



**San Jacinto River Authority
Purchasing Department
1577 Dam Site Road
Conroe, Texas 77304**

REQUEST FOR COMPETITIVE SEALED PROPOSALS CSP 19-0050

SJRA WOODLANDS DIVISION REHABILITATION OF BEAR BRANCH GRAVITY MAIN

Date Issued: SEPTEMBER 13, 2019

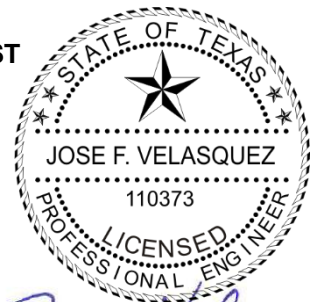
**Response Due Date & Time: OCTOBER 17, 2019 at 2:00 PM CST
Location for Delivery: as stated above**

SJRA PROJECT NO. WDPR0082.1001.2T001

ARKK ENGINEERS, LLC, TEXAS FIRM NO. 13872

NIGP CLASS and ITEM

913	45
913	89



Jose Velasquez

9/13/2019

Disclosure Requirements

Chapter 176 of the Texas Local Government Code mandates the public disclosure of certain information concerning persons doing business or seeking to do business with the San Jacinto River Authority, including affiliations and business and financial relationships such persons may have with San Jacinto River Authority officers. An explanation of the requirements of Chapter 176, applicable forms and a complete text of the new law are available at: <http://www.sjra.net>. If you are unable to obtain such information online, please contact the San Jacinto River Authority Purchasing Department, 1577 Dam Site Road, Conroe, Texas 77304 or call (936) 588-3111.

BY DOING BUSINESS OR SEEKING TO DO BUSINESS WITH THE SAN JACINTO RIVER AUTHORITY, YOU ACKNOWLEDGE THAT YOU HAVE BEEN NOTIFIED OF THE REQUIREMENTS OF CHAPTER 176 OF THE TEXAS LOCAL GOVERNMENT CODE AND THAT YOU ARE SOLELY RESPONSIBLE FOR COMPLYING WITH THEM.

Doc.

No.

Document Title

Doc. Date

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INVITATION TO SUBMIT PROPOSALS

GENERAL NOTICE

The San Jacinto River Authority is requesting Competitive Sealed Proposals (CSP) for the Construction of the following project in Montgomery County, Texas:

CSP No. 19-0050 – Rehabilitation of Bear Branch Gravity Main

PROJECT DESCRIPTION

Work of the contract is for rehabilitation of approximately 16,100 L.F. of existing 42" thru 72" sanitary sewer gravity main by cured-in-place pipe (CIPP) lining. The sanitary sewer gravity main is located along the Bear Branch waterway between Kuykendahl Rd. and WWTF No. 2 in The Woodlands, Texas. This project also includes rehabilitation of manholes, cleaning and television inspection, diversion pumping, installing temporary construction roads along access routes, installing temporary bridges across drainage ditches, creeks, and channels, and all labor, equipment, materials, and incidentals required for the project.

The existing sanitary sewer gravity main is located within the limits of an existing 30' or 40' easement along the Bear Branch waterway. Access to the existing sanitary sewer gravity main is limited due to the location and existing terrain, drainage channels, presence of trees and brush, and a golf course along the alignment. The Contractor shall coordinate his operations with Montgomery County, The Woodlands Country Club (Palmer Course) Golf Club, The Woodlands Development Company, The Woodlands Water Agency (TWWA), and The Woodlands Township for access during construction. The Contractor must meet the requirements of the above entities and any special requirements identified in the field.

PROPOSAL DUE DATE

Competitive Sealed Proposals must be delivered to the San Jacinto River Authority, G&A Building, 3rd Floor Receptionist, 1577 Dam Site Road, Conroe, TX 77304 no later than **2:00 PM (CST) on OCTOBER 17, 2019**. Proposals will be publically opened and read aloud at this time. Address proposals to:

Elton D. Brock, MBA, CTPM, CTCM, CPSM, C.P.M.
Purchasing Manager
San Jacinto River Authority
Purchasing Department
1577 Dam Site Road
Conroe, TX 77304

PRE-PROPOSAL CONFERENCE

A **mandatory** Pre-Proposal Conference will be held at Woodlands Division, 2436 Sawdust Road, The Woodlands, TX 77380, at **1:00 PM (CST)** on **SEPTEMBER 24, 2019**. Proposals will not be accepted from Offering Firms which fail to attend the Pre-Submittal Conference.

COMPETITIVE SEALED PROPOSAL DOCUMENTS/COPIES

A complete set of Competitive Sealed Proposal (CSP) Documents may be accessed via a link from the SJRA Website (<http://www.sjra.net/purchasing/bidopportunities/>), Purchasing Tab, Bid Opportunities.

Video Data

A drone video of the project area is available for viewing at ARKK Engineers, LLC (ARKK) offices. Offerors can schedule a viewing of the video data with ARKK Staff by appointment. **Offerors will not be allowed to make copy of drone video, it is available for viewing purpose only.**

1. The aerial video was performed in May 2019.
2. The Owner and Engineer shall not be held responsible for the accuracy of completeness of any information or data in this video. The entire project alignment is not depicted on this video and some segments may not be available.

Television inspection video data of a majority of the line segments included for rehabilitation as part of this project are available for viewing at ARKK offices. Offerors can schedule a viewing of the video data with ARKK Staff by appointment.

1. The sewer mains were televised in 2012.
2. The Owner and Engineer shall not be held responsible for the accuracy of completeness of any information or data in the videos. Offeror is responsible for field verifying all pipe diameters and lengths.

ARKK Engineers, LLC
7322 Southwest Freeway, Suite 1040
Houston, TX 77074
713-400-2755

Offerors are made aware that the video data is for information purposes only. Offerors shall have full responsibility for interpretation of the videos and use of the information for their pricing and construction purposes. It should be noted that the field conditions will change and the Offeror must include allowances in his pricing and anticipate adjustments in the field to accommodate the changes.

Offerors may perform additional investigations as they deem appropriate.

Offerors are made aware that ARKK Staff will not be allowed to discuss or answer any questions during the video viewing. All questions must be submitted in writing to SJRA's Purchasing department.

REVIEW OF PROPOSALS AND AWARD OF CONTRACT

The SJRA reserves the right to reject any or all Proposals and to waive informalities and irregularities.

Proposals will be ranked according to the criteria described in the CSP Document. Both cost and non-cost factors will be evaluated and scored. One or more Offerors may be invited back for discussions or to present their Proposal to the SJRA before the final rankings are made.

The SJRA may enter into contract negotiations with the highest ranked firm for the completion of the Work. If the negotiations with the highest ranked firm are unsuccessful, the SJRA will formally close negotiations with this firm and initiate contract negotiations with the next highest ranked firm. Upon agreement between both parties, a Contractor-executed contract may be recommended for approval by the SJRA Board of Directors or the SJRA General Manager, as applicable. Upon approval, the contract will be executed by the General Manager of the SJRA.

Any contract or contracts awarded under this Invitation to Submit Proposals are expected to be funded in part by a loan or grant from the Texas Water Development Board. Neither the State of Texas, nor any of its departments, agencies, or employees are or will be a party to this invitation to Submit Proposals or any resulting contract.

TWDB REQUIREMENTS

The following provisions are derived from Texas Water Development Board (TWDB) Guidance TWDB-0550, which is available for download at <http://www.twdb.texas.gov/financial/instructions/doc/TWDB-0550.pdf>.

Contract Contingent on TWDB Approvals -- This contract is contingent upon release of funds from the Texas Water Development Board. Any contract awarded under the CSP Documents is expected to be funded in part by financial assistance from the TWDB. Accordingly, the award of the contract, the payment of amounts due under the contract, and other matters related to the contract are contingent upon approvals from the TWDB. Neither the U.S. Environmental Protection Agency (EPA) or the State of Texas, nor any of its departments, agencies, or employees, are or will be a party to the CSP Documents or any resulting contract.

Disadvantaged Business Enterprise Goals -- Any contract awarded under the CSP Documents is subject to the EPA's Disadvantaged Business Enterprise (DBE) Program, which includes EPA-approved fair share goals toward procurement of Minority and Women-owned Business Enterprise (M/WBE) businesses. EPA rules require that SJRA and its Contractors make a good faith effort to award a fair share of contracts, subcontracts, and procurements to M/WBEs through demonstration of the six affirmative steps. For more details of the DBE Program and the current, applicable fair share goals, please visit <http://www.twdb.texas.gov/dbe>.

The current fair share goals for the State of Texas are as follows:

CATEGORY	MBE	WBE
CONSTRUCTION	19.44%	9.17%
EQUIPMENT	16.28%	11.45%
SERVICES	20.41%	13.66%
SUPPLIES	25.34%	8.82%

Davis-Bacon Wage Rate Requirements -- Davis-Bacon prevailing wage requirements apply to Contractors and Subcontractors performing on contracts in excess of \$2,000 for the Project.

Any contracts or subcontracts in excess of \$2,000 must include the provisions of the Davis-Bacon Wage Rate Requirements found in TWDB Guidance No. DB-0156.

Wage Determinations - U.S. Department of Labor (DOL) wage determination must be included in the bidding and contract documents. DOL wage determinations may be obtained online at <https://beta.sam.gov/>.

For prime contracts in excess of \$100,000 (such as the contract to be awarded under CSP Documents), Contractors and Subcontractors must also, under the provisions of the Contract Work Hours and Safety Standards Act, as amended, pay laborers and mechanics, including guards and watchmen, at least one and one-half times their regular rate of pay for all hours worked over 40 in a workweek. The Fair Labor Standards Act may also apply to Davis-Bacon covered contracts.

Current DOL wage rate determinations are set forth in Specification 00 73 43. While this Invitations to Submit Proposals remains open, the SJRA must monitor <https://beta.sam.gov/> on a weekly basis to ensure that the wage determination contained Specification 00 73 43 remains current. The SJRA must amend Specification 00 73 43 if the DOL issues a modification to the applicable wage rate determination more than 10 days prior to the due date for submitting Proposals. If DOL modifies or supersedes the applicable wage determination less than 10 days prior to the due date for submitting Proposals, the SJRA may request a finding from TWDB that there is not reasonable time to notify potential Offerors of the modification of the wage determination.

For additional information on Davis-Bacon Wage Rate Requirements and its applicability to this contract, please consult TWDB Guidance No. DB-0156, which is available for download at <http://www.twdb.texas.gov/financial/instructions/doc/DB-0156.pdf>.

American Iron and Steel -- This Project is subject to the American Iron and Steel (AIS) requirements of 33 U.S.C. §1388. Any contract awarded under the CSP Documents is subject to the AIS requirements of under said law.

Equal Employment Opportunity and Affirmative Action -- All Offerors will receive consideration without regard to race, color, religion, sex (including pregnancy), sexual orientation, gender identity, national origin, age (40 or older), disability, or genetic information. The Offeror awarded the contract will be required to comply with the Department of Labor regulations at 41 CFR Part 60-4, relating to Construction Contractors--Affirmative Action Requirements, which include the President's Executive Order No. 11246, as amended by Executive Order No. 11375 and Executive Order No. 13672. Failure by the Contractor to carry out these requirements is a material breach, which may result in the termination of financial assistance to SJRA for the contract and the Project.

Debarment and Suspension Certification -- The contract is subject to the federal requirements of Subpart C of 2 CFR Part 180 and Part 1532 regarding Debarment and Suspension.

Proposal Security -- Each Offeror shall furnish security (in the form of a cashier's check or bond) made payable to the SJRA in the amount not less than five percent (5%) of the total Proposal Amount, including any Cash Allowances and Alternates. If a bond is provided, the Offeror shall utilize a surety company which is authorized to do business in Texas in accordance with Surety Bonds and Related Instruments, Chapter 3503 of the Texas Insurance Code.

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SECTION 00 21 13.02CT

**INSTRUCTIONS TO OFFERORS
(COMPETITIVE SEALED PROPOSALS)**

1. Overview of Competitive Sealed Proposal Process.

The objective of the Competitive Sealed Proposal (CSP) process is to competitively procure goods and services with the firm whose Proposal provides the best value for the Owner (SJRA). Proposals will be received, publically opened, and the names and monetary Proposals of Offerors read aloud. Subsequently, the Proposals will be ranked according to the criteria described in this CSP Document. Both cost and non-cost factors will be evaluated and scored. One or more Offerors may be invited back for discussions or to present their Proposal to the SJRA before the final rankings are made.

The SJRA may enter into contract negotiations with the highest ranked firm for the completion of the Work. If the negotiations with the highest ranked firm are unsuccessful, the SJRA will formally close negotiations with this firm and initiate contract negotiations with the next highest ranked firm. Upon Standard Form of Agreement between both parties, a Contractor-executed Contract may be recommended for approval by the SJRA Board of Directors or the SJRA General Manager, as applicable. Upon approval, the Contract will be executed by the General Manager of the SJRA.

2. Defined Terms.

2.1. Definitions for the following terms used in these Instructions do not replace definitions for similar terms that may be contained within other sections of the Contract Documents.

2.2. Certain additional terms used in these Instructions to Offerors have the meanings indicated below and are applicable to both the singular and plural thereof.

2.2.1. Addendum or Addenda - Additions, deletions, and/or changes to any part of the CSP issued in writing by the Owner prior to Proposal due date and time.

2.2.2. Apparent Best Value Offeror - The Offering Firm whose Proposal for completion of the Work provides the best value for the Owner as defined by the ranking detailed in Article 12 of Instructions to Offerors.

2.2.3. Board of Directors - The governing body of the SJRA comprised of seven (7) directors appointed to six (6) year terms by the Governor of the state of Texas.

2.2.4. Contract Negotiations - Discussions which take place between the Owner and the Apparent Best Value Offeror in an effort to reach Standard Form of Agreement on contract scope of work, cost, and other contractual requirements.

- 2.2.5. Contractor - The successful Offeror to this CSP who enters into a contractual relationship with the Owner for completion of the Work, following any contract approval by the SJRA Board of Directors or the SJRA General Manager, as applicable. .
- 2.2.6. CSP Document - Abbreviation of the Competitive Sealed Proposals Document, the document used to request Competitive Sealed Proposals for the procurement of goods and services as authorized under Government Code Chapter 2269, Subchapter D.
- 2.2.7. Engineer's Estimate of Probable Construction Cost – Engineer's opinion of project construction cost to Owner developed by the Principal Architect/Engineer. Actual contract amount may vary significantly.
- 2.2.8. Issuing Office - The location from which the CSP Documents are issued. For this project the issuing office is San Jacinto River Authority, 1577 Dam Site Road, Conroe, Texas 77304.
- 2.2.9. Offeror, Offering Firm - Firm which responds to a CSP by submitting a Proposal directly to Owner. Offeror and Offering Firm shall have the same meaning in the Instructions to Offerors.
- 2.2.10. Owner - The San Jacinto River Authority (SJRA).
- 2.2.11. Proposal - Offeror's submittal which conforms to the requirements set forth in this CSP.
- 2.2.12. Proposal Form - As detailed in the requirements of this CSP, contains unit pricing for all parts of the Work and their aggregate as detailed and affirmed on the Proposal Form and may include additional forms supplied by Offeror and or the Owner that relate to the Offeror's proposed cost for completing the Work.
- 2.2.13. SJRA - San Jacinto River Authority, a government agency whose mission is to develop, conserve, and protect the water resources of the San Jacinto River basin.
- 2.2.14. Statement of Qualifications, (SOQ) - Offeror submitted documents which describe the Offering Firm's qualifications for performing the Work and contain no pricing or cost data. Requirements for the Statement of Qualifications (SOQ) are set forth in Article 9 and Article 11 of the Instructions to Offerors (this CSP).
- 2.2.15. Subcontractor - Any contractor hired by the Contractor to furnish services, or goods and services, specified in this CSP.
- 2.2.16. Successful Offeror - The Firm who has completed negotiations with the Owner and, following any approval by the SJRA Board of Directors or the SJRA General Manager, as applicable, is selected to enter into a Contract with the owner to complete the work.
- 2.2.17. Supplier - Any supplier of materials and/or equipment to Contractor for the Project.

3. Schedule.

CSP Documents Posted on Website:	September 13, 2019
Legal Advertisements:	September 13, 2019 September 20, 2019
Pre-Proposal Conference (Mandatory) :	September 24, 2019, 1:00 pm (CST)
Deadline for Questions and Inquiries:	October 4, 2019, 2:00 pm (CST)
Proposal Submission Deadline:	October 17, 2019, 2:00 pm (CST)
Anticipated Construction Start:	January, 2020

4. Competitive Sealed Proposal Documents/Copies.

- 4.1. This Request for Competitive Sealed Proposals (CSP) consists of the following documents:
 - 4.1.1. Invitation to Submit Proposals (00 11 13);
 - 4.1.2. Instructions to Offerors (00 21 13.02);
 - 4.1.3. Proposal Form (00 41 00.02), Contractor shall also complete and submit the provided Microsoft Excel spreadsheet of the Proposal Form;
 - 4.1.4. Statement of Qualifications (00 21 13.03);
 - 4.1.5. All Contract Documents referenced in this CSP;
 - 4.1.6. Addenda to this CSP issued by the SJRA Purchasing Department;
 - 4.1.7. Any attached forms; and
 - 4.1.8. Proposal Security (Offeror's Bond)
- 4.2. A complete set of CSP Documents may be viewed and accessed via the SJRA Website, at: <http://www.sjra.net/purchasing/bidopportunities/>. Purchasing Tab (Bid Opportunities).
- 4.3. Complete sets of CSP Documents must be used in preparing Proposals; neither Owner nor Principal Architect/Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of CSP Documents.
- 4.4. Owner and Principal Architect/Engineer, in making copies of CSP Documents available on the above terms, do so only for the purpose of obtaining Proposals for the Work and do not confer a license or grant for any other use.

5. TWDB Requirements (TWDB-0550 – Supplemental Contract Conditions and Instructions)

The following provisions are derived from Texas Water Development Board (TWDB) Guidance TWDB-0550, which is available for download at <http://www.twdb.texas.gov/financial/instructions/doc/TWDB-0550.pdf>.

5.1. Contingent Award of Contract

Any contract awarded under the CSP documents is expected to be funded in part by financial assistance from the Clean Water State Revolving Fund (CWSRF) program administered by the Texas Water Development Board (TWDB) with grant fund from the United States Environmental Protection Agency (EPA). Accordingly, the award of the contract, the payment of amounts due under the contract, and other matters related to the contract are contingent upon approvals from the TWDB. Neither the EPA or the State of Texas, nor any of its departments, agencies, or employees, are or will be a party to the CSP Documents or any resulting contract.

5.2. Disadvantaged Business Enterprise Goals

The CWSRF program receives federal funds from the EPA. EPA regulations require that recipients of loans from the CWSRF, such as SJRA, make a "good faith effort" to award a fair share of work to Disadvantaged Business Enterprises (DBE) who are Minority Business Enterprises (MBEs), and Women-owned Business Enterprises (WBEs) whenever procuring construction, supplies, services and equipment. DBE requirements are set forth in the TWDB Supplemental Conditions (Specification Section 00 73 00).

The current fair share goals for the State of Texas are as follows:

CATEGORY	MBE	WBE
CONSTRUCTION	19.44%	9.17%
EQUIPMENT	16.28%	11.45%
SERVICES	20.41%	13.66%
SUPPLIES	25.34%	8.82%

5.3. Davis-Bacon Wage Rate Requirements

5.3.1. Davis-Bacon prevailing wage requirements apply to Contractors and Subcontractors performing on contracts in excess of \$2,000 for the Project.

5.3.2. Any contracts or subcontracts in excess of \$2,000 must include the provisions of the Davis-Bacon Wage Rate Requirements found in TWDB Guidance No. DB-0156. Wage Determinations - U.S. Department of Labor (DOL) wage determination must be included in the bidding and contract documents. DOL wage determinations may be obtained online at <https://beta.sam.gov/>.

5.3.3. For prime contracts in excess of \$100,000, Contractors and Subcontractors must also, under the provisions of the Contract Work Hours and Safety Standards Act, as amended, pay laborers and mechanics, including guards and watchmen, at least one and one-half times their regular rate of pay for all

hours worked over 40 in a workweek. The Fair Labor Standards Act may also apply to Davis-Bacon covered contracts.

5.3.4. Davis-Bacon requirements are set forth in the TWDB Supplemental Conditions (Specification Section 00 73 00). The full text of such requirements shall be included in any subcontracts entered into by the Contractor.

5.3.5. Additional information on Davis-Bacon Wage Rate Requirements and its applicability to this contract can be found in TWDB Guidance DB-0156, which is available for download at <http://www.twdb.texas.gov/financial/instructions/doc/DB-0156.pdf>.

5.4. American Iron and Steel

This Project is subject to the American Iron and Steel (AIS) requirements of 33 U.S.C. §1388. Any contract awarded under the CSP Documents is subject to the AIS requirements under said law. The Contractor must complete the statement of understanding regarding this requirement, as referenced in the TWDB Supplemental Conditions (Specification Section 00 73 00).

5.5. Equal Employment Opportunity and Affirmative Action

All Offerors will receive consideration without regard to race, color, religion, sex (including pregnancy), sexual orientation, gender identity, national origin, age (40 or older), disability, or genetic information. The Offeror awarded the contract will be required to comply with the Department of Labor regulations at 41 CFR Part 60-4, relating to Construction Contractors--Affirmative Action Requirements, which include the President's Executive Order No. 11246, as amended by Executive Order No. 11375 and Executive Order No. 13672. Failure by the Contractor to carry out these requirements is a material breach, which may result in the termination of financial assistance to SJRA for the contract and the Project.

5.6. Debarment and Suspension Certification

This contract is subject to the federal requirements of Subpart C of 2 CFR Part 180 and Part 1532 regarding Debarment and Suspension. The Contractor will comply with the assurances provided with the bid that leads to a contract.

5.7. Proposal Security

Each Offeror shall furnish security (in the form of a cashier's check or bond) made payable to the SJRA in the amount not less than five percent (5%) of the total Proposal Amount, including any Cash Allowances and Alternates. If a bond is provided, the Offeror shall utilize a surety company which is authorized to do business in Texas in accordance with Surety Bonds and Related Instruments,

Chapter 3503 of the Texas Insurance Code. See Article 17 (below) for additional requirements.

5.8. Forms to be Submitted with Proposal.

In addition to any other forms required to be submitted with a Proposal hereunder, the following forms shall be submitted with a proposal. Such forms are available for download at <https://www.twdb.texas.gov/financial/instructions/>.

WRD-255 -- Bidder's Certifications regarding Equal Employment Opportunity and Non-Segregated Facilities.

SRF-404 -- Certification Regarding Debarment, Suspension and Other Responsibility Matters, (to be completed and submitted by the sub-recipient).

Disadvantaged Business Enterprise (DBE) Construction Contract Phase Forms:

Form	Prime Contractor	Submit Form To
TWDB-0216	Required	TWDB
TWDB-0217	Required	TWDB
TWDB-0373	Required	TWDB

6. Competitive Sealed Proposal Process\Contract Documents.

- 6.1. All questions about the Competitive Sealed Proposal Process or the meaning or intent of the Contract Documents are to be directed to the SJRA Purchasing Department.

Contact:

Elton D. Brock, MBA, CTPM, CTCM, CPSM, C.P.M.
Purchasing Manager
San Jacinto River Authority
Purchasing Department
1577 Dam Site Road
Conroe, TX 77304

- 6.2. All questions shall be submitted to the buyer referenced above via email.
- 6.3. Interpretations or clarifications considered necessary by Owner in response to such questions will be issued by Addenda and posted to the SJRA Website via the following link: <http://www.sjra.net/purchasing/bidopportunities/> Purchasing Tab (Bid Opportunities). Oral statements may not be relied upon and will not be binding or legally effective.

7. Pre-Proposal Conference.

- 7.1. A single **mandatory** Pre-Proposal Conference will be conducted at the offices of the San Jacinto River Authority, Woodlands Division, 2436 Sawdust Road, The Woodlands, TX 77380, at **1:00 PM (CST), September 24, 2019**. Representatives of Owner and Principal Architect/Engineer will be present to discuss the project. Proposals will not be accepted from offering firms which fail to attend the pre-submittal conference.
- 7.2. All questions about the meaning or intent of the Competitive Sealed Proposal and Contract Documents are to be directed to the SJRA Purchasing Department. The SJRA Purchasing Department will address all questions as Owner considers necessary in response to inquiries arising at the conference through written Addenda and posted to the SJRA Website via the following link: <http://www.sjra.net/purchasing/bidopportunities/> Purchasing Tab (Bid Opportunities). Oral statements may not be relied upon and will not be binding or legally effective.

8. Estimated Budget.

- 8.1. An Engineer's Opinion of Probable Construction Cost (project cost estimate) has been generated by the Principal Architect/Engineer. If an award is made, the actual contract amount may vary.
- 8.2. The Engineer's Opinion of Probable Construction Cost for this project is **\$9,000,000.00.**

9. Basis for Ranking of Proposals.

- 9.1 The Owner will consider the qualifications (Statement of Qualifications) of the Offerors and their respective proposed Contract Price (Proposal Form) when evaluating Proposals to determine which Offeror, in the sole opinion of the Owner, will provide the best value to the Owner. All procurements shall conform to Chapter 2269 of the State of Texas Government Code. The Proposals will be evaluated using the following criteria and weighting:
- 9.1.1. Proposed Project Cost: The Offeror's Proposed Cost of Performing the Work shall be indicated in the Proposal Form (Section 00 41 00.02). The Owner has established an internal budget for this Project. The total Proposal Price is defined per the Proposal Form to include the cost(s) of the proposed Total Base Items ("A") and Total Extra Unit Price Items ("B"). Attach the Proposal Form and all information/documents required to be submitted with the Proposal.

9.1.2. Experience/Past Performance of Offeror with Similar Projects: Provide general information about the Organization as required in Table 1 and Table 2 of Specification Section 00 21 13.03 Statement of Qualifications (SOQ). Provide any additional information as required by the Construction Experience section of Table 2. Describe the Organizational structure and the qualifications of the management team as it relates to this Project in Table 3. Provide a narrative format as described in Table 4, describe Offeror's experience as a general contractor and describe the Organization's operating philosophy and approach to constructing, completing, and commissioning Projects. Describe the Organization's approach to managing Subcontractors and Suppliers (Table 11), quality management and construction contract administration. Limit the narrative portion responding to this criterion to 10 pages in length. Provide a list of Projects completed by the Organization in the last five (5) years using copies of Table 5.

Experience should include, as a minimum, the satisfactory completion of five (5) cured-in-place pipe (CIPP) lining installation Projects of similar scope for proposed key personnel. A higher point score will be given to Offerors whose proposed key personnel have obtained the given minimum experience within the last five (5) years.

Offeror must demonstrate experience in the construction of Projects of similar construction cost and/or techniques, with similar project site conditions, and describe how they intend to provide the needed experience and expertise. Submit descriptions of Projects on which proposed key personnel have experience by submitting completed copies of the attached Table 12, with at least one Project for each of the key individuals. If Offeror does not have specific experience with Projects of this type and magnitude, the Offeror may describe its proposed approach and how its experience with other Projects enhances its capability to successfully complete this Project. Offeror may submit photographs, Project descriptive narratives, letters of recommendation, Project awards, and references to demonstrate experience in constructing a Project which meets the Owner's expectations for a quality Project constructed on time and within budget (Tables 13 and 14). This narrative is not to exceed one (1) page in length.

Provide information to demonstrate the ability of the Organization to complete Projects within budget and on time. Offerors are to provide a tabulation of all Projects completed by the Organization within the last five (5) years on Tables 13 and 14 to demonstrate performance in these areas. Comments may be added to the tabulations to indicate the reasons for amending the contract amounts or completion dates. Provide narrative information to indicate the number of Projects and dollar volume currently under contract by the Organization and the projected completion date of each active Project. Describe how the resources

dedicated to these assignments will impact Offeror's ability to effectively execute the construction of this Project. Provide an estimate of the amount of the Project that will be done using in-house resources and the amount to be performed by Subcontractors and Suppliers. This narrative is not to exceed five (5) pages in length.

- 9.1.3. Experience and Qualifications of Proposed Key Personnel with Similar Projects: Provide information on the managerial structure and the key personnel that will be actively working on this Project in Tables 6 through 10 and Table 12. Key personnel include the Project Manager, Project Superintendent, Safety Manager, and Quality Control Manager. If more than one of these key roles are to be filled by one individual, this information is to be provided with the list of proposed individuals. The Offeror is to provide a list of individuals from which the individual for any given position may be selected if the Offeror is not able to commit to one individual for the Project at the time the Proposal is submitted. Qualifications of these individuals will be considered in evaluating the qualifications of the Offeror. The Proposal must provide the services of the proposed key personnel for the life of the Project as a condition of qualification. Failure to provide the proposed key Personnel may result in the disqualification of the Offeror and may void the award of the Contract.

Provide the resumes (not to exceed one page for each) of proposed key personnel with the SOQ describing their education and experience in Table 6. Include more detailed information on Projects on which they have had significant involvement in the last five (5) years, or that demonstrate their experience with similar Projects. This list is to include the name and a current telephone number for references of each of these Project assignments. Offerors are to include a list of the current Project assignments for each of the individuals proposed, the anticipated completion date for this assignment and the percentage of the time they will have available to devote to this Project. The Project Superintendent must be dedicated to this Project full time for the duration of the Project.

- 9.1.4. Approach: The Offeror shall include a project schedule, brief write-up, and an exhibit that summarizes the Offeror's approach to overall project sequence of construction for entire project limits and corresponding time lines, proposed construction methods for each segment, staging areas, temporary access routes (includes maintenance), diversion pumping routes, contingency plan, and site restoration. Brief write-up shall not to exceed three (3) pages.

The Contractor shall include a copy of the Site Access Map and show the locations with setup lengths that they anticipate performing traditional CIPP setup and Over-The-Hole setup.

The Offeror shall include a description of the conceptual approach it intends for the Flood Risk Mitigation Plan and include within its brief write-up any special considerations in its approach to the project sequence based upon the Plan.

The Offeror shall also attach to his Proposal a summary of the Builder's Risk Insurance. The summary shall include information on insurance coverage when flooding occurs.

- 9.1.5. Financial Management (Stability): Provide the past two (2) years of available financial statements, preferably audited, with this Proposal. Provide financial statements showing the name and address of the firm preparing the financial statements and the date of preparation. Offerors may choose to report on the financial stability of their Organization to demonstrate that they have the ability to complete the Project in a manner that will not impose undue efforts on the part of the Owner to evoke bonds to complete the Project or meet financial obligations. Describe the Offeror's systems and philosophy for financial management of the Project. Describe Offeror's systems and philosophy for contracting with Subcontractors and Suppliers and managing payments and retainage. Provide other information if desired to demonstrate solid financial management practices that will enhance completion of the Project. This narrative is not to exceed two (2) pages in length.

This is a Pass or Fail. Any Offeror receiving a score of "Fail", will be automatically disqualified.

- 9.1.6. Other Factors: The Owner will consider other factors in evaluating Proposals, including the following (narratives in this Section shall not exceed five (5) pages total in length).
- 9.1.6.1. Safety: Demonstrated success in the implementation of a Project site safety program. This may be demonstrated by documentation of the Offeror's safety program, and statement regarding their commitment to safety. Indicators such as the EMR (Experience Modification Ratio) may be used to demonstrate the effectiveness of the safety program.
- 9.1.6.2. Claims Experience and Litigation History: List all claims or litigation involving construction Project Owners that have been filed within the last five (5) years, or that are currently outstanding. Provide a brief description of the nature of each suit and when it is anticipated that the suit will be resolved. Specifically detail and disclose any unforeseen or differing site condition claims and/or litigation arising within the last five (5) years.

9.1.6.3. Past Experience with the Owner: Demonstrate success of projects that have been completed with the Owner within the last five (5) years. Describe how the experience with the Owner will impact the performance of the Organization on this project.

9.1.6.4. Past Experience with Projects in Flood Prone Areas: Demonstrate prior experience and successful completion of projects of similar scope and execution in flood prone areas which required such special considerations as dewatering and/or providing special access on or over the project site.

9.2. Table of criteria and weighting for the ranking of Offeror's Proposals:

Rating Category	Description	Weighting Points
9.1.1	Proposed Project Cost	50
9.1.2	Experience/Past Performance of Offeror with Similar Projects	15
9.1.3	Experience and Qualifications of Proposed Key Personnel with Similar Projects	10
9.1.4	Project Approach	20
9.1.5	Financial Management (Stability)	Pass/Fail
9.1.6	Other Factors	5
Total		100

10. Proposal Form.

- 10.1. A Proposal Form (00 41 00.02) is included with the CSP Documents; additional copies may be obtained at the SJRA Website (<http://www.sjra.net/purchasing/bidopportunities/>) Purchasing Tab (Bid Opportunities).
- 10.2. All blanks on the Proposal Form must be completed in ink, by hand, or electronically printed.
- 10.3. Contractor shall also complete and submit the provided Microsoft Excel spreadsheet of the Proposal Form. Template may be obtained via the SJRA Website (<http://www.sjra.net/purchasing/bidopportunities/>) Purchasing Tab (Bid Opportunities).
- 10.4. The Proposal price shall include such amount as the Offeror deems proper for overhead and profit.

11. Offering Firm's Statement of Qualifications (SOQ).

- 11.1. SOQs shall not exceed fifteen (15) pages, including transmittal letters and narratives, and excluding completed SOQ tables and attachments, covers and

plain section dividers. SOQs shall be printed on single side 8 ½" by 11" pages with not less than 1 inch margins, not less than 1.25 line spacing and not less than 11 point font.

- 11.2. The SOQ must be submitted with the Proposal and include, as a minimum, the information as described in Article 9, Basis for Ranking of Proposals. Failure to submit the required information in the SOQ may result in the Owner considering the Proposal non-responsive and result in rejection of the Proposal by Owner. Offerors may be required to provide supplemental information if requested by the Owner to clarify, enhance or supplement the information provided in the SOQ.
- 11.3. Offerors must provide requested SOQ information using the tables provided in specification section 00 21 13.03 - Statement of Qualifications. A copy of these tables will be made available in Microsoft Word to assist with the preparation of the SOQ. Information in these tables must be provided completely and in detail. The information in these tables will be used to make direct comparisons with the information provided by other Offerors. Failure to include the information completely and clearly may result in lower scores in the evaluations. Information that cannot be totally incorporated in the table may be included in an appendix to the table. Appendices must be clearly referenced by appendix number in the table, and the appended material must include the appendix number on every sheet of the appendix. The appendix must include only the information that responds to the question or item number to which the appended information applies. The required tables are listed below:

Table 1	General Information
Table 2	Organizational Experience
Table 3	Organizational Structure
Table 4	Project Experience and Resources
Table 5	Current Projects and Projects Completed within the last 5 Years
Table 6	Proposed Key Personnel
Table 7	Proposed Project Managers
Table 8	Proposed Project Superintendent
Table 9	Proposed Project Safety Manager
Table 10	Proposed Quality Control Manager
Table 11	Subcontractors and Suppliers
Table 12	Project information for Key Personnel
Table 13	Demonstration of Budget Performance
Table 14	Demonstration of On-time Performance

- 11.4. Offerors may provide supplemental information to the SOQs using AIA, AGC or other industry standard SOQ tables and / or Offerors may submit additional information such as organizational brochures or other marketing information to help demonstrate their ability to provide best value to the Owner. This information may not be submitted as a substitute to the information specifically requested in this Section, or in the SOQ tables. If this information is to be included as an appendix to the information requested in Article 11.3. (above), the appendix must specify the paragraph or section to which the appendix applies and the paragraph or section must accurately reference the appendix.

12. Ranking of Offeror's Proposals.

- 12.1. The Owner will consider the qualifications (Statement of Qualifications) of the Offerors and Offeror's proposed Subcontractors, Suppliers and consultants, in addition to the proposed cost(s) (Proposal Form) when evaluating Proposals to determine which Proposal offers the best value to the Owner. Owner will rank each of the Offeror's Proposals based on the criteria and criteria weighting described in Article 9, Basis for Ranking of Proposals.
- 12.2. Evaluation and ranking of the Proposals will be completed no later than the 45th calendar day from the date of Proposal opening. Offerors are requested not to withdraw their Proposals within ninety (90) calendar days from the date on which Proposals are opened. Proposal Security of the highest ranking firms will be held by the Owner until contract negotiations are finalized.
- 12.3. In evaluating Proposals, Owner will consider the selection criteria set forth in Article 9 of these Instructions to Offerors and whether or not the Proposals comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested by Owner.
- 12.4. Owner may consider the qualifications and experience of Subcontractors, Suppliers, and other persons and organizations proposed for those portions of the Work as to which the identity of Subcontractors, Suppliers, and other persons and organizations must be submitted as provided in the General Conditions. Owner may also consider the operating costs, maintenance requirements, performance data and guarantees of major items of materials and equipment proposed for incorporation in the Work when such data is required to be submitted prior to recommendation of award to Owner's Board of Directors or its General Manager, as applicable.
- 12.5. Owner may conduct such investigations as Owner deems necessary to assist in the evaluation of any Proposal and to establish the responsibility, qualifications and financial ability of Offerors, proposed Subcontractors, Suppliers and other persons and organizations to perform and furnish the Work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time.

- 12.6. The Owner, at its discretion, may also choose to conduct interviews with the top ranking Offerors to provide Offerors a better opportunity to demonstrate they can provide the best value to the Owner for this Project. Should the Owner choose to conduct interviews with the top ranking Offerors, they will be notified of:
- 12.6.1. The time and place for the interview.
 - 12.6.2. Interview format and agenda.
 - 12.6.3. Questions to prepare for the interview.
 - 12.6.4. Individuals that are expected to participate in the interview.

Failure to participate in the interview may result in disqualification from consideration for the project.

13. Award of Contract.

- 13.1. It is the intent of the San Jacinto River Authority to award this contract to the Offering Firm whose Proposal for completion of the Work provides the best value for the Owner after consideration of the relative importance of costs and other evaluation factors described in the Basis for Ranking Proposals set forth in Article 9 of these Instructions to Offerors.
- 13.2. The Owner reserves the right to adopt the most advantageous interpretation of the Proposals submitted in the case of ambiguity or lack of clearness in stating Proposal Prices, to reject any or all Proposals, and/or to waive informalities.
- 13.3. Owner reserves the right to reject any or all Proposals, including without limitation the rights to reject any or all nonconforming, nonresponsive, unbalanced, or conditional Proposals and to reject the Proposal of any Offeror if Owner determines that an award to that Offeror would not provide the best value for the Owner, whether because the Proposal is not responsive or the Offeror is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by Owner.
- 13.4. Owner also reserves the right to waive all informalities not involving price, time or changes in the Work and to negotiate contract terms with the Apparent Best Value Offeror. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.
- 13.5. The qualifications of a firm shall not deprive the Owner of the right to accept a Proposal, which in its judgment offers the best value to the Owner. In addition, the Owner reserves the right to reject any Proposal where circumstances and developments have, in the opinion of the Owner, changed the qualifications or responsibility of the firm.

- 13.6. Material misstatements in the information submitted for evaluation may be ground for rejection of Offeror's Proposal. Any such misstatement, if discovered after award of the contract to such firm, may be grounds for immediate termination of the contract. Additionally, the Offeror will be liable to the Owner for any costs or damages to the Owner resulting from such misstatements, including costs and attorney's fees for collecting such costs and damages.
- 13.7. If the Contract is to be awarded, it will be awarded to the Apparent Best Value Offeror following successful Contract Negotiations and following any required approval by the SJRA Board of Directors or the SJRA General Manager, as applicable.
- 13.8. If Contract Negotiations with the Apparent Best Value Offeror are unsuccessful, The Owner will formally close Contract Negotiations with this Firm and attempt to open Contract Negotiations with the next highest-ranked firm according to the selection criteria set forth in Article 9 of these Instructions to Offerors.
- 13.9. If the Contract is to be awarded, Owner will notify Successful Offeror of intent to submit contract for approval by SJRA's Board of Directors within ninety (90) Calendar days after the day of the Proposal opening. Following approval by the SJRA's Board of Directors or the SJRA General Manager, as applicable, the General Manager of the SJRA may execute the contract.
- 13.10. The Offeror may submit exceptions or alternatives not in accordance with the terms and conditions of the Contract Documents, or for Work that is not in strict compliance with the Contract Documents. In such event, Offeror must describe the intent and substance of the changes in the Proposal in adequate detail so they are clearly identifiable and understandable. Alternates will not be considered in the ranking and evaluation of the Proposals. Upon selection of the Proposal that offers the best value to the Owner, the Owner and Principal Architect/Engineer may consider proposed alternates in negotiating a final Contract scope, time/schedule and price.
- 13.11. Addenda may be issued to clarify, correct, or change the Contract Documents, prior Addenda or the related supplemental data as deemed advisable by Owner or Principal Architect/Engineer.

14. Interpretation and Addenda.

- 14.1. All questions about the meaning or intent of the Competitive Sealed Proposal and Contract Documents are to be directed to the SJRA Purchasing Department in writing. Interpretations or clarifications considered necessary by Owner's Representative in response to such questions will be issued by written Addenda and posted on SJRA Purchasing Department website, <http://www.sjra.net/purchasing/bidopportunities/>.

Contact:

Elton D. Brock, MBA, CTPM, CTCM, CPSM, C.P.M.
Purchasing Manager
San Jacinto River Authority
Purchasing Department
1577 Dam Site Road
Conroe, TX 77304

Any questions submitted via SJRA Online Bidding System website on the appropriate webpage for submitting questions shall be the equivalent of contacting the SJRA Purchasing Department directly (via phone or email).

- 14.2. To properly qualify their Proposal, each Offeror shall, prior to submitting their Proposal, check the receipt of all Addenda and acknowledge such receipt on the Proposal Form and on the acknowledgement line of the Addendum Cover page. Proposals submitted without such acknowledgment of all issued Addenda and letters of clarification may cause Proposal to be considered non-responsive. Such Addenda and letters of clarification shall become a part of the executed contract and modify the contract documents accordingly.
- 14.3. Questions received after the deadline for Questions and Inquiries may not be answered.
- 14.4. Only questions answered by formal written Addenda issued by Owner will be binding. Oral and other interpretations or clarifications will be without legal effect.
- 14.5. Addenda may be issued to clarify, correct, or change the Contract Documents, Addenda or the related supplemental data as deemed advisable by Owner or Principal Architect/Engineer. Addenda may also be issued to modify the CSP Documents as deemed advisable by Owner or Principal Architect/Engineer.
- 14.6. Notification of Addenda will be provided by the SJRA Purchasing Department.
- 14.7. The Owner will not be responsible or held liable for any failure of the notification to reach Offeror. Offerors are encouraged to visit the webpage where the CSP Documents are issued until the legal limit for filing addenda (48 hours prior to Proposal due date and time) has passed to ensure receipt of all addenda.

15. Confidentiality of Proposal Information.

All materials submitted to the SJRA and upon receipt by the SJRA become public property and are subject to the Texas Public Information Act, Government Code Chapter 552. If an Offeror does not desire proprietary Information in the SOQ to be disclosed, each page must be identified and marked proprietary at the time of submittal. The SJRA will, to the extent provided by law, endeavor to protect such

information from disclosure. The final decision as to what information must be disclosed, however, lies with the Texas Attorney General. Failure to identify proprietary information will result in all unmarked sections being deemed non-proprietary and available upon public request. Proposers shall not be permitted to mark entire Proposal as proprietary.

16. Examination of Contract Documents and Site.

16.1. It is the responsibility of each Offeror before submitting a Proposal:

- 16.1.1. To examine thoroughly the Contract Documents and other related data identified in the CSP Documents (including "technical data" referred to below);
- 16.1.2. To visit the site to become familiar with and satisfy Offeror as to the general, local and site conditions that may affect cost, progress, performance or furnishing of the Work;
- 16.1.3. To visit the site during raining and/or flood conditions to become familiar with site conditions that may affect cost, progress, performance, or furnishing of the Work;
- 16.1.4. To consider federal, state and local Laws and Regulations that may affect cost, progress, performance or furnishing of the Work;
- 16.1.5. To study and carefully correlate Offeror's knowledge and observations with the Contract Documents and such other related data; and
- 16.1.6. To promptly notify the SJRA Purchasing Department of all conflicts, errors, ambiguities or discrepancies which Offeror has discovered in or between the Contract Documents and such other related documents.

16.2. Reference is made to the General Conditions Article 4 and Contract Specification Sections 00 31 21 – Historical High Water Information and 00 31 32 – Geotechnical Information for identification of:

- 16.2.1. Reports of explorations and tests of subsurface conditions at or contiguous to the site and flood, water flow, and/or rain data and reports, which have been utilized by Principal Architect/Engineer in preparation of the Contract Documents. While such reports and data are intended to be an accurate record of the conditions at the specific boring locations, as well as the project site generally, on the date taken, it is not a guarantee of specific Site conditions which may vary between locations and over time, and Offerors may not rely upon the general accuracy of the "technical data" contained in such reports and upon other data, interpretations, opinions or information contained in such reports or otherwise relating to the subsurface and surface conditions at the site, nor upon the completeness thereof for the purposes of preparing a Proposal for construction.
- 16.2.2. Copies of such reports and data will be made available by Owner to any Offeror on request. Such reports are not part of the Contract

Documents. Offeror is responsible for any interpretation or conclusion drawn from any "technical data" or any such data, interpretations, opinions or information. Offeror acknowledges that Owner and Principal Architect/Engineer disclaim any responsibility for the accuracy, correctness, completeness, suitability, and sufficiency of such reports and for Offeror's interpretation of such reports.

- 16.3. Information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site are based upon information and data furnished to Owner and Principal Architect/Engineer by Owners of such Underground Facilities or others, and Owner and Principal Architect/Engineer do not assume and expressly disclaim responsibility for the accuracy or completeness thereof or for Offeror's interpretation of such information and data. The Contractor is advised to coordinate closely with Owner, Principal Architect/Engineer and Utility Operator(s) prior to the commencement of any underground construction activities.
- 16.4. Provisions concerning responsibilities for the adequacy of data furnished to prospective Offerors with respect to subsurface conditions, other physical conditions and Underground Facilities, and possible changes in the Contract Documents due to differing or unanticipated conditions appear in Article 6 of the Standard Form of Agreement and Article 4.2 of the General Conditions.
- 16.5. Before submitting a Proposal, each Offeror will be responsible for obtaining such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface, and underground facilities) at or contiguous to the site or otherwise, including but not limited to hydraulic conditions, which may affect cost, progress, performance or furnishing of the Work, or which relate to any aspect of the means, methods, techniques, sequences or procedures of construction to be employed by Offeror and safety precautions and programs incident thereto or which Offeror deems necessary to determine its Proposal for performing and furnishing the Work in accordance with the time, price and other terms and conditions of the Contract Documents.
- 16.6. On request, the SJRA Purchasing Department may provide each Offeror access to the site to conduct such examinations, investigations, explorations, tests and studies, as each Offeror deems necessary for submission of a Proposal. Offeror must fill any resultant holes and clean up and restore the site to its former condition upon completion of such explorations, investigations, tests and studies.
- 16.7. The lands upon which the Work is to be performed, rights-of-way and easements for access thereto and other lands designated for use by Contractor in performing the Work are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment or storage of materials and equipment to be

incorporated in the Work are to be obtained and paid for by Contractor. Easements for permanent structures of permanent changes in existing facilities are to be obtained and paid for by Owner unless otherwise provided in the Contract Documents.

- 16.8. Reference is made to Specification Section 01 11 13 - Work Covered By Contract Documents for the identification of the general nature of Work that is to be performed at the site by the Owner or others (such as utilities and other prime Contractors) that relates to the Work for which a Proposal is to be submitted. On request, Owner may provide to each Offeror for examination access to or copies of Contract Documents (other than portions thereof related to price) for such Work.
- 16.9. The submission of a Proposal will constitute an incontrovertible representation by Offeror that Offeror has complied with every requirement of this Article 16, that without exception the Proposal is premised upon performing and furnishing the Work required by the Contract Documents and applying the specific means, methods, techniques, sequences or procedures of construction (if any) that may be shown or indicated or expressly required by the Contract Documents, that Offeror has given Owner or Principal Architect/Engineer written notice of all conflicts, errors, ambiguities and discrepancies that Offeror has discovered in the Contract Documents and the written resolutions thereof by Principal Engineer is acceptable to Offeror, and that the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.
- 16.10. Effective January 1, 2016, Texas Government Code Section 2252.908 requires persons who enter into contract with a government entity to submit a disclosure of interested parties (Form 1295) to the government entity or state agency at the time business entity submits the signed contract to the government entity or state agency. Use the following link to access filing instructions:
https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm.

17. Proposal Security.

- 17.1. Each Proposal must be accompanied by Proposal Security made payable to the Owner in the amount not less than five percent (5%) of the total Proposal Amount, including any Cash Allowances and Alternates, and shall be in the form of a cashier's check or Offeror's Bond.
- 17.2. Offeror's Bond must be on the form provided within the Contract Documents (CSP) and must bear the impressed seal of the Surety, and be signed by the Offeror and an authorized individual of the Surety. Bonds will only be accepted from Sureties authorized to execute a bond order and in accordance with state law.

17.3. The Proposal Security of Successful Offeror will be retained until such Offeror has executed the Standard Form of Agreement, furnished the required contract securities and met the other conditions contained in Specification Section 00 41 00.02 – Proposal Form, whereupon the Proposal Security will be returned. If the Offeror fails to execute and deliver the Standard Form of Agreement and furnish the required contract security within ten (10) Calendar days after the SJRA Board of Directors has approved a contract award, Owner may annul its award and the Proposal Security of that Offeror will be forfeited. The Proposal Security of other Offerors whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of the seventh day after the Effective Date of the Standard Form of Agreement or the ninety-first day after the Proposal opening, whereupon Proposal Security furnished by such Offerors will be returned. Proposal Security, if submitted in the form of cashier's check, submitted with Proposals which are not competitive will be returned within ten (10) Calendar days after the Proposal opening.

18. Contract Times.

The number of Calendar days within which, or the dates by which, the Work is to reach Substantial and Final Completion are set forth in Specification Section 00 52 00 – Standard Form of Standard Form of Agreement between Owner and Contractor.

19. Substitutes and "Or-Equal" Items.

The Contract, if awarded, will be on the basis of goods and services described in the Drawings or specified in the Specifications with consideration for possible substitute or "or equivalent" items. Whenever it is indicated in the Drawings or specified in the Specifications that a Substitute or "or-equal"/"or equivalent" item of material or equipment may be furnished or used by Contractor if acceptable to Principal Engineer and Owner, application for such acceptance may be prior to Contract award in accordance with Texas Government Code 2269.155. See section 6.02.5 in the General Conditions of the Contract for more information.

20. Subcontractors, Suppliers and Others.

20.1. If the Owner requests the identity of certain Subcontractors, Suppliers or other persons or organizations (including those who are to furnish the principal items of material and equipment, as well as any and all third party flood risk consultants, engineers, and subcontractors Contractor intends to retain, hire, or contract with to prepare or implement the Flood Risk Mitigation Plan) to be submitted to Owner, Apparent Best Value Offeror, and any other Offerors so requested, shall within five (5) Calendar days from request submit to Owner a list of all such Subcontractors, Suppliers or other persons or organizations proposed for those portions of the Work for which such identification is requested. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of

qualification for each such Subcontractor, Supplier, person or organization if requested by Owner. If the Owner or Principal Architect/Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, other person or organization, Owner may, before giving notice of its intent to recommend Award to Owner's Board of Directors, request that Apparent Best Value Offeror submit an acceptable substitute without an increase in price.

If Apparent Best Value Offeror declines to make any such substitution, Owner may formally close contract negotiations with Offeror and enter into contract negotiations with the next most highly-ranked Offeror that proposes to use acceptable Subcontractors, Suppliers and other persons and organizations. The declining to make requested substitutions will not constitute grounds for sacrificing the Proposal Security of any Offeror. Any Subcontractor, Supplier, other person or organization listed and to whom Owner or Principal Architect/Engineer does not make written objection prior to giving notice of its intent to recommend Award to Owner's Board of Directors will be deemed acceptable to Owner and Principal Architect/Engineer subject to revocation of such acceptance after the Effective Date of the Standard Form of Agreement as provided in Article 6.04 of the General Conditions.

- 20.2. No Contractor shall be required to employ any Subcontractor, Supplier, other person or organization against whom Contractor has reasonable objection.

21. Preparation of Proposals.

- 21.1. Prepare one (1) unbound original of the complete Proposal Package, including the completed Proposal Form 00 41 00.02. Clearly mark this package with the word "Original". Prepare one (1) bound copy with original signatures, and one (1) electronic copy on flash drive (in .pdf format) of the completed Proposal with original signatures, Statement of Qualifications 00 21 13.03, and full set of Financials. Respondents shall submit Exhibit 4 - Pricing Sheet in MS Excel format only.
- 21.2. An Original Proposal is the Proposal containing the Original Signature of a person authorized to sign on behalf of the Offering Firm.
- 21.3. Proposals shall be enclosed in an opaque sealed Envelope (or Package), marked with CSP No. 19-0050 - Rehabilitation of Bear Branch Gravity Main and address of Offering Firm.
- 21.4. Each Original Proposal submitted by an Offeror shall contain the following:
- 21.4.1. Offerors Statement of Qualifications (SOQ; 00 21 13.03);
 - 21.4.2. Completed Proposal Form (00 41 00.02);
 - 21.4.3. Completed Certification of Proposal (00 41 00.02);

- 21.4.4. Form of Business (00 45 20);
 - 21.4.5. Proposal Security (Offeror's Bond 00 43 13);
 - 21.4.6. Resolution of Contractor (00 45 43);
 - 21.4.7. Conflict of interest Forms (Form CIQ; 00 45 10);
 - 21.4.8. Verification Company Does Not Boycott Israel Form
 - 21.4.9. TGC 2252.152 Certification Form (Certification Foreign Terrorist Organizations Prohibited)
 - 21.4.10. Section 00 62 07 Certification Regarding Debarment, Suspension Form
 - 21.4.11. Texas Water Development Board Forms ED-103, ED-104, WRD-255, and SRF-404;
 - 21.4.12. One (1) flash drive with a Completed Proposal with Original signatures, Statement of Qualifications (SOQ) and a full set of Financials, along with an MS Excel format of Exhibit 4 – Pricing Sheet; and
 - 21.4.13. Any other Documentation required by the terms of this Competitive Sealed Proposal.
- 21.5. Conflict of Interest Questionnaire, Specification Section 00 45 10 of Contract shall be submitted under separate cover. If Offering Firm affirms that there are no Conflicts of Interest, Offeror shall indicate so by writing name of firm and "No Conflicts" on CIQ form and signing form.
- 21.6. Proposals submitted by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal must be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation must be shown below the signature.
- 21.7. Submitted Proposals by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature and the official address of the partnership must be shown below the signature.
- 21.8. All names must be typed or printed in ink below the signature.
- 21.9. The Proposal shall contain an acknowledgment of receipt of all Addenda (the numbers of which must be filled in on the Proposal Form).
- 21.10. The address and telephone number for communications regarding the Proposal must be shown.
- 21.11. Evidence of authority to conduct business as an out-of-state corporation in the state where the Work is to be performed shall be provided in accordance with Specification Section 00 41 00.02 – Proposal Form. State Contractor license number, if any, must also be shown.

22. Submission of Proposals.

- 22.1. Proposals shall be submitted at the time and place indicated in the Invitation to Submit Proposals (00 11 13) and accompanied by the Proposal Security and other required documents.
- 22.2. If the Proposal is sent through the mail or other delivery system the sealed envelope shall be enclosed in a separate envelope with the notation "SEALED PROPOSAL ENCLOSED" on the face of it. Proposals not received by the time or at the location specified will be returned unopened to the Offeror.
- 22.3. The clock used by the Owner at the place used for receiving Proposals shall conclusively determine the time that Proposals are received.
- 22.4. Proposals sent by facsimile or electronic mail or delivered to any other location other than the address provided in the Invitation to Offerors will NOT be accepted.

23. Modification and Withdrawal of Proposals.

- 23.1. Proposals may be modified or withdrawn by a document duly executed (in the same manner that a Proposal must be executed) and delivered to the place where Proposals are to be submitted prior to the date and time for the opening of Proposals.
- 23.2. If, within twenty-four (24) hours after Proposals are opened, any Offeror files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material or substantial mistake in the preparation of its Proposal, that Offeror may withdraw its Proposal. The Proposal Security may be retained by the Owner if Offeror cannot clearly demonstrate to the Owner evidence of a material or substantial mistake in its Proposal. Thereafter, that Offeror may be disqualified from responding to a reissued CSP for the Work to be furnished under these Contract Documents.

24. Opening of Proposals.

Proposals will be opened and (unless obviously non-responsive) the names and Monetary Proposals of Offering Firms read aloud at a public opening. An abstract of the Proposals will be made available no later than the seventh day after the Contract is awarded.

25. Proposals to Remain Subject to Acceptance.

All Proposals will remain subject to acceptance for ninety (90) Calendar days after the date of the opening, but Owner may, in its sole discretion, release any Proposal and

return the Proposal Security prior to that date.

26. Davis-Bacon Wage Rates.

Davis-Bacon prevailing wage rates are applicable to this Project. Contractors for this Project must pay no less than the Davis-Bacon prevailing wage rates established by the U.S. Department of Labor and included in Specification Section 00 73 43 – Davis-Bacon Wage Determination. Prior to the Proposal Submission Deadline, SJRA shall monitor <https://beta.sam.gov/> on a weekly basis to ensure that the wage determination provided herein remains current. SJRA shall amend the wage determination provided herein to the extent the Department of Labor issues a modification. A subrecipient must comply with the requirements of section 513 of the Federal Water Pollution Control Act (33 U.S.C. 1372) in all procurement contracts and must require contractors to include an express obligation to comply with section 513 of the Federal Water Pollution Control Act in all subcontracts and other lower tiered transactions. All contracts and subcontracts for the treatment works construction project must contain in full in any contract in excess of \$2,000 the wage rate requirements contract clauses prescribed by TWDB. Section 513 requires compliance with 40 U.S. Code Sections 3141 to 3144, 3146, and 3147 covering wage rate requirements.

27. Liquidated Damages or Economic Disincentives.

Provisions for liquidated damages or economic disincentives are set forth in Specification Section 00 52 00 -Standard Form of Standard Form of Agreement between Owner and Contractor and Specification Section 00 72 00 - General Conditions of the Contract.

28. Contract Security and Insurance.

Article 5 of the General Conditions sets forth Owner's requirements as to insurance and Performance and Payment Bonds. When the Successful Offeror delivers the original, hard copy executed Standard Form of Agreement to Owner, it must be accompanied by evidence of insurance and unsigned Performance and Payment Bonds as required by Article 5 of the General Conditions, unless prior written approval of Contractor's evidence of insurance and unsigned performance and payment Bond forms has been received from the SJRA Purchasing Department. Such evidence of insurance shall include, without limitation, all required certificates and endorsements, evidencing all required coverages, limits of liability, additional insured status, waivers of subrogation and other insurance requirements.

29. Conflict of Interest and Disclosure of Interested Parties.

- 29.1. Chapter 176 of the Texas Local Government Code mandates the public disclosure of certain information concerning persons doing business or seeking to do business with the San Jacinto River Authority, including affiliations and business and financial relationships such persons may have with San Jacinto

River Authority officers. An explanation of the requirements of Chapter 176, applicable forms and a complete text of the law are available at:
<http://www.ethics.state.tx.us/forms/CIQ.pdf>.

BY DOING BUSINESS OR SEEKING TO DO BUSINESS WITH THE SAN JACINTO RIVER AUTHORITY, YOU ACKNOWLEDGE THAT YOU HAVE BEEN NOTIFIED OF THE REQUIREMENTS OF CHAPTER 176 OF THE TEXAS LOCAL GOVERNMENT CODE AND THAT YOU ARE RESPONSIBLE FOR COMPLYING WITH THEM.

- 29.2. Texas Government Code Section 2252.908 requires persons who enter into a Contract with a government entity to submit a disclosure of interested parties (Form 1295) to the government entity or state agency at the time business entity submits the signed contract to the government entity or state agency. Use the following link to access filing instructions:
https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm.

30. Taxes.

Owner is exempt from payment of sales and use taxes of the State of Texas and of cities and counties thereof, on all goods and services to be incorporated into the Work. Said taxes shall not be included in the Proposal.

- 30.1. Owner will furnish the required certificates of tax exemption to Contractor for use in the purchase of goods to be incorporated into the Work.
- 30.2. Owner's exemption does not apply to construction tools, machinery, equipment, or other property purchased by or leased by Contractor, or to goods not incorporated into the Work, except to the extent the exemption referred to in paragraph 19.4 applies to the Project to exempt taxes on any such items.
- 30.3. If the project is construction of a water or wastewater system certified by the Texas Commission on environmental Quality as a regional system, equipment, services and supplies used solely to construct the Project are exempted from taxes imposed by Chapter 151, Limited Sales, Excise and Use Tax, Texas Tax Code. Said taxes shall not be included in the Proposal. Owner will furnish any required certificates of tax exemption to Contractor.

31. Verification Company Does not Boycott Israel

Pursuant to Section 2270.002 of the Texas Government Code, the Contractor shall be required to execute contemporaneous with its execution of the Standard Form of Agreement a verification that Contractor does not Boycott Israel and Contractor will not Boycott Israel during the term of this Standard Form of Agreement. "Boycott Israel" as used herein means refusing to deal with, terminating business activities with, or otherwise taking any action that is intended to penalize, inflict economic harm on, or

limit commercial relations specifically with Israel, or with a person or entity doing business in Israel or in an Israeli-controlled territory, but does not include an action made for ordinary business purposes.

32. TGC 2252.152 Certification Form (Certification Foreign Terrorist Organizations Prohibited)

Pursuant to Sections 2252.152 and 2252.153 of the Texas Government Code, the Contractor shall be required to execute contemporaneous with its execution of the Standard Form of Agreement a certification that Contractor is not listed on the website of the Comptroller of the State of Texas concerning the listing of companies that are identified under Section 806.051, Section 807.051 or Section 2253.153, during the term of this Standard Form of Agreement.

33. Signing of Standard Form of Agreement.

SJRA's Purchasing Department will transmit to the Successful Offeror the required number of unsigned counterparts of the Standard Form of Agreement with all other written Contract Documents attached. Contractor shall deliver original, hard copies of the required number of counterparts of the Standard Form of Agreement and written Contract Documents signed by Contractor, unsigned Bond forms, evidence of insurance as set out in Section 27 above, signed disclosure of interested parties (Form 1295), signed Conflict of interest Questionnaire, signed and notarized Verification Company Does Not Boycott Israel, and signed TGC 2252.152 Certification Form (Certification Foreign Terrorist Organizations Prohibited) to SJRA Purchasing Department ten (10) Calendar days prior to the SJRA Board of Directors Meeting for which a contract award is anticipated. Notwithstanding the foregoing, the Standard Form of Agreement may be executed using electronic signatures at the option and in the discretion of Owner, and, in such event, the provisions of the Uniform Electronic Transaction Act, Chapter 332, Texas Business and Commerce Code, as amended, and any applicable policies and procedures of Owner regarding electronic signatures shall apply. However, the requirements of this Section 31 apply regardless of whether or not the Standard Form of Agreement is also executed using electronic signatures or transmitted electronically. Following and subject to award, the Owner shall deliver one (1) fully signed counterpart of the Standard Form of Agreement to Contractor. Within three (3) Calendar days of Contractor's receipt of the fully executed Standard Form of Agreement, the Contractor shall deliver the original, hard copy fully executed Bonds to SJRA Purchasing Department.

END OF SECTION

TABLE 1 – GENERAL INFORMATION			
Organization Doing Business As:			
Business Address of Principle Office:			
Main Telephone Number:			
Fax Number:			
Web Site Address:			
Form of Business (check one):	<input type="checkbox"/> Corporation	<input type="checkbox"/> Partnership	<input type="checkbox"/> Individual <input type="checkbox"/> Joint Venture
IF A CORPORATION			
Date of Incorporation:			
State of Incorporation:			
Chief Executive Manager's Name:			
President's Name:			
Vice President's Name(s):			
Secretary's Name:			
Treasurer's Name:			
IF A PARTNERSHIP			
Date of Organization:			
General or Limited Partnership?:			
IF AN INDIVIDUAL			
Name:			
Business Address:			
IF A JOINT VENTURE			
Name of Lead Joint Venture Manager:			
Name of Firm:			
Joint Venture Partner Manager(s):			
Name of Firm(s):			
Individuals Not Listed Above Having Significant Business Control:			
Indicators of Organization Size:			
Current Number Full Time Employees:		Estimate of Current Year's Revenue:	
Average Number of Projects per Year:		Average Project Construction Cost:	

TABLE 2 – ORGANIZATIONAL EXPERIENCE			
Organization Doing Business As:			
Business Address of Principle Office:			
Main Telephone Number:			
Fax Number:			
Web Site Address:			
Organization Doing Business As:			
ORGANIZATIONAL HISTORY			
List of names that this organization has operated under over the history of the organization, including the names of related companies presently doing business:			
Names of Organization:	From Date	To Date	
List of companies, firms or organizations that own any part of the organization.			
Name of Companies, Firms or Organization:			Percent Ownership
CONSTRUCTION EXPERIENCE			
1.	Years' experience in projects similar to the proposed project:		
	As a General Contractor:		As a Joint Venture Partner:
2.	Has this or a predecessor organization ever defaulted on a project or failed to complete any work awarded to it? If yes provide full details in a separate attachment. (Attachment #_____)		
3.	Has this or a predecessor organization been released from a bid or proposal in the past ten years? If yes provide full details in a separate attachment. (Attachment #_____)		
4.	Has this or a predecessor organization ever been disqualification as a bidder or Offeror by any local, state, or federal agency within the last five (5) years? If yes provide full details in a separate attachment. (Attachment #_____)		
5.	Is this organization or your proposed surety currently in any litigation or contemplating litigation? If yes provide full details in a separate attachment. (Attachment #_____)		
6.	Has this or a predecessor organization ever refused to construct or refused to provide materials defined in the contract documents? If yes provide full details in a separate attachment. (Attachment #_____)		
7.	Has this or a predecessor organization ever encountered unforeseen or differing site conditions on a project that resulted in change orders, claims, or litigation? If yes, provide full details in a separate attachment. (Attachment # _____)		

8.	Has your company, firm, corporation, or business implemented an Employee Health and Safety Program compliant with 29 CFR 1910 "General Industry Standards" https://www.osha.gov/pls/oshaweb/owasrch.search_form?p_doc_type=STANDARDS&p_toc_level=1&p_keyvalue=1910 and/or 29 CFR 1926 "General Construction Standards" https://www.osha.gov/pls/oshaweb/owasrch.search_form?p_doc_type=STANDARDS&p_toc_level=1&p_keyvalue=1926 as they apply to your Company's customary activities?	
9.	Has your company, firm, corporation, partnership, or institution represented by the company, firm, corporation, partnership, or anyone acting in representation, received citations for violations of OSHA within the past three (3) years? If YES, please provide the following additional information: Date of offense, location of establishment inspected, category of offense, final disposition of offense, if any, and penalty assessed.	
10.	Has your company, firm, corporation, partnership, or institution represented by the company, firm, corporation, partnership, or anyone acting in representation received citations for violations of environmental laws or regulations, of any kind or type, within the past five (5) years? Citations include notice of violation, notice of enforcement, suspension/revocations of state of federal licenses, or registrations, fines assessed, pending criminal complaints, indictments, or convictions, administrative orders, draft orders, final orders, and judicial final judgements. If YES, please provide the following additional information: Date of offense, location of where offense occurred, type of offense, final disposition of offense, if any, and penalty assessed.	
11.	Has your company, firm, corporation, partnership, or institution represented by the company, firm, corporation, partnership, or anyone acting in representation ever been convicted, within the past ten (10) years, of a criminal offense which resulted in a serious bodily injury or death? If YES, please provide the following additional information: Date of offense, location of where offense occurred, type of offense, final disposition of offense, if any, and penalty assessed.	
12.	Has your company filed or been named in any litigation involving your company and the Owner on a contract within the last five (5) years under your current company name or any other company name? If so, provide details of the issues and resolution if available. Include lawsuits where Owner was involved. (Notice: Failure to disclose this information during proposal submission, and later discovered, may result in contract termination at SJRA's option).	
13.	Please provide a history of all OSHA actions, advisories, etc., Contractor has received on all jobs worked in any capacity, prime, or subcontractor. The history shall be for the two-year period preceding the Bid Date of the Project.	
14.	Please provide a list of all on-the-job injuries, accidents, and fatalities suffered by any present or former employees of Contractor during the same two-year period.	
15.	If less than the two-year period, give the date Contractor started doing business.	

TABLE 3 – ORGANIZATIONAL STRUCTURE	
Organization Doing Business As:	
PROPOSED PROJECT ORGANIZATION	
1. Provide a brief description of the managerial structure of the organization and illustrate with an organizational chart. Include the title and names of key personnel. Include this chart as an attachment to this description. (Attachment No. _____)	
2. Provide a brief description of the experience and qualifications of the organization's management team, including officers that will be directly involved in the project. Describe the individuals that are authorized to execute Contract Documents, Change Orders or receive payment for the organization. Include a copy of a board resolution or other documentation as appropriate for the structure of the company authorizing these individuals to conduct business on behalf of the organization. (Attachment No. _____)	
SURETY REFERENCES	

TABLE 4 – PROJECT EXPERIENCE AND RESOURCES				
Organization Doing Business As: 				
PROJECTS				
1. Provide a list of major projects that are currently underway, or have been completed within the last five (5) years on Table 5, using additional copies as required. Identify (1) those projects which specifically illustrate the organizations capability to provide best value to the Owner for this project and (2) those projects which specifically illustrate the organization's prior experience working in flood prone areas that may require dewatering and/or special access over and around the project site.				
Provide a narrative description (not to exceed 10 pages) of your organizations approach to completing this project to provide best value for the Owner. Including a description of your approach in the following areas: <ol style="list-style-type: none"> 1. Contract administration 2. Management of subcontractor and suppliers 3. Time management 4. Cost control 5. Quality management 6. Project site safety 7. Managing changes to the project 8. Managing equipment 9. Meeting HUB / MWBE Participation Goal 				
EQUIPMENT				
2. Provide a list of major equipment proposed for use on this project, including but not limited to any equipment that may be needed to implement the Flood Risk Mitigation Plan. Attach additional information if necessary.				
Equipment item	Primary use on project	Own	Will buy	Lease
DIVISION OF WORK BETWEEN ORGANIZATION AND SUBCONTRACTOR				
3. What work will the organization complete using its own resources?				
4. What work does the organization propose to subcontract on this project?				

TABLE 5 – CURRENT PROJECTS AND PROJECTS COMPLETED WITHIN THE LAST 5 YEARS									
1	Project Owner:		Project Name:						
	General Description of								
	Project Cost:								
	Key Project Personnel:		Project Manager	Project Superintendent	Safety Manager	Quality Control Manager			
	Name:								
	Reference contact information (listing names indicates approval to contacting the names individuals as a reference)								
	Name	Title/Position	Organization	Telephone	F-mail				
	Owner:								
	Designer:								
	Construction Manager:								
2	Project Owner:		Project Name:						
	General Description of								
	Project Cost:								
	Key Project Personnel:		Project Manager	Project Superintendent	Safety Manager	Quality Control Manager			
	Name:								
	Reference contact information (listing names indicates approval to contacting the names individuals as a reference)								
	Name	Title/Position	Organization	Telephone	F-mail				
	Owner:								
	Designer:								
	Construction Manager:								
3	Project Owner:		Project Name:						
	General Description of								
	Project Cost:								
	Key Project Personnel:		Project Manager	Project Superintendent	Safety Manager	Quality Control Manager			
	Name:								
	Reference contact information (listing names indicates approval to contacting the names individuals as a reference)								
	Name	Title/Position	Organization	Telephone	F-mail				
	Owner:								
	Designer:								
	Construction Manager:								

TABLE 6 – PROPOSED KEY PERSONNEL		
Organization Doing Business As: _____		
PROPOSED PROJECT ORGANIZATION		
1. Provide a brief description of the managerial structure of the organization and illustrate with an organizational chart. Include the title and names of key personnel. Include this chart as an attachment to this description. See attachment No.		
2. Provide a brief description of the managerial structure proposed for this project and illustrate with an organizational chart. Include the title and names of proposed key personnel and alternates. Include this chart as an attachment to this description. See attachment No.		
EXPERIENCE OF KEY PERSONNEL		
3. Provide information on the key personnel proposed for this project that will provide the following key functions. Provide information for candidates for each of these positions on the pages for each of these key personnel. Also provide biographical information for each primary and alternate candidate as an attachment. The biographical information must include the following as a minimum: technical experience, managerial experience, education and formal training, work history which describes project experience, including the roles and responsibilities for each assignment, and primary language. Additional information highlighting experience which makes them the best candidate for the assignment should also be included.		
Role	Primary candidate	Alternate candidate
Project Manager		
Project Superintendent		
Project Safety Manager		
Quality Control Manager		
4. If key personnel are to fulfill more than one of the roles listed above, provide a written narrative describing how much time will be devoted to each function, their qualifications to fulfill each role and the percentage of their time that will be devoted to each role. If the individual is not to be devoted solely to this project, indicate how time it to be divided between this project and their other assignments.		

TABLE 7 – PROPOSED PROJECT MANAGERS			
Organization Doing Business As:			
PRIMARY CANDIDATE			
1.	Name of Individual:		
	Years of Experience as Project Manager:		
	Years of Experience With This Organization:		
	Number of Similar Projects as Project Manager:		
	Number of Similar Projects in Other Positions:		
	Current Project Assignments:		
	Name of Assignment:	Percent of Time Used for This Project:	Estimated Project Completion Date:
2. Reference contact information (listing names indicates approval to contacting the names individuals as a reference)			
Name:		Name:	
Title/ Position:		Title/ Position:	
Organization:		Organization:	
Telephone:		Telephone:	
E-mail:		E-mail:	
Project:		Project:	
Candidate's Role on Project:		Candidate's Role on Project:	
ALTERNATE CANDIDATE			
3.	Name of Individual:		
	Years of Experience as Project Manager:		
	Years of Experience With This Organization:		
	Number of Similar Projects as Project Manager:		
	Number of Similar Projects in Other Positions:		
	Current Project Assignments:		
	Name of Assignment:	Percent of Time Used for This Project:	Estimated Project Completion Date:
4. Reference contact information (listing names indicates approval to contacting the names individuals as a reference)			
Name:		Name:	
Title/ Position:		Title/ Position:	
Organization:		Organization:	
Telephone:		Telephone:	
E-mail:		E-mail:	
Project:		Project:	
Candidate's Role on Project:		Candidate's Role on Project:	

TABLE 8 – PROPOSED PROJECT SUPERINTENDENT			
Organization Doing Business As:			
PRIMARY CANDIDATE			
1.	Name of Individual:		
	Years of Experience as Project Superintendent:		
	Years of Experience With This Organization:		
	Number of Similar Projects as Project Superintendent:		
	Number of Similar Projects in Other Positions:		
	Current Project Assignments:		
	Name of Assignment:	Percent of Time Used for This Project:	Estimated Project Completion Date:
2. Reference contact information (listing names indicates approval to contacting the names individuals as a reference)			
Name:		Name:	
Title/ Position:		Title/ Position:	
Organization:		Organization:	
Telephone:		Telephone:	
E-mail:		E-mail:	
Project:		Project:	
Candidate's Role on Project:		Candidate's Role on Project:	
ALTERNATE CANDIDATE			
3.	Name of Individual:		
	Years of Experience as Project Superintendent:		
	Years of Experience With This Organization:		
	Number of Similar Projects as Project Superintendent:		
	Number of Similar Projects in Other Positions:		
	Current Project Assignments:		
	Name of Assignment:	Percent of Time Used for This Project:	Estimated Project Completion Date:
4. Reference contact information (listing names indicates approval to contacting the names individuals as a reference)			
Name:		Name:	
Title/ Position:		Title/ Position:	
Organization:		Organization:	
Telephone:		Telephone:	
E-mail:		E-mail:	
Project:		Project:	
Candidate's Role on Project:		Candidate Role on Project:	

TABLE 9 – PROPOSED PROJECT SAFETY MANAGER			
Organization Doing Business As:			
PRIMARY CANDIDATE			
1.	Name of Individual:		
	Years of Experience as Project Safety Manager:		
	Years of Experience With This Organization:		
	Number of Similar Projects as Project Safety Manager:		
	Number of Similar Projects in Other Positions:		
	Current Project Assignments:		
	Name of Assignment:	Percent of Time Used for This Project:	Estimated Project Completion Date:
2. Reference contact information (listing names indicates approval to contacting the names individuals as a reference)			
Name:		Name:	
Title/ Position:		Title/ Position:	
Organization:		Organization:	
Telephone:		Telephone:	
E-mail:		E-mail:	
Project:		Project:	
Candidate's Role on Project:		Candidate's Role on Project:	
ALTERNATE CANDIDATE			
3.	Name of Individual:		
	Years of Experience as Project Safety Manager:		
	Years of Experience With This Organization:		
	Number of Similar Projects as Project Safety Manager:		
	Number of Similar Projects in Other Positions:		
	Current Project Assignments:		
	Name of Assignment:	Percent of Time Used for This Project:	Estimated Project Completion Date:
4. Reference contact information (listing names indicates approval to contacting the names individuals as a reference)			
Name:		Name:	
Title/ Position:		Title/ Position:	
Organization:		Organization:	
Telephone:		Telephone:	
E-mail:		E-mail:	
Project:		Project:	
Candidate's Role on Project:		Candidate's Role on Project:	

TABLE 10 – PROPOSED QUALITY CONTROL MANAGER			
Organization Doing Business As:			
PRIMARY CANDIDATE			
1.	Name of Individual:		
	Years of Experience as Quality Control Manager:		
	Years of Experience With This Organization:		
	Number of Similar Projects as Quality Control Manager:		
	Number of Similar Projects in Other Positions:		
	Current Project Assignments:		
	Name of Assignment:	Percent of Time Used for This Project:	Estimated Project Completion Date:
2. Reference contact information (listing names indicates approval to contacting the names individuals as a reference)			
Name:		Name:	
Title/ Position:		Title/ Position:	
Organization:		Organization:	
Telephone:		Telephone:	
E-mail:		E-mail:	
Project:		Project:	
Candidate's Role on Project:		Candidate's Role on Project:	
ALTERNATE CANDIDATE			
3.	Name of Individual:		
	Years of Experience as Quality Control Manager:		
	Years of Experience With This Organization:		
	Number of Similar Projects as Quality Control Manager:		
	Number of Similar Projects in Other Positions:		
	Current Project Assignments:		
	Name of Assignment:	Percent of Time Used for This Project:	Estimated Project Completion Date:
4. Reference contact information (listing names indicates approval to contacting the names individuals as a reference)			
Name:		Name:	
Title/ Position:		Title/ Position:	
Organization:		Organization:	
Telephone:		Telephone:	
E-mail:		E-mail:	
Project:		Project:	
Candidate's Role on Project:		Candidate's Role on Project:	

TABLE 11 – SUBCONTRACTORS AND SUPPLIERS			
Organization Doing Business As: <input type="text"/>			
PROJECT SUBCONTRACTORS			
1. Provide a list of subcontractors that will provide more than 10 percent of the work (based on contract amounts)			
Name	Work to be provided	Est. percent of contract	
2. Provide information on the proposed key personnel, project experience and a description of past relationship and work experience for each subcontractor listed above using the Project Information forms.			
SUPPLIERS			
3. Provide a list of major equipment or materials proposed for use on this project. Attach additional information if necessary.			
Supplier name	Equipment / material provided	Furnish only	Furnish and install

TABLE 12 – PROJECT INFORMATION FOR KEY PERSONNEL									
Project Owner:		Project Name:							
General Description of Project:									
PROJECT BUDGET AND SCHEDULE PERFORMANCE									
Budget history		Schedule performance							
A		B		C		D		E	
Bid		% of Bid Amount		Notice to Proceed:		Date		Days	
Change Orders				Contract Substantial Completion Date at Notice to Proceed:					
Owner Enhancements:				Contract Final Completion Date at Notice to Proceed:					
Unforeseen Conditions:				Change Order Authorized Substantial Completion Date:					
Design Issues:				Change Order authorized Final Completion Date:					
Total:				Actual / Estimated Substantial Completion Date:					
Final Cost:				Actual / Estimated Final completion Date:					
KEY PROJECT PERSONNEL									
Name:		Project Manager		Project Superintendent		Safety Manager		Quality Control Manager	
Percentage of Time Devoted to The project:									
Proposed for This Project:									
Did Individual Start and Complete The Project?:									
If Not, Who Started or Completed the Project in Their									
Reason for Change:									
Reference Contract information (Listing names indicates approval to contact the named individuals as a reference)									
Name		Title/ Position		Organization		Telephone		E-mail	
Owner:									
Designer:									
Construction Manager:									
Surety:									
ISSUES / DISPUTES RESOLVED OR PENDING RESOLUTION BY ARBITRATION, LITIGATION OR DISPUTE REVIEW BOARDS:									
Number of Issues Resolved:		Total Amount Involved in Resolved Issues:		Number of Issues Pending:		Total Amount Involved in Resolved Issues:			

Standard Specification
Contract No. 19-0050

Standard Specification
Contract No. 19-0050

Affidavits

One of the following four affidavits shall be executed and provided with this information. The individual signing the affidavit shall attach evidence of their authority to bind the Organization to an agreement.

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AFFIDAVIT FOR CORPORATION

State _____ §

County of _____ §

_____, being duly sworn deposes and says
(Name)

That he is _____ of the Corporation submitting the
(Title)

foregoing qualification form and related information; that he has read such documents; and that such documents are true and correct and contain no material misrepresentations; and that he is authorized to make this affidavit on behalf of the Corporation.

Signature

Signed and sworn to me before this _____ day of _____, 20 ____

Notary Public

My commission expires: _____

AFFIDAVIT FOR PARTNERSHIP

State _____ §

County of _____ §

_____, being duly sworn deposes and says
(Name)

That he is _____ of the Company submitting the
(Title)

foregoing qualification form and related information; that he has read such documents; and that such documents are true and correct and contain no material misrepresentations; and that he is authorized to make this affidavit on behalf of the Partnership.

Signature

Signed and sworn to me before this _____ day of _____, 20__

Notary Public

My commission expires: _____

AFFIDAVIT FOR INDIVIDUAL

State _____ §

County of _____ §

(Name) _____ , being duly sworn deposes and says

That he is _____ of the company submitting the
(Title)

foregoing qualification form and related information; that he has read such documents; and that such documents are true and correct and contain no material misrepresentations.

Signature

Signed and sworn to me before this _____ day of _____, 20__

Notary Public

My commission expires: _____

AFFIDAVIT FOR JOINT VENTURE STATEMENT

We the undersigned do hereby give notice to our agreement to bid as a joint venture on the Project.

Name of Joint Venture

Name of firm

Signature

Signed and sworn to me before this _____ day of _____, 20__

Notary Public

My commission expires: _____

Name of firm

Signature

Signed and sworn to me before this _____ day of _____, 20__

Notary Public

My commission expires: _____

END OF SECTION

SECTION 00 31 21

HISTORICAL HIGH WATER INFORMATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Historical High Water Information
2. Offeror Responsibilities

B. Related Specification Sections include but are not necessarily limited to:

1. Document 01 14 20 – Flood Risk Mitigation Plan

1.2 MEASUREMENT AND PAYMENT (NOT USED)

1.3 SUBMITTALS (NOT USED)

1.4 AVAILABLE HISTORICAL HIGH WATER INFORMATION

A. The attached exhibits showing high water mark information measured during the “2016 Tax Day Flood” are hereby provided to prospective Offerors:

“RESEARCH FOREST AT GREEN BRIDGE (2016 TAX DAY FLOOD)”

“GOSLING RD AND PANTHER BRANCH (2016 TAX DAY FLOOD)”

B. The attached exhibits are for informational purposes. Notwithstanding anything in this Section or the Contract Documents to the contrary, the attached exhibits are not Contract Documents. NEITHER THE SJRA NOR PRINCIPAL ARCHITECT/ENGINEER IS RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ANY INFORMATION OR DATA CONTAINED OR DEPICTED THEREIN; AND EACH DISCLAIMS ANY REPRESENTATION OR WARRANTY, WHATSOEVER, WITH RESPECT TO SUCH INFORMATION, INCLUDING, WITHOUT LIMITATION, ITS ACCURACY, CORRECTNESS, AND/OR THAT WATER LEVEL LIMITS THEREIN WILL NOT BE EXCEEDED, AS WELL AS DISCLAIMS ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

1.5 OFFEROR RESPONSIBILITIES

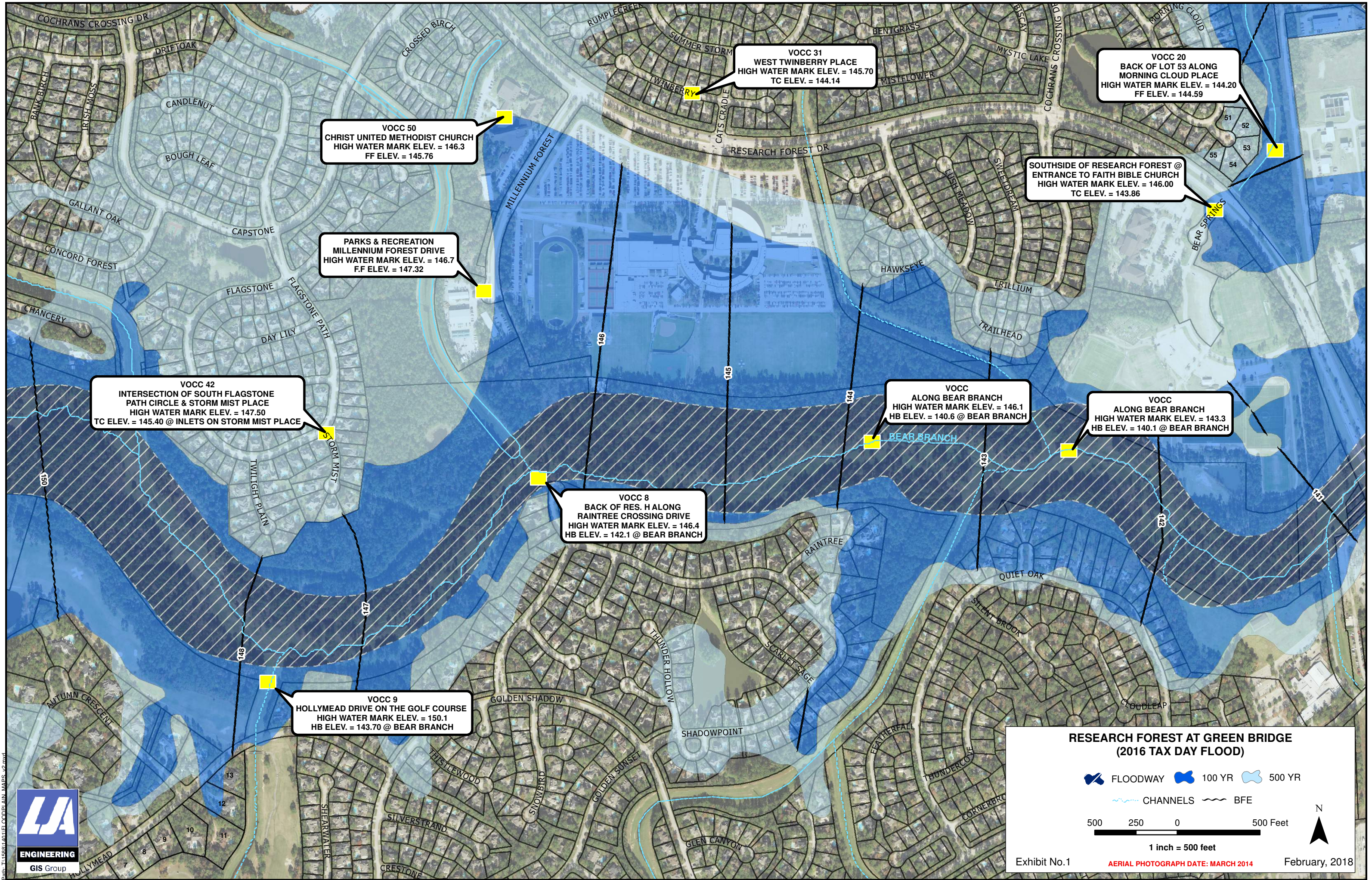
A. Offeror shall take full responsibility for interpretation and use of information contained in the attached for bidding and construction purposes.

B. Offeror is encouraged to perform additional investigations as Offeror deems appropriate.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION



VOCC 50
CHRIST UNITED METHODIST CHURCH
HIGH WATER MARK ELEV. = 146.3
FF ELEV. = 145.76

PARKS & RECREATION
MILLENNIUM FOREST DRIVE
HIGH WATER MARK ELEV. = 146.7
F.F ELEV. = 147.32

VOCC 42
INTERSECTION OF SOUTH FLAGSTONE
PATH CIRCLE & STORM MIST PLACE
HIGH WATER MARK ELEV. = 147.50
TC ELEV. = 145.40 @ INLETS ON STORM MIST PLACE

VOCC 8
BACK OF RES. H ALONG
RAINTREE CROSSING DRIVE
HIGH WATER MARK ELEV. = 146.4
HB ELEV. = 142.1 @ BEAR BRANCH

VOCC 9
HOLLYMEAD DRIVE ON THE GOLF COURSE
HIGH WATER MARK ELEV. = 150.1
HB ELEV. = 143.70 @ BEAR BRANCH

VOCC 31
WEST TWINBERRY PLACE
HIGH WATER MARK ELEV. = 145.70
TC ELEV. = 144.14




VOCC 20
BACK OF LOT 53 ALONG
MORNING CLOUD PLACE
HIGH WATER MARK ELEV. = 144.20
FF ELEV. = 144.59



SOUTHSIDE OF RESEARCH FOREST @
ENTRANCE TO FAITH BIBLE CHURCH
HIGH WATER MARK ELEV. = 146.00
TC ELEV. = 143.86

VOCC
ALONG BEAR BRANCH
HIGH WATER MARK ELEV. = 146.1
HB ELEV. = 140.6 @ BEAR BRANCH

VOCC
ALONG BEAR BRANCH
HIGH WATER MARK ELEV. = 143.3
HB ELEV. = 140.1 @ BEAR BRANCH

**RESEARCH FOREST AT GREEN BRIDGE
(2016 TAX DAY FLOOD)**

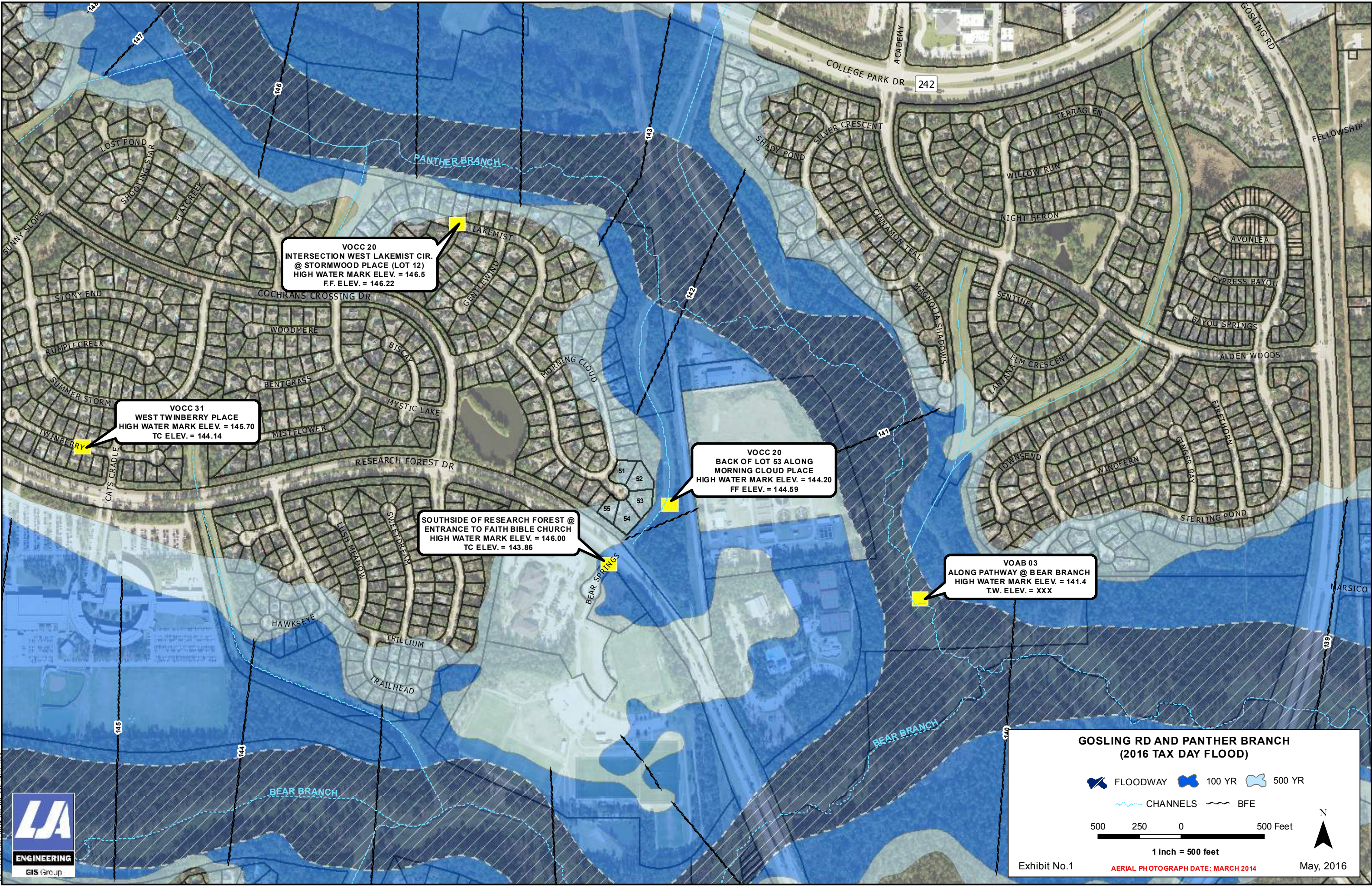
 FLOODWAY  100 YR  500 YR

 CHANNELS  BFE

500 250 0 500 Feet

1 inch = 500 feet

Exhibit No.1 **AERIAL PHOTOGRAPH DATE: MARCH 2014** February, 2018



VOCC 20
INTERSECTION WEST LAKEMIST CIR.
@ STORMWOOD PLACE (LOT 12)
HIGH WATER MARK ELEV. = 146.5
F.F. ELEV. = 146.22

VOCC 31
WEST TWINBERRY PLACE
HIGH WATER MARK ELEV. = 145.70
TC ELEV. = 144.14

SOUTHSIDE OF RESEARCH FOREST @
ENTRANCE TO FAITH BIBLE CHURCH
HIGH WATER MARK ELEV. = 146.00
TC ELEV. = 143.86

VOCC 20
BACK OF LOT 53 ALONG
MORNING CLOUD PLACE
HIGH WATER MARK ELEV. = 144.20
FF ELEV. = 144.59

VOAB 03
ALONG PATHWAY @ BEAR BRANCH
HIGH WATER MARK ELEV. = 141.4
T.W. ELEV. = XXX

**GOSLING RD AND PANTHER BRANCH
(2016 TAX DAY FLOOD)**

FLOODWAY

100 YR

500 YR

CHANNELS

BFE

500

250

0

500 Feet

1 inch = 500 feet

Exhibit No.1

AERIAL PHOTOGRAPH DATE: MARCH 2014

May, 2016



Path: T:\15881601\GOSLING RD 242 AREA.mxd

SECTION 00 31 24

ENVIRONMENTAL INFORMATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Site Investigation Reports
 - 2. Reports
 - 3. Offeror Responsibilities
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Document 00 31 32 – Geotechnical Information
 - 2. Document 00 31 32.10 – Trench Safety Geotechnical Information

1.2 MEASUREMENT AND PAYMENT (NOT USED)

1.3 SUBMITTALS (NOT USED)

1.4 SITE INVESTIGATION REPORTS

- A. In the design and preparation of Contract Documents for this Project, the SJRA and Principle Architect/Engineer have used information in environmental site assessment reports for the investigation and analysis of soils and subsurface conditions at the Project site.
- B. A hard copy of each report will be made available as information only to Offerors at:

San Jacinto River Authority, Woodlands Division
2436 Sawdust Road
The Woodlands, TX 77380

- C. Neither the SJRA nor Principal Architect/Engineer is responsible for accuracy or completeness of any information or data.

1.5 REPORTS

- A. Environmental Assessment Surveys
 - 1. Texas Water Development Board Financial Assistance Programs Environmental Assessment, prepared by the Terracon Consultants, Inc.

1.6 SPECIAL ENVIRONMENTAL CONDITIONS

A. U.S. Army Corps of Engineers (USACE) permits for the project:

1. USACE Nationwide Permit (NWP) 12 – Utility Line Activities will be required due to impacts from temporary construction access. Notification to USACE is not required, but Contractor must comply with the terms and conditions of USACE Nationwide Permit (NWP) 12.
 - a. [https://www.nao.usace.army.mil/Portals/31/docs/regulatory/NationwidePermits/Nationwide Permit 12.pdf](https://www.nao.usace.army.mil/Portals/31/docs/regulatory/NationwidePermits/Nationwide%20Permit%2012.pdf)
 - b. <https://www.swg.usace.army.mil/Portals/26/docs/regulatory/PN%20January/2017%20NWP%20RC.pdf?ver=2017-01-12-140117-117>

B. Montgomery County Floodplain Permit

1. Contractor must obtain a Development Permit Non-Structure from Montgomery County Permit Office for installation of new Manhole within the 100-year floodplain.

C. Texas Parks & Wildlife Department (TPWD), (TPWD Project No. 42228):

1. Contractor must comply with the Migratory Bird Treaty Act, where vegetation clearing will occur outside of the general bird nesting season (March 15 to September 15) or a survey will be conducted for active nests, prior to clearing. Nest surveys should be conducted no more than five days prior to construction in order to maximize detection of active nests. If a nest is found, a vegetation buffer area of no less than 150-feet in diameter should remain around the nest until all young have fledged. The Contractor shall not resume construction in the area of the encounter until authorized to do so by the Owner.
2. Contractor will be responsible for installing proper erosion and sedimentation controls. Erosion and sedimentation will be managed by implementing matting at stream crossings, minimizing the amount of clearing and grubbing, and not excavating in the vicinity of stream banks.
 - a. Erosion and sedimentation controls must be installed in areas where construction activities are anticipated for the coming weeks. Contractor must remove and relocate erosion and sedimentation controls after work is completed in each project area.
3. To ensure compliance with Texas Parks and Wildlife Code, if dewatering, maintenance, or construction related activities within water resources are anticipated to occur, the Authority should coordinate with the Texas Parks and Wildlife Department Kills and Spills Team to develop a plan to avoid impacts to aquatic resources.

- D. Standard emergency condition for the discovery of cultural resources
 - 1. If significant cultural resources are encountered during construction, the Contractor shall immediately cease work in the area of the encounter and notify the Owner, who will immediately implement actions in accordance with the ESA and applicable State statutes. The Contractor shall not resume construction in the area of the encounter until authorized to do so by the Owner.
- E. Standard emergency condition for the discovery of threatened and endangered species
 - 1. If a threatened or endangered species is encountered during construction, the Contractor shall immediately cease work in the area of the encounter and notify the Owner, who will immediately implement actions in accordance with the ESA and applicable State statutes. These actions shall include reporting the encounter to the TWDB, the U.S. Fish and Wildlife Service, and the Texas Parks and Wildlife Department, obtaining any necessary approvals or permits to enable the work to continue, or implement other mitigation actions. The Contractor shall not resume construction in the area of the encounter until authorized to do so by the Owner.

1.7 OFFEROR RESPONSIBILITIES

- A. Offeror shall take full responsibility for interpretation and use of information contained in above listed reports for bidding and construction purposes.
- B. Offeror may perform additional investigations as Offeror deems appropriate.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 00 31 32

GEOTECHNICAL INFORMATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Site Investigation Reports
 - 2. Geotechnical Reports
 - 3. Offeror Responsibilities
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Section 00 31 24 – Environmental Information
 - 2. Section 00 31 32.10 – Trench Safety Geotechnical Information

1.2 MEASUREMENT AND PAYMENT (NOT USED)

1.3 SUBMITTALS (NOT USED)

1.4 SITE INVESTIGATION REPORTS

- A. In the design and preparation of Contract Documents for this Project, the SJRA and Principle Architect/Engineer have used information in environmental site assessment reports for the investigation and analysis of soils and subsurface conditions at the Project site.
- B. A hard copy of each report will be made available as information only to Offerors at:

San Jacinto River Authority, Woodlands Division
2436 Sawdust Road
The Woodlands, TX 77380

- C. Neither the SJRA nor Design Consultant is responsible for accuracy or completeness of any information or data.

1.5 GEOTECHNICAL REPORTS

- A. Report No. 97165064, prepared by Terracon Consultants, Inc., titled Geotechnical Engineering Report Revision 1 for SJRA – Bear Branch Gravity Main Rehabilitation, dated January 3, 2017.

1.6 OFFEROR RESPONSIBILITIES

- A. Offeror shall take full responsibility for interpretation and use of information contained in above listed reports for its bidding and construction purposes.

- B. Offeror may perform additional soils investigations as Offeror deems appropriate.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 00 31 32.10

TRENCH SAFETY GEOTECHNICAL INFORMATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Trench Safety Geotechnical Information: Geotechnical Information obtained for use in design of the trench safety system was performed by a geotechnical engineering firm.
- B. A hard copy of each report will be made available as information only to Offerors at:

San Jacinto River Authority, Woodlands Division
2436 Sawdust Road
The Woodlands, TX 77380

Report No. 97165064, prepared by Terracon Consultants, Inc., titled Geotechnical Engineering Report Revision 1 for SJRA – Bear Branch Gravity Main Rehabilitation, dated January 3, 2017.

1.2 MEASUREMENT AND PAYMENT (NOT USED)

1.3 SUBMITTALS (NOT USED)

PART 2 - NOT USED

PART 3 - NOT USED

END OF SECTION

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SECTION 00 41 00.02

PROPOSAL FORM

To: The San Jacinto River Authority
1577 Dam Site Road
G & A Building, 3rd Floor Receptionist
Conroe, Texas 77304

Project: Rehabilitation of Bear Branch Gravity Main
CSP No.: 19-0050
Project No.: WDPR0082.1001.2T001
Offeror: _____
(Print or type full name of proprietorship, partnership, corporation, or joint venture)

1.0 OFFER

- A. Total Proposal Price:** The undersigned Offeror proposes and agrees, if this Proposal is accepted, to enter into an Agreement with Owner in the form included in the Contract Documents to perform all Work as specified or indicated in Contract Documents for the Contract Amount indicated in this Proposal or as modified by a Change Order or Change Directive.
- B. Proposal Security:** Included with the Proposal is a Proposal Security in the amount of 5 percent of the Total Proposal Price subject to terms described in Specification Section 00 21 13.02 – Instructions to Offerors.
- C. Period for Proposal Acceptance:** Offeror accepts all of the terms and conditions of the Request for Proposals and Instructions to Offerors, including without limitation those dealing with the disposition of required Bonds. This offer shall remain open to acceptance and is irrevocable for 90 days after Proposal Date (opening). That period may be extended by mutual written agreement of the SJRA and Offeror.
- D. Liquidated Damages:** Offeror accepts the provisions of the Agreement as to liquidated damages in the event of its failure to complete Work in accordance with the schedule set forth in the Agreement.
- E. Addenda:** Offeror hereby acknowledges it has received, examined and carefully studied all Addenda and all Addenda have been considered and all related costs are included in the Total Proposal Price. Offeror hereby acknowledges receipt of the following Addenda:

Addendum No.	Addendum Date	Signature Acknowledging Receipt

F. Proposal Supplements: The following documents shall be provided with the proposal:

- Offeror's Statement of Qualifications (SOQ).
- Completed Certification of Proposal
- Form of Business 00 45 20
- Proposal Security (Offeror's Bond 00 43 13)
- Resolution of Contractor 00 45 43
- Verification Company Does Not Boycott Israel Form
- TGC 2252.152 Certification Form (Certification Foreign Terrorist Organizations Prohibited)
- Section 00 62 07 Certification Regarding Debarment, Suspension Form
- ED-103 Contractor's Act of Assurance (TWDB Form)
- ED-104 Contractor's Act of Assurance Resolution (TWDB Form)
- SRF-404 Debarment / Suspension Certification (TWDB Form)
- One flash drive with a Completed Proposal with Original signatures, Statement of Qualifications (SOQ) and a full set of Financials.
- Any other Documentation required by the terms of this Competitive Sealed Proposal

G. Conflict of Interest Forms:

Conflict of Interest Forms (Form CIQ) shall be submitted under separate cover and not be included in the sealed proposal.

2.0 CONTRACT TIME

- A. If Proposal is accepted, Contractor shall achieve Substantial Completion of the Work within **450** calendar days after the date when the Contract Time Requirements commence to run as provided in Article 2.3 of the General Conditions, and Contractor shall achieve Final Completion within **45** calendar days after the date required for Substantial Completion of the Work, subject to adjustments of Contract Time Requirements as provided in the Contract.

3.0 OFFEROR REPRESENTATIONS

- A. Offeror is familiar with and is satisfied as to all federal, state and local laws and regulations that may affect cost, progress, performance and furnishing of the Work.
- B. Offeror has visited the Site and become familiar with and is satisfied as to the general, local and Site conditions that may affect cost, progress, performance

and furnishing of the Work, including but not limited to the flood prone nature of the Site.

- C. Offeror has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site and (2) Hazardous Conditions identified in reports and drawings provided to Offeror or available for Offeror review. Offeror understands that neither Owner nor Principal Architect/Engineer is responsible for the accuracy of these documents and they are not part of the Contract Documents.
- D. Offeror has obtained and carefully studied all additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions including surface, subsurface and Underground Improvements at or contiguous to the Site which may affect cost, progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Offeror, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Contract Documents to be employed by Offeror, and safety precautions and programs incident thereto.
- E. Offeror does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Proposal for performance of the Work at the Contract Amount proposed, within the Contract Time Requirements proposed and in accordance with the terms and conditions of the Contract Documents. Offeror shall make no claims against the Owner and shall bear all risk of losses, if any, resulting on account of the amount and character of the Work, or because the conditions under which the Work must be done vary or differ from conditions or information contained in the Contract Documents, or are different from what were estimated or anticipated by it.
- F. Offeror is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
- G. Offeror has correlated the information known to Offeror, information and observations obtained from visits to the Site, reports and drawings identified in the Contract Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Contract Documents.
- H. Offeror has given Owner or Principal Architect/Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Offeror has discovered in the Contract Documents, and the written resolution thereof by Principal Architect/Engineer are acceptable to Offeror.

- I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work for which this Proposal is submitted.
- J. Supersession: The Owner and the Contractor Agree that Texas Water Development Board ("TWDB") Supplemental Conditions have been fully incorporated and accounted for in and are a part of the Bid Documents, Bid and Contract Documents.
- K. Privity of Contract: Funding for this contract is expected to be provided in part by the Texas Water Development Board. Neither the State of Texas, nor any of its departments, agencies, or employees, including but not limited to the TWDB, is or will be, a party to this contract or any lower tier contract. This contract is subject to applicable provisions 31 TAC Chapter 363 in effect on the date of this contract.
- L. Laws to be Observed: In the performance of the Contract, the Contractor must comply with all applicable federal, state, and local laws, ordinances and regulations, including but not limited to laws concerned with labor, safety, minimum wages, and the environment. The Contractor will make himself familiar with and shall at all times observe and comply with all federal, state, and local laws, ordinances and regulations which in any manner affect the conduct of the work, and shall Indemnify and save harmless the Owner, Texas Water Development Board and its representatives against any claim arising from violation of any such law, ordinance or regulation by himself or by his subcontractor or by his employees.
- M. Review by Owner and TWDB:
 - (a) The Owner and authorized representatives, agents and employees of the Owner and TWDB shall at all times have access to and be permitted to observe and review all work, materials, equipment, payrolls, personnel records, employment conditions, material invoices, books and accounting records, subcontracts, purchase orders, and all other relevant data, documents and records pertaining to this Contract.
 - (b) Any such inspection or review by the TWDB shall not subject the TWDB or State of Texas to any action for damages.
- N. Offeror will submit written evidence of its authority to do business in the state where the Project is located with its Proposal, form 00 45 20 – Form of Business.
- O. Offeror further represents that this Proposal is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; Offeror has not directly or indirectly induced or solicited any other Offeror to submit a false or sham Proposal; Offeror has not

solicited or induced any individual or entity to refrain from submitting a Proposal; and Offeror has not sought by collusion to obtain for itself any advantage over any other Offeror or over Owner.

4.0 DEFINED TERMS:

- A. Terms defined in this Proposal, if any, shall be for the purposes of this Proposal. Terms with initial capital letters not defined herein shall have the meaning assigned to them in the other Bid Documents or Contract Documents.

5.0 TOTAL PROPOSAL PRICE HAS BEEN CALCULATED BY OFFEROR, USING THE FOLLOWING COMPONENT PRICES AND PROCESS (PRINT OR TYPE NUMERICAL AMOUNTS):

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SAN JACINTO RIVER AUTHORITY
Rehabilitation of Bear Branch Gravity Main
PROPOSAL FORM

A. BASE ITEMS

Item No.	Spec. Reference	Description	Qty.	Unit	Unit Price (this column controls)	Proposal Price
1	01 71 13	Mobilization (Not to Exceed 3% of the Total Bid), complete in place the sum of:	1	L.S.	\$ _____	\$ _____
2	31 11 00	Clearing and Grubbing as needed to accomplish rehabilitation work (Not to Exceed 1% of the Total Bid), complete in place the sum of:	1	L.S.	\$ _____	\$ _____
3	01 57 13.02	Site Access to facilitate rehabilitation (includes crushed rock access roads and/or matting, temporary bridges at drainage channels/creeks/ditch crossings, temporary fill, pipeline crossings, approval by pertinent entity, including installation, maintenance, and removal), complete in place the sum of:	1	L.S.	\$ _____	\$ _____
4	01 57 13.02	Stabilized Construction Exit, complete in place the sum of:	10	EA.	\$ _____	\$ _____
5	01 57 23	Filter Fabric Fencing, complete in place the sum of:	12,000	L.F.	\$ _____	\$ _____
6	01 57 23	Inlet Protection Barrier (all types), complete in place the sum of:	5	EA.	\$ _____	\$ _____
7	01 55 26	Traffic Control and Regulation, complete in place the sum of:	1	L.S.	\$ _____	\$ _____
8	01 74 23	Site Restoration, complete in place the sum of:	1	L.S.	\$ _____	\$ _____
9	33 32 00.01	Diversion Pumping, complete in place the sum of:	1	L.S.	\$ _____	\$ _____

10	33 01 30.13	Cured-in-place pipe lining of existing 42" sanitary sewer (includes end seal sleeves), all depths, complete in place the sum of:	3,340	L.F.	\$ _____	\$ _____
11	33 01 30.13	Cured-in-place pipe lining of existing 48" sanitary sewer (includes end seal sleeves), all depths, complete in place the sum of:	4,690	L.F.	\$ _____	\$ _____
12	33 01 30.13	Cured-in-place pipe lining of existing 54" sanitary sewer (includes end seal sleeves), all depths, complete in place the sum of:	7,735	L.F.	\$ _____	\$ _____
13	33 01 30.13	Cured-in-place pipe lining of existing 72" sanitary sewer (at Wastewater Treatment Facility No. 2), (includes end seal sleeves), all depths, complete in place the sum of:	335	L.F.	\$ _____	\$ _____
14	33 31 19.01	Cleaning and television inspection of existing 42" diameter sanitary sewers (includes Pre and Post-TV), complete in place, the sum of:	3,340	LF	\$ _____	\$ _____
15	33 31 19.01	Cleaning and television inspection of existing 48" diameter sanitary sewers (includes Pre and Post-TV), complete in place, the sum of:	4,690	L.F.	\$ _____	\$ _____
16	33 31 19.01	Cleaning and television inspection of existing 54" diameter sanitary sewers (includes Pre and Post-TV), complete in place, the sum of:	7,735	L.F.	\$ _____	\$ _____
17	33 31 19.01	Cleaning and television inspection of existing 72" diameter sanitary sewers (includes Pre and Post-TV), complete in place, the sum of:	335	L.F.	\$ _____	\$ _____

18	33 31 19.01	Additional cleaning (all types, including mechanical cleaning) of 42" thru 48" sanitary sewer, complete in place, the sum of:	2,750	L.F.	\$ _____	\$ _____
19	33 31 19.01	Additional cleaning (all types, including mechanical cleaning) of 54" sanitary sewer, complete in place, the sum of:	150	L.F.	\$ _____	\$ _____
20	33 01 30.13	Modification of manhole bench and invert for cured-in-place lining operations, all depths, complete in place the sum of:	2	EA.	\$ _____	\$ _____
21	33 05 16	Install 6' diameter precast sanitary sewer manhole S-5A (includes 1" SewperCoat and 6.5' X 6.5' concrete collar), up to 20' deep, complete in place the sum of:	1	EA.	\$ _____	\$ _____
22	33 60 03	Abandon existing sanitary sewer manhole S-5, complete in place the sum of:	1	EA.	\$ _____	\$ _____
23	33 39 20	Proposed vent pipe with bollard (includes securing vent pipe to bollard with stainless steel hardware), complete in place the sum of:	20	EA.	\$ _____	\$ _____
24	33 39 20	Replace 24" manhole ring and cover (composite material, per details), (includes 5' X 5' concrete collar), complete in place the sum of:	10	EA.	\$ _____	\$ _____
25	33 39 20	Replace 32" manhole ring and cover (composite material, per details), (includes 6.5' X 6.5' concrete collar), complete in place the sum of:	10	EA.	\$ _____	\$ _____

26	33 39 20	Replace 24" or 32" manhole ring and cover (composite material) to grade, complete in place the sum of:	6	EA.	\$ _____	\$ _____
27	33 60 01	Manhole wall liner, 1" SewperCoat, complete in place the sum of:	550	V.F.	\$ _____	\$ _____
28	33 60 01	Manhole wall liner, 1" SewperCoat for box-shaped structures or manholes greater than 4' diameter, complete in place the sum of:	3,750	S.F.	\$ _____	\$ _____
29	32 13 13	Remove and replace existing concrete pavement, including reinforcement, complete in place the sum of:	50	S.Y.	\$ _____	\$ _____
30	01 58 13	Temporary Project Signs (locations to be approved by Owner), complete in place the sum of:	3	EA.	\$ _____	\$ _____
31	31 41 00	Trench safety system for trench excavations, complete in place the sum of:	250	L.F.	\$ _____	\$ _____
32	01 14 20	Flood Risk Mitigation Plan Preparation:	1	L.S.	\$ _____	\$ _____
33		Flood Risk Mitigation Plan Implementation:	[Note]		[Attach Proposal]	[Attach Proposal]
<u>A. Total Base Items:</u>					\$ _____	

Note: Offeror to propose in attachment, the cost reimbursement compensation and/or rate based compensation that would apply to the extent of implementation of the Flood Risk Mitigation Plan.

B. EXTRA UNIT PRICE ITEMS

Item No.	Spec. Reference	Description	Qty.	Unit	Unit Price (this column controls)	Proposal Price
34	33 31 19.01	Additional cleaning (all types, including mechanical cleaning) of 72" sanitary sewer, complete in place, the sum of:	250	L.F.	\$ _____ \$ <u>55.00¹</u>	\$ _____
35	33 01 30.70	Point repair of 42" thru 48" sanitary sewer, all depths, complete in place the sum of:	3	EA.	\$ _____ \$ <u>20,000.00¹</u>	\$ _____
36	33 01 30.70	Point repair of 54" sanitary sewer, all depths, complete in place the sum of:	2	EA.	\$ _____ \$ <u>25,000.00¹</u>	\$ _____
37	33 01 30.70	Point repair of 72" sanitary sewer, all depths, complete in place the sum of:	1	EA.	\$ _____ \$ <u>35,000.00¹</u>	\$ _____
38	33 01 30.70	Extra length for point repair of 42" thru 48" sanitary sewer, all depths, complete in place, the sum of:	100	L.F.	\$ _____ \$ <u>200.00¹</u>	\$ _____
39	33 01 30.70	Extra length for point repair of 54" sanitary sewer, all depths, complete in place, the sum of:	50	L.F.	\$ _____ \$ <u>250.00¹</u>	\$ _____
40	33 01 30.70	Extra length for point repair of 72" sanitary sewer, all depths, complete in place, the sum of:	50	L.F.	\$ _____ \$ <u>375.00¹</u>	\$ _____
41	33 01 30.70	Obstruction removal (by excavation), all depths, all pipe sizes, complete in place the sum of:	2	EA.	\$ _____ \$ <u>10,000.00¹</u>	\$ _____
42	33 01 30.70	Extra length for obstruction removal (by excavation), all depths, complete in place the sum of:	50	L.F.	\$ _____ \$ <u>300.00¹</u>	\$ _____

43	33 01 30.70	Obstruction removal (by remote), all depths, 42" thru 72" diameter pipe, complete in place the sum of:	10	EA.	\$ _____ \$ <u>1,500.00¹</u>	\$ _____
44	33 01 30.13	Pre-liner for existing 42"thru 48" sanitary sewer (includes end seal sleeves), all depths, complete in place, the sum of:	2,000	L.F.	\$ _____ \$ <u>30.00¹</u>	\$ _____
45	33 01 30.13	Pre-liner for existing 54" sanitary sewer (includes end seal sleeves), all depths, complete in place, the sum of:	1,750	L.F.	\$ _____ \$ <u>40.00¹</u>	\$ _____
46	30 01 30.13	Pre-liner for existing 72" sanitary sewer (includes end seal sleeves), all depths, complete in place, the sum of:	225	L.F.	\$ _____ \$ <u>50.00¹</u>	\$ _____
47	33 60 01	Additional 1" thick cementitious wall liner material for buildback or patching (includes steel reinforcement), complete in place the sum of:	1,750	S.F.	\$ _____ \$ <u>15.00¹</u>	\$ _____
48	01 57 23.02	Well pointing system for manhole construction, complete in place the sum of:	1	EA.	\$ _____ \$ <u>3,500.00¹</u>	\$ _____
49	01 57 23.02	Well pointing system for point repair, all depths, all pipe sizes, complete in place the sum of:	4	EA.	\$ _____ \$ <u>5,000.00¹</u>	\$ _____
50	01 57 23.02	Installation & removal of piezometer, complete in place the sum of:	5	EA.	\$ _____ \$ <u>300.00¹</u>	\$ _____
51	31 21 33	Wet condition bedding, for manhole construction or point repair, complete in place the sum of:	3	EA.	\$ _____ \$ <u>3,500.00¹</u>	\$ _____
52	31 32 13.16	Install extra cement stabilized sand backfill, complete in place the sum of:	100	C.Y.	\$ _____ \$ <u>30.00¹</u>	\$ _____
53	32 12 16	Remove & replace existing asphalt pavement, complete in place the sum of:	100	S.Y.	\$ _____ \$ <u>90.00¹</u>	\$ _____

54	32 13 13	Extra concrete (all classes), complete in place the sum of:	100	C.Y.	\$ _____ \$ <u>90.00¹</u>	\$ _____
55	32 13 13	Remove & replace existing concrete driveway, including reinforcement, complete in place the sum of:	100	S.F.	\$ _____ \$ <u>10.00¹</u>	\$ _____
56	32 13 13	Remove & replace existing concrete sidewalk, complete in place the sum of:	100	S.F.	\$ _____ \$ <u>5.00¹</u>	\$ _____
57	32 13 13	Remove and Replace existing concrete curb, complete in place the sum of:	100	L.F.	\$ _____ \$ <u>5.00¹</u>	\$ _____
58	32 90 00	Furnish and Planting of Replacement Tree, as directed by Owner, 3" to 4" Caliper Oak (Live Oak or Red Oak), complete in place the sum of:	50	EA.	\$ _____ \$ <u>200.00¹</u>	\$ _____
59	32 90 00	Furnish and Planting of Replacement Tree, as directed by Owner, 3" to 4" Caliper Pine (Loblolly), complete in place the sum of:	50	EA.	\$ _____ \$ <u>200.00¹</u>	\$ _____
60	01 14 19	Brace, support, and protect power poles and utility structures, complete in place, the sum of:	2	EA.	\$ _____ \$ <u>1,500.00¹</u>	\$ _____
61	01 58 13	Additional Temporary Project Signs (locations to be approved by Owner), complete in place, the sum of:	3	EA.	\$ _____ \$ <u>2,000.00¹</u>	\$ _____
<u>B. Total Extra Unit Price Items:</u>					\$ _____	

Table B Footnotes:

(1) Minimum Unit Price determined prior to Proposal. Can be increased by the Offeror by crossing out the Minimum and noting revised Unit Price on the line above.

C. CASH ALLOWANCES

Item No.	Spec. Reference	Description	Cash Allowance ^{1, 2}
62	01 11 13	Permitting Allowance:	<u>\$1,000.00</u>
<u>C. Total Cash Allowances:</u>			<u>\$1,000.00</u>

Table C Footnotes:

(1) Fixed price determined prior to Proposal. Cannot be adjusted by Offeror.

(2) Contractor must submit documentation of fees paid for permits.

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D. TOTAL PROPOSAL PRICE:
(Add Totals for Items A, B, and C)

\$ _____

6.0 SIGNATURES: By signing this Document, I agree that I have received and reviewed all Bid Documents, Contract Documents and Addenda and considered all costs associated with the Bid Documents, Contract Documents and Addenda in calculating the Total Proposal Price.

Offeror: _____
(Print or type full name of your proprietorship, partnership, corporation, or joint venture.*)

** By: _____
Signature Date

Name: _____
(Print or type name) Title

Doing Business as: _____

Business Address: _____
(Mailing)

(Street, if different)

Telephone and Fax Number: _____
(Print or type numbers)

* If Proposal is a joint venture, add additional Proposal Form signature sheets for each member of the joint venture.

** Offeror certifies that the only person or parties interested in this offer as principals are those named above. Offeror has not directly or indirectly entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive Proposing.

Note: This document constitutes a Governmental record, as defined by § 37.01 of the Texas Penal Code. Submission of a false Governmental record is a criminal offense as provided in § 37.10 of the Texas Penal Code.

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7.0 CERTIFICATION OF PROPOSAL

The undersigned affirms that they are duly authorized to execute this Proposal, that this Proposal has not been prepared in collusion with any other Offeror, and that the contents of this Proposal have not been communicated to any other Offeror prior to the official opening of this Proposal. Additionally, the undersigned affirms that the Offeror is willing to sign the attached SJRA Agreement (if applicable).

Signed By: _____ Title: _____

Typed Name: _____ Company Name: _____

Phone No.: _____ Fax No.: _____

Email: _____

Proposal Address: _____
P.O. Box or Street City State Zip

Order Address: _____
P.O. Box or Street City State Zip

Remit to Address: _____
P.O. Box or Street City State Zip

Federal Tax ID No.: _____

Date: _____

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END OF SECTION

SECTION 00 43 13

OFFEROR'S BOND

THAT WE, _____, as Principal,
(Offeror)
("Offeror"), and the other subscriber hereto, _____, as Surety, do hereby
acknowledge ourselves to be held and firmly bound to the San Jacinto River Authority, a political sub-division of the
State of Texas, in the sum of _____ Dollars
(\$ _____) (an amount equal to five (5) percent of the Total Bid Price, including Cash Allowances and
Alternates, if any, for the payment of which sum, well and truly to be made to the San Jacinto River Authority and its
successors, the Offeror and Surety do bind themselves, their heirs, executors, administrators, successors, and
assigns, jointly and severally.

THE CONDITIONS OF THIS OBLIGATION ARE SUCH THAT:

WHEREAS, the Offeror has submitted on or about this day a proposal offering to perform the following:

Rehabilitation of Bear Branch Gravity Main

SJRA Project No. W DPR0082.1001.2T001

(Project Name, Location and Number)

in accordance with the Drawings, Specifications, and terms and conditions related thereto to which reference is
hereby made.

NOW, THEREFORE, if the Offeror's offer as stated in the Section 00 41 00.02 – Proposal Form is accepted
by the San Jacinto River Authority, and the Offeror executes and returns to the San Jacinto River Authority Section
00 52 00 – Standard Form of Agreement between Owner and Contractor, required by the San Jacinto River Authority,
on the forms prepared by the San Jacinto River Authority, for the Work and also executes and returns the same
number of the Performance, Payment and Maintenance Bonds (such bonds to be executed by a Corporate Surety
authorized by the State Board of Insurance to conduct insurance business in the State of Texas, and having an
underwriting limitation in at least the amount of the bond) and other submittals as required, in connection with the
Work, within the Contract Time, then this obligation shall become null and void; otherwise it is to remain in full force
and effect.

If Offeror is unable to or fails to perform the obligations undertaken herein, the undersigned Offeror and
Surety shall be liable to the San Jacinto River Authority for the full amount of this obligation which is hereby
acknowledged as the amount of damages which will be suffered by the San Jacinto River Authority on account of the
failure of such Offeror to perform such obligations, the actual amount of such damages being difficult to ascertain.

Notices required or permitted hereunder shall be in writing and shall be deemed delivered when actually
received or, if earlier, on the third day following deposit in a United States Postal Service post office or receptacle,
with proper postage affixed (certified mail, return receipt requested), addressed to the respective other Party at the
address prescribed in the Contract documents, or at such other address as the receiving Party may hereafter
prescribe by written notice to the sending Party.

IN WITNESS THEREOF, the Offeror and Surety have signed and sealed this instrument on the respective
dates written below their signatures and have attached current Power of Attorney.

ATTEST, SEAL: (if a corporation)

WITNESS: (if not a corporation)

(Name of Offeror)

By: _____
Name:
Title:

By: _____
Name:
Title:
Date:

ATTEST/SURETY WITNESS: (SEAL)

(Full Name of Surety)

(Address of Surety for Notice)

(Telephone Number of Surety)

By: _____
Name:
Title:
Date:

By: _____
Name:
Title:
Date:

END OF SECTION

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SECTION 00 45 10

CONFLICT OF INTEREST QUESTIONNAIRE

Local Government Code Chapter 176 requires Offerors with the San Jacinto River Authority ("SJRA") to file a Conflict of Interest Questionnaire with the SJRA.

The Conflict of Interest Questionnaire is available for downloading on the Texas Ethics Commission's website at: <http://www.ethics.state.tx.us/forms/CIQ.pdf>. The completed Conflict of Interest Questionnaire will be posted on the SJRA website. Also you will find a list of the SJRA Local Government Officers on the SJRA website.

For your convenience the CIQ form is attached as part of this document. Although the SJRA has provided this document for the Offeror's convenience, it is the Offeror's responsibility to submit the latest version of the CIQ form as promulgated by the Texas Ethics Commission.

The Failure of any Offeror to comply with this law is a Class C misdemeanor.

END OF SECTION

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CONFLICT OF INTEREST QUESTIONNAIRE

For vendor doing business with local governmental entity

FORM CIQ

This questionnaire reflects changes made to the law by H.B. 23, 84th Leg., Regular Session.

This questionnaire is being filed in accordance with Chapter 176, Local Government Code, by a vendor who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the vendor meets requirements under Section 176.006(a).

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

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

OFFICE USE ONLY

Date Received

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

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

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

Name of Officer

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.

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

☐ Yes ☐ No

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

☐ Yes ☐ No

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

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

7

Signature of vendor doing business with the governmental entity

Date

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.

SECTION 00 45 20
FORM OF BUSINESS

Please mark the box describing your firm's form of business, fill in the requested information, and include the relevant attachments.

☐ **Corporation**

Corporate Name: _____
State of Incorporation: _____
Mailing Address: _____
Type of Corporation: _____

Certificate of Assumed Name, if operating under a name different than that on the corporate charter (the Certificate must have been issued within the past 10 years to be valid)

*Certificate of Good Standing

*Certificate of Existence (if non-Texas corporation, Certificate of Authority)

☐ **Partnership/Joint Venture**

Partnership/Joint Venture Name: _____
Mailing Address: _____
Type of Partnership/Joint Venture: _____

Copy of the Partnership or Joint Venture Agreement, **or**
Affidavit with the name of the partnership or joint venture, the names of the individual partners or participants in the joint venture, and a statement that the partnership or joint venture is in existence

Certificate of Assumed Name, (the Certificate must have been issued within the past 10 years to be valid)

If firm is a limited partnership, the Certificate of Limited Partnership

If any partner or joint venturer is a corporation, the above information relating to corporation must be included as to each sum partner or joint venturer.

☐ **Sole Proprietorship**

Name: _____
Mailing Address: _____

Certificate of Assumed Name, if operating under a name different than that of the sole proprietor (the Certificate must have been issued within the past 10 years to be valid)

** Must be furnished upon request of the SJRA and must be less than 90 days old.*

END OF SECTION

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SECTION 00 45 43
RESOLUTION OF CONTRACTOR

_____, (“Contractor”),
(Name of Contractor, e.g., “Biz. Inc.”, “Biz LLP”)
is a _____,
(Type of Organization, e.g.: Corporation, Limited Partnership, Limited Liability Partnership, Limited Liability Company, etc.)
which is bound by acts of _____,
(Name and Form of Governing Entity, e.g., “Biz Inc. Board of Directors”, “Bill Smith, GP”, etc.)
 (“Governing Entity”).

On the . day of _____, 20____, the Governing Entity resolved, in accordance with all documents, rules, and laws applicable to the Contractor, that

_____, is authorized to act as the
(Contractor’s Representative)

Contractor’s Representative in all business transactions (initial one) ____ conducted in the State of Texas OR ____ related to this Contract; and

The Governing Entity warrants that the above resolution (a) was entered into without dissent or reservation by the Governing Entity, (b) has not been rescinded or amended, and (c) is now in full force and effect; and

**PART 1 - IN AUTHENTICATION OF THE ADOPTION OF THIS RESOLUTION, I
SUBSCRIBE MY NAME ON THIS ____ DAY OF _____, 20 ____.**

(Authorized Signature for Governing Entity)

(Print or Type Name and Title of Authorized Signatory)

SWORN AND SUBSCRIBED before me on _____
Date

Notary Public in and for the State of Texas

My Commission Expires: _____
Expiration Date

Print or Type Name of Notary Public

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CONTRACTOR'S ACT OF ASSURANCE RESOLUTION

I hereby certify that it was RESOLVED by a quorum of the directors of the _____ (Name of Corporation),
meeting on the _____ day of _____ 20____, that:

Authorized Representative(s):

--

be, and hereby is/are authorized to act on behalf of _____
(Name of Corporation), as its representative in all business transactions conducted in the State of
Texas, and;

That all above resolution was unanimously ratified by the Board of Directors at said
meeting and that the resolution has not been rescinded or amended and is now in full forces and
effect; and;

In authentication of the adoption of this resolution, I subscribe my name and affix the seal
of the Corporation this _____ day of _____, 20_____.

_____(Secretary)

[SEAL]

SECTION 00 52 00

**STANDARD FORM OF AGREEMENT
BETWEEN OWNER AND CONTRACTOR**

THIS AGREEMENT is dated as of _____ by and between **the San Jacinto River Authority** (hereinafter called "**OWNER**") and _____ (hereinafter called "**CONTRACTOR**").

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

Article 1. WORK.

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

Construction of **Rehabilitation of Bear Branch Gravity Main**

Article 2. PRINCIPAL ENGINEER AND OWNER'S REPRESENTATIVE.

The project has been designed by **ARKK Engineers, LLC, 7322 Southwest Freeway, Suite 1040, Houston, TX 77074**, who is hereinafter called "PRINCIPAL ENGINEER" and who assumes all duties and responsibilities and has the rights and authority assigned to PRINCIPAL ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents. OWNER'S Representative shall be **ARKK Engineers, LLC.**

Article 3. CONTRACT TIMES.

The Work will be Substantially Completed within **450 calendar days** after the date when the Contract Time Requirements commence to run as provided in Article 2.3 of the General Conditions, and CONTRACTOR shall achieve Final Completion within **45 calendar days** of the date required for Substantial Completion.

OWNER and CONTRACTOR recognize that **time is of the essence** of this Agreement and that OWNER will suffer financial loss if the Work is not completed within the times specified in the above paragraph, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) and, as a reasonable estimate of such damages, CONTRACTOR shall pay OWNER **Two-Thousand Five-Hundred Dollars (\$2,500.00)** for each and every day of delay in CONTRACTOR achieving Substantial Completion of the Work and readiness for final payment beyond the times specified in the above paragraph. OWNER shall have the option of deducting the amount of any liquidated damages from any monies that may be owed to CONTRACTOR or to recover such amount from the CONTRACTOR or its sureties, at CONTRACTOR'S expense.

Article 4. CONTRACT AMOUNT.

OWNER shall pay CONTRACTOR for completion of the Work, in accordance with the Contract Documents, an amount in current funds equal to the sum of the amounts determined to be due and owing pursuant to the Proposal and any subsequent Change Orders and Change Directives thereto.

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'S Representative or PRINCIPAL ARCHITECT/ENGINEER as determined by the OWNER and as provided in the General Conditions and Supplemental Conditions, if any.

OWNER shall make progress payments on account of the Contract Amount on the basis of CONTRACTOR'S Applications for Payment as recommended by OWNER'S Representative or PRINCIPAL ARCHITECT/ENGINEER and in conformance with the procedures described in the General Conditions. All such payments will be measured by the schedule of values established in Article 2.4.2.07 of the General Conditions (and on the number of units of each Unit Price item completed, if unit price contract). Upon final completion and acceptance of the Work in accordance with Article 14.11 of the General Conditions, OWNER shall pay the remainder of the Contract Amount as recommended by OWNER'S Representative as provided in said Article 14.11.

The 10 percent retainage withheld pursuant to Article 14.01.5 of the General Conditions shall be deposited in an interest-bearing account, and the interest earned on such retainage shall be paid to CONTRACTOR on completion of the contract.

Article 6. CONTRACTOR'S REPRESENTATIONS.

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

CONTRACTOR has examined and carefully studied the Contract Documents (including the Addenda listed in Article 7) and the other related data identified in the Proposal Documents.

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

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

CONTRACTOR has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site. CONTRACTOR acknowledges that such reports and drawings are not Contract Documents, are not warranted or represented in any manner by Owner to accurately show the conditions at the Site, and may not be complete for CONTRACTOR'S purposes. CONTRACTOR acknowledges that OWNER and PRINCIPAL ARCHITECT/ENGINEER do not assume and expressly disclaim any responsibility for the accuracy or completeness of the information and data shown or indicated in the Contract Documents with respect to

subsurface conditions or Underground Facilities at or contiguous to the Site or CONTRACTOR'S interpretation of such information and data. CONTRACTOR has obtained and carefully studied (or assumes responsibility for having done so) all such additional supplementary research, examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site or otherwise which may affect cost, progress, performance, or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto. CONTRACTOR does not consider that any additional examinations, investigations, explorations, tests, studies, or data are necessary for the performance and furnishing of the Work at the Contract Amount, within the Contract Time Requirements and in accordance with the other terms and conditions of the Contract Documents.

CONTRACTOR has visited the site and reviewed and analyzed the Historical High Water Information and has become familiar with and understands the flood prone nature of the site, which may affect cost, progress, performance, or furnishing of the Work. Contractor is aware of the risks associated with performing the work under these types of conditions affecting the site and assumes all responsibilities and risks associated with performing the work in light of the flood prone nature of the site, to the extent provided for in the Contract Documents.

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

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

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

Pursuant to Section 2270.002 of the Texas Government Code, contemporaneous with CONTRACTOR's execution of this Agreement, CONTRACTOR shall execute the Verification Company Does Not Boycott Israel, attached hereto and incorporated herein.

Pursuant to Sections 2252.152 and 2252.153 of the Texas Government Code, contemporaneous with CONTRACTOR's execution of this Agreement, CONTRACTOR shall execute the TGC 2252.152 Certification Form (Certification Foreign Terrorist Organizations Prohibited), attached hereto and incorporated herein.

Article 7. CONTRACT DOCUMENTS.

The Contract Documents are comprised of the following:

1. This Agreement.
2. Exhibits to this Agreement:
Verification Company Does Not Boycott Israel
TGC 2252.152 Certification Form (Certification Foreign Terrorist Organizations Prohibited)

Document	Title	Date	Page(s)

3. Performance, Payment, Maintenance, and Surface Correction Bonds.
4. General Conditions of the Contract.
5. Supplemental Conditions, if any.
6. Specifications 00 11 13 through 33 60 03, prepared by Jose F. Velasquez, P.E. and sealed on September 13, 2019.
7. Drawings.
8. Addenda:

Addendum No.	Addendum Date	Signature Acknowledging Receipt

9. CONTRACTOR'S Proposal Form pursuant to Competitive Sealed Proposal No. 19-0050.
10. Davis-Bacon Wage Rates.
11. The following which may be delivered or issued after the Effective Date of the Agreement and are not attached thereto: All written Change Orders or Change Directives pursuant to Article 3.3 of the General Conditions.

There are no Contract Documents other than those listed in this Article. The Contract Documents may only be amended, modified, or supplemented as provided in Article 3.3 of the General Conditions.

Article 8. INDEMNITY PROVISIONS.

THE GENERAL, SPECIAL, AND SUPPLEMENTAL CONDITIONS, IF ANY, INCORPORATED INTO THIS AGREEMENT CONTAIN PROVISIONS THAT MAY RELIEVE ONE PARTY FOR RESPONSIBILITY IT WOULD OTHERWISE HAVE UNDER THE LAW FOR DAMAGES OR OTHER LIABILITY ARISING OUT OF THE WORK.

EACH OF THE PARTIES HERETO SPECIFICALLY AGREES THAT IT HAS A DUTY TO READ THIS AGREEMENT, THE GENERAL, SPECIAL, AND SUPPLEMENTAL CONDITIONS, IF ANY, AND ALL OTHER CONTRACT DOCUMENTS AND AGREES THAT IT IS CHARGED WITH NOTICE AND KNOWLEDGE OF THE TERMS OF THIS AGREEMENT AND ALL CONTRACT DOCUMENTS; THAT IT HAS IN FACT READ THIS AGREEMENT AND ALL CONTRACT DOCUMENTS AND IS FULLY INFORMED AND HAS FULL NOTICE AND KNOWLEDGE OF THE TERMS, CONDITIONS AND EFFECTS OF THIS AGREEMENT; THAT IT HAS HAD THE OPPORTUNITY TO BE REPRESENTED BY INDEPENDENT LEGAL COUNSEL OF ITS CHOICE PRECEDING ITS EXECUTION OF THIS AGREEMENT AND HAS RECEIVED OR VOLUNTARILY CHOSEN NOT TO RECEIVE THE ADVICE OF ITS ATTORNEY IN ENTERING INTO THIS AGREEMENT; AND THAT IT RECOGNIZES THAT CERTAIN TERMS OF THIS AGREEMENT AND THE CONTRACT DOCUMENTS RESULT IN ONE PARTY ASSUMING THE LIABILITY INHERENT IN SOME ASPECTS OF THE TRANSACTION AND RELIEVING THE OTHER PARTY OF ITS RESPONSIBILITY FOR SUCH LIABILITY. EACH PARTY HERETO AGREES AND COVENANTS THAT IT WILL NOT CONTEST THE VALIDITY OR ENFORCEMENT OF ANY EXCULPATORY PROVISION OF THIS AGREEMENT ON THE BASIS THAT THE PARTY HAD NO NOTICE OR KNOWLEDGE OF SUCH PROVISION OR THAT THE PROVISION IS NOT "CONSPICUOUS".

Article 9. MISCELLANEOUS.

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

CONTRACTOR certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Article 9:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the proposal process or in the Contract execution;
2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the proposal process or the execution of the Contract to the detriment of OWNER, (b) to establish Proposal or Contract prices at artificial noncompetitive levels, or (c) to deprive OWNER of the benefits of free and open competition;
3. "collusive practice" means a scheme or arrangement between two or more Proposers, with or without the knowledge of OWNER, a purpose of which is to establish Proposal prices at artificial, non-competitive levels; and

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

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

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

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

This Agreement may be executed in counterparts, each of which shall be deemed an original, but all of which together shall be deemed to be one and the same agreement. A signed copy of this Agreement delivered by facsimile, email, or other means of electronic transmission shall be deemed to have the same legal effect as delivery of an original signed copy of this Agreement. Duplicate copies of duly executed and delivered counterparts of this Agreement shall be deemed to have the same full force and effect as originals and may be relied upon as such. Notwithstanding the foregoing, OWNER and CONTRACTOR agree that this Agreement may be executed using electronic signatures at the option and in the discretion of OWNER, and, in such event, the provisions of the Uniform Electronic Transaction Act, Chapter 332, Texas Business and Commerce Code, as amended, and any applicable policies and procedures of OWNER regarding electronic signatures shall apply.

Rehabilitation of Bear Branch Gravity Main **STANDARD FORM OF AGREEMENT**
SJRA Project No. WDPR0082.1001.2T001 **BETWEEN OWNER AND CONTRACTOR**

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this Agreement.

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

OWNER: San Jacinto River Authority

By: _____

Attest: _____

Address for giving notices:

CONTRACTOR:

By: _____

(CORPORATE SEAL)

Attest: _____

Address for giving notices:

License No. _____

Agent for service of process: _____

END OF SECTION

VERIFICATION COMPANY DOES NOT BOYCOTT ISRAEL

BEFORE ME, the undersigned authority, on this day personally appeared _____ [name], _____ [title] of _____ [Contractor], and, upon oath, after first being duly sworn, deposed and stated:

"My name is _____ and I am the _____ [title] of _____ [Contractor], hereinafter referred to in this verification as 'Contractor'. The facts set forth herein are within my personal knowledge and are true and correct, and I am competent and authorized to make this verification on behalf of Contractor.

Contractor does not Boycott Israel; and

Contractor will not Boycott Israel during the term of this Agreement; and

'Boycott Israel' as used herein means refusing to deal with, terminating business activities with, or otherwise taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations specifically with Israel, or with a person or entity doing business in Israel or in an Israeli-controlled territory, but does not include an action made for ordinary business purposes."

Contractor: _____

By: _____

[Signature of Affiant]

Printed Name: _____

Title: _____

SUBSCRIBED AND SWORN TO before me on this ____ day of _____, 20____, by _____, _____ [title] of _____ [Contractor], known to me or proved through photo identification.

Notary Public in and for the State of Texas
My commission expires: _____

FORMS REQUIRED FOR SUBMISSION WITH PROPOSAL

TGC 2252.152 CERTIFICATION FORM

**CONTRACTS WITH COMPANIES ENGAGED IN BUSINESS WITH IRAN,
SUDAN, OR FOREIGN TERRORIST ORGANIZATIONS PROHIBITED -
CERTIFICATION**

I, _____, the
undersigned representative
of

_____ (Company
or business name) being an adult over the age of eighteen (18) years of
age, pursuant to Texas Government Code, Chapter 2252, Section
2252.152 and Section 2252.153, certify that the company named above is
not listed on the website of the Comptroller of the State of Texas
concerning the listing of companies that are identified under Section
806.051, Section 807.051 or Section 2253.153. I further certify that should
the above-named company enter into a contract that is on said listing of
companies on the website of the Comptroller of the State of Texas which
do business with Iran, Sudan or any Foreign Terrorist Organization, I will
immediately notify the San Jacinto River Authority's Purchasing Division.

Name of Company Representative (Print)

Signature of Company Representative

Date

SECTION 00 60 20

MONTHLY SUBCONTRACTOR PAYMENT REPORTING FORM

Legal Project Name: Rehabilitation of Bear Branch Gravity Main

SJRA Project No.: WDPR0082.1001.2T001

Contractor's Company Name: _____

Address: _____

CERTIFICATION

BEFORE ME, the undersigned authority, on this day personally appeared _____,
_____ [title] of _____ [Contractor], and, upon oath, after first being duly
sworn, deposed and stated:

"My name is _____ and I am the _____ [title] of
_____ [Contractor], hereinafter referred to in this affidavit as "Contractor". The facts
set forth herein are within my personal knowledge and are true and correct, and I am competent and
authorized to make this affidavit on behalf of Contractor.

Contractor has paid each and all of its Subcontractors, laborers, suppliers, vendors and
materialmen, if any, in full, for all work, labor, materials, equipment and/or services provided to Contractor
for incorporation in or use or work on the Project, through the period ending _____ [end
date of last paid pay period] (the "Pay Period"), except to the extent of any contractual retainage withheld
by Contractor, or other amounts withheld by Contractor for defective work or otherwise in accordance with
its contract with any Subcontractor, laborer, supplier, vendor or materialman and identified in the Payment
Notifications described below.

Contractor acknowledges that SJRA is relying on Contractor's statements and representations
herein in making payment for Work performed on the Project. Contractor agrees to indemnify SJRA from
any and all loss, cost or expense, including but not limited to attorneys' fees incurred, resulting from any
false or incorrect information contained in this affidavit."

EXCEPTION: Contractor sent Payment Notifications to the following Subcontractors, laborers, suppliers,
vendors or materialmen explaining why Contractor withheld payment, copies of which are attached:

Name: _____ Name: _____

Street Address: _____ Street Address: _____

City, State, and Zip Code: _____ City, State, and Zip Code: _____

Amount of Payment Withheld: _____ Amount of Payment Withheld: _____

Date Payment First Withheld: _____ Date Payment First Withheld: _____

Description of Good Faith Reason: _____ Description of Good Faith Reason: _____

(Signature of Contractor's Representative)

(Print or Type Name of Contractor's Representative)

SWORN TO AND SUBSCRIBED before me on:

Date

Notary Public in and for the State of Texas

My Commission Expires: _____
Expiration Date

Print or Type name of Notary Public

SECTION 00 61 13.13
PERFORMANCE BOND

STATE OF TEXAS

COUNTY OF _____

KNOW ALL MEN BY THESE PRESENTS: That _____ (Contractor) of the City of _____, County of _____, and State of Texas, as Principal, and _____ authorized under the Laws of the State of Texas to act as surety on bonds for principals, as Surety, are held and firmly bound unto San Jacinto River Authority (Owner), in the penal sum of _____ Dollars (\$_____) for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, for a period of one (1) year beyond the date of approval by the engineer of Owner, by these presents:

WHEREAS, the Principal has entered into a certain written contract with the Owner, dated the _____ day of _____, 20____, for construction of: _____ (the "Contract"), which Contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall faithfully perform said Contract and shall in all respects duly and faithfully observe and perform all and singular the covenants, conditions and agreements in and by said Contract agreed and covenanted by the Principal to be observed and performed, within the time provided therein and any extensions thereof that may be granted by the Owner, and during the life of any guarantees or warranties contained in or required under said Contract, and shall also well and truly perform all the undertakings, covenants, terms, conditions and agreements of any and all modifications of said Contract that may hereafter be made, then this obligation shall be void; otherwise to remain in full force and effect;

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

Surety, for value received, stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract, or to work performed thereunder, or the plans, specifications, or drawings, accompanying the same, shall in anyway 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 the work to be performed thereunder.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument on the _____ day of _____, 20__.

Principal

BY:_____

TITLE:_____

ADDRESS:

Surety

BY:_____

TITLE:_____

PHYSICAL ADDRESS:

MAILING ADDRESS FOR NOTICE OF CLAIMS:

TELEPHONE:_____

LOCAL RECORDING AGENT
PERSONAL IDENTIFICATION
NUMBER:

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

APPROVED AS TO FORM:

Owner:

SAN JACINTO RIVER AUTHORITY

BY: _____

NAME: _____

TITLE: _____

END OF SECTION

SECTION 00 61 13.16
STATUTORY PAYMENT BOND

STATE OF TEXAS

COUNTY OF _____

KNOW ALL MEN BY THESE PRESENTS: That _____ (Contractor)
of the City of _____, County of _____, and State
of Texas, as Principal, and _____
authorized under the Laws of the State of Texas to act as surety on bonds for principals,
as Surety, are held and firmly bound unto San Jacinto River Authority (Owner), in the
penal sum of _____ Dollars
(\$_____) for the payment whereof, the said Principal and Surety bind
themselves, and their heirs, administrators, executors, successors and assigns, jointly
and severally, for a period of one (1) year beyond the date of approval by the engineer
of Owner, by these presents:

WHEREAS, the Principal has entered into a certain written contract with the Owner,
dated the _____ day of _____, 20__, for construction of: _____

(the "Contract").

which Contract is hereby referred to and make a part hereof as fully and to the same
extent as if copied at length herein.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION IS SUCH, that if the
said Principal shall pay all claimants supplying labor and material to him or a Sub-
Contractor in the prosecution of the work provided for in said Contract, then, this
obligation shall be void; otherwise to remain in full force and effect;

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

Surety, for value received, stipulates and agrees that no change, extension of time,
alteration or addition to the terms of the Contract, or to work performed thereunder, or
the plans, specifications, or drawings, accompanying the same, shall in anyway 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 the work to be
performed thereunder.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument on the _____ day of _____, 20__.

Principal

Surety

BY:_____

BY:_____

TITLE:_____

TITLE:_____

ADDRESS:

PHYSICAL ADDRESS:

MAILING ADDRESS FOR NOTICE OF
CLAIM:

TELEPHONE:_____

LOCAL RECORDING AGENT
PERSONAL IDENTIFICATION
NUMBER:

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

APPROVED AS TO FORM:

Owner:

SAN JACINTO RIVER AUTHORITY

BY: _____

NAME: _____

TITLE: _____

END OF SECTION

SECTION 00 61 19

ONE-YEAR MAINTENANCE BOND

THAT WE, _____,
_____, as Principal, hereinafter called Contractor, and the other
subscriber hereto, _____,
as Surety, do hereby acknowledge ourselves to be held and firmly bound to the San
Jacinto River Authority ("SJRA") in the sum of \$ _____,
_____ , for the payment of which sum to be made to the
SJRA and its successors, Contractor and Surety do bind themselves, their successors,
jointly and severally.

THE CONDITIONS OF THIS OBLIGATION ARE SUCH THAT:

WHEREAS, the Contractor has on or about this day executed a Contract in
writing with the SJRA for _____,
all of such work to be done as set out in full in said Contract Documents therein referred
to and adopted by the SJRA, all of which are made a part of this instrument as fully and
completely as if set out in full herein.

NOW THEREFORE, if the said Contractor shall comply with the provisions of
Paragraph 13.7.1 of the General Conditions, and correct work not in accordance with
the Contract documents discovered within the established one-year period, then this
obligation shall become null and void, and shall be of no further force and effect;
otherwise, the same is to remain in full force and effect.

Notices required or permitted hereunder shall be in writing and shall be deemed
delivered when given in accordance with the definition of Written Notice in the General
Conditions of the Contract.

IN WITNESS THEREOF, the said Contractor and Surety have signed and sealed
this instrument on the respective dates written below their signatures and Surety has
attached its current Power of Attorney.

ATTEST, SEAL: (if a corporation)

WITNESS: (if not a corporation)

Name of Contractor

By: _____

Name:

Title:

By: _____

Name:

Title:

Date:

ATTEST/SURETY WITNESS:

(SEAL)

Full Name of Surety

Address of Surety for Notice

Telephone Number of Surety

By: _____

Name:

Title:

Date:

By: _____

Name:

Title: Attorney-in-Fact

Date:

END OF SECTION

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SECTION 00 61 19.01

SECOND-YEAR MAINTENANCE BOND

THAT WE, _____,
_____, as Principal, hereinafter called Contractor, and the other
subscriber hereto, _____,
as Surety, do hereby acknowledge ourselves to be held and firmly bound to the San
Jacinto River Authority ("SJRA") in the sum of \$ _____
_____ (10% of Contract Amount), for the payment of which
sum to be made to the SJRA and its successors, Contractor and Surety do bind
themselves, their successors, jointly and severally.

THE CONDITIONS OF THIS OBLIGATION ARE SUCH THAT:

WHEREAS, the Contractor has on or about this day executed a Contract in
writing with the SJRA for _____,
all of such work to be done as set out in full in said Contract Documents therein referred
to and adopted by the SJRA, all of which are made a part of this instrument as fully and
completely as if set out in full herein.

NOW THEREFORE, if the said Contractor shall, without cost to Owner and in
accordance with the requirements of the Contract Documents and Owner's written
instructions:

- (a) correct Defective Work, or, if it has been rejected by Owner, remove it
from the Site and replace it with Work that is not Defective, and
- (b) satisfactorily correct or remove and replace any damage to other Work or
the work of others, or damage to other property, whether personal or real
property, resulting from the correction, removal or replacement of such
Defective Work;

with regard to any and all Defective Work discovered within two (2) years from the date
of Substantial Completion, then this obligation shall become null and void, and shall be
of no further force and effect; otherwise, the same is to remain in full force and effect.

Notices required or permitted hereunder shall be in writing and shall be deemed
delivered when given in accordance with the definition of Written Notice in the General
Conditions of the Contract.

IN WITNESS THEREOF, the said Contractor and Surety have signed and sealed
this instrument on the respective dates written below their signatures and Surety has
attached its current Power of Attorney.

ATTEST, SEAL: (if a corporation)

WITNESS: (if not a corporation)

Name of Contractor

By: _____

Name:

Title:

By: _____

Name:

Title:

Date:

ATTEST/SURETY WITNESS:

(SEAL)

Full Name of Surety

Address of Surety for Notice

Telephone Number of Surety

By: _____

Name:

Title:

Date:

By: _____

Name:

Title: Attorney-in-Fact

Date:

END OF SECTION

SECTION 00 61 20

ONE-YEAR SURFACE CORRECTION BOND

THAT WE, _____,
_____, as Principal, hereinafter called Contractor, and the other
subscriber hereto, _____,
as Surety, do hereby acknowledge ourselves to be held and firmly bound to the San
Jacinto River Authority ("SJRA") in the sum of \$_____ such sum being equal to four
percent of the Original Contract Price, for the payment of which sum to be made to the
SJRA and its successors, Contractor and Surety do bind themselves, their successors,
jointly and severally.

THE CONDITIONS OF THIS OBLIGATION ARE SUCH THAT:

WHEREAS, the Contractor has entered into a Contract in writing with the SJRA
dated of even date herewith, for _____,
all of such work to be done in accordance with the Contract documents therein referred
to, and adopted by the SJRA.

NOW THEREFORE, if the Contractor shall comply with the provisions of
Paragraph 13.7.1 of the General Conditions, and repair, replace, restore, and correct
surface work associated with backfill operations of subsurface work not in accordance
with the Contract documents discovered within one year from the date that the One-
year Maintenance Bond has expired, then this obligation shall become null and void,
and shall be of no further force and effect; otherwise, the same is to remain in full force
and effect.

Notices required or permitted hereunder shall be in writing and shall be deemed
delivered when actually received or, if earlier, on the third day following deposit in a
United States Postal Service post office or receptacle, with proper postage affixed
(certified mail, return receipt requested), addressed to the respective other party at the
address prescribed in the Contract documents, or at such other address as the
receiving party may hereafter prescribe by written notice to the sending party.

IN WITNESS THEREOF, the said Principal and Surety have signed and sealed this instrument on the respective dates written below their signatures.

ATTEST, SEAL: (if a corporation)

WITNESS: (if not a corporation)

By: _____

Name:

Title:

Name of Contractor

By: _____

Name:

Title:

Date:

ATTEST/SURETY WITNESS:

(SEAL)

Full Name of Surety

Address of Surety for Notice

Telephone Number of Surety

By: _____

Name:

Title:

Date:

By: _____

Name:

Title: Attorney-in-Fact

Date:

END OF SECTION

SECTION 00 62 04

HISTORY OF OSHA ACTIONS AND LIST OF ON-THE-JOB INJURIES

Prior to award of the Contract, Successful Offeror will be required to file the following with the San Jacinto River Authority:

1. A history of all OSHA actions, advisories, etc., Contractor has received on all jobs worked in any capacity, prime or subcontractor. The history shall be for the two-year period preceding the Bid Date of the Project.
2. A list of all on-the-job injuries, accidents, and fatalities suffered by any present or former employees of Contractor during the same two-year period.
3. If less than the two-year period, give the date Contractor started doing business.
4. Provide the company Experience Modification Rate (EMR) for the three-year period preceding the Proposal Submission Date of the Project.

An officer of the company must certify in a notarized statement that the information submitted is true and correct.

END OF SECTION

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SECTION 00 62 07

**CERTIFICATION REGARDING DEBARMENT,
SUSPENSION, AND OTHER RESPONSIBILITY MATTERS**

Contractor certifies to the best of its knowledge and belief that it and its principals:

1. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal, State, or local department or agency;
2. Have not within a three-year period preceding this proposal 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;
3. Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph 2 of this certification; and
4. Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award.

Company:

Typed Name & Title of Authorized Representative

Signature of Authorized Representative

Date

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

END OF SECTION

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SECTION 00 62 10

NAME AND QUALIFICATIONS OF PROPOSED SUPERINTENDENT (FOR FILING)

Prior to award of the Contract, Offeror selected will be required to file the following with the San Jacinto River Authority:

1. The name and qualifications of the Superintendent being proposed to supervise the Project.

This information must be submitted to the SJRA within the time period stated in within 10 days of written notification of contract award. An officer of the company must certify in a statement that the information submitted is true and correct.

END OF SECTION

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SECTION 00 62 16
AFFIDAVIT OF INSURANCE

BEFORE ME, the undersigned authority, on this day personally appeared

_____,
Affiant
who being by me duly sworn on his oath stated that he/she is _____
Title
of _____,
Contractor's Company Name

the Contractor named and referred to within the Contract Documents; that he/she is fully competent and authorized to give this affidavit on behalf of Contractor, and that the attached original insurance certificate truly and accurately reflects the insurance coverage that is now in effect and will be in effect during the periods required by the Contract.

Affiant's Signature
SWORN AND SUBSCRIBED before me on _____
Date

Notary Public in and for the State of TEXAS

Print or type Notary Public name

My Commission Expires: _____
Expiration Date

END OF SECTION

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4827-0155-8354, V. 1



San Jacinto River Authority

ADMINISTRATIVE OFFICE
P.O. Box 329 • Conroe, Texas 77305
(T) 936.588.3111 • (F) 936.588.3043

Certificate of Substantial Completion

SECTION 00 65 16 CERTIFICATE OF SUBSTANTIAL COMPLETION

		Date of Substantial Completion:	
Project Name:	Rehabilitation of Bear Branch Gravity Main	Project Number:	WDPR0082.1001.2T001
Project Location:	The Woodlands, Texas	Contract Number:	19-0050
Contractor:		Notice To Proceed	
Principal Architect/Eng.:		Contracted Amount:	
Construction Manager:		Amount at Completion:	
Inspector:		Time to Complete:	Days
Punch List Correction Period:		Date of Inspection:	

Description of Substantially Complete Work:			
<p>Issuance and execution of this Certificate of Substantial Completion by the San Jacinto River Authority (SJRA), shall denote that the described Work for the referenced Project has been inspected for compliance to the Project's Contract Documents and the described Work was found to be Substantially Complete. Therefore, the Date of Substantial Completion is established as indicated above.</p> <p>Items having no impact on the intended and proper implementation, operation, or utilization of the described Work which have been determined as requiring correction or incomplete, are documented on the attached Substantial Completion Punch List. All such items shall be completed within the above stated Punch List Correction Period.</p> <p>Punch List omissions of Contract Work does not relieve the Contractor of its responsibility to complete the Project Work in accordance with the Contract Documents.</p> <p>Contract required warranties and guarantee periods shall commence on the Date of Substantial Completion.</p> <p>Final insurance(s) shall remain in effect until the Project's Date of Final Completion of the Work is established.</p>			
Construction Manager:		Date:	
	Print	Signature	
Company:			
Principal Architect/Eng.		Date:	
	Print	Signature	
Company:			
Contractor:		Date:	
	Print	Signature	
Company:			
SJRA Representative:		Date:	
	Print	Signature	
SJRA General Manager:		Date:	
	Print	Signature	



San Jacinto River Authority

ADMINISTRATIVE OFFICE
P.O. Box 329 • Conroe, Texas 77305
(T) 936.588.3111 • (F) 936.588.3043

Certificate of Substantial Completion

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CERTIFICATE OF PARTIAL SUBSTANTIAL COMPLETION

SECTION 00 65 16.23 CERTIFICATE OF PARTIAL SUBSTANTIAL COMPLETION

		Date of Partial Substantial	
Project Name:	Rehabilitation of Bear Branch Gravity Main	Project Number:	WDPR0082.1001.2T001
Project Location:	The Woodlands, Texas	Contract Number:	19-0050
Contractor:		Notice To Proceed Date:	
Principal Architect/Eng.:		Contracted Amount:	
Construction Manager:		Amount at Completion:	
Inspector:		Time to Complete:	Days
Punch List Correction Period:	Days	Date of Inspection:	

Description of Substantially Complete Work:

Issuance and execution of this Certificate of Partial Substantial Completion by the San Jacinto River Authority (SJRA), shall denote that the described Work for the referenced Project has been inspected for compliance to the Project's Contract Documents and the described Work was found to be Substantially Complete. Therefore, the Date of Partial Substantial Completion is established as indicated above.

Items having no impact on the intended and proper implementation, operation, or utilization of the described Work which have been determined as requiring correction or incomplete, are documented on the attached Partial Substantial Completion Punch List. All such items shall be completed within the above stated Punch List Correction Period.

Punch List omissions of Contract Work does not relieve the Contractor of its responsibility to complete the Project Work in accordance with the Contract Documents.

Contract required warranties and guarantee periods shall commence on the Date of Partial Substantial Completion.

Final insurance(s) shall remain in effect until the Project's Date of Final Completion of the Work is established.

Construction Manager:		Date:	
	Print	Signature	
Company:			
Principal Architect/Eng.:		Date:	
	Print	Signature	
Company:			
Contractor:		Date:	
	Print	Signature	
Company:			
SJRA Representative:		Date:	
	Print	Signature	
SJRA General Manager:		Date:	
	Print	Signature	



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CERTIFICATE OF PARTIAL SUBSTANTIAL COMPLETION

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SECTION 00 65 19

CONTRACTOR'S CERTIFICATION OF FINAL COMPLETION

CERTIFICATE OF FINAL COMPLETION OF: Rehabilitation of Bear Branch Gravity Main

Project No.: WDPR0082.1001.2T001

Contract Dated: [Contract Date]

BEFORE ME, the undersigned authority, a Notary Public in and for the State of Texas, on this day personally appeared _____ who, being by me duly sworn, on his oath says that he or she represents _____, the Contractor who has performed a contract with the San Jacinto River Authority ("SJRA") for the construction of the Work described above, and is duly authorized to make this affidavit; that he or she has personally examined the Work described above as required by the Contract documents; that said Work and all items thereof have been completed and all known defects made good; that all surplus material, refuse, dirt and rubbish have been cleaned up and removed or disposed of as directed by the SJRA; that all parts of Work are in a neat, tidy, finished condition and ready in all respects for acceptance by the SJRA; that all gravel or shell roadway surfaces removed during the course of the Work have been replaced in accordance with the Specifications, that rates of pay for all labor employed on said Work have not been below the minimum set out in "Labor Classification and Minimum Wage Scale" in the Contract documents and that within the knowledge of affiant all just bills for labor and material and for the rental or use of any equipment or apparatus, used in, on, or in connection with the Work have been paid in full by the Contractor.

Affiant's Signature

SWORN AND SUBSCRIBED before me on
PART 1 -

DATE

Notary Public in and for the State of TEXAS

Print or type name

My Commission Expires: _____
Expiration Date

THIS IS TO CERTIFY that I have thoroughly inspected the Work performed by the above named Contractor on the above described Contract and find all things in accordance with the Contract documents governing this Work.

Inspector

[Project Manager or Construction Manager]

Approved:

[Title of Approval Authority], [Contracting Department]

END OF SECTION

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SECTION 00 65 19.13
AFFIDAVIT OF BILLS PAID

STATE OF TEXAS

COUNTY OF _____

BEFORE ME, the undersigned authority, on this day personally appeared _____, party to that certain Contract entered into on the ____ day of _____, 20__, between **San Jacinto River Authority** (Owner) and _____ for the erection, construction, and completion of certain improvements and/or additions upon the following described premises, to wit:

REHABILITATION OF BEAR BRANCH GRAVITY MAIN

CSP NO. 19-0050

Said party being by me duly sworn states upon oath that the said improvements have been erected and completed in full compliance with the above referred to Contract and the agreed plans and specifications therefore.

Deponent further states that he has paid all bills and claims for materials furnished and labor performed on said Contract and that there are no outstanding unpaid bills or legal claims for labor performed or materials furnished upon said job.

This affidavit is being made by the undersigned realizing that it is in reliance upon the truthfulness of the statements contained therein that final and full settlement of the balance due on said Contract is being made, and in consideration of the disbursement of funds San Jacinto River Authority, deponent expressly waives and releases all liens, claims and rights to assert a lien on said premises and agrees to indemnify and hold Owner safe and harmless from and against all losses, damages, costs and expenses of any character whatsoever specifically including court costs, bonding fees and attorney fees, arising out of or in any way relating to claims for unpaid labor or material used or associated with construction of improvements on the above-described premises.

By: _____

Subscribed and sworn to before me, the undersigned authority, on this the _____ day of _____, 20__.

Notary Public in and for _____ County, Texas.

END OF SECTION

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San Jacinto River Authority

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CERTIFICATE OF FINAL COMPLETION

SECTION 00 65 19.23 CERTIFICATE OF FINAL COMPLETION

CERTIFICATE OF FINAL COMPLETION

Date of Final Completion:

Project Name: Rehabilitation of Bear Branch Gravity Main

Project Number: WDPR0082.1001.2T001

Project Location: The Woodlands, Texas

Contract Number: 19-0050

Contractor:

Notice To Proceed

Principal

Contracted Amount:

Construction

Amount at Completion:

Inspector:

Time to Complete: Days

Punch List Correction Days

Date of Inspection:

Description of Finally Complete Work:

DATE OF FINAL COMPLETION - The Work performed under the Contract was inspected on above indicated Date of Final Completion and found to be complete. The date of final completion of the Work is hereby established as indicated above.

PUNCH LIST - Contractor certified in Document 00 65 19 – Contractor's Certification of Final Completion that all Punch List items were completed or corrected. Failure to identify incomplete work items or requirements of the Contract prior to issuance of this Certificate does not alter the responsibility of Contractor to comply with all provisions of the Contract.

ACCEPTANCE OF THE WORK - Based on inspection and to the best of our knowledge, information and belief, the Work has been completed in accordance with the terms and conditions of the Contract and we recommend acceptance of the Work by the San Jacinto River Authority or their delegated authority.

Construction
Manager:

Date:

Print

Signature

Company:

Principal
Architect/Eng.:

Date:

Print

Signature

Company:

Contractor:

Date:

Print

Signature

Company:

SJRA Project
Manager:

Date:

Print

Signature

SJRA General Manager:

Date:

Print

Signature



San Jacinto River Authority

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CERTIFICATE OF FINAL COMPLETION

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SECTION 00 65 21

CONDITIONAL WAIVER AND RELEASE UPON PROGRESS PAYMENT

Legal Project Name: Rehabilitation of Bear Branch Gravity Main

SJRA Project No.: WDPR0082.1001.2T001

Contractor's Company Name ("Contractor"): _____

Address: _____

On receipt by Contractor of a check from the San Jacinto River Authority ("SJRA") in the sum of \$_____ payable to Contractor, and when the check has been properly endorsed and has been paid by the bank on which it is drawn, this document becomes effective to waive and release any and all rights, claims and causes of action which Contractor may have against SJRA, including but not limited to any and all claims for costs, expenses and damages incurred by Contractor, arising out of or related to all labor, materials, equipment and/or services furnished for incorporation in or use or work on the Project, through the period ending _____ [end date of current pay period] (the "Pay Period"), except to the extent of any contractual retainage withheld from Contractor, and except for the following pending claims, if any:

Description of Claim

Amount (\$)

Contractor warrants that Contractor has already paid or will use the funds received from this progress payment to promptly pay in full all amounts due the Contractor's laborers, Subcontractors, materialmen, vendors and suppliers for all work, materials, equipment, and/or services provided for or to the above referenced Project through the Pay Period.

Date _____

_____ (Contractor name)

By: _____ (Signature)

_____ (Title)

This instrument was executed and acknowledged before me on this ____ day of _____, 20____, by _____, known to me as the person whose name is subscribed above, as _____ [title] of _____ [company], on behalf of and as the authorized act of said entity.

Notary Public in and for the State of Texas

My Commission Expires: _____

SECTION 00 65 27

CONDITIONAL WAIVER AND RELEASE UPON FINAL PAYMENT

Legal Project Name: Rehabilitation of Bear Branch Gravity Main

SJRA Project No.: WDPR0082.1001.2T001

Contractor's Company Name ("Contractor"): _____

Address: _____

On receipt by Contractor of a check from the San Jacinto River Authority ("SJRA") in the sum of \$_____ payable to Contractor, and when the check has been properly endorsed and has been paid by the bank on which it is drawn, this document becomes effective to waive and release any and all rights, claims and causes of action which Contractor may have against SJRA, including but not limited to any and all claims for costs, expenses and damages incurred by Contractor, arising out of or related to all labor, materials, equipment and/or services furnished for incorporation in or use or work on the Project, except for the following pending claims, if any:

Description of Claim

Amount (\$)

Contractor warrants that Contractor has already paid or will use the funds received from this payment to promptly pay in full all amounts due the Contractor's laborers, Subcontractors, materialmen, vendors and suppliers for all work, materials, equipment, and/or services provided for or to the above referenced Project.

Date _____

_____ (Contractor name)

By: _____ (Signature)

_____ (Title)

This instrument was executed and acknowledged before me on this ____ day of _____, 20____,
by _____, known to me as the person whose name is subscribed above, as
_____ [title] of _____ [company], on behalf of and as
the authorized act of said entity.

Notary Public in and for the State of Texas

My Commission Expires: _____

BIDDER'S CERTIFICATIONS

Project Name: _____

Project Number: _____

Contract For: _____

The following certifications must be completed by the bidder for each contract.

A. EQUAL EMPLOYMENT OPPORTUNITY:

() I have developed and have on file at each establishment affirmative action programs pursuant to 41 CFR Part 60-1.7.

I have:

- () participated in previous contract(s) or subcontract(s) subject to the equal opportunity clause under Executive Orders 11246 and 11375. I have filed all notices, contract specifications, and compliance reports due under the requirements contained in 41 CFR Part 60-4.
- () **not** participated in previous contracts(s) subject to the equal opportunity clause under Executive Orders 11246 and 11375 and 41 CFR Chapter 60.

B. NONSEGREGATED FACILITIES

() I certify that I do not and will not maintain any facilities provided for my employees in a segregated manner, or permit my employees to perform their services at any location under my control where segregated facilities are maintained; and that I will obtain a similar certification prior to the award of any federally assisted subcontract exceeding \$10,000 which is not exempt from the equal opportunity clause as required by 41 CFR Part 60-1.8.

I will obtain a similar certification from any proposed subcontractor(s), when appropriate.

I understand that a false statement on this certification may be grounds for rejection of this bid proposal or termination of the contract award.

Typed Name and Title of Bidder's Authorized Representative

Signature of Bidder's Authorized Representative

Date

Name and Address of Bidder

Debarment / Suspension Certification

I, _____, hereby certify that I have checked on the federal
(Authorized Representative of Recipient)

System for Award Management (www.sam.gov) website and determined that

_____ is not shown as an “excluded party” that is debarred,
(Name of entity)

suspended or otherwise excluded from or ineligible for participation in federal assistance programs under Executive Order 12549. (See 2 CFR Part 180 and 2 CFR Part 1532 for additional information on the federal governmentwide debarment and suspension system for nonprocurement programs and activities.)

I understand that a false statement herein may subject me to penalties under federal and state laws relating to filing false statements and other relevant statutes.

Signature

Date

Title

Name of Recipient

Verifying prime contractors and subcontractors for construction, equipment, supplies and services: Using the www.sam.gov website, the recipient must verify prior to awarding the contract that the prime contractor is not listed as an “excluded party” that is debarred, suspended or otherwise excluded from or ineligible. Once any subcontractors are known, they also must be verified as not listed as an “excluded party” prior to award of a subcontract. The recipient must print a dated record of the verification from the www.sam.gov website and retain a copy that is available for review by TWDB. The prime contractors and subcontractors must be verified prior to the contract award or the costs may be disallowed.

**Section 00 72 00
GENERAL CONDITIONS OF THE CONTRACT**

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ARTICLE 1 – DEFINITIONS

UNLESS OTHERWISE STATED IN THE CONTRACT DOCUMENTS, WORDS WHICH HAVE WELL-KNOWN TECHNICAL OR CONSTRUCTION INDUSTRY MEANINGS ARE USED IN THE CONTRACT DOCUMENTS IN ACCORDANCE WITH SUCH RECOGNIZED MEANINGS.

Whenever 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 thereof:

- 1.001 **Addendum:**** Written instruments issued by the Contract Awarding Authority which clarify, correct or change the bidding requirements or the Contract Documents prior to the Due Date. "Addenda" is the plural form of Addendum.
- 1.002 **Agreement:**** Document signed by the Parties and binding the Parties, containing the name of Contractor, title and location of the Project, original Contract Time Requirements, Original Contract Amount, enumeration of documents included in the Contract, and other provisions.
- 1.003 **Allowance:**** A not-to-exceed amount which is established between the Owner and the Contractor as part of the Contractor's Bid/Proposal when the precise scope of a particular line item has not been defined to a level which is adequate for the Contractor to provide definitive line item pricing for that particular scope of Work. The use of any Allowances by the Contractor in any Bid/Proposal will be subject to the Owner's sole approval. Additional Allowances or adjustments can be added to any Bid/Proposal upon the agreement of the Owner and Contractor.
- 1.004 **Alternative Dispute Resolution:**** The process by which a disputed Claim may be settled if the Owner and the Contractor cannot reach an agreement between themselves, as an alternative to litigation.
- 1.005 **Application for Payment:**** Is the Contractor's monthly pay application, the form of which must be acceptable to the Owner.
- 1.006 **Bid/Proposal:**** A complete, properly signed response to an Invitation for Bid/Proposal that, if accepted, would bind the Bidder/Offeror to perform the resultant Contract.
- 1.007 **Bidder/Offeror:**** A person, firm, or entity that submits a Bid/Proposal in response to an Invitation for Bids/Proposals. Any Bidder/Offeror may be represented by an agent after submitting evidence reasonably satisfactory to Owner demonstrating the agent's authority to bind the Bidder/Offeror. The agent cannot certify as to his own agency status.
- 1.008 **Bid/Proposal Documents:**** The Advertisement or Invitation for Bids/Proposals, Instructions to Bidders/Offerors, the Bid/Proposal Form, the Contract Documents and Addenda.
- 1.009 **Bonds:**** Performance Bond, Payment Bond, Maintenance Bond, and other Surety instruments executed by Surety. When in singular form the term refers to an individual instrument.
- 1.010 **Calendar Day:**** Any day of the week; no days being excepted. Work on Saturdays, Sundays, and/or Legal Holidays shall be as approved by and coordinated with Owner.
- 1.011 **Change Directive:**** A written directive to Contractor, signed by Owner, ordering a change in the Work that is within the general scope of the Contract and consisting of additions, deletions, or other revisions and stating a proposed basis for adjustment, if any, in the Contract Amount or Contract Time Requirements, or both. A Change Directive may be used in the absence of total agreement on the terms of a Change Order. A Change Directive can change the Contract Amount or Contract Time Requirements, and the parties may reasonably expect that the

- change directed or documented by a Change Directive will be incorporated in a subsequently issued Change Order.
- 1.012 Change Orders:** Written agreements entered into between Contractor and Owner authorizing an addition, deletion, or revision to the Contract, issued on or after the Execution Date of the Contract.
- 1.013 CMT Consultant:** Owner's consultant responsible for the testing of construction materials engineering, and the verification testing services necessary for acceptance of the Work by the Owner as required by Section 2267.058(a) of the Texas Government Code.
- 1.014 Claim:** A written demand or written assertion by the Owner or the Contractor seeking, as a matter of right, an adjustment or interpretation of Contract terms, payment of money, extension of time or other relief with respect to the terms of the Contract. The Party making the Claim has the responsibility to substantiate the Claim.
- 1.015 Commissioning:** This is the process of verification, preliminary testing, starting up and functional operations testing of all equipment and systems which are part of the Project. The term "commissioning" shall specifically include the drafting, review and verification of all test plans and test reports for all equipment and systems which are part of the Project.
- 1.016 Construction Documents:** Means the Plans or Drawings and the Specifications and such other documents incorporated into the Contract Documents that set out the Contractor's scope of work to be performed under the Contract and/or the technical requirements for the design and construction of the Work.
- 1.017 Contractor:** Means the individual, firm, corporation, or other business entity identified as such in the Agreement, including its successors and its authorized representatives, with whom Owner has entered into the Contract for performance of the Work. The Contractor may also be referred to as the "Bidder" or "Offeror" in the Contract Documents, both of which will be understood to mean the "Contractor" as identified in the Agreement.
- 1.018 Construction Phase:** Means the implementation and execution of the Work required by the Contract Documents, commencing with the Notice to Proceed for the Work.
- 1.019 Contract:** The binding legal agreement between the Owner and the Contractor including all documents that have been incorporated into the agreement between Owner and Contractor for performance of the Work, as evidenced by the Contract Documents, and into which these General Conditions of the Contract (General Conditions) have been incorporated.
- 1.020 Contract Amount:** The monetary amount stated in the Agreement as it may be adjusted by Change Order or Change Directive, payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents.
- 1.021 Contract Awarding Authority:** The SJRA Board of Directors. When authorized by the SJRA Board of Directors, the SJRA General Manager may enter into Contracts on behalf of the SJRA.
- 1.022 Contract Documents:** Those items so designated in the Agreement. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of physical subsurface, geotechnical or environmental conditions are not Contract Documents.
- 1.023 Contract Time Requirements:** Means those requirements for the timely performance of the Work as set forth in the Agreement, including Milestones and the required dates for Mechanical Completion, Substantial Completion and Final Completion.
- 1.024 Cost of the Work:** Has the meaning set forth in Article 11.5.

- 1.025 Critical Path:** The longest series of tasks that runs consecutively from the beginning to the end of the Work, as determined by duration and workflow sequence. This longest path determines how quickly the Work can be completed, given appropriate resources.
- 1.026 Day:** Means that twenty-four hour period measured from midnight to the next midnight. When any period is referred to in days, it will be computed to exclude the first and include the last day of such period.
- 1.027 Defective:** Means with respect to any Work, failing to conform in any respect to any one or more requirements of the Contract Documents.
- 1.028 Delay:** Means a delay, disruption, hindrance, interference, acceleration, recovery effort, or loss of productivity or efficiency, or any other impact whatsoever with respect to the Critical Path of the Work.
- 1.029 Discrepancies:** Means any error, omission, conflict, inconsistency, discrepancy, or lack of clarity in the Contract Documents discovered by the Contractor or that should reasonably have been discovered by the Contractor in fulfilling its obligations arising from the Contract and based upon its applicable standard of care as a Contractor and not as a design professional. The Discrepancy must be determinable by the Contractor through an evaluation of one or more drawings or specifications which are part of the Construction Documents, the above-grade Site conditions, geotechnical reports, surveys or other information provided to Contractor by Owner or any combination thereof.
- 1.030 Division 01:** Means the General Requirements (Division One) of the Specifications made a part of the Construction Documents, whether such Specifications are set out in a separate document or are part of the Project Manual.
- 1.031 Document Control:** This is the process of generating, transmitting, receiving, recording, filing and distributing documents and records generated by the Project Team Members and others during the execution of the Project. The process may utilize an electronic or paper format, or both.
- 1.032 Drawings:** Those portions of the Contract Documents which are graphic and pictorial representations of the scope, extent and character of the Work to be furnished and performed by Contractor and which have been approved by Owner. Drawings may include plans, elevations, sections, details, schedules and diagrams. Shop Drawings are not Drawings.
- 1.033 Due Date:** The date and time specified for receipt of Bids/Proposals or any other required submittal from the Contractor.
- 1.034 Equal:** The terms "equal" or "approved equal" shall have the same meaning.
- 1.035 Execution Date:** Date of last signature of the parties to the Agreement.
- 1.036 Field Order:** A written authorization by the Owner for a minor variation in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Amount or Contract Time Requirements and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
- 1.037 Final Completion:** The point in time when Owner determines that all Work has been completed and the Contract fully performed except for those obligations that survive final payment.
- 1.038 Force Account:** A basis of payment for the direct performance of Work with payment based on the Cost of the Work and consideration for overhead and profit, as set forth in Section 11.5.
- 1.039 Force Majeure:** For purposes of this Contract, events of "force majeure" shall consist of the following, to the extent that they are beyond the reasonable control of Contractor and also cause Delay to the Critical Path of the Project: (i) acts of God, (ii) acts of war, (iii) terrorist acts, (iv) civil unrest, (v) riots, (vi) labor

- disputes (excluding disputes with laborers on the Project), (vii) unavoidable material shortages, (viii) fire or other casualty loss (not attributable to the acts or omissions of Contractor or any Subcontractor of any tier), (ix) newly announced or enacted governmental restrictions, (x) acts or inactions of governmental agencies other than the Owner and outside of the Owner's responsibility and control; or (xi) an event, occurrence, or series of events or occurrences which are beyond the scope and provisions of the Flood Risk Mitigation Plan, as certified by the Professional Engineer who prepared it (or his or her successor).
- 1.040 Hazardous Conditions:** Are any materials, wastes, substances, and chemicals deemed to be hazardous under applicable Legal Requirements or the handling, storage, remediation, or disposal of which are regulated by applicable Legal Requirements.
- 1.041 Not used.**
- 1.042 Legal Requirements:** Are all applicable federal, state, and local laws, codes, ordinances, rules, regulations, orders, and decrees of any governmental or quasi-governmental entity having jurisdiction over the Project or Site, the practices involved in the Project or Site or any Work.
- 1.043 Legal Holidays:**
- .1** The following are recognized by the Owner:
- | <u>Holiday Observed</u> | <u>Date</u> |
|---------------------------|-----------------------------|
| New Year's Day | January 1 |
| Martin Luther King Day | Third Monday in January |
| Presidents' Day | Third Monday in February |
| Memorial Day | Last Monday in May |
| Independence Day | July 4 |
| Labor Day | First Monday in September |
| Veterans Day | November 11 |
| Thanksgiving Day | Fourth Thursday in November |
| Friday after Thanksgiving | Friday after Thanksgiving |
| Christmas Eve | December 24 |
| Christmas Day | December 25 |
- .2** If a Legal Holiday falls on Saturday, it will be observed on the preceding Friday. If a Legal Holiday falls on Sunday, it will be observed on the following Monday.
- 1.044 Major Subcontractor:** Means a Subcontractor of the Contractor whose Subcontract amount with the Contractor exceeds or is reasonably expected to exceed the sum of \$50,000.00.
- 1.045 Manufacturer:** An individual or entity who produces goods, materials, or equipment for use or sale and has a direct contract with Contractor or Supplier or any Subcontractor or Sub-Subcontractor to furnish materials or equipment to be incorporated in the Work.
- 1.046 Master Project Schedule:** Is the most recent version of the Contractor's Project Schedule which has been formally accepted by the Owner.
- 1.047 Mechanical Completion:** Means when the specified Work has been delivered, constructed, installed, and Contractor has successfully completed all required local functional testing, obtained Manufacturers' certificates of proper installation, and completed operations readiness testing such that all improvements and equipment are ready for performance testing.
- 1.048 Milestones:** Means a significant event specified in the Owner's Project Schedule or the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

- 1.049 Modification:** Means a written amendment to the Contract, including but not limited to (1) a Change Order, or (2) a Change Directive.
- 1.050 Notice to Proceed:** A Written Notice given by Owner to Contractor fixing the date on which the Contract Time Requirements will commence to run by establishing Date of Commencement of the Work covered by the Written Notice and on which Contractor shall start to perform Contractor's obligations under the Contract Documents for such Work.
- 1.051 Owner:** The San Jacinto River Authority (the "SJRA" or the "Owner"), a public entity, organized and existing under the laws of the State of Texas, acting through the SJRA Board of Directors, the SJRA General Manager or his/her designee, officers, agents or employees to administer design and construction of the Project.
- 1.052 Owner's Independent Contractor:** A contractor who has been employed separately by the Owner and is not a Subcontractor of the Contractor.
- 1.053 Owner's Project Schedule:** Means the dates indicated in the Instructions to Bidders/Offerors and all Contract Time Requirements.
- 1.054 Owner's Representative:** The designated representative or representatives of the Owner. Owner's Representative may be designated from the Owner's staff, the Principal Architect/Engineer, an Owner's Independent Contractor(s), or an Owner's consultant(s) employed for the purpose of representing the Owner on a given Project or Projects.
- 1.055 Partial Occupancy or Use:** Use by Owner of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Substantial Completion of all the Work, provided Owner and Contractor have, with respect to such part of the Work, accepted in writing the responsibilities assigned to each of them for payments, retainage if any, security, maintenance, utilities, corrective work, insurance and warranties.
- 1.056 Pre-construction Conference:** Is the required meeting between the Owner and the Contractor before Work can be initiated in the field. Contractor will have made all of the required submittals prior to the date of the Pre-construction Conference in accordance with Section 2.4.2.
- 1.057 Preliminary Project Schedule:** Is the initial Contractor's Schedule for the Work required under Section 2.4.2 and must conform to and be integrated with the Milestones contained in the Owner's Project Schedule for the Work and is subject to Owner's approval.
- 1.058 Principal Architect/Engineer (Engineer):** The Owner's design professional identified as such in the Contract. The terms "Principal Architect/Engineer" and "Engineer", as indicated with initial capital letters, mean the same entity, as defined in the Agreement. References to Principal Architect/Engineer in these General Conditions shall refer to the Owner's Principal Architect/Engineer (Engineer), except as otherwise expressly provided herein. Nothing contained in the Contract Documents shall create any contractual or agency relationship between the respective Principal Architect/Engineer and Contractor. References can be singular or plural and will apply to all of the Principal Architects or Engineers as may be applicable.
- 1.059 Project:** Total construction, of which the Work performed under Contract may be the whole or part, and which may include construction by the Owner or by Owner's Independent Contractors.
- 1.060 Project Manual:** That portion of the Contract Documents which may include the following: introductory information; bidding requirements, Contract forms, Agreement, General Conditions, Supplemental General Conditions; General Requirements; Specifications; Drawings; Project Safety Manual; and Addenda.

- 1.061 Project Schedule:** Is the Contractor's most recent schedule submitted to the Owner.
- 1.062 Project Team:** Means the Owner, the Owner's Representative, the Contractor, the Principal Architect/Engineer, any consultants of the Principal Architect/Engineer designated by the Owner, any Owner's Independent Contractors, and any Owner's consultants employed for the purpose of programming, design, and construction of the Project. The constitution of the Project Team may vary at different stages of the Work. The Project Team will be designated by Owner and may be modified from time to time by Owner.
- 1.063 Not used.**
- 1.064 Recovery Schedule:** Means a short duration schedule implemented to bring the Work back on schedule to achieve the Contract Time Requirements for the Project.
- 1.065 Rental Rate Blue Book:** Is the document published by EquipmentWatch which identifies the rental rates for equipment in the construction industry.
- 1.066 Resident Project Representative:** The authorized representative of the Owner's staff, the Principal Architect/Engineer, or an Owner's consultant who may be assigned to the Site or any part thereof. Not all Projects will utilize a Resident Project Representative.
- 1.067 Schedule of Values:** Is a schedule, prepared and maintained by the Contractor, allocating portions of the Contract Amount to various portions of the Work, including a tabulation of all of the costs of the various Subcontracts and materials which in the aggregate make up the Contract Amount. The Schedule of Values shall be subject to Owner's approval and, after such approval, be used as the basis for reviewing the Contractor's Applications For Payment.
- 1.068 Scope of Work:** Is the entire Work which is included within the Contract for this Project. This term can also be used to describe the subset of Work which is included within a particular Trade Subcontract.
- 1.069 Shop Drawings:** All drawings, diagrams, illustrations, schedules and other data or information which are specifically prepared or assembled for the Work by or for Contractor, subcontractor or supplier and submitted by Contractor as required by the Contract Documents.
- 1.070 Site:** Is the land or premises on which the Project is located.
- 1.071 Specifications:** Those portions of the Contract Documents furnished by Owner through its respective Principal Architects/Engineers consisting of written technical descriptions as applied to the Work, which set forth to Contractor, in detail, the requirements which must be met by all materials, equipment, construction, systems, standards, workmanship, and services as applied to the Work and certain administrative requirements and procedural matters.
- 1.072 Start-Up:** This is the subset of Commissioning at which time the Project equipment and / or systems are placed in full operation in preparation for the operational testing phase of the Project.
- 1.073 Stipulated Sum:** Single lump sum amount stated for the completion of the Work or a portion thereof required by this Contract.
- 1.074 Substantial Completion:** The stage in the progress of the Work when the Work, or designated portion thereof, is sufficiently complete in accordance with the Contract Documents so Owner can occupy or utilize the Work for its intended use, as evidenced by a Certificate of Substantial Completion approved by Owner, as further defined in Article 14.07.
- 1.075 Subcontractor (or Trade Subcontractor):** An individual, firm, corporation, or other business entity having a direct contract with the Contractor for the performance of a portion of the Work under the Contract. A Subcontractor includes a supplier of tools, equipment or materials as well as an individual or

- entity renting tools or equipment to the Contractor. For purposes of this Contract, unless designated otherwise, the term "Subcontractor" shall include all Sub-Subcontractors and Suppliers in contractual privity to the Subcontractor.
- 1.076 Sub-Subcontractor:** An individual, firm, corporation, or other business entity who has a direct or indirect contract with a Subcontractor of any tier to perform a portion of the Work, to furnish tools, equipment or materials, or to rent tools or equipment. For purposes of this Contract, unless designated otherwise, the term "Sub-Subcontractor" shall include all lower tier subcontractors and Suppliers in contractual privity to the Sub-Subcontractor.
- 1.077 Superintendent:** The representative of Contractor authorized in writing to receive and fulfill instructions from the Owner's Representative, and who shall supervise and direct construction of the Work.
- 1.078 Supplemental General Conditions:** The part of the Contract Documents which amends or supplements the General Conditions, but only to the extent provided therein. Not all Projects will utilize Supplemental General Conditions. All General Conditions which are not so amended or supplemented remain in full force and effect.
- 1.079 Supplier:** An individual or entity having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment or products, or services to be incorporated in the Work by Contractor or any Subcontractor.
- 1.080 Surety:** Corporate entity that is bound by one or more Bonds, and is responsible for the completion of the Work, including during the correction period, and for payment of debts incurred by Contractor or Subcontractors for work, services, labor, materials or equipment provided in connection with the Work. Surety shall include any co-surety or reinsurer, as applicable.
- 1.081 Underground Improvements:** Is defined in Section 4.2.3 of these General Conditions.
- 1.082 Unit Price:** An amount stated in the Contract for an individual, measurable item of work, which, when multiplied by actual quantity incorporated into the Work, amounts to full compensation for completion of the item, including work incidental to it.
- 1.083 Unit Price Quantities:** Quantities indicated in the Contract that are approximations made by the Owner for contracting purposes.
- 1.084 Unit Price Work:** Is any Work which is to be executed based upon a Unit Price for that Work which has been agreed upon in advance between the Parties in accordance with Section 11.6 of these General Conditions.
- 1.085 Unusual Inclement Weather:** Is defined in Section 12.2 of these General Conditions.
- 1.086 Value Analysis:** Means the systematic application of recognized techniques by a multi-disciplined team to identify the function of a product or service, establish a worth for that function, generate alternatives through the use of creative thinking, and provide the needed functions to accomplish the original purpose of the Project, reliably, without sacrificing safety, necessary quality, or environmental attributes of the Project.
- 1.087 Work:** The entire completed construction, or the various separately identifiable parts thereof, required to be furnished under the Contract Documents, including all labor, products, equipment, material, supervision, insurance, temporary facilities and services provided by Contractor to fulfill Contractor's obligations. The Work may constitute the whole or a portion of the Project.
- 1.088 Working Day:** Any day of the week, not including Saturdays, Sundays, or Legal Holidays in which conditions under the Contractor's control will permit work for a continuous period of not less than seven (7) hours during Working Hours. Upon

agreement with Owner, work on Saturdays, Sundays and/or Legal Holidays may be allowed and will be considered a Working Day.

1.089 Working Hours: Those hours in which the Work shall be performed. Except as otherwise authorized in writing by Owner's, all Work shall be done between 7:00 a.m. and 6:00 p.m. However, emergency work may be done without prior permission as indicated in Section 6.11.07. Night Work may be revoked at any time by Owner if Contractor fails to maintain adequate equipment and supervision for the prosecution and control of the night Work.

1.090 Written Notice: Written communication between Owner and Contractor. Written Notice shall be deemed to have been duly served if delivered in person to Owner's Representative or Contractor's duly authorized representative, or if delivered at or sent by registered or certified mail with proper postage affixed to the attention of Owner's Representative or Contractor's duly authorized representative at the last business address known to the party giving notice, or by facsimile to the facsimile number known to the party giving notice, provided any notice delivered by facsimile after 5:00PM shall be deemed delivered on the next business day.

ARTICLE 2 - PRELIMINARY MATTERS

2.1 Delivery of Contract, Bonds, Insurance, etc.: After written notification to Contractor of anticipated award of Contract, and at least ten (10) days prior to the SJRA Board of Directors Meeting at which a contract award is anticipated, Contractor shall deliver to Owner original, hard copies of the signed Agreement, unsigned Bond forms, required evidence of insurance, including without limitation, all certificates of insurance and endorsements, signed disclosure of interested parties (Form 1295), signed Conflict of interest Questionnaire, and signed and notarized Verification Company Does Not Boycott Israel, as identified in the Bid/Proposal Documents. Within three (3) days of Contractor's receipt of the fully executed Agreement, the Contractor shall deliver the original, hard copy fully executed Bonds to Owner. The requirements of this Section 2.1 apply regardless of whether or not the Agreement is also executed using electronic signatures or transmitted electronically. Any violation of this Section 2.1 by Contractor shall render the Contract voidable by Owner.

2.2 Copies of Documents: Owner shall furnish to Contractor up to ten (10) copies of the Contract Documents unless otherwise specified. Additional copies will be furnished, upon request, at a cost to be specified by the Owner.

2.3 Commencement of Contract Time Requirements; Notice to Proceed: The applicable Contract Time Requirements will begin to run on the day indicated in the Notice to Proceed for the Work covered in such Notice.

2.4 Before Starting Construction:

2.4.1 No Work shall be done at the Project Site prior to the Pre-construction Conference without Owner's written approval. Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents to check and verify pertinent figures shown thereon and compare them accurately to all applicable field measurements and conditions and other information known to Contractor and other information made available to Contractor by Owner. Contractor shall promptly report in writing to Owner's Representative any conflict, error, ambiguity or Discrepancy which Contractor may discover and shall obtain a written interpretation or clarification from Owner's

Representative before proceeding with any Work affected thereby. Contractor shall be liable to Owner for failure to report any conflict, error, ambiguity or Discrepancy in the Contract Documents about which Contractor knew or reasonably should have known.

2.4.2 Successful completion of the Work within the applicable Contract Time Requirements is of primary importance. **Time is of the essence to this Contract.** Therefore, the Contractor hereby agrees to submit to the Owner's Representative for review and approval, or acceptance, as appropriate, all information required by this section, including both a Preliminary Project Schedule for the Work and the Flood Risk Mitigation Plan within thirty (30) days from date of the Owner's issuance of the Notice To Proceed with the Work or at the scheduled Pre-construction Conference, whichever is later. The Owner's Representative will schedule the Pre-construction Conference upon the timely submittal of the required documents, unless the allowable time for providing the required submittals is extended by written mutual agreement. Prior to the date scheduled for the Pre-construction Conference, the Contractor will submit the following to the Owner:

- .01** A proposed Preliminary Project Schedule (the "Preliminary Project Schedule") for the Work developed using the scheduling software authorized in Section 6.03 of the General Conditions, unless otherwise approved by Owner, to confirm that all Work will be completed within the respective Contract Time Requirements. The Preliminary Project Schedule must satisfy the requirements of Section 6.03 of these General Conditions and must be prepared in accordance with Division 01 - Section 01 32 16, Construction Progress Schedules. Such Preliminary Project Schedule shall also conform to the Owner's Project Schedule. This Preliminary Project Schedule must contain sufficient detail to indicate that the Contractor has properly identified required Work elements and tasks, has provided for a sufficient and proper workforce and integration of Subcontractors and Suppliers, has provided sufficient resources and has considered the proper sequencing of the Work required to result in a successful Project that can be completed within the Contract Time Requirements. The Project Schedule and Schedule of Values shall be developed together to permit the Work progress to be accurately reflected in the Contractor's Applications for Payment.
- .02** An organizational chart showing the principals and management personnel who will be involved with the Work, including each one's responsibilities for the Work;
- .03** A complete listing of the Contractor's key employees proposed for the Work. List each one by name and job title, and show length of employment with Contractor.
- .04** Emergency contact telephone numbers for the Project Manager and the project Superintendent.
- .05** A discussion and confirmation of the Contractor's commitment to health, safety and environment by providing a copy of its Health, Safety and Environmental Policies, employee's safety handbook and the safety records for the past three years of Contractor's proposed project manager and Superintendent;
- .06** A preliminary schedule of Shop Drawings and sample submittals;

- .07** A preliminary Schedule of Values for all of the Work, subdivided into component parts in sufficient detail to serve as the basis for progress payments during construction. At a minimum, the schedule of values shall be broken out by trade and split between materials and labor as commented on and accepted by Owner. Such prices will include overhead and profit applicable to each item of Work;
- .08** A letter designating Contractor's Superintendent and project manager, and a confirmation of past project experience for the Contractor's Superintendent and project manager specifically applicable to the Work;
- .09** A letter designating the "Competent Person(s)" on general safety and excavation safety measures along with certifications or other documentation of the safety representative's qualifications;
- .10** If applicable, an excavation safety system plan;
- .11** If applicable, a plan illustrating proposed locations of temporary facilities;
- .12** A letter designating the Texas Registered Professional Land Surveyor for layout of the Work, if the Work requires the services of a licensed surveyor; and
- .13** The Flood Risk Mitigation Plan [_____]

2.4.3 Neither the rejection, acceptance, comment on nor the approval of any of the submittals required in Section 2.4.2, above, will constitute either the adoption, affirmation, or direction of the Contractor's means and methods of the performance of the Work which remain the sole responsibility of the Contractor. Owner shall not be responsible for, and will not have control or charge of, construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, and shall not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. Owner shall not be responsible for or have control or charge over the acts or omissions of Contractor, Subcontractors or any of their agents or employees or any other persons performing any of the Work.

2.5 Pre-construction Conference: Prior to commencement of Work at the Site, Contractor must attend a Pre-construction Conference with Owner's Representative and others required by Owner, and participate in an inspection of the Project Site if required by Owner.

2.6 Initially Acceptable Schedules: Unless otherwise provided in the Contract Documents, Contractor shall obtain approval of Owner of the Preliminary Project Schedule submitted in accordance with Section 2.4.2.01 before the first progress payment will be made to Contractor. The Preliminary Project Schedule must provide for an orderly progression of the designated portion of the Work to completion within the Contract Time Requirements, including any specified Milestones, and shall permit the Work progress to be accurately reflected in the Contractor's Applications for Payment. Approval of the Preliminary Project Schedule by Owner will not impose on Owner responsibility or liability for the sequencing, scheduling or progress of the Work, nor shall it constitute interference with, nor shall it relieve Contractor from Contractor's full responsibility for the Work. Contractor's schedule of Shop Drawings and sample submissions shall provide adequate time, in Owner's opinion, for properly reviewing and processing the required submittals. Contractor's Schedule of Values must conform to the requirements set forth in the Contract. The process of

approving Preliminary Project Schedule and updates to the Master Project Schedule shall not constitute a warranty by the Owner that any non-Contractor milestones or activities will occur as set out on the Preliminary Project Schedule or the Master Project Schedule, or approval of the logic set out in the Preliminary Project Schedule or Master Project Schedule. Approval of the Preliminary Project Schedule, the Master Project Schedule or any updates thereto does not constitute a warranty by the Owner to furnish any Owner-furnished information or services any earlier than Owner would otherwise be obligated to furnish that information or services under the Contract Documents. Failure of the Work to proceed in the sequence scheduled by Contractor shall not serve as any basis for a Claim for additional compensation or adjustment of the Contract Time Requirements.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.1 Intent: The intent of the Contract Documents is to include all information necessary for the proper execution and timely completion of the Work by Contractor. The Contractor will execute the Work described in and reasonably inferable from the Contract Documents as necessary to produce the results intended by the Contract Documents.

3.1.1 The Contract Documents are complementary in nature, and what is shown in one location on the Drawings or Specifications shall be construed to apply to all other similar locations of the Drawings and Specifications. In the event of any internal inconsistency in either the Drawings or Specifications, or with each other, the Owner shall resolve such inconsistency and Contractor shall perform in accordance with the Owner's determination. In the determination of the Contract Amount, the Contractor has provided for such further development consistent with the Contract Documents and reasonably inferable therefrom. It is the intent and understanding of Contractor that the Contract Amount includes the construction of completed and tested Work by the Contractor, including all devices, fasteners, materials or other work not shown in the Drawings and Specifications but which are reasonably inferable therefrom and any and all incidental accessories necessary to make the Work complete and operable in all respects (even if not specified in the description of the Work, but necessary for proper installation and operation of the Work under the Drawings and Specifications), all of which shall be included in the Contract Amount.

3.1.2 The expression "reasonably inferable" and similar terms in the Contract Documents shall be interpreted to mean reasonably inferable by a contractor familiar with the Project and exercising the care, skill and diligence of the Contractor required by the Contract Documents. Such further development does not include such things as changes in scope, systems, kinds and quality of materials, finishes or equipment, all of which, if required, shall be incorporated by Change Order or Change Directive. The Contract Documents shall be interpreted with the understanding that a common sense approach will be utilized as necessary so that the Contract Documents produce the intended results for the benefit of the Owner as follows:

.1 The Contract Documents are intended to be complimentary and interpreted in harmony so as to avoid conflict. Words and phrases will be interpreted in a manner consistent with construction and design industry

standards. What is required by any Contract Document shall be required by all of them;

- .2** In the event of any inconsistency, conflict or ambiguity between or among the Contract Documents that cannot be harmonized so as to avoid conflict, the Contract Documents shall take precedence in the following order: Modifications, documents amending, modifying or supplementing the Contract Documents pursuant to Article 3.3 of the General Conditions, the Agreement, Exhibits to the Agreement, the Supplemental Conditions (if any), the General Conditions, Instructions to Bidders/Offerors, Notice to Proceed, Addenda, Specifications, Drawings, Contractor's Bid/Proposal, Documentation submitted by Contractor prior to Notice of Award and attached to the Agreement, Performance, Payment and Maintenance Bonds; and
- .3** The definitions of terms herein shall apply equally to the singular and plural forms of the terms defined. Whenever the context may require, any pronoun shall include the corresponding masculine, feminine and neuter forms. The words "include", "includes" and "including" shall be deemed to be followed by the phrase "without limitation". Unless the context requires otherwise (a) any definition of or reference to any agreement, instrument or other document herein shall be construed as referring to such agreement, instrument or other document as from time to time amended, supplemented or otherwise modified (subject to any restrictions on such amendments, supplements or modifications set forth herein), (b) any reference herein to any Party shall be construed to include such Party's successors and assigns (subject to the restrictions contained herein), and (c) the words "herein", "hereof" and "hereunder", and words of similar import, shall be construed to refer to the entirety of the Contract Documents and not to any particular provision, unless the context clearly dictates otherwise. No provision of this Agreement shall be interpreted or construed against any Party because such Party or its legal representative drafted such provision.

3.1.3 Standards, Specifications, Codes, Laws, and Regulations

- .1** Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Legal Requirements, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Legal Requirements in effect at the time of opening of Bids/Proposals (or on the Effective Date of the Agreement if there were no Bids/Proposals) and as amended, modified, codified or reenacted, in whole or in part, and in effect from time to time, except as may be otherwise specifically stated in the Contract Documents.
- .2** No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, or the Principal Architect/Engineer, or any of their related entities any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake

responsibility inconsistent with the provisions of the Contract Documents.

3.2 Reporting and Resolving Discrepancies: If, during the performance of the Work, Contractor discovers any Discrepancy within the Contract Documents or between the Contract Documents and any provisions of any Legal Requirements or of any such standard, specification, manual or code or instructions of any Supplier, Contractor shall report it to Owner's Representative in writing at once, and Contractor shall not proceed with the Work affected thereby until a clarification, an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Section 3.3.1 or Section 3.3.2 below. Contractor shall be liable to Owner for failure to report any such Discrepancy that Contractor knew about or should reasonably have discovered in fulfilling its obligations arising from the Contract.

3.3 Clarifying, Amending and Supplementing Contract Documents:

3.3.1 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 ways:

- .1** Change Order.
- .2** Change Directive.

3.3.2 In addition, the requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work that do not affect the Contract Amount or Contract Time Requirements may be authorized, in one or more of the following ways:

- .1** Field Order.
- .2** Shop Drawing or sample approved in accordance with the Contract Documents.
- .3** Written interpretation or clarification issued in accordance with the Contract Documents.

3.4 Reuse of Documents Prohibited: Contractor and any Subcontractor or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with Owner: (i) shall not have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of Principal Architect/Engineer or Principal Architect/Engineer's consultant, and (ii) shall not reuse any of such Drawings, Specifications, other documents or copies on extensions of the Project or any other project without written consent of Owner and Principal Architect/Engineer. Contractor may retain one (1) set of such documents for its records.

3.5 Not Used.

3.6 Electronic Data: Owner utilizes Microsoft SharePoint or similar document management software (the "Program") for its projects. Contractor will be provided access to the Program solely for purposes of Contractor's performance of its obligations under the Contract, at no cost to Contractor. The Program may be used to handle management, distribution and submission of all Project documents (including without limitation drawings, specifications, submittals, RFIs, schedules, etc.). Contractor must access the Program for all such Project documents, unless

otherwise directed in writing by Owner. Contractor is responsible for all of the content contained in the Program related to the Project, including but not limited to all periodic updates, revisions and additions to the Project documents contained therein. All Project documents contained in the Program shall be deemed delivered to Contractor. Contractor is responsible for ensuring and maintaining compatibility of Contractor's computer systems with the Program. Contractor shall take all necessary precautions to prevent any unauthorized access to the Program and the Project documents contained therein, and to prevent any virus or malware infiltration of the Program. **CONTRACTOR SHALL COMPLY WITH ALL MICROSOFT OR OTHER SIMILAR DOCUMENT MANAGEMENT SOFTWARE VENDOR TERMS AND CONDITIONS APPLICABLE TO CONTRACTOR'S USE OF THE PROGRAM, AND SHALL DEFEND, INDEMNIFY AND HOLD HARMLESS OWNER FROM AND AGAINST ANY AND ALL CLAIMS, DAMAGES, LIABILITY, LOSS, COST AND EXPENSE, INCLUDING BUT NOT LIMITED TO ATTORNEYS' FEES, INCURRED AS A RESULT OF ANY CONTRACTOR BREACH OF SUCH TERMS AND CONDITIONS (COLLECTIVELY "CLAIMS" AS USED IN THIS SECTION 3.6), EVEN IF SUCH CLAIMS ARE CAUSED IN PART BY, BUT NOT TO THE EXTENT CAUSED BY, THE NEGLIGENCE OR FAULT, THE BREACH OR VIOLATION OF A STATUTE, ORDINANCE, GOVERNMENTAL REGULATION, STANDARD, OR RULE, OR THE BREACH OF CONTRACT OF OWNER, ITS AGENT OR EMPLOYEE, OR ANY THIRD PARTY UNDER THE CONTROL OR SUPERVISION OF OWNER, OTHER THAN CONTRACTOR OR ITS AGENT, EMPLOYEE OR SUBCONTRACTOR OF ANY TIER.** Any use, interpretation, conclusion or information obtained or derived from such Program information and documents will be at the user's sole risk. If there is a conflict or inconsistency between the Program information or documents and any hard copies furnished to Contractor, Contractor shall promptly notify Owner and Principal Architect/Engineer in writing, and shall not rely upon such Program information or documents or the hard copies furnished to Contractor until such conflict or inconsistency is resolved in writing by Owner or Principal Architect/Engineer. When distributing documents in electronic media format, Owner makes no representations as to compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those which are used by Owner or the data's creator.

ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS

4.1 Availability of Lands: The Owner will provide access to all land and interests in land required for the Work and will notify Contractor of any known restrictions in such access. Contractor may make a Claim if, after having received seventy-two hours' prior written notice, the Owner fails to provide timely access to the Work. Contractor is solely responsible for and must obtain any additional temporary construction facilities, stockpiling or storage sites not otherwise provided by the Owner.

4.1.1 In the event that Owner has agreed to provide any special licenses or easement(s) relating to the Work and in the event that Delays in the Work that are the responsibility of the Contractor cause the Work to be Delayed to the point that the ending date of such a license or easement has been exceeded, the Contractor shall reimburse the Owner for any additional costs and/or expenses incurred by Owner (including but not limited to reasonable

attorneys' fees) in endeavoring to extend or renew the duration of any such license or easement in order to facilitate the completion of the Work.

4.2 Subsurface and Physical Conditions:

4.2.1 Contractor specifically represents that it has carefully examined the plans, the geotechnical report, if any, the Flood Risk Mitigation Plan, and the Site of the proposed Work and is thoroughly familiar with all of the conditions surrounding construction of the Project, having had the opportunity to conduct any and all additional inquiry, tests and investigation that he/she deems necessary and proper, to satisfy itself as to conditions, including but not limited to subsurface conditions, at the Site of the Work, and to inform itself by its independent research, tests and investigations of the difficulties to be encountered and to judge for itself the accessibility of the Work and all attending circumstances affecting the cost of doing the Work or time required for its completion. Contractor acknowledges the receipt of the geotechnical report, if any, and agrees that the report is not a guarantee of specific Site conditions which may vary between boring locations and over time, and is not a Contract Document. Contractor may not rely upon or make any Claim against Owner with respect to any Contractor interpretation of or conclusion drawn from any data, interpretations, opinions or information contained in such reports or shown or indicated in such drawings. Contractor shall make no claims against the Owner and shall bear all risk of losses, if any, resulting on account of the amount and character of the Work, or because the conditions under which the Work must be done vary or differ from conditions or information contained in the Contract Documents, or are different from what were estimated or anticipated by it. However, to the extent delays, disruption, or interference to performance or progress of the Work results from flooding or other rain events that constitute Force Majeure pursuant to item (xi) of its definition, Contractor may seek the relief afforded for Compensable Delays, subject to and in accordance with Section 10.5.

4.2.2 Except as provided in Section 4.2.5 below, Contractor must notify Owner in writing as soon as reasonably possible, but no later than three (3) calendar days, if unforeseen conditions are encountered at the Site which are (i) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or other information provided by Owner to Contractor or (ii) unknown physical conditions of an unusual nature, that differ materially from those normally encountered in the type of Work being performed under this Contract. Contractor may not disturb the conditions until Owner conducts an investigation of such conditions. Upon receipt of notice from the Contractor, the Owner's Representative will promptly investigate such conditions with the Principal Architect/Engineer.

4.2.3 Notwithstanding any other provision of this Contract, Contractor is solely responsible for the location and protection of any and all underground utilities, pipelines, facilities and improvements, whether public or private, and whether utility distribution, supply or collection systems, or lines connecting customers to utility distribution, supply or collection systems, and including but not limited to all electric, telecommunication, gas, water, storm sewer and sanitary sewer lines, and all pipes, conduits, cables, wires, manholes, vaults, tanks, and tunnels (collectively "Underground Improvements"). Contractor shall notify "One Call" and shall retain a private underground locator service,

and shall exercise due care to locate, mark, uncover and otherwise protect all Underground Improvements in the construction zone and any of Contractor's Work or storage areas. Contractor's responsibility for the location and protection of Underground Improvements is primary and non-delegable. **Contractor shall defend and indemnify Owner from and against any losses, Claims, expenses, costs or penalties (including fines that may be levied against Owner) that may result from damage to any Underground Improvements in the Work area.** Owner reserves the right to repair any damage Contractor causes to such Underground Improvements at Contractor's expense or to offset the cost of such repairs against funds then or thereafter due Contractor pursuant to the Contract. If any Underground Improvements are damaged by Contractor, Contractor shall give verbal notice to the Owner's Representative within one (1) hour and written notice within twenty-four (24) hours after such damage occurs.

4.2.4 Contractor shall take reasonable precaution to avoid disturbing primitive records and antiquities of archaeological, paleontological or historical significance. No objects of this nature shall be disturbed without written permission of Owner and Archeology Division, Texas Historical Commission. When such objects are uncovered unexpectedly, Contractor shall stop all Work in close proximity and immediately notify the Owner's Representative and Archeology Division, Texas Historical Commission of their presence. Contractor shall reference Texas Water Development Board Emergency Conditions for cultural resources in the event of accidental discoveries. Contractor shall not disturb them until written permission and permit to do so is granted by the governing authorities and Owner. All primitive rights to antiquities uncovered on Owner's property shall remain property of State of Texas, Archeology Division, Texas Historical Commission in accordance with the Texas Natural Resources Code. If it is determined by Owner, in consultation with Archeology Division, Texas Historical Commission, that exploration or excavation of primitive records or antiquities on Project Site is necessary to avoid loss, Contractor shall cooperate in salvage work attendant to preservation. If the Work stoppage or salvage work causes an increase in Contractor's cost of, or time required for, performance of the Work, the Contract Amount and/or Contract Time Requirements will be equitably adjusted.

4.2.5 Environmental Conditions: Contractor shall immediately stop all Work and must notify Owner in writing as soon as reasonably possible, but no later than one (1) calendar day after any significant environmental conditions are encountered at the Site which are or may be subject to any Legal Requirements. Contractor shall reference Texas Water Development Board Emergency Conditions for threatened and endangered species in the event of accidental discoveries. Contractor shall not disturb the conditions until Owner conducts an investigation. Owner's Representative and Principal Architect/Engineer will promptly investigate such conditions. If it is determined that such conditions are subject to Legal Requirements, did not result from any Hazardous Conditions brought to the Site by Contractor or any Subcontractor, and cause an increase or decrease in the Contractor's cost of or time required for performance of any part of the Work, Owner's Representative will recommend an equitable adjustment in the Contract Amount or Contract Time Requirements, or both. If it is determined that such conditions are not subject to Legal Requirements or resulted from any

Hazardous Conditions brought to the Site by Contractor or any Subcontractor, Owner's Representative will notify Contractor in writing of such findings and the Contract Amount and Contract Time Requirements will not be adjusted. Contractor may dispute such a determination in accordance with Article 16.

4.3 Reference Points: Unless otherwise specified, primary control lines and bench marks suitable for use in layout will be furnished by Owner. Lay out of the Work shall be performed in accordance with the requirements of Division 01. Controls, bench marks and property boundary markers shall be carefully preserved by Contractor by use of flags, staffs or other visible devices and in case of destruction or removal by Contractor, any Subcontractor or their employees, such controls and bench marks shall be replaced by a Texas Registered Professional Land Surveyor at Contractor's expense. Any SJRA survey monuments damaged by Contractor will be reestablished by Owner at Contractor's expense.

4.4 Hazardous Conditions:

4.4.1 Contractor shall not be responsible for any Hazardous Conditions uncovered or revealed at the Site which were not shown, indicated or identified in the Contract Documents to be within the scope of the Work, and which were not brought onto the Site by the Contractor or the Subcontractors. Contractor shall immediately notify Owner's Representative of any such suspected Hazardous Conditions encountered at the Site before or during performance of the Work, and shall stop Work immediately in the affected area, and take all necessary precautions to avoid disturbance of the Hazardous Conditions.

4.4.2 Contractor shall be responsible for any Hazardous Conditions brought to the Site by Contractor, Subcontractor, Suppliers or anyone else for whom Contractor is responsible.

4.4.3 No asbestos-containing materials or lead-based paint shall be incorporated into the Work or brought on the Project Site without prior written approval of Owner. The Contractor shall not knowingly use, specify, request or approve for use any asbestos containing materials or lead-based paint without the Owner's written approval. When a specific product is specified, the Contractor shall endeavor to verify that the product does not include asbestos containing material or lead-based paint.

4.4.4 Refer to Section 1.040 Hazardous Conditions definitions and to Division 01 for procedures related thereto.

.1 Not used.

.2 Upon receiving notice of the presence of suspected Hazardous Conditions, Owner shall take the necessary measures required to ensure that the Hazardous Conditions are remediated or rendered harmless. Such necessary measures shall include Owner retaining qualified independent consultants to (i) ascertain whether Hazardous Conditions have actually been encountered, and, if they have been encountered, (ii) prescribe the remedial measures that Owner must take either to remove the Hazardous Conditions or render the Hazardous Conditions harmless.

.3 Contractor shall be obligated to resume Work at the affected area of the Project only after Owner or its qualified independent consultant

provides written certification that (i) the Hazardous Conditions have been removed or rendered harmless and (ii) all necessary approvals have been obtained from all government and quasi-government entities having jurisdiction over the Project or Site. The Contractor shall be responsible for continuing the Work in the unaffected portion of the Project and Site.

- .4 Contractor will be entitled, in accordance with these General Conditions, to an adjustment in its Contract Amount and/or Contract Time Requirements to the extent Contractor's cost of performance is actually increased and/or the Critical Path of the Work has been delayed by the presence of Hazardous Conditions discovered at the Site.
- .5 Notwithstanding anything in the Contract Documents to the contrary, Owner, its officers, directors, agents and employees, and the Owner's Representative, the Principal Architect/Engineer, the Principal Architect/Engineer's Consultants and Subconsultants and their respective officers, directors, partners, employees and agents are not responsible for Hazardous Conditions introduced to the Site by Contractor, Subcontractors or anyone for whose acts they may be liable. Contractor shall be responsible for use, storage and remediation of any Hazardous Conditions brought to the Site by Contractor, Subcontractors, Suppliers or anyone else for whom Contractor is responsible. **Contractor shall defend, indemnify and hold harmless Owner and Owner's officers, directors, employees and agents and the Owner's Representative, the Principal Architect/Engineer, the Principal Architect/Engineer's Consultants and Subconsultants and their respective officers, directors, partners, employees and agents from and against any and all claims, losses, damages, liabilities and expenses, including attorneys' fees and court costs, arising out of or resulting from Hazardous Conditions introduced to the Site by Contractor, Subcontractors or anyone for whose acts they may be liable. Notwithstanding the foregoing, if Subchapter C of Chapter 151 of the Texas Insurance Code applies to the Contract, the obligation to defend, indemnify and hold harmless set forth in this Section 4.4.4.5 shall not apply to the extent prohibited by Subchapter C of Chapter 151 of the Texas Insurance Code.**

ARTICLE 5 - BONDS AND INSURANCE

- 5.1 Surety and Insurance Companies:** All Bonds and insurance required by the Contract Documents shall be obtained from solvent surety or insurance companies that are duly admitted and licensed by the State of Texas and authorized to issue bonds or insurance policies for the limits and coverages required by the Contract Documents. Bonds shall be in a form acceptable to Owner and shall be issued by a surety which complies with the requirements of Chapter 3503 of the Texas Insurance Code. The Surety must obtain reinsurance for any portion of the risk that exceeds 10% of the Surety's capital and surplus. For bonds exceeding \$100,000, the Surety must also hold a certificate of authority from the U.S. Secretary of the Treasury or have obtained reinsurance from a reinsurer that is authorized as a reinsurer in Texas and holds a certificate of authority from the U.S. Secretary of the Treasury and has an A.M. Best rating of A-, X or better.

5.2 Workers' Compensation Insurance Coverage:

5.2.1 Definitions:

- .1** Certificate of coverage ("certificate") - A copy of a certificate of insurance, a certificate of authority to self-insure issued by the division, or a coverage agreement (DWC Form-81, DWC Form-82, DWC Form-83, or DWC Form-84), showing statutory workers' compensation insurance coverage for the person's or entity's employees providing services on the Project, for the duration of the Project.
- .2** Duration of the Project - includes the time from the beginning of the Work on the Project until the Contractor's/person's Work on the Project has been completed and accepted by Owner.
- .3** Persons providing services on the Project includes all persons or entities performing all or part of the services the Contractor has undertaken to perform on the 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 the Project.
- .4** Services include, without limitation, providing, hauling, or delivering equipment or materials, or providing labor, transportation, or other service related to a project. "Services" does not include activities unrelated to the Project, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.

5.2.2 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, Section 401.011(44) for all employees of the Contractor providing services on the Project, for the duration of the Project.

5.2.3 Contractor must provide a certificate of coverage to Owner prior to being awarded the Contract.

5.2.4 If the coverage period shown on the Contractor's current certificate of coverage ends during the Duration of the Project, the Contractor must, prior to the end of the coverage period, file a new certificate of coverage with Owner showing that coverage has been extended.

5.2.5 Contractor shall obtain from each person providing services on the Project, and provide to Owner:

- .1** A certificate of coverage, prior to that person beginning Work on the Project, so Owner will have on file certificates of coverage showing coverage for all persons providing services on the Project; and
- .2** No later than seven (7) days after receipt by 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 the Project.

- 5.2.6** Contractor shall retain all required certificates of coverage for the Duration of the Project and for one (1) year thereafter.
- 5.2.7** Contractor shall notify Owner in writing by certified mail or personal delivery, within ten (10) days after Contractor knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the Project.
- 5.2.8** Contractor shall post on each Project Site a notice, in the text, form and manner prescribed by the Texas Department of Insurance, Division of Workers' Compensation, informing all persons providing services on the Project that they are required to be covered, and stating how a person may verify coverage and report lack of coverage.
- 5.2.9** Contractor shall contractually require each person with whom it contracts to provide services on the 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, Section 401.011(44) for all of its employees providing services on the Project, for the Duration of the Project;
 - .2** Provide to Contractor, prior to that person beginning Work on the Project, a certificate of coverage showing that coverage is being provided for all employees of the person providing services on the Project, for the Duration of the Project;
 - .3** Provide 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 the Project;
 - .4** Obtain from each other person with whom it contracts, and provide to Contractor: a) a certificate of coverage, prior to the other person beginning Work on the 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 the Project;
 - .5** Retain all required certificates of coverage on file for the Duration of the Project and for one (1) year thereafter;
 - .6** Notify Owner in writing by certified mail or personal delivery, within ten (10) 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 the Project; and
 - .7** Contractually require each person with whom it contracts, to perform as required by these Section 5.2.9.1 through Section 5.2.9.7, with the certificates of coverage to be provided to the person for whom they are providing services.
- 5.2.10** By signing this Contract or providing or causing to be provided a certificate of coverage, Contractor is representing to Owner that all employees of the Contractor who will provide services on the Project will be covered by workers' compensation coverage for the Duration of the 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 or, in the case of a self-insured, with the division. Providing false or misleading information may subject Contractor to administrative penalties, criminal penalties, civil penalties or other civil actions.

- 5.2.11** Contractor's failure to comply with any of these provisions is a breach of the Contract by Contractor which entitles Owner to declare the Contract void if Contractor does not remedy the breach within ten (10) days after receipt of notice of breach from Owner.

5.3 Additional Insurance Requirements:

- 5.3.1 Contractor And Subcontractor Provided Insurance:** Contractor and Subcontractors shall obtain and maintain insurance coverages described in Sections 5.3.1.01 through 5.3.1.08 and, to the extent applicable, Sections 5.3.1.09 through 5.3.1.11 through the end of the warranty period (with the exception of Builders' Risk, which is required to remain in effect at least until final payment) or such longer periods of time as may be set forth herein; except that Subcontractors' limits of coverage for Commercial General Liability shall be no less than \$1,000,000 per occurrence and \$2,000,000 in the aggregate, Subcontractors shall not be required to maintain separate Builder's Risk Insurance, Subcontractors shall not be required to maintain Environmental Impairment Liability or Pollution Liability Insurance unless their Scope of Work involves Hazardous Conditions in which event such Subcontractors shall maintain such insurance with limits of coverage not less than \$1,000,000 per occurrence and \$2,000,000 in the aggregate, Subcontractors shall not be required to maintain Professional Liability coverage unless their Scope of Work includes professional services in which event such Subcontractors shall maintain such insurance with limits of coverage not less than \$1,000,000 per occurrence and in the aggregate, and Subcontractors' limits of coverage for Umbrella Liability shall be no less than \$3,000,000. All insurance secured by Contractor, Subcontractors and Sub-Subcontractors pursuant to Owner's requirements under this provision shall be in accordance with Article 5 of the General Conditions and Section 5.3.1.01 as follows.

5.3.1.01 General Requirements.

- .01** Contractor shall carry insurance in the types and amounts indicated below for the Duration of the Project or such longer periods of time set forth below, and shall include coverage for items owned by Owner in the care, custody and control of Contractor prior to and during construction and the warranty period.
- .02** Contractor shall forward Certificates of Insurance evidencing the coverage and limits of insurance required herein to Owner with copies to each additional insured and loss payee listed in the Supplemental Conditions (if any), before the Contract is executed. Contractor shall also provide copies of policy endorsements and excerpts from policies to evidence the required coverages. Contractor shall not commence Work until the required insurance is obtained and until such insurance has been reviewed and approved by Owner. Approval of insurance by Owner shall not relieve or decrease the liability of Contractor hereunder and shall not be construed to be a limitation of liability on the part of Contractor. Contractor must also forward new Certificates

- of Insurance to Owner whenever a previously identified policy period has expired as verification of continuing coverage.
- .03** Contractor's insurance coverage is to be written by companies licensed to do business in the State of Texas at the time the policies are issued and shall be written by companies with A.M. Best ratings of A-, X or better, except for pollution liability or environmental impairment liability insurance which shall be written by companies with A.M. Best ratings of A- or better.
 - .04** All endorsements naming the Owner as an additional insured, waivers of subrogation in favor of Owner, and notices of cancellation endorsements as well as the Certificates of Insurance shall specify Owner's name and address as: the San Jacinto River Authority, 1577 Dam Site Road, Conroe, Texas 77304.
 - .05** The "other" insurance clause shall not apply to the Owner where the Owner is an additional insured shown on any policy. Insurance policies required by the Contract shall be primary and non-contributing with respect to any other insurance coverage maintained by or available to the Owner and/or other additional insureds. The policies shall be endorsed to provide severability of interests.
 - .06** If underlying insurance policies are not written with coverage limits for at least the amounts specified below, Contractor shall carry Umbrella or Excess Liability Insurance for any differences in amounts specified. If Excess Liability Insurance is provided, it shall follow the form of the primary coverage and have the same inception and termination dates as the primary coverage.
 - .07** Owner shall be entitled, upon request and without expense, to receive certified copies of policies and endorsements thereto and may make any reasonable requests for deletion or revision or modification of particular policy terms, conditions, limitations, or exclusions except where policy provisions are established by law or regulations binding upon either of the parties hereto or the underwriter on any such policies. Failure of Contractor to provide certified copies, as requested, is a material breach of the Contract.
 - .08** Owner reserves the right to review the insurance requirements set forth during the effective period of this Contract and to make reasonable adjustments to insurance coverage, limits, and exclusions when deemed necessary and prudent by Owner based upon changes in statutory law, court decisions, the claims history of the industry or financial condition of the insurance company as well as Contractor.
 - .09** All insurance policies required to be maintained will contain a provision or endorsement stating that the coverage afforded will not be cancelled until at least 30 days' prior written notice has been provided to the Contractor and to the Owner. Contractor shall not cause any insurance to be canceled nor permit any insurance to lapse during the term of the Contract or as required in the Contract.
 - .10** Contractor shall be responsible for premiums, deductibles and self-insured retentions, if any, stated in policies. The amounts of all deductibles or self-insured retentions shall be disclosed on the Certificates of Insurance. Any deductible or self-insured retention in excess of \$25,000 is subject to the written approval of Owner.
 - .11** Contractor shall provide Owner thirty (30) days written notice of erosion of the aggregate limits below occurrence limits for all applicable coverages required by the Contract.

- .12** If Owner-owned property is being transported or stored off-site by Contractor, then the appropriate property policy will be endorsed for transit and storage in an amount sufficient to protect Owner's property.
- .13** The insurance coverages required under this contract are required minimums and are not intended to limit the responsibility or liability of Contractor. The inclusion of required minimum insurance limits in this Contract shall not be construed as limiting the Owner's or other additional insured's rights under any policy with higher limits. The minimum insurance limits set forth in this Contract shall be deemed to be amended to any higher limits actually contained in Contractor's insurance policies.
- .14** The Contractor hereby waives its rights of recovery from the Owner, its officers, directors, agents and employees, and the Owner's Representative, the Principal Architect/Engineer, the Principal Architect/Engineer's Consultants and Subconsultants and their respective officers, directors, partners, employees and agents with regard to all causes of property and/or liability loss covered by insurance required by this Contract, and shall cause a waiver of subrogation endorsement to be provided in favor of the Owner, its officers, directors, agents and employees, and the Owner's Representative, the Principal Architect/Engineer, the Principal Architect/Engineer's Consultants and Subconsultants and their respective officers, directors, partners, employees and agents on all insurance coverage carried by the Contractor, whether required herein or not.
- .15** Failure to obtain and maintain the required insurance shall constitute a material breach of, and default under, this Contract. If Contractor shall fail to remedy such breach, Contractor will be liable for any and all costs, liabilities, damages and penalties resulting to Owner from such breach, unless a written waiver of the specific insurance requirement(s) is provided to Contractor by Owner. In the event of any failure by Contractor to comply with the provisions of this Contract, Owner may, without in any way compromising or waiving any right or remedy at law or in equity, on notice to Contractor, purchase such insurance, at Contractor's expense, provided that Owner shall have no obligation to do so and if Owner shall do so, Contractor shall not be relieved of or excused from the obligation to obtain and maintain such insurance amounts and coverages.
- .16** Additional insured status shall be provided in favor of the Owner, its officers, directors, agents and employees, and the Owner's Representative, the Principal Architect/Engineer, the Principal Architect/Engineer's Consultants and Subconsultants and their respective officers, directors, partners, employees and agents on all insurance policies other than Workers' Compensation, Professional Liability, Builder's Risk and Contractor's Property Insurance for its equipment, on ISO forms CG 20 10 10 01 and CG 20 37 10 01 or their combined equivalent. It is the intent of the parties to this Contract that this Additional Insured status shall include coverage for completed operations and for the additional insureds' concurrent and sole negligence. Notwithstanding the foregoing, if Subchapter C of Chapter 151 of the Texas Insurance Code applies to the Contract, this additional insured obligation shall not require or provide coverage the

scope of which is prohibited under Subchapter C of Chapter 151 of the Texas Insurance Code.

- .17 Contractor's obligations under this Contract to defend, indemnify and/or hold harmless Owner or other parties shall not be limited in any way by any insurance required of Contractor by this Contract or otherwise provided or maintained by Contractor. Any insurance obligations of Contractor under this Contract are independent from Contractor's obligations under this Contract to defend, indemnify and/or hold harmless Owner or other parties.

5.3.1.02 Business Automobile Liability Insurance: Provide coverage for all owned, non-owned and hired vehicles. The policy shall provide coverage in the following types and amounts:

- .1 A minimum combined single limit of \$1,000,000 per occurrence for bodily injury and property damage.
- .2 A minimum combined single limit of \$1,000,000 minimum per occurrence for bodily injury and property damage.
- .3 The policy shall contain the following endorsements in favor of Owner:
 - .a Waiver of Subrogation endorsement; and
 - .b 30 day Notice of Cancellation endorsement; and
 - .c Additional Insured endorsement.

5.3.1.03 Workers' Compensation And Employers' Liability Insurance: Coverage shall meet or exceed statutory limits and all other benefits outlined in the Texas Workers' Compensation Act (Section 401). The minimum policy limits for Employers' Liability Insurance coverage shall be \$500,000 bodily injury per accident, \$500,000 bodily injury by disease policy limit and \$500,000 bodily injury by disease each employee.

- .1 Contractor's policy shall cover all States in which Work is performed and apply to the State of Texas and shall include these endorsements in favor of Owner:
 - .a Waiver of Subrogation; and
 - .b 30 day Notice of Cancellation.

5.3.1.04 Commercial General Liability Insurance: Provide coverages with minimum limits as follows: combined bodily injury and property damage limit of \$2,000,000 minimum per occurrence and \$5,000,000 aggregate. The Contractor's policy shall include coverage for:

- .1 Blanket contractual liability coverage for liability assumed under the Contract and all contracts relative to this Project; and
- .2 Completed Operations/Products Liability for at least three years after Substantial Completion; and
- .3 Explosion, Collapse and Underground (X, C & U) coverage; and
- .4 Independent Contractors coverage; and
- .5 Aggregate limits of insurance per project; and
- .6 Additional insureds as required in 5.3.1.01.16; and
- .7 30 day notice of cancellation in favor of Owner; and
- .8 Waiver of Transfer of Recovery Against Others in favor of all required additional insureds; and
- .9 Primary and non-contributing endorsement.

5.3.1.05 Builder's Risk Insurance: Contractor shall maintain Builder's Risk Insurance or Installation Insurance on an all-risk physical loss form in the Contract Amount plus the value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Work at the site on a replacement cost basis without optional deductibles. Coverage shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, explosion, tornado, malicious mischief, collapse, earthquake, flood, surface water, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements and shall cover reasonable compensation for Principal Architect/Engineer's and Contractor's services and expenses required as a result of any insured loss. Coverage shall continue until final payment for the Work is made by the Owner. Coverage shall allow for partial occupancy/use by the Owner. Owner shall be an additional named insured on the policy. Policy must include expenses incurred in the repair or replacement of any insured property, including but not limited to fees and charges of the Principal Architect/Engineer and any other engineers and architects and their respective subconsultants. If off-site storage is permitted by the Owner, coverage shall include materials in transit and storage in an amount sufficient to protect property being transported or stored. Any losses covered by the Builder's Risk or Installation Insurance shall be adjusted by the Owner.

5.3.1.06 Environmental Impairment Liability or Pollution Liability Insurance:

Contractor shall comply with the following insurance requirements in addition to those specified above:

- .1** Provide an Environmental Impairment Liability policy with minimum limits of \$2,000,000 each occurrence and \$5,000,000 aggregate. Coverage shall contain a "per project" aggregate, 30 day notice of cancellation to Owner and waiver of subrogation in favor of Owner. Coverage to include non-owned disposal sites. Coverage shall include clean-up costs, bodily injury, property damage and defense costs.
- .2** Policy shall contain proper endorsement wording to comply with Federal or TCEQ requirements. Policy will also cover vessels and marine operations. Contractor shall submit complete copies of the policy providing pollution liability coverage to Owner.

5.3.1.07 Professional Liability Insurance: For Work which requires professional engineering or architectural or professional survey services to meet the requirements of the Contract, including but not limited to excavation safety systems, traffic control plans, development of the Flood Risk Mitigation Plan, and construction surveying, the Contractor, Subcontractors, or Engineer responsible for performing the professional services shall provide Professional Liability Insurance with a minimum limit of \$1,000,000 each occurrence and \$3,000,000 aggregate to pay on behalf of the assured all sums which the assured shall become legally obligated to pay as damages by reason of any negligent act, error, or omission committed in connection with professional services provided for or in connection with the Work of this Contract.

5.3.1.08 Umbrella Liability: Umbrella Liability with a limit of \$5,000,000, with the Owner as an additional insured and with waiver of subrogation and 30 day notice of cancellation. The Umbrella Liability policy shall follow form, be excess over and be no less broad than all coverages described above (with the exception of Workers' Compensation, Professional Liability and Pollution Liability), shall include a drop-down provision and contain a per job aggregate. This policy shall have the same inception and expiration dates as the Commercial General Liability insurance required above. Contractor shall maintain such insurance in identical coverage, form and amount, including required endorsements, for at least three (3) years following Date of Substantial Completion of the Work to be performed under the Contract.

5.3.1.09 Protection and Indemnity: Protection and Indemnity coverage for any over water operations, vessels, barges, divers. This policy shall have limits of \$1,000,000 each occurrence, \$2,000,000 aggregate and policy endorsed to provide

5.3.1.10 Excess P&I: Excess P&I in the amount of \$20,000,000 each occurrence with additional insured, waiver of subrogation and 30 day notice of cancellation to the Owner.

5.3.1.11 Marine: Contractor and/or any Subcontractors shall have appropriate workers compensation insurance to provide coverage for USL&H and Jones Act exposures.

5.3.1.12 Contractor Property/Equipment: To the extent not covered by Builder's Risk, Contractor shall maintain property insurance against the risk of loss to its equipment and other property used to perform or in connection with the Work or the Project.

5.3.2 Waiver of Rights

5.3.2.1 All policies purchased in accordance with Section 5.3.1.05 shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional named insureds thereunder. Owner and Contractor waive all rights of recovery for damages against each other and their respective officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, the Principal Architect/Engineer, the Principal Architect/Engineers Consultants and Subconsultants and Owner's Representative and any named insured or additional named insured or loss payee to the extent (a) of losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work and (b) that such losses and damages are actually paid by such policies or other property insurance applicable to the Work. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as adjuster or recipient thereof or otherwise payable under any such policy.

5.3.3 Receipt and Application of Insurance Proceeds

5.3.3.1 Any insured loss under the policies of insurance required by Section 5.3.1.05 will be adjusted with Owner and made payable to Owner for the named insureds, additional named insureds, and loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Section 5.3.3.2. Owner shall deposit any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof, to the extent of loss payments received, covered by an appropriate Change Order.

5.3.3.2 Owner shall have power to adjust and settle any loss with the builder's risk or other property insurers.

5.3.4 Partial Utilization, Acknowledgment of Property Insurer:

5.3.4.1 If Owner desires to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Section 14.08, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Section 5.3.1.05 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, and the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

5.4 Bonds:

5.4.1 General:

- .1** Contractor shall furnish performance, payment, and one-year maintenance Bonds, each in an amount at least equal to the Contract Amount as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents, as well as a second year maintenance Bond, in an amount equal to ten percent (10%) of the Contract Amount. The one-year maintenance Bond shall remain in effect until completion of the correction period specified in Section 13.7.1. The second year maintenance Bond shall remain in effect until 2-years from the date of Substantial Completion. Contractor shall also furnish such other Bonds as are required by the Contract Documents.
- .2** Bonds shall be executed on forms furnished by Owner, as included in the Specifications. All Bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each Bond.
- .3** If the Surety on any Bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in the State of Texas or it is placed into receivership, Contractor shall within ten (10) days thereafter substitute other Bonds and Surety, each of which must be acceptable to Owner.

- .4** The Performance Bond and Payment Bond shall be issued in an amount of one hundred percent (100%) of the Contract Amount as security for the faithful performance and/or payment of all Contractor's obligations under the Contract Documents. All Bonds, including but not limited to the Performance Bond and Payment Bond shall be issued by a solvent corporate surety company authorized to do business in the State of Texas, and shall meet any other requirements established by law or by Owner pursuant to applicable law. Any surety duly authorized to do business in Texas may write Performance and Payment Bonds on a project without reinsurance to the limit of ten percent (10%) of its capital and surplus. Such a surety must reinsure any obligations over the ten percent (10%) limit.

5.4.2 Performance Bond:

- .1** Contractor shall furnish Owner with a Performance Bond in the form set out in the Contract Documents.
- .2** The Performance Bond shall include the one (1) year warranty correction period obligation from the date of Substantial Completion of the Work.

5.4.3 Payment Bond:

- .1** Contractor shall furnish Owner with a Payment Bond in the form set out in the Contract Documents.

5.4.4 One-Year Maintenance Bond:

- .1** Contractor shall furnish Owner with a One-Year Maintenance Bond in the form set out in the Contract Documents.

5.4.5 Second-Year Maintenance Bond:

- .1** Contractor shall furnish Owner with a Second-Year Maintenance Bond in the form set out in the Contract Documents.
- .2** The Second-Year Maintenance Bond shall be in an amount equal to ten percent (10%) of the Contract Amount, and shall remain in effect until 2-years from the date of Substantial Completion.

5.4.6 Surface Correction Bond:

- .1** Contractor shall furnish owner with Surface Correction Bond in the form set out in the Contract Documents.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.01 Supervision and Superintendence:

- 6.01.1** Contractor shall supervise, inspect and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences and procedures of construction. Contractor shall be responsible to see that the completed Work strictly complies with the Contract Documents.

6.01.2 Contractor shall have an English-speaking, competent Superintendent on the Work at all times that Work is in progress. The Superintendent will be Contractor's representative on the Site and shall have the authority to act on the behalf of Contractor. All communications given to the Superintendent shall be as binding as if given to Contractor. Contractor's Superintendent and Project Manager shall provide cellular telephone numbers and emergency and home telephone number(s) at which one or the other may be reached if necessary when Work is not in progress. Telephone or cellular phone number(s) shall be to a live person having responsible authority for the Work and not an answering machine or answering service. The Superintendent must be an employee of the Contractor, unless such requirement is waived in advance in writing by the Owner. If the Contractor proposes a management structure with a Project Manager supervising, directing, and managing construction of the Work in addition to or in substitution of a Superintendent, the requirements of these Construction Documents with respect to the Superintendent shall likewise apply to any such Project Manager:

- .1** Contractor shall present the resume of the proposed Superintendent to the Owner's Representative showing evidence of experience and successful superintendence and direction of Work of a similar scale and complexity. If, in the opinion of the Owner, the proposed Superintendent does not have sufficient experience in line with the Work, he/she will not be allowed to be the designated Superintendent for the Work.
- .2** The Superintendent shall not be replaced without prior Written Notice to Owner's Representative. If Contractor deems it necessary to replace the Superintendent, Contractor shall provide the necessary information for approval, as stated above, on the proposed new Superintendent.
- .3** A qualified substitute Superintendent may be designated in the event that the designated Superintendent is temporarily away from the Work, but not to exceed a time limit acceptable to the Owner's Representative.
- .4** Contractor shall replace the Superintendent upon Owner's request in the event the Superintendent is unable to perform to Owner's satisfaction.

6.02 Labor, Materials and Equipment:

6.02.1 Contractor shall maintain a work force adequate to accomplish the Work within the Contract Time Requirements. Contractor agrees to employ only orderly and competent workers, skillful in performance of the type of Work required under this Contract. Contractor, Subcontractors, Sub-Subcontractors, and their employees may not use or possess any alcoholic or other intoxicating beverages, illegal drugs or controlled substances while on the job or on Owner's property, nor may such workers be intoxicated, or under the influence of alcohol or drugs, on the job. Subject to the applicable provisions of Texas law, Contractor, Subcontractors, Sub-Subcontractors, and their employees may not use or possess any firearms or other weapons while on the job or on Owner's property. If Owner or Owner's Representative notifies Contractor that any worker or representative of Contractor is incompetent, disorderly, abusive, or disobedient, has knowingly or repeatedly violated safety regulations, has

possessed any firearms in contravention of the applicable provisions of Texas law or this Contract, or has possessed or was under the influence of alcohol or drugs on the job, Contractor shall immediately remove such worker or representative, including any officer or owner of Contractor, from performing Contract Work, and may not employ such worker or representative again on Contract Work without Owner's prior written consent. Contractor shall at all times maintain good discipline and order on or off the Site in all matters pertaining to the Project. Contractor shall pay workers no less than the applicable wage rates established for the Contract, and maintain weekly payroll reports as evidence thereof, in accordance with the requirements of Chapter 2258 of the Texas Government Code.

6.02.2 Except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular Working Days and regular Working Hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without the Owner's prior written consent given after the Contractor has provided 48-hour advanced written notice to the Owner's Representative.

6.02.3 Unless otherwise specified in Division 01, Contractor shall provide and pay 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, provided the Owner's CMT Consultant shall provide certain inspection services, the Owner shall provide testing of construction materials engineering and the verification testing services necessary for acceptance of the Work by Owner, as required by Section 2267.058(a) of the Texas Government Code.

6.02.4 All materials and equipment shall be of good quality and new (including new products made of recycled materials, pursuant to Section 361.426 of the Texas Health & Safety Code), except as otherwise provided in the Contract Documents. If required by Owner's Representative, Contractor shall furnish satisfactory evidence (reports of required tests, Manufacturer's certificates of compliance with material requirements, mill reports, etc.) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with instructions of the applicable Manufacturer or Supplier, except as otherwise provided in the Contract Documents.

6.02.5 Substitutes and "Approved Equal" Items:

- .1** Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Manufacturer or Supplier, the specification or description is intended to establish the type, function and quality required. Unless the specification or description contains words reading that no like, equivalent or "approved equal" item or no substitution is permitted, other items of material or equipment of other Manufacturers or Suppliers may be submitted by Contractor, at Contractor's sole risk, including potential impacts and disruptions to the Critical Path of the Project Schedule, to Principal

Architect/Engineer for their review and approval through Owner's Representative under the following circumstances:

- (a) "Approved Equal": If in Principal Architect/Engineer's and Owner's sole discretion an item of material or equipment proposed by Contractor is functionally equal and of equivalent type and quality to that named, and sufficiently similar so that no change in related Work, time of performance or Contract Amount will be required, it may be approved by Principal Architect/Engineer and Owner through the submittal process as an "approved equal" item. Contractor shall provide Principal Architect/Engineer and Owner with all necessary documentation required for Principal Architect/Engineer and Owner to make their evaluation, and shall identify the item of material or equipment proposed by Contractor as a variation in accordance with Section 6.20.5.
- (b) Substitute Items: Contractor may submit an item of material or equipment which does not qualify as an "approved equal" item under Subsection 6.02.5.1(a), or may resubmit an item of material or equipment proposed by Contractor and rejected by Principal Architect/Engineer or Owner as an "approved equal" item under Subsection 6.02.5.1(a), as a proposed substitute item. All of Contractor's requests for substitutions must be clearly identified as a **"Request For Substitution"** on the face of the document. Contractor shall submit sufficient information as provided in Division 01 to allow Principal Architect/Engineer and Owner to evaluate the item of material or equipment proposed as a substitute for the item named.
- .2 Substitute Construction Methods and Procedures: If a specific means, method, technique, sequence or procedure of construction is shown or indicated in and expressly required by the Contract Documents, Contractor may, at Contractor's sole risk, including potential impacts and disruptions to the Critical Path of the Project Schedule, with prior approval of Principal Architect/Engineer, furnish or utilize a substitute means, method, technique, sequence, or procedure of construction. All such proposed substitutions must be clearly identified as being a **"Substitution"** in all of the Contractor's submittals. Contractor shall submit sufficient information to Owner's Representative to allow Principal Architect/Engineer's, in Principal Architect/Engineer's sole discretion, evaluation of the proposed substitute as an equivalent to that method or procedure expressly called for by the Contract Documents. The procedure for review by Principal Architect/Engineer will be same as that provided for substitute items in Division 01.
- .3 Principal Architect/Engineer's Evaluation: Principal Architect/Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Subsections 6.02.5.1(a), 6.02.5.1(b), and 6.02.5.2. Principal Architect/Engineer and Owner will be the judge of acceptability. No "approved equal" or substitute shall be ordered, installed, or utilized until Principal Architect/Engineer's and Owner's review is complete, and any "approved equal" is approved through the submittal process, or any approved substitute is evidenced by either a Change Order, or a Change Directive. Owner may require Contractor to furnish at Contractor's expense a special performance

guarantee or other surety Bond with respect to any approved substitute. Owner shall not be responsible for any Delay due to review time for any "approved equal" or substitute.

- .4 Contractor's Expense: All data and documentation to be provided by Contractor in support of any proposed "approved equal" or substitute item will be at Contractor's expense.
- .5 The approval of the Principal Architect/Engineer and/or Owner will not relieve the Contractor from primary responsibility and liability for the suitability and performance of any proposed substitute item, method or procedure and will not relieve Contractor from its primary responsibility and liability for curing Defective Work and performing warranty work, which the Contractor shall cure and perform, regardless of any claim the Contractor may choose to advance against the Owner, the Principal Architect/Engineer or Manufacturer.
- .6 Notwithstanding the foregoing, it is agreed and understood that the Contract Amount shall not be adjusted as a result of the Contractor's use of the cost of any possible substitute or "approved equal" items in calculating its Bid/Proposal price.

6.02.6 Contractor agrees to assign and hereby assigns to Owner any rights it may have to bring antitrust suits against its Manufacturers or Suppliers for overcharges on materials incorporated in the Project growing out of illegal price fixing agreements. Contractor further agrees to cooperate with Owner should Owner wish to prosecute suits against Manufacturers or Suppliers for illegal price fixing.

6.03 Project Schedule Requirements: Unless otherwise provided in Division 01, Contractor shall adhere to the Owner's Project Schedule as provided by the Owner, which shall be further developed by the Contractor to become first the Contractor's Preliminary Project Schedule and then, upon acceptance by the Owner, become the Master Project Schedule, as it may be adjusted from time to time as provided below:

6.03.1 Preliminary Project Schedule: Within thirty (30) days from the issuance of a Notice To Proceed by the Owner, the Contractor shall submit to the Owner's Representative a Preliminary Project Schedule to be used as the Contractor's baseline schedule for the Project. This Preliminary Project Schedule shall be initially based on and shall include and be consistent with all of the Milestones contained in Division 01, Work Covered By Contract Documents Specification, and shall be presented in a form reasonably acceptable to the Owner. The Preliminary Project Schedule shall be a Critical Path Method (CPM) schedule depicting all significant activities which will occur on the Project; the durations for all major items of Work to be performed; the start and finish dates of such activities; the Contract Time Requirements as set out in the Contract Documents; and the precedence logic of such activities. The Contractor's Preliminary Project Schedule shall include, at a minimum:

- .1 Duration and milestone dates for all equipment, materials delivery, and operations efforts that may affect the timely completion of the Project.
- .2 Duration and milestone dates for each anticipated construction activity.
- .3 Pre-purchase of materials and equipment with a "long lead" time.
- .4 Permitting and regulatory milestones.

- .5** Dates associated with the activities leading to delivery milestones from others including for offsite roadways and utilities.
- 6.03.2** The Contractor shall coordinate the Preliminary Project Schedule with the Contractor's Submittal Schedules for Shop Drawings and Samples as required by Division 01 of the Project Manual. The Contractor's Submittal Schedule must provide an adequate duration for reviewing and processing the required Submittals acceptable to Owner and the Principal Architect/Engineer.
- 6.03.3** The Contractor shall provide Owner with an electronic version (by disk or CD) of the Preliminary Project Schedule and of each subsequent Master Project Schedule, including all subsequent electronic schedule revisions and updates, created without password protection, in latest version of Microsoft Project (.MPT, .MPX or .MPD suffix) or a format approved by Owner. Failure to furnish Owner, Owner's Representative, and Principal Architect/Engineer with a revised Project Schedule in one of the above formats within ten (10) days of receipt of a written request shall constitute a breach of the Contract by Contractor, and shall be considered to be adequate cause for termination of the Contractor by Owner.
- 6.03.4 Master Project Schedule:** Once the Contractor's Preliminary Project Schedule has been accepted by Owner, it shall become the Master Project Schedule (Baseline Schedule) for the Project. The Contractor shall update the Master Project Schedule monthly or more often by the submission of a revised Master Project Schedule or when circumstances develop which make it beneficial to the Project, or as may be required by Owner. Once the most recently revised Master Project Schedule has been accepted by Owner, the Master Project Schedule shall be considered to have been updated. The updated Master Project Schedule shall then be distributed by the Contractor to Owner's staff, the Principal Architect/Engineer, each consultant, and other appropriate parties. The Master Project Schedule shall be reviewed at the monthly team meeting at a summary level, including for a three month look-ahead and anticipated Project completion.
- 6.03.5 Changes to the Master Project Schedule:** A copy of the accepted Master Schedule shall be maintained unaltered. The Contractor shall thereafter submit to Owner's Representative an updated Project Schedule each month with its Application for Payment, to reflect actual progress that has been made and to forecast future progress of the Work. The monthly Project Schedule update shall be based upon the accepted Master Project Schedule. Contractor shall submit to Owner's Representative for review and acceptance by Owner any proposed changes or adjustments in its monthly Project Schedule that modify either the Master Project Schedule or the previous month's approved Project Schedule. Any such proposed adjustments must be substantiated with a written narrative containing an explanation of any changes to the underlying logic of the subject schedule. Contractor's proposed changes to the schedule must show how the Contractor will consistently advance the progress of the Work in accordance with the Critical Path of the Work and the Contract Time Requirements, including all required contractual Milestones. Such adjustments will conform generally to the Master or monthly Project Schedule then in effect and

additionally will comply with any provisions of Division 01 applicable thereto.

6.03.6 Proposed adjustments indicated by the Project Schedule that will change the Contract Time Requirements, including Milestones, shall be submitted in accordance with the requirements of Article 12. Any such proposed adjustments must be substantiated with documentation of any changes to the underlying logic of the Master Project Schedule. Such adjustments may only be made by a Change Order or Change Directive in accordance with Article 12.

6.03.7 Contractor shall keep a current schedule of submittals that coordinates with the Master Project Schedule, and shall submit the initial schedule of submittals to Owner's Representative for acceptance along with the Preliminary Project Schedule.

6.04 Concerning Subcontractors, Suppliers and Others:

6.04.1 Assignment: Contractor shall retain direct control of and give direct attention to the fulfillment of this Contract. Contractor shall not assign, transfer, or convey this Contract or any portion thereof, or any right, title or interest in, to or under same, or any causes of action or claims for damages arising under this Contract or any breach thereof, without the prior written consent of Owner. In addition, without Owner's written consent, the Contractor will not subcontract the performance of the entire Work or the supervision and direction of the Work.

6.04.2 Award of Subcontracts for Portions of the Work: Contractor shall not employ any Subcontractor, Supplier or other person or organization, whether initially or as a substitute, against whom Owner may have reasonable objection. Owner will communicate such objections by Written Notice. If Owner requires a change without good cause of any Subcontractor, person or organization previously accepted by Owner, the Contract Amount shall be increased or decreased by the difference in the cost caused by any such change, and an appropriate Change Order shall be issued. Contractor shall not substitute any Subcontractor, person or organization that has been accepted by Owner, unless the substitute has been accepted in writing by Owner. No acceptance by Owner of any Subcontractor, Supplier or other person or organization shall constitute a waiver of any right of Owner to reject Defective Work. Contractor shall comply with the applicable requirements set forth in the Bid/Proposal Documents and Contract Documents with respect to Subcontractors and the subcontracting process.

6.04.3 Contractor shall enter into written agreements with all Subcontractors and Suppliers which specifically bind the Subcontractors, Manufacturers and Suppliers to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Principal Architect/Engineer. The Owner reserves the right to specify that certain requirements shall be adhered to by all Subcontractors, Manufacturers and Suppliers as indicated in other portions of the Contract Documents and these requirements shall be made a part of the agreements between Contractor and Subcontractors, Manufacturers and Suppliers.

- 6.04.4** Contractor shall be fully responsible to Owner for all acts and omissions of the Subcontractors, Manufacturers, or Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with Contractor just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents shall create for the benefit of any such Subcontractor, Manufacturer, or Supplier or other person or organization any contractual relationship between Owner and any such Subcontractor, Supplier, Manufacturer or other person or organization, nor shall it create any obligation on the part of Owner or Principal Architect/Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Manufacturer, or Supplier or other person or organization except as may otherwise be required by laws and regulations.
- 6.04.5** Contractor shall be solely responsible for efficiently scheduling and coordinating the Work of Subcontractors, Manufacturers, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with Contractor in order to avoid any Delays or inefficiencies in the prosecution of the Work. Contractor shall require all Subcontractors, Manufacturers, Suppliers and such other persons and organizations performing or furnishing any of the Work to communicate with Owner's Representative through Contractor.
- 6.04.6** The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing or delineating the Work to be performed by any specific trade.
- 6.04.7** Contractor shall pay each Subcontractor, Manufacturer and Supplier their appropriate share of payments made to Contractor not later than ten (10) Calendar Days from Contractor's receipt of payment from Owner.
- 6.04.8** To the extent allowed by Texas law, the Owner shall be deemed to be a third party beneficiary to each subcontract and may, if Owner elects, following a termination of the Contractor, require that the Subcontractor(s) perform all or a portion of unperformed duties and obligations under its subcontract(s) for the benefit of the Owner, rather than the Contractor; however, if the Owner requires any such performance by a Subcontractor for the Owner's direct benefit, then the Owner shall be bound and obligated to pay such Subcontractor the reasonable value for all Work performed by such Subcontractor to the date of the termination of the Contractor, less previous payments to Contractor for such Subcontractor's work, and for all Work performed by Subcontractor thereafter. In the event that the Owner elects to invoke its right under this section, Owner will provide written notice of such election to the terminated Contractor and the affected Subcontractor(s).

6.05 Patent Fees and Royalties:

- 6.05.1** Contractor shall be responsible at all times for compliance with applicable patents or copyrights encompassing, in whole or in part, any design, device, material, or process utilized, directly or indirectly, in the performance of the Work or the formulation or presentation of its Bid/Proposal.

- 6.05.2** Contractor shall pay all royalties and license fees and shall provide, prior to commencement of Work hereunder and at all times during the performance of same, for lawful use of any design, device, material or process covered by letters patent or copyright, suitable legal agreement with the patentee, copyright holder, or their duly authorized representative, whether or not a particular design, device, material, or process is specified by Owner.
- 6.05.3** Contractor shall defend Owner in all suits or claims for infringement of any patent or copyright and shall indemnify and save Owner harmless from any loss or liability, direct or indirect, arising with respect to Contractor's process in the formulation of its Bid/Proposal or the performance of the Work or otherwise arising in connection therewith, with the exception that the Contractor will not be responsible to defend or indemnify the Owner for such loss or liability when a particular design, process or product of a particular Manufacturer or Manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner or Principal Architect/Engineer, unless Contractor knew or reasonably should have known of the patent or copyright violation and failed to notify Owner of same. Owner reserves the right to provide its own defense to any suit or claim of infringement of any patent or copyright in which event Contractor shall, to the extent provided in this Subsection, indemnify and save harmless Owner from all costs and expenses of such defense as well as satisfaction of all judgments entered against Owner.
- 6.05.4** Owner shall have the right to stop the Work and/or terminate this Contract at any time in the event Owner discovers that Contractor's work methodology includes the use of any infringing design, device, material or process.
- 6.06 Permits, Fees:** Contractor shall obtain and pay for all construction permits, licenses and fees required for prosecution of the Work. However, Owner or Owner's Representative will obtain and pay for the following permits, licenses and/or fees:
- .1** Site Development Permit; and
 - .2** Initial Corp of Engineer Permits (404, Letter of Permission only, if applicable).
- 6.07 Laws and Regulations:**
- 6.07.1** Contractor shall give all notices and comply with all Legal Requirements applicable to furnishing and performing the Work, including arranging for and obtaining any required inspections, tests, approvals or certifications from any governmental entity or public body having jurisdiction over the Work or any part thereof. Except where otherwise expressly required by applicable laws and regulations, neither Owner, Owner's Representative, nor Principal Architect/Engineer shall be responsible for monitoring Contractor's compliance with any Legal Requirements.
- 6.07.2** Maintaining clean water, air and earth or improving thereon shall be regarded as of prime importance. Contractor shall plan and execute its operations in compliance with all applicable Legal Requirements concerning

control and abatement of water pollution and prevention and control of air pollution.

6.07.3 If Contractor performs any Work knowing or having reason to know that it is contrary to applicable Legal Requirements, Contractor shall bear all claims, costs, losses and damages arising therefrom; however, it shall not be Contractor's primary responsibility to make certain that the Specifications and Drawings are in accordance with all Legal Requirements, but this does not relieve Contractor of the Contractor's obligations under the terms of the Contract.

6.07.4 This Work is subject to the Texas Pollution Discharge Elimination System (TPDES) permitting requirements for the installation and maintenance of temporary and permanent erosion and sediment controls and storm water pollution prevention measures throughout the construction period. Contractor's responsibilities are as follows.

.01 Contractor must prepare a Storm Water Pollution Prevention Plan (SWPPP), or make modifications if SWPPP is already completed and as required, prior to filing the NOI form.

.02 Contractor must file a Notice of Intent (NOI) form with the TCEQ at least two (2) days prior to start of construction activity and pay for the permit. The required NOI form is available from the Internet at <https://www.tceq.texas.gov/assets/public/permitting/waterquality/forms/20022.pdf>.

The form shall be mailed or submitted online to the TCEQ. If submitting online, the web address is <https://www3.tceq.texas.gov/steers/>. If Contractor has not already registered to use the TCEQ online application submittal service, it will take up to ten (10) working days to receive a user name and password. Contractor shall take this timeframe into consideration if applying online. A Time Extension shall not be granted for this timeframe. The mailing address is:

Texas Commission on Environmental Quality
Stormwater Processing Center (MC-228)
P.O. Box 13087
Austin, TX 78711-3087

For overnight mail: Stormwater Processing Center (MC-228)
12100 Park 35 Circle
Austin, TX 78753

.03 Contractor must mail a copy of the completed Notice of Intent (NOI) form to the local Municipal Separate Storm Sewer Systems (MS4) representative.

.04 Contractor must obtain a signed certification statement from all Subcontractors responsible for implementing the erosion and sediment control measures. This statement shall indicate that the Subcontractor understands the permit requirements. The certified statement forms shall be attached to and become part of the SWPPP.

.05 Contractor must post a notice near the main entrance of the Work with the following information.

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- .1** The TPDES permit number for the Work or a copy of the NOI if a permit number has not yet been assigned,
 - .2** The name and telephone number of a local contact person,
 - .3** A brief description of the Work, and
 - .4** The location of the SWPPP if the Site is inactive or does not have an on-site location to store the plan.
 - .5** If posting this information near a main entrance is infeasible due to safety concerns, the notice must be posted in a local public building. If the Work is linear (pipeline, highway, etc.), the notice must be placed in a publicly accessible location near where construction is actively underway and moved as necessary. For linear Work, multiple postings of the information may be required by Owner (e.g. postings at both ends of the Work).
 - .06** Contractor must maintain all erosion and sediment control measures and other protective measures identified in the SWPPP in effective operating condition.
 - .07** Contractor must retain weekly inspection reports and be available for audit by the Owner, the TCEQ or the EPA.
 - .08** Contractor must perform inspections every seven (7) calendar days and after every ½ inch rainfall event, noting the following observations on an inspection form provided by Owner:
 - .1** Locations of discharges of sediment or other pollutants from the Site.
 - .2** Locations of storm water / erosion / sedimentation controls that are in need of maintenance.
 - .3** Locations of storm water / erosion / sedimentation controls that are not performing, failing to operate, or are inadequate.
 - .4** Locations where additional storm water / erosion / sedimentation controls are needed.
 - .09** Contractor must maintain at Work Site at all times a copy of the SWPPP (with all updates, as described below) and inspection reports.
 - .10** Contractor must update the SWPPP as necessary to comply with TPDES permitting requirements, which includes noting changes in erosion / sedimentation controls and other best management practices that are part of the SWPPP and which may be necessary due to the results of inspection reports.
 - .11** Contractor must file a Notice of Termination with the TCEQ within thirty (30) days of final stabilization on all portions of the Work Site. Form is available from Owner or on the Internet at:
<https://www.tceq.texas.gov/assets/public/permitting/waterquality/forms/10443.docx>.
The notice shall be mailed to:
Texas Commission on Environmental Quality
Storm Water & General Permits Team;
 - .12** Upon completion of the Work, the Contractor must provide copies of all TPDES records to Owner.
- 6.07.6** Contractor shall abide by all Legal Requirements including, but not limited to, the Endangered Species Act.
- 6.07.7** Contractor warrants and represents that: (i) Contractor does not have any contracts with and does not provide supplies or services to any organization

designated as a foreign terrorist organization by the United States secretary of state as authorized by 8 U.S.C. Section 1189 (a "Foreign Terrorist Organization"); or (ii) the United States government has affirmatively declared Contractor to be excluded from its federal sanctions regime relating to Sudan, its federal sanctions regime relating to Iran, or any federal sanctions regime relating to a Foreign Terrorist Organization.

6.07.8 Davis-Bacon Wage Requirements. Contractor shall ensure that all subcontracts include and require the same provisions as provided in this Section 6.07.8.

.1 Minimum Wages

(i) All laborers and mechanics employed or working upon the site of the Work 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 CFR 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 Section 3.07.8.1(iv) herein; 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 29 CFR 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 Section 6.07.8.1(ii) of this section) 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 SJRA may obtain wage determinations from the U.S. Department of Labor's web site, www.dol.gov.

(ii)(A) The SJRA, on behalf of EPA, 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 TWDB shall approve a request for 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 SJRA agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the SJRA to the TWDB. The TWDB will transmit the request, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the TWDB or will notify the TWDB 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 SJRA do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the TWDB shall refer the request and the local wage determination, including the views of all interested parties and the recommendation of the TWDB, to the Administrator for determination. The request shall be sent to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request 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 Sections 6.07.8.1(ii)(B) or (C) of this section, 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 SJRA shall, upon written request of the EPA Award Official or 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, all or part of the wages required by the Contract, the EPA 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 (3) years thereafter for all laborers and mechanics working at the site of the Work. 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 CFR 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 SJRA, that is, the entity that receives the funds from the TWDB. Such documentation shall be available on request of the TWDB or EPA. As to each payroll copy received, the SJRA shall provide written confirmation in a form satisfactory to the TWDB indicating whether or not the Project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly payrolls. 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 <http://www.dol.gov/whd/forms/wh347instr.htm> 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 SJRA for transmission to the TWDB or EPA if requested by EPA, the TWDB, 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 this section 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 subrecipient(s).

(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 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR 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 CFR 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 Section 6.07.8.3(ii)(B) herein.

(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 this section available for inspection, copying, or transcription by authorized representatives of the TWDB, EPA 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 EPA or TWDB 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 CFR 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 CFR 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 CFR part 30.

.5 Compliance with Copeland Act requirements. The Contractor shall comply with the requirements of 29 CFR 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 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may be appropriate, 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 CFR 5.5.

.7 Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the Contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 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 CFR 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 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the Contractor (or any of its subcontractors) and the SJRA, TWDB, EPA, 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 CFR 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 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

.11 Contract Work Hours and Safety Standards Act.

(i) 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.

(ii) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (a)(1) of this section the Contractor and any subcontractor responsible therefore 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 (a)(1) of this section, in the sum of \$10 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 (a)(1) of this section.

(iii) Withholding for unpaid wages and liquidated damages. The SJRA, upon written request of the EPA Award Official or an authorized representative of the Department of Labor, shall 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 (a)(2) of this section.

(iv) Subcontracts. The Contractor or subcontractor shall insert in any subcontracts the clauses set forth in Sections 6.07.8.11(i) – (iv) and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (a)(1) through (4) of this section.

(v) In addition to the clauses contained in Section 6.07.08.11(iii), above, 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

CFR 5.1, the SJRA 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 SJRA 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 EPA, TWDB, and the Department of Labor, and the Contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

.12 (i) The SJRA shall periodically interview a sufficient number of employees entitled to Davis-Bacon prevailing wages (covered employees) to verify that contractors or subcontractors are paying the appropriate wage rates. As provided in 29 CFR 5.6(a)(6), all interviews must be conducted in confidence. The subrecipient must use Standard Form 1445 (SF 1445) found in TWDB guidance document TWDB-0156 or equivalent documentation to memorialize the interviews. Copies of the SF 1445 are also available from EPA on request.

(ii) The SJRA shall establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the Contract or subcontract. The SJRA must conduct more frequent interviews if the initial interviews or other information indicated that there is a risk that the contractor or subcontractor is not complying with DB. The SJRA shall immediately conduct interviews in response to an alleged violation of the prevailing wage requirements. All interviews shall be conducted in confidence.

(iii) The SJRA shall periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors or subcontractors are paying the appropriate wage rates. The SJRA shall establish and follow a spot check schedule based on its assessment of the risks of noncompliance with Davis-Bacon posed by contractors or subcontractors and the duration of the Contract or subcontract. At a minimum, if practicable, the SJRA should spot check payroll data within two weeks of each contractor or subcontractor's submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract. The SJRA must conduct more frequent spot checks if the initial spot check or other information indicates that there is a risk that the contractor or subcontractor is not complying with Davis-Bacon. In addition, during the examinations the SJRA shall verify evidence of fringe benefit plans and payments there under by contractors and subcontractors who claim credit for fringe benefit contributions.

(iv) The SJRA shall periodically review contractors and subcontractors' use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the U.S Department of Labor or a state, as appropriate, and that contractors and subcontractors are not using disproportionate numbers of, laborers, trainees and apprentices. These reviews shall be conducted in accordance with the schedules for spot checks and interviews described in Sections 6.07.8.12(ii) and (iii) above.

(v) The SJRA must immediately report potential violations of the Davis-Bacon prevailing wage requirements to the EPA Region 6 DB Coordinator, TWDB, and to the appropriate DOL Wage and Hour District Office listed at <http://www.dol.gov/whd/america2.htm>.

6.08 Taxes:

6.08.1 Contractor shall pay only those sales, consumer, use and other similar taxes required to be paid by Contractor in accordance with the laws and regulations of the State of Texas in the performance of this public works contract.

6.08.2 Owner is an exempt organization as defined by Chapter 11 of the Property Tax Code of Texas and is thereby exempt from payment of Sales Tax under Chapter 151, Limited Use Sales, Excise and Use Tax, Texas Tax Code, and Article 1066 (C), Local Sales and Use Tax Act, Revised Civil Statutes of Texas.

6.08.3 In addition, if the Project is construction of a water or wastewater system certified by the Texas Commission on Environmental Quality as a regional system, equipment, services and supplies used solely to construct the Project are exempted from taxes imposed by Chapter 151, Limited Sales, Excise and Use Tax, Texas Tax Code.

6.09 Use of Premises:

6.09.1 Contractor shall use the Premises in accordance with the Flood Risk Mitigation Plan. Contractor shall confine construction equipment, the storage of materials and equipment and the operations of workers to the Site and land and areas identified in and permitted by the Contract Documents and other land and areas permitted by laws and regulations, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. Contractor assumes full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any adjacent land or areas, resulting from the performance of the Work. Should any claim be made by any such owner or occupant because of or in connection with the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law. Any such settlement shall not include any admission of liability on the part of Owner and shall be subject to Owner's approval, which approval shall not be unreasonably withheld.

- 6.09.2** Contractor shall defend, indemnify and hold harmless the Owner, the Owner's Representative, the Principal Architect/Engineer, Principal Architect/Engineer's Consultants and anyone directly or indirectly employed by any of them from and against all claims, costs, losses and damages (including court costs and reasonable attorneys' fees) arising out of or resulting from any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Owner's Representative, Principal Architect/Engineer or any other party indemnified hereunder arising out of the Work except to the extent such claims, costs, losses or damages are caused by negligence or fault, breach or violation of a statute, ordinance, governmental regulation, standard or rule or breach of contract of the Owner, the Owner's Representative, the Principal Architect/Engineer, Principal Architect/Engineer's Consultants or any third party under the control or supervision of them other than Contractor or its agent or employee or Subcontractors of any tier.
- 6.09.3** During the progress of the Work and on a daily basis, Contractor shall keep the premises free from any accumulations of waste materials, rubbish and other debris resulting from the Work. Contractor shall provide such personnel, waste containers and or equipment necessary to maintain an orderly, clean and safe work site. Contractor shall keep all streets, access streets, driveways, and areas of public access, walkways, and other designated areas clean and open at all times. At the completion of the Work, Contractor shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery and surplus materials. Contractor shall have the Site clean and ready for occupancy by Owner at Substantial Completion of the Work. Contractor shall, at a minimum, restore to original condition all property not designated for alteration by the Contract Documents. If the Contractor fails to clean up or restore at the completion of the Work, Owner may do so and the cost thereof will be charged against the Contractor.
- 6.09.4** Contractor shall not load or permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.
- 6.10 Record Documents:** Contractor shall maintain in a safe place at the Site, or other location acceptable to Owner, one (1) record copy of all red line Record Drawings, Specifications, Addenda, Change Orders, Change Directives, Field Orders and written interpretations and clarifications in good order and annotated to show all changes made during construction. These record documents together with all final samples and all final Shop Drawings and submittals will be available to Owner, Owner Representative, and Principal Architect/Engineer for reference during performance of the Work. Upon Substantial Completion of the Work, these record documents, samples, Shop Drawings and submittals shall become the property of the Owner and shall be neatly labeled and organized per the Owner's direction and promptly delivered in containers acceptable to the Owner, to Owner's Representative. Record drawings must also include an electronic format that is either ".dwg" or ".dxf".

6.11 Safety and Protection:

6.11.01 Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Prior to commencement of the Work, Contractor shall submit a site security plan for approval by Owner. By reviewing the plan or making recommendations or comments, Owner will not assume liability nor will Contractor be relieved of liability for damage, injury or loss. Contractor shall take all necessary precautions for the safety of and shall provide the necessary protection to prevent damage, injury or loss to:

- .1** all persons on the Work Site or who may be affected by the Work;
- .2** all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
- .3** other property at the Site or adjacent thereto, including, but not limited to, trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and Underground Improvements not designated for removal, relocation or replacement in the course of construction.

6.11.02 The Contractor will provide a Safety Manager for this Project. The Safety Manager will be responsible for the safety of the entire Work and the prevention of accidents in connection with the Work. The Safety Manager shall be competent and qualified to perform his/her duties, including but not limited to having received all appropriate Occupational Safety and Health Act of 1970, as amended ("OSHA") and other safety training, and experienced in managing safety programs on construction projects comparable in scope and complexity.

6.11.03 Specific Duties of the Contractor's Safety Manager: This person will ensure compliance with all provisions of the Contract Documents, the Flood Risk Mitigation Plan, OSHA, other governmental agencies, industry safety requirements and standards. The Contractor Safety Manager will prepare and enforce a site-specific safety plan for the Work.

- .1** Additional duties of the Contractor's Safety Manager shall include the following:
 - (a)** Be responsible for safety over-sight of the entire Work.
 - (b)** Review and direct immediate action to correct all substandard safety conditions.
 - (c)** Be responsible for providing any necessary additional safety personnel with support in carrying out the duties and responsibilities of that position.
 - (d)** Conduct regular supervisory safety meetings, including the discussion of observed unsafe work practices or conditions, a review of accidents experienced and corrective actions, and encouragement of safety suggestions from employees.
 - (e)** Investigate all accidents and implement immediate corrective action.
 - (f)** Cooperate with the insurance carrier(s) and Owner's safety personnel.
 - (g)** Provide timely reports in writing of any observed unsafe conditions or practices, or violations of job security regarding safety issues and take corrective actions.

- (h) Report all injuries and accidents in a timely manner to the Contractor and safety personnel in accordance with Contract Documents, federal, state and local laws and regulations.
 - (j) Ensure that the necessary competent safety persons are on Site as required in the Contract.
 - (k) Comply with insurance carriers requirements in all accident investigation and reporting procedures.
 - (m) Coordinate safety activities with insurance carriers, and take necessary steps to promptly implement safety recommendations or directives issued thereby.
 - (n) Be responsible for the availability and proper use of all necessary safety equipment including personal protective equipment and apparel for the employees.
 - (p) Ensure that adequate first-aid supplies are available at the Work Site and that personnel are qualified and identified to administer first-aid as required.
 - (r) Be on the Site at all times while Work is in progress. If the Safety Manager has to leave the Site, the Contractor is required to provide an alternate competent and qualified Safety Manager.
 - (s) Review and familiarize himself or herself with the Flood Risk Mitigation Plan and act in accordance with same.
- .2** The Contractor Safety Manager shall stop Work as necessary in the event of imminent danger or in situations where they deem necessary to protect a person from injury or prevent property damage.

6.11.04 Contractor shall comply with all applicable Legal Requirements, including but not limited to all laws and regulations of any governmental entity or public body having jurisdiction for 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 Improvements, and utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property caused, directly or indirectly, in whole or in part, by Contractor or any Subcontractor, Supplier or 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, shall be remedied by Contractor (except to the extent of damage or loss attributable to errors or omissions in the Drawings or Specifications, or to the acts or omissions of Owner, the Owner's Representative, or the Principal Architect/Engineer, or Principal Architect/Engineer's Consultant or anyone employed by any of them or anyone for whose acts any of them may be liable other than Contractor or its agent, or employee, or Subcontractors of any tier). Contractor's duties and responsibilities for safety and protection of the Work shall continue until such time as all the Work is completed and Owner's Representative has issued a notice to Owner and Contractor in accordance with Article 14 that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion). Without limitation, Contractor shall comply with the following specific provisions:

- .1** It shall be the duty and responsibility of Contractor and all of its Subcontractors to be familiar with and comply with 29 USC Section 651, et seq., the Occupational Safety and Health Act of 1970, as amended ("OSHA") and to enforce and comply with all provisions of this Act.
 - .2** The Contractor and all of its Subcontractors shall comply with all applicable requirements of Subpart P of Part 1926 of 29 C.F.R, OSHA Safety and Health Standards, Texas Health and Safety Code Section 756.023, as amended, and shall submit a unit price for the particular excavation safety systems to be utilized by the Contractor for all excavations which exceed a depth of five feet (5').
- 6.11.05** Before commencing any excavation which will exceed a depth of five feet (5'), the Contractor shall prepare and employ detailed drawings and specifications regarding the safety systems to be utilized. Said plans and specifications shall include a certification from a registered Texas professional engineer indicating full compliance with the OSHA provisions cited above.
- 6.11.06 Hazard Communication Programs:** Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with applicable laws and regulations.
- 6.11.07 Emergencies:**
 - .1** In emergencies affecting the safety or protection of persons or the Work at the Site or adjacent thereto, including but not limited to emergency conditions as provided for in the Flood Risk Mitigation Plan, Contractor, without special instruction or authorization from Owner, Owner Representative, or Principal Architect/Engineer, is obligated to act reasonably to prevent threatened damage, injury or loss and to mitigate damage or loss to the Work. Contractor shall give Owner's Representative telephone notification as soon as reasonably practical and a prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If Owner determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Change Directive or Change Order will be issued to document the consequences of such action.
 - .2** Authorized agents of Contractor shall respond immediately to call-out at any time of any day or night when circumstances warrant the presence on Project Site of Contractor or his agent to protect the Work or adjacent property from damage, injury or loss, or to take such action or measures pertaining to the Work as may be necessary to provide for the safety of the public. Should Contractor and/or its agent fail to respond and take action to alleviate such an emergency situation, Owner may direct other forces to take action as necessary to remedy the emergency condition, and Owner will deduct any cost of such remedial action from the funds due Contractor under this Contract, or Contractor shall reimburse Owner for same on demand.

- .3 In the event there is an accident involving injury to any individual or damage to any property on or near the Work, Contractor shall provide to Owner's Representative verbal notification within one (1) hour and written notification within twenty-four (24) hours of the event and shall be responsible for recording the location of the event and the circumstances surrounding the event through photographs, interviewing witnesses, obtaining medical reports, police accident reports and other documentation that describes the event. Copies of such documentation shall be provided to Owner's Representative, for Owner's and Principal Architect/Engineer's records, within forty-eight (48) hours of the event. Contractor shall cooperate with Owner on any Owner investigation of any such incident.

6.12 Continuing the Work: Contractor shall carry on the Work and adhere to the Project Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as Owner and Contractor may otherwise agree in writing.

6.13 Contractor's General Warranty and Guarantee:

6.13.1 Contractor warrants and guarantees to Owner that all Work will conform to the drawings and specifications, be performed in a good and workmanlike manner in accordance with the Contract Documents and will not be Defective and that the whole and entire Work will function and operate as expressed or required by the Contract Documents. This warranty will survive the termination or expiration of the Contract. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

- .1 abuse, modification or improper maintenance or operation by persons other than Contractor, Subcontractors or Suppliers; or
- .2 normal wear and tear under normal usage.

6.13.2 Nothing in this warranty is intended to limit any Manufacturer's warranty which provides Owner with greater warranty rights than set forth in this Section or the Contract Documents. Further, nothing in this warranty shall be limited by the Contractor's obligation to cure defects within any specific corrective or warranty period as required in the Contract Documents, including Section 13.7 below.

6.13.3 Contractor's obligation to perform and complete the Work in a good and workmanlike manner in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

- .1 observations by Owner's Representative, Owner's CMT Consultant, and/or Principal Architect/Engineer;
- .2 recommendation of any progress or final payment by Owner's Representative;
- .3 the issuance of a certificate of Substantial Completion or any payment by Owner to Contractor under the Contract Documents;
- .4 use or occupancy of the Work or any part thereof by Owner;
- .5 any acceptance by Owner or any failure to do so;
- .6 any review of a Shop Drawing or sample submittal;

- .7 any inspection, test or approval by others;
- .8 any correction of Defective Work by Owner; or
- .9 progress payments or final payment by Owner.

6.13.4 Except as otherwise agreed in writing by the Parties, partial occupancy or use of some or all of the Work or any part thereof shall not commence the corrective period under Section 13.7 below.

6.13.5 Independent from Contractor's warranty and corrective work obligations, Contractor shall be responsible for maintenance of the Work prior to Owner's occupancy or use of same, such that the Work shall be capable of being started-up and operated as designed without any additional maintenance, or any repair or replacement of, or additional work or services on, the equipment, materials or systems.

6.13.6 Not used.

6.14 INDEMNIFICATION BY CONTRACTOR:

6.14.1 Contractor shall defend, indemnify and hold harmless (collectively, "Indemnify") Owner, the Owner's Representative, the Principal Architect/Engineer, Principal Architect/Engineer's Consultants and Subconsultants and their respective officers, directors, partners, employees, agents and other Consultants (the "INDEMNIFIED PARTIES") from and against all claims, costs, losses, demands, injuries, liabilities, damages, causes of action and expenses (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals and all court or other dispute resolution costs) arising out of or resulting from the Work, provided that any such claim, cost, loss, demand, injury, liability, damage or cause of action:

- .1 Is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, and
- .2 Is caused in whole or in part by any negligent act or omission of Contractor, any Subcontractor, any Supplier, 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, even if caused in part by any negligence or omission of one or more of the INDEMNIFIED PARTIES; save and except that Contractor's obligation to Indemnify shall not apply to the extent such claims, costs, losses, demands, injuries, liabilities, damages, causes of action or expenses are caused by negligence or fault, breach or violation of a statute, ordinance, governmental regulation, standard or rule or breach of contract of an Indemnified Party or any third party under the control or supervision of an Indemnified Party other than Contractor or its agent or employee or Subcontractors of any tier.

6.14.2 Notwithstanding Subsection 6.14.1, **CONTRACTOR AGREES TO AND SHALL DEFEND, INDEMNIFY AND HOLD HARMLESS (COLLECTIVELY "INDEMNIFY") OWNER, THE OWNER'S REPRESENTATIVE, THE PRINCIPAL ARCHITECT/ENGINEER, PRINCIPAL ARCHITECT/ENGINEER'S CONSULTANTS AND SUBCONSULTANTS**

AND THEIR RESPECTIVE OFFICERS, DIRECTORS, PARTNERS, MEMBERS, EMPLOYEES, AGENTS AND OTHER CONSULTANTS (COLLECTIVELY THE "INDEMNIFIED PARTIES" OR INDIVIDUALLY AN "INDEMNIFIED PARTY") FROM AND AGAINST ANY AND ALL CLAIMS, COSTS, LOSSES, DEMANDS, INJURIES, LIABILITIES, DAMAGES, AND CAUSES OF ACTION, INCLUDING BUT NOT LIMITED TO ALL EXPENSES OF LITIGATION, COURT COSTS AND ATTORNEYS' FEES (COLLECTIVELY, IN THIS SUBSECTION 6.14.2, "EMPLOYEE CLAIMS"), FOR BODILY INJURY OR DEATH OF ANY EMPLOYEE OF CONTRACTOR, ITS AGENTS, OR ITS SUBCONTRACTORS OF ANY TIER (COLLECTIVELY "EMPLOYEE" FOR THE PURPOSE OF THIS SECTION 6.14.2), ACTUALLY OR ALLEGEDLY OCCASIONED BY, CONTRIBUTED TO OR ARISING OUT OF, IN WHOLE OR IN PART, THE WORK OR THIS CONTRACT, INCLUDING BUT NOT LIMITED TO CLAIMS DUE TO NEGLIGENCE, GROSS NEGLIGENCE, BREACH OF WARRANTY, BREACH OF CONTRACT, VIOLATION OF ANY STATUTE, RULE OR REGULATION OR OTHER ACT OR OMISSION BY CONTRACTOR, ITS EMPLOYEES, AGENTS OR ANY SUBCONTRACTOR OF CONTRACTOR OF ANY TIER, OR THEIR RESPECTIVE AGENTS OR EMPLOYEES, OR ANY OTHER PARTY FOR WHOSE ACTS CONTRACTOR IS LIABLE. CONTRACTOR'S OBLIGATION TO INDEMNIFY SHALL APPLY EVEN IF SUCH EMPLOYEE CLAIMS ARE ACTUALLY OR ALLEGEDLY CAUSED IN WHOLE OR IN PART BY THE ACTS, OMISSIONS, OR NEGLIGENCE OF AN INDEMNIFIED PARTY, EVEN IF SUCH NEGLIGENCE OR OTHER ACTS OR OMISSIONS ARE ACTIVE OR PASSIVE, DIRECT OR INDIRECT, SOLE OR CONCURRENT. THIS INDEMNITY AGREEMENT IS INTENDED TO INDEMNIFY THE INDEMNIFIED PARTIES FROM THE CONSEQUENCES OF THEIR OWN NEGLIGENCE, AS PROVIDED ABOVE.

- 6.14.3** The indemnification obligation under Section 6.14.1 and 6.14.2 shall not be limited in any way by any insurance required by or provided in connection with this Contract or otherwise, or by any limitation on the amount or type of damages, or compensation or benefits payable by or for Contractor or any such Subcontractor, Supplier or other person or organization under workers' compensation acts, disability benefit acts or other employee benefit acts.
- 6.14.4** Notwithstanding anything in Section 6.14.1 or 6.14.2 to the contrary, the obligations of Contractor under Section 6.14.1 and 6.14.2 shall not extend to the liability of a registered architect, a licensed engineer, or an agent, servant or employee of a registered architect or a licensed engineer, for damage that is caused by or results from defects in plans, designs or specifications prepared, approved or used by the architect or engineer, or negligence of the architect or engineer in the rendition or conduct of professional duties called for or arising out of the construction contract and the plans, designs or specifications that are a part of the construction contract; and arises from personal injury or death, property injury, or any other expense that arises from personal injury, death, or property injury.
- 6.14.5** In the event Contractor fails to follow Owner's directives concerning use of the Site, scheduling or course of construction, or engages in other conduct which results in damage to property based on inverse condemnation or

otherwise, then and in that event, Contractor shall indemnify Owner against all costs and claims resulting therefrom except to the extent such costs or claims are caused by negligence or fault, breach or violation of a statute, ordinance, governmental regulation, standard or rule or breach of contract of Owner or any third party under the control or supervision of Owner other than Contractor or its agent or employee or Subcontractors of any tier.

6.14.6 Subject to the limitation as set out in Section 6.14.4, in the event Contractor's negligence or breach of contract results in Delay in the progress of the Work or the performance of services being done by others on the Site or otherwise with regard to the Project (including Owner's separate contractors, design professionals, and consultants) so as to result in loss for which Owner becomes liable to such others, then Contractor shall indemnify Owner from and reimburse Owner for such loss, except to the extent such loss is caused by negligence or fault, breach or violation of a statute, ordinance, governmental regulation, standard or rule or breach of contract of Owner or any third party under the control or supervision of Owner other than Contractor or its agent or employee or Subcontractors of any tier.

6.15 Not used.

6.16 Not used.

6.17 Notice of Claim: Should Contractor suffer injury or damage to person or property because of any error, omission or act of Owner or of any of Owner's employees or agents or others for whose acts Owner is liable, a Claim must be made to Owner within five (5) calendar days of the event giving rise to such injury or damage. The provisions of this Section 6.17 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or statute of repose.

6.18 Liquidated Damages or Economic Disincentives: Contractor and its Surety shall be liable for liquidated damages or economic disincentives as provided in the Contract for the failure of the Contractor to timely complete the Work within the Contract Time Requirements.

6.19 Commissioning: The Contractor will be responsible to provide all of the required commissioning of the mechanical, electrical, instrumentation, and proprietary equipment and systems for the Project. This is the process of verification, preliminary testing, starting up and functional operations testing of all such equipment and systems which are part of the Project. The term "commissioning" shall specifically include the drafting, review and verification of all test plans and test reports for all equipment and systems which are part of the Project. The verification, testing, start-up and commissioning of the mechanical, electrical, instrumentation, and proprietary equipment and systems for the Project can be performed by the Contractor's personnel or it can be part of a subcontract work package with the Contractor managing and supervising that Scope of Work.

6.19.1 At least ninety (90) days prior to the planned dates for the initiation of the preliminary testing of any mechanical, electrical, instrumentation, and proprietary equipment and systems for the Project, or within a time-frame agreed upon at the Pre-Construction Meeting, the Contractor shall prepare

and submit an overall Project Testing and Commissioning Program for Owner, Owner's Representative, and Principal Architect/Engineers' review and approval.

6.19.2 Project Testing and Commissioning Program: The Project Testing and Commissioning Program shall cover all aspects of the Project and shall contain as a minimum, all of the following information:

- .1 Equipment Test Plans:** An individual Equipment Test Plan configured for each piece of mechanical, electrical, instrumentation, and proprietary equipment and items on the entire Project that identifies how each piece of such equipment or item is to be verified, tested and commissioned including what functional elements must be demonstrated and precisely how those functional elements will be demonstrated to be operational to the Owner, Owner's Representative, and the Principal Architects/Engineers.

6.20 Shop Drawings & Submittals: The Contractor shall be required to provide submittals, samples and Shop Drawings to the Owner's Representative for transmittal to the Principal Architect/Engineer for approval in accordance with the Schedule of Submittals and section 01 33 00 of Division 01 Submittals.

6.20.1 Each submittal shall be identified in a format and in quantities as may be required by the Owner and section 01 33 00 of Division 01 Submittals. Contractor shall utilize Owner's standard forms unless otherwise approved in writing by the Owner.

6.20.2 Where a Shop Drawing or sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Principal Architect/Engineer's review and approval of the pertinent submittal will be at the sole risk and expense of Contractor.

6.20.3 Before submitting each Shop Drawing or sample, Contractor shall have:

- .1** reviewed and coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the Work and the Contract Documents;
- .2** determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
- .3** determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
- .4** determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

6.20.4 Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's preparation, review and approval of that submittal.

- 6.20.5** With each submittal, Contractor shall give Principal Architect / Engineer specific written notice of any variations that the Shop Drawing or sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawings or sample submittal; and, in addition, by a specific notation made on each Shop Drawing or sample submitted to Principal Architect / Engineer for review and approval of each such variation.
- 6.20.6** Principal Architect/Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Principal Architect/Engineer. Engineer's review and approval will be only to evaluate whether the items covered by the submittals appear that they will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
- 6.20.7** Principal Architect/Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
- 6.20.8** Principal Architect/Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Section 6.20.5 and Principal Architect/Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or sample. Principal Architect / Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Section 6.20.3.
- 6.20.9** Contractor shall make corrections required by Principal Architect / Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Principal Architect/Engineer on previous submittals.
- 6.21 Operation & Maintenance Manuals:** The Contractor shall be required to provide Operations & Maintenance Manuals for all mechanical, electrical, instrumentation, and proprietary equipment and items being installed as part of the Work. The Contractor must compile all specified instructions, maintenance manuals and operating data as defined under this section and in the Specifications. The compilation and assembly of the Operations & Maintenance Manuals for the Work can be performed by the Contractor's personnel or it can be part of a subcontract work package with the Contractor managing and supervising that Scope of Work. The Contractor shall strictly adhere to all of the requirements for the assembly, formatting and printing of the O&M Manuals as more thoroughly defined in the Contract Documents.

- 6.22 Training of Owner's Personnel:** The Contractor shall be required to provide training of the Owner's designated personnel for all mechanical, electrical, instrumentation, and proprietary equipment and items being installed on the Project. The Contractor must provide this training as defined under this section, Division 01 and the Specifications. The training of the Owner's designated personnel for all mechanical, electrical, instrumentation, and proprietary equipment and items being installed on the Project can be performed by the Contractor's personnel or it can be part of a subcontract work package with the Contractor managing and supervising that Scope of Work.

ARTICLE 7 - OTHER WORK

- 7.1** Owner may perform other work related to the Project at the Site by Owner's own forces, or let other contracts for the other work, or have other work performed by utility owners. Contractor and Owner agree to and shall use best efforts to cooperate and coordinate the Work with others performing work and other work related to the Project in order to avoid conflicts and Delays in the Work.
- 7.2** Contractor shall afford Owner's Independent Contractors and each utility owner (and Owner, if Owner is performing the additional work with Owner's employees) proper and safe access to the Site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work and shall properly connect and coordinate the Work with theirs. Unless otherwise provided in the Contract Documents, 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 work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the advance written consent of Owner's Representative and the other contractors whose work will be affected. Unless expressly so consented to by such parties, Contractor shall promptly remedy damage caused by Contractor to completed or partially completed construction or to property of the Owner or separate contractors.
- 7.3** If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Owner's Representative in writing any Delays, defects or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.
- 7.4** Owner shall provide for coordination of the activities of the Owner's own forces and of Owner's Independent Contractors with the Work of Contractor, who shall cooperate with them. Contractor shall participate with Owner's Independent Contractors and Owner's Representative in reviewing their construction schedules when directed to do so. On the basis of such review, Contractor shall make any revisions to the Project Schedule agreed upon as necessary after a joint review. The agreed upon construction sequences shall then constitute the Project Schedules to be used by Contractor, separate contractors and Owner until subsequently revised.
- 7.5** Contractor shall coordinate the activities of all Subcontractors. If Owner performs other work on the Project or at the Site with Owner's Independent Contractors, Contractor agrees to reasonably cooperate and coordinate its activities with those of

such separate contractors so that the Project can be completed in an orderly and coordinated manner without unreasonable disruption.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

- 8.1** Prior to the start of construction, Owner will designate in writing a person or entity to act as Owner's Representative during construction. The Owner shall retain the right to communicate directly with the Contractor. However, except as otherwise provided in these General Conditions, the Owner shall issue communications to Contractor through the Owner's Representative. Owner's Representative will be responsible for providing Owner-supplied information and approvals. Owner's Representative will also endeavor to provide Contractor with prompt notice if it observes a failure on the part of the Contractor to fulfill its contractual obligations, including any errors, omissions or defects in the performance of the Work; however, failure of the Owner's Representative to provide Contractor with such notice shall not relieve Contractor of any of its responsibilities under the Contract Documents.
- 8.2** Owner and Owner's Representative will not supervise, direct, control or have authority over or be responsible for Contractor's means, methods, techniques, sequences or procedures of construction or the safety precautions and programs incident thereto. Owner and Owner's Representative are not responsible for any failure of Contractor to comply with Legal Requirements applicable to furnishing or performing the Work. Owner and Owner's Representative are not responsible for Contractor's failure to perform or furnish the Work in accordance with the Contract Documents. Failure or omission of Owner or Owner's Representative to discover, or object to or condemn any Defective Work or material shall not relieve Contractor from the obligation to properly and fully perform the Contract.
- 8.3** Owner and Owner's Representative are not responsible for the acts or omissions of Contractor, or of any Subcontractor, any Manufacturer or Supplier, or of any other person or organization performing or furnishing any of the Work. Contractor acknowledges and agrees that Owner's or Owner's Representative's direction to perform Work in accordance with the approved Master Project Schedule is not a demand for acceleration or a dictation of Contractor's means or methods.
- 8.4** Information or services under the Owner's control shall be furnished by the Owner with reasonable promptness. The Owner or Owner's Representative shall have a reasonable amount of time to investigate Site conditions, review submittals, analyze requests for changes, and to make other decisions in the orderly administration of the Contract. Contractor must notify the Owner and/or Owner's Representative in writing, if the time for the investigation, review, analysis of any submittals, required for changes or otherwise required for Owner's decision, impacts in any way the Critical Path of the approved Master Project Schedule.
- 8.5 Furnishing of Services and Information**
- 8.5.1** Owner may provide, at its own cost and expense, for Contractor's information and use, any of the following, all of which are not binding on Owner, are not Contract Documents, are not warranted or represented in any manner to accurately show the conditions at the Site of the Work, and shall not be the basis for any Claim for damages, additional compensation or extension of time should the actual conditions in the course of the Work

vary or differ from conditions or information contained in or inferable from them:

- .1 Surveys describing the property, boundaries, topography and reference points for use during construction, including existing service and utility lines;
- .2 Geotechnical studies describing subsurface conditions, and other surveys describing other latent or concealed physical conditions at the Site;
- .3 Temporary and permanent easements, zoning and other requirements and encumbrances affecting land use, or necessary to permit the proper design and construction of the Project and enable Contractor to perform the Work;
- .4 A legal description of the Site;
- .5 As-built and record drawings of any existing structures at the Site; and
- .6 Environmental studies, reports and impact statements describing the environmental conditions, including Hazardous Conditions, known by the Owner to be in existence at the Site.

8.5.2 In accordance with the Davis-Bacon Wage Requirements, Owner shall periodically interview employees entitled to the Davis-Bacon prevailing wages to verify that contractors or subcontractors are paying the appropriate wage rates. All interviews shall be conducted in confidence and will be documented using Standard Form 1445, attached hereto. Contractor shall cooperate and assist Owner in establishing an interview schedule.

ARTICLE 9 – PRINCIPAL ARCHITECT/ENGINEER'S STATUS DURING CONSTRUCTION

9.1 Principal Architect/Engineer's Authority and Responsibilities:

- 9.1.1** The duties and responsibilities and the limitations of authority of Principal Architect/Engineer during construction, as set forth in the Contract Documents, may be assigned or assumed by the Owner, but shall not be extended without written consent of Owner and/or Principal Architect/Engineer. The assignment of any authority, duties or responsibilities to Principal Architect/Engineer under the Contract Documents, or under any agreement between Owner and Principal Architect/Engineer, or any undertaking, exercise or performance thereof by Principal Architect/Engineer, is intended to be for the sole and exclusive benefit of Owner and not for the benefit of Contractor, Subcontractor, Supplier, or any other person or organization, or for any surety or employee or agent of any of them.
- 9.1.2** Principal Architect/Engineer will not supervise, direct, control or have authority over or be responsible for Contractor's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto. Principal Architect/Engineer is not responsible for any failure of Contractor to comply with Legal Requirements applicable to the furnishing or performing the Work. Principal Architect/Engineer is not responsible for Contractor's failure to perform or furnish the Work in accordance with the Contract Documents. Failure or omission of Principal Architect/Engineer to discover, or object to or

condemn any Defective Work or material shall not relieve Contractor from the obligation to properly and fully perform the Contract.

- 9.1.3** Principal Architect/Engineer is not responsible for the acts or omissions of Contractor, or of any Subcontractor, any Manufacturer or Supplier, or of any other person or organization performing or furnishing any of the Work.
- 9.1.4** If Owner and Principal Architect/Engineer agree, Principal Architect/Engineer will review the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, Bonds and certificates of inspection, tests and approvals and other documentation required to be delivered by Article 14, but only to determine generally that their content appears to comply with the requirements of, and in the case of certificates of inspections, tests and approvals that the results certified indicate compliance with, the Contract Documents.
- 9.1.5** The limitations upon authority and responsibility set forth in this Section 9.1 shall also apply to Principal Architect/Engineer's Consultants, Resident Project Representative and assistants.
- 9.2 Visits to Site:** If Owner and Principal Architect/Engineer agree, Principal Architect/Engineer will make visits to the Site at intervals appropriate to the various stages of construction as requested by the Owner or the Owner's Representative and as Principal Architect/Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Principal Architect/Engineer will endeavor for the benefit of Owner to determine, in general, if the Work is proceeding in accordance with the Contract Documents. Principal Architect/Engineer will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. Principal Architect/Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and on-site observations, Principal Architect/Engineer will keep Owner and Owner's Representative informed of the progress of the Work and will endeavor to guard Owner against Defective Work. Principal Architect/Engineer's visits and on-site observations are subject to all the limitations on Principal Architect/Engineer's authority and responsibility set forth in Section 9.1 above.
- 9.3 Resident Project Representative:** If Owner and Principal Architect/Engineer agree, Principal Architect/Engineer may furnish a Resident Project Representative to assist Principal Architect/Engineer in providing more continuous observation of the Work. Owner may designate another representative or agent to represent Owner at the Site who is not a Principal Architect/Engineer, Principal Architect/Engineer's consultant, agent or employee.
- 9.4 Clarifications and Interpretations:** Principal Architect/Engineer may determine that written clarifications or interpretations of the requirements of the Contract Documents (in the form of drawings or otherwise) are necessary. Such written clarifications or interpretations will be consistent with the intent of and reasonably inferable from the Contract Documents, will be issued by the Principal Architect/Engineer after consultation with the Owner, and the Contractor will comply

with same. If Contractor believes that a written clarification or interpretation alters the Scope of Work and justifies an adjustment in the Contract Amount or the Contract Time Requirements, Contractor may make a Claim as provided in Article 11 or 12.

- 9.5 Rejecting Defective Work:** Principal Architect/Engineer will recommend that Owner disapprove or reject Work which Principal Architect/Engineer believes fails to conform to a requirement of the Contract Documents or believes will not produce a completed Project that conforms to the Contract Documents, or will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
- 9.6** The Principal Architect/Engineer shall not have the authority to issue changes in the field without the express written approval of the Owner.
- 9.7 Shop Drawings:** Refer to Division 01 for Principal Architect/Engineer's authority concerning Shop Drawings.

ARTICLE 10 - CHANGES IN THE WORK

10.1 Changes:

- 10.1.1** Without invalidating the Contract and without providing notice to any Surety, Owner may, at any time or from time to time, order additions, deletions or revisions in the Work. Such changes in the Work will be authorized by Change Order, Change Directive or Field Order. In the event that the Owner and the Contractor are unable to negotiate the terms of a Change Order for the performance of additional Work, the Owner may, at its election, perform such additional Work with its own forces or an Independent Contractor and such work will be considered "Other Work" in accordance with Article 7 or issue a Change Directive.
- 10.1.2** Changes in the Work shall be performed under applicable provisions of the Contract Documents, and Contractor shall proceed promptly, unless otherwise provided in the Change Order, Change Directive or Field Order. Contractor's proposals for changes in the Contract Amount and/or Contract Time Requirements shall be submitted within ten (10) Calendar Days as requested by the Owner, including estimated impacts to the approved Master Project Schedule if any. Owner will review each proposal and promptly respond to Contractor. After initial review of Contractor's proposal by Owner, Contractor shall provide any supporting data requested by Owner, including but not limited to any Subcontractor or Supplier proposal, within seven (7) Calendar Days, unless Owner grants an extension.
- 10.1.3** Contractor shall not be entitled to an increase in the Contract Amount or an extension of the Contract Time Requirements with respect to any Work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in Sections 3.3.1 and 3.3.2, except in the case of an emergency as provided in Section 6.11.15 or in the case of uncovering Work as provided in Section 13.4.
- 10.1.4** Except in the case of an emergency as provided in Section 6.11.15, a Change Order or Change Directive is required before Contractor commences

any activities associated with a change in the Work which, in Contractor's opinion, will result in a change in the Contract Amount and/or Contract Time Requirements. Any Work performed prior to Contractor's receipt of a Change Order or Change Directive, will be at Contractor's sole risk and expense, including potential cost impacts and any Delay to the Critical Path of the Master Project Schedule.

10.1.5 Not used.

10.1.6 Contractor shall provide to the Owner's Representative's all Contractor documentation/records deemed necessary by Owner or Owner's Representative to evaluate the Contractor's Claim including, but not limited to certified payroll, receipts, bills of lading, invoices, schedules, contractor daily reports, and equipment logs. Other documents, if any, shall be provided pursuant to the Contract Documents.

10.2 Change Orders:

10.2.1 Owner and Contractor shall execute appropriate written Change Orders covering:

- .1** a change in the Work, subject to limitations in Article 10 and elsewhere in the Contract;
- .2** the amount of the adjustment in the Contract Amount, if any; and
- .3** the extent of the adjustment in the Contract Time Requirements, if any.

10.2.2 An executed Change Order shall constitute a settlement of and represent the complete, equitable, and final amount of adjustment in the Contract Amount and/or Contract Time Requirements owed to Contractor or Owner as a result of the occurrence or event causing the change in the Work encompassed by the Change Order.

10.3 Change Directives:

10.3.1 Owner may, by written Change Directive, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Amount and Contract Time Requirements being adjusted as the Owner may deem necessary. A Change Directive may be used in the absence of complete and prompt agreement on the terms of a Change Order, or as otherwise may be deemed to be necessary by the Owner. Where practicable, any items or elements of changed Work that may be agreed upon, prior to the performance of Work under this Article, will be included in a separate Change Order.

10.3.2 If the Change Directive provides for an adjustment to the Contract Amount, the adjustment shall be based on one of the methods provided in Article 11.4.1.

10.3.3 A Change Directive signed by Contractor indicates the agreement of Contractor with the proposed basis of adjustment in the Contract Amount and Contract Time Requirements as described within that Change Directive.

Such agreement shall be effective immediately and shall be recorded later by preparation and execution of an appropriate Change Order.

10.3.4 The Contractor is not obligated to execute a Change Directive, but that Change Directive still constitutes valid direction to the Contractor from the Owner. The refusal by the Contractor to accept the terms incorporated within a Change Directive does not invalidate the content of the Change Directive or undermine in any manner the Owner's right to provide the directive contained within that Change Directive. Upon receipt of a Change Directive, Contractor shall promptly proceed with the change in the Work involved, provided, prior to the commencement of any Work under this section, the Contractor must submit its proposed Work plan, anticipated schedule, and a list of its work force and equipment proposed to be used in such Work for Owner's approval. Upon such approval, Contractor must promptly commence and make continuous progress in the Change Directive Work. The Owner reserves the right to withhold payment for low production or lack of progress.

10.3.5 The Owner will allow the Contractor to bill for all portions of a Change Directive for which the Work has been successfully completed, if and to the extent the Change Directive provides for an adjustment to the Contract Amount.

10.4 Field Order:

10.4.1 Owner may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Amount or the Contract Time Requirements and are compatible with the design concept of the completed Project as a functioning whole as intended by the Contract Documents. These minor variations shall be accomplished by written Field Order and shall be binding on Owner and on Contractor who shall perform the Work involved promptly. Contractor shall promptly acknowledge in writing the receipt of a Field Order.

10.4.2 If Contractor believes that a Field Order justifies an adjustment in the Contract Amount and/or Contract Time Requirements, Contractor shall make a prompt written request to Owner for a Change Order or Change Directive. Any request by Contractor for an adjustment in Contract Amount and/or Contract Time Requirements must be made in writing prior to the Contractor or the Contractor's Subcontractors beginning the Work covered by the Field Order.

10.5 Limitation on Damages for Delay:

10.5.1 Contractor shall receive no compensation or damages for Delays except when, and only to the extent that, Contractor demonstrates to the reasonable satisfaction of Owner that direct and unavoidable extra cost to Contractor is caused by: (a) Change Orders or Change Directives (not attributable to Contractor's failure to comply with the Contract Documents or other fault or negligence) that Delay the Work; or (b) specific orders given by Owner to stop or suspend Work (not attributable to Contractor's failure to comply with the Contract Documents or other fault or negligence)

that Delay the Work; (c) an item "(xi)" Force Majeure event(s) or occurrence(s); or (d) failure of Owner to:

- .1 provide permits or material, which is to be furnished by Owner, or
 - .2 provide access to the Work,
- and only to the extent that such circumstances continue after the Contractor furnishes Owner with written notice of such failure, such circumstances are not attributable to Contractor's failure to comply with the Contract Documents or other fault or negligence, and such failure causes Delay (a "Compensable Delay").

10.5.2 When extra compensation or damages are claimed for a Compensable Delay, Written Notice and support shall be delivered to the Owner as Provided in Section 12.1.1, and a written statement thereof shall be presented by Contractor to Owner's Representative for Owner's Representative and Owner's review and consideration. Contractor's application for extra compensation or damages shall, however, be subject to review and approval by the Owner. In no event other than a Compensable Delay shall the Contractor be entitled to any compensation or recovery of any damages in connection with any Delays, including without limitation: consequential damages, lost opportunity costs, lost profits, unabsorbed home office overhead or other similar damages, and Contractor hereby expressly waives and releases any and all rights to claim or recover any such compensation or damages. The Owner's exercise of any of its rights or remedies under the Contract Documents (including without limitation ordering changes in the Work, or directing suspension, rescheduling, or correction of the Work), regardless of the extent or frequency of the Owner's exercise of such rights or remedies, shall not be construed as active interference in the Contractor's performance of the Work.

10.5.3 In the event of a Compensable Delay, Contractor's sole and exclusive remedy (other than as provided in Section 10.5.4) shall be recovery of Contractor's General Conditions Costs for the period of time during any Working Day that Contractor is prevented from performing Work on the Critical Path, and Contractor hereby expressly waives and releases any and all rights to claim or recover any other compensation or damages arising out of or related to a Compensable Delay. "General Conditions Costs" consist only of actual and direct costs necessarily incurred by the Contractor and which Contractor was unable to mitigate despite the exercise of reasonable diligence, for standby costs of facilities, machinery, and equipment on Site ("Standby Equipment Costs"), and "Jobsite Overhead" as defined below, calculated as follows:

- .1 Standby Equipment Costs will not be claimable, due or paid for periods when the facilities, machinery or equipment would have otherwise been idle. Claims for Standby Equipment Costs time are limited to no more than eight (8) hours per twenty-four (24) hour day, forty (40) hours per week, and one hundred seventy-six (176) hours per month. Standby Equipment Costs will be payable at 50 percent (50%) of the applicable Blue Book Rental Rates and calculated by dividing the monthly rate by one hundred seventy-six (176), multiplying the result by the number of standby hours, and multiplying that number by the regional adjustment factor and the rate adjustment factor contained in the Blue Book. Operating costs will not be claimable or payable.

- .2** Jobsite Overhead will be claimable and payable based on actual costs that the Contractor will be required to document. "Jobsite Overhead" is defined as the wages or salaries of the Contractor's on-Site administrative and supervisory personnel (when unable to perform other services for Contractor), and reasonable office expenses incurred at the Site office, and will not include any element of home office labor, employees or overhead expenses.

10.5.4 Except as otherwise provided in this Section 10.5, an extension of the Contract Time Requirements, to the extent permitted under Article 12, shall be the sole remedy of the Contractor for any claimed Delays, or loss, costs, expenses or damages incurred as a result of same.

10.5.5 This Section 10.5 is intended as a limitation on damages available to Contractor and as a defense in favor of Owner against damages not compensable in accordance with its terms, in both cases pursuant to Section 271.155 of Subchapter I of Chapter 271 of the Texas Local Government Code. Contractor and Owner agree that such limitation and defense shall apply even if Owner is found to have breached the Contract.

ARTICLE 11 - CHANGE OF CONTRACT AMOUNT

11.1 The Contract Amount is stated in the Contract and, including authorized adjustments, is the total amount payable by Owner to Contractor for performance of the Work in accordance with the Contract Documents.

11.2 Contractor agrees and acknowledges that, unless otherwise permitted by law, the original Contract Amount may not be increased by more than twenty-five percent (25%).

11.3 The Contract Amount shall only be changed by a Change Order or Change Directive. Any Claim by Contractor for an adjustment in the Contract Amount shall be made by Written Notice delivered to Owner promptly (but in no event later than fifteen (15) calendar days) after the start of the occurrence or 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 be delivered within thirty (30) calendar days after Written Notice of Claim is delivered by Contractor, and shall represent that the adjustment claimed covers all known amounts to which Contractor is entitled as a result of said occurrence or event. If Owner and Contractor cannot otherwise agree, all Claims by Contractor for adjustment in the Contract Amount shall be determined as set out in Article 16.

11.4 Determination of Value of Change Order or Change Directive Work:

11.4.1 The value of any Work covered by a Change Order or Change Directive for an adjustment in the Contract Amount will be determined by one of the following methods:

- .1** by application of unit prices contained in the Contract Documents or subsequently agreed upon to the quantities of the items involved.
- .2** by a mutually agreed lump sum properly itemized and supported by sufficient substantiating data to permit evaluation.

- .3 by a cost which has been determined in a manner agreed upon by the Parties and mutually acceptable fixed or percentage fee; or
- .4 as provided in Subsection 11.5.

11.4.2 No cost will be included in the Change Order or Change Directive for the Contractor's time spent preparing the Change Order or responding to the Change Directive, nor will costs be included for the time to negotiate the Change Order or Change Directive costs for machinery, tools, or equipment as described in Subsection 11.5.3.

11.4.3 Before using the method described in Section 11.4.1.4, Owner and Contractor agree to attempt to negotiate a Change Order or Change Directive using the methods identified in Sections 11.4.1.1 through 11.4.1.3, as appropriate, to determine the adjustment in the Contract Amount.

11.5 Determination of Value of Change Order or Change Directive Work When No Agreement: If none of the methods defined in Sections 11.4.1.1, 11.4.1.2 or 11.4.1.3 can be agreed upon before a change in the Work is commenced which will result in an adjustment in the Contract Amount, then the change in the Work will be performed by Change Directive, and the appropriate adjustment determined using the Force Account method set forth below in Subsections 11.5.1 through 11.5.6. The "Cost of the Work" consists only of those items specified in Subsections 11.5.1 through 11.5.5, below.

11.5.1 For all personnel, Contractor or Subcontractors will be entitled to reimbursement for wages or salaries and employee benefit costs for extra Work performed using the employees' actual wages or salaries and a forty percent (40%) burden rate. No charge for additional superintendence will be permitted unless considered necessary and ordered by Owner;

11.5.2 Contractor will be entitled to the actual cost, including freight charges, of the materials used and installed on such Work. In case material invoices indicate a discount may be taken, the actual cost will be the invoice price minus the discount;

11.5.3 For machinery, trucks, power tools, or other similar equipment (the "equipment") agreed to be necessary by Owner and Contractor, Contractor will be entitled to reimbursement for actual rental costs;

11.5.4 Contractor will be entitled to the actual cost of Contractor's premiums for Bond(s) and insurance on the extra Work, based on invoices from Surety and insurance carriers. Contractor shall provide Owner's Representative or Owner with invoices from Surety and insurance carriers indicating such cost when requested by Owner's Representative or Owner;

11.5.5 Contractor will be entitled to reimbursement for actual, direct additional General Conditions Costs, but without duplication of any costs otherwise recoverable under this Subsection 11.5, reasonably and necessarily incurred by Contractor in the performance of the extra Work and which can be reasonably demonstrated to the Owner to be necessary to implement the changed Work; and

11.5.6 Contractor will be entitled to allowances for overhead and profit as stated below.

.1 The maximum allowance for overhead and profit on increases due to Change Orders and Change Directives:

	Overhead	Profit
To Contractor for change in the Work performed by Subcontractors:	10 percent	0 percent

To first tier Subcontractors for change in the Work performed by its Subcontractors:	10 percent	0 percent
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To Contractor and Subcontractor for change in the Work performed by their respective firms:	10 percent	5 percent
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.2 For changes in the Work performed by Contractor and Subcontractors, allowance for overhead and profit will be applied to an amount equal to cost of all additions less cost of all deletions to the Work. Allowance for overhead to Contractor and first tier Subcontractors on changes performed by Sub-Subcontractors are applied to an amount equal to the sum of all increases to the Work by applicable Sub-Subcontractors, less any decreases in such Sub-subcontractors' Work.

11.5.7 If Owner deletes Work or makes a change which results in a net decrease in the Contract Amount, the Owner is entitled to a credit calculated in accordance with Subsections 11.4.1.1 through 11.4.1.4.

11.5.8 The compensation, as herein provided for, shall be received by Contractor and any affected Subcontractor as payment in full for Work done by Change Directive and will include use of small tools, and total overhead expense and profit. Contractor shall maintain in accordance with generally accepted accounting principles a documented, itemized accounting, evidencing the expenses and savings, including overhead and profit, associated with such changes, both for expenses and savings, in the performance of the Work resulting from the change. Contractor shall submit to Owner's Representative records of Work done by Change Directive at the end of each day, which records will be made upon forms provided for this purpose by Owner, and Contractor shall request that Contractor and Owner's Representative compare records of Work done by Change Directive at the end of each day. Any record of such comparison shall be signed by both Owner's Representative and Contractor, with one copy being retained by Owner and one by Contractor. Refusal by Contractor to sign these records within two (2) working days of presentation does not invalidate the accuracy of the record.

11.6 Unit Price Work:

11.6.1 The following Sections 11.6.1 through 11.6.7 apply only to those elements of the Work which are identified in the Contract Documents as being "Unit Price Work".

- 11.6.2** Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Amount will be deemed to include for all Unit Price Work an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as set forth in the Bid/Proposal. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids/Proposals and determining an initial Contract Amount. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Owner's Representative. Owner's Representative will review with Contractor the determinations on such matters before rendering a written decision thereon (by recommendation of payment on an Application for Payment or otherwise).
- 11.6.3** When "plan quantity" is indicated for a Bid/Proposal item, Contractor shall be paid the amount specified in the Contract Documents without any measurements.
- 11.6.4** Contractor agrees each Unit Price includes amounts for all overhead and profit associated with performing the units of Work for which the Unit Prices applies.
- 11.6.5** A Major Item is any individual Bid/Proposal item in the Bid/Proposal that has a total cost equal to or greater than five percent (5%) of the original Contract Amount or \$50,000, whichever is greater, computed on the basis of Bid/Proposal quantities and Contract Unit Prices.
- 11.6.6** Owner or Contractor may make a Claim for an adjustment in the Contract Amount in accordance with Article 11 if:
- .1** the actual quantity of any Major Item should become as much as twenty five percent (25%) more than or twenty five percent (25%) less than that in the Bid/Proposal; or
 - .2** Contractor presents documentation contesting accuracy of a "plan quantity" and Owner verifies actual quantity and determines the "plan quantity" is in error by five percent (5%) or more;
- 11.6.7** Provided, however, in the event a Major Item is reduced by twenty-five percent (25%) or more relative to the quantity amount in the Bid/Proposal, no additional Article 11.5.6 profit or overhead will be added, if, due to other additions in the Work, the net value of the Contract Amount is not reduced.

ARTICLE 12 - CHANGE OF CONTRACT TIMES

12.1 Requisites for Changes in Contract Time Requirements:

- 12.1.1** The Contract Time Requirements (including Milestones) may only be changed by Change Order duly executed by both Contractor and Owner or by Change Directive. Any Claim for an adjustment of the Contract Time Requirements (including Milestones) or adjustment of the Contract Amount due to any Compensable Delay as provided in Section 10.5 shall be made by Written Notice delivered by the party making the Claim to the other party promptly (but in no event later than five (5) calendar days after the start of the occurrence or event giving rise to the Delay) and stating the

general nature of the Delay. Notice of the extent of the Delay and any requested adjustment of the Contract Amount due to any Compensable Delay as provided in Section 10.5, with supporting data, shall be delivered within thirty (30) calendar days after Written Notice of Claim is delivered by claimant, and shall represent that the adjustment claimed is the entire adjustment to which claimant is entitled as a result of said occurrence or event. If Owner and Contractor cannot otherwise agree, all Claims for adjustment in the Contract Time Requirements (including Milestones) and/or adjustment of the Contract Amount due to any Compensable Delay as provided in Section 10.5 shall be determined in accordance with and subject to the requirements of Article 16. Notwithstanding anything in the Contract Documents to the contrary, no Claim for an adjustment in the Contract Time Requirements (including Milestones) and/or adjustment of the Contract Amount due to any Compensable Delay as provided in Section 10.5 will be valid if not submitted in accordance with the requirements of this Article.

12.1.2 When Contractor is at fault and Owner stops the Work so that corrections in the Work can be made by Contractor, no extensions of time will be allowed.

12.1.3 Except for an item (xi) event of Force Majeure which shall be governed by Section 10.5, in the event of a Delay attributable to Force Majeure, an extension of the Contract Time Requirements (including Milestones) in an amount equal to the time lost due to such Delay shall be Contractor's sole and exclusive remedy for such Delay. In such an event, Contractor shall take all commercially reasonable action to mitigate the Delay, and Owner and Contractor will meet no later than three (3) business days after cessation of the event to establish a proposed new Project Schedule for the Project. Any claimed Force Majeure Delay attributable to industry-wide delays or disruptions in manufacture or delivery of materials or equipment required for the Work shall be supported by the following documentation:

- (a)** By copies of purchase orders for Delayed item(s) indicating date ordered by Contractor/Subcontractor and date of purchase order receipt by Supplier;
- (b)** If item(s) require Shop Drawings or other submittal information in accordance with the Contract Documents, by providing records of dates Contractor forwarded submittal(s) to Owner's Representative, dates Owner or Principal Architect/Engineer returned submittal(s) to Contractor, and dates submittal(s) were forwarded to Manufacturer or Supplier;
- (c)** By copies of document(s) from Manufacturer or Supplier, on Manufacturer's or Supplier's letterhead, indicating date(s) item(s) would be ready for shipment and/or actual shipment date(s);
- (d)** By copies of correspondence between Contractor / Subcontractor and Manufacturer or Supplier indicating Contractor / Subcontractor's efforts to expedite item(s); and
- (e)** If item(s) are being purchased by a Subcontractor, by providing correspondence, meeting notes, etc., that reflect Contractor's efforts with the Subcontractor to expedite delivery of the item(s).

12.1.4 The Contractor will only be entitled to an extension of time for Delays that can be demonstrated by the Contractor through critical path analysis as causing Delay, and only for any Delay caused by Force Majeure, Changes

ordered in the Work by the Owner through Change Order or Change Directive which justify additional time, or other Delays as described in Section 10.5. No extension of time shall relieve Contractor or Surety on its performance Bond from all of Contractor's obligations hereunder which shall remain in full force and effect.

12.2 Weather Delays:

12.2.1 Contractor may be granted an extension of time because of "Unusual Inclement Weather", as defined below. However, the Contractor will not be granted an extension of time for "Normal Rain Days", as defined below.

12.2.2 "Unusual Inclement Weather" is defined as a rain event, or extreme temperatures, high winds, hail or lightning, which occurs at the Site and is of sufficient magnitude to prevent Contractor from performing units of Work critical to maintaining the Master Project Schedule on a day when Work is scheduled to be performed and is otherwise capable of being performed, and which is beyond the Normal Rain Days as defined in Section 12.2.3 below.

12.2.3 Baseline Rain Day Determination. "Normal Rain Days" are based on U.S. Weather Bureau Records available for the most immediate area of the Site of the Work, and are included in Owner's Project Schedule, are not a justification for an extension of time, and are broken down by the number of calendar days in each month as follows:

January	7 days	July	6 days
February	6 days	August	7 days
March	7 days	September	6 days
April	7 days	October	7 days
May	8 days	November	6 days
June	8 days	December	6 days

12.2.4 Not used.

12.2.5 Rainfall will be measured with the Owner's Representative's approval at the Site using an approved rain gauge or with the Owner's Representative's approval at the nearest operational public weather data collection facility to the Site.

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

13.1 Notice of Defects: All Defective Work may be rejected, corrected or accepted as provided in Article 13. Contractor must give Owner, Owner's Representative, and Principal Architect/Engineer prompt notice of any Defective Work of which Contractor has actual knowledge. Prompt notice of all Defective Work of which Owner, Owner's Representative, Owner's CMT Consultant, or Principal Architect/Engineer has actual knowledge may be given to Contractor. Payment may be withheld by the Owner for identified Defective Work until such time as the Owner, Owner's Representative, or Principal Architect/Engineer has determined the Defective Work has been corrected such that it complies with all applicable Contract requirements.

13.2 Access to Work: Owner, Owner's Representative, Owner's CMT Consultant, Principal Architect/Engineer, Principal Architect/Engineer's Consultants, other representatives and personnel of Owner, independent testing laboratories and governmental agencies having jurisdiction will have access to the Work at reasonable times for observing, inspecting and testing. Contractor shall provide them proper and safe conditions for such access, and advise them of Contractor's site safety procedures and programs so that they may comply therewith as applicable.

13.3 Tests and Inspections:

13.3.1 Contractor shall give at least twenty-four (24) hours advance notice of readiness of the Work for all required inspections, tests or approvals, and shall coordinate and cooperate with inspection and testing personnel to facilitate the required inspections or tests.

13.3.2 Owner shall employ and pay for services of an independent testing laboratory to perform all inspections, tests or approvals required by the Contract Documents except:

- .1** for inspections, tests or approvals covered by Section 13.3.3 and 13.3.4 below;
- .2** for costs incurred with tests or inspections conducted pursuant to Section 13.4.3 below shall be paid as provided in Section 13.4.3;
- .3** for reinspecting or retesting Defective Work; and
- .4** as otherwise specifically provided in the Contract Documents.

All testing laboratories shall meet the requirements of ASTM E-329.

13.3.3 If Legal Requirements require any Work (or part thereof) specifically to be inspected, tested or approved by an employee or other representative of any governmental entity or public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests or approvals, pay all costs in connection therewith and furnish Owner's Representative the required certificates of inspection or approval.

13.3.4 Contractor shall also be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests or approvals required for Owner's, Owner's CMT Consultant's, Owner's Representative's, and Principal Architect/Engineer's review of materials or equipment to be incorporated in the Work, or of materials, mix designs or equipment submitted for review prior to Contractor's purchase thereof for incorporation in the Work.

13.4 Uncovering Work:

13.4.1 If any Work that is to be inspected, tested or approved is covered by Contractor without prior written concurrence of Owner's Representative, or if any Work is covered contrary to the written request of Owner's Representative, Contractor must, if requested by Owner's Representative, uncover and recover the Work at Contractor's expense, except as provided in Section 13.4.2.

13.4.2 Uncovering Work as provided in Section 13.4.1 shall be at Contractor's expense unless Contractor has given Owner's Representative timely notice of Contractor's intention to cover the same and Owner's Representative has not acted within five (5) working days of receipt of such notice.

13.4.3 If Owner's Representative considers it necessary or advisable that permissibly covered Work be observed, inspected or tested, Contractor shall uncover, expose or otherwise make available for observation, inspection or testing that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is Defective, Contractor shall pay or otherwise bear all claims, costs, losses and damages arising out of or resulting from such uncovering, exposure, observation, inspection and testing and satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others). If, however, such Work is not found to be Defective, Contractor shall, subject to Section 13.4.1, be allowed an increase in the Contract Amount or an extension of the Contract Time Requirements (including Milestones), or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement and reconstruction.

13.5 Owner May Stop the Work:

13.5.1 If the Work is Defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty or obligation on the part of Owner to exercise this right for the benefit of Contractor or any Surety or other party.

13.5.2 If Contractor fails to correct Defective Work or submit a plan that is satisfactory to Owner for taking corrective action, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated, or Owner may take any other action permitted by this Contract. A notice to stop the Work, based on defects, shall not stop Calendar or Working Days charged against the Contract Time Requirements.

13.6 Correction or Removal of Defective Work: If required by Owner, Contractor shall promptly, as directed, either correct all Defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by Owner or Owner's Representative, remove it from the Site and replace it with Work that is not defective. Contractor shall correct or remove and replace Defective Work, or submit a plan of action detailing how the deficiency will be corrected, within the time frame identified in the notice of Defective Work. Contractor shall pay all claims, costs, losses and damages arising out of or resulting from such correction or removal (including but not limited to all costs of repair or replacement of Work of others, and all costs of reinspecting and/or retesting such Defective Work).

13.7 Corrective period:

13.7.1 If within one (1) year after the date of Substantial Completion or such longer period of time as may be prescribed by Legal Requirements or by the

terms of any applicable special guarantee or express warranty required by the Contract Documents or by any specific provision of the Contract Documents (including but not limited to Section 14.11.2), any Work, including Work performed after the Substantial Completion date, is found to be Defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

- (a)** correct such Defective Work, or, if it has been rejected by Owner, remove it from the Site and replace it with Work that is not Defective, and
- (b)** satisfactorily correct or remove and replace any damage to other Work or the work of others, or damage to other property, whether personal or real property, resulting from the correction, removal or replacement of such Defective Work.

Such one (1) year or longer period will renew and recommence for Work requiring correction upon the completion of correction of such Work.

- 13.7.2** If Contractor does not promptly comply with the terms of Owner's corrective action instructions, or in an emergency where Delay would result in unreasonable risk of loss or damage, Owner may have the Defective Work corrected or the rejected Work removed and replaced, and all claims, costs, losses and damages arising out of or resulting from such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid or otherwise borne by Contractor.
- 13.7.3** In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the corrective period for that item will still start to run from the date of Substantial Completion of the Work.
- 13.7.4** If correction of Defective Work will affect the function or use of the facility, Contractor shall not proceed with correction of Defective Work without prior coordination with and approval of Owner.
- 13.7.5** The obligations of the Contractor to perform warranty and corrective work will survive the acceptance of the Work and any termination of the Contract.
- 13.7.6** Owner will utilize the "Warranty Item Form" a copy of which is attached hereto for the purpose of providing written notice of defects discovered during the corrective period. Contractor will acknowledge receipt of the notice by dating, signing, completing and returning the form to Owner when the defect is corrected, including such information on or attached to the form to describe the nature of the repairs or corrections that were made. If the defect cannot be corrected within seven (7) Calendar Days of receipt of notice, Contractor shall promptly provide a written explanation to Owner (or Owner's Representative) describing the repairs or other correction needed and the time required to complete the repairs or other correction.
- 13.7.7** Establishment of the required period for correction of Work as described in Subsection 13.7.1 above relates only to the specific obligation of the Contractor to correct defects in Work discovered during the corrective period, and has no relationship to the time within which any obligation to comply with the Contract Documents may be sought to be enforced, nor to

the time within which proceedings may be commenced to establish the Contractor's liability with respect to any failure by Contractor to have complied with its obligations under the Contract Documents.

13.7.8 All Manufacturer and extended Manufacturer warranties shall be assigned to Owner as a condition of Final Completion.

13.8 Acceptance of Defective Work: If, instead of requiring correction or removal and replacement of Defective Work, Owner decides to accept it, Owner may do so. Contractor shall pay or otherwise bear all claims, costs, losses and damages attributable to Owner's evaluation of and determination to accept such Defective Work. If any such acceptance occurs prior to recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents and compensating Owner for the diminished value of the Defective Work. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner after a calculation by Owner of the diminution in value of the Defective Work.

13.9 Owner May Correct Defective Work: If Contractor fails within a reasonable time after Written Notice of Owner to correct Defective Work, or to remove and replace rejected Work, 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 seven (7) calendar days' Written Notice to Contractor, correct any such deficiency. If, in the sole discretion of the Owner, significant progress has not been made by Contractor during this seven (7) calendar day period to correct the deficiency, the Owner may exercise any actions necessary to remedy the deficiency. In exercising the rights and remedies under this paragraph, Owner may proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work, and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, its agents and employees, Owner's other contractors, Principal Architect/Engineer and Principal Architect/Engineer's consultants access to the Site or any such offsite storage facility to enable Owner to exercise the rights and remedies under this paragraph. All claims, costs, losses and damages incurred or sustained by Owner in exercising such rights and remedies will be paid or otherwise borne by Contractor and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work. Such claims, costs, losses and damages will include but not be limited to all costs of repair or replacement of work of others destroyed or damaged by correction, removal or replacement of Contractor's Defective Work. Contractor shall not be allowed an extension of the Contract Time Requirements (including Milestones), or entitled to make any claim for damages resulting from any Delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies hereunder.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 Application for Progress Payment:

14.01.1 No more often than once a month, Contractor shall submit to Owner or if directed by Owner, to Owner's Representative, for review an Application

for Payment, in a form acceptable to Owner, filled out and signed by Contractor covering the Work completed as of the last day of the month for which an Application for Payment is being made. Application for Payment shall be accompanied by such supporting documentation as is required by the Contract Documents. The Application for Payment shall constitute Contractor's representation that the Work has been performed in accordance with the Contract Documents, has progressed to the point represented in the Application for Payment, and that title to all Work has passed or will pass to Owner free and clear of all claims, encumbrances, and security interests upon the incorporation of the Work into the Project, or upon Contractor's receipt of payment, whichever occurs earlier.

- 14.01.2** Such applications shall not include requests for payment on account of changes in the Work which have been properly authorized by Change Directives, if the Change Directive does not provide for an adjustment to the Contract Amount, or if the changes in the Work are not yet included in Change Orders.
- 14.01.3** Such applications shall not include requests for payment of amounts the Contractor does not intend to pay to a Subcontractor or Manufacturer or Supplier because of a dispute or other reason.
- 14.01.4** If payment is requested on the basis of materials or equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall be accompanied by such bills of sale, data and other information satisfactory to Owner and Owner's Representative substantiating Owner's title to such materials or equipment or otherwise protecting Owner's interests therein. Payment on account of such materials or equipment will not include any amount for Contractor's overhead or profit or relieve Contractor of its obligation to protect and install such materials or equipment in accordance with the requirements of the Contract and to correct or restore damaged or Defective Work and shall in no event exceed eighty five percent (85%) of the line item valuation for such materials or equipment in the Schedule of Values. If materials or equipment are stored at another location, at the direction of the Owner they shall be stored in a bonded and insured facility, accessible to Owner's Representative and Principal Architect/Engineer, CMT Consultant, and Owner, and shall be clearly marked as property of Owner. Contractor shall insure such materials and equipment while so stored and in transit to the Site. Title to materials delivered to the Site of the Work or a staging area will pass to Owner upon payment by Owner without the necessity for further documentation. Risk of loss for all such materials and equipment will not pass to Owner until final payment.
- 14.01.5** In making progress payments, ten percent (10%) of the approved amount shall be retained until final completion and acceptance of the Contract Work. However, if the Owner at any time after fifty percent (50%) of the work has been completed finds that satisfactory progress is being made, Owner may authorize any of the remaining progress payments to be made in full. Also, if the Contractor has achieved Substantial Completion of the Work and the Owner finds the amount retained to be in excess of the amount adequate for the protection of the Owner, Owner, at its sole

discretion, may release to the Contractor all or a portion of such excess amount. The Owner is not obligated to pay interest on amounts retained except as provided in the Agreement. The interest rate to be paid on such retainage shall be the rate of interest paid by the Owner's depository bank on interest bearing accounts of similar amounts during the period of time interest accrues as provided herein.

14.01.6 Applications for Payment shall include the following documentation:

- .1 an updated Project Schedule and narrative;
- .2 an Affidavit of all bills paid to Subcontractors and Suppliers in the Monthly Subcontractor Payment Reporting Form included in the Specifications;
- .3 conditional waivers and releases from Contractor upon progress and final payments, in the forms included in the Specifications; and
- .4 a Contractor's Monthly Report;

14.02 Contractor's Warranty of Title: Contractor warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner free and clear of all claims no later than the time of payment to Contractor.

14.03 Review of Applications for Progress Payment:

14.03.1 Contractor shall submit its Application for Payment to the Owner's Representative not later than three (3) days after the first day of each month. The Owner's Representative will, within seven (7) calendar days after receipt of each Application for Payment, either indicate a recommendation for payment and forward the Application for Payment for processing by Owner, or return the Application for Payment to Contractor indicating Owner's Representative's reasons for refusing to recommend payment. In the latter case, Contractor shall make the necessary corrections and resubmit the Application for Payment.

14.03.2 Owner's Representative's recommendation of any payment requested in an Application for Payment will constitute a representation by Owner's Representative, based upon Owner's Representative's on-site observations of the executed Work and on Owner's Representative's review of the Application for Payment and the accompanying schedules and other information, that to the best of Owner's Representative's knowledge, information and belief:

- .1 the Work has progressed to the point indicated; and
- .2 the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for unit price Work, and to any other qualifications stated in the recommendation).

14.03.3 By recommending any such payment, Owner's Representative will not be deemed to have represented that:

- .1 exhaustive or continuous on-site inspections have been made to check the quality or the quantity of the Work;
- .2 examination has been made to ascertain how or for what purpose Contractor has used money previously paid on account of the Contract Amount;
- .3 Contractor's construction means, methods, techniques, sequences or procedures have been reviewed; or
- .4 that there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment from Contractor.

14.04 Decisions to Withhold Payment:

14.04.1 Owner may withhold or nullify the whole or part of any payment to such extent as may be necessary on account of:

- .01 Defective Work not remedied;
- .02 third party Claims filed or reasonable evidence indicating probable filing of such Claims;
- .03 failure of Contractor to timely or properly make payments to Subcontractors or for labor, materials or equipment;
- .04 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Amount;
- .05 damage to Owner or another contractor for which Contractor is responsible;
- .06 reasonable evidence that the Work will not be completed within the Contract Time Requirements, and that the unpaid balance would not be adequate to cover actual or liquidated damages or economic disincentives for the anticipated Delay;
- .07 failure of Contractor to submit a Schedule of Values in accordance with the Contract Documents;
- .08 failure of Contractor to submit a submittal schedule in accordance with the Contract Documents;
- .09 failure of Contractor to submit and update the construction Project Schedule in accordance with the Contract Documents;
- .10 failure of Contractor to maintain a record of changes on drawings and documents;
- .11 failure of Contractor to maintain weekly payroll reports and, as applicable, provide copies of reports in a timely manner upon request of Owner;
- .12 Contractor's neglect or unsatisfactory prosecution of the Work, including failure to clean up;
- .13 property damage claims that are the responsibility of the Contractor; or
- .14 failure of Contractor to comply with any provision of the Contract Documents.

14.04.2 When the above reasons for withholding payment are remedied or no longer exist, Contractor shall resubmit a statement for withheld amounts. Payment will be made within forty-five (45) calendar days of receipt by the Owner of an approved Application for Payment, subject to Article 14.05 and Government Code, Section 2251.025(b).

14.05 Delayed Payments: Owner shall endeavor to, but shall not be obligated to, make payment to Contractor within thirty (30) calendar days of receipt of an Application for Payment in acceptable form, including all supporting documents and information required. However, Contractor agrees that should Owner fail to make payment to Contractor of the sum due on any such Application for Payment within forty-five (45) calendar days after the day on which Owner received the Application for Payment, then Owner will pay to Contractor, in addition to the sum due on such Application for Payment, interest thereon at the rate specified in Government Code, Section 2251.025(b) from date due until fully paid, which shall fully liquidate and shall be Contractor's sole and exclusive remedy for any injury to or damages incurred by Contractor arising out of such delay in payment.

14.06 Arrears: No money shall be paid by Owner upon any claim, debt, demand or account whatsoever, to any person, firm or corporation who is in arrears to the Owner for taxes; and the Owner shall be entitled to counterclaim and automatically offset against any such debt, claim, demand or account in the amount of taxes so in arrears and no assignment or transfer of such debt, claim, demand or account after said taxes are due, shall affect the right of Owner to so offset said taxes, and associated penalties and interest if applicable, against the same.

14.07 Substantial Completion:

14.07.1 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall notify Owner's Representative and request a determination as to whether the Work or designated portion thereof is substantially complete. If Owner, Owner's Representative or the Principal Architect/Engineer does not consider the Work substantially complete, Owner's Representative will notify Contractor giving reasons for that position. After performing any required Work, Contractor shall then submit another request for Owner's Representative to determine Substantial Completion. If Owner considers the Work substantially complete, Owner's Representative will prepare and deliver a certificate of Substantial Completion which shall establish the date of Substantial Completion, shall include a punch list of items to be completed or corrected before final payment, shall establish the time within which Contractor shall complete or correct the punch list items, and shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work, warranties, corrective periods, and insurance.

Failure to include an item on the punch list does not alter the responsibility of Contractor to complete all Work in accordance with the Contract Documents. If a Certificate of Occupancy or Certificate of Compliance is required by governmental entities or public authorities having jurisdiction over the Work, said certificate shall be issued before the Work or any portion thereof is considered to have achieved Substantial Completion. The certificate of Substantial Completion shall be signed by Owner and Contractor to evidence acceptance of the responsibilities assigned to them in such certificate.

.1 For water and wastewater lines construction, Substantial Completion means, in addition to the definition at Section 1.072, that the Work,

including all testing and disinfection, have been completed and accepted and the line(s) placed into service. A certificate of Substantial Completion may not be issued. Work that remains after Substantial Completion could include the final pavement of roadways, adjustment of structures to final grade and re-vegetation. Owner's Representative will issue a notice specifying what portion of the Work is partially completed for the purpose of payment and what Work remains to be done on the portion being accepted as having achieved Substantial Completion.

- .2** For water and wastewater lines construction that includes roadway construction and/or reconstruction, a certificate of partial Project Substantial Completion may be given for the Work described and deemed substantially complete per Article 14.07.1.1, exclusive of any Project roadway construction and/or reconstruction. Having received a certificate of partial Substantial Completion on the water and wastewater lines construction, a certificate of Substantial Completion of the entire or balance of the Project may be given when the roadway construction and/or reconstruction is found to be substantially complete as per Article 14.07.1.3. The requirements of Article 14.08 Partial Utilization, shall also apply.
- .3** For roadway construction and/or reconstruction, Substantial Completion means, in addition to the definition at Section 1.072, that the Work, including the final surface course, all permanent traffic control devices (pavement markings, signs, etc.), punch list items, and final cleanup has been completed, accepted, and placed into service, and, any street lighting conduit that has been installed, lowered or relocated must be inspected for usability by, and must have received written approval from, the Owner as well as having been completed, accepted, and placed into service. A certificate of Substantial Completion may not be issued. Work that remains after Substantial Completion could include final clean up. The Owner's Representative will issue a notice specifying what portion of the Work is partially completed for the purpose of payment and what Work remains to be done on the portion being accepted as having achieved Substantial Completion.
- .4** Substantial Completion shall also comprise the completion of Work associated with the Project so that the utilities, systems, equipment, and/or facilities are operating properly and functioning per their intended use, as designed. Work that can be completed between Substantial Completion and Final Completion includes finish work such as cleanup, finish painting, landscape repairs, and final documentation. However, Contractor shall provide all Owner required equipment and system operation and maintenance training and Manufacturer certifications, and shall submit all spare parts and final O&M Data in order for Substantial Completion to be deemed achieved.

- 14.07.2** Owner shall have the right to exclude Contractor from the Work after the date of Substantial Completion, but Owner will allow Contractor reasonable access to complete or correct items on the punch list and perform and complete warranty or corrective work.

- 14.07.3** Unless otherwise provided in the Contract Documents, for all periods prior to the issuance of a Certificate of Substantial Completion for the Project or for any designated area within the Project, the Contractor shall be responsible for the cost of all temporary and permanent utility charges necessary to maintain the progress and quality of the construction Work which is under the Contractor's control.
- 14.07.4** Unless otherwise provided in the Contract Documents, for all periods prior to the issuance of a Certificate of Substantial Completion for the Project or for any designated area within the Project, the Contractor shall be responsible for the cost of all temporary structural support systems necessary for the safe execution of the Work. Such systems shall be the sole responsibility of the Contractor.
- 14.08 Partial Utilization:** Use by Owner, at Owner's option, of any substantially completed part of the Work which: (i) has specifically been identified in the Contract Documents, or (ii) Owner and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work in accordance with the following:
- 14.08.1** Owner at any time may request Contractor to permit Owner to use any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If Contractor agrees that such part of the Work is substantially complete, Contractor shall certify to Owner's Representative that such part of the Work is substantially complete and request Owner's Representative to issue a notice specifying what portion of the Work is substantially complete for the purpose of payment and what Work remains to be done on the portion being accepted. Contractor at any time may notify Owner's Representative that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Owner's Representative to issue a notice specifying what portion of the Work is substantially complete for the purpose of payment and what Work remains to be done on the portion being accepted. The provisions of Sections 14.7.1 and 14.7.2 will apply with respect to notice specifying what portion of the Work is substantially complete for the purpose of payment and what Work remains to be done on the portion being accepted.
- 14.08.2** Such partial utilization must be authorized to the extent required by any governmental entities or public authorities having jurisdiction over the Work.
- 14.08.3** Warranty and corrective period requirements for such partial utilization shall be in accordance with Section 13.7.3 above.
- 14.09 Final Inspection:** Upon Written Notice from Contractor that the entire Work or an agreed portion thereof is complete, Owner will make a final inspection with Contractor and provide Written Notice of all particulars in which this inspection reveals that the Work is incomplete or Defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies. Owner's Representative, Principal Architect/Engineer, CMT Consultant

and other third party consultants and any other governmental entity or public authority with jurisdiction over the Project may assist Owner in the inspection and testing of the Work and Contractor agrees to and shall cooperate with any such consultants or authorities with respect to any such inspections and tests.

14.10 Final Application for Payment: Contractor may make application for final payment following the procedure for progress payments after Contractor has completed all such corrections to the satisfaction of Owner (and Owner's Representative) and delivered the following documents:

- 14.10.01** Affidavit by Contractor certifying the payment of all debts and claims;
- 14.10.02** Architect's/Engineer's Certificate of Completion;
- 14.10.03** Three (3) complete final operating and maintenance manuals, each containing maintenance and operating instructions, schedules, guarantees, and other documentation required by the Contract Documents;
- 14.10.04** Record documents (as provided in Section 6.10);
- 14.10.05** Complete releases or waivers (satisfactory to Owner) of all claims arising out of or filed in connection with the Work;
- 14.10.06** Certificate evidencing that insurance required by the Contract, if any, will remain in force after final payment and through the warranty and corrective periods and any longer period of time required by the Contract;
- 14.10.07** Non-Use of Asbestos Affidavit (After Construction) and lead based paints;
- 14.10.08** TPDES records in accordance with Section 6.07.4;
- 14.10.09** Consent of Surety, if any, to final payment; and
- 14.10.10** Any other documentation required by the Contract Documents.

14.11 Final Payment and Acceptance:

14.11.1 If, on the basis of observation of the Work during construction, final inspection, and review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Owner's Representative and Owner are satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled and there are no outstanding claims, Owner's Representative will recommend the final Application for Payment and thereby notify the Owner, who, if it accepts such recommendation, will pay to Contractor the balance due Contractor under the terms of the Contract. If the sole remaining unfinished item to complete the Work is the reestablishment of vegetation, Owner has the right to require Contractor to execute and deliver to Owner a re-vegetation letter with a reasonable fiscal amount posted via an irrevocable, callable on demand letter of credit issued by a financial

institution acceptable to Owner and at no cost to Owner to ensure completion of this item, as a condition of final payment. This Work must be accomplished within one hundred twenty (120) Calendar Days of the date of Final Completion of the Work. When the permanent erosion control has been established, Owner will initiate an inspection for final acceptance of the erosion controls. If the re-vegetation is not completed within the one hundred twenty (120) Calendar Days, Owner, at its option, may draw upon and complete the Work using the proceeds of the posted re-vegetation letter of credit.

14.11.2 Owner will issue a certificate of Final Completion to Contractor which establishes the Final Completion date. If the sole remaining unfinished item to complete the Work is the reestablishment of vegetation, and Contractor has executed the above-described re-vegetation letter of credit to ensure completion of this item, the Owner will issue a certificate of conditional acceptance to Contractor which establishes the Final Completion date.

14.11.3 Final payment is considered to have taken place when Contractor or any of its representatives negotiates Owner's final payment check, whether labeled final or not, for cash or deposits the check in any financial institution for its monetary return.

14.12 Waiver of Claims by Contractor: The making and acceptance of final payment will constitute a waiver of all claims by Contractor against Owner other than those previously made in writing and still unsettled at the time of the final payment.

14.13 Contractor's Payment Obligations Contractor will pay the Subcontractors, in accordance with its contractual obligations to such parties, all the amounts Contractor has received from Owner on account of their work. Contractor is required to pay the prevailing wage rates on a weekly basis to laborers and mechanics in accordance with the requirements of 29 C.F.R. 5.5, with such requirements being incorporated herein by reference. Contractor will impose similar requirements on the Subcontractors to pay those parties with whom they have contracted. Contractor will defend and indemnify Owner from and against any claims for payment by any such parties.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.1 Owner May Suspend Work Without Cause: At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than one hundred twenty (120) calendar days by Written Notice to Contractor, or such longer period of time as agreed to in writing by Owner and Contractor. Contractor shall promptly resume the Work upon Owner's written direction to proceed. Contractor shall be allowed an adjustment in the Contract Amount or an extension of the Contract Time Requirements, or both, directly attributable to any such suspension if Contractor makes an approved Claim therefor as provided in Articles 10.5 and 12.1.

15.2 Owner May Terminate Without Cause: Upon seven (7) calendar days' Written Notice to Contractor, Owner may, without cause and without prejudice to any right or remedy of Owner, elect to terminate the Contract. In such case, Contractor shall be paid (without duplication of any items):

- 15.2.1** for completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination;
- 15.2.2** for reasonable demobilization costs;
- 15.2.3** for reasonably anticipated profits on completed and accepted Work not previously paid and not included in separate pay items calculated to date of termination but not for anticipated profit on unperformed Work or unabsorbed overhead, or lost opportunity; and
- 15.2.4** for all costs reasonably incurred in settlement of terminated contracts with Subcontractors, Manufacturers, Suppliers and others, including for reasonably anticipated profits on completed and accepted Work not previously paid and not included in separate pay items calculated to date of termination but not for anticipated profit on unperformed Work or unabsorbed overhead, or lost opportunity. Contractor agrees to negotiate in good faith with Subcontractors, Manufacturers, Suppliers and others to mitigate its and Owner's costs.

15.3 Owner May Terminate With Cause:

- 15.3.1** Upon the occurrence of any one or more of the following events (each, a "default"):
 - .1** if Contractor persistently fails to perform the Work in accordance with the Contract Documents;
 - .2** if Contractor disregards Legal Requirements;
 - .3** if Contractor disregards the authority of Owner or Owner's Representative;
 - .4** if Contractor makes fraudulent statements;
 - .5** if Contractor fails to maintain a work force adequate to accomplish the Work within the Contract Time Requirements;
 - .6** if Contractor fails to make adequate progress and endangers successful completion of the Contract; or
 - .7** if Contractor otherwise breaches any provision of the Contract Documents;

Owner may, after giving Contractor (and the performance bond Surety, if any) seven (7) calendar days Written Notice, terminate in whole or in part the Contract or the Contractor's right to perform Work. Owner, at its option, may proceed with negotiation with Surety for completion of the Work. Alternatively, Owner may exclude Contractor from the Site and take possession of the Work (without liability to Contractor for trespass or conversion), incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and 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 Amount exceeds all claims, costs, losses and damages sustained by Owner arising out of or resulting from the Contractor's default and Owner's completion of the Work, including attorneys' fees and other expenses and additional Owner's Architect/Engineer fees and other expenses in connection with such

completion, Owner shall pay Contractor only for the value of unpaid, conforming Work performed by Contractor prior to such termination up to but not more than such excess. If such claims, costs, losses and damages exceed such unpaid balance, Contractor or Surety shall pay the difference to Owner upon demand. In the event that a termination for cause is found to be wrongful, the termination shall be deemed converted to a termination without cause as set forth in Section 15.2 and Contractor's remedy for wrongful termination shall be exclusively limited to the recovery of the payments permitted for termination without cause as set forth in Section 15.2.

15.3.2 Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor and Surety then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

15.4 Contractor May Stop Work or Terminate: If through no act or fault of Contractor, the Work is suspended for a period of more than one hundred and twenty (120) calendar days by Owner or under an order of court or other governmental entity or public authority, or such longer period of time as agreed to in writing by Owner and Contractor, or (except during disputes) Owner's Representative fails to forward to Owner for processing any properly prepared and submitted Application for Payment within seven (7) calendar days after it is submitted, or (except during disputes) Owner fails for forty-five (45) calendar days after it is submitted to pay Contractor any sum finally determined by Owner to be due, then Contractor may, upon forty-five (45) calendar days' Written Notice to Owner, and provided Owner does not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Section 15.2. The provisions of this Section 15.4 are not intended to preclude Contractor from making a Claim under Articles 11 and 12 for an increase in Contract Amount or Contract Time Requirements or otherwise for expenses or damage directly attributable to Contractor's stopping Work pursuant to this Section.

15.5 Discretionary Notice to Cure: In its sole discretion, Owner may, but is not required to, provide a Notice to Cure to Contractor and its Surety to cure an event of default described in Section 15.3.1 above and/or an anticipatory breach of contract and, if required by Owner, the Contractor and Surety shall attend a meeting with Owner, regarding the Notice to Cure, the event of default, and/or the anticipatory breach of contract. If issued, the Notice to Cure will set forth the time limit by which the cure is to be completed or commenced and diligently prosecuted. Upon receipt of any Notice to Cure, Contractor shall prepare a report describing its program and measures to accomplish the cure of the event of default and/or anticipatory breach of contract within the time required by the Notice to Cure. The Contractor's report must be delivered to Owner at least three (3) days prior to any requested meeting with the Owner and Surety.

15.6 Bankruptcy: If Contractor declares bankruptcy or is adjudged bankrupt or makes an assignment for the benefit of creditors or if a receiver is appointed for the benefit of creditors or if a receiver is appointed by reason of Contractor's insolvency, Contractor may be unable to perform this Contract in accordance with the Contract requirements. In such an event, Owner may demand Contractor or its successor in interest provide Owner with adequate assurance of Contractor's ability to perform in

accordance with the terms and conditions of the Contract. If Contractor fails to provide adequate assurance of performance to Owner's reasonable satisfaction within ten (10) days of such a request, Owner may terminate the Contract or the Contractor's right to perform Work for cause or without cause, pursuant to Sections 15.2 or 15.3 above. If Contractor fails to provide timely adequate assurance of its performance and actual performance, Owner may prosecute the Work with its own forces or with other contractors on a time and material or other appropriate basis and the cost of which will be charged against the Contract balance or otherwise borne by Contractor.

15.7 Duty to Mitigate: In the event of any termination or suspension under this Contract, the Contractor agrees to and shall take all reasonable actions to mitigate its damages and any and all claims for damages which may be asserted against the Owner.

15.8 Responsibility during Demobilization: While demobilizing, the Contractor will take all necessary and reasonable actions to preserve and protect the Work, the Site and other property of the Owner or others at the Site.

ARTICLE 16 - DISPUTE RESOLUTION

16.1 Filing of Claims:

16.1.1 All Claims by Contractor shall be made by Written Notice delivered to Owner within fifteen (15) calendar days after the start of the occurrence or 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 be delivered in writing within thirty (30) calendar days after Written Notice of Claim is delivered by Contractor and shall represent that the adjustment claimed covers all known monetary amounts and/or extensions of time to which Contractor is entitled.

16.1.2 Within thirty (30) calendar days of receipt of notice of the amounts and/or time extensions sought by the Claim with supporting data, Owner's Representative and Contractor shall meet to discuss the Claim, after which a written offer of settlement or written notification of no settlement offer may be made to Contractor. If Contractor is not satisfied with any proposal presented, Contractor shall have thirty (30) calendar days in which to: (i) submit additional supporting data requested by the other party along with a written request to re-evaluate the Claim; (ii) modify the initial Claim; or (iii) request Alternative Dispute Resolution.

16.2 Alternative Dispute Resolution:

16.2.1 If a dispute exists concerning a Claim, the parties agree to use the following procedure prior to pursuing any other available remedies except that nothing herein shall preclude the Owner from seeking injunctive or other extraordinary relief in a court of competent jurisdiction prior to the completion of the following procedure. Owner reserves the right to include the Owner's Representative, Principal Architect/Engineer and/or the CMT Consultant as a party. Similarly, Contractor agrees to participate at its own cost in similar dispute resolution procedures for any dispute between Owner and any such other parties, and Contractor agrees to require its

Subcontractors to participate in the following procedures in any dispute between Owner and Contractor, upon Owner's written request, if in Owner's sole discretion the participation of Contractor and/or any Subcontractor is necessary to the resolution of any such dispute.

16.2.2 Negotiating with Previously Uninvolved Personnel: Either party may make a written request for a meeting to be held between representatives of each party within fourteen (14) Calendar Days of the request or such later period that the parties may agree to. Each party shall endeavor to include, at a minimum, one (1) previously uninvolved senior level decision maker (an owner, officer, or employee of each organization) with the authority to negotiate and settle the dispute on behalf of their organization. If a previously involved senior level decision maker is unavailable due to the size of the Contractor's organization or any other reason, the Contractor shall nonetheless provide an appropriate senior level decision maker for the meeting. The purpose of this and any subsequent meetings will be good faith negotiations and resolution of the matters constituting the dispute. Negotiations shall be concluded within thirty (30) Calendar Days of the first meeting, unless mutually agreed otherwise. This step may be waived by a written agreement signed by both parties, in which event the parties may proceed directly to mediation as described below.

16.2.3 Mediation:

- .1** If the procedure described in 16.2.2 proves unsuccessful or is waived pursuant to its terms, the parties shall initiate the mediation process. Owner and Contractor agree to select within thirty (30) calendar days a mediator trained in mediation skills, and experienced in the mediation of construction disputes, to assist with resolution of the dispute. Owner and Contractor agree to act in good faith in the selection of the mediator and to give all due consideration to qualified individuals nominated to act as mediator. Should the parties fail to agree on a mediator within thirty (30) calendar days of initiation of the mediation process, the parties agree to ask the American Arbitration Association to select a qualified individual, which selection shall be binding on the parties. If the dispute is technical in nature, the mediator appointed by the American Arbitration Association shall be qualified by at least ten (10) years' experience in construction, engineering, and/or public works projects. If a party refuses to participate in the selection of a mediator or refuses to attend a scheduled mediation, the other party may pursue other remedies available to it.
- .2** Mediation is a forum in which an impartial person, the mediator, facilitates communication between parties to promote reconciliation, settlement, or understanding among them. The parties hereby agree that mediation, at a minimum, shall provide for (i) conducting an on-site investigation, if appropriate, by the mediator for fact gathering purposes, (ii) a meeting of all parties for the exchange of points of view and (iii) separate meetings between the mediator and each party to the dispute for the formulation of resolution alternatives. The parties agree to participate in mediation in good faith for up to thirty (30) calendar days after the date of the first mediation session, unless mutually agreed otherwise. Should the parties fail to reach a

resolution of the dispute through mediation, then the parties may pursue other remedies available to them.

ARTICLE 17 – MISCELLANEOUS

- 17.1 Computation of Times:** When any period of time is measured in the Contract Documents in days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or legal holiday, such day will be omitted from the computation.
- 17.2 Venue; Choice of Law:** Venue for any suit at law or in equity involving the Contract or the parties' relationship created by it shall lie exclusively in Montgomery County, Texas. The Contract and any disputes arising out of it shall be construed in accordance with and governed by the laws of the State of Texas, without regard to its conflict of laws principles. Any claims or causes of action arising under or in conjunction with this Contract shall be brought in a court of competent jurisdiction in Montgomery County, Texas. In the event of litigation relating to this Contract or the performance or nonperformance of Work hereunder, the Contractor and the Owner voluntarily and irrevocably consent to the jurisdiction of the applicable courts in Montgomery County, Texas, and hereby waive any argument that such a forum is inconvenient.
- 17.3 Extent of Contract:** This Contract represents the entire and integrated agreement between the Owner and Contractor with respect to the subject matter hereof and supersedes all prior and contemporaneous negotiations, representations or agreements, whether written or oral, and each party disclaims any reliance upon any such prior or contemporaneous negotiation, representation or agreement.
- 17.4 Remedies Cumulative:** Except as limited by this Contract, remedies provided for herein are cumulative, and in addition to and not in lieu of those provided by law or available in equity.
- 17.5 Severability:** If any word, phrase, clause, sentence or provision of the Contract, or the application of same to any person or set of circumstances is for any reason held to be unconstitutional, void, invalid or unenforceable, then such word, phrase, clause, sentence or provision shall be deemed severed herefrom and the remainder of this Contract shall remain in full force and effect.
- 17.6 Independent Contractor:** The Contract shall not be construed as creating an employer/employee relationship, a partnership, or a joint venture. Contractor is an independent contractor and Contractor's work and services shall be those of an independent contractor. Without limiting the generality of the foregoing, Contractor agrees and understands that the Contract does not grant any rights or privileges to any employee of Contractor, its Subcontractors or Suppliers which are established for employees of Owner.
- 17.7 Prohibition of Gratuities:** Owner may, by Written Notice to Contractor, terminate the Contract without liability if Owner determines that gratuities were offered or given by Contractor or any agent or representative of Contractor to any officer or employee of Owner with a view toward securing the Contract or securing favorable treatment with respect to the awarding or amending or the making of any determinations with respect to the performing of such Contract. In the event the Contract is terminated by Owner pursuant to this provision, Owner shall be entitled,

in addition to any other rights and remedies, to recover or withhold the amount of the cost incurred by Contractor in providing such gratuities, to the extent Contractor attempted to charge Owner for same or included any such costs in the Contract Amount.

17.8 Prohibition Against Personal Interest in Contracts: No officer, employee, independent consultant, or elected official of Owner who is involved in the development, evaluation, or decision-making process of the performance of any solicitation shall have a financial interest, direct or indirect, in the Contract resulting from that solicitation. Any violation of this provision shall render the Contract voidable by Owner.

17.9 Owner's Right to Audit:

17.9.1 "Records" means all records generated by or on behalf of Contractor and each Subcontractor and Supplier of Contractor, whether paper, electronic, or other media, which are in any way related to performance of or compliance with this Contract, including, without limitation:

- .01** accounting records;
- .02** written policies and procedures, contractor daily diaries, and pay reports;
- .03** subcontract files (including proposals of successful and unsuccessful bidders, bid recaps, etc.);
- .04** original estimates and estimating work sheets;
- .05** correspondence;
- .06** Change Order files (including documentation covering negotiated settlements);
- .07** back charge logs and supporting documentation;
- .08** general ledger entries detailing cash and trade discounts earned, insurance rebates and dividends;
- .09** subcontracts, purchase orders or other agreements between Contractor and any Subcontractor or Manufacturer, or Supplier;
- .10** records necessary to evaluate Contract compliance, Change Order pricing, and any Claim submitted by Contractor or any of its payees;
- .11** SWP3 Documentation;
- .12** job cost reports; and
- .13** any other Contractor record that may substantiate any charge or claim related to this Contract.

17.9.2 Contractor shall allow Owner's agent or its authorized representative to inspect, audit, and/or reproduce, or all three, all Records generated by or on behalf of Contractor and each Subcontractor and Manufacturer or Supplier, upon Owner's written request. Further, Contractor shall allow Owner's agent or authorized representative to interview any of Contractor's employees, all Subcontractors and all Manufacturers and Suppliers, and any of their respective employees.

17.9.3 Contractor shall retain all its Records, and require all its Subcontractors and Manufacturers and Suppliers to retain their respective Records, during the performance of this Contract and for three (3) years after final payment or any termination, until all audit and litigation matters that Owner has brought to the attention of Contractor are resolved, or as otherwise required

by law, whichever is longer. Owner's right to inspect, audit or reproduce Records, or interview employees of Contractor or its respective Subcontractors or Manufacturers and Suppliers exists during the performance of this Contract, and for three (3) years after final payment or any termination, until all audit and litigation matters that Owner has brought to Contractor's attention are resolved, or as otherwise required by law, whichever is longer, and at no cost to Owner.

- 17.9.4** Contractor must provide sufficient and accessible facilities during its normal business hours for Owner to inspect, audit or reproduce Records, or all three, and to interview any person about the Records.
- 17.9.5** Contractor shall insert these requirements in each written contract between Contractor and any Subcontractor, Manufacturer or Supplier and require each Subcontractor, Manufacturer and Supplier to comply with these provisions.
- 17.10 Survival of Obligations:** All representations, indemnifications, warranties and guarantees made in, required by or provided pursuant to the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion and acceptance of the Work and termination or completion of the Contract.
- 17.11 No Waiver:** The waiver of any provision of this Contract will not be deemed to be a waiver of any other provision of this Contract. No provision of this Contract will be deemed waived whatsoever unless expressly provided in writing, nor will a waiver of any default be deemed a waiver of any subsequent defaults of the same type. The failure at any time to enforce this Contract, whether the default is known or not, shall not constitute a waiver of or estoppel against the right to do so.
- 17.12 Condition Precedent to Right to Sue:** Notwithstanding anything in the Contract Documents to the contrary, the Contractor must have provided at least 90 days prior written notice of a claim for damages as a condition precedent to the right to sue on the Contract.
- 17.13 WAIVER OF THE RIGHT TO JURY TRIAL. OWNER AND CONTRACTOR HEREBY, KNOWINGLY, IRREVOCABLY AND INTENTIONALLY WAIVE ANY RIGHTS EITHER PARTY MAY HAVE TO A TRIAL BY JURY IN RESPECT TO ANY CLAIM, CAUSE OF ACTION, PROCEEDING OR COUNTER CLAIM BASED UPON THE CONTRACT DOCUMENTS, OR ARISING OUT OF, UNDER OR IN CONNECTION WITH THE CONSTRUCTION OF THE WORK OR ANY COURSE OF CONDUCT, COURSE OF DEALING, STATEMENTS (WHETHER VERBAL OR WRITTEN) OR ACTIONS OF ANY PARTY. HOWEVER, THIS WAIVER OF JURY TRIAL SHALL NOT APPLY TO LITIGATION WHICH MAY BE INITIATED BY ANY THIRD PARTIES.**
- 17.14 Attorneys' Fees and Costs.** If Contractor brings any suit against Owner and Contractor does not prevail in such suit, Contractor shall be liable for all attorneys' fees and costs incurred by Owner as a result of such suit. "Prevail" as used in this Section 17.14 means the Contractor recovers a judgment against Owner for at least eighty percent (80%) of all relief sought by Contractor in Claims against Owner in the Written Notice(s) as provided in Section 16.1.1 above,

and the judgment is greater than any relief offered to Contractor by Owner in any written settlement offer.

END OF GENERAL CONDITIONS TERMS

WARRANTY ITEM NO. _____
(PROJECT NAME)

The General Conditions of the Contract require that Defects be corrected within seven (7) days after written notice is received.

TO: _____
name/ address / telephone / fax / email

ATTENTION OF: _____

FROM: _____
project manager name / address / telephone / fax / email

PROJECT: _____
name / location / CIP ID number

END DATE OF WARRANTY OR CORRECTIVE PERIOD: _____

SUBJECT: _____

☐ If checked, the defect requires immediate attention. The Contractor has been called.

☐ If checked, the Owner has been asked to consult with the Contractor on the defect.

PLEASE CORRECT THE FOLLOWING ITEM(S):

DATE OF REQUEST _____ **SIGNATURE** _____
Project Manager

☐ _____ Phone No. _____

☐ _____ Phone No. _____

☐ _____ Phone No. _____

RESPONSE FROM Contractor: DATE CORRECTION WAS MADE: _____

The Contractor must endeavor to correct the defect within seven (7) calendar days after written notice is received. If the defect cannot be corrected by that time, Contractor shall provide a written explanation to the Owner describing the repairs or other correction needed and the time required to complete the repairs or corrections.

Description of corrections made:

DATE OF REPLY: _____ **SIGNATURE:** _____

PRINTED NAME: _____

When the repair/correction is complete, the contractor should return a copy to each of the following:

☐ _____ Phone No. _____

☐ _____ Phone No. _____

☐ _____ Phone No. _____

END OF SECTION

4812-4844-0915, v. 1-6602-9900, v. 4-6602-9900, v. 3-6602-9900, v. 2

SECTION 00 73 00

TWDB SUPPLEMENTAL CONDITIONS

1. Incorporate of TWDB Supplemental Conditions

The attached and following is an excerpt from TWDB Guidance No. 0550 (the "TWDB Supplemental Conditions"). The TWDB Supplemental Conditions are incorporated into and made part of the CSP Documents for all purposes.

2. Specific Agreements

- 2.1. By execution of the Agreement, Contractor ratifies and agrees to be bound by the statement set forth in paragraph 9 of the TWDB Supplemental Conditions.
- 2.2. The contract clauses set forth in "Option 1: Section 3, Section 4, and Section 5", as referenced in paragraph 10(a)(ii) of the TWDB Supplemental Conditions, are deemed to be inserted into and made part of the CSP Documents for all purposes.

END OF SECTION

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III. SUPPLEMENTAL CONTRACT CONDITIONS

1. Supersession

The Owner and the Contractor agree that the TWDB Supplemental Conditions apply to that work eligible for Texas Water Development Board assistance to be performed under this contract and these clauses supersede any conflicting provisions of this contract.

2. Privity of Contract

Funding for this project is expected to be provided in part by the Texas Water Development Board. Neither the State of Texas, nor any of its departments, agencies or employees is, or will be, a party to this contract or any lower tier contract. This contract is subject to applicable provisions 31 TAC Chapter 371 (DWSRF) or 375 (CWSRF) in effect on the date of the assistance award for this project.

3. Definitions

- (a) The term "Owner" means the local entity contracting for the construction services.
- (b) The term "TWDB" means the Executive Administrator of the Texas Water Development Board, or other person who may be at the time acting in the capacity or authorized to perform the functions of such Executive Administrator, or the authorized representative thereof.
- (c) The term "Engineer" means the engineer the Owner has authorized to work on the project.

4. Laws to be Observed

In the execution of the Contract, the Contractor must comply with all applicable Local, State and Federal laws, including but not limited to laws concerned with labor, safety, minimum wages, and the environment. The Contractor shall make himself familiar with and at all times shall observe and comply with all Federal, State, and Local laws, ordinances and regulations which in any manner affect the conduct of the work, and shall indemnify and save harmless the Owner, Texas Water Development Board, and their representatives against any claim arising from violation of any such law, ordinance or regulation by the Contractor, their Subcontractor or their employees.

5. Review by Owner and TWDB

- (a) The Owner, authorized representatives and agents of the Owner, and TWDB shall, at all times have access to and be permitted to observe and review all work, materials, equipment, payrolls, personnel records, employment conditions, material invoices, and other relevant data and records pertaining to this Contract, provided, however that all instructions and approval with respect to the work will be given to the Contractor only by the Owner through authorized representatives or agents.
- (b) Any such inspection or review by the TWDB shall not subject the State of Texas, or its representatives, to any action for damages.

6. Performance and Payment Bonds

Each Contractor awarded a construction contract must furnish performance and payment bonds:

- (a) The performance bond shall include without limitation guarantees that work done under the contract will be completed and performed according to approved plans and specifications and in accordance with sound construction principles and practices;
- (b) The performance and payment bonds shall be in a penal sum of not less than 100 percent of the contract price and remain in effect for one year beyond the date of approval by the Engineer of the political subdivision; and
- (c) The Contractor shall utilize a surety company which is authorized to do business in Texas in accordance with Surety Bonds and Related Instruments, Chapter 3503 of the Insurance Code.

7. Payment Schedule and Cost Breakdown

- (a) The Contractor shall submit for approval immediately after execution of the Agreement, a carefully prepared Progress Schedule, showing the proposed dates of starting and completing each of the various sections of the work, the anticipated monthly payments to become due to the Contractor, and the accumulated percent of progress each month.

- (b) The following paragraph applies only to contracts awarded on a lump sum contract price:

COST BREAKDOWN - The Contractor shall submit to the Owner a detailed breakdown of the estimated cost of all work to be accomplished under the contract, arranged and itemized as to meet the approval of the Owner or funding agencies. This breakdown shall be submitted promptly after execution of the agreement and before any payment is made to the Contractor for the work performed under the contract. After approval by the Owner the unit prices established in the breakdown shall be used in estimating the amount of partial payments to be made to the Contractor.

8. Workman's Compensation Insurance Coverage (as applicable, consistent with Texas Labor Code § 406.096)

- (a) The Contractor shall certify in writing that the Contractor provides workers' compensation insurance coverage for each employee of the Contractor employed on the public project.
- (b) Each Subcontractor on the public project shall provide such a certificate relating to coverage of the Subcontractor's employees to the general Contractor, who shall provide the Subcontractor's certificate to the governmental entity.
- (c) A Contractor who has a contract that requires workers' compensation insurance coverage may provide the coverage through a group plan or other method satisfactory to the governing body of the governmental entity.
- (d) The employment of a maintenance employee by an employer who is not engaging in building or construction as the employer's primary business does not constitute engaging in building or construction.
- (e) In this section:

- i. "Building or construction" includes:
 - erecting or preparing to erect a structure, including a building, bridge, roadway, public utility facility, or related appurtenance;
 - remodeling, extending, repairing, or demolishing a structure; or
 - otherwise improving real property or an appurtenance to real property through similar activities.
- ii. "Governmental entity" means this state or a political subdivision of this state. The term includes a municipality.

9. American Iron & Steel

The following statement must be completed by the Contractor and made a part of the agreement between the Owner and the Contractor:

The Contractor acknowledges to and for the benefit of the Owner ("Purchaser") and the Texas Water Development Board (TWDB) that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements commonly known as "American Iron and Steel" that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contractor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Owner and the TWDB that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Owner or the TWDB. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Owner to enforce this Agreement and recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Owner resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the TWDB or any damages owed to the TWDB by the Owner). While the Contractor has no direct contractual privity with the TWDB, as a lender to the Owner for the funding of its project, the Owner and the Contractor agree that the TWDB is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the TWDB.

Additional information on the American Iron and Steel (AIS) and its applicability to this contract can be found in the TWDB-1106 guidance.

It is recommended the Owner receive and maintain files documenting the Contractor's use of AIS. Monthly compliance with AIS will be verified by the Owner through the submittal of the TWDB form TWDB-1106-A.

10. Davis-Bacon Wage Rate Requirements

(a) Compliance Procedures

In order to be held in compliance and satisfy this federal requirement, the following must be fulfilled:

- i. **Wage Determinations** - U.S. Department of Labor (DOL) wage determination must be included in the bidding and contract documents. DOL wage determinations may be obtained online at <http://www.wdol.gov/>. Once it is determined that Davis-Bacon wage rates will apply to a construction contract, the Owner must state in the solicitation that Davis-Bacon prevailing wage rates are applicable and bid packages must include the current Davis-Bacon general wage determination for the area where construction will occur. While the solicitation remains open, the Owner must monitor www.wdol.gov on a weekly basis to ensure that the wage determination contained in the solicitation remains current. The Owner must amend the solicitation if the DOL issues a modification more than 10 days prior to the closing date (i.e. bid opening) for the solicitation. If DOL modifies or supersedes the applicable wage determination less than 10 days prior to the closing date, the Owner may request a finding from the TWDB that there is not a reasonable time to notify interested Contractors of the modification of the wage determination.
- ii. **Insert wage rate requirements in full for all contracts and subcontracts in excess of \$2,000** - If the Owner is a governmental entity such as a city or district, it must insert in full the contract clauses shown below as Option 1: Section 3, Section 4 if the contract exceeds \$100,000, and Section 5. If the Owner is a non-governmental entity such as a water supply corporation or a private company, it must insert in full the contract clauses shown below as Option 2: Section 3, Section 4 if the contract exceeds \$100,000, and Section 5. The Owner must ensure all prime contracts require the same full text in any subcontracts.
- iii. **Monthly Certification** – The Owner must complete and submit monthly a Davis Bacon Wage Rate Certificate of Compliance once construction has begun. (Use [Monthly Davis Bacon Wage Rate Certificate of Compliance Submittal by Owner \(Subrecipient\) DB-0154](#)).
- iv. **Contractor Payroll Requirements** - The Contractor is required to pay the prevailing wage rates on a weekly basis to laborers and mechanics in accordance with the requirements of 29 CFR 5.5, which are incorporated into the actual construction contract. Contractors/ Subcontractors must furnish weekly a statement with respect to the wages paid to each employee during the preceding week. They may use the Department of Labor (DOL) Payroll Form WH-347 and weekly Statement of Compliance on the reverse, or their own payroll form with all of the same data elements as the DOL Payroll Form WH-347, and the TWDB's form, [Statement of Compliance Certification by Contractor for SRF, DB-0155](#). The DOL Payroll Form WH-347 can be found under the forms section of this document or at the following link: <http://www.dol.gov/whd/programs/dbra/wh347.htm>.

- v. **Interviews** - The Owner must periodically interview a sufficient number of employees entitled to the Davis-Bacon prevailing wages to verify that Contractors or Subcontractors are paying the appropriate wage rates. All interviews must be conducted in confidence. The Owner must use Standard Form 1445 (SF 1445) found in the forms section of TWDB guidance document TWDB-0156 or equivalent documentation to memorialize the interviews. The Owner must establish and follow an interview schedule based on its assessment of the risks of noncompliance with Davis-Bacon posed by Contractors or Subcontractors and the duration of the contract or subcontract. The Owner must conduct more frequent interviews if the initial interviews or other information indicated that there is a risk that the Contractor or Subcontractor is not complying with Davis-Bacon. The Owner must immediately conduct interviews in response to an alleged violation of the prevailing wage requirements.
- vi. **Payroll Records** - Certified payroll records are required to be retained by the Owner and Contractor for three years after completion of the construction project. The Owner must periodically conduct spot checks of a representative sample of weekly payroll data to verify that Contractors or Subcontractors are paying the appropriate wage rates.
- vii. **Wage Rate Poster** – The Contractor must post the required Poster (WH-1321) and applicable wage rates at the construction site. The wage rate poster may be found at under the forms section of TWDB Guidance DB-0156 or at <http://www.dol.gov/whd/programs/dbra/wh1321.htm>.
- viii. **Report Violations** – The Owner must immediately report violations of the Davis-Bacon prevailing wage requirements to the EPA Davis-Bacon Coordinator listed in the assistance agreement and to the appropriate DOL WHD Office listed at <http://www.dol.gov/dol/contact/index.htm>.

(b) Subcontracts

The Contractor will insert in full the required wage rate requirement in any subcontract in excess of \$2,000 as specified in (a)(ii) of this section.

(c) Davis-Bacon General Wage Determinations

A "wage determination" is the listing of wage and fringe benefit for each classification of laborers and mechanics which the Administrator of the Wage and Hour Division of the U.S. DOL has determined to be prevailing in a given area for a construction. The Davis-Bacon Wage Determinations are classified by the nature of the construction projects performed, specifically listed as "schedules": residential, building, highway, and heavy construction. A brief outline of the definitions for each schedule is listed below.

- **Construction Type: Heavy determination**

This determination includes those projects that are not properly classified as either "building," "highway," or "residential." Unlike these classifications, heavy construction is not a homogenous classification. Because of this catch-all nature, projects within the heavy classification may sometimes be distinguished on the basis of their particular project characteristics, and separate schedules may be issued for dredging projects, water and sewer line projects, dams, major bridges, and flood control projects.

- **Construction Type: Highway determination**
This determination includes construction, alteration or repair of roads, streets, highways, runways, taxiways, alleys, trails, paths, parking areas, and other similar projects not incidental to building or heavy construction.
- **Construction Type: Building determination**
This determination includes construction of sheltered enclosures with walk-in access for the purpose of housing persons, machinery, equipment or supplies; all construction of such structures; the installation of utilities and of equipment, both above and below grade levels; as well as incidental grading, utilities and paving. Such structures need not be "habitable" to be building construction. Also, the installation of heavy machinery and/or equipment does not generally change the project's character as a building.
- **Construction Type: Residential**
This determination includes the construction, alteration or repair of single-family houses, apartment buildings of no more than four stories in height. This includes all incidental items such as site work, parking areas, utilities, streets, and sidewalks.

The Owner should review their Contractor's wage decisions and confirm they provide an adequate classification of the labor required for the specific construction contract. Most CWSRF and DWSRF projects will fall under the "Heavy" construction type, but Owners should ask their consulting Engineers if unsure. Some contracts or projects may require more than one general schedule to be included depending on the nature and extent of the work (i.e. a building is constructed in a water treatment facility). This is described in more detail in DOL's All Agency Memorandum 130 with Addendum 131. See the DOL's website <http://www.dol.gov/whd/programs/dbra/memorand.htm>. In such cases, the TWDB would designate the work to which each wage determination or part thereof applies per Federal Acquisition Regulations (FAR) 22.404-2 thru 404-3 <https://www.acquisition.gov/browse/far/22?&searchTerms=Regulations+%28FAR%29+22.404-2+thru+404-3> Should overlaps occur in the wage classification schedules for the contract(s), the Owner may consider adopting the higher rate classification.

In all cases, the Owner is responsible to insure an adequate classification is provided to insure compliance with the law. Where a Contractor alerts the Owner that the classification is inadequate, the Owner should work with the Contractor and the DOL to address any valid concerns.

All questions regarding Davis-Bacon guidance can be directed to: U.S. Department of Labor Wage and Hour Division 1-866-4USWAGE (1-866-487-9243), TTY: 1-877-889-5627, Monday-Friday 8 a.m. to 8 p.m. Eastern Time.

If you require further information about Davis-Bacon and how to apply it to your project, please contact the Texas Water Development Board [Project Team Manager for your region](#) or Clay Schultz, Director, Regional Water Project Development, (512) 463-6277.

The Owner and Contractor may obtain additional information on the Davis-Bacon Wage Rates requirements in the TWDB's Guidance DB-0156 – *"Guidance on Davis-Bacon Wage Rate Requirements"*.

Option 1 – Applies to Governmental Entities (such as Cities and Districts)

1. Applicability of the Davis-Bacon (DB) prevailing wage requirements.

DB prevailing wage requirements apply to the construction, alteration, and repair of treatment works carried out in whole or in part with assistance made available by the Clean Water State Revolving Fund and to any construction project carried out in whole or in part by assistance made available by the Drinking Water State Revolving Fund. If an Owner encounters a unique situation at a site that presents uncertainties regarding DB applicability, the Owner must discuss the situation with the TWDB before authorizing work on that site.

2. Obtaining Wage Determinations.

(a) Owners shall obtain the wage determination for the locality in which a covered activity subject to DB will take place prior to issuing requests for bids, proposals, quotes or other methods for soliciting contracts (solicitation) for activities subject to DB. These wage determinations shall be incorporated into solicitations and any subsequent contracts. Prime contracts must contain a provision requiring that Subcontractors follow the wage determination incorporated into the prime contract.

- (i) While the solicitation remains open, the Owner shall monitor www.wdol.gov weekly to ensure that the wage determination contained in the solicitation remains current. The recipients shall amend the solicitation if DOL issues a modification more than 10 days prior to the closing date (i.e. bid opening) for the solicitation. If DOL modifies or supersedes the applicable wage determination less than 10 days prior to the closing date, the Owners may request a finding from the TWDB that there is not a reasonable time to notify interested Contractors of the modification of the wage determination. The TWDB will provide a report of its findings to the Owner.
- (ii) If the Owner does not award the contract within 90 days of the closure of the solicitation, any modifications or supersedes DOL makes to the wage determination contained in the solicitation shall be effective unless the TWDB, at the request of the Owner, obtains an extension of the 90 day period from DOL pursuant to 29 CFR 1.6(c)(3)(iv). The Owner shall monitor www.wdol.gov on a weekly basis if it does not award the contract within 90 days of closure of the solicitation to ensure that wage determinations contained in the solicitation remain current.

(b) If the Owner carries out activity subject to DB by issuing a task order, work assignment or similar instrument to an existing Contractor (ordering instrument) rather than by publishing a solicitation, the Owner shall insert the appropriate DOL wage determination from www.wdol.gov into the ordering instrument.

(c) Owners shall review all subcontracts subject to DB entered into by prime Contractors to verify that the prime Contractor has required its Subcontractors to include the applicable wage determinations.

(d) As provided in 29 CFR 1.6(f), DOL may issue a revised wage determination applicable to an Owner's contract after the award of a contract or the issuance of an ordering instrument if DOL determines that the Owner has failed to incorporate a wage determination or has used a wage determination that clearly does not apply to the contract or ordering instrument. If this occurs, the Owner shall either terminate the contract or ordering instrument and issue a revised solicitation or ordering instrument or incorporate DOL's wage determination retroactive to the beginning of the contract or ordering instrument by change order. The Owner's Contractor must be compensated for any increases in wages resulting from the use of DOL's revised wage determination.

3. Contract and Subcontract provisions.

(a) The Owner(s) shall insert in full in any contract in excess of \$2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a treatment work under the CWSRF or a construction project under the DWSRF financed in whole or in part from Federal funds or in accordance

with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in 29 CFR 5.1, the Water Resources Reform and Development Act of 2014 for a CWSRF-funded project or the Consolidated Appropriations Act, 2016 (or subsequent federal law) for a DWSRF-funded project, the following clauses:

(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work 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 CFR 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 paragraph (a)(1)(iv) of this section; 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 29 CFR 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 this section) 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.

Owners may obtain wage determinations from the U.S. Department of Labor's web site, www.dol.gov.

(ii)(A) The Owner(s), on behalf of EPA, 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 TWDB shall approve a request for 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 Owner(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the Owner (s) to the TWDB.

The TWDB will transmit the request, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or

disapprove every additional classification request within 30 days of receipt and so advise the TWDB or will notify the TWDB 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 Owner(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the TWDB shall refer the request and the local wage determination, including the views of all interested parties and the recommendation of the TWDB, to the Administrator for determination. The request shall be sent to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request 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 this section, 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 Owner(s) shall, upon written request of the EPA Award Official or 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, all or part of the wages required by the contract, the EPA 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 work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. 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 CFR 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 Owner, that is, the entity that receives the funds from the TWDB. Such documentation shall be available on request of the TWDB or EPA. As to each payroll copy received, the Owner shall provide written confirmation in a form satisfactory to the TWDB indicating whether the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly payrolls. 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 <http://www.dol.gov/whd/forms/wh347instr.htm> 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 Owner(s) for transmission to the TWDB or EPA if requested by EPA, the TWDB, 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 this section 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 Owner(s).

(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 CFR part 5, the appropriate information is being maintained under § 5.5(a)(3)(i) of Regulations, 29 CFR 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 CFR 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 section.

(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 this section available for inspection, copying, or transcription by authorized representatives of the TWDB, EPA 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 EPA or TWDB 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 CFR 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 CFR 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 as 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 CFR part 30.

(5) Compliance with Copeland Act requirements. The Contractor shall comply with the requirements of 29 CFR 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 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may be appropriate, 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 CFR 5.5.

(7) Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a Contractor and a Subcontractor as provided in 29 CFR 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 CFR 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 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the Contractor (or any of its Subcontractors) and Owner(s), TWDB, EPA, 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 CFR 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 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

4. Contract Provision for Contracts in Excess of \$100,000.

(a) Contract Work Hours and Safety Standards Act. The Owner shall insert the following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of this section 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 Item 3, above or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

(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 (a)(1) of this section the Contractor and any Subcontractor responsible therefore 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 (a)(1) of this section, in the sum of \$10 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 (a)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The Owner, upon written request of the EPA Award Official or an authorized representative of the Department of Labor, shall 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 (a)(2) of this section.

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

(b) In addition to the clauses contained in Item 3, above, 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 CFR 5.1, the Owner 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 Owner 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 EPA, TWDB, and the Department of Labor, and the Contractor or Subcontractor will permit such representatives to interview employees during working hours on the job.

5. Compliance Verification

(a) The Owner shall periodically interview a sufficient number of employees entitled to DB prevailing wages (covered employees) to verify that Contractors or Subcontractors are paying the appropriate wage rates. As provided in 29 CFR 5.6(a)(6), all interviews must be conducted in confidence. The Owner must use Standard Form 1445 (SF 1445) found in the forms section of TWDB guidance document TWDB-0156 or equivalent documentation to memorialize the interviews. Copies of the SF 1445 are also available from EPA on request.

(b) The Owner shall establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by Contractors or Subcontractors and the duration of the contract or subcontract. Owners must conduct more frequent interviews if the initial interviews or other information indicated that there is a risk that the Contractor or Subcontractor is not complying with DB.

Owners shall immediately conduct interviews in response to an alleged violation of the prevailing wage requirements. All interviews shall be conducted in confidence."

(c) The Owner shall periodically conduct spot checks of a representative sample of weekly payroll data to verify that Contractors or Subcontractors are paying the appropriate wage rates. The Owner shall establish and follow a spot check schedule based on its assessment of the risks of noncompliance with DB posed by Contractors or Subcontractors and the duration of the contract or subcontract. At a minimum, if practicable, the Owner should spot check payroll data within two weeks of each Contractor or Subcontractor's submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract. Owners must conduct more frequent spot checks if the initial spot check or other information indicates that there is a risk that the Contractor or Subcontractor is not complying with DB. In addition, during the examinations the Owner shall verify evidence of fringe benefit plans and payments there under by Contractors and Subcontractors who claim credit for fringe benefit contributions.

(d) The Owner shall periodically review Contractors and Subcontractor's use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the U.S Department of Labor or a state, as appropriate, and that Contractors and Subcontractors are not using disproportionate numbers of, laborers, trainees and apprentices. These reviews shall be conducted in accordance with the schedules for spot checks and interviews described in Item 5(b) and (c) above.

(e) Owners must immediately report potential violations of the DB prevailing wage requirements to the EPA Region 6 DB Coordinator, TWDB, and to the appropriate DOL Wage and Hour District Office listed at <http://www.dol.gov/whd/america2.htm>.

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11. Payments

(a) Progress Payments:

- i. The Contractor shall prepare their requisition for progress payment as of the last day of the payment month and submit it, with the required number of copies, to the Engineer for review. Except as provided in paragraph (iii) of this subsection, the amount of the payment due to the Contractor shall be determined by adding to the total value of work completed to date, the value of materials properly stored on the site and deducting (1) five percent (5%) minimum of the total amount, as a retainage and (2) the amount of all previous payments. The total value of work completed to date shall be based on the actual or estimated quantities of work completed and on the unit prices contained in the agreement (or cost breakdown approved pursuant to section 7.b relating to lump sum bids) and adjusted by approved change orders. The value of materials properly stored on the site shall be based upon the estimated quantities of such materials and the invoices prices.

Copies of all invoices shall be available for inspection by the Engineer.

- ii. The Contractor shall be responsible for the care and protection of all materials and work upon which payments have been made until final acceptance of such work and materials by the Owner. Such payments shall not constitute a waiver of the right of the Owner to require the fulfillment of all terms of the contract and the delivery of all improvements embraced in the contract complete and satisfactory to the Owner in all details.
 - iii. This clause applies to contracts when the Owner is a District or Authority. The retainage shall be ten (10%) percent minimum of the amount otherwise due until at least fifty (50%) of the work has been completed. After the project is fifty (50%) percent completed, and if the District or Authority's Board finds that satisfactory progress is being made, then the District may authorize any of the remaining progress payments to be made in full. The District is not obligated to pay interest earned on the first 50% of work completed (Texas Water Code Sec. 49.276(d)).
 - iv. The five (5%) percent retainage of the progress payments due to the Contractor may not be reduced until the building of the project is substantially complete and a reduction in the retainage has been authorized by the TWDB.
- (b) Withholding Payments. The Owner may withhold from any payment otherwise due to the Contractor so much as may be necessary to protect the Owner and if so elects may also withhold any amounts due from the Contractor to any Subcontractors or material dealers for work performed or material furnished by them. The foregoing provisions shall be construed solely for the benefit of the Owner and will not require the Owner to determine or adjust any claims or disputes between the Contractor and his Subcontractors or material dealers, or to withhold any monies for their protection unless the Owner elects to do so.
- The failure or refusal of the Owner to withhold any monies from the Contractor shall in no way impair the obligations of any surety or sureties under any bond or bonds furnished under this contract.
- (c) Payments Subject to Submission of Certificates. Each payment to the Contractor by the Owner shall be made subject to submission by the Contractor of all written certifications required of him and his Subcontractors by general and special conditions pertaining to this contract.
- (d) Final Payment.
- i. Upon satisfactory completion of the work performed under this contract,

as a condition before final payment under this contract or as a termination settlement under this contract the Contractor shall execute and deliver to the Owner a release of all claims against the Owner arising under, or by virtue of, this contract, except claims which are specifically exempted by the Contractor to be set forth therein. Unless otherwise provided in this contract, by State law or otherwise expressly agreed to by the parties to this contract, final payment under this contract or settlement upon termination of this contract shall not constitute a waiver of the Owner's claims against the Contractor or his sureties under this contract or applicable performance and payment bonds.

- ii. After final inspection and acceptance by the Owner of all work under the contract, the Contractor shall prepare their requisition for final payment which shall be based upon the carefully measured or computed quantity of each item of work at the applicable unit prices stipulated in the Agreement or cost breakdown (if lump sum), as adjusted by approved change orders. The total amount of the final payment due the Contractor under this contract shall be the amount computed as described above less all previous payments.
- iii. The retainage and its interest earnings, if any, shall not be paid to the Contractor until the TWDB has authorized a reduction in, or release of, retainage on the contract work.
- iv. Withholding of any amount due to the Owner, under general and/or special conditions regarding "Liquidated Damages," shall be deducted from the final payment due the Contractor.

12. Equal employment opportunity and affirmative action

This provision applies to Clean Water State Revolving Fund Program and Drinking Water State Revolving Fund projects where the contract agreement is for more than \$10,000.

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 (including pregnancy), sexual orientation, gender identity, national origin, age (40 or older), disability, or genetic information. 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 by the contracting officer setting forth the provisions of this nondiscrimination clause.

- (2) The Contractor will, in all solicitations or advancements 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 the Contractor has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of the Contractor's commitments under Section 202 of Executive Order No. 11246 of September 24, 1965, 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 No. 11246 of Sept. 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 No. 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting 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 such rules, regulations, or orders, this contract may be cancelled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 11246 of Sept. 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 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 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 No. 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 may be directed by the Secretary of Labor as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with a Subcontractor or vendor as a result of such direction, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the notice which contains the applicable goals set for minority and female participation and which is set forth in the solicitations from which this contract resulted.

13. Debarment and Suspension

This provision applies only to Clean Water State Revolving Fund Equivalency Program projects and Drinking Water State Revolving Fund projects. This contract is subject to the Title 40 Code of Federal Regulations Part 32 concerning Debarment and Suspension. The Contractor will comply with the assurances provided with the bid that led to this contract.

Instructions for Certification

- (a) By signing and submitting this proposal, the prospective lower tier participant is providing the certification set out below.
- (b) The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
- (c) The prospective lower tier participant shall provide immediate written notice to the person to whom this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous when submitted or had become erroneous by reason of changed circumstances.
- (d) The terms covered transaction, debarred, suspended, ineligible, lower tier covered transaction, participant, person, primary covered transaction, principal, proposal, and voluntarily excluded, as used in this clause, have the meaning set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.
- (e) The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is proposed for debarment under 48 CFR part 9, subpart 9.4, debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
- (f) The prospective lower tier participant further agrees by submitting this proposal

that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

- (g) A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not proposed for debarment under 48 CFR part 9, subpart 9.4, debarred, suspended, ineligible, or voluntarily excluded from covered transactions, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the List of Parties Excluded from Federal Procurement and Non-procurement Programs.
- (h) Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- (i) Except for transactions authorized under paragraph (e) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is proposed for debarment under 48 CFR part 9, subpart 9.4, suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Covered Transactions.

- (1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.
- (2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

14. Disadvantaged Business Enterprises

The Texas Water Development Board's (TWDB) Clean Water and Drinking Water State Revolving Fund programs receive federal funds from the U. S. Environmental Protection Agency (EPA). As a condition of federal grant awards, EPA regulations require that loan recipients make a "good faith effort" to award a fair share of work to DBE's who are Minority Business Enterprises (MBE's), and Women-owned Business Enterprises (WBE's) whenever procuring construction, supplies, services and equipment.

The current fair share goals for the State of Texas are as follows:

Category	MBE	WBE
Construction	19.44%	9.17%
Equipment	16.28%	11.45%
Services	20.41%	13.66%
Supplies	25.34%	8.82%

After loan commitment, but prior to closing, Owners (Applicants) must provide forms TWDB-0216 and TWDB-0373. The project's Prime Engineer, Financial Advisor, and Bond Counsel must complete a TWDB-0217 form and indicate if any subcontracting opportunities will be available or if the Contractor will be self-performing the contract. Regardless of the procurement's outcome, all entities must submit a TWDB-0373 and list the Contractors selected by the Owner for the project. Failure to include a Contractor and contract amount will result in denial of payment until the proper documentation has been reviewed and approved.

For each construction contract, Owners are required to submit a TWDB-0216 and TWDB-0373 for the procurement of the project's Prime Contractor. If the Prime Contractor is utilizing Subcontractors for the project, then additional TWDB-0216 and TWDB-0373 forms will be required for submittal prior to request for payment.

The following forms are required for each contract:

Form	Prime Contractor	Submit Form To
TWDB-0216	Required	TWDB
TWDB-0217	Required	TWDB
TWDB-0373	Required	TWDB

- (a) The Contractor shall, if awarding sub-agreements, to the extent appropriate for the goals listed in the instructions to bidders make a good faith effort to award a fair share of work to DBE's who are Minority Business Enterprises (MBE's) and Women-owned Business Enterprises (WBE's) as sources of supplies, construction, equipment and services by taking the following steps:
- Ensure DBEs are made aware of contracting opportunities by including qualified small, minority, and women's businesses on solicitation lists;
 - Assuring that small, minority, and women's businesses are solicited whenever they are potential sources;
 - Dividing total requirements, when economically feasible, into small tasks or quantities to permit maximum participation of small, minority, and women's businesses;
 - Establishing delivery schedules, where the requirements of the work permit, which will encourage participation by small, minority, and women's businesses; and

- v. Using the services and assistance of the Small Business Administration, Minority Business Development Agency of the U.S. Department of Commerce, and Texas Marketplace, as appropriate.

15. Archeological Discoveries and Cultural Resources

No activity which may affect properties listed or properties eligible for listing in the National Register of Historic Places or eligible for designation as a State Archeological Landmark is authorized until the Owner has complied with the provisions of the National Historic Preservation Act and the Antiquities Code of Texas.

The Owner has previously coordinated with the appropriate agencies and impacts to known cultural or archeological deposits have been avoided or mitigated. However, the Contractor may encounter unanticipated cultural or archeological deposits during construction.

If archeological sites or historic structures which may qualify for designation as a State Archeological Landmark according to the criteria in 13 TAC Chapter 26, or that may be eligible for listing on the National Register of Historic Places in accordance with 36 CFR Part 800, are discovered after construction operations are begun, the Contractor shall immediately cease operations in that particular area and notify the Owner, the TWDB, and the Texas Historical Commission, 1511 N. Colorado St., P.O. Box 12276, Capitol Station, Austin, Texas 78711-2276. The Contractor shall take reasonable steps to protect and preserve the discoveries until they have been inspected by the Owner's representative and the TWDB. The Owner will promptly coordinate with the State Historic Preservation Officer and any other appropriate agencies to obtain any necessary approvals or permits to enable the work to continue. The Contractor shall not resume work in the discovery until authorized to do so by the Owner.

16. Endangered Species

No activity is authorized that is likely to jeopardize the continued existence of a threatened or endangered species as listed or proposed for listing under the Federal Endangered Species Act (ESA), and/or the State of Texas Parks and Wildlife Code on Endangered Species, or to destroy or adversely modify the habitat of such species.

If a threatened or endangered species is encountered during construction, the Contractor shall immediately cease work in the area of the encounter and notify the Owner, who will immediately implement actions in accordance with the ESA and applicable State statutes. These actions shall include reporting the encounter to the TWDB, the U. S. Fish and Wildlife Service, and the Texas Parks and Wildlife Department, obtaining any necessary approvals or permits to enable the work to continue, or implement other mitigation actions. The Contractor shall not resume construction in the area of the encounter until authorized to do so by the Owner.

17. Hazardous Materials

Materials utilized in the project shall be free of any hazardous materials, except as may be specifically provided for in the specifications.

If the Contractor encounters existing material on sites owned or controlled by the Owner or in material sources that are suspected by visual observation or smell to contain hazardous materials, the Contractor shall immediately notify the Engineer and the

Owner.

The Owner will be responsible for the testing and removal or disposal of hazardous materials on sites owned or controlled by the Owner. The Owner may suspend the work, wholly or in part during the testing, removal or disposal of hazardous materials on sites owned or controlled by the Owner.

18. Project Signage

The Owner must implement one of the signage options below as described in TWDB Guidance TWDB-1109:

- Online signage placed on community website or social media outlet;
- Press release;
- Posters or wall signage in a public building or location;
- Newspaper or periodical advertisement for project construction, groundbreaking ceremony, or operation of the new or improved facility; or
- Standard on-site signage erected in a prominent location at the construction project site or along a major thoroughfare within the community as directed by the Owner.

If a recipient decides on a public or media event to publicize the accomplishment of significant events related to construction of the project, the U.S Environmental Protection Administration, Region 6, must be provided with at least a ten working day notice of the event and provided the opportunity to attend and participate. Please contact Associate Director Claudia Hosch, who can be reached at (214) 665-6464 or Hosch.Claudia@epa.gov.

19. Changes

*Provisions identified with an asterisk below are consistent with Local Government Code 271.060. Counties and Municipalities may modify the identified provisions, when applicable, to conform to Local Government Code 262.031 (Counties) or 252.048 (Municipalities).

- (a) The Owner may at any time, without notice to any surety, by written order designated or indicated to be a change order, make changes in the work within the general scope of the contract, including but not limited to changes:
 - i. In the specifications (including drawings and designs);
 - ii. In the time, method or manner of performance of the work;
 - iii. To decrease or increase the quantity of work to be performed or materials, equipment or supplies to be furnished;
- (b) *The total price of a contract may not be increased by a change order unless provision has been made for the payment of the added cost by the appropriation of current funds or bond funds for that purpose, by the authorization of the issuance of certificates, or by a combination of those procedures.
- (c) *A contract with an original contract price of \$1 million or more may not be increased by more than 25 percent. If a change order for a contract with an original contract price of less than \$1 million increases the contract amount to \$1 million or more, subsequent change orders may not increase the revised contract amount by more than 25 percent.
- (d) *A governing body may grant authority to an official or employee responsible for purchasing or for administering a contract to approve a change order that involves an increase or decrease of \$50,000 or less.

- (e) Changes that involve an increase in price will be supported by documentation of the cost components. For projects funded through the EDAP program, or with grant proceeds, TWDB staff may request this information to be provided in a format equivalent to the Cost and Pricing Information form (No. WRD-277).
- (f) Any change orders involving a change in the project requiring a relocation of project components, sizing, or process may require additional environmental approval. A map and description of the proposed changes should be sent to the TWDB Environmental Reviewer for coordination and approval as soon as possible to avoid any delay.

20. Operation and Maintenance Manuals and Training

- (a) The Contractor shall obtain installation, operation, and maintenance manuals from manufacturers and suppliers for equipment furnished under the contract. The Contractor shall submit three copies of each complete manual to the Engineer within 90 days after approval of shop drawings, product data, and samples, and not later than the date of shipment of each item of equipment to the project site or storage location.
- (b) The Owner shall require the Engineer to promptly review each manual submitted, noting necessary corrections and revisions. If the Engineer rejects the manual, the Contractor shall correct and resubmit the manual until it is acceptable to the Engineer as being in conformance with the design concept of the project and for compliance with information given in the Contract Documents. Owner may assess the Contractor a charge for reviews of the same items in excess of three (3) times. Such procedure shall not be considered cause for delay.
- (c) Acceptance of manuals by Engineer does not relieve the Contractor of any requirements of terms of Contract.
- (d) The Contractor shall provide the services of trained, qualified technicians to check final equipment installation, to assist as required in placing same in operation, and to instruct operating personnel in the proper manner of performing routine operation and maintenance of the equipment.
- (e) Operations and maintenance manuals specified hereinafter are in addition to any operation, maintenance, or installation instructions required by the Contractor to install, test, and start-up the equipment. Each manual is to be bound in a folder and labeled to identify the contents and project to which it applies. The manual shall contain the following applicable items:
 - i. A listing of the manufacturer's identification, including order number, model, serial number, and location of parts and service centers.
 - ii. A list of recommended stock of parts, including part number and quantity.
 - iii. Complete replacement parts list.
 - iv. Performance data and rating tables.
 - v. Specific instructions for installation, operation, adjustment, and maintenance.
 - vi. Exploded view drawings for major equipment items.
 - vii. Lubrication requirements.
 - viii. Complete equipment wiring diagrams and control schematics with terminal identification.

21. As-Built Dimensions and Drawings

- (a) Contractor shall make appropriate daily measurements of facilities constructed and keep accurate records of location (horizontal and vertical) of all facilities.
- (b) Upon completion of each facility, the Contractor shall furnish the Owner with one set of direct prints, marked with red pencil, to show as-built dimensions and locations of all work constructed. As a minimum, the final drawings shall include the following:
 - i. Horizontal and vertical locations of work.
 - ii. Changes in equipment and dimensions due to substitutions.
 - iii. "Nameplate" data on all installed equipment.
 - iv. Deletions, additions, and changes to scope of work.
 - v. Any other changes made.

22. Close-Out Procedures

To close-out the contract and release final retainage, the following steps must be completed:

- (a) TWDB Staff must conduct a construction contract final inspection (CCFI);
- (b) The following submittals must be received, reviewed, and accepted by the TWDB:
 - i. The final change order, adjustment of quantities, or a statement that all change orders have previously been submitted and there will be no more change orders;
 - ii. The final pay request from the Contractor;
 - iii. An affidavit by the Contractor that all bills have been paid;
 - iv. Certification by the consulting Engineer that the work has been completed and was constructed in accordance with the approved plans and specifications and sound engineering principals and construction practices;
 - v. Acceptance of the project by the Owner in the form of a written resolution or other formal action;
 - vi. Notification of the beginning date of the warranty period for the contract; and
 - vii. Confirmation that the Owner has received the as-built drawings from the Contractor.
- (c) TWDB will issue a Certificate of Approval allowing the release of retainage.

23. Additional Forms and Information

The following forms and guidance documents, mentioned throughout this Guidance, are available on the TWDB site at: <http://www.twdb.texas.gov/financial/instructions/index.asp>

Forms:

Contractor's Act of Assurance (ED-103)
Contractor's Resolution on Authorized Representative (ED-104)
Debarment / Suspension Certification (SRF-404)
Bidder's Certifications- EEO (WRD – 255)
DBE Affirmative Steps solicitation Report (TWDB 0216)
DBE Prime Contractor Affirmative Steps Certification & Goals (TWDB 0217)
DBE Loan/Grant Participation Summary (TWDB 0373)

Monthly American Iron and Steel Certificate (TWDB-1106-A)
American Iron and Steel (AIS) De Minimis Log (TWDB-1106-B)

Monthly Davis Bacon Wage Rate Certificate of Compliance Submittal by Owner (Sub-Recipient) (DB-0154)

Guidance Documents:

TWDB-0210 Disadvantaged Business Enterprise Guidance

Requirements for American Iron and Steel (AIS) Guidance (TWDB-1106)

Guidance on Davis-Bacon Wage Rate Requirements for State Revolving Fund Projects (DB-0156)

SECTION 00 73 01
SUPPLEMENTARY CONDITIONS

The following Paragraphs supplement the November 28, 2017 edition of the General Conditions of the Contract, Specification Section 00 72 00. For the avoidance of doubt, the defense, indemnification, hold harmless, and insurance obligations and release, and the other provisions of these Supplementary Conditions are in addition to the obligations of Contractor set forth elsewhere in the Contract Documents. To the extent that any obligation, requirement, or provision of these Supplementary Conditions conflicts with any other obligation or requirement of the Contract Documents, the more stringent obligation or requirement will control; provided, however, that to the maximum extent possible, all requirements, obligations, and provisions shall be interpreted and construed as supplementary and not as conflicting with any other.

1. CC Woodlands, LLC

- a. **TERMS AND CONDITIONS OF TEMPORARY CONSTRUCTION EASEMENT AGREEMENT:** CC Woodlands, LLC has granted to Owner a Temporary Construction Easement Agreement to facilitate the Work. The final executed Temporary Construction Easement Agreement document is attached as "Attachment A" to this document, and incorporated herein by reference. Contractor expressly assumes toward Grantor (as defined below) and Owner the obligations of Grantee (as defined below) and agrees to be bound by and perform the Work in accordance with each and every term, condition, and provision set forth in the final executed Temporary Construction Easement Agreement.
- b. **INDEMNIFICATION:** Without limiting the generality of the foregoing Paragraph 1.a., Contractor expressly assumes toward Grantor (as defined below) and Owner and agrees to be bound by the defense, indemnification, and hold harmless obligations and the release of Grantee (as defined below) in the following paragraph excerpted from the Temporary Construction Easement Agreement granted by CC Woodlands, LLC ("Grantor" in the following excerpt) to the San Jacinto River Authority ("Grantee" in the following excerpt):

"Grantee hereby agrees that it will engage qualified contractors to perform the work permitted and contemplated by this Easement Agreement, including but not limited to the construction of the Facilities, and that it will require such contractors engaged by Grantee to perform work within the Easement Tract to indemnify, defend and hold harmless Grantor and Grantor's officers, directors, members, managers, partners, shareholders, employees, agents, contractors and any affiliates or subsidiaries of the foregoing (each individually a "Grantor Party" and collectively referred to as, "Grantor

Parties") from and against any and all liabilities, claims, demands, damages, causes of action, suits, actions, judgments, expenses, costs and attorneys' fees brought or made on account of any injuries or damages received or sustained by any person or persons or property, arising out of, occasioned by or in connection with Grantee's use of the Easement Tract or any work performed thereon. In addition to and not in limitation of the immediately preceding sentence, Grantee, for and on behalf of Grantee and Grantee's employees, contractors, successors and assigns, does hereby irrevocably release, acquit, and forever discharge Grantor and the Grantor Parties of and from any and all liabilities, claims, demands, damages, causes of action, suits, actions, judgments, expenses, costs, attorneys' fees and compensations of whatsoever kind resulting from the flight of golf balls."

- c. **ADDITIONAL INSURED:** Without limiting the generality of the above Paragraph 1.a., additional insured status shall be provided to "CC Woodlands, LLC, and its officers, directors, members, managers, partners, shareholders, employees, agents, contractors and any affiliates or subsidiaries of the foregoing", as if the foregoing language in quotations was included, in its entirety, in the list of additional insureds set forth in Paragraph 5.3.1.16 of the General Conditions (Specification Section 00 72 00).

2. The Woodlands Land Development Company, L.P.

- a. **TERMS AND CONDITIONS OF TEMPORARY CONSTRUCTION AND ACCESS EASEMENT AGREEMENT:** The Woodlands Land Development Company, L.P. has granted to Owner a Temporary Construction and Access Easement Agreement to facilitate the Work. The final executed Temporary Construction and Access Easement Agreement document is attached as "Attachment B" to this document, and incorporated herein by reference. Contractor expressly assumes toward Grantor (as defined below) and Owner the obligations of Grantee (as defined below) and agrees to be bound by and perform the Work in accordance with each and every term, condition, and provision set forth in the final executed Temporary Construction and Access Easement Agreement.
- b. **INDEMNIFICATION:** Without limiting the generality of the above Paragraph 2.a., Contractor expressly assumes toward Grantor (as defined below) and Owner and agrees to be bound by the defense, indemnification, and hold harmless obligations of Grantee (as defined below) in the following paragraph excerpted from the Temporary Construction and Access Easement Agreement granted by The Woodlands Land Development Company, L.P. ("Grantor" in the following excerpt) to the San Jacinto River Authority ("Grantee" in the following excerpt):

“Grantee hereby agrees that it will engage qualified contractors to perform the work permitted and contemplated by this Easement Agreement, including but not limited to the construction of the Facilities, and that it will require such contractors engaged by Grantee to perform work within the Easement Tract to indemnify, defend and hold harmless Grantor and Grantor’s officers, directors, members, managers, partners, shareholders, employees, agents, contractors and any affiliates or subsidiaries of the foregoing (each individually a "Grantor Party" and collectively referred to as, "Grantor Parties") from and against any and all liabilities, claims, demands, damages, causes of action, suits, actions, judgments, expenses, costs and attorneys’ fees brought or made on account of any injuries or damages received or sustained by any person or persons or property, arising out of, occasioned by or in connection with Grantee’s use of the Easement Tract or any work performed thereon.”

- c. **ADDITIONAL INSURED:** Without limiting the generality of the above Paragraph 2.a., additional insured status shall be provided to “The Woodlands Land Development Company, L.P., and its officers, directors, members, managers, partners, shareholders, employees, agents, contractors and any affiliates or subsidiaries of the foregoing”, as if the foregoing language in quotations was included, in its entirety, in the list of additional insureds set forth in Paragraph 5.3.1.16 of the General Conditions (Specification Section 00 72 00).

3. The Woodlands Township

- a. **TERMS AND CONDITIONS OF INTERLOCAL CONSTRUCTION ACCESS AGREEMENT:** The Woodlands Township and Owner have entered into an Interlocal Construction Access Agreement to facilitate the Work. The final executed Interlocal Construction Access Agreement is attached as “Attachment C” to this document and included herein by reference. Contractor expressly assumes toward the Township (as defined below) and Owner the obligations of the Authority (as defined below) and agrees to be bound by and perform the Work in accordance with each and every term, condition, and provision set forth in the final executed Interlocal Construction Access Agreement.
- b. **INDEMNIFICATION:** Without limiting the generality of the above Paragraph 3.a., Contractor expressly assumes toward the Township (as defined below) and Owner and agrees to be bound by the indemnification and hold harmless obligations of the Authority (as defined below) in the following paragraph excerpted from the Interlocal Construction Access Agreement between The Woodlands Township ("Township" in the following excerpt) and the San Jacinto River Authority ("Authority" in the following excerpt):

“IN CONSIDERATION OF THE CONSENT HEREIN ABOVE GRANTED BY THE TOWNSHIP TO THE AUTHORITY TO CONSTRUCT A STAGING AREA ON THE PARK REQUIRING ENTRY UPON, OVER AND THROUGH THE PARK, THE AUTHORITY, TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, HEREBY AGREES TO INDEMNIFY AND HOLD THE TOWNSHIP HARMLESS FROM ALL CLAIMS FOR INJURY TO OR DEATH OF ANY PERSON OR FOR DAMAGE TO PROPERTY AND/OR ANY IMPROVEMENTS LOCATED ON THE PARK TO THE EXTENT ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE PROJECT CONTEMPLATED HEREBY, OR FOR ANY INJURIES, DEATH OR DAMAGES WHICH WOULD NOT HAVE OCCURRED BUT FOR THE PROJECT, EXCEPT WHERE SUCH INJURIES, DEATH OR DAMAGES ARE CAUSED BY THE ACTS OF THE TOWNSHIP, ITS CONTRACTORS, AGENTS, EMPLOYEES, SUCCESSORS, OR ASSIGNS.”

- c. ADDITIONAL INSURED: Without limiting the generality of the above Paragraph 3.a., additional insured status shall be provided to The Woodlands Township, in the list of additional insureds set forth in Paragraph 5.3.1.01.16 of the General Conditions (Specification Section 00 72 00).

END OF SECTION

ATTACHMENT A

TEMPORARY CONSTRUCTION EASEMENT AGREEMENT

THE STATE OF TEXAS §
 § KNOW ALL PERSONS BY THESE PRESENTS:
COUNTY OF MONTGOMERY §

THAT CC WOODLANDS, LLC, ("Grantor") a Texas limited liability company, whose address is 3030 Lyndon B. Johnson Fwy, Ste #600, Dallas, Texas 75234-7744, for and in consideration of the sum of Ten & No/100 Dollars (\$10.00) and other good and valuable consideration to Grantor in hand paid by SAN JACINTO RIVER AUTHORITY ("Grantee"), a body politic and corporate and a governmental agency of the State of Texas, whose address is P.O. Box 329, Conroe, Texas 77305, Attention: General Manager, the receipt and sufficiency of which are hereby acknowledged and confessed, and subject to the matters set forth below, has GRANTED, SOLD, and CONVEYED, and by these presents does GRANT, SELL, and CONVEY, unto Grantee an exclusive, temporary construction easement (the "Easement") in, over, under, across, and through those certain tracts or parcels of land depicted as "TCE-04", "TCE-05", "TCE-08", "TCE-10", and "TCE-11" on Exhibit Nos. 8, 14, 15, 16, 18, 19, and 20 attached hereto as Exhibit A and incorporated herein by this reference for all purposes (the "Easement Tract"), for the purpose of providing a temporary work and storage area and access thereto for Grantee, its agents, contractors, subcontractors, and its and their employees in connection with the construction and rehabilitation of a sanitary sewer and any appurtenances thereto, including bypass pumping equipment and operation, and equipment ancillary to the construction and operation thereof (the "Facilities"), on Grantee's property subject to the further terms and provisions hereinafter set forth. Except as otherwise provided herein, construction access to the site, allowed construction routes, areas where access is prohibited, restoration requirements including special turf areas, cart paths and irrigation, contractor insurance requirements, and the use of trenchless methods in sensitive areas and fairway crossings, shall all be done in accordance with the plans, specifications, and contract documents prepared by ARKK Engineers dated March 2019.

Within thirty (30) days after substantial completion of the construction of the Facilities, Grantee agrees to fully restore Grantor's property and the improvements thereon (including, if present, any cart paths and irrigation improvements), at Grantee's sole cost and expense, to their original condition as existed immediately prior to the work. Grantee acknowledges that, as of the date of the execution hereof, trees, turf, grass, shrubs or natural vegetation may be located, in whole or in part, within the Easement Tract. Such trees, turf, grass, shrubs or natural vegetation may be removed or trimmed by Grantee to the extent reasonably necessary to perform the work, and, if so removed, shall be replaced with substantially similar plantings. Any damage done to the turf areas of Grantor's property shall be repaired using sod of the same type as the grass damaged.

The construction schedule must be approved in advance by Grantor, and the work shall be done in a manner to minimize disruption of surrounding areas. Grantee shall perform all work in an expeditious and diligent manner once the same is initiated and in compliance with all applicable governmental laws. Grantee shall not use the Easement in a manner that constitutes a public or private nuisance. Grantee shall remove and properly dispose of trash and debris attributable to

Grantee's use of the Easement, and shall not bury any trash or waste material of any kind on the Easement Tract.

If any lien is filed or otherwise imposed on any part of the Easement Tract in connection with or arising out of Grantee's use of the Easement, Grantee shall (i) use its best efforts to cause such lien to be released, discharged or otherwise settled so as not to encumber any portion of Grantor's property within ten (10) days after filing; (ii) cooperate with Grantor in any action to remove such lien and (iii) indemnify, defend and hold Grantor harmless from any such lien.

Grantee hereby agrees that it will engage qualified contractors to perform the work permitted and contemplated by this Easement Agreement, including but not limited to the construction of the Facilities, and that it will require such contractors engaged by Grantee to perform work within the Easement Tract to indemnify, defend and hold harmless Grantor and Grantor's officers, directors, members, managers, partners, shareholders, employees, agents, contractors and any affiliates or subsidiaries of the foregoing (each individually a "Grantor Party" and collectively referred to as, "Grantor Parties") from and against any and all liabilities, claims, demands, damages, causes of action, suits, actions, judgments, expenses, costs and attorneys' fees brought or made on account of any injuries or damages received or sustained by any person or persons or property, arising out of, occasioned by or in connection with Grantee's use of the Easement Tract or any work performed thereon. In addition to and not in limitation of the immediately preceding sentence, Grantee, for and on behalf of Grantee and Grantee's employees, contractors, successors and assigns, does hereby irrevocably release, acquit, and forever discharge Grantor and the Grantor Parties of and from any and all liabilities, claims, demands, damages, causes of action, suits, actions, judgments, expenses, costs, attorneys' fees and compensations of whatsoever kind resulting from the flight of golf balls.

Grantee agrees that Grantee and its agents and contractors working in and around the Easement Tract shall at all times maintain Commercial General Liability Insurance and other insurance policies as scheduled below insuring Grantor against all claims and demands for bodily injury, personal injury and property damage with respect to the Easement Tract and Grantee's use of the Easement as follows:

A. General liability insurance covering Grantee's activities in the Easement Tract, completed operations and products liability, and contractual liability, all with a minimum combined single limit of \$1,000,000 each occurrence and general aggregate of \$2,000,000 for bodily injury and property damage, including personal injury;

B. Commercial automobile liability insurance covering all owned, hired or otherwise non-owned vehicles with a minimum combined single limit of \$1,000,000 for bodily injury and property damage; and,

C. (i) Worker's Compensation as required by Texas law, and (ii) Employers' liability insurance with a minimum limit of \$1,000,000 per accident.

Grantor shall be named as an additional insured on all liability policies save and except workers compensation, and all such liability policies shall be primary and non-contributory to any

insurance maintained by Grantor.

Nothing contained herein shall grant or be construed as granting to Grantee the right to use the Easement for any purpose other than for the purposes herein specified or to change the dimensions or location of the Easement.

Nothing herein contained shall be deemed to be a gift or dedication of any portion of the Easement Area to the general public or for the general public or for any public purpose whatsoever, it being the intention of the Grantor that this Agreement shall be strictly limited to and for the purpose herein expressed.

This Agreement shall be governed and construed in accordance with the laws of the State of Texas. In case any one or more of the provisions contained in this Agreement shall for any reason be held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provision hereof, and this Agreement shall be construed as if such invalid, illegal or unenforceable provision had never been contained herein.

This Agreement contains the entire agreement between the parties relating to the rights herein granted and the obligations herein assumed. Any or all amendments or modifications concerning this Agreement shall be of no force and effect, unless such subsequent amendment or modification is in writing and signed by all of the parties hereto or their successors and assigns.

It shall be conclusively presumed that persons signing on behalf of Grantor and the Grantee have all requisite power and authority to enter into this Agreement and the indemnification obligation set forth above. The execution and delivery of this Agreement by Grantor and Grantee has been duly authorized by all necessary parties.

This Easement, and Grantee's rights in and to the Easement hereunder, shall expire upon completion of construction of the Facilities and restoration of the Easement Tract or two (2) years from the date of execution hereof, whichever occurs first.

TO HAVE AND TO HOLD the above described Easement, together with all and singular the rights and appurtenances thereto in anywise belonging, including all necessary rights of ingress, egress, and regress, unto Grantee, its successors and assigns, for the period set forth hereinabove; and Grantor does hereby bind Grantor and Grantor's successors and assigns to WARRANT AND DEFEND, for the period set forth hereinabove, all and singular, the Easement unto Grantee, and its successors, substitutes and assigns, against every person whomsoever lawfully claiming or to claim the same or any part thereof, subject to all of the terms, conditions, provisions and limitations hereinabove set forth and provided, by, through or under Grantor, but not otherwise.

[SIGNATURE PAGES FOLLOW]

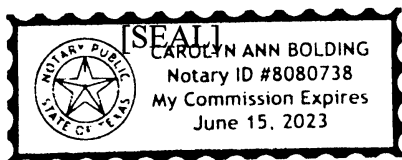
EXECUTED this 24 day of May, 2019.

CC WOODLANDS, LLC, a Texas limited liability company

By: [Signature]
Name: Curt McClellan
Title: Treasurer

THE STATE OF TEXAS §
 §
COUNTY OF Dallas §

This instrument was acknowledged before me on this the 24 day of May, 2019, by Curt McClellan, Treasurer, on behalf of CC WOODLANDS, LLC, a Texas limited liability company.



[Signature]
Notary Public in and for the State of TEXAS

ACCEPTED this 10th day of June, 2019.



THE STATE OF TEXAS

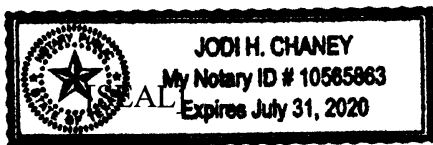
COUNTY OF MONTGOMERY

SAN JACINTO RIVER AUTHORITY

By: [Signature]
Jace A. Houston, General Manager

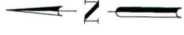
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This instrument was acknowledged before me on this 10th day of June, 2019, by Jace A. Houston, General Manager of the San Jacinto River Authority, on behalf of the San Jacinto River Authority.

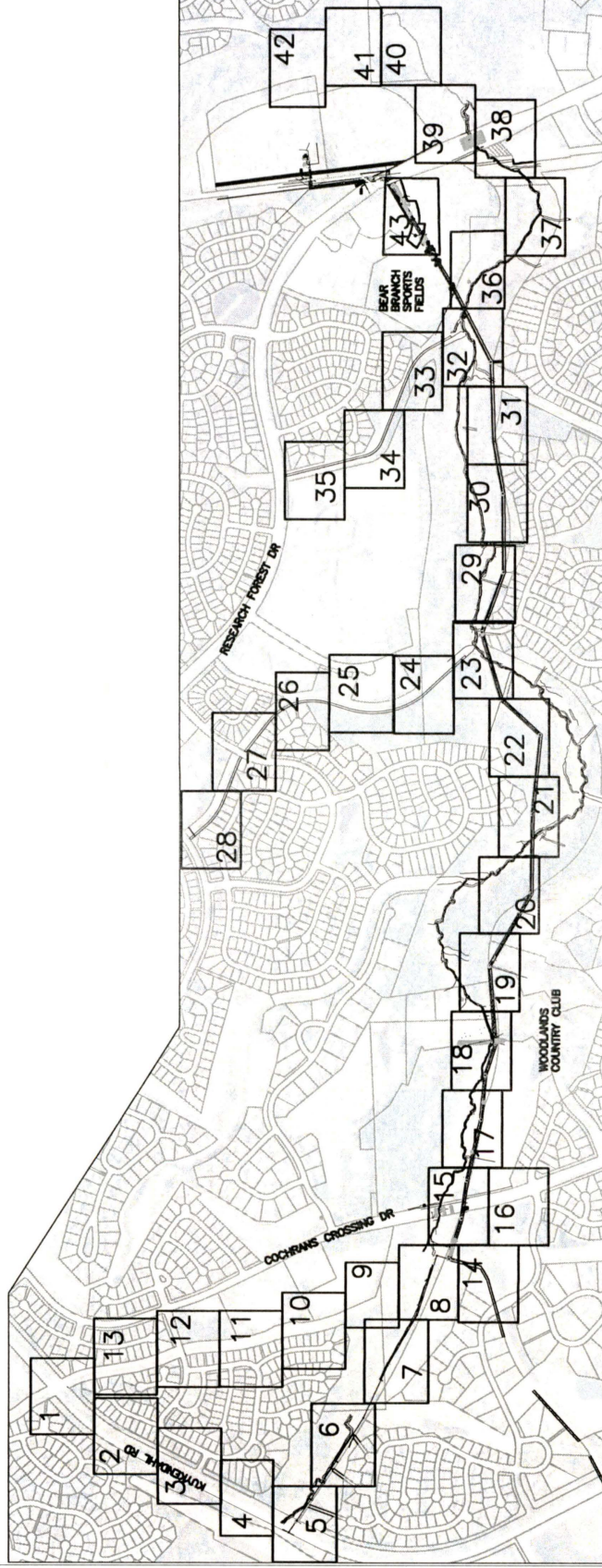


[Signature]
Notary Public in and for the State of T E X A S

EXHIBIT A



SCALE: 1"=1800'
GRAPHIC SCALE IN FEET



PLAN

SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION



REHABILITATION OF
BEAR BRANCH
GRAVITY MAIN

ISSUE	DATE	DESCRIPTION
SIRA PROJECT NO:		
FILE NAME: Easement Exhibit 12.11.18.dwg		
DRAWN BY: AC		
CHECKED BY: VF		
SCALE:		AS SHOWN

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.

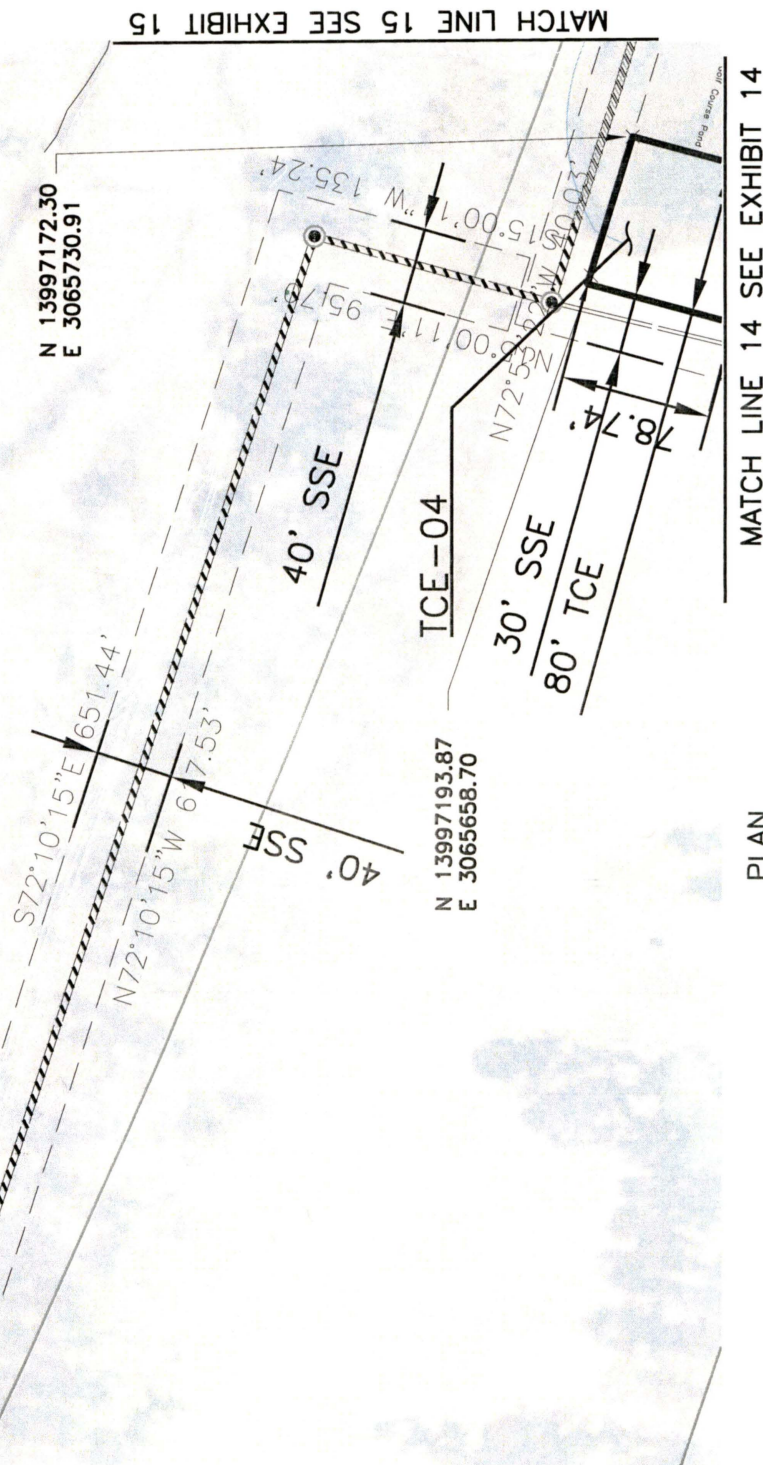
LEGEND



EXHIBIT REFERENCE

TEMPORARY
CONSTRUCTION &
ACCESS EASEMENTS
EXHIBIT KEY MAP

SCALE: 1"=100'
GRAPHIC SCALE IN FEET



PLAN

MATCH LINE 14 SEE EXHIBIT 14

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.

LEGEND

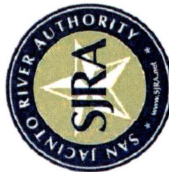

MANHOLE

—————TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
 / / /EXISTING GRAVITY MAIN
 ————EXISTING SANITARY SEWER EASEMENT (SSE)

**TEMPORARY
CONSTRUCTION &
ACCESS EASEMENTS**

EXHIBIT 8

**SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION**

REHABILITATION OF
BEAR BRANCH
GRAVITY MAIN[illegible]

SCALE: AS SHOWN

FILE NAME: Ecosystem Exhibit 12.11.18.docx

DRAWN BY: AC

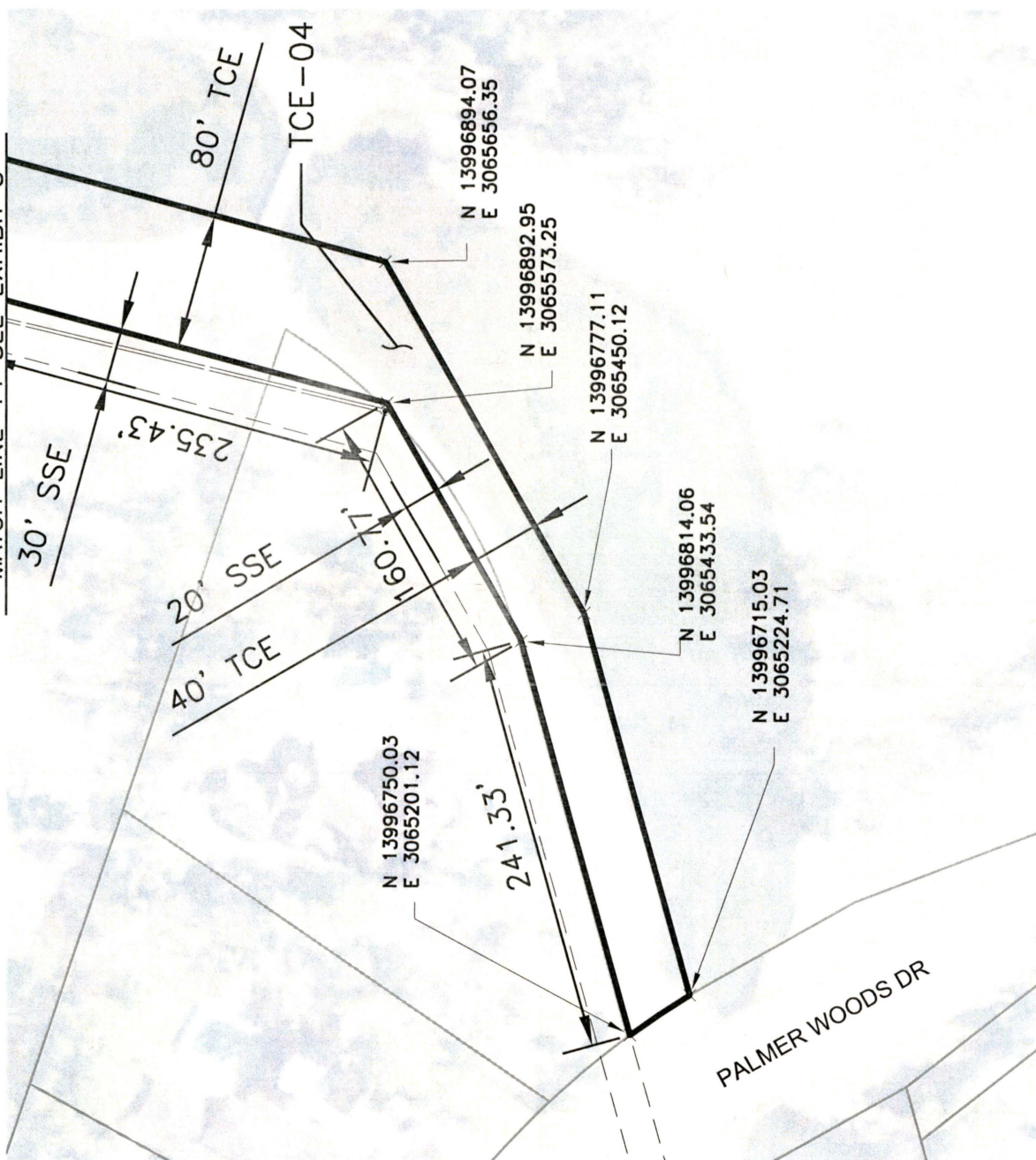
CHECKED BY: VF

A Z

SCALE: 1"=100'
GRAPHIC SCALE IN FEET



MATCH LINE 14 SEE EXHIBIT 8



PLAN

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.

LEGEND


MANHOLE

———TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
 / / EXISTING GRAVITY MAIN
 ———EXISTING SANITARY SEWER EASEMENT (SSE)

**SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION**

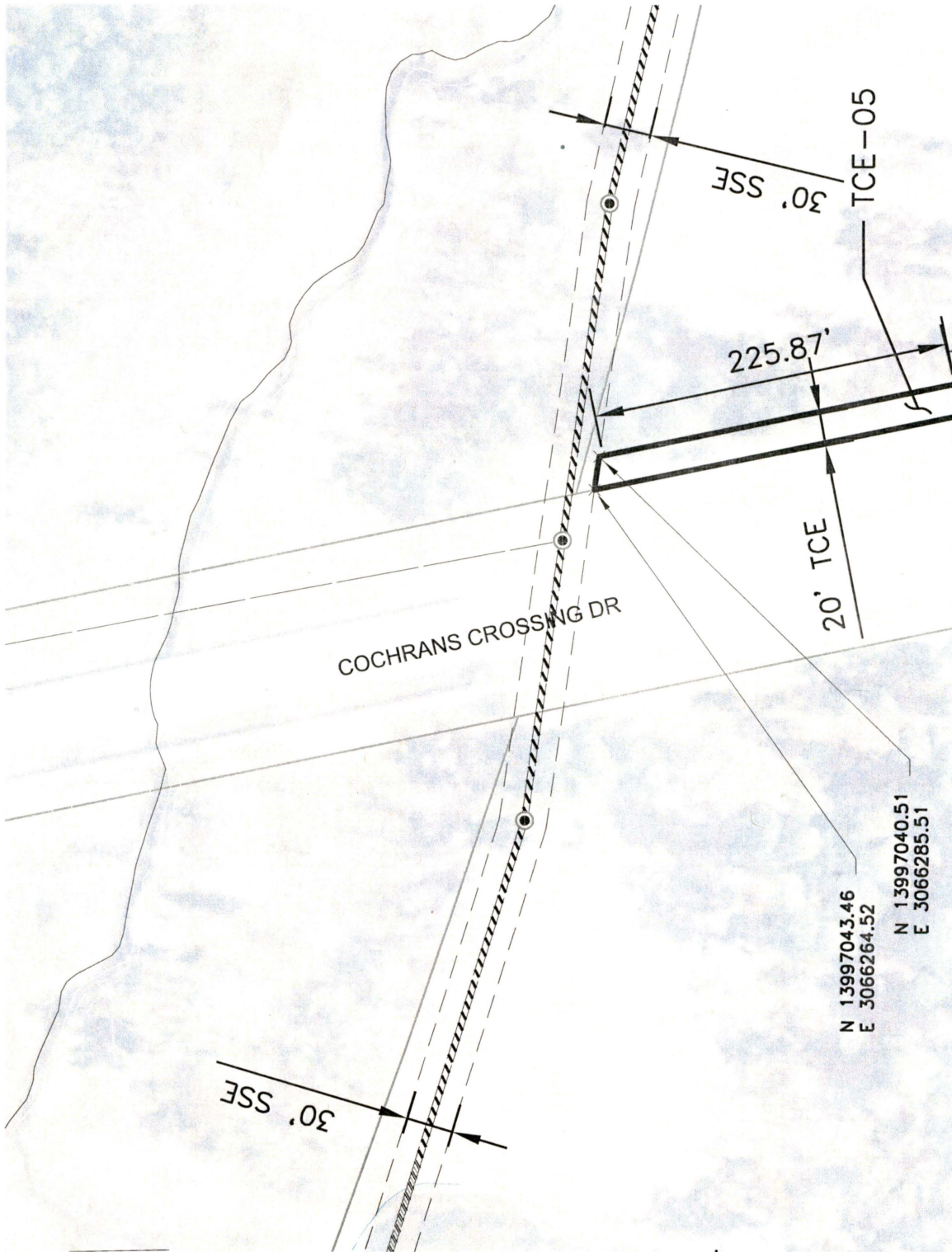
REHABILITATION OF
BEAR BRANCH
GRAVITY MAIN

ISSUE	DATE	DESCRIPTION
S.A. PROJECT NO:		
FILE NAME: Element Embs 12.11.18.dwg		
DRAWN BY: AC		
CHECKED BY: YF		
SCALE: AS SHOWN		

TEMPORARY
CONSTRUCTION &
ACCESS EASEMENTS



SCALE: 1"=100'
GRAPHIC SCALE IN FEET
0 50 100



PLAN MATCH LINE SEE EXHIBIT 16

SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION



REHABILITATION OF
BEAR BRANCH
GRAVITY MAIN

ISSUE	DATE	DESCRIPTION
SJRA PROJECT NO:		
FILE NAME: Comment Exhibit 12.11.18.dwg		
DRAWN BY: AC		
CHECKED BY: WF		
SCALE:		AS SHOWN

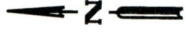
TEMPORARY
CONSTRUCTION &
ACCESS EASEMENTS

EXHIBIT 15

LEGEND

- MANHOLE
- TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
- EXISTING GRAVITY MAIN
- EXISTING SANITARY SEWER EASEMENT (SSE)

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.



SCALE: 1"=100'
GRAPHIC SCALE IN FEET



MATCH LINE SEE EXHIBIT 15

20' TCE

241.95'

TCE-05

N 13996576.91
E 3066369.80

N 13996581.84
E 3066389.23

STONECROFT PL

COCHRANS CROSSING DR

PALMER WOODS DR

PLAN

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.

LEGEND



MANHOLE

- TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
- // / EXISTING GRAVITY MAIN
- EXISTING SANITARY SEWER EASEMENT (SSE)

SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION



REHABILITATION OF
BEAR BRANCH
GRAVITY MAIN

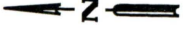
ISSUE	DATE	DESCRIPTION

FILE NAME: Easement Exhibit 12.11.18.dwg
DRAWN BY: AC
CHECKED BY: WF
SCALE: AS SHOWN

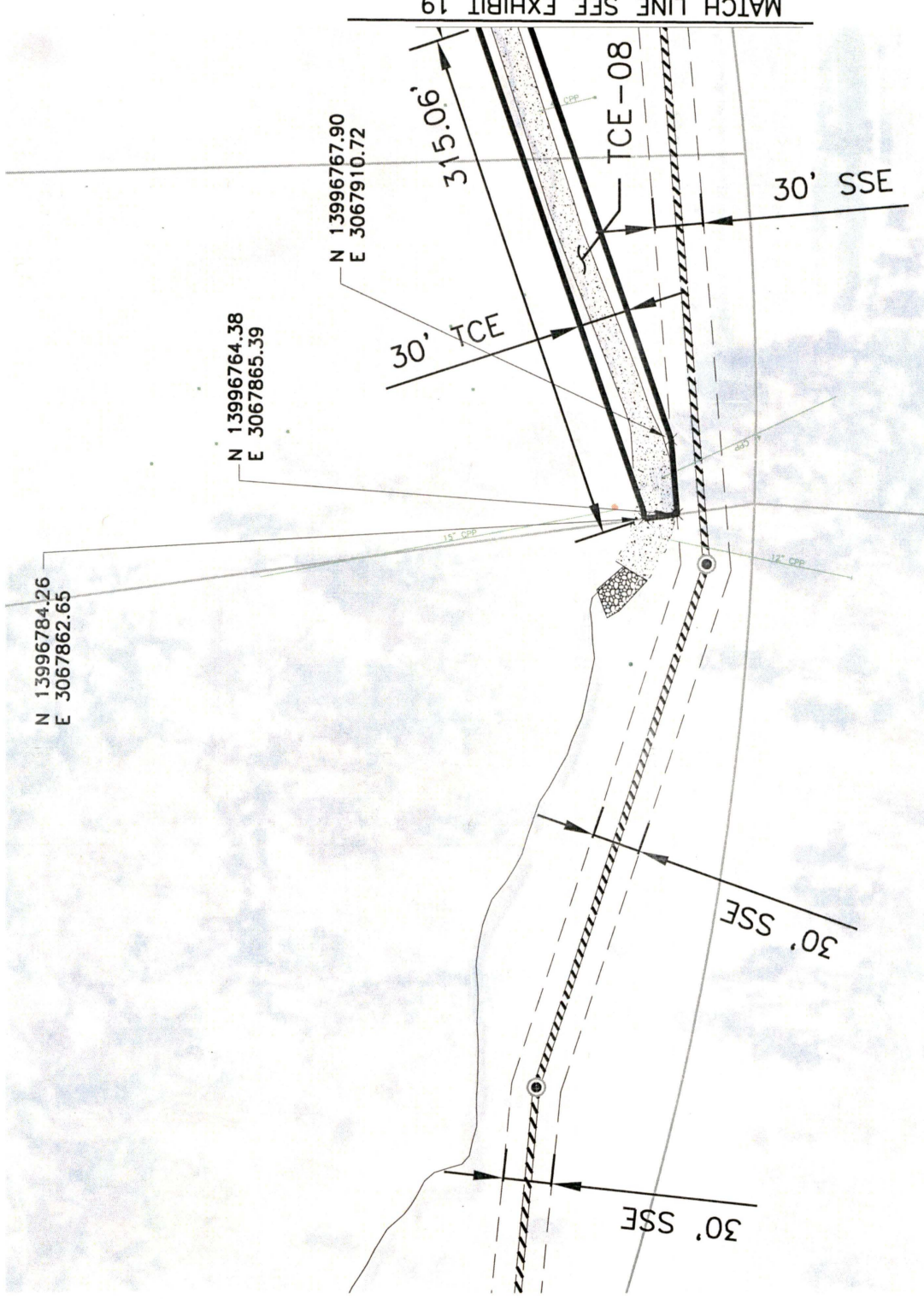
TEMPORARY
CONSTRUCTION &
ACCESS EASEMENTS

EXHIBIT 16

EXHIBIT A



SCALE: 1"=100'
GRAPHIC SCALE IN FEET



PLAN

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.

LEGEND



- MANHOLE
- TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
- // / EXISTING GRAVITY MAIN
- EXISTING SANITARY SEWER EASEMENT (SSE)

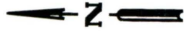
SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION



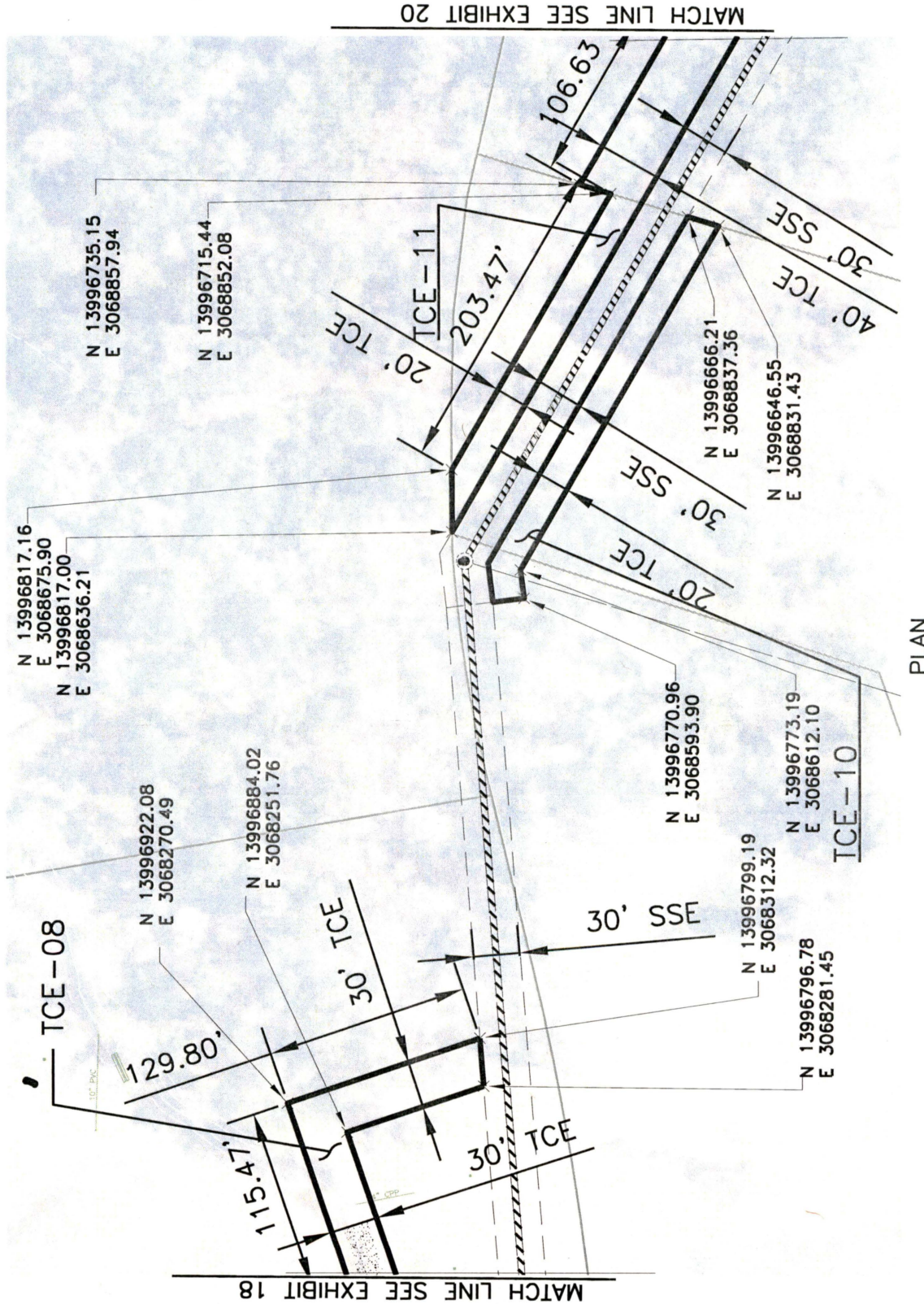
REHABILITATION OF
BEAR BRANCH
GRAVITY MAIN

ISSUE	DATE	DESCRIPTION
SJRA PROJECT NO:		
FILE NAME: Easement Exhibit 12.11.18.dwg		
DRAWN BY: AC		
CHECKED BY: WF		
SCALE:		AS SHOWN

TEMPORARY
CONSTRUCTION &
ACCESS EASEMENTS
EXHIBIT 18



SCALE: 1"=100'
GRAPHIC SCALE IN FEET



PLAN

LEGEND

MANHOLE

- TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
- EXISTING GRAVITY MAIN
- EXISTING SANITARY SEWER EASEMENT (SSE)

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.

SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION



REHABILITATION OF
BEAR BRANCH
GRAVITY MAIN

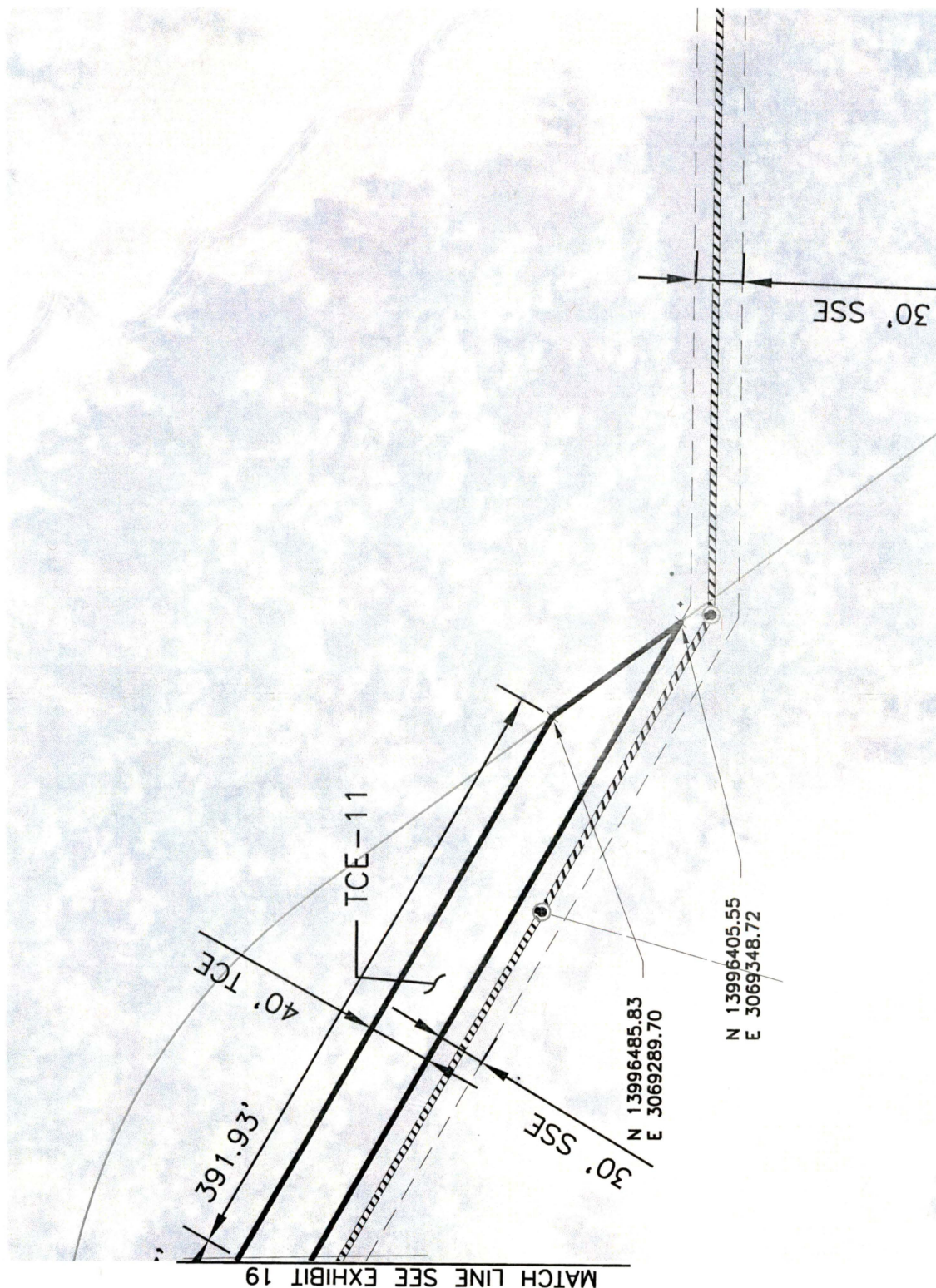
ISSUE	DATE	DESCRIPTION
SJRA PROJECT NO:		
FILE NAME: Comment Exhibit 12.11.18.dwg		
DRAWN BY: AC		
CHECKED BY: WF		
SCALE:		AS SHOWN

TEMPORARY
CONSTRUCTION &
ACCESS EASEMENTS

EXHIBIT 19



SCALE: 1"=100'
GRAPHIC SCALE IN FEET
0 50 100



PLAN

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.

LEGEND

MANHOLE

- TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
- // / EXISTING GRAVITY MAIN
- - - EXISTING SANITARY SEWER EASEMENT (SSE)

SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION



REHABILITATION OF
BEAR BRANCH
GRAVITY MAIN

ISSUE	DATE	DESCRIPTION
SJRA PROJECT NO:		
FILE NAME: Easement Exhibits 12.11.18.dwg		
DRAWN BY: AC		
CHECKED BY: WF		
SCALE:		AS SHOWN

TEMPORARY
CONSTRUCTION &
ACCESS EASEMENTS
EXHIBIT 20

ATTACHMENT B

TEMPORARY CONSTRUCTION AND ACCESS EASEMENT AGREEMENT

THE STATE OF TEXAS §
 § KNOW ALL PERSONS BY THESE PRESENTS:
COUNTY OF MONTGOMERY §

THAT THE WOODLANDS LAND DEVELOPMENT COMPANY, L.P. ("Grantor"), a Texas limited partnership, whose address is 1790 Hughes Landing Blvd., Suite 600, The Woodlands, Texas 77380, for and in consideration of the sum of Ten & No/100 Dollars (\$10.00) and other good and valuable consideration to Grantor in hand paid by SAN JACINTO RIVER AUTHORITY ("Grantee"), a body politic and corporate and a governmental agency of the State of Texas, whose address is P.O. Box 329, Conroe, Texas 77305, Attention: General Manager, the receipt and sufficiency of which are hereby acknowledged and confessed, and subject to the matters set forth below, has GRANTED, SOLD, and CONVEYED, and by these presents does GRANT, SELL, and CONVEY, unto Grantee (i) a temporary construction easement (the "Construction Easement") in, over, under, across, and through those certain tracts or parcels of land depicted as "TCE-01", "TCE-02", "TCE-03", "TCE-06", "TCE-07", "TCE-09", "TCE-12", "TCE-13", "TCE-15", and "TCE-17" on Exhibit Nos. 5 through 8, 15, and 17 through 23, 29 through 32, and 36 through 43 attached hereto and incorporated herein by this reference for all purposes (the "Construction Easement Tract"), for the purpose of providing a temporary work and storage area and access thereto for Grantee, its agents, contractors, subcontractors, and its and their employees in connection with the construction and rehabilitation of a sanitary sewer and any appurtenances thereto, including bypass pumping equipment and operation, and equipment ancillary to the construction and operation thereof (the "Facilities"), and (ii) an exclusive, temporary construction access easement (the "Access Easement") over, across, and through those certain tracts or parcels of land depicted as "TAE-02", "TAE-03", "TAE-04", "TAE-05", "TAE-06", "TAE-07", "TAE-08" on Exhibit Nos. 1, 5, 8 through 13, and 23 through 28, and 32 through 35 attached hereto and incorporated herein by this reference for all purposes (the "Access Easement Tract"), for the purpose of providing ingress and egress to Grantee, its agents, contractors, subcontractors, and its and their employees in connection with the construction and rehabilitation of the Facilities. Hereinafter, the Construction Easement and the Access Easement may be referred to collectively as the "Easement", and the Construction Easement Tract and the Access Easement Tract may be referred to collectively as the "Easement Tract". Except as otherwise provided herein, construction access to the site, allowed construction routes, areas where access is prohibited, restoration requirements, contractor insurance requirements, and the use of trenchless methods in sensitive areas, shall all be done in accordance with the plans, specifications, and contract documents prepared by ARKK Engineers dated March 2019.

Within thirty (30) days after substantial completion of the construction of the Facilities, Grantee agrees to fully restore Grantor's property and the improvements thereon, at Grantee's sole cost and expense, to their original condition as existed immediately prior to the work. Grantee acknowledges that, as of the date of the execution hereof, trees, turf, grass, shrubs or natural vegetation may be located, in whole or in part, within the Easement Tract. Such trees,

turf, grass, shrubs or natural vegetation may be removed or trimmed by Grantee to the extent reasonably necessary to perform the work, and, if so removed, shall be replaced with substantially similar plantings. Any damage done to the turf areas of Grantor's property shall be repaired using sod of the same type as the grass damaged.

The construction schedule must be approved in advance by Grantor, and the work shall be done in a manner to minimize disruption of surrounding areas. Grantee shall perform all work in an expeditious and diligent manner once the same is initiated and in compliance with all applicable governmental laws. Grantee shall remove and properly dispose of trash and debris attributable to Grantee's use of the Easement, and shall not bury any trash or waste material of any kind on the Easement Tract.

If any lien is filed or otherwise imposed on any part of the Easement Tract in connection with or arising out of Grantee's use of the Easement, Grantee shall (i) use its best efforts to cause such lien to be released, discharged or otherwise settled so as not to encumber any portion of Grantor's property within ten (10) days after filing; (ii) cooperate with Grantor in any action to remove such lien and (iii) indemnify, defend and hold Grantor harmless from any such lien.

Grantee hereby agrees that it will engage qualified contractors to perform the work permitted and contemplated by this Easement Agreement, including but not limited to the construction of the Facilities, and that it will require such contractors engaged by Grantee to perform work within the Easement Tract to indemnify, defend and hold harmless Grantor and Grantor's officers, directors, members, managers, partners, shareholders, employees, agents, contractors and any affiliates or subsidiaries of the foregoing (each individually a "Grantor Party" and collectively referred to as, "Grantor Parties") from and against any and all liabilities, claims, demands, damages, causes of action, suits, actions, judgments, expenses, costs and attorneys' fees brought or made on account of any injuries or damages received or sustained by any person or persons or property, arising out of, occasioned by or in connection with Grantee's use of the Easement Tract or any work performed thereon.

Nothing contained herein shall grant or be construed as granting to Grantee the right to use the Easement for any purpose other than for the purposes herein specified or to change the dimensions or location of the Easement.

Nothing herein contained shall be deemed to be a gift or dedication of any portion of the Easement Area to the general public or for the general public or for any public purpose whatsoever, it being the intention of the Grantor that this Agreement shall be strictly limited to and for the purpose herein expressed.

This Agreement shall be governed and construed in accordance with the laws of the State of Texas. In case any one or more of the provisions contained in this Agreement shall for any reason be held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provision hereof, and this Agreement shall be construed as if such invalid, illegal or unenforceable provision had never been contained herein.

This Agreement contains the entire agreement between the parties relating to the rights herein granted and the obligations herein assumed. Any or all amendments or modifications concerning this Agreement shall be of no force and effect, unless such subsequent amendment or modification is in writing and signed by all of the parties hereto or their successors and assigns.

It shall be conclusively presumed that persons signing on behalf of Grantor and the Grantee have all requisite power and authority to enter into this Agreement and the indemnification obligation set forth above. The execution and delivery of this Agreement by Grantor has been duly authorized by all necessary parties.

This Easement, and Grantee's rights in and to the Easement hereunder, shall expire upon completion of construction of the Facilities and restoration of the Easement Tract or two (2) years from the date of execution hereof, whichever occurs first.

TO HAVE AND TO HOLD the above described Easement, together with all and singular the rights and appurtenances thereto in anywise belonging, including all necessary rights of ingress, egress, and regress, unto Grantee, its successors and assigns, for the period set forth hereinabove.

[SIGNATURE PAGES FOLLOW]

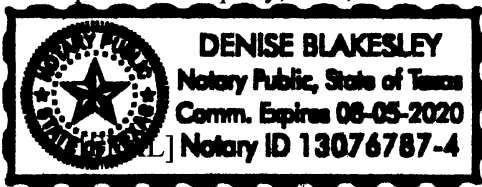
EXECUTED this 2nd day of July, 2019.

THE WOODLANDS LAND DEVELOPMENT
COMPANY, L.P., a Texas limited partnership

By: [Signature]
Name: Dan Kolkhorst [Signature]
Title: Vice President

THE STATE OF TEXAS §
 §
COUNTY OF MONTGOMERY §

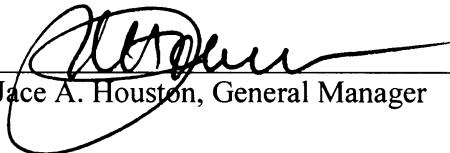
This instrument was acknowledged before me on this the 2nd day of July, 2019, by Daniel Kolkhorst, Vice President, of The Woodlands Land Development Company, L.P., a Texas limited partnership, on behalf of said limited partnership.



[Signature]
Notary Public in and for the State of T E X A S

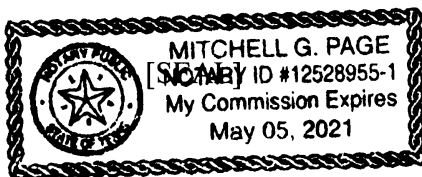
ACCEPTED this 23rd day of July, 2019.

SAN JACINTO RIVER AUTHORITY

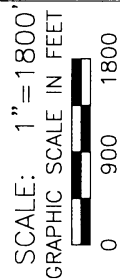
By: 
Jace A. Houston, General Manager

THE STATE OF TEXAS §
 §
COUNTY OF MONTGOMERY §

This instrument was acknowledged before me on this 23rd day of July, 2019, by Jace A. Houston, General Manager of the San Jacinto River Authority, on behalf of the San Jacinto River Authority.




Notary Public in and for the State of T E X A S



SCALE: 1"=1800'
GRAPHIC SCALE IN FEET

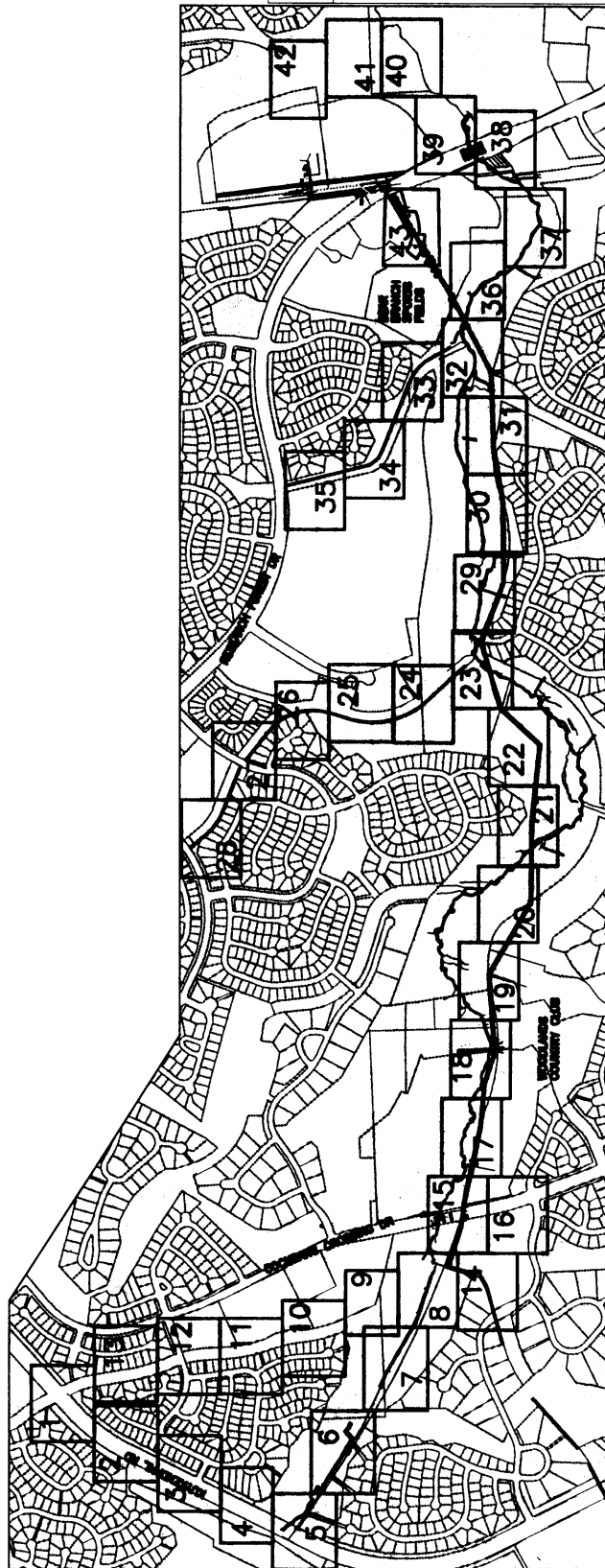
**SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION**



REHABILITATION OF BEAR BRANCH GRAVITY MAIN

ISSUE	DATE	DESCRIPTION
SURA PROJECT NO:		
FILE NAME: Easement Exhibits 12.11.18.dwg		
DRAWN BY: AC		
CHECKED BY: VF		
SCALE:		
AS SHOWN		

TEMPORARY CONSTRUCTION & ACCESS EASEMENTS



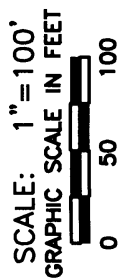
PLAN

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.

LEGEND



EXHIBIT REFERENCE



REHABILITATION OF BEAR BRANCH GRAVITY MAIN

ORIGIN	DATE	DESCRIPTION
		SAVA PROJECT INC.
		FILE JAMES Unswatland Embroid 12.11.18.dwg
		Drawn BY AC
		CHECKED BY W
		SCALE AS SHOWN

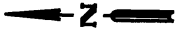
**TEMPORARY
CONSTRUCTION &
ACCESS EASEMENTS**

EXHIBIT 1

LEGEND

- MANHOLE
 — TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
 // / EXISTING GRAVITY MAIN
 — EXISTING SANITARY SEWER EASEMENT (SSE)

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.



SCALE: 1"=100'
GRAPHIC SCALE IN FEET



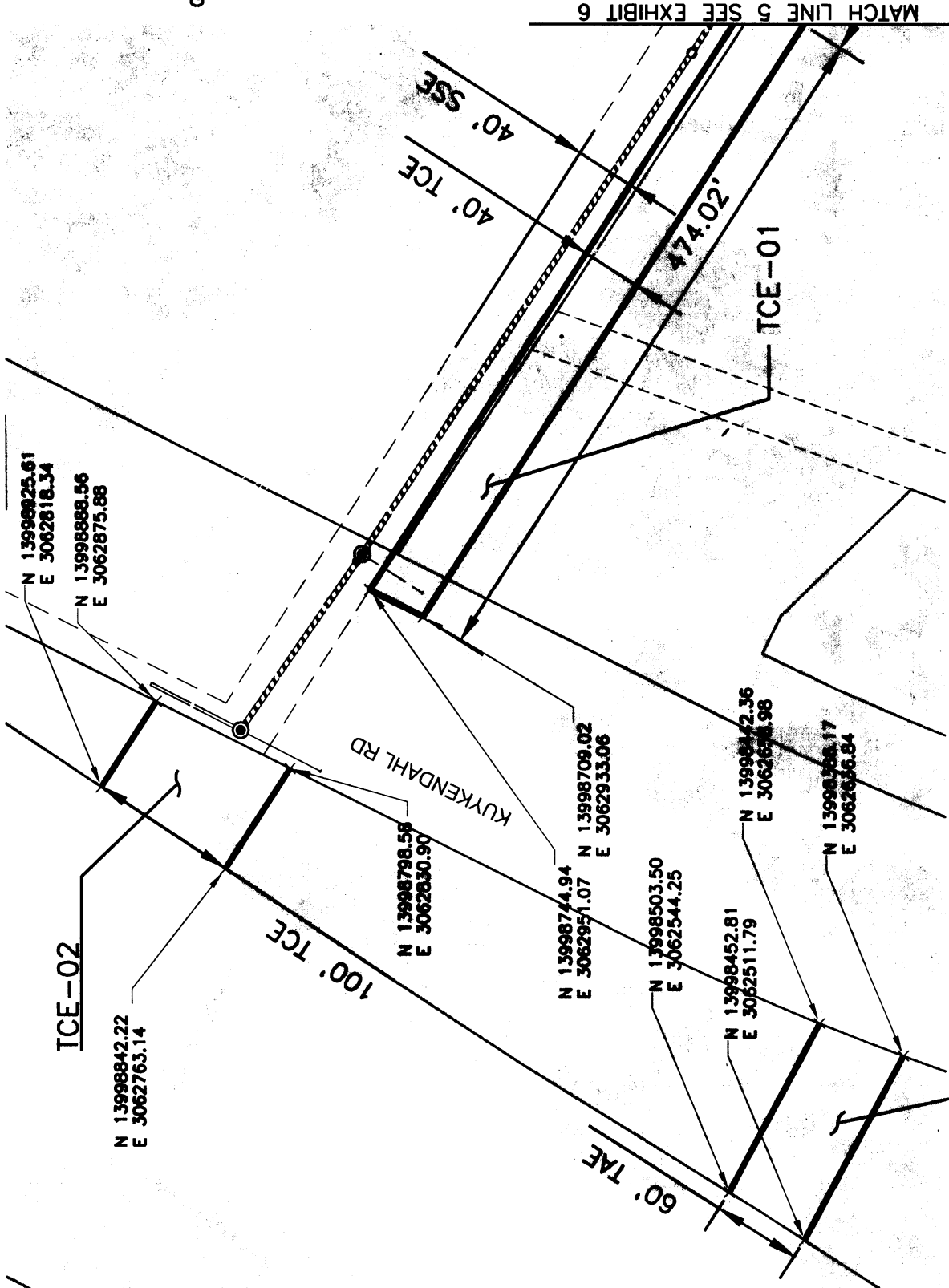
SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION



REHABILITATION OF
BEAR BRANCH
GRAVITY MAIN

DATE	DESCRIPTION
1/11/18	PROJECT NO.
1/11/18	FILE NAME: San Jacinto Authority 12.11.18.dwg
1/11/18	DRAWN BY: AC
1/11/18	CHECKED BY: W
1/11/18	SCALE: AS SHOWN

TEMPORARY
CONSTRUCTION &
ACCESS EASEMENTS
EXHIBIT 5

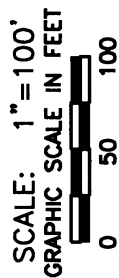


PLAN

LEGEND

- MANHOLE
- TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
- EXISTING GRAVITY MAIN
- EXISTING SANITARY SEWER EASEMENT (SSE)

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.



MATCH LINE 6 SEE EXHIBIT 6

**SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION**



REHABILITATION OF BEAR BRANCH GRAVITY MAIN

				ISSUE	DATE	DESCRIPTION
						SILVA PROJECT NO.
						PYLE 10485 Basement Embank 12.11.18.dwg
						DRAWN BY: AC
						CHECKED BY:
						SCALE: AS SHOWN

**TEMPORARY
CONSTRUCTION &
ACCESS EASEMENTS**

EXHIBIT 7

PLAN

LEGEND

- MAN-HOLE
 — TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
 // / EXISTING GRAVITY MAIN
 — — EXISTING SANITARY SEWER EASEMENT (SSE)

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.



LEGEND

- MAN-HOLE
 — TEMPORARY CONSTRUCTION EASEMENT (TCE)
 // EXISTING GRAVITY MAIN
 - - EXISTING SANITARY SEWER EASEMENT (SSE)

MANHOLE
●
——TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)

TEMPORARY CONSTRUCTION & ACCESS EASEMENTS

EXHIBIT 8

MATCH LINE 8 SEE EXHIBIT 9

CO. TAE

TAE-04

20 N 13997592.61
E 3065098.74

N 13997536.03
E 3065274.58

212.09'

N 13997528.69
E 3065298.19

720.05

~~S72°10'15"E/651.44'~~

TCE-03

N72°10'15"W 617.53'

MATCH LINE 15 SEE EXHIBIT 15

40' SSE

40. TCE

40. SS

—Z—

SCALE: 1"=100'
GRAPHIC SCALE IN FEET



**SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION**



REHABILITATION OF BEAR BRANCH GRAVITY MAIN

DATE	TIME	DESCRIPTION
		SAN PROJECT NO.
		FILE NAME: Account Number 12111111111111111111
		Project ID: AC
		CHANGED BY: Y
		SCALE
		AS SHOWN

TEMPORARY CONSTRUCTION & ACCESS EASEMENTS

EXHIBIT 8



MATCH LINE 8 SEE EXHIBIT 8

PLAN

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.

LEGEND



_____TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
 // /EXISTING GRAVITY MAIN
 _____EXISTING SANITARY SEWER EASEMENT (SSE)

— — — — — **EXISTING SANITARY SEWER EASEMENT (SSE)**

**TEMPORARY
CONSTRUCTION
ACCESS EASEMENT**

EXHIBIT 9

REHABILITATION OF BEAR BRANCH GRAVITY MAIN

**SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION**



ISSUE	DATE	DESCRIPTION
SARA PROJECT NO:		
FILE NAME: Transport Combo 12.11.10.doc		
DRAWN BY: AC		
CHECKED BY: F		
SCALE:		AS SHOWN

Full Month: December (ends 12.11.18.09)

Green Bay AC

INVEST BY	STOCKS
ASIAN PACIFIC	

TEMPORARY

CONSTRUCTION &

ACCESS EASEMENTS

Page 1 of 1

6.1. EXHIBIT 6



MATCH LINE 9 SEE EXHIBIT 9 PLAN


NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.

LEGEND

- MANHOLE
 — TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
 // / EXISTING GRAVITY MAIN
 — — EXISTING SANITARY SEWER EASEMENT (SSE)



SCALE: 1"=100'
GRAPHIC SCALE IN FEET

A horizontal graphic scale bar with alternating black and white segments. Below the bar are numerical markings for 0, 50, and 100 feet.

**SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION**

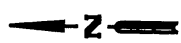


REHABILITATION OF BEAR BRANCH GRAVITY MAIN

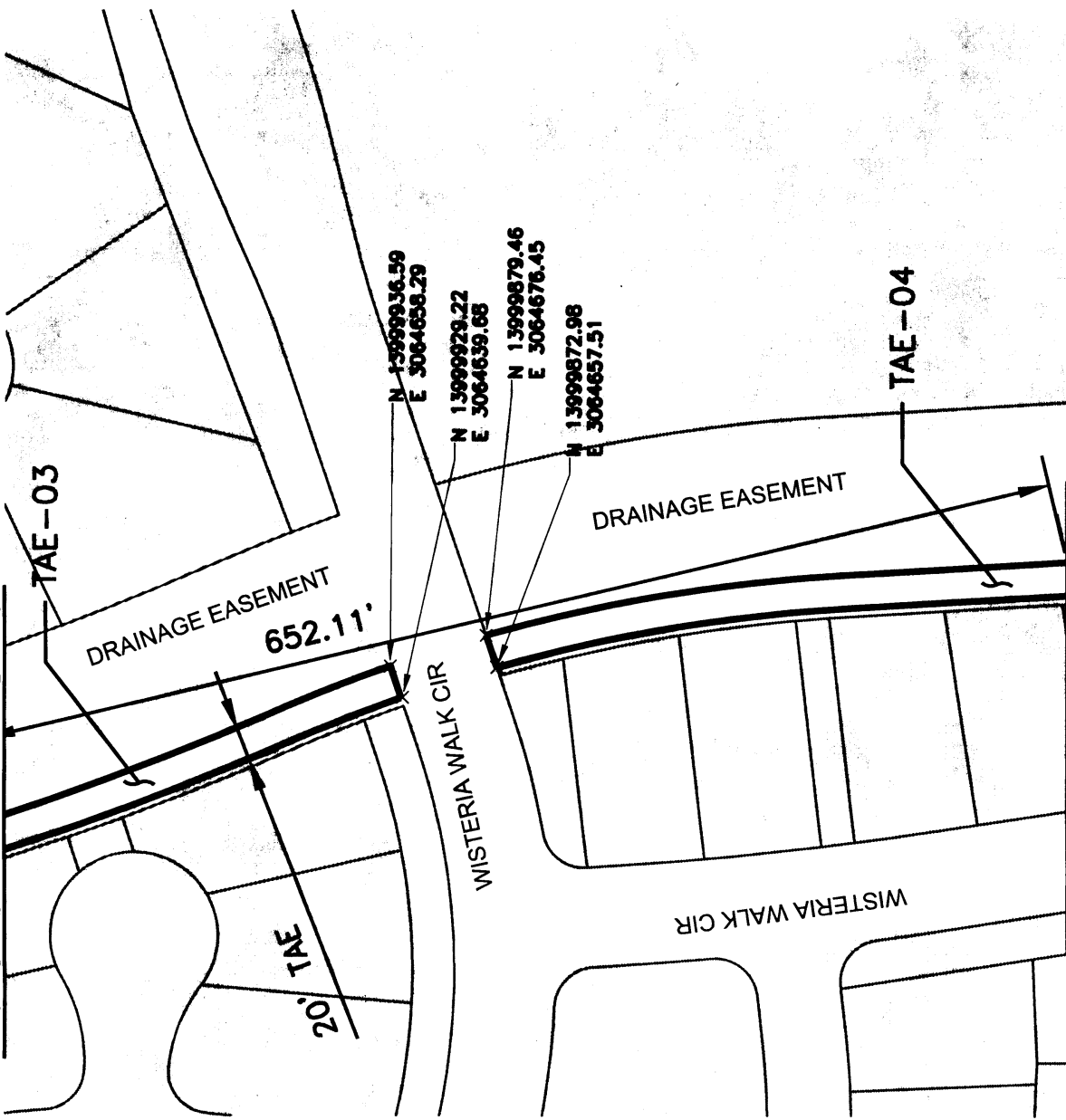
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**TEMPORARY
CONSTRUCTION &
ACCESS EASEMENTS**

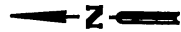
Experiment 10



MATCH LINE 12 SEE EXHIBIT 13



MATCH LINE 11 SEE EXHIBIT 11 PLAN



SCALE: 1"=100'
GRAPHIC SCALE IN FEET
0 50 100

SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION



REHABILITATION OF
BEAR BRANCH
GRAVITY MAIN

DATE	DESCRIPTION
12/11/18	PROJECT NO.
12/11/18	FILED IN
12/11/18	DATE
12/11/18	BY
12/11/18	SCALE
12/11/18	AS SHOWN

TEMPORARY
CONSTRUCTION &
ACCESS EASEMENTS

EXHIBIT 12

LEGEND

- MANHOLE
- TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
- /// EXISTING GRAVITY MAIN
- - - EXISTING SANITARY SEWER EASEMENT (SSE)

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.



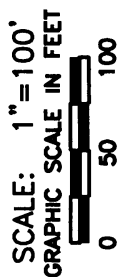
NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.

LEGEND



-----TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
 // / EXISTING GRAVITY MAIN
 ----- EXISTING SANITARY SEWER EASEMENT (SSE)

EXHIBIT 17

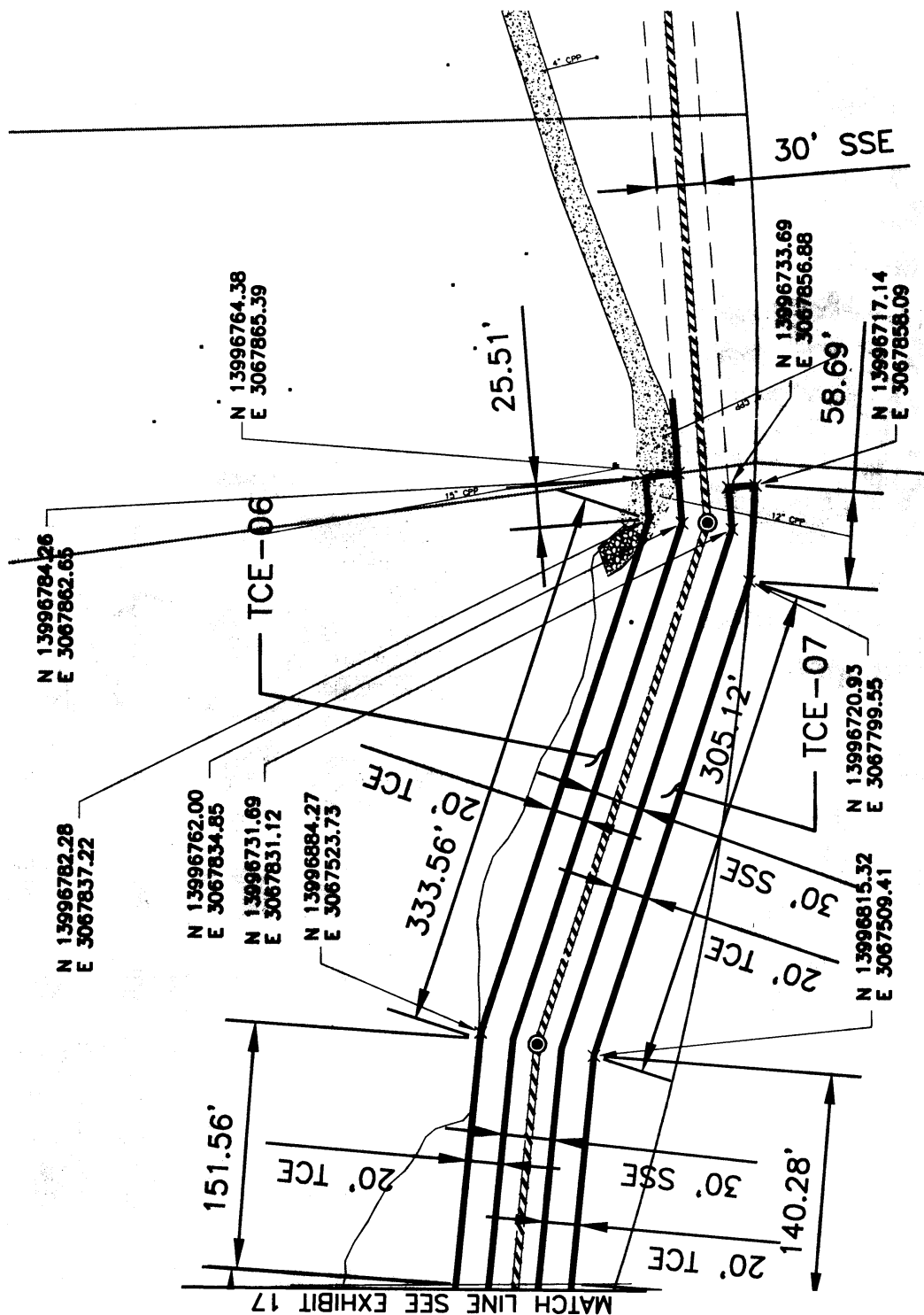
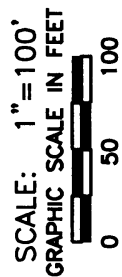


**SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION**



REHABILITATION OF BEAR BRANCH GRAVITY MAIN

DATE	DATE	DESCRIPTION
		SAN PROJECT NO.
		PLU 1000, Equipment Complete 12.11.18
		Item In AC
		CHORD BY
		SCALE
		AS SHOWN



PLAN

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.

LEGEND

- MAN-HOLE
 — TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
 // / EXISTING GRAVITY MAIN
 --- EXISTING SANITARY SEWER EASEMENT (SSE)

**SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION**



REHABILITATION OF BEAR BRANCH GRAVITY MAIN

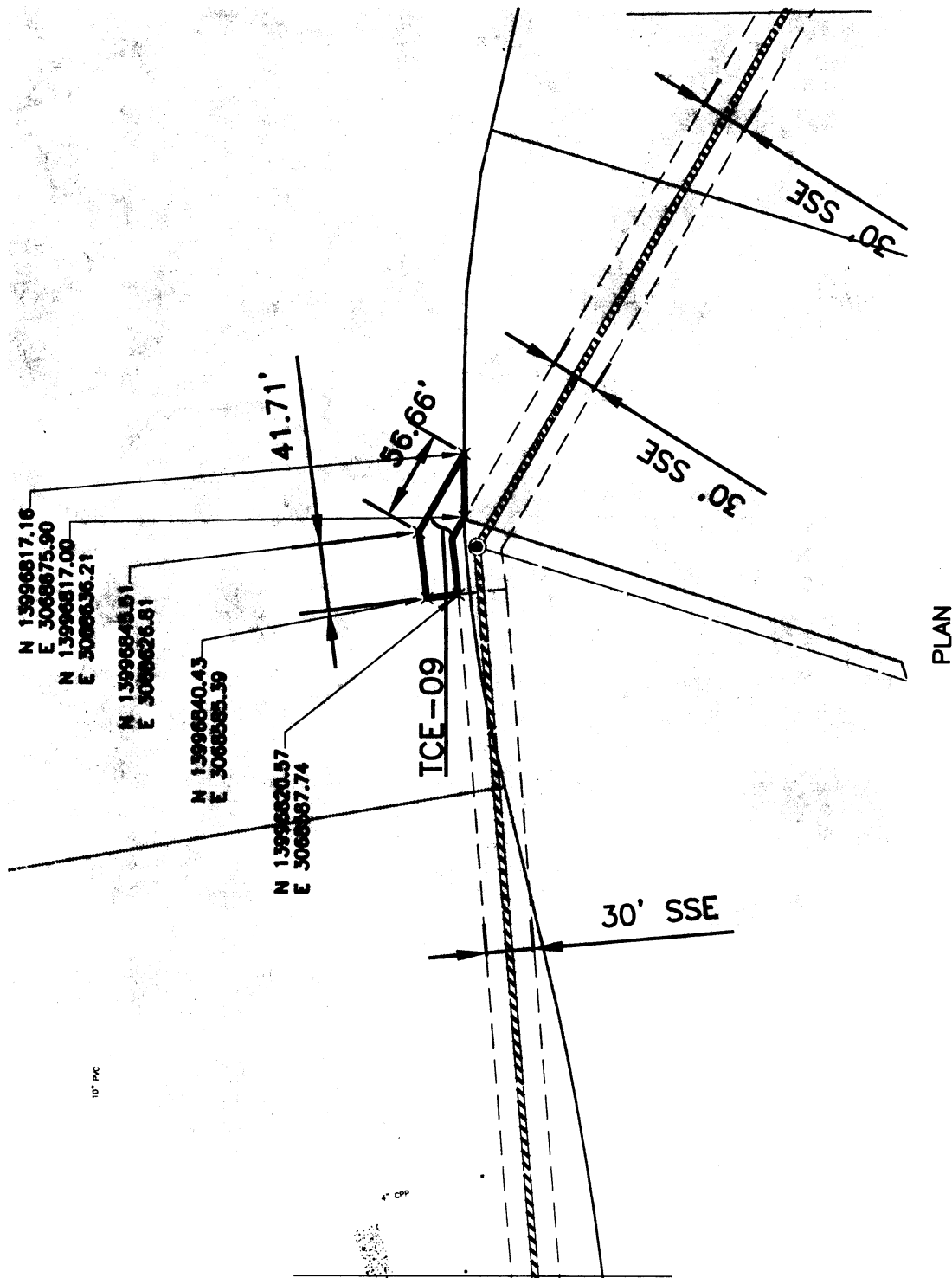
DATE	DATE	DESCRIPTION
		SAN PROJECT NO.
		FILE NAME Document Example 12.11.10.doc
		Version: AC
		CHECKED BY: V
		SCALE: AS SHOWN

**TEMPORARY
CONSTRUCTION &
ACCESS EASEMENTS**

EXHIBIT 18



SCALE: 1"=100'
GRAPHIC SCALE IN FEET



PLAN

LEGEND



MANHOLE

— TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)

— / / EXISTING GRAVITY MAIN

— — EXISTING SANITARY SEWER EASEMENT (SSE)

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.

SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION



REHABILITATION OF
BEAR BRANCH
GRAVITY MAIN

DATE	12/03/2019
PROJECT NO.	12-11-18-001
PROJECT NAME	REHABILITATION OF BEAR BRANCH GRAVITY MAIN
PROJECT LOCATION	12-11-18-001
PROJECT DESCRIPTION	REHABILITATION OF BEAR BRANCH GRAVITY MAIN
PROJECT STATUS	AS SHOWN

TEMPORARY
CONSTRUCTION &
ACCESS EASEMENTS

EXHIBIT 19



NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.

LEGEND

- | MAN-HOLE | TEMPORARY | EXISTING | EXISTING |
|----------|-----------|----------|----------|
| 1 | 2 | 3 | 4 |

CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
UTILITY MAIN
PRIMARY SEWER EASEMENT (SSE)

--- EXISTING SANITARY SEWER EASEMENT (SSE)

TEMPORARY

CONSTRUCTION & ACCESS EASEMENTS

EXHIBIT 20

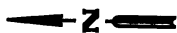
**SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION**

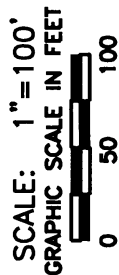


REHABILITATION OF BEAR BRANCH GRAVITY MAIN

LINE	DATE	DESCRIPTION
		SUN PROJECT 100
		POL 10000 Government Expend 12.11.10.dmg
		BRNCH BR AC
		CHECKED BY: Y
		DATE: 12.11.10

SCALE: 1"=100'
GRAPHIC SCALE IN FEET





**SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION**



REHABILITATION OF BEAR BRANCH GRAVITY MAIN

[illegible]

**TEMPORARY
CONSTRUCTION &
ACCESS EASEMENTS**

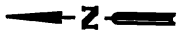
EXHIBIT 21

LEGEND

- MAN-HOLE
 — TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
 // / EXISTING GRAVITY MAIN
 — — EXISTING SANITARY SEWER EASEMENT (SSE)

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.

PLAN



SCALE: 1"=100'
GRAPHIC SCALE IN FEET



MATCH LINE SEE EXHIBIT 24

TAE-05

N 13996945.30
E 3071988.05

N 13996915.75
E 3071886.88

DRAINAGE EASEMENT

20' TAE

N 13996840.16
E 3071628.09

MATCH LINE SEE EXHIBIT 29

40' TCE

105.38'

124.75'

N 13997046.87
E 3071711.61

269.56'

30' SSE

40' TCE

323.26'

RAINTREE CROSSING DR

TCE-12

N 13997050.30
E 3071756.43

N 13996902.97
E 3071988.50

REHABILITATION OF
BEAR BRANCH
GRAVITY MAIN



SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION

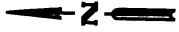
PLAN

LEGEND



NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.

TEMPORARY
CONSTRUCTION &
ACCESS EASEMENTS
EXHIBIT 23



SCALE: 1"=100'
GRAPHIC SCALE IN FEET



MATCH LINE SEE EXHIBIT 25

TAE-05

686.39'

N 13997488.30
E 3071360.56

N 13997487.11
E 3071334.41

20' TAE

DRAINAGE EASEMENT

MATCH LINE SEE EXHIBIT 23

PLAN

LEGEND



- TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
- /// EXISTING GRAVITY MAIN
- - - EXISTING SANITARY SEWER EASEMENT (SSE)

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.

SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION



REHABILITATION OF
BEAR BRANCH
GRAVITY MAIN

DATE	DESCRIPTION

FILE NAME: Easement Exhibit 12.11.18.dwg

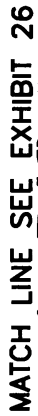
DRAWN BY: JC

CHECKED BY: W

SCALE: AS SHOWN

TEMPORARY
CONSTRUCTION &
ACCESS EASEMENTS

EXHIBIT 24



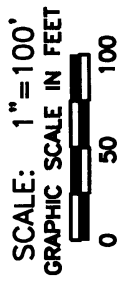
20' TAE

DRAINAGE EASEMENT

N 13997831.30
E 3071183.91

**MATCH LINE SEE EXHIBIT 24
PLAN**

MILLENNIUM FOREST DR



**SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION**



REHABILITATION OF BEAR BRANCH GRAVITY MAIN

				SERIAL	DATE	DESCRIPTION
						SAN PROJECT NO.
						POLYMER RESEARCH CENTER 12-11-1969
						DURHAM IN NC
						CHECKED BY:
						SCALE:
						AS SHOWN

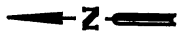
TEMPORARY CONSTRUCTION & ACCESS EASEMENTS

EXHIBIT 25

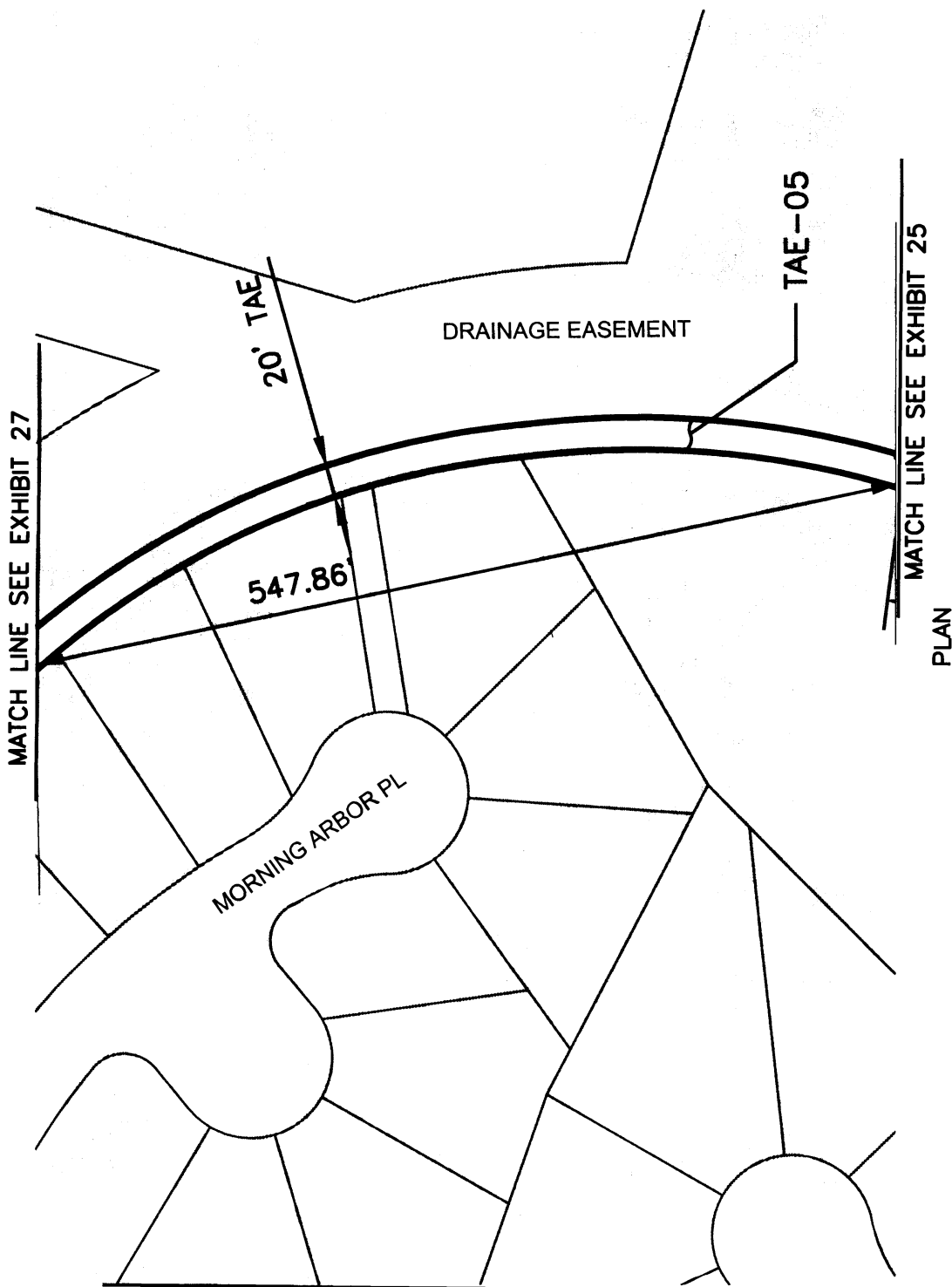
LEGEND

- MAN-HOLE
 ————— TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
 // // EXISTING GRAVITY MAIN
 ———— EXISTING SANITARY SEWER EASEMENT (SSE)

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.



SCALE: 1"=100'
GRAPHIC SCALE IN FEET
0 50 100



SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION



REHABILITATION OF
BEAR BRANCH
GRAVITY MAIN

SCALE	DATE	REVISION
SAN PROJECT NO.		
FILE NUMBER	Contract Number	12.1.1.8.dwg
DRAWN BY		
CHECKED BY		
SCALE		AS SHOWN

TEMPORARY
CONSTRUCTION &
ACCESS EASEMENTS

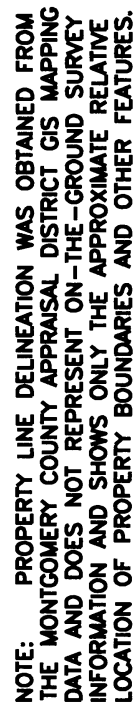
EXHIBIT 26

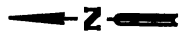
LEGEND

- MANHOLE
- TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
- /// EXISTING GRAVITY MAIN
- - - EXISTING SANITARY SEWER EASEMENT (SSE)

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.

EXHIBIT 27





SCALE: 1"=100'
GRAPHIC SCALE IN FEET



MATCH LINE SEE EXHIBIT 30

30' SSE

40' TCE

287.54'

N 13996719.81
E 3072606.29

N 13996679.75
E 3072599.39

532.09.

TCE-12

50. SSE

PLAN

LEGEND

- MANHOLE
 — TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
 // / EXISTING GRAVITY MAIN
 — — EXISTING SANITARY SEWER EASEMENT (SSE)

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.

**SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION**

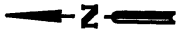


REHABILITATION OF BEAR BRANCH GRAVITY MAIN

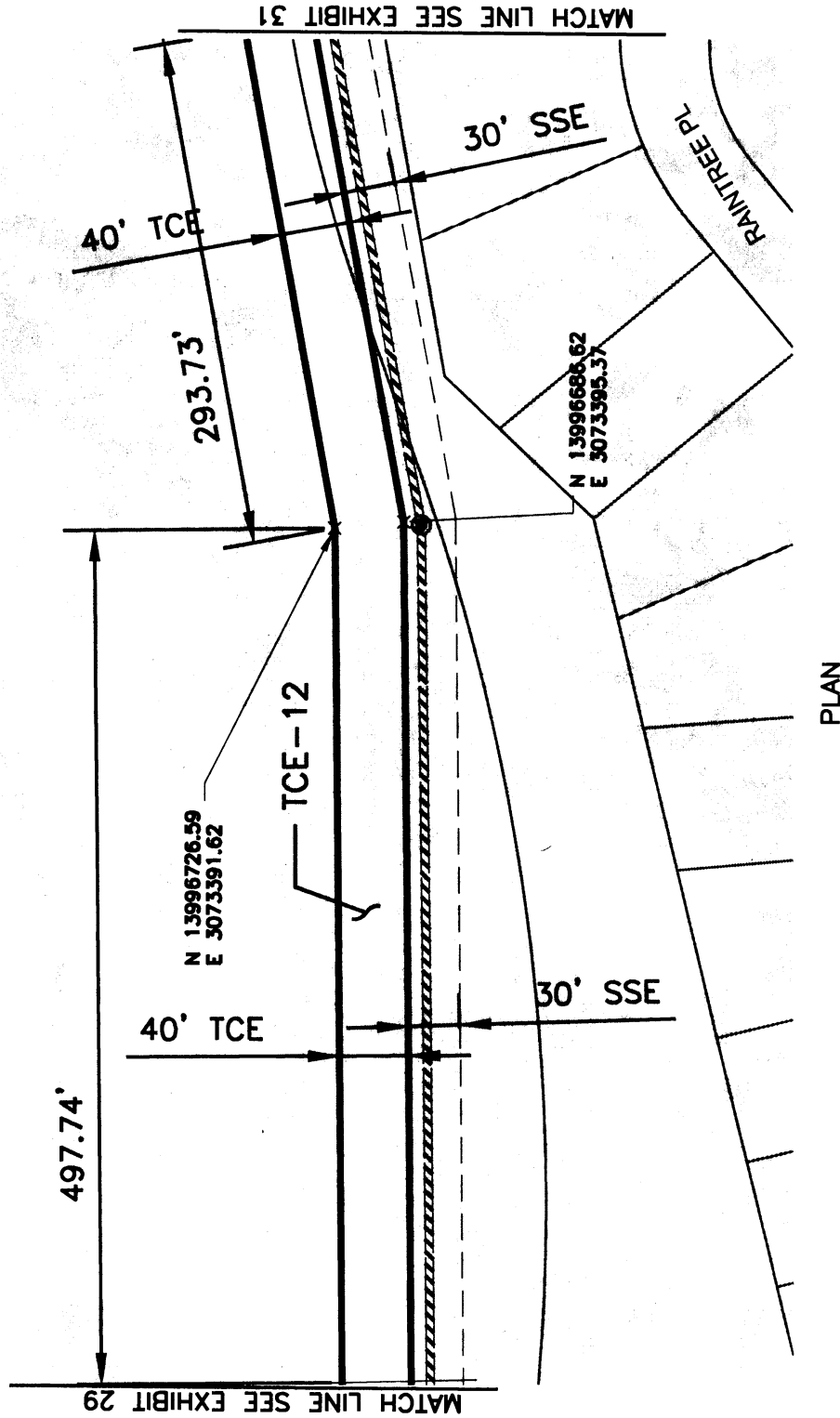
	DATE	BASE	DESCRIPTION
			SAN PROJECT NO.
			P&L WITH COMMENT CUMULO 12.11.1809
			UNION BN AC
			CHECKED BY:
			SCALE AS GIVEN

TEMPORARY CONSTRUCTION & ACCESS EASEMENTS

EXHIBIT 29



SCALE: 1"=100'
GRAPHIC SCALE IN FEET



NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.

LEGEND



- TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
- EXISTING GRAVITY MAIN
- EXISTING SANITARY SEWER EASEMENT (SSE)

SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION



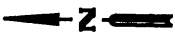
REHABILITATION OF
BEAR BRANCH
GRAVITY MAIN

DATE	DESCRIPTION
SAN PROJECT NO.	
FILE NUMBER	
PROJECT NAME	
PROJECT LOCATION	
PROJECT DATE	
PROJECT TIME	
PROJECT COST	
PROJECT STATUS	
PROJECT COMMENTS	

DATE: 12.11.2024
DRAWN BY: JC
CHECKED BY: JC
SCALE: AS SHOWN

TEMPORARY
CONSTRUCTION &
ACCESS EASEMENTS

EXHIBIT 30



SCALE: 1"=100'
GRAPHIC SCALE IN FEET
0 50 100

MATCH LINE SEE EXHIBIT 32

PLAN

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.

LEGEND

- MAN-HOLE
 — TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
 // / EXISTING GRAVITY MAIN
 — — EXISTING SANITARY SEWER EASEMENT (SSE)

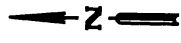
EXHIBIT 31

**SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION**



REHABILITATION OF BEAR BRANCH GRAVITY MAIN

[illegible]



SCALE: 1"=100'
GRAPHIC SCALE IN FEET
0 50 100

SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION

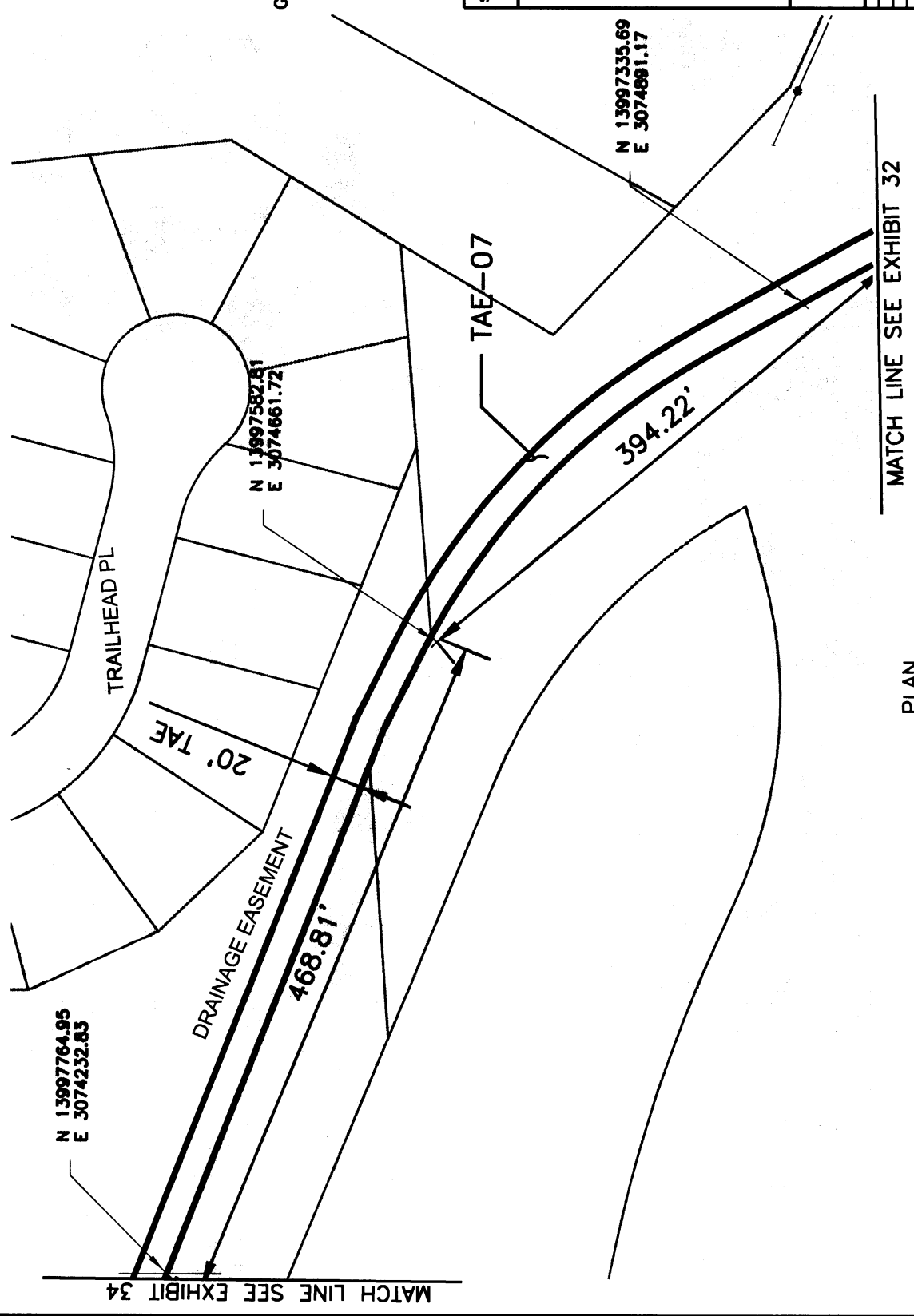


REHABILITATION OF
BEAR BRANCH
GRAVITY MAIN

DATE	DESCRIPTION
12/11/2019	AS SHOWN
FILE NUMBER	12.11.18.dwg
DRAWN BY	AC
CHECKED BY	W
SCALE	AS SHOWN

TEMPORARY
CONSTRUCTION &
ACCESS EASEMENTS

EXHIBIT 33



LEGEND

- MANHOLE
- TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
- EXISTING GRAVITY MAIN
- EXISTING SANITARY SEWER EASEMENT (SSE)

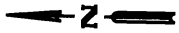
NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.



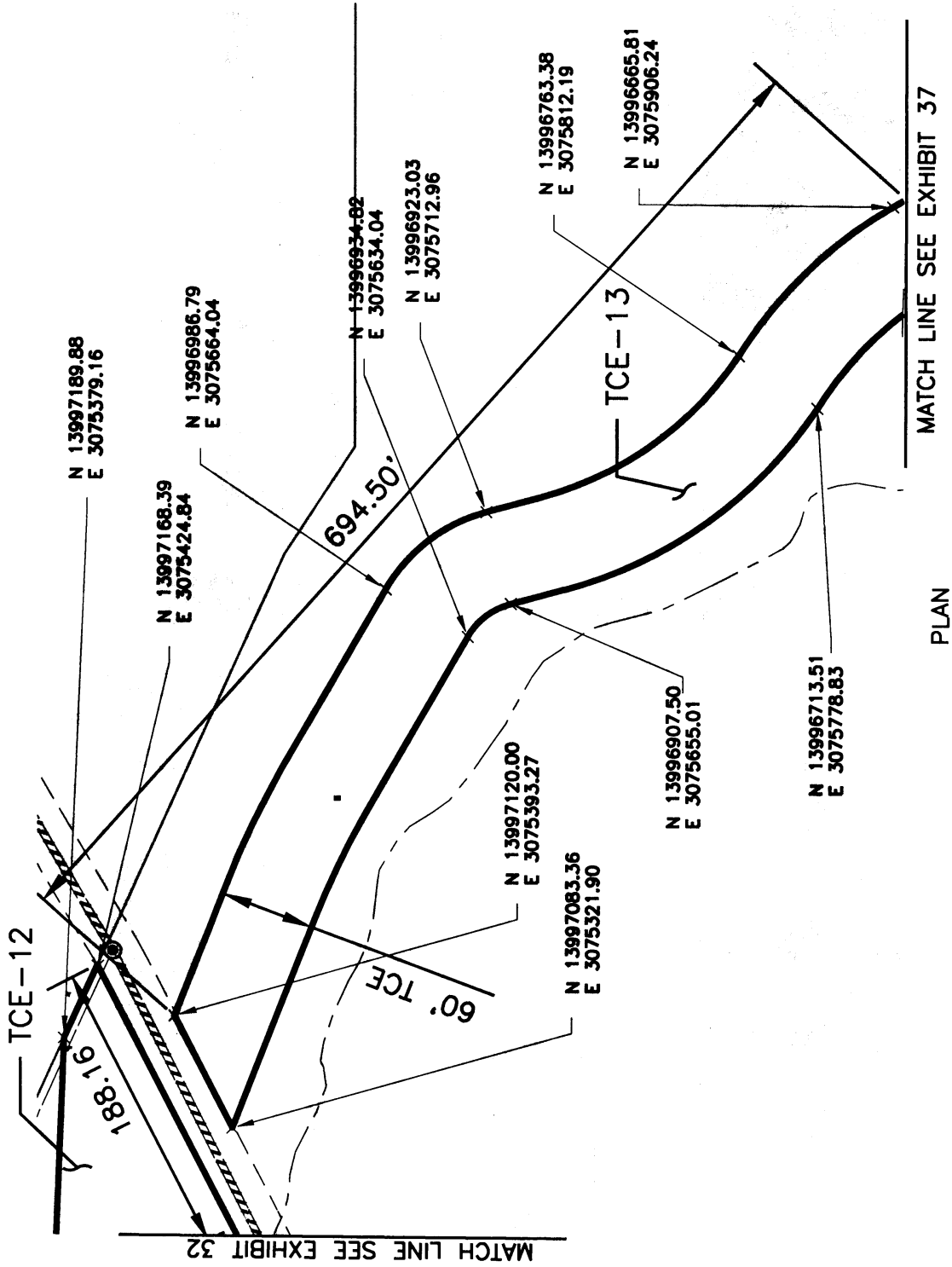
REHABILITATION OF BEAR BRANCH GRAVITY MAIN

[illegible]

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.



SCALE: 1"=100'
GRAPHIC SCALE IN FEET



NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.

LEGEND



- MANHOLE
- TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
- EXISTING GRAVITY MAIN
- EXISTING SANITARY SEWER EASEMENT (SSE)

SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION



REHABILITATION OF
BEAR BRANCH
GRAVITY MAIN


DATE	DESCRIPTION
DATE PROJECT NO.	
FILE NAME	Rehabilitation Exhibit 12.11.16.dwg
DRAWN BY	AC
CHECKED BY	MP
SCALE	AS SHOWN

TEMPORARY
CONSTRUCTION &
ACCESS EASEMENTS

EXHIBIT 36



SCALE: 1"=100'
GRAPHIC SCALE IN FEET

A horizontal graphic scale bar with alternating black and white segments. Below the bar are numerical markings for 0, 50, and 100 feet.

MATCH LINE SEE EXHIBIT 38

N 13996439.19
E 3076240.76

N 13996416.12
E 3076355.95

60. TCE

78.487

**SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION**



REHABILITATION OF BEAR BRANCH GRAVITY MAIN

DATE	TIME	DESCRIPTION
		SAN PROJECT NO.
		FILE 10000 Unavail. Combo 12.11.10.dmg
		GREEN BN AC
		CHANGED BY?
		SCALE: AS SHOWN

TEMPORARY CONSTRUCTION & ACCESS EASEMENTS

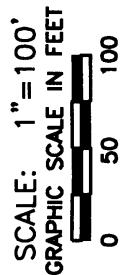
EXHIBIT 37

LEGEND

- MAN-HOLE
 — TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
 // / EXISTING GRAVITY MAIN
 — — EXISTING SANITARY SEWER EASEMENT (SSE)

PLAN

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.



MATCH LINE SEE EXHIBIT 39

TCE-13

403.67.

~~60° TCE~~

MATCH LINE SEE EXHIBIT 37

RESEARCH FOREST DR

PLAN

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.

LEGEND

MANHOLE

—————TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
 // /EXISTING GRAVITY MAIN
 ————EXISTING SANITARY SEWER EASEMENT (SSE)

EXHIBIT 38

**SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION**



REHABILITATION OF BEAR BRANCH GRAVITY MAIN

ISSUE	DATE	DESCRIPTION
SAN PROJECT NO.		
FILE NAME	Document	Issued 12.11.18.org
DESIGN BY:	AC	
CHECKED BY:		
SCALE:		AS SHOWN

TEMPORARY CONSTRUCTION & ACCESS EASEMENTS



SCALE: 1"=100'
GRAPHIC SCALE IN FEET



MATCH LINE SEE EXHIBIT 40

N 13997206.69
E 3077261.85

362.23'

N 13997262.45
E 3077339.05

TCE-15

N 13997100.26
E 3077015.02

N 13997007.81
E 3076815.73

N 13996955.94
E 3076760.11

RESEARCH FOREST DR

N 13997222.57
E 3077383.87

N 13997151.60
E 3077285.61

60' TCE

N 13997044.52
E 3077037.28

N 13996951.14
E 3076840.10

PLAN

MATCH LINE SEE EXHIBIT 38

TCE-13

75.95'

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.

LEGEND



- TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
- TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
- EXISTING GRAVITY MAIN
- EXISTING SANITARY SEWER EASEMENT (SSE)

SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION



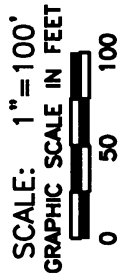
REHABILITATION OF
BEAR BRANCH
GRAVITY MAIN

DATE	DESCRIPTION

SCALE: 1"=100'
DATE: 12/11/18
PROJECT NO.: 12-11-18-001
FILE: 12-11-18-001.dwg
DRAWN BY: JAC
CHECKED BY: JAC
SCALE: AS SHOWN

TEMPORARY
CONSTRUCTION &
ACCESS EASEMENTS

EXHIBIT 39



NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.



_____TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
 // //EXISTING GRAVITY MAIN
 _____EXISTING SANITARY SEWER EASEMENT (SSE)

REHABILITATION OF BEAR BRANCH GRAVITY MAIN

DATE	TIME	DESCRIPTION
		SAN PROJECT NO.
		PL 12400 Equipment Emble 12.11.18.00
		DRUM BN AC
		CACHED BRY
		SCALE
		AS SHOWN

TEMPORARY CONSTRUCTION & ACCESS EASEMENTS

EXHIBIT 40

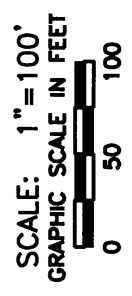
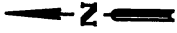
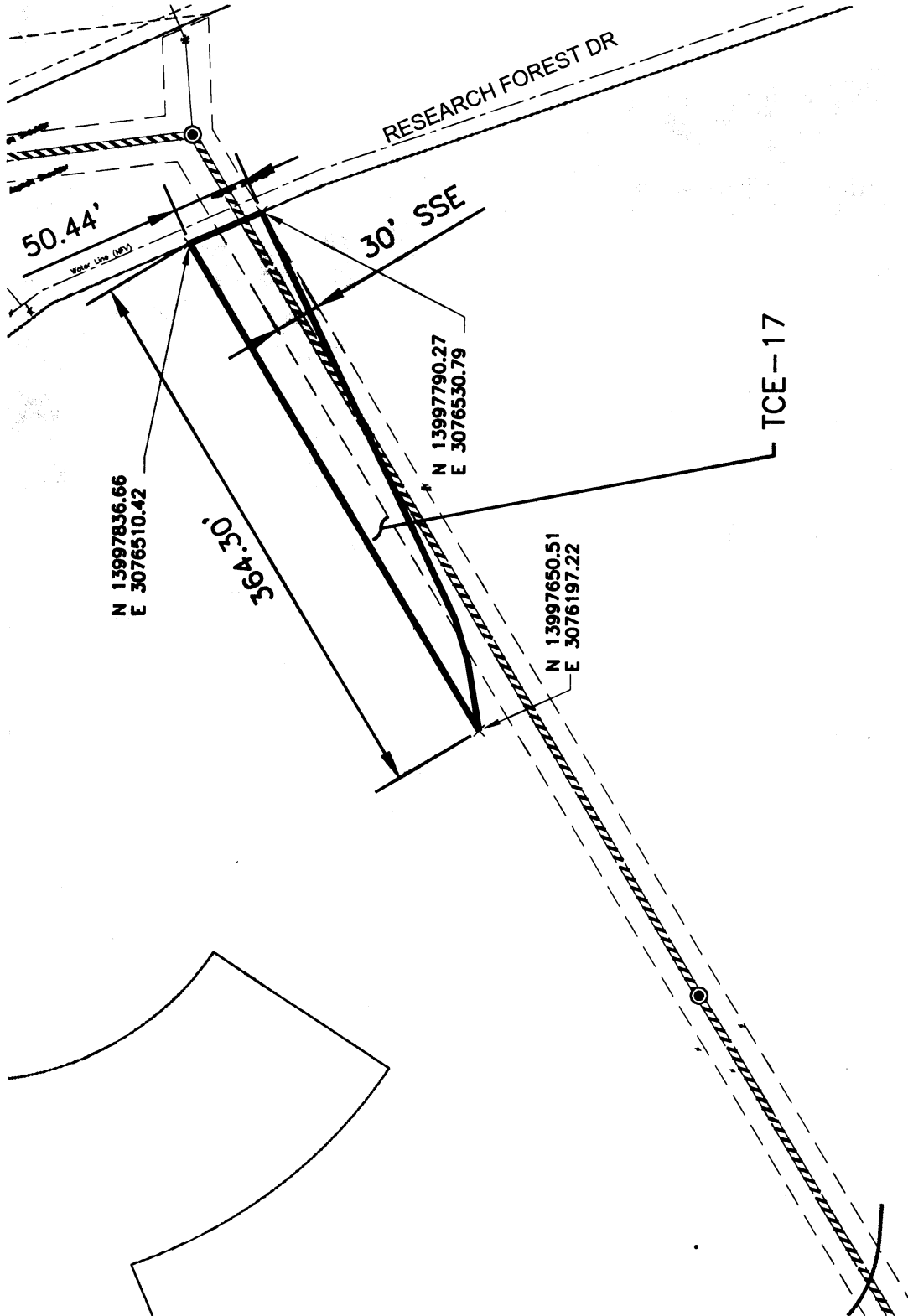


EXHIBIT 42



SCALE: 1"=100'



SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION



REHABILITATION OF
BEAR BRANCH
GRAVITY MAIN

DATE	DESCRIPTION
SAN PROJECT NO.	
FILE NAME	San Jacinto River Authority
DESIGN BY	AC
CHECKED BY	W
SCALE	AS SHOWN

TEMPORARY
CONSTRUCTION &
ACCESS EASEMENTS
EXHIBIT 43

PLAN

LEGEND

● MANHOLE

— TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)

/// EXISTING GRAVITY MAIN

- - - EXISTING SANITARY SEWER EASEMENT (SSE)

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.

ATTACHMENT C

INTERLOCAL CONSTRUCTION ACCESS AGREEMENT

THE STATE OF TEXAS §
 §
COUNTY OF MONTGOMERY §

This INTERLOCAL AGREEMENT (this "Agreement") is made and entered into effective as of the date fully executed below by and between the SAN JACINTO RIVER AUTHORITY (the "Authority"), a conservation and reclamation district, body politic and corporate and a governmental agency of the State of Texas created and operating under the provisions of Chapter 426, Acts of the 45th Texas Legislature, Regular Session, 1937, as now or hereafter amended, Chapter 49 of the Texas Water Code, as amended, and Section 59 of Article XVI of the Texas Constitution, and THE WOODLANDS TOWNSHIP (the "Township"), successor by name change to Town Center Improvement District, a body politic and corporate and a political subdivision of the State of Texas created by and operating pursuant to Chapter 289, Acts of the 73rd Texas Legislature, Regular Session, 1993, as now or hereafter amended.

RECITALS

WHEREAS, the Authority is responsible for providing the water supply and transmission system and waste collection, treatment and disposal system requirements for its customers located within the boundaries of the Township, and

WHEREAS, the Authority regularly rehabilitates the water and waste water infrastructure to avoid systems failures, sewage overflows and permit violations and is planning to rehabilitate a segment of sewer line, the Bear Branch Gravity Main (the "Project"), a portion of which lies within the Bear Branch Park and Sports Fields (the "Park"); and

WHEREAS, the Township has certain rights and obligations for the Park per that certain Use, Operation and Maintenance Agreement with Municipal Utility District No. 67, dated April 22, 1992; and

WHEREAS, the Authority and Township desire to provide safe public access to the users, guests and invitees of the Park and for use by employees of the Township and other contractors and users authorized by the Township during construction of the Project; and

WHEREAS, the Authority and the Township (each a "Party" and, together, the "Parties"), pursuant to the authority found in Chapter 791, Government Code, Interlocal Cooperation Act, have determined that it is in their mutual best interest, and in the public interest, for the Township to provide the Authority with access to the Park for the Authority to construct the Project.

NOW, THEREFORE, for and in consideration of the mutual covenants, agreements and benefits to the Parties, it is agreed as follows:

AGREEMENT

Section 1. NOW, THEREFORE, KNOW ALL MEN BE THESE PRESENTS, that the Township hereby consents to the access, construction and installation of the Project including a

related staging location within the Park as described in the areas noted (TCE-16 and TCEA-17) in Exhibit A, and consents to the entry upon, over, through the Park by the Authority and its designated contractor(s) solely for the purpose of constructing the Project, subject to the terms and conditions hereof.

Section 2. The Authority shall promptly commence and diligently pursue the construction and rehabilitation of the segment of the Project located within the Park to completion and shall construct the Project in good and workmanlike manner and in full compliance with all applicable laws.

Section 3. The Authority shall repair any damage to the Park which is caused by the Authority or contractors during the Project. The Authority will maintain the staging location and surrounding area of the Park in a clean and safe condition.

Section 4. The Authority shall not create or place, permit to be created or placed or, through any act or failure to act, acquiesce in the creation or placing of, or allow to remain, any lien (statutory, constitutional or contractual), pledge, security interest, encumbrance or charge on the Park.

Section 5. The Authority and its contractors shall obtain and keep in force during the term of this Agreement sufficient insurance policies in amounts reasonably acceptable to the Township protecting the Township (as an additional insured) against claims for bodily injury, personal injury and property damage based upon, involving, relating to or arising, directly or indirectly, out of the execution, construction or completion of the Project or the occupancy of the Park and all areas appurtenant to it by or in connection with the Project. The Township shall be named an additional insured with respect to each such insurance policy. No such policy shall be cancelable or subject to reduction of coverage or other modification except after thirty (30) days prior written notice to the Township and only if suitable replacement policy or policies are timely provided by the Authority. A certificate or certificates of insurance, insurance endorsements and such proof of insurance as may be acceptable to the Township shall be furnished by the Authority to the Township upon the request of Township therefor.

IN CONSIDERATION OF THE CONSENT HEREIN ABOVE GRANTED BY THE TOWNSHIP TO THE AUTHORITY TO CONSTRUCT A STAGING AREA ON THE PARK REQUIRING ENTRY UPON, OVER AND THROUGH THE PARK, THE AUTHORITY, TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, HEREBY AGREES TO INDEMNIFY AND HOLD THE TOWNSHIP HARMLESS FROM ALL CLAIMS FOR INJURY TO OR DEATH OF ANY PERSON OR FOR DAMAGE TO PROPERTY AND/OR ANY IMPROVEMENTS LOCATED ON THE PARK TO THE EXTENT ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE PROJECT CONTEMPLATED HEREBY, OR FOR ANY INJURIES, DEATH OR DAMAGES WHICH WOULD NOT HAVE OCCURRED BUT FOR THE PROJECT, EXCEPT WHERE SUCH INJURIES, DEATH OR DAMAGES ARE CAUSED BY THE

ACTS OF THE TOWNSHIP, ITS CONTRACTORS, AGENTS, EMPLOYEES, SUCCESSORS, OR ASSIGNS.

Section 7. The Authority will not later than sixty (60) calendar days prior to the date the access and construction staging is needed for the Project, notify the Township and provide a site plan and schedule for the installation and use of the construction staging for the Project.

Section 8. This Agreement shall terminate upon completion of the Project.

Section 9: Governing Law and Venue; Subject to Laws and Regulations. (a) This Agreement shall be governed by the laws of the State of Texas, and venue shall be in a court of competent jurisdiction located in Montgomery County, Texas.

(b) This Agreement shall be subject to all present and future valid and applicable laws, orders, rules, and regulations of the United States of America, the State of Texas, or any regulatory body having jurisdiction.

Section 10: Parties in Interest. This Agreement shall be for the sole and exclusive benefit of Parties and shall not be construed to confer any rights upon any other person or entity, including, without limitation, any contractor, subcontractor, agent or consultant of either of the Parties.

Section 11: Entire Agreement. This Agreement contains the entire agreement of the Parties with regard to the matters addressed herein. This Agreement may not be assigned, amended, modified, superseded or canceled, nor may any of the terms, covenants, representations, warranties or conditions be waived, except by written agreement executed by both Parties.

Section 12: Approvals; Execution Authorized. Each Party represents to the other Party that this Agreement, and the execution of same by the undersigned representative of such Party, has been duly authorized and approved by the governing body of such Party.

[SIGNATURES COMMENCE ON FOLLOWING PAGE]

IN WITNESS WHEREOF, the Parties have executed this Agreement in multiple counterparts, any one of which shall be deemed an original, but all of which taken together shall constitute one agreement.

SAN JACINTO RIVER AUTHORITY



By: [Signature]
Jace A. Houston, General Manager

DATE: 4-30-19

THE WOODLANDS TOWNSHIP

By: [Signature]
Don T. Norrell, President/General Manager

DATE: 4-26-19

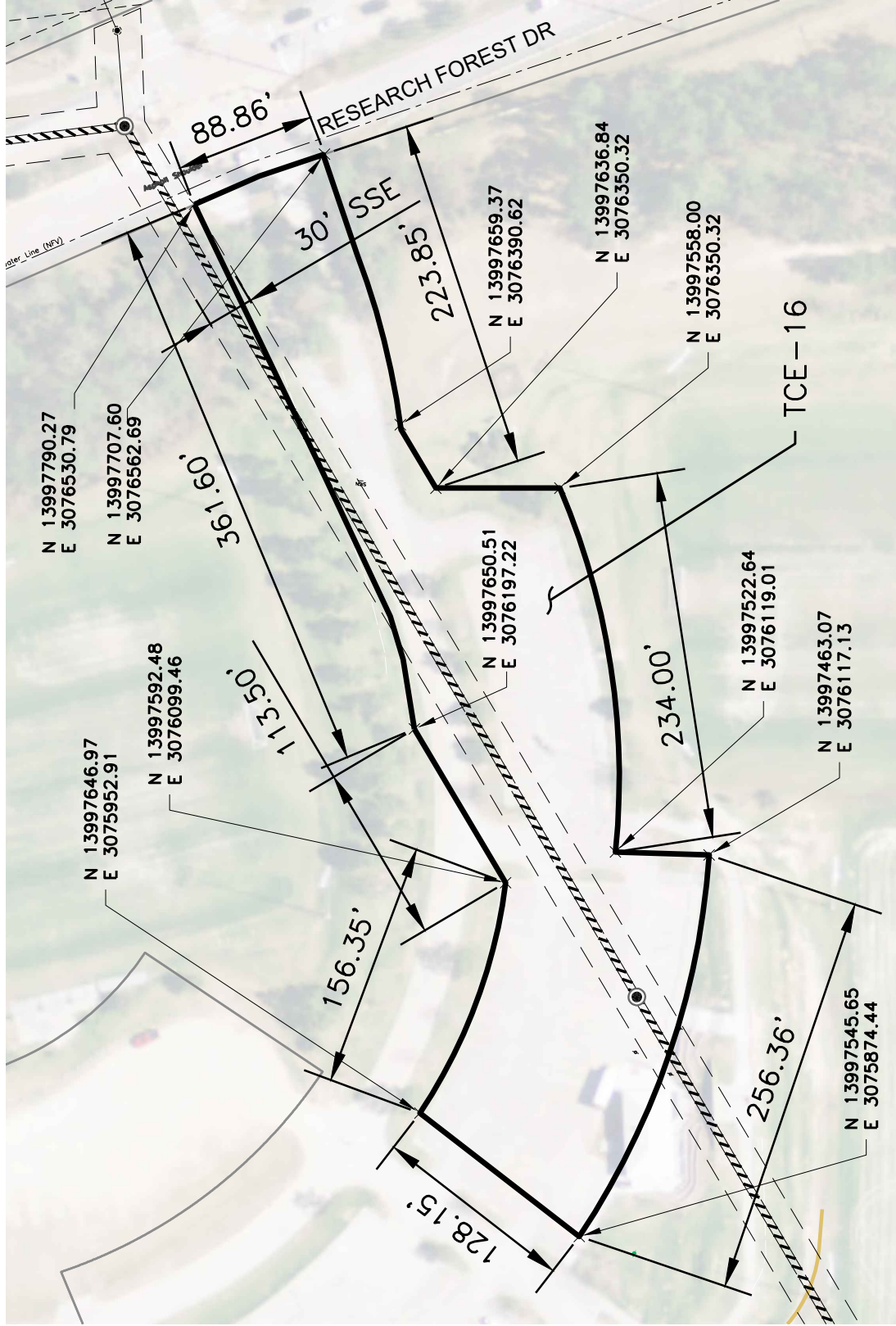
APPROVED AS TO FORM:

[Signature]
Roberta B. Cross, Township Attorney

REHABILITATION OF BEAR BRANCH GRAVITY MAIN


ISSUE	DATE	DESCRIPTION
SARA PROJECT NO:		
FILE NAME: Equipment Exhibits.dwg		
DRAWN BY: AC		
CHECKED BY: WF		AS SHOWN
SCALE:		

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES



PLAN

SCALE: 1"=100'
GRAPHIC SCALE IN FEET



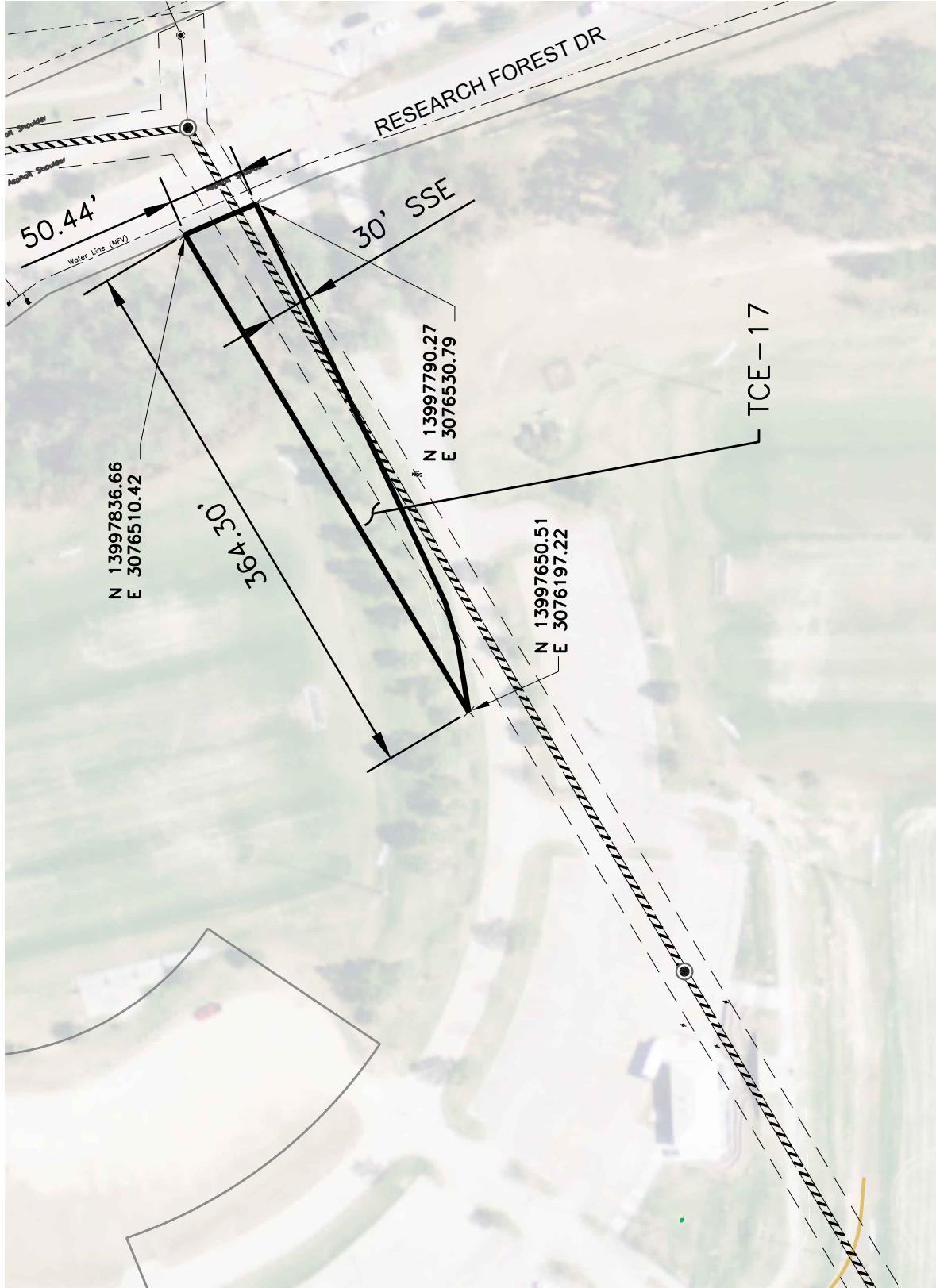
0 50 100

**SAN JACINTO RIVER AUTHORITY
WOODLANDS DIVISION**

REHABILITATION OF
BEAR BRANCH
GRAVITY MAIN[illegible]

**TEMPORARY
CONSTRUCTION &
ACCESS EASEMENTS**

EXHIBIT 43



PLAN

LEGEND

- MANHOLE
 ——— TEMPORARY CONSTRUCTION EASEMENT (TCE)/TEMPORARY ACCESS EASEMENT (TAE)
 / / EXISTING GRAVITY MAIN
 — — EXISTING SANITARY SEWER EASEMENT (SSE)

NOTE: PROPERTY LINE DELINEATION WAS OBTAINED FROM THE MONTGOMERY COUNTY APPRAISAL DISTRICT GIS MAPPING DATA AND DOES NOT REPRESENT ON-THE-GROUND SURVEY INFORMATION AND SHOWS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES AND OTHER FEATURES.

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SECTION 00 73 43
WAGE SCALE FOR CONSTRUCTION

- 1.1 Contractor and its Subcontractors must pay the Davis-Bacon prevailing wage rates for heavy construction projects for each craft or type of worker or mechanic employed in the execution of any construction or repair under the Contract in accordance with Chapter 2258 of the Texas Government Code. The San Jacinto River Authority ("SJRA") has included the Davis-Bacon prevailing wage rates in the locality in which the work is being performed, which is set forth in Exhibit "A".
- 1.2 In bidding, Contractor warrants and represents that it has carefully examined the classifications for each craft or type of worker needed to execute the Contract and determined that such classifications in Exhibit "A" include all necessary categories to perform the work under the Contract.
- 1.3 If Contractor believes that an additional classification for a particular craft or type of worker is necessary to perform work under the Contract, it must submit with its bid a request to the San Jacinto River Authority to use an additional labor classification not listed in Exhibit "A" and specify the proposed new classification. The SJRA shall determine whether a proposed classification is already covered in Exhibit "A", and, if it is, specify which classification is appropriate. The SJRA's decision is conclusive. If the SJRA decides that a new classification is necessary, it will determine the appropriate prevailing wage rate for any resurveyed, amended, new, or additional craft or type of worker not covered by Exhibit "A". Such determination must be decided in accordance with procedures established by the SJRA, and in compliance with Chapter 2258 of the Texas Government Code.
- 1.4 Contractor must not use any labor classification not covered by Exhibit "A" until such classification is established and approved for use by the SJRA.

A Contractor or Subcontractor who violates Chapter 2258 of the Texas Government Code must pay to the SJRA \$60 per each worker employed for each calendar day or part of the day that the worker is paid less than the wage rates set forth in Exhibit "A".
- 1.5 The SJRA may withhold money required to be withheld under Chapter 2258 of the Texas Government Code from the final payment to Contractor or earlier payments if the SJRA makes a determination that there is good cause to believe that Contractor has not complied with these provisions and Chapter 2258 of the Government Code, in which case the SJRA may withhold the money at any time subsequent to the finding by the SJRA.

- 1.6 Contractor and Subcontractors must keep records as required by Chapter 2258 of the Government Code, and specifying:
- (1) the name and classification of each worker employed under the Contract; and
 - (2) the actual per diem wages paid to each worker, and the applicable hourly rate.
- The records must be open at all reasonable hours for inspection by the officers and agents of the SJRA.
- 1.7 The prevailing wage rate does not prohibit the payment of more than the rates stated.
- 1.8 The hourly cost of salary for non-exempt workers for labor in excess of 40 hours per worker per week, shall be calculated at 1.5 times the worker's base pay, plus 1.0 times fringe benefits, for the applicable craft and level.

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EXHIBIT "A"

LABOR CLASSIFICATIONS AND PREVAILING WAGE RATES
FOR
CONSTRUCTION
2019

Heavy Construction Projects

County Name: Montgomery and Waller Counties

Wages based on DOL General Decision: TX190063 01/04/2019 TX63

CLASSIFICATION	RATE	FRINGES
Sprinkler Fitter (Fire Sprinklers)	\$29.03	\$15.84
Carpenter	\$14.38	
Ironworker, reinforcing	\$11.29	
Laborers:		
Common Montgomery County	\$8.83	\$0.94
Landscape	\$7.35	
Mason Tender Cement	\$9.96	
Pipelaye Montgomery County	\$10.04	
Pipelaye Waller County	\$10.07	
Cement Mason / Concrete Finisher	\$11.37	\$1.13
Electrician	\$18.40	\$1.34
Formbuilder / Formsetter	\$13.35	\$1.17
Pipefitter	\$17.00	\$0.04
Power Equipment Operator:		
Backhoe	\$13.25	
Bulldozer Montgomery County	\$13.12	
Crane	\$14.91	\$0.58
Excavator	\$16.74	
Front End Loader Montgomery County	\$12.30	\$0.57
Grader	\$12.20	\$1.48
Tractor	\$12.38	\$1.51
Truck Driver Montgomery County	\$11.82	\$0.92
Welders – Receive rate prescribed for craft performing operation to which welding is incidental.		

END OF SECTION



Guidance on Davis-Bacon Wage Rate Requirements for State Revolving Fund Projects

Overview

Davis-Bacon prevailing wage requirements apply to the construction, alteration, or repair of treatment works carried out, in whole or in part, with assistance made available by the Clean Water State Revolving Fund (CWSRF) and to any construction project carried out, in whole or in part, by assistance made available by the Drinking Water State Revolving Fund (DWSRF).

For the CWSRF and DWSRF programs, the Davis-Bacon prevailing wage requirements apply to contractors and subcontractors performing on federally funded or assisted contracts in excess of \$2,000 for the construction, alteration, or repair, including painting, of a treatment works project under the CWSRF or a construction project under the DWSRF. Contractors and subcontractors must pay their laborers and mechanics employed under the contract no less than the locally prevailing wages and fringe benefits for corresponding work on similar projects in the area. The prevailing wage requirements apply to all State Revolving Fund (SRF) financial assistance projects.

For prime contracts in excess of \$100,000, contractors and subcontractors must also, under the provisions of the Contract Work Hours and Safety Standards Act, as amended, pay laborers and mechanics, including guards and watchmen, at least one and one-half times their regular rate of pay for all hours worked over 40 in a workweek. The overtime provisions of the Fair Labor Standards Act may also apply to Davis-Bacon covered contracts.

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To access the various sections, place cursor over the Chapter or page #, then press Ctrl+Click to follow the link.

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Wage Rate Requirements

The following wage rate requirements apply to entities receiving financial assistance under the CWSRF and DWSRF programs and will be incorporated into the associated legal instruments. These entities, such as cities, districts, water supply corporations or private companies, are referred to as “subrecipients” within this document.

CWSRF: A subrecipient must comply with the requirements of section 513 of the Federal Water Pollution Control Act (33 U.S.C. 1372) in all procurement contracts and must require contractors to include compliance with section 513 of the Federal Water Pollution Control Act in all subcontracts and other lower tiered transactions. All contracts and subcontracts for the treatment works construction project must contain in full in any contract in excess of \$2,000 the wage rate requirements contract clauses prescribed by TWDB. Section 513 requires compliance with 40 U.S. Code Sections 3141 to 3144, 3146, and 3147 covering wage rate requirements.

DWSRF: A subrecipient must comply with the requirements of section 1450(e) of the Safe Drinking Water Act (42 U.S.C.300j-9(e)) in all procurement contracts and must require contractors to include compliance with section 1450(e) of the Safe Drinking Water Act in all subcontracts and other lower tiered transactions. All contracts and subcontracts for the construction project must contain in full in any contract in excess of \$2,000 the wage rate requirements contract clauses prescribed by TWDB. Section 1450(e) requires compliance with 40 U.S. Code Sections 3141 to 3144, 3146, and 3147 covering wage rate requirements.

Subrecipients must adhere to the requirements in Sections 1-5 in Appendix 1 (for governmental entities) or Appendix 2 (for non-governmental entities).

Compliance Procedures

In order to be held in compliance and satisfy this federal requirement, entities will need to do the following:

1. **Wage Determinations** - U.S. Department of Labor (DOL) wage determination must be included in the bidding and contract documents. DOL wage determinations may be obtained online at <http://www.wdol.gov/>. Once it is determined that Davis-Bacon wage rates will apply to a construction contract, the subrecipient’s contracting organization must state in the solicitation that Davis-Bacon prevailing wage rates are applicable and bid packages must include the current Davis-Bacon general wage determination for the area where construction will occur. While the solicitation remains open, the subrecipient must monitor www.wdol.gov on a weekly basis to ensure that the wage determination contained in the solicitation remains current. The subrecipients must amend the solicitation if the DOL issues a modification more than 10 days prior to the closing date (i.e. bid opening) for the solicitation. If DOL modifies or supersedes the applicable wage determination less than 10 days prior to the closing date, the subrecipient may request a finding from TWDB that there is not a reasonable time to notify interested contractors of the modification of the wage determination.
2. **Insert wage rate requirements in full for all contracts and subcontracts in excess of \$2,000** - If the subrecipient is a governmental entity such as a city or district, it must insert in full the contract clauses found in Appendix 1, Section 3, Section 4 if the contract exceeds

\$100,000, and Section 5. If the subrecipient is a non-governmental entity such as a water supply corporation or a private company, it must insert in full the contract clauses found in Appendix 2, Section 3, Section 4 if the contract exceeds \$100,000, and Section 5. The subrecipient must ensure all prime contracts require the same full text in any subcontracts.

3. **Monthly Certification** - A Monthly Davis Bacon Wage Rate Certificate of Compliance must be completed by the subrecipient of the SRF funding and submitted monthly to TWDB once construction has begun. (See [Monthly Davis Bacon Wage Rate Certificate of Compliance Submittal by Owner \(Subrecipient\) DB-0154](#)).
4. **Contractor Payroll Requirements** - The contractor is required to pay the prevailing wage rates on a weekly basis to laborers and mechanics in accordance with the requirements of 29 CFR 5.5, which are incorporated into the actual construction contract. Contractors/ subcontractors must furnish weekly a statement with respect to the wages paid to each employee during the preceding week. They may use the Department of Labor (DOL) Payroll Form WH- 347 and weekly Statement of Compliance on the reverse, or their own payroll form with all of the same data elements as the DOL Payroll Form WH-347, and the TWDB's form, [Statement of Compliance Certification by Contractor for SRF, DB-0155](#). The DOL Payroll Form WH-347 can be found under the forms section of this document or at the following link: <http://www.dol.gov/whd/programs/dbra/wh347.htm>. (See [DOL Payroll Form WH-347](#))
5. **Interviews** - The subrecipient must periodically interview a sufficient number of employees entitled to the Davis-Bacon prevailing wages to verify that contractors or subcontractors are paying the appropriate wage rates. All interviews must be conducted in confidence. The subrecipient must use Standard Form 1445 (SF 1445) found in the forms section or equivalent documentation to memorialize the interviews. The subrecipient must establish and follow an interview schedule based on its assessment of the risks of noncompliance with Davis-Bacon posed by contractors or subcontractors and the duration of the contract or subcontract. Subrecipients must conduct more frequent interviews if the initial interviews or other information indicated that there is a risk that the contractor or subcontractor is not complying with Davis-Bacon. Subrecipients must immediately conduct interviews in response to an alleged violation of the prevailing wage requirements. (See Section 5 of Appendix 1 and 2)
6. **Payroll Records** - Certified payroll records are required to be retained by the subrecipient and contractor for three years after completion of the construction project. The subrecipient must periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors or subcontractors are paying the appropriate wage rates. (See Section 5 of Appendix 1 and 2)
7. **Wage Rate Poster** - Post the required Poster (WH-1321) and applicable wage rates at the construction site. The wage rate poster may be found at under the forms section of this document or at <http://www.dol.gov/whd/programs/dbra/wh1321.htm>. (See [Davis-Bacon Wage Rate Poster, WH-1321](#))
8. **Report Violations** - Subrecipients must immediately report violations of the Davis-Bacon prevailing wage requirements to the EPA Davis-Bacon Coordinator listed in the assistance

agreement and to the appropriate DOL WHD Office listed at <http://www.dol.gov/dol/contact/index.htm>. (See Section 5 of Appendix 1 and 2)

Davis-Bacon General Wage Determinations

A "wage determination" is the listing of wage and fringe benefit for each classification of laborers and mechanics which the Administrator of the Wage and Hour Division of the U.S. DOL has determined to be prevailing in a given area for a particular type of construction. The Davis-Bacon Wage Determinations are classified by the nature of the construction projects performed, specifically listed as "schedules": residential, building, highway, and heavy construction. A brief outline of the definitions for each schedule is listed below.

- **Construction Type: Heavy determination**
This determination includes those projects that are not properly classified as either "building," "highway," or "residential." Unlike these classifications, heavy construction is not a homogenous classification. Because of this catch-all nature, projects within the heavy classification may sometimes be distinguished on the basis of their particular project characteristics, and separate schedules may be issued for dredging projects, water and sewer line projects, dams, major bridges, and flood control projects.
- **Construction Type: Highway determination**
This determination includes construction, alteration or repair of roads, streets, highways, runways, taxiways, alleys, trails, paths, parking areas, and other similar projects not incidental to building or heavy construction.
- **Construction Type: Building determination**
This determination includes construction of sheltered enclosures with walk-in access for the purpose of housing persons, machinery, equipment or supplies; all construction of such structures; the installation of utilities and of equipment, both above and below grade levels; as well as incidental grading, utilities and paving. Such structures need not be "habitable" to be building construction. Also, the installation of heavy machinery and/or equipment does not generally change the project's character as a building.
- **Construction Type: Residential**
This determination includes the construction, alteration or repair of single-family houses, apartment buildings of no more than four stories in height. This includes all incidental items such as site work, parking areas, utilities, streets, and sidewalks.

Entities should review their contractor's wage decisions and confirm they provide an adequate classification of the labor required for the specific construction contract. Most CWSRF and DWSRF projects will fall under the "Heavy" construction type, but entities should ask their consulting engineers if unsure. Some contracts or projects may require more than one general schedule to be included depending on the nature and extent of the work (i.e. a building is constructed in a water treatment facility). This is described in more detail in DOL's All Agency Memorandum 130 with Addendum 131. See the DOL's website <http://www.dol.gov/whd/programs/dbra/memorand.htm>. In such cases, the contracting agency

should designate the work to which each wage determination or part thereof applies per FAR 22.404-2 thru 404-3 (Federal Acquisition Regulations) <https://www.acquisition.gov/far/current/html/Subpart%2022.4.html#wp1102017>. Should overlaps occur in the wage classification schedules for the contract(s), the owner may consider adopting the higher rate classification.

In all cases, the entity is responsible to insure an adequate classification is provided to insure compliance with the law. Where contractors alert the owner that the classification is inadequate, the owner should work with the contractor and the DOL to address any valid concerns. See the Contact Information below for additional resources.

Contact Information

All questions regarding Davis-Bacon guidance can be directed to: U.S. Department of Labor Wage and Hour Division 1-866-4USWAGE (1-866-487-9243), TTY: 1-877-889-5627, Monday-Friday 8 a.m. to 8 p.m. Eastern Time.

If you require further information about Davis-Bacon and how to apply it to your project, please contact the Texas Water Development Board [Project Team Manager for your region](#) or Clay Schultz, Director, Regional Water Project Development at (512) 463-6277.

Additional Resources:

1. For Wage Determinations applicable to construction projects in Texas: <http://www.wdol.gov/dba.aspx#3>
2. Source for determine the prevailing wage rate for each state and county is on the web page, Selecting Davis-Bacon Wage Decisions, provides criteria for state and county: <http://www.wdol.gov/archdba.aspx>
3. For more information on prevailing wage and wage determinations visit the Prevailing Wage Resource Book: <http://www.dol.gov/whd/recovery/pwrb/toc.htm>
4. The United States Department of Labor website: <http://www.dol.gov/whd/govcontracts/dbra.htm>
The webpage provides an overview, compliance assistance material, poster information, recordkeeping, DOL contact information and more.
5. Davis-Bacon and Related Acts (DBRA) Frequently Asked questions
More in-depth information can be accessed at the Department of Labor (DOL) website: <http://www.dol.gov/whd/programs/dbra/faqs.htm>

Contact Information – Department of Labor Texas Offices

Clear Lake District Office US Dept. of Labor Wage & Hour Division Camino Center II 17625 El Camino Real Suite 482 Houston, TX 77058	Phone: (281) 488-0690 1-866-4-USWAGE (1-866-487-9243)	Adrian Samaniego District Director
Dallas District Office US Dept. of Labor Wage & Hour Division The Offices @ Brookhollow 1701 E. Lamar Blvd., Suite 270, Box 22 Arlington, TX 76006-7303	Phone: (817) 861-2150 1-866-4-USWAGE (1-866-487-9243)	Curtis L. Poer District Director
Houston District Office US Dept. of Labor Wage & Hour Division 8701 S. Gessner Drive, Suite 1164 Houston, TX 77074-2944	Phone: (713) 339-5500 1-866-4-USWAGE (1-866-487-9243)	Robin Mallet District Director
McAllen District Office US Dept. of Labor Wage & Hour Division 1101 E. Hackberry Ave., Suite 400 McAllen, TX 78501	Phone: (956) 682-4631 1-866-4-USWAGE (1-866-487-9243)	Eden Ramirez District Director
Corpus Christi Area Office US Dept. of Labor Wage & Hour Division Wilson Plaza 606 W. Carancahua, Suite 705 Corpus Christi, Texas 78476	Phone: (361) 888-3152 1-866-4-USWAGE (1-866-487-9243)	Vince Leija Asst. District Director
San Antonio District Office US Dept. of Labor Wage & Hour Division Northchase 1 Office Building 10127 Morocco, Suite 140 San Antonio, TX 78216	Phone: (210) 308-4515 1-866-4-USWAGE (1-866-487-9243)	Juan Coria District Director
Austin District Office US Dept. of Labor Wage & Hour Division JJ Pickles Federal Building 300 East 8 th Street, Suite 865 Austin, TX 78701	Phone: (512) 236-2560 1-866-4-USWAGE (1-866-487-9243)	Nicole Sellers District Director

West Texas Panhandle and Northwest Quadrant: See Albuquerque, NM

Albuquerque District Office
Mailing Address:
US Dept. of Labor
Wage and Hour Division
P.O. Box 907
Albuquerque, NM 87103-0907

Phone:
(505) 248-6100
1-866-4-USWAGE
(1-866-487-9243)

George Watkins
District Director

Physical Address:
500 Gold, SW - Suite 12000
Albuquerque, NM 87102

Forms Section

**Monthly Davis-Bacon Wage Rate Certificate of Compliance
Submittal by Owner (Subrecipient)**

TWDB Project No. _____

Loan No. _____

This executed certificate must be submitted with each Outlay report for labor included within construction contracts. This Certificate applies only for Financial Assistance CLOSED AFTER 10/30/2009.

I, _____, _____ of
(Name) (Title)
_____ hereby certify that periodic reviews of a
(Name of entity)
representative sample of the weekly payroll data, and contractor weekly payroll certifications, such as OMB No. 1235-0008, have been performed to verify that contractors and subcontractors are paying the appropriate wage rate for compliance with section 513 of the Federal Water Pollution Control Act (33 U.S.C. 1372) for the Clean Water State Revolving Fund or with section 1450(e) of the Safe Drinking Water Act (42 U.S.C.300j-9(e)) for the Drinking Water State Revolving Fund. These laws require payment of prevailing wages in accordance with 40 U.S.C. §§ 3141–3144, 3146, and 3147 (contained within the Davis-Bacon Act, as amended).

I understand that a false statement herein may subject me to penalties under federal and state laws relating to filing false statements and other relevant statutes.

Signature

Date

Standard Form 1445 – Labor Standards Interview

LABOR STANDARDS INTERVIEW							
CONTRACT NUMBER				EMPLOYEE INFORMATION			
NAME OF PRIME CONTRACTOR				LAST NAME		FIRST NAME	
NAME OF EMPLOYER				STREET ADDRESS			
SUPERVISOR'S NAME				CITY		STATE	ZIP CODE
LAST NAME		FIRST NAME		MI		WORK CLASSIFICATION	
						WAGE RATE	
ACTION						CHECK BELOW	
						YES	NO
Do you work over 8 hours per day?							
Do you work over 40 hours per week?							
Are you paid at least time and a half for overtime hours?							
Are you receiving any cash payments for fringe benefits required by the posted wage determination decision?							
WHAT DEDUCTIONS OTHER THAN TAXES AND SOCIAL SECURITY ARE MADE FROM YOUR PAY?							
HOW MANY HOURS DID YOU WORK ON YOUR LAST WORK DAY BEFORE THIS INTERVIEW?				TOOLS YOU USE			
DATE OF LAST WORK DAY BEFORE INTERVIEW (YYMMDD)							
DATE YOU BEGAN WORK ON THIS PROJECT (YYMMDD)							
THE ABOVE IS CORRECT TO THE BEST OF MY KNOWLEDGE							
EMPLOYEE'S SIGNATURE						DATE (YYMMDD)	
INTERVIEWER	SIGNATURE			TYPED OR PRINTED NAME			DATE (YYMMDD)
INTERVIEWER'S COMMENTS							
WORK EMPLOYEE WAS DOING WHEN INTERVIEWED				ACTION (If explanation is needed, use comments section)		YES	NO
				IS EMPLOYEE PROPERLY CLASSIFIED AND PAID?			
				ARE WAGE RATES AND POSTERS DISPLAYED?			
FOR USE BY PAYROLL CHECKER							
IS ABOVE INFORMATION IN AGREEMENT WITH PAYROLL DATA?							
<input type="checkbox"/> YES <input type="checkbox"/> NO							
COMMENTS							
CHECKER							
LAST NAME		FIRST NAME		MI		JOB TITLE	
SIGNATURE						DATE (YYMMDD)	
AUTHORIZED FOR LOCAL REPRODUCTION Previous edition not usable				STANDARD FORM 1445 (REV. 12-96) Prescribed by GSA - FAR (48 CFR) 53.222(g)			

Statement of Compliance Certification by Contractor for State Revolving Funds Federal Davis-Bacon Requirements

In accordance with Title 29 CFR Part 5.5(a)(3)(ii), each weekly payroll must be accompanied by a Statement of Compliance Certification executed by each contractor/subcontractor employing mechanics and laborers at the work site in which the federal government is to participate. Contractors may choose to use the DOL Form WH-347 payroll with the accompanying statement of compliance located on the back of Form WH-347 OR provide contractor's own payroll form using this TWDB Statement of Compliance Certification, DB-0155.

Date: _____
Estimate Number: _____ for the payroll period _____ to _____
Name of Project: _____ Location: _____
Contract Number: _____ TWDB SRF Project #: _____
Date Contract Awarded: _____

I _____ (Name and Title of Signatory Party)
do hereby state:

(1) That I pay or supervise the payment, during the above payroll period, of the persons employed by

_____ (Contractor or Subcontractor);
that all persons employed on said project have been paid the full weekly wages earned;
that no rebates have been or will be made either directly or indirectly to or on behalf of said

_____ (Contractor or Subcontractor)
from the full weekly wages earned by any person and that no deductions have been made either directly or indirectly from the full wages earned by any person, other than permissible deductions as defined in Regulations Part 3 (29 C.F.R. Subtitle A), issued by the Secretary of Labor under the Copeland Act, as amended (48 Stat. 948, 63 Stat. 108, 72 Stat. 967; 76 Stat. 357; 40 U.S.C. § 3145) as described below:

(2) That any payrolls otherwise under this contract required to be submitted for the above period are correct and complete; that the wage rates for laborers or mechanics contained therein are not less than the applicable wage rates contained in any wage determination incorporated into the contract; that the classifications set forth therein for each laborer or mechanic conform with the work he performed.

(3) That any apprentices employed in the above period are duly registered in a bona fide apprenticeship program registered with a State apprenticeship agency recognized by the Bureau of Apprenticeship and Training, United States Department of Labor, or if no such recognized agency exists in a State, are registered with the Bureau of Apprenticeship and Training, United States Department of Labor.

(4) That:
(a) WHERE FRINGE BENEFITS ARE PAID TO APPROVED PLANS, FUNDS, OR PROGRAMS

DB-0155
3/10/2016

☐ in addition to the basic hourly wage rates paid to each laborer or mechanic listed in the above referenced payroll, payments of fringe benefits as listed in the contract have been or will be made to appropriate programs for the benefit of such employees, except as noted in section 4(c) EXCEPTIONS below.

(b) WHERE FRINGE BENEFITS ARE PAID IN CASH

☐ Each laborer or mechanic listed in the attached payroll has been paid, as indicated on the payroll, an amount not less than the sum of the applicable basic hourly wage rate plus the amount of the required fringe benefits as listed in the contract, except as noted in section 4(c) below.

(c) EXCEPTIONS

EXCEPTION (CRAFT)	EXPLANATION

REMARKS

NAME AND TITLE	SIGNATURE

THE WILLFUL FALSIFICATION OF ANY OF THE ABOVE STATEMENTS MAY SUBJECT THE CONTRACTOR OR SUBCONTRACTOR TO CIVIL OR CRIMINAL PROSECUTION. SEE SECTION 1001 OF TITLE 18 AND SECTION 231 OF TITLE 31 OF THE UNITED STATES CODE.

Date _____

I, _____ (Name of Signatory Party) _____ (Title)
do hereby state:

(1) That I pay or supervise the payment of the persons employed by

_____, (Contractor or Subcontractor) _____ on the

_____, (Building or Work) _____; that during the payroll period commencing on the

_____ day of _____, and ending the _____ day of _____,
all persons employed on said project have been paid the full weekly wages earned, that no rebates have
been or will be made either directly or indirectly to or on behalf of said

_____, (Contractor or Subcontractor) _____ from the full

weekly wages earned by any person and that no deductions have been made either directly or indirectly
from the full wages earned by any person, other than permissible deductions as defined in Regulations, Part
3 (29 C.F.R. Subtitle A), issued by the Secretary of Labor under the Copeland Act, as amended (48 Stat. 948,
63 Stat. 108, 72 Stat. 967; 40 U.S.C. § 3145), and described below:

(2) That any payrolls otherwise under this contract required to be submitted for the above period are
correct and complete, that the wage rates for laborers or mechanics contained herein are not less than the
applicable wage rates contained in any wage determination incorporated into the contract; that the classifications
set forth therein for each laborer or mechanic conform with the work he performed.

(3) That any apprentices employed in the above period are duly registered in a bona fide apprenticeship
program registered with a State apprenticeship agency recognized by the Bureau of Apprenticeship and
Training, United States Department of Labor, or if no such recognized agency exists in a State, are registered
with the Bureau of Apprenticeship and Training, United States Department of Labor.

(4) That:

(a) WHERE FRINGE BENEFITS ARE PAID TO APPROVED PLANS, FUNDS, OR PROGRAMS

☐ — In addition to the basic hourly wage rates paid to each laborer or mechanic listed in
the above referenced payroll, payments of fringe benefits as listed in the contract
have been or will be made to appropriate programs for the benefit of such employees,
except as noted in section 4(c) below.

(b) WHERE FRINGE BENEFITS ARE PAID IN CASH

☐ — Each laborer or mechanic listed in the above referenced payroll has been paid,
as indicated on the payroll, an amount not less than the sum of the applicable
basic hourly wage rate plus the amount of the required fringe benefits as listed
in the contract, except as noted in section 4(c) below.

(c) EXCEPTIONS

EXCEPTION (CRAFT)	EXPLANATION

REMARKS:

NAME AND TITLE	SIGNATURE
THE WILLFUL FALSIFICATION OF ANY OF THE ABOVE STATEMENTS MAY SUBJECT THE CONTRACTOR OR SUBCONTRACTOR TO CIVIL OR CRIMINAL PROSECUTION. SEE SECTION 1001 OF TITLE 18 AND SECTION 231 OF TITLE 31 OF THE UNITED STATES CODE.	

EMPLOYEE RIGHTS UNDER THE DAVIS-BACON ACT

FOR LABORERS AND MECHANICS EMPLOYED ON FEDERAL OR FEDERALLY ASSISTED CONSTRUCTION PROJECTS

THE UNITED STATES DEPARTMENT OF LABOR WAGE AND HOUR DIVISION

PREVAILING WAGES

You must be paid not less than the wage rate listed in the Davis-Bacon Wage Decision posted with this Notice for the work you perform.

OVERTIME

You must be paid not less than one and one-half times your basic rate of pay for all hours worked over 40 in a work week. There are few exceptions.

ENFORCEMENT

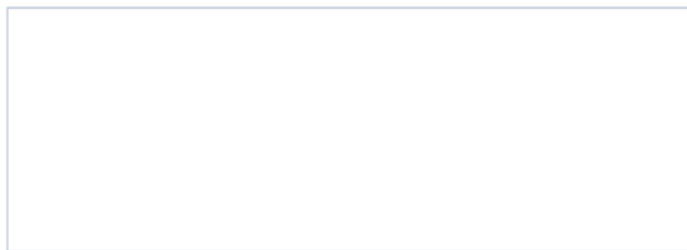
Contract payments can be withheld to ensure workers receive wages and overtime pay due, and liquidated damages may apply if overtime pay requirements are not met. Davis-Bacon contract clauses allow contract termination and debarment of contractors from future federal contracts for up to three years. A contractor who falsifies certified payroll records or induces wage kickbacks may be subject to civil or criminal prosecution, fines and/or imprisonment.

APPRENTICES

Apprentice rates apply only to apprentices properly registered under approved Federal or State apprenticeship programs.

PROPER PAY

If you do not receive proper pay, or require further information on the applicable wages, contact the Contracting Officer listed below:



or contact the U.S. Department of Labor's Wage and Hour Division.



For additional information:

1-866-4-USWAGE
(1-866-487-9243) TTY: 1-877-889-5627



WWW.WAGEHOUR.DOL.GOV

U.S. Department of Labor | Employment Standards Administration | Wage and Hour Division

WH 1321 (Revised April 2009)

Appendix 1 – Applies to Governmental Entities (such as Cities and Districts)

1. Applicability of the Davis-Bacon (DB) prevailing wage requirements.

DB prevailing wage requirements apply to the construction, alteration, and repair of treatment works carried out in whole or in part with assistance made available by a State water pollution control revolving fund and to any construction project carried out in whole or in part by assistance made available by a drinking water treatment revolving loan fund. If a subrecipient encounters a unique situation at a site that presents uncertainties regarding DB applicability, the subrecipient must discuss the situation with the TWDB before authorizing work on that site.

2. Obtaining Wage Determinations.

(a) Subrecipients shall obtain the wage determination for the locality in which a covered activity subject to DB will take place prior to issuing requests for bids, proposals, quotes or other methods for soliciting contracts (solicitation) for activities subject to DB. These wage determinations shall be incorporated into solicitations and any subsequent contracts. Prime contracts must contain a provision requiring that subcontractors follow the wage determination incorporated into the prime contract.

- (i) While the solicitation remains open, the subrecipient shall monitor www.wdol.gov weekly to ensure that the wage determination contained in the solicitation remains current. The recipients shall amend the solicitation if DOL issues a modification more than 10 days prior to the closing date (i.e. bid opening) for the solicitation. If DOL modifies or supersedes the applicable wage determination less than 10 days prior to the closing date, the subrecipients may request a finding from the TWDB that there is not a reasonable time to notify interested contractors of the modification of the wage determination. The TWDB will provide a report of its findings to the subrecipient.
- (ii) If the subrecipient does not award the contract within 90 days of the closure of the solicitation, any modifications or supersedes DOL makes to the wage determination contained in the solicitation shall be effective unless the TWDB, at the request of the subrecipient, obtains an extension of the 90 day period from DOL pursuant to 29 CFR 1.6(c)(3)(iv). The subrecipient shall monitor www.wdol.gov on a weekly basis if it does not award the contract within 90 days of closure of the solicitation to ensure that wage determinations contained in the solicitation remain current.

(b) If the subrecipient carries out activity subject to DB by issuing a task order, work assignment or similar instrument to an existing contractor (ordering instrument) rather than by publishing a solicitation, the subrecipient shall insert the appropriate DOL wage determination from www.wdol.gov into the ordering instrument.

(c) Subrecipients shall review all subcontracts subject to DB entered into by prime contractors to verify that the prime contractor has required its subcontractors to include the applicable wage determinations.

(d) As provided in 29 CFR 1.6(f), DOL may issue a revised wage determination applicable to a subrecipient's contract after the award of a contract or the issuance of an ordering instrument if DOL determines that the subrecipient has failed to incorporate a wage determination or has used a wage determination that clearly does not apply to the contract or ordering instrument. If this occurs, the subrecipient shall either terminate the contract or ordering instrument and issue a revised solicitation or ordering instrument or incorporate DOL's wage determination retroactive to the beginning of the contract or

ordering instrument by change order. The subrecipient's contractor must be compensated for any increases in wages resulting from the use of DOL's revised wage determination.

3. Contract and Subcontract provisions.

(a) The subrecipient(s) shall insert in full in any contract in excess of \$2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a treatment work under the CWSRF or a construction project under the DWSRF financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in 29 CFR 5.1, the Water Resources Reform and Development Act of 2014 for a CWSRF-funded project or the Consolidated Appropriations Act, 2016 (or subsequent federal law) for a DWSRF-funded project, the following clauses:

(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work 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 CFR 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 paragraph (a)(1)(iv) of this section; 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 29 CFR 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 this section) 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.

Subrecipients may obtain wage determinations from the U.S. Department of Labor's web site, www.dol.gov.

(ii)(A) The subrecipient(s), on behalf of EPA, 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 TWDB shall approve a request for 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 subrecipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the subrecipient (s) to the TWDB. The TWDB will transmit the request, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the TWDB or will notify the TWDB 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 subrecipient(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the TWDB shall refer the request and the local wage determination, including the views of all interested parties and the recommendation of the TWDB, to the Administrator for determination. The request shall be sent to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request 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 this section, 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 subrecipient(s) shall, upon written request of the EPA Award Official or 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, all or part of the wages required by the contract, the EPA 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. 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 CFR 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 subrecipient, that is, the entity that receives the funds from the TWDB. Such documentation shall be available on request of the TWDB or EPA. As to each payroll copy received, the subrecipient shall provide written confirmation in a form satisfactory to the TWDB indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly payrolls. 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 <http://www.dol.gov/whd/forms/wh347instr.htm> 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 subrecipient(s) for transmission to the TWDB or EPA if requested by EPA, the TWDB, 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 this section 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 subrecipient(s).

(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 CFR part 5, the appropriate information is being maintained under § 5.5(a)(3)(i) of Regulations, 29 CFR 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 CFR 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 section.

(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 this section available for inspection, copying, or transcription by authorized representatives of the TWDB, EPA 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 EPA or TWDB 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 CFR 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 CFR 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 CFR part 30.

(5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR 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 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may be appropriate, 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 CFR 5.5.

(7) Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 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 CFR 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 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and subrecipient(s), TWDB, EPA, 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 CFR 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 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

4. Contract Provision for Contracts in Excess of \$100,000.

(a) Contract Work Hours and Safety Standards Act. The subrecipient shall insert the following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of this section 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 Item 3, above or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

(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 (a)(1) of this section the contractor and any subcontractor responsible therefore 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 (a)(1) of this section, in the sum of \$10 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 (a)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The subrecipient, upon written request of the EPA Award Official or an authorized representative of the Department of Labor, shall 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 (a)(2) of this section.

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

(b) In addition to the clauses contained in Item 3, above, 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 CFR 5.1, the 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 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 EPA, TWDB, and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

5. Compliance Verification

(a) The subrecipient shall periodically interview a sufficient number of employees entitled to DB prevailing wages (covered employees) to verify that contractors or subcontractors are paying the appropriate wage rates. As provided in 29 CFR 5.6(a)(6), all interviews must be conducted in confidence. The subrecipient must use Standard Form 1445 (SF 1445) found in TWDB guidance document TWDB-0156 or equivalent documentation to memorialize the interviews. Copies of the SF 1445 are also available from EPA on request.

(b) The subrecipient shall establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. Subrecipients must conduct more frequent interviews if the initial interviews or other information indicated that there is a risk that the contractor or subcontractor is not complying with DB. Subrecipients shall immediately conduct interviews in response to an alleged violation of the prevailing wage requirements. All interviews shall be conducted in confidence."

(c) The subrecipient shall periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors or subcontractors are paying the appropriate wage rates. The subrecipient shall establish and follow a spot check schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, if practicable, the subrecipient should spot check payroll data within two weeks of each contractor or subcontractor's submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract. Subrecipients must conduct more frequent spot checks if the initial spot check or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. In addition, during the examinations the subrecipient shall verify evidence of fringe benefit plans and payments there under by contractors and subcontractors who claim credit for fringe benefit contributions.

(d) The subrecipient shall periodically review contractors and subcontractor's use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the U.S Department of Labor or a state, as appropriate, and that contractors and subcontractors are not using disproportionate numbers of, laborers, trainees and apprentices. These reviews shall be conducted in accordance with the schedules for spot checks and interviews described in Item 5(b) and (c) above.

(e) Subrecipients must immediately report potential violations of the DB prevailing wage requirements to the EPA Region 6 DB Coordinator, TWDB, and to the appropriate DOL Wage and Hour District Office listed at <http://www.dol.gov/whd/america2.htm>.

Appendix 2 – Applies to Non-Governmental Entities (such as Water Supply Corporations and Private Companies)

1. Applicability of the Davis-Bacon (DB) prevailing wage requirements.

DB prevailing wage requirements apply to the construction, alteration, and repair of treatment works carried out in whole or in part with assistance made available by a State water pollution control revolving fund and to any construction project carried out in whole or in part by assistance made available by a drinking water treatment revolving loan fund. If a subrecipient encounters a unique situation at a site that presents uncertainties regarding DB applicability, the subrecipient must discuss the situation with the TWDB before authorizing work on that site.

2. Obtaining Wage Determinations.

(a) Subrecipients must obtain proposed wage determinations for specific localities at www.wdol.gov. After the subrecipient obtains its proposed wage determination, it must submit the wage determination to the TWDB for approval prior to inserting the wage determination into a solicitation, contract or issuing task orders, work assignments or similar instruments to existing contractors (ordering instruments unless subsequently directed otherwise by the TWDB.)

(b) Subrecipients shall obtain the wage determination for the locality in which a covered activity subject to DB will take place prior to issuing requests for bids, proposals, quotes or other methods for soliciting contracts (solicitation) for activities subject to DB. These wage determinations shall be incorporated into solicitations and any subsequent contracts. Prime contracts must contain a provision requiring that subcontractors follow the wage determination incorporated into the prime contract.

- (i) While the solicitation remains open, the subrecipient shall monitor www.wdol.gov on a weekly basis to ensure that the wage determination contained in the solicitation remains current. The recipients shall amend the solicitation if DOL issues a modification more than 10 days prior to the closing date (i.e. bid opening) for the solicitation. If DOL modifies or supersedes the applicable wage determination less than 10 days prior to the closing date, the subrecipients may request a finding from the TWDB that there is not a reasonable time to notify interested contractors of the modification of the wage determination. The TWDB will provide a report of its findings to the subrecipient.
- (ii) If the subrecipient does not award the contract within 90 days of the closure of the solicitation, any modifications or supersedes DOL makes to the wage determination contained in the solicitation shall be effective unless the TWDB, at the request of the subrecipient, obtains an extension of the 90 day period from DOL pursuant to 29 CFR 1.6(c)(3)(iv). The subrecipient shall monitor www.wdol.gov on a weekly basis if it does not award the contract within 90 days of closure of the solicitation to ensure that wage determinations contained in the solicitation remain current.

(c) If the subrecipient carries out activity subject to DB by issuing a task order, work assignment or similar instrument to an existing contractor (ordering instrument) rather than by publishing a solicitation, the subrecipient shall insert the appropriate DOL wage determination from www.wdol.gov into the ordering instrument.

(d) Subrecipients shall review all subcontracts subject to DB entered into by prime contractors to verify that the prime contractor has required its subcontractors to include the applicable wage determinations.

(e) As provided in 29 CFR 1.6(f), DOL may issue a revised wage determination applicable to a subrecipient's contract after the award of a contract or the issuance of an ordering instrument if DOL determines that the subrecipient has failed to incorporate a wage determination or has used a wage determination that clearly does not apply to the contract or ordering instrument. If this occurs, the subrecipient shall either terminate the contract or ordering instrument and issue a revised solicitation or ordering instrument or incorporate DOL's wage determination retroactive to the beginning of the contract or ordering instrument by change order. The subrecipient's contractor must be compensated for any increases in wages resulting from the use of DOL's revised wage determination.

3. Contract and Subcontract provisions.

(a) The subrecipient(s) shall insert in full in any contract in excess of \$2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a treatment work under the CWSRF or a construction project under the DWSRF financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in 29 CFR 5.1, the Water Resources Reform and Development Act of 2014 for a CWSRF-funded project or the Consolidated Appropriations Act, 2016 (or subsequent federal law) for a DWSRF-funded project, the following clauses:

(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work 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 CFR 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 paragraph (a)(1)(iv) of this section; 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 29 CFR 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 this section) 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.

Subrecipients may obtain wage determinations from the U.S. Department of Labor's web site, www.dol.gov.

(ii)(A) The subrecipient(s), on behalf of EPA, 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 TWDB shall approve a request for 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 subrecipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the subrecipient(s) to the TWDB. The TWDB will transmit the request, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the TWDB or will notify the TWDB 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 subrecipient(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the TWDB shall refer the request and the local wage determination, including the views of all interested parties and the recommendation of the TWDB, to the Administrator for determination. The request shall be sent to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request 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 this section, 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 subrecipient(s) shall, upon written request of the EPA Award Official or 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, all or part of the wages required by the contract, the EPA 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. 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 CFR 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 subrecipient, that is, the entity that receives the funds from the TWDB. Such documentation shall be available on request of the TWDB or EPA. As to each payroll copy received, the subrecipient shall provide written confirmation in a form satisfactory to the TWDB indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly payrolls. 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 <http://www.dol.gov/whd/forms/wh347instr.htm> 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 subrecipient(s) for transmission to the TWDB or EPA if requested by EPA, the TWDB, 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 this section 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 subrecipient(s).

(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 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR 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 CFR 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 section.

(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 this section available for inspection, copying, or transcription by authorized representatives of the TWDB, EPA 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 EPA or TWDB 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 CFR 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 CFR 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 CFR part 30.

(5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR 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 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may be appropriate, 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 CFR 5.5.

(7) Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 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 CFR 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 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and Subrecipient(s), TWDB, EPA, 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 CFR 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 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

4. Contract Provision for Contracts in Excess of \$100,000.

(a) Contract Work Hours and Safety Standards Act. The subrecipient shall insert the following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of this section 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 Item 3, above or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

(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 (a)(1) of this section the contractor and any subcontractor responsible therefore 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 (a)(1) of this section, in the sum of \$10 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 (a)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The subrecipient shall upon the request of the EPA Award Official or 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 (a)(2) of this section.

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

(b) In addition to the clauses contained in Item 3, above, 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 CFR 5.1, the 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 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 EPA, TWDB, and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

5. Compliance Verification

(a) The subrecipient shall periodically interview a sufficient number of employees entitled to DB prevailing wages (covered employees) to verify that contractors or subcontractors are paying the appropriate wage rates. As provided in 29 CFR 5.6(a)(6), all interviews must be conducted in confidence. The subrecipient must use Standard Form 1445 (SF 1445) found in TWDB guidance document TWDB-0156 or equivalent documentation to memorialize the interviews. Copies of the SF 1445 are also available from EPA on request.

(b) The subrecipient shall establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. Subrecipients must conduct more frequent interviews if the initial interviews or other information indicated that there is a risk that the contractor or subcontractor is not complying with DB. Subrecipients shall immediately conduct interviews in response to an alleged violation of the prevailing wage requirements. All interviews shall be conducted in confidence."

(c) The subrecipient shall periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors or subcontractors are paying the appropriate wage rates. The subrecipient shall establish and follow a spot check schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, if practicable the subrecipient should spot check payroll data within two weeks of each contractor or subcontractor's submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract. Subrecipients must conduct more frequent spot checks if the initial spot check or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. In addition, during the examinations the subrecipient shall verify evidence of fringe benefit plans and payments there under by contractors and subcontractors who claim credit for fringe benefit contributions.

(d) The subrecipient shall periodically review contractors and subcontractor's use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the U.S Department of Labor or a state, as appropriate, and that contractors and subcontractors are not using disproportionate numbers of, laborers, trainees and apprentices. These reviews shall be conducted in accordance with the schedules for spot checks and interviews described in Item 5(b) and (c) above.

(e) Subrecipients must immediately report potential violations of the DB prevailing wage requirements to the EPA Region 6 DB Coordinator, TWDB, and to the appropriate DOL Wage and Hour District Office listed at <http://www.dol.gov/whd/america2.htm>.



**Guidance on
Disadvantaged Business Enterprises for
State Revolving Fund Projects**

Updates to this guidance include:

- *Fiscal Year 2018 Negotiated Minority Business Enterprise and Women's Business Enterprise (MBE/WBE) Goals (p. 2).*
- *Updated TWDB-0215 (Attachment 1)*
- *Updated TWDB-0217 (Attachment 3)*

DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

TWDB-0210 GUIDANCE

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Attachments (examples of required forms):

1. TWDB-0215
2. TWDB-0216
3. TWDB-0217
4. TWDB-0373

DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

INTRODUCTION TO FEDERAL REQUIREMENTS

The Texas Water Development Board (TWDB) intends to ensure that applicants, consultants and contractors are provided with information and guidance to successfully meet the U.S. Environmental Protection Agency's (EPA) Disadvantaged Business Enterprise (DBE) program requirements.

The TWDB's Clean and Drinking Water State Revolving Fund programs receive federal funding from the EPA to provide financial assistance for water and wastewater projects. Recipients of financial assistance (e.g., municipalities, towns, public water systems) and their sub-recipients (e.g., prime consultants, prime contractors, purchase order vendors) are **required** to make a "Good Faith Effort" to award a fair share of work to contractors who are certified as Minority Business Enterprises (MBE) and Women-owned Business Enterprises (WBE) whenever procuring construction, supplies, services, and equipment ([40 CFR, Section 33.301](#)). This requirement is currently limited to Clean Water State Revolving Fund Equivalency projects and all Drinking Water State Revolving Fund projects. Recipients of financial assistance are required to show evidence that they have performed the six steps showing a "Good Faith Effort" (referred to as the Six Good Faith Efforts) for all procurements ([40 CFR, Section 33.301](#)).

The DBE program is an outreach, education, and goal oriented program designed to increase the participation of MBEs and WBEs in procurements funded by EPA assistance agreements through the State Revolving Funds. The DBE program goals, also referred to as Fair Share Objectives, are negotiated every three years between the TWDB and the EPA. The TWDB's current negotiated fair share goals are:

<u>Category</u>	<u>MBE</u>	<u>WBE</u>
Construction	19.44%	9.17%
Equipment	16.28%	11.45%
Supplies	25.34%	8.82%
Services	20.41%	13.66%
<i>Effective 08/14/2018 – 09/01/2021</i>		

The MBE/WBE goals are neither standards nor quotas; they are goals. Recipients of financial assistance are not required to meet the fair share objectives. They must, however, acknowledge that they are aware of and are actively pursuing the fair share objectives with their procurements.

Recipients of financial assistance **must** maintain all records documenting compliance with all applicable federal and state requirements. They are also subject to additional contract administration requirements ([40 CFR, Section 33.302](#)).

This guide will cover the Six Good Faith Efforts, procurement instructions, and the TWDB's DBE review process. All of the required DBE forms as well as a few situational examples are included for reference. Clear definitions of all of the terms used throughout the guidance document may be found within the Glossary (Appendix A). The terms "recipient of financial assistance", "applicant", or "entity" may be used interchangeably.

COMPLIANCE WITH THE REQUIREMENTS

Compliance is achieved by: 1) applying the Six Good Faith Efforts to all procurements utilizing applicable State Revolving Fund program funds, 2) submitting TWDB's DBE forms in a timely manner, 3) ensuring all necessary documentation and language is included in bid advertisements and solicitations, and 4) maintaining detailed documents showing compliance with the DBE requirements. In the event that a recipient of financial assistance fails to comply with any of the DBE program requirements, EPA may take remedial action under [40 CFR, Section 33.105](#). A failure to comply with the DBE process outlined in this guidance document accurately and in a timely manner may also result in the withholding of payments or project delays.

SIX GOOD FAITH EFFORTS

The Six Good Faith Efforts undertaken by a recipient of financial assistance and its prime consultant(s)/contractor(s) ensures that DBE businesses are made aware of procurement opportunities.

According to [40 CFR § 33.301](#), a recipient of financial assistance is required to complete the following Six Good Faith Efforts whenever procuring construction, equipment, services and supplies under an EPA financial assistance agreement:

- (1) Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities. For Indian Tribal, State and Local and Government recipients, this will include placing DBEs on solicitation lists and soliciting them whenever they are potential sources.
- (2) Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitations for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.
- (3) Consider in the contracting process whether businesses competing for large contracts could subcontract with DBEs. For Indian Tribal, State and local Government recipients, this will include dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.
- (4) Encourage contracting with a consortium of DBEs when a contract is too large for one of these businesses to handle individually.
- (5) Use the services and assistance of the Small Business Administration (SBA) and the Minority Business Development Agency of the Department of Commerce.
- (6) If the Prime Contractor awards subcontracts, require the prime contractor to take the complete steps (1) through (5) listed above.

Note: Step-by-step guides are available in future sections of this guidance to explain these six steps (pp. 7-15).

WHEN TO SUBMIT

Recipients of financial assistance through the SRF Programs will be required to submit DBE documentation at different phases during the project's lifecycle (Application, Prior to Closing, Release of Planning/Design funds, and Construction Contract Phases). *Note: Submitting DBE forms to the TWDB alone will not meet EPA's fair share policy. Review the section, Required Documentation, for the additional steps that **must** be completed.*

Application (must be submitted with a financial application)

- **TWDB-0215 (from Applicant/Entity)** certifies that the entity understands they **must** follow the Six Good Faith Efforts and attempt to meet the Fair Share Objectives for MBE/WBE participation.

Prior to Closing (must be submitted, reviewed and approved by TWDB staff prior to closing)

- **TWDB-0216 (from Applicant/Entity)** identifies the methods of solicitation used for procurements, all businesses directly solicited for procurement (at this stage, typically the Financial Advisor, Bond Counsel, and Engineer), their contact information, and their MBE/WBE status.
- **TWDB-0373 (from Applicant/Entity)** identifies the businesses awarded a contract, their contact information, their MBE/WBE status, an actual or anticipated executed contract date, and contract amount. *Note: Any businesses operating as brokers may not be listed on the TWDB-0373 as an MBE or WBE.¹*
- **TWDB-0217 (from Prime Consultants)** certifies that the Prime Consultant (at this stage, typically the Financial Advisor, Bond Counsel, and Engineer) understand they **must** follow the Six Good Faith Efforts and attempt to meet the Fair Share Objectives for MBE/WBE participation.

Release of Planning/Design Phase funds

- **TWDB-0216 (from Applicant/Entity)** identifies the methods of solicitation used for procurements, all businesses directly solicited for procurement, their contact information, and their MBE/WBE status. This form is required at this stage only, if the entity pursues procuring additional businesses (e.g., Environmental, Other Legal Services, Surveying) for construction (if applicable), equipment, services, or supplies after closing.
- **TWDB-0373 (from Applicant/Entity)** identifies the businesses awarded a contract, their contact information, their MBE/WBE status, an actual or anticipated executed contract date, and contract amount. This form is required, at this step only, if the entity pursues procuring additional businesses (e.g., Environmental, Other Legal Services, Surveying) for construction (if applicable), equipment, services, or supplies after closing. *Note: Any businesses operating as brokers may not be listed on the TWDB-0373 as an MBE or WBE.¹*
- **TWDB-0216 (from Prime Consultants/Contractors)** indicates all businesses solicited for procurement, their contact information, and their MBE/WBE status.

¹ A broker is a business that does not perform, manage, or supervise the work of its sub/contract in a manner consistent with the normal business practices for sub/contractors in its line of business.

- **TWDB-0373 (from Prime Consultants/Contractors)** identifies all businesses awarded a subcontract, their contact information, their MBE/WBE status, an actual or anticipated executed contract date, and contract amount. *Note: Any businesses operating as brokers may not be listed on the TWDB-0373 as an MBE or WBE.*²

Construction Contracts

- **TWDB-0216 (from Applicant/Entity)** identifies the methods of solicitation used for procurements, all businesses directly solicited for procurement (at this stage, typically a construction contractor), their contact information, and their MBE/WBE status.
- **TWDB-0373 (from Applicant/Entity)** identifies the businesses awarded a contract, their contact information, their MBE/WBE status, an actual or anticipated executed contract date, and contract amount.
- **TWDB-0216 (from Prime Consultants/Contractors)** indicates all businesses solicited for procurement, their contact information, and their MBE/WBE status.
- **TWDB-0217 (from Prime Contractor)** certifies that the Prime Contractor understands they **must** follow the Six Good Faith Efforts and attempt to meet the Fair Share Objectives for MBE/WBE participation.
- **TWDB-0373 (from Prime Contractor)** identifies all businesses awarded a contract, their contact information, their MBE/WBE status, an actual or anticipated executed contract date, and contract amount. *Note: Any businesses operating as brokers may not be listed on the TWDB-0373 as an MBE or WBE.*²

REQUIRED DOCUMENTATION

In addition to the forms that **must** be submitted to the TWDB for review and approval prior to a project progressing through its lifecycle, recipients of financial assistance are required to maintain the following sets of documents or files related to the DBE program for the duration of the project:

- All copies of advertisements, solicitation postings, and communications to publish public solicitation including publishers' affidavits, U.S. certified mail receipts, and emails.
- Bidder's List(s) of Prime Contracts if procurement was through an open-competitive bidding process.
- All forms submitted to the TWDB and the EPA for the DBE program.
- All documentation submitted by the Prime Consultant(s) and Contractor(s) depicting their compliance with EPA's fair share policy (review the section, Procurement Steps, for more details).

SPECIAL CIRCUMSTANCES

In some circumstances, a recipient of financial assistance may not be able to make a good faith effort in procuring DBEs. If this circumstance is encountered, communication with the TWDB's DBE Coordinator should take place well in advance of making the decision to execute a procurement/contract not following the TWDB's DBE program. The DBE Coordinator will determine whether the circumstance may qualify for a **sole-source** method of procurement. The sole-source method requires that the recipient of financial assistance produce a letter explaining why they were unable to follow the DBE program, submit the documentation to the TWDB for official review, and retain a copy of the letter within the project file.

² A broker is a business that does not perform, manage, or supervise the work of its sub/contract in a manner consistent with the normal business practices for sub/contractors in its line of business.

Example:

After pilot testing a specific treatment process for a treatment plant, the Texas Commission on Environmental Quality (TCEQ) has required a specific piece of equipment that only a single manufacturer produces, or a sole-source. In this instance, two key items are needed for DBE program compliance: a letter from the recipient of financial assistance detailing the circumstances related to the sole-source, and the exemption letter from the TCEQ identifying the specific equipment. These items should be sent to the TWDB and saved within the recipient of financial assistance's project file. Communication should be given to the TWDB's DBE Coordinator upon receipt and review of the TCEQ's exemption letter.

There may be instances when a recipient of financial assistance would like to contract for services or contract with a supplier(s) for an extended period of time. These **multi-year contracts** are allowed and acceptable under the EPA's DBE program, so long as certain steps are followed. When the TWDB's DBE Coordinator reviews any submitted DBE documentation, they will ensure the solicitation language contains the expected scope of work and the applicable timeframes of the contract. The solicitation should also reference the TWDB's negotiated fair share objectives through use of the TWDB's solicitation statement within the advertisement. Including the solicitation statement ensures the multi-year contract is procured under the TWDB's current negotiated fair share objectives. If any of this information is missing, the TWDB's DBE Coordinator may not be able to approve the submitted DBE documentation and may require additional steps in order to meet compliance.

The recipient of financial assistance **must** follow the EPA's DBE process in procuring the multi-year contract(s). A multi-year contract will not be accepted if the contract solicitation and award date occurred more than three years from the date of submission to the TWDB's DBE Coordinator. Multi-year contracts exceeding this timeframe may be evaluated by the TWDB on a case-by-case basis. Advanced notice of this type of procurement should be given to the TWDB's DBE Coordinator before making the decision to execute a procurement/contract.

Example:

The Town of Medgar (Town), is preparing to execute a contract with a consultant engineering firm for engineering services covering all line replacement work within its public water supply system. The Town has drafted a solicitation for water line replacement work for all projects that are or may possibly be funded through the TWDB's Drinking Water State Revolving Fund (DWSRF) and has received an approval for use by the TWDB's DBE Coordinator. The multi-year contract is structured to be in effect for no longer than three years. Following the standard DBE process, the Town posts the solicitation, awards the contract, and then submits the applicable forms to the TWDB for review. Three years later, the Town chooses to take on additional water line replacement work funded through new DWSRF financing. To show compliance, they submit the DBE forms showing their original procurement of the engineering firm to the TWDB's DBE Coordinator. Following this process allows the Town to utilize one consultant engineering firm for all water line replacement projects within the system that are planned and/or implemented within the three years after executing the contract.

In instances where a recipient of financial assistance wants their own staff to perform services, their approval process would follow a **force account** process. Under a force account, the recipient of financial assistance submits a written request to the TWDB's DBE Coordinator describing the scope of work covered by their staff and indicating their participation through the force account process. This letter should remain within their project files. The TWDB's DBE Coordinator will acknowledge its receipt, review for applicability, and respond with a determination before any work proceeds.

PROCUREMENT STEPS

Included in these instructions are steps to successfully perform your DBE solicitation. Please read them carefully. These steps should be taken when procuring construction, equipment, services, and/or supplies. The terms “recipients of financial assistance”, “applicant”, or “entity” may be used interchangeably. The term “Prime(s)” refers to both “Consultants” and “Contractors”.

STEP 1. DETERMINE YOUR PROCUREMENT NEEDS

For all of the categories listed below, you are required to solicit by any of the listed methods identified in Step 2 DBE businesses qualified and capable of completing the work requested. You should also determine whether it is economically feasible to divide the proposed project into smaller tasks or quantities to permit maximum participation by DBE businesses.

Procurement Categories

Construction contracts generally relate to the bidding process for a prime contractor.

Equipment contracts relate to the purchase of equipment from vendors.

Services contracts relate to the hiring of consultants or any other service related work.

Supply contracts relate to the purchase of supplies directly from vendors.

Examples

1. If your project consists of one general construction contract, you will need to solicit DBE prime contractors within the regional vicinity of the project that are capable of completing the work.
2. If your own workforce will be performing all of the work, but you will need to purchase supplies or equipment, then you will need to solicit DBE vendors within the regional project area capable of providing supplies or equipment to your proposed project.

STEP 2. DETERMINE YOUR METHODS OF SOLICITATION

You may choose from a list of seven methods of solicitation. At least TWO methods **must** be chosen. These may be performed in conjunction with any required local or state procurement laws:

- Newspaper Advertisements
- Direct Contact by Phone, Fax, USPS Mail, Email (any combination of these still counts as ONE method)
- Meetings or Conferences
- Minority Media Postings
- Internet Website Postings
- Trade Association Publications (i.e., publishing a solicitation within a Trade Association’s publications)
- Other Government Publications (i.e., publishing a solicitation within other governmental publications)

If you choose to solicit via direct contact, additional steps are required to ensure fairness (see Step 2B. Directly Solicit Businesses). To reiterate, depending on your entity or businesses' makeup, you **must** ensure that you meet all applicable local and state procurement laws.

STEP 2A. ADVERTISE YOUR PROJECT

Draft the content of your solicitation. Example advertisement and request for qualifications language is available in appendix B.

To be compliant with the DBE program, all solicitations, both publicly advertised and via direct contact, should address 1) fair share goals; 2) good faith efforts; 3) the involvement of federal EPA funding; and 4) encouragement of MBEs, WBEs, and other DBEs to bid on prime and subcontracts.

To ensure compliance, the TWDB recommends including the following solicitation statement in all solicitations:

This contract is subject to the Environmental Protection Agency's (EPA) Disadvantaged Business Enterprise (DBE) Program, which includes EPA-approved fair share goals toward procurement of Minority and Women-owned Business Enterprise (M/WBE) businesses. EPA rules require that applicants and prime contractors make a good faith effort to award a fair share of contracts, subcontracts, and procurements to M/WBEs through demonstration of the six affirmative steps. For more details of the DBE Program and the current, applicable fair share goals, please visit www.twdb.texas.gov/dbe.

The TWDB encourages you to publish your solicitation at least 30 days prior to the bid closing date to allow sufficient time for potential prime or subconsultants/contractors to submit bids and proposals. The solicitation statement may be used within a newspaper advertisement, a posting to minority media or internet website, or posting within any other trade association or government publications. A copy of the actual solicitation found within/on the publication or web page **must** be kept with the project files and submitted along with the form TWDB-0216.

When advertising your project through a newspaper, it is important to retrieve a publisher's affidavit showing the dates of the posting(s) and the content of the advertisement. This support information **must** be saved with the project files and submitted along with the form TWDB-0216. For entities and projects required by state procurement law to perform an open competitive bidding process (i.e., political subdivisions of the state or districts soliciting for contract(s) more than a specific dollar amount as directed by state procurement law), a posting at least once a week, for two consecutive weeks, in a newspaper published in the municipality (or county) in which the district is located is required (TEX. LOC. GOV'T CODE § 252.041 and TEX. WATER CODE § 49.273).

Note: Sufficient documentation for meetings or conferences held as a method of solicitation include announcements of the meeting or meeting minutes AND a sign-in sheet. Posting items to a government-run plan room is considered the "Other Government Publications" method listed within the previous step. Posting items to a privately-run plan room is considered the "Trade Association Publications" method listed within the previous step. Conducting and submitting a search of businesses does not count as any one of the methods listed within the previous step. Search results are only accepted when accompanied with a detailed, signed explanation to document your inability to locate DBE businesses meeting the qualifications solicited and/or their inability to bid on your project.

STEP 2B. DIRECTLY SOLICIT BUSINESSES

You may directly solicit businesses utilizing phone, fax, USPS mail, or email communications. All documentation of such activity **must** be saved with the project files. When communicating via phone, an electronic or hand-written call log may be used as support. Remember to document the name of the firm solicited, the person contacted, a telephone number, their MBE/WBE status, and the category of work requested.

You **must** make contact with at least three qualified businesses for the specific procurement and **at least one** of those businesses **must** be a certified MBE/WBE business. An example of submitted direct solicitation documentation is available in Appendix D. To determine a business' certification, review Step 3. Determining a Business' DBE Status.

STEP 3. DETERMINING A BUSINESS' DBE STATUS

A DBE is a business owned by a socially and economically disadvantaged individual and certified as such by the EPA or another organization whose certification standards meet or exceed that of the EPA's (See Appendix A for a full definition of DBE). To assist you in identifying, soliciting, and utilizing qualified DBE businesses, the TWDB encourages you to refer to the following list of acceptable DBE certification agencies made available at the local, statewide, and national levels.

- [Texas Procurement and Support Services \(TPASS\)](#) The **Centralized Master Bidders List (CMBL) – Historically Underutilized Business (HUB) Directory Search** is a statewide database managed by the TPASS. This database contains contact information on all vendors registered to do business with the State, including TPASS-certified HUB vendors. The CMBL & HUB search is an online system available to the public free of charge.
- [Small Business Administration](#)
- [Texas Department of Transportation](#)
- [City of Austin](#) Located on the right-hand side of the webpage are links to the MBE/WBE/DBE Certified Vendor Search and SBE Certified Vendors directories.
- [City of Houston](#)

A list of other Minority & Women-owned Business Organizations that you may contact directly to obtain a list of qualified vendors for your procurement opportunities may be found at www.twdb.texas.gov/dbe.

Please note that MBE, WBE, or Historically Underutilized Business (HUB) certifications provided by the Texas Small Businesses Association or the Texas Certification Directory **will not** be accepted by the TWDB or the U.S. Environmental Protection Agency (EPA) as they do not meet EPA certification requirements.

STEP 4. UNDERSTANDING ROLES AND RESPONSIBILITIES

For Applicants:

As the recipient of financial assistance, you are responsible for ensuring that your project meets EPA's fair share policy for all procurements funded utilizing State Revolving Fund program funds. This includes the subcontracts of your Prime Consultant(s) and Contractor(s). You should review the Prime Consultant's and Contractor's DBE documentation and determine them to be in compliance before you submit the TWDB forms and support for official review.

You may request DBE documentation from your Prime Consultant(s) and Contractor(s) at the time of bid or after you have awarded a contract. Keep in mind your project schedule and the timeframes in which you need to obtain TWDB's approvals to continue progressing with your project. Receiving and reviewing forms earlier ensures that you receive approval well in advance of critical deadlines.

If your Prime Consultant's and Contractor's documented DBE process comes back with any errors, it is your responsibility to work with them to achieve compliance. Be mindful that contracts procured without following requirements may result in the need for re-procurement or be funded utilizing an alternate source of funds other than State Revolving Fund program funds. The TWDB's DBE Coordinator is available to assist you in correcting any deficiencies of your Prime Consultant's and Contractor's procurements. For more detailed instructions, review the section, Applicant's Review of Prime Consultant's/Contractor's Procurements.

If the contract amount for any of your Prime Consultant(s)/Contractor(s) changes from the time of your initial DBE submission, you **must** submit an updated TWDB-0373 listing the final, actual contract dollar amounts.

Note: In the event you change your Prime Consultant/Contractor or any subcontractors, for any reason, you or your Prime Consultant/Contractor must follow the DBE process when re-procuring. This will require you to re-submit a new TWDB-0373 reflecting actual contract dollar amounts and any supporting certification documentation.

For the Prime:

As the Prime, you are responsible for ensuring that your project meets EPA's fair share policy for all procurements funded utilizing State Revolving Fund program funds. You should review the subcontractors' DBE documentation and determine them to be in compliance before you submit the TWDB forms and support to the Entity awarding you a contract.

You may request DBE documentation from your subcontractor(s) at the time of bid or after you have been awarded a contract. Keep in mind your project schedule and the timeframes in which you need to obtain TWDB's approvals to continue progressing with your project. Receiving and reviewing forms earlier ensures that you receive approval well in advance of critical deadlines.

Be mindful that should any DBE forms or support documentation come back with any errors, it is your responsibility to correct any deficiencies to achieve compliance. A contract procured without following all of the necessary requirements may result in the need for re-procurement or be funded utilizing an alternate source of funds other than State Revolving Fund program funds. The TWDB's DBE Coordinator is available to assist you in correcting any deficiencies.

If the contract amount for any of your subcontractors change from the time of your initial DBE submission, you **must** submit an updated TWDB-0373 listing the final, actual contract dollar amounts.

Note: In the event you change any of your subcontractors, for any reason, you must follow the DBE process when re-procuring. This will require you to re-submit a new TWDB-0373 reflecting actual contract dollar amounts and any supporting certification documentation.

STEP 5. CREATING A BIDDERS LIST (APPLICANTS-ONLY)

As a recipient of financial assistance, you **must** create and maintain a Bidders List **if** your solicitation is subject to competitive bidding requirements. The list must include all firms that bid or quote on contracts and/or subcontracts. You **must** keep the bidders list until the project is complete, the project period has expired, and you are no longer receiving EPA funding under the financing agreement.

The following information **must** be retained on the Bidders List:

- The firm's name with point of contact
- The firm's mailing address, telephone number and email address
- The procurement on which the firm bid or quoted, and when
- The firm's status as an MBE/WBE.

The TWDB's form, [Affirmative Steps Solicitation Report \(TWDB-0216\)](#), may be used as the official Bidders List.

You may be exempt from the Bidders List requirement if you have received no more than \$250,000 for any single EPA financial assistance agreement OR no more than a combined total of \$250,000 for multiple EPA financial assistance agreements within any one federal fiscal year.

STEP 6. COMPLETING THE NECESSARY DBE FORMS

If you are completing these steps **prior to closing** on a TWDB financial assistance award:

Applicant: The forms you must complete and sign are the [TWDB-0216](#) and [TWDB-0373](#). These forms document the methods of solicitation used, who was directly solicited and/or made a bid, and who was ultimately awarded a contract. You may have chosen one or more Prime Consultants (typically an Engineer, Financial Advisor, and/or Bond Counsel).

Prime(s): You must complete and sign the [TWDB-0217](#) acknowledging you understand the DBE program requirements.

All three of these forms are needed well in advance of your (applicant's) anticipated closing date, as they must be reviewed and approved by TWDB staff before the closing is initiated. Confirm all forms are accurately completed, the required support documentation has been attached, and dated signatures from the appropriate authorized representatives are included.

If you are completing these steps for the **release funds for the planning, acquisition, and/or design phases**:

Prime(s): In addition to having the above referenced forms completed, you will need to complete and submit additional forms if you have selected subcontractors. Forms [TWDB-0216](#) and [TWDB-0373](#) should be completed and submitted to the Entity awarding you a contract. These forms document the methods of solicitation used, who was directly solicited and/or made a bid, and who was ultimately awarded a contract. All of these forms are needed in advance of the desired date for release of funds, as they **must** be reviewed and approved by TWDB staff before the release is initiated. Confirm that all forms are accurately completed, the required support documentation has been attached, and dated signatures from the appropriate authorized representatives are included.

If you are completing these steps for a **construction contract(s)**:

Applicant: Forms [TWDB-0216](#) and [TWDB-0373](#) are required showing your selection process for a Prime Contractor(s).

Prime(s): Form [TWDB-0217](#) **must** be completed acknowledging that you understand the DBE program requirements. If subcontractors are utilized, complete forms [TWDB-0216](#) and [TWDB-0373](#) showing your selection process.

These forms are needed in advance of the desired date for release of funds, as they **must** be reviewed and approved by TWDB staff before the release is initiated. Confirm that all forms are accurately completed, the required support documentation has been attached, and dated signatures from the appropriate authorized representatives are included.

Note: In the event you change any of your subcontractors, for any reason, you must follow the DBE process when re-procuring. This will require you to re-submit a new TWDB-0373 reflecting actual contract dollar amounts and any supporting certification documentation.

In the event you run out of space on any of the TWDB forms, you can use your own additional spreadsheet or word document and attach.

STEP 7. SUMMARIZING THE PROCESS

The following is a summary of the necessary steps to complete in order to receive a notice of compliance with the DBE program requirements.

- Applicant: Publish, post, contact, and/or distribute advertisements soliciting for a Prime Consultant(s)/Contractor(s) for the proposed project. It is recommended that this occur at least 30-days prior to the close of accepting bids. The solicitation advertisement should contain the TWDB's recommended solicitation statement.
- Applicant: If applicable, create and retain a copy of a Bidders List (refer to Step 5).
- Primes: Complete and submit the Prime Consultant/Contractor Certification form (TWDB-0217) to the Entity awarding you a contract. If instructed to do so by the Entity, also submit the completed form to the TWDB Review Engineer. If sent electronically, copy DBE@twdb.texas.gov.
- Primes: If subcontracting, publish, post, contact, and/or distribute advertisements soliciting subcontractor(s) for the proposed project. It is recommended that this occur at least 30-days prior to the close of accepting bids. The solicitation advertisement should contain the TWDB's recommended solicitation statement.
- All: Save all copies, correspondence, etc. documenting the solicitation(s).
- All: Based upon the stage of the project, complete all necessary forms associated with the solicitation and award of the contract(s) for Prime Consultant(s)/Contractor(s) or subcontractor(s) (refer to Step 6 for the required forms).
- All: Compile all necessary forms from your selected Prime Consultant(s)/Contractor(s) or subcontractor, based upon the stage of the project. Ensure accuracy and completeness of the forms. Coordinate with the submitter should there be any errors.
- All: Submit all required documentation to the TWDB Project Reviewer / Engineer assigned to the project. If submitting electronically, copy DBE@twdb.texas.gov with the submission.

STEP 8. CHANGES TO SELECTED CONSULTANTS OR CONTRACTORS

In the event there is a change of Consultant(s)/Contractor(s) or any subcontractor(s), you **must** follow the DBE process when re-procuring.

APPLICANT'S REVIEW OF PRIME CONSULTANT'S/CONTRACTOR'S PROCUREMENTS

Before submitting any DBE documentation to the TWDB for an official review, look over the DBE documentation from your Prime Consultants/Contractors to confirm the documents are in order and the procurements are in compliance.

As a recipient of financial assistance, it is important to remember you are responsible for the Prime Consultant's/Contractor's soliciting of DBE businesses (DBE includes both MBEs and WBEs) for any procurements needed to complete your proposed project. This includes all construction, services, supplies and/or equipment.

If you encounter any errors, most can be corrected for compliance after the bid opening date as long as no awards have been made.

If you are unsure of any information presented to you during the review of the Prime Consultant(s)/Contractor(s) efforts, please contact the TWDB's DBE Coordinator for further instruction or recommendation at (512) 463-0991 or at DBE@twdb.texas.gov.

Included in these instructions are steps to successfully perform your review of your Prime Consultant(s)/Contractor(s) DBE documentation for this project. Please read them carefully. The term Prime(s) refers to both Consultants and Contractors. The terms recipient of financial assistance, applicant, or entity may be used interchangeably.

STEP 1. REVIEW ANY DRAFT SOLICITATIONS

Prior to the Prime Consultant(s)/Contractor(s) making any solicitations for subcontractor opportunities, you should review the draft solicitation to ensure that the TWDB's recommended solicitation statement, or the statement with the required solicitation components (see p. 8) is included. For reference, the following should appear in all solicitations:

This contract is subject to the Environmental Protection Agency's (EPA) Disadvantaged Business Enterprise (DBE) Program, which includes EPA-approved fair share goals toward procurement of Minority and Women-owned Business Enterprise (M/WBE) businesses. EPA rules require that applicants and prime contractors make a good faith effort to award a fair share of contracts, subcontracts, and procurements to M/WBEs through demonstration of the six affirmative steps. For more details of the DBE Program and the current, applicable fair share goals, please visit www.twdb.texas.gov/dbe.

If this or another form of acceptable language is not included, procurements made through the solicitation may not be compliant with the EPA's DBE Program.

STEP 2. ENSURE THAT ALL DOCUMENTATION HAS BEEN PROVIDED BY THE PRIME(S)

The Prime Consultant(s)/Contractor(s) should provide you, the Applicant:

- [TWDB-06217](#) This form acknowledges that the Prime Consultant/Contractor understands that they **must** follow the DBE program when soliciting for subcontractors.
- [TWDB-0216](#) If subcontractors are utilized, this form should be submitted. The form indicates all businesses solicited for procurement, their contact information, and their MBE/WBE status. The Prime Consultant/Contractor **must** include support documentation demonstrating they have met the Six Good Faith Efforts and followed the correct steps for their selected method(s) of solicitation.
- [TWDB-0373](#) If subcontractors are utilized, this form should be submitted. The form identifies the businesses awarded a procurement contract, their contact information, their MBE/WBE status, an actual or anticipated executed contract date, and contract amount. If any MBE/WBE businesses are contracted, the Prime Consultant/Contractor should include the DBE certification along with the form as support documentation. You **must** review the certification to ensure that the certification comes from an agency acceptable to the EPA. A list of acceptable DBE certification agencies may be found at www.twdb.texas.gov/dbe. *Note: Any businesses operating as brokers may not be listed on the TWDB-0373 as an MBE or WBE.*³

STEP 3. REVIEW THE SUPPORTING SOLICITATION DOCUMENTATION

The DBE solicitation should specifically describe the construction work, supplies, equipment, or services that are being solicited, and include the following required DBE language:

This contract is subject to the Environmental Protection Agency's (EPA) Disadvantaged Business Enterprise (DBE) Program, which includes EPA-approved fair share goals toward procurement of Minority and Women-owned Business Enterprise (M/WBE) businesses. EPA rules require that applicants and prime contractors make a good faith effort to award a fair share of contracts, subcontracts, and procurements to M/WBEs through demonstration of the six affirmative steps. For more details of the DBE Program and the current, applicable fair share goals, please visit www.twdb.texas.gov/dbe.

Similar to the solicitation you performed for your Prime Consultant(s)/Contractor(s), the TWDB recommends solicitations for subcontractors be published at least 30 days prior to the bid closing date to allow sufficient time for potential subcontractors to submit bids and proposals. You should ensure that a copy of the actual solicitation found within/on the publication or web page is kept with their and your project files. This information will be needed for submission to the TWDB for official review of DBE compliance.

If the Prime Consultant(s)/Contractor(s) is advertising through a newspaper, it is important to ensure that they have retained a publisher's affidavit showing the dates of the posting(s) and the content of the advertisement. You should also ensure that this support information is saved with their and your project files, as the information will be needed for submission to the TWDB for official review. Be mindful of your applicable local and state procurement laws as they relate to your Prime Consultant's/Contractor's solicitation of subcontractors.

³A broker is a business that does not perform, manage, or supervise the work of its sub/contract in a manner consistent with the normal business practices for sub/contractors in its line of business.

STEP 3A. REVIEW PHONE LOGS, FAX TRANSMITTAL LOGS, EMAIL DELIVERY RECIEPTS, MEETING SIGN-IN SHEET, MINORITY MEDIA POSTING, INTERNET & WEB POSTINGS, TRADE ASSOCIATION PUBLICATIONS AND OTHER GOVERNMENT PUBLICATIONS

If the Prime Consultant(s)/Contractor(s) chose one of the solicitation methods mentioned above, they are **required** to provide support documentation showing that the TWDB's required solicitation statement was included or mentioned. Review all support documentation to ensure that this requirement was met.

STEP 4. CLOSE COORDINATION

It is important for you and your Prime Consultant(s)/Contractor(s) to coordinate closely during all phases of your project to ensure that all DBE requirements have been met. Failure to do so may result in project delays or the inability to make use of State Revolving Fund program funds.

STEP 5. NOW THAT YOU HAVE COMPLETED YOUR REVIEW

Once you have completed your review of the Prime Consultant's/Contractor's solicitation efforts and have determined that they are in compliance, you should keep all documentation on file in the event it is requested for review by the TWDB or the U.S. Environmental Protection Agency. All of the Prime Consultant's/Contractor's DBE solicitation documentation should be included in the DBE compliance package submitted to TWDB.

CONTRACT ADMINISTRATION REQUIREMENTS

Each procurement contract signed by a recipient of financial assistance must include the following term and conditions:

The contractor shall not discriminate on the basis of race, color, national origin or sex in the performance of this contract. The contractor shall carry out applicable requirements of 40 CFR Part 33 in the award and administration of contracts awarded under EPA financial assistance agreements. Failure by the contractor to carry out these requirements is a material breach of this contract which may result in the termination of this contract or other legally available remedies.

Additionally, the following U.S. EPA DBE regulations apply:

- A recipient **must** require its Prime Contractor to pay its subcontractor for satisfactory performance no more than 30 days from the Prime Contractor's receipt of payment from the recipient.
- A recipient **must** be notified in writing by its Prime Contractor prior to any termination of a DBE subcontractor for convenience by the Prime Contractor.
- If a DBE subcontractor fails to complete work under the subcontract for any reason, the recipient must require the Prime Contractor to employ the Six Good Faith Efforts described in 40 CFR § 33.301 if soliciting a replacement subcontractor.
- A recipient **must** require its Prime Contractor to employ the Six Good Faith Efforts even if the Prime Contractor has achieved its fair share objectives.

DBE PROGRAM LINKS

TWDB DBE Program Webpage: www.twdb.texas.gov/dbe

DBE Rules (40 CFR Parts 33, 35, and 40): www.epa.gov/sites/production/files/2013-09/documents/final_dbe_rule.pdf

MBE/WBE Certification Fact Sheet: www.epa.gov/sites/production/files/2013-09/documents/mbe_wbe_certification.pdf

APPENDIX A. GLOSSARY

- **Applicant** – a public or private utility seeking funding from the Clean Water State Revolving Fund (i.e., Equivalency funding only) or the Drinking Water State Revolving Fund.
- **Broker** – a business that does not perform, manage, or supervise the work of its contract or subcontract in a manner consistent with the normal business practices for contractors or subcontractors in its line of business.
- **Construction** – the erection, alteration, or repair (including dredging, excavating, and painting) of buildings, structures, or other improvements to real property, and activities in response to a release or a threat of release of a hazardous substance into the environment, or activities to prevent the introduction of a hazardous substance into a water supply.
- **Disadvantaged Business Enterprises (DBE)** – an entity owned or controlled by a socially and economically disadvantaged individual as described by Public Law 102-389 (42 U.S.C. §4370d) or an entity owned and controlled by a socially and economically disadvantaged individual as described by Title X of the Clean Air Act Amendments of 1990 (42 U.S.C. §7601 note); a Small Business Enterprise (SBE); a Small Business in a Rural Area (SBRA); or a Labor Surplus Area Firm (LSAF), a Historically Underutilized Business (HUB) Zone Small Business Concern, or a concern under a successor program. This term includes Minority Business Enterprises (MBE) and Women-owned Business Enterprises (WBE).
- **Entity** – See “Applicant”.
- **Equipment** – items procured under a financial assistance agreement as defined by applicable regulations for the particular type of financial assistance received.
- **Equivalency funding** – a term used to categorize projects within the Clean Water State Revolving Fund program identified by the TWDB whose cumulative funding is in an amount equal to the capitalization grant awarded by EPA to the TWDB.
- **Fair Share Goals / Objectives** – are goals based upon the capacity and availability of qualified, certified MBEs and WBEs within the state for the procurement categories of construction, equipment, services, and supplies, compared to the number of all qualified entities within the state for the same procurement categories. The goals are negotiated every three years between the TWDB and EPA. A fair share objective is not a quota; a recipient cannot be penalized for not meeting its fair share objectives; and, once negotiated, fair share objectives remain in place for three years.
- **Fair Share Policy** – a policy maintained by the EPA relating to the “Good Faith Effort” to award a fair share of the work to contractors who are certified as Minority Business Enterprises (MBEs) and Women-owned Business Enterprises (WBEs) whenever procuring construction, supplies, services and equipment. The TWDB’s current negotiated fair share goals are available on page 2. Recipients are not required to meet the fair share goals; however, the EPA may take remedial action under 40 CFR §33.105 for failure to comply with DBE program requirements.
- **Financial Assistance Agreement** – a binding legal agreement between the recipients of financial assistance and the TWDB outlining the terms and conditions for the funding provided and the recipient’s obligations.

- **Force Account** – the part of the expense account of a public body (as a municipality) resulting from the employment of a labor force usually distinguished from the part resulting from contracting similar services with commercial agencies
- **Historically Underutilized Business (HUB)** – a small business organization that appears on the List of Qualified HUBZone Small Business Concerns maintained by the Small Business Administration.
- **Minority Business Enterprises (MBE)** – a Disadvantaged Business Enterprise (DBE) owned and/or controlled by a socially and economically disadvantaged individual other than a Small Business Enterprise (SBE), Labor Surplus Area Firm (LSAF), Small Business in Rural Areas (SBRA), or Women-owned Business Enterprise (WBE).
- **Prime Consultant** – consultants awarded a contract by the recipient of financial assistance, typically during the initial phases of a project; primarily the project’s consulting Engineer, Financial Advisor, and Bond/Legal Counsel.
- **Prime Contractor** – contractors awarded a contract by the recipient of financial assistance, typically during the construction phase of a project.
- **Procurement** – the act of obtaining construction work, equipment, services, or supplies.
- **Recipient** – See “Applicant”.
- **Services** – a contractor’s labor, time or efforts provided in a manner consistent with normal business practices which do not involve the delivery of a specific end item, other than documents (e.g., reports, design drawings, specifications).
- **Six Affirmative Steps** – also referred to as the Six Good Faith Efforts, are the steps every recipient of financial assistance through the State Revolving Fund must follow, along with their Prime Consultant(s)/Contractor(s), in order to adequately offer the opportunity to make bids for work paid using these funds.
- **Six Good Faith Efforts** – See “Six Affirmative Steps”.
- **Small Business Enterprises (SBE)** – an organization, including its affiliates, independently owned and operated, not dominant in the field of operation in which it is bidding, and qualified as a small business under the criteria and size standards in 13 CFR Part 121.
- **Subcontractor** – a business awarded a contract by a Prime Consultant/Contractor for specific work, services, supplies, or equipment.
- **Supplies** – items procured under a financial assistance agreement as defined by applicable regulations for the particular type of financial assistance received.
- **Women-owned Business Enterprises (WBE)** – a business which is at least 51% owned or controlled by women for purposes of EPA’s 8% statute or a business concern which is at least 51% owned and controlled by women for purposes of EPA’s 10% statute. Determination of ownership by a married woman in a community property jurisdiction will not be affected by her husband’s 50% interest in her share. Similarly, a business which is more than 50% owned by a married man will not become a qualified WBE by virtue of his wife’s 50% interest in his share.

APPENDIX B. EXAMPLE ADVERTISEMENTS (REQUEST FOR QUALIFICATIONS)

ADVERTISEMENT / INVITATION FOR BIDS REQUEST FOR SEALED PROPOSALS

The City of ____ will receive bids for the Lift Station and Sanitary Sewer Rehabilitation Project at ____ City Hall until 3:00 p.m., on the ____ day of ____, 2011, at the City ____ City Hall located on 123 Example St., ____, Texas 78516, at which time all bids will be received and publicly opened and read. Bids received after the closing time will be returned unopened. NO PRE-BID CONFERENCE WILL BE CONDUCTED.

This contract is subject to the Environmental Protection Agency's (EPA) Disadvantaged Business Enterprise (DBE) Program, which includes EPA-approved fair share goals toward procurement of Minority and Women-owned Business Enterprise (M/WBE) businesses. EPA rules require that applicants and prime contractors make a good faith effort to award a fair share of contracts, subcontracts, and procurements to M/WBEs through demonstration of the six affirmative steps. For more details on the DBE Program and the current, applicable fair share goals, please visit www.twdb.texas.gov/dbe.

This contract is to be funded through a loan obtained from the Texas Water Development Board as part of the Clean Water State Revolving Fund. There are a number of special provisions for this funding that bidders, by submitting a bid, acknowledge understanding, including the following: A contract is contingent upon release of funds from the TWDB. Any contract or contracts awarded under this Notice to Bidders are expected to be funded in part by financial assistance from the TWDB. Neither the State of Texas nor any of its departments, agencies, or employees are or will be a party to this Invitation for Bids or any resulting contract.

Equal Opportunity in Employment - All qualified applicants will receive consideration for employment without regard to race, color, national origin, sex, religion, age, or handicap. The contractor shall carry out applicable requirements of 40 CFR Part 33 in the award and administration of contracts awarded under TWDB financial assistance agreements. Failure by the contractor to carry out these requirements is a material breach, which may result in the termination of the awarded financial assistance.

The project will consist of the following:

The City of ____ intends to replace/install/upgrade electrical controls and minor rehab for eight (8) lift stations remove and replace approx. 616 linear feet of 8" sanitary sewer line, remove and replace approx. 1,758 linear feet of 12" clay sanitary sewer line with a 15" PVC sanitary sewer line, remove and replace ten (10) 48" brick manholes with 48" fiberglass manholes.

Contract Documents, including Drawings and Technical Specifications are on file at the City of ____ City Hall or at the office of ____, at ____, _____. Please direct questions to _____.

Copies of the Contract Documents and Construction Plans can be examined at _____. Bidders, suppliers or sub-contractors may obtain copies of the Contract Documents for bidding purposes at ____ for a non-refundable payment of \$100.00 per set, checks made payable to _____. A Certified check or bank draft, payable to the order of City of _____ or negotiable U.S. Government Bonds (at par value) or a satisfactory Bid Bond executed by the Bidder of an acceptable surety in an amount equal to five percent (5%) of the total bid shall be submitted with each bid.

The City of _____ reserves the right to reject any or all bids or to waive any informality in the bidding. Bids may be held by the City of _____ for a period not to exceed sixty (60) days from the date of the bid opening for the purpose of reviewing the bids and investigating the bidders' qualifications prior to the contract award.

Small and minority firms are encouraged to submit bids for this project.

ENGINEER, BOND COUNSEL, and FINANCIAL ADVISOR - REQUEST FOR QUALIFICATIONS

The City of _____ requests the submission of qualifications statements, which will lead to the possible award of a contract to provide _____ services for a project involving the City's Water Treatment Facilities.

Scope of Work

The services to be obtained for the **Engineer** require: _____

The services to be obtained for the **Bond Counsel** require: _____

The services to be obtained for the **Financial Advisor** require: _____

Guidelines for Content of Qualification Statements

DO NOT INCLUDE COST INFORMATION with the qualification statement. Responses that include cost or pricing information will be rejected and will not be considered by the City.

Detailed instructions on preparation of the qualification statement must be obtained from the City. For more information on preparing and submitting the qualification statement, contact _____, City Administrator, at _____. This information should be requested as soon as possible in order to allow time to prepare the document and comply with the procedures.

Submittal Deadline

Three copies of the qualifications statement must be filed with the City by: _____.

Minimum Qualifications and Selection Criteria

The City will evaluate the proposals to determine which firm has the best qualifications.

Contract Terms and Negotiation Schedule

The consultant for *Bond Counsel, Financial Advisor, Engineering and Rate Consultant* services is expected to negotiate an agreement for services that is acceptable to the City. If an acceptable contract cannot be negotiated, the City may formally end negotiations and begin negotiating with the next highest qualified person or firm.

This contract is contingent upon release of funds from the Texas Water Development Board (TWDB). Any contract or contracts awarded under this Invitation for Bid (IFB) or Request for Qualifications (RFQ) are expected to be funded in part by a loan from the TWDB. Neither the State of Texas nor any of its departments, agencies, or employees are or will be a party to this IFB, RFQ, or any resulting contract. RFQ's are issued in accordance with Section 2254 of the Texas Government Code (Professional Services Act).

This contract is subject to the Environmental Protection Agency's (EPA) Disadvantaged Business Enterprise (DBE) Program, which includes EPA-approved fair share goals toward procurement of Minority and Women-owned Business Enterprise (M/WBE) firms. EPA rules require that applicants and prime contractors make a good faith effort to award a fair share of contracts, subcontracts, and procurements to M/WBEs through demonstration of the six affirmative steps. For more details of the DBE Program and the current, applicable fair share goals, please visit www.twdb.texas.gov/dbe.

The City of _____ is an affirmative action/equal opportunity employer. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age, handicap or national origin. Small, minority, and women-owned business enterprises are encouraged to submit proposals.

APPENDIX C. HOW TO SEARCH THE CMBL AND HUB DIRECTORY

Visit the [Texas Procurement and Support Services \(TPASS\)](https://mycpa.cpa.state.tx.us/tpasscmbsearch/index.jsp) website at <https://mycpa.cpa.state.tx.us/tpasscmbsearch/index.jsp>.

The screenshot shows a web browser window with the URL <http://www.cpa.state.tx.us/procurement/cmb/cmbhub.html>. The page title is "Window on State Government". The main heading is "Centralized Master Bidders List (CMBL) & Historically Underutilized Business (HUB) Search".

Search:

- ☒ CMBL only, ☐ HUBs on CMBL, ☐ HUBs not on CMBL
- ☐ HUB Mentor Protege, ☐ All Vendors

Vendor ID: ?

Vendor Number: ?

Vendor Name: begins with Name ?

Include Inactive Vendors: ☐ ? **Small Businesses Only:** ☐ Yes, ☒ No

Selection 1: Class Code: Item: District:

Selection 2: Class Code: Item: District:

Selection 3: Class Code: Item: District: ?

[Class Code](#) | [Item Code](#) | [District](#)

Texas County:

City: begins with

Zip: begins with

Sort by: Vendor Name

Output as: Detail List

Results: return all matches

Output may contain coded information in [Hub Status](#) and [Reason Off CMBL](#)

Related Links

- [CMBL Registration](#)
- [HUB Directory](#)
- [HUB Mentor Protege Agreement](#)
- [Listing System for Award Management \(EPLS\)](#)
- [Debarred Vendors List](#)

NIGP Class-Item Codes contain 5-digits. To obtain the five-digit code, combine the three-digit class code with its corresponding two-digit item number.

Step 1: Go to the TPASS website.

Step 2: Select the type of business search: CMBL only, HUBs on CMBL, HUBs not on CMBL, HUB mentor protégé, or all vendors.

Step 3: Enter the respective commodity class, item and district codes (please see next page for related water and wastewater commodities) and click on Search.

Step 4: On the following page, select the information you would like to obtain from the database: contact information, address, business description, gender, ethnicity, and website.

Step 5: Search Results will appear with the requested information.

Step 6: Click on the Vendor ID or business name to pull up detailed vendor information to confirm HUB status (A = Active, N = Not HUB), contact information, and registered commodities.

Step 7: Gather physical or email contact information from the search results list.

Example National Institute of Government Purchasing (NIGP) Commodity Codes

Class	Item(s)	Description
890 (Water Supply, Groundwater, Sewage Treatment, and Related Equipment)	01 - 95	Equipment (various)
907 (Architectural and Engineering Services – Non-Professional)	42	Geotechnical – Soils
907 (Architectural and Engineering Services – Non-Professional)	75	Site Assessment and Site Field Observation
907 (Architectural and Engineering Services – Non-Professional)	83	Testing Services
912 (Construction Services, General)	16	Boring, Drilling, Testing, Soundings
912 (Construction Services, General)	23	Construction, General (Backfill Services, Digging, Ditching, Road Grading, Rock Stabilization)
912 (Construction Services, General)	40	Demolition Services
912 (Construction Services, General)	44	Excavation Services
912 (Construction Services, General)	75	Quality Control Testing Services
913 (Construction Services, Heavy – Including Maintenance and Repairs)	39	Construction, Pipe Culvert
913 (Construction Services, Heavy – Including Maintenance and Repairs)	40	Construction, Pipeline
913 (Construction Services, Heavy – Including Maintenance and Repairs)	45	Construction, Sewer and Storm Drain
913 (Construction Services, Heavy – Including Maintenance and Repairs)	47	Construction, Sidewalk and Driveway
913 (Construction Services, Heavy – Including Maintenance and Repairs)	56	Construction, Utility/Underground Projects
913 (Construction Services, Heavy – Including Maintenance and Repairs)	59	Construction and Upgrades, Wastewater Treatment Plant
913 (Construction Services, Heavy – Including Maintenance and Repairs)	60	Construction, Water System/Plants, Main and Service Line
913 (Construction Services, Heavy – Including Maintenance and Repairs)	63	Lime Slurry Removal Services
913 (Construction Services, Heavy – Including Maintenance and Repairs)	77	Maintenance and Repair, Pipe Culvert
913 (Construction Services, Heavy – Including Maintenance and Repairs)	78	Maintenance and Repair, Pipeline (Includes Removal and Relocation)
913 (Construction Services, Heavy – Including Maintenance and Repairs)	81	Maintenance and Repair, Sewer and Storm Drain (Including Removal)
913 (Construction Services, Heavy – Including Maintenance and Repairs)	82	Maintenance and Repair, Sidewalk and Driveway (Including Removal)
913 (Construction Services, Heavy – Including Maintenance and Repairs)	89	Maintenance and Repair, Utility/Underground Projects
913 (Construction Services, Heavy – Including Maintenance and Repairs)	91	Maintenance and Repair, Wastewater Treatment Plant
913 (Construction Services, Heavy – Including Maintenance and Repairs)	92	Maintenance and Repair, Water System, Main and Service Line
914 (Construction Services, Trade (New Construction))	27 -88	Construction Trades (various)
918 (Consulting Services)	16	Archeological Consulting
918 (Consulting Services)	41	Energy Conservation Consulting

Class	Item(s)	Description
918 (Consulting Services)	42	Engineering Consulting
918 (Consulting Services)	43	Environmental Consulting
918 (Consulting Services)	46	Feasibility Studies (Consulting)
918 (Consulting Services)	55	Geological Consulting and Study
918 (Consulting Services)	72	Lakes, Rivers, and Other Waterway Management Consulting Services
918 (Consulting Services)	74	Legal Consulting
918 (Consulting Services)	97	Utilities: Gas, Water, Electric Consulting
925 (Engineering Services, Professional)	17	Civil Engineering
925 (Engineering Services, Professional)	24	Desalination (Process and Facilities) Engineering
925 (Engineering Services, Professional)	28	Drainage Engineering
925 (Engineering Services, Professional)	33	Engineer Services, Professional
925 (Engineering Services, Professional)	34	Energy Management Engineering
925 (Engineering Services, Professional)	35	Environmental Engineering
925 (Engineering Services, Professional)	36	Engineering Services (Not Otherwise Classified)
925 (Engineering Services, Professional)	37	Facilities Design Services, Engineering
925 (Engineering Services, Professional)	44	General Construction: Management, Scheduling, Cost Estimation – Engineering
925 (Engineering Services, Professional)	45	Geological Engineering
925 (Engineering Services, Professional)	46	Geotechnical Engineering
925 (Engineering Services, Professional)	58	Irrigation; Drainage: Flood Control/Engineering
925 (Engineering Services, Professional)	61	Land Development and Planning/Engineering
925 (Engineering Services, Professional)	70	Municipal Engineering
925 (Engineering Services, Professional)	77	Pollution Control Engineering
925 (Engineering Services, Professional)	78	Power Generation, Transmission, Distribution - Engineering
925 (Engineering Services, Professional)	83	Sanitary Engineering
925 (Engineering Services, Professional)	87	Sewage Collection, Treatment, and Disposal Engineering
925 (Engineering Services, Professional)	96	Waste Water Treatment Engineering
925 (Engineering Services, Professional)	97	Water Supply, Treatment, and Distribution/Engineering
926 (Environmental and Ecological Services)	14	Air Pollution Control Services (Including Data Collection Research and Development, etc.)
926 (Environmental and Ecological Services)	23	Auditing Services, Environment
926 (Environmental and Ecological Services)	29	Contaminated Groundwater Services (Including Discharge Pipe Installation)
926 (Environmental and Ecological Services)	40	Ecological Services
926 (Environmental and Ecological Services)	41	Ecosystem Development, Management and Protection Services
926 (Environmental and Ecological Services)	42	Environmental Services (Not Otherwise Classified)
926 (Environmental and Ecological Services)	52	Impact Studies, Environmental
926 (Environmental and Ecological Services)	62	Noise Testing Services
926 (Environmental and Ecological Services)	70	Permitting Services, Environmental
926 (Environmental and Ecological Services)	72	Planning and Advisory Services, Environmental
926 (Environmental and Ecological Services)	83	Site Assessment, Environmental
926 (Environmental and Ecological Services)	85	Soil, Soil Vapor, and Groundwater Sampling and Analysis (Including Disposal)
926 (Environmental and Ecological Services)	88	Storm Water Discharge Testing Services
926 (Environmental and Ecological Services)	90	Subsurface Testing, Environmental

Class	Item(s)	Description
926 (Environmental and Ecological Services)	91	Tank Testing and Disposal Services, Storage (Including Underground Types)
926 (Environmental and Ecological Services)	94	Water Pollution Services
926 (Environmental and Ecological Services)	95	Water/Wastewater Conservation Services
926 (Environmental and Ecological Services)	96	Wetland Delineations (Including Assessments)
946 (Financial Services)	25	Banking Services
946 (Financial Services)	30	Cash/Securities and Bonding Services
946 (Financial Services)	38	Custom Brokerage Services (Including Stocks and Bonds)
946 (Financial Services)	48	Financial Advisor
946 (Financial Services)	49	Financial Services (Not Otherwise Classified)
946 (Financial Services)	56	Investment Management Services
946 (Financial Services)	60	Loan Administration
946 (Financial Services)	66	Monetary Systems (Including Analysis, Liquidity, Policy, etc.)
946 (Financial Services)	75	Securities and Commodities Market Services (Including Direct or Indirect Purchases, Sales and Transactions of Equities, Fixed Income, Options, and Derivatives on an Agency and Principal Basis)
946 (Financial Services)	85	Trusts, Estates and Agency Accounts
958 (Management Services)	05	Asset Management Services
958 (Management Services)	12	Bio-Solids Management Services
958 (Management Services)	26	Construction Management Services
958 (Management Services)	39	Financial Management Services
958 (Management Services)	77	Project Management Services
958 (Management Services)	85	Soil and Land Management Services (Including Testing, Protection, Preparation, Planning, etc.)
961 (Miscellaneous Services, No 1. (Not Otherwise Classified))	01	Archeological Services
961 (Miscellaneous Services, No 1. (Not Otherwise Classified))	32	Environmental Impact Studies
961 (Miscellaneous Services, No 1. (Not Otherwise Classified))	49	Legal Services, Attorney
961 (Miscellaneous Services, No 1. (Not Otherwise Classified))	85	Utility Services, Water
961 (Miscellaneous Services, No 1. (Not Otherwise Classified))	91	Water and Petroleum Pipeline Services
962 (Miscellaneous Services, No 2. (Not Otherwise Classified))	14	Blue Printing Services: Blue Prints, Blue Line, Large Engineering
962 (Miscellaneous Services, No 2. (Not Otherwise Classified))	39	Hauling Services
962 (Miscellaneous Services, No 2. (Not Otherwise Classified))	50	Leak Detection Services: Gas, Water, Chemical
962 (Miscellaneous Services, No 2. (Not Otherwise Classified))	52	Mapping Services (Including Cartography and Surveying Services (Not Aerial – See 902-33 and 905-10 for Aerial Mapping and Surveying Services)
962 (Miscellaneous Services, No 2. (Not Otherwise Classified))	92	Video Scanning of Sewers, Water Wells, etc.
962 (Miscellaneous Services, No 2. (Not Otherwise Classified))	94	Water Services, Bottled and Bulk Delivery (Tanker Services)

Class	Item(s)	Description
962 (Miscellaneous Services, No 2. (Not Otherwise Classified))	96	Well Services (Including Oil, Gas, and Water): Drilling, Plugging, Consulting, Maintenance and Repair
968 (Public Works and Related Services)	18	Back Flow Preventer Testing Services
968 (Public Works and Related Services)	47	Inspection Services, Construction Type
968 (Public Works and Related Services)	63	Relocation and/or Removal Services for Utility Works
968 (Public Works and Related Services)	66	Right of Way Services (Including Title, Appraisal, Negotiation, Closing, Relocation, Condemnation, etc.)
968 (Public Works and Related Services)	73	Storm Drain Cleaning, Repair, and Sludge Removal Services
968 (Public Works and Related Services)	78	Tank Installation, Removal, Disposal, and Related Services (Including Septic and Underground Type)
968 (Public Works and Related Services)	91	Water Supply Analysis, Infrastructure Analysis, Water Quality Analysis, and Long-Term Planning
968 (Public Works and Related Services)	92	Water Supply Plant Operating and Monitoring System Services (Including Water Resources Development and Water Quality Management Services)
968 (Public Works and Related Services)	96	Water and Wastewater Treatment Services

APPENDIX D. EXAMPLES OF DIRECT SOLICITATIONS

Example Call/Fax Log

For facsimiles, a copy of one of the faxed information should be provided with the completed TWDB-0216 form submission.

DBE Call Log		DBE Call Log	
City of Yaleville Water Treatment Plant Project		City of Yaleville Water Treatment Plant Project	
DWSRF		DWSRF	
Date: <u>10/15/16</u>	Date: _____	Date: _____	Date: _____
Contact: <u>Carl Sagan, Manager</u>	Contact: _____	Contact: _____	Contact: _____
Company: <u>Goldberg Instruments LLC</u>	Company: _____	Company: _____	Company: _____
Phone No.: <u>313.555.7199</u>	Phone No.: _____	Phone No.: _____	Phone No.: _____
Certification: <u>Not a MBE/WBE</u>	Certification: _____	Certification: _____	Certification: _____
Comments: <u>Requested a quote on lab equipment for water quality testing. Emailed the ad used in The Yaleville Herald classifieds.</u>	Comments: _____	Comments: _____	Comments: _____
Date: <u>10/15/16</u>	Date: _____	Date: _____	Date: _____
Contact: <u>Neil deGrasse Tyson, owner</u>	Contact: _____	Contact: _____	Contact: _____
Company: <u>N.E.G. Instruments, LLC</u>	Company: _____	Company: _____	Company: _____
Phone No.: <u>313.555.1000</u>	Phone No.: _____	Phone No.: _____	Phone No.: _____
Certification: <u>MBE, Certified by City of Austin</u>	Certification: _____	Certification: _____	Certification: _____
Comments: <u>Requested a quote on lab equipment for water quality testing. Emailed the ad from The Yaleville Herald classifieds.</u>	Comments: _____	Comments: _____	Comments: _____
Date: <u>10/16/16</u>	Date: _____	Date: _____	Date: _____
Contact: <u>Michio Kaku, President</u>	Contact: _____	Contact: _____	Contact: _____
Company: <u>Bottom Page Instrument Company</u>	Company: _____	Company: _____	Company: _____
Phone No.: <u>313.557.4322</u>	Phone No.: _____	Phone No.: _____	Phone No.: _____
Certification: <u>MBE, Certified by Texas D.O.T.</u>	Certification: _____	Certification: _____	Certification: _____
Comments: <u>Requested a quote on lab equipment for water quality testing.</u>	Comments: _____	Comments: _____	Comments: _____
Date: _____	Date: _____	Date: _____	Date: _____
Contact: _____	Contact: _____	Contact: _____	Contact: _____
Company: _____	Company: _____	Company: _____	Company: _____
Phone No.: _____	Phone No.: _____	Phone No.: _____	Phone No.: _____
Certification: _____	Certification: _____	Certification: _____	Certification: _____
Comments: _____	Comments: _____	Comments: _____	Comments: _____
Date: _____	Date: _____	Date: _____	Date: _____
Contact: _____	Contact: _____	Contact: _____	Contact: _____
Company: _____	Company: _____	Company: _____	Company: _____
Phone No.: _____	Phone No.: _____	Phone No.: _____	Phone No.: _____
Certification: _____	Certification: _____	Certification: _____	Certification: _____
Comments: _____	Comments: _____	Comments: _____	Comments: _____

Example Email

From: Felix Stanton
Sent: Monday, November 28, 2016 4:32 PM
To: Rose Mendoza (rmendoza@shiplap.com)
Subject: Yaleville WTP RFT

Importance: High

Attachments: Yaleville WTP Project RFT

Ms. Mendoza,

The City of Yaleville is seeking a response to this Request for Tender (RFT) for lab equipment for water quality testing.

Example US Mail

Along with the Certified mail receipts (shown below), a copy of one of the mailed letters should be provided with the completed TWDB-0216 form submission.

U.S. Postal ServiceTM
CERTIFIED MAILTM RECEIPT
 (Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at www.usps.com

COLLEYVILLE TX 76034

OFFICIAL USE

Postage	\$ \$0.45	0086
Certified Fee	\$2.95	15
Return Receipt Fee (Endorsement Required)	\$0.00	Postmark Here
Restricted Delivery Fee (Endorsement Required)	\$0.00	
Total Postage & Fees	\$ \$3.40	12/12/2012

Sent to
 Street, Apt. No. or PO Box No.
 City, State, ZIP
 Thompson Terrace
 Colleyville, Texas 76034

PS Form 3800

U.S. Postal ServiceTM
CERTIFIED MAILTM RECEIPT
 (Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at www.usps.com

AUSTIN TX 78757

OFFICIAL USE

Postage	\$ \$0.45	0086
Certified Fee	\$2.95	15
Return Receipt Fee (Endorsement Required)	\$0.00	Postmark Here
Restricted Delivery Fee (Endorsement Required)	\$0.00	
Total Postage & Fees	\$ \$3.40	12/12/2012

Sent to
 Street, Apt. No. or PO Box No.
 City, State, ZIP
 Northcross Drive, Suite 211
 Austin, Texas 78757

PS Form 3800

U.S. Postal ServiceTM
CERTIFIED MAILTM RECEIPT
 (Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at www.usps.com

AUSTIN TX 78739

OFFICIAL USE

Postage	\$ \$0.45	0086
Certified Fee	\$2.95	15
Return Receipt Fee (Endorsement Required)	\$0.00	Postmark Here
Restricted Delivery Fee (Endorsement Required)	\$0.00	
Total Postage & Fees	\$ \$3.40	12/12/2012

Sent to
 Street, Apt. No. or PO Box No.
 City, State, ZIP
 Lost Oasis Hollow
 Austin, Texas 78739

PS Form 3800

U.S. Postal ServiceTM
CERTIFIED MAILTM RECEIPT
 (Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at www.usps.com

DALLAS TX 75219

OFFICIAL USE

Postage	\$ \$0.45	0086
Certified Fee	\$2.95	15
Return Receipt Fee (Endorsement Required)	\$0.00	Postmark Here
Restricted Delivery Fee (Endorsement Required)	\$0.00	
Total Postage & Fees	\$ \$3.40	12/12/2012

Sent to
 Street, Apt. No. or PO Box No.
 City, State, ZIP
 Turtle Creek Boulevard,
 Suite 1151
 Dallas, Texas 75219

PS Form 3800

U.S. Postal ServiceTM
CERTIFIED MAILTM RECEIPT
 (Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at www.usps.com

SUGAR LAND TX 77479

OFFICIAL USE

Postage	\$ \$0.45	0086
Certified Fee	\$2.95	15
Return Receipt Fee (Endorsement Required)	\$0.00	Postmark Here
Restricted Delivery Fee (Endorsement Required)	\$0.00	
Total Postage & Fees	\$ \$3.40	12/12/2012

Sent to
 Street, Apt. No. or PO Box No.
 City, State, ZIP
 Southwest Freeway, Suite 227
 Sugar Land, Texas 77479

PS Form 3800

ATTACHMENT 1 – AFFIRMATIVE STEPS CERTIFICATION AND GOALS (TWDB-0215)

To download this document, view [TWDB-0215 from the TWDB website](#).

FOR OFFICE USE ONLY: Commitment #

TWDB-0215
Revised 08/14/2018

TWDB-0215 APPLICANT/ENTITY TEXAS WATER DEVELOPMENT BOARD AFFIRMATIVE STEPS CERTIFICATION and GOALS

I. PROJECT INFORMATION

TWDB Project Number	Applicant/Entity Name	Total of TWDB Funding Request	Program Type (insert "X" for all that apply)
			<input type="checkbox"/> Drinking Water SRF (DWSRF)
			<input type="checkbox"/> Clean Water SRF (CWSRF)

II. GOOD FAITH EFFORT (Applicable to all PRIME contracts awarded by the applicant/entity)

I understand that it is my responsibility to comply with all state and federal regulations and guidance in the utilization of Minority and Women-Owned Businesses in procurement. I certify that I will make a good faith effort to afford opportunities for Minority Business Enterprise (MBE), and Women-Owned Business Enterprise (WBE) by:

1. Including qualified MBEs and WBEs on procurement solicitation lists
2. Soliciting potential MBE's and WBE's
3. Reducing contract size/quantities when economically feasible to permit maximum participation by MBE's and WBE's
4. Establishing delivery schedules to encourage participation by MBE's and WBE's
5. Using the services and assistance of the Small Business Administration, Minority Business Development Agency, U.S. Department of Commerce, and Texas Marketplace
6. Requiring all Prime Consultants/Contractors to follow steps 1-5 listed above in employing MBE and WBE Subcontractors

Signature - Applicant/Entity Representative	Title (print legibly)	Date

III. PROJECT PARTICIPATION ESTIMATES

The Cost Categories mentioned below are goals. These goals are neither standards nor quotas. Recipients of financial assistance are not required to meet the fair share objectives. They must, however, acknowledge that they are aware of and are actively pursuing the fair share objectives with their procurements.

	Potential MBE Participation	Potential WBE Participation
Cost Category	Goal	Goal
Construction	19.44%	9.17%
Supplies	25.34%	8.82%
Equipment	16.28%	11.45%
Services	20.41%	13.66%

The fair share goals listed above are required by 40 CFR Part 33 Subpart D and are directly negotiated with EPA Region 6. Entities receiving federal financial assistance are subject to the TWDB's goals and may not be substituted with other agency or program goals.

IV. TWDB APPROVAL SIGNATURE

Signature indicates the form meets DBE Requirements.

DBE Coordinator	Approval Date

ATTACHMENT 2 – AFFIRMATIVE STEPS CERTIFICATION AND GOALS (TWDB-0216)

To download this document, view [TWDB-0216 from the TWDB website](#).

Page 1 of 2

FOR OFFICE USE ONLY
Commitment # _____

TWDB-0216
Revised 11/13/2017

TWDB-0216
TEXAS WATER DEVELOPMENT BOARD
AFFIRMATIVE STEPS SOLICITATION REPORT

I. PROJECT INFORMATION

TWDB Project Number	Applicant/Entity Name	Total TWDB Funding Request	Program Type (insert "X" for all that apply)
			<input type="checkbox"/> Drinking Water SRF (DWSRF) <input type="checkbox"/> Clean Water SRF (CWSRF)

Project Name: _____

Solicitation By: ☐ Applicant/Entity OR ☐ Prime Contracted Business: _____

Project Phase: ☐ Prior to Closing ☐ Release of funding for PADs ☐ Construction Contract # _____

II. SOLICITATION METHOD(S) UTILIZED

At least two methods of solicitation are required. Select the method(s) utilized for the solicitation. Copies of the actual postings, direct contact email/phone log, etc. must be attached to this form as support documentation for each method used. Failure to adequately follow these steps will result in the requirement to complete additional steps in order to become compliant.

☐ Newspaper Advertisements

☐ Meetings or Conferences

☐ Trade Association Publications

☐ Minority Media

☐ Internet & Web Postings

☐ Other Government Publications

☐ Direct Contact by Phone, Fax, USPS Mail, or Email*

If using direct contact, entities must solicit to a **minimum of 3 businesses/firms (at least one being a DBE) for each category of contract sought (i.e., construction, supplies, equipment, or services) to demonstrate a Good Faith Effort.*

III. PROJECT BIDDERS LIST:

List on the following table, or provide on a separate list, each business entity directly solicited for procurement or that submitted a bid for consideration.

Instructions for Columns 1 - 4	1 - Full business name (line one) & point of contact (line two) 2 - Business address 3 - Telephone number 4 - Email address for the business
Instructions for Column 5	Enter one of the following procurement or contract categories: CONSTRUCTION – SUPPLIES – EQUIPMENT – SERVICES <i>For detailed definitions, review guidance document, TWDB-0210.</i>
Instructions for Column 6	Enter the type of business: MBE - Minority Business Enterprise, WBE - Women-owned Business Enterprise, or OTHER - Company or firm is Non-MBE or WBE

Notice: Entities receiving State Revolving Fund financial assistance must create and maintain a Bidders List if the entity is subject to, or chooses to follow, competitive bidding. The Bidders List must include all firms that bid or quoted on contracts under EPA assisted projects, including both MBE/WBEs and non-MBE/WBEs. Entities must keep all Bidders Lists until project completion or the recipient is no longer receiving EPA funding under the loan, whichever is later. Entities with loans totaling less than \$250,000 during a state fiscal year are exempt from the Bidders List requirement, but must still meet DBE program requirements. The Bidders List requirement also applies to all Prime Contracted Businesses/Firms that make subcontracting.

ATTACHMENT 3 – AFFIRMATIVE STEPS CERTIFICATION AND GOALS (TWDB-0217)

To download this document, view [TWDB-0217 from the TWDB website](#).

FOR OFFICE USE ONLY: Commitment # <div style="border: 1px solid black; height: 20px; width: 100%;"></div>	TWDB-0217 Revised 08/14/2018										
TWDB-0217 TEXAS WATER DEVELOPMENT BOARD (TWDB) PRIME CONSULTANT/CONTRACTOR CERTIFICATION											
I. PROJECT INFORMATION											
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: center;">TWDB Project Number</th> <th style="text-align: center;">Applicant/Entity Name</th> <th style="text-align: center;">Total of TWDB Funding</th> <th style="text-align: center;">Program Type (insert "X" for all that apply)</th> </tr> <tr> <td style="height: 30px;"></td> <td></td> <td></td> <td> <input type="checkbox"/> Drinking Water SRF (DWSRF) <input type="checkbox"/> Clean Water SRF (CWSRF) </td> </tr> </table>	TWDB Project Number	Applicant/Entity Name	Total of TWDB Funding	Program Type (insert "X" for all that apply)				<input type="checkbox"/> Drinking Water SRF (DWSRF) <input type="checkbox"/> Clean Water SRF (CWSRF)			
TWDB Project Number	Applicant/Entity Name	Total of TWDB Funding	Program Type (insert "X" for all that apply)								
			<input type="checkbox"/> Drinking Water SRF (DWSRF) <input type="checkbox"/> Clean Water SRF (CWSRF)								
Prime Consultant/Contractor: _____ Contract Number: _____ Contract Amount: _____											
II. GOOD FAITH EFFORT (Applicable to all subcontracts awarded by the prime contractor/consultant)											
I understand that it is my responsibility to comply with all state and federal regulations and guidance in the utilization of Minority and Women-owned Businesses in procurement. I certify that I will make a "good faith effort" to afford opportunities for Minority Business Enterprise (MBE), and Women-owned Business Enterprise (WBE) by:											
1.	Including qualified MBEs and WBEs on procurement solicitation lists										
2.	Soliciting potential MBEs and WBEs										
3.	Reducing contract size/quantities when economically feasible to permit maximum participation by MBEs and WBEs										
4.	Establishing delivery schedules to encourage participation by MBEs and WBEs										
5.	Using the services and assistance of the Small Business Administration, Minority Business Development Agency, U.S. Department of Commerce, and Texas Marketplace										
6.	Submitting documentation to the Applicant/Entity to verify good faith effort, steps 1-5.										
<input type="checkbox"/>	EXCEPTION: As the Prime Consultant/Contractor, I certify that I have reviewed the contract requirements and found no available subcontracting opportunities. I also certify that I will fulfill 100 percent of the contract requirements with my own employees and resources. (Check if applicable)										
Signature – Prime Consultant/Contractor		Title (print legibly)	Certification Date								
III. PROJECT PARTICIPATION ESTIMATES											
The Cost Categories mentioned below are goals. These goals are neither standards nor quotas. Recipients of financial assistance are not required to meet the fair share objectives. They must, however, acknowledge that they are aware of and are actively pursuing the fair share objectives with their procurements.											
	Potential MBE Participation	Potential WBE Participation									
Cost Category	Goal	Goal									
Construction	19.44%	9.17%									
Supplies	25.34%	8.82%									
Equipment	16.28%	11.45%									
Services	20.41%	13.66%									
<i>The fair share goals listed above are required by 40 CFR Part 33 Subpart D and are directly negotiated with EPA Region 6. Entities receiving federal financial assistance are subject to the TWDB's goals and may not be substituted with other agency or program goals.</i>											
IV. TWDB APPROVAL SIGNATURE											
Signature indicates the form meets DBE Requirements.											
DBE Coordinator		Approval Date									

ATTACHMENT 4 – PARTICIPATION SUMMARY (TWDB-0373)

To download this document, view [TWDB-0373 from the TWDB website](#).

Page 1 of 2

FOR OFFICE USE ONLY
Commitment # _____

TWDB-0373
Revised 11/13/2017

TWDB-0373
TEXAS WATER DEVELOPMENT BOARD
PARTICIPATION SUMMARY

I. PROJECT INFORMATION

TWDB Project Number	Applicant/Entity Name	Total TWDB Funding Request	Program Type (insert "X" for all that apply)
			<input type="checkbox"/> Drinking Water SRF (DWSRF) <input type="checkbox"/> Clean Water SRF (CWSRF)

Project Name: _____

Solicitation By: ☐ Applicant/Entity OR ☐ Prime Contracted Business: _____

Project Phase: ☐ Prior to Closing ☐ Release of funding for PADs ☐ Construction Contract # _____

Instructions	
Column 1	Enter the full name, street address, city/state/zip for each firm awarded a contract for the project.
Column 2	Enter one of the following procurement or contract categories: CONSTRUCTION – SUPPLIES – EQUIPMENT – SERVICES
Column 3	Enter the type of business: MBE (Minority Business Enterprise), WBE (Women-owned Business Enterprise), or OTHER (NOTE: OTHER = Company or firm is Non-MBE or WBE)
Column 4	Enter the exact amount of the awarded contract.
Column 5	Enter the exact date the contract was executed or the proposed date of contract execution.

If valid MBE/WBE firms are awarded contracts, a copy of their certification is required to be attached with this form for each MBE/WBE business listed.

Notice: Brokers may not be listed below as an MBE or WBE. A broker is a firm that does not perform, manage, or supervise the work of its sub/contract in a manner consistent with the normal business practices for sub/contractors in its line of business. For more specifics, review guidance document, TWDB-0210.

II. LIST OF ACTUAL CONTRACTS/PROCUREMENTS

	Column 1 Name & Address of Contracted Firm/Vendor	Column 2 Procurement Category	Column 3 MBE/WBE Status	Column 4 Contract Amount (\$)	Column 5 <u>Contract Execution Date</u>
1.					
2.					
3.					
4.					
5.					
6.					

(Table continues on the next page)



American Iron and Steel (AIS) Guidance for Clean Water & Drinking Water State Revolving Fund Projects

This document is not a comprehensive representation of the federal requirements. For complete details of the federal requirements visit: <https://www.epa.gov/cwsrf/state-revolving-fund-american-iron-and-steel-ais-requirement>

In any instance when there may be a discrepancy between this guidance and the actual federal requirements, program participants must adhere to the federal requirements.

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Overview

It is the intent of the Texas Water Development Board (TWDB) to ensure that applicants, consultants and contractors are provided with procedures and recommendations for implementation of the American Iron and Steel (AIS) provisions for the Clean and Drinking Water State Revolving Funds. These provisions are currently contained in Section 608 of the Federal Water Pollution Control Act for the Clean Water State Revolving Fund (CWSRF) and in the federal appropriation acts for the Drinking Water State Revolving Fund (DWSRF).

The AIS provisions require CWSRF and DWSRF assistance recipients to use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of a public water system or treatment works. Based on the statutory provisions, the effective date depends on the date the TWDB loan was closed and varies by program.

Effective Dates

CWSRF:

If the loan closes on or after October 1, 2014:	
(a) If the Plans and Specifications for the project were approved by TWDB prior to June 10, 2014	Exempt from AIS
(b) If the Plans and Specifications for the project were approved by TWDB on or after June 10, 2014	AIS applies

DWSRF:

The American Iron and Steel provisions generally apply to any financial assistance closed on or after January 17, 2014. There may be statutory exceptions to the AIS requirements based on the date of approval of plans and specifications by a state agency. The entity should contact the project's Team Manager or Project Manager if there are questions regarding AIS exceptions.

CWSRF and DWSRF

Planning, Acquisition, and Design funded separately from the Construction Phase:

If the original loan for the planning and/or design of a project closed prior to January 17, 2014, then the AIS provision would not apply to the construction phase of the same project.

United States (U.S.) Environmental Protection Agency (EPA) Guidance

EPA has provided guidance through the following resources:

1. American Iron and Steel Requirement Guidance (March 20, 2014) (**Attachment 1**)
2. Questions and Answers Part 1: Valves and Hydrants (May 30, 2014) (**Attachment 2**)
3. Questions and Answers Part 2: Products, Projects and Process (September 10, 2014) (**Attachment 3**)
4. Questions and Answers Part 3: Plans and specifications dates, Refinancing and Coatings (March 16, 2015) (**Attachment 4**)

5. EPA's American Iron and Steel webpage - http://water.epa.gov/grants_funding/aisrequirement.cfm
Please contact TWDB with any questions regarding applicability of AIS requirements.

Covered Iron and Steel Products

If the project receiving CWSRF or DWSRF funds must comply with the AIS requirements, then all covered iron and steel products must be made in the United States, no matter whether the CWSRF or DWSRF was the source of funds used to purchase a particular covered iron and steel product. The entity may not use funds from non-State Revolving Fund sources, including the entity's own funds, to pay for a non-compliant iron or steel product used in the project.

AIS requirements apply to the following products made primarily of iron or steel, permanently incorporated into the public water system or treatment works:

- Lined or unlined pipes or fittings;
- Manhole Covers;
- Municipal Castings;
- Hydrants;
- Tanks;
- Flanges;
- Pipe clamps and restraints;
- Valves;
- Structural steel;
- Reinforced precast concrete; and
- Construction materials.

Mechanical and electrical components, equipment, and systems are not considered iron and steel products, and are exempt from AIS requirements. Mechanical equipment is typically that which has motorized parts and/or is powered by a motor. Electrical equipment is typically any machine powered by electricity and includes components that are part of the electrical distribution system.

Waivers

AIS provisions permit EPA to issue waivers for a case or category of cases where EPA finds (1) that applying these requirements would be inconsistent with the public interest; (2) iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or (3) inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

EPA has granted nationwide waivers, which are attached hereto as **Attachment 5**:

1. De Minimis waiver pursuant to Section 436 of P.L. 113-76, Consolidated Appropriations Act (CAA) (April 15, 2014) The De Minimis waiver permits the use of products when they occur in de minimis incidental components to the project. Funds used for de minimis incidental components cumulatively may not exceed 5% of the total cost of the materials used in and incorporated into the project; the cost of an individual item may not exceed 1% of the total cost of materials used in and incorporated into the project.
2. Nationwide Plans and Specs waiver pursuant to Section 436 of P.L. 113-76, Consolidated Appropriations Act (CAA) (April 15, 2014)
3. Short-Term National Product Waiver for Stainless Steel Nuts and Bolts used in Pipe Couplings, Restraints, Joints, Flanges, and Saddles (February 18, 2015)
4. National Product Waiver for Pig Iron and Direct Reduced Iron (February 18, 2015)
5. National Product Waiver for Minor Components in Iron and Steel Products (with Cost Ceiling) (October 27, 2015)
6. One-Year Extension of the Short-Term National Product Waiver for Stainless Steel Nuts and Bolts Used in Pipe Couplings, Restraints, Joints, Flanges, and Saddles (February 22, 2016)
7. One-year Extension of the Short-Term National Product Waiver for Stainless Steel Nuts and Bolts Used in Pipe Couplings, Restraints, Joints, Flanges, and Saddles (January 18, 2017)

EPA's American Iron and Steel webpage includes any waivers issued -
http://water.epa.gov/grants_funding/aisrequirement.cfm

Waiver Process

EPA has implemented a waiver application process to allow the State, on behalf of the applicant, to apply for waivers of the AIS requirement directly to EPA Headquarters. Only waiver requests received from the State will be considered. A waiver application may be submitted at any time during the project, however until a waiver is granted by EPA, the AIS requirement stands.

In order to apply for a project waiver, the assistance recipient should email the request in the form of a Word document (.doc) to the TWDB project engineer. Proper and sufficient documentation must be provided by the assistance recipient.

After receiving an application for waiver of the AIS requirements, EPA Headquarters will publish the request on its website for 15 days and receive informal comment. EPA Headquarters will then

determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver – that it is quantitatively and qualitatively sufficient – and to determine whether or not to grant the waiver.

EPA will notify TWDB that a waiver request has been approved or denied as soon as such a decision has been made. Approved waivers will be posted on the EPA website. The applicant should keep a copy of the signed waiver in their AIS Certification File.

Compliance

In order to ensure compliance with the AIS requirement, specific AIS contract language must be included in each contract, including the construction material purchase agreements. The applicant should be aware that AIS requirements will apply to the project through the TWDB commitment resolution.

It is the applicant's responsibility to assure that all construction and purchase contracts are executed in compliance with AIS, and a record of all forms and certifications necessary to demonstrating compliance with AIS is maintained. To demonstrate compliance with AIS requirements either the final manufacturer that delivers the iron or steel product to the worksite, vendor, or contractor, may provide a certification asserting that all manufacturing processes occurred in the United States, or the applicant may use step certification process, similar to the Federal Highway Administration. The applicant is also responsible for monitoring De Minimis Logs to ensure all iron and steel products listed on the log meet the requirements of the EPA's De Minimis waiver.

TWDB relies on self-certification by the applicant to document compliance with AIS, and requires the applicant to submit a Monthly American Iron and Steel Certificate of Compliance Submittal with each outlay report. Failure to submit the Monthly American Iron and Steel Certificate of Compliance could delay the release of funds.

TWDB Compliance Procedures

In order to be in compliance and satisfy TWDB's requirements for implementation of AIS requirements, entities will need to do the following:

1. The applicant shall prepare and submit any waiver request to the TWDB project engineer. TWDB will forward all requests to EPA. Any waiver to the AIS requirements must be issued by the EPA. A checklist detailing the types of information required for a waiver to be processed, and EPA's waiver determination checklist is attached as **Attachment 6**.
2. Applicants shall include the following language in the advertisement for bids for all construction contracts funded by the TWDB's DWSRF or CWSRF:

For CWSRF, include - Any contract(s) awarded under this Invitation for Bids is/are subject to the American Iron and Steel (AIS) requirements of Section 608 of the Federal Water Pollution Control Act.”

For DWSRF, include - “Any contract(s) awarded under this Invitation for Bids is/are subject to the American Iron and Steel (AIS) requirements of federal law, including federal appropriation acts.”

3. Applicants shall include the AIS requirements in all construction contracts, which are attached hereto as **Attachment 7**.

4. Applicants shall include the following language on the General Notes Plan Sheet(s).

For CWSRF, include - “This project is subject to the American Iron and Steel (AIS) requirements of Section 608 of the Federal Water Pollution Control Act. All iron and steel products for construction, alteration, maintenance, or repairs incorporated in these plans must be produced in the United States”

For DWSRF, include - “This project is subject to the American Iron and Steel (AIS) requirements of federal law, including federal appropriation acts. All iron and steel products for construction, alteration, maintenance, or repairs incorporated in these plans must be produced in the United States”

5. The applicant and prime construction contractor must obtain certifications from the final manufacturer that delivers the iron and steel product to the worksite, vendor, or contractor asserting that all manufacturing processes occurred in the United States.
6. The prime construction contractor and applicant will be required to maintain a file that contains the certifications from the final manufacturers, any approved waivers, and the De Minimis log. This file must be available for review by TWDB representatives. Sample Certification letters, step certification log, and De Minimis Log are included in **Attachment 8**.
7. The applicant must submit a Monthly American Iron and Steel Certificate of Compliance Submittal with each outlay report, attached as **Attachment 9**.
8. The applicant will provide a letter of certification, after the completion of the construction contract and prior to issuance of a Certificate of Approval by the TWDB, stating the project was completed in compliance with the AIS requirements.

Recommendations and Best Management Practices

The following recommendations are not required but should be considered by the applicant in implementation of the AIS requirements:

1. AIS requirements should be addressed in the engineering feasibility study to determine availability of AIS products, and determine if any requests for waivers need to be initiated.
2. While a waiver application may be submitted at any time during the project, the applicant should consider EPA's review schedule (15 day comment period plus review time) when scheduling projects. It is not recommended to request a waiver after the advertisement for bids or start of construction unless absolutely necessary.
3. Develop procedures for maintaining a record of AIS documentation.
4. Distinguish separate bid items that must comply with AIS requirements on the Bid Form.
5. Consideration of AIS compliance documentation when developing the contractor submittal procedures for shop drawings, material lists, and manufacturer certifications, etc.
6. Discuss AIS requirements during pre-bid conference and pre-construction meetings, to address contractor's responsibilities, and availability of iron and steel products needed to complete the project.

Attachment 1 - American Iron and Steel Requirement Guidance (March 20, 2014)
(Double click on the embedded Acrobat version below for a clear copy of the entire document)



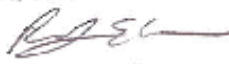
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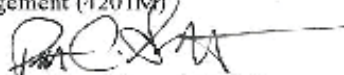
MAR 20 2014

OFFICE OF WATER

MEMORANDUM

SUBJECT: Implementation of American Iron and Steel provisions of P.L. 113-76,
Consolidated Appropriations Act, 2014

FROM: ✓ Andrew D. Sawyers, Director 
Office of Wastewater Management (4201M)

Peter C. Grevatt, Director 
Office of Ground Water and Drinking Water (4601M)

TO: Water Management Division Directors
Regions I - X

P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an "American Iron and Steel (AIS)" requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of a public water system or treatment works if the project is funded through an assistance agreement executed beginning January 17, 2014 (enactment of the Act), through the end of Federal Fiscal Year 2014.

Section 436 also sets forth certain circumstances under which EPA may waive the AIS requirement. Furthermore, the Act specifically exempts projects where engineering plans and specifications were approved by a State agency prior to January 17, 2014.

The approach described below explains how EPA will implement the AIS requirement. The first section is in the form of questions and answers that address the types of projects that must comply with the AIS requirement, the types of products covered by the AIS requirement, and compliance. The second section is a step-by-step process for requesting waivers and the circumstances under which waivers may be granted.

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Attachment 2 - Questions and Answers Part 1: Valves and Hydrants (May 30, 2014)

(Double click on the embedded Acrobat version below for a clear copy of the entire document)

May 30, 2014

American Iron & Steel (AIS) Requirement of the Consolidated Appropriations Act of 2014 (Public Law 113-76) Q&A Part 1: Valves and Hydrants

Q1: Does the AIS requirement of the Consolidated Appropriations Act of 2014 require minor, miscellaneous components within a covered valve or hydrant, such as nuts, bolts and washers, to be made in the U.S.?

A1: The definition of "iron and steel products" that must either be domestically produced or subject to a waiver in order to comply with the AIS requirement of the Consolidated Appropriations Act of 2014 includes valves and hydrants. Unlike many other of the "iron and steel products" that are listed in the definition, valves and hydrants are typically precision mechanical products with multiple fitted, operating parts and connections. Valves and hydrants, unlike most of the other listed products, contain other minor components, such as small washers, nuts, and bolts that are of unknown origin but are added to the valve or hydrant during the manufacturing process. For purposes of the 2014 AIS requirement, EPA considers only the significant iron and steel components of a covered valve or hydrant – the body, bonnet, shoe, stem, and wedge/disc/gate/ball – to be within the definition of "iron and steel products" that must either be made domestically, or otherwise must comply with the AIS requirement. The minor components represent a very small percentage of the iron and steel in the hydrants and valves that are defined as "iron and steel products." These minor components, which EPA has learned through our research are currently difficult to find domestically in sufficient quantity, such as minor nuts, bolts, and washers, are not required to be of U.S. origin.

Q2: Do the actuators/control systems attached to valves have to comply with the AIS requirement, or just the valve itself?

A2: The AIS requirement of the Consolidated Appropriations Act of 2014 includes valves in its definition of "iron and steel products" that recipients must make certain are either domestically made or subject to a waiver in order to comply with the AIS requirement. Actuators and control systems are not included in the definition. Only the valve itself is required to be either domestically produced or subject to a waiver in order to be compliant with the AIS requirement. Absent a waiver, EPA considers valves and hydrants to be domestically produced if the significant iron and steel components of a covered valve or hydrant – the body, bonnet, shoe, stem, and wedge/disc/gate/ball – if made of iron or steel, is produced in the U.S. See Q1 above for a discussion about minor components. The valves and actuators, while often purchased and shipped together, are two unique products that are manufactured separately and typically attached together during the final step of the process. Valves are included in the definition of "iron and steel products" in the AIS requirement. Actuators, whether manual, electric, hydraulic or pneumatic, are not listed as an "iron and steel product" under the AIS requirement of the Consolidated Appropriations Act of 2014, nor are they considered construction materials. Therefore, they do not need to be domestically produced in the U.S. in order to comply with the requirement.

Q3: Are electric powered motor operated valves excluded based on the valve being motorized equipment (i.e. electrical equipment)?

A3: No, electric powered motor operated valves are not excluded based on the valve being motorized equipment. The actuator, a motor that controls the valve, is considered a separate product, which is not

1 of 2

Attachment 3 - Questions and Answers Part 2: Products, Projects and Process (September 10, 2014)

(Double click on the embedded Acrobat version below for a clear copy of the entire document)

September 10, 2014

**American Iron & Steel (AIS) Requirement of the Consolidated Appropriations Act of 2014
(Public Law 113-76)**

Q&A Part 2

PRODUCT QUESTIONS

1. Q: Do all fasteners qualify for de minimis exemption?

A: No. There is no broad exemption for fasteners from the American Iron and Steel (AIS) requirements. Significant fasteners used in SRF projects are not subject to the de minimis waiver for projects and must comply with the AIS requirements. Significant fasteners include fasteners produced to industry standards (e.g., ASTM standards) and/or project specifications, special ordered or those of high value. When bulk purchase of unknown-origin fasteners that are of incidental use and small value are used on a project, they may fall under the national de minimis waiver for projects. The list of potential items could be varied, such as big-box/hardware-store-variety screws, nails, and staples. The key characteristics of the items that may qualify for the de minimis waiver would be items that are incidental to the project purpose (such as drywall screws) and not significant in value or purpose (such as common nails or brads). See the following: http://water.epa.gov/grants_funding/upload/Deminimis-Waiver-04-15-14.pdf.

EPA also clarifies that minor components of two listed products – valves and hydrants – may not need to meet the AIS requirements if the minor components comprise a very small quantity of minor, low-cost fasteners that are of unknown origin. See EPA's questions and answers on the subject at the following: http://water.epa.gov/grants_funding/upload/AIS-QandA-Part-1-Valves-and-Hydrants-final.pdf.

2. Q: Does PCCP pipe have to be domestically produced?

A: Yes. Pre-stressed concrete cylinder pipe (PCCP) or other similar concrete cylinder pipes would be comparable to pre-cast concrete which is specifically listed in the Consolidated Appropriations Act of 2014 as a product subject to the AIS requirement.

3. Q: If the iron or steel is made from recycled metals will the vendor/supplier have to provide a certification document certifying that the recycled metals are domestically produced?

A: No. Recycled source materials used in the production of iron and steel products do not have to come from the U.S. Iron or steel scrap, for instance, are considered raw materials that may come from anywhere. While certification is not required for the raw material, EPA does recommend that additional final processing of iron and steel be certified to have occurred in the U.S.

4. Q: Do tanks used for filtration systems, if delivered to the construction site separately and then filled with filtration media onsite, have to be domestically produced?

Attachment 4 - Questions and Answers Part 3: Plans and specifications dates,
Refinancing and Coatings
(March 16, 2015)

(Double click on the embedded Acrobat version below for a clear copy of the entire document)

March 2015

American Iron & Steel Requirement for the Clean Water and Drinking Water State Revolving Funds

Q&A Part 3

For CWSRF and DWSRF: On January 17, 2014, Public Law 113-76, the "Consolidated Appropriations Act, 2014," was enacted and included an American Iron and Steel requirement for the Clean Water and Drinking Water State Revolving Fund programs through the end of fiscal year 2014. Since then, the AIS requirement has continued for both programs, but through different statutes, with a few changes as described in the questions and answers provided below.

For CWSRF: On June 10, 2014, the Water Resources Reform and Development Act amended the Clean Water Act to include permanent requirements for the use of AIS products in CWSRF assistance agreements. Section 608 of the CWA now contains requirements for AIS that repeat those of the Consolidated Appropriations Act, 2014. All CWSRF assistance agreements must comply with Section 608 of the CWA for implementation of the permanent AIS requirement.

For DWSRF: On December 16, 2014, the President signed Public Law 113-235, the "Consolidated and Further Continuing Appropriations Act, 2015," which provides fiscal year 2015 full-year appropriations through September 30, 2015. This law continues the requirement for the use of AIS products in DWSRF assistance agreements through September 30, 2015.

CWSRF PROGRAM

1. **Q:** The Water Resources Reform and Development Act amended the Clean Water Act to include permanent requirements for the use of AIS for CWSRF funded assistance agreements. Does the CWA include an exemption for plans and specifications approved prior to the enactment of the legislation similar to the exemption included in the Consolidated Appropriations Act (CAA) 2014?

A: Yes. The WRRDA amendment to the CWA, which included AIS requirements, included a similar exemption as the CAA 2014. For any CWSRF assistance agreement signed on or after October 1, 2014, if the plans and specifications were approved prior to June 10, 2014 (the enactment of WRRDA), then the project is exempt from AIS requirements. For assistance agreements signed prior to October 1, 2014, the previous dates in the CAA 2014 apply (see March 20, 2014, AIS guidance document).

If a project does not require approved engineering plans and specifications, the bid advertisement date will count in lieu of the plans and specifications approval date for purposes of this exemption in Section 608 (f).

The following table summarizes AIS exemptions based on the plans and specifications approval date for CWSRF funded projects.

3/16/2015

Attachment 5 – EPA Approved Waivers

- a. De Minimis waiver pursuant to Section 436 of P.L. 113-76, Consolidated Appropriations Act (CAA) (April 15, 2014)

(Double click on the embedded Acrobat version below for a clear copy of the entire document).



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF WATER

DECISION MEMORANDUM

SUBJECT: De Minimis Waiver of Section 436 of P.L. 113-76, Consolidated Appropriations Act (CAA), 2014

FROM: Nancy K. Stoner
Acting Assistant Administrator

The EPA is hereby granting a nationwide waiver pursuant to the "American Iron and Steel (AIS)" requirements of P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), section 436 under the authority of Section 436(b)(1) (public interest waiver) for de minimis incidental components of eligible water infrastructure projects. This action permits the use of products when they occur in de minimis incidental components of such projects funded by the Act that may otherwise be prohibited under section 436(a). Funds used for such de minimis incidental components cumulatively may comprise no more than a total of 5 percent of the total cost of the materials used in and incorporated into a project; the cost of an individual item may not exceed 1 percent of the total cost of the materials used in and incorporated into a project.

P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an "American Iron and Steel" (AIS) requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use specific domestic iron and steel products that are produced in the United States if the project is funded through an assistance agreement executed beginning January 17, 2014 (enactment of the Act), through the end of Fiscal Year 2014, unless the agency determines it necessary to waive this requirement based on findings set forth in Section 436(b). The Act states, "[the requirements] shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency... finds that:— (1) applying subsection (a) would be inconsistent with the public interest" 436(b)(1).

In implementing section 436 of the Act, the EPA must ensure that the section's requirements are applied consistent with congressional intent in adopting this section and in the broader context of the purposes, objectives, and other provisions applicable to projects funded under the SRF. Water infrastructure projects typically contain a relatively small number of high-cost components incorporated into the project. In bid solicitations for a project, these high-cost components are generally described in detail via project specific technical specifications. For these major components, utility owners and their contractors are generally familiar with the conditions of availability, the potential alternatives for each detailed specification, the approximate cost, and the country of manufacture of the available components.

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- b. Nationwide Plans and Specs waiver pursuant to Section 436 of P.L. 113-76, Consolidated Appropriations Act (CAA) (April 15, 2014)
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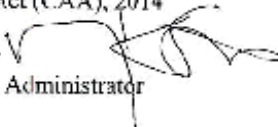


UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF WATER

DECISION MEMORANDUM

SUBJECT: Plans and Specifications Waiver of Section 436 of P.L. 113-76, Consolidated Appropriations Act (CAA), 2014

FROM: Nancy K. Stoner 
Acting Assistant Administrator

The EPA is hereby granting a nationwide waiver of the American Iron and Steel requirement pursuant to Section 436(b)(1) (public interest waiver), of the Consolidated Appropriations Act (CAA), 2014, for eligible projects that had engineering plans and specifications submitted to an appropriate state agency prior to and including January 17, 2014, the date of enactment of the CAA, and approved between and including January 17, 2014, and the date of this waiver, where the state agency that approved such plans and specifications did so under the normal course of business for that agency. This action permits the use of non-domestic iron and steel products in such projects funded by a Clean or Drinking Water State Revolving Fund that may otherwise be prohibited under section 436.

If a project does not require approved engineering plans and specifications, the bid advertisement date will count in lieu of the plans and specifications approval date for purposes of this national waiver.

The basis for the nationwide waiver is that due to the uncertainty about whether an American Iron and Steel requirement would be included in this year's appropriation, potential assistance recipients did not have the opportunity to plan for a possible American Iron and Steel requirement. Until detailed guidance was issued, potential assistance recipients were unable to solicit bids from construction firms with appropriate definitions of key terms contained in the CAA language. Additionally, projects that submitted engineering plans and specifications prior to and including January 17, 2014, without knowledge of the American Iron and Steel requirement, and with the anticipation that such plans would be quickly approved, but such approval did not occur until on or after January 17, 2014, would be required to redesign elements of the project, investigate potential domestic products, revise engineering drawings and bid specifications, and resubmit such plans and specifications for approval, thereby delaying the initiation of construction substantially. Those projects which do not require approved plans and specifications, but were bid prior to the guidance being issued, also could be required to rebid the project or submit change orders to comply with the new requirements, which would also delay initiation of construction.

- c. Short-Term National Product Waiver for Stainless Steel Nuts and Bolts used in Pipe Couplings, Restraints, Joints, Flanges, and Saddles (February 18, 2015)
(Double click on the embedded Acrobat version below for a clear copy of the entire document)



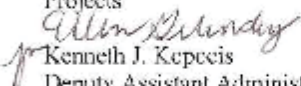
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

FEB 18 2015

OFFICE OF WATER

DECISION MEMORANDUM

SUBJECT: Short-Term National Product Waiver for Stainless Steel Nuts and Bolts used in Pipe Couplings, Restraints, Joints, Flanges, and Saddles for State Revolving Fund Projects

FROM: 
Kenneth J. Keppeis
Deputy Assistant Administrator

The U.S. Environmental Protection Agency is hereby granting a national product waiver pursuant to the "American Iron and Steel" provisions of the Clean Water Act and Public Law 113-235, the "Consolidated and Further Continuing Appropriations Act, 2015."¹ The waiver permits the use of non-domestically produced stainless steel nuts and bolts in bolting-type pipe couplings, restraints, joints, flanges and repair saddles in iron and steel products for projects funded by a Clean Water or Drinking Water State Revolving Fund that may otherwise be prohibited absent this waiver. This national product waiver is short-term, applying to the covered products if those products are purchased up until one year after the waiver's signature date. The waiver is retroactive and also applies to products purchased before the signature date. Covered products purchased prior to the waiver's signature date or within the one-year period may be used subsequent to the waiver expiration date.

Coverage: The specific product categories covered by this waiver include bolted expansion joints, bolted dismantling joints, bolted pipe couplings, bolted pipe restraints, bolted pipe flanges, bolted flange adapters, bolted pipe repair or service saddles, bolted mechanical joints, and pipe hangers and supports. Non-domestic stainless steel nuts and bolts may be incorporated into these specific products; however, all other iron and steel components in these products, unless subject to a waiver, must still meet the AIS requirements. In other words, this waiver does not exempt the whole product, or any of the main iron or steel components such as the ring, sleeve, body, flange spool or mechanical joint, from the AIS requirements just because stainless steel nuts and bolts are used. Any project that receives funds from the CWSRF or DWSRF since the enactment of P.L. 113-76, the "Consolidated Appropriations Act, 2014," is required to comply with the AIS provisions.

¹ Absent a waiver, all treatment works and drinking water facilities that are constructed, in whole or in part, with funds from the CWSRF or the DWSRF, must use American made iron and steel. EPA is allowed under certain circumstances to provide waivers of this requirement.

- d. National Product Waiver for Pig Iron and Direct Reduced Iron (February 18, 2015)
(Double click on the embedded Acrobat version below for a clear copy of the entire document)



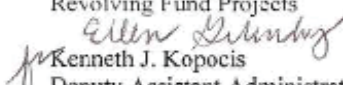
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WASHINGTON, D.C. 20460

FEB 18 2015

OFFICE OF WATER

DECISION MEMORANDUM

SUBJECT: National Product Waiver for Pig Iron and Direct Reduced Iron for State
Revolving Fund Projects

FROM: 
Kenneth J. Kopocis
Deputy Assistant Administrator

The U.S. Environmental Protection Agency is hereby granting a national product waiver pursuant to the "American Iron and Steel" provisions of the Clean Water Act and Public Law 113-235, the "Consolidated and Further Continuing Appropriations Act, 2015," for certain intermediate goods used in the manufacture of iron and steel products.¹ This waiver permits the use of pig iron and direct reduced iron manufactured outside of the United States in domestic manufacturing processes for iron and steel products used in projects funded by a Clean Water or Drinking Water State Revolving Fund that may otherwise be prohibited absent this waiver. The waiver is retroactive and thus also applies to the use of non-domestic pig iron and direct reduced iron before the signature date.

Background: Pig iron and direct reduced iron are intermediate products of iron and steel manufacturing used as material feed sources in iron and steel foundries and steel mills. Pig iron is a product of iron ore smelting in a blast furnace. It is made from molten iron, which has been cast in the shape of "pigs" as it comes from the blast furnace. Direct reduced iron ore is produced from iron ore, pellets or fines, which are reduced in a solid state using natural gas. Hot briquetted iron, or HBI, is a compacted form of direct reduced iron with enhanced physical characteristics for shipment and storage.

Coverage: This waiver permits the use of iron and steel products that were manufactured using non-domestic pig iron and direct reduced iron in projects that receive funds from either the CWSRF or DWSRF. Any project that received or will receive funds from the CWSRF or DWSRF beginning with the enactment of P.L. 113-76, the "Consolidated Appropriations Act, 2014," may use this waiver for iron and steel that use these intermediate goods.

Rationale: The AIS provisions require CWSRF and DWSRF assistance recipients to use specific domestic iron and steel products that are produced in the United States if the project is funded

¹ Absent a waiver, all treatment works and drinking water facilities that are constructed, in whole or in part, with funds from the CWSRF or the DWSRF, must use American made iron and steel. EPA is allowed under certain circumstances to provide waivers of this requirement.

- e. National Product Waiver for Minor Components in Iron and Steel Products (with Cost Ceiling)
(October 27, 2015)
(Double click on the embedded Acrobat version below for a clear copy of the entire document)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OCT 27 2015

OFFICE OF WATER

DECISION MEMORANDUM

SUBJECT: National Product Waiver for Minor Components within Iron and Steel Products (with Cost Ceiling) for State Revolving Fund Projects

FROM: Kenneth J. Kopocis *Kenneth J. Kopocis*
Deputy Assistant Administrator

The U.S. Environmental Protection Agency is hereby granting a national product waiver pursuant to the "American Iron and Steel" provisions of the Clean Water Act and Public Law 113-235, the "Consolidated and Further Continuing Appropriations Act, 2015," (hereinafter referred to as "the Acts") for minor components within a product under an established cost ceiling.¹ The waiver will permit projects funded by the Clean Water State Revolving Fund or Drinking Water State Revolving Fund to use non-domestically produced miscellaneous minor components within an otherwise domestically produced iron and steel product for up to 5 percent of the total material cost of the product. These products could be prohibited absent this waiver. This waiver is retroactive, and so also applies to products purchased before the signature date of this waiver.

Coverage: The items covered by this waiver include miscellaneous minor components within iron and steel products as defined in the AIS provisions of the Acts. The specific minor components in covered iron and steel products will vary by product and manufacturer. Pursuant to this waiver, non-domestically produced miscellaneous minor components comprising up to 5 percent of the total material cost of an otherwise domestically produced iron and steel product may be used. This waiver does not exempt the whole product from the AIS requirements, and the primary iron or steel components of the product must be produced domestically. Unless subject to a separate waiver, all other iron and steel components in these products must still meet the AIS requirements. Valves and hydrants are also subject to the cost ceiling requirements described here. This waiver supersedes the EPA's previous guidance issued on May 30, 2014, (Question 1) related to minor components in valves and hydrants.

The coverage of this waiver is different from that of the existing national de minimis waiver. While the national de minimis waiver covers entire products (when those products are generally of low cost and incidental to the construction of the project), this waiver covers minor components within an iron and steel product. In addition, the national de minimis waiver is intended for assistance recipients to use for their projects, while this minor components waiver is intended to allow manufacturers to certify that their products comply with the AIS requirements.

¹ Absent a waiver, all treatment works and drinking water facilities that are constructed, in whole or in part, with funds from the CWSRF or the DWSRF, must use American made iron and steel. The EPA is allowed under certain circumstances to provide waivers of this requirement.

- f. One-Year Extension of the Short-Term National Product Waiver for Stainless Steel Nuts and Bolts Used in Pipe Couplings, Restraints, Joints, Flanges, and Saddles (February 22, 2016)
(Double click on the embedded Acrobat version below for a clear copy of the entire document)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

FEB 22 2016

OFFICE OF WATER

DECISION MEMORANDUM

SUBJECT: One-Year Extension of the Short-Term National Product Waiver for Stainless Steel Nuts and Bolts used in Pipe Couplings, Restraints, Joints, Flanges and Saddles for State Revolving Fund Projects

FROM: Joel Beauvais
Deputy Assistant Administrator

A handwritten signature in black ink, appearing to read "Joel Beauvais", is written over the printed name and title.

The U.S. Environmental Protection Agency hereby grants a one-year extension of the Short-Term National Product Waiver for Stainless Steel Nuts and Bolts used in Pipe Couplings, Restraints, Joints, Flanges and Saddles for State Revolving Fund Projects, pursuant to the "American Iron and Steel" requirements of the Clean Water Act Section 608 and P.L. 114-113, the "Consolidated Appropriations Act, 2016." The original waiver was signed on February 18, 2015. With the one-year extension, the waiver will expire February 18, 2017. This waiver permits the use of non-domestically produced stainless steel nuts and bolts in bolting-type pipe couplings, restraints, joints and repair saddles in iron and steel products for projects funded by a Clean Water or Drinking Water State Revolving Fund that may otherwise be prohibited absent this waiver.

The original, approved waiver (attached) provides details regarding the specific types of products covered by this waiver as well as the rationale for issuance of the original waiver. This national product waiver extension is short-term, applying to the covered products if those products are purchased up until February 18, 2017.

Rationale: The EPA reassessed the market for and supply of stainless steel nuts and bolts for the products of interest and was unable to gather sufficient evidence that there is an adequate domestic supply of stainless steel nuts and bolts for the subject products. Through the research effort, the agency found that the domestic supply of stainless steel nuts and bolts has increased since fall 2014 and there may be manufacturers that have the capability to meet the demand for stainless steel nuts and bolts. However, manufacturers were generally unable, or unwilling, to provide information about their production capacity. The agency did not receive evidence that there is an adequate national availability of stainless steel nuts and bolts.

In addition, the agency received five responses from manufacturers and suppliers after posting a draft version of this Decision Memorandum during a 15-day public comment period. Most comments were in favor of the waiver extension. Comments in support of the waiver extension claimed a remaining significant shortage in the supply of stainless steel nuts and bolts.

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- g. One-year Extension of the Short-Term National Product Waiver for Stainless Steel Nuts and Bolts Used in Pipe Couplings, Restraints, Joints, Flanges, and Saddles (January 18, 2017)
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JAN 18 2017

OFFICE OF WATER

DECISION MEMORANDUM

SUBJECT: One-Year Extension of the Short-Term National Product Waiver for Stainless Steel Nuts and Bolts used in Pipe Couplings, Restraints, Joints, Flanges and Saddles for State Revolving Fund Projects

FROM: Michael H. Shapiro *Michael Shapiro*
Deputy Assistant Administrator

The U.S. Environmental Protection Agency hereby grants a one-year extension of the Short-Term National Product Waiver for Stainless Steel Nuts and Bolts used in Pipe Couplings, Restraints, Joints, Flanges and Saddles for State Revolving Fund Projects, pursuant to the "American Iron and Steel" requirements of the Clean Water Act Section 608 and Public Law 114-254, the "Further Continuing and Security Assistance Appropriations Act, 2017." The original waiver was signed on February 18, 2015 and was granted a one-year extension on February 22, 2016. With this additional one-year extension, the waiver will expire February 18, 2018. This waiver permits the use of non-domestically produced stainless steel nuts and bolts in bolting-type pipe couplings, restraints, joints and repair saddles in iron and steel products for projects funded by a Clean Water or Drinking Water State Revolving Fund that may otherwise be prohibited absent this waiver.

The original, approved waiver (attached) provides details regarding the specific types of products covered by this waiver as well as the rationale for issuance of the original waiver. This national product waiver extension is short-term, applying to the covered products if those products are purchased up until February 18, 2018.

Rationale: In 2016, the EPA reassessed the market for and supply of stainless steel nuts and bolts for the products of interest and was unable to gather sufficient evidence that there is an adequate domestic supply of these products. Through the research effort, the agency found that the domestic supply of stainless steel nuts and bolts for the subject products has increased slightly since fall 2015. The EPA received anecdotal evidence from a few manufacturers that they increased their supply of stainless steel nuts and bolts used in the subject products by small amounts, but the slight increase does not represent a significant change in the manufacturing capacity of the domestic products. Furthermore, the domestic supply of the stainless steel nuts and bolts is not readily quantifiable because manufacturers were generally unable, or unwilling, to provide information about their production capacity. In addition, the agency received no responses from manufacturers and suppliers after posting a draft version of this Decision Memorandum during a 15-day public comment period.

Lacking evidence that manufacturers of stainless steel nuts and bolts used in the subject products can meet current demands, the agency is extending the national waiver for another year. Prior to the

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Attachment 6: EPA Waiver Request

Information Checklist for Waiver Request

The purpose of this checklist is to help ensure that all appropriate and necessary information is submitted to EPA. EPA recommends that States review this checklist carefully and provide all appropriate information to EPA. This checklist is for informational purposes only and does not need to be included as part of a waiver application.

Items	☑	Notes
General <ul style="list-style-type: none"> • Waiver request includes the following information: <ul style="list-style-type: none"> ○ Description of the foreign and domestic construction materials ○ Unit of measure ○ Quantity ○ Price ○ Time of delivery or availability ○ Location of the construction project ○ Name and address of the proposed supplier ○ A detailed justification for the use of foreign construction materials • Waiver request was submitted according to the instructions in the memorandum • Assistance recipient made a good faith effort to solicit bids for domestic iron and steel products, as demonstrated by language in requests for proposals, contracts, and communications with the prime contractor 		
Cost Waiver Requests <ul style="list-style-type: none"> • Waiver request includes the following information: <ul style="list-style-type: none"> ○ Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products ○ Relevant excerpts from the bid documents used by the contractors to complete the comparison ○ Supporting documentation indicating that the contractor made a reasonable survey of the market, such as a description of the process for identifying suppliers and a list of contacted suppliers 		
Availability Waiver Requests <ul style="list-style-type: none"> • Waiver request includes the following supporting documentation necessary to demonstrate the availability, quantity, and/or quality of the materials for which the waiver is requested: <ul style="list-style-type: none"> ○ Supplier information or pricing information from a reasonable number of domestic suppliers indicating availability/delivery date for construction materials ○ Documentation of the assistance recipient's efforts to find available domestic sources, such as a description of the process for identifying suppliers and a list of contacted suppliers. ○ Project schedule ○ Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of construction materials • Waiver request includes a statement from the prime contractor and/or supplier confirming the non-availability of the domestic construction materials for which the waiver is sought <p>Has the State received other waiver requests for the materials described in this waiver request, for comparable projects?</p>		

EPA Checklist for Waiver Request

Instructions: To be completed by EPA. Review all waiver requests using the questions in the checklist, and mark the appropriate box as Yes, No or N/A. Marks that fall inside the shaded boxes may be grounds for denying the waiver. If none of your review markings fall into a shaded box, the waiver is eligible for approval if it indicates that one or more of the following conditions applies to the domestic product for which the waiver is sought:

1. The iron and/or steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality.
2. The inclusion of iron and/or steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

Review Items	Yes	No	N/A	Notes
Cost of Waiver Request				
<ul style="list-style-type: none"> • Does the waiver request include the following information? <ul style="list-style-type: none"> ○ Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products 				
<ul style="list-style-type: none"> ○ Relevant excerpts from the bid documents used by the contractors to complete the comparison 				
<ul style="list-style-type: none"> ○ A sufficient number of bid documents or pricing information from domestic sources to constitute a reasonable survey of the market 				
<ul style="list-style-type: none"> • Does the Total Domestic Project exceed the Total Foreign Project Cost by more than 25%? 				
Availability Waiver Requests				
<ul style="list-style-type: none"> • Does the waiver request include supporting documentation sufficient to show the availability, quantity, and/or quality of the iron and/or steel product for which the waiver is requested? <ul style="list-style-type: none"> ○ Supplier information or other documentation indicating availability/delivery date for materials ○ Project schedule ○ Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of materials • Does supporting documentation provide sufficient evidence that the 				
<ul style="list-style-type: none"> • Contractors made a reasonable effort to locate domestic suppliers of materials, such as a description of the process for identifying suppliers and a list of contacted suppliers? 				
<ul style="list-style-type: none"> • Based on the materials delivery/availability date indicated in the supporting documentation, will the materials be unavailable when they are needed according to the project schedule? (By item, list schedule date and domestic delivery quote date or other relevant information) 				
<ul style="list-style-type: none"> • Is EPA aware of any other evidence indicating the non-availability of the materials for which the waiver is requested? Examples include: <ul style="list-style-type: none"> ○ Multiple waiver requests for the materials described in this waiver request, for comparable projects in the same State ○ Multiple waiver requests for the materials described in this waiver request, for comparable projects in other States ○ Correspondence with construction trade associations indicating the non-availability of the materials • Are the available domestic materials indicated in the bid documents of inadequate quality compared those required by the project plans, specifications, and/or permits? 				

Attachment 7: Construction Contract Language

The following language must be included in all construction and purchase contracts associated with a TWDB CWSRF or DWSRF loan:

The Contractor acknowledges to and for the benefit of the Applicant (“Purchaser”) and the Texas Water Development Board (TWDB) that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements commonly known as “American Iron and Steel,” that requires all of the iron and steel products used in the project to be produced in the United States (“American Iron and Steel Requirement”) including iron and steel products provided by the Contractor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the TWDB that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the TWDB. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser to enforce this Agreement and recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney’s fees) incurred by the Purchaser resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the TWDB or any damages owed to the TWDB by the Purchaser). While the Contractor has no direct contractual privity with the TWDB, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the TWDB is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the TWDB.

Attachment 8: Sample Certifications

AIS Certification must document the location of the manufacturing process involved with the production of steel and iron materials. Each handler (supplier, fabricator, manufacturer, processor, etc.) of the iron and steel products and their step in the process must be recorded and certified as domestically performed.

The applicant may utilize either

- (1) a Final Manufacturer Certification process, in which the final manufacturer that delivers the iron or steel product to the worksite, vendor, or contractor, may provide a certification identifying all handlers of the iron or steel product, and asserting that all manufacturing processes occurred in the US; or
- (2) a Step Certification process in which each handler of the iron or steel product provides a separate certification letter certifying that their step in the process was domestically performed.

The following information is provided as a sample letter of certification for AIS compliance. Documentation must be provided on company letterhead. The Final Manufacturer's Certification should list everyone who has handled the product, starting with the processor of the raw iron or steel through the contractor who installs the final product.

Company Name
Company Address
City, State Zip

I, (company representative), certify that the following products and/or materials shipped/provided to the subject project are in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

1. X_{xxx}
2. X_{xxx}
3. X_{xxx}

Contractor: _____
(Name) (Item) (Process)

Supplier: _____
(Name) (Item) (Process)

Manufacturer: _____
(Name) (Item) (Process)

Processor: _____
(Name) (Item) (Process)

Signed by company representative

Step Certification

A step certification is a process under which each handler (supplier, fabricator, manufacturer, processor, etc.) of the iron and steel products certifies that their step in the process was domestically performed. The Step Certification process requires you receive a separate letter from everyone who handles the product, starting with the processor of the raw iron or steel through the contractor who installs the final product.

Step Certification Letter

The following information is provided as a sample letter of step certification for AIS compliance. Documentation must be provided on company letterhead of each handler responsible for that process of the iron or steel product.

Date

Company

Name

Company

Address

City, State

Zip

Subject: American Iron and Steel Step Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the (melting, bending, coating, galvanizing, cutting, etc.) process for (manufacturing or fabricating) the following products and/or materials shipped or provided for the subject project is in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxx

2. Xxx

3. Xxx

Such process took place at the following location:

Handler: _____
(Name) (Item) (Process)

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

Step Certification Log

The following information is provided as a sample log to keep track of step certification for AIS compliance. The TWDB makes no claims regarding the legality of the step certification log with respect to AIS compliance.

**American Iron and Steel
Step Certification Log for**

(Iron or Steel Product)

Contractor:	_____	_____	_____
	(Name)	(Item)	(Process)
Supplier:	_____	_____	_____
	(Name)	(Item)	(Process)
Manufacturer:	_____	_____	_____
	(Name)	(Item)	(Process)
Processor:	_____	_____	_____
	(Name)	(Item)	(Process)

De Minimis Log

The following information is provided as a sample De Minimis log for AIS compliance. The TWDB makes no claims regarding the legality of the De Minimis log with respect to AIS compliance.

Figure 1 - Information contained in the log example: Owner Name, Project Name, TWDB SRF Number, Contractor Name, Total Project Cost, Total Material Cost followed by data entered for each of the following categories: Item Number, Iron or Steel Product, Unit Cost, Quantity, Total Cost, Percent of Total Material Cost Less Than One Percent, Cumulative Cost, Percent of Total Material Cost Less Than Five Percent.

[illegible]

Attachment 9: Monthly American Iron and Steel Certificate

Compliance Submittal by Owner (Sub-Recipient)

TWDB Project No. _____

Loan No. _____

This executed certificate must be submitted with each Outlay report for iron and steel products included within construction contracts.

I, _____, _____ of
(Name) (Title)

_____ hereby certify that all iron and steel products and/or materials incorporated into the construction, alteration, maintenance, or repair of the subject project are in full compliance with the American Iron and Steel requirements of Section 608 of the Federal Water Pollution Control Act for the Clean Water State Revolving Fund or applicable federal law, including federal appropriation acts, for the Drinking Water State Revolving Fund, or comply with waivers granted by the U.S. Environmental Protection Agency.

I understand that a false statement herein may subject me to penalties under federal and state laws relating to filing false statements and other relevant statutes.

Signature

Date

EXCERPTS FROM TEXAS WATER CODE

(Previously WRD-021)

The following excerpts from the Texas Water Code are hereby made a part of this contract. In the event there are any conflicts between these requirements and requirements of the specifications, these excerpts will govern.

CONSTRUCTION CONTRACT REQUIREMENTS

Pursuant to § 17.183 of the Texas Water Code, the governing body of each political subdivision receiving financial assistance from the board shall require in all contracts for the construction of a project:

- (1) that each bidder furnish a bid guarantee equivalent to five percent of the bid price;
- (2) that each contractor awarded a construction contract furnish performance and payment bonds:
 - (A) the performance bond shall include without limitation guarantees that work done under the contract will be completed and performed according to approved plans and specifications and in accordance with sound construction principles and practices; and
 - (B) the performance and payment bonds shall be in a penal sum of not less than 100 percent of the contract price and remain in effect for one year beyond the date of approval by the engineer of the political subdivision; and
- (3) that payment be made in partial payments as the work progresses;
- (4) that each partial payment shall not exceed 95 percent of the amount due at the time of the payment as shown by the engineer of the project, but, if the project is substantially complete, a partial release of the five percent retainage may be made by the political subdivision with approval of the executive administrator;
- (5) that payment of the retainage remaining due upon completion of the contract shall be made only after:
 - (A) approval by the engineer for the political subdivision as required under the bond proceedings;
 - (B) approval by the governing body of the political subdivision by a resolution or other formal action; and
 - (C) certification by the development fund manager in accordance with the rules of the board that the work to be done under the contract has been completed and performed in a satisfactory manner and in accordance with sound engineering principles and practices;
- (6) that no valid approval may be granted unless the work done under the contract has been completed and performed in a satisfactory manner according to approved plans and specifications; and
- (7) that, if a political subdivision receiving financial assistance under Subchapter K of this chapter, labor from inside the political subdivision be used to the extent possible.

FILING CONSTRUCTION CONTRACT

The political subdivision shall file with the Board a certified copy of each construction contract it enters into for the construction of all or part of a project. Each contract shall contain or have attached to it the specifications, plans, and details of all work included in the contract.
Amended by Acts 1987, 70th Leg., ch. 1103, Sec. 1, eff. Sept. 1, 1987.

Excerpts from Texas Water Code

Page 2 of 2

INSPECTION OF PROJECTS

1. the Board may inspect the construction of a project at any time to assure that:
 - a. the contractor is substantially complying with the approved engineering plans of the project; and
 - b. the contractor is constructing the project in accordance with sound engineering principles.
2. inspection of a project by the Board does not subject the State to any civil liability.

ALTERATION OF PLANS

After the Executive Administrator approves the engineering plans, a political subdivision may not make any substantial or material alteration in the plans unless the Executive Administrator authorizes the alteration in accordance with the rules of the Board. For a waste water treatment plant or other facility required to have commission approval of the plans and specifications, the commission must give its approval before a substantial or material alteration is made in those plans.

Amended by Acts 1987, 70th Leg., ch. 1103, Sec. 1, eff. Sept. 1, 1987.

CERTIFICATE OF APPROVAL

The Executive Administrator may consider the following as grounds for refusal to give a Certificate of Approval for any construction contract:

1. failure to construct the project according to approved plans;
2. failure to construct the works in accordance with solid engineering principles;
- or
3. failure to comply with any terms of the contract.

Amended by Acts 1987, 70th Leg., ch. 1103, Sec. 1, eff. Sept. 1, 1987.

The Texas Water Code is available online at: <http://www.statutes.legis.state.tx.us/?link=WA>.
Chapter WATER CODE, CHAPTER 17. PUBLIC FUNDING, Sec. §17.183.

SECTION 01 11 13

WORK COVERED BY CONTRACT DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Definitions.
 - 2. Work Covered by Contract Documents.
 - 3. Cash Allowances.
 - 4. Owner-Furnished Products.
 - 5. Document Management Software
 - 6. Work Sequence.
 - 7. Work Guidelines.
 - 8. Coordination of Work.
 - 9. Contractors Use of Premises.
 - 10. Contract Clarification.
 - 11. Alternate Construction Methods.
 - 12. Utility Lines.
 - 13. Warranty.
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
 - 2. Division 01 – General Requirements.

1.2 MEASUREMENT AND PAYMENT (NOT USED)

1.3 SUBMITTALS (NOT USED)

1.4 DEFINITIONS (NOT USED)

1.5 WORK COVERED BY CONTRACT DOCUMENTS

- A. Work of the contract is for rehabilitation of approximately 16,100 L.F. of existing 42" thru 72" sanitary sewer gravity main by cured-in-place pipe (CIPP) lining. The sanitary sewer gravity main is located along the Bear Branch waterway between Kuykendahl Rd. and WWTF No. 2 in The Woodlands, Texas. This project also includes the preparation and implementation of a Flood Risk Mitigation Plan, rehabilitation of manholes, pre and post cleaning and television inspection,

diversion pumping, installing temporary construction access roads/bridges, and all labor, equipment, materials, and incidentals required for the project.

- B. The existing sanitary sewer gravity main is located within the limits of an existing 30' or 40' easement along the Bear Branch waterway. Access to the existing sanitary sewer gravity main is limited due to the location and existing terrain, presence of trees and brush, and a golf course along the alignment. The Contractor shall coordinate his operations with Montgomery County, The Woodlands Country Club (Palmer Course) Golf Club, The Woodlands Development Company, The Woodlands Water Agency (TWWA), and The Woodlands Township for access during construction. The Contractor must meet the requirements of the above entities and any special requirements identified in the field.

1.6 CASH ALLOWANCES

- A. Include the following specific Allowances in the Contract Price:
 - 1. A miscellaneous allowance has been established for agency permits (such as TCEQ and County) as approved by the Owner. Contractor shall submit a detailed breakdown of fees paid for permits to the Owner.
 - 2. Allow the Stipulated sum as indicated in Section 00 41 00.02 – Proposal Form for Agency Permits (such as TCEQ and the County Permit Department), to be reimbursed on an Actual Cost Basis.
- B. Whenever costs are more or less than the stipulated allowance, the Contract Price shall be adjusted accordingly via Change Order, see Specification Section 01 26 63 – Change Orders. The amount of the Change Order shall be the difference between actual costs and the amount of the allowance stated in the Bid or Proposal.

1.7 OWNER-FURNISHED PRODUCTS (NOT USED)

1.8 DOCUMENT MANAGEMENT SOFTWARE

- A. Contractor and the Owner's Representative shall be given the applicable number of Document Management System user names and passwords.
- B. Contractor shall use the Owner's internet based document management system to transmit its documents to the Owner's Representative, including but not limited to Requests for Information (RFIs), shop drawing submittals, applications for payment, and letters of correspondence. Refer to Specification Section 01 33 00 – Submittals. The document management software should be able to automatically notify all team members of a submittal upload regardless of the originator, i.e. contractor, Principal Architect/Engineer, Owner's Representative, or Owner. Notification of new uploads should go to all team members regardless if they are the Principal Architect/Engineer or not, i.e. sub-consultants for construction management & inspection, but are not tasked as the Principal Architect/Engineer.

- C. A minimum of one (1) and a maximum of three (3) accounts on the document management system will be provided by the Owner. Additional accounts may be requested by the Contractor.
- D. Each account will allow one (1) user to access the document management system. Training on the document management system will be provided by the Owner as requested by the Contractor at a mutually agreed upon date and location.

1.9 WORK SEQUENCE

- A. Construct Work in phases during the construction period. Coordinate construction schedule and operations with the Owner's Representative. Subcontractors shall coordinate its activities and operations with the Contractor.
- B. Construction of this project may require using multiple crews working concurrently in order to complete the project within the specified Contract Time. At no time will multiple crews be allowed to work in consecutive traffic control phases during construction.
- C. Data for all facilities and utilities shown were taken from available plans, record drawings, and/or utility maps made available from several sources. Actual field locations of facilities and utilities may vary from that shown on the Drawings. Contractor shall make a complete and independent verification of utility locations prior to submittal of subsequent shop drawings. Unless otherwise approved by the Owner's Representative, work shall not continue at locations where there is a conflict with existing utilities.
- D. Construction disturbing traffic shall be conducted during off-peak hours, 9:00 a.m. to 4:00 p.m. weekdays and/or weekends 7:00 p.m. Friday to 4:00 a.m. Monday. Exception to these times, if necessary, shall be sought during the approval process. Continue work in areas using same construction schedule during following, consecutive days and/or weekends until work is completed.
- E. Flow in the Bear Branch waterway and drainage ditches must be maintained at all times.

1.10 WORK GUIDELINES

- A. Maintain local driveway access to public schools, residential and commercial properties adjacent to work areas at all times. Provide temporary driveway access in accordance with Specification Sections 01 55 26 – Traffic Control and 01 14 19 – Use of Premises. Coordinate work and schedule with impacted business owners, schools, and residents in conjunction with the Owner, well in advance of commencing the Work in the area(s) of the impacted entities.
- B. Contractor shall adhere to each privately owned and operated utility company's construction guidelines when constructing the proposed Work adjacent-to or across each such entities wet or dry utility.

- C. Contractor shall coordinate its Work with the respective pipeline companies' at all proposed utility crossings. See appropriate Contract Drawings for additional and /or related information.
- D. Obtain right-of-entry agreement(s), insurance, crossing permit(s), and other documentation as required or deemed necessary by each utility or pipeline company or other such entity at no additional cost to the Owner.
- E. Contractor shall coordinate its Work schedule with those utility companies who require a representative of their company to be present (onsite) during the construction adjacent-to or across their wet or dry utility.
- F. Site restoration at all crossings shall be performed immediately upon completion of the Work. Restoration shall be performed in accordance with all applicable Specification Sections and utility company requirements.
- G. Hand dig within one (1) foot of underground service lines (public or private).
- H. Contractor shall bear the sole responsibility for damage to existing traffic cables resulting from its construction activities. The Contractor shall be responsible for the repair of damaged traffic cables including the re-cabling of the entire intersection if required, at no additional cost to the Owner.
- I. Work associated with hydrostatic testing, pressure testing, or cleaning of the new facility shall not begin without prior approval from the Owner's Representative.

1.11 COORDINATION OF WORK

- A. Coordinate activity schedule and extend full cooperation to other Contractors who have responsibilities either concurrent with, proceeding, or following this project's duration along the work site. Ensure availability of access to selected portions of this project area to others and provide appropriate information for planning purposes to other Contractors. No compensation or time extension will be allowed as a result of conflicting construction activities.
- B. Comply with coordination requirements outlined in Specification Section 01 14 19 – Use of Premises.
- C. Dial 811 to contact either Texas 811 or Lone Star 811 One-Call all three (3) One-Call centers in the state of Texas a minimum of forty-eight (48) hours prior to construction within twenty-five (25) feet of a private pipeline.

Contact numbers for such centers are as follows:

- 1. TESS (Texas) One Call (800) 344-8377
- 2. Texas One-Call (800) 245-4545
- 3. Texas (Lone Star) One Call (800) 669-8344
- D. All work shall be performed to the lines, grades, elevations, and locations shown on the Drawings.

- E. Prevent overstress or damage of any structure and any part or member of it during construction. This applies to new and existing facilities, utilities, and structures affected by construction operations. Contractor shall monitor and record the effect of its construction operations on new and existing facilities, utilities and structures and provide engineered temporary supports and connections as required to assure the safety and stability of the same to prevent overstress of any part.
- F. Work shall include the restoration of existing drainage swale systems. Contractor shall restore ground cover to areas damaged during construction. Within residential areas, provide block sod. Perform block sodding or hydro-mulch per Specification Sections.
- G. Contractor Work performed within all rights-of-way shall be performed in accordance with the respective entities' standards.
- H. Coordination of Work at Bear Branch Sportsfields:
All work within the vicinity of the Bear Branch Sportsfields must be coordinated with The Woodlands Township and the SJRA.
 - 1. The Contractor will be responsible for meeting The Woodlands Township requirements when working within the vicinity of the Bear Branch Sportsfields.
 - 2. Any work within the vicinity of the Bear Branch Sportsfields must be approved by The Woodlands Township prior to mobilizing to the area. Not later than sixty (60) calendar days prior to the date the access and construction staging is needed within the vicinity of the Bear Branch Sportsfields, The Woodlands Township shall be notified and provided a site plan and schedule for the work.
 - 3. Contractor is made aware that The Woodlands Township has provided the following 2019 Schedule and Recommendations as a guidance for work in the Bear Branch Sportsfields area. The Contractor will continue to coordinate for any updates to the schedule and for 2020 schedule.

Bear Branch Sports Fields

- Preferred timing for work at the Bear Branch Sports Fields is **June to July 2020**. The Parks and Recreation Department is working to minimize the number of events during this time period in order to accommodate construction.
- We request that a majority work, especially truck traffic, **occur during weekdays**. January through August, the fields are used for general weekend recreational programming. Also, the western parking lot is used by the church on Sundays for overflow parking.
- Highest Priority 2019 events to accommodate include:
 - Sundays, January through August
 - August 30 – Friday Night Lights (Cross Country Tournament)*
 - September 27-29 – Nike Tournament (Cross Country Tournament)*
 - November, 15-26 – Nike Invitational (Cross Country Tournament)*
 - November 21-25 – Copa Tournament, international, one of the largest annual events
 - January 25-27 – Premier Cup

*Cross County tournaments utilize the disc golf course around perimeter of park, see map below. These events are also the hardest to accommodate by moving to other facilities.

Sports Fields - Calendar of Events

2019 Dates	Event	Est. Attendance
Wednesdays (year round)	General Seasons Rec Programming	75
Sundays (Jan-Aug)	General Seasons Rec Programming	900
January – early June	Dynamo Dash's Regular Season	3200/week
January 4-5	7 v 7's Drew Web Lacrosse	750-1000
January 17-19	TWHS JV Soccer Tournament	1200
January 25-27	Premier Cup	4700
February 15-18	Soccer Showcase	
April 20	Turf Cup	2500
May 25	Memorial Day Cup	2500
May – 1 week; June - 1 week	Dynamo Dash Summer Tryouts	1500/week
August – Mid month	Dynamo Youth Camp	2500
August 30	Friday Night Lights – Cross Country*	2500
September 27-29	Nike Tournament – Cross Country*	2500
November 15-16	Nike Invitational	2500
November 21-25	Copa Tournament	4700
December – mid-month	Dynamo Winter Blast	1500

I. Coordination of Work at The Woodlands Country Club – Palmer Course:

All work within the vicinity of The Woodlands Country Club – Palmer Course must be coordinated with Golf Course Staff and the SJRA.

1. The Contractor will be responsible for meeting the golf course requirements when working near the golf course. Contractor must provide minimum 4 weeks' notice prior to working in the area.
2. Any work within the vicinity of the golf course must be approved by the Golf Course Staff prior to mobilizing to the area.
3. Contractor is made aware that The Woodlands Country Club has provided the following 2019 Schedule and Recommendations as a guidance for work in the vicinity of the golf course area. The Contractor will continue to coordinate for any updates to the schedule and for 2020 schedule and accommodate the schedule.
 - a. Golf course is closed the week of August 12th thru August 16th, which may allow the Contractor to commence work in the area.
 - b. 2019 schedule where no work will be approved due to tournaments is as follows:

September 12-14 – Club Championship

October 2-4 – Member Guest
4. Contractor will be responsible for restoring all golf course areas that have been disturbed due to construction and access for construction. Contractor must match existing grass/sod that requires replacement. Contractor is responsible for coordinating and confirming with Golf Course Staff on specific grass/sod for replacement. Contractor must follow proper installation and care procedures per supplier's recommendations.

1.12 CONTRACTOR USE OF PREMISES

- A. Comply with all requirements outlined in Specification Section 01 14 19 – Use of Premises.

1.13 CONTRACT CLARIFICATION

- A. Should clarification of the Contract Documents be requested, request clarification before proceeding with Work by submitting a Request for Information (RFI). Such requests shall be preceded by a diligent investigation of the Contract Documents. Include evidence of such investigation(s) in all requests for clarification.

1.14 ALTERNATE CONSTRUCTION METHODS

- A. Alternate construction means and methods will be permitted in accordance with applicable Contract Document details and specification at no additional cost to the Owner. Alternate construction means and methods shall provide a substantial benefit to the project and/or the Owner. Contractor accepts full

responsibility for all additional costs of geotechnical investigations and other incidental items, including any re-design that may be necessary to permit the alternate construction means and methods.

- B. Contractor shall submit the below listed modifications for alternate construction methods to the Owner's Representative for Principal Architect/Engineer and Owner's consideration. Submittal shall be made prior to commencement of any construction activity utilizing an alternate construction method. Contractor execution of alternate construction methods prior to its receiving Principal Architect/Engineer and Owner's approval shall be at the sole risk of the Contractor for removal and replacement at no additional cost to the Owner. The following modifications must also be signed and sealed by a Licensed Professional Engineer registered in the State of Texas prior to submittal to Owner's Representative.
1. Proposed construction method and detailed plan of approach;
 2. Location of access shafts, if applicable;
 3. Proposed traffic control plan;
 4. Proposed storm water pollution prevention plan;
 5. Revisions to material specifications, and;

1.15 UTILITY LINES

- A. All utilities represented on the Drawings are shown as an approximate location and are based on the best information available during project design. Contractor shall field-verify the exact location of all utilities prior to commencing construction. The Contractor shall be responsible for any and all damage to these utilities, caused or resulting from their failure to locate, protect and/or maintain these utilities during construction.

1.16 WARRANTY

- A. Comply with the warranty requirements stipulated in Contract Document General Conditions and the warranty requirements of the various specification sections of this project manual.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 14 19

USE OF PREMISES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Administrative and procedural requirements for:
 - a. Contractor Responsibilities
 - b. Temporary Utilities
 - c. Limits of Construction
 - d. Storage Sheds and Buildings
 - e. Working Times
 - f. Site Access Times
 - g. Notification to Adjacent Occupants
 - h. Safety Requirements
 - i. First Aid Equipment
 - j. Fire Protection
 - k. Security Measures
 - l. Protection of Utilities, Pipelines, and Property
 - m. Surface Restoration
 - n. Traffic Control and Use of Public Rights of Way
 - o. Contractor's Roads and Parking
 - p. Coordination with Facility Owner's Operations
 - q. Contractor's Field Office
 - r. Principal Architect/Engineer's Field Office
 - s. Project Photographs
 - t. Special Considerations Related to Adjacent Properties and Facilities
 - u. Historical and Archaeological Sites

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00 – Proposing Requirements, Contract Forms, and General Conditions of the Contract.

2. Division 01 – General Requirements.
3. Specification Section 31 21 33 – Trenching, Backfilling, and Compacting for Utilities.

1.2 MEASUREMENT AND PAYMENT

- A. Unit Price. No separate payment will be made for this item. Include the cost in associated items for this project.

1.3 SUBMITTALS

- A. See Specification Section 01 33 00 – Submittals for the requirements for the mechanics and administration of the submittal process.
- B. Contractors Safety Program.
- C. All proposed notifications to adjacent occupants.
- D. Planning requests for temporary Owner's facility shutdowns.

1.4 CONTRACTOR RESPONSIBILITIES

- A. Comply with applicable requirements specified in other sections of Project Specifications.
- B. Comply with procedures for access to the site and Contractor's use of rights-of-way.
- C. Maintain and operate temporary construction facilities and temporary systems to assure continuous service of Owner's and other adjacent existing facilities.
- D. Modify and extend temporary systems as Work progress requires.
- E. Completely remove materials and equipment when no longer required.
- F. Restore existing facilities used for temporary services to original or better condition, or as specified.
- G. Prior to installation of material, equipment and/or other work, verify with subcontractors, material or equipment manufacturers, and installers that the substrate or surface to which those materials will attach is acceptable for installation of those materials or equipment. (Substrate is defined as any building or construction surfaces to which materials or equipment are attached to, or required prior to installation i.e., floors, walls, ceilings, soils, utilities, site grading, and backfill etc.).
- H. Correct unacceptable substrate until acceptable for installation of equipment or materials.
- I. Prepare and implement the Flood Risk Mitigation Plan, in accordance with and as required by the Contract Documents.

1.5 TEMPORARY UTILITES

A. Obtaining Temporary Service:

1. Make arrangements with utility service companies for temporary services, unless provided by Owner.
2. Abide by rules and regulations of utility service companies and/or authorities/agencies/entities having jurisdiction.
3. Be responsible for utility service costs and permits until Work is substantially complete. Included services are fuel, power, light, heat, and any other utility services necessary for execution, completion, testing, and initial operation of Work.
4. Be responsible for providing approved metering devices, as necessary, for any temporary utilities.

B. Water:

1. Owner will provide the Contractor water required for performance of Work. Contractor will perform specified tests of piping, equipment, devices, or other equipment.
2. Provide and maintain adequate supply of potable water for consumption by Contractor personnel and Owner's Representatives.
3. Provide necessary approved metering devices and backflow preventers.

C. Electricity and Lighting:

1. Provide electrical service required for Work, including testing of Work. Provide power for lighting, operation of equipment, and other use as necessary.
2. For projects on existing sites, electric power service to be provided includes temporary power service or generator(s) to maintain Owner's operations during scheduled shutdown(s). Coordinate all temporary shutdowns with Owner and Owner's Representative(s).
3. Minimum lighting level shall be ten (10) foot-candles for open areas; twenty (20) foot-candles for stairs and shops. Provide minimum of one (1) 300 watt lamp for each 200 square feet of work area.

D. Heat and Ventilation:

1. Provide temporary heat as necessary for protection or completion of Work.
2. Provide temporary heat and ventilation to assure safe working conditions. Maintain enclosed areas at minimum of 50°F.

E. Telephone:

1. Provide emergency telephone service (including call waiting and call

forwarding) at Project Site for use by Contractor personnel, Owner, Owner's Representative, and others performing work or furnishing services at the site.

F. Sanitary Facilities:

1. Provide and maintain sanitary facilities for persons on job site. Comply with regulations of State and local departments of health.
2. Enforce use of sanitary facilities by construction personnel at job site. Enclose sanitary facilities. 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 nuisance or health problem. Haul sewage and waste off-site and properly dispose of in accordance with all applicable regulations.
3. Locate toilets near Work site, within 500 feet of working activities for line work projects and secluded from view as best as possible. Keep toilets clean and supplied throughout course of Work. Locate toilets a minimum of 100 feet from all water wells.

1.6 LIMITS OF CONSTRUCTION

- A. Construction operations and storage areas are limited to Owner's property, permanent easements, temporary construction easements (TCE), and/or the Limits of Construction or Construction Limits as indicated on the Contract Drawings.
- B. Unauthorized use of areas, or trespassing on land outside of defined limits, is not permitted. Access to the Site is limited due to the location and existing terrain, presence of trees and brush, and a golf course along the alignment. The Contractor shall coordinate operations with Montgomery County, The Woodlands Country Club (Palmer Course) Golf Club, The Woodlands Development Company, The Woodlands Water Agency (TWWA), and The Woodlands Township for access during construction.
- C. Make arrangements, at no cost to the Owner, for Contractor's temporary use of any private properties which may be needed by Contractor for performance of Work. Contractor and Contractor's surety shall indemnify and hold harmless the Owner and Owner's Representatives against claims or demands arising from use of properties outside the Limits of Construction. Submit notarized copy of any separately negotiated agreement(s) between private property owner(s) and Contractor prior to use of area.
- D. Where Limits of Construction are shown on Contract Drawings to extend to a property or Right-of-Way line, keep equipment, materials, and stockpiles a minimum of 5 feet from boundary, or existing fence lines.
- E. Where utility alignment is within an esplanade and Limits of Construction are

shown to extend to edge of the esplanade, keep equipment, materials, and stockpiles a minimum of 5 feet from back of curb.

- F. There are unique terms and conditions associated with the various public and private easements, rights-of-entry, encroachment and crossing documents (collectively, the easement documents) which may be site specific. Contractor shall familiarize itself with all easement Documents. Approved Temporary Access/ Construction Easement documents will be made available to the Contractor.
- G. The Contractor, at its sole expense, shall be responsible for complying with all terms and conditions of all easement documents and the easement rights described therein for this project.
- H. Contractor shall safely, properly, and adequately assume and perform all of the duties, indemnities, responsibilities, and liabilities of the Owner under the easement documents.
- I. Contractor, at its cost, shall provide all insurance required by the easement documents. All land included within the tracts covered by the easement documents and easements described herein shall be restored to its original condition prior to Substantial Completion of the construction (including, without limitation, repair or replacement of pavement, concrete, signs, fencing, trees, sidewalks, landscaping, shrubbery, and grass) unless otherwise specified in the Contract Documents.

1.7 STORAGE SHEDS AND BUILDINGS

- A. Provide adequately ventilated, watertight storage facilities with floor above ground level for protection of materials and equipment susceptible to weather damage.
- B. Store materials in neat and orderly manner. Store materials and equipment to permit easy access for identification, inspection, and inventory.
- C. Storage of materials not susceptible to weather damage may be on blocks off ground.
- D. Storage of all fuels and chemicals shall be in designated areas by Contractor.
- E. Refer to Specification Section 01 65 50 – Product Delivery, Storage, and Handling for additional requirements.
- F. Fill and grade site for temporary structures to provide positive drainage away from Work area, but not to impact adjacent property owners.
- G. Restrict total length of distributed materials along route of construction up to 1,000 linear feet as approved in writing by Owner's Representative.
- H. Avoid obstructing drainage ditches or inlets. When obstruction is unavoidable due to requirements of Work, provide grading and temporary drainage

structures to maintain unimpeded drainage flow. Failure of the Contractor to maintain proper site drainage shall prohibit it from making a claim against the Owner for monetary or time damages due to drainage impacts.

1.8 WORKING TIMES

- A. Construction shall be conducted during working hours as indicated in Specification Section 00 72 00 – General Conditions of the Contract, unless otherwise amended by a supplemental specification or agreement to the General Conditions of the Contract, and approved by Owner.

1.9 SITE ACCESS TIMES

- A. Contractor to coordinate all site access, including deliveries, outside of working hours with Owner's Representative. Neither Owner nor Owner's Representatives shall sign for any Contractor deliveries. Refer to Specification Section 01 65 50 – Product Delivery, Storage, and Handling.
- B. Contractor shall coordinate with Owner to not interfere with Owner's facility operations.

1.10 NOTIFICATION OF ADJACENT OCCUPANTS

- A. Notify individual occupants in areas to be affected by Work of proposed construction activities and schedule using a standardized notification form letter and/or door hanger. Notification shall be made not less than 72 hours or more than 2 weeks prior to performance of work within 200 feet of homes or businesses. Coordinate all notifications with Owner's Representative.
- B. Include in notification the names and telephone numbers of two Contractor representatives for resident contact available on 24-hour call. Describe precautions that Contractor will take to protect private property and identify potential inconveniences and disruptions to resident's access and utilities.
- C. For Contractor's convenience, Owner's Representative will provide an example notice at the pre-construction meeting. In addition to other requirements of this specification regarding notification to adjacent occupants, Contractor's notice is generally to follow the form and content of the example notice.
- D. Submit proposed notification(s) to Owner for approval prior to distribution. Provide notice(s) in languages as appropriate (i.e., double sided notice. Notice on one side shall be written in English and flip side shall be written in Spanish).

1.11 SAFETY REQUIREMENTS

- A. Beware of overhead power lines existing in area and in close proximity to project. When 10 feet of clearance between energized overhead power line and construction-related activity cannot be maintained, submit a request to the appropriate utility provider to de-energize or move conflicting overhead power line(s).

- B. Submit Contractor's Safety Program in accordance with Specification Section 01 33 00 – Submittals. Include Site Safety and Site Security in accordance with Specification Section 00 72 00 – General Conditions of the Contract. Include documented response to trench safety requirements as specified in Specification Section 00 31 32.10 – Trench Safety Geotechnical Information.
- C. Conduct operations in strict accordance with the Contractor's Safety Program, in accordance with applicable Federal, State, and local safety codes and statutes, and with good construction practice. Establish and maintain procedures for safety of all work, personnel, and equipment involved in Project.
- D. Observe and comply with Texas Occupational Safety Act (Art. 5182a, V.C.S.) and with all safety and health standards promulgated by Secretary of Labor under Section 107 of Contract Work Hours and Standards Act, published in 29 CFR Part 1926 and adopted by Secretary of Labor as occupational safety and health standards under Williams-Steiger Occupational Safety and Health Act of 1970, and to other legislation enacted for safety and health of Contractor employees. Safety and health standards apply to subcontractors and their employees as well as to Contractor and its employees.
- E. Observance of and compliance with regulations is solely and without qualification responsibility of Contractor without reliance or superintendence of or direction by the Owner or Owner's Representative. Immediately advise Owner's Representative of investigation or inspection by Federal Safety and Health Inspectors of Contractor or subcontractor's work or place of work on job site under this Contract, and after investigation or inspection, advise Owner's Representative of results. Submit one copy of accident reports to Owner's Representative within 10 days of occurrence.
- F. Protect areas occupied by workmen using best available devices for detection of lethal and combustible gases. Test devices frequently to assure functional capability. Constantly observe infiltration of liquids into Work area for visual or odor evidences of contamination, and immediately take appropriate steps to seal off entry of contaminated liquids into Work area.
- G. Implement safety measures, including but not limited to safety personnel, first-aid equipment, ventilating equipment, and other safety equipment, as specified or detailed on the Contract Drawings and Flood Risk Mitigation Plan.
- H. Maintain required coordination with Police and Fire Departments during entire period covered by Contract.
- I. In safety plan, include project safety analysis. Itemize major tasks and potential safety hazards. Plan to eliminate hazards or protect workers and public from each hazard, including but not limited to those hazards addressed in the Flood Risk Mitigation Plan.

1.12 FIRST AID EQUIPMENT

- A. Provide first aid kit throughout construction period. List telephone numbers for hospitals, and ambulance services in each first aid kit.
- B. Have at least one person thoroughly trained in first aid and cardiopulmonary resuscitation (CPR) procedures present on site whenever Work is in progress. Contractor to conform to protocols and requirements for training and protection against "blood borne pathogens."

1.13 FIRE PROTECTION

- A. Conform to specified fire protection and prevention requirements established by Federal, State, or local governmental agencies and as provided in Contractor's Safety Program.

1.14 SECURITY MEASURES

- A. Protect all Work materials, equipment, and property from loss, theft, damage, and vandalism. Perform duty to protect property of the Owner used in connection with performance of Work.
- B. If existing fencing or barriers are breached or removed for purposes of construction, provide and maintain temporary security fencing equal to existing.

1.15 PROTECTION OF UTILITIES, PIPELINES, AND PROPERTY

- A. Utilize Utility Coordinating Committee One Call System (telephone number, (713) 223-4567), which must be called 48 hours in advance to locate utilities. Toll free telephone number is 1-800-669-8344, Texas (Lone Star) One Call System.
- B. Notify The Woodlands Water Agency (TWWA) a minimum of 72 hours in advance of any field activities. Telephone number 281-367-1271.
- C. Prevent damage to existing utilities during construction. Utilities shown on Drawings are at approximate locations. Pre-locate, by whatever means may be required (metal detection equipment, probes, excavation, survey), underground utilities before excavating in accordance with the Critical Locations investigation described in Specification Section 31 21 33 – Trenching, Backfilling and Compacting for Utilities. Perform investigative work and repairs required after investigation. Contractor is responsible for damages caused by failure to locate and preserve these underground utilities. Give owners of utilities a minimum of five (5) days' notice before commencing Work in area, for locating utilities during construction and for making adjustments or relocation of utilities when they conflict with proposed Work. Include cost for temporary relocation of utilities necessary to accommodate construction in unit costs for utility construction unless otherwise noted on Drawings. Bypassing of sanitary waste to storm drainage facilities is not allowed. Utility service laterals are not shown on Drawings. Contractor shall anticipate that service lines exist and

repair them when damaged due to construction activity. No separate payment will be made for repair work. Include payment in unit prices for work in appropriate sections.

- D. Contractor shall adhere to each privately owned and operated utility company's construction guidelines when working adjacent-to or across each such entities wet or dry utility.
- E. Prior to abandonment of any utility indicated on the Drawings, make arrangements with Owner's Representative and utility owner to terminate service, remove meters, valves, appurtenances, transformers, and/or poles, as required.
- F. Utility Outages and Shutdowns: Provide a notification to the Owner's Representative and private utility companies (when applicable) a minimum of 48 hours, excluding weekends and holidays, in advance of required utility shutdown. Shutdown planning and coordination activities shall commence a minimum of 2-weeks prior to scheduled shutdown. Coordinate all work as required.
- G. Protect and prevent damage to existing crossing, parallel, and adjacent pipelines during construction in accordance with Specification Section 01 11 13 – Work Covered by Contract Documents.
- H. When excavating near product pipelines and prior to start of excavation, request that representative of pipeline company come to the construction site(s) to meet representatives of Contractor and Owner's Representative to discuss actual procedures that will be used. Request that pipeline company's representative probe and locate pipelines in at least three locations: one at each side of proposed excavation and one at centerline of proposed Work. Representative of the pipeline company and Owner's Representative must be present to observe activities of Contractor at all times when excavation is being conducted within 15 feet of existing pipelines.
- I. Protection of the Work, and Public and Private Property
 - 1. Take precautions, provide programs, and take actions necessary to protect the Work, and public and private property from damage.
 - 2. Do not alter condition of properties adjacent to and along Limits of Construction.
 - 3. Do not use ways, means, methods, techniques, sequences, or procedures that result in damage to adjacent properties or improvements.
 - 4. Restore properties damaged by Contractor outside of designated Limits of Construction at no cost to Owner.
 - 5. Take action to prevent damage, injury, or loss, including, but not limited to, the following:

- a. Store materials, supplies, and equipment in orderly, safe manner that will not interfere with progress of Work or work of others.
 - b. Provide suitable storage for materials subject to damage by exposure to weather, theft, breakage, or otherwise.
 - c. Place upon Work or any part thereof only safe loads.
 - d. Frequently clean up refuse, rubbish, scrap materials, and debris created by construction operations, keeping Project site safe and orderly.
 - e. Provide safe barricades and guard rails to protect pedestrian and vehicular traffic around openings, scaffolding, temporary stairs and ramps, excavations, elevated walkways, and other hazardous areas.
6. Assume full responsibility for preservation of public and private property on or adjacent to the Limits of Construction. When direct or indirect damage is done by or on account of any act, omission, neglect, or misconduct in execution of Work by Contractor, restore to condition equal to or better than that existing before damage was done.
 7. Perform daily clean up in affected construction areas in order to restore site to existing or better conditions. Areas should be free of debris, scrap material, dirt, mud, and other items identified by Owner's Representative. Do not leave buildings, roads, streets, or other construction areas unclean. If deemed necessary by the Owner's Representative, Contractor shall employ street sweeping/cleaning equipment to maintain area streets.
- J. Barricades and Warning Signals:
1. Where Work is performed on or adjacent to any roadway, right-of-way, or public place, furnish and erect barricades, fences, lights, warning signs, and danger signals, and take other precautionary measures, for protection of persons or property and of the Work.
 2. Paint barricades to be visible at night. From sunset to sunrise, furnish and maintain at least one light at each barricade.
 3. Erect sufficient barricades to keep vehicles and pedestrians from entering the area under construction.
 4. Maintain barricades, signs, lights and provide watchmen until Project is accepted by the Owner or the site has been completely restored to its preconstruction condition.
 5. Whenever Work creates encroachment on public roadways, station flagmen to manage traffic flow in accordance with approved traffic control plan. Refer to Specification Section 01 55 26 – Traffic Control.
- K. Protection of Existing Structures:

1. Underground Structures:
 - a. Underground structures are defined to include, but not be limited to, sewer, water, gas, and other piping, manholes, boxes, chambers, electrical signal and communication conduits, tunnels, and other existing subsurface installations located within or adjacent to limits of Work.
 - b. Known underground structures including water, sewer, electric, and telecommunication services are shown on Contract Drawings. This information is not guaranteed to be correct or complete.
 - c. Explore ahead of trenching and excavation work and sufficiently uncover obstructing underground structures to determine their location, to prevent damage to them, and to prevent interruption of utility services. Restore underground structures to original conditions at no additional cost if damaged during construction.
 - d. Locate and protect private lawn sprinkler systems which may exist within site. Repair or replace damaged systems to condition existing at start of Work, or better.
 - e. Necessary changes in location of Work may be made by the Owner to avoid unanticipated underground structures.
 - f. If permanent relocation of underground structures or other subsurface installations is required and not otherwise provided in Contract, the Owner will direct Contractor in writing to perform Work, which is paid for under provisions for changes as described in Specification Section 00 72 00 - General Conditions of the Contract.
2. Surface Structures: Surface structures are defined as existing buildings, structures and other constructed installations above ground surface. Included with structures are their foundations and any extensions below the surface. Surface structures include, but are not limited to buildings, tanks, walls, bridges, roads, dams, channels, open drainage, piping, poles, wires, posts, signs, markers, curbs, walks, guard cables, fencing, and other facilities visible above ground surface.
3. Existing Condition Survey: Contractor shall survey and adequately document the condition and elevation of existing structures adjacent to the proposed alignment. Monitoring program for proposed trenchless construction operations shall be developed in accordance with trenchless construction Specification Sections.
4. Protection of Underground and Surface Structures:
 - a. Support in place and protect from direct or indirect damage underground and surface structures located within or adjacent to limits of Work.
 - b. Prevent overstress or damage to any structure and any part or member

of structures during construction. This applies to new and existing facilities, utilities, and structures affected by construction operations. Contractor shall monitor and record the effect of its construction operations on new and existing facilities, utilities, and structures, and shall provide engineered temporary supports and connections as required to assure the safety and stability of the structures and prevent overstress of any part. Employ a registered Professional Engineer licensed in the State of Texas to design temporary supports to assure safety and integrity of structures and facilities.

- c. Install temporary supports carefully and as required by party owning or controlling structure. Before installing structure supports, satisfy Owner's Representative that methods and procedures have been approved by owner of structure.
- d. Avoid moving or changing property of public utilities or private corporations without prior written consent of responsible official of that service or public utility. Representatives of these utilities reserve the right to enter within limits of this Project for purpose of maintaining their properties, or of making changes or repairs to their property that may be considered necessary by performance of this Contract.
- e. Notify owners and/or operators of utilities and pipelines adjacent to the Work of the nature of construction operations and dates when operations will be performed. When construction operations are required in immediate vicinity of existing structures, pipelines, or utilities, give minimum of 5 working days advance notice. Probe and flag location of underground utilities prior to commencement of excavation. Keep flags in place until construction operation reaches and uncovers utility.
- f. Assume risks attending presence or proximity of underground and surface structures within or adjacent to Work including but not limited to damage and expense for direct or indirect damage caused by Contractor's Work to structure. Immediately repair damage.

L. Protection of Installed Products:

- 1. Provide protection of installed products to prevent damage from subsequent operations. Remove protection facilities when no longer needed, prior to final completion of Work.
- 2. Control traffic to prevent damage to equipment, materials, and surfaces.
- 3. Provide coverings to protect equipment and materials from damage. Cover projections, wall corners, jambs, sills, and exposed sides of openings in areas used for traffic and passage of materials in subsequent work.

1.16 SURFACE RESTORATION

- A. Restore site to the condition which existed before construction in accordance with Specification Section 01 74 23 – Restoration of Site, unless otherwise noted in Contract Documents.
- B. For projects not having well defined phases, the total linear footage of project rights-of-way and/or easements that may be disturbed at any given time, shall be limited to no more than fifty (50) percent of the total project linear footage or 1,000 linear feet, whichever is less. Accordingly, disturbed areas shall be restored in accordance with Specification Section 01 74 23 – Restoration of Site prior to proceeding with Work that would exceed the fifty (50) percent total project disturbed length or 1,000 linear feet, whichever is less.

1.17 TRAFFIC CONTROL AND USE OF PUBLIC RIGHTS OF WAY

- A. Comply with traffic regulation in accordance with Specification Section 01 55 26 - Traffic Control, and approved traffic control plan(s).
- B. Provide barricades and signs in accordance with Section VI of the State of Texas Manual on Uniform Traffic Control Devices.
- C. Obtain necessary permits and Owner's approval when the nature of Work requires closing an entire street. Obtaining permits required for street closure are the Contractor's responsibility. Avoid unnecessary inconvenience to abutting property owners. Avoid closing more than two (2) consecutive intersections at one time, except by permission of Owner.
- D. Notify Owner's Representative at least 48 hours prior to closing a street or street crossing. It is the Contractor's responsibility to obtain all required permits for street closures in advance.
- E. Maintain 10-foot-wide minimum access lane for emergency vehicles, including access to fire hydrants, at all times.
- F. Remove surplus materials and debris and open each 500 lineal foot length of roadway for public use when work within that length is complete.
- G. Contractor shall provide and install signs indicating entrances to businesses whose normal entry is impaired or detoured as a result of construction. Proposed signs shall be submitted to the Owner's Representative for approval prior to manufacture and installation.
- H. Final acceptance of any portion of Work is not based on return of roadway to public use.
- I. Avoid obstructing driveways or entrances to private property.
- J. Provide temporary access or complete excavation and backfill in one continuous operation to minimize duration of obstruction when excavation is required across drives or entrances.

- K. Contractor shall bear the sole responsibility for damage to existing traffic cables resulting from its construction activities. The Contractor shall be responsible for the repair of damaged traffic cables including the re-cabling of the entire intersection if required, at no additional cost to the Owner.
- L. Construct and maintain temporary detours, ramps, and/or roads to provide for normal public traffic flow when use of public roads or streets is closed by necessities of Work. Contractor shall obtain all required roadway closure or detour permits in advance of commencing the proposed temporary detour, ramps, and/or roadway Work.
- M. Provide mats or other means to prevent overloading or damage to existing roadways from tracked equipment, large tandem axle trucks or equipment that will damage existing roadway surface. Contractor shall repair or replace damaged roadway not scheduled for removal and/or replacement at no additional cost to the Owner. Repairs or replacement shall be in conformance with the roadway owner's requirements.
- N. Provide daily sweeping of hard-surface roadways to remove soils tracked onto public roadways.

1.18 CONTRACTORS ROADS AND PARKING

- A. Prevent interference with traffic on existing roads.
- B. Construct and maintain temporary access roads and parking areas.
- C. Designate temporary parking areas to accommodate Contractor's and Owner's Representative personnel. When site space is not adequate, provide additional off-site parking. Locate as approved by Owner's Representative.
- D. Minimize use by construction traffic of existing streets and driveways.
- E. Do not allow heavy vehicles or construction equipment in existing parking areas.
- F. Do not inhibit the ability of the Owner's personnel to access, operate, and maintain existing facilities during construction.

1.19 COORDINATION WITH FACILITY OWNER'S OPERATIONS

- A. Definition: A "shutdown" is when a portion of the normal operation of Owner's facility, whether equipment, systems, piping, or conduit, has to be temporarily suspended or taken out of service to perform the Work.
- B. Work that may interrupt normal operations shall be accomplished at times convenient to, and approved by Owner.
- C. Except for necessary shutdowns, perform the Work such that Owner's facilities remain in continuous satisfactory operation during the Project. Schedule and conduct the Work such that the Work does not:

1. Impede Owner's production or processes,
 2. Create potential hazards to public health or wellbeing,
 3. Create potential hazards to operating equipment and personnel,
 4. Reduce the quality of Owner's facilities' product(s) or effluent, or
 5. Cause odors or other nuisances.
- D. Coordinate shutdowns with Owner. When possible, combine activities into a single shutdown to minimize impacts on Owner's operations and processes.
- E. Submit a shutdown plan to the Owner and Principal Architect/Engineer a minimum of 14 days prior to a planned shutdown. Shutdown plan shall consist of the following:
1. For each shutdown, submit an inventory of labor and materials required to perform the shutdown and activities, an estimate of time required to accomplish the complete shutdown including time for Owner to take down and start up existing equipment, systems, or conduits, and written description of steps required to complete the Work associated with the shutdown.
- F. After acceptance of shutdown planning submittal and prior to starting the shutdown, provide written notification to Owner of date and time each shutdown is to start. Provide written notification submitted to the Owner's Representative at least 72 hours in advance of each shutdown.
- G. Furnish at the Site, in close proximity to the shutdown and tie-in work areas, tools, equipment, spare parts and materials, both temporary and permanent, necessary to successfully complete the shutdown. Complete to the extent possible, prefabrication of piping and other assemblies prior to the associated shutdown. Demonstrate to Owner's satisfaction that Contractor has complied with these requirements before commencing the shutdown.
- H. If Contractor's operations cause an unscheduled interruption of Owner's operations, immediately re-establish satisfactory operation for Owner.
- I. Unscheduled shutdowns or interruptions of continued safe and satisfactory operation of Owner's facilities that result in fines or penalties by authorities having jurisdiction shall be paid solely by Contractor.

1.20 CONTRACTOR'S FIELD OFFICE

- A. At Contractor's cost, and upon approval from Owner, Contractor must provide their own field office and temporary facilities, parking areas, equipment and material storage areas. Contractor shall be responsible for all permits, permissions, leases, utilities and maintenance of its facilities. Contractor shall maintain his temporary facilities in a clean, neat and orderly manner. Facilities for the Owner's Representative will be provided by the Contractor. All Contract

and progress meetings will be held at the Owner's facilities as identified at the pre-construction conference.

B. Store materials in neat and orderly manner. Place materials and equipment to permit easy access for identification, inspection, and inventory.

C. Furnish and Locate:

1. Locate temporary field office within reasonable driving distance of the project site.
2. Provide office space ready for operation within 10 days after Notice to Proceed.
3. Construct all-weather, hard-surfaced parking spaces. Provide all-weather surfaced walk between parking spaces and field office.
4. Furnish, install, and maintain field office for exclusive use of authorized representatives of the Owner. Provide construction field office space for Owner's construction inspectors (minimum 2 inspectors).

D. Minimum Construction:

1. Structurally sound foundation and superstructure.
2. Completely weather tight with insulated roof, walls, and 7 foot ceiling (minimum).
3. Stairs or walkway with handrail and covered entrance platform (minimum 4 feet by 4 feet) with mud scraper at door.
4. Resilient floor covering.
5. Screened windows with area equal to approximately 10 percent of floor area sufficient for light, view, and ventilation. Provide each window with operable sash and burglar bars.
6. Secure, lockable exterior doors with dead-bolt cylinder locks.

E. Minimum Services:

1. Exterior light at entrance.
2. Interior lighting of 75 foot-candles minimum at desk-top height.
3. Automatic heating to maintain 65°F in winter.
4. Automatic cooling to maintain 75°F in summer.
5. Electric power service.
6. Telephone service including minimum three lines—one for voice, one for Internet, and one for fax, if necessary.
7. Sanitary facilities in field office with one water closet and one lavatory and medicine cabinet.

8. Mailing address.
- F. Minimum Furnishings:
 1. One 5-drawer desk.
 2. Two swivel-desk chairs with casters.
 3. One plan table.
 4. One plan rack to hold drawings.
 5. One, 4-drawer legal file cabinet complete with 50 legal-size hanging folders and two full sized carriers.
 6. One marker board with cleaner, eraser, and markers.
 7. Two waste baskets.
 8. One tack board, 30 inches by 36 inches.
 9. One all-purpose fire extinguisher.
 10. Six protective helmets (hard hats) with ratchet adjustment for use by Owner's Representatives and/or Principal Architect/Engineer.
 11. Conference table and chairs to accommodate ten persons.
 12. Plain-paper fax machine.
 13. Telephone instrument separate from fax machine.
 14. Computer(s) equipped with MS Office 2007 or newer software.
- G. Provide adequate bookcase space for one set of Contract Documents for ready reference.
- H. Designate field office as non-smoking facility.
- I. At this office, maintain complete field file of Shop Drawings, posted Drawings and Specifications, and other files of field operations including provisions for maintaining "As Built Drawings."

1.21 PROJECT PHOTOGRAPHS

- A. Refer to Specification Section 01 32 36.01 – Project Photographs

1.22 SPECIAL CONSIDERATIONS RELATED TO ADJACENT PROPERTIES AND FACILITIES

- A. Contractor shall be responsible for negotiations of any waivers or alternate arrangements required to enable transportation of materials to the site.
- B. Maintain conditions of access road to site such that access is not hindered as the result of construction related deterioration.

1. Provide daily sweeping of hard-surface roadways to remove soils tracked onto roadway.

1.23 HISTORICAL AND ARCHAEOLOGICAL SITES

- A. If, during the course of construction, evidence of deposits of historical or archeological interest are found, the Contractor shall cease operations affecting the find and shall notify Owner.
 1. No further disturbance of the deposits shall ensue until the Contractor has been notified by Owner that Contractor may proceed.
 2. Owner will issue a notice to proceed after appropriate authorities have surveyed the find and made a determination to Owner.
 3. Compensation to the Contractor, if any, for lost time or changes in construction resulting from the find shall be determined in accordance with changed or extra work provisions of the Contract Documents.
 4. The site has been previously investigated and has no known history of historical or archaeological finds. Refer to report titled Federal Environmental Review (TWDB-0801) for details.
- B. Refer to Specification Section 00 72 00 – General Conditions of the Contract including paragraph 4.2.4.

1.24 WARRANTY (NOT USED)

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 MAINTENANCE

- A. Maintain temporary facilities in a clean, neat, and orderly manner including maintenance of all-weather surface driveway and parking areas, buildings and furnishings, and equipment or materials furnished and supplied as part of any temporary field office or storage yard for duration of Contract.
- B. Provide regular janitorial services for any temporary field office for duration of Contract. Janitorial services consist of twice weekly sweeping and mopping of floors and trash removal, weekly cleaning of restrooms, and weekly dusting of furniture and equipment.
- C. Provide soap and water, paper towels, toilet paper, cleansers, and other necessary consumables to properly maintain any temporary field office and all temporary toilet facilities.

- D. At this office, maintain complete field file of Shop Drawings, posted Drawings and Specifications, and other files of field operations including provisions for maintaining "As Built Drawings."
- E. Immediately repair damage, leaks, or defective service.
- F. Remove any field office provided under this contract from site upon acceptance of the entire work by the Owner.

3.2 OWNER TRAINING (NOT USED)

END OF SECTION

SECTION 01 14 20

FLOOD RISK MITIGATION PLAN

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Flood Risk Mitigation Plan, which provides for how the Contractor intends to mitigate flood risks during construction of the Work.
 - 1. Montgomery County Permit Department has provided Emergency Action Plan (EAP) guidelines for removing temporary movable equipment when working in the floodway/floodplain that can be considered as part of the Flood Risk Mitigation Plan, included at the end of this section.
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
 - 2. Division 01 – General Requirements.

1.2 MEASUREMENT AND PAYMENT

- A. Payment for preparation of a Flood Risk Mitigation Plan is on a lump sum basis. See Proposal item in Section 00 41 00.02 – Proposal Form.
- B. Payment for implementation of a Flood Risk Mitigation Plan is on a cost reimbursement and/or rate based compensation based on per-event basis. See Proposal item and associated note in Section 00 41 00.02 – Proposal Form. Payment shall also be subject to Parts 3.C and D below.

1.3 SUBMITTALS

- A. Conform to requirements of Section 01 33 00 – Submittals.
- B. As part of Offeror's Proposal, in accordance with Section 00 21 13.02 – Instructions to Offerors, the Offeror shall include a description of the approach it intends for the Flood Risk Mitigation Plan and include within its brief write-up any special considerations in its approach to the project sequence based upon the Flood Risk Mitigation Plan.
- C. As part of Offeror's Proposal, in accordance with Section 00 41 00.02 – Proposal Form, the Offeror shall attach to its Proposal the cost reimbursement compensation and/or rate based compensation that would apply to the extent of implementation of the Flood Risk Mitigation Plan.
- D. Submit a detailed Flood Risk Mitigation Plan to Owner's Representative for review and comment, within thirty (30) days from date of Owner's issuance of the Notice to Proceed for the Work or at the scheduled Pre-Construction Conference, whichever is later. Treatment of any SJRA comments shall be at Offeror's discretion.

1.4 FLOOD RISK MITIGATION PLAN

A. General

Before submitting a Proposal, it is the responsibility of the Offeror to examine the Historical High Water Information, as well as to visit the site to become familiar with project site conditions, including area topography and understand the flood prone nature of the Project site and its potential impact on construction operations, which may affect cost, progress, performance, or furnishing of the Work. Offeror is made aware of the risks associated with performing the Work under these types of conditions affecting the site, and assumes all responsibilities and risks associated with performing the Work in light of the flood prone nature of the site, to the extent provided for in the Contract Documents. Offeror is also made aware that its work must be scheduled around the rain events so as to minimize the potential impact of the rain event and potential flooded site conditions on construction operations.

B. The Flood Risk Mitigation Plan must be signed and sealed by a Registered Professional Engineer (the "Preparing P.E."), furnished to Owner's Representative and, as minimum, contain the following:

1. Name, address, and telephone number of the Contractor and the Preparing P.E., including names and telephone numbers of key emergency contact personnel.
2. Method(s) of monitoring weather conditions to determine when a threat of flooding exists in the project area.
3. Statement of the assumptions regarding the extent and frequency of flooding/high waters for which the Flood Risk Mitigation Plan is being prepared.
4. Notification procedure for on-site personnel, any subcontractors, and other offsite persons or agencies that require notification, including all pertinent information required for contact (e.g., emergency/weekend telephone numbers).
5. A plan detailing the kinds of labor and equipment resources that Contractor expects to use to manage and mitigate the impact of floods so that the site can resume normal operations as soon as reasonably practicable.
6. A procedure to ensure that, to the greatest extent possible, all construction materials which are not anchored, restrained or otherwise secure are removed from flood prone areas and/or protected from flood damage.
7. Field investigation of all existing erosion and sedimentation control measures, with maintenance as necessary.
8. Implementation of additional measures necessary to prevent the migration of sediment from unstable areas of the Project site.
9. A procedure to address the site after a flood event and identify and mitigate any damage sustained.

10. Any other procedures, measures, or plans which are necessary, in the judgment of the Preparing P.E., to fulfill the purpose of the Flood Risk Mitigation Plan.

C. Additional Requirements

1. Maintain on the Project site, or have readily available, a sufficient supply of materials and personnel to implement the Flood Risk Mitigation Plan.
2. Comply with requirements of agencies having jurisdiction.
3. Comply with Texas Commission on Environmental Quality regulations.
4. Obtain necessary permits from agencies with control over the installation of temporary drainage structures.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

- A. Implementation of the Flood Risk Mitigation Plan shall be within the Contractor's discretion and control, including if Contractor deems necessary or prudent, in consultation with the Preparing P.E.
- B. Contractor agrees to provide written notice to SJRA of Contractor's decisions to implement from time to time the Flood Risk Mitigation Plan, as soon as reasonably possible following each decision of Contractor to implement the plan, and in no event later than two (2) business days after each such decision.
- C. Notwithstanding that implementation decisions are within Contractor's discretion and control, SJRA shall have right to review the reasonableness of amounts invoiced by Contractor for each implementation compensation, and SJRA shall not be obligated to pay for any unreasonable, excessive or unnecessary amounts. In addition, in the absence of prior written SJRA approval, SJRA shall not be obligated to pay for any amounts that would exceed any agreed on "not to exceed" limitation for implementation compensation. Finally, Contractor agrees not to abuse its discretion and control over implementation decisions, including without limitation not to exercise such discretion or control in bad faith, arbitrarily or capriciously, for any purpose of attempting to charge SJRA for any such unreasonable, excessive or unnecessary amounts.
- D. Compensation will only occur if the Contractor as part of its scheduling efforts has fully mobilized to a project area, then must demobilize due to an unforeseen heavy rain event that was not previously forecasted by the National Weather Service. This item will only apply if the contractor has fully mobilized into the project area with heavy equipment and is setup to perform work. This item will not apply if the Contractor as part of his scheduling efforts has not mobilized due to an impending rain event that could potentially lead to flooding of the project site.

END OF SECTION



MONTGOMERY COUNTY

PERMIT DEPARTMENT

501 N. THOMPSON, SUITE 100
CONROE, TEXAS 77301
(936) 539-7836 • FAX (936) 538-8155

Emergency Action Plan (EAP) Considerations

When you have temporary equipment, RV and other movable items that do not have a solid foundation in the floodway/floodplain, Montgomery County recommends that you have an plan of how and when to move it **BEFORE** the flood occurs. Below are guidelines for what to consider when developing an Emergency Action Plan.

Elements of the plan:

- Identify the **Purpose** of the Emergency Action Plan.
 - Goal is to remove equipment, RV, animals, agriculture equipment, etc. from the floodplain/floodway in advance of a flood to minimize damages and environmental impacts.
- Identify a **Training routine**: experience shows that having scheduled training and drills ensures that the plan will be enacted when needed and everyone knows their role.
- Identify the **Procedures** of the Emergency Action Plan
 - What is the protocol for enacting the plan?
 - What data/information act as triggers in the plan?

Information/data to include:

- Map of the upstream river basin. This provides a context of where people need to monitor for forecast and past precipitation. Heavy rain can fall upstream causing a flood but you may not experience rainfall at your location.
 - SJRA has a map of the watersheds on their website - <http://www.sjra.net/lakeconroe/stormevents/>
- Monitor weather sources for past and future precipitation.
 - Sources can include the National Weather Service (NWS Houston office - <https://www.weather.gov/hgx/> and or Weather Prediction Center - <https://www.wpc.ncep.noaa.gov/#page=qpf>, Local TV, private weather vendor, etc. Specify in the EAP your weather sources and how you will receive the information (do you have to check or is there an email, text, app notification)
 - Identify a forecast precipitation amount for moving equipment – especially important if you are working in or near the main river channel. Generally, the main river channels in Montgomery County fill quickly. So you may have less response time, especially in heavy rainfall situations that occur over a brief period. Rivers may respond quickly after the rain falls.

- Keep watch of the weather forecast out 3 to 5 days – especially for weekends/holidays.
- Monitor USGS River gages and NWS river forecast for river gages in the upstream basin
 - (Note: typically the NWS only includes 12 hours of forecast rainfall in river forecasts. So if the forecast is issued at 7 am, it only includes forecast precipitation through 7 pm. Thus if rain is forecast overnight, that rainfall is not included in the NWS River forecast until the next forecast update.) Thus forecast of river rises may not provide enough advanced notice to move equipment to higher ground. This is why we recommend moving items with forecast rain vs. waiting to see responses.)
- Identify a notification system for employees/people impacted
 - Specify who or what job position makes the decision to remove equipment and monitor precipitation and river forecast/observation data.
 - If you have an RV park, how will you notify your residents that they need to move?
- Identify equipment/materials/items that will be moved.
 - Is equipment (such as a truck) onsite for the owner to be able to quickly move the equipment or will they need to call someone (such as a heavy duty wrecker).
 - If they need to call someone, include this contact information.
 - Identify their minimum response time?
 - Once equipment is in place to move the mobile infrastructure - how long will it take to relocate?
 - Identify a redundant way to move equipment.
 - Is there any equipment that will not be able to be moved?
 - If yes how will you secure and ensure no hazardous materials escape into the water?
 - Identify River gages to monitor:
 - Subscribe to USGS water alerts for observed critical water levels at upstream locations (alerts can come as a txt message, email, etc.)
 - You can do this from their Texas Water Dashboard -
<https://txpub.usgs.gov/txwaterdashboard/>
 - You may want to contact the USGS office to see if they know what are bankfull elevations and flows for the river gages you plan to monitor
Address: 19241 David Memorial Dr. # 180, Shenandoah, TX 77385
Phone: (936) 271-5300
 - Link to NWS forecasts for the above listed gages -
<https://water.weather.gov/ahps2/index.php?wfo=HGX>
 - Link to Montgomery County Emergency management –
 - Website <https://mctxoem.org/>
 - Facebook – search Montgomery County Office of Homeland Security and Emergency Management.
 - Twitter - <https://twitter.com/MCOEM>
 - Register your location and your primary points of contact with Smart911 -
<https://www.smart911.com/smart911/registration/registrationLanding.action>

SECTION 01 22 00

UNIT PRICES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Authority
 - 2. Unit Quantities Specified
 - 3. Measurement
 - 4. Payment Plus Conditions
 - 5. Nonconformance Assessment
 - 6. Nonpayment for Rejected Products
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
 - 2. Division 01 – General Requirements.

1.2 MEASUREMENT AND PAYMENT

- A. Measurement:
 - 1. Measurement by Weight: Reinforcing steel, rolled or formed steel or other metal shapes are measured by CRSI or AISC Manual of Steel Construction weights. Welded assemblies are measured by CRSI or AISC Manual of Steel Construction or scale weights.
 - 2. Measurement by Volume:
 - a. Stockpiles: Measured by cubic dimension using mean length, width, and height or thickness.
 - b. Excavation and Embankment Materials: Measured by cubic dimension using average end area method.
 - 3. Measurement by Area: Measured by square dimension using mean length and width or radius.
 - 4. Linear Measurement: Measured by linear dimension, at item centerline or mean chord.
 - 5. Stipulated Price Measurement: By unit designated in Agreement.
 - 6. Other: Items measured by weight, volume, area, or linear means or combination, as appropriate, as completed item or unit of Work.
 - 7. Measurement by Each: Measured by each instance or item provided.

8. Measurement by Lump Sum: Measure includes all associated work.

B. Payment:

1. Payment Includes: Full compensation for required supervision, labor, products, tools, equipment, plant, transportation, services, and incidentals; and erection, application or installation of an item of Work; and Contractor's overhead and profit.
2. Total compensation for required Unit Price Work shall be included in Unit Price provided in Proposal. Claims for payment as Unit Price Work, but not specifically covered in list of unit prices contained in Proposal, will not be accepted.
3. Interim payments for stored materials will be made only for materials to be incorporated under items covered in unit prices, unless disallowed in Supplementary Conditions.
4. Progress payments will be based on Owner's Representative's observations and evaluations of quantities incorporated in Work multiplied by unit price.
5. Final payment for Work governed by unit prices will be made on basis of actual measurements and quantities determined by Owner's Representative multiplied by unit price for Work which is incorporated in or made necessary by the Work.

1.3 SUBMITTALS (NOT USED)

1.4 AUTHORITY

- A. Measurement methods delineated in Specification sections are intended to complement criteria of this section. In event of conflict, the order of governance is: General Conditions, Individual Specifications, 01 22 00 – Unit Prices.
- B. Owner's Representative will take measurements and compute quantities accordingly.
- C. Assist by providing necessary equipment, workers, and survey personnel.

1.5 UNIT QUANTITIES SPECIFIED

- A. Quantity and measurement estimates stated in Agreement are for contract purposes only. Quantities and measurements supplied or placed in Work and verified by Owner's Representative (GCs 11.6.2) shall determine payment as stated in Specifications Section 00 72 00 - General Conditions of the Contract.
- B. When actual Work requires greater or lesser quantities than those quantities indicated in Proposal, provide required quantities at unit prices contracted as stated in Specifications Section 00 72 00 – General Conditions of the Contract.

1.6 NONCONFORMANCE ASSESSMENT

- A. Remove and replace Work, or portions of Work, not conforming to Contract Documents.

- B. When not practical to remove and replace Work, Owner's Representative will direct one of the following remedies:
 - 1. Nonconforming Work will remain as is, but Unit Price will be adjusted lower at discretion of Owner's Representative.
 - 2. Nonconforming Work will be modified as authorized by Owner's Representative, and Unit Price will be adjusted lower at discretion of Owner's Representative, when modified Work is deemed less suitable than specified.
- C. Specification sections may modify above remedies or may identify a specific formula or percentage price reduction.
- D. Authority of Owner's Representative to assess nonconforming work and identify payment adjustment is final.

1.7 NONPAYMENT FOR REJECTED PRODUCTS

- A. Payment will not be made for the following:
 - 1. Products wasted or disposed of in unacceptable manner.
 - 2. Products determined as nonconforming before or after placement.
 - 3. Products not completely unloaded from transporting vehicle.
 - 4. Products placed beyond lines and levels of required Work.
 - 5. Products remaining on hand after completion of Work, unless specified otherwise.
 - 6. Loading, hauling, and disposing of rejected products.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 25 13
PRODUCT SUBSTITUTIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. The procedure for requesting the approval of substitution of a product that is not equivalent to a product which is specified by descriptive or performance criteria or defined by reference to one or more of the following:
 - a. Name of manufacturer.
 - b. Name of vendor.
 - c. Trade name.
 - d. Catalog number.
2. Substitutions are not "or-equals".

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
2. Division 01 – General Requirements.

C. Request for Substitution – General:

1. Base all bids on materials, equipment, and procedures specified.
2. Certain types of equipment and kinds of material are described in specifications by means of references to names of manufacturers and vendors, trade names, or catalog numbers.
 - a. When this method of specifying is used, it is not intended to exclude from consideration other products bearing other manufacturer's or vendor's names, trade names, or catalog numbers, provided said products are "or-equals," as determined by Owner's Representative.
3. Other types of equipment and kinds of material may be acceptable substitutions under the following conditions:
 - a. Or-equals are unavailable due to strike, discontinued production of products meeting specified requirements, or other factors beyond control of Contractor; or,
 - b. Contractor proposes a cost and/or time reduction incentive to the Owner.

1.2 MEASUREMENT AND PAYMENT

- A. Unit Price. No separate payment will be made for this item. Include the cost in associated items for this project.

1.3 SUBMITTALS (NOT USED)

1.4 QUALITY ASSURANCE

- A. In making request for substitution or in using an approved product, Contractor represents Contractor:
 - 1. Has investigated proposed product, and has determined that it is adequate or superior in all respects to that specified, and that it will perform function for which it is intended.
 - 2. Will provide same guarantee for substitute item as for product specified.
 - 3. Will coordinate installation of accepted substitution into Work, to include building modifications if necessary, making such changes as may be required for Work to be complete in all respects.
 - 4. Waives all claims for additional costs related to substitution which subsequently arise.

1.5 DEFINITIONS

- A. Product: Manufactured material or equipment.

1.6 PROCEDURE FOR REQUESTING SUBSTITUTION

- A. Substitution shall be considered only:
 - 1. After award of Contract.
 - 2. Under the conditions stated herein.
- B. Written request through Contractor only.
- C. Transmittal Mechanics:
 - 1. Follow the transmittal mechanics prescribed for Shop Drawings in Specification Section 01 33 00 – Submittals.
 - a. Product substitution will be treated in a manner similar to "deviations," as described in Specification Section 01 33 00 – Submittals.
 - b. List the letter describing the deviation and justifications on the transmittal form in the space provided under the column with the heading DESCRIPTION.
 - 1) Include in the transmittal letter, either directly or as a clearly marked attachment, the items listed in the following paragraph below.
- D. Transmittal Contents:
 - 1. Product identification:
 - a. Manufacturer's name.
 - b. Telephone number and representative contact name.

- c. Specification Section or Drawing reference of originally specified product, including discrete name or tag number assigned to original product in the Contract Documents.
2. Manufacturer's literature clearly marked to show compliance of proposed product with Contract Documents.
3. Itemized comparison of original and proposed product addressing product characteristics including but not necessarily limited to:
 - a. Size.
 - b. Composition or materials of construction.
 - c. Weight.
 - d. Electrical or mechanical requirements.
4. Product experience:
 - a. Location of past projects utilizing product.
 - b. Name and telephone number of persons associated with referenced projects knowledgeable concerning proposed product.
 - c. Available field data and reports associated with proposed product.
5. Data relating to changes in construction schedule.
6. Data relating to changes in cost.
7. Samples:
 - a. At request of Owner's Representative.
 - b. Full size if requested by Owner's Representative.
 - c. Held until substantial completion.
 - d. Owner's Representative not responsible for loss or damage to samples.

1.7 APPROVAL OR REJECTION

- A. Written approval or rejection of substitution given by the Owner's Representative, Principal Architect/Engineer, and the Owner.
- B. Owner's Representative reserves the right to require proposed product to comply with color and pattern of specified product if necessary to secure design intent.
- C. In the event the substitution is approved, the resulting cost and/or time reduction will be documented by Change Order in accordance with the General Conditions.
- D. Substitution will be rejected if:
 1. Submittal is not through the Contractor with his stamp of approval.
 2. Request is not made in accordance with this Specification Section.

3. In Owner's Representative opinion, acceptance will require substantial revision of the original design.
 4. In the Owner's Representative opinion, substitution will not perform adequately the function consistent with the design intent.
- E. Contractor shall reimburse Owner for the cost of the Owner's Representative evaluation whether or not substitution is approved.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 26 63

CHANGE ORDERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

Procedures for processing Change Orders, including:

1. Quality Assurance.
2. Responsible Individual.
3. Documentation of Change in Contract Price and Contract Time.
4. Change Procedures.
5. Proposals and Contract Modifications.
6. Work Change Directive.
7. Change Order.
8. Execution of Change Documentation.
9. Correlation of Contractor Submittals.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00 – Introductory Information, Proposing Requirements, Contract Forms, and Conditions of the Contract.
2. Division 01 – General Requirements.

1.2 MEASUREMENT AND PAYMENT (NOT USED)

1.3 SUBMITTALS (NOT USED)

1.4 QUALITY ASSURANCE

A. Reference Standards:

1. Equipment Rental Rates: equipmentwatch.com. Rental Rate is defined as full unadjusted base rental rate for appropriate item of construction equipment.

1.5 RESPONSIBLE INDIVIDUAL

- A. Provide letter to the Owner's Representative indicating name, title, address and contact information of individual authorized to execute change documents and who is responsible for informing others in Contractor's employ and Subcontractors of changes to the Work. Information should be provided at the Preconstruction Conference but, no later than 10 calendar days following the Preconstruction Conference.

1.6 DOCUMENTATION OF CHANGE IN CONTRACT PRICE AND CONTRACT TIME

- A. Maintain detailed records of changes in Work. Provide full information required for identification and evaluation of proposed changes, and substantiate costs of changes in Work.
- B. Document each proposal for change in cost or time with sufficient data to allow evaluation of proposal. Provide additional information upon request of the Owner or the Owner's Representative.
- C. Proposals shall include the following minimum information:
 - 1. Quantities of items in original Proposal with additions, reductions, deletions, and substitutions.
 - 2. Quantities and cost of items in original schedule of values with additions, reductions, deletions, and substitutions.
 - 3. Provide unit prices for items not included in original Proposal with supporting information when absent from original Proposal Work.
 - 4. Justification for changes in Contract Time.
 - 5. Additional data upon request.
- D. For changes in Work performed on a time-and-materials basis, provide the following additional information:
 - 1. Quantities and description of products and equipment.
 - 2. Taxes, insurance and bonds.
 - 3. Overhead and profit as noted in Document 00 72 00 - General Conditions, Article 11.5.
 - 4. Dates, times, and by whom work was performed.
 - 5. Time records and certified copies of applicable payrolls.
 - 6. Invoices, receipts for products, rented equipment, and subcontracts, similarly documented.
- E. For changes in Work performed on a time-and-materials basis, payment for rental equipment will be as follows:
 - 1. Actual invoice cost for duration required to complete extra work without markup for overhead and profit. When extra work comprises only a portion of rental invoice where equipment would otherwise be on site, compute hourly equipment rate by dividing the actual monthly invoice by 176. (One day equals 8 hours and 1 week equals 40 hours.)
 - 2. Do not exceed estimated operating costs given on equipmentwatch.com website for items of equipment. Overhead and profit will be allowed on operating cost.
- F. For changes in Work performed on a time-and-materials basis using Contractor-owned equipment, use equipmentwatch.com rates as follows:

1. Contractor-owned equipment will be paid at Rental Rate for duration of time required to complete extra work without markup for overhead and profit. Utilize lowest cost combination of hourly, daily, weekly, or monthly rates. Use 150 percent of Rental Rate for double shifts (one extra shift per day) and 200 percent of Rental Rate for more than two shifts per day. Standby rates shall be 50 percent of appropriate Rental Rate shown on equipmentwatch.com website. No other rate adjustments apply.
2. Do not exceed estimated operating costs given on equipmentwatch.com. Overhead and profit will be allowed on operating cost. Operating costs will not be allowed for equipment on standby.

1.7 CHANGE PROCEDURES

- A. Changes to Contract Price or Contract Time can only be made by issuance of Change Order. Issuance of Work Change Directive will be formalized into a Change Order. Changes will be in accordance with requirements of the General Conditions.
- B. The Owner's Representative will advise of minor changes in Work not involving an adjustment to Contract Price or Contract Time as authorized by the General Conditions by issuing supplemental instructions.
- C. Request clarification of Drawings, Specifications, Contract Documents, or other information by using Request for Information. Response by the Owner's Representative to Requests for Information does not authorize Contractor to perform tasks outside scope of Work. Changes must be authorized as described in this section.

1.8 PROPOSALS AND CONTRACT MODIFICATIONS

- A. The Owner or the Owner's Representative may issue a Request for Proposal (RFP), which includes detailed description of proposed change with supplementary or revised Drawings and Specifications. The Owner or the Owner's Representative may also request a proposal in response to a Request for Information. Prepare and submit proposal within 7 days or as specified in the request.
- B. Submit request for Contractor changes to Owner's Representative describing proposed change and its full effect on Work, with a statement describing reason for change and effect on Contract Price and Contract Time including full documentation.
- C. The Owner may use the Principal Architect/Engineer to review Change Orders.

1.9 WORK CHANGE DIRECTIVE

- A. The Owner may issue a signed Work Change Directive instructing Contractor to proceed with a change in Work. Work Change Directive will subsequently be incorporated in Change Order.
- B. Document will describe changes in Work and designate method of determining change in Contract Price or Contract Time.

- C. Proceed promptly to execute changes in Work in accordance with Work Change Directive.

1.10 CHANGE ORDER

- A. Stipulated Price Change Order
 - 1. Stipulated Price Change Order will be based on accepted proposal.
- B. Unit Price Change Order
 - 1. Where Unit Prices for affected items of Work are included in Proposal, unit price Change Order will be based on unit prices, subject to the General Conditions.
 - 2. Where unit prices of Work are not pre-determined in Proposal, Work Change Directive or accepted proposal will specify unit prices to be used.
- C. Time-and-Material Change Order
 - 1. Provide itemized account and supporting data after completion of change, within time limits indicated for claims in the General Conditions.
 - 2. The Owner will determine change allowable in Contract Price and Contract Time as provided in the General Conditions.
 - 3. Maintain detailed records of work done on time-and-material basis as specified in paragraph 1.4, Documentation of Change in Contract Price and Contract Time.
 - 4. Provide full information required for evaluation of changes and substantiate costs for changes in Work.

1.11 EXECUTION OF CHANGE DOCUMENTATION

- A. The Owner or the Owner's Representative will issue Change Orders, Work Change Directives, or accepted proposal for signatures of parties as described in the General Conditions.

1.12 CORRELATION OF CONTRACTOR SUBMITTALS

- A. For Stipulated Price Contracts, promptly revise Schedule of Values and Application for Payment forms to record authorized Change Orders as separate line item.
- B. For Unit Price Contracts, next monthly estimate of Work after acceptance of a Change Order will be revised to include new items not previously included and appropriate unit rates.
- C. Promptly revise progress schedules to reflect change in Contract Time, and to adjust time for other items of work affected by change, and resubmit for review.
- D. Promptly enter changes to on-site and record copies of Drawings, Specifications, or Contract Documents.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 29 73
SCHEDULE OF VALUES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Measurement and Payment
 - 2. Definition
 - 3. Preparation
 - 4. Submittal
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 00 – Introductory Information, Proposing Requirements, Contract Forms, and Conditions of the Contract.
 - 2. Division 01 – General Requirements.

1.2 MEASUREMENT AND PAYMENT

- A. Unit Price. No separate payment will be made for this item. Include the cost in associated items for this project.

1.3 SUBMITTALS

- A. Submit Schedule of Values in accordance with requirements of Section 01 33 00 – Submittals. Submit at least 10 days prior to submitting first application for progress payment. Submit via SharePoint.
- B. Revise Schedule of Values and resubmit for items affected by contract modifications, Change Orders, and Work Change Directives. After changes are reviewed without exception by Authority's Principal Architect/Engineer, make submittal at least 10 days prior to submitting next application for progress payment.

1.4 DEFINITIONS

- A. Schedule of Values: Is a schedule, prepared and maintained by the Contractor, allocating portions of the Contract Amount to various portions of the Work, including a tabulation of all of the costs of the various Subcontracts and materials which in the aggregate make up the Cost of the Work. The Schedule of Values shall be subject to Owner's approval and, after such approval, be used as the basis for reviewing the Contractor's Application For Payment.
- B. Break down costs to list major products or operations for each line item which has an installed value of more than \$5000.

1.5 PREPARATION

- A. For stipulated price contracts, subdivide Schedule of Values into logical portions of Work, such as major work items or work in contiguous geographic areas.
- B. Schedule and Schedule of Values shall be developed together. At a minimum, the Schedule of Values shall be broken out by trade and split between materials and labor as approved by the Owner. Such Prices will include overhead and profit applicable to each item of work.
- C. For lump sum equipment items where submittal of operation/maintenance data and testing are required, include separate item for equipment operation and maintenance data submittal valued at 5 percent of lump sum amount for each equipment item and separate item for testing and adjusting valued at 5 percent of lump sum amount for each equipment item.
- D. Round off figures for each listed item to nearest \$100 except for value of one item, when necessary, to make total of items in Schedule of Values equal Contract Price for stipulated price contracts or lump sum amount in Schedule of Unit Price Work.
- E. Submit Schedule of Values in approved electronic spreadsheet, formatted to print on 11" x 17" paper, to the Owner's Document Management System.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 32 16

CONSTRUCTION PROGRESS SCHEDULE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Specific requirements for the preparation, submittal, updating, status reporting and management of the construction Progress Schedule.
- B. Provide Construction Schedules for Work included in Contract in accordance with requirements in this Section. Create Construction Schedule using Critical Path Method (CPM) computer software capable of mathematical analysis of Precedence Diagramming Method (PDM) plans. Provide printed activity listings and bar charts in formats described in this Section.
- C. Combine activity listings and bar charts with narrative report to form Construction Schedule submittal for Owner and the Owner's Representatives.
- D. Related Specification Sections include, but are not necessarily limited to:
 - 1. Division 00 - Bidding Requirements, Contract Forms and Conditions of the Contract.
 - 2. Division 01 - General Requirements.

1.2 MEASUREMENT AND PAYMENT

- A. No separate payment will be made for this item. Include the cost of construction scheduling in overhead cost for this project.

1.3 SCHEDULING STAFF

- A. Employ or retain services of individual experienced in critical path scheduling for duration of Contract. Individual shall cooperate with Owner's Representative and shall update schedule (Progress Schedule) monthly as required by the Contract's General Conditions, to indicate current status of Work.

1.4 QUALITY ASSURANCE

- A. The person preparing and revising the construction Progress Schedule shall be experienced in the preparation of schedules of similar complexity.
- B. Within five (5) days from award of the Contract, Contractor shall submit to Owner's Representative the name of the person responsible for the preparation, maintenance, updating and revision of all schedules.
 - 1. Qualifications necessary:
 - a. At least five (5) years verifiable experience in the preparation and updating of complex construction schedules for projects of similar type, size and complexity.

- b. Proficient in the use of Microsoft® Project® 2007.

1.5 DEFINITIONS

A. The following definitions shall apply to this Specification Section:

1. **BASELINE SCHEDULE:** The initial as-bid, detailed, cost and resource loaded Progress Schedule prepared by the Contractor to define its plan for constructing the Project as required by the Contract Documents, and accepted by the Owner or Owner's Representative as meeting the requirements of the Contract Documents for specified constraints, sequences, milestones and completion dates.
2. **PROGRESS SCHEDULE:** The initially accepted Baseline Schedule, or subsequently approved Revised Baseline Schedules, updated each month to reflect actual start and finish dates of schedule activities and all time impact events whether caused by Contractor or Owner or factors beyond the control of either party.
3. **REVISED BASELINE SCHEDULE:** The initially accepted Baseline Schedule revised to reflect only approved changes.
4. **WORKING SCHEDULE:** A schedule developed from the Progress Schedule, utilizing scheduling software features not allowed for Baseline and Progress Schedules at the Contractor's sole discretion, to indicate the Contractor's plan for executing the Work, and providing for schedule recovery when approved time extensions are not sufficient to provide for timely completion due to Contractor inefficiencies beyond the control of the Owner or outside the risks accepted by the Owner.

1.6 SUBMITTALS

A. Shop Drawings:

1. See Specification Section 01 33 00 – Submittals for requirements for the mechanics and administration of the submittal process.
2. Scheduler qualifications.
3. Baseline Schedule: Submitted within 30 days after Effective Date of Agreement.
4. Monthly Progress Schedules.
5. Revised Baseline Schedules.
6. Working Schedules.
7. Look-Ahead Schedules.

1.7 GENERAL REQUIREMENTS

- A. Contractor shall prepare and submit Baseline and Progress Schedules and updates and revisions to them as specified herein.
1. All scheduling to be performed in Microsoft® Project® 2007.

2. The Baseline and Progress Schedules shall be a calendar day-based and cost-loaded Critical Path Method (CPM) network diagram with supporting data.

B. Disallowed Scheduling Software Features:

1. The following specific features are not allowed to be applied in the Baseline and Progress Schedules:
 - a. Resource leveling.
 - b. Activity or event constraints, other than those specified by the Contract Documents.
 - c. Leads and lags:
 - 1) Create specific activities with specific durations in-lieu-of leads and lags.
 - 2) Durations shall have positive values.
 - d. Default progress data:
 - 1) Start and finish dates shall not be automatically updated.
 - 2) Update with actual start and finish dates documented from field reports.
 - 3) Work activities shall be updated by actual Work progression, not cash flow driven.
 - 4) Updating of activity percent complete and remaining duration shall be independent functions, not one parameter calculated from the other.
 - 5) Out-of-sequence progress shall be accounted for through retained logic, not a default option of progress override.
 - e. Multiple calendars.
2. Any float suppression techniques or other software features that corrupts the pure mathematical model calculating the critical path.
 - a. The following CPM schedule outputs will be rejected without further review:
 - 1) Schedules indicating the start of the critical path at a date point or activity beyond the date of Notice to Proceed, or schedules indicating a discontinuous critical path from Notice to Proceed to Contract completion.
 - 2) Schedules defining critical activities as those on a path or paths having some minimum value of float.
 - 3) Schedules with multiple critical paths.
 - 4) Schedules indicating a completion date beyond the contractual completion date.

3. Contractor, at Contractor's sole discretion, may employ the disallowed scheduling software features for Contractor's exclusive use in preparing a Working Schedule.
- C. Float Time:
 1. Neither the Owner nor the Contractor owns the float; the project owns the float.
 2. As such, liability for delay of the project completion date rests with the party actually causing delay to the project completion date.
- D. By preparing and submitting the Baseline Schedule, the Contractor represents that it can and intends to execute the Work and portions thereof within the specified times and constraints and that its bid covers the costs associated with the execution of the Work in accordance with the Construction Schedule.
- E. Contractor shall provide an electronic copy on CD media for the Baseline Schedule and Progress Schedule and all monthly updates of both to accompany hard copies of the schedules and tabular reports.
 1. Electronic submittal shall be in a format compatible with Microsoft® Project® 2007.

1.8 SUBMITTAL PACKAGES

- A. Baseline Schedule:
 1. CPM time-scaled network diagram:
 - a. Three (3) prints of each sheet.
 - b. Minimum sheet size: 11 IN x 17 IN.
 - c. Provide electronic format (CD-ROM).
 2. Supporting data:
 - a. Three (3) sets of a list of project activities including the following:
 - 1) Holidays that will be observed during construction.
 - 2) Number of planned working days and shifts per week.
- B. Monthly updates that include the following:
 1. Narrative Schedule Report.
 2. Revised Baseline Schedule as appropriate.
 - a. Update to reflect approved Change Orders occurring since the prior update.
 - b. If no new approved Change Orders since prior update, provide a narrative report indicating such, and acknowledging the pertinence of the previously approved Baseline Schedule.
 3. Updated Progress Schedule.

4. Explanation of changes in logic, duration of activities.
 5. The number of opaque reproductions which Contractor requires, plus three (3) copies which will be distributed by the Owner's Representative.
 - a. Do not submit fewer than three (3) copies.
 6. Provide electronic format (CD-ROM).
 7. Upload electronic version (pdf) to SharePoint.
- C. Look-Ahead Rolling Schedule:
1. A four-week rolling schedule shall be provided by the Contractor at each progress meeting.
 - a. The schedule shall provide an accurate representation of the work performed the previous week and work planned for the current week and subsequent two (2) weeks.
 2. The schedule shall be provided in a tabular format with bars representing work duration.
 - a. The schedule shall refer to activity ID numbers on the Baseline and Progress Schedules.
 - b. Activities that are on the critical path and activities that are behind schedule shall be noted by color, highlight, or underscore.
 3. Derived from the Working Schedule, if applicable.
- D. Narrative Schedule Report:
1. Schedule reports for Initial Baseline and Revised Baseline Schedules shall include the following minimum data for each activity:
 - a. Preceding and succeeding activities.
 - b. Activity description and number.
 - c. Durations of activities:
 - 1) Original durations.
 - 2) Remaining durations.
 - d. Earliest start date (by calendar date).
 - e. Earliest finish date (by calendar date).
 - f. Actual start date (by calendar date).
 - g. Actual finish date (by calendar date).
 - h. Latest start date (by calendar date).
 - i. Latest finish date (by calendar date).
 - j. Float.
 - k. Percentage of activity completed.

- l. Activity constraints specified by the Contract Documents.
 - m. Type of Tabulation (Initial or Updated).
 - n. Project Duration.
 - o. Project Contractual Completion Date.
 - p. The date of commencement of the Work as stated in the Notice to Proceed.
 - q. If an updated (revised) schedule, cite the new project completion date and project status and date of revision.
- 2. Shall be organized in the following sequence with all applicable documents included:
 - a. Contractor's transmittal letter.
 - b. Work completed during the period.
 - c. Identification of unusual conditions or restrictions regarding labor, equipment or material.
 - d. Description of the current critical path.
 - e. Changes to the critical path and scheduled completion date since the last schedule submittal.
 - f. Description of problem areas.
 - g. Current and anticipated delays:
 - 1) Cause of delay.
 - 2) Impact of delay on other activities, milestones and completion dates.
 - 3) Corrective action and schedule adjustments to correct the delay.
 - h. Pending items and status thereof:
 - 1) Permits.
 - 2) Change orders.
 - 3) Time adjustments.
 - 4) Non-compliance notices.
 - i. Reasons for an early or late scheduled completion date in comparison to the contract completion date.

1.9 SCHEDULING CONFERENCE

- A. Contractor shall schedule and Owner's Representative will conduct a scheduling conference with Contractor's project manager and construction scheduler.
 - 1. Conference must take place within 10 business days after the Preconstruction Conference.

2. Owner's Representative will review the requirements of this Specification Section and other specified scheduling and sequencing requirements with Contractor.
3. Baseline Construction Schedule:
 - a. Provide five (5) copies of a Baseline Schedule in the form of an arrow or precedence diagram covering the following project phases and activities:
 - 1) Schedule of Submittals of Shop Drawings and schedule dates for fabrication and delivery of key and long lead time items.
 - 2) Contractor's submittal information shall show intended submittal dates and shall include, as a minimum, the maximum allowable review period.
 - 3) The information shall provide sufficient durations for reasonable administration of re-submittals, fabrication and transportation to produce realistic delivery dates for those procurement items.
4. Owner's Representative shall review the schedule and provide comments.
5. Provide approval of the schedule or request a meeting to review the schedule with Contractor within seven (7) days of receipt of the schedule.
6. If requested, Contractor shall participate in a review and evaluation of the schedule with Owner's Representative.
7. Any revisions necessary as a result of this review shall be resubmitted for review by Owner's Representative within five (5) business days.
- B. Contractor shall submit a general time-scaled logic diagram displaying the major activities and sequence of planned operations.
 1. Contractor shall be prepared to discuss the proposed work plan and schedule methodology that comply with the Contract requirements.
 2. If Contractor proposes deviations to specified construction staging of the project, then the general time-scaled logic diagram shall also display the deviations and resulting time impacts.
 3. Contractor shall be prepared to discuss the proposal.
- C. Contractor shall provide the Preliminary Schedule of Values for the work to be performed.
 1. This document must match the total quantities and costs associated with the scheduled tasks.
- D. Owner's Representative will review the logic diagram, WBS coding structure, and activity identification system, and provide required Baseline Schedule changes to Contractor for implementation within seven (7) days following the Conference.
- E. Scheduling Conference (are required on a bi-weekly basis until agreement to the Baseline Schedule is reached.

1. Contractor to provide copies of the revised schedule.
2. Contractor to address specific comments from the previous meeting.
3. Contractor to revise the narrative as required.

1.10 BASELINE SCHEDULE

- A. Schedule shall include, but not be limited to, activities that show the following that are applicable to the project:
 1. Project characteristics, salient features, or interfaces, including those with outside entities that could affect time of completion.
 2. Project start date, scheduled completion date and other milestones.
 3. Work performed by Contractor, subcontractors and suppliers.
 4. Submittal development, delivery, review and approval, including those from Contractor, subcontractors and suppliers.
 5. Procurement, delivery, installation and testing of materials, plants and equipment.
 6. Testing and settlement periods.
 7. Utility notification and relocation.
 8. Erection and removal of falsework and shoring.
 9. Finish work and final cleanup.
 10. Project float as the predecessor activity to the scheduled completion date.
- B. Schedule shall have not less than 20 activities, unless otherwise authorized by the Owner's Representative.
 1. The number of activities shall be sufficient to assure adequate planning of the project, to permit monitoring and evaluation of progress, and to do an analysis of time impacts.
 2. Schedule activities shall include the following:
 - a. A clear and legible description.
 - b. Start and finish dates.
 - c. A duration of not less than one (1) working day, except for event activities, and not more than 20 working days, unless otherwise authorized by the Owner's Representative.
 - d. At least one (1) predecessor and one (1) successor activity, except for project start and finish milestones.
 - e. Required constraints: Only contractually required constraints may be inserted into the Baseline Schedule.
 - f. Codes for responsibility, stage, work shifts, location and contract pay item numbers.

C. Early Completion Time:

1. Contractor may show early completion time on any schedule provided that the requirements of the contract are met.
2. Contractor may increase early completion time by improving production, reallocating resources to be more efficient, performing sequential activities concurrently or by completing activities earlier than planned.

D. Working durations shall be planned to incorporate the effects of normal weather impacts. See General Conditions Article 12.2 for the "Baseline Rain Day Determination".

1.11 PROGRESS SCHEDULE

A. Develop Progress Schedule based on approved Baseline and Revised Baseline Schedules.

1. All restrictions on use of constraints, leads and lags, resource leveling, etc., shall also apply to Progress Schedules.

B. The Progress Schedule will be updated once per month for monitoring progress.

1. Contractor may submit one (1) additional update per month for its own convenience.

C. Indicate progress by making entries on the most recently accepted version of the network diagram and supporting data to show:

1. Activities completed.
2. Activities started.
3. Remaining duration for each activity started but not yet completed.
4. Percent complete based on value of work in place and value of equipment or material delivered and properly stored.
5. Status of activity due to be completed by the next scheduled progress meeting.

D. Computerized Progress Schedule and percent completion of Work shall be used to verify Contractor's payment requests.

1. Progress payments will not be processed by the Owner's Representative unless the updated Progress Schedule has been submitted concurrently with a pay request and found acceptable by the Owner's Representative.

1.12 REVISIONS TO PROGRESS SCHEDULE

A. Contractor shall submit data for a revised Progress Schedule within five (5) days of the occurrence of any of the following:

1. When contractor-caused delay in completion of any activity or group of activities indicates an overrun of the Contract Time or Control Dates by 30 working days or 10 percent of the remaining duration, whichever is less.

2. When delays in submittals, deliveries, or work stoppages are encountered making necessary the replanning or rescheduling of the Work.
3. When the schedule does not represent the actual progress of the Work.
4. When a change order significantly affects the contract completion date.
- B. The revised Progress Schedule shall be the basis of a Working Schedule showing:
 1. How Contractor intends to return to schedule.
 2. How Contractor intends to avoid falling behind schedule on future activities.
- C. Show changes on the network diagram and supporting data including:
 1. New activities and their duration.
 2. Modifications to existing activities.
- D. Provide written narrative report as needed to define:
 1. Problem areas, anticipated delays, and impact on the current schedule.
 2. Corrective action recommended, and its effect.
 3. Major changes in scope.
 4. Revised projections of progress and completion.
- E. Except as provided in the following subparagraphs 1 and 2, the cost of revisions to the Progress Schedule resulting from changes in the Work shall be included in the cost for the change in the Work, and shall be based on the complexity of the revision or Change Order, man-hours expended in analyzing the change, and the total cost of the change.
 1. The cost of revision to the Construction Schedule not resulting from authorized changes in the Work shall be the responsibility of the Contractor.
 2. The cost of revision to the Construction Schedule for the Contractor's convenience shall be the responsibility of the Contractor.
- F. The revised network diagram and supporting data for the Progress Schedule shall be submitted to the Owner's Representative upon completion of the revisions, but not later than the next progress meeting.
- G. Revisions to the Progress Schedule for the Contractor's convenience:
 1. Must be approved by the Owner's Representative before Contractor changes the sequence of Work.

1.13 TIME IMPACT ANALYSIS (TIA)

- A. The accepted initial Baseline Schedule or subsequently accepted Revised Baseline Schedule shall be used for TIA.
- B. Contractor shall submit a written TIA to the Owner's Representative with each request for adjustment of Contract Time, or when Contractor or Owner's

Representative consider that an approved or anticipated change may impact the critical path or contract progress.

1. The TIA must be attached to any change order prior to approval of any change to time or cost.
- C. The TIA shall illustrate the impacts of each change or delay on the current scheduled completion date or internal milestone, as appropriate.
 1. The analysis shall use the Baseline or Revised Baseline Schedule (accepted Baseline Schedule) that has a data date closest to and prior to the event.
 2. If the Owner's Representative determines that the accepted Baseline Schedule used does not appropriately represent the conditions prior to the event, the accepted Baseline Schedule shall be updated to the day before the event being analyzed.
 3. The TIA shall include an impact schedule developed from incorporating the event into the accepted Baseline Schedule by adding or deleting activities, or by changing durations or logic of existing activities as appropriate to the nature of the change event.
 4. If the impact schedule shows that incorporating the event modifies the critical path and scheduled completion date of the accepted Baseline Schedule, the difference between scheduled completion dates of the two (2) schedules shall be equal to the adjustment of Contract Time.
- D. Contractor shall submit a TIA in duplicate within 15 working days of receiving a written request for a TIA from the Owner's Representative.
 1. Contractor shall allow the Owner's Representative two (2) weeks after receipt to approve or reject the submitted TIA.
 2. All approved TIA schedule changes shall be shown on the next update schedule.
- E. In the event of a TIA rejection:
 1. If a TIA submitted by the Contractor is rejected by the Owner's Representative, the Contractor shall meet with the Owner's Representative to discuss and resolve issues related to the TIA.
 2. If agreement is not reached, the Contractor will be allowed 15 days from the meeting with the Owner's Representative to give notice.
 3. Contractor shall only show actual as-built work, not unapproved changes related to the TIA, in subsequent update schedules.
 4. If agreement is reached at a later date, approved TIA schedule changes shall be shown on the next update schedule.
 5. Owner's Representative will withhold remaining payment on the schedule contract item if a TIA is requested by Owner's Representative and not submitted by Contractor within 15 working days.

6. The schedule item payment will resume on the next estimate after the requested TIA is submitted.
 - a. No other contract payment will be retained regarding TIA submittals.

1.14 NARRATIVE SCHEDULE REPORT

- A. Narrative Schedule Report shall list Activities Started This Month; Activities Completed This Month; Activities Continued This Month; Activities Scheduled To Start or Complete Next Month; Problems Encountered This Month; Actions Taken to Solve These Problems.
- B. Narrative Schedule Report shall describe changes made to Construction Schedule Logic (i.e., changes in Predecessors and Lags); Activities Added to Schedule; Activities Deleted from Schedule; any other changes made to Schedule other than addition of Actual Start Dates and Actual Finish Dates and changes of Data Date and Remaining Durations for recalculation of mathematical analysis.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 32 36.01

PROJECT PHOTOGRAPHS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Technical and submittal requirements for project photographs, including:
 - a. Measurement and Payment
 - b. Project photographs for facility and pipeline projects. Facility projects may have one or more distinct sites. Pipeline projects may have more than one segment but are usually linear in nature, such as waterline or wastewater line projects.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00 - Bidding Requirements, Contract Forms, and Conditions of the Contract.
2. Division 01 - General Requirements.

1.2 MEASUREMENT AND PAYMENT

- A. Unit Price. No separate payment will be made for this item. Include the cost in associated items for this project.

1.3 DEFINITIONS:

1. Pre-construction Photographs: Photographs taken, in sufficient numbers and detail, prior to beginning field activities, to show original construction site conditions.
2. Progress Photographs: Photographs, taken throughout the duration of construction at regular intervals from vantage points, approved by the Owner's Representative, that document progress of the Work.
3. Completed Project Photographs: Photographs, taken by a commercial photographer, which are suitable for framing and for use in brochures or on the Internet.

1.4 SUBMITTALS:

1. Refer to Section 01 33 00 – Submittals.
2. Format and Media. Digital photography shall be used for Preconstruction and Progress Photographs. Digital or film photography may be used for Completed Project Photographs. Submit color prints of photographs whether produced by digital or film photography for hard copy submittals. Submit digital Joint Photographic Experts Group (JPEG) images for electronic submittals.

a. Prints.

- 1) Submit Preconstruction Photograph prints in three-hole punched plastic pockets or sleeves, bound in a three-ring notebook, four photos each on the front and back of each plastic sheet (eight photos total per sheet). Minimum size for Preconstruction photograph prints shall be 3-inches by 5-inches on photographic-quality paper. Preconstruction photographs must be taken prior the first construction activities in the field and submitted prior to the first Pay Application being made by the Contractor.
- 2) Submit Progress Photograph prints in three-hole punched plastic pockets or sleeves, bound in a three ring notebook, one photo per sheet. Produce prints on photographic-quality paper approved by the Owner's Representative. Minimum size for Progress photograph prints shall be 8-inches by 10-inches.
- 3) Submit proofs of Completed Project photos for review and selection by the Owner's Representative. After selection of the proofs submit Completed Project prints. Minimum size for Completed Project photograph prints shall be 11x14 matte finish prints.

b. Media

- 1) Film Photography. If film is used to make photographs, Submit negatives, in 3-hole punched plastic sheets with individual sleeves for each negative. Mark negative sleeves with project name and dates of photos. Use 35mm or larger color film for film photography. If film is used, a digital image of the photograph must also be submitted. Scanned photographs must equal or exceed 400 dots per inch when scanned from 8-inch by 10-inch prints
- 2) Digital Photography. Use at least 6.0 megapixel density for photographs. Submit digital photographic files on compact disks (CD) in JPEG format. Submit disks in 3-hole punched plastic sheets with a maximum of two CD's per sheet. Mark disks with project name and dates of photos.
3. Submit Preconstruction Photograph digital images with embedded GPS coordinates (latitude, longitude and compass direction of view) shown on the image. In addition to the Compact Disk submittal, Contractor shall download digital images and GPS coordinates to the Owner's GIS system if directed by the Owner's Representative.
4. Submit Progress Photograph digital images with embedded GPS coordinates (latitude, longitude and compass direction of view) shown on the image.
5. Submit Completed Project Photograph images. GPS coordinates shall not be shown on Completed Project digital images.
6. Submittal Quantities and Frequencies

- a. Preconstruction photographs: Submit one set of photo prints and one set of digital images. All photos(images) shall have embedded GPS coordinates (latitude, longitude) and the compass bearing (N, NE, E...) such that this information appears on the print (image).
 - 1) For Pipeline Projects, Contractor shall provide photos to document the existing conditions of the site. For water line and wastewater line projects, Contractor shall take photos at approximately 200 foot intervals (plus or minus 25 feet) along the center line of the project. No survey or staking is required to establish stationing as GPS coordinates are provided. One photo shall be taken looking in the direction of increasing stationing, one photo looking to the right (90°R) from the first photo, one photo looking to the left (90°L), one photo looking in the direction of decreasing stationing (180° from the increasing stationing direction). Where the project is to be constructed in or near active traffic lanes offset the location of the photos such that the photographs are taken from the sidewalk or shoulder or median and not from the active traffic pavement. In addition to the centerline photographs, Contractor shall document with photographs all features such as mailboxes, signs, traffic and light poles, driveways, culverts, inlets, and landscaping along the pipeline route which could be damaged by the Contractor's operations. Preconstruction Photo prints submittals shall progress from the lowest station to the highest station along the centerline.
- b. Progress Photographs: Submit one set of Progress Photos prints and one set of digital images each month with each Application for Payment. Monthly Applications for Payment shall be deemed incomplete if not accompanied by the required Progress Photographs. Contractor's failure or election to not submit a monthly Application for Payment shall not affect the requirement for monthly Progress Photographs:
 - 1) For Facility Contracts with a Total Bid Price over \$100,000, at least once each month during construction: Provide five (5) progress photos as directed by Owner's Representative.
 - 2) For Facility Contracts with a Total Bid Price over \$2,000,000, at least once each month during construction: Provide a commercial photographer to take progress photos as directed by Owner's Representative. Provide ten (10) ground level color photos (printed 8" x 10") and digital images per month from fixed vantage points, with vantage points approved by the Owner's Representative.
 - 3) For Facility Contacts with Total Bid Price over \$10,000,000 in addition to ground level photos: Provide at least two (2) color aerial photos prints and digital images taken at;
 - a) At 0 percent complete
 - b) At three (3) month intervals after the initial set

- c) At substantial completion
 - d) In the first summer operational season but at least six (6) months after facility start up. Submittal of these photos may extend past the final completion of the project and shall not prevent project closeout.
- 4) For Pipeline Contracts: Provide at least four (4) ground level color photo prints (8" x 10") and digital images of the Work with at least one photo taken approximately each week (one week apart) during the monthly period to show progress of the Work with locations and direction of the photo approved by the Owner's Representative.
- c. Completed Project Photographs:
- 1) For Facility Contracts submit two sets of Completed Project Photographs, after Date of Substantial Completion and prior to final payment. Two sets of Completed Project photos shall be taken from two vantage points. Each of the two vantage points pre-approved by the Owner. Vantage points for Finished Photographs will be approved separately from vantage points approved for Progress Photographs.
 - 2) For Pipeline Contracts, Completed Project Photographs are not required unless otherwise specified.

7. Labeling:

- a. Photo Prints; Place a label on the back of each photographic print, applied so as to not show through on the front. Labels shall contain the following information:
 - 1) Name of Project and Project Number, unless embedded on the print
 - 2) Name of Contractor.
 - 3) Date photograph was taken, unless embedded on the print or image.
 - 4) Location of the photograph (station or coordinates or other notation, unless embedded on the print or image)
 - 5) Short description of photo subject.
 - 6) Name and address of commercial photographer who took the photograph, if applicable.
- b. Digital Images: Place a label on the CD, Labels shall contain the following information:
 - 1) Name of Project and Project Number
 - 2) Name of Contractor.
 - 3) Name and address of commercial photographer who took the photograph, if applicable

- 4) For each digital image create a file name which has as part of the name the date the photograph was taken and the location of the photograph by station, coordinates or other unique identifier
 8. Hand-deliver or transmit Completed Project Photo prints in standard photographic mailers marked "Photographs - Do Not Bend."
 9. Photographic prints, negatives, photographic files and disks become the property of the Owner with all rights of reproduction to the Owner. Do not publish photographs without written consent by the Owner.
- B. Quality Assurance:
1. Contractor shall be responsible for the quality of and timely execution and submittal of photographs.
 2. Contractor shall schedule and coordinate photographer with Owner's Representative.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 33 00

SUBMITTALS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Mechanics and administration of the submittal process for:
 - a. Shop Drawings.
 - b. Samples.
 - c. Miscellaneous submittals, including the Flood Risk Mitigation Plan
2. General content requirements for Shop Drawings.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00 - Bidding Requirements, Contract Forms, and Conditions of the Contract.
2. Division 01 - General Requirements.
3. Sections in Divisions 02 through 33 identifying required submittals.

1.2 MEASUREMENT AND PAYMENT

- A. Unit Price. No separate payment will be made for this item. Include the cost in associated items for this project.

1.3 SUBMITTALS (NOT USED)

1.4 DEFINITIONS

A. Shop Drawings:

1. See General Conditions.
2. Product data and samples are Shop Drawing information.

B. Miscellaneous Submittals:

1. Submittals other than Shop Drawings.
2. Representative types of miscellaneous submittal items include but are not limited to:
 - a. Construction schedule.
 - b. Facility Shutdown Plan(s)
 - c. Installed equipment and systems performance test reports.
 - d. Manufacturer's installation certification letters.
 - e. Warranties.

- f. Service agreements.
- g. Construction photographs.
- h. Record Documents.
- i. Cost breakdown (Schedule of Values).
- j. Safety Plan(s).
- k. Flood Risk Mitigation Plan.

1.5 SUBMITTAL SCHEDULE

A. Schedule of Shop Drawings:

- 1. Submitted and approved within 20 days of receipt of Notice to Proceed.
- 2. Account for multiple transmittals under any specification section where partial submittals will be transmitted.

1.6 PREPARATION OF SUBMITTALS

A. General:

- 1. All submittals and all pages of all copies of a submittal shall be completely legible.
- 2. Submittals which, in the Owner's Representative's or Principal Architect/Engineer's sole opinion, are illegible will be returned without review.

B. Shop Drawings:

- 1. Scope of any submittal and shop drawing transmittal:
 - a. Submit shop drawings utilizing Owner's standard Submittal Transmittal Form.
 - b. Limited to one (1) Specification Section.
 - c. Do not submit under any Specification Section entitled (in part) "Basic Requirements" unless the product or material submitted is specified, in total, in a "Basic Requirements" Section.
- 2. Numbering letter of transmittal:
 - a. Include a series number, "xx", beginning with "01" and increasing sequentially with each additional transmittal.
 - b. Assign consecutive series numbers to subsequent transmittals.
- 3. Describing transmittal contents:
 - a. Provide listing of each component or item in submittal capable of receiving an independent review action.
 - b. Identify for each item:
 - 1) Manufacturer and Manufacturer's Drawing or data number.

- 2) Contract Document tag number(s).
- 3) Unique page numbers for each page of each separate item.
- 4) Use divider sheets with labeled tabs to separate independent items within a single submittal.
- c. When submitting "or-equal" items that are not the products of named manufacturers, include the words "or-equal" in the item description.
4. Contractor stamping:
 - a. General:
 - 1) Contractor's review and approval stamp shall be applied either to the letter of transmittal or a separate sheet preceding each independent item in the submittal.
 - a) Contractor's signature and date shall be wet ink signature. Is an electronic signature acceptable as most submittals are uploaded to SharePoint as a .PDF electronic document?
 - b) Shop Drawing submittal stamp shall read "(Contractor's Name) has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval as stipulated under General Conditions Paragraph 6.20.4."
 - 2) Submittals containing multiple independent items shall be prepared with an index sheet for each item listing the discrete page numbers for each page of that item, which shall be stamped with the Contractor's review and approval stamp.
 - a) Individual pages or sheets of independent items shall be numbered in a manner that permits Contractor's review and approval stamp to be associated with the entire contents of a particular item.
 - b) Use divider sheets with labeled tabs to separate independent items within a single submittal.
 - b. Electronic stamps:
 - 1) Contractor may electronically embed Contractor's review and approval stamp to either the Submittal Transmittal Form or a separate index sheet preceding each independent item in the submittal.
 - 2) Contractor's signature and date on electronically applied stamps shall be wet ink signature. Is an electronic signature acceptable as most submittals are uploaded to SharePoint as a PDF electronic document?
5. Resubmittals:
 - a. Number with original root number and a suffix letter starting with "A" on a new Submittal Transmittal Form.
 - b. Do not increase the scope of any prior transmittal.

- c. Account for all components of prior transmittal.
 - 1) If items in prior transmittal received "A" or "B" Action code, list them and indicate "A" or "B" as appropriate (See also 1.6, this Section).
 - a) Do not include submittal information for items listed with prior "A" or "B" in resubmittal.
 - 2) Indicate items to be resubmitted "at a later date" for any prior "C" or "D" Action item not included in resubmittal.
 - a) Obtain Principal Architect/Engineer's approval to exclude items.
- 6. For 8-1/2 x 11 In, 8-1/2 x 14 In, and 11 x 17 In hard copy size sheets, provide three (3) copies of each page for Principal Architect/Engineer's plus the number required by the Contractor. In today's electronic environment, is subsection No. 6 necessary to be included in the contract documents?
 - a. The number of copies required by the Contractor will be defined at the Preconstruction Conference, but shall not exceed four (4) hard copies.
 - b. All other hard copy size sheets:
 - 1) Submit one (1) reproducible transparency or high resolution print and one (1) additional print of each Drawing until approval is obtained.
 - 2) Utilize mailing tube; do not fold.
 - 3) The Principal Architect/Engineer will mark and return the reproducible to the Contractor through the Owner's Representative for his reproduction and distribution.
- 7. Electronic submittals utilizing web based document management system (SharePoint®):
 - a. Shop drawing submittals shall be produced (scanned) in Adobe Acrobat's Portable Document Format (PDF) Version 5.0 or higher.
 - b. Do not password protect and/or lock the PDF document.
 - c. Create one (1) PDF document (PDF file) for each submittal.
 - d. Drawings or other graphics must be converted to PDF format and made part of the single (one [1]) PDF document.
 - 1) Scanning to be used only where actual file conversion is not possible.
 - e. Limit PDF document size to 5MB.
 - f. Rotate pages that must be viewed in landscape to the appropriate position for easy reading.
 - g. Images only shall be scanned at a resolution of 300 dpi or greater.
 - 1) Perform Optical Character Recognition (OCR) capture on all images.
 - 2) Achieve OCR with the "original image with hidden text" option.

- 3) Word searches of the PDF document must operate successfully to demonstrate OCR compliance.
- h. Create bookmarks in the navigation frame, for each entry in the Table of Contents/Index.
 - 1) Normally three (3) levels deep (i.e., "Chapter," "Section," "Sub-section").
- i. Thumbnails must be generated for each PDF file.
- j. Set the opening view for PDF files as follows:
 - 1) Initial view: Bookmarks and Page.
 - 2) Magnification: Fit in Window.
 - 3) Page layout: Single page.
 - 4) Set the file to open to the cover page of the submittal with bookmarks to the left, and the first bookmark linked to the cover page.
- k. All PDF documents shall be set with the option "Fast Web View" to open the first pages of the document for the viewer while the rest of the document continues to load.
- l. File naming conventions:
 - 1) File names shall use a "nine dot three" convention (XXXXXX-YY-Z.PDF) where XXXXXX is the Specification Section number, YY is the Shop Drawing Root series number and Z is an ID number used to designate the associated volume.
 - a) Example 1:
 - (1) Two (2) pumps submitted as separate Shop Drawings under the same Specification Section:
 - (a) Pump 1 = 43 21 21-01-1.pdf.
 - (b) Pump 2 = 43 21 21-02-1.pdf.
 - b) Example 2:
 - (1) Control system submitted as one (1) Shop Drawing but separated into two (2) shop drawing submittals:
 - (a) Volume 1 = 40 90 00-01-1.pdf.
 - (b) Volume 2 = 40 90 00-01-2.pdf.
- 8. Provide clear space (3 In Sq) for Principal Architect/Engineer stamping of each component defined in the PREPARATION OF SUBMITTALS Article – Contractor Stamping.
- 9. Contractor shall not use red color for marks on transmittals.
 - a. Duplicate all marks on all copies transmitted, and ensure marks are photocopy reproducible.

- b. Outline Contractor marks on reproducible transparencies with a rectangular box.

10. Transmittal contents:

- a. Coordinate and identify Shop Drawing contents so that all items can be easily verified by the Owner's Representative and the Principal Architect/Engineer.
- b. Identify equipment or material use, tag number, Drawing detail reference, weight, and other Project specific information.
- c. Provide sufficient information together with technical cuts and technical data to allow an evaluation to be made to determine that the item submitted is in compliance with the Contract Documents.
- d. Submit items such as equipment brochures, cuts of fixtures, product data sheets or catalog sheets on 8-1/2 x 11 In pages.
 - 1) Clearly mark (indicate) exact item or model and all options proposed.
- e. When a Shop Drawing submittal is called for in any Specification Section, include as appropriate, scaled details, sizes, dimensions, performance characteristics, capacities, test data, anchoring details, installation instructions, storage and handling instructions, color charts, layout Drawings, rough-in diagrams, wiring diagrams, controls, weights and other pertinent data in addition to information specifically stipulated in the Specification Section.
 - 1) Arrange data and performance information in format similar to that provided in Contract Documents.
 - 2) Provide, at minimum, the detail specified in the Contract Documents.
- f. Provide warranty information.
- g. If proposed equipment or materials deviate from the Contract Drawings or Specifications in any way, clearly note the deviation and justify the said deviation in detail in a separate letter immediately following transmittal sheet.

11. Samples:

- a. Identification:
 - 1) Identify sample as to transmittal number, manufacturer, item, use, type, project designation, tag number, standard Specification Section or Drawing detail reference, color, range, texture, finish and other pertinent data.
 - 2) If identifying information cannot be marked directly on sample without defacing or adversely altering samples, provide a durable tag with identifying information securely attached to the sample.
- b. Include application specific brochures, and installation instructions.

- c. Provide Contractor's stamp of approval on samples or transmittal form as indication of Contractor's checking and verification of dimensions and coordination with interrelated work.
- d. Resubmit samples of rejected items.

C. Miscellaneous Submittals:

- 1. Prepare in the format and detail specified in Specification requiring the miscellaneous submittal.

1.7 TRANSMITTAL OF SUBMITTALS

A. Shop Drawings, Samples:

- 1. Transmit all submittals via Owner's Document Management System (SharePoint).
- 2. Transmit all paper submittals to the address provided below.

San Jacinto River Authority
2436 Sawdust Road
The Woodlands, TX 77380
Attn: Construction Manager

- 3. Utilize SJRA Standard Submittal Transmittal Form (to be provided by Owner) to transmit all Shop Drawings, and Samples.
- 4. All submittals must be from Contractor.
 - a. Submittals will not be received from or returned to subcontractors.
- 5. Provide submittal information defining specific equipment or materials utilized on the Project.
 - a. Generalized product information, not clearly defining specific equipment or materials to be provided, will be rejected.

B. Miscellaneous Submittals:

- 1. Transmit under Contractor's standard Submittal Transmittal Form or letterhead.
- 2. Submit in triplicate or as specified in individual Specification Section.
- 3. Transmit to the address provided below.

San Jacinto River Authority
2436 Sawdust Road
The Woodlands, TX 77380
Attn: Construction Manager

4. Provide copy of Submittal Transmittal without attachments to Owner's Representative.
- C. Expedited Return Delivery:
 1. Include prepaid express envelope or airbill in submittal transmittal package for any submittals Contractor expects or requires express return mail.
 2. Inclusion of prepaid express envelope or airbill does not obligate Owner's Representative or Principal Architect/Engineer to conduct expedited review of submittal.
- D. Fax Transmittals:
 1. Permitted on a case-by-case basis to expedite review when approved by Principal Architect/Engineer.
 2. Requires hard copy transmittal to immediately follow.
 - a. Principal Architect/Engineer will proceed with review of fax transmittal.
 - b. Principal Architect/Engineer's approval or rejection comments will be recorded and returned on hard copy transmittal.
 3. Provisions apply to both:
 - a. Initial transmittal contents.
 - b. Supplemental information required to make initial transmittal contents complete.

1.8 PRINCIPAL ARCHITECT/ENGINEER 'S REVIEW ACTION

- A. Shop Drawings and Samples, and any other Submittal, for which SJRA may require Principal Architect/Engineer review action:
 1. Items within transmittals will be reviewed for overall design intent and will receive one of the following actions:
 - a. NO EXCEPTION.
 - b. EXCEPTIONS AS NOTED.
 - c. REVISE & RESUBMIT
 - d. REJECTED - RESUBMIT.
 - e. ACKNOWLEDGE RECEIPT.
 - f. FOR INFORMATION PURPOSES ONLY.
 - g. SUPPLEMENTARY INFORMATION.
 2. Submittals received will be initially reviewed to ascertain inclusion of Contractor's approval stamp.
 - a. Submittals not stamped by the Contractor or stamped with a stamp containing language other than that specified herein will not be reviewed for technical content and will be returned without any action.

3. In relying on the representation on the Contractor's review and approval stamp, Owner and Principal Architect/Engineer reserve the right to review and process poorly organized and poorly described submittals as follows:
 - a. Submittals transmitted with a description identifying a single item and found to contain multiple independent items:
 - 1) Review and approval will be limited to the single item described on the transmittal letter.
 - 2) Other items identified in the submittal will:
 - a) Not be logged as received by the Principal Architect/Engineer.
 - b) Be removed from the submittal package and returned without review and comment to the Contractor for coordination, description and stamping.
 - c) Be submitted by the Contractor as a new series number, not as a re-submittal number.
 - b. Principal Architect/Engineer, at Principal Architect/Engineer's discretion, may revise the transmittal letter item list and descriptions, and conduct review.
 - 1) Unless Contractor notifies Principal Architect/Engineer in writing that the Principal Architect/Engineer's revision of the Submittal Transmittal Form item list and descriptions was in error, Contractor's review and approval stamp will be deemed to have applied to the entire contents of the submittal package.
4. Submittals returned with Action "A" or "B" are considered ready for fabrication and installation.
 - a. If for any reason a submittal that has an "A" or "B" Action is resubmitted, it must be accompanied by a letter defining the changes that have been made and the reason for the resubmittal.
 - b. Destroy or conspicuously mark "SUPERSEDED" all documents having previously received "A" or "B" Action that are superseded by a resubmittal.
5. Submittals with Action "A" or "B" combined with Action "C" (Revise and Resubmit) or "D" (Rejected) will be individually analyzed giving consideration as follows:
 - a. The portion of the submittal given "C" or "D" will not be distributed (unless previously agreed to otherwise at the Preconstruction Conference).
 - 1) One (1) copy or the one (1) transparency of the "C" or "D" Drawings will be marked up and returned to the Contractor.
 - a) Correct and resubmit items so marked.
 - b. Items marked "A" or "B" will be fully distributed.

- c. If a portion of the items or system proposed are acceptable, however, the major part of the individual Drawings or documents are incomplete or require revision, the entire submittal may be given "C" or "D" Action.
 - 1) This is at the sole discretion of the Principal Architect/Engineer.
 - 2) In this case, some Drawings may contain relatively few or no comments or the statement, "Resubmit to maintain a complete package."
 - 3) Distribution to the Owner and field will not be made (unless previously agreed to otherwise).
- 6. Failure to include any specific information specified under the submittal paragraphs of the Specifications will result in the submittal being returned to the Contractor with "C" or "D" Action.
- 7. Calculations: Requirements for the submittal of calculations in the individual Specification Sections shall be satisfied through the submittal of a certification sealed by the Principal Architect/Engineer that the calculations have been performed. Certification will be received for information purposes only and will be returned stamped "D. ACKNOWLEDGE RECEIPT".
- 8. Transmittals of submittals which the Principal Architect/Engineer considers as "Not Required" submittal information, which is supplemental to but not essential to prior submitted information, or items of information in a transmittal which have been reviewed and received "A" or "B" Action in a prior submittal, will be returned with Action "E. Acknowledge Receipt" (Principal Architect/Engineer's Review Not Required).
- 9. Samples may be retained for comparison purposes.
 - a. Remove samples when directed.
 - b. Include in bid all costs of furnishing and removing samples.
- 10. Approved samples submitted or constructed, constitute criteria for judging completed work.
 - a. Finished work or items not equal to samples will be rejected.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 35 05

ENVIRONMENTAL PROTECTION AND SPECIAL CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Addresses:

1. Minimizing the pollution of air, water, or land; control of noise, the disposal of solid waste materials, and protection of deposits of historical or archaeological interest.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
2. Division 01 – General Requirements.

1.2 MEASUREMENT AND PAYMENT

- A. Unit Prices. No separate payment will be made for this item. Include the cost of same in associated items for this project.

1.3 SUBMITTALS

A. Shop Drawings:

1. See Specification Section 01 33 00 – Submittals for requirements for the mechanics and administration of the submittal process.
2. Prior to the start of any construction activities submit:
 - a. A detailed proposal of all methods of control and preventive measures to be utilized for environmental protection.
 - b. A drawing of the work area, haul routes, storage areas, access routes and current land conditions including trees and vegetation.
 - c. Submit manufacturer's catalog sheets and other product data on dispensing equipment, pump, and aboveground fuel storage tanks, indicating capacity and dimensions of tank.
 - d. Submit drawings to show location of tank protection area and driveway. Indicate nearest inlet or channelized flow area. Clearly dimension distances and measurements.
 - e. Submit list of spill containment equipment, and quantities thereof, located at fueling area.

1.4 ENVIRONMENTAL CONTROLS

- A. Provide and maintain methods, equipment, and temporary construction as necessary for controls over environmental conditions at construction site and adjacent areas.

- B. Work to minimize impact to surrounding environment. Adopt construction procedures that do not cause unnecessary excavation and filling of terrain, indiscriminate destruction of vegetation, air or stream pollution, nor harassment or destruction of wildlife.
- C. Recognize and adhere to environmental requirements of Project. Limit disturbed areas to boundaries established by Contract. Avoid pollution of “on-site” streams, sewers, wells, or other water sources.
- D. Burning of rubbish, debris, or waste materials is not permitted.

1.5 POLLUTION CONTROL

- A. Provide methods, means, and facilities required to prevent contamination of soil, water, or atmosphere by discharge of noxious substances from construction operations.
- B. Provide equipment and personnel to perform required emergency measures to contain spillage, and to remove contaminated soils or liquids. Excavate and dispose of contaminated earth off-site, and replace with suitable compacted fill and topsoil.
- C. Provide systems for control of atmospheric pollutants.
 - 1. Prevent toxic concentrations of chemicals.
 - 2. Prevent harmful dispersal of pollutants into atmosphere.
- D. Use equipment that conforms to current Federal, State, and local laws and regulations.
- E. Install or otherwise implement positive controls to prevent hazardous materials migrating from Work area.

1.6 PEST AND RODENT CONTROL

- A. Provide rodent and pest control as necessary to prevent infestation of construction or storage areas.
- B. Employ methods and use materials which will not adversely affect conditions at site or on adjoining properties.

1.7 NOISE CONTROL

- A. State regulations that dictate a maximum level of 85 decibels at any time of the day or night. Local municipal noise limits may be more restrictive and shall be followed as required.
- B. Provide vehicles, equipment, and construction activities that minimize noise to greatest degree practicable. Conform noise levels to latest OSHA standards. Do not permit noise levels to interfere with Work or create nuisance in surrounding areas.
- C. Conduct construction operations during daylight hours except as approved by Owner’s Representative.

- D. Select construction equipment to operate with minimum noise and vibration. When in opinion of Owner's Representative, objectionable noise or vibration is produced by equipment, rectify conditions without additional cost to Owner. Sound Power Level (PWL) of equipment shall not exceed 85 dbA (re: 10-12 watts) measured 5 feet from piece of equipment. Explicit equipment noise requirements are specified with equipment specifications.

1.8 DUST CONTROL

- A. Control objectionable dust caused by operation of vehicles and equipment. Apply water or use other methods, subject to approval of Owner's Representative, to control amount of dust generated.

1.9 WATER RUNOFF AND EROSION CONTROL

- A. Comply with Texas Pollutant Discharge Elimination System (TPDES) permit when required.
- B. In addition to TPDES requirements:
1. Provide methods to control surface water, runoff, subsurface water, and water from excavations and structures to prevent damage to Work, site, or adjoining properties.
 2. Control fill, grading and ditching to direct water away from excavations, pits, tunnels, and other construction areas; and to direct drainage to proper runoff courses so as to prevent erosion, sedimentation or damage.
 3. Provide, operate, and maintain equipment and facilities of adequate size to control surface water.
 4. Dispose of drainage water in manner to prevent flooding, erosion, or other damage to portion of site or to adjoining areas and in conformance with environmental requirements.
 5. Retain existing drainage patterns external to construction site by constructing temporary earth berms, sedimentation basins, retaining areas, and temporary ground cover as needed to control conditions.
 6. Plan and execute construction and earth work by methods to control surface drainage from cuts and fills, and from borrow and waste disposal areas, to prevent erosion and sedimentation.
 - a. Minimize area of bare soil exposed at one time.
 - b. Provide temporary control measures, as berms, dikes, and drains.
 7. Construct fills and waste areas by selective placement to eliminate erosion of surface silts or clays.
 8. Inspect earthwork periodically to detect evidence of start of erosion. Apply corrective measures as required to control erosion.

1.10 QUALITY ASSURANCE

- A. Person conducting visual examination for pollutant shall be fully knowledgeable about the TPDES Construction General Permit, detecting sources of storm water contaminants, inspection of aboveground storage tank and appurtenances for leakage, and the day-to-day operations that may cause unexpected pollutant releases.

PART 2 - PRODUCTS

2.1 ABOVEGROUND FUEL STORAGE TANK

- A. Tank Assembly: Must be listed with UL 1709 and UL 2085.
- B. Inner Steel Storage Tank: Follow UL 142, with minimum thickness of 1/8-inch welded construction.
- C. Tank Encasement: Either concrete or steel to provide minimum of 110 percent containment of inner tank capacity. Provide 5-gallon overspill containment pan for tank refueling.
- D. Dispenser Pump: For submersible pump, UL listed emergency shut-off valve to be installed at each dispenser. For suction pump, UL listed vacuum-activated shut-off valve, with shear section, is to be installed at each dispenser. Fuel may not be dispensed from tank by gravity flow or by pressurization of tank. Means must be provided to prevent release of fuel by siphon flow.
- E. Representative Manufacturers: Convault, Fireguard, Ecovault, SuperVault, or equal.

2.2 CONCRETE

- A. Provide concrete with minimum strength of 4,000 psi at 28 days.

2.3 AGGREGATES

- A. Coarse aggregate shall consist of crushed stone, gravel, crushed blast furnace slag, or combination of these materials. Aggregate shall be composed of clean, hard, durable materials, free from adherent coatings, salt, alkali, dirt, clay, loam, shale, soft or flaky materials, or organic and injurious matter.
- B. Coarse aggregates shall conform to following gradation requirements.

Sieve Size	Percent Retained
<u>(Square Mesh)</u>	<u>(By Weight)</u>
2-1/2"	0
2"	0 - 20
1-1/2"	15 - 50
3/4"	60 - 80
No. 4	95 - 100

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Employ and utilize environmental protection methods, obtain all necessary permits, and fully observe all local, state, and federal regulations.
- B. No clearing and grubbing or rough cutting permitted until erosion and sediment control systems are in place, other than site Work specifically directed by Owner's Representative to allow soil testing and surveying.
- C. Prohibit equipment and vehicles from maneuvering on areas outside of dedicated rights-of-way and easements for construction. Immediately repair damage caused by construction traffic to erosion and sediment control systems.
- D. Maintain existing erosion and sediment control systems located within project site until acceptance of Project or until directed by Owner's Representative to remove and discard existing system.
- E. Regularly inspect and repair or replace damaged components of erosion and sediment control systems as specified in this Section. Unless otherwise directed, maintain erosion and sediment control systems until project area stabilization is accepted by the Owner. Remove erosion and sediment control systems promptly when directed by Owner's Representative. Discard removed materials off site.
- F. Remove and dispose sediment deposits at designated spoil site for Project. If a project spoil site is not designated on Drawings, dispose of sediment off site at location not in or adjacent to stream or flood plain. Assume responsibility for off-site disposal. Spread sediment evenly throughout site, compacted and stabilized. Prevent sediment from flushing into a stream or drainage way. If sediment has been contaminated, dispose of in accordance with existing federal, state, and local rules and regulations.
- G. Assume responsibility 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.
- H. Employ protective measures to avoid damage to existing trees to be retained on project site. Conduct construction operations under this Contract in conformance with erosion control practices described in Drawings and this or other Specifications.
- I. Prepare spill response and containment procedures to be implemented in event of significant materials spill. Significant materials include but are not limited to: raw materials; fuels; materials such as solvent, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under Section 101(14) of CERCLA; chemical required to be reported pursuant to Section 313 of Title III of SARA; fertilizers; pesticides, and waste products such as slag, ashes and sludge that have potential to be released with storm water

discharges. Spill containment procedures shall be kept on-site or in construction field office.

- J. Spill containment equipment appropriate to size of operation is to be located in close proximity of fueling area. Such equipment includes, but not limited to, suitable waste containers for significant materials, drip pans, booms, inlet covers, or absorbent.
- K. Properly label significant materials or waste containers used for construction activities and stored on-site overnight.
- L. Install, maintain, and inspect erosion, sediment control measures and practices as specified in Drawings and in this or other Specifications
- M. Land Protection:
 - 1. Except for any work or storage area and access routes specifically assigned for the use of the Contractor, the land areas outside the limits of construction shall be preserved in their present condition.
 - a. Contractor shall confine his construction activities to areas defined for work within the Contract Documents.
 - 2. Manage and control all borrow areas, work or storage areas, access routes and embankments to prevent sediment from entering nearby water or land adjacent to the work site.
 - 3. Restore all disturbed areas including borrow and haul areas and establish permanent type of locally adaptable vegetative cover.
 - 4. Unless earthwork is immediately paved or surfaced, protect all side slopes and backslopes immediately upon completion of final grading.
 - 5. Plan and execute earthwork in a manner to minimize duration of exposure of unprotected soils.
 - 6. Except for areas designated by the Contract Documents to be cleared and grubbed, the Contractor shall not deface, injure or destroy trees and vegetation, nor remove, cut, or disturb them without approval of the Owner's Representative.
 - a. Any damage caused by the Contractor's equipment or operations shall be restored as nearly as possible to its original condition at the Contractor's expense.
 - 7. Utilize, as necessary, erosion control methods to protect side and backslopes, minimize and the discharge of sediment to the surface water leaving the construction site as soon as rough grading is complete.
 - a. These controls shall be maintained until the site is ready for final grading and landscaping or until they are no longer warranted and concurrence is received from the Owner's Representative.
 - b. Physically retard the rate and volume of run-on and runoff by:

- 1) Implementing structural practices such as diversion swales, terraces, straw bales, silt fences, berms, storm drain inlet protection, rocked outlet protection, sediment traps and temporary basins.
 - 2) Implementing vegetative practices such as temporary seeding, permanent seeding, mulching, sod stabilization, vegetative buffers, hydroseeding, anchored erosion control blankets, sodding, vegetated swales or a combination of these methods.
 - 3) Providing Construction sites with graveled or rocked access entrance and exit drives and parking areas to reduce the tracking of sediment onto public or private roads.
8. Discharges from the construction site shall not contain pollutants at concentrations that produce objectionable films, colors, turbidity, deposits or noxious odors in the receiving stream or waterway.

N. Solid Waste Disposal:

1. Collect solid waste on a daily basis.
2. Provide disposal of degradable solid waste to an approved solid waste disposal site.
3. Provide disposal of nondegradable solid waste to an approved solid waste disposal site or in an alternate manner approved by Owner's Representative and regulatory agencies.
4. No building materials wastes or unused building materials shall be buried, dumped, or disposed of on the site.

O. Fuel and Chemical Handling:

1. Store and dispose of chemical wastes in a manner approved by regulatory agencies.
2. Take special measures to prevent chemicals, fuels, oils, greases, herbicides, and insecticides from entering drainage ways.
3. Do not allow water used in onsite material processing, concrete curing, cleanup, and other waste waters to enter a drainage way(s) or stream.
4. The Contractor shall provide containment around fueling and chemical storage areas to ensure that spills in these areas do not reach waters of the state.

P. Control of Dust:

1. The control of dust shall mean that no construction activity shall take place without applying all such reasonable measures as may be required to prevent particulate matter from becoming airborne so that it remains visible beyond the limits of construction.

- a. Reasonable measures may include paving, frequent road cleaning, planting vegetative groundcover, application of water or application of chemical dust suppressants.
- b. The use of chemical agents such as calcium chloride must be approved by the State of Texas DOT.
2. Utilize methods and practices of construction to eliminate dust in full observance of agency regulations.
3. The Owner's Representative will determine the effectiveness of the dust control program and may request the Contractor to provide additional measures, at no additional cost to Owner.

Q. Burning:

1. Do not burn material on the site.
2. If the Contractor elects to dispose of waste materials by burning, make arrangements for an off-site burning area and conform to all agency regulations.

R. Control of Noise:

1. Control noise by fitting equipment with appropriate mufflers.

S. Completion of Work:

1. Upon completion of work, leave area in a clean, natural looking condition.
2. Ensure all signs of temporary construction and activities incidental to construction of required permanent work are removed.

T. Historical Protection:

1. If during the course of construction, evidence of deposits of historical or archaeological interests is found, cease work affecting find and notify Owner's Representative.
 - a. Do not disturb deposits until written notice from Owner's Representative is given to proceed.
2. The Contractor will be compensated for lost time or changes in construction to avoid the find based upon normal change order procedures.

3.2 TOPSOIL PLACEMENT FOR EROSION AND SEDIMENT CONTROL SYSTEMS

- A. When topsoil is specified as a component of another Specification, conduct erosion control practices described in this Specification during topsoil placement operations.
- B. When placing topsoil, maintain erosion and sediment control systems consisting of swales, grade stabilization structures, berms, dikes, waterways, and sediment basins.
- C. Maintain grades which have been previously established on areas to receive topsoil.

- D. After areas to receive topsoil have been brought to grade, and immediately prior to dumping and spreading topsoil, loosen subgrade by discing or by scarifying to a depth of at least 2 inches to permit bonding of topsoil to subsoil. Compact by passing bulldozer up and down slope, tracking over entire surface area of slope to create horizontal erosion control slots.
- E. No sod or seed shall be placed on soil which has been treated with soil sterilants until sufficient time has elapsed to permit dissipation of toxic materials.

3.3 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 following methods:
 - 1. Mulches bound with chemical binders such as Carasol, Terratack, or equal.
 - 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 surface.
 - 5. Irrigation by water sprinkling.
 - 6. Barriers using solid board fences, snow fences, burlap fences, crate walls, bales of hay, or similar materials.
- C. Implement dust control methods immediately whenever dust can be observed blowing on project site.

3.4 KEEPING STREETS CLEAN

- A. Keep streets clean of construction debris and mud carried by construction vehicles and equipment. If necessary, install stabilized construction exits at construction, staging, storage, and disposal areas. Vehicle/equipment wash area (stabilized with coarse aggregate) may be installed adjacent to stabilized construction exit, as needed. Release wash water into a drainage swale or inlet protected by erosion and sediment control measures. Construction exit specified in Section 01 57 13.02 - Stabilized Construction Access.
- B. In addition to stabilized construction exits, shovel or sweep pavement to extent necessary to keep street clean. Water hosing or sweeping of debris and mud off of street into adjacent areas is not allowed.

3.5 EQUIPMENT MAINTENANCE AND REPAIR

- A. Confine maintenance and repair of construction machinery and equipment to areas specifically designated for that purpose. Locate 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 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.

3.6 WASTE COLLECTION AND DISPOSAL

- A. Formulate and implement a plan for collection and disposal of waste materials on construction site. In plan, designate locations for trash and waste receptacles and establish a collection schedule. Specify and carry out methods for ultimate disposal of waste in accordance with applicable local, state, and federal health and safety regulations. Make special provisions for collection and disposal of liquid wastes and toxic or hazardous materials.
- B. Keep receptacles and waste collection areas neat and orderly to extent possible. Waste shall not be allowed to overflow its container or accumulate from day-to-day. Locate trash collection points where they shall least likely be affected by concentrated storm water runoff.

3.7 WASHING AREAS

- A. Avoid washing concrete delivery trucks or dump trucks and other construction equipment at locations where runoff shall flow directly into a watercourse or storm water conveyance system. Designate special areas for washing vehicles. Locate these areas where wash water shall spread out and evaporate or infiltrate directly into ground, or where runoff can be collected in temporary holding or seepage basin. Beneath wash areas construct a gravel or rock base to minimize mud production.

3.8 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 shall not cause runoff pollution.
- B. Store toxic chemicals, materials, 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 areas where toxic liquids are to be opened and stored.

3.9 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, retain water or slurry used to control dust contaminated with heavy metals or toxic pollutants on site, and prevent runoff directly into watercourses or storm water conveyance systems. Carry out methods of ultimate disposal of these materials in accordance with applicable local, state, and federal health and safety regulations.

3.10 SANITARY FACILITIES

- A. Provide construction sites with adequate portable toilets for workers in accordance with applicable health regulations.

3.11 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.

3.12 CONSTRUCTION METHODS

- A. Provide fuel tank protection area and driveway as shown on Drawings.
- B. Do not locate fueling area in or near channelized flow area or close to storm sewer conveyance system. Provide sufficient space to allow installation of other erosion and sediment controls to protect those areas.
- C. Clear and grub fueling area to remove unsuitable materials. Place geotextile fabric as permeable separator to prevent mixing of coarse aggregate with underlying soil. Overlap fabric minimum of 6 inches. Place coarse aggregate on top of geotextile fabric to minimum depth of 8 inches.
- D. Grade protection area and driveway to provide sufficient drainage away from stabilized areas. Use sandbags, gravel, boards, or similar methods to prevent sediment from entering public right-of-way, receiving stream or storm water conveyance system. Provide driveway to fuel tank area with minimum width of 15 feet for one-way traffic and 30 feet for two-way traffic.
- E. Place aboveground storage tank on top of cast-in-place or pre-cast foundation. Base size and thickness of foundation on size and weight of tank to be used, with minimum thickness of 6 inches. Enclose concrete foundation by 5-inch by 5-inch concrete curb and extend minimum of 1 foot beyond tank and dispenser assemblies, so that leak and drip can be contained within concrete foundation.
- F. Slope concrete foundation minimum of 1 percent toward 6-inch wide by 12-inch long by 4-inch deep sump pit. Install minimum of 2-inch pipe inside sump pit with valve on outside of curb to allow draining of concrete foundation.
- G. Install portable concrete Jersey Barrier around concrete foundation. Provide minimum clearance of 2 feet from edge of foundation. In lieu of Jersey barrier, install 4-inch diameter steel pipe bollards around foundation. Bury bollards minimum of 3 feet deep, 3 feet above ground, and 4 feet on center, encased in 12-inch wide concrete foundation.

3.13 MAINTENANCE

- A. Inspections shall be conducted by designated health and safety officer qualified to conduct health and safety inspections.

- B. Inspect stabilized areas after every storm event and at least once a week. Provide periodic top dressing with additional coarse aggregate to maintain required depth. Repair and clean out damaged control measures used to trap sediment.
- C. Inspect fuel tank foundation's bermed area after every storm event and at least once a week. Visually examine storm water contained in tank's bermed foundation area for oil sheen or other obvious indicators of storm water pollution. Properly dispose of storm water when pollutant is present. Record visual examination of storm water discharge in Report noting date and time of examination, name of examiner, observations of water quality, and volume of storm water discharged from bermed area. Keep Report with other storm water pollution control inspection reports on site, in readily accessible location.

3.14 TEMPORARY FUELING AREA CLOSURE

- A. Dispose of temporary vehicle and equipment fueling area by removal of sediment and erosion controls properly off site. Owner's Representative will inspect top soils in fueling area and immediate vicinity for evidence of fuel leaks. If Owner's Representative determines that sufficient pollutants have been released, remove soil and properly dispose off site. Other remediation methods may be required.

END OF SECTION

SECTION 01 45 16.32
CONTRACTOR'S QUALITY CONTROL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Measurement and Payment
 - 2. Quality Assurance/Control of Installation
 - 3. References
 - 4. Manufacturer's Field Services and Reports
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
 - 2. Division 01 – General Requirements.

1.2 MEASUREMENT AND PAYMENT

- A. Unit Price. No separate payment will be made for this item. Include the cost in associated items for this project.

1.3 SUBMITTALS (NOT USED)

1.4 QUALITY ASSURANCE/CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality at no additional cost to the Owner.
- B. Comply fully with manufacturers' installation instructions, including each step in sequence.
- C. Request clarification Owner's Representative before proceeding when manufacturers' instructions conflict with Contract.
- D. Comply with specified standards as minimum requirements for Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform Work by persons qualified to produce specified level of workmanship.

1.5 REFERENCES

- A. Obtain copies of standards and maintain at job site when required by individual Specification sections.

1.6 MANUFACTURERS' FIELD SERVICES AND REPORTS

- A. When specified in individual Specification sections or as required by Owner's Representative, provide material or product suppliers' or manufacturers' technical representative to observe site conditions, conditions of surfaces and installation, quality of workmanship, test, adjust and balance of equipment as applicable and to initiate operation, as required.
- B. At Owner's Representative's request, submit qualifications of manufacturers' representative to Owner's Representative 15 days in advance of required representatives' services. Representative is subject to approval by Owner's Representative.
- C. A manufacturers' representative is to report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to a manufacturer's written instructions. Submit report within 14 days of observation to Owner's Representative for review.

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 SUMMARY

A. Section Includes:

1. Testing laboratory services
2. Requirements of this section apply to testing laboratories employed by the Contractor for approval of manufactured products, materials, including mix designs and quality control of materials
3. Requirements of this section also apply to testing laboratories employed by the Owner for approval of materials and the constructed Work on site.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
2. Division 01 – General Requirements.

1.2 MEASUREMENT AND PAYMENT

- A. Unit Price. No separate payment will be made for this item. Include the cost in associated items for this project

1.3 QUALITY ASSURANCE

A. Reference Standards

1. ASTM C 1077 – Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation.
2. ASTM D 3666 – Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Bituminous Paving Materials.
3. 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
4. ASTM E 329 – Standard Specification for Minimum Requirements for Agencies Engaged the Testing and/or Inspection of Materials Used in Construction.
5. ISO/IEC 17025 – General Requirements for the Competence of Calibration and Testing Laboratories.

1.4 RELATED REQUIREMENTS

- A. To test products and materials and provide certifications as identified in Part 2 Products, in the individual Specification sections, the Contractor shall either

1. Select, employ and pay for services of an independent testing laboratory or laboratories, or
 2. Cause its suppliers to perform required inspection and testing using an independent testing laboratory or a qualified in-house laboratory.
- B. Owner's Representative may, at its option, observe or witness any and all testing of materials and products which are to be utilized in the construction of the Work as they are being tested by the Contractor's laboratories.
- C. Owner will select, employ, and pay for services of an independent testing laboratory to perform inspection and testing identified in Part 3 of individual Specification sections.
- D. Employ and pay for services of independent testing laboratory or laboratories to perform inspection and testing identified in Part 2 of individual Specification sections.
- E. Employment of testing laboratory by Owner does not relieve the Contractor of obligation to perform the Work in accordance with requirements of Contract Documents.
- F. Owner's Representative schedules and monitors Owner's testing laboratory. Provide minimum 24 hours notice of testing to Owner's Representative to avoid delay of the Work.

1.5 QUALIFICATION OF LABORATORY

- A. Meet laboratory qualification requirements of ASTM E 329 and applicable requirements of ASTM C 1077, ASTM D 3666, and ASTM D 3740.
- B. Meet ISO/IEC 17025 conditions for accreditation by the American Association for Laboratory Accreditation (A2LA) in specific fields of testing required in individual Specification sections.
- C. If laboratory subcontracts are part of testing services, such work will be placed with laboratory complying with requirements of this Section.

1.6 LABORATORY

- A. Owner's testing laboratory will provide and distribute copies of laboratory reports to the distribution list provided by Owner's Representative at the preconstruction conference. Distribution will include download to the Owner's electronic document management system (Sharepoint) for the Project.
- B. Keep one copy of each laboratory report at site field office for duration of project.
- C. Contractor's testing laboratory will provide and distribute copies of laboratory test reports for materials to be incorporated into this Work to the distribution list provided by Owner's Representative at the preconstruction conference. Distribution will include download to the Owners electronic document management system (Sharepoint) for the Project

- D. Laboratories will email material supplier, Contractor, and Owner's Representative no later than close of business on working day following test completion and review, reports which indicate failing test results.

1.7 LIMITS ON TESTING LABORATORY AUTHORITY

- A. Laboratory may not release, revoke, alter, or enlarge requirements of Contract.
- B. Laboratory may not approve or accept any portion of the Work.
- C. Laboratory may not assume duties of Contractor or the Owner
- D. Laboratory has no authority to stop the Work.

1.8 SUBMITTALS (NOT USED)

1.9 CONTRACTOR RESPONSIBILITIES

- A. Provide safe access to the Work and to manufacturer's facilities for Owner's Representative, and for testing laboratory personnel.
- B. Provide testing laboratory with copy of construction schedule and copy of each update to construction schedule.
- C. Notify Owner's Representative and testing laboratory during normal working hours of the day previous to expected time for operations requiring inspection and testing services. When Contractor fails to make timely prior notification, then do not proceed with operations requiring inspection and testing services.
- D. Notify Owner's Representative 24 hours in advance when Specification requires presence of Owner's Representative for sampling or testing.
- E. Request and monitor testing as required to provide timely results and avoid delay to the Work. Where specified, provide samples to laboratory in sufficient time to allow required test to be performed in accordance with specified test methods before intended use of 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 site or at source of products to be tested; and to facilitate tests and inspections including storage and curing of test samples.
- G. Arrange with laboratory through Owner's Representative. Payment for additional testing will be made in accordance with Document 00 72 00 - General Conditions of the Contract:
 - 1. Retesting required for failed tests
 - 2. Retesting for nonconforming Work
 - 3. Additional sampling and tests requested beyond specified requirements
 - 4. Insufficient notification of cancellation of tests for Work scheduled but not performed.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 CONDUCTING TESTING

- A. Conform laboratory sampling and testing specified in individual Specification sections to latest issues of ASTM standards, TxDOT methods, or other recognized test standards as approved by Owner's Representative.
- B. Requirements of this section also apply to those tests for approval of materials, for mix designs and for quality control of materials as performed by employed testing laboratories.

END OF SECTION

SECTION 01 55 26
TRAFFIC CONTROL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes traffic control requirements for signs, signals, control devices, flares, lights, as well as construction parking control, English-speaking flagpersons, peace officers, designated haul routes and bridging of trenches and excavations.
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
 - 2. Division 01 – General Requirements.

1.2 MEASUREMENT AND PAYMENT

- A. Traffic Control and Regulation. Measurement is on a lump sum basis for traffic control and regulation, including submittal of traffic control plan if requested by the entity, provision of traffic control devices, and provision of equipment and personnel as necessary to protect Work and public. Amount invoiced shall be based on Schedule of Values submitted for traffic control and regulation.
- B. Payment for traffic control is on a lump sum basis and shall be authorized by Owner's Representative in three parts. Partial payments shall be made according to following schedule:
 - 1. Payment of 25 percent traffic control amount shall be authorized when permanent control devices and necessary temporary markings, sufficiently deployed along job site as required to maintain progress of Work, are installed at job site and approved. This limiting percentage shall be prorated based upon extent of Contractor's setup.
 - 2. Payment of 50 percent traffic control amount shall be authorized when the Work commences.
 - 3. Payment of 25 percent traffic control amount shall be authorized when the Work is complete and unnecessary permanent and temporary control devices removed. This limiting percentage shall be prorated based upon extent of restoration.
 - 4. Contractor must provide traffic control submittal for approval.
 - 5. Contractor will be responsible for obtaining all traffic control permits at no additional cost to the project.
 - 6. Flagmen. No separate payment for flagmen. Include costs for flagmen in the unit price for Traffic Control and Regulation.

1.3 SUBMITTALS

- A. Conform to requirements of Section 01 33 00 – Submittals.
- B. Traffic control plan responsive to the current Texas Manual on Uniform Traffic Control Devices (TMUTCD) sealed by Registered Professional Engineer must be submitted. .
- C. Submit copies of approved lane closure permits.
- D. For traffic control plan, submit Schedules of values within 30 days following notice to proceed. Refer to Section 01 29 73 – Schedule of Values.
- E. Provide information and records regarding use of qualified flagmen to verify use of “peace officers” as flagmen in compliance with Contract and Texas law, including but not limited to, Article 4413 (29bb), commonly referred to as Private Investigators and Private Security Agencies Act, and Article 2.12, Texas Code of Criminal Procedure.
- F. Provide information and records regarding use of qualified flagmen to verify Contractor’s use of “certified flagmen” as flagmen is in compliance with Contract.

1.4 FLAGMEN

- A. Use flagmen, qualified as described under Paragraph 1.4.B, Uniformed Peace Officers, and Paragraph 1.4.C, Certified Flagmen, to control, regulate, and direct even flow and movement of vehicular and pedestrian traffic when construction operations encroach on public traffic lanes.
 - 1. Contractor must use a flagmen when construction vehicles will be crossing traffic lanes near the school zones. School zone times are 6:30 AM to 9:00 AM and 2:00 PM to 4:00 PM.
 - 2. Contractor must avoid blocking traffic lanes at all times unless approved by the Owner.
- B. Uniformed Peace Officer: Individual who has full-time employment as peace officer and receives compensation as flagman for private employment as individual employee or independent contractor. Private employment may be either employee-employer relationship or on an individual basis. Flagman may not be in employ of another peace officer and may not be a reserve peace officer.
 - 1. Peace officer is defined as:
 - a. Sheriffs and their deputies
 - b. Constables and deputy constables
 - c. Marshals or police officers of an incorporated city, town, or village
 - d. As otherwise provided by Article 2.12, Texas Code of Criminal Procedure, as amended

2. Individual who has full-time employment as a peace officer is one who is actively employed in a full-time capacity as a peace officer working, on average, a minimum of 32 paid hours per week, being paid a rate of pay not less than prevailing minimum hourly wage rate set by federal Wage and Hour Act and entitled to full benefits of participation in retirement plan, vacation, holidays, and insurance benefits. A reserve peace officer does not qualify, under this definition, as a peace officer.
- C. Certified Flagman: Individual who receives compensation as flagman and meets the following qualifications and requirements:
 1. Formally trained and certified in traffic control procedures.
 2. Required to wear distinctive uniform, bright-colored vest, and be equipped with appropriate flagging and communication devices
 3. English speaking, with Spanish as advantageous, but not required, primary, or secondary language.
 4. Paid as Certified Flagman, equivalent to hourly wage rate set for Rough Carpenter under Specification Section 00 73 43 – Wage Scale for Construction.
 5. Required to carry proof of training/certification and photographic identification card issued by training institute to allow Owner's Representative to easily determine necessary full-time traffic control is actually provided when and where construction work encroaches upon traffic lanes.

PART 2 - PRODUCTS

2.1 SIGNS, SIGNALS, AND DEVICES

- A. Comply with Texas State Manual on Uniform Traffic Control Devices.
- B. Traffic Barriers, 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 Work requires public roads be temporarily impeded or closed, obtain approvals from governing authorities and pay permits before starting any Work. Coordinate activities with Owner's Representative.
- B. Maintain 10-foot-wide, all-weather lane adjacent to Work areas for use of emergency vehicles. Keep all-weather lane free of construction equipment and debris.

- C. Cover or remove the permanent signs and construction signs that are incorrect or that do not apply to the current situation for a particular phase. Do not mount signs on drums or barricades, except those listed in the latest Barricades and Construction standard sheets.
- D. Place positive barriers to protect drop-off conditions greater than 1 FT within the clear zones that remain overnight.
- E. Construction activities not to obstruct normal flow of traffic from 6:30 a.m. to 9:00 a.m. and 2:00 p.m. to 4:00 p.m. on designated major arterials and school zones or as directed by the Owner.
- F. Maintain local driveway access to residential and commercial properties adjacent to Work areas at all times. Use all-weather materials as approved by Owner's Representative when maintaining temporary driveway access to commercial and residential driveways.
- G. Cleanliness of Surrounding Streets: Keep streets used for entering and leaving job area free of excavated material, debris, and foreign material resulting from construction operations.
- H. Provide Owner's Representative 1-week notice prior to implementing each approved traffic control phase.
- I. Notify local schools, churches, bus lines, police department, commercial businesses, and fire department in writing of construction a minimum of 5 working days prior to beginning Work.
- J. Remove existing signing and striping that are in conflict with construction activities or may cause driver confusion.
- K. Provide safe access for pedestrians along major cross streets.
- L. Alternate closures of cross streets so that two adjacent cross streets are not closed simultaneously.
- M. Do not close more than two consecutive esplanade openings at a time without prior approval by Owner's Representative.

3.2 CONSTRUCTION PARKING CONTROL

- A. Control vehicular parking to prevent interference with public traffic and parking, and access by emergency vehicles.
- 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 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. Construct necessary traffic control devices for temporary signals including but not limited to loop detectors, traffic signal conduits, traffic signal wiring, and crosswalk signals required to complete Work. Notify, a minimum of 60 days in advance, the agency concerning control boxes and switchgear. The agency will perform service, programming, or adjustments, to signal boxes and switchgear should this work be required during construction.
- 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. Establish notices, signs, and traffic controls before moving into next phase of traffic control.
- C. Relocate traffic signs and signals as Work progresses to maintain effective traffic control.
- D. Unless otherwise approved by Owner's Representative, provide driveway signs with name of business that can be accessed from particular cross-over. Use two signs for each cross-over.
- E. Replace existing traffic control devices in project area.
- F. Owner's Representative may direct Contractor to make minor traffic control sign adjustments to eliminate driver confusion and maintain traffic safety during construction at no additional payment.

3.6 BRIDGING TRENCHES AND EXCAVATIONS

- A. Whenever necessary, bridge trenches and excavation to permit an unobstructed flow of traffic. Provide steel plates that can be laid across construction areas and major drives of commercial businesses.
- B. Secure bridging against displacement by using adjustable cleats, angles, bolts, or other devices whenever bridge is installed:
 - 1. On existing bus route.
 - 2. When more than 5 percent of daily traffic is comprised of commercial or truck traffic.
 - 3. When more than two separate plates are used for bridge.
 - 4. When bridge is to be used for more than 5 consecutive days.
- C. Install bridging to operate with minimum noise.

- D. Adequately shore trench or excavation to support bridge and traffic.
- E. Extend steel plates used for bridging a minimum of 1 foot beyond edges of trench or excavation. Use temporary paving materials (premix) to feather edges of plates to minimize wheel impact on secured bridging.
- F. Use steel plates of sufficient thickness to support H-20 loading, truck or lane, 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.

3.8 TRAFFIC CONTROL, REGULATION, AND DIRECTION

- A. Use flagmen to control, regulate, and direct even flow and movement of vehicular and pedestrian traffic including but not limited to the following conditions:
 - 1. Where multi-lane vehicular traffic must be diverted into single lane vehicular traffic
 - 2. Where vehicular traffic must change lanes abruptly
 - 3. Where construction equipment must enter or cross vehicular traffic lanes and walks
 - 4. Where construction equipment will on vehicular traffic lines near school zones
 - 5. Where construction equipment may intermittently encroach on vehicular traffic lanes and unprotected walks and crosswalks
 - 6. Where traffic regulation is needed due to rerouting of vehicular traffic around Work site.
 - 7. Other areas of Work where construction activities might affect public safety and convenience.
- B. Use and maintain flagmen at points for periods of time as may be required to provide for public safety and convenience of travel.
- C. Use of flagmen is for purpose of assisting in regulation of traffic flow and movement and does not relieve Contractor of full responsibility for taking other steps and providing other flaggers or personnel as Contractor may deem necessary to protect Work and public.

3.9 INSTALLATION STANDARDS

- A. Work in other phases shall be permitted, provided 1) phases are not continuous to one work is being done in presently, 2) installation of utility occurs in only one phase. Keep work and operation in second phase to an absolute minimum. Perform work in no more than two phases at a time. Authorization to perform

work in second phase shall not relieve any responsibility of completing backfilling and paving operations in accordance with Contract.

- B. Place temporary pavement with a single lane closure, in accordance with TMUTCD.
- C. Reinstall temporary and permanent pavement markings as directed by Owner's Representative. Alternative markings shall be considered when marking manufacturer's weather conditions cannot be met. These alternatives are to be submitted and approved by Owner's Representative prior to installation. No extra payment will be made for use of alternative markings.

3.10 MAINTENANCE OF EQUIPMENT AND MATERIAL

- A. Designate individual to be responsible for maintenance of traffic handling around construction area. Individual must be accessible at all times to immediately correct any deficiencies in equipment and materials used to handle traffic including missing, damaged, or obscured signs, drums, barricades, or pavement markings. Give name, address, and telephone number of designated individual to Owner's Representative.
- B. Make daily inspections of signs, barricades, drums, lamps, and temporary pavement markings to verify that these are visible, in good working order, and conform with traffic handling plans and directions of Owner's Representative. When not in compliance, immediately bring equipment and materials into compliance by replacement, repair, cleaning, relocation, and realignment.
- C. Keep equipment and materials, especially signs and pavement markings, clean and free of dust, dirt, grime, oil, mud, or debris.
- D. Owner's Representative shall decide if damaged or vandalized signs, drums, and barricades can be reused.

END OF SECTION

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SECTION 01 56 39

TEMPORARY TREE AND PLANT PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes requirements for tree and plant protection.
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
 - 2. Division 01 – General Requirements.

1.2 MEASUREMENT AND PAYMENT

- A. Unless a separate bid item has been established, no separate payment will be made for tree and plant protection specified herein. Include cost in price bid for related work items.

1.3 SUBMITTALS

- A. Conform to requirements of Section 01 33 00 – Submittals.
- B. Submit name and experience of qualified Arborist to Owner's Representative.

1.4 PROJECT CONDITIONS WHEN TREES AND PLANTS ARE IDENTIFIED TO REMAIN

- A. Preserve and protect existing trees and plants from foliage, branch, trunk, or root damage that could result from construction operations when trees and plants are identified to remain.
- B. Do not allow any vehicular traffic, construction equipment, parking of vehicles or stockpiling of excavated material or construction materials within protected tree root zone areas. Refer to Section 1.6 DEFINITIONS, for Dripline/Root Zone Area definition.
- C. Prevent the following types of damage:
 - 1. Compaction of root zone area by equipment, vehicles, foot traffic or materials storage.
 - 2. Suffocating roots by placing soil in excess of three inches (3") within root zone areas, including placement of any select fill or soil with high clay content.
 - 3. Trunk and limb damage resulting from contact with equipment and vehicles.
 - 4. Poisoning by pouring solvents, fuel, and other injurious materials on or near root zone areas or in areas where such materials will leak or wash into root zone areas.

5. Changing soil pH within root zones by depositing concrete, powdered lime or other materials used to stabilize or dehydrate soils.
6. Cutting roots measuring one inch (1") in diameter and larger within protected areas unless required for root pruning.
7. Scorching of foliage, twigs and limbs caused by direct contact with expulsion of hot exhaust from equipment or vehicles.
8. Branch damage due to improper pruning or trimming.
9. Damage from permanently altering drainage patterns near root zones.
10. Trunk and branch damage resulting from nailing or bolting.

1.5 DAMAGE ASSESSMENT

- A. When trees other than those designated for removal are destroyed or badly damaged as result of construction operations, remove and replace with same size, species, and variety up to and including 8 inches in trunk diameter. Any tree larger than 8 inches in diameter shall be replaced with 8-inch diameter tree of same species and variety and total contract amount shall be reduced by amount determined from following International Shade Tree Conference formula: $0.7854 \times D^2 \times \38.00 where D is diameter in inches of tree or shrub trunk measured 12 inches above grade.

1.6 DEFINITIONS

- A. Dripline/Root Zone Area - The ground area delineated by the branch spread of a single plant or group of plants. This area is considered the most critical area of roots and should be protected, excluding the area within the street located between curbs.
- B. Zero Curb Cut - The process in which required street work is conducted without cutting or otherwise disturbing soil located immediately behind the existing curb.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Protection Fencing - Orange, plastic mesh fencing, four feet (4') in height with six feet (6') high steel T-bar posts. Set posts eighteen inches (18") into ground. Stretch fencing material taut prior to securing.
- B. Fertilizer - A low salt, slow release fertilizer containing twenty-seven percent (27%) nitrogen, nine percent (9%) phosphorus and nine percent (9%) potassium (potash) or similar.
- C. Plastic Vapor Barrier - Polyethylene sheeting at least 6-mil thickness and three feet width to prevent leaching of stabilized material into native soil.
- D. Tree Replacements - Shall be as approved by Owner's Representative as necessary.

PART 3 - EXECUTION

3.1 PROTECTION AND MAINTENANCE OF EXISTING TREES AND SHRUBS

- A. Except for trees shown on Drawings or determined by Owner's Representative to be removed or relocated, trees within Project area are to remain in place, protected from damage and maintained by Contractor.
- B. If required by the Project specifications, employ a qualified Arborist. The Arborist must be approved by Owner's Representative and shall have a minimum of 5 (five) years of experience in the field of tree protection.
- C. Perform the following services as required by construction activities for trees that remain:
 - 1. Trimming
 - a. Trees shall be pruned in accordance ANSI A300 (Part 1) - 2001 Pruning Revision of ANSI A300-1995 Tree, Shrub and Other Woody Plant Maintenance - Standard Practices. Pruning shall be done by a professional arborist who has received training in proper pruning techniques.
 - b. Pruning shall not alter the natural shape or character of the tree or leave holes in the canopy. Trees and shrubs should be pruned for balance as well as to maintain proper form and branching habit.
 - c. Cut limbs at branch collar. No stubs should remain on trees. Branch cuts should not gouge outer layer of tree structure or trunk.
 - 2. Root Pruning
 - a. When excavating with equipment within the root zone area is unavoidable and roots cannot be preserved, root prune prior to excavation to minimize damage to the portion of the root system that will remain.
 - b. Prune roots using a conventional trenching machine. Trench along the proposed edge of excavation limits to a depth of three feet (3'). Do not allow ripping of roots with a backhoe or other equipment.
 - c. Following trenching with the machine, re-cut roots measuring one inch (1") in diameter and larger using appropriate sharpened, pruning shears or pruning saws to make a clean, smooth-cut surface. Cut roots flush with edge of soil to limit root exposure.
 - d. Backfill trench in a manner that will not allow settling using clean, native soil.
 - 3. Fertilizing and Watering
 - a. Trees should be fertilized in accordance with the American National Standard for tree fertilization ANSI A300 (Part 2) - 1998 Tree, Shrub and Other Woody Plant Maintenance - Standard Practices (Fertilization).

- b. Deep root fertilize all trees that have received disturbance or damage to their root zone area.
 - c. Fertilize entire root zone area within the dripline of the tree and continue ten feet (10') beyond the dripline.
 - d. Mixture shall be injected into the top ten inches (10") of soil, under pressure of one hundred and fifty pounds per square inch (150 psi) to two hundred pounds per square inch (200 psi). Mix and apply per product label instructions.
 - e. Inject one-half gallon (1/2) of solution at a depth of ten inches (10") on spacing of three feet (3') between injection points.
 - f. Fertilizer shall be mixed in a tank with mechanical agitation.
 - g. Fertilizer to be added to tank and mixed on site.
 - h. During periods of inadequate rainfall, water trees once weekly to saturate soil to a depth of six inches (6") to eight inches (8") within root zones. Allow soils to dry between watering. Do not allow soils to remain wet.
- 4. Water areas currently being served by private sprinkler systems to maintain health of existing landscapes if the affected systems are temporarily taken out of service due to construction activities.
 - 5. Contractor's option with Owner's Representative's permission, shrubs to remain may be temporarily transplanted and returned to original positions under supervision of professional horticulturist.

3.2 PROTECTION

A. Construction Methods

1. General

- a. Contractor shall attend a pre-construction meeting conducted by the Owner's Representative to review tree preservation requirements and sequence of services for the construction process.
- b. Protect tree limbs, trunks and foliage from direct exposure to hot exhaust from equipment and vehicles by providing adequate exhaust pipe deflectors.
- c. Cover exposed roots within 24 hours to reduce damage caused by desiccation. Roots may be covered with soil or mulch to help protect them from drying.
- d. Protect root zone areas from damage that may result from soil compaction or from noxious materials in solution caused by run-off or spillage during mixing and placement of construction materials, or drainage from stored materials.

- e. Minimize cut to two inches (2") below grade when installing silt fence within tree root zones or anchor base of fabric on grade using gravel or staples. Do not cut roots 1" in diameter or larger.
- f. Site preparation work and/or construction work shall not begin in any area where tree preservation measures have not been completed and approved by the Owner's Representative.

2. Preparation

- a. Contractor shall not allow any vehicular traffic, parking of vehicles or stockpiling of excavated material or construction material within the root zone area of trees to be preserved.
- b. When access within protected root zone areas by equipment traffic or frequent foot traffic cannot be avoided, contact Owner's Representative for review prior to entrance. Place a three-quarter inch (3/4") thick layer of plywood on natural grade within root zones to minimize soil compaction. Overlap edges of plywood by six inches (6") to twelve inches (12") to ensure adequate coverage. This is not acceptable bridging for driving over exposed tree roots. Exposed roots should not be driven over.
- c. Contractor shall notify Owner's Representative if existing tree locations differ from locations represented on construction drawings. The tree location and dripline/root zone area as observed in the field shall supersede that outlined on construction plans.

3. Tree Protection Fencing

- a. Each tree located adjacent to proposed soil excavation shall be protected with a tree protection fence or as designated on the plans. Fence locations shall be approved by Owner's Representative.
- b. Contractor shall not remove or relocate tree protection fencing and shall not operate within the limits shown without approval of the Owner's Representative.
- c. Fences shall be placed in continuous alignment to protect a tree or group of trees.
- d. Posts shall be installed on eight-foot (8') centers at eighteen inches (18") below grade. The fencing shall be continuous between posts, shall be pulled taut prior to securing to posts, and shall be firmly attached to the posts with a minimum of three (3) wire ties.
- e. Place fencing in a manner that will not obstruct traffic site lines at curbs, intersections or driveways.
- f. Fencing shall be removed only after all work within the immediate area is complete.

- g. Contractor shall immediately repair fences if damage occurs at no additional charge to client.
- 4. Excavation within Root Zone Areas
 - a. For excavation within root zone areas, where required for personal safety, provide excavation protection by using vertical-wall-shoring techniques at excavations to minimize excavation width. Do not bench cut or step cut edge where such techniques will encroach on root zone areas.
 - b. If roots are encountered and must be severed, roots measuring one inch (1") in diameter and larger shall be cut using a sharpened pruning instrument to leave a smooth, clean-cut surface.
- 5. Zero Curb Cut and Vapor Barrier Installation
 - a. Where existing curb is to be removed within tree root zone areas, do not disturb soil immediately back of curb. Do not allow forms and stakes to disturb roots.
 - b. A vapor barrier shall be installed to provide a non-leaching barrier between any stabilized material and/or concrete and tree roots and soils.
 - c. Vapor barrier shall be installed vertically to a depth of five inches (5") below limits of stabilized material. Vapor barrier to be extended ten inches (10") above natural grade and ten feet (10') beyond the dripline limits of the tree. Trim vertical vapor barrier to approximately one inch (1") above grade after installation of final grade.
- 6. Boring/Tunneling
 - a. In areas indicated, bore under root systems of trees at a minimum depth of four feet (4') from the top of pipe to the soil surface at natural grade.
 - b. Bore pits and receiving pits shall be located outside of protected root zone areas.
 - c. Equipment and material shall be positioned outside of protected root zone areas. When access within protected root zone area by equipment traffic or frequent foot traffic cannot be avoided, place a three-quarter inch (3/4") thick layer of plywood on natural grade within root zones to minimize soil compaction, refer to Section 3. 2, A, 2.
- 7. Trunk Barricading
 - a. Install trunk barricading to protect trees in close proximity of moving or mechanical equipment and construction work when work is required within the tree protection fencing as shown on the plans.
 - b. Place trunk barricading around entire tree trunks to protect tree trunks located within five feet (5') of construction activities.
 - c. Install tree planking around the circumference of the tree trunk, per plan details.

d. Tie in place with 9 to 12 gauge steel wire.

B. Sequence of Tree Protection and Services

1. Fertilize trees affected by construction between the months of October and May.
2. Prune/trim trees for clearance and safety.
3. Root Prune trees.
4. Place tree protection fence and trunk barricades to protect trees. Place fencing prior to any construction activities.
5. Remove tree protection upon completion of project.

C. Existing Stressed and Declining Trees

1. Prior to beginning the construction phase, trees located within the right-of-way should be reviewed and trees that appear to be stressed or declining in health should be documented. Immediately notify the Owner's Representative of any dead and dying trees.

D. Accidental Spills of Toxic Materials

1. Concrete, lime or other chemicals placed or accidentally spilled within root zone protection areas shall be completely removed. Contaminated soil shall be completely removed at the time of the spill and removed by hand shovel. Fresh soil shall be added as necessary to bring the soil level to that of natural grade.

3.3 MAINTENANCE OF NEWLY PLANTED TREES AND REPLANTED TREES

A. Show proof of capacity to water during dry periods.

B. Guarantee trees planted for this Project shall remain alive and healthy at least until end of 1-year warranty period.

1. Within 4 weeks notice from Owner's Representative, replace dead trees or trees that in opinion of Owner's Representative have become unhealthy, unsightly or have lost their natural shape as result of additional growth, improper pruning, maintenance or weather conditions.
2. When tree must be replaced, guarantee period begins on date of tree replacement, subject to Owner's Representative's inspection, for no less than 1 year.
3. Straighten leaning trees and bear entire cost.
4. Dispose of trees rejected by Owner's Representative and bear entire cost.

END OF SECTION

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SECTION 01 57 13.01
TPDES REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

Preparation of Storm Water Pollution Prevention Plan and notifications to TCEQ.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
2. Division 01 – General Requirements.

1.2 MEASUREMENT AND PAYMENT

A. Unit Price. No separate payment will be made for this item. Include the cost in associated items for this project.

1.3 DEFINITIONS

A. Commencement of Construction Activities: The exposure of soil resulting from activities such as clearing, grading, and excavating.

B. Large Construction Activity: Project that:

1. Disturbs 5 acres or more, or
2. Disturbs less than 5 acres but is part of a larger common plan of development that will disturb 5 acres or more of land.

C. Small Construction Activity: Project that:

1. Disturbs 1 or more acres but less than 5 acres, or
2. Disturbs less than 1 acre but is part of a larger common plan of development that will ultimately disturb 1 or more acres but less than 5 acres.

D. TPDES Operator:

1. The person or persons who have day-to-day operational control of the construction activities which are necessary to ensure compliance with the SWP3 for the site or other Construction General Permit conditions.

1.4 SUBMITTALS (NOT USED)

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 SITE SPECIFIC STORM WATER POLLUTION PREVENTION PLAN (SWP3)

- A. Prepare a SWP3 following Part III of the Construction General Permit.
- B. Update or revise the SWP3 as needed during the construction following Part III, Section E of the Construction General Permit.
- C. Submit the SWP3 and any updates or revisions to Owner's Representative for review and address comments prior to commencing, or continuing, construction activities.

3.2 NOTICE OF INTENT FOR LARGE CONSTRUCTION ACTIVITY

- A. Fill out, sign, and date TCEQ Form 20022 (3/5/2008) Notice of Intent (NOI) for Storm Water Discharges Associated with Construction Activity under the TPDES Construction General Permit (TXR150000), **ATTACHMENT 1** of this Section 01 57 13.01 – TPDES Requirements.
- B. Submit the Notice of Intent by one of the following methods:
 - 1. Submit online at TCEQ ePermits (www6.tceq.state.tx.us/steers) and pay the \$225 application fee. Transmit a copy of the electronic certificate provided by TCEQ to Owner's Representative.
 - 2. Send a \$325 check and completed TCEQ Form 20022 (3/5/2008) to the Texas Commission on Environmental Quality. Transmit a copy of the check and completed form to Owner's Representative.
- C. Owner will complete a separate Owner's copy of TCEQ Form 20022 (3/5/2008) for NOI, and will submit Notice, along with application fee, to the TCEQ.
- D. Submission of the Notice of Intent form by Contractor to TCEQ is required a minimum of 7 days before Commencement of Construction Activities.

3.3 CONSTRUCTION SITE NOTICE FOR SMALL CONSTRUCTION ACTIVITY

- A. Fill out, sign, and date the Construction Site Notice, Attachment 2 to TPDES General Permit TXR150000, "Construction Site Notice," **ATTACHMENT 2** of this Section 01 57 13.01 – TPDES Requirements.
- B. Transmit the signed Construction Site Notice to Owner's Representative at least 7 days prior to Commencement of Construction Activity.

3.4 CERTIFICATION REQUIREMENTS

- A. Fill out TPDES Operator's Information form, **ATTACHMENT 3** of this Section 01 57 13.01 – TPDES Requirements, including Contractor's name, address, and telephone number and the names of persons or firms responsible for maintenance and inspection of erosion and sediment control measures. Use multiple copies as required to document full information.
- B. Contractor and Subcontractors shall sign and date the Contactor's/Subcontractor's Certification for TPDES Permitting, **ATTACHMENT**

4 of this Section 01 57 13.01 – TPDES Requirements. Include this certification with other Project certification forms.

- C. Submit properly completed certification forms to Owner's Representative for review before beginning construction operations.
- D. Conduct inspections in accordance with TCEQ requirements. Ensure persons or firms responsible for maintenance and inspection of erosion and sediment control measures read, fill out, sign, and date the Erosion Control Contractor's Certification for Inspection and Maintenance. Use the EPA NPDES Construction Inspection Form, **ATTACHMENT 5** of this Section 01 57 13.01 – TPDES Requirements; to record maintenance inspections and repairs.

3.5 RETENTION OF RECORDS

- A. Keep a copy of this document and the SWP3 in a readily accessible location at the construction site from Commencement of Construction Activity until submission of the Notice of Termination (NOT) for Storm Water Discharges Associated with Construction Activity under TPDES Construction General Permit (TXR150000). Contractors with day-to-day operational control over SWP3 implementation shall have a copy of the SWP3 available at a central location, on-site, for the use of all operators and those identified as having responsibilities under the SWP3. Upon submission of the NOT, submit all required forms and a copy of the SWP3 with all revisions to Owner's Representative.

3.6 REQUIRED NOTICES

- A. Post the following notices from the effective date of the SWP3 until the date of final site stabilization as defined in the Construction General Permit:
 - 1. Post the TPDES permit number for Large Construction Activity, or a signed TCEQ Construction Site Notice for Small Construction Activity. Signed copies of the Contractor's NOI must also be posted.
 - 2. Post notices near the main entrance of the construction site in a prominent place for public viewing. Post name and telephone number of Contractor's local contact person, brief project description and location of the SWP3.
 - a. If posting near a main entrance is not feasible due to safety concerns, coordinate posting of notice with Owner's Representative to conform to requirements of the Construction General Permit.
 - b. If Project is a linear construction project (e.g., road, utilities, etc.), post notice in a publicly accessible location near active construction. Move notice as necessary.
 - 3. Post a notice to equipment and vehicles operators, instructing them to stop, check, and clean tires of debris and mud before driving onto traffic lanes. Post at each stabilized construction exit area.
 - 4. Post a notice of waste disposal procedures in a readily visible location on site.

3.7 ON-SITE WASTE MATERIAL STORAGE



- A. On-site waste material storage shall be self-contained and shall satisfy appropriate local, state, and federal rules and regulations.
- B. Prepare list of waste material to be stored on-site. Update list as necessary to include up-to-date information. Keep a copy of updated list with the SWP3.
- C. Prepare description of controls to reduce pollutants generate from on-site storage. Include storage practices necessary to minimize exposure of materials to storm water, and spill prevention and response measures consistent with best management practices. Keep a copy of the description with the SWP3.

3.8 NOTICE OF TERMINATION

- A. Submit an NOT, **ATTACHMENT 6** of this Section 01 57 13.01 – TPDES Requirements, to Owner's Representative within 10 days after:
 - 1. Final stabilization has been achieved on all portions of the site that are the responsibility of the Contractor; or
 - 2. Another operator has assumed control over all areas of the site that have not been stabilized; and
 - 3. All silt fences and other temporary erosion controls have either been removed scheduled to be removed as defined in the SWP3, or transferred to a new operator, if the new operator has sought permit coverage.
- B. Owner's Representative will complete NOT and submit Contractor's notices to the TCEQ and MS4 entities.

END OF SECTION

ATTACHMENT 1

	Notice of Intent (NOI) for Storm Water Discharges Associated with Construction Activity under TPDES General Permit (TXR150000)	TCEQ Office Use Only Permit No.: TXR15 RN: CN: Ref No:
	Sign up now for ePermits NOI at www6.tceq.state.tx.us/steers Get Instant Permit Coverage and only pay a \$225 application fee. If filing a paper NOI you can pay the application fee on line? Go to www.tceq.state.tx.us/epay Select Fee Type: GENERAL PERMIT CONSTRUCTION STORM WATER DISCHARGE NOI APPLICATION If submitting a paper NOI , coverage under the general permit starts seven (7) days after the date postmarked for delivery to TCEQ.	<div style="border: 1px solid black; padding: 2px 5px; color: red; font-weight: bold;">Reset Form</div>
IMPORTANT: <ul style="list-style-type: none">•Use the INSTRUCTIONS to fill out each question in this form.•Use the attached CUSTOMER CHECKLIST to make certain all you filled out all required information.•Incomplete applications WILL delay approval or result in automatic Denial.		
Renewal of General Permit Is this NOI to renew an ACTIVE permit? <div style="display: flex; align-items: flex-start;"><div style="margin-right: 10px;"><input type="checkbox"/> Yes - What is your permit number? Permit No. TXR15 _____ <input type="checkbox"/> No - a permit number will be issued.</div></div>		
Application Fee if mailing a paper NOI: You must pay the \$325 Application Fee to TCEQ for the application to be considered complete. Payment and NOI must be mailed to separate addresses. See instructions for correct mailing addresses.		
Provide your payment information below, for us to verify payment of the application fee:		
<input type="checkbox"/> Mailed:	Check/Money Order No.:	Company Name on checking account:
<input type="checkbox"/> EPAY:	Voucher No.:	Is the Payment Voucher copy attached? <input type="checkbox"/> Yes
A. OPERATOR (applicant)		
1. If the applicant is currently a customer with TCEQ, what is the Customer Number (CN) issued to this entity? CN (Search Central Registry)		
2. What is the Legal Name of the entity (applicant) applying for this permit? <small>(The legal name must be spelled exactly as filed with the Texas Secretary of State, County, or in the legal document forming the entity.)</small>		
3. What is the name and title of the person signing the application? <small>(The person must be an official meeting signatory requirements in TAC 305.43(a).)</small>		
Name:	Job Title:	
4. What is the Operator's (applicant) mailing address as recognized by the US Postal Service? (verify at USPS.com)		
Address:		Suite No./Bldg. No./Mail Code:
City:	State:	ZIP Code:
Country Mailing Information (if outside USA):		Country Code: Postal Code:
5. Phone No.: ()		Extension:
6. Fax No.: ()		E-mail Address:
7. Indicate the type of Customer:		
<input type="checkbox"/> Individual	<input type="checkbox"/> Sole Proprietorship-D.B.A.	<input type="checkbox"/> Limited Partnership
<input type="checkbox"/> Corporation	<input type="checkbox"/> Federal Government	<input type="checkbox"/> General Partnership
<input type="checkbox"/> State Government	<input type="checkbox"/> County Government	<input type="checkbox"/> City Government
<input type="checkbox"/> Other Government	<input type="checkbox"/> Other (describe):	

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Page 1

ATTACHMENT 1

8. Independent Operator: <input type="checkbox"/> Yes <input type="checkbox"/> No (If governmental entity, subsidiary, or part of a larger corporation, check "No".)	
9. Number of Employees: <input type="checkbox"/> 0-20; <input type="checkbox"/> 21-100; <input type="checkbox"/> 101-250; <input type="checkbox"/> 251-500; or <input type="checkbox"/> 501 or higher	
10. Customer Business Tax and Filing Numbers (This item is not applicable to Individuals, Government, GP or Sole Proprietor.) REQUIRED for Corporations and Limited Partnerships (Verify the entity's status and filing no. with TX SOS at 512/463-5555)	
State Franchise Tax ID Number:	Federal Tax ID:
TX SOS Charter (filing) Number:	DUNS Number (if known):
B. APPLICATION CONTACT	
If TCEQ needs additional information regarding this application, who should be contacted?	
1. Name:	Title:
2. Phone No.: ()	Extension:
3. Fax No.:	E-mail Address:
C. REGULATED ENTITY (RE) INFORMATION ON PROJECT OR SITE	
1. TCEQ Issued RE Reference Number (RN): RN (Search Central Registry)	
2. Name of Project or Site (the name as known by the community where this facility/project is located): (example: phase and name of subdivision or name of project that's unique to the site)	
3. Does the site have a physical address? If Yes, complete Section A for a physical address. If No, complete Section B for site location information.	
Section A: Enter the physical address for the site. (verify it with USPS.com or other delivery source)	
Street Number:	Street Name:
City:	ZIP Code:
Section B: Enter the site location information.	
If no physical address (Street Number & Street Name), provide a written location access description to the site: (Ex.: phase 1 of Woodland subdivision located 2 miles west from intersection of Hwy 290 & IH35 accessible on Hwy 290 South)	
City where the site is located or nearest city to site:	ZIP Code where site is located:
4. Identify the county where the site is located:	
5. Latitude: ° ' " N	Longitude: ° ' " W
6. What is the primary business of this entity? In your own words, briefly describe the primary business of the Regulated Entity: (Do not repeat the SIC and NAICS code)	
7. What is the mailing address for the regulated entity?	
Is the RE mailing address the same as the Operator? <input type="checkbox"/> Yes, address is the same as Operator <input type="checkbox"/> No, provide the address	
Street Number:	Street Name:
City:	State:
	ZIP Code:
D. GENERAL CHARACTERISTICS	
1. Is the site located on Indian Country Lands? <input type="checkbox"/> No <input type="checkbox"/> Yes – If Yes, do not submit this NOI. Contact EPA, Region VI If the site is on Indian country lands, you must obtain authorization through EPA, Region VI.	
2. What is the Standard Industrial Classification (SIC) code (see instructions for common codes): (Search Osha.gov)	
Primary:	Secondary:

ATTACHMENT 1

3(a) What is the total number of acres disturbed? _____	
3(b) Is the project site part of a larger common plan of development or sale? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, the total number of acres disturbed can be less than 5 acres. If No, the total number of acres disturbed must be 5 or more. If the total number of acres disturbed is less than 5 then the project site does not qualify for coverage through this Notice of Intent. Coverage will be denied. See the requirements in the general permit for small construction sites.	
4. Discharge Information (all information MUST be provided or the permit will be denied)	
4(a) What is the name of the water body(s) to receive the storm water runoff or potential runoff from the site? _____	
4(b) What is the segment number(s) of the classified water body(s) that the discharge or potential discharge will eventually reach? _____	
4(c) Are any of the surface water bodies receiving discharges from the construction site on the latest EPA-approved CWA 303(d) list of impaired waters? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide the name of the impaired water body(s). _____	
4(d) Is the discharge into an MS4? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, what is the name of the MS4 Operator? _____ Note: The general permit requires you to send a copy of the NOI to the MS4 Operator.	
4(e) Is the discharge or potential discharge within the Recharge Zone, Contributing Zone, or Contributing Zone within the Transition Zone of the Edwards Aquifer? <input type="checkbox"/> Yes <input type="checkbox"/> No If the answer is Yes, please note that a copy of the agency approved Plan required by the Edwards Aquifer Rule (30 TAC Chapter 213) must be included or referenced in the Storm Water Pollution Prevention Plan.	
E. CERTIFICATION	
Check "Yes" to the certifications below. Failure to certify to all items will result in denial.	
<input type="checkbox"/> Yes	I certify that I have obtained a copy and understand the terms and conditions of the general permit (TXR150000) .
<input type="checkbox"/> Yes	I certify that the full legal name of the entity (Operator) applying for this permit has been provided and is legally authorized to do business in Texas.
<input type="checkbox"/> Yes	I understand that a Notice of Termination (NOT) must be submitted when this authorization is no longer needed.
<input type="checkbox"/> Yes	I certify that a storm water pollution prevention plan has been developed and implemented prior to construction, and that is compliant with any applicable local sediment and erosion control plans and prepared and implemented as required in the general permit TXR150000.
Operator Certification:	
I, _____ Typed or printed name (Required & must be legible) Title (Required & legible)	
certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	
I further certify that I am authorized under 30 Texas Administrative Code §305.44 to sign and submit this document, and can provide documentation in proof of such authorization upon request.	
Signature: _____ Date: _____ (Use blue ink)	

ATTACHMENT 1

Texas Commission on Environmental Quality General Permit Payment Submittal Form \$325 for a paper Construction NOI Application Fee	
Use this form to submit your Application Fee only if you are mailing your payment.	
<ul style="list-style-type: none">• Complete items 1 through 5 below:• Staple your check in the space provided at the bottom of this document.• Do not mail this form with your NOI form.• Do not mail this form to the same address as your NOI.	
Mail this form and your check to:	
BY REGULAR U.S. MAIL	BY OVERNIGHT/EXPRESS MAIL
Texas Commission on Environmental Quality Financial Administration Division Cashier's Office, MC-214 P.O. Box 13088 Austin, TX 78711-3088	Texas Commission on Environmental Quality Financial Administration Division Cashier's Office, MC-214 12100 Park 35 Circle Austin, TX 78753
Fee Code: GPA General Permit: TXR150000	
1. Check / Money Order No:	
2. Amount of Check/Money Order:	
3. Date of Check or Money Order:	
4. Name on Check or Money Order:	
5. NOI INFORMATION	
If the check is for more than one NOI, list each Project/Site (RE) Name and Physical Address exactly as provided on the NOI. DO NOT SUBMIT A COPY OF THE NOI WITH THIS FORM AS IT COULD CAUSE DUPLICATE PERMIT ENTRIES.	
See Attached List of Sites (If more space is needed, you may attach a list.)	
Project/Site (RE) Name:	
Project/Site (RE) Physical Address:	
Staple Check In This Space	

ATTACHMENT 1

Did you complete everything? Use this checklist to be sure!

Are you ready to mail your form to TCEQ? Go to the General Information Section of the Instructions for mailing addresses.

Customer GP Notice of Intent Checklist TXR150000	
<input checked="" type="checkbox"/>	This checklist is for use by the operator to ensure a complete application. Missing information may result in denial of coverage under the permit. (See NOI Process description in the Instructions)
<input type="checkbox"/>	Application Fee of \$325.00 was mailed separately to TCEQ's Cashiers's Office (separate from the NOI) or the EPAY payment voucher is attached.
<input type="checkbox"/>	OPERATOR INFORMATION - Confirm each item is complete: <input checked="" type="checkbox"/> Customer Number (CN) issued by TCEQ Central Registry <input type="checkbox"/> Legal Name as filed to do business in Texas (Call TX SOS 512/463-5555) <input type="checkbox"/> Name and Title of person signing the application. This person must meet signatory requirements in 30 TAC Section 305.43 <input type="checkbox"/> Operator Mailing Address is complete & verifiable with USPS. www.usps.com <input type="checkbox"/> Phone Numbers/E-mail Address <input type="checkbox"/> Type of Operator (Entity Type) <input type="checkbox"/> Independent Operator <input type="checkbox"/> Number of Employees <input type="checkbox"/> For Corporations or Limited Partnerships – Tax ID and SOS Filing numbers are REQUIRED
<input type="checkbox"/>	Application Contact person we can call for questions about this application.
<input type="checkbox"/>	REGULATED ENTITY (RE) INFORMATION ON PROJECT OR SITE - Confirm each item is complete: <input checked="" type="checkbox"/> Regulated Entity Reference Number (RN) (if site is already regulated by TCEQ) <input type="checkbox"/> Site/Project Name/Regulated Entity <input type="checkbox"/> Site/Project (RE) Physical Address Please do not use a rural route or post office box for a site location <input type="checkbox"/> Or if no physical address, the location information that includes description, zip code and city is listed. <input type="checkbox"/> Latitude and Longitude TCEQ USGS Topographic Map Viewer or TerraServer-USA <input type="checkbox"/> Business description <input type="checkbox"/> Site Mailing Address (checked same as operator or complete & verifiable with USPS. www.usps.com)
<input type="checkbox"/>	GENERAL CHARACTERISTICS - Confirm each item is complete: <input checked="" type="checkbox"/> Indian Country Lands –the facility is not on Indian Country Lands <input type="checkbox"/> Standard Industrial Classification (SIC) code www.osha.gov/oshstats/sicser.html <input type="checkbox"/> Acres Disturbed is provided and qualifies for coverage through a NOI. <input type="checkbox"/> Common plan of development or for sale? <input type="checkbox"/> Discharge Information: <input type="checkbox"/> receiving water body <input type="checkbox"/> segment number(s) is REQUIRED <input type="checkbox"/> water body on the latest EPA-Approved Clean Water Act 303(d) list of impaired waters <input type="checkbox"/> MS4 Operator <input type="checkbox"/> Edwards Aquifer Rule
<input type="checkbox"/>	CERTIFICATION Certification statements have been checked indicating "Yes" Signature meets 30 Texas Administrative Code (TAC) §305.44 and is original and has been provided for the Operator.

ATTACHMENT 1

**Notice of Intent (NOI) for Storm Water Discharges Associated with Construction
Activity under TPDES General Permit (TXR150000)
General Information and Instructions**

GENERAL INFORMATION

Where to Send the Notice of Intent (NOI) and other related forms:

BY REGULAR U.S. MAIL

Texas Commission on Environmental Quality
Storm Water Processing Center (MC228)
P.O. Box 13087
Austin, TX 78711-3087

BY OVERNIGHT/EXPRESS MAIL

Texas Commission on Environmental Quality
Storm Water Processing Center (MC228)
12100 Park 35 Circle
Austin, TX 78753

TCEQ Contact list:

Application Processing Questions relating to the status and form requirements:	512/239-3700, 512/245-0130 or swpermit@tceq.state.tx.us
Technical Questions relating to the general permit:	512/239-4671 or swgpp@tceq.state.tx.us
Environmental Law Division:	512/239-0600
Records Management for obtaining copies of forms submitted to TCEQ:	512/239-0900
Information Services for obtaining reports from program data bases (as available):	512/239-DATA (3282)
Financial Administration's Cashier's office:	512/239-0357 or 512/239-0187

Notice of Intent Process:

When your NOI is received by the program, the form will be processed as follows:

1. **Administrative Review:** Each item on the form will be reviewed for a complete response. In addition, the operator's legal name must be verified with Texas Secretary of State as valid and active (if applicable). The address(s) on the form must be verified with the US Postal service as an address receiving regular mail delivery. Never give an overnight/express mailing address.

2. **Notice of Deficiency:** If an item is incomplete or not verifiable as indicated above, a notice of deficiency (NOD) will be mailed to the operator. The operator will have 30 days to respond to the NOD. The response will be reviewed for completeness.

3. **Acknowledgment of Coverage:** An Acknowledgment Certificate will be mailed to the operator. This certificate acknowledges coverage under the general permit.

-or-

Denial of Coverage: If the application is too incomplete to process, or the operator fails to respond to the NOD or the response is inadequate, coverage under the general permit may be denied. If coverage is denied, the operator will be notified.

General Permit (Your Permit)

If filing the NOI through ePermits online application, coverage under the general permit begins the day the NOI is submitted to TCEQ through epermits. **Sign up now for on line NOI at <https://www6.tceq.state.tx.us/steers/>**

If mailing a paper NOI, coverage under the general permit begins **seven (7) days after a completed NOI is postmarked for delivery to the TCEQ**. You should have a copy of your general permit when submitting your application.

You may view and print your permit for which you are seeking coverage, on the TCEQ web site
http://www.tceq.state.tx.us/permitting/water_quality/stormwater/TXR15_AIR.html.

General Permit Forms

The Notice of Intent (NOI), [Notice of Termination \(NOT\)](#), and [Notice of Change \(NOC\)](#) #20391 with instructions are available in Adobe Acrobat PDF format on the TCEQ web site http://www.tceq.state.tx.us/permitting/water_quality/stormwater/TXR15_AIR.html.

Sign up now for on line Notice of Termination application at <https://www6.tceq.state.tx.us/steers/>

Change in Operator

An authorization under the general permit is not transferable. If the operator or owner of the regulated entity changes, the present permittee must submit a Notice of Termination and the new operator must submit a Notice of Intent. The NOT and NOI must be submitted not later than 10 days prior to the change in Operator status.

ATTACHMENT 1

TCEQ Central Registry Core Data Form

The Core Data Form has been incorporated into this form. **Do not send a core data form to TCEQ.**

After final acknowledgment of coverage under the general permit, the program will assign a Customer Number (CN) and Regulated Entity Number (RN). For Construction Permits, a new RN will be assigned for each Notice of Intent filed with TCEQ, since construction project sites can overlap with other Customers. The RN assigned to your construction project will not be assigned to any other TCEQ authorization.

You can find the information on the Central Registry web site at www4.tceq.state.tx.us/crpub. You can search by the Regulated Entity (RN), Customer Number (CN) or Name (Permittee), or by your permit number under the search field labeled "Additional ID". Capitalize all letters in the permit number.

The Customer (Permittee) is responsible for providing consistent information to the TCEQ, and for updating all CN and RN data for all authorizations as changes occur. For General Permits, a Notice of Change form must be submitted to the program area.

Application Fees:

\$225.00 application fee if submitting the NOI through ePermits.

\$325.00 application fee if submitting a paper NOI for processing.

The application fee is required to be paid at the time the NOI is submitted. Failure to submit payment at the time the application is filed will cause delays in acknowledgment or denial of coverage under the general permit.

• **Mailed Payments:**

DO NOT mail your check with the original Notice of Intent application.

Use the attached Application Fee payment submittal form if mailing the payment. Do not include a copy of the NOI.

BY REGULAR U.S. MAIL

Texas Commission on Environmental Quality
Financial Administration Division
Cashier's Office, MC-214
P.O. Box 13088
Austin, TX 78711-3088

BY OVERNIGHT/EXPRESS MAIL

Texas Commission on Environmental Quality
Financial Administration Division
Cashier's Office, MC-214
12100 Park 35 Circle
Austin, TX 78753

• **ePAY Electronic Payment:**

Go to www.tceq.state.tx.us/epay

Select Water Quality, then select the fee category "GENERAL PERMIT CONSTRUCTION STORM WATER DISCHARGE NOI APPLICATION".

You must include a copy of the payment voucher with your NOI. Your NOI will not be considered complete without the payment voucher.

The Annual Water Quality Fee has been consolidated into the Application Fee effective March 5, 2008. An annual fee will not be assessed and billed to operators on 9/1/2008. This does not relieve the operator of fees due for prior fiscal year assessments.

The operator will continue to receive an invoice for payment of any past due annual fee. A 5% penalty will be assessed if the payment is received by TCEQ after the due date. Annual fee assessments cannot be waived as long as the authorization under the general permit was active on September 1 of the FY billed.

ATTACHMENT 1

INSTRUCTIONS FOR FILLING OUT THE NOI FORM	
A. OPERATOR (As defined in the general permit.)	
1. TCEQ Issued <u>Customer Number</u> (CN) TCEQ's Central Registry will assign each customer a number that begins with "CN," followed by nine digits. This is not a permit number , registration number, or license number.	
<ul style="list-style-type: none"> If this customer has not been assigned a Customer Reference Number, leave the space for the Customer Reference Number blank. If this customer has already been assigned this number, enter the operator's Customer Reference Number in the space provided. 	
2. Legal Name Provide the legal name of the facility operator, as authorized to do business in Texas. The name must be provided exactly as filed with the Texas Secretary of State (SOS), or on other legal documents forming the entity, that is filed in the county where doing business. You may contact the SOS at 512/463-5555, or go to http://www.sos.state.tx.us/corp/contact.shtml for more information related to filing in Texas. If filed in the county where doing business, provide a copy of the legal documents showing the legal name.	
3. Name and Title of person signing the Notice of Intent application form. Signature meets <u>30 Texas Administrative Code (TAC) §305.44</u>	
4. Operator Mailing Address Provide a complete mailing address for receiving mail from the TCEQ. The address must be verifiable with the US Postal Service at www.usps.com , for regular mail delivery (not overnight express mail). If you find that the address is not verifiable using the USPS web search, please indicate the address is used by the USPS for regular mail delivery.	
5. Phone Number This number should correspond to this customer's mailing address given earlier. Enter the area code and phone number here. Leave "Extension" blank if this customer's phone system lacks this feature.	
6. Fax Number and E-mail Address This number and E-mail address should correspond to operator's mailing address provided earlier. (Optional Information)	
7. Type of Entity Check only one box that identifies the type of entity. Use the descriptions below to identify the appropriate entity type:	
<p>Individual is a customer who has not established a business, but conducts an activity that needs to be regulated by the TCEQ.</p> <p>Sole Proprietorship— D.B.A. is a customer that is owned by only one person and has not been incorporated. This business may:</p> <ul style="list-style-type: none"> be under the person's name have its own name ("doing business as," or d.b.a.) have any number of employees <p>Partnership is a customer that is established as a partnership as defined by the Texas Secretary of State's Office.</p> <p>Corporation the customer meets all of these conditions:</p> <ul style="list-style-type: none"> is a legally incorporated entity under the laws of any state or country is recognized as a corporation by the Texas Secretary of State has proper operating authority to operate in Texas. <p>Government- Federal, state, county, or city government (as appropriate) the customer is either an agency of one of these levels of government or the governmental body itself.</p> <p>Other is Estate, Trust, etc. the customer does not fit one of the above descriptions. Enter a short description of the type of customer in the blank provided.</p>	
8. Independent Operator Check "No" if this customer is a subsidiary, part of a larger company, or is a governmental entity. Otherwise, check "Yes."	
9. Number of Employees Check one box to show the number of employees for this customer's entire company, at all locations. This is not necessarily the number of employees at the site named in the NOI.	
10. State Franchise Tax ID Number Corporations and limited liability companies that operate in Texas are issued a franchise tax identification number. If this customer is a corporation or limited liability company, enter this number here.	
Federal Tax ID All businesses, except for some small sole proprietors, individuals, or general partnerships should have a federal taxpayer identification number (TIN). Enter this number here. Use no prefixes, dashes, or hyphens. Sole proprietors, individuals, or general partnerships do not need to provide a federal tax ID.	
TX SOS Charter (filing) Number Corporations and Limited Partnerships required to register with the Texas Secretary of State are issued a charter or filing number. You may obtain further information by calling SOS at 512/463-5555 http://www.sos.state.tx.us/corp/contact.shtml .	

ATTACHMENT 1

DUNS Number Most businesses have a DUNS (Data Universal Numbering System) number issued by Dun and Bradstreet Corp. If this customer has one, enter it here.
B. Application Contact Provide the name, title and communication information of the person that TCEQ can contact for additional information regarding this application. If the application is missing information and there is no contact person to call, the application may be denied.
C. REGULATED ENTITY (RE) INFORMATION ON PROJECT OR SITE
1. <u>Regulated Entity Reference Number (RN)</u> This is a number issued by TCEQ's Central Registry to sites (a location where a regulated activity occurs) regulated by TCEQ. This is not a permit number, registration number, or license number. • If this Regulated Entity has not been assigned a Regulated Entity Number, leave this space blank. • If this customer has been assigned this number, enter the operator's Regulated Entity Number.
2. Site/Project Name/Regulated Entity If the site is already regulated by TCEQ, use the same name as on the existing <u>Regulated Entity Reference Number (RN)</u> . If new, provide the name of the site as known by the public in the area where the site is located. The name you provide on this application will be used in the TCEQ Central Registry as the Regulated Entity.
3. Site/Project (RE) Physical Address Section A: Enter the complete physical address of where the site is located. This must be a street number and street name for a complete physical address. This address must be validated through US Postal Service or your local police (911 service) as a valid address. Please confirm this to be a complete and valid address. In some rural areas, new addresses are being assigned to replace rural route addresses. Please do not use a rural route or post office box for a site location. Section B: If a site does not have an actual physical address that includes a street number and street name, then provide a complete written location access description, and the zip code and city where the site is located. For example: "The site is located 2 miles west from intersection of Hwy 290 & IH35, located on the southwest corner of the Hwy 290 South bound lane." This includes authorizations for construction projects such as highways and subdivision.
4. Identify the County where the site is located. If the site covers more than one county, provide the county that is most affected by the authorized activity and list the additional county(s) as secondary.
5. Latitude and Longitude Enter the latitude and longitude of the site in either degrees, minutes, and seconds or decimal form. For help obtaining the latitude and longitude, go to: TCEQ USGS Topographic Map Viewer , or TerraServer-USA
6. Description of Activity Regulated In your own words, briefly describe the primary business being conducted at the site. (A description specific to what you are doing that requires this authorization - Do not repeat the SIC Code(s).)
SITE MAILING ADDRESS Provide a complete mailing address to be used by TCEQ for receiving mail at the site. In most cases, the address is the same as the operator. If so, simply place a check mark in the box. If you provide a different address, please verify the address with USPS as instructed above for the operator address.
D. GENERAL CHARACTERISTICS
1. Indian Country Lands If your site is located on Indian Country Lands, the TCEQ does not have authority to process your application. You must obtain authorization through EPA, Region VI, Dallas. Do not submit this form to TCEQ. Indian Country means (1) all land within the limits of any American Indian reservation under the jurisdiction of the U.S. government, notwithstanding the issuance of any patent, and including rights-of-way running throughout the reservation; (2) all dependent Indian communities within the borders of the United States whether within the original or subsequently acquired territory thereof, and whether within or outside the limits of a State; and (3) all Indian allotments, the Indian titles which have not been extinguished, including rights-of-way running through the same. Indian Tribe means any Indian Tribe, band, nation, or community recognized by the Secretary of the Interior and exercising substantial governmental duties and powers.
2. Standard Industrial Classification (SIC) code Provide the SIC code that best describes the construction activity being conducted at the site. Common SIC Codes related to construction activities include: 1521 Construction of Single Family Homes; 1522 Construction of Residential Bldgs. Other than Single Family Homes; 1541 Construction of Industrial Bldgs. and Warehouses; 1542 Construction of Non-residential Bldgs. other than Industrial Bldgs. and Warehouses; 1611 Highway & Street Construction, except Highway Construction; 1622 Bridge, Tunnel, & Elevated Highway Construction; 1623 Water, Sewer, Pipeline & Communications, and Power Line Construction. For help with SIC codes, go to: www.osha.gov/oshstats/sicser.html

ATTACHMENT 1

<p>3. Estimated Area of Land Disturbed</p> <p>3(a). Provide the approximate number of acres that the construction site will disturb.</p> <p>3(b). Indicate if the site is part of a common plan of development or for sale.</p> <p>Construction activities that disturb less than one acre, unless they are part of a larger common plan that disturbs more than one acre, do not require permit coverage.</p> <p>Construction activities that disturb between one and five acres, unless they are part of a common plan that disturbs five acres or more acres, do not require submission of an NOI. Therefore, the estimated area of land disturbed should not be less than five, unless the project is part of a larger common plan that disturbs five or more acres.</p> <p>"Disturb" means any clearing, grading, excavating, or other similar activities. If you have any questions about this item, please call the storm water technical staff at (512)239-4671.</p>
<p>4. Discharge Information</p> <p>4 (a). The storm water may be discharged directly to a receiving stream or through a MS4* from your site. It eventually reaches a receiving water body such as a local stream or lake, possibly via a drainage ditch. You must provide the name of the water body that receives the discharge from the site (a local stream or lake).</p> <p>4 (b). The classified segment number(s) is REQUIRED to get coverage. Go to the link to find the segment number of the classified water body where storm water will flow http://www.tceq.state.tx.us/compliance/monitoring/water/quality/data/wqm/viewer/viewer.html . Call Water Quality Assessments at 512/239-4671 for further assistance. Another source for segments is: http://www.tceq.state.tx.us/comm_exec/forms_pubs/pubs/gi/gi-316/index.html</p> <p>4 (c). If any surface water body(s) receiving discharges from the construction site are on the latest EPA-approved CWA § 303(d) list of impaired waters, provide the name(s) of the water body(s).</p> <p>EPA approved CWA 303d list of impaired waters can be found at: Texas Water Quality Inventory and 303(d) List - Texas Commission on Environmental Quality - www.tceq.state.tx.us</p> <p>4 (d). Identify the MS4* Operator name if the storm water discharge is into an MS4.</p> <p>*MS4 is an acronym for Municipal separate storm sewer system. MS4 is defined as a separate storm sewer system owned or operated by a state, city, town, county, district, association, or other public body (created by or pursuant to state law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under state law such as a sewer district, flood control or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, that discharges to water in the state.</p> <p>For assistance, you may call the technical staff of the Water Quality Assessment & Standards Section at 512/239-4671.</p>
<p>4 (e). Edwards Aquifer Rule</p> <p>See maps on the TCEQ website to determine if the site is located within the Recharge Zone, Contributing Zone, or Contributing Zone within the Transition Zone of the Edwards Aquifer at http://www.tceq.state.tx.us/compliance/field_ops/eapp/viewer.html.</p> <p>If the discharge or potential discharge is within the Recharge Zone, Contributing Zone, or Contributing Zone within the Transition Zone of the Edwards Aquifer, a site specific authorization approved by the Executive Director under the Edwards Aquifer Protection Program (30 TAC Chapter 213) is required before construction can begin.</p> <p>The general permit requires the approved Contributing Zone Plan or Water Pollution Abatement Plan to be included as a part of the Storm Water Pollution Prevention Plan. The certification must be answered "Yes" for coverage under the general permit.</p>
<p>E. CERTIFICATIONS</p> <p>Failure to indicate "Yes" to ALL of the certification items may result in denial of coverage under the general permit.</p> <p>The certification must bear an original signature of a person meeting the signatory requirements specified under <u>30 Texas Administrative Code §305.44</u></p> <p>IF YOU ARE A CORPORATION:</p> <p>The regulation that controls who may sign an NOI or similar form is 30 Texas Administrative Code §305.44(a)(1) (see below). According to this code provision, any corporate representative may sign an NOI or similar form so long as the authority to sign such a document has been delegated to that person in accordance with corporate procedures. By signing the NOI or similar form, you are certifying that such authority has been delegated to you. The TCEQ may request documentation evidencing such authority.</p> <p>IF YOU ARE A MUNICIPALITY OR OTHER GOVERNMENT ENTITY:</p> <p>The regulation that controls who may sign an NOI or similar form is 30 Texas Administrative Code §305.44(a)(3) (see below). According to this code provision, only a ranking elected official or principal executive officer may sign an NOI or similar form. Persons such as the City Mayor or County Commissioner will be considered ranking elected officials. In order to identify the principal executive officer of your government entity, it may be beneficial to consult your city charter, county or city ordinances, or the Texas statute(s) under which your government entity was formed. An NOI or</p>

ATTACHMENT 1

similar document that is signed by a government official who is not a ranking elected official or principal executive officer does not conform to §305.44(a)(3). The signatory requirement may not be delegated to a government representative other than those identified in the regulation. By signing the NOI or similar form, you are certifying that you are either a ranking elected official or principal executive officer as required by the administrative code. Documentation demonstrating your position as a ranking elected official or principal executive officer may be requested by the TCEQ.

If you have any questions or need additional information concerning the signatory requirements discussed above, please contact the Texas Commission on Environmental Quality's Environmental Law Division at 512/239-0600.

30 Texas Administrative Code

§305.44. Signatories to Applications.

(a) All applications shall be signed as follows.

(1) For a corporation, the application shall be signed by a responsible corporate officer. For purposes of this paragraph, a responsible corporate officer means a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. Corporate procedures governing authority to sign permit or post-closure order applications may provide for assignment or delegation to applicable corporate positions rather than to specific individuals.

(2) For a partnership or sole proprietorship, the application shall be signed by a general partner or the proprietor, respectively.

(3) For a municipality, state, federal, or other public agency, the application shall be signed by either a principal executive officer or a ranking elected official. For purposes of this paragraph, a principal executive officer of a federal agency includes the chief executive officer of the agency, or a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., regional administrator of the EPA).

ATTACHMENT 2



CONSTRUCTION SITE NOTICE

FOR THE

Texas Commission on Environmental Quality (TCEQ)

Storm Water Program

TPDES GENERAL PERMIT TXR150000

The following information is posted in compliance with **Part II.D.2** of the TCEQ General Permit Number TXR150000 for discharges of storm water runoff from construction sites. Additional information regarding the TCEQ storm water permit program may be found on the internet at:

http://www.tceq.state.tx.us/permitting/water_quality/stormwater/TXR15_AIR.html

Contact Name and Phone Number:	
Project Description: (Physical address or description of the site's location, estimated start date and projected end date, or date that disturbed soils will be stabilized)	
Location of Storm Water Pollution Prevention Plan :	

For Construction Sites Authorized Under Part II.D.2. (Obtaining Authorization to Discharge) the following certification must be completed:

I _____ (Typed or Printed Name Person Completing This Certification) certify under penalty of law that I have read and understand the eligibility requirements for claiming an authorization under Part II.D.2. of TPDES General Permit TXR150000 and agree to comply with the terms of this permit. A storm water pollution prevention plan has been developed and implemented according to permit requirements. A copy of this signed notice is supplied to the operator of the MS4 if discharges enter an MS4 system. I am aware there are significant penalties for providing false information or for conducting unauthorized discharges, including the possibility of fine and imprisonment for knowing violations.

Signature and Title

Date

ATTACHMENT 3

TPDES OPERATOR'S INFORMATION

Owner's Name and Address:

Telephone:

Contractor's Names and Addresses:

General Contractor:

Telephone:

Site Superintendent:

Telephone:

Erosion Control and Maintenance Inspection:

Telephone:

Subcontractor's Names and Addresses:

_____	_____
_____	_____
_____	_____
_____	_____
Phone: _____	Phone: _____

Note: Insert name, address, and telephone number of persons or firms.

ATTACHMENT 4
CONTRACTOR'S / SUBCONTRACTOR'S
CERTIFICATION FOR TPDES PERMITTING

I certify under penalty of law that I understand the terms and conditions of TPDES General Permit No. TXR150000 and the Storm Water Pollution Prevention Plan for the construction site identified as part of this certification.

Signature: _____

Name: (printed or
typed) _____

Title: _____

Company: _____

Address: _____

Date: _____

Signature: _____

Name: (printed or
typed) _____

Title: _____

Company: _____

Address: _____

Date: _____

Signature: _____

Name: (printed or
typed) _____

Title: _____

Company: _____

Address: _____

Date: _____

ATTACHMENT 5



EPA NPDES Construction Inspection Form



The following inspection is being performed in compliance with Part IV.D.4. of the NPDES Region 6 Storm Water Construction General Permit [63 Fed. Reg. 36502] and being retained in accordance with Part V of the Permit. Qualified personnel (provided by the permittee or cooperatively by multiple permittees) shall inspect disturbed areas of the construction site that have not been finally stabilized, areas used for storage of materials that are exposed to precipitation, placement and effectiveness of structural control measures, and locations where vehicles enter or exit the site. Inspections shall be performed at least once every 14 days and within 24 hours of the end of a storm event of 0.5 inches or greater. Where sites have been temporarily stabilized, runoff is unlikely due to winter conditions, or during seasonal arid periods in arid areas (0-10 inches of rainfall annually) and semi-arid areas (10-20 inches annually) such inspections shall be conducted at least once every month. This form is primarily intended for use with construction projects in Texas and New Mexico. Permittees on Indian Country lands in Oklahoma, Louisiana and Arkansas and some oil and gas facilities in Oklahoma may use this form if they are eligible for this permit. Other facilities need to check with their NPDES authority before using this form.

If you do not know your NPDES Permit Number, contact the NOI Processing Center at (301)495-4145. This form was prepared as an example and it is not a required form for use with the permit. Alternative forms may be used if they contain all of the required information as set forth in the permit. This form and additional information regarding the NPDES Region 6 storm water program may be found on the Internet at <http://www.epa.gov/region6/sw/>. Any person with a complaint about the operation of this facility in regards to this permit should contact EPA Region 6 at (214)665-7112.

Permit Number(s) covered by this inspection (e.g. owners, developers, general contractor, builders)	
Signature and Certification in accordance with Part VI.G of the permit:	<p>I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.</p> <p>Signature _____ Date _____</p>
Date of Inspection	
Inspector Name	
Is there a copy of the permit language with the SWPPP?	<p>• YES • NO</p>
Is the inspector qualified and are the qualifications documented in the SWPPP?	<p>• YES • NO</p>
Is an NPDES storm water construction sign posted at the entrance for all permittees?	<p>• YES • NO</p>
<p>You may want to use EPA Region 6 construction checklist to assure components of the SWPPP are complete. This form, the construction sign, and the checklist are available on the Region 6 NPDES Storm Water Forms and Documents web page which may be found on the internet at http://www.epa.gov/earth1r6/gen/w/formsww.htm. In addition to the checklist, you should provide a narrative (see next page) on the existing Best Management Practices and Structural Controls found during each inspection. Any problems identified in an inspection should be corrected within 7 days. The inspection should cover all components of the SWPPP and all potential pollutants. While eroded soil is the primary pollutant of concern, do not forget to inspect for other pollutant sources such as fuel tanks, paints, solvents, stabilization materials, concrete hardener, batch plants, and construction debris. The inspector will need to update the SWPPP to reflect findings of the inspection. The site map should be updated after an inspection to show controls that have been added or removed, to ensure the site map is kept current in accordance with Part IV.C. of the permit.</p>	

Revision 4, March 1, 2000



ATTACHMENT 5

Narrative Findings of the inspection:

Observations should include any findings of Best Management Practices or controls that are not in accordance with the SWPPP. If a control is not in place or failed, observe the reason why. A control removed temporarily for work is not necessarily a violation if properly recorded in the SWPPP. If it has been removed, record why it was removed and, if applicable, when it will be reinstalled. If the control has failed, observe the conditions so a conclusion may be made as to whether the control failed for improper maintenance or improper design. The qualified inspector will know when a failed control is inadequate and should be replaced by an improved control mechanism. Qualified inspectors are to have authority to make changes to the SWPPP to assure compliance. Controls that have not been installed should be given a reason why they are not installed and/or a scheduled date for installation if they are designed for a later phase of construction. After the inspection, the SWPPP and its site map should be updated to reflect current conditions of controls and Best Management Practices at the time of the inspection. This includes removing uninstalled controls from the site map or otherwise denoting on the site map if they are no longer installed if the controls have been removed because they are no longer necessary (e.g. stabilization has been achieved in that area).

Revision 4, March 1, 2000

ATTACHMENT 6

	Notice of Termination (NOT) for Authorizations under TPDES General Permit TXR150000	TCEQ Office Use Only Permit No.: RN: CN: <div style="text-align: right; border: 1px solid black; padding: 2px; display: inline-block;">Reset Form</div>
	Sign up now for on line NOT at http://www.tceq.state.tx.us/permitting/steers/steers.html Get your NOT Confirmation letter immediately after submitting the on line NOT form.	
What is the permit number to be terminated? Processing will be delayed without the permit number. TXR15_____		
A. OPERATOR (applicant)		
1. What is the Customer Number (CN) issued to this entity? CN_____		
2. What is the full Legal Name of the current permittee? <i>This must be the current permittee of the permit to be terminated.</i>		
3. What is the applicant's mailing address as recognized by the US Postal Service ?		
Address: _____ Suite No./Bldg. No./Mail Code: _____		
City: Houston _____ State: _____ ZIP Code: _____		
Country Mailing Information (if outside USA). Country Code: _____ Postal Code: _____		
4. Phone No.: () _____ Extension: _____		
5. Fax No.: () _____ E-mail Address: _____		
B. REGULATED ENTITY (RE) INFORMATION ON PROJECT OR SITE		
1. What is the TCEQ Issued RE Reference Number (RN)? RN_____		
2. Name of Project or Site as currently permitted): (example: phase and name of subdivision or name of project that's unique to the site)		
3. Physical Address of Project or Site as currently permitted: (enter in spaces below)		
Street Number: _____ Street Name: _____		
City: _____ ZIP Code: _____ County (Counties if >1): _____		
4. If no physical address (Street Number & Street Name), provide the written location access description to the site: 		
C. REASON FOR TERMINATION		
Check the reason for termination:		
<input type="checkbox"/> Final stabilization has been achieved on all portions of the site that are the responsibility of the Operator and all silt fences and other temporary erosion controls have either been removed, or scheduled for removal as defined in the SWP3.		
<input type="checkbox"/> Another permitted Operator has assumed control over all areas of the site that have not been finally stabilized, and temporary erosion controls that have been defined in the SWP3 have been transferred to the new Operator.		
<input type="checkbox"/> The activity is now authorized under an alternate TPDES permit.		
<input type="checkbox"/> The activity never began at this site that is regulated under the general permit.		
D. CERTIFICATION		
I, _____ Title _____		
Typed or printed name		
certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.		
I further certify that I am authorized under 30 Texas Administrative Code §305.44 to sign and submit this document, and can provide documentation in proof of such authorization upon request.		
Signature: _____ Date: _____		
(Use blue ink)		

ATTACHMENT 6

Notice of Termination (NOT) for Authorizations under TPDES General Permit TXR150000 General Information and Instructions	
GENERAL INFORMATION	
Where to Send the Notice of Intent (NOI):	
BY REGULAR U.S. MAIL Texas Commission on Environmental Quality Storm Water Processing Center (MC228) P.O. Box 13087 Austin, TX 78711-3087	BY OVERNIGHT/EXPRESS MAIL Texas Commission on Environmental Quality Storm Water Processing Center (MC228) 12100 Park 35 Circle Austin, TX 78753
TCEQ Contact list:	
Application Processing Questions relating to the status and form requirements:	512/239-4671
Technical Questions relating to the general permit:	512/239-4671
Environmental Law Division:	512/239-0600
Records Management for obtaining copies of forms submitted to TCEQ:	512/239-0900
Information Services for obtaining reports from program data bases (as available):	512/239-DATA (3282)
Financial Administration's Cashier's office:	512/239-0357 or 512/239-0187
Notice of Termination Process:	
A Notice of Termination is effective on the date postmarked for delivery to TCEQ . When your NOT is received by the program, the form will be processed as follows:	
1. Administrative Review: The form will be reviewed to confirm the following: <ul style="list-style-type: none">• the permit number is provided• the permit is active and has been approved• the entity terminating the permit is the current permittee• the site information matches the original permit record• the form has the required original signature with title and date	
2. Notice of Deficiency: If an item is incomplete or not verifiable as indicated above, a phone call will be made to the applicant to clear the deficiency. A letter will not be sent to the permittee if unable to process the form.	
3. Confirmation of Termination: A Notice of Termination Confirmation letter will be mailed to the operator.	
General Permit (Your Permit) Coverage under the general permit begins 48 hours after a completed NOI is postmarked for delivery to the TCEQ . You should have a copy of your general permit when submitting your application. You may view and print your permit for which you are seeking coverage, on the TCEQ web site www.tceq.state.tx.us	
General Permit Forms The Notice of Intent (NOI), Notice of Termination (NOT), and Notice of Change (NOC) with instructions are available in Adobe Acrobat PDF format on the TCEQ web site www.tceq.state.tx.us .	
Change in Operator An authorization under the general permit is not transferable. If the operator or owner of the regulated entity changes, the present permittee must submit a Notice of Termination and the new operator must submit a Notice of Intent. The NOT and NOI must be submitted not later than 10 days prior to the change in Operator status.	
TCEQ Central Registry Core Data Form The Core Data Form has been incorporated into this form. Do not send a core data form to TCEQ.	
After final acknowledgment of coverage under the general permit, the program will assign a Customer Number (CN) and Regulated Entity Number (RN). For Construction Permits, a new RN will be assigned for each Notice of Intent filed with TCEQ, since construction project sites can overlap with other Customers. The RN assigned to your construction project will not be assigned to any other TCEQ authorization.	
You can find the information on the Central Registry web site at https://www6.tceq.state.tx.us/epay/ . You can search by the Regulated Entity (RN), Customer Number (CN) or Name (Permittee), or by your permit number under the search field labeled "Additional ID" Capitalize all letters in the permit number.	

ATTACHMENT 6

The Customer (Permittee) is responsible for providing consistent information to the TCEQ, and for updating all CN and RN data for all authorizations as changes occur. For General Permits, a Notice of Change form must be submitted to the program area.
Annual Water Quality Fee: This fee is assessed to operators with an active authorization under the general permit on September 1 of each year. The operator will receive an invoice for payment of the annual fee in November of each year. The payment will be due 30 days from the invoice date. A 5% penalty will be assessed if the payment is received by TCEQ after the due date. Annual fee assessments cannot be waived as long as the authorization under the general permit is active on September 1.
It's important for the operator to submit a Notice of Termination (NOT) when coverage under the general permit is no longer required. A NOT is effective on the postmarked date of mailing the form to TCEQ. It is recommended that the NOT be mailed using a method that documents the date mailed and received by TCEQ.
<ul style="list-style-type: none">• Mailed Payments: You must return your payment with the billing coupon provided with the billing statement.• ePAY Electronic Payment: Go to https://www6.tceq.state.tx.us/epay/ You must enter your account number provided at the top portion of your billing statement. Payment methods include Mastercard, Visa, and electronic check payment (ACH). A transaction over \$500 can only be made by ACH.

INSTRUCTIONS FOR FILLING OUT THE NOT FORM

A. OPERATOR (current permittee.)
1. TCEQ Issued Customer Number (CN)
2. Legal Name of Operator The operator must be the same entity as previously submitted on the original Notice of Intent for the permit number provided.
3. Operator Mailing Address Provide a complete mailing address for receiving mail from the TCEQ. Update the address if different than previously submitted in the Notice of Intent or Notice of Change.
4. Phone Number, Fax Number, and E-mail Address Provide updated contact information.
B. REGULATED ENTITY (RE) INFORMATION ON PROJECT OR SITE
1. Regulated Entity Reference Number (RN)
2. Site/Project Name/Regulated Entity Provide the name of the site as previously submitted in the Notice of Intent for the permit number provided.
3. Site/Project (RE) Physical Address Provide the physical address or location access description as previously submitted for the permit number provided.
C. REASON FOR TERMINATION
Indicate the reason for terminating the permit by checking one of the options. If the reason is not listed then provide an attachment that explains the reason for termination.
Please read your general permit carefully to determine when to terminate your permit. Permits will not be reactivated after submitting a termination form. The termination is effective on the date postmarked for delivery to TCEQ.
D. CERTIFICATIONS
The certification must bear an original signature of a person meeting the signatory requirements specified under 30 Texas Administrative Code (TAC) §305.44.
IF YOU ARE A CORPORATION:
The regulation that controls who may sign an NOI or similar form is 30 Texas Administrative Code §305.44(a)(1) (see below). According to this code provision, any corporate representative may sign an NOI or similar form so long as the authority to sign such a document has been delegated to that person in accordance with corporate procedures. By signing the NOI or similar form, you are certifying that such authority has been delegated to you. The TCEQ may request documentation evidencing such authority.
IF YOU ARE A MUNICIPALITY OR OTHER GOVERNMENT ENTITY:
The regulation that controls who may sign an NOI or similar form is 30 Texas Administrative Code §305.44(a)(3) (see below). According to this code provision, only a ranking elected official or principal executive officer may sign an NOI or similar form. Persons such as the City Mayor or County Commissioner will be considered ranking elected officials. In order to identify the principal executive officer of your government entity, it may be beneficial to consult your city charter, county or city ordinances, or the Texas statute(s) under which your government entity was formed. An NOI or similar document that is signed by a government official who is not a ranking elected official or principal executive officer does not conform to

END OF SECTION

SECTION 01 57 13.02
STABILIZED CONSTRUCTION ACCESS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Stabilized construction roads, parking areas, exits and truck washing area requirements.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
2. Division 01 – General Requirements.

1.2 MEASUREMENT AND PAYMENT

- A. Measure and pay for stabilized construction exits and truck washing area by each. Stabilized construction exit includes aggregate placed in minimum 8-inch layer, per details. No separate payment shall be made for Street Cleaning as Required by Section 01 57 13.01 – TPDES Requirements. Include cost of Work for Street Cleaning under Section in pay items for which Work is a component.
- B. Payment for site access will be made at the lump sum price bid for “Site Access”, which payment shall constitute full compensation for labor, equipment, tools, materials, and incidentals necessary to complete the specified work, including refilling of depressions.
1. Site access includes installation and removal of matting or crushed rock material installed along the access routes or construction routes as needed to complete construction of the project.
 - a. Contractor is made aware that plans provide a Site Access Map & Water for Construction to show the approved access routes and location of fire hydrants for water for construction.
 2. Site access includes temporary drainage crossings at drainage channels/creeks that the Contractor will need to construct for site access to the construction easement and to facilitate rehabilitation.
 - a. The Site Access Map & Water for Construction plan also shows anticipated temporary drainage crossings. The Contractor may encounter additional drainage channels that may require additional temporary drainage crossing installations to complete the work. No additional payment will be made for additional temporary drainage crossings that the Contractor may need to complete the work.

- b. Contractor must maintain normal flow of drainage ditches, creeks, and channels during the construction of the project. Contractor must size the temporary drainage crossings to allow for normal flow of the drainage channels and creeks.
- c. Contractor must provide a submittal for each temporary drainage crossing.
- d. Contractor is made aware that all temporary drainage crossings must be removed from the project site if the Contractor will not be working in the project area or prior to a rain event. No additional payment will be made for removal and re-installation of temporary drainage crossings.

1.3 SUBMITTALS

- A. Conform to requirements of Section 01 33 00 – Submittals.
- B. Submit manufacturer's catalog sheets and other product data on geotextile fabric.
- C. Submit sieve analysis of aggregates conforming to requirements of this Specification.

1.4 REFERENCES

- A. ASTM D4632 – Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.

PART 2 - PRODUCTS

2.1 GEOTEXTILE FABRIC

- A. Provide woven or non-woven geotextile fabric made of polypropylene, polyethylene, ethylene, or polyamide material.
- B. Geotextile fabric shall have minimum grab strength of 270 psi in any principal direction (ASTM D4632) and equivalent opening size between 50 and 140.
- C. Geotextile and threads shall be resistant to chemical attack, mildew, and rot and shall contain ultraviolet ray inhibitors and stabilizers to provide minimum of 6 months of expected usable life at temperature range of 0°F to 120°F.
- D. Representative Manufacturers: Mirafi, Inc. or equal.

2.2 COARSE AGGREGATES

- A. Coarse aggregate shall consist of crushed stone, gravel, crushed blast furnace slag, or combination of these materials. Aggregate shall be composed of clean, hard, durable materials free from adherent coatings, salt, alkali, dirt, clay, loam, shale, soft or flaky materials, or organic and injurious matter.
- B. Coarse aggregates shall be 3 inch to 5 inch granular material.

PART 3 - EXECUTION

3.1 PREPARATION AND INSTALLATION

- A. If necessary to keep street clean of mud carried by construction vehicles and equipment, provide stabilized construction roads and exits at construction, staging, parking, storage, and disposal areas. Construct erosion and sediment controls in accordance with requirements shown on Drawings and specified in this Section.
- B. No clearing, grubbing or rough cutting permitted until erosion and sediment control systems are in place, other than as specifically directed by the Owner's Representative to allow soil testing and surveying.
- C. Maintain existing erosion and sediment control systems located within Project site until acceptance of Project or until directed by Owner's Representative to remove and discard existing system.
- D. Regularly inspect, repair, or replace components of stabilized construction exits. Unless otherwise directed, maintain stabilized construction roads and exits until project is accepted by the Owner. Remove stabilized construction roads and exits promptly when directed by Owner's Representative. Discard removed materials off site.
- E. Remove and dispose of sediment deposits at designated spoil site for Project. If project spoil site is not designated on Drawings, dispose of sediment off site at location not in or adjacent to stream or flood plain. Assume responsibility for off site disposal. Spread sediment evenly throughout site, compacted and stabilized. Do not allow sediment to flush into stream or drainage way. If sediment has been contaminated, dispose in accordance with existing federal, state, and local rules and regulations.
- F. Prohibit equipment and vehicles from maneuvering on areas outside of dedicated rights-of-way and easements for construction. Immediately repair damage caused by construction traffic to erosion and sediment control systems.
- G. Conduct construction operation under this Contract in conformance with erosion control practices described in this and other Specifications.

3.2 CONSTRUCTION METHODS

- A. Provide stabilized access roads, subdivision roads, parking areas, and other on-site vehicle transportation routes where shown on Drawings.
- B. Provide stabilized construction exits and truck washing areas when approved by Owner's Representative, of sizes and locations where shown on Drawings or as specified in this Section.
- C. Vehicles leaving construction areas shall have their tires cleaned to remove sediment prior to entrance onto public right-of-way. When washing is needed to remove sediment, construct truck washing area. Truck washing shall be done on stabilized areas which drain into drainage system protected by erosion and sediment control measures.

- D. Details for stabilized construction exit are shown on Drawings. Construct other stabilized areas to same requirements. Maintain roadway width at least 14 feet for one-way traffic and 20 feet for two-way traffic and sufficiently for ingress and egress. Furnish and place geotextile fabric as permeable separator to prevent mixing of coarse aggregate with underlying soil. Maximum exposure of geotextile fabric to elements between laydown and cover of 14 days to minimize damage potential.
- E. Grade roads and parking areas to provide sufficient drainage away from stabilized areas. Use sandbags, gravel, boards, or similar methods to prevent sediment from entering public right-of-way, receiving stream or storm water conveyance system.
- F. Inspect and maintain stabilized areas daily. Provide periodic top dressing with additional coarse aggregates to maintain required depth. Repair and clean out damaged control measures used to trap sediment. Immediately remove sediment spilled, dropped, washed, or tracked onto public right-of-way.
- G. Maintain length of stabilized area as shown on Drawings, but not less than 50 feet. Maintain thickness less than 8 inches. Maintain width less than full width of all points of ingress or egress.
- H. Stabilization for other areas shall have same coarse aggregate, thickness, and width requirements as stabilized construction exit, except where shown otherwise on Drawings.
- I. Stabilized area may be widened or lengthened to accommodate truck washing area when authorized by Owner's Representative.
- J. Alternative methods of construction may be utilized when shown on Drawings, or when approved by Owner's Representative. These methods include following:
 - 1. Cement-Stabilized Soil - Compacted cement-stabilized soil or other fill material in application thickness of at least 8 inches.
 - 2. Wood Mats/Mud Mats - Oak or other hardwood timbers placed edge-to-edge and across support wooden beams which are placed on top of existing soil in application thickness of at least 6 inches.
 - 3. Steel Mats - Perforated mats placed across perpendicular support members.
- K. Provide street cleaning, such as sweeping or vacuuming, at locations around project site where construction traffic has caused tracking of sediments onto roadways. Do not wash or flush sediments into adjacent drainage systems.
- L. Mechanical sweepers shall be vacuum-type or regenerative sweepers. Sweeping speed not to exceed 6 mph. Make two passes.
- M. Clean street daily before end of workday. When excess sediments have tracked onto streets, Owner's Representative may direct contractor to clean street as often as necessary. Remove and dispose of sediments properly.

- N. Use other erosion and sediment control measures to prevent sediment runoff during period of rains and non-working hours and when storm discharges are expected.

END OF SECTION

SECTION 01 57 23

TEMPORARY STORM WATER POLLUTION AND EROSION CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Construction and maintenance of temporary storm water protection and erosion control devices.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
2. Division 01 – General Requirements.
3. Section 03 09 00 – Concrete.
4. Section 31 10 00 – Clearing and Grubbing.
5. Section 31 21 33 – Trenching, Backfilling, and Compacting for Utilities.

1.2 MEASUREMENT AND PAYMENT

A. Filter fabric fence (with or without reinforcement) shall be measured by the linear foot of completed and accepted filter fabric fence.

1. Payment shall include full compensation for furnishing and placing all materials, maintenance requirements, repair and replacement of damaged sections, removal and disposal of sediment deposits, and removal of erosion protection systems after final stabilization. The Contractor shall inspect and maintain these items where active construction is ongoing.

B. Inlet Protection Barrier (including Stage II) will be measured by each inlet protection barrier installed and accepted.

1. Payment shall include full compensation for furnishing and placing all materials, maintenance requirements, repair and replacement of damaged sections, removal and disposal of sediment deposits, and removal of erosion protection systems after final stabilization. The Contractor shall inspect and maintain these items where active construction is ongoing.

1.3 QUALITY ASSURANCE

A. Reference Standards:

1. ASTM International (ASTM):
 - a. A36 – Standard Specification for Carbon Structural Steel.
 - b. D698 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).

- c. D3786 – Standard Test Method for Hydraulic Bursting Strength for Knitted Goods and Nonwoven Fabrics.
- d. D4355 – Standard Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus).
- e. D4491 – Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
- f. D4632 – Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
- g. D4833 – Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products.
- h. D6382 – Standard Practice for Dynamic Mechanical Analysis and Thermogravimetry of Roofing and Waterproofing Membrane Material.

1.4 DEFINITIONS

- A. Filter Fabric Fence and Reinforced Filter Fabric Fence: Installed to allow surface or channel runoff percolation through fabric in sheet-flow manner and to retain and accumulate sediment.
- B. Straw Bale Fence: Installed to allow surface runoff percolation through straw in sheet-flow manner and to retain and accumulate sediment.
- C. Interceptor Dikes and Swales: Constructed to direct surface or channel runoff around the project area or runoff from project area into sediment traps.
- D. Drop Inlet Baskets: Installed to allow runoff percolation through the basket and to retain and accumulate sediment.
- E. Sediment Traps: Constructed to pool surface runoff from construction area to allow sediment to settle onto the bottom of trap.

1.5 SUBMITTALS

- A. Conform to requirements of Specification Section 01 33 00 – Submittals.
- B. Submit manufacturer's literature for product specifications and installation instructions.
- C. Submit manufacturers catalog sheets and other product data on geotextile or filter fabrics, outlet pipe, perforated riser, and connectors.
- D. Submit proposed methods, equipment, materials, and sequence of operations for storm water pollution prevention structures.
- E. Submit shop drawings for Drop Inlet Baskets.

1.6 WARRANTY (NOT USED)

PART 2 - PRODUCTS

2.1 CONCRETE

- A. Concrete: In accordance with Specification Section 03 09 00 – Concrete.

2.2 AGGREGATE MATERIALS

- A. Stone: Use open graded aggregates with minimum diameter of 3 inches, and maximum 5 inches in diameter and less than ½ cubic foot in volume unless otherwise specified. Use clean, hard crushed concrete or stone free from adherent coatings, salt, alkali, dirt, clay, loam, shale, soft or flaky materials, or organic and injurious matter.
- B. Provide gravel lining in accordance with Specification Section 31 21 33 – Trenching, Backfilling, and Compacting for Utilities, or as shown on the Drawings.
- C. Provide clean cobbles and gravel consisting of crushed concrete or stone. Use clean, hard crushed concrete or stone free from adherent coatings, salt, alkali, dirt, clay, loam, shale, soft or flaky materials, or organic matter.
- D. Sediment Pump Pit Aggregate: Use nominal 2-inch diameter river gravel.

2.3 GEOTEXTILE FILTER FABRIC

- A. Woven or nonwoven geotextile filter fabric made of either polypropylene, polyethylene, ethylene, or polyamide material, in continuous rolls of longest practical length.
- B. Grab Strength: 100 psi in any principal direction (ASTM D4632), Mullen burst strength greater than 200 psi (ASTM D3786), and equivalent opening size between 50 and 140 for soils with more than 15 percent by weight passing No. 200 sieve and between 20 and 50 for soils with less than 15 percent by weight passing No. 200 sieve; and maximum water flow rate of 40 gallons per minute per square foot (ASTM D4491).
- C. Filter fabric material shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0°F to 120°F. Ultraviolet stability exceed shall exceed 70% after 500 hours of exposure (ASTM D4355).
- D. Acceptable Manufacturers: Mirafi, Inc., Synthetic Industries, or approved equal.

2.4 FENCING

- A. Wire Fencing: Woven galvanized steel wire, 12½ gauge by 2 inch by 4 inch mesh spacing, minimum 24-inch roll or sheet width of longest practical length.
- B. Fence Stakes: Nominal 2 by 2 inch moisture-resistant treated wood or steel posts (min. of 1.25 lbs. per linear foot and Brinell Hardness greater than 140) with safety caps on top; length as required for minimum 8 inch bury and full height of filter fabric.

2.5 SANDBAGS

- A. Provide woven material made of polypropylene, polyethylene, or polyamide material.
- B. Minimum unit weight of 4 ounces per square yard.
- C. Minimum grab strength of 100 psi in any principal direction (ASTM D4632)
- D. Mullen burst strength exceeding 300 psi (ASTM D3786).
- E. Ultraviolet stability exceeding 70 percent (ASTM D4355).
- F. Size: Length: 18 to 24 inches. Width: 12 to 18 inches. Thickness: 6 to 8 inches. Weight: 50 to 125 pounds.

2.6 DROP INLET BASKET

- A. Provide steel frame members in accordance with ASTM A36.
- B. Construct top frame of basket with two short sides of 2-inch by 2-inch and single long side of 1-inch by 1-inch, 1/8 inch angle iron. Construct basket hangers of 2 inch by 1/4 inch iron bars. Construct bottom frame of 1-inch by 1/4 inch iron bar or 1/4 inch plate with center 3 inches removed. Use minimum 1/4 inch diameter iron rods or equivalent for sides of inlet basket. Weld minimum of 14 rods in place between top frame/basket hanger and bottom frame. Exact dimensions for top frame and insert basket will be determined based on dimensions of type of inlet being protected.

2.7 STRAW BALE

- A. Straw: Standard-baled agricultural hay bound by wire, nylon, or polypropylene rope. Do not use jute or cotton binding.
- B. Straw Bale Stakes (applicable where bales are on soil): No. 3 (3/8 diameter) reinforcing bars, deformed or smooth at Contractor's option, length as required for minimum 18-inch bury and full height bales.

PART 3 - EXECUTION

3.1 PREPARATION, INSTALLATION AND MAINTENANCE

- A. Provide erosion and sedimentation control systems at the locations shown on Drawings. Construct in accordance with the requirements shown on the Drawings and as specified in this Section.
- B. Control fill, grading and ditching to direct water away from excavations, pits, tunnels, and other construction areas, and to direct drainage to proper runoff courses to prevent erosion, sedimentation or damage.
- C. Do not clear, grub or rough cut until erosion and sediment control systems are in place unless approved by Owner's Representative to allow installation of erosion and sediment control systems, soil testing, and surveying.

- D. Maintain erosion and sediment control systems located within project site until acceptance of project or until directed by Owner's Representative to remove and discard existing system.
- E. Regularly inspect and repair or replace damaged components of erosion and sediment control structures. Unless otherwise directed, maintain erosion and sediment control structure until project area stabilization is accepted. Redress and replace granular fill at outlets as needed to replenish depleted granular fill. Remove erosion and sediment control structures promptly when directed by Owner's Representative. Dispose of materials in accordance with Specification Section 01 74 19 – Construction Waste Management and Disposal.
- F. Remove and dispose sediment deposits at the designated spoil site for the Project. If a project spoil site is not designated on Drawings, dispose of sediment off site at approved location in accordance with Specification Section 01 74 19 – Construction Waste Management and Disposal. Off-site disposal shall be the responsibility of the Contractor. Sediment to be placed at the project site should be spread, compacted and stabilized in accordance with the Owner's Representative directions. Sediment shall not be allowed to flush into streams or drainage ways. If sediment has been contaminated, it needs to be disposed of in accordance with existing federal, state and local regulations.
- G. Unless otherwise shown on the Drawings, compact embankments, excavations, and trenches in accordance with Specification Section 31 23 16.01 – Roadway Excavation or Specification Section 31 21 33 – Trenching, Backfilling, and Compacting for Utilities.
- H. Conduct all construction operations under this Contract in conformance with erosion control practices described in Specification Section 01 35 05 – Environmental Protection and Special Controls.
- I. Prohibit equipment and vehicles from maneuvering on areas outside of dedicated right of way and easements for construction. Immediately repair damage caused by construction traffic to erosion and sediment control structures.
- J. Protect existing trees and plants in accordance with Specification Section 01 56 39 – Temporary Tree and Plant Protection.
- K. Conduct all construction operations under this Contract in conformance with the erosion control practices required by State and local law.

3.2 CONSTRUCTION METHODS

- A. Filter Fabric Fence (Type 1):
 - 1. Provide filter fabric fence systems at locations specified on the Drawings in accordance with the Drawing detail. Filter fabric fence systems shall be installed in such a manner that surface runoff will percolate through the

system in sheet flow fashion and allow sediment to be retained and accumulated.

2. Attach the filter fabric to 2-inch by 2-inch wooden stakes or equivalent steel posts spaced a maximum of 3 feet apart and embedded a minimum of 1 foot. If filter fabric is factory pre-assembled with support netting, then maximum spacing allowable is 8 feet. The wooden stakes shall be installed at a slight angle toward the source of anticipated runoff.
3. Trench in the toe of the filter fabric fence with a spade or mechanical trencher so that the downward face of the trench is flat and perpendicular to the direction of flow or for V-trench configuration as shown on Drawings. Lay filter fabric along the edges of the trench. Backfill and compact trench.
4. Securely fasten filter fabric to stakes using staples or wire ties at 3 inches on center maximum. Filter fabric fence shall have a minimum height of 18 inches and a maximum height of 36 inches above natural ground.
5. The filter fabric should be provided in continuous rolls and cut to the length of the required to minimize the use of joints. When joints are necessary, the fabric should be spliced together only at a support post with a minimum 6-inch overlap, and sealed securely.
6. Inspect sediment filter barrier systems after each rainfall, daily during periods of prolonged rainfall, and at a minimum once a week. Repair or replace damaged section immediately to restore the requirements of this Item. Remove sediment deposits when silt reaches a depth one-third of the height of the fence or 6 inches, whichever is less.

B. Reinforced Filter Fabric Fence (Type 2):

1. Attach the filter fabric to 2-inch by 2-inch wooden stakes or equivalent steel posts spaced a maximum of 3 feet apart and embedded a minimum of 1 foot. If filter fabric is factory pre-assembled with support netting, then maximum spacing allowable is 8 feet. The wooden stakes shall be installed at a slight angle toward the source of anticipated runoff.
2. Trench in the toe of the filter fabric fence with a spade or mechanical trencher so that the downward face of the trench is flat and perpendicular to the direction of flow or for V-trench configuration as shown on Drawings. Lay filter fabric along the edges of the trench. Backfill and compact trench.
3. Use galvanized 2-inch by 4-inch welded fabric for woven wire securely fasten filter fabric material to woven wire fence with tie wires.
4. Securely fasten filter fabric to stakes using staples or wire ties at 3 inches on center maximum. Filter fabric fence shall have a minimum height of 18 inches and a maximum height of 36 inches above natural ground.
5. The filter fabric should be provided in continuous rolls and cut to the length of the required to minimize the use of joints. When joints are necessary, the

fabric should be spliced together only at a support post with a minimum 6-inch overlap, and sealed securely.

6. Inspect sediment filter barrier systems after each rainfall, daily during periods of prolonged rainfall, and at a minimum once a week. Repair or replace damaged section immediately to restore the requirements of this Item. Remove sediment deposits when silt reaches a depth one-third of the height of the fence or 6-inches, whichever is less.
7. When used in swales, ditches or diversions, elevation of barrier at top of filter fabric at flow line location in channel shall be lower than bottom elevation of filter fabric at ends of barrier or top of bank, whichever is less, in order to keep storm water discharge in channel from overtopping bank.

C. Triangular Filter Fabric Fence:

1. Attach filter fabric to wire fencing, minimum 18 inches on each side. Provide a fabric cover and skirt with continuous wrapping of fabric. Skirt should form continuous extension of fabric on upstream side of fence.
2. Secure triangular fabric filter fence in place using one of the following methods:
 - a. Toe-in skirt 6-inches with mechanically compacted material;
 - b. Weight down skirt with continuous layer of 3-inch to 5-inch graded rock; or
 - c. Trench-in entire structure 4-inches.
3. Anchor triangular fabric filter fence structure and skirt securely in place using 6-inch wire staples on 2-foot centers on both edges and on skirt, or staked using 18-inch by 3/8-inch diameter re-bar with tee ends.
4. Lap fabric filter material by 6-inches to cover segment joints. Fasten joints with galvanized shoat rings.

D. Sediment Traps:

1. Use fill material for embankment free of roots, woody vegetation, oversized stones or rocks, or organic or other objectionable matter. Clear, grub, and strip area under embankment of vegetation and root material.
2. Limit of excavation and outlet length and height shall be as specified on Drawings. Use side slopes of 2H:1V or flatter.
3. Maintain minimum of 6-inches between top of core material and top of stone outlet, minimum of 4-inches between bottom of core material and existing ground and minimum of 1-foot between top of stone outlet and top of embankment.
4. Embed rock minimum of 4-inches into existing ground for stone outlet.
5. For stone outlet, core shall be minimum of 1-foot in height and 1-foot in width and wrapped in triple layer of geotextile fabric.

6. Install stone outlet or outlet pipe and riser as shown on Drawings.
7. Repair or replace damaged trap components. Redress and replace stone as needed to replenish depleted stone. Remove sediment deposit and restore traps to original dimensions when sediment has accumulated to one-half design depth of the trap or 1-foot, whichever is less.

E. Dikes and Swales:

1. Unless otherwise indicated, maintain minimum dike height of 18-inches, measured from cleared ground at up slope toe to top of dike. Maintain side slopes of 2:1 or flatter.
2. Dike and Swale Stabilization: When shown on the Drawings, place gravel lining 3 inches thick and compacted into the soil or 6 inches thick if truck crossing is expected. Extend gravel lining across bottom and up both sides of swale minimum height of 8 inches vertically, above bottom. Gravel lining on dike side shall extend up the up slope side of dike a minimum height of 8 inches, measured vertically from interface of existing or graded ground and up slope toe of dike, as shown on Drawings.
3. Divert flow from dikes and swales to sediment basins, stabilized outlets, or sediment trapping devices of types and at locations shown on Drawings. Grade dikes and swales as shown on Drawings, or, if not specified, provide positive drainage with maximum grade of 1 percent to outlet or basin.
4. Clear in accordance with Specification Section 31 10 00 – Clearing and Grubbing. Compact embankments in accordance with Specification Section 31 23 00 – Earthwork.
5. Carry out excavation for swale construction so that erosion and water pollution is minimal. Minimum depth shall be 1 foot and bottom width shall be 4 feet, with level swale bottom. Excavation slopes shall be 2H:1V or flatter. Clear, grub and strip excavation area of vegetation and root material.

F. Downspout Extenders:

1. Downspout extender shall have slope of approximately 1 percent. Use pipe diameter of 4 inches or as shown on the Drawings. Place pipe in accordance with Specification Section 31 21 33 – Trenching, Backfilling, and Compacting for Utilities.

G. Pipe Slope Drains:

1. Compact soil around and under drain entrance section to top of embankment in lifts appropriately sized for method of compaction utilized.
2. Inlet pipe shall have slope of 1 percent or greater. Use pipe diameter as shown on the Drawings.
3. Top of embankment over inlet pipe and embankments directing water to pipe shall be at least 1 foot higher at all points than top of inlet pipe.
4. Pipe shall be secured with hold-down grommets spaced 10 feet on center.

5. Place riprap apron with a depth equal to pipe diameter with 2H:1V side slopes.

H. Paved Flumes:

1. Compact soil around and under the entrance section to top of the embankment in lifts appropriately sized for method of compaction utilized.
2. Construct subgrade to required elevations. Remove and replace soft sections and unsuitable material. Compact subgrade thoroughly and shape to a smooth, uniform surface.
3. Construct permanent paved flumes in accordance with Drawings.
4. Remove sediment from riprap apron when sediment has accumulated to depth of one foot.

I. Level Spreaders:

1. Construct level spreader on undisturbed soil and not on fill. Ensure that spreader lip is level for uniform spreading of storm runoff.
2. Maintain at required depth, grade, and cross section as specified on Drawings. Remove sediment deposits as well as projections or other irregularities that will impede normal flow.

J. Inlet Protection Barriers:

1. Place sandbags and filter fabric fences as required at inlets.
2. Maintain to allow minimal inlet inflow restrictions/blockages during storm events.

K. Drop Inlet Baskets:

1. Fit inlet insert basket into inlet without gaps around insert at locations shown on Drawings.
2. Support for inlet insert basket shall consist of fabricated metal as shown on Drawings.
3. Construct top frame of basket with two short sides of 2-inch by 2-inch and single long side of 1-inch by 1-inch, 1/8-inch angle iron. Construct basket hangers of 2-inch by 1/4-inch iron bars. Construct bottom frame of 1-inch by 1/4-inch iron bar or 1/4-inch plate with center 3-inches removed. Use minimum 1/4-inch diameter iron rods or equivalent for sides of inlet basket. Weld minimum of 14 rods in place between top frame/basket hanger and bottom frame. Exact dimensions for top frame and insert basket will be determined based on dimensions of type of inlet being protected.
4. Push down and form filter fabric to shape of basket. Use sheet of fabric large enough to be supported by basket frame when holding sediment and extend at least 6-inches past frame. Place inlet grates over basket/frame to serve as fabric anchor.

5. Remove sediment deposit after each storm event and whenever accumulation exceeds 1-inch depth during weekly inspections.

L. Straw Bale Fences:

1. Place bales in row with ends tightly abutting adjacent bales. Place bales with bindings parallel to ground surface.
2. Embed bale in soil a minimum of 4-inches.
3. Securely anchor bales in place with Straw Bale Stakes driven through bales a minimum of 18-inches into ground. Angle first stake in each bale toward previously laid bale to force bales together.
4. Fill gaps between bales with straw to prevent water from channeling between bales. Wedge carefully in order not to separate bales.
5. Replace with new straw bale fence every two months or as required by Owner's Representative.

M. Brush Berms:

1. Construct brush berm along contour lines by hand placing method. Do not use machine placement of brush berm.
2. Use woody brush and branches having diameter less than 2-inches with 6-inches overlap. Avoid incorporation of annual weeds and soil into brush berm.
3. Use minimum height of 18-inches measured from top of existing ground at upslope toe to top of berm. Top width shall be 24-inches minimum and side slopes shall be 2H:1V or flatter.
4. Embed brush berm into soil a minimum of 4-inches and anchor using wire, nylon or polypropylene rope across berm with a minimum tension of 50 pounds. Tie rope securely to 18-inch x 3/8-inch diameter rebar stakes driven into ground on 4-foot centers on both sides of berm.

3.3 STREET AND SIDEWALK CLEANING

- A. Keep areas clean of construction debris and mud carried by construction vehicles and equipment. If necessary, install stabilized construction exits at construction, staging, storage, and disposal areas, following Specification Section 01 57 13.02 – Stabilized Construction Access.
- B. In lieu of or in addition to stabilized construction exits, shovel or sweep pavements as required to keep areas clean. Do not hose or sweep debris and mud off street into adjacent areas, except, hose sidewalks during off-peak hours, after sweeping.

3.4 WASTE COLLECTION AREAS

- A. Prevent water runoff from passing through waste collection areas, and prevent water runoff from waste collection areas migrating outside collection areas.

3.5 EQUIPMENT MAINTENANCE AND REPAIR

- A. Confine maintenance and repair of construction machinery and equipment to areas specifically designated for that purpose, so fuels, lubricants, solvents, and other potential pollutants are not washed directly into receiving streams or storm water conveyance systems. Provide these areas with adequate waste disposal receptacles for liquid and solid waste. Clean and inspect maintenance areas daily.
- B. 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.

3.6 VEHICLE/ EQUIPMENT WASHING AREAS

- A. Install wash area (stabilized with coarse aggregate) adjacent to stabilized construction exit(s), as required to prevent mud and dirt run-off. Release wash water into drainage swales or inlets protected by erosion and sediment controls. Build wash areas following Specification Section 01 57 13.02 – Stabilized Construction Access. Install gravel or rock base beneath wash areas.
- B. Wash vehicles only at designated wash areas. Do not wash vehicles such as concrete delivery trucks or dump trucks and other construction equipment at locations where runoff flows directly into watercourses or storm water conveyance systems.
- C. Locate wash areas to spread out and evaporate or infiltrate wash water directly into ground, or collect runoff in temporary holding or seepage basins.

3.7 REMOVAL OF CONTROLS

- A. Remove erosion and sediment controls when the site is finally stabilized, as directed by Owner's Representative.
- B. Dispose of sediments and waste products following Specification Section 01 35 05 – Environmental Protection and Special Controls.

3.8 OWNER TRAINING (NOT USED)

END OF SECTION

SECTION 01 57 23.02

CONTROL OF GROUND WATER AND SURFACE WATER

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

Control of ground water and surface water.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
2. Division 01 – General Requirements.

1.2 MEASUREMENT AND PAYMENT

- A. No separate payment will be made for control of ground water or surface water for this project, with the exception of costs for well pointing for manhole construction or open cut trenches for point repairs. Include cost to control ground water and surface water in unit price for Work requiring control.
- B. Measurement and payment for well pointing shall be made on a per each basis for the manhole construction or open cut trenches for point repairs, regardless of size, depth, and trench width. This shall be full compensation for labor, materials, tools and operations necessary to lower and maintain ground water levels not less than 12-inches below the bottom of excavation.
- C. Payment for each piezometer installed shall be made per each. This shall be full compensation for labor, materials, tools and operations necessary to determine groundwater conditions prior to excavation.
1. Payment includes the cost for all installation, removal, recording, and reporting of data associated with the piezometer as necessary.

1.3 REFERENCES

- A. ASTM D698 – Standard Test Methods for Laboratory Compaction of Soils Using Standard Effort (12,400 ft-lbf/ft³ (600kN-m/m³).
- B. Federal Regulations 29 CFR Part 1926, Standards-Excavation, Occupational Safety and Health Administration (OSHA).

1.4 DEFINITIONS

- A. Ground water control includes both dewatering and depressurization of water-bearing soil layers.
1. Dewatering includes lowering water table and intercepting seepage that would otherwise emerge from slopes or bottoms of excavations, or into tunnels and shafts, and disposing of removed water. 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 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 keeping 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 work from any source of surface water.
- D. Equipment and instrumentation for monitoring and control of ground water control system includes piezometers, monitoring wells and flow meters for observing and recording flow rates.
- E. Surface water includes water from rainfall, runoff, the SJRA canal, and all other sources not considered ground water.

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. Submit prepared method and spacing of readings for review prior to obtaining water level readings.
- B. Design ground water control system, compatible with requirements of Federal Regulations 29 CFR Part 1926 and Section 31 41 00 – Trench Safety System to produce following results:
 1. Effectively reduce hydrostatic pressure affecting:
 - a. Excavations
 - b. Tunnel excavation, face stability, or seepage into tunnels
 2. Develop substantially dry and stable subgrade for subsequent construction operations
 3. Preclude damage to adjacent properties, buildings, structures, utilities, installed facilities, and other work
 4. Prevent loss of fines, seepage, boils, quick condition, or softening of foundation strata
 5. Maintain stability of sides and bottom of excavations

- C. Provide ground water control systems that include single-stage or multiple-stage well point systems, eductor and ejector-type systems, deep wells, or combinations of these equipment types, as appropriate.
- D. Provide drainage of seepage water and surface water, as well as water from any other source entering excavation. Excavation drainage may include placement of drainage materials, crushed stone and filter fabric, together with ditches and 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 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 system to protect property as required.
- H. Provide adequate number of piezometers installed at proper locations and depths as required to provide meaningful observations of conditions affecting excavation, adjacent structures and water wells.
- I. Provide environmental monitoring wells installed at proper locations and depths as required to provide adequate observations of hydrostatic conditions and possible contaminant transport from contamination sources into work area or ground water control system.

1.6 SUBMITTALS

- A. Conform to requirements of Section 01 33 00 – Submittals.
- B. Submit Ground Water and Surface Water Control Plan for review by Owner's Representative prior to start of any field work. Plan shall be signed by Professional Engineer registered in State of Texas. Submit plan to include following:
 - 1. Results of subsurface investigation and description of extent and characteristics of water bearing layers subject to ground water control
 - 2. Names of equipment suppliers and installation subcontractors
 - 3. 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. 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. Description of proposed filters including types, sizes, capacities, and manufacturer's application recommendations
 6. Certification of 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 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 weekly during operations:
1. Records of flow rates and piezometric elevations obtained during monitoring of dewatering and depressurization. Refer to Paragraph 3.2, Requirements for Eductor, Well Points, or Deep Wells.
 2. Maintenance records for ground water control installations, piezometers and monitoring wells

1.7 ENVIRONMENTAL REQUIREMENTS

- A. Comply with requirements of agencies having jurisdiction.
- B. Comply with Texas Commission on Environmental Quality regulations and Texas Water Well Drillers Association for development, drilling, and abandonment of wells used in dewatering system.
- C. Obtain necessary permits from agencies with control over use of groundwater and matters affecting well installation, water discharge, and use of existing storm drains and natural water sources. Because review and permitting process may be lengthy, take early action to pursue and submit for required approvals.

- D. Monitor ground water discharge for contamination while performing pumping in vicinity of potentially contaminated sites.
- E. Filter water discharged from dewatering systems prior to entering drainage ways.

PART 2 - PRODUCTS

2.1 EQUIPMENT AND MATERIALS

- A. Use optional equipment and materials as necessary to achieve desired results for dewatering. Selected equipment and materials are subject to review of Owner's Representative through submittals required in Paragraph 1.6, Submittals.
- B. Eductors, well points, or deep wells, where used, must be furnished, installed and operated by experienced contractor regularly engaged in ground water control system design, installation, and operation.
- C. Equipment must be in good repair and operating order.
- D. Keep sufficient standby equipment and materials available to ensure continuous operation, where required.

PART 3 - EXECUTION

3.1 GROUND WATER CONTROL

- A. Perform 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 draw down characteristics of waterbearing layers. Present results in Ground Water and Surface Water Control Plan (See Paragraph 1.6B.1).
- B. Provide labor, material, equipment, techniques and methods to lower, control and handle ground water in manner compatible with construction methods and site conditions. Monitor effectiveness of installed system and its effect on adjacent property.
- C. Install, operate, and maintain ground water control systems in accordance with Ground Water and Surface Water Control Plan. Notify Owner's Representative in writing of changes made to accommodate field conditions and changes to Work. Provide revised drawings and calculations with 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 system lowers ground water piezometric levels at rate required to maintain dry excavation resulting in 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. Define allowable piezometric elevations in 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 monitoring wells when directed by Owner's Representative.
 - 3. Grout abandoned well and piezometer holes. Fill piping that is not removed with cement-bentonite-non-shrink grout or cement-sand grout along entire shaft length.
- H. During backfilling, dewatering may be reduced to maintain water level 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 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 permanent perforated underground drainage system may be reduced, for units designed to withstand hydrostatic uplift pressure. Provide means of draining 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 maximum dry density in accordance with ASTM D 698.
- M. Foundation Beds: Maintain saturation line at least 3 feet below lowest elevations where concrete is to be placed. Drain foundations in areas where concrete is to be placed before placing reinforcing steel. Keep free from water for 3 days after concrete is placed.

3.2 REQUIREMENTS FOR EDUCTOR, WELL POINTS, OR DEEP WELLS

- A. Design, install, and operate all dewatering wells to prevent the removal of native material except as incidental to well development.
- B. For aboveground piping in ground water control system, include 12-inch minimum length of clear, transparent piping between every eductor well or well point and discharge header to visually monitor discharge from each installation.

- C. Install sufficient piezometers or monitoring wells to show trench or shaft excavations in water bearing materials are predrained 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 selected method of Work.
- D. Install piezometers or monitoring wells not less than 1 week in advance of beginning associated excavation.
- E. Dewatering may be omitted for portions of under drains or other excavations, but only where auger borings and piezometers or monitoring wells show that soil is predrained by existing system and that criteria of ground water control plan are satisfied.
- F. Replace installations that produce noticeable amounts of sediments after development.
- G. Provide additional ground water control installations, or change methods, in event that installations according to ground water control plan does not provide satisfactory results based on performance criteria defined by plan and by specification. Submit revised plan according to Paragraph 1.6B.

3.3 EXCAVATION DRAINAGE

- A. May use excavation drainage methods if necessary to achieve well drained conditions. Excavation drainage may consist of 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 ground water control installations or excavation drainage are operating in 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 excavation area when ground water control operations are complete. Remove and grout monitoring wells when directed by Owner's Representative. Follow applicable regulations for abandoning piezometers and monitoring wells.

3.5 MONITORING AND RECORDING

- A. Monitor and record average flow rate of operation for each deep well, or for each wellpoint or eductor header used in dewatering system. Also monitor and record water level and ground water recovery. Obtain records 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 Work is completed or piezometers or wells are removed, except when Owner's Representative determines more frequent monitoring and recording are required. Comply with Owner's Representative direction for increased monitoring and recording and take measures 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. 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 agencies.

END OF SECTION

SECTION 01 58 13

TEMPORARY PROJECT SIGNAGE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes requirements for temporary project signage.
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
 - 2. Division 01 – General Requirements.

1.2 MEASUREMENT AND PAYMENT

- A. Unit Prices:
 - 1. Payment for project signs shall be made per each as requested by the Owner. Project sign must be approved by the Owner prior to installation.
 - 2. Relocate skid-mounted or post-mounted signs as directed by the Owner's Representative at no additional cost to Owner.

1.3 SYSTEM DESCRIPTION

- A. Sign Construction: Construct project identification signs of new materials. Construct post-mounted signs as shown on Standard Detail Drawing – Project Sign Detail.
- B. Appearance: Project identification signs shall be maintained to present a clean and neat look throughout project duration.
- C. Sign Manufacturer/Maker: Experienced as a professional sign company.
- D. Sign Placement: Place signs at locations as directed by Owner's Representative. Owner's Representative will provide sign placement instructions at preconstruction meeting.
 - 1. A linear project is one involving paving, overlay, sewer lines, storm drainage, or water mains that run in right-of-way over a distance. A linear project requires a project identification sign at each end of construction site.
 - 2. Single Site or Building Projects: Provide one project identification sign.
 - 3. Multiple Sites: Provide one project identification sign at each site.
 - 4. Sign Relocation: As work progresses at each site, it may be necessary to move and relocate project identification signs. Relocate signs as directed in writing by Owner's Representative.
- E. Alternate Skid-mounted Sign Construction: Post-mounted signs are preferred, but skid-mounted signs are allowed, especially for projects with noncontiguous locations where work progresses from one location to another. Design skid

structure so that sign will withstand a 60-mile-per-hour wind load directly to face or back of sign. Use stakes, straps, or ballast. Approval of use of skid-mounted signs shall not release Contractor from responsibility of maintaining a project identification sign on project site and shall not make Owner responsible for security of such signs.

1.4 SUBMITTALS

- A. Submit shop drawings under provisions of Section 01 33 00 – Submittals.
- B. Show content, layout, lettering style, lettering size, and colors. Make sign and lettering to scale, clearly indicating condensed lettering, if used.

PART 2 - PRODUCTS

2.1 SIGN MATERIALS

- A. Structure and Framing: Use new sign materials.
 - 1. Sign Posts: Use 4-inch by 4-inch pressure treated wood posts, 9 feet long for skid mounting and 12 feet long minimum for in-ground mounting.
 - 2. Skid Bracing: 2-inch by 4-inch wood framing material.
 - 3. Skid Members: 2-inch by 6-inch wood framing material.
 - 4. Fasteners:
 - a. Use galvanized steel fasteners.
 - b. Use ½-inch by 5½-inch button head carriage bolts to attach sign to posts. Secure with nuts and flat head washers at locations shown on Standard Detail Drawing – Project Sign Detail.
 - c. Cover button heads with white reflective film or paint to match sign background.
- B. Sign: Use ¾ inch marine plywood. Use full-size 4-foot by 8-foot sheet for sign and a single piece for header to minimize joints; do not piece wood to fabricate sign face.
- C. Paint and Primers: White paint used to prime surfaces and to resist weathering shall be an industrial grade, fast-drying, oil-based paint with gloss finish. Paint structural and framing members white on all sides and edges to resist weathering. Paint sign and sign header material white on all sides and edges to resist weathering. Paint all sign surfaces with this weather-protective paint prior to adding any adhesive applications.
- D. Colors:
 - 1. Sign Background: Sign background shall be industrial grade, reflective white. Use 3M Scotchlite Engineer Grade, Pressure Sensitive Sheeting (White), or approved equal.

2. Border: Add ½ inch-wide red border around area which designates project name and project amount. For border, use industrial grade reflective red. Use 3M Scotchlite Engineer Grade, Pressure Sensitive Sheeting (Red), or approved equal.
3. Sign Film: Make legends, symbols, lettering, and artwork from 3M Scotchcal Pressure Sensitive Films, or approved equal. Match colors to following 3M Scotchcal Pressure Sensitive Films.
 - a. Lettering Below Logo: Black
 - b. Lettering Above Project Name: Vivid Blue
 - c. Lettering on Blue Background: White
 - d. Background Behind Project Name: Vivid Blue

2.2 SIGN LAYOUT

A. Lettering:

1. Style, Size, and Spacing: Prepare sign using uppercase Helvetica Regular lettering of height and spacing shown on Standard Detail Drawing – Project Sign Detail.
2. Condensed Style: Lettering for variable text may be condensed if needed to maintain sign composition.

B. Composition:

1. The lower left of sign below Owner Logo is used to list names of the Owner's Board of Directors. These lines will be placed exactly as shown on Drawings with same size and spacing as indicated.
2. Lines with Variable Text. On blue background is space for project name and dollar amount for project construction.
 - a. Owner's Representative will provide project name to Contractor for preparation of sign. Project name is centered on one or two lines in area with blue background. Lettering may be condensed, if necessary.
 - b. Owner's Representative will provide Contractor with project's dollar value rounded to nearest \$1,000 for preparation of sign. Dollar amount is centered on one line in area with blue background and immediately below project name.

2.3 LAYOUT AND COMPOSITION

- A. Owner Logo: Owner will provide Contractor with logo.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install project identification signs within 7 calendar days after Notice to Proceed.

- B. Erect signs where designated by Owner's Representative at preconstruction meeting. Position sign in such a manner as to be fully visible and readable to general public.
- C. Erect sign level and plumb.
- D. If mounted on posts, sink posts 3 feet to 4 feet below grade. Stabilize posts to minimize lateral motion. Leave a minimum of 8 feet of post above existing grade for mounting of sign.
- E. Erect sign so that top edge of sign is at a nominal 8 feet above existing grade.

3.2 MAINTENANCE AND REMOVAL

- A. Keep signs and supports clean. Repair deterioration and damage.
- B. Remove signs, framing, supports, and foundations to a depth of 2 feet upon completion of Project. Restore area to a condition equal to or better than before construction.

END OF SECTION

SECTION 01 65 50

PRODUCT DELIVERY, STORAGE, AND HANDLING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes requirements for product delivery, storage and handling.
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 00 - Bidding Requirements, Contract Forms, and Conditions of the Contract.
 - 2. Division 01 - General Requirements.

1.2 MEASUREMENT AND PAYMENT

- A. Unit Price. No separate payment will be made for this item. Include the cost in associated items for this payment.

1.3 SUBMITTALS

- A. Provide Owner project Log Book.

1.4 TRANSPORTATION

- A. Make arrangements for transportation, delivery, and handling of equipment and materials required for timely completion of Work.
- B. Transport and handle products in accordance with instructions.
- C. Consign and address shipping documents to proper party giving name of Project, street number, and city. Shipments shall be delivered to Contractor.

1.5 DELIVERY

- A. Scheduling: Schedule delivery of products or equipment as required to allow timely inspection and installation, and to avoid prolonged storage, overburdening of limited storage space, conflicts with other contractors on site. Confirm availability of equipment and personnel for handling products prior to delivery.
- B. Packaging: Deliver products or equipment in manufacturer's original unopened and unbroken cartons or other containers designed and constructed to protect the contents from physical or environmental damage.
- C. Identification: Clearly and fully mark and identify as to manufacturer, item, and installation location.
- D. Protection and Handling: Provide manufacturer's instructions for storage and handling.

PART 2 - PRODUCTS

- A. Products: Means material, equipment, or systems forming Work. Does not include machinery and equipment used for preparation, fabrication, conveying, and erection of Work. Products may also include existing materials or components designated for reuse.
- B. For material and equipment specifically indicated or specified to be reused in the work:
 - 1. Use special care in removal, handling, storage and reinstallation, to assure proper function in completed work.
 - 2. Arrange for transportation, storage and handling of products which require offsite storage, restoration or renovation. Pay all costs for such work.
- C. When contract documents require that installation of work comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in installation, including two copies to Owner's Representative. Maintain one set of complete instructions at job site during installation until completion.
- D. Provide equipment and components from fewest number of manufacturers as practical, in order to simplify spare parts inventory and allow for maximum interchangeability of components. For multiple components of same size, type, or application, use same make and model of component throughout Project.

PART 3 - EXECUTION

3.1 PROTECTION, STORAGE AND HANDLING

- A. Protection:
 - 1. Protect materials in accordance with manufacturer's recommendations and requirements of these Specifications.
 - a. Store products or equipment in location to avoid loss or physical damage to items while in storage.
 - 2. Protect equipment from exposure to elements and keep thoroughly dry.
 - 3. When space heaters are provided in equipment, connect and operate heaters during storage until equipment is placed in service.
- B. Storage:
 - 1. Store materials in accordance with manufacturer's recommendations and requirements of these Specifications.
 - 2. Make necessary provisions for safe storage of materials and equipment. Place loose soil materials, and materials to be incorporated into Work to prevent damage to any part of Work or existing facilities and to maintain free access at all times to all parts of Work and to utility service company installations in vicinity of Work. Keep materials and equipment neatly and

compactly stored in locations that will cause minimum inconvenience to other contractors, public travel, adjoining owners, tenants, and occupants. Arrange storage to provide easy access for inspection.

3. Restrict storage to areas available on construction site for storage of material and equipment as shown on Drawings or approved by Owner's Representative.
4. Provide off-site storage and protection when on-site storage is not adequate. Provide addresses of and access to off-site storage locations for inspection by Owner's Representative.
5. Do not use lawns, grass plots, or other private property for storage purposes without written permission of owner or other person in possession or control of premises.
6. Store in manufacturers' unopened containers.
7. Neatly, safely, and compactly stack materials delivered and stored along line of Work to avoid inconvenience and damage to property owners and general public, and maintain at least 3 feet from fire hydrant. Keep public, private driveways, and street crossings open.
8. Repair or replace damaged lawns, sidewalks, streets, or other improvements to satisfaction of Owner's Representative. Total length which materials may be distributed along route of construction at one time is 1,000 linear feet, unless otherwise approved in writing by Owner's Representative.

C. Handling:

1. Handle materials in accordance with manufacturer's recommendations and requirements of these Specifications.
2. Coordinate off-loading of materials and equipment delivered to job site. If necessary to move stored materials and equipment during construction, relocate materials and equipment at no additional cost to Owner. Do not allow the off-loading of materials in those parking areas used for crew's personal vehicles.
3. Provide equipment and personnel necessary to handle products by methods to prevent damage to products or packaging.
4. Provide additional protection during handling as necessary to prevent breaking, scraping, marring, or otherwise damaging products or surrounding areas.
5. Handle products by methods to prevent over bending or over stressing.
6. Lift heavy components only at designated lifting points.

Do not drop, roll, or skid products off delivery vehicles. Hand carry or use suitable materials handling equipment.

3.2 STORAGE FACILITIES

A. Temporary Storage Building (if required):

1. Provide a weatherproof temporary storage building specifically for the purpose of providing for protection of products and equipment.
2. Equip building with lockable doors and lighting, and provide electrical service for equipment space heaters and heating or ventilation as necessary to provide storage environments acceptable to specified manufacturers.
3. Provide methods of storage of products and equipment off the ground.
4. Provide this structure within 60 days after Notice to Proceed.
 - a. Locate building on-site where shown on the Drawings or in location approved by the Owner's Representative.
 - b. Remove building from site prior to project closeout.

3.3 FIELD QUALITY CONTROL

A. Inspect Deliveries:

1. Inspect all products or equipment delivered to the site prior to unloading.
 - a. Reject all products or equipment that are damaged, used, or in any other way unsatisfactory for use on Project.

B. Monitor Storage Area: Monitor storage area to ensure suitable temperature and moisture conditions are maintained as required by manufacturer or as appropriate for particular items.

END OF SECTION

SECTION 01 71 13

MOBILIZATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes requirements for mobilization.
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
 - 2. Division 01 – General Requirements.

1.2 MEASUREMENT AND PAYMENT

- A. Measurement for mobilization is on lump sum basis.
- B. Mobilization payments will be included in periodic progress payment upon written application subject to following provisions:
 - 1. Authorization for payment of 50 percent of Contract Price for mobilization will be made upon receipt and approval by Owner's Representative of the following items, as applicable:
 - a. Schedule of Values submittal in accordance with Section 01 29 73 – Schedule of Values
 - b. Trench safety program
 - c. Safety Program/Plan submittal in accordance with the Trench Safety Program/Plan in accordance with Section 31 41 00 – Trench Safety System.
 - d. Construction Schedule submittal in accordance with Section 01 32 16 – Construction Progress Schedule
 - e. Preconstruction photographs in accordance with Section 01 32 36.01 – Project Photographs
 - f. Critical Location Report in accordance with Section 31 21 33 – Trenching, Backfilling, and Compacting for Utilities
 - g. Control of groundwater and surface water plan in accordance with Section – 1 57 23.02 – Control of Ground Water and Surface Water, when required
 - 2. Authorization for payment of remaining 50 percent of Contract Price for mobilization will be made upon completion of Work amounting to 5 percent of Contract Price less mobilization unit price.
- C. Mobilization payments will be subject to retainage amounts stipulated in Specification Section 00 72 00 – General Conditions of the Contract.

- D. A reduction of 10 percent of mobilization amount bid in Schedule for Unit Price Work will be applied to each Payment Application when Field Office is not properly maintained. Proper maintenance consists of operational plumbing and sanitary facilities, adequate potable water supply, operational telephone and facsimile machine and functional temperature control.

1.3 SUBMITTALS (NOT USED)

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 74 13

CLEANING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes intermediate and final cleaning of Work, not including special cleaning of closed systems specified elsewhere.
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
 - 2. Division 01 – General Requirements.

1.2 MEASUREMENT AND PAYMENT

- A. Unit Price. No separate payment will be made for this item. Include the cost in associated items for this project.

1.3 SUBMITTALS (NOT USED)

1.4 STORAGE AND HANDLING

- A. Store cleaning products and cleaning wastes in containers specifically designed for those materials.

1.5 SCHEDULING

- A. Schedule cleaning operations so that dust and other contaminants disturbed by cleaning process will not fall on newly painted surfaces.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents:
 - 1. Compatible with surface being cleaned.
 - 2. New and uncontaminated.
 - 3. For Manufactured Surfaces: Material recommended by manufacturer.

PART 3 - EXECUTION

3.1 CLEANING - GENERAL

- A. Prevent accumulation of wastes that create hazardous conditions.
- B. Conduct cleaning and disposal operations to comply with laws and safety orders of governing authorities.

- C. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains or sewers.
- D. Dispose of degradable debris at an approved solid waste disposal site.
- E. Dispose of nondegradable debris at an approved solid waste disposal site or in an alternate manner approved by regulatory agencies.
- F. Handle materials in a controlled manner with as few handlings as possible.
- G. Do not drop or throw materials from heights greater than 4 FT or less than 4 FT if conditions warrant greater care.
- H. On completion of work, leave area in a clean, natural looking condition.
 - 1. Remove all signs of temporary construction and activities incidental to construction of required permanent Work.
- I. Do not burn on-site.

3.2 INTERIOR CLEANING

A. Cleaning During Construction:

- 1. Keep work areas clean so as not to hinder health, safety or convenience of personnel in existing facility operations.
- 2. At maximum weekly intervals, dispose of waste materials, debris, and rubbish.
- 3. Vacuum clean interior areas when ready to receive finish painting.
 - a. Continue vacuum cleaning on an as-needed basis, until Substantial Completion.

B. Final Cleaning:

- 1. Complete immediately prior to Demonstration Period.
- 2. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from sight-exposed surfaces.
- 3. Wipe all lighting fixture reflectors, lenses, lamps and trims clean.
- 4. Wash and shine glazing and mirrors.
- 5. Polish glossy surfaces to a clear shine.
- 6. Ventilating systems:
 - a. Clean permanent filters and replace disposable filters if units were operated during construction.
 - b. Clean ducts, blowers and coils if units were operated without filters during construction.
- 7. Replace all burned out lamps.
- 8. Broom clean process area floors.

9. Mop office and control room floors.

3.3 EXTERIOR (SITE) CLEANING

A. Cleaning During Construction:

1. Construction debris:
 - a. Confine in strategically located container(s):
 - 1) Cover to prevent blowing by wind.
 - 2) Store debris away from construction or operational activities.
 - 3) Haul from site minimum once a week.
 - b. Remove from work area to container daily.
 - c. Site clean-up prior to storm events. Thoroughly clean site of all loose or unsecured items which may become airborne or transported by flowing water during storm events.
2. Vegetation: Keep weeds and other vegetation trimmed to 3 IN maximum height.
 - a. The use of chemical weed control substances should be avoided unless prior Owner approval is received.
3. Soils, sand, and gravel deposited on paved areas and walks:
 - a. Remove as required to prevent muddy or dusty conditions.
 - b. Do not flush into storm sewer system.

B. Final Cleaning:

1. Remove trash and debris containers from site.
 - a. Repair areas disturbed by location of trash and debris containers to Owner's satisfaction including but not limited to re-seeding, sod placement, pavement repair, asphalt repair, sidewalk repair, and rut removal and/or fill placement.
2. Clean paved roadways.

3.4 FIELD QUALITY CONTROL

- A. Immediately prior to Demonstration Period, conduct an inspection with Owner's Representative to verify condition of all work areas.

END OF SECTION

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SECTION 01 74 19

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes requirements for construction waste management and disposal.
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
 - 2. Division 01 – General Requirements.

1.2 MEASUREMENT AND PAYMENT

- A. No separate payment will be made for waste material disposal under this Section. Include payment in unit price for related sections.

1.3 SUBMITTALS

- A. Conform to requirements of Section 01 33 00 – Submittals.
- B. Obtain and submit disposal permits for proposed disposal sites if required by local ordinances. Submit a copy of all disposal permits to the Owner's Representative.
- C. Submit copy of written permission from property owner(s) outside limits of Project, with description of property, prior to disposal of excess material. Submit written and signed release from property owner upon completion of disposal work. Copies of the permission and release documents are to be submitted to the Owner's Representative.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 SALVAGEABLE MATERIAL

- A. Excavated Material: When indicated on Drawings, load, haul, and deposit excavated material at location or locations shown on Drawings outside limits of Project.
- B. Other Salvageable Materials: Conform to requirements of individual Specification Sections.
- C. Coordinate with the Owner's Representative the loading of salvageable material.

3.2 EXCESS MATERIAL

- A. Remove and legally dispose of vegetation, rubble, broken concrete, debris, asphaltic concrete pavement, excess soil, and other materials not designated for salvage from job site.
- B. Excess soil may be deposited on private property outside the Project limits when written permission is obtained from property owner. See Paragraph 1.3C above.
- C. Verify flood plain status of any proposed disposal site. Do not dispose of excavated materials in area designated as within 100-year Flood Hazard Area unless the proper permit has been obtained. Remove excess material placed in "100-year Flood Hazard Area" at no additional cost to the Owner.
- D. Remove waste materials from site daily, in order to maintain site in neat and orderly condition, unless otherwise authorized by the Owner.

END OF SECTION

SECTION 01 74 23
RESTORATION OF SITE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes requirements for the restoration of sites affected by Utility Work, Roadway Reconstruction or Widening, or Facilities Work. Section does not apply to roadway extension projects.
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
 - 2. Division 01 – General Requirements.
 - 3. Section 02 41 13 13 – Removing Existing Pavements and Structures.
 - 4. Section 31 21 33 – Trenching, Backfilling, and Compacting for Utilities.
 - 5. Section 32 13 13 – Concrete Pavement, Curb, Sidewalks, and Steps.
 - 6. Section 32 90 00 – Seeding, Sodding, and Landscaping.
 - 7. Section 32 92 13 – Hydro-Mulching.

1.2 MEASUREMENT AND PAYMENT

- A. Stipulated Price (Lump Sum) Contract. If Contract is Stipulated Price Contract, payment for Work in this Section is included in total Stipulated Price.

1.3 REFERENCES

- A. ANSI Z60.1 – American Standard for Nursery Stock.

1.4 DEFINITIONS

- A. Site Restoration is replacement or reconstruction of site improvements to rights-of-way, easements (includes drainage easements), public property, and private property (includes golf course areas) that are affected or altered by construction operations, with improvements to restore to a condition which is equal to, or better than, that which existed prior to construction operations.
- B. Site Improvement includes but is not limited to pavement, curb and gutter, esplanades, sidewalks, driveways, culverts, headwalls, mail boxes, lighting, signage, fences, lawns, irrigation systems, and landscaping.
- C. Line Segment. Length of sewer from center line to center line of manholes.
- D. Minimum Trench Width. Allowable trench width for corresponding pipe outside diameter as defined in Section 31 21 33 – Trenching, Backfilling, and Compacting for Utilities, unless otherwise indicated on the Drawings.

1.5 SUBMITTALS

- A. Conform to requirements of Section 01 33 00 – Submittals.
- B. Submit qualifications of nursery or landscaping firm to be used.

1.6 QUALITY ASSURANCE

- A. Have trees, landscape shrubs, and plantings performed by qualified personnel.

1.7 SCHEDULING

- A. After paving or utility work is completed on line segment and segment is submitted on monthly estimate for payment, complete site restoration for that segment in accordance with 3.1 of this Section, unless extended in writing by Owner's Representative.
- B. For utility work requiring testing or post-installation TV inspection, completion of segment is not considered to include testing or TV inspection. Schedule for completion of site restoration is not determined by completion of testing or TV inspection.

1.8 WARRANTY

- A. Provide 2-week warranty on plants and sod grasses that die due to shock or damage only.
- B. Replace plants that fail during warranty period according to specifications governing original plants.
- C. At the end of the warranty period, provide written notification to homeowner(s) stating the underlying property owner, advising that home owner is subsequently responsible for watering, maintaining replaced plants and grasses. Provide copy of notice to Owner's Representative. Notice to include date and time notice was provided, who provided the notice and how was delivered.
- D. Damage caused by natural hazards including hail, high winds or storm is not covered by warranty.
- E. Existing plant material required to be moved on site are covered under warranty.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Pavement, Sidewalks, and Driveways. Use materials as specified in Section 32 13 13 – Concrete Pavement, Curb, Sidewalks, and Steps.
- B. Seeding and Sodding.
 - 1. Provide sod and mechanically seed as specified in Section 32 90 00 – Seeding, Sodding, and Landscaping.

2. Provide hydro-mulching/seeding in accordance with Section 32 92 13 – Hydro-Mulching.
- C. Trees, Shrubs, and Plantings.
 1. Provide trees, shrubs, and plants of quantity, size, genus, species, and variety of those being replaced and conforming to recommendations and requirements of ANSI Z60.1 and Section 32 90 00 – Seeding, Sodding and Landscaping.
 2. Use balled-and-burlapped nursery stock for tree replacement.
 3. Within availability of standard nursery stock, replace each removed tree with one of an equivalent species and size, but with not less than 2½-inch diameter trunk, as measured 1½ feet above natural ground.

PART 3 - EXECUTION

3.1 COORDINATION

- A. For water main and sanitary sewer and roadway reconstruction and widening, construction cannot exceed site restoration by more than 50% of total Project length or 1,000 lineal feet, whichever is less, unless otherwise approved by the Owner's Representative. Site restoration must proceed continuously and be sequentially completed in order of work progress. When utility work and reconstruction or widening work occurs within same limits of right-of-way, utility installation cannot exceed pavement improvements by more than 1,000 linear feet, unless otherwise approved by the Owner's Representative. No intermediate areas can be skipped or left to be completed at a future date, unless otherwise approved by the Owner.
- B. For water main and sanitary sewer construction, site restoration associated with wet connections, cut and plugs, salvaging of fire hydrants and sewer reconnections which needs to occur after line is tested, can be restored after 45 days provided site is restored immediately after accomplishing such work. Payment may be withheld for such wet connections, cut and plugs, salvaging of fire hydrants and sewer reconnection work until site restoration is complete.
- C. Limit utility installation to maximum of two project site locations for projects involving multiple subdivisions or locations, unless otherwise approved by the Owner's Representative.
- D. When roadway reconstruction and widening is being completed in phases, complete restoration of site in previous phase before continuing to next phase, unless otherwise approved by the Owner's Representative.

3.2 EXAMINATION

- A. Construction Site Photographs. Document conditions on and adjacent to construction site with construction photographs as specified in Section 01 32 36.01 – Project Photographs.

- B. Make photographs of all areas where construction operations will be conducted including driveways and sidewalks within or adjacent to Work area.

3.3 PREPARATION

- A. Removing Pavements and Structures.
 - 1. Remove minimum pavement, curb and gutter, and other structures as required to perform Work. Perform removals in accordance with Section 02 41 13 13 – Removing Existing Pavements and Structures.
 - 2. Remove concrete and asphaltic concrete material using sawed joints in accordance with Section 32 13 13 – Concrete Pavement, Curb, Sidewalks, and Steps.
 - 3. Remove curb and gutter a distance of 2 feet outside excavation, unless otherwise approved by the Owner's Representative.
- B. Remove or relocate existing fencing, if required, for construction operations. Maintain integrity of private property owner's fencing if needed for protection of children, pets, or property. Notify Property owner and/or resident at least 72 hours in advance before removing fencing.

3.4 INSTALLATION

- A. Pavement, Sidewalk, and Driveway Restoration.
 - 1. Replace pavement, curb and gutter, culverts, headwalls, sidewalks, and driveways removed or damaged as result of construction operations. Reconstruct in accordance with Section 32 13 13 – Concrete Pavement, Curb, Sidewalks, and Steps.
 - 2. Where replacement sidewalks terminate at street curb radius, construct wheel chair ramp that meets current Texas Accessibility Standards.
- B. Seeding and Sodding.
 - 1. Clean up construction debris and level area with bank sand so that resulting surface of new grass matches level of existing grass and maintains pre-construction drainage patterns. Level minor ruts or depressions caused by construction operations where grass is still viable by filling with bank sand.
 - 2. Restore previously existing turfed areas with sod and fertilize in accordance with Section 32 90 00 – Seeding, Sodding, and Landscaping. Sod to match existing turf.
 - a. Any areas disturbed within the golf course areas must be restored as approved by golf course owners and as specified in the plans.
 - 3. Restore unpaved areas not requiring sodding with hydromulch methods conforming to Section 32 92 13 – Hydro-Mulching.
- C. Trees, Shrubbery, and Plants.

1. Take extra care in removing and replanting trees, shrubbery, and plants. Remove trees, shrubbery, and plants, leaving soil around roots. Place trees, shrubbery, and plants outside of excavation area.
 2. Replace in kind any trees, shrubbery, and plants removed or damaged by construction operations.
 3. Have nursery or landscape firm make tree replacements using balled-and-burlapped nursery stock.
- D. Fence Removal and Replacement.
1. Replace fencing removed or damaged to equal or better than what existed prior to construction, including concrete footings and mow strips. Provide new wood posts, top and bottom railing and panels. Metal fencing material not damaged by Work may be reused.
 2. Remove and dispose of damaged or substandard material.

3.5 CLEANING

- A. Remove debris and trash to maintain clean and orderly site as described in General Conditions and Section 01 74 19 – Construction Waste Management and Disposal.

3.6 MAINTENANCE

- A. Maintain shrubs, plantings, sodded areas and seeded areas through warranty period.
- B. Replace shrubs, plantings, and seeded or sodded areas that fail to become established through warranty period.
- C. Maintain newly planted trees, shrubs, and plantings as follows:
1. Water as often as necessary to keep ground and backfill moist until plantings have become established.
 2. Repair or replace bracing as necessary.
 3. Prune as necessary.
 4. Treat plants in accordance with approved methods of horticultural practices where insects or disease affect plants after planting.
- D. Refer to Section 01 56 39 – Temporary Tree and Plant Protection, Section 32 92 13 – Hydro-Mulching and Section 32 90 00 – Seeding, Sodding, and Landscaping for additional maintenance requirements.

END OF SECTION

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SECTION 01 77 19
CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes requirements for closeout of a construction project.
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 00 – Introductory Information, Proposing Requirements, Contract Forms, and Conditions of the Contract.
 - 2. Division 01 – General Requirements.

1.2 MEASUREMENT AND PAYMENT

- A. Unit Price. No separate payment will be made for this item. Include the cost in associated items for this project.

1.3 SUBMITTALS (NOT USED)

1.4 SUBSTANTIAL COMPLETION

- A. Comply with Document 00 72 00 – General Conditions of the Contract regarding Substantial Completion when Contractor considers the Work, or portion thereof designated by Owner's Representative, to be substantially complete.
- B. Insure the following items have been completed when included in the Work, prior to presenting a list of items to be inspected by Owner's Representative for issuance of a Certificate of Substantial Completion:
 - 1. Cutting, plugging, and abandoning of water, wastewater, and storm sewer lines, as required by specifications for each item;
 - 2. Construction of, and repairs to, pavement, driveways, sidewalks, culverts, headwalls and curbs and gutters;
 - 3. Sodding and hydromulch seeding, unless waived by the Owner in writing;
 - 4. General clean up including signage, lighting, pavement markings, transfer of services, successful testing and landscape;
 - 5. Installation of all bid items included in Document 00 41 00.02 – Proposal Form and approved Contract Document changes.
- C. Assist Owner's Representative with inspection of Contractor's list of items and complete or correct the items, including items added by Owner's Representative, within a time period of 30 days or as mutually agreed.

- D. Should Owner's Representative's inspection show failure of Contractor to comply with substantial completion requirements, including those items in Paragraph 1.2B of this specification, Contractor shall complete or correct the items, before requesting another inspection by Owner's Representative.

1.5 CLOSEOUT PROCEDURES

- A. Comply with Document 00 72 00 – General Conditions of the Contract regarding Final Inspection and Final Payment when Work is complete and ready for Owner's Representative's final inspection.
- B. Provide Project Record Documents in accordance with Section 01 78 39 – Project Record Documents.
- C. Complete or correct items on punch list, with no new items added. Address new items during warranty period.
- D. Owner will occupy portions of Work as specified in other Sections.

1.6 FINAL CLEANING

- A. Execute final cleaning prior to Final Inspection.
- B. For facilities, clean interior and exterior glass and surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Clean equipment and fixtures to sanitary condition.
- D. Clean or replace filters of operating equipment.
- E. Clean debris from roofs, gutters, down spouts, and drainage systems.
- F. Clean site; sweep paved areas, rake landscaped surfaces clean.
- G. Remove waste and surplus materials, rubbish, and temporary construction facilities from site following final test of utilities and completion of Work.

1.7 ADJUSTING

- A. Adjust operating equipment to ensure smooth and unhindered operation in accordance with manufacturer's written instructions. Value of this testing and adjusting is five (5) percent of Lump Sum Amount in Schedule of Values for item being tested.

1.8 WARRANTIES

- A. Provide one original and two copies of each warranty from subcontractors, suppliers, and manufacturers.
- B. Provide Table of Contents and assemble warranties in three-ring/D binder with durable plastic cover.
- C. Submit warranties prior to final progress payment.
- D. Warranties shall commence in accordance with requirements in Document 00 72 00 – General Conditions of the Contract.

1.9 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide products, spare parts, maintenance, and extra materials in quantities specified in individual Specification sections.
- B. Deliver to location as directed by Owner's Representative; obtain receipt prior to final Payment Application.

1.10 TEXAS DEPARTMENT OF LICENSING AND REGULATION (TDLR) INSPECTION

- A. Contact TDLR's Houston Regional Office, 5425 Polk Street, Houston, Texas, 77023, telephone 713-924-6303, fax 713-921-3106, to schedule an inspection for ADA compliance prior to final completion.
- B. Provide results of TDLR's inspection to Owner's Representative prior to final inspection.

1.11 FINAL PHOTOS

- A. Provide per Specification Section 01 32 36.01 – Project Photographs.

1.12 PROJECT RECORD DOCUMENTS

- A. Provide per Specification Section 01 78 39 – Project Record Documents.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 78 39

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Maintenance and Submittal.
 - 2. Recording.
 - 3. Submittals.
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
 - 2. Division 01 – General Requirements.

1.2 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. Maintain one record copy of documents at site in accordance with Document 00 72 00 – General Conditions of the Contract.
- B. Store Record Documents and samples in field office when field office is required by Contract, or in secure location. Provide files, racks, and secure storage for Record Documents and samples.
- C. Label each document "PROJECT RECORD" in neat, large, printed letters.
- D. Maintain Record Documents in clean dry and legible condition. Do not use Record Documents for construction purposes.
- E. Keep Record Documents and Samples available for inspection by Owner's Representative.
- F. Bring Record Drawings to progress review meetings for viewing by Owner's Representative.

1.3 RECORDING

- A. Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- B. Contract Drawings: Legibly mark each item to record actual construction, or "as built" conditions, including:
 - 1. Measured depths of elements of foundation in relation to finish first floor datum.
 - 2. Measured horizontal locations and elevations of underground utilities and appurtenances, referenced to permanent surface improvements.

3. Elevations of underground utilities referenced to bench mark utilized for Project.
 4. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of construction.
 5. Field changes of dimension and detail.
 6. Modifications made by Change Order.
 7. Details not on original Contract Drawings.
 8. References to related shop drawings and modifications.
- C. Maintain on site at all times an instrument for accurately measuring elevations. Survey every joint of water main at time of construction and record on drawings water main invert elevation, including elevation top of manway and centerline horizontal location relative to baseline.
- D. Record information with red felt-tip marking pen on set of blue line opaque drawings.
- E. Legibly mark Record Drawings to record:
1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
 2. Changes made by Change Order or Field Order.
 3. Other matters not originally specified.
- F. Legibly annotate shop drawings to record changes made after review.

1.4 SUBMITTALS

- A. At Contract closeout, deliver Project Record Documents to Owner's Representative.

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 SUMMARY

A. Section Includes

1. Removing concrete pavement, asphaltic concrete pavement, brick pavement, and base courses.
2. Removing concrete curbs, concrete curbs and gutters, sidewalks, and driveways.
3. Removing pipe culverts, sewers, and sewer leads.
4. Removing existing inlets and manholes.
5. Removing and disposing of pre-stressed concrete beams and drill shafts.
6. Removing miscellaneous structures of concrete or masonry.
7. Removing existing bridge.
8. Regulatory Requirements

B. Related Specifications Sections include but are not necessarily limited to:

1. Division 00 – Bidding Requirements Contract Forms and Conditions of the Contract
2. Division 01 – General Requirements
3. Section 32 13 13 – Concrete Pavement, Curb, Sidewalks, and Steps

1.2 MEASUREMENT AND PAYMENT

A. Unit Price. No separate payment will be made for this item. Including all types and thicknesses of concrete pavement, asphaltic concrete pavement, brick pavement, asphalt overlays, base courses for roads, parking areas, curbs, curbs and gutters, sidewalks and driveways, culverts, headwalls, ditch liners, storm and sanitary sewers and sewer leads, manholes, inlets, pipe replacement, timber structures, steel structures, handling of hazardous materials and other miscellaneous structures of concrete and masonry.

1. Include the cost of associated items for this project in the following items:
 - a. For removal of concrete pavement, include in price for removal and repair/replacement of concrete pavement per Section 32 13 13 – Concrete Pavement, Curb, Sidewalks and Steps
 - b. For removal of asphaltic concrete pavement, include in price for removal and repair/replacement of asphaltic concrete pavement per Section 32 12 16 – Asphaltic Concrete Vehicular Pavement.

1.3 SUBMITTALS (NOT USED)

1.4 WORK INCLUDED

- A. Furnish labor, materials, equipment and incidentals necessary for every type of required demolition.
- B. Furnish equipment of every type required to demolish and transport construction debris away from the Site.

1.5 STANDARDS

- A. Work shall be performed in accordance with the codes and ordinances of the agency having jurisdiction over the Place of Record.
- B. Coordinate removal work with utility companies.
- C. Occupational Safety and Health Association (OSHA), 29CFR Parts 1010 and 1926, "Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite", 40 CFR Part 61 - "National Emission Standard for Hazardous Air Pollutants"

1.6 DELIVERY AND STORAGE

- A. Stockpile construction debris at the Site only as long as necessary to haul to a disposal site. Stack materials neatly and handle in an orderly manner until removed from the Site.

1.7 JOB CONDITIONS

- A. Contractor shall visit the Site and determine the extent of demolition required and the Site conditions that might affect his proposal. Include costs of covering all aspects of the demolition as part of the proposal.
- B. The Drawings shall be carefully reviewed to determine the extent of necessary demolition and to identify elements of the existing construction which are to remain in place. Report any discrepancies to Owner and Engineer before disturbing existing conditions. Property lines and limits of demolition shall be accurately located prior to beginning site demolition. Start of demolition activities shall represent confirmation by Contractor that existing conditions are as presented in the Contract Documents. Demolition outside the limits indicated on the Drawings, or outside the property lines shall not be performed.
- C. For electrical demolition, verify field measurements and circuiting arrangements are as shown on the Drawings. Verify that existing wiring and equipment serve only abandoned facilities.
- D. Material removed during demolition, and any equipment not otherwise designated to remain the property of the Owner, shall become the property of the Contractor and shall be promptly removed from the Site.

- E. Equipment and material designated as remaining the property of the Owner shall be removed from the structure and transported to a designated location on the Site and stored for the Owner's use. Store on wood runners raised above the surrounding grade and cover with weather resistant covering that is tied securely in place.
- F. Take necessary precautions in removing Owner designated property to prevent damage during the demolition process. Equipment shall be removed in one piece. Loose components may be removed separately. Controls and electrical equipment may be removed from the equipment and handled separately. Large units, such as motor driven pumps, may be dismantled and motors handled separately. Do not use a cutting torch to separate the Owner's equipment or material. Salvaged piping shall be taken apart at flanges or fittings and removed in sections.

1.8 WARRANTY (NOT USED)

PART 2 - PRODUCTS

- A. New materials and equipment for patching and extending work shall meet the requirements of the individual Sections in these Contract Documents. For materials not addressed in these documents, materials used shall meet or exceed the dimensions and quality of the existing work.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Obtain advance approval from Owner's Representative for dimensions and limits of removal work.
- B. Contractor shall be responsible for obtaining location of underground utilities at the Site and stake and flag locations. Known existing underground utilities as shown in Construction Drawings are based on best available information at the time of preparation of these construction documents. Arrange for all applicable utility companies to accurately locate underground piping and set color-coded flags along the project limits. Investigate utility company's records to ascertain depths and sizes of piping and other ancillary features.
 - 1. In the event that exact location of utility cannot be obtained, dig test holes as necessary to establish location of utility. Contractor shall not use mechanical digging machines within 6 feet of any active buried utility. For a distance of 4 feet on either side of buried utility, all digging shall be by hand excavation. If the utility is not active, or is to be abandoned or removed, any form of excavation may be used.

3.2 PROTECTION

- A. Protect 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. Bench marks, 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 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 minimum depth of 2 inches.
- D. Unless otherwise shown and detailed on the plans, when street and driveway saw cut location is greater than one-half of a pavement lane width, remove pavement for full lane width or to nearest longitudinal joint as directed by Owner's Representative.
- E. Remove sidewalks and curbs to nearest existing dummy, expansion, or construction joint.
- F. Removal of Existing Site Structures
 1. Remove concrete or masonry structures located below the ground line where indicated or where such structures will interfere with new construction. Where structures are a part of an active underground utility system, repair piping to prevent blockage in the flow.
 2. Remove abandoned manholes, basins, or similar structures. With the Engineer's approval, and if structures will not interfere with any other proposed construction, they may be abandoned in place. Remove the top part of the structure so that it is a minimum of 2 feet below the new finish grade. Remove part of the floor system of basins, manholes and other such structures to prevent entrapment of water. Fill remaining cavities with approved backfill material.
 3. Removal of Steel Structures: Meet with Owner and identify any material to be salvaged. Protect such material from damage using protective demolition methods. Remove steel structural members by unbolting, cutting welds, or cutting rivet heads and punching shanks through holes. Do not use flame-cutting unless approved by the Engineer.

3.4 BACKFILL

- A. Backfill cavities resulting from demolition. Fill cavities occurring within the limits of buildings, structures, or pavements in accordance with the requirements Section 31 21 33 – Trenching, Backfilling, and Compacting for Utilities. Backfill and compact cavities outside the construction limits to the same density as the surrounding earth. No testing is required for backfill outside the limits of new construction.

3.5 DISPOSAL

- A. Disposal shall be in accordance with requirements of Section 01 74 19 – Construction Waste Management and Disposal.
- B. Remove from site, debris resulting from work under this section in accordance with requirements of Specification Section 01 74 19 – Construction Waste Management and Disposal.

3.6 OWNER TRAINING (NOT USED)

END OF SECTION

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SECTION 03 09 00

CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Cast-in-place concrete and grout.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00 - Bidding Requirements, Contract Forms, and Conditions of the Contract.
2. Division 01 - General Requirements.

1.2 MEASUREMENT AND PAYMENT

- A. Unit Price. No separate payment will be made for this item. Include the cost in associated items for this project.

1.3 QUALITY ASSURANCE

A. Referenced Standards:

1. American Concrete Institute (ACI):
 - a. 116R, Cement and Concrete Terminology.
 - b. 211.1, Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete.
 - c. 212.3R, Chemical Admixtures for Concrete.
 - d. 304R, Guide for Measuring, Mixing, Transporting, and Placing Concrete.
 - e. 304.2R, Placing Concrete by Pumping Methods.
 - f. 305R, Hot Weather Concreting.
 - g. 306R, Cold Weather Concreting.
 - h. 318, Building Code Requirements for Structural Concrete.
 - i. 347R, Recommended Practice for Concrete Formwork.
2. ASTM International (ASTM):
 - a. A82, Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
 - b. A185, Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.

- c. A615, Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
- d. A775, Standard Specification for Epoxy-Coated Steel Reinforcing Bars.
- e. C31, Standard Practice for Making and Curing Concrete Test Specimens in the Field.
- f. C33, Standard Specification for Concrete Aggregates.
- g. C39, Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
- h. C94, Standard Specification for Ready-Mixed Concrete.
- i. C138, Standard Method of Test for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete.
- j. C143, Standard Test Method for Slump of Hydraulic Cement Concrete.
- k. C150, Standard Specification for Portland Cement.
- l. C157, Standard Test Method for Length Change of Hardened Hydraulic-Cement, Mortar, and Concrete.
- m. C172, Standard Practice for Sampling Freshly Mixed Concrete.
- n. C173, Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
- o. C231, Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
- p. C260, Standard Specification for Air-Entraining Admixtures for Concrete.
- q. C289, Standard Test Method for Potential Alkali-Silica Reactivity of Aggregates (Chemical Method).
- r. C309, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
- s. C494, Standard Specification for Chemical Admixtures for Concrete.
- t. C618, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
- u. C1315, Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.
- v. D882, Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
- w. D994, Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).
- x. D1056, Standard Specification for Flexible Cellular Materials-Sponge or Expanded Rubber.

- y. D1709, Standard Test Methods for Impact Resistance of Plastic Film by the Free-Falling Dart Method.
- z. D1751, Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
- aa. E96, Standard Test Methods for Water Vapor Transmission of Materials.
- bb. E329, Standard Specification for Agencies Engaged in Construction Inspection and/or Testing.
- cc. E1745, Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs.
- 3. Corps of Engineers (COE):
 - a. CRD-C572, Specifications for Polyvinylchloride Waterstops.
 - b. CRD-C621, Standard Specification for Packaged, Dry, Hydraulic-Cement Grout (Nonshrink).
- B. Quality Control:
 - 1. Concrete testing agency:
 - a. Contractor to employ and pay for services of a testing laboratory to:
 - 1) Perform materials evaluation.
 - 2) Design concrete mixes.
 - b. Concrete testing agency to meet requirements of ASTM E329.
 - 2. Do not begin concrete production until proposed concrete mix design has been approved by Owner's Representative.
 - a. Approval of concrete mix design by Owner's Representative does not relieve Contractor of his responsibility to provide concrete that meets the requirements of this Specification.
 - 3. Adjust concrete mix designs when material characteristics, job conditions, weather, strength test results or other circumstances warrant.
 - a. Do not use revised concrete mixes until submitted to and approved by Owner's Representative.
 - 4. Perform structural calculations as required to prove that all portions of the structure in combination with remaining forming and shoring system has sufficient strength to safely support its own weight plus the loads placed thereon.
- C. Qualifications:
 - 1. Ready mixed concrete batch plant certified by National Ready Mixed Concrete Association (NRMCA).

2. Formwork, shoring and reshoring for slabs and beams except where cast on ground to be designed by a professional engineer currently registered in the state where the Project is located.

1.4 DEFINITIONS

A. Per ACI 116R except as modified herein:

1. Concrete fill: Non-structural concrete.
2. Concrete Testing Agency: Testing agency employed to perform materials evaluation, design of concrete mixes or testing of concrete placed during construction.
3. Exposed concrete: Exposed to view after construction is complete.
4. Indicated: Indicated by Contract Documents.
5. Lean concrete: Concrete with low cement content.
6. Nonexposed concrete: Not exposed to view after construction is complete.
7. Required: Required by Contract Documents.
8. Specified strength: Specified compressive strength at 28 days.
9. Submitted: Submitted to Owner's Representative.

1.5 SUBMITTALS

A. Shop Drawings:

1. See Specification Section 01 33 00 – Submittals for requirements for the mechanics and administration of the submittal process.
2. Concrete mix designs proposed for use.
 - a. Concrete mix design submittal to include the following information:
 - 1) Sieve analysis and source of fine and coarse aggregates.
 - 2) Test for aggregate organic impurities.
 - 3) Test for deleterious aggregate per ASTM C289.
 - 4) Proportioning of all materials.
 - 5) Type of cement with mill certificate for cement.
 - 6) Type of fly ash with certificate of conformance to specification requirements.
 - 7) Slump.
 - 8) Air content.
 - 9) Brand, type, ASTM designation, and quantity of each admixture proposed for use.
 - 10) 28-day cylinder compressive test results of trial mixes per ACI 318 and as indicated herein.

- 11) Shrinkage test results.
- 12) Standard deviation value for concrete production facility.
3. Product technical data including:
 - a. Acknowledgement that products submitted meet requirements of standards referenced.
 - b. Manufacturer's installation instructions.
 - c. Manufacturers and types:
 - 1) Joint fillers.
 - 2) Curing agents.
 - 3) Chemical sealer.
 - 4) Bonding and patching mortar.
 - 5) Construction joint bonding adhesive.
 - 6) Non-shrink grout with cure/seal compound.
 - 7) Waterstops.
4. Reinforcing steel:
 - a. Show grade, sizes, number, configuration, spacing, location and all fabrication and placement details.
 - b. In sufficient detail to permit installation of reinforcing without having to make reference to Contract Drawings.
 - c. Obtain approval of Shop Drawings by Owner's Representative before fabrication.
 - d. Mill certificates.
5. Strength test results of in place concrete including slump, air content and concrete temperature.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Storage of Material:
 1. Cement and fly ash:
 - a. Store in moistureproof, weathertight enclosures.
 - b. Do not use if caked or lumpy.
 2. Aggregate:
 - a. Store to prevent segregation and contamination with other sizes or foreign materials.
 - b. Obtain samples for testing from aggregates at point of batching.
 - c. Do not use frozen or partially frozen aggregates.

- d. Do not use bottom 6 IN of stockpiles in contact with ground.
- e. Allow sand to drain until moisture content is uniform prior to use.
- 3. Admixtures:
 - a. Protect from contamination, evaporation, freezing, or damage.
 - b. Maintain within temperature range recommended by manufacturer.
 - c. Completely mix solutions and suspensions prior to use.
- 4. Reinforcing steel: Support and store all rebars above ground.
- B. Delivery:
 - 1. Concrete:
 - a. Prepare a delivery ticket for each load for ready-mixed concrete.
 - b. Truck operator shall hand ticket to Owner's Representative at the time of delivery.
 - c. Ticket to show:
 - 1) Mix identification mark.
 - 2) Quantity delivered.
 - 3) Amount of each material in batch.
 - 4) Outdoor temp in the shade.
 - 5) Time at which cement was added.
 - 6) Numerical sequence of the delivery.
 - 7) Amount of water added.
 - 2. Reinforcing steel:
 - a. Ship to jobsite with attached plastic or metal tags with permanent mark numbers.
 - b. Mark numbers to match Shop Drawing mark number.

1.7 WARRANTY (NOT USED)

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with the Contract Documents, the following products and manufacturers are acceptable:
 - 1. Nonshrink, nonmetallic grout:
 - a. Sika "SikaGrout 212."
 - b. Euclid Chemical "NS Grout."

- c. BASF Admixtures, Inc. "Masterflow 713."
 - 2. Epoxy grout:
 - a. BASF Admixtures, Inc. "Brutem MPG."
 - b. Euclid Chemical Company, "E3-G."
 - c. Fosroc, "Conbextra EPHF".
 - 3. Expansion joint fillers:
 - a. Permaglaze Co.
 - b. Rubatex Corp.
 - c. Williams Products, Inc.
 - 4. Waterstops, PVC:
 - a. Greenstreak Plastic Products, Inc.
 - b. W.R.Meadows, Inc.
 - c. Burke Company.
 - 5. Form coating:
 - a. Richmond "Rich Cote."
 - b. Industrial Lubricants "Nox-Crete Form Coating."
 - c. Euclid Chemical "Eucoslip VOX."
 - 6. Prefabricated forms:
 - a. Simplex "Industrial Steel Frame Forms."
 - b. Symons "Steel Ply."
 - c. Universal "Uniform."
 - 7. Chemical sealer:
 - a. L&M Construction Chemicals, Inc.
 - b. Euclid Chemical Company.
 - c. Dayton Superior.
 - 8. Bonding agent:
 - a. Euclid Chemical Co.
 - b. BASF Admixtures, Inc.
 - c. L&M Construction Chemicals Inc.
- B. Submit request for substitution in accordance with Specification Section 01 25
13 – Product Substitutions.

2.2 MATERIALS

- A. Portland Cement: Conform to ASTM C150.

B. Fly Ash:

1. ASTM C618, Class F or Class C.
2. Nonstaining.
 - a. Hardened concrete containing fly ash to be uniform light gray color.
3. Maximum loss on ignition: 4 percent.
4. Compatible with other concrete ingredients.
5. Obtain proposed fly ash from a source approved by the State Highway Department in the state where the Project is located for use in concrete for bridges.

C. Admixtures:

1. Air entraining admixtures: ASTM C260.
2. Water reducing, retarding, and accelerating admixtures:
 - a. ASTM C494 Type A through E.
 - b. Conform to provisions of ACI 212.3R.
 - c. Do not use retarding or accelerating admixtures unless specifically approved in writing by Owner's Representative and at no cost to Owner.
 - d. Follow manufacturer's instructions.
 - e. Use chloride free admixtures only.
3. Maximum total water soluble chloride ion content contributed from all ingredients of concrete including water, aggregates, cementitious materials and admixtures by weight percent of cement:
 - a. 0.10 all other concrete.
4. Do not use calcium chloride.
5. Pozzolanic admixtures: ASTM C618.
6. Provide admixtures of same type, manufacturer and quantity as used in establishing required concrete proportions in the mix design.

D. Water: Potable, clean, free of oils, acids and organic matter.

E. Aggregates:

1. Normal weight concrete: ASTM C33, except as modified below.
2. Fine aggregate:
 - a. Clean natural sand.
 - b. No manufactured or artificial sand.
3. Coarse aggregate:
 - a. Crushed rock, natural gravel, or other inert granular material.

- b. Maximum amount of clay or shale particles: 1 percent.
- 4. Gradation of coarse aggregate:
 - a. Lean concrete and concrete topping: Size #7.
 - b. All other concrete: Size #57 or #67.
- F. Concrete Grout:
 - 1. Nonshrink nonmetallic grout:
 - a. Nonmetallic, noncorrosive, nonstaining, premixed with only water to be added.
 - b. Grout to produce a positive but controlled expansion.
 - c. Mass expansion not to be created by gas liberation.
 - d. Minimum compressive strength of nonshrink grout at 28 days: 6500 psi.
 - e. In accordance with COE CRD-C621.
 - 2. Epoxy grout:
 - a. 3-component epoxy resin system.
 - 1) Two liquid epoxy components.
 - 2) One inert aggregate filler component.
 - b. Each component packaged separately for mixing at jobsite.
- G. Reinforcing Steel:
 - 1. Reinforcing bars: ASTM A615, Grade 60.
 - 2. Welded wire reinforcement: ASTM A185.
 - a. Minimum yield strength: 60,000 psi.
 - 3. Column spirals: ASTM A82.
- H. Forms:
 - 1. Prefabricated or job built.
 - 2. Wood forms:
 - a. New 5/8 or 3/4 IN 5-ply structural plywood of concrete form grade.
 - b. Built-in-place or prefabricated type panel.
 - c. 4 x 8 FT sheets for built-in-place type except where smaller pieces will cover entire area.
 - d. When approved, plywood may be reused.
 - 3. Metal forms:
 - a. Metal forms excluding aluminum may be used.

- b. Forms to be tight to prevent leakage, free of rust and straight without dents to provide members of uniform thickness.
- 4. Chamfer strips: Clear white pine, surface against concrete planed.
- 5. Form ties:
 - a. Removable end, permanently embedded body type with cones on outer ends not requiring auxiliary spreaders.
 - b. Cone diameter: 3/4 IN minimum to 1 IN maximum.
 - c. Embedded portion 1-1/2 IN minimum back from concrete face.
 - d. If not provided with threaded ends, constructed for breaking off ends without damage to concrete.
 - e. Provide ties with built-in waterstops at all walls that will be in contact with process liquid during plant operation.
- 6. Form release: Nonstaining and shall not prevent bonding of future finishes to concrete surface.
- I. Waterstops:
 - 1. Plastic: COE CRD-C572.
 - 2. Serrated with center bulb.
 - 3. Thickness: 3/8 IN.
 - 4. Length (general use): 6 IN unless indicated otherwise.
 - 5. Expansion joints:
 - a. Length: 9 IN.
 - b. Center bulb: 1 IN OD x 1/2 IN ID.
 - 6. Provide hog rings or grommets spaced at maximum 12 IN OC along the length of the water stop.
 - 7. Provide factory made waterstop fabrications at all changes of direction, intersections and transitions leaving only straight butt splices for the field.
- J. Chairs, Runners, Bolsters, Spacers, and Hangers:
 - 1. Stainless steel, epoxy coated, plastic, brick, or plastic coated metal.
 - a. Plastic coated: Rebar support tips in contact with the forms only.
- K. Chemical Floor Sealer:
 - 1. Colorless low VOC water-based solution containing acrylic copolymers.
 - a. ASTM C1315, Class B, minimum 30 percent solids.
 - 2. L&M Construction Chemicals Inc. Dress & Seal WB 30.
- L. Vapor Retarder:
 - 1. ASTM E1745, Class A, minimum 15 mil thickness.

2. Water vapor permeance: 0.03 maximum per ASTM E96.
3. Puncture resistance: ASTM D1709, Method B, 2200 grams.
4. Minimum tensile strength: 45 LBS/IN, ASTM D882.
5. Vapor retarder tape: As recommended by vapor retarder manufacturer.

M. Membrane Curing Compound:

1. ASTM C309, Type I-D.
2. Resin based, dissipates upon exposure to UV light.
3. Curing compound shall not prevent bonding of any future coverings, coatings or finishes.
4. Curing compounds used in water treatment plant construction to be nontoxic and taste and odor free.

N. Bonding Agent:

1. High solids acrylic latex base liquid for interior or exterior application as a bonding agent to improve adhesion and mechanical properties of concrete patching mortars.
2. Euclid Chemical Co. "Flex-Con."
3. BASF Admixtures, Inc. "Acryl-Set."
4. L&M Construction Chemicals "Everbond."
5. Thoro System Products "Acryl 60."

O. Expansion Joint Filler:

1. In contact with water or sewage:
 - a. Closed cell neoprene.
 - b. ASTM D1056, Class SC (oil resistant and medium swell) of 2 to 5 psi compression deflection (Grade SCE41).
2. Exterior driveways, curbs and sidewalks:
 - a. Asphalt expansion joint filler.
 - b. ASTM D994.
3. Other use:
 - a. Fiber expansion joint filler.
 - b. ASTM D1751.

2.3 CONCRETE MIXES

A. General:

1. All concrete to be ready mixed concrete conforming to ASTM C94.

2. Provide concrete of specified quality capable of being placed without segregation and, when cured, of developing all properties required.
3. All concrete to be normal weight concrete.

B. Strength:

1. Provide specified strength and type of concrete for each use in structure(s) as follows:

TYPE	WEIGHT	SPECIFIED STRENGTH*
Concrete fill	Normal weight	3000 psi
Lean concrete	Normal weight	3000 psi
Concrete topping	Normal weight	4000 psi
Precast concrete	Normal weight and lightweight	5000 psi
All other general use concrete	Normal weight	4000 psi

* Minimum 28-day compressive strength.

C. Air Entrainment:

1. Provide air entrainment in all concrete resulting in a total air content percent by volume as follows:

MAX AGGREGATE SIZE	TOTAL AIR CONTENT PERCENT
1 IN or 3/4 IN	5 to 7
1/2 IN	5 1/2 to 8

2. Air content to be measured in accordance with ASTM C231, ASTM C173, or ASTM C138.

D. Slump - 4 IN maximum, 1 IN minimum:

1. Measured at point of discharge of the concrete into the concrete construction member.
2. Concrete of lower than minimum slump may be used provided it can be properly placed and consolidated.
3. Pumped concrete:
 - a. Provide additional water at batch plant to allow for slump loss due to pumping.
 - b. Provide only enough additional water so that slump of concrete at discharge end of pump hose does not exceed maximum slump specified above.

4. Determine slump per ASTM C143.
- E. Selection of Proportions:
 1. General:
 - a. Proportion ingredients to:
 - 1) Produce proper workability, durability, strength, and other required properties.
 - 2) Prevent segregation and collection of excessive free water on surface.
 2. Minimum cement contents and maximum water cement ratios for concrete to be as follows:

SPECIFIED STRENGTH	MINIMUM CEMENT, LB/CY MAXIMUM AGGREGATE SIZE			MAXIMUM WATER CEMENT RATIO BY WEIGHT
	1/2 IN	3/4 IN	1 IN	
3000	---	517	517	0.45
4000	611	611	611	0.45
5000	---	686	665	0.40

3. Substitution of fly ash: Maximum of 25 percent by weight of cement at rate of 1 LB fly ash for 1 LB of cement.
4. Sand cement grout:
 - a. Three parts sand.
 - b. One part Portland cement.
 - c. Entrained air: Six percent plus or minus one percent.
 - d. Sufficient water for required workability.
 - e. Minimum 28-day compressive strength: 3,000 psi.
5. Pan stair fill:
 - a. Coarse aggregate: 100 percent passing a 1/2 IN sieve.
 - b. Proportions:
 - 1) 1 sack cement.
 - 2) 150 LBS coarse aggregate.
 - 3) 150 LBS fine aggregate (sand).
 - c. Adjust mix to obtain satisfactory finishing.
6. Normal weight concrete:
 - a. Proportion mixture to provide desired characteristics using one of methods described below:

- 1) Method 1 (Trial Mix): Per ACI 318, Chapter 5, except as modified herein.
 - a) Air content within range specified above.
 - b) Record and report temperature of trial mixes.
 - c) Proportion trial mixes per ACI 211.1.
 - 2) Method 2 (Field Experience): Per ACI 318, Chapter 5, except as modified herein:
 - a) Field test records must be acceptable to Owner's Representative to use this method.
 - b) Test records shall represent materials, proportions and conditions similar to those specified.
 7. Required average strength to exceed the specified 28-day compressive strength by the amount determined or calculated in accordance with the requirements of Paragraph 5.3 of ACI 318 using the standard deviation of the proposed concrete production facility as described in Paragraph 5.3.1 of ACI 318.
- F. Allowable Shrinkage: 0.048 percent per ASTM C157.

PART 3 - EXECUTION

3.1 FORMING AND PLACING CONCRETE

- A. Formwork:
1. Contractor is responsible for design and erection of formwork.
 2. Construct formwork so that concrete members and structures are of correct size, shape, alignment, elevation and position.
 - a. Allowable tolerances: As recommended in ACI 347R.
 3. Provide slabs and beams of minimum indicated depth when sloping foundation base slabs or elevated floor slabs to drains.
 - a. For slabs on grade, slope top of subgrade to provide floor slabs of minimum uniform indicated depth.
 - b. Do not place floor drains through beams.
 4. Openings: Provide openings in formwork to accommodate work of other trades.
 - a. Accurately place and securely support items built into forms.
 5. Chamfer strips: Place 3/4 IN chamfer strips in forms to produce 3/4 IN wide beveled edges on permanently exposed corners of members.
 6. Clean and adjust forms prior to concrete placement.

7. Tighten forms to prevent mortar leakage.
8. Coat form surfaces with form release agents prior to placing reinforcing bars in forms.

B. Reinforcement:

1. Position, support and secure reinforcement against displacement.
2. Locate and support with chairs, runners, bolsters, spacers and hangers, as required.
3. Set wire ties so ends do not touch forms and are directed into concrete, not toward exposed concrete surfaces.
4. Lap splice lengths: ACI 318 Class B top bar tension splices unless indicated otherwise on the Drawings.
5. Extend reinforcement to within 2 IN of concrete perimeter edges.
 - a. If perimeter edge is earth formed, extend reinforcement to within 3 IN of the edge.
6. Minimum concrete protective covering for reinforcement: As shown on Drawings.
7. Do not weld reinforcing bars.
8. Welded wire reinforcement:
 - a. Install welded wire reinforcement in maximum practical sizes.
 - b. Splice sides and ends with a splice lap length measured between outermost cross wires of each fabric sheet not less than:
 - 1) One spacing of cross wires plus 2 IN.
 - 2) 1.5 x development length.
 - 3) 6 IN.
 - c. Development length: ACI 318 basic development length for the specified fabric yield strength.
9. Provide at locations indicated.
10. Locate wall vertical construction joints at 30 FT maximum centers and wall horizontal construction joints at 10 FT maximum centers.
11. Locate construction joints in floor slabs and foundation base slabs so that concrete placements are approximately square and do not exceed 2500 SF.
12. Locate construction joints in columns and walls:
 - a. At the underside of beams, girders, haunches, drop panels, column capitals, and at floor panels.
 - b. Haunches, drop panels, and column capitals are considered part of the supported floor or roof and shall be placed monolithically therewith.

- c. Column based need not be placed monolithically with the floor below.
- 13. Locate construction joints in beams and girders:
 - a. At the middle of the span, unless a beam intersects a girder at that point.
 - b. If the middle of the span is at an intersection of a beam and girder, offset the joint in the girder a distance equal to twice the beam width.
 - c. Provide satisfactory means for transferring shear and other forces through the construction joint.
- 14. Locate construction joints in suspended slabs:
 - a. At or near the center of span in flat slab or T-beam construction.
 - b. Do not locate a joint between a slab and a concrete beam or girder unless so indicated on Drawings.
- 15. In pan-formed joists:
 - a. At or near span center when perpendicular to the joists.
 - b. Centered in the slab, midway between joists, when parallel to the joists.
- 16. Install construction joints perpendicular to main reinforcement with all reinforcement continued across construction joints.
- 17. At least 48 HRS shall elapse between placing of adjoining concrete construction.
- 18. Thoroughly clean and remove all laitance and loose and foreign particles from construction joints.
- 19. Before new concrete is placed, coat all construction joints with an approved bonding adhesive used and applied in accordance with manufacturer's instructions.
- C. Embedments:
 - 1. Set and build in anchorage devices and other embedded items required for other work that is attached to, or supported by concrete.
 - 2. Use setting diagrams, templates and instructions for locating and setting.
 - 3. Secure waterstops in correct position using hog rings or grommets spaced along the length of the waterstop and wire tie to adjacent reinforcing steel.
- D. Placing Concrete:
 - 1. Place concrete in compliance with ACI 304R and ACI 304.2R.
 - 2. Place in a continuous operation within planned joints or sections.
 - 3. Begin placement when work of other trades affecting concrete is completed.
 - 4. Place concrete by methods which prevent aggregate segregation.
 - 5. Do not allow concrete to free fall more than 4 FT.

6. Where free fall of concrete will exceed 4 FT, place concrete by means of tremie pipe or chute.
- E. Consolidation: Consolidate all concrete using mechanical vibrators supplemented with hand rodding and tamping, so that concrete is worked around reinforcement and embedded items into all parts of forms.
- F. Protection:
 1. Protect concrete from physical damage or reduced strength due to weather extremes.
 2. In cold weather comply with ACI 306R except as modified herein.
 - a. Do not place concrete on frozen ground or in contact with forms or reinforcing bars coated with frost, ice or snow.
 - b. Minimum concrete temperature at the time of mixing:

OUTDOOR TEMPERATURE AT PLACEMENT (IN SHADE)	CONCRETE TEMPERATURE AT MIXING
Below 30 DegF	70 DegF
Between 30-45 DegF	60 DegF
Above 45 DegF	50 DegF

- c. Do not place heated concrete that is warmer than 80 DegF.
 - d. If freezing temperatures are expected during curing, maintain the concrete temperature at or above 50 DegF for 7 days or 70 DegF for 3 days.
 - e. Do not allow concrete to cool suddenly.
 3. In hot weather comply with ACI 305R except as modified herein.
 - a. At air temperature of 95 DegF and above, keep concrete as cool as possible during placement and curing.
 - b. Do not allow concrete temperature to exceed 95 DegF at placement.
 - c. Prevent plastic shrinkage cracking due to rapid evaporation of moisture.
 - d. Do not place concrete when the actual or anticipated evaporation rate equals or exceeds 0.2 LBS/SF/HR as determined from ACI 305R, Figure 2.1.5.
- G. Curing:
 1. Begin curing concrete as soon as free water has disappeared from exposed surfaces.
 2. Cure concrete by use of moisture retaining cover, burlap kept continuously wet or by membrane curing compound.

3. Provide protection as required to prevent damage to concrete and to prevent moisture loss from concrete during curing period.
4. Provide curing for minimum of 7 days.
5. Form materials left in place may be considered as curing materials for surfaces in contact with the form materials except in periods of hot weather.
6. In hot weather follow curing procedures outlined in ACI 305R.
7. In cold weather follow curing procedures outlined in ACI 306R.
8. If forms are removed before 7 days have elapsed, finish curing of formed surfaces by one of above methods for the remainder of the curing period.
9. Curing vertical surfaces with a curing compound:
 - a. Cover vertical surfaces with a minimum of two coats of the curing compound.
 - b. Allow the preceding coat to completely dry prior to applying the next coat.
 - c. Apply the first coat of curing compound immediately after form removal.
 - d. Vertical surface at the time of receiving the first coat shall be damp with no free water on the surface.
 - e. A vertical surface is defined as any surface steeper than 1 vertical to 4 horizontal.

H. Form Removal:

1. Remove forms after concrete has hardened sufficiently to resist damage from removal operations or lack of support.
2. Where no reshoring is planned, leave forms and shoring used to support concrete until it has reached its specified 28-day compressive strength.
3. Where reshoring is planned, supporting formwork may be removed when concrete has sufficient strength to safely support its own weight and loads placed thereon.
 - a. While reshoring is underway, no superimposed loads shall be permitted on the new construction.
 - b. Place reshores as soon as practicable after stripping operations are complete but in no case later than the end of working day on which stripping occurs.
 - c. Tighten reshores to carry their required loads.
 - d. Leave reshores in place until concrete being supported has reached its specified 28-day compressive strength.

3.2 CONCRETE FINISHES

A. Tolerances:

1. Class A: 1/8 IN in 10 FT.

2. Class B: 1/4 IN in 10 FT.

B. Surfaces Exposed to View:

1. Provide a smooth finish for exposed concrete surfaces and surfaces that are:
 - a. To be covered with a coating or covering material applied directly to concrete.
 - b. Scheduled for grout cleaned finish.
2. Remove fins and projections, and patch voids, air pockets, and honeycomb areas with cement grout.
3. Fill tie holes with nonshrink nonmetallic grout.

C. Surfaces Not Exposed to View:

1. Patch voids, air pockets and honeycomb areas with cement grout.
2. Fill tie holes with nonshrink nonmetallic grout.

D. Grout Cleaned Finish:

1. Mix one part Portland cement and 1-1/2 parts fine sand with sufficient bonding agent/water mixture to produce a grout with the consistency of thick paint.
 - a. White Portland cement shall be substituted for gray Portland cement to produce a color that matches color of surrounding concrete as determined by trial patch for areas not to be painted.
2. Wet surface of concrete to prevent absorption of water by grout and uniformly apply grout with brushes or spray gun.
3. Immediately scrub the surface with a cork float or stone to coat and fill air bubbles and holes.
4. While grout is still plastic, remove all excess grout by working surface with rubber float, sack or other approved means.
5. After the surface whitens from drying, rub vigorously with clean burlap.
6. Keep final finish damp for a minimum of 36 HRS after final rubbing.

E. Slab Float Finish:

1. After concrete has been placed, consolidated, struck off, and leveled, do no further work until ready for floating.
2. Begin floating when water sheen has disappeared and surface has stiffened sufficiently to permit operation.
3. During or after first floating, check planeness of entire surface with a 10 FT straightedge applied at not less than two different angles.
4. Cut down all high spots and fill all low spots during this procedure to produce a surface within Class B tolerance throughout.

5. Refloat slab immediately to a uniform sandy texture.
- F. Troweled Finish:
 1. Float finish surface.
 2. Next power trowel, and finally hand trowel.
 3. Produce a smooth surface which is relatively free of defects with first hand troweling.
 4. Perform additional trowelings by hand after surface has hardened sufficiently.
 5. Final trowel when a ringing sound is produced as trowel is moved over surface.
 6. Thoroughly consolidate surface by hand troweling.
 7. Leave finished surface essentially free of trowel marks, uniform in texture and appearance and plane to a Class A tolerance.
 8. On surfaces intended to support floor coverings remove any defects of sufficient magnitude that would show through floor covering by grinding.
- G. Broom Finish: Immediately after concrete has received a float finish as specified, give it a transverse scored texture by drawing a broom across surface.
- H. Apply chemical floor hardener to permanently exposed interior concrete floor slab surfaces where indicated.
 1. Apply in accordance with manufacturer's instructions.

3.3 GROUT

- A. Preparation:
 1. Nonshrinking nonmetallic grout:
 - a. Clean concrete surface to receive grout.
 - b. Saturate concrete with water for 24 HRS prior to grouting.
 2. Rock anchors:
 - a. Clean rock anchors of all loose material.
 - b. Orient hook or bends in anchor bars to clear anchor bolts, reinforcements, and other embedments to be installed later.
 3. Epoxy grout: Apply only to clean, dry, sound surface.
- B. Application:
 1. Nonshrinking nonmetallic grout:
 - a. Mix in a mechanical mixer.
 - b. Use no more water than necessary to produce flowable grout.

- c. Place in accordance with manufacturer's instructions.
 - d. Completely fill all spaces and cavities below the bottom of baseplates.
 - e. Provide forms where baseplates and bedplates do not confine grout.
 - f. Where exposed to view, finish grout edges smooth.
 - g. Except where a slope is indicated on Drawings, finish edges flush at the baseplate, bedplate, member, or piece of equipment.
 - h. Protect against rapid moisture loss by covering with wet rags or polyethylene sheets.
 - i. Wet cure grout for seven (7) days, minimum.
2. Rock anchors:
- a. See Item 1 above.
 - b. If rodded:
 - 1) Fill each hole so that it overflows when anchor bar is inserted.
 - 2) Force anchor bars into place.
 - c. If pressure placed, set anchor bar before grouting.
 - d. Take special care to avoid any movement of anchors that have been placed.
3. Epoxy grout:
- a. Mix and place in accordance with manufacturer's instructions.
 - b. Completely fill all cavities and spaces around dowels and anchors without voids.
 - c. Obtain manufacturer's field technical assistance as required to ensure proper placement.

3.4 FIELD QUALITY CONTROL

- A. Owner will employ and pay for services of a concrete testing laboratory to perform testing of concrete placed during construction.
- 1. Contractor to cooperate with Owner in obtaining and testing samples.
- B. Tests During Construction:
- 1. Strength test - procedure:
 - a. Three cylinders, 6 IN DIA x 12 IN high, will be taken from each sample per ASTM C172 and ASTM C31.
 - b. Cylinders will be tested per ASTM C39:
 - 1) One at 7 days.
 - 2) Two at 28 days.
 - 2. Strength test - frequency:

- a. Not less than one test each day concrete placed.
 - b. Not less than one test for each 50 CY or major fraction thereof placed in one day.
 - c. Not less than one test for each type of concrete poured.
 - d. Not less than one test for each concrete structure exceeding 2 CY volume.
3. Slump test:
 - a. Per ASTM C143.
 - b. Determined for each strength test sample.
 - c. Additional slump tests may be taken.
 4. Air content:
 - a. Per ASTM C231, ASTM C173, and ASTM C138.
 - b. Determined for each strength test sample.
 5. Temperature: Determined for each strength test sample.
- C. Evaluation of Tests:
1. Strength test results:
 - a. Average of 28-day strength of two cylinders from each sample.
 - 1) If one cylinder manifests evidence of improper sampling, molding, handling, curing or testing, strength of remaining cylinder will be test result.
 - 2) If both cylinders show any of above defects, test will be discarded.
- D. Acceptance of Concrete:
1. Strength level of each type of concrete shall be considered satisfactory if both of the following requirements are met:
 - a. Average of all sets of three consecutive strength tests equals or exceeds the required specified 28-day compressive strength.
 - b. No individual strength test falls below the required specified 28-day compressive strength by more than 500 psi.
 2. If tests fail to indicate satisfactory strength level, perform additional tests and/or corrective measures as directed by Owner's Representative.
 - a. Perform additional tests and/or corrective measures at no additional cost to Owner.

3.5 SCHEDULES

- A. Form Types:
1. Surfaces exposed to view:

- a. Prefabricated or job-built wood forms.
 - b. Laid out in a regular and uniform pattern with long dimensions vertical and joints aligned.
 - c. Produce finished surfaces free from offsets, ridges, waves, and concave or convex areas.
 - d. Construct forms sufficiently tight to prevent leakage of mortar.
 2. Surfaces normally submerged or not normally exposed to view: Wood or steel forms sufficiently tight to prevent leakage of mortar.
 3. Other types of forms may be used:
 - a. For surfaces not restricted to plywood or lined forms.
 - b. As backing for form lining.
- B. Grout:
1. Nonshrinking nonmetallic grout: General use.
 2. Epoxy grout:
 - a. Grouting of dowels and anchor bolts into existing concrete.
 - b. Other uses indicated on Drawings.
 3. Sand cement grout: Keyways of precast members.
- C. Concrete:
1. Precast concrete: Where indicated on Drawings.
 2. Lean concrete: Where indicated on Drawings.
 3. Concrete fill: Where indicated on Drawings.
 4. Lightweight concrete: Where indicated on Drawings.
 5. Normal weight concrete: All concrete.
 6. Concrete pan fill: Stair and landings where indicated on Drawings.
 7. General use concrete: All other locations.
- D. Concrete Finishes:
1. Grout cleaned finish: Where indicated on Drawings.
 2. Slab finishes:
 - a. Use following finishes as applicable, unless otherwise indicated:
 - 1) Floated finish: Surfaces intended to receive roofing, concrete topping, lean concrete, concrete fill and waterproofing.
 - 2) Troweled finish: Interior floor slabs, exposed roof slabs and base slabs of structures, equipment bases, and column bases.
 - 3) Broom finish: Sidewalks, docks, concrete stairs, and ramps.

3.6 OWNER TRAINING (NOT USED)

END OF SECTION

SECTION 31 11 00
CLEARING AND GRUBBING

Part 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Clearing and Grubbing
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
 - 2. Division 01 – General Requirements.

1.2 MEASUREMENT AND PAYMENT

- A. Payment
 - 1. Payment for the work specified will be made at the lump sum price bid for “Clearing and Grubbing”, which payment shall constitute full compensation for labor, equipment, tools, and incidentals necessary to complete the specified work, including pruning and refilling of depressions. No payment will be made for clearing and grubbing in the borrow or waste disposal areas, and all costs thereof shall be included in the appropriate bid price of the type of work involved.
 - 2. The amount bid for “Clearing and Grubbing” shall not exceed 1 percent of the total amount bid, exclusive of “Mobilization” and “Clearing and Grubbing.”

1.3 WORK INCLUDED

- A. Provide labor, materials, equipment and incidentals necessary to perform operations in connection with clearing, grubbing, and disposal of cleared and grubbed materials.

1.4 QUALITY ASSURANCE; DEFINITIONS

- A. Clearing: Clearing is defined as the removal of trees, shrubs, bushes, and other organic matter at or above original ground level.
- B. Grubbing: Grubbing is defined as the removal of stumps, roots, boards, logs, and other organic matter found at or below ground level.

1.5 WARRANTY (NOT USED)

Part 2 - PRODUCTS (NOT USED)

Part 3 - EXECUTION

3.1 PREPARATION

- A. Mark and stake areas to be cleared and grubbed (includes tree pruning) prior to commencing clearing operations. The Owner's Representative shall approve clearing and grubbing limits prior to commencement of clearing operations.
 - 1. Pruning of any trees must be performed with proper tree cutting tools and equipment. No separate payment will be made for pruning of trees, costs shall be included with the clearing and grubbing pay item.
- B. Trees and shrubs outside of the clearing limits, which are within 10 feet of the clearing limits, shall be clearly marked to avoid damage during clearing and grubbing operations.
- C. Remove trees and brush outside the clearing limits, but within the immediate vicinity of the work, upon receipt of approval by the Owner's Representative, when the trees or brush interfere with the progress of construction operations.
- D. Clearly mark trees and shrubs within the clearing limits, which are to remain, and protect the trees and shrubs from damage during the clearing and grubbing operations.
- E. The clearing limits shall not extend beyond the project limits.
- F. Establish the clearing limits as follows:
 - 1. Embankments plus 10 feet beyond the toe of the embankment.
 - 2. Excavations plus 5 feet beyond the top of the excavation.
 - 3. Concrete structures plus 10 feet beyond the edge of the footing.
 - 4. Roadways, runways, taxiways, and parking areas plus 5 feet beyond the edge of pavement or R.O.W. limits.
 - 5. Retaining walls plus 10 feet beyond the edge of the footing.
 - 6. Railroads plus 10 feet beyond the edge of the subgrade.
 - 7. Underground utility trench top width plus 8 feet.
 - 8. Coordinate with electric power provider for appropriate clearance width in feet along the centerline of the overhead utility lines.
- G. Establish the grubbing limits as follows:
 - 1. Embankments plus 2 feet beyond the toe of the embankment.
 - 2. Concrete structures plus 2 feet beyond the edge of the footing.
 - 3. Roadways, runways, taxiways, and parking areas plus 1 foot beyond the edge of pavement.
 - 4. Retaining walls plus 2 feet beyond the edge of the footing.
 - 5. Railroads plus 2 feet beyond the edge of the subgrade.

3.2 INSTALLATION

- A. Clearing: Clearing shall consist of the felling, cutting up, pruning, and the satisfactory disposal of trees and other vegetation, together with the down timber, snags, brush, rubbish, fences, and debris occurring within the area to be cleared.
- B. Grubbing:
 - 1. Grubbing shall consist of the removal and disposal of stumps and roots larger than 1 inch in diameter.
 - 2. Extend grubbing to the depth indicated below: In the case of multiple construction items, the greater depth shall apply.
 - a. Footings: 18 inches below the bottom of the footing.
 - b. Walks: 12 inches below the bottom of the walk.
 - c. Roads and Taxiways: 18 inches below the bottom of the subgrade.
 - d. Parking Areas: 12 inches below the bottom of the subgrade.
 - e. Runways: 24 inches below the bottom of the subgrade.
 - f. Embankments: 24 inches below existing ground.
 - g. Railroads: 24 inches below the bottom of the subgrade.
 - h. Concrete Structures: 18 inches below the bottom of the concrete.
 - i. Retaining Walls: 18 inches below the bottom of the footing.

3.3 FIELD QUALITY CONTROL

- A. Completely remove timber, logs, roots, brush, rotten wood, and other refuse from the Owner's property. Disposal of materials in streams shall not be permitted and no materials shall be piled in stream channels or in areas where it might be washed away by floods. Timber within the area to be cleared shall become the property of the Contractor, and the Contractor may cut, trim, hew, saw, or otherwise dress felled timber within the limits of the Owner's property, provided timber and waste material is disposed of in a satisfactory manner. Materials shall be removed from the site daily, unless permission is granted by the Engineer to store the materials for longer periods.

3.4 OWNER TRAINING (NOT USED)

END OF SECTION

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SECTION 31 21 33

TRENCHING, BACKFILLING, AND COMPACTING FOR UTILITIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Excavation, trenching, backfilling and compacting for all underground utilities.
2. Specification Section is applicable to sanitary sewer gravity main and manhole structure.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
2. Division 01 – General Requirements.
3. Section 33 05 16 – Precast Concrete Manhole Structures.

1.2 MEASUREMENT AND PAYMENT

A. Unit Price. No separate payment will be made for this item. Include the cost for installed underground piping, sewer, conduit or ductwork. Payment will only be made for wet condition bedding as described below.

B. Measurement and payment for wet condition bedding for manhole construction or point repair will be made per each.

1. Wet condition bedding for manholes or point repairs shall be utilized for installation of the manhole or point repairs in water bearing silts and sand where mechanical dewatering does not provide a firm and stable bottom and the subgrade is unstable.
2. It is the Contractor's responsibility to notify the Engineer if such conditions existing which may require wet condition bedding to obtain Engineer's concurrence prior to utilizing this item.
3. This bid item includes all work necessary to install the wet condition bedding including all filter fabrics and other materials as shown on the drawings.

C. No additional payment will be made for performing Critical Location exploratory excavation. Include cost in unit price for installed underground piping, sewer, conduit, or duct work.

1.3 QUALITY ASSURANCE

A. Referenced Standards:

1. ASTM International (ASTM):
 - a. C33 – Standard Specification for Concrete Aggregates.

- b. C40 – Standard Test Method for Organic Impurities in Fine Aggregates for Concrete.
 - c. C94 – Standard Specification for Ready-Mixed Concrete.
 - d. C123 – Standard Test Method for Lightweight Particles in Aggregate.
 - e. C131 – Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - f. C136 – Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - g. C142 – Standard Test Method for Clay Lumps and Friable Particles in Aggregates.
 - h. D558 – Standard Test Methods for Moisture-Density (Unit Weight) Relations of Soil-Cement Mixtures.
 - i. D698 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
 - j. D1140 – Standard Test Methods for Amount of Material in Soils Finer than No. 200 Sieve.
 - k. D1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
 - l. D2321 – Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
 - m. D2487 – Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
 - n. D2922 – Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
 - o. D4253 – Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.
 - p. D4254 – Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.
 - q. D4318 – Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
2. Texas Department of Transportation (TxDOT):
- a. Tex-101-E – Preparing Soil and Flexible Base Materials for Testing.
 - b. Tex-110-E – Particle Size Analysis of Soils.
 - c. Tex-460-A – Determining Crushed Face Particle Count.
3. Occupational Safety and Health Administration (OSHA):

- a. Federal Regulations – 29 CFR Part 1926,
- 4. AWWA Standards – Excavation:
 - a. AWWA M9 – Concrete Pressure Pipe
 - b. AWWA M11 – Steel Water Pipe
- B. Qualifications:
 - 1. Testing and analysis of backfill materials for soil classification and compaction during construction will be performed by an independent laboratory provided by the Owner.
 - 2. Contractor shall provide licensed professional engineer licensed in Texas for design of trench shoring systems or other trench safety plans.

1.4 DEFINITIONS

- A. Classification of Excavation: Excavation shall be "unclassified" and involves the removing of the necessary materials to provide the trench to the required width and depth. The Contractor, prior to submitting a proposal, must satisfy himself as to the actual subsurface conditions. No extra or separate payments shall be made for rock, dewatering, or any other condition.

1.5 SUBMITTALS

- A. Shop Drawings:
 - 1. See Specification Section 01 33 00 – Submittals for requirements for the mechanics and administration of the submittal process.
 - 2. Submit planned typical method of excavation, backfill placement and compaction including:
 - a. Trench widths.
 - b. Procedures for foundation and pipe zone bedding placement, and trench backfill compaction
 - c. Procedures for assuring compaction against undisturbed soil when pre-manufactured trench safety systems are proposed.
 - 3. Submit respective pipe or conduit manufacturer's data regarding bedding methods of installation and general recommendations.
 - 4. Submit backfill material sources and product quality information in accordance with requirements of this section.
 - 5. Submit sieve analysis reports on all granular materials.
 - 6. Certified Test Reports for embedment material, coarse gravel, and flexbase. Certified Test Reports shall be from an independent laboratory. Test reports shall include sieve analysis, Atterburg limits, and results of an Abrasion test.

B. Miscellaneous Submittals:

1. See Specification Section 01 33 00 – Submittals for requirements for the mechanics and administration of the submittal process.
2. 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.
3. Submit 11-inch by 17-inch copy of Drawing with plotted utility or obstruction location titled Critical Location Report to Owner's Representative as described in 1.6.D.1. Drawing shall be signed and sealed by R.P.L.S.
4. Submit trench excavation safety program.
5. Submit trench shield (trench box) certification if employed:
 - a. Specific to Project conditions.
 - b. Re-certified if members become distressed.
 - c. Certification by licensed professional structural engineer, licensed in the State of Texas
 - d. Owner's Representative and Owner are not responsible to, and will not, review and approve.

1.6 PROJECT CONDITIONS

- A. Avoid overloading or surcharge a sufficient distance back from edge of excavation to prevent slides or caving.
 1. Maintain and trim excavated materials in such manner to be as little inconvenience as possible to public and adjoining property owners.
- B. Provide full access to public and private premises and fire hydrants, at street crossings, sidewalks and other points as designated by Owner's Representative to prevent serious interruption of travel.
- C. Protect and maintain bench marks, monuments or other established points and reference points and if disturbed or destroyed, replace items to full satisfaction of Owner's Representative and controlling agency.
- D. Protection of Existing Structures and Utilities
 1. The Contractor shall advise the Owner's Representative of any existing utilities that are not shown on the Drawings, or are shown incorrectly, that affect the pipe layout. Contractor shall also propose a resolution to the utility conflict for the Owner's Representative's review. The Owner's Representative will determine whether the utility will be relocated or the proposed pipe location revised.
 2. Utilities that affect the pipe layout will be interpreted by the Owner's Representative as follows:

- a. Utilities that conflict with the grade of the proposed pipe will be interpreted as affecting the pipe layout.
- b. Utilities that conflict with the operations and maintenance of the proposed pipe will be interpreted as affecting the pipe layout.
- E. Where excavation endangers adjacent structures and utilities, the Contractor shall, at his own expense, carefully support and protect such structures and/or utilities so that there shall be no damage. In the case where the structure cannot be protected and must be temporarily or permanently relocated, Contractor will be compensated for actual cost only once approved by the Owner's Representative.
- F. If in the opinion of the Owner's Representative, concrete backfill is necessary for the support of utility lines crossing trenches, the Owner's Representative may direct 2000 psi concrete backfill to be used. Payment shall be made to the Contractor at the unit price bid for the installation of such quantity of the concrete backfill as directed by the Owner's Representative.

1.7 WARRANTY (NOT USED)

PART 2 - PRODUCTS

2.1 MATERIAL CLASSIFICATIONS

- A. Classify materials for backfill for purpose of quality control in accordance with 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 2.01B, or by product descriptions, as given in Paragraph 2.02.
- 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: non-plastic.
 - b. Gradation: D_{60}/D_{10} - 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 (GM, GP, SP, SM):
 - a. Plasticity index: non-plastic 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.
- 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 more restrictive class.

2.2 MATERIALS

- 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.
 - 1. These soils may be used for site grading and restoration in unimproved areas as approved by the Owner's representative.
 - 2. Soils in Class IVB, fat clay (CH) may only be used as backfill materials outside of roadways and where otherwise allowed by this Specification Section.
- B. Provide backfill material that is free of stones greater than 2 IN, 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 C142.

2. Lightweight pieces: Less than 5 percent when tested in accordance with ASTM C123.
 3. Organic impurities: No color darker than standard color when tested in accordance with ASTM C40.
 4. Clay Clods: Less than 4 inches in least dimension.
 5. In no case will the above materials be permitted in the pipe zone.
- 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 Owner's representative, provided that the physical property criteria are determined to be satisfactory by testing.
- D. Bank Run Sand: Durable bank run sand classified as SP, or SW by the Unified Soil Classification System (ASTM D2487) meeting the following requirements:
1. Less than 15 percent passing the number 200 sieve when tested in accordance with ASTM D 1140.
 - a. 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 D4318:
 - 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 C33 and graded within the following limits when tested in accordance with ASTM C136:

Sieve	Percent Passing
3/8 IN	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 C33 for course aggregates specified for number 8 size and graded within the following limits when tested in accordance with ASTM C136:

Sieve	Percent Passing
3/8 IN	95 to 100
No. 4	60 to 80
No. 8	15 to 40

- G. Pea Gravel: Durable particles composed of angular gravels and graded within the following limits when tested in accordance with ASTM C136:

Sieve	Percent Passing
1/2 IN	100
3/8 IN	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 wear not exceeding 45 percent when tested in accordance with ASTM C131.
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 TxDOT Tex-460-A, Part I.
5. Crushed stone:
 - a. Produced from oversize plant processed stone or gravel, sized by crushing to predominantly angular particles from a naturally occurring single source.
 - b. Uncrushed gravel are not acceptable materials for embedment where crushed stone is shown on the applicable utility embedment drawing details.
 - c. Where coarse gravel is required for water drainage, restoration of trench foundation, or other uses, it shall be crushed stone in compliance with ASTM C33 for Coarse Concrete Aggregate. Gradation shall be ASTM C33 No. 57, No. 67, or as follows:

Sieve Size Sq. Openings	Amount Passing Percent by Weight
1"	95-100
3/4"	55-85
1/2"	25-50
No. 4	0-5

6. Crushed Concrete:

- a. The Owner's Representative will make a determination as to whether crushed concrete can be allowed and what the acceptable gradation is.
- b. Gradation and quality control test requirements are the same as crushed stone.
- c. 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 TxDOT Tex-110-E.

Sieve	Percent Passing by Weight for Pipe Embedment by Ranges of Nominal Pipes Sizes		
	>15 IN	15 IN - 8 IN	<8 IN
1 IN	95 - 100	100	-
3/4 IN	60 - 90	90 - 100	100
1/2 IN	25 - 60	-	90 - 100
3/8 IN	-	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 to meet plasticity criteria.
- J. Native Backfill: Any suitable soil or mixture of soils initially excavated during trench excavation, meeting the requirements of section 2.2 B of this Specification, and within Classes I, II, III and IV; or fat clay (CH) where allowed by this Specification Section.
- K. Cement Stabilized Sand:
 1. Sand-cement mixture shall produce a minimum unconfined compressive strength of at least 100 pounds per square inch in 48 hours and contain not less than 2.0 sacks of cement per ton of dry sand.
 - a. Design will be based on strength specimens molded in accordance with ASTM D558 at a moisture content within 2 percent of optimum and within 4 hours of batching.
 - b. Determine minimum cement content from production data and statistical history.

- c. Granular material to be used as cement stabilized sand should be well graded and have the grain size characteristics as listed below:

Sieve	Percent Passing
No. 4	55 to 100
No. 10	37 to 100
No. 40	24 to 100
No. 200	10 to 20

2. Cement: Type I Portland cement conforming to ASTM C150.
3. Sand: Clean, durable sand meeting grading requirements for fine aggregates of ASTM C33, or requirements for Bank Run Sand of this Specification Section and the following requirements:
 - a. Classified as SW, SP, SW-SM, SP-SM, or SM by the United Soil Classification System of ASTM D2487.
 - b. Deleterious materials:
 - 1) Clay lumps, ASTM C142; less than 0.5 percent.
 - 2) Lightweight pieces, ASTM C123; less than 5.0 percent.
 - 3) Organic impurities, ASTM C40, color no darker than the standard color.
 - c. Plasticity index of 4 or less when tested in accordance with ASTM D4318.
 - 1) Water: Potable water, free of oils, acids, alkalies, organic matter, or other deleterious substances, meeting requirements of ASTM C94.
- L. Concrete Backfill: Conform to Class B concrete as specified in Division 03 – Concrete.
- M. Granular Embedment Material: Granular embedment material may be pea gravel or bank run sand as defined in sections 2.2 G and 2.2 D, respectively. Additionally, granular embedment material shall be free from large stones, clay, and organic material. Granular embedment material shall be a soil classification of GW, GP, SW, or SP as determined by ASTM D2487. The granular embedment material shall be such that when wet, the fine material shall not form mud or muck. The granular embedment material shall be composed of angular, tough durable particles, free from thin, flat and elongated pieces, of suitable quality to insure permanence in the trench and have a percentage of wear of not more than 40 percent when tested in accordance with ASTM C131 or ASTM C535. The P.I. of the fines shall not exceed 3. Light weight aggregate is not acceptable for granular embedment. Material used for granular embedment shall have a resistivity of not less than 5000 ohms/cm as measured by ASTM G57.
- N. Well-graded Crushed Stone Bedding Material:
 1. ASTM C33, gradation 67 (3/4 IN to No. 4 sieve) defined below:

Sieve	Percent
1"	100
3/4"	90 to 100
3/8"	20 to 55
No. 4	0 to 10

O. Lime Stabilized Clay Backfill.

1. Clayey material hydrated lime or quicklime to achieve a pH of 12.4 and a plasticity index (PI) of less than 20 in accordance with ASTM D 4318.
2. The optimum lime content to be determined by lime optimization curve using specific soil sample and proposed lime additive.

P. Flowable fill: Provide Flowable Fill in accordance with Specification Section 03 31 31 – Concrete Mixing, Placing, Jointing, and Curing as required.

PART 3 - EXECUTION

3.1 GENERAL

- A. Remove and dispose of unsuitable materials as directed by Owner's Representative to site provided by Contractor.
- B. Establish traffic control when working within the public right of way per applicable specifications. Maintain barricades and warning lights for streets and intersections affected by Work, and are considered hazardous to traffic movements.
- C. Perform work to conform to applicable safety standards and regulations. Employ trench safety system as designed by the Contractor's engineer licensed in the State of Texas.
- D. Immediately notify agency or company owning any existing utility line which is damaged, broken or disturbed. Obtain approval from Owner's Representative and agency for any repairs or relocations, either temporary or permanent.
- E. Maintain permanent benchmarks, monumentation and other reference points. Unless otherwise directed in writing, replace those which are damaged or destroyed.
- F. Limit pavement removal to less than five pipe laying days in advance of pipe laying.

3.2 EXCAVATION

- A. Unclassified Excavation: Remove rock excavation, clay, silt, sand, gravel, hard pan, loose shale, and loose stone to required lines and grades, or as directed by Owner's Representative.
- B. Upon discovery of unknown utilities, badly deteriorated utilities not designated for removal, or concealed conditions, discontinue work at that location. Notify Owner's Representative and obtain instructions before proceeding.

C. Excavation for Appurtenances:

1. 12 IN (minimum) clear distance between outer surface and embankment.
2. See Specification Section 33 05 16 – Precast Concrete Manhole Structures for applicable requirements.

D. Groundwater Dewatering:

1. Where groundwater is, or is expected to be, encountered during excavation, install a dewatering system to prevent softening and disturbance of subgrade, to allow pipe, bedding, embedment, and backfill material to be placed in a dry, stable trench.
2. Groundwater shall be drawn down and maintained at least 1 FT below the bottom of any trench or manhole excavation prior to excavation.
3. Review soils investigation before beginning excavation and determine where groundwater is likely to be encountered during excavation.
 - a. Employ dewatering specialist for selecting and operating dewatering system.
4. Keep dewatering system in operation until dead load of pipe, structure and backfill exceeds possible buoyant uplift force on pipe or structure.
5. Dispose of groundwater to an area which will not interfere with construction operations or damage existing construction.
6. Install groundwater monitoring wells as necessary.
7. Shut off dewatering system at such a rate to prevent a quick upsurge of water that might weaken the subgrade.
8. No additional payment for groundwater dewatering.

E. Critical Location Investigation

1. Prior to manufacturing pipe, the contractor shall properly locate and identify all existing utilities in proximity to the sanitary sewer gravity main. The contractor shall confirm utilities using vacuum excavation or other suitable excavation method and provide a submittal to the Owner with their findings and proof of completion.
2. Horizontal and vertical location of various underground lines shown on Drawings, including but not limited to water lines, gas lines, storm sewers, sanitary sewers, telecommunication lines, electric lines or power ducts, pipelines, concrete and debris, are based on best information available but are only approximate locations. Unless otherwise approved by Owner's Representative, at Critical Locations shown on Drawings, perform vacuum excavation to field verify horizontal and vertical locations of such lines within zone of 2 feet vertically and 4 feet horizontally of proposed work.

- a. Verify location of existing utilities prior to manufacturing pipe and prior to beginning installation pit. Use extreme caution and care when uncovering utilities designated by Critical Locate.
- b. Notify Owner's Representative in writing immediately upon identification of obstruction. In event of failure to identify obstruction in minimum of 7 days, Contractor will not be entitled to extra cost for downtime including, but not limited to, payroll, equipment, overhead, demobilization and remobilization, until 7 days has passed from time Owner's Representative is notified of obstruction.
3. Notify involved utility companies of date and time that investigation excavation will occur and request that their respective utility lines be marked in field. Comply with utility or pipeline company requirements that their representative be present during excavation. Provide Owner's Representative with 48 hours notice prior to field excavation or related work.
4. Survey vertical and horizontal locations of obstructions relative to project baseline and datum and plot on 12 inch by 18 inch copy of Drawings.

F. Protection

1. Protect trees, shrubs, lawns, existing structures, and other permanent objects outside of grading limits and within grading limits as designated on Drawings, and in accordance with requirements of Section 01 56 39 – Temporary Tree and Plant Protection.
2. Protect and support above-grade and below-grade utilities which are to remain.
3. Restore damaged permanent facilities to pre-construction conditions unless replacement or abandonment of facilities is indicated on Drawings.
4. 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 Owner.

G. Trench Excavation:

1. Excavate trenches by open cut method to depth shown on Drawings and necessary to accommodate work.
 - a. Support existing utility lines where proposed work crosses at a lower elevation.
 - 1) Stabilize excavation to prevent undermining of existing utility.
2. Any trench or portion of trench, which is opened and remains idle for seven (7) calendar days, or longer, as determined by the Owner's Representative, may be directed to be immediately refilled, without completion of work, at no additional cost to Owner.

- a. Said trench may not be reopened until Owner's Representative is satisfied that work associated with trench will be prosecuted with dispatch.

H. Pipe Trench:

1. The "pipe zone" shall be defined as the zone from 12 inches below the bottom of the pipe to 12 inches above the top of the pipe, unless otherwise noted on Drawings.
2. The trench walls in the pipe zone shall be vertical. Trench widths shall be as shown on the Drawings.
3. Trench walls above the pipe zone may be laid back or benched where room permits as necessary to meet the requirements of OSHA.
4. For semi-rigid pipe or flexible pipe (including AWWA C200 steel pipe, AWWA C303 bar-wrapped concrete cylinder pipe, PVC, Ductile Iron, and other pipe materials as listed in appropriate specifications), where the character of the trench walls is loose, unstable, saturated soft clays, quicksand or otherwise unable to provide adequate side support to maintain the required pipe deflection, the Contractor shall modify the backfill to keep the pipe within the limits of the specified pipe deflection.
 - a. Contractor shall widen the trench excavation to accommodate modified backfill procedure.
 - b. Contractor shall protect exterior pipe coating, and shall repair any damage caused by backfilling.
 - c. Concrete encasement, soil cement, flowable fill or some other method approved by the Owner's Representative may be used in lieu of this procedure.

I. Pipe Foundation:

1. Excavate the trench to an even grade so that the full length of the pipe barrel is supported and joints make up properly. Excavate the trench to the line and grade indicated and as directed by the Owner's Representative. Grades shall be uniform between high points and low points to eliminate intermediate "highs and lows."
2. The trench shall be "rough cut" a minimum of 12 inches below the bottom of the pipe, unless otherwise noted on drawings. The "rough cut" dimension shall be increased as necessary to provide a minimum clearance of 2 inches from the bottom of the trench to the bottom of the bells, flanges, valves, fittings, etc.

3. The entire foundation area in the bottom of all excavations shall be firm, stable material. Loose material shall be removed, leaving a clean, flat trench bottom, and material shall not be disturbed below required sub grade except as hereinafter described. If the subgrade is soft, spongy, disintegrated, or where the character of the foundation materials is such that a proper foundation cannot be obtained at the elevation specified, then when directed by the Owner's Representative the Contractor shall deepen the excavation to a depth where a satisfactory foundation can be obtained. The subgrade shall then be brought back to the required grade with the well-graded crushed stone bedding materials and construction methods specified in section 3.3 and 3.4 of this specification. Payment for additional excavation and backfill shall be made at the unit price bid in the Proposal.
4. Remove soft, loose or spongy foundation soil caused by Contractor failure to dewater, rainfall, or Contractor operations. Replace with well-graded crushed stone bedding material, as noted above, with no additional compensation.
5. If over excavation does not yield satisfactory foundation conditions, then construct the foundation in accordance with section 3.3 J. of this specification.

J. Correcting Faulty Grade:

1. If the trench is excavated to a faulty grade (at a lower elevation than indicated), correct the faulty grade as specified below:
 - a. In uniform, stable dry soils, correct the faulty grade with embedment material thoroughly compacted, as defined in sections 3.3 and 3.4 of this specification.
 - b. In soft spongy disintegrated soils or where necessary to allow proper drainage, correct the faulty grade using well-graded crushed stone bedding in accordance with section 3.3 J. of this specification.
 - c. Maximum allowable loose lift thickness for embedment or well-graded crushed stone bedding material shall be 8 inches.

K. Pipe Clearance in Rock: Remove ledge rock, rock fragments, or unyielding shale or marl to provide a clearance of at least 12 inches below the parts of the pipe, valves or fittings. Provide adequate clearance for properly jointing pipe laid in rock trenches at bell holes. Refill the excavation to grade with embedment material.

L. Blasting Procedure: Blasting shall not be allowed.

M. Bell Holes Required:

1. Bell holes of ample dimension shall be dug in trenches at each joint of pipe to permit the jointing to be made properly, visually inspected, and so that the pipe will rest on the full length of the barrel.

2. Pipe with field-applied exterior coatings shall have the joints excavated to sufficient depth to allow proper cleaning, application, testing and inspection of the field-applied coating system.
- N. Care of Surface Material for Reuse: Surface materials such as topsoil in its natural state, suitable for reuse in restoring the excavated surface, shall be kept separate from the general excavation material. The top 12 inches of the trench backfill shall be considered topsoil. Save the topsoil to be used as backfill of the top 12 inches of the trench after pipe laying.
- O. Manner of Piling Excavated Material: Place excavated material so that Work is not endangered or interferes with public traffic, or the stability of excavations and open trenches. Do not place excavated material over buried pipelines or existing utilities unless adequate provisions are made to protect those pipelines and/or utilities. Roads and driveways must be kept open in every case. Keep drainage channels clear of obstructions or make other satisfactory provisions for drainage.
- P. Trenching by Machine or by Hand: The use of trench digging machinery is approved except in places where operations of same will cause damage to existing structures above or below ground, in which case employ hand methods.

3.3 BACKFILLING OF TRENCHES OUTSIDE ROADWAYS

- A. General: This Section is intended to cover the requirements for trench backfill where trench is in open fields, unimproved alleys, fields, and other similar open areas, except public and private roadways.
- B. Time of Backfilling: Backfill operations shall immediately follow pipe jointing, joint coating application, and curing.
- C. Braced and Sheeted Trenches: Remove sheeting and shoring as backfilling operations progress. Incorporate methods so that a good bond is obtained between the backfill material and the undisturbed trench walls.
- D. Protection of Pipe during Backfilling Operations: Take the necessary precautions to protect the pipe during backfilling operations. Take care to prevent damage to the pipe or to the pipe coating, and repair any damaged pipe before being "covered up". Backfill the trench to prevent the deformation or otherwise deflection of the cylindrical shape of the pipe by more than the allowable pipe deflection as specified elsewhere. Use methods such as stulling or ellipsing as necessary.
- E. Site and Preparation: In addition to clearing and grubbing of brush and trees along the right of way for this Project, alteration to the topography shall be done if indicated on the Drawings, at the locations and to the extent shown.
- F. Compaction: All compaction shall be in accordance with specification 3.6 of this specification. See specification section 3.6 for density and testing requirements.

G. Backfill Procedure for sanitary sewer gravity main:

1. Embedment material for sanitary sewer shall granular embedment material as specified in section 2.2 N. Place the first lift of granular embedment material (bedding layer) to a depth slightly above the bottom of pipe grade and compact. Lay pipe on this material to the indicated grade. Provide bell holes to permit the pipe to rest on the full length of the barrel and to permit joint make-up.
2. Place subsequent lifts of granular embedment uniformly on both sides of the pipe to a depth of 12 inches above the pipe. Compact using low ground pressure vibration or mechanical tamping in 6 to 8 inch loose lifts. Contractor shall take precautions to ensure no voids occur under the haunches of the pipe and to prevent disturbance of the pipe alignment. The Contractor shall be responsible for any damage that may occur to the pipe.
3. Backfill above pipe zone:
 - a. Under unimproved areas: After placement and compaction of the granular embedment, place native backfill in the trench for the full width of the trench to the top of the trench. Consolidate this material by mechanical compaction in 6 to 8 inch loose lifts. The Contractor shall be responsible for any damage that may occur to the pipe.
 - b. Under proposed paving: After placement and compaction of the granular embedment, deposit native backfill in the trench for the full width of the trench to within 3 feet of pavement subgrade then place lime stabilized clay or cement stabilized sand or Owner approved select backfill to immediately below pavement subgrade. Consolidate this material by mechanical compaction in 6 to 8 inch loose lifts. The Contractor shall be responsible for any damage that may occur to the pipe.

H. Backfill Procedure for Storm and Sanitary Lines:

1. Embedment material for storm and sanitary sewer lines shall cement stabilized sand as defined in section 2.2 K. Place the first lift of cement stabilized sand to the bottom of pipe grade and compact. Lay pipe on this material to the indicated grade. Provide bell holes to permit the pipe to rest on the full length of the barrel and to permit joint make-up.
2. Place subsequent lifts of cement stabilized sand uniformly on both sides of the pipe to 12 inches above the top of the pipe. Compact using low ground pressure vibration or mechanical tamping in 6 to 8 inch loose lifts. Contractor shall take precautions to ensure no voids occur under the haunches of the pipe and to prevent disturbance of the pipe alignment.
3. Backfill above pipe zone:
 - a. Under unimproved areas: Place the native material above the pipe zone in lifts not exceeding 8 inches loose depth. Mechanical compaction shall be utilized. The Contractor shall be responsible for any damage that may occur to the pipe.

- b. Under proposed paving: Continue placement and compaction of the cement stabilized sand in the trench for the full width above. Consolidate this material by mechanical compaction in 6 to 8 inch loose lifts. The Contractor shall be responsible for any damage that may occur to the pipe.

I. Surface Material Replacement:

- 1. The top 12 inches of the trench backfill shall be composed of the original surface material or topsoil excavated from the trench. Place the topsoil over the consolidated trench backfill material and neatly round over the trench to a sufficient height to allow settlement to grade after consolidation. Grade the surface to allow drainage in the same manner as existed prior to construction.
- 2. Top soil shall not contain rocks or clods larger than those adjacent to the trench in the undisturbed condition.

J. Backfill in Wet Conditions:

- 1. If wet conditions are encountered, backfill utilities lines in accordance with details provided in the Drawings for wet trench construction.

K. Flowable Fill:

- 1. Backfill the pipe trench with flowable fill to 12 inches above the top of the pipe. Pipe shall be blocked up on soil pads to allow a minimum of 6 inches of flowable fill below the pipe.
- 2. Discharge from a mixer by any means acceptable to the Owner's representative into the area to be filled.
- 3. Place in 4 FT maximum lifts to the elevations indicated.
 - a. Allow 12 HR set-up time before placing next lift or as approved by the Owner's representative.
 - b. Place flowable fill lifts in such a manner as to prevent flotation of the pipe.
- 4. Do not place flowable fill on frozen ground.
- 5. Place flowable fill on subgrade free of disturbed or softened material and water.
- 6. Conform to appropriate requirements of Specification Section 31 23 00.
- 7. Start flowable fill batching, mixing, and placing if weather conditions are favorable, and the air temperature is 34 DegF and rising.
- 8. Temperature of flowable fill at the time of placement: At least 40 DegF.
- 9. Stop mixing and placing when the air temperature is 38 DegF or less and falling.
- 10. Each filling stage shall be as continuous an operation as is practicable.

11. Prevent traffic contact with flowable fill for at least 24 HRS after placement or until flowable fill is hard enough to prevent rutting by construction equipment.
12. Do not place flowable fill until water has been controlled or groundwater level has been lowered in conformance with the requirements of the Groundwater Dewatering paragraph in this Specification Section.

3.4 BACKFILL PROCEDURE FOR UTILITIES UNDER EXISTING PUBLIC AND PRIVATE ROADS OR UNDER OTHER UTILITIES

- A. Compact backfill material within the pipe zone as described in 3.3.
- B. For trench excavation above the pipe zone, fill the excavation to the pavement subgrade with cement stabilized sand compacted to 95 percent standard density at plus 2 to minus 1 percent optimum moisture in maximum 6 to 8 inch lifts.

3.5 TRENCH SHORING AND BACKFILL

- A. Shoring of Trench Walls.
 1. Install Special Shoring in advance of trench excavation or simultaneously with trench excavation, so that soils within full height of trench excavation walls will remain laterally supported at all times.
 2. For all types of shoring, support trench walls in pipe embedment zone throughout installation. Provide trench wall supports sufficiently tight to prevent washing trench wall soil out from behind trench wall support.
 3. Leave sheeting driven into or below pipe embedment zone in place to preclude loss of support of foundation and embedment materials, unless otherwise directed by Owner's Representative. Leave rangers, walers, and braces in place as long as required to support sheeting, which has been cut off, and trench wall in vicinity of pipe zone.
 4. Employ special methods for maintaining integrity of embedment or foundation material. Before moving supports, place and compact embedment to sufficient depths to provide protection of pipe and stability of trench walls. As supports are moved, finish placing and compacting embedment.
 5. If sheeting or other shoring is used below top of pipe embedment zone, do not disturb pipe foundation and embedment materials by subsequent removal. Maximum thickness of removable sheeting extending into embedment zone shall be equivalent of 1-inch-thick steel plate. As sheeting is removed, fill in voids left with grouting material.
- B. Use of Trench Shields. When trench shield (trench box) is used as worker safety device, the following requirements apply:
 1. Make trench excavations of sufficient width to allow shield to be lifted or pulled freely, without damage to trench sidewalls.

2. Move trench shields so that pipe, and backfill materials, after placement and compaction, are not damaged nor disturbed, nor degree of compaction reduced. Recompect after shield is moved if soil is disturbed.
 3. When required, place, spread, and compact pipe foundation and bedding materials beneath shield. For backfill above bedding, lift shield as each layer of backfill is placed and spread. Place and compact backfill materials against undisturbed trench walls and foundation.
 4. Maintain trench shield in position to allow sampling and testing to be performed in safe manner.
 5. Conform to applicable Government regulations.
- C. Voids under paving area outside shield caused by Contractor's work will require removal of pavement, consolidation and replacement of pavement in accordance with Contract Documents. Repair damage resulting from failure to provide adequate supports.
- D. Place sand or soil behind shoring or trench shield to prevent soil outside shoring from collapsing and causing voids under pavement. Immediately pack suitable material in outside voids following excavation to avoid caving of trench walls.
- E. Coordinate excavation within 15 feet of pipeline with company's representative. Support pipeline with methods agreed to by pipeline company's representative. Use small, rubber-tired excavator, such as backhoe, to do exploratory excavation. Bucket that is used to dig in close proximity to pipelines shall not have teeth or shall have guard installed over teeth to approximate bucket without teeth. Excavate by hand within 1 foot of pipeline company's line. Do not use larger excavation equipment than normally used to dig trench in vicinity of pipeline until pipelines have been uncovered and fully exposed. Do not place large excavation and hauling equipment directly over pipelines unless approved by pipeline company's representative.

3.6 COMPACTION

A. General:

1. Place and assure bedding, backfill, and fill materials achieve an equal or higher degree of compaction than undisturbed materials adjacent to the work.
2. In no case shall degree of compaction below minimum compactions specified be accepted.

B. Compaction Requirements:

1. Unless noted otherwise on Drawings or more stringently by other Specification Sections, comply with following minimum trench compaction criteria.

LOCATION	MATERIAL	COMPACTION DENSITY
All applicable areas	Bank sand	95 percent of standard proctor density, +2 to -1% optimum density, by ASTM D698 and ASTM D2922
	Pea gravel	95 percent of maximum relative density by ASTM D4253 and ASTM D4254
	Well-graded crushed stone	95 percent of maximum relative density by ASTM D4253 and ASTM D4254
	Native backfill	95 percent of standard proctor density, +2 to -1% optimum density, by ASTM D698 and ASTM D2922
	Cement stabilized sand	95 percent of standard proctor density, +2 to -1% optimum density, by ASTM D558 and ASTM D2992

3.7 FIELD QUALITY CONTROL

A. Testing:

1. In-place density tests of compacted materials will be performed by Owner's Representative according to the standards provided in section 3.6, and at the following frequencies and conditions.
2. Owner will provide a recognized testing laboratory capable of performing a full range of testing procedures complying with the standards or testing procedures specified. The testing lab shall provide certified technicians that are trained and knowledgeable in, in-trench nuclear density testing, sand cone, concrete sampling and testing, ASTM D698 and D1557 proctors at a minimum.
3. Testing Frequency: Accommodate the Owner's Representative in performing the following:
 - a. Testing: Pothole every 1000 feet and grab Samples at pipe level for materials testing and proctors.
 - b. Owner's Representative shall take a minimum of three in-trench/ pipe zone nuclear density tests every 150 feet of installed pipe.
 - c. Owner's Representative shall take a minimum of three nuclear density tests above the pipe zone for every 150 feet.
 - d. Owner's Representative shall take a minimum of three in-trench/pipe zone nuclear density test and a minimum of three above pipe zone nuclear density test at all open cut road crossings.
 - e. Contractor to update his field "as-built" drawings with density test locations in the profile.
4. When requested by Owner's Representative, Contractor shall excavate test pits after the backfill has been placed and compacted in the pipe zone for the purpose of taking field density tests and inspecting the haunch areas under the pipe for voids.

5. When requested by Owner's Representative, Contractor shall excavate the test pits to a depth and area of sufficient size to allow the inspector to visually inspect the haunch area of the pipe for voids or loose material next to the pipe and to make a field density test. Provide a safety trench shield to protect the inspector while in the pit.
6. After inspection, backfill and compact the test pit area in accordance with the applicable specification herein.
7. Dig one test pit for inspection of each day's work, if deemed necessary, as determined by the Owner's Representative. Repair and replace areas that are found not to be in compliance with the Specification requirements, until satisfactory results are consistently and uniformly attained.
8. Special care should be taken by the Contractor to ensure the backfill material flows under the pipe haunches. The Contractor's method and procedures used to accomplish this will be observed to confirm that adequate results are being achieved. This may require the removal of pipe joints to observe the results and make density tests. Pipe laying shall not begin until satisfactory results are achieved by the Contractor's proposed method. Perform additional tests as directed until compaction meets or exceeds requirements.
 - a. Cost associated with "Failing" tests shall be paid by Contractor.
9. Assure Owner's representative has immediate access for testing of all soils related work.
10. Ensure excavations are safe for testing personnel.

3.8 OWNER TRAINING (NOT USED)

END OF SECTION

SECTION 31 32 13.16
CEMENT STABILIZED SAND

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Cement Stabilized Sand
- B. Related Specification Sections include, but are not necessarily limited to:
 - 1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
 - 2. Division 01 – General Requirements.
 - 3. Specification Section is applicable to sanitary sewer gravity main and manhole structure.

1.2 MEASUREMENT AND PAYMENT

- A. Unit Price. No separate payment will be made for this item. Include the cost in associated items for this project.
- B. Payment will only be made for extra cement stabilized sand backfill as approved by the Owner. Measurement will be per cubic yard of extra cement stabilized sand backfill installed.

1.3 REFERENCES

- A. C 33 – Standard Specification for Concrete Aggregates (Fine Aggregate).
- B. C 40 – Standard Test Method for Organic Impurities in Fine Aggregates for Concrete.
- C. C 42 – Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
- D. C 94 – Standard Specification for Ready-Mixed Concrete.
- E. C 123 – Standard Test Method for Lightweight Particles in Aggregate.
- F. C 142 – Standard Test Method for Clay Lumps and Friable Particles in Aggregates.
- G. C 150 – Specification for Portland Cement.
- H. D 558 – Standard Test Method for Moisture-Density (Unit Weight) Relations of Soil Cement-Mixtures.
- I. D 1632 – Standard Practice for Making and Curing Soil-Cement Compression and Flexure Test Specimens in the Laboratory.
- J. D 1633 – Standard Test Methods for Compressive Strength of Molded Soil-Cement Cylinders.

- K. D 2487 – Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
- L. D 6938 – Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- M. D 3665 – Standard Practice for Random Sampling of Construction Materials.
- N. D 4318 – Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

1.4 SUBMITTALS

- A. Conform to requirements of Section 01 33 00 – Submittals.
- B. Submit proposed target cement content and production data for sand-cement mixture in accordance with requirements of Paragraph 2.3, 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 containing no less than 2.5 sacks of cement per cubic yard of mixture.
 - 1. Where potable water lines cross wastewater lines, embed wastewater line with cement stabilized sand in accordance with Texas Administrative Code §290.44(e)(4)(B):
 - a. Provide minimum of 10% cement per cubic yard of cement stabilized sand mixture, based on loose dry weight volume. Use at least 2.5 sacks of cement per cubic yard of mixture (2 sacks per ton of dry sand).
 - b. Unless otherwise shown on Drawings, embed wastewater main or lateral minimum of six inches above and below.
 - c. Use brown coloring in cement stabilized sand for wastewater main or lateral bedding for identification of pressure rated wastewater mains during future construction.
- B. Design will be based on strength specimens molded in accordance with ASTM D558 at moisture content within 3 percent of optimum and within 4 hours of batching.

1.6 WARRANTY (NOT USED)

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 31 23 33 – Trenching, Backfilling, and Compacting for Utilities, and the following requirements:
 - 1. Classified as SW, SP, SW-SM, SP-SM, or SM by United 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.
- C. Water: Potable water, free of oils, acids, alkalis, 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 4 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 4 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.
- D. The target content may be adjusted when statistical history so indicates. For determination of minimum product performance use formula:

$$f'_c + \frac{1}{2} \text{ standard deviation}$$

PART 3 - EXECUTION

3.1 PLACING

- A. Place sand-cement mixture in maximum 8-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.

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 pounds each from the first, middle, and last third of the truck and composite them into one sample for test purposes.
- C. Prepare and mold four 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 4 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 plus or minus 2 hours and two specimens will be tested at 7 days plus or minus 4 hours.
- 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. Time material was batched
 - 3. Time material was sampled
 - 4. Test age (exact 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.
- 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 3.4 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) have 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, Owner's Representative, and material supplier by facsimile of tests indicating results falling below specified strength requirements within 24 hours.
- F. If any strength test of laboratory cured specimen 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 3.3A.
- 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 100 pounds per square inch, 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 pounds per square inch and greater than or equal to 70 pounds per square inch, material shall be accepted contingent on credit in payment. Compute credit by the following formula:

$$\text{Credit per Cubic Yard} = \frac{\$30.00 \times 2 (100 \text{ psi} - \text{Actual psi})}{100}$$

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 the Owner.

3.5 WARRANTY (NOT USED)

END OF SECTION

SECTION 31 41 00
TRENCH SAFETY SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes

1. Trench safety system for construction of trench excavations. For structural excavations which fall under provisions of State and Federal trench safety laws.
2. Specification Section is applicable to manhole construction or open cut trenches for point repairs on existing sanitary sewer main.

B. Related Specification Sections include, but are not necessarily limited to:

1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
2. Division 01 – General Requirements.

1.2 MEASUREMENT AND PAYMENT

A. Unit Price

1. Measurement for trench safety systems used on trench excavations is on a per linear foot basis measured along centerline of trench, including manholes and other line structures.

1.3 DEFINITIONS

- A. Trench. Narrow excavation (in relation to its depth) made below surface of ground. In general, depth is greater than width, but width of trench (measured at bottom) is not greater than 15 feet.
- B. Trench safety system requirements shall apply to larger open excavations if erection of structures or other installations limits space between excavation slope and 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. Trench safety system is Contractor's methods and means of construction.
- D. Trench Safety Program is the safety procedures governing the presence and activities of individuals working in and around trench excavations.

1.4 SUBMITTALS

- A. Conform to requirements of Section 01 33 00 – Submittals.
- B. Submit trench safety program specifically for construction of trench excavation. Design trench safety program in accordance with OSHA 29 CFR standards.

- C. Trench safety system and special designs containing deviations from OSHA standards to be sealed by a Professional Engineer registered by State of Texas.
- D. Review of trench safety system by Owner's Representative shall only be in regards to compliance with this specification and shall not constitute approval by Owner's Representative nor relieve Contractor of obligations under State and Federal trench safety laws
- E. Submit certification that trench safety system will not be subjected to loads exceeding those which the system was designed to withstand according to the available construction and geotechnical information. When trench box is used in a manner other than what is indicated and certified in manufacturer's technical data, submit trench box manufacturer certifications of proposed usage.

1.5 REGULATORY REQUIREMENTS

- A. Install and maintain trench safety systems in accordance with detail specifications set out in 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 Federal Register Vol. 54, No. 209 on October 31, 1989. Sections that are incorporated into these specifications by reference include Sections 1926-650 through 1926-652.
- B. Reproduction of OSHA standards included in "Subpart P - Excavations" from Federal Register Vol. 54, No. 209 is available upon request to Contractors bidding on projects. The Owner assumes no responsibility for accuracy of reproduction. Obtain copy of this section of the Federal Register.
- C. Legislation enacted by Texas Legislature with regard to 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 to indemnify and hold harmless the Owner and the Owner's Representative, its employees and agents, from any and all damages, costs (including, without limitation, legal fees, court costs, and cost of investigation), judgments or claims by anyone for injury or death of persons resulting from collapse or failure of trenches constructed under this Contract.
- B. Contractor acknowledges and agrees that this indemnity provision provides indemnity for the Owner and the Owner's Representative, its employees and agents, in case the Owner and the Owner's Representative is 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 hiring of Contractor.

1.7 WARRANTY (NOT USED)

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install and maintain trench safety systems in accordance with provisions of OSHA 29 CFR.
- B. Install specially designed trench safety systems in accordance with Contractor's trench excavation safety program for locations and conditions identified in program.
- C. A competent person, as identified in Contractor's Trench Safety Program, to verify that trench boxes and other pre-manufactured systems are certified for actual installation conditions.

3.2 INSPECTION

- A. Contractor, or Contractor's independently retained consultant, to make daily inspections of trench safety systems to ensure that installed systems and operations meet OSHA 29 CFR and other personnel protection regulations requirements.
- B. If evidence of possible cave-ins or slides is apparent, immediately stop work in trench and move personnel to safe locations until necessary precautions have been taken to safeguard personnel entering trench.
- C. Maintain permanent record of daily inspections.

3.3 FIELD QUALITY CONTROL

- A. Verify specific applicability of selected or specially designed trench safety systems to each field condition encountered on project.

3.4 OWNER TRAINING (NOT USED)

END OF SECTION

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SECTION 32 12 16

ASPHALTIC CONCRETE VEHICULAR PAVEMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Asphaltic concrete vehicular paving.
- B. Related Specification Sections include, but are not necessarily limited to:
 - 1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
 - 2. Division 01 – General Requirements.

1.2 MEASUREMENT AND PAYMENT

- A. Unit Price.
 - 1. Measurement and payment for asphaltic concrete pavement shall be by the square yard installed in place to match existing thickness.
 - 2. Payment shall include full compensation for materials, installation, delivery, equipment, labor, tools and incidentals, including placement of tack coat. Any damage to existing or proposed pavement resulting from construction operations shall be repaired by the Contractor at no additional cost to the Project.

1.3 QUALITY ASSURANCE

- A. Referenced Standards:
 - 1. Federal Specifications (FS):
 - a. TT-P-115F, Paint, Traffic (Highway, White and Yellow).
 - 2. Construction standards: State of Texas, Department of Transportation, as amended to date.
- B. Miscellaneous:
 - 1. Should conflicts arise between standard specifications of government agencies mentioned herein and Contract Documents, Contract Documents shall govern.

1.4 SUBMITTALS

- A. Shop Drawings:
 - 1. See Specification Section 01 33 00 – Submittals for requirements for the mechanics and administration of the submittal process.
 - 2. Product technical data including:

- a. Acknowledgement that products submitted meet requirements of standards referenced.
- b. Manufacturer's installation instructions.
3. Asphalt design mix.

1.5 WARRANTY (NOT USED)

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Asphaltic Concrete:
 1. TxDOT Specification – Item 300 Asphalts, Oils, & Emulsions
 2. TxDOT Specification – Item 310 Prime Coat
 3. TxDOT Specification – Item 340 Dense Graded Hot-Mix Asphalt.
 4. TxDOT Specification – Item 247 Flexible Base
- B. Line Paint:
 1. Nonreflective.
 2. White.
 3. FS TT-P-115F.

2.2 MIXES

- A. Comply with mix design category per TxDOT Specification – Item 340, Dense Graded Hot-Mix Asphalt.
 1. Fine-Graded Surface Course, Type D

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Construct to match existing line/grade in accordance with referenced State and Federal Specifications.
- B. Install base course in accordance with TxDOT Specification – Item 247, Flexible Base, and drawings.
- C. Spread a prime coat uniformly on compacted aggregate base course at rate of 0.25 to 0.35 GAL per square yard in accordance with TxDOT Specification – Item 310, Prime Coat.
- D. Install Tack Coat in accordance with TxDOT Specification – Item 300, Asphalts, Oils, & Emulsions.
- E. Install surface course, Type D, in accordance with TxDOT Specification – Item 340, Dense Graded Hot Mix Asphalt.

F. Tolerance of Finished Grade: +0.10 FT from required elevations.

G. Line Painting:

1. Thoroughly clean surfaces which are to receive paint.
2. Make completely dry before paint is applied.
3. Do not paint until minimum of five (5) days has elapsed from time surface is completed.
 - a. A longer period may be required if directed by Owner's Representative.
4. Do not apply paint over wet surfaces, during wet or damp weather, or when temperature is below 40 DegF.
5. Lay out markings and striping in accordance with Drawings.
 - a. Width of painted lines: 4 IN.

3.2 OWNER TRAINING (NOT USED)

END OF SECTION

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SECTION 32 13 13

CONCRETE PAVEMENT, CURB, SIDEWALKS, AND STEPS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Concrete pavement, curb, sidewalk, driveways, and steps.

B. Related Specification Sections include, but are not necessarily limited to:

1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
2. Division 01 – General Requirements.
3. Section 03 05 05 – Testing.

1.2 MEASUREMENT AND PAYMENT

A. Unit Price.

1. Payment for the removal and replacement of concrete shall be by the square yard.
2. Payment for extra concrete shall be by the cubic yard.
3. Payment for the removal and replacement of concrete driveway and sidewalks shall be by the square foot.
4. Payment for the removal and replacement of concrete sidewalks shall be by the square foot.
5. Payment for the removal and replacement of concrete curb shall be by the linear foot.
6. Payment shall include sawcutting, removal and disposal of the existing concrete, preparation of subgrade, reinforcement and joints.

1.3 QUALITY ASSURANCE

A. Referenced Standards:

1. American Association of State Highway and Transportation Officials (AASHTO):
 - a. M153 – Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction (ASTM D1752).
 - b. M171 – Sheet Materials for Curing Concrete.
 - c. M182 – Burlap Cloth Made from Jute or Kenaf.

- d. M213 – Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types) (ASTM D1751).
- e. M224 – Use of Protective Sealers for Portland Cement Concrete.
- 2. M233 – Boiled Linseed Oil Mixture for Treatment of Portland Cement Concrete.American Concrete Institute (ACI):
 - a. 305R – Hot Weather Concreting.
 - b. 306R – Cold Weather Concreting.
- 3. ASTM International (ASTM):
 - a. A185 – Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
 - b. A615 – Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
 - c. C33 – Standard Specification for Concrete Aggregates.
 - d. C150 – Standard Specification for Portland Cement.
 - e. C174 – Standard Test Method for Measuring Thickness of Concrete Elements Using Drilled Concrete Cores.
 - f. C309 – Standard Specification Liquid Membrane-Forming Compounds for Curing Concrete.
 - g. D698 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³).
 - h. D1751 – Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
 - i. D1752 – Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction.
 - j. D4253 – Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.
 - k. D4254 – Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.
- 4. Federal Specification (FS):
 - a. SS-S-1614 – Sealants, Joint, Jet-Fuel-Resistant, Hot-Applied for Portland Cement and Tar Concrete Pavements.
 - b. TT-S 00227 E – Sealing Compound: Elastomeric Type, Multi-Component (for Calking, Sealing, and Glazing in Buildings and Other Structures).

1.4 SUBMITTALS

A. Shop Drawings:

1. See Specification Section 01 33 00 – Submittals for requirements for the mechanics and administration of the submittal process.
2. Product technical data including:
 - a. Acknowledgement that products submitted meet requirements of standards referenced.
 - b. Manufacturer's installation instructions.
3. Mix design(s) in accordance with Specification Section 03 31 30 – Concrete, Materials and Proportioning and Specification Section 03 05 05 – Testing.
4. Qualifications of concrete installer.
5. Drawings detailing all reinforcing.
6. Test reports:
 - a. Concrete cylinder Test results from field quality control.

B. Samples:

1. See Specification Section 01 33 00 – Submittals for requirements for the mechanics and administration of the submittal process.
2. Samples of fabricated jointing materials and devices.

1.5 WARRANTY (NOT USED)

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Portland Cement: ASTM C150, Type I or II.
- B. Aggregates:
 1. ASTM C33, gradation size #67, 3/4 IN to #4.
 2. Clean, crushed gravel.
- C. Water: Clean, clear; and free from oil, acids, alkali, or vegetable matter.
- D. Admixtures: Comply with Specification Section 03 31 30 – Concrete, Materials and Proportioning.
- E. Reinforcing Bars: ASTM A615, Grade 60.
- F. Welded Wire Reinforcement:
 1. ASTM A185.
 2. Flat.
 3. Clean, free from dirt, scale, rust.

G. Preformed Joint Filler:

1. Non-extruding cork, self-expanding cork, sponge rubber or cork rubber.
2. AASHTO M153 or AASHTO M213.

H. Hot-Poured Joint Sealing Material: FS SS-S-1614.

I. Sidewalk Joint Sealant:

1. Two (2) compound polyurethane.
2. Class A, Type 1.
3. Self-leveling.
4. Non-tracking.
5. FS TT-S 00227 E(3).

J. Membrane Curing Compound: ASTM C309.

K. Cover Materials for Curing:

1. Burlap:
 - a. AASHTO M182.
 - b. Minimum Class 2, 8 OZ material (1 YD x 42 IN).
2. Polyethylene film, AASHTO M171.

L. Paper Subgrade Cover: Polyethylene film, AASHTO M171.

M. Concrete Treatment:

1. Boiled linseed oil mixture.
2. AASHTO M233.

N. Traffic Paint: FS TT-P-115, Type 1 - Alkyd.

O. Forms:

1. Steel or wood.
2. Size and strength to resist movement during concrete placement and able to retain horizontal and vertical alignment.
3. Free of distortion and defects.
4. Full depth.
5. Metal side forms:
 - a. Minimum 7/32 IN thick.
 - b. Depth equal to edge thickness of concrete.
 - c. Flat or rounded top minimum 1-3/4 IN wide.
 - d. Base 8 IN wide or equal to height, whichever is less.
 - e. Maximum deflection 1/8 IN under center load of 1,700 LBS.

- f. Use flexible spring steel forms or laminated boards to form radius bends.

2.2 MIXES

- A. Mix design to provide 4,000 psi 28-day compressive strength, 1-1/2 IN plus 1 IN slump, 6 percent air.
- B. Comply with Specification Section 03 31 30 – Concrete, Materials and Proportioning and Specification Section 03 31 31 – Concrete Mixing, Placing, Jointing, and Curing.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Subgrade Preparation:
1. Prepare using methods, procedures, and equipment necessary to attain required compaction densities, elevation and section.
 2. Scarify and recompact top 6 IN of fills and embankments which will be under paved areas.
 3. Remove soft or spongy areas.
 4. Replace with aggregate material.
 5. Compact to the following densities:
 - a. Cohesive soils: 95 percent per ASTM D698.
 - b. Non-cohesive soils: 75 percent relative per ASTM D4253 and ASTM D4254.
 6. Assure moisture content is within limits prescribed to achieve required compaction density.
 7. Following compaction, trim and roll to exact cross section.
 - a. Check with approved grading template.
 8. Perform density tests on subgrade to determine that subgrade complies with the specification.
- B. Aggregate Course:
1. Place material in not more than 6 IN thick layers.
 2. Spread, shape, and compact all material deposited on the subgrade during the same day.
 3. Compact to 75 percent relative per ASTM D4253 and ASTM D4254.
- C. Loose and Foreign Material: Remove loose and foreign material immediately before application of paving.
- D. Appurtenance Preparation:

1. Block out or box out curb inlets and curb returns.
2. Provide for joint construction as detailed and dimensioned on Drawings.
3. Adjust manholes, inlets, valve boxes and any other utility appurtenances to design grade.
 - a. Secure to elevation with concrete.
 - b. Place concrete up to 5 IN below design grade.
4. Headers:
 - a. Construct at open ends of pavements.
 - b. Use same concrete to construct headers as that used in the abutting structure.
 - c. Extend header full width of pavement and crown same as pavement.
5. Clean and oil forms.

3.2 INSTALLATION

- A. Concrete Production: Comply with Specification Section 03 31 31 – Concrete Mixing, Placing, Jointing, and Curing.
- B. Forms:
 1. Form support:
 - a. Compact soil foundation and cut to grade to support forms and superimposed machine loads.
 - b. Use bearing stakes driven flush with bottom of form to supplement support as necessary.
 - c. Do not use earth pedestals.
 2. Staking forms:
 - a. Joint forms neatly and tightly.
 - b. Stake and pin securely with at least three (3) pins for each 10 FT section.
 3. Clean and oil forms prior to placement of concrete.
 4. Set forms sufficiently in advance of work (minimum of 2 HRS) to permit proper inspection.
 5. Previously finished concrete pavement, curb or sidewalk contiguous with new work may serve as side form when specifically approved.
- C. Reinforcing:
 1. Locate longitudinal edge bars between 3 IN and 6 IN from edge of slab.
 2. Lap mats one (1) full space.
 3. Tie end transverse member of upper mat securely to prevent curving.

4. Lap non-welded bars 12 IN minimum.
5. Support:
 - a. Place bars and heavy mats securely on chairs at called-for height.
 - b. Place other fabric on the first of a two-course pour and cover promptly with final pour, or place fabric by a fabric-placer if procedure is reviewed and approved by Owner's Representative.

D. Joints:

1. Hold joint location and alignment to within +1/4 IN.
2. Finish concrete surface adjacent to previously placed slab to within +1/8 IN, with tooled radius of 1/4 IN.
3. Metal keyway joints:
 - a. Form by installing metal joint strip left in place.
 - b. Stake and support like side form.
 - c. Provide dowels or tie bars.
4. Weakened plane joints:
 - a. Tooled joints:
 - 1) Form groove in freshly placed concrete with tooling device.
 - 2) Groove dimensions shall be 3/8 IN at surface and 1/4 IN at root.
 - b. Sawed joints:
 - 1) Saw 1/4 IN groove in green concrete.
 - 1) Commence sawing as soon as concrete is hard enough to withstand operation without chipping, spalling or tearing, regardless of nighttime or weather.
 - 2) Thoroughly wet surface to protect membrane cure and recoat afterward.
 - 3) Complete saw cutting before shrinkage stresses cause cracking.
 - c. Locate at 6 FT intervals.
5. Stake in place load transfer device for expansion joints consisting of dowels:
 - a. Supporting and spacing means and pre-molded joint filler as per Drawing details.
 - b. Located at 48 FT intervals and at all intersection curb returns.
 - c. Provide preformed joint filler at all junctions with existing curb, sidewalk, steps, or other structures.
6. Install construction joints at end of day's work or wherever concreting must be interrupted for 30 minutes or more.

7. Thoroughly clean and fill joints with joint sealing material as specified.
 8. Fill joints without overflowing onto pavement surface.
 9. Upper surface of filled joint to be flush to 1/8 IN below finish surface.
- E. Place Concrete:
1. Comply with Specification Section 03 31 31 – Concrete Mixing, Placing, Jointing, and Curing.
 2. Construct driveway openings, ramps, and other features as per Drawing details.
- F. Cold and Hot Weather Concreting:
1. Cold weather:
 - a. Cease concrete placing when descending air temperature in shade falls below 40 Deg F.
 - b. Do not resume until ambient temperature rises to minimum 40 Deg F.
 - c. If placing below 40 Deg F is authorized by Owner's Representative, maintain temperature of mix between 60 and 80 Deg F.
 - d. Heat aggregates or water or both.
 - e. Water temperature may not exceed 175 Deg F.
 - f. Aggregate temperature may not exceed 150 Deg F.
 - g. Remove and replace frost damaged concrete.
 - h. Salt or other antifreeze is not permitted.
 - i. Comply with ACI 306R.
 2. Hot weather:
 - a. Cease concrete placing when plastic mix temperature cannot be maintained under 90 Deg F.
 - b. Aggregates or water or both may be cooled.
 - c. Cool water with crushed ice.
 - d. Cool aggregates by evaporation of water spray.
 - e. Never batch cement hotter than 160 Deg F.
 - f. Comply with ACI 305R.
- G. Finishing:
1. As soon as placed, strike off and screed to crown and cross section, slightly above grade, so that consolidation and finishing will bring to final Drawing elevations.
 2. Maintain uniform ridge full width with first pass of first screed.

3. Pavement and similar surfaces:
 - a. Float by longitudinally reciprocating float, passing gradually from edge to edge.
 - b. Assure successive advances do not exceed half the length of the float.
 - c. Test level of slab with minimum 10 FT straightedge.
 - d. Fill depressions with fresh material, consolidate and refinish.
 - e. Cut down high areas and retest.
 - f. Belt surface with two-ply canvas belt, using transverse strokes while advancing along center line.
 - g. Provide final finish by full width burlap or carpet drag, drawn longitudinally.
 - h. Keep drag clean to avoid build up and consequent scarring.
 - i. Tool pavement edges with suitable edger.
 - j. Retest with straightedge and if pavement shows deviation of more than 1/8 IN in 10 FT, remove and replace.
4. Curb and similar surfaces:
 - a. Bring curb to grade by running straightedge over steel templates with sawing motion.
 - b. Float surface with a wood float to draw cement to surface.
 - c. Broom finish after floating.
 - d. Tool edges with suitable edger.
 - e. Upon removal of forms, fill honeycombed or unevenly filled sections immediately with cement mortar.
 - f. Assure that expansion joints are cleared of concrete.
5. Sidewalk, steps, ramps, and similar surfaces:
 - a. Test with 6 FT straightedges equipped with long handles and operated from off the sidewalk.
 - b. Draw excess water and laitance off from surface.
 - c. Float finish so as to leave no disfiguring marks, but to produce a uniform granular or sandy texture.
 - d. Broom finish after floating.
 - e. Tool pavement edges with suitable edger.
 - f. Provide exposed aggregate surfaces in areas indicated on the Drawings.
 - g. Provide method such as abrasive blasting, bush hammering, or surface retarder acceptable to the Owner's Representative.

H. Curing:

1. Apply membrane curing compound complying with ASTM C309, and in accordance with manufacturer's directions, but at a minimum rate of 200 SF per gallon.
2. Apply curing compound within 4 HRS after finishing or as soon as surface moisture has dissipated.
3. Cure for minimum of seven (7) days.
4. When average daily temperature is below 50 Deg F, provide insulating protection of 12 IN minimum thickness loose dry straw, or equivalent, for 10 days.
5. Linseed oil sealant:
 - a. For concrete pavement or sidewalk, seal surface with linseed oil.
 - b. Apply linseed oil to clean surface as per AASHTO M224 after concrete has cured for one (1) month.
 - c. Apply first application at minimum rate of 67 SY per gallon.
 - d. Apply second application to a dry surface at minimum rate of 40 SY per gallon.

I. Protection of Concrete:

1. Protect concrete surfaces and appurtenances from traffic for minimum of 14 days.
2. Erect and maintain warning signs, lights, watchmen to direct traffic.
3. Repair or replace parts of concrete surfaces damaged by traffic, or other causes, occurring prior to final acceptance.
4. Protect concrete pavement against public traffic, construction traffic and traffic caused by employees and agents.
5. No equipment shall be driven or moved across concrete surfaces unless such equipment is rubber-tired and only if concrete is designed for and capable of sustaining loads to be imposed by the equipment.
6. Do not drive over new or existing concrete with tracked vehicles and equipment.

J. Painting and Striping:

1. Stripe and mark pavement per the Drawings following sufficient cure time for pavement.
2. Lay out markings with guidelines, templates, and forms.
3. Apply 6 IN wide stripe with self-contained striping machine to a clean and dry pavement surface.

4. Temperature must be above 40 Deg F and precipitation should not be expected during drying period.
5. Use yellow or white paint as approved complying with FS TT-P-115.
6. Apply at 1 GAL per 105 SF.

K. Opening to Traffic:

1. After 14 days, pavement may, at Owner's discretion, be opened to traffic if job cured test cylinders have attained a compressive strength of 3,000 LBS per square inch when tested in accordance with ASTM standard methods.
2. Prior to opening to traffic, clean and refill joints as required with the specified filler material.

L. Clean Up:

1. Assure clean up work is completed within two (2) weeks after pavement has been opened to traffic.
2. No new work will begin until clean up work has been completed, or is maintained within two (2) weeks after pavement has been opened to traffic.

M. Pavement Patching:

1. Comply with material and density requirements as mentioned elsewhere in this Specification Section except provide minimum 6 IN aggregate immediately below the patch.
2. Place pavement patch providing a thickened edge.
3. Assure that patch in plane of "cold" joint has a thickness 6 IN greater than that of the existing pavement.
4. Extend patch under existing pavement for a distance of 6 IN minimum.
5. Fill void under existing pavement with concrete.
6. Undercut existing pavement 6 IN all around patch and to a depth of 6 IN.
7. Prior to placing patch, sawcut edge of existing concrete to 1/4 depth and remove to provide a vertical face for a straight and true joint.

3.3 FIELD QUALITY CONTROL

- A. Provide test cylinders in accordance with Specification Section 03 05 05 – Testing for each CY of concrete placed.
- B. Pavement Thickness Testing:
 1. General:
 - a. Core pavement to determine the actual thickness as directed by Owner's Representative.
 - b. Determine thickness by ASTM C174.

- c. Fill holes from removal of cores with concrete of the same mixture as specified.
 - d. Cost incidental to coring of cores showing a deficiency greater than 1/4 IN shall be paid by the Contractor.
 - e. Cost of cores showing a deficiency of 1/4 IN or less shall be paid by the Owner.
 - f. If average pavement thickness, as directed by core measurement, is outside specified tolerances, payment will be reduced per PART 1 of this Specification Section.
 - g. If deficiency in pavement thickness is 1 IN or more, remove and replace pavement at Contractor's expense.
2. Core categories:
- a. In determining the average thickness of acceptable pavement for which payment will be made, utilize the following core categories:

CATEGORY NUMBER	CORE THICKNESS IN RELATION TO DESIGN	CORE LENGTH USED IN CALCULATING
1	1 IN or more deficiency	NOT USED
2	Less than 1 IN deficiency through 1/2 IN excess	Actual Core Thickness
3	More than 1/2 IN excess	Design Thickness plus 1/2 IN

- b. Core sampling:
 - 1) Take cores in each lane in each block.
- c. Take cores at locations where the cement content was found to be low when checking the quantities of cement used during the progress of the work.
- d. Each separately poured lane of the pavement to be considered as a unit.
- e. A lane shall be considered to be the pavement surface between longitudinal construction joints, between a longitudinal construction joint and the edge, or between two (2) pavement edges in cases where the entire width of the pavement is poured in one (1) operation.
- f. Should any core show a deficiency in thickness in excess of 1 IN, check cores shall be taken 5 FT on either side of this location parallel to the centerline of the pavement.
- g. If both of these cores are within the 1 IN tolerance, no further special borings for this individual zone of deficiency will be made.

- h. If either one (1) or both of these cores are not within the 1 IN tolerance, the procedure will be to cut cores in the following order on either side of the original short core parallel to the centerline of the pavement:
- 1) 25 FT, 50 FT, the same to be measured from the location of original core found to be deficient in thickness, then at 50 FT intervals until a thickness within the 1 IN tolerance is found in both directions.
 - 2) On either side of the original deficient core, the procedure will then be to make a coring approximately half the distance within the first core which comes within the 1 IN tolerance.
 - 3) Repeat the above procedure until the station (+5 FT), at which the pavement comes within the 1 IN tolerance is located.
 - 4) If for some reason two (2) or more cores are taken at the same station and at least one (1) of them is beyond the 1 IN tolerance, the section of pavement at the station shall be considered as unacceptable.

3.4 OWNER TRAINING (NOT USED)

END OF SECTION

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SECTION 32 90 00

SEEDING, SODDING AND LANDSCAPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Seeding, sodding and landscape planting:
2. Specification Section is applicable to restoration of project areas that have been disturbed during construction phase.

B. Related Specification Sections include, but are not necessarily limited to:

1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
2. Division 01 – General Requirements.

1.2 MEASUREMENT AND PAYMENT

- A. Unit Price. No separate payment will be made for this item. Include the cost in associated items for this project.

1.3 QUALITY ASSURANCE

A. Referenced Standards:

1. American Nursery and Landscape Association/American National Standards Institute (ANLA/ANSI):
 - a. Z60.1 – American Standard for Nursery Stock.
2. AOAC International (AOAC – Association of Official Agricultural Chemists.).
3. ASTM International (ASTM):
 - a. D2028 – Standard Specification for Cutback Asphalt (Rapid-Curing Type).
 - b. D5276 – Standard Test Method for Drop Test of Loaded Containers by Free Fall.

B. Quality Control:

1. Fertilizer:
 - a. If Owner's Representative determines fertilizer requires sampling and testing to verify quality, testing will be done at Contractor's expense, in accordance with current methods of the AOAC.
 - b. Upon completion of Project, a final check of total quantities of fertilizer used will be made against total area seeded.

- c. If minimum rates of application have not been met, Contractor will be required to distribute additional quantities to make up minimum application specified.

1.4 SUBMITTALS

A. Product technical data including:

1. Acknowledgement that products submitted meet requirements of standards referenced.
2. Manufacturer's installation instructions.
3. Signed copies of vendor's statement for seed mixture required, stating botanical and common name, place of origin, strain, percentage of purity, percentage of germination, and amount of Pure Live Seed (PLS) per bag.
4. Type of herbicide to be used during first growing season to contain annual weeds and application rate.
5. Source and location of sod, plants, and plant material, as per Section 3.2 - Installation and Section 3.3 - Planting Trees, Shrubs, and Ground Covers of this Specification Section.
6. Certification that each container of seed delivered will be labeled in accordance with Federal and State Seed Laws and equals or exceeds Specification requirements.

A. Miscellaneous Submittals:

1. See Specification Section 01 33 00 – Submittals for requirements for the mechanics and administration of the submittal process.
2. Copies of invoices for fertilizer used on Project showing grade furnished, along with certification of quality and warranty.

1.5 SEQUENCING AND SCHEDULING

A. Installation Schedule:

1. Provide schedule showing when trees, shrubs, groundcovers and other plant materials are anticipated to be planted.
2. Show schedule of when lawn type and other grass areas are anticipated to be planted.
3. Indicate planting schedules in relation to schedule for irrigation system installation, finish grading and topsoiling.
4. Indicate anticipated dates Owner's Representative will be required to review installation for initial acceptance and final acceptance.

B. Pre-installation Meeting:

1. Meet with Owner's Representative and other parties as necessary to discuss schedule and methods, unless otherwise indicated by Owner's Representative.

1.6 WARRANTY (NOT USED)

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS AND SUPPLIERS

- A. Subject to compliance with the Contract Documents, the manufacturers and suppliers listed in the applicable Articles below are acceptable.
- B. Acceptable sod supplier for all Golf Course areas is: All Seasons Turf Grass, 32601 FM 529, Brookshire, TX 77423 (281-375-7505). Contractor is responsible for following proper installation and care procedures per supplier's recommendations as shown on the drawings.
- C. Submit request for substitution in accordance with Specification Section 01 25 13 – Product Substitutions.

2.2 MATERIALS

BOTANICAL AND COMMON NAME	PERCENT BY WEIGHT (PLS)	MINIMUM PERCENT GERMINATION	MINIMUM PERCENT PURITY
Kentucky Bluegrass (Poa pratensis)	60	85	95
Fescue, Tall, KY 31 (Festura arundiancea 'KY 31')	30	85	98
Ryegrass, Perennial (Lolium perenne)	10	90	95

Pasture Seeding:

BOTANICAL AND COMMON NAME	MINIMUM PERCENT GERMINATION	MINIMUM PERCENT PURITY	LBS PLS PER ACRE
Smooth Brome Grass (Bromus inermis 'Leyss')	80	90	14
Fescue, Tall, KY 31 (Festura arundiancea 'KY 31')	90	98	2.5
Switchgrass (Panicum virgatum)	90	95	3.5

BOTANICAL AND COMMON NAME	MINIMUM PERCENT GERMINATION	MINIMUM PERCENT PURITY
Pennegift Crownvetch (Coronilla veria) (Blue-tagged certified hulled)	75	98
Ryegrass, Perennial (Lolium perenne)	90	95

A. Native Grass Seeding: Certified seed of locally adapted strains. Seed mixture:

GRASSES	LBS PLS PER ACRE	APPROXIMATE NUMBER OF SEEDS PER LB (PLS)
Big bluestem(Andropogon gerardi)	2.4	165,000
Blue grama(Bouteloua gracilis)	0.1	825,000
Green needlegrass(Stipa viridula)	0.6	181,000
Indian grass(Sorghastrum nutans)	1.2	175,000
Little bluestem 'Blaze' (Andropogon scoparius 'Blaze')	1.4	260,000
Sideoats grama(Bouteloua curtipendula)	0.8	191,000
Switchgrass(Panicum virgatum)	1.0	389,000
Western wheatgrass(Agropyron smithii)	1.5	110,000
Sand reedgrass(Calamovilfia gigantea)	1.0	273,000
Sand bluestem(Andropogon hallii)	2.5	113000
Sand Lovegrass(Eragrostis trichodes)	0.3	1300000
Reed canarygrass(Phalaris arundinacea)	2.0	533000

FORBS	LBS PLS PER ACRE	APPROXIMATE NUMBER OF SEEDS PER LB (PLS)
Purple prairieclover (Petalostemen purpureum)	0.2	278.000
Pitcher Sage		
Salvia pitcheri	0.2	149,000
Upright prairieconeflower	0.1	461,000

Buffalograss lawn: Spring seeding or dormant fall seeding.

BOTANICAL AND COMMON NAME	LBS (PLS) PER ACRE	APPROXIMATE NUMBER OF SEEDS PER POUND
Buffalograss (Buchloe dactyloides)	20.0	52,000
Blue Grama (Bouteloua gracilis)	0.1	825,000

- B. Soil Amendments:
- C. Asphalt Binder: Emulsified asphalt per State specifications.
- D. Water:
 - 1. Water free from substances harmful to grass or sod growth.
 - 2. Provide water from source approved prior to use.
- E. Plants:
 - 1. Sound, healthy, vigorous, with normal top and root systems, free from disease, insect pests or their eggs, grown in same or colder climatic zone as project.
 - 2. Nursery grown stock, freshly dug. No heeled-in, cold storage or collected stock.
 - a. Species and size as indicated on Drawings.

PART 3 - EXECUTION

3.1 SOIL PREPARATION

- A. General:
 - 1. Limit preparation to areas which will be planted soon after.
 - 2. Provide facilities to protect and safeguard all persons on or about premises.
 - 3. Protect existing trees designated to remain.
 - 4. Verify location and existence of all underground utilities.
 - a. Take necessary precaution to protect existing utilities from damage due to construction activity.
 - b. Repair all damages to utility items at no cost to Owner.
 - 5. Provide facilities such as protective fences and/or watchmen to protect work from vandalism.
 - a. Contractor to be responsible for vandalism until acceptance of work in whole or in part.
- B. Preparation for Lawn-Type Seeding, Sprigging, Plugging or Sodding:
 - 1. Loosen surface to minimum depth of 4 IN.
 - 2. Remove stones over 1 IN in any dimension and sticks, roots, rubbish, and other extraneous matter.
 - 3. Prior to applying fertilizer, loosen areas to be seeded with a double disc or other suitable device if the soil has become hard or compacted.
 - 4. Correct any surface irregularities in order to prevent pocket or low areas which will allow water to stand.

5. Distribute fertilizer uniformly over areas to be seeded:
 - a. For lawn-type seeding: 30 LBS per 1000 SF.
 - b. For pasture seeding: 200 LBS per acre.
6. Incorporate fertilizer into soil to a depth of at least 2 IN by disking, harrowing, or other approved methods.
7. Remove stones or other substances from surface which will interfere with turf development or subsequent mowing operations.
8. Grade lawn areas to a smooth, even surface with a loose, uniformly fine texture.
 - a. Roll and rake, remove ridges and fill depressions, as required to meet finish grades.
 - b. Limit fine grading to areas which can be planted soon after preparation.
9. Restore lawn areas to specified condition if eroded or otherwise disturbed after fine grading and before planting.
10. Spread limestone uniformly over designated areas at a rate of 100 LBS per 1000 SF.
11. Distribute fertilizer as specified uniformly over areas to be seeded at a rate of 12 LBS per 1000 SF.

C. Native Grass Seeding:

3.2 INSTALLATION

A. Lawn-Type and Pasture Seeding:

1. Do not use seed which is wet, moldy, or otherwise damaged.
2. Perform seeding work from April 20 to May 15 for spring planting, and August 1 to September 15 for fall planting, unless otherwise approved by Owner's Representative.
3. Employ satisfactory methods of sowing using mechanical power-driven drills or seeders, or mechanical hand seeders, or other approved equipment.
4. Distribute seed evenly over entire area at rate of application not less than 4 LBS (PLS) of seed per 1000 SF, 50 percent sown in one direction, remainder at right angles to first sowing.
5. Stop work when work extends beyond most favorable planting season for species designated, or when satisfactory results cannot be obtained because of drought, high winds excessive moisture, or other factors.
 - a. Resume work only when favorable conditions develop.
6. Lightly rake seed into soil followed by light rolling or cultipacking.
7. Immediately protect seeded areas against erosion by mulching.

- a. Spread mulch in continuous blanket using 1-1/2 tons per acre to a depth of 4 or 5 straws.
8. Protect seeded slopes against erosion with erosion netting or other methods approved by Owner's Representative.
 - a. Protect seeded areas against traffic or other use by erecting barricades and placing warning signs.
9. Immediately following spreading mulch, anchor mulch using a rolling coulter or a wheatland land packer having wheels with V-shaped edges to force mulch into soil surface, or apply evenly distributed emulsified asphalt at rate of 10-13 GAL/1000 SF.
 - a. SS-1 emulsion in accordance with ASTM D5276 or RC-1 cutback asphalt in accordance with ASTM D2028 are acceptable.
 - b. If mulch and asphalt are applied in one treatment, use SS-1 emulsion with penetration test range between 150-200.
 - c. Use appropriate shields to protect adjacent site improvements.

3.3 PLANTING TREES, SHRUBS, AND GROUND COVERS

A. Notification:

1. Notify Owner's Representative of source of plants and plant materials at least 30 days prior to planting to permit Owner's Representative inspection of source qualifications.

B. Preparation:

1. Handle plants so that roots or balls are adequately protected from breakage of balls, from sun or drying winds.
 - a. Ensure tops or roots of plants are not permitted to dry out.
2. During transportation, protect materials from wind and sun to prevent tops and roots from drying out.
3. Protect tops of plants from damage. Plants with damaged tops will be rejected.
4. For purpose of inspection and planting identification, attach durable, legible labels to bundle or container of plant material delivered at the planting site. State correct plant name and size of each plant in weather-resistant ink on labels.
5. Do not prune trees and shrubs at nursery.

C. Planting Season:

1. Plant deciduous shade trees and shrubs any time the ground is suitable between October 15 and June 1.
2. Plant evergreen material between September 1 and June 1.
3. Plant ground covers between March 15 to June 1.

D. Planting Procedure:

1. Indicate locations of plants for approval by Owner's Representative before excavating plant locations.
2. In event underground construction, utilities, obstructions, or rock are encountered in excavation of plantings, secure alternate locations from Owner's Representative
 - a. Make said changes without additional compensation.
 - b. Where tree locations fall under existing overhead wires, or crowd existing trees, adjust locations as directed by Owner's Representative.
3. Excavate pits and beds as necessary and in accordance with ANLA/ANSI Z60.1.
 - a. Loosen bottom of pits prior to planting.
 - b. Excavation is unclassified; excavate all materials without additional cost.
4. Tree and shrub pits to be circular in shape with vertical sides at least 1 FT greater in diameter than ball diameter.
 - a. Pit to be of sufficient depth to provide 6 IN of planting soil under ball when set to natural grade.
5. Shrub and ground cover beds:
 - a. Plant shrubs used in mass plantings in individual holes of required size.
 - b. Strip all sod from among mass planting.
 - c. For ground cover beds, remove sod from within limits of bed.
 - d. Add soil amendments as specified and mix or rototill with existing topsoil to a depth of 6 IN.
6. Set plants straight or plumb, in locations when indicated and at such level that after settlement they bear same relationship to finished grade as they did in their former setting.
 - a. Carefully tamp planting soil under and around base of balls to prevent voids.
 - b. Remove burlap, rope and wires from top of balls.
 - c. Do not remove burlap from sides and bottom of balls.
7. Backfill plants with planting soil.
 - a. Tamp to 1/2 depth of pit and thoroughly water and puddle before bringing backfill to proper grade.
 - b. After planting has been completed, flood pit again so that backfill is thoroughly saturated and settled.
8. After planting is complete, form a level saucer 3 IN high around each tree extending to limit of plant pit for watering purposes.

9. Mulch plant pit after saucer has been shaped.
 - a. Mulch to limits of pit and uniformly over ground cover beds to a depth of 3 IN.
 - b. In mass plantings of shrubs, mulch entire area uniformly among shrubs to a depth of 3 IN.
 - c. If mulching is delayed and soil has dried out, water plants thoroughly before spreading mulch.
10. Staking: Stake trees immediately after planting as detailed on Drawings or in accordance with Nursery Standards.
11. Wrap deciduous trees 2 IN or more in caliper by neatly overlapping wrapping material between ground line and second branch. Place ties at top and bottom of wrapping material and not more than 12 IN apart between top and bottom ties.
12. Remove dead or damaged branches.
 - a. Thin deciduous material to about two-thirds of initial branching.
 - b. Remove only dead or damaged branches from evergreens.
13. Water plants during planting operations.
 - a. Water each plant a minimum of once each week until final acceptance.
 - b. Apply sufficient water to moisten backfill about each plant so that moisture will extend into the surrounding soil.

3.4 MAINTENANCE AND REPLACEMENT

A. General:

1. Begin maintenance of planted areas immediately after each portion is planted and continue until final acceptance or for a specific time period as stated below, whichever is the longer.
2. Provide and maintain temporary piping, hoses, and watering equipment as required to convey water from water sources and to keep planted areas uniformly moist as required for proper growth.
3. Protection of new materials:
 - a. Provide barricades, coverings or other types of protection necessary to prevent damage to existing improvements indicated to remain.
 - b. Repair and pay for all damaged items.
4. Replace unacceptable materials with materials and methods identical to the original specifications unless otherwise approved by the Owner's Representative.

B. Seeded or Sodded Lawns:

1. Maintenance period begins at completion of planting or installation of entire area to be seeded or sodded.
2. Owner's Representative will review seeded or sodded lawn area after installation for initial acceptance.
3. Maintain lawns by watering, fertilizing, weeding, mowing, trimming, and other operations such as rolling, regrading, and replanting as required to establish a smooth, uniform lawn, free of weeds and eroded or bare areas.
4. Lay out temporary lawn watering system and arrange watering schedule to avoid walking over muddy and newly seeded areas.
 - a. Use equipment and water to prevent puddling and water erosion and displacement of seed or mulch.
5. Unacceptable plantings are those areas that do not meet the quality of the specified material, produce the specified results, or were not installed to the specified methods.
6. Replant bare areas using same materials specified.
7. Owner's Representative will review final acceptability of installed areas at end of maintenance period.
8. Maintain repaired areas until remainder of maintenance period or approved by Owner's Representative, whichever is the longer period.

3.5 OWNER TRAINING (NOT USED)

END OF SECTION

SECTION 32 91 05

TOPSOILING AND FINISHED GRADING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Topsoiling and finished grading.

B. Related Specification Sections include, but are not necessarily limited to:

1. Division 00 – Proposing Requirements, Contract Forms, and Conditions of the Contract.
2. Division 01 – General Requirements.
3. Section 31 10 00 – Clearing and Grubbing.

1.2 MEASUREMENT AND PAYMENT

A. Unit Price. No separate payment will be made for this item. Include the cost in associated items for this project.

1.3 SUBMITTALS

A. Shop Drawings:

1. See Specification Section 01 33 00 – Submittal for requirements for the mechanics and administration of the submittal process.
2. Project Data: Test reports for furnished topsoil.

1.4 PROJECT CONDITIONS

- A. Verify amount of topsoil stockpiled and determine amount of additional topsoil, if necessary, to complete work.
- B. Location of Work: All areas within limits of grading and all areas outside limits of grading which are disturbed in the course of the work.

1.5 WARRANTY (NOT USED)

PART 2 - PRODUCTS

2.1 MATERIALS

A. Topsoil:

1. Imported, Original surface soil typical of the area.
2. Existing topsoil stockpiled under Specification Section 31 10 00 – Clearing and Grubbing.
3. Capable of supporting native plant growth.

4. pH: 5.5 to 8.5.
5. Liquid Limit: 50 or less.
6. Plasticity Index: 20 or less.
7. Gradation: maximum of 10 percent passing No. 200 sieve.

2.2 TOLERANCES

- A. Finish Grading Tolerance: 0.1 FT plus/minus from required elevations.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Correct, adjust and/or repair rough graded areas.
 1. Cut off mounds and ridges.
 2. Fill gullies and depressions.
 3. Perform other necessary repairs.
 4. Bring all sub-grades to specified contours, even and properly compacted.
- B. Loosen surface to depth of 2 IN, minimum.
- C. Remove all stones and debris over 2 IN in any dimension.

3.2 ROUGH GRADE REVIEW

- A. Reviewed by Owner's Representative in Specification Section 31 10 00 – Clearing and Grubbing.

3.3 PLACING TOPSOIL

- A. Do not place when subgrade is wet or frozen enough to cause clodding.
- B. Spread to compacted depth of 4 IN for all disturbed earth areas.
- C. If topsoil stockpiled is less than amount required for work, furnish additional topsoil at no cost to Owner.
- D. Provide finished surface free of stones, sticks, or other material 1 IN or more in any dimension.
- E. Provide finished surface smooth and true to required grades.
- F. Restore stockpile area to condition of rest of finished work.

3.4 ACCEPTANCE

- A. Upon completion of topsoiling, obtain Owner's Representative acceptance of grade and surface.
- B. Make test holes where directed to verify proper placement and thickness of topsoil.

3.5 OWNER TRAINING (NOT USED)

END OF SECTION

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SECTION 32 92 13
HYDRO-MULCHING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Seeding, fertilizing, mulching, and maintenance of areas indicated on Drawings.
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
 - 2. Division 01 – General Requirements.
 - 3. Section 32 90 00 – Seeding, Sodding, and Landscaping.
 - 4. Section 32 91 05 – Topsoiling and Finished Grading.

1.2 MEASUREMENT AND PAYMENT

- A. Unit Price. No separate payment will be made for this item. Include the cost in associated items for this project.

1.3 SUBMITTALS

- A. Conform to requirements of Section 01 33 00 – Submittals.
- B. Submit certification from supplier that each type of seed conforms to these specifications and requirements of Texas Seed Law. Certification shall accompany seed delivery.
- C. Submit certificate stating that fertilizer complies with these specifications and requirements of Texas Fertilizer Law.

1.4 WARRANTY (NOT USED)

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Topsoil: Conform to material requirements of Section 32 91 05 – Topsoiling and Finished Grading.
- B. Seed: Conform to U.S. Department of Agriculture rules and regulations of Federal Seed Act and Texas Seed Law. Seed shall be certified 90 percent pure and furnish 80 percent germination and meet following requirements:

1. Rye: Fresh, clean, Italian rye grass seed (*lolium multi-florum*), mixed in labeled proportions. As tested, minimum percentages of impurities and germination must be labeled. Deliver in original unopened containers.
2. Bermuda: Extra-fancy, treated, lawn type common bermuda (*Cynodon dactylon*). Deliver in original, unopened container showing weight, analysis, name of vendor, and germination test results.
3. Wet, moldy, or otherwise damaged seed will not be accepted.
4. Seed requirements, application rates, and planting dates are:

TYPE	APPLICATION RATE POUNDS/A	PLANTING DATE
Hulled Common Bermuda Grass 98/88	40	Jan 1 to Mar 31
Unhulled Common Bermuda Grass 98/88	40	
Hulled Common Bermuda Grass 98/88	40	Apr 1 to Sep 30
Hulled Common Bermuda Grass 98/88	40	Oct 1 to Dec 31
Unhulled Common Bermuda Grass 98/88	40	
Annual Rye Grass (Gulf)	30	

- C. Fertilizer: Dry and free flowing, inorganic, water soluble commercial fertilizer, which is uniform in composition. Deliver in unopened containers which bear manufacturers guaranteed analysis. Caked, damaged, or otherwise unsuitable fertilizer will not be accepted. Fertilizer shall contain minimum percentages of following elements:
1. Nitrogen: 10 Percent
 2. Phosphoric Acid: 20 Percent
 3. Potash: 10 Percent
- D. Mulch:
1. Virgin wood cellulose fibers from whole wood chips having minimum of 20 percent fibers 0.42 inches in length and 0.01 inches in diameter.
 2. Cellulose fibers manufactured from recycled newspaper and meeting same fiber content and size as for cellulose fibers from wood chips.
 3. Dye mulch green for coverage verification purposes.
- E. Soil Stabilizer: "Terra Tack 1" or approved equal.
- F. Weed control agent: Pre-emergent herbicide for grass areas, such as "Benefin," or approved equal.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Place and compact topsoil in accordance with requirements of Section 32 91 05 – Topsoiling and Finished Grading.
- B. Dispose of objectionable and waste materials in accordance with Section 01 74 19 – Construction Waste Management and Disposal.

3.2 APPLICATION

- A. Seed: Apply uniformly at rates given in Paragraph 2.1 B for type of seed and planting date.
- B. Fertilizer: Apply uniformly at rate of 500 pounds per acre.
- C. Mulch: Apply uniformly at rate of 50 pounds per 1,000 square feet.
- D. Soil Stabilizer: Apply uniformly at rate of 40 pounds per acre.
- E. Weed Control Agent: Apply at manufacturer's recommended rate prior to hydro mulching.
- F. Sod: Lay single row of sod along perimeter where top soil and pavement intersect. Apply in conformance to Section 32 90 00 – Seeding, Sodding, and Landscaping.
- G. Suspend operations under conditions of drought, excessive moisture, high winds, or extreme or prolonged cold. Obtain Owner's representative approval before resuming operations.

3.3 MAINTENANCE

- A. Maintain grassed areas minimum of 90 days, or as required to establish acceptable growth. For areas seeded in fall, continue maintenance following spring until acceptable lawn is established.
- B. Maintain grassed areas by watering, fertilizing, weeding, and trimming.
- C. Repair areas damaged by erosion by regrading, rolling, and replanting.
- D. Reseed small, sparse grass areas. When sparse areas exceed 20 percent of planted area, reseed by hydro mulch.
- E. Mow grass when height reaches 3½ inches or greater on average before final acceptance. Mow to height of 2½ inches.

3.4 OWNER TRAINING (NOT USED)

END OF SECTION

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SECTION 33 01 30.13
CURED-IN-PLACE PIPE

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Pre-approved methods and materials for the rehabilitation of deteriorated gravity sewer lines by the Cured-In-Place Pipe (CIPP) lining method.

1.2 MEASUREMENT AND PAYMENT

- A. Measurement for cured-in-place pipe is on a linear foot basis for installed liner (includes hydrophilic end seal sleeves), measured from centerline of upstream manhole to centerline of downstream manhole.
- B. Liner tube, resin, temperature sensor fiber optic cable for continuous cure monitor system, and sealing liner at manholes (with hydrophilic end seal sleeves) of completed work are included in the cured-in-place pipe unit price. CIPP samples (flat plate) for each setup will be provided to the Owner for testing. No separate payment will be made for these items.
- C. Materials and equipment required for typical or Over-the-Hole CIPP installation methods must be included in the cured-in-place pipe unit price.
 - 1. Contractor must provide color of tent for Over-the-Hole setup as approved by the Owner.
- D. Measurement for pre-liner during cured-in-place pipe installation is on a linear foot basis for pre-liner installed (includes hydrophilic end seal sleeves), measured from centerline of upstream manhole to centerline of downstream manhole.
 - 1. The Contractor will provide the Owner with documentation indicating the limits when a pre-liner will be required for approval.
 - 2. Pre-liner must be compatible with all cured-in-place liners. Pre-liner will be used in areas where there is active infiltration to protect the resin from being washed out.
 - 3. Cost of the pre-liner includes installation of hydrophilic end seal sleeves. The hydrophilic end seal sleeves must be compatible with all types of CIPP liners. End seals must be watertight to prevent water from entering into the manholes.
 - 4. Contractor shall provide submittals for pre-liner and end seals for review and approval.
- E. Measurement for service lateral reconnections is on a unit price basis for each reconnection. Payment will be made for each reconnection installed complete in place, including service connections, couplings, and adapters

disconnecting existing services, reconnecting new service, fittings, excavation, backfill and testing.

- F. Measurement and payment for modification of existing manhole invert (including the bench) shall be paid for each manhole invert that has been modified as needed for cured-in-place liner installation. This shall be full compensation for providing labor, materials, tools, equipment, diversion pumping, incidentals and necessary operations.
1. Incidental items include cleaning, preparation, testing, all safety procedures, plugs, disposal of debris/pipe (all types), reshaping of manhole invert and bench, grouting the existing pipes and surface restoration.
 2. Contractor shall submit a modification plan for approval to Engineer.
 3. This item shall only apply to manholes identified on the plan drawings or as authorized by the Engineer.

1.3 REFERENCES

- A. AASHTO Standard Specification for Highway Bridges.
- B. ASTM C581 - Standard Practice for Determining Chemical Resistance of Thermosetting Resins Used in Glass Fiber Reinforced Structures, Intended for Liquid Service.
- C. ASTM D543 - Test Method for Resistance of Plastics to Chemical Reagents.
- D. ASTM D790 - Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- E. ASTM D3681 - Test Method for Chemical Resistance of Reinforced Thermosetting Resin Pipe in a Deflected Condition.
- F. ASTM D4814 - Specification for Automotive Spark-Ignition Engine Fuel.
- G. ASTM F1216 – Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube.
- H. ASTM F1743 – Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP)
- I. ASTM D5813 – Cured-in-Place Thermosetting Resin Sewer Pipe
- J. ASTM D2990 – Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics

1.4 SYSTEM DESCRIPTION

- A. The process generally consists of inserting a resin impregnated flexible tube into an existing sewer, expanding the tube out against the sewer

pipe, and curing the tube to form a pipe liner. Curing is accomplished by circulating heated water or ambient temperature water to effect the desired cure throughout the tube extending full length from manhole to manhole.

- B. The CIPP cures into a hard, impermeable liner pipe of the specified thickness and forms a structurally sound liner pipe with a uniformly smooth interior providing hydraulic flow equal to or greater than the existing sewer in original condition.
- C. The general guide for materials and installation of the CIPP is ASTM F1216, as modified by this specification. The Owner reserves the right to approve any material or installation practice which may differ from this standard.

1.5 SUBMITTALS

- A. Make submittals in conformance with requirements of Section 01 33 00 – Submittals.
- B. Resin
 - 1. Submit technical data sheet showing physical and chemical properties.
 - 2. Submit test results to show compliance with ASTM C581.
- C. Flexible Tube
 - 1. Submit technical data sheet showing physical properties.
- D. Cure-In-Place Pipe
 - 1. Submit curing schedule.
 - 2. Submit copies of curing log sheets for each inversion. Must be submitted at least weekly.
 - 3. Submit, if requested, copies of any test results performed by the Contractor's laboratory.
 - 4. Submit Contractor's Quality Control Plan or Procedures that the Contractor uses to ensure proper materials are used in the wet out process.
 - 5. Submit data on temperature sensor cable (fiber optic) monitoring system to continuously monitor the cure temperature of CIPP liner along the entire length of pipe.
 - 6. Submit Post Installation TV as specified in Section 33 31 19.01 – Cleaning and Televising of Sewers.
- E. Pre-liner
 - 1. Submit technical data sheet showing physical properties.

F. End Seal Sleeve

1. Submit technical data sheet showing physical properties.

1.6 QUALITY ASSURANCE

- A. Use ASTM F1216 as the general guide for acceptable products and processes.
- B. Though the process may be licensed, no change of material, design values, or procedures may be made during the course of the Work without the prior written approval of the Engineer.
- C. Contractor shall have a Quality Control Plan or Procedure in place that will allow the Engineer to monitor the wet out process.
 1. The lining tube manufacturer and installation Contractor shall operate under a quality management system that is third-party certified to ISO 9001 or other internationally recognized organization standards. Proof of certification shall be submitted with the Bidder's bid and required for approval.
- D. Contractor must have 5 years of CIPP installation experience with the exact product intended for use with this proposal.
- E. A minimum of 5 successful wastewater collection system projects of a similar size and scope of work shall be performed in the U.S. and documented to the satisfaction of the Owner to assure commercial viability. All successful projects must be equal to or larger in host pipe diameter to that which is included within this project.
 1. The installer shall provide an experience record demonstrating the successful installation of 75,000 LF (minimum) of the same or larger diameter product as being proposed for this project.
- F. Proven materials have passed independent laboratory testing and have been successfully installed to repair failing host pipes in the U. S. for at least 4 years.
- G. Chemical Resistance - The CIPP shall meet the chemical resistance requirements of ASTM F1216, Appendix X2. CIPP samples for testing shall be of tube and resin system similar to that proposed for actual construction. It is required that CIPP samples with and without plastic coating meet these chemical-testing requirements.
- H. Hydraulic Capacity - Overall, the hydraulic cross-section shall be maintained as large as possible. The CIPP shall have a minimum of the full flow capacity of the original pipe before rehabilitation. Calculated capacities may be derived using a commonly accepted roughness coefficient for the existing pipe material taking into consideration its age and condition.
- I. CIPP Field Samples - The Contractor shall submit test results to Owner and/or Engineer from field installations of the same resin system and tube

materials as proposed for the actual installation. These test results must verify that the CIPP physical properties specified in Section 2.2 have been achieved in previous field applications. Samples for this project shall be made and tested as described in Section 3.7.

PART 2 - PRODUCTS

2.1 SUPPLIERS

- A. The following manufacturers/suppliers of the cured-in-place pipe have been pre-approved:
 - 1. National Liner, LLC
 - 2. Inliner Technologies, LLC
 - 3. Insituform Technologies, Inc.
 - 4. Applied Felts, Inc.
 - 5. Invert-A-Pipe

2.2 MATERIALS

- A. Flexible Tube
 - 1. Provide a flexible tube manufactured and fabricated under quality controlled conditions set by the process manufacturer. Use a tube sized so that, when installed, the tube will snugly fit the internal circumference of the sewer pipe and produce the specified thickness when the liquid thermosetting resin cures.
 - 2. Use a tube length that is the minimum necessary to fully span the distance between manholes, with an allowance for proper stretching or shrinkage due to pressure or expansion. Include a sufficient amount of material for sealing at manholes and for cutting openings to service lines.
- B. Resin
 - 1. Provide a liquid thermosetting resin to saturate the tube and produce a properly cured liner which is resistant to abrasion due to solids, grit, and sand.
 - 2. Use polyester, vinyl ester, or epoxy resin complying with the following requirements.
 - a. Polyester Resin. A resin created by reaction products between isophthalic/tetrathalic acid, maleic anhydride, and a glycol characterized by reactive unsaturation located along the molecular chain. This resin is compounded with a reactive styrene monomer and reacted together with initiators/promoters to produce cross linked copolymer matrices.

- b. Vinyl ester Resin. A resin created by reaction products of epoxy resins with methacrylic acid and characterized by reactive unsaturation located in terminal positions of the molecular chain. This resin is compounded with a reactive styrene monomer and reacted together with initiators/promoters to produce cross linked copolymer matrices.
 - c. Epoxy Resin. A resin created by reaction products of biphenyl A and epichlorohydrin producing glycidyl ether reactive sites in the terminal position of the molecular chain. This resin is cross linked with the reactive equivalent of a curing agent suitable for the cured-in-place process.
3. Have the corrosion resistance of the resin system tested by the resin manufacturer in accordance with ASTM C581. The result of exposure to the chemical solutions listed below shall produce loss of not more than 20 percent of the initial physical properties when tested in accordance with ASTM C581 for a period of not less than 1 year at a temperature of 73.4 degrees F plus or minus 3.6 degrees F.

CHEMICAL SOLUTION	CONCENTRATION, %
Tap Water (pH 6-9)	100
Nitric Acid	5
Phosphoric Acid	10
Sulfuric Acid	10
ASTM Fuel C ¹	100
Vegetable Oil ²	100
Detergent ³	0.1
Soap ³	0.1

¹. As per ASTM D4814

². Cotton seed, corn, or mineral oil

³. As per ASTM D543

- C. CIPP Properties. The installed CIPP after curing shall meet the minimum structural properties listed below:

PROPERTY	REFERENCE	MINIMUM VALUE
Flexural Strength	ASTM D790	4,500 psi
Modulus of Elasticity	ASTM D790	400,000 psi

- D. CIPP Thickness. The CIPP thickness after curing shall meet the minimum thickness specified below. Provide the required CIPP thickness based on the maximum depth to sewer invert for the segment being rehabilitated.

Upstream Manhole	Downstream Manhole	Existing Line Dia. (inches)	Depth of line at deepest point based on terrain	Calculated Enhanced Resin Thickness (mm) (minimum)
S-4	S-1	42	25.7	28.5
S-1	S-5A	42	15.8	22.0
S-5A	S-6	42	14.7	21.0
S-6	S-7	42	14.5	21.0
S-7	S-8	42	13.3	20.0
S-8	S-9	42	13.2	20.0
S-9	MH11	42	13.5	20.0
MH11	MH12	48	19.0	27.5
MH12	S-24	48	24.6	31.5
S-24	MH13	48	19.4	28.0
MH13	MH14	48	16.6	25.5
MH14	MH15	48	16.5	25.5
MH15	MH16	48	13.9	23.0
MH16	A-14	48	18.0	26.5
A-14	A-14A	48	17.2	26.0
A-14A	A-13	48	15.8	25.0
A-13	A-12	48	17.5	26.0
A-12	A-11	54	18.3	30.0
A-11	A-10	54	17.1	28.5
A-10	A-9	54	15.5	27.0
A-9	A-8	54	16.1	27.5
A-8	A-7	54	16.9	28.5
A-7	A-6	54	19.3	30.5
A-6	A-5	54	17.2	28.5
A-5	A-4	54	17.0	28.5
A-4	A-3	54	32.2	40.0
A-3	A-2	54	27.5	37.0
A-2	A-1	54	23.5	34.0
A-1	UNK-3	72	24.1	44.5
UNK-3	UNK-2	72	24.7	45.0
UNK-2	UNK-1	72	25.1	45.5
UNK-1	LS	72	25.6	46.0

1. The minimum thickness for the installed CIPP after curing has been calculated based on the following design considerations:
 - a. The existing sewer is considered fully deteriorated.
 - b. The sewer is considered to have an ovality of 2% in circumference.
 - c. The CIPP is subjected to a full soil load of 120 pounds per cubic foot.
 - d. The CIPP is subjected to traffic live loads as calculated by AASHTO Standard Specifications for Highway Bridges, HS-20-44 Highway Loading.
 - e. The modulus of soil reaction for pipe zone backfill material is 700 psi.
 - f. The CIPP is subject to a groundwater elevation at natural grade.
 - g. The long-term flexural strength and long-term flexural modulus of elasticity for CIPP is equivalent to 50% of the initial flexural strength and initial flexural modulus of elasticity, respectively, as measured in accordance with ASTM D790.
 - h. The maximum deflection is 5% in the vertical axis.
 - i. The minimum overall factor of safety is 2.0.
 - j. A 5% allowance is added for resin migration.
 2. Review the table of CIPP thickness for correctness and, if disagreeing that the minimum CIPP thickness indicated is adequate to meet the design criteria, advise the Engineer. If any modifications to increase CIPP thickness are required, the Owner will issue required modifications.

Verify that installed thickness of the CIPP is within minus 5 percent and plus 10 percent of the specified thickness. Accurately measure the installed thickness and certify it through an independent testing laboratory which will take the sample and retain custody of the material. Have thickness measured and results submitted to the Engineer.
- E. Physical Property Tests – Post installation physical property tests of the cured composite tube and resin system shall be performed in accordance with ASTM D 790, at the sole discretion and cost of the Owner.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Provide notifications in accordance with Section 01 14 19 – Use of Premises.
- B. Review survey television inspection tapes of the sewer line to plan rehabilitation work. Complete obstruction removal, point repairs and sag elimination.
- C. Inform the Engineer of work schedules for CIPP installation.
 - 1. Provide 72-hour notice for the Engineer and Owner to witness wet out procedure.
 - 2. Provide 72-hour notice to the Engineer and Owner prior to inversion and curing of liner installation.
- D. Conduct operations in accordance with applicable OSHA standards, including those safety requirements involving work on an elevated platform and entry into a confined space. Make suitable precautions to eliminate hazards to personnel near construction activities when pressurized air is being used.

3.2 PRE-INSTALLATION CLEANING AND TV INSPECTION

- A. Perform a Pre-Installation Television Inspection immediately before installation of the resin impregnated flexible tube. Verify that sewer is clean and pipe conditions are as anticipated. Rewash and reclean existing sewer, as necessary, immediately before pre-installation television inspection.
- B. All TV inspection shall be in accordance with Section 33 31 19.01 – Cleaning and Televising of Sewers.

3.3 OBSTRUCTION REMOVAL, POINT REPAIR AND SAG ELIMINATION

- A. If pre-installation video inspection reveals an obstruction in the line segment (such as heavy solids, dropped joints, protruding service connections or collapsed pipe) that cannot be removed by conventional sewer cleaning equipment as described in Section 33 31 19.01 – Cleaning and Televising of Sewers and the obstruction will prevent completion of the insertion process, perform point repairs or obstruction removal prior to CIPP installation. Follow requirements in Section 33 01 30.70 – Point Repairs and Obstruction Removals. Immediately notify Engineer and Owner if it is necessary.
- B. If pre-installation video inspection reveals a sag in the sewer that has a vertical displacement greater than one-half the pipe diameter, eliminate the sag by performing a point repair as specified in Section 33 01 30.70 – Point Repairs and Obstruction Removals or by removal and replacement of the sewer segment. Notify the Engineer when a sag is identified so that the method of repair can be determined.

- C. Infiltration identified by pre-installation video inspection shall be repaired by external or internal chemical grout injection prior to the CIPP installation (no separate pay). Chemical grout by injection (internal or external) to repair infiltration shall be performed at no additional cost to the project. Notify the Engineer and Owner if infiltration is such that it cannot be repaired by chemical grouting.

- 1. Contractor must submit product submittal prior to use.

3.4 DIVERSION PUMPING

- A. Maintain commercial and residential sanitary sewer service during the installation process.
- B. Install and operate diversion pumping equipment to maintain sewage flow around the segment of pipe being rehabilitated and to prevent backup or overflow as specified in Section 33 32 00.01 – Diversion Pumping.

3.5 INSTALLATION PROCEDURES

- A. Wet Out: Designate a location where the flexible tube will be impregnated with resin. Thoroughly saturate flexible tube prior to installation. A catalyst system, or additive compatible with the resin and flexible tube, may be used as recommended by the manufacturer and with approval of the Engineer. Handle the resin-impregnated flexible tube to retard or prevent resin setting until it is ready for insertion.
- B. Insertion: Insert flexible tube through an existing manhole by means of the inversion, pull-in or other approved procedure. Connect tube ends by an attachment so that a leak-proof seal is created.
 - 1. The lining shall be installed by using the following insertion method:
 - a. Water inversion – where the liner is inverted under the pressure of water and cured by circulating hot water.
- C. Curing.
 - 1. Follow submitted cure schedule in curing of liner.
 - 2. After insertion is completed, apply a suitable recirculation system capable of delivering water uniformly throughout the section to achieve a consistent cure of the resin. Maintain the curing temperature as recommended by the resin/catalyst system manufacturer.
 - 3. For pipes 42" and larger, unless otherwise specified by the Engineer or recommended by the manufacturer, the Contractor must utilize a fiber optic cure monitoring system during the CIPP installation.
 - 4. Fit suitable monitors to any heat source to gauge the temperature of incoming and outgoing water supply. Place another gauge

between impregnated tube and invert of the original pipe at the manholes to monitor outside liner temperatures during resin curing.

5. Continue uninterrupted heating until the desired temperature is achieved. Accurately measure temperatures at both ends of the pipe. Obtain initials of the Engineer on curing logs if the Engineer observes curing operations. Consider initial cure complete when exposed portions of the flexible tube pipe take a hard set and temperatures are adequate, as recommended by the resin/catalyst system manufacturer.
- D. Cool Down: Initiate a controlled cool-down to cool the hardened pipe to a temperature below 110 degrees F, in accordance with the cure schedule. Take care in release of the water column so that a vacuum will not develop that could damage the newly installed pipe. Do not discharge water in excess of 110 degrees F into the sanitary sewer system.
- E. Due to the proximity of the SJRA Wastewater Treatment Facility No. 2, all water used for the CIPP curing process shall be processed through a carbon filtration treatment system prior to discharge back into the sewer system. Discharged water shall meet the following requirements:
 1. Concentration of styrene shall not exceed 2 mg/L.
 2. Temperature shall not exceed 110° F as described in section 3.5 D, above.Contractor shall maintain an ongoing sampling program and provide complete laboratory analysis for styrene on all samples collected along with completed chain-of-custody forms.

Analytical results demonstrating compliance with the styrene requirement must be provided within 48 hours following each CIPP installation AND prior to the discharge of any additional CIPP process water.
- F. Finished Pipe: Provide a finished CIPP which is continuous and free as commercially practicable from visual defects such as foreign inclusions, dry spots, pinholes, and delamination.
- G. If a point repair is required after the liner has cured, use a tube segment to splice across the point repair. Cure the segment using the same process as used for the original liner.

3.6 FIELD QUALITY CONTROL

- A. For each inversion, place a short section of pipe in the manhole aligned with and the same size as the existing sewer. Run the impregnated tube through the pipe and cure the CIPP under restrained conditions. This liner will be used to obtain samples for testing. Label samples with the project number, date of installation, location, manhole number and specified thickness. Provide duplicate samples from the same pipe section to the Engineer for inspection and testing by an independent laboratory.

- B. Contractor shall have a quality control plan or procedure for the wetout process. It shall include a report for each wet out of each CIPP segment showing information such as resin lot numbers, volumes of resin, and catalyst used. Include a checklist so that each critical step in the wet out process is checked off and initialed.
- C. Maintain a curing log of CIPP temperatures at the upstream and downstream manholes during the curing process to document that proper temperatures and cure times have been achieved.
- D. Repair failed CIPP or CIPP deemed unacceptable as a result of post-installation television inspection or test reports for structural values, thickness, or other defects. Obtain approval of the Engineer for method of repair, which may require field or workshop demonstration.
- E. CIPP sampling shall be as specified by the manufacturer and in accordance with 3.7 Testing.

3.7 TESTING

- A. CIPP samples shall be prepared for each installation setup designated by the owner/engineer. Pipe physical properties will be tested in accordance with ASTM F1216 or ASTM F1743, Section 8, using either method proposed. The flexural properties must meet or exceed the values of this specification, Table 1 of ASTM F1216 or the values submitted to the Owner and/or Engineer by the Contractor for this project's CIPP wall design, whichever is greater. No additional payment will be made for providing samples to the Owner for testing.
- B. Wall thickness of samples shall be determined as described in paragraph 8.1.6 of ASTM F1743. The minimum wall thickness at any point shall not be less than 87.5% of the submitted minimum design wall thickness as calculated in section 2.2.D.
- C. Visual inspection of the CIPP shall be in accordance with ASTM F1743, Section 8.6.

3.8 SERVICE RECONNECTIONS

- A. After the cured-in-place process is completed, reconnect service connections. Reinstall service reconnections within 24 hours after the cured-in-place process is completed.
- B. These services shall be reconnected by excavation and man-entry or remote-operated cutting tool.

3.9 SEALING AT MANHOLES

- A. Form a tight seal between the CIPP and the manhole wall with hydrophilic end seal sleeves at the pipe penetration. Do not leave any annular gaps.

1. End seals shall be composed of hydrophilic rubber and seamlessly molded as a one-piece (includes retaining ring), minimum 3.5-inch wide which when installed will form a 360-degree seal between the host pipe and the newly installed CIPP liner. Use of caulking, rope or band type of an end seal shall not be allowed. Acceptable end seals are Insignia™ End Seals by LMK Enterprises or approved equal.
 2. Seal any annular spaces greater than 2-inch with manhole wall repair material. Finish off the seal with an approved vinylester or polyester resin placed around the pipe opening from inside the manhole in a band at least 4 inches wide. Complete the sealing procedure for each liner segment immediately after the liner is cured.
- B. Reshape and smooth the manhole invert as specified in Section 33 60 01 – Manhole Rehabilitation.

3.10 POST-TELEVISING OF COMPLETED WORK

- A. Provide a Post-Installation TV Inspection showing completed work including condition of restored connections. Refer to Section 33 31 19.01 – Cleaning and Televising of Sewers and Section 33 31 13.01 – Acceptance Testing for Sanitary Sewers.

3.12 FINAL CLEANUP

- A. Upon completion of rehabilitation work and testing, clean and restore project area affected by the Work. Restoration shall be in accordance with Section 01 74 23 – Restoration of Site.

3.13 NON-CONFORMING WORK

- A. If either the thickness, flexural strength, or flexural modulus of elasticity of the installed CIPP are less than 90% of the specified values, the product is considered unacceptable. A method of repair or replacement shall be submitted for review and approval by the Owner. All work required to remedy non-conforming work shall be at the sole cost of the Contractor.
- B. For all instances, as described in this specification section, other than thickness, flexural strength, and flexural modulus of elasticity, where the CIPP is deemed unacceptable, the Contractor shall submit a method of repair or replacement for review and approval by the Owner. All work required to remedy non-conforming work shall be at the sole cost of the Contractor.

END OF SECTION

SECTION 33 01 30.70
POINT REPAIRS AND OBSTRUCTION REMOVALS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Repair sanitary sewer lines by replacing typically short lengths of failed pipe with new pipe.
- B. Repair service lines located within the utility easement or street right-of-way, by replacing short lengths of failed pipe with new pipe.
- C. Remove obstructions by excavation or remote device or excavation.

1.2 MEASUREMENT AND PAYMENT

- A. Measurement for sewer line point repair is on a unit price basis for each point repair performed. This bid item shall also apply for any emergency point repairs necessary in the sanitary sewer lines designated for full length rehabilitation along the project alignment. No additional payment shall be made for mobilization for the emergency point repairs. Contractor must mobilize immediately to address the emergency repairs. The length of pipe to be replaced under each point repair pay item, as determined by depth of sewer line measured from natural ground to flowline at the location of the point of repair, is as follows:
 - 1. Six (6) feet minimum length for sewers up to ten (10) feet deep.
 - 2. Fifteen (15) feet minimum length for sewers over ten (10) feet deep.
 - 3. Extra length for point repair will be paid per linear foot of pipe installed beyond the minimum lengths included with the point repair, as described above.
- B. The cost of the following items of work are included in the unit prices for point repairs:
 - 1. Diversion pumping system.
 - 2. Access to site.
 - 3. Excavation, embedment and backfill.
 - 4. Hauling away and lawful disposal of excess excavated materials and debris.
 - 5. Pipe, pipe fittings, adapters and concrete collars.
 - 6. Smoke testing and any required testing.
 - 7. Restoration of site improvements, including pavement and sodding.

8. No additional payment will be made for re-mobilization if the Contractor has mobilized off the project site.
9. Pre and Post Television inspection.
- C. Measurement for obstruction removal is on a unit price basis for each setup. A setup consists of one or more manhole sections up to a continuous length of 800-feet provided that one or more removals are accomplished in each setup.
 1. This bid item is intended to apply to obstruction removal where obstructions are at specific locations and not continuous throughout the pipe, such as roots, hanging gaskets, protruding services, fixed debris, and stabilized sand.
- D. The cost of the following items of work are included in the unit prices for obstruction removal by remote device or excavation:
 1. Cleaning of sewers due to broken pipe, roots, dirt loose deposits, etc.
 2. Hauling away and lawful disposal of excess excavated materials and debris.
 3. Smoke testing and any required testing.
 4. Restoration of site improvements, including sodding.
 5. Television inspection.
- E. Payment will not be made for obstruction removal if the existing sewer line, service line or tap is damaged and a point repair is required. Payment will not be made for removal of a protruding tap if the service reconnection is performed by excavation.

1.3 PERFORMANCE REQUIREMENTS

- A. Sewer Line Point Repair.
 1. Locate and replace small lengths of one or more pipe sections where isolated line failure has occurred due to settlement, corrosion, crushing, or separation of joints.
 2. The Engineer may identify potential locations for point repair, but the Contractor is responsible for verifying locations.
 3. Determine the location of point repairs by TV inspection of the manhole section in which the failed pipe is located. The Engineer will direct the Contractor to make point repairs.
 4. The Engineer will authorize each point repair after failure points are located. Do not make point repairs without prior approval of Engineer.
 5. Replace carrier pipe for point repairs unless otherwise directed by the Engineer.

- B. Service Line Point Repair.
 - 1. Locate and replace small lengths of one or more pipe sections where isolated line failure has occurred due to settlement, corrosion, crushing, or separation of joints.
 - 2. The Engineer may identify potential locations for point repair, but the Contractor is responsible for verifying locations.
 - 3. Determine the location of service line repairs by smoke testing the manhole section in which the failed pipe is located. The Engineer will direct the Contractor to make point repairs based on results of smoke testing.
 - 4. The Engineer will authorize each point repair after failure points are located. Do not make point repairs without prior approval of the Engineer. Point repairs are performed only on those portions of service lines which are located in an easement or right-of-way; no repairs to service lines are performed on private property.
 - 5. Replace carrier pipe for point repairs unless otherwise directed by the Engineer.
 - 6. Post-installation TV inspection of service line point repairs is not required.
- C. Obstruction Removal. Remove obstructions by one of the following methods:
 - 1. Obstruction removal by remote device.
 - a. Protruding taps service lines that protrude greater than one inch into the sewer.
 - b. Other obstructions, such as hanging gaskets, fixed debris, stabilized sand, hardened mineral deposits, and roots.
 - 2. Obstruction removal by excavation. An obstruction encountered during liner insertion that is removed by digging and exposing the pipe.
 - 3. Obstruction removal could run entire length of sewer line depending on direction of the Engineer.

1.4 DEFINITIONS

- A. Point Repair. Repair of broken or collapsed gravity sanitary sewer lines on public property, including mains, collectors, and service lines, by replacing at the point of failure, the length of failed pipe with new pipe.
- B. Obstruction Removal. Clearing the sewer main of obstructions to allow for rehabilitation.

- C. Sewer Lines. Gravity flow pipe lines in the easement or right-of-way which collect sanitary sewer discharges from commercial or residential service lines and discharge into another sewer line (main or collector), lift station, or treatment plant.
- D. Service Lines. Those gravity flow sewer lines from commercial or residential property which discharge into a sewer line.

1.5 SUBMITTALS

- A. Conform to requirements of Section 01 33 00 – Submittals.
- B. Submit product data for each pipe product, fittings, and jointing material.
- C. Submit pre- and post-inspection videos in accordance with Section 33 31 19.01 - Cleaning and Televising of Sewers.

1.6 SEQUENCING

- A. Complete point repairs before rehabilitating sewer between adjacent manholes.
- B. Clean line and perform post-installation television inspection for each point repair that is on a sewer line that is not scheduled for rehabilitation.

PART 2 PRODUCTS

2.1 PIPE

- A. CCFRPM Pipe and Joints: 42-inch through 72-inch pipe complying with Section 33 11 16 CCFRPM Pipe for Direct Bury Installation.

2.2 JOINTING MATERIALS

- A. Pipe shall be field connected with fiberglass sleeve couplings that utilize elastomeric sealing gaskets as the sole means to maintain joint watertightness. The joints must meet the performance requirements of ASTM D4161. Joints at tie-ins, when needed, may utilize gasket-sealed closure couplings.
- B. Use 5 sack premix (bag) concrete or Class A concrete with a minimum compressive strength of 4000 psi for concrete collar.

PART 3 EXECUTION

3.1 PROTECTION

- A. Provide barricades, warning lights and signs for excavations created by point repairs.
- B. Do not allow sand, debris or runoff to enter sewer system.

3.2 DIVERSION PUMPING

- A. Install and operate diversion pumping equipment as required to maintain sewage flow and to prevent backup or overflow. Conform to the requirements of Section 33 32 00.01 – Diversion Pumping.

3.3 EXCAVATION

- A. Excavate and backfill trenches in accordance with Section 31 21 33 – Trenching, Backfilling, and Compacting for Utilities.
- B. Perform work in accordance with OSHA standards. Employ a Trench Safety System as required in Section 31 41 00 - Trench Safety Systems.
- C. Install and operate necessary dewatering and surface water control measures in accordance with requirements of Section 01 57 23.02 - Control of Surface and Ground Water during Construction.
- D. Remove excess excavated material and debris from the work site daily.

3.4 TYPICAL SEQUENCE OF POINT REPAIR FOR SEWER LINES

- A. Perform pre-installation television inspection to verify location of sewer line point repairs.
- B. After the location of the point repair is determined, excavate the required length of point repair. Remove the damaged pipe and replace with new pipe. Shape the bottom of the trench and place the required pipe bedding so that the grade of the replaced pipe matches the grade of the existing line.
- C. Prior to replacing pipe, determine condition of the existing line on both sides of point repair by lamping the line a minimum of 10 feet in each direction. Determine whether additional lengths of line beyond "minimum length" criteria, need replacement. Report need for additional replacement to the Engineer and obtain approval before proceeding.
- D. Connect the new pipe to existing pipe using flexible adapters. If joints cannot be made watertight using flexible adapters, place waterstop gaskets on each joint and encase in a reinforced concrete collar. Reconnect affected service connections or stacks using full bodied fittings.
- E. Establish proper grade for the pipe being replaced using methods acceptable to the Engineer.
- F. Encase exposed pipe in cement stabilized sand conforming to Section 32 13.16 - Cement Stabilized Sand or crushed stone conforming to Section 31 21 33 – Trenching, Backfilling, and Compacting for Utilities.
- G. Backfill the excavation as specified in Section 31 21 33 - Trenching, Backfilling and Compacting for Utilities.

- H. Complete site restoration as specified in Section 01 74 23 – Restoration of Site.
- I. Perform a post-installation TV inspection for each point repair as specified in Section 33 31 19.01 – Cleaning and Televising of Sewers. Point repairs that show offset joints, non-uniform grade, incorrect alignment, or excessive deflection or similar conditions are considered defective work. Replace pipe and bedding as required for rework.

3.5 TYPICAL SEQUENCE OF POINT REPAIR FOR SERVICE LINES

- A. Perform smoke testing between manholes to verify location of service line point repairs.
- B. After the location of the point repair, excavate the required length of point repair. Remove the damaged pipe and replace with new pipe. Shape the bottom of the trench and place the required pipe bedding so that the grade of the replaced pipe matches the grade of the existing line.
- C. Connect the new pipe to existing pipe using flexible adapters.
- D. Establish proper grade for the pipe being replaced using methods acceptable to the Engineer.
- E. After completion of point repair, but prior to backfill, perform a smoke test to demonstrate the integrity of the repair, in the presence of Engineer. Repair and retest sections that fail.
- F. Encase exposed pipe in cement stabilized sand conforming to Section 31 32 13.16 – Cement Stabilized Sand or crushed stone conforming to Section 31 21 33 – Trenching, Backfilling, and Compacting for Utilities.
- G. Backfill the excavation as specified in Section 31 21 33 – Trenching, Backfilling, and Compacting.
- H. Complete site restoration as specified in Section 01 74 23 – Restoration of Site.

3.6 ABANDONMENT OF POINT REPAIR

- A. If a pipe is exposed and found in good condition, not requiring a point repair, notify the Engineer.
- B. If pre-installation television inspection reveals that no point repair is required in the manhole section then point repair shall be abandoned.
- C. Backfill the excavation, replace pavement or sidewalk and repair and seed or sod unpaved areas, as specified in Section 01 74 23 – Restoration of Site.

3.7 OBSTRUCTION REMOVAL

- A. Remote Device. Remove obstructions identified on video tape of a sanitary line segment which could cause a non-uniform liner pipe installation or obstruction of the liner during installation. Obtain approval from the Engineer for obstruction removal with a remote device before proceeding.
 - 1. Use a power driven cutting device (Robotic cutter) to remove protruding taps. Cut the protruding tap so that the protrusion is no greater than 3/4 inch. If the protruding tap cannot be removed by the cutting device, then a point repair may be performed at the direction of the Engineer.
 - 2. To remove other obstructions, use a remote device. Pull or drive the devices from manhole to manhole using a solid steel mandrel, porcupine, root saw, bucket, robotic cutter, or similar devices to remove the obstruction. Select a device that is adequately sized to remove the obstruction.
- B. Excavation. Use excavation as the method of obstruction removal when installation of the liner in the sanitary sewer is in progress. If during the liner insertion operation, a collapsed sewer, off-set joint, or other obstruction is encountered which prevents or blocks the passage or insertion of the liner, notify the Engineer for approval to make an excavation. Uncover and remove the obstruction in the following manner:
 - 1. Excavate at the point where there is an obstruction. Use a trench safety system, as required.
 - 2. Break out the existing sanitary sewer pipe (carrier pipe) as directed by the Engineer. Remove only that amount of material which is causing the obstruction. Remove the minimum amount of carrier pipe.
 - 3. Under such conditions, replacement of the carrier pipe is not required. Do not disturb the existing sewer bedding during excavation. However, if embedment is disturbed during the obstruction removal procedure, place cement stabilized sand or crushed stone beneath the liner.
 - 4. When the liner is completely in place, encase it with crushed stone or cement stabilized sand as shown on the Drawings.

END OF SECTION

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SECTION 33 05 13.13

ADJUSTING MANHOLES, INLETS, AND VALVE BOXES TO GRADE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Adjusting elevation of existing manholes, existing inlets, and existing valve boxes to new grades.
- B. Related Specification Sections include, but are not necessarily limited to:
 - 1. Division 00 – Proposing Requirements, Contract Forms, and Conditions of the Contract.
 - 2. Division 01 – General Requirements.
 - 3. Section 32 90 00 – Seeding, Sodding, and Landscaping.
 - 4. Section 32 91 05 – Topsoiling and Finished Grading
 - 5. Section 32 92 13 – Hydro-mulching.
 - 6. Section 33 05 16 – Precast Manhole Structures.
 - 7. Section 33 39 20 – Frames, Grates, Rings, and Covers.

1.2 MEASUREMENT AND PAYMENT

- A. Unit Price. No separate payment will be made for this item. Include the cost in associated items for this project.

1.3 SUBMITTALS (NOT USED)

1.4 WARRANTY (NOT USED)

PART 2 - PRODUCTS

2.1 CONCRETE MATERIALS

- A. Provide concrete, conforming to requirements of Section 03 09 00 – Concrete.
- B. Provide precast concrete manhole sections and adjustment rings conforming to requirements of Section 33 05 16 – Precast Manhole Structures.

2.2 CAST-IRON MATERIALS

- A. Provide cast-iron materials conforming to requirements of Section 33 39 20 – Frames, Grates, Rings, and Covers.

2.3 PIPING MATERIALS

- A. For riser pipes and fittings, refer to Divisions 33 – Utilities.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine existing structure, valve box, frame and cover or inlet box, frame and cover or inlet, piping and connections for damage or defects affecting adjustment to grade. Report damage or defects to Owner's representative.

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. Rebuild adjustment portion of manhole or inlet by adding or removing adjustments. Follow procedures detailed in Section 33 05 16 – Precast Manhole Structures.
- B. Salvage and reuse cast-iron frame and cover or grate.
- C. Protect or block off manhole or inlet bottom using wood forms shaped to fit so that no debris or soil falls to bottom during adjustment.
- D. Verify that manholes and inlets are free of visible leaks as result of reconstruction. Repair leaks in manner subject to Owner's representative's approval.

3.4 ADJUSTING VALVE BOXES

- A. Salvage and reuse valve box and surrounding concrete block as approved by Owner's representative. No separate pay.
- B. Remove and replace 6 inch ductile iron riser pipe with suitable length for depth of cover required to establish 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 24 inch by 24 inch by 8 inch thick concrete pad around valve box. Center valve box horizontally within concrete slab.

3.5 BACKFILL AND GRADING

- A. Backfill area of excavation surrounding each adjusted manhole, inlet, and valve box and compact according to requirements of Section 31 23 16.16 – Structural Excavation for Minor Structures.
- B. Grade ground surface to drain away from each manhole and valve box. Place earth fill around manholes to level of upper rim of manhole frame. Place earth fill around valve box concrete slab.

- C. In unpaved areas, grade surface at uniform slope of 1 to 5 from manhole frame to natural grade. Provide minimum of 4 inches of topsoil conforming to requirements of Section 32 91 05 – Topsoiling and Finished Grading. Provide seeding in accordance with Section 32 92 13 – Hydro-mulching, or if sodding in accordance with Section 32 90 00 – Seeding, Sodding, and Landscaping.

3.6 OWNER TRAINING (NOT USED)

END OF SECTION

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SECTION 33 05 16

PRECAST CONCRETE MANHOLE STRUCTURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Precast concrete manhole structures and appurtenant items.
 - a. Sanitary sewer manholes and appurtenances.

B. Related Specification Sections include, but are not necessarily limited to:

1. Division 00 – Proposing Requirements, Contract Forms, and Conditions of the Contract.
2. Division 01 – General Requirements.
3. Section 03 05 05 – Testing.
4. Section 31 21 33 – Trenching, Backfilling and Compacting for Utilities.
5. Section 31 32 13.16 – Cement Stabilized Sand.
6. Section 32 90 00 – Seeding, Sodding and Landscaping.
7. Section 32 92 13 – Hydro-Mulching.
8. Section 33 39 20 - Frames, Grates, Rings, and Covers.

1.2 MEASUREMENT AND PAYMENT

A. Unit Price.

1. Payment for manholes is on a unit price basis for each manhole type installed.

1.3 QUALITY ASSURANCE

A. Referenced Standards:

1. ASTM International (ASTM):
 - a. A48 – Standard Specification for Gray Iron Castings.
 - b. A307 – Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
 - c. A615 – Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
 - d. C150, Standard Specification for Portland Cement.
 - e. C443 – Standard Specification for Joints for Circular Concrete Sewer and Culvert Pipe, using Rubber Gaskets.
 - f. C478, Standard Specification for Precast Reinforced Concrete Manhole Sections.

- g. C923, Standard Specification for Resilient Connectors between Reinforced Concrete Manhole Structures, Pipes, and Laterals.
- h. C1107 – Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Non-shrink).
- i. D4022, Standard Specification for Coal Tar Roof Cement, Asbestos Containing.
- j. D2665 - Standard Specification Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings.

1.4 SUBMITTALS

A. Shop Drawings:

- 1. See Specification Section 01 33 00 – Submittals for requirements for the mechanics and administration of the submittal process.
- 2. Product technical data including:
 - a. Acknowledgement that products submitted meet requirements of standards referenced.
 - b. Manufacturer's installation instructions.
Fabrication and/or layout drawings:
 - c. Include detailed diagrams of manholes showing typical components and dimensions, reinforcements and other details.
 - d. Itemize, on separate schedule, sectional breakdown of each manhole structure with all components and refer to drawing identification number or notation.
 - e. Indicate knockout elevations for all piping entering each manhole.
- 3. Shop drawings of manhole sections, base units and construction details, including reinforcement, jointing methods, materials and dimensions.
- 4. Summary of criteria used in manhole design including, as minimum, material properties, loadings, load combinations, and dimensions assumed. Include certification from manufacturer that precast manhole design is in full accordance with ASTM C478 and design criteria as established in this Specification.
- 5. Seal submittal drawings by Professional Engineer registered in State of Texas.

1.5 PROJECT CONDITIONS

- A. For this project, the groundwater elevation shall be assumed to be at natural grade.

1.6 WARRANTY (NOT USED)

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
1. Manhole rings, covers and frames:
 - a. East Jordan (EJ)
 - b. Neenah Foundry.
 - c. Deeter Foundry.
 2. Black mastic joint compound:
 - a. Kalktite 340.
 - b. Tufflex.
 - c. Plastico.
 3. Premolded joint compound:
 - a. Ram Nec.
 - b. Kent Seal.
 4. Emulsified fibrated asphalt compound:
 - a. Sonneborn Hydrocide 700B Semi-Mastic.
- B. Submit request for substitution in accordance with Specification Section 01 25 13 – Product Substitutions.

2.2 SANITARY SEWER, STORM AND DRAIN MANHOLE STRUCTURE COMPONENTS

- A. Manhole Components:
1. Reinforcement: ASTM C478.
 2. Minimum wall thickness: 5 IN.
 3. Minimum base thickness: 12 IN.
 4. Provide the following components for each manhole structure:
 - a. Base (precast) with integral bottom section or (cast-in-place).
 - b. Precast bottom section(s).
 - c. Precast barrel section(s).
 - d. Precast eccentric transition section.
 - e. Precast adjuster ring(s).
 - f. Precast concrete transition section.
 - g. Precast flat top.

5. Unless dimensioned or specifically noted on Drawings, provide manhole section with minimum 48 IN inside dimensions.
- B. Nonpressure Type Frames and Cover:
1. Cast iron frame and covers: ASTM A48, Class 35 (minimum).
 2. Ductile iron frame and covers: ASTM A536.
 3. Use only cast {ductile} iron of best quality, free from imperfections and blow holes.
 4. Furnish frame and cover of heavy-duty construction a minimum total weight of 450 LBS.
 5. Machine all horizontal surfaces.
 6. Furnish unit with solid nonventilated lid with concealed pickholes.
 - a. Letter covers "SEWER" for all collection system manholes, "DRAIN" for all gravity unit drains returning flow to the headworks, and "STORM" for storm sewer systems.
 7. Ensure minimum clear opening of 30 IN DIA.
- C. Pressure Type Frame and Cover:
1. Provide covers meeting the requirements of Paragraph 2.2B and as modified below.
 2. Furnish frame and bolted cover of heavy-duty construction.
 - a. Equip unit with six (6) stainless steel countersunk 3/8 IN DIA by 1-1/2 IN long bolts with stainless steel washers.
 3. Provide solid lid and minimum 1/8 IN thick x 1/2 IN wide continuous strip neoprene gasket.
 4. Furnish unit with a minimum of six (6) anchorage holes and six (6) 6 IN long x 3/4 IN DIA stainless steel anchor bolts.
- D. Special Coatings and Joint Treatment:
1. Joints of precast sections:
 - a. Black mastic compound: ASTM D4022.
 2. Aluminum components embedded in concrete:
 - a. See Specification Section 09 91 00 – Painting and Protective Coatings for protective coating for aluminum embedded in concrete.
 3. Vertical wall surfaces:
 - a. Emulsified fibrated asphalt compound meeting ASTM D1227 Type I for all exterior and interior vertical wall surfaces.

- E. Sanitary Sewer Manhole Concrete:
1. Provide all sanitary manholes constructed with Portland ASTM C150, Type I or II cement with a tricalcium aluminate content not to exceed 8 percent.
 2. Mix aggregate shall be a minimum of 50 percent crushed limestone.
 3. Provide 3000 psi non-shrink grout.
- F. Construct barrels for precast manholes from standard reinforced concrete manhole sections of diameter indicated on Drawings. Use various lengths of manhole sections in combination to provide correct height with fewest joints. Design wall sections for depth and loading conditions in this Section, with minimum thickness of 5 inches. Base section shall have minimum thickness of 12 inches under invert.
- G. Provide tops to support HS-20 vehicle loading, and receive cast iron frame covers, as indicated on Drawings.
- H. Where manholes larger than 48-inch diameter are indicated on Drawings, provide precast base sections with flat slab top precast sections used to transition to 48-inch diameter manhole access riser sections. Transition can be concentric or eccentric unless otherwise shown on Drawings. Locate transition to provide minimum of 7-foot head clearance from base to underside of transition unless otherwise approved by Owner's Representative.
- I. Design Loading Criteria: Manhole walls, transition slabs, cone tops, and manhole base slab shall be designed, by manufacturer, to requirements of ASTM C 478 for depth as shown on Drawings and to resist following loads.
1. AASHTO HS-20 vehicle loading applied to manhole cover and transmitted down to transition and base slabs.
 2. Unit soil weight of 120 pcf located above portions of manhole, including base slab projections.
 3. Lateral soil pressure based on saturated soil conditions producing an at-rest equivalent fluid pressure of 100 pcf.
 4. Internal liquid pressure based on unit weight of 63 pcf.
 5. Dead load of manhole sections fully supported by transition and base slabs.
- J. Design: Manhole walls, transition slabs, cone tops, and manhole base slab shall be designed according to requirements of ASTM C 478 and the following:
1. Design additional reinforcing steel to transfer stresses at openings. Area of steel to be no less than shown on Drawings.
 2. Wall Loading Conditions:
 - a. Saturated soil pressure acting on empty manhole.
 - b. Manhole filled with liquid to a halfway depth as measured from invert to cover, with no balancing external soil pressure.
 3. Minimum clear distance between two wall penetrations shall be 12 inches or half diameter of smaller penetration, whichever is greater.

- K. Provide joints between sections with O-ring gaskets conforming to ASTM C 443.
- L. When base is cast monolithic with portion of vertical section, extend reinforcing in vertical section into base.
- M. Precast Concrete Base: Suitable cutouts or holes to receive pipe and connections. Lowest edge of holes or cutouts: for water line manhole, no less than 6 inches above inside surface of floor of base.

2.3 CONCRETE

- A. Conform to requirements of Section 03 05 05 – Testing.
- B. Channel Inverts: Use 5 sack premix (bag) concrete or Class A concrete for inverts not integrally formed with manhole base, with minimum compressive strength of 4000 psi.
- C. Cement Stabilized Sand Foundation: Provide cement stabilized sand foundation under base section in lieu of foundation slab, as shown on Drawings, conforming to requirements of Section 31 32 13.16 – Cement Stabilized Sand.
- D. Concrete Foundation: Provide Class A concrete with minimum compressive strength of 4000 psi for concrete foundation slab under manhole base section where indicated on Drawings.

2.4 MISCELLANEOUS METALS

- A. Provide cast-iron frames, rings, and covers conforming to requirements of Section 33 39 20 – Frames, Grates, Rings, and Covers.

2.5 DROP CONNECTIONS AND STUBS

- A. Provide drop connections and stubs conforming to same pipe material requirements used in main pipe, unless otherwise indicated on Drawings.

2.6 PIPE CONNECTIONS TO MANHOLE

- A. Sanitary Sewers:
 - 1. Provide resilient connectors conforming to requirements of ASTM C 923. Use the following materials for metallic mechanical devices as defined in ASTM C 923:
 - a. External Clamps: Type 304 stainless steel.
 - b. Internal, Expandable Clamps on Standard Manholes: Type 304 stainless steel, 11 gauge minimum.
 - c. Internal, Expandable Clamps on Corrosion-Resistant Manholes:
 - 1) Type 316 stainless steel, 11 gauge minimum.
 - 2) Type 304 stainless steel, 11 gauge minimum, coated with minimum 16-mil fusion-bonded epoxy conforming to AWWA C 213.

2. Where rigid joints between pipe and cast-in-place manhole base are specified or shown on Drawings, provide polyethylene-isoprene waterstop meeting physical property requirements of ASTM C 923, such as Press-Seal WS Series, or approved equal.
- B. Storm Sewer Connections
1. Provide watertight connections in accordance with ASTM 923 and ASTM F 2510 as applicable.
- C. Water Lines:
1. Where smooth exterior pipes (i.e., steel, ductile iron, or PVC pipes) are connected to manhole base or barrel, seal space between pipe and manhole wall with assembly consisting of rubber gasket or links mechanically compressed to form a watertight barrier. Assemblies: Press-Wedge, Res-Seal, Thunderline Link-Seal, or approved equal. See Drawings for placement of assembly in manhole sections.
 2. When connecting concrete or cement mortar coated steel pipes, or as option for connecting smooth exterior pipes to manhole base or barrel, space between pipe and manhole wall may be sealed with an assembly consisting of a stainless steel power sleeve, stainless steel take-up clamp and a rubber gasket. Take-up clamp: minimum of 9/16-inch wide. Provide PSX positive seal gasket system by Press-Seal Gasket Corporation or approved equal.

2.7 NON-SHRINK GROUT

- A. Provide prepackaged, inorganic, flowable, non-gas-liberating, non-metallic, cement-based grout requiring only addition of water.
- B. Meet requirements of ASTM C 1107 and have minimum 28-day compressive strength of 7000 psi.

2.8 VENT PIPES

- A. Provide external vent pipes for manholes where indicated on Drawings.
- B. Vent Outlet Assembly: Provide vent outlet assembly as shown on Drawings, constructed of following specified materials:
 1. Flanges: Meet bolt pattern and dimensions for ASME B16.I, 125-pound flanges. Flange bolts shall be Type 304 stainless steel or hot-dip zinc coated, conforming to ASTM A 307, Class A or B.
 2. Coating: Hot-dipped galvanized after fabrication.

2.9 PROHIBITED MATERIALS

- A. Do not use brick masonry for construction of sanitary sewer manholes, including adjustment of manholes to grade. Use only specified materials listed above.

2.10 MANHOLE LADDER FOR MANHOLES (NOT USED)

PART 3 - EXECUTION

3.1 MANHOLE CONSTRUCTION

A. General:

1. Construct cast-in-place concrete base slabs.
2. Make inverts with a semi-circular bottom conforming to the inside contour of the adjacent sewer sections.
3. On all straight runs, lay pipe through manhole and cut out top half of pipe.
 - a. See detail on Drawings.
 - b. If pipes deflect at manhole, shape as specified in the preceding and following paragraphs.
4. Shape inverts accurately and steel trowel finish.
 - a. For changes in direction of the sewer and entering branches into the manhole, make a circular curve in the manhole invert using as large a radius as manhole inside diameter will permit.
 - b. Pour base slab integral with bottom barrel section.

3.2 BUILD EACH MANHOLE TO EXAMINATION

- #### **A. Verify that lines and grades are correct.**
- #### **B. Determine if subgrade, when scarified and recompact, can be compacted to 95 percent of maximum Standard Proctor Density according to ASTM D 698 prior to placement of foundation material and base section. When proper density is not reached, moisture-condition subgrade until that density is reached or treat as unstable subgrade.**
- #### **C. Do not build manholes in ditches, swales, or drainage paths unless approved by Owner's Representative.**

3.3 PLACEMENT

- #### **A. Install precast manholes to conform to locations and dimensions shown on Drawings and at such elevation that pipe sections built into wall of manhole will be true extensions of line of pipe.**
- #### **B. For all horizontal mating surfaces between concrete and concrete or concrete and metal, above established high groundwater elevation shown trowel apply to clean surface black mastic joint compound to a minimum wet thickness of 1/4 IN immediately prior to mating the surfaces.**
- #### **C. For horizontal joints that fall below established high groundwater elevation shown, install a resilient O-ring type gasket or pre-molded joint compound.**
- #### **D. Seal all pipe penetrations in manhole.** 1. Form pipe openings smooth and well-shaped. 2. After installation, seal cracks with, non-shrink grout.

3. After grout cures, wire brush smooth and apply two coats emulsified fibrated asphalt compound to minimum wet thickness of 1/8 IN to ensure complete seal.
- E. Set and adjust frame and cover final 6 IN (minimum) to 18 IN (maximum) to match finished pavement or finished grade elevation using precast adjuster rings.
- F. Place sanitary and storm manholes at points of change in alignment, grade, size, pipe intersections, and end of sewer unless otherwise shown on Drawings.

3.4 MANHOLE BASE SECTIONS AND FOUNDATIONS

- A. Place precast base on 12-inch-thick (minimum) foundation of crushed stone wrapped in filter fabric, cement stabilized sand, or concrete foundation slab. Compact cement-sand in accordance with requirements of Section 31 32 13.16 - Cement Stabilized Sand.
- B. Unstable Subgrade Treatment: When unstable subgrade is encountered, notify Owner's Representative for examination of subgrade to determine if subgrade has heaved upwards after being excavated. When heaving has not occurred, over-excavate subgrade to allow for 24-inch-thick layer of crushed stone wrapped in filter fabric as foundation material under manhole base. When there is evidence of heaving, provide pile-supported concrete foundation, as detailed on Drawings, under manhole base.

3.5 PRECAST MANHOLE SECTIONS

- A. Install sections, joints, and gaskets in accordance with manufacturer's printed recommendations.
- B. Install precast adjustment rings above tops of cones or flat-top sections as required to adjust finished elevation and to support manhole frame.
- C. Seal any lifting holes with non-shrink grout.
- D. Place at least two precast concrete grade rings with thickness of 12 inches or less, under casting.

3.6 PIPE CONNECTIONS AT MANHOLES

- A. Install approved resilient connectors at each pipe entering and exiting manholes in accordance with manufacturer's instructions.
 1. Where smooth exterior pipes (i.e. steel, ductile iron or PVC pipes) are connected to manhole base or barrel, space between pipe and manhole wall shall be sealed with an assembly consisting of rubber gaskets or links mechanically compressed to form watertight barrier. Assemblies: "Press-Wedge," "Res-Seal," "Thunderline Link-Seals," or approved equal. See Drawings for placement of assembly in manhole sections.

2. When connecting concrete or cement mortar coated steel pipes, or as an option for connecting smooth exterior pipes to manhole base or barrel, space between pipe and manhole wall may be sealed with an assembly consisting of stainless steel power sleeve, stainless steel take-up clamp and rubber gasket. Take-up clamp: minimum of 9/16-inch wide. Provide PSX positive seal gasket system by Press-Seal Gasket Corporation or approved equal.
- B. Grout storm sewer connections to manhole unless otherwise shown on Drawings. Grout pipe penetration in place on both inside and outside of manhole.
- C. Ensure no concrete, cement stabilized sand, fill, or other rigid material is allowed to enter space between pipe and edge of wall opening at and around resilient connector on either interior or exterior of manhole. If necessary, fill space with compressible material to ensure full flexibility provided by resilient connector.
- D. Where new manhole is constructed on existing sewer, rigid joint pipe may be used. Install waterstop gasket around existing pipe at center of cast-in-place wall. Join ends of split waterstop material at pipe springline using an adhesive recommended and supplied by waterstop manufacturer.
- E. Test connection for watertight seal before backfilling.

3.7 INVERTS FOR SANITARY SEWERS

- A. Construct invert channels to provide smooth flow transition waterway with no disruption of flow at pipe-manhole connections. Conform to following criteria:
 1. Slope of Invert Bench: 1 inch per foot minimum; 1-1/2 inches per foot maximum.
 2. Depth of Bench to Invert:
 - a. Pipes smaller than 15 inches: one-half of largest pipe diameter.
 - b. Pipes 15 to 24 inches: three-fourths of largest pipe diameter.
 - c. Pipes larger than 24 inches: equal to largest pipe diameter.
 3. Invert Slope through Manhole: 0.10 foot drop across manhole with smooth transition of invert through manhole, unless otherwise indicated on Drawings.
- B. Form invert channels with concrete if not integral with manhole base section. For direction changes of mains, construct channels tangent to mains with maximum possible radius of curvature. Provide curves for side inlets and smooth invert fillets for flow transition between pipe inverts.

3.8 DROP CONNECTIONS FOR SANITARY SEWERS

- A. Backfill drop assembly with crushed stone wrapped in filter fabric, cement stabilized sand, or Class A concrete to form solid mass. Extend cement stabilized sand or concrete encasement minimum of 4 inches outside bells.
- B. Install drop connection when sewer line enters manhole higher than 24 inches above invert of manhole.

3.9 STUBS FOR FUTURE CONNECTIONS

- A. In manholes, where future connections are indicated on Drawings, install resilient connectors and pipe stubs with approved watertight plugs.

3.10 MANHOLE FRAME AND ADJUSTMENT RINGS

- A. Combine precast concrete or HDPE adjustment rings so elevation of installed casting cover matches pavement surface. Seal between concrete adjustment ring and precast top section with non-shrink grout; do not use mortar between adjustment rings. Apply latex-based bonding agent to precast concrete surfaces joined with non-shrink grout. Set cast iron frame on adjustment ring in bed of approved sealant material. Install sealant bed consisting of two beads of sealant, each bead having minimum dimensions of 1/2-inch and 1/2-inch wide.
- B. Wrap manhole frame and adjustment rings with external sealing material, minimum 3 inches beyond joint between ring and frame and ring and precast section.
- C. For manholes in unpaved areas, set top of frame minimum of 6 inches above existing ground line unless otherwise indicated on Drawings. In unpaved areas, encase manhole frame in mortar or non-shrink grout placed flush with face of manhole ring and top edge of frame. Provide rounded corner around perimeter.

3.11 BACKFILL

- A. Place and compact backfill materials in area of excavation surrounding manholes in accordance with the requirements of Section 31 21 33 – Trenching, Backfilling and Compacting for Utilities. Provide embedment zone backfill material, as specified for adjacent utilities, from manhole foundation up to an elevation 12 inches over each pipe connected to manhole. Provide trench zone backfill, specified for adjacent utilities, above embedment zone backfill.
- B. Where rigid joints are used for connecting existing sewers to manhole, backfill under existing sewer up to springline of pipe with Class B concrete or flowable fill.
- C. In unpaved areas, provide positive drainage away from manhole frame to natural grade. Seed in accordance with Section 32 92 13 – Hydro-Mulching. When shown on Drawings, sod disturbed areas in accordance with Section 32 90 00 – Seeding, Sodding and Landscaping.

3.12 FIELD QUALITY CONTROL

- A. Manholes shall be tested by hydrostatic exfiltration or vacuum testing. Manholes shall be tested after installation with all connections (existing and /or proposed) in place.

3.13 PROTECTION

- A. Protect manholes from damage until subsequent work has been accepted. Repair or replace damaged elements of manholes at no additional cost to Owner.

3.14 OWNER TRAINING (NOT USED)

END OF SECTION

SECTION 33 11 15

HIGH DENSITY POLYETHYLENE (HDPE) SOLID AND PROFILE WALL PIPE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. High density polyethylene (HDPE) pipe for water mains and sanitary sewer force mains, diversion pumping, including fittings.
2. High density polyethylene (HDPE) pipe for gravity sanitary sewers and drains, including fittings.
3. High density polyethylene (HDPE) pipe for gravity storm sewers and drains, including fittings.
4. High density polyethylene (HDPE) pipe for storm sewers culverts.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00 – Proposing Requirements, Contract Forms, and Conditions of the Contract.
2. Division 01 – General Requirements.
3. Specification Sections:
 - a. Section 31 21 33 – Trenching, Backfilling, and Compacting For Utilities.

1.2 MEASUREMENT AND PAYMENT

- A. Unit Price. No separate payment will be made for this item. Include the cost in associated items for this project.

1.3 QUALITY ASSURANCE

A. Referenced Standards:

1. ASTM International (ASTM):
 - a. C906 – Polyethylene (PE) pressure Pipe & Fittings, 4 inch through 63 inch for water
 - b. D 618 – Standard Practice for Conditioning Plastics for Testing.
 - c. D 1248 – Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable.
 - d. D 2321 – Standard Recommended Practice for Underground Installation of Flexible Thermoplastic Pipe.
 - e. D 2657 – Standard Practice for Heat Fusion Joining Polyolefin Pipe and Fittings.
 - f. D 2837 – Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials.

- g. D 3035 – Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter.
- h. D 3212 – Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.
- i. D 3350 – Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.
- j. F 477 – Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
- k. F 714 – Standard Specification for Polyethylene Plastic (PE) Pipe (SDR-PR) Based on Outside Diameter.
- l. F 894 – Standard Specification for Polyethylene (PE) Large-Diameter Profile Wall Sewer and Drain Pipe.
- m. F 2306 – Standard Specification for 12 to 60 in. [300 to 1500 mm] Annular Corrugated Profile-Wall Polyethylene (PE) Pipe and Fittings for Gravity-Flow Storm Sewer and Subsurface Drainage Applications.
- n. F 2487 – Standard Practice for Infiltration and Exfiltration Acceptance Testing of Installed Corrugated High Density Polyethylene Pipelines.
- o. F 2510 – Standard Specification for Resilient Connectors between Concrete Manhole Structures and Corrugated High Density Polyethylene Drainage Pipes.

1.4 SUBMITTALS

- A. Conform to requirements of Section 01 33 00 – Submittals.
- B. Submit shop drawings showing design of pipe and fittings including specials fittings required to achieve alignment and grade as shown on the Drawings, pipe section lengths, fabrication, fittings, flanges, gasket material, and special details.
- C. Submit details of Pipe Joints and jointing procedure for HDPE pipe.

1.5 QUALITY CONTROL

- A. Provide manufacturer's certificate of conformance to Specifications.
- B. Furnish pipe and fittings that are homogeneous throughout and free from visible cracks, holes, foreign inclusions, or other injurious defects. Provide pipe as uniform as commercially practical in color, opacity, density, and other physical properties.
- C. Owner's Representative reserves right to inspect pipes or witness pipe manufacturing. Inspection shall in no way relieve manufacturer of responsibilities to provide products that comply with applicable standards and these Specifications.

1. Manufacturer's Notification: Should Owner's Representative wish to witness manufacture of specific pipes, manufacturer shall provide Owner's Representative with minimum three weeks' notice of when and where production of those specific pipes will take place.
 2. Failure to Inspect. Approval of products or tests is not implied by Owner's Representative's decision not to inspect manufacturing, testing, or finished pipes.
- D. Pipe manufacturer to provide services of experienced, competent, and authorized representative to visit site to advise and consult Contractor during jointing and installation of pipe if requested by the Owner.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with documented experience of minimum 5 years of pipe installations that have been in successful, continuous service for same type of service as proposed Work.

1.7 WARRANTY (NOT USED)

PART 2 - PRODUCTS

2.1 GENERAL

- A. Provide solid wall and profile wall HDPE pipe based on the intended service as described herein.
- B. Mark each standard and random length of pipe in compliance with these Specifications with following information:
1. Pipe size.
 2. Pipe class.
 3. Production code.
 4. Material designation.
- C. Warranty
1. The pipe shall be warranted one year by the pipe supplier.
 2. The fusion services (if applicable) shall be warranted for one year by the fusion service provider.

2.2 MATERIALS FOR WATER LINES

- A. HDPE pipe for water service shall be "DRISCOPLEX Series" as manufactured by Performance Pipe, or approved equal.
- B. Furnish solid wall pipe with plain end construction for heat joining (butt fusion) conforming to ASTM D 2657 for pressure applications. Utilize controlled temperatures and pressures for joining to produce fused leak-free joint.

- C. Furnish solid wall pipe for water mains and sanitary sewer force mains with minimum working pressure rating of 150 psi, and with inside diameter equal to or greater than nominal pipe size indicated on Drawings
- D. All piping system components shall be the products of one manufacturer and shall conform to the latest edition of ASTM D 1248, ASTM D 3350, ASTM F 714, and AWWA C 906.
- E. Piping and bends shall be extruded from a polyethylene compound and shall conform to the following requirements:
 - 1. The polyethylene resin shall meet or exceed the requirements of ASTM D 3350 for PE 3408 material with a cell classification of 335434C, or better.
 - 2. The polyethylene compound shall be suitably protected against degradation by ultraviolet light by means of carbon black, well dispersed by precompounding in a concentration of not less than 2 percent.
 - 3. The maximum allowable hoop stress shall be 800 psi at 73.4 degrees F.
 - 4. The pipe manufacturer shall be listed with the Plastic Pipe Institute as meeting the recipe and mixing requirements of the resin manufacturer for the resin used to manufacture the pipe in this project.
 - 5. The pipe and bends shall have a minimum standard dimension ratio (SDR) wall thickness of SDR 11 and a minimum working pressure of 150 psi.
 - 6. Joining shall be performed by thermal butt-fusion in accordance with the manufacturer's recommendations.
 - 7. Water pipe exterior shall be blue in color or contain blue striping.
- F. Each HDPE pipe section for water service shall also be marked with:
 - 1. Dimension ratio or standard dimension ratio.
 - 2. AWWA pressure class.
 - 3. AWWA standard designation number.
 - 4. NSF-61 mark verifying suitability for potable water service.
 - 5. Extrusion production record code.
 - 6. Trademark or trade name.
 - 7. Cell classification of HDPE material code.

2.3 MATERIALS FOR GRAVITY SANITARY SEWERS

- A. Furnish profile-wall gravity sanitary sewer pipe with bell-and-spigot end construction conforming to ASTM D 3212. Joining will be accomplished with elastomeric gasket in accordance with manufacturer's recommendations. Use integral bell-and-spigot gasketed joint designed so that when assembled, elastomeric gasket, contained in machined groove on pipe spigot, is compressed radially in pipe bell to form positive seal. Design joint to avoid

displacement of gasket when installed in accordance with manufacturer's recommendations

B. Pipe and Fittings: High density, high molecular weight polyethylene pipe material meeting requirements of Type III, Class C, Category 5, Grade P34, as defined in ASTM D 1248. Material meeting requirements of cell classification in accordance with ASTM D 3350 are also suitable for making pipe products under these specifications.

C. Jointing:

1. Gaskets:

- a. Meet requirements of ASTM F 477. Use gasket molded into circular form or extruded to proper section and then spliced into circular form. When no contaminant is identified, use gaskets of properly cured, high-grade elastomeric compound. Basic polymer shall be natural rubber, synthetic elastomer, or blend of both.
- b. HDPE Pipes are not allowed to be installed in potentially contaminated areas, unless submitted and approved by Owner's Representative. Where approved provide gaskets as indicated below:

CONTAMINANT	GASKET MATERIAL REQUIRED
Petroleum (diesel, gasoline)	Nitrile Rubber
Other Contaminants	As recommended by pipe manufacturer

2. Lubricant. Use lubricant for assembly of gasketed joints which has no detrimental effect on gasket or on pipe, in accordance with manufacturer's recommendations.

D. Other Pipe Materials: Materials other than those specified may be used as part of profile construction, e.g., as core tube to support shape of profile during processing, provided that these materials are compatible with base polyethylene material and are completely encapsulated in finished product and in no way compromise performance of pipe products in intended use. Examples of suitable material include polyethylene and polypropylene.

2.4 MATERIALS FOR FORCE MAIN SANITARY SEWERS

- A. All piping system components shall be the products of one manufacturer and shall conform to the latest edition of ASTM D 1248, ASTM D 3350, ASTM F 714, and AWWA C 906.
- B. Furnish solid wall pipe with plain end construction for heat joining (butt fusion) conforming to ASTM D 2657 for pressure applications. Utilize controlled temperatures and pressures for joining to produce fused leak-free joint.

- C. Furnish solid wall pipe for sanitary sewer force mains with minimum working pressure rating of 150 psi, and with inside diameter equal to or greater than nominal pipe size indicated on Drawings
- D. Piping and bends shall be extruded from a polyethylene compound and shall conform to the following requirements:
 - 1. The polyethylene resin shall meet or exceed the requirements of ASTM D 3350 for PE 3408 material with a cell classification of 335434C, or better.
 - 2. The polyethylene compound shall be suitably protected against degradation by ultraviolet light by means of carbon black, well dispersed by precompounding in a concentration of not less than 2 percent.
 - 3. The maximum allowable hoop stress shall be 800 psi at 73.4 degrees F.
 - 4. The pipe manufacturer shall be listed with the Plastic Pipe Institute as meeting the recipe and mixing requirements of the resin manufacturer for the resin used to manufacture the pipe in this project.
 - 5. The pipe and bends shall have a minimum standard dimension ratio (SDR) wall thickness of SDR 11 and a minimum working pressure of 150 psi.
 - 6. Joining shall be performed by thermal butt-fusion in accordance with the manufacturer's recommendations.
 - 7. Water pipe exterior shall be blue in color or contain blue striping.

2.5 MATERIALS FOR GRAVITY STORM SEWERS AND STORM SEWER CULVERTS

- A. Furnish corrugated profile-wall polyethylene (CPP) pipe for gravity storm sewer and storm sewer culvert pipe.
- B. Pipe and Fittings High density, high molecular weight polyethylene HDPE virgin compound material meeting requirements of cell class outlined in ASTM D 3350. Manufacturing shall meet requirements of ASTM F 2306.
- C. Joints shall be installed such that connection of pipe sections will form continuous line free from irregularities in flow line. Suitable joints are:
- D. Integral Bell and Spigot. Bell shall overlap minimum of two corrugations of spigot end when fully engaged.
- E. Exterior Bell and Spigot. Bell shall be fully welded to exterior of pipe and overlap spigot end so that flow lines and ends match when fully engaged.

PART 3 - EXECUTION

3.1 TRANSPORTATION AND STORAGE

- A. All of the pipe supplier's guidelines shall be followed for transportation and storage of the pipe.
- B. Care shall be taken during transportation of the pipe to ensure that it is not cut, kinked, or otherwise damaged.

- C. Pipes shall be stored on level ground free of sharp objects which could damage the pipe.
- D. Stacking of the pipe shall be limited to a height that will not cause excessive deformation of the bottom layers of pipes under anticipated temperature condition.
- E. Where necessary due to ground conditions, the pipe shall be stored on wooden sleepers, spaced suitably and of such widths as not to allow deformation of the pipe at the point of contact with the sleeper or between supports.
- F. Any pipe damage during transportation or storage shall be replaced by the contractor at the contractor's expense.

3.2 INSTALLATION

- A. Install pipe in accordance with the manufacturers recommended installation procedures and ASTM D 2774.
- B. Bedding and backfill: Conform to requirements of Section 31 21 33 – Trenching, Backfilling, and Compacting for Utilities.
- C. Use only workmen trained in the installation of HDPE Pipe.
- D. Do not store pipe uncovered direct in direct sunlight. Allow pipe temperature to approach ground temperature before each individual pipe section is terminally connected.
- E. Fusion joints: Meet minimum requirements of manufacturer for cool down time and other fusing requirements. Socket fusion and extrusion welding or hot gas welding will not be accepted. Join sections of HDPE pipe into continuous lengths above ground by thermal butt fusion method in accordance with AWWA C906 and pipe manufacturer's recommendations for specified service.
- F. Cutting pipe: Comply with pipe manufacturer's recommendations. After cutting, leave end pipe in accordance with manufacturer's recommendations.

3.3 OWNER TRAINING (NOT USED)

END OF SECTION

SECTION 33 11 16

CCFRPM PIPE FOR DIRECT BURY INSTALLATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Centrifugally Cast Fiberglass Reinforced Polymer Mortar (CCFRPM) Pipe.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00 – Proposing Requirements, Contract Forms, and Conditions of the Contract.
2. Division 01 – General Requirements.
3. Specification Sections:
 - a. Section 31 21 33 – Trenching, Backfilling, and Compacting For Utilities.
 - b. Section 33 01 30.70 – Point Repairs and Obstruction Removals.

1.2 MEASUREMENT AND PAYMENT

- A. Unit Price. No separate payment will be made for this item. Include the cost in associated items for this project.

1.3 QUALITY ASSURANCE

A. Referenced Standards:

1. ASTM International (ASTM):
 - a. D3262 - Standard Specification for "Fiberglass" (Glass-Fiber-Reinforced Thermosetting-Resin) Sewer Pipe.
 - b. D4161 - Standard Specification for "Fiberglass" (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe Joints Using Flexible Elastomeric Seals.
 - c. D2412 - Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading.
 - d. D3681 – Standard Test Method for Chemical Resistance of "Fiberglass" Pipe in a Deflected Condition.
 - e. D638 – Test Method for Tensile Properties of Plastics.

1.4 SUBMITTALS

- A. Conform to requirements of Section 01 33 00 – Submittals.
- B. Submit shop drawings showing design of pipe and fittings including specials fittings required to achieve alignment and grade as shown on the Drawings, pipe section lengths, fabrication, fittings, flanges, gasket material, and special details.

- C. Submit details of Pipe Joints and jointing procedure for CCFRPM pipe.

1.5 QUALITY CONTROL

- A. Provide manufacturer's certificate of conformance to Specifications.
- B. Furnish pipe and fittings that are homogeneous throughout and free from visible cracks, holes, foreign inclusions, or other injurious defects. Provide pipe as uniform as commercially practical in color, opacity, density, and other physical properties.
- C. Owner's Representative reserves right to inspect pipes or witness pipe manufacturing. Inspection shall in no way relieve manufacturer of responsibilities to provide products that comply with applicable standards and these Specifications.
1. Manufacturer's Notification: Should Owner's Representative wish to witness manufacture of specific pipes, manufacturer shall provide Owner's Representative with minimum three weeks' notice of when and where production of those specific pipes will take place.
 2. Failure to Inspect. Approval of products or tests is not implied by Owner's Representative's decision not to inspect manufacturing, testing, or finished pipes.
- D. Pipe manufacturer to provide services of experienced, competent, and authorized representative to visit site to advise and consult Contractor during jointing and installation of pipe if requested by the Owner.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with documented experience of minimum 5 years of pipe installations that have been in successful, continuous service for same type of service as proposed Work.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Provide pipe based on the intended service as described herein.
- B. Mark each standard and random length of pipe in compliance with these Specifications with following information:
1. Pipe size.
 2. Pipe class.
 3. Production code.
 4. Material designation.
- C. Warranty

1. The pipe shall be warranted one year by the pipe supplier.
2. The fusion services (if applicable) shall be warranted for one year by the fusion service provider.

2.2 MATERIALS FOR GRAVITY SANITARY SEWERS

- A. Resin Systems: The manufacturer shall use only polyester resin systems with a proven history of performance in this particular application. The historical data shall have been acquired from a composite material of similar construction and composition as the proposed product.
- B. Glass Reinforcements: The reinforcing glass fibers used to manufacture the components shall be of highest quality commercial grade E-glass filaments with binder and sizing compatible with impregnating resins.
- C. Silica Sand: Sand shall be minimum 98% silica with a maximum moisture content of 0.2%.
- D. Additives: Resin additives, such as curing agents, pigments, dyes, fillers, thixotropic agents, etc., when used, shall not detrimentally effect the performance of the product.
- E. Elastomeric Gaskets: Gaskets shall meet ASTM F477 and be supplied by qualified gasket manufacturers and be suitable for the service intended.
- F. Furnish pipe for sanitary sewer to match the inside diameter of the existing pipes.

2.3 MANUFACTURE AND CONSTRUCTION

- A. Pipes: Manufacture pipe by the centrifugal casting process to result in a dense, nonporous, corrosion-resistant, consistent composite structure. The interior surface of the pipes exposed to sewer flow shall provide crack resistance and abrasion resistance. The exterior surface of the pipes shall be comprised of a sand and resin layer which provides UV protection to the exterior. Pipes shall be Type 1, Liner 2, Grade 3, per ASTM D3262.
- B. Joints: Unless otherwise specified, the pipe shall be field connected with fiberglass sleeve couplings that utilize elastomeric sealing gaskets as the sole means to maintain joint watertightness. The joints must meet the performance requirements of ASTM D4161. Joints at tie-ins, when needed, may utilize gasket-sealed closure couplings.
- C. Fittings: Flanges, elbows, reducers, tees, wyes, laterals and other fittings shall be capable of withstanding all operating conditions when installed. They may be contact molded or manufactured from mitered sections of pipe joined by glass-fiber-reinforced overlays. Properly protected standard ductile iron, fusion-bonded epoxy-coated steel and stainless steel fittings may also be used.
- D. Acceptable Manufacturer: HOBAS Pipe USA.

PART 3 - EXECUTION

3.1 TRANSPORTATION AND STORAGE

- A. Packaging, handling, and shipping shall be done in accordance with the manufacturer's instructions.
- B. Care shall be taken during transportation of the pipe to ensure that it is not cut, kinked, or otherwise damaged.
- C. Pipes shall be stored on level ground free of sharp objects which could damage the pipe.
- D. Stacking of the pipe shall be limited to a height that will not cause excessive deformation of the bottom layers of pipes under anticipated temperature condition.
- E. Where necessary due to ground conditions, the pipe shall be stored on wooden sleepers, spaced suitably and of such widths as not to allow deformation of the pipe at the point of contact with the sleeper or between supports.
- F. Any pipe damage during transportation or storage shall be replaced by the contractor at the contractor's expense.

3.2 INSTALLATION

- A. Burial: The bedding and burial of pipe and fittings shall be in accordance with the project plans and specifications and the manufacturer's requirements.
- B. Bedding and backfill: Conform to requirements of Section 31 21 33 – Trenching, Backfilling, and Compacting for Utilities.
- C. Pipe Handling: Use textile slings, other suitable materials or a forklift. Use of chains or cables is not recommended.
- D. Jointing:
 - 1. Clean ends of pipe and coupling components.
 - 2. Apply joint lubricant to pipe ends and elastomeric seals of coupling. Use only lubricants approved by the pipe manufacturer.
 - 3. Use suitable equipment and end protection to push or pull the pipes together.
 - 4. Do not exceed forces recommended by the manufacturer for coupling pipe.
 - 5. Join pipes in straight alignment then deflect to required angle. Do not allow the deflection angle to exceed the deflection permitted by the manufacturer.
- E. Field Tests:
 - 1. Infiltration / Exfiltration Test: Maximum allowable leakage shall be per local specification requirements.

2. Low Pressure Air Test: Each reach may be tested with air pressure (max 5 psi). The system passes the test if the pressure drop due to leakage through the pipe or pipe joints is less than or equal to the specified amount over the prescribed time period.
 3. Individual Joint Testing: For pipes large enough to enter, individual joints may be pressure tested with a portable tester to 5 psi max. with air or water in lieu of line infiltration, exfiltration or air testing.
 4. Deflection: Maximum allowable long-term deflection is normally 5% of the initial diameter.
- F. Cutting pipe: Comply with pipe manufacturer's recommendations. After cutting, leave end pipe in accordance with manufacturer's recommendations.

3.3 OWNER TRAINING (NOT USED)

END OF SECTION

Section 33 31 13.01
ACCEPTANCE TESTING FOR SANITARY SEWERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Visual inspection of sewer pipes
 - 2. Mandrel testing for flexible sewer pipes.
 - 3. Leakage testing of sewer pipes.
 - 4. Leakage testing of manholes.
 - 5. Smoke testing of point repairs.
- B. Related Specification Sections include, but are not necessarily limited to:
 - 1. Division 00 - Bidding Requirements, Contract Forms, and Conditions of the Contract.
 - 2. Division 01 - General Requirements.

1.2 MEASUREMENT AND PAYMENT

- A. Unit Price. No separate payment will be made for this item. Include the cost in associated items for this project.

1.3 REFERENCES

- A. ASTM C 828 - Standard Test Method for Low-Pressure Air Test of Vitrified Clay Pipe Lines.
- B. ASTM C 924 - Standard Practice for Testing Concrete Pipe Sewer Lines by Low-Pressure Air Test Method.
- C. ASTM D 3034 - Standard Specification for Type PSM Polyethylene (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
- D. ASTM F 794 - Specification for Poly (Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter.
- E. ASTM F 1417 - Standard Test Method for Installation Acceptance of Plastic Gravity Sewer Lines Using Low-Pressure Air.

1.4 PERFORMANCE REQUIREMENTS

- A. Gravity flow sanitary sewers are required to have straight alignment and uniform grade between manholes.

- B. Flexible pipe, including “semi-rigid” pipe, is required to show no more than 5 percent deflection. Test pipe no sooner than 30 days after backfilling of line segment, but prior to final acceptance using standard mandrel to verify that installed pipe is within specified deflection tolerances.
- C. Maximum allowable leakage for Infiltration or Exfiltration
 - 1. The total exfiltration, as determined by hydrostatic head test, shall not exceed 50 gallons per inch diameter per mile of pipe per 24 hours at minimum test head of 2 feet above crown of pipe at upstream manhole or 2 feet above groundwater elevation, whichever is greater.
 - 2. When pipes are installed more than 2 feet below groundwater level, use infiltration test in lieu of exfiltration test. Total infiltration shall not exceed 50 gallons per inch diameter per mile of pipe per 24 hours. Groundwater elevation must be at least 2 feet above crown of pipe at upstream manhole.
 - 3. Refer to Table 1, Water Test Allowable Leakage, at end of Section, for measuring leakage in sewers. Perform leakage testing to verify that leakage criteria are met.
- D. Perform air testing in accordance with requirements of this Section and Texas Natural Resources Conservation Commission requirements. Refer to Table 2, Time Allowed for Pressure Loss from 3.5 psig to 2.5 psig, Table 3, Minimum Testing Times for Low Pressure Air Test, and Table 4, Vacuum Test Time Table, at end of this Section.

1.5 SUBMITTALS

- A. Conform to requirements of Section 01 33 00 - Submittals Procedures.
- B. Test Plan: Before testing begins and in adequate time to obtain approval through submittal process, prepare and submit test plan for approval by Owner’s representative. Include testing procedures, methods, equipment, and tentative schedule. Obtain advance written approval for deviations from Drawings and Specifications.
- C. Test Reports: Submit test reports for each test on each segment of sanitary sewer.

1.6 GRAVITY SANITARY SEWER QUALITY ASSURANCE

- A. Repair, correct, and retest manholes or sections of pipe which fail to meet specified requirements when tested.
- B. Provide testing reports and video tape of television inspection as directed by Owner’s representative.
- C. Upon completion of tape reviews by Owner’s representative, Contractor will be notified regarding final acceptance of sewer segment.

1.7 SEQUENCING AND SCHEDULING

- A. Perform testing as work progresses. Schedule testing so that no more than 1000 linear feet of installed sewer remains untested at one time.

- B. Coordinate testing schedules with Owner's representative. Perform testing under observation of Owner's representative.

PART 2 - PRODUCTS

2.1 DEFLECTION MANDREL

- A. Mandrel Sizing. Rigid mandrel shall have outside diameter (O.D.) equal to 95 percent of inside diameter (I.D.) of pipe. Inside diameter of pipe, for purpose of determining outside diameter of mandrel, shall be average outside diameter minus two minimum wall thicknesses for O.D. controlled pipe and average inside diameter for I.D. controlled pipe, dimensions shall be per appropriate standard. Statistical or other "tolerance packages" shall not be considered in mandrel sizing.
- B. Mandrel Design. Rigid mandrel shall be constructed of metal or rigid plastic material that can withstand 200 psi without being deformed. Mandrel shall have nine or more "runners" or "legs" as long as total number of legs is odd number. Barrel section of mandrel shall have length of at least 75 percent of inside diameter of pipe. Rigid mandrel shall not have adjustable or collapsible legs which would allow reduction in mandrel diameter during testing. Provide and use proving ring for modifying each size mandrel.
- C. Proving Ring. Furnish "proving ring" with each mandrel. Fabricate ring of 1/2-inch-thick, 3-inch-wide bar steel to diameter 0.02 inches larger than approved mandrel diameter.
- D. Mandrel Dimensions (5 percent allowance). Average inside diameter and minimum mandrel diameter are specified in Table 5, Pipe vs. Mandrel Diameter, at end of this Section. Mandrels for higher strength, thicker wall pipe or other pipe not listed in table may be used when approved by Owner's representative.

2.2 EXFILTRATION TEST

- A. Water Meter: Obtain transient water meter from Authority for use when water for testing will be taken from Authority's system. Conform to Authority's requirements for water meter use.
- B. Test Equipment:
 - 1. Pipe plugs.
 - 2. Pipe risers where manhole cone is less than 2 feet above highest point in pipe or service lead.

2.3 INFILTRATION TEST

- A. Test Equipment:
 - 1. Calibrated 90 degree V-notch weir.
 - 2. Pipe plugs.

2.4 LOW PRESSURE AIR TEST

- A. Minimum Requirement for Equipment:
 - 1. Control panel
 - 2. Low-pressure air supply connected to control panel.
 - 3. Pneumatic plugs: Acceptable size for diameter of pipe to be tested; capable of withstanding internal test pressure without leaking or requiring external bracing.
 - 4. Air hoses from control panel to:
 - a. Air supply.
 - b. Pneumatic plugs.
 - c. Sealed line for pressuring.
 - d. Sealed line for monitoring internal pressure.
- B. Testing Pneumatic Plugs: Place pneumatic plug in each end of length of pipe on ground. Pressurize plugs to 25 psig; then pressurize sealed pipe to 5 psig. Plugs are acceptable when they remain in place against test pressure without external aids.

2.5 GROUND WATER DETERMINATION

- A. Equipment: Pipe probe or small diameter casing for ground water elevation determination.

2.6 SMOKE TESTING

- A. Equipment:
 - 1. Pneumatic plugs.
 - 2. Smoke generator as supplied by Superior Signal Company, or approved equal.
 - 3. Blowers producing 2500 scfm minimum.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Provide labor, equipment, tools, test plugs, risers, air compressor, air hose, pressure meters, pipe probe, calibrated weirs, or any other device necessary for proper testing and inspection.
- B. Determine selection of test methods and pressures for gravity sanitary sewers based on ground water elevation. Determine ground water elevation using equipment and procedures conforming to Section 01 57 23.02 - Control of Ground Water and Surface Water.

3.2 VISUAL INSPECTION OF GRAVITY SANITARY SEWERS

- A. Check pipe alignment visually by flashing light between structures. Verify if alignment is true and no pipes are misplaced. In case of misalignment or damaged pipe, remove and relay or replace pipe segment.

3.3 MANDREL TESTING FOR GRAVITY SANITARY SEWERS

- A. Perform deflection testing on flexible and semi-rigid pipe to confirm pipe has no more than 5 percent deflection. Mandrel testing shall conform to ASTM D 3034. Perform testing no sooner than 30 days after backfilling of line segment, but prior to final acceptance testing of line segment.
- B. Pull approved mandrel by hand through sewer sections. Replace any section of sewer not passing mandrel. Mandrel testing is not required for stubs.
- C. Retest repaired or replaced sewer sections.

3.4 LEAKAGE TESTING FOR GRAVITY SANITARY SEWERS

- A. Test Options:
 - 1. Test gravity sanitary sewer pipes for leakage by either exfiltration or infiltration methods, as appropriate, or with low pressure air testing.
 - 2. Test new or rehabilitated sanitary sewer manholes with water or low pressure air. Manholes tested with low pressure air shall undergo physical inspection prior to testing.
 - 3. Perform leakage testing after backfilling of line segment, and prior to tie-in of service connections.
 - 4. If no installed piezometer is within 500 feet of sewer segment, provide temporary piezometer for this purpose.
- B. Compensating for Ground Water Pressure:
 - 1. Where ground water exists, install pipe nipple at same time sewer line is placed. Use ½-inch capped pipe nipple approximately 10 inches long. Make installation through manhole wall on top of sewer line where line enters manhole.
 - 2. Immediately before performing line acceptance test, remove cap, clear pipe nipple with air pressure, and connect clear plastic tube to nipple. Support tube vertically and allow water to rise in tube. After water stops rising, measure height in feet of water over invert of pipe. Divide this height by 2.3 feet/psi to determine ground water pressure to be used in line testing.
- C. Exfiltration test:
 - 1. Determine ground water elevation.
 - 2. Plug sewer in downstream manhole.
 - 3. Plug incoming pipes in upstream manhole.

4. Install riser pipe in outgoing pipe of upstream manhole when highest point in service lead (house service) is less than 2 feet below bottom of manhole cone.
 5. Fill sewer pipe and manhole or pipe riser, when used, with water to point 2-1/2 feet above highest point in sewer pipe, house lead, or ground water table, whichever is highest.
 6. Allow water to stabilize for one to two hours. Take water level reading to determine drop of water surface, in inches, over one-hour period, and calculate water loss (1 inch of water in 4 feet diameter manhole equals 8.22 gallons) or measure quantity of water required to keep water at same level. Loss shall not exceed that calculated from allowable leakage according to Table 1 at end of this Section.
- D. Infiltration test: Ground water elevation must be not less than 2.0 feet above highest point of sewer pipe or service lead (house service).
1. Determine ground water elevation.
 2. Plug incoming pipes in upstream manhole.
 3. Insert calibrated 90 degree V-notch weir in pipe on downstream manhole.
 4. Allow water to rise and flow over weir until it stabilizes.
 5. Take five readings of accumulated volume over period of 2 hours and use average for infiltration. Average must not exceed that calculated for 2 hours from allowable leakage according to Table 1 at end of this Section.
- E. Low Air Pressure Test: When using this test conform to ASTM C 828, ASTM C 924, or ASTM F 1417, as applicable, with holding time not less than that listed in Table 2.
1. Air testing for sections of pipe shall be limited to lines less than 36-inch average inside diameter.
 2. Lines 36-inch average inside diameter and larger shall be tested at each joint. Minimum time allowable for pressure to drop from 3.5 pounds per square inch gauge to 2.5 pounds per square inch during joint test shall be 10 seconds, regardless of pipe size.
 3. For pipe sections less than 36-inch average inside diameter:
 - a. Determine ground water level.
 - b. Plug both ends of pipe. For concrete pipe, flood pipe and allow 2 hours to saturate concrete. Then drain and plug concrete pipe.
 - c. After manhole-to-manhole section of sanitary sewer main has been sliplined and prior to any service lines being connected to new liner, plug liner at each manhole with pneumatic plugs.

- d. Pressurize pipe to 4.0 psig. Increase pressure 1.0 psi for each 2.3 feet of ground water over highest point in system. Allow pressure to stabilize for 2 to 4 minutes. Adjust pressure to start at 3.5 psig (plus adjustment for ground water table). See Table 2 at end of this Section.
- e. To determine air loss, measure time interval for pressure to drop to 2.5 psig. Time must exceed that listed in Table 2 at end of this Section for pipe diameter and length. For sliplining, use diameter of carrier pipe.

F. Retest: Repair and retest any section of pipe which fails to meet requirements.

3.5 TEST CRITERIA TABLES

A. Exfiltration and Infiltration Water Tests: Refer to Table 1, Water Test Allowable Leakage, at end of this Section.

B. Low Pressure Air Test:

1. Times in Table 2, Time Allowed For Pressure Loss From 3.5 psig to 2.5 psig, at end of this Section, are based on equation from Texas Commission on Environmental Quality (TCEQ) Design Criteria 217.57 (a) (1) (C).

		$T = 0.0850(D)(K)/(Q)$
where:	T =	time for pressure to drop 1.0 pounds per square inch gauge in seconds
	K =	0.000419 DL, but not less than 1.0
	D =	average inside diameter in inches
	L =	length of line of same pipe size in feet
	Q =	rate of loss, 0.0015 ft ³ /min./sq. ft. internal surface

2. Since K value of less than 1.0 shall not be used, there are minimum testing times for each pipe diameter as given in Table 3, Minimum Testing Times for Low Pressure Air Test.

- Notes:
1. When two sizes of pipe are involved, compute time by ratio of lengths involved.
 2. Lines with 27-inch average inside diameter and larger may be air tested at each joint.
 3. Lines with average inside diameter greater than 36 inches must be air tested for leakage at each joint.
 4. If joint test is used, perform visual inspection of joint immediately after testing.
 5. For joint test, pipe is to be pressurized to 3.5 psi greater than pressure exerted by groundwater above pipe. Once pressure has stabilized, minimum times allowable for pressure to drop from 3.5 pounds per square inch gauge to 2.5 pounds per square inch gauge shall be 10 seconds.

3.6 LEAKAGE TESTING FOR MANHOLES

A. After completion of manhole construction, wall sealing, or rehabilitation, but prior to backfilling, test manholes for water tightness using hydrostatic or vacuum testing procedures.

- B. 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 minimum of 6 inches outside of manhole walls. Brace inverts to prevent lines from being dislodged when lines entering manhole have not been backfilled.
- C. Vacuum testing:
 - 1. Install vacuum tester head assembly at top access point of manhole and adjust for proper seal on straight top section of manhole structure. Following manufacturer's instructions and safety precautions, inflate sealing element to recommended maximum inflation pressure; do not over-inflate.
 - 2. Evacuate manhole with vacuum pump to 10 inches mercury (Hg), disconnect pump, and monitor vacuum for time period specified in Table 4, Vacuum Test Time Table.
 - 3. If drop in vacuum exceeds 1 inch Hg over specified time period tabulated above, locate leaks, complete repairs necessary to seal manhole and repeat test procedure until satisfactory results are obtained.
- D. Perform hydrostatic exfiltration testing as follows:
 - 1. Seal wastewater lines coming into manhole with internal pipe plug. Then fill 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 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.

3.7 SMOKE TEST PROCEDURE FOR POINT REPAIRS

- A. Application: Perform smoke test to:
 - 1. Locate points of line failure for point repair.
 - 2. Determine when point repairs are properly made.
 - 3. Determine when service connections have been reconnected to rehabilitated sewer.
 - 4. Check integrity of connections to newly replaced service taps to liners and to existing private service connections.
- B. Limitations: Do not backfill service taps until completion of this test. Test only those taps in single manhole section at one time. Keep number of open excavations to minimum.
- C. Preparation: Prior to smoke testing, give written notices to area residents no fewer than 2 days, nor more than 7 days, prior to proposed testing. Also give notice to City of Houston Police and Fire Departments 24 hours prior to actual smoke testing.

- D. Isolate Section: Isolate manhole section to be tested from adjacent manhole sections to keep smoke localized. Temporarily seal annular space at manhole for sliplined sections.
- E. Smoke Introduction:
 - 1. Operate equipment according to manufacturer's recommendation and as approved by Owner's representative.
 - 2. Conduct test by forcing smoke from smoke generators through sanitary sewer main and service connections. Operate smoke generators for minimum of 5 minutes.
 - 3. Introduce smoke into upstream and downstream manhole as appropriate. Monitor tap/connection for smoke leaks. Note sources of leaks.
- F. Repair and Retest: Repair and replace taps or connections noted as leaking and then retest. Taps and connections may be left exposed in only one manhole section at time. When repair or replacement, testing or retesting, and backfilling of excavation is not completed within one work day, properly barricade and cover each excavation as approved by Owner's representative.
- G. Service Connections: On houses where smoke does not issue from plumbing vent stacks to confirm reconnection of sewer service to newly installed liner pipe, perform dye test to confirm reconnection. Introduce dye into service line through plumbing fixture inside structure or sewer cleanout immediately outside structure and flush with water. Observe flow at service reconnection or downstream manhole. Detection of dye confirms reconnection.

Table 1
WATER TEST ALLOWABLE LEAKAGE

DIAMETER OF RISER OR STACK IN INCHES	VOLUME PER INCH OF DEPTH		ALLOWANCE LEAKAGE*	
	INCH	GALLONS	PIPE SIZE IN INCHES	GALLONS/MINUTE PER 100 FT
1	0.7854	.0034	6	0.0039
2	3.1416	.0136	8	0.0053
2.5	4.9087	.0212	13	0.0066
3	7.0686	.0306	12	0.0079
4	12.5664	.0306	15	0.0099
5	19.6350	.0544	18	0.0118
6	28.2743	.1224	21	0.0138
8	50.2655	.2176	24	0.0158
			27	0.0177
			30	0.0197
			36	0.0237
			42	0.0276
For other diameters, multiply square of diameters by value for 1" diameter.			Equivalent to 50 gallons per inch of inside diameter per mile per 24 hours.	

- * Allowable leakage rate shall be reduced to 10 gallons per inch of inside diameter per mile per 24 hours, when sewer is identified as located within 25-year flood plain.

Table 2
ACCEPTANCE TESTING FOR SANITARY SEWERS

TIME ALLOWED FOR PRESSURE LOSS FROM 3.5 PSIG TO 2.5 PSIG														
Pipe Dia m. (in)	Min. Time (min:sec)	Length for Min. Time (ft)	Time for Longer Length (sec)	Specification Time for Length (L) Shown (min:sec)										
				100 ft	150 ft	200 ft	250 ft	300 ft	350 ft	400 ft	450 ft	500 ft	550 ft	600 ft
6	5:40	398	0.8548	5:40	5:40	5:40	5:40	5:40	5:40	5:42	6:25	7:07	7:50	8:33
8	7:33	298	1.5196	7:33	7:33	7:33	7:33	7:36	8:52	10:08	11:24	12:40	13:56	15:12
10	9:27	239	2.3743	9:27	9:27	9:27	9:54	11:52	13:51	15:50	17:48	19:47	21:46	23:45
12	11:20	199	3.4190	11:20	11:20	11:20	14:15	17:06	19:57	22:48	25:39	28:30	31:20	34:11
15	14:10	159	5.3423	14:10	14:10	17:48	22:16	26:43	31:10	35:37	40:04	44:31	48:58	53:25
18	17:00	133	7.6928	17:00	19:14	25:39	32:03	38:28	44:52	51:17	57:42	64:06	70:31	76:56
21	19:50	114	10.4708	19:50	26:11	34:54	43:38	52:21	61:05	69:48	78:32	87:15	95:59	104:42
24	22:40	99	13.6762	22:48	34:11	45:35	56:59	68:23	79:47	91:10	102:34	113:58	125:22	136:46
27	25:30	88	17.3089	28:51	43:16	57:42	72:07	86:33	100:58	115:24	129:49	144:14	158:40	173:05
30	28:20	80	21.3690	35:37	53:25	71:14	89:02	106:51	124:39	142:28	160:16	178:05	195:53	213:41
33	31:10	72	25.8565	43:06	64:38	86:11	107:44	129:17	150:50	172:23	193:55	215:28	237:01	258:34

Table 3
MINIMUM TESTING TIMES FOR LOW PRESSURE AIR TEST

PIPE DIAMETER (INCHES)	MINIMUM TIME (SECONDS)	LENGTH FOR MINIMUM TIME (FEET)	TIME FOR LONGER LENGTH (SECONDS)
6	340	398	0.855 (L)
8	454	298	1.520 (L)
10	567	239	2.374 (L)
12	680	199	3.419 (L)
15	850	159	5.342 (L)
18	1020	133	7.693 (L)
21	1190	114	10.471 (L)
24	1360	100	13.676 (L)
27	1530	88	17.309 (L)
30	1700	80	21.369 (L)
33	1870	72	25.856 (L)

Table 4
 VACUUM TEST TIME TABLE

DEPTH IN FEET	TIME IN SECONDS BY PIPE DIAMETER		
	48"	60"	72"
4	10	13	16
8	20	26	32
12	30	39	48
16	40	52	64
20	50	65	80
24	60	78	96
*	5.0	6.5	8.0
*Add T times for each additional 2-foot depth. (The values listed above have been extrapolated from ASTM C 924-85)			

**Table 5
 PIPE VS. MANDREL DIAMETER**

<u>Material and Wall Construction</u>	<u>Nominal Size (Inches)</u>	<u>Average I.D. (Inches)</u>	<u>Minimum Mandrel Diameter (Inches)</u>
PVC-Solid (SDR 26)6	6	5.764	5.476
	8	7.715	7.329
	10	9.646	9.162
PVC-Solid (SDR 35)12	12	11.737	11.150
	15	14.374	13.655
	18	17.629	16.748
	21	20.783	19.744
	24	23.381	22.120
	27	26.351	25.033
	30	29.500	28.025
PVC-Truss	8	7.750	7.363
	10	9.750	9.263
	12	11.790	11.201
	15	14.770	14.032
PVC-Profile (ASTM F 794)	12	11.740	11.153
	15	14.370	13.652
	18	17.650	16.768
	21	20.750	19.713
	24	23.500	22.325
	27	26.500	25.175
	30	29.500	28.025
	36	35.500	33.725
	42	41.500	39.425
	48	47.500	45.125
HDPE-Profile	18	18.000	17.100
	21	21.000	19.950
	24	24.000	22.800
	27	27.000	25.650
	30	30.000	28.500
	36	36.000	34.200
	42	42.000	39.900
	48	48.000	45.600
	54	54.000	51.300
	60	60.000	57.000
Fiberglass (Class SN 46)	12	12.85	11.822
	18	18.66	17.727
	20	20.68	19.646
	24	24.72	23.484
	30	30.68	29.146
	36	36.74	34.903
	42	42.70	40.565
	48	48.76	46.322
	54	54.82	52.079
	60	60.38	57.361

END OF SECTION

SECTION 33 31 19.01

CLEANING AND TELEVISIONING OF SEWERS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Cleaning the sewer line to remove debris, solids, roots, sand, pieces of broken pipe, bricks, grease, and grit from sewer line and manholes, thus improving flow and facilitating television inspection for sewer evaluation. Cleaning includes the initial manhole wall washing by high-pressure water jet.
- B. Televising the line to obtain quality video and TV inspection reports upon which the Engineer can make a decision regarding needed sewer rehabilitation and repair.

1.2 MEASUREMENT AND PAYMENT

- A. Measurement for cleaning and televising of sewers with normal cleaning equipment is on a linear foot basis. The Contract unit price for cleaning with normal equipment is full payment for sewer line actually cleaned and accepted.
- B. Measurement for cleaning and televising of sewers with mechanical cleaning equipment is on a linear foot basis for the quantity approved by the Engineer. The Contract unit price for cleaning with mechanical equipment is paid in addition to the unit price for cleaning using normal cleaning equipment. Mechanical cleaning will be approved to remove continuous tuberculation/scaling and/or hardened mineral deposits in cast iron or ductile iron pipe that cannot be removed by normal cleaning methods. Mechanical cleaning may be limited to specific sections of a pipe segment as approved by the Engineer on a case-by-case basis after normal cleaning methods have failed to produce satisfactory results, as determined by viewing videos.

1.3 DEFINITIONS

- A. Normal Cleaning Equipment. Cleaning devices such as rods, metal pigs, porcupines, root saws, snakes, scooters, sewer balls, kites, and other approved equipment in conjunction with a hand-winch device and gas or electric rod-propelled devices. Variable pressure water nozzles, (3000 psi) are considered hydraulic cleaning equipment.
- B. Mechanical Cleaning Equipment. Buckets, scrapers, scooters, porcupines, kites, heavy-duty brushes, metal pigs, and other debris-removing equipment and accessories used in conjunction with an approved power winching machine. High to very high pressure water nozzles (10,000 psi) are considered as mechanical cleaning equipment.

- C. Survey TV Inspection. Survey TV is a video inspection of existing sanitary sewers to evaluate lines and determine if conditions exist which will require line rehabilitation.
- D. Pre-Installation TV Inspection. Pre-installation TV is a video inspection by the Contractor of sewer lines specified for rehabilitation to confirm cleaning, location of service connections, and constructability of line rehabilitation according to Drawings and Specifications.
- E. Post-Installation TV Inspection. Post-installation TV is a video inspection to determine that rehabilitation of a sanitary sewer has been completed according to Drawings and Specifications.
- F. TV Inspection Report. A form that is filled out by each TV inspection for any video file that is submitted to the Owner. Form provided by the Owner.

1.4 PERFORMANCE REQUIREMENTS

- A. Clean the designated sanitary sewers and manholes using mechanical, hydraulically-propelled, or high-velocity sewer cleaning equipment. Select a cleaning process which removes grease, sand, silt, solids, rags, and debris from each sewer segment and associated manholes.
- B. The Engineer may determine that no additional line rehabilitation work is required if the cleaning operation shows the sewer line to be free of damage or deterioration. The Engineer may delete from the project, any or all of the sanitary sewer lines which do not show the need for rehabilitation.
- C. If, after Pre-Installation TV Inspection, the Contractor determines that the existing line condition is such that, in his judgment, the specified rehabilitation method would be ineffective or not constructible, he should notify the Engineer in writing. The Engineer will determine what rehabilitation method should be used and notify the Contractor in writing.

1.5 SUBMITTALS

- A. Make submittals in conformance with Section 01 33 00 – Submittal Procedures.
- B. Submit the equipment manufacturer's operational manual and guidelines to the Engineer for review. Strictly follow such instructions unless modified by the Engineer.
- C. Submit a list of legal disposal sites proposed for dumping debris from the cleaning operation.
- D. Submit and maintain a Liquid Waste Manifest conforming to local requirements. Send the Owner's and regulator's copies of the completed manifest to the Engineer monthly.

- E. Submit videos is USB flash drive and hard copies of the TV inspection reports to the Engineer for review.
 - 1. Provide MPEG-4 (H.264) files on USB flash drive of a quality sufficient for the Engineer to evaluate the condition of the sanitary sewer, locate the sewer service connections, and verify cleaning. If quality is not sufficient, Contractor shall re-televise the sanitary sewer segment and provide a new MPEG-4 file and report at no additional cost to the Owner. Camera distortions, inadequate lighting, dirty lens, or blurred/hazy picture will be cause for rejection of a tape and rejection of the associated line segment.
 - 2. MPEG-4 files submitted become the property of the Owner and will be retained by the Maintenance Support Division.
 - 3. Contractor shall maintain a master copy of all MPEG-4 files and TV inspection reports submitted, until final acceptance of the work.
 - 4. Transmit each TV Inspection Report to the Engineer with a Transmittal Form. Copies of the TV Inspection Report form and Television Inspection Codes Summary are attached.

1.6 QUALITY ASSURANCE

- A. Qualifications. Use experienced personnel to operate cleaning equipment and devices.
- B. Acceptance of sewer cleaning work is contingent upon the successful completion of the television inspection. If television inspection shows debris, solids, sand, grease, or grit remaining in the line, the cleaning is considered unsatisfactory. Repeat cleaning, inspection, and televising of the sewer line until cleaning is acceptable by the Engineer.
- C. For reporting overflow or spillage of wastewater, refer to Section 33 32 00.01- Diversion Pumping.

PART 2 PRODUCTS

2.2 CLEANING EQUIPMENT

- A. Select the cleaning equipment and method for cleaning, based on the condition of the sanitary sewer mains at the time work begins. More than one type of equipment or attachments may be required on a single project or at a single location.
- B. When requested by the Engineer, demonstrate the performance capabilities of the cleaning equipment and method proposed for use on the project. If results obtained by the demonstration are not satisfactory, provide other equipment or devices that will clean the sewer line.

- C. For cleaning equipment, install a gauge to indicate working pressure on the discharge of high-pressure water pumps. In addition to conventional nozzles, use a nozzle which directs the cleaning force to the bottom of the pipe for sewers 18 inches and larger.
- D. When cleaning equipment is used, install a suitable sand trap, weir, dam, or suction in the downstream manhole so that solids and debris are trapped for removal.

2.3 CLEANING ACCESSORIES

- A. When an additional quantity of water from the public water supply is needed to meet the cleaning requirements of the equipment and the sewer, obtain transient water meters from the Owner for installation on the trucks or at fire hydrants.
- B. All cleaning equipment must be equipped with a backflow preventer to prevent any contamination to the public water supply.

2.4 TELEVISION EQUIPMENT

- A. Closed Circuit TV Equipment. Select and use closed-circuit television equipment that will produce a color DVD.
- B. Pipe Inspection Camera. Produce a DVD using a pan-and-tilt, radial viewing, pipe inspection camera that pans 275 degrees and rotates 360 degrees. Use a camera with an accurate footage counter which displays on the monitor the exact distance of the camera from the centerline of the starting manhole. Use a camera with camera height adjustment so that the camera lens is always centered at one-half the inside diameter, or higher, in the pipe being televised. Provide a lighting system that allows the features and condition of the pipe to be clearly seen. A reflector in front of the camera may be required to enhance lighting in dark or large diameter pipe.
- C. Provide videos on USB flash drive.
 - 1. Provide individual MPEG-4 files for each segment, manhole to manhole.

VIDEO LABEL

Wastewater File No.: _____		Contractor's Name: _____	
Inspection Type:	<input type="checkbox"/> Survey	<input type="checkbox"/> Pre-Installation	<input type="checkbox"/> Post-Installation
Video No.:	_____	Date Televised: _____	Date Submitted: _____
Basin No:	_____		

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin cleaning until both upstream and downstream manholes have been checked for flow monitors or other mechanical devices. Refer to Section 33 60 01 – Manhole Rehabilitation.

3.2 PREPARATION

- A. Cleaning.
 - 1. Take precautions to protect sanitary sewer mains and manholes from damage that might be inflicted by the improper selection of the cleaning process or improper use of the equipment. When using hydraulically propelled devices, take precautions to ensure that the water pressure created does not cause damage or flooding to public or private property. Do not surcharge the sanitary sewer beyond the elevation that could cause overflow of sewage into area waterways, homes, or buildings or onto the ground.
 - 2. Do not use or obstruct a fire hydrant when there is a fire in the area. Remove water meters, fittings and piping from fire hydrants at the end of each working day.
 - 3. Exercise care to prevent contamination of the potable water system. Use a backflow preventer of appropriate size is mandatory when drawing water from a public hydrant.
 - 4. Where possible, use the flow of wastewater present in the sanitary sewer main to provide fluid for hydraulic cleaning devices.
- B. Televising. Contractor shall use the Television Inspection Report form following this Section to document results of TV inspections.

3.3 CLEANING

- A. Conserve Water. Do not waste water from the public water supply because of poor connections or from hydrants left opened.
- B. Install Collapsible Dam. Use a collapsible dam for hydraulically propelled devices which require a head of water to operate. Provide a dam which is easily collapsible to prevent damage to the sewer, public property, or private property.
- C. High Velocity Cleaning. Operate high-velocity cleaning equipment so that the pressurized nozzle moves continuously. Turn off or reduce the flow to the nozzle to prevent damage to the line any time the nozzle becomes stationary.
- D. Mechanical Cleaning. In addition to hydraulic cleaning equipment, perform mechanical cleaning when required and approved using equipment and accessories defined in mechanical cleaning equipment.

- E. Debris Disposal. Remove sludge, dirt, sand, rocks, grease, roots, and other solid or semi-solid material resulting from the cleaning operation at the downstream manhole of the section being cleaned. Passing debris from one sewer section to any other sewer section is not allowed. Load debris from the manholes into an enclosed container that is legally permitted for liquid waste hauling. Remove solids or semi-solids resulting from cleaning operations from the site and dispose of it at the end of each work day. Do not accumulate debris, liquid waste, or sludge on the site except in totally enclosed containers approved by the Engineer.
- F. Disposal Sites. Dispose of waste at a legally-permitted disposal site using a permitted transporter.

3.4 TELEVISIONING

- A. Immediately after cleaning, televise the sanitary sewer line to document the condition of the line and to locate existing service connections. Notify the Engineer 24 hours in advance of any TV inspection so that the Engineer may observe inspection operations.
- B. Perform TV inspection of sanitary sewers as follows:
 - 1. Perform a survey TV inspection on any sanitary sewer within the boundary of the project, as directed by the Engineer. After reviewing survey TV MPEG-4 files, the Engineer will identify which sanitary sewers will be rehabilitated or will need additional work.
 - 2. Perform pre-installation TV inspection immediately after line cleaning and before line rehabilitation work. Pre-installation TV is not required for sewer lines designated as "remove and replace". Verify that the line is clean and ready to accept the line rehabilitation. Prepare Television Inspection Report forms. Maintain copies of MPEG-4 files and reports for reference by the Engineer for the duration of the project.
 - 3. Perform post-installation TV inspection to confirm completion of rehabilitation work, including removal and replacement. Verify that the rehabilitation work conforms to the requirements of the Drawings and Specifications. Provide a color MPEG-4 file showing the completed work, including the condition of restored service connections. Prepare and submit Television Inspection Report forms providing location of service connections along with location of any discrepancies. Manhole work, including benches, inverts and pipe penetrations into manhole, should be complete prior to post-installation TV work.

4. Videos shall pan beginning and ending manholes to demonstrate that all debris has been removed. Camera operator shall slowly pan each service connection, clamped joints, and when pipe material transitions from one material to another. A TV Inspection Report shall be completed for every segment that is submitted to the Engineer.
- C. TV inspection MPEG-4 files shall be continuous for pipe segments between manholes. Do not leave gaps in the MPEG-4 file of a segment between manholes and do not show a single segment on more than one MPEG-4 file, unless specifically allowed by the Engineer.

FLOW CONTROL

- A. Perform survey TV inspection on one manhole section at a time. Adequately control the flow in the section being televised. Do not exceed the depth of wastewater flow shown below:

Pipe Diameter (Inches)	Depth of Flow (Percent of Pipe Diameter)
6 - 10	10
12 - 24	15
Over 24	20

1. If during survey TV inspection of a manhole section, the wastewater flow depth exceeds the maximum allowable, reduce the flow depth to an acceptable level by performing the survey TV inspection during minimum flow hours, by diversion pumping, or by pulling a camera with swab, high-velocity jet nozzle or other acceptable dewatering device. Video files made while floating the camera is not acceptable unless approved by the Engineer.
- B. Minimize flow in the line while performing pre-installation TV inspection. Divert the normal flow as specified in Section 01 54 12 – By Pass Pumping of Wastewater and clean the line to be inspected.
- C. No flow is allowed in the line while performing post-installation TV inspection.

3.5 PASSAGE OF TV CAMERA

- A. Do not pull or propel the television camera through the line at a speed greater than 30 feet per minute.
- B. If during survey TV inspection of a manhole section, the camera is unable to pass an obstruction even though flow is unobstructed, televise the manhole section from the other direction (reverse setup) in order to obtain a complete video of the line. Whenever such a condition arises, notify the

Engineer to determine if an obstruction removal or point repair is necessary. If a point repair is authorized, repair the pipe at the designated location and then re-televising the manhole section to verify completion of the point repair, unless waived by the Engineer.

1. When the camera is being pulled from the other direction in order to survey on either side of an obstruction and a second repair location is encountered away from the first obstruction, notify the Engineer and request a review of the MPEG-4 file. The Engineer may direct the Contractor to make one or both point repairs. No downtime shall be allowed.
 2. If two point repairs are allowed and completed, re-televising the manhole section. Generally, up to 20 feet of the sewer pipe from the finished end of the first point repair to the starting end of the second point repair may be lamped or physically inspected to verify the condition of the sewer without further TV inspection.
 3. The Owner makes no guarantee that the sanitary sewer specified or proposed for survey TV after cleaning, is clear for the passage of the camera set-up. Select the appropriate equipment, tools, and methods for securing safe passage of the camera.
- C. During pre-installation TV inspection, camera passage should show the line is ready to rehabilitate. Report any variations between previous reported (existing data) conditions and the actual conditions encountered to the Engineer.
- D. For post-installation TV inspection, exercise the full capabilities of the camera equipment to document the completion of the rehabilitation work and the conformance of the work to the Drawings and Specifications. Provide a full 360 degree view of pipe, joints and service connections.

3.6 TV INSPECTION REPORT

- A. For each TV inspection video provide a completed TV Inspection Report, as attached at the end of this section. The Report is a written/narrated log of pipe defects, sags, service connection locations and conditions, indexed to the footage counter. The TV Inspection Report shall be filled out as instructed below:
- B. DIRECTION OF FLOW
1. MANHOLE NUMBER: The upstream manhole number of the line segment shall be put in this field. This is an alpha-numeric field with 9 spaces available (i.e. SB179003).
 2. MANHOLE NUMBER: The downstream manhole number of the line segment shall be put in this field. This is an alpha-numeric field with 9 spaces available (i.e. SB179002).

C. HEADER SECTION

1. ADDRESS UPS/DWN: The upstream and downstream address of the line segment shall be put in this field. This is an alpha-numeric field with 6 spaces available for the street number and 21 spaces available for the street name (i.e., UPS: 2150 Sunnyland DWN: 2110 Sunnyland).
2. WORK ORDER NO.: This number will be provided by the Owner, this field shall be left blank. This is a numeric field with 10 spaces available.
3. TV DATE: The date that the MPEG-4 file was produced shall be placed in this field. This date shall be the same as the date shown on the display screen. This is a numeric field with 8 spaces available (i.e., 2/21/95).
4. TV CONTRACTOR: The TV Contractor's name shall be placed in this field. This is an alpha-numeric field with 5 spaces available (i.e., Chief, KIN (Kinsel), IGS (Insituform).
5. WEATHER: The existing weather conditions at the time that the MPEG-4 file was made shall be placed in this field. This is an alpha-numeric field with 10 spaces available (i.e., Cloudy).
6. VTR FORMAT: The VTR format shall be placed in this field. This is an alpha-numeric field with 4 spaces available (i.e., DVD).
7. MPEG-4 NUMBER: Each TV DVD produced must have an MPEG-4 file number for identification. This number must be affixed to the DVD label. This number must not be duplicated in the same project. This is an alpha-numeric field with 6 spaces available (i.e., IA0101).
8. VTR INDEX: The numeric location of the line segment on the DVD shall be indicated here. This is an alpha-numeric field with 6 spaces available for each number (i.e., 1336 to 2185).
9. SUMMARY:
 - a. This line is to be used to put in additional information about the line segment as indicated below:
 - 1) Type of TV Inspection (i.e., Post, Survey, Pre-Rehabilitation)
 - 2) General Contractor (i.e., Cullum, Kinsel, Texas Sterling)
 - 3) Rehabilitation Method (i.e., FF, CPP, PB, SL, RR)
 - 4) Rehabilitation System Manufacturer or Trade Name when applicable (i.e., Insituform, Inliner II,
 - 5) PIM System, McConnell Pipe Crushing, U Liner)

- 6) Pipe Trade Name for PVC, PEP or FRP pipe (i.e., Hobas, Drisco 1000, Lamson Vylon, Quail)
- b. This information will be noted in the following manner:
 - 1) Post/Cullum/FF/U Liner/Quail (a typical listing for a **Fold and Form** line segment)
 - 2) Post/Insituform/CPP/Insituform (a typical listing for a **Cured-in-Place** line segment)
 - 3) Post/McLat/PB/McConnell PipeCrushing/Drisco1000 (a typical listing for a **Pipeburst** line segment)
 - 4) Post/Kinsel/SL/Hobas (a typical listing for a **Sliplined** line segment)
 - 5) Post/Texas Sterling/RR/Lamson Vylon (a typical listing for a **Removed and Replaced** line segment)
10. LOCATION: The physical location of the line segment shall be placed in this field. The location is for the line segment, not the manholes. If the line segment covers more than one location, then choose location where majority of line segment is. The codes for the location are shown on the attached Television Inspection Codes list. This is an alpha-numeric field with 2 spaces available (i.e., C).
11. SURFACE COVER: The type of surface that covers the line segment shall be placed in this field. Use the designation that reflects what covers the majority of the line segment. The codes for surface cover are shown on the attached Television Inspection Codes list. This is an alpha field with only 1 space available (i.e., F).
12. PIPE SIZE: The inside diameter of the liner or pipe based on new pipe size, material and SDR shall be placed in this field. The unit of measure is inch. This is a numeric field with 6 spaces available, which includes 2 spaces for decimals (i.e., 6.58 IN).
13. PIPE TYPE: The pipe or liner type installed shall be placed in this field. This is an alpha field with 3 spaces available (i.e., PEP, CPP, PVC).
14. LENGTH: The length of the line segment shall be placed in this field. The length shown on the TV report shall be the same as the length shown on the MPEG-4 file. Also, the length on the top portion of the TV report shall match that shown on the bottom portion of the TV Report. The unit of measure is feet. This is a numeric field with 4 spaces available, with no decimals (i.e., 305 FT).

15. UPS DEPTH: The depth, measured from the top ring of the upstream manhole to the invert of the upstream manhole, shall be placed in this field. The unit of measure is in feet and tenths of feet. This is a numeric field with 3 spaces available, which includes one space for a decimal (i.e., 6.9 FT).
16. DWN DEPTH: The depth, measured from the top ring of the downstream manhole to the invert of the downstream manhole, shall be placed in this field. The unit of measure is in feet and tenths of feet. This is a numeric field with 3 spaces available, which includes one space for a decimal (i.e., 7.4 FT).
17. JOINT LENGTH: The pipe joint length shall be placed in this field. Show no joint length for CPP, FF and PEP line segments. Put a "0" in the field for these line segments that have no joints. The unit of measure is inch. This is a alpha field with 2 spaces available (i.e., 40 IN).
18. FLOW DEPTH: The pipe or liner flow depth shall be placed in this field. The unit of measure is inch. This is a numeric field with 3 spaces available, which includes one decimal place (i.e., 2.5 IN).
19. REVERSE SET UP: When a reverse set up is done on a line segment check "yes" if not check "no". This item is not in the data base, therefore there is no field length or type data for this item.
20. SKETCH: If a sketch of the line segment is included check "yes" if not check "no". This item is not in the data base, therefore there is no field length or type data for this item.
21. PRIOR HISTORY: If any prior information exists on this line segment check "yes" if not check "no". This item is not in the data base, therefore there is no field length or type data for this item.
22. EVALUATION TV: If the TV Inspection Report is for line segment evaluation or survey purposes check "yes" if not check "no". This item is not in the data base, therefore there is no field length or type data for this item.
23. PRE-REHAB TV: If the TV Inspection Report is for pre-installation TV inspection to show that the line is ready for rehabilitation check "yes" if not check "no". This item is not in the data base, therefore there is no field length or type data for this item.
24. POST-REHAB TV: If the TV Inspection Report is for post-rehab TV inspection to document the completion of the rehabilitation work check "yes" if not check "no". This item is not in the data base, therefore there is no field length or type data for this item.
25. LINE DETERIORATION: The existence of pipe deterioration and how much deterioration exists shall be indicated here. If there is no deterioration check "N" if deterioration is light check "L", if it is

medium check "M", if it is heavy check "H". This item is not in the data base, therefore there is no field length or type data for this item.

26. **DIRECTION OF FLOW:** The direction of flow in the line segment shall be placed in this field. Typically, the larger number is the upstream manhole and the smaller number is the downstream manhole. Do not reverse the manhole designation on the TV report if a reverse set up is shown; check the reverse set up box on the report.

D. CODE INPUT SECTION

1. **TV INSPECTION CODES:** Codes to be used in this section are shown on the Television Inspection Codes sheet (attached).
2. **FOOT READ U/D:** The up/down designation shall be shown under the section titled "Footage Reading" in the boxes marked "U." and "D." This will make it clear what direction footage is measured from.
3. **CLOCK POSITION:** The clock position, with 12 o'clock straight up, of each defect shall be shown in this field (i.e., 12:00, 3:00). Also, show the clock position of each service connection and state the condition of the connection. Include the distance the connection is protruding into the pipe, when appropriate, and the type of connection, such as plumber service.
4. **CRACKS:** Any cracks in the pipe shall be listed in this field using the codes on the Television Inspection Codes sheet. Report the size length and width of any cracks.
5. **JOINTS:** Misaligned and broken joints shall be listed in this field using the codes on the Television Inspection Codes sheet.
6. **LATERALS:** All laterals shall be listed in this field using the codes on the Television Inspection Codes sheet.
7. **ROOTS:** Any root intrusion into the pipe shall be listed in this field using the codes on the Television Inspection Codes sheet.
8. **DEBRIS:** Any debris in the pipe shall be listed in this field using the codes on the Television Inspection Codes sheet.
9. **INFLOW/INFILTRATION:** Report any inflow and infiltration in this field using the codes listed on the Television Inspection Codes sheet.
10. **ALIGNMENT:** Report the existence of any sags in the field using the codes listed on the Television Inspection Codes sheet. Report the beginning of sags for one-quarter pipe, one-half pipe and underwater as well as where the camera pulls out of the sag.

11. **STRUCTURAL:** Report structural condition of the pipe using the codes listed on the Television Inspection Codes sheet.
12. **PICTURE NO.:** Leave this field blank.
13. **COMMENTS:** Comments shall be placed in this field. Comments must be accompanied by a corresponding footage. Items to report in this field are: collapses in pipe, stabilized material, mineral deposits, changes in pipe material, reverse set up, drop stack, large voids, multiple cracks, when unable to continue video, etc.
14. **CLAMP/SPLICE LOCATION:** The clamp/splice location shall be shown in the Comments field. Clamp/splice location must be accompanied by footage.
15. **START SURVEY AT M. H. XYZ:** The depth of the line segment shall be shown in the Comments field. (i.e., Start Survey at M. H. 021 - Line Depth 10.2 FT). The depth is to be measured from the top ring of the manhole to the invert of the pipe being televised. The unit of measure is feet and tenths of feet. This depth may be different from the manhole depth.
16. **END OF SURVEY AT M. H. XYZ:** The depth of the line segment shall be shown in the comments field (i.e., End Survey at M. H. 022 - Line Depth 10.8 FT). The depth is to be measured from the top ring of the manhole to the invert of the pipe being televised. The unit of measure is feet and tenths of feet. This depth may be different from the manhole depth.

3.7 FIELD QUALITY CONTROL

- A. Do not allow, under any circumstances, sewage or solids removed in the cleaning process to be released onto streets or into ditches, catch basins, storm drains, sanitary or storm sewer manholes, or cleanouts.
- B. Acceptance of sewer cleaning work is contingent upon the successful completion of the television inspection. If the television inspection shows debris, solids, sand, grease, or grit remaining in the line, the cleaning will be considered unsatisfactory. Repeat cleaning, inspection, and televising of the sewer line until cleaning is satisfactory.

3.8 ADJUSTING

- A. Repair manholes which are dismantled or damaged during the cleaning process and replace any manhole frame and cover which is damaged during the cleaning process.

HEADER INFORMATION
LOCATION

A STREET ROW, HEAVY TRAFFIC
 B STREET ROW, LIGHT TRAFFIC
 C EASEMENT, POOR ACCESS
 D EASEMENT, GOOD ACCESS
 E PARKING LOT, POOR ACCESS
 F PARKING LOT, GOOD ACCESS
 G ALLEY, POOR ACCESS
 H ALLEY, GOOD ACCESS
 I OPEN AREA, POOR ACCESS
 J OPEN AREA, GOOD ACCESS

SURFACE COVER

A ASPHALT STREET
 B CONCRETE STREET
 C SHELL STREET
 D SIDEWALK
 E TREES/SHRUBS
 F CLOSE TO FENCE
 G OPEN AREA
 H MOVABLE BUILDING
 I UNMOVABLE BUILDING
 J OVERHEAD UTILITIES
 K WATERWAY OR RAILWAY
 L HIGHWAY OR RUNWAY
 M PIPE ABOVE GROUND

PIPE TYPE

ABS ACRYLONITRILE BUTADIENE
 STYRENE
 BRK BRICK
 CIP CAST IRON PIPE
 CMP CORRUGATED METAL PIPE
 CON POURED IN PLACE
 CONCRETE
 CPP CURED IN PLACE PIPE
 DIP DUCTILE IRON PIPE
 FRP FIBERGLASS REINFORCED
 PIPE
 PLP PLASTIC LINED CONCRETE

JOINTS

MJ - MISALIGNED JOINT BJ - BROKEN
 JOINT

CODES	DESCRIPTION	USE IN
A (3)	DRP JT > 90% CLEAR	MJ
B (6)	DRP JT 80 - 90% CLEAR	MJ
C (9)	DRP JT < 80% CLEAR	MJ
D (3)	SHF JT > 90% CLEAR	MJ
E (6)	SHF JT 80 - 90% CLEAR	MJ
F (9)	SHF JT < 80% CLEAR	MJ
G (1)	WD JT 2" - 3"	MJ
H (2)	WD JT 3" - 4"	MJ
I (3)	WD JT > 4"	MJ
J (2)	BRK JT - LIGHT	BJ
K (4)	BRK JT - MEDIUM	BJ
L (6)	BRK JT - HEAVY	BJ
N (0)	VISIBLE GASKET	MJ
O (0)	LEAKING AT JOINT	MJ

LATERALS (L)

CODES	DESCRIPTION
A (1)	PRT SER 0" - 1"
B (2)	PRT SER 1" - 2"
C (3)	PRT SER 2" - 3"
D (4)	PRT SER 3" +
E (5)	DEFECTIVE - SERVICE CONN.
F (6)	DEAD/UNUSED SERVICE
G (7)	FACTORY SERVICE
H (0)	PLUMBER SERVICE

ROOTS (R)

CODES	DESCRIPTION
A (1)	ROOTS - LIGHT
B (2)	ROOTS - MEDIUM
C (3)	ROOTS - HEAVY

DEBRIS (D)

CODES	DESCRIPTION
A	DEBRIS - LIGHT
B	DEBRIS - MEDIUM
C	DEBRIS - HEAVY
D	GREASE - LIGHT
E	GREASE - MEDIUM
F	GREASE - HEAVY

PIPE

PEP	POLYETHYLENE PIPE
PVC	POLYVINYLCHLORIDE PIPE
RCP	REINFORCED CONCRETE
PIPE	
RPM	REINFORCED PLASTIC
MORTAR PIPE	
URC	UNREINFORCED CONCRETE
PIPE	
VCP	VITRIFIED CLAY PIPE

INFLOW/INFILTRATION (I)

CODES	DESCRIPTION
A (3)	I/I - LIGHT (0-1 GPM)
B (6)	I/I - MEDIUM (1-5 GPM)
C (9)	I/I - HEAVY (> 5 GPM)
D (2)	I/I - SOME EVIDENCE
E (4)	I/I - CONSIDERABLE EVIDENCE
F (6)	I/I - GREAT EVIDENCE
G (0)	I/I - NO EVIDENCE

WEATHER

DRY - WET

CODE DESCRIPTIONS

CRACKS

RC-RADIAL LC-
 LONGITUDINAL

CODES DESCRIPTION

USE IN

A (1)	< 1/2" W, < 1' L	
B (2)	< 1/2" W, 1' - 2' L	CRK
C (3)	< 1/2" W, > 2' L	
D (4)	> 1/2" W, < 1' L	
E (5)	> 1/2" W, 1' - 2' L	CRK
F (6)	> 1/2" W, > 2' L	
G (7)	HOLE IN PIPE – SMALL	
H (8)	PIPE MISSING - < 60"	
I (9)	PIPE MISSING - > 60"	
Z (0)	AT MANHOLE NUMBER	CS

ALIGNMENT (A)

CODES DESCRIPTION

A	BEGIN 1/4 PIPE WATER
B	BEGIN 1/2 PIPE WATER
C	CAMERA UNDERWATER
D	END CAMERA UNDERWATER
E	END 1/2 PIPE WATER
F	END 1/4 PIPE WATER

STRUCTURAL

DS - DETERIORATED; OS - OVALITY; CS - COLLAPSED

CODES DESCRIPTION

USE IN

A (3)	LINE DET - LIGHT	DS
B (6)	LINE DET - MEDIUM	DS
C (9)	LINE DET - HEAVY	DS
D (3)	OVAL < 5%	OS
E (6)	OVAL > 5% & < 10%	OS
F (9)	OVAL > 10%	OS
G (9)	COLLAPSED	CS
H (0)	PIPE DET - HEAVY	DS
L (0)	PIPE DET - LIGHT	DS
M (0)	PIPE DET - MEDIUM	DS
N (0)	PIPE DET - NONE	DS
O	LINE DET - NONE	DS

END OF SECTION

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Section 33 32 00.01
DIVERSION PUMPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes

1. Diversion-pumping: Installation and operation of bulkheads, plugs, hoses, piping, and pumps required to maintain sewer flow and prevent backups and overflows.

B. Related Specification Sections include, but are not necessarily limited to:

1. Division 00 – Bidding Requirements, Contract Forms, and Conditions of the Contract.
2. Division 01 – General Requirements.

1.2 MEASUREMENT AND PAYMENT

- A. Stipulated Price (Lump Sum). If Contract is a Stipulated Price Contract, payment for Work in this Section is included in total Stipulated Price.

1.2 SYSTEM DESCRIPTION

- A. Provides continuous sewer service to users of sewer systems while maintenance or construction operations are in progress, by diverting flow around construction locations. Maintain sewer flow to prevent backup or overflow onto streets, yards and unpaved areas or into buildings, adjacent ditches, storm sewers, and waterways. Do not divert sewage outside of sanitary sewer system.
- B. When pumps are operating, have an experienced operator on site to monitor operation, adjust pumps, make minor repairs to system, and report problems. The operator must be able to properly communicate with the site inspector and the Owner.
- C. Contractor must use jointless PVC (fusible) or HDPE pipe designed to withstand the pressures for diversion pumping.
- D. The Contractor must have additional standby pumps available on the job site for diversion pumping in the event of failure of any pumps. The Contractor is responsible for submitting a plan of action to the Owner and the Engineer for review and concurrence, showing the layout of the proposed diversion system, with working hours, and any other information that would be needed to accommodate the proposed construction. Any changes recommended to accommodate field conditions must be incorporated by the Contractor at no additional cost to the Project.
- E. Contractor is made aware that work will be near residential areas and quiet pumps must be utilized to keep noise levels to a minimum. The pump noise level must not exceed 50 decibels at a minimum distance of 50-feet. In the

event the Contractor cannot keep the noise level to a minimum, Contractor must utilize electric powered pumps or install soundproof wall barriers around the pumps. The Contractor will replace the pumps or install soundproof wall barriers at no additional cost to the project.

- F. The flow data presented in **Table 1** at the end of this specification was not field measured/verified, but was generated in a wastewater system model using population data, land use, and unit wastewater usage parameters. Wet weather flows were developed in the wastewater system model using a 5-year, 24-hour design storm. Therefore the flows presented are for reference only and could differ from actual field conditions. Contractor shall be responsible for providing a diversion pumping system to handle all daily dry and wet weather flows including peak flows for all rain events during construction.
- G. Lift Station 24 Data (Located at 7001 Flintridge Dr., The Woodlands, TX 77381)
 - 1. The following information is for reference only. Contractor will be responsible for verifying that the diversion system setup will be sufficient to handle all daily dry and wet weather flows.
 - a. The lift station site has two force mains that can be used to divert flows to two different locations, LS24A a 12" diameter force main discharges at a gravity system along Lake Woodlands Dr. and the LS24B a 16" diameter force mains discharges at MH S-1 of the Bear Branch Trunk Main.
 - 1) Contractor will be responsible for verifying if the 12" diameter force main will be able handle the daily flows while the Contractor is performing rehabilitation work. Contractor may be limited to the number of days that they may divert flows with the 12" diameter force main.
 - b. Firm Capacity of LS24B = 4,000 gpm
 - c. Pump = 2,600 gpm
 - d. Average run time is 5 to 6 hours per day.

1.3 SUBMITTALS

- A. Conform to requirements of Section 01 33 00 - Submittals.
- B. For systems that divert sanitary sewer line segments of 24-inch diameter or larger, submit a Diversion Pumping Plan prior to installation. Show location, number and size of pumps, number, location, size and type of hoses or rigid piping, and location of downstream discharge; and special features where pipes or hoses cross roadways, temporary trenches, support bridges.

1.4 SCHEDULING

- A. When the Owner operates or maintains diversion pumping in construction areas, coordinate construction activities with Owner's representative.
- B. The Contractor must keep the diversion pumping in place until rehabilitation of

the manholes is complete. No additional payment will be made to keep the diversion pumping in place for the manhole rehabilitation.

- C. Cease operation of diversion pumping when approved by Owner's representative.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Design piping, joints and accessories to withstand at least twice maximum system pressure or 50 psi, whichever is greater.
- B. Use self-priming type or submersible electric pumps, with a working pressure gauge on the discharge. Pumps shall comply with the requirements of City of Houston Code of Ordinances, Chapter 30 - Noise and Sound Level Regulation.

PART 3 - EXECUTION

3.1 FIELD QUALITY CONTROL

- A. During diversion pumping, do not allow sewage to leak, dump, or spill into or onto areas outside of existing sanitary sewer systems.
- B. In the event of an accidental spill or overflow, immediately stop discharge and take action to clean up and disinfect spill. Promptly notify Owner's representative so required reporting can be made to the Texas Commission on Environmental Quality (TCEQ) and the Environmental Protection Agency (EPA).

3.2 CLEANING

- A. When diversion-pumping operations are complete, drain sewage within piping into sanitary sewers prior to disassembly.

TABLE 1 - FLOWS

US MH	DS MH	Min. Wet Weather Flows (Peak)		Min. Dry Weather Flows (Avg. Daily)		Min. Dry Weather Flows (Daily Max.)	
		Free Outfall (no lift station)	Submerged Outfall (w/ lift station)	Free Outfall (no lift station)	Submerged Outfall (w/ lift station)	Free Outfall (no lift station)	Submerged Outfall (w/ lift station)
		Flow [MGD]	Flow [MGD]	Flow [MGD]	Flow [MGD]	Flow [MGD]	Flow [MGD]
S-4	S-1	3.2	3.2	0.8	0.8	2.0	2.0
S-1	S-5	6.5	6.5	1.4	1.4	3.5	3.5
S-5	S-6	6.5	6.5	1.4	1.4	3.3	3.3
S-6	S-7	6.5	6.5	1.4	1.4	2.9	2.9
S-7	S-8	6.5	6.5	1.4	1.4	2.7	2.7
S-8	S-9	6.5	6.5	1.4	1.4	2.6	2.7
S-9	MH11	6.5	6.5	1.4	1.4	2.6	2.6
MH11	MH12	9.1	9.1	2.2	2.2	3.8	3.8
MH12	S-24	9.2	9.2	2.2	2.2	3.8	3.8
S-24	MH13	11.2	11.2	2.4	2.4	4.1	4.1
MH13	MH14	11.2	11.2	2.4	2.4	4.1	4.1
MH14	MH15	11.2	11.2	2.4	2.4	4.1	4.1
MH15	MH16	11.2	11.2	2.4	2.4	4.1	4.1
MH16	A-14	11.2	11.2	2.4	2.4	4.1	4.1
A-14	A-14A	13.2	13.1	2.7	2.7	4.7	4.6
A-14A	A-13	13.2	13.1	2.7	2.7	4.6	4.6
A-13	A-12	13.5	13.5	2.8	2.7	4.7	4.7
A-12	A-11	13.5	13.5	2.8	2.7	4.7	4.7
A-11	A-10	13.5	13.5	2.8	2.7	4.7	4.7
A-10	A-9	14.8	14.8	2.9	2.9	4.9	4.9
A-9	A-8	14.8	14.8	2.9	2.9	4.9	4.9
A-8	A-7	15.5	15.3	3.1	3.1	5.1	5.1
A-7	A-6	15.4	14.4	3.1	3.1	5.1	5.1
A-6	A-5	15.5	13.8	3.1	3.1	5.1	5.1
A-5	A-4	15.6	12.3	3.1	3.1	5.2	5.2
A-4	A-3	15.7	10.7	3.1	3.1	5.2	5.2
A-3	A-2	15.7	8.8	3.1	3.1	5.2	5.1
A-2	A-1	15.7	8.8	3.1	3.1	5.2	4.9
A-1	UNK-3	17.0	9.2	3.3	3.3	5.5	4.1
UNK-3	UNK-2	23.4	11.1	4.6	4.5	7.6	5.7
UNK-2	UNK-1	23.4	11.1	4.6	4.5	7.6	5.6

END OF SECTION

SECTION 33 39 20
FRAMES, GRATES, RINGS, AND COVERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Iron castings and composite materials for manhole frames and covers, inlet frames and grates, catch basin frames and grates, meter vault frames and covers, adjustment rings, and extensions and ring grates.
 - 2. Ring grates.
 - 3. Vent pipe with bollard.
- B. Related Specification Sections include, but are not necessarily limited to:
 - 1. Division 00 – Proposing Requirements, Contract Forms, and Conditions of the Contract.
 - 2. Division 01 – General Requirements.

1.2 MEASUREMENT AND PAYMENT

- A. Unit Price. Payment for external vent pipe with bollard is on a unit price basis for each bollard and vent out assembly installed or replaced as shown on Drawings, per details and as approved by the Owner. No separate payment will be made for bollard and vent pipe that is embedded into concrete collar, per details.
 - 1. Payment includes bollard, securing vent piping to bollard with stainless steel hardware, bedding, backfill, concrete, and form work per details.
 - 2. Incidental items includes removing existing vent pipes, disposing of existing vent pipe materials, plug and seal existing vent pipe holes in manholes, and coring new holes for installation of vent pipes.
- B. Unit Price. Payment for frames, grates, rings, and covers is on a unit price basis for each type properly installed per details and proposal form.
 - 1. Payment includes bedding and backfill and form work for concrete collar per details for each size installed.

1.3 QUALITY ASSURANCE

- A. Referenced Standards:
 - 1. American Association of State Highway and Transportation Officials (AASHTO)
 - a. Standard Specification for Highway Bridges
 - 2. ASTM International (ASTM):
 - a. A 48 - Standard Specification for Gray Iron Castings

- b. A 615 - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
 - c. ASTM A 307 - Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile.
 - d. ASTM D 2996 - Standard Specification for Filament-wound Fiberglass (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe.
 - e. ASTM D 2997 - Standard Specification for Centrifugally Cast Fiberglass (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe.
3. American Welding Society (AWS).
- a. D 12.1 Welding Reinforcing Steel.

1.4 SUBMITTALS

- A. Conform to requirements of Section 01 33 00 – Submittals.
- 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. Include plans, elevations, sections, and connection details. Show anchorage and accessory items. Include setting drawings for location and installation of castings and anchorage devices.

1.5 WARRANTY (NOT USED)

PART 2 - PRODUCTS

2.1 CASTINGS

- A. Use castings for frames, grates, rings and covers conforming to ASTM A 48, Class 35B. Provide locking covers if indicated on Drawings.
- B. Use clean castings capable of withstanding application of AASHTO M306-40,000 pound proof loading without detrimental permanent deformation.
- C. Fabricate castings to conform to shapes, dimensions, and with wording or logos shown on Drawings. Standard dimensions for manhole covers are 32 inches in diameter.
- D. Use clean castings, free from blowholes and other surface imperfections. Use clean and symmetrical cast holes in covers, 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 position in which casting may be seated in frame.

2.3 SPECIAL FRAMES AND COVERS

- A. Where indicated on Drawings, provide watertight manhole frames and covers with minimum of four bolts and gasket designed to seal cover to frame. Supply approved watertight manhole covers and frames.

2.4 FINISH

- A. Unless otherwise specified, uncoated cast iron.

2.5 FABRICATED RING GRATES

- A. Fabricate ring grates from reinforcing steel conforming to ASTM A 615.
- B. Conform to welds connecting bars to AWS D 12.1.

2.6 ADJUSTMENT RINGS FOR ASPHALT OVERLAYS

- A. Use castings conforming Section 2.1.
- B. One piece casting with dimensions to fit frame and cover.

2.7 VENT PIPES

- A. Provide bollard with external vent pipe for manholes where indicated on Drawings.
- B. Buried Vent Pipes: Provide 3-inch FRP pipe as specified for vent outlet assembly, constructed of the following specified materials:
 - 1. FRP Pipe: Provide filament-wound FRP conforming to ASTM D 2996 or centrifugally cast FRP conforming to ASTM D 2997. Seal cut ends in accordance with manufacturer's recommendations.
 - 2. Joints and Fittings: Provide epoxy- bodied fittings and join pipe to fittings with epoxy adhesive, according to pipe manufacturer's instructions.
 - 3. Flanges: Provide socket-flange fittings for epoxy adhesive bonding to pipe ends. Meet bolt pattern and dimensions for ASME B 16.1, 125-pound flanges. Use Type 304 stainless steel or hot-dip zinc coated, conforming to ASTM A 307, Class A or B flange bolts, as approved by the Owner.
 - 4. Coating: Provide 2-component, aliphatic polyurethane coating, using primer or tie coat recommended by manufacturer. Provide two or more coats to yield dry film thickness of at least 3 mils. Provide Amershield, Tnemec 74, or approved equal. Owner selects color from manufacturer's standard colors.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install castings according to approved shop drawings, instructions in related specifications, and applicable directions from 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 form work until permanently set.
- C. Fabricate ring grates in accordance with standard detail. Set in mortar in mouth of pipe bell.
- D. Install adjustment rings in existing frames with clean bearing surfaces that are free from rocking.

3.2 OWNER TRAINING (NOT USED)

END OF SECTION

SECTION 33 60 01

MANHOLE REHABILITATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Repair, rehabilitation, or replacement of deteriorated, leaking, or structurally unsound manholes.
 - A. Stopping Leaks by repair and sealing of the concrete and/or masonry bench, channel, invert, pipe inlets, walls, cone, chimney and frame of all manholes to include removal of unsound materials and other coating materials, preparation, chemical grouting, structural grouting, patching, plugging and sealing compounds.
 - B. Surface preparation, and installation of a Corrosion Resistant Barrier with SewperCoat, to include protection of surfaces not to be treated, touch-up, clean-up and appurtenant work all in accordance with the requirements of the Contract Documents and this Specification.

1.2 MEASUREMENT AND PAYMENT

A. Unit Price.

1. Measurement for the installation of manhole wall liner (includes lining of bench and invert) is on a vertical foot basis of manhole depth measured from the flowline of the lowest invert in the manhole to the rim of the manhole as indicated in the Proposal Form and as indicated on plan drawings. Payment includes sealing of annular space and preparation and forming of benches and channels. No separate payment shall be made for manhole wall sealing and bench preparation or repair of existing benches. Include the cost for the same in the manhole wall liner. No separate payment will be made for diversion pumping.
 - A. Wall liner installation must be completed after the rehabilitation of the pipe is complete. The Contractor must keep the diversion pumping system in place until the wall liner (includes walls, roof, base, bench, and invert) installation is complete.
 - B. Contractor must provide dimensions for each manhole to verify quantities for box structures or manholes that are greater than 4' diameter. Contractor must provide a breakdown in square foot and calculations for the quantities for each box manhole structure for payment.
 - C. Contractor is made aware that the minimum thickness of manhole wall liner will be as shown in plans and proposal form. Material calculations for the manhole will not be based on number of bags of material used.

2. This payment will include the lining of the manhole (including the bench and invert) regardless of diameter or inside dimensions or number of connecting pipes or any other configuration of the manhole. Incidental items include cleaning, preparation, testing, all safety procedures, plugs, diversion pumping to complete lining and associated testing, sealing of active leaks (includes using chemical grouting), drilling of weep holes if necessary, repair of cracks, holes or any other deterioration, disposal of debris, reshaping of manhole inverts, grouting the existing pipes and surface restoration. Any additional preparation necessary to line fiberglass manholes shall not be paid for separately and must be included in the pertinent bid item.
3. Contractor is made aware that several manholes have been lined with other coating materials. Contractor is responsible for removing all coating materials prior to installing manhole wall liner. No separate payment will be made for removal of existing coating materials.
4. Measurement for installation of additional thickness of cementitious manhole wall liner for build back or patching material (includes reinforcing steel rebar or mesh) shall be by the square foot. No separate payment will be made for diversion pumping.
 - A. The Contractor must provide location and photos of areas where additional wall thickness is required.
 - B. Contractor must use cementitious material that bonds to SewperCoat wall liner as approved by manufacturer.
 - C. No separate payment will be made for cleaning and removal of debris prior to building back or patching manhole walls.
 - D. No separate payment will be made for steel reinforcement that may be required to build or patch manhole walls.
5. Cleaning and removal of debris prior to manhole rehabilitation shall be considered incidental to the cost of manhole rehabilitation.
6. This item shall only apply to existing manholes identified on the plan drawings or as authorized by the Engineer. New manholes requiring wall lining will not be paid for under this item, but the cost thereof should be included in the related item.
7. An estimate for 100 percent payment will be authorized when the manhole has been lined, tested as per specifications, and the restoration work is complete.

1.3 PERFORMANCE REQUIREMENTS

- A. Perform work needed to make manholes structurally sound, improve flow, prevent entrance of inflow or groundwater, prevent entrance of soil or debris, and provide protection against hydrogen sulfide gas attack.

- B. Manufacturer's Product Support - When requested by the Engineer, provide a representative employed by the manufacturer having technical training in admixture and manhole wall liner available for consultation on site with 48 hours' notice. The manufacturer's representative shall submit a written report within one week of each site visit summarizing observations, recommendations with special notes about corrective actions, and photo(s).
- C. All Contractor personnel performing the lining work shall have confined space entry certification that is up to date. Such certification must be provided as a submittal to the Owner.
- D. Manhole rehabilitation work must be completed immediately upon completion of the main line rehabilitation.

1.4 QUALITY ASSURANCE

- A. Obtain all chemical grouting materials from a single manufacturer.
- B. Installation shall be completed by firms and individuals trained in methods of installation by the manufacturer with at least five years of experience.
- C. Field verification shall be completed by the contractor prior to commencement of work.

1.5 SUBMITTALS

- A. Submittals shall conform to requirements of Section 01 33 00 - Submittals.
- B. Product Data: Submit product data, including surface preparation instructions and application instructions, from manufacturer of wall repair materials, hydraulic cements, quickset mortars, specialized sealants, and grouts.
- C. Installer Qualifications. Installers of liners and wall repair systems shall submit qualifications to Engineer at least 14 days prior to start of any material application. Submittal shall consist of:
 - 1. Manufacturer's approved equipment list, by name and model number for application of product and contractor's equipment list showing approved equipment available for use in product application.
 - 2. List of contractor's personnel who have satisfactorily completed manufacturer's training in product application within previous two years. Include date of certification for each person.

1.6 PROJECT CONDITIONS

- A. Manholes Containing Mechanical or Electrical Equipment:
 - 1. Drawings may not show locations of flow monitoring equipment. If a manhole contains any mechanical hardware or electrical flow monitoring equipment immediately notify Engineer.
 - 2. Reschedule work in such manholes until equipment has been removed by Owner and further instructions are given.

3. Do not subject manholes with mechanical hardware or electrical equipment to diversion pumping.
 4. Damage to installed equipment, due to negligence of Contractor, will be repaired by Owner and cost of repairs charged to Contractor.
- B. Field Location of Manholes, Cleanouts, Inlets, and End of Lines:
1. Contractor is responsible for locating and uncovering all manholes, cleanouts, and end of lines. If difficulty is encountered in locating a manhole, cleanout, or end of line covered by ground or pavement, notify Engineer in writing and await instructions.
 2. Manholes may be located within project limits which are not part of the system being rehabilitated. Properly identify manholes before starting cleaning and sealing operations.

1.7 SALVAGE

- A. Manhole covers and frames, inlet grates and frames, and adjusting rings from abandoned manholes and inlets remain the property of the Owner. Deliver salvaged items to locations designated by Engineer.

1.8 MATERIAL HANDLING, DELIVERY AND STORAGE

- A. Materials shall be delivered in the original unopened containers. Each container shall be clearly labeled with the following:
1. Product name
 2. Manufacturers name
 3. Component designation
 4. Product mix ratio
 5. Health and safety information
- B. Provide equipment and personnel to handle the materials which prevent damage. The contractor shall promptly inspect delivered materials for damage.
- C. Store materials in accordance with manufacturer's recommendations.

1.9 WARRANTY

- A. Coating material manufacturer shall provide written ten (10) year warranty from date of completion covering defects in material. Warrant that coating material furnished is:
1. Merchantable
 2. Fit for purpose specified
- B. Applicator shall provide written ten (10) year installation warranty from date of completion covering defects in workmanship. Warranty coating against:
1. Delamination from substrate
 2. Degradation of finish

3. Cracking and spalling of finish
4. Corrosion of substrate due to defects in finish.

PART 2 - PRODUCTS

2.1 WALL CLEANING MATERIAL

- A. High Pressure Water: 3500-psi minimum force.
- B. Cleaners: Detergent or muriatic acid capable of removing dirt, grease, oil and other matter which would prevent a good bond of sealing material to wall. Refer to sealing material manufacturer's recommendations.
- C. Clean the manhole walls thoroughly. Use a high-pressure washer to clean the substrate with a sprayer tip. Keep the tip between 6 and 12 inches from the surface and hold at a 45° to 90° angle to the surface. The operator may control and direct the movement of the spray tip across the surface of the manhole wall at a speed equal to no more than one foot per second (or 0.3 meters per second). A special cleaning agent, detergent and/ or acid chemical wash may be added to the water for extra dirty, greasy and tough surfaces. The cleaning water may also be heated to 210° for extra tough removal of grease contamination. Take extra special care to remove all debris from the manhole. Begin the cleaning process and move down along the wall to the bottom. Use a rotating turbo nozzle that super boosts the required pressure to strip away the foreign matter and deleterious materials from the wall. Continue the cleaning procedure to remove loose and protruding aggregate, concrete pieces, and cement mortar; and use a mason's hammer or scraper if necessary.

2.2 WALL REPAIR MATERIALS

- A. Hydraulic Cements: Use a blend of cement powders or hydraulic cement to stop active leaks in the manhole structure that meet the following:
 1. Compressive strength of 5500 psi in 28-days
 2. Tensile strength of 570 to 650 psi in 28-days
 3. Bond strength of 800 to 880 psi in 28 days
- B. Quickset Mortar: Use a quickset mortar to repair wide cracks, holes or disintegrated mortar.
- C. Select manhole wall liner repair material from the following list of pre-approved products:
 1. MasterEmaco S 488CI
- D. Wall repair materials must bond with approved wall lining materials as approved by the Owner.

2.3 100% CALCIUM ALUMINATE WALL LINER

- A. The materials to be utilized in the lining of manhole shall be designed and manufactured to withstand the severe effects of hydrogen sulfide in a wastewater environment. Manufacturer of corrosion protection products shall have long proven experience in the production of the lining products utilized and shall have satisfactory installation record.
- B. The materials shall be applied by an approved manufacturer's certified applicator and must meet the manufacturer's recommendations. Equipment for installation of lining materials shall be high quality grade and be as recommended by the manufacturer.
- C. Provide pre-approved cementitious structural rehabilitation material to repair and reform manhole benches and inverts. Use a pre-approved cementitious structural rehabilitation material which developed a minimum compressive strength of 5,500 psi at 24 hours as tested per the provisions of ASTM C109. Follow manufacturer's recommended batching and mixing instructions.
- D. This method consists of spray applying a 100% Fused Calcium Aluminate (mortar + aggregate) cementitious mix to the manhole walls and benches on the existing manholes resulting in a monolithic liner. The mix(es) shall be batched in accordance with manufacturer's recommendations. Adding water to facilitate application at the nozzle will not be allowed.
- E. Acceptable 100% Calcium Aluminate Liner products are:
 - 1. SewperCoat PG by Kerneos, Inc.

2.4 BENCH & INVERT FORMING/REPAIR MATERIALS

- A. Use corrosion resistant cementitious material containing microsilica admixtures or 100% calcium aluminate material to repair and reform manhole benches and inverts per paragraph 2.3.

2.5 MANHOLE FRAME & COVER

- A. See Details on Plan Drawings.
- B. Provide a frame-to-manhole seal as manufactured by Cretex, or approved equal.
- C. Sealing materials between adjustments rings and manhole frame shall be Adeka Ultraseal P201 or approved equal.

PART 3 - EXECUTION

3.1 PROTECTION

- A. Provide barricades and warning lights and signs for excavations created by manhole or cleanout removal.
- B. Do not allow sand, debris or runoff to enter sewer system.

3.2 EXCAVATION

- A. Excavate in accordance with Section 31 21 33 Trenching, Backfilling, and Excavation for Utilities.
- B. Perform work in accordance with OSHA standards. Employ a Trench Safety System as specified in Section 31 41 00 for excavations over 5 feet deep.
- C. Install and operate necessary dewatering and surface water control measures in accordance with requirements of Section 01 57 23.02.

3.3 DIVERSION PUMPING

- A. Install and operate diversion pumping equipment to maintain sewage flow and to prevent backup or overflow in accordance with requirements of Section 33 32 00.01 – Diversion Pumping. Obtain approval for diversion pumping equipment and procedures from Engineer.
- B. Design all piping, joints and accessories to withstand twice the maximum system pressure or 50 psi, whichever is greater.
- C. In the event of accidental spill or overflow, immediately stop the overflow and take action to clean up and disinfect spillage. Promptly notify Engineer so that required reporting can be made to the TCEQ and Environmental Protection Agency.

3.4 MANHOLE WALL CLEANING

- A. The floor and interior walls of the manhole shall be thoroughly cleaned and made free of all foreign materials including dirt, grit, roots, oils, grease, sludge, incompatible existing coatings, waxes, form release, curing compounds, efflorescence, sealers, salts, or other contaminants which may affect the performance and adhesion of the coating to the substrate.
 - 1. High pressure water blasting with a minimum of 3500 psi shall be used to clean free all foreign material within the manhole.
 - 2. When grease and oil are present within the manhole, an approved detergent or muriatic acid shall be used integrally with the high pressure cleaning water.
 - 3. All materials resulting from the cleaning of the manhole shall be removed prior to application of the cement based coating.
 - 4. All loose or defective brick, grout, ledges, steps and protruding ledges shall be removed to provide an even surface prior to application of coating.
- B. Prevent any foreign material from entering the adjoining pipes. Remove droppings of foreign and wall sealant materials before they harden on the bottom of the manhole.
- C. No separate pay shall be made for this item. Include cost for sealing in the unit price for manhole liner.

- D. Manufacturer's representative shall be available when requested by the Owner or Engineer on site to answer questions and approve manhole preparation work prior to lining.

3.5 MANHOLE WALL SEALING

- A. Seal active leaks in the manhole structure by using a blend of cement powder or hydraulic cement.
- B. Remove loose or defective wall material. Wipe or brush surface clean prior to the application of hydraulic cements.
- C. Drill weep holes at bottom of manhole walls to relieve hydrostatic pressure to stop leaks. Plug pressure relief holes after leaks are stopped using hydraulic cement materials. Lead wool may also be used to plug large leaks.
- D. Repair wide cracks, holes, or disintegrated mortar with quickset mortars. Follow manufacturer's application procedures.
- E. Reshape manhole inverts before wall sealing work.
- F. After all active leaks have been stopped, clean and prepare walls for application of selected liner material.
- G. Properly apply the sealing compound to provide the minimum required uniform coating to the wall surface.
- H. Prevent any foreign material from entering the adjoining pipes. Remove droppings of foreign and wall sealant materials before they harden on the bottom of the manhole.
- I. Strictly follow product manufacturer's published technical specifications and recommendations for surface preparation, application and proportioning.

3.6 CEMENTITIOUS LINER AND 100% CALCIUM ALUMINATE WALL LINER

- A. Apply liner to specified thickness using a steel trowel to provide a smooth, even surface. Finish and cure concrete per manufacturer's requirements.
- B. Liner material may be applied using spray application methods. Use steel trowel to provide a smooth, even surface before final set.
- C. The Contractor shall make provisions in his unit price bid for each manhole to maintain dry conditions for the 100% Calcium Aluminate Liner application and subsequent curing as per manufacturer's recommendations. Minimum moist curing time is 18 hours or per manufacturer's requirements, whichever is longer.

3.7 MANHOLE BENCHES/INVERTS

- A. Remove obstructions and loose materials from benches prior to shaping the invert. Form a smooth, U-shaped invert having a minimum depth of one-half pipe diameter and channel it across the floor of the manhole using a quickset mortar. Control flow to allow sufficient setting time for material used.
- B. Make finished benches smooth and without defects which would allow for accumulation of debris.

3.8 MANHOLE COVERS AND FRAMES

- A. Adjust manhole frames and covers found above or below grade and reset loose frames. Make adjustments with concrete rings or approved materials. Set frames in a full bed of non-shrink grout and adjust to surrounding grade as specified in the pertinent section. Protect bottoms of manhole from debris or soil during adjustment.
- B. Install watertight manhole covers and frames at locations shown on the Drawings or as instructed by Engineer. Use new frames and covers.
- C. For new sanitary sewer manholes subject to loading or differential movement at manhole frames, and for all rehabilitated manholes, install manhole chimney seals to prevent inflow between manhole frames and masonry chimneys. Refer to Section 33 05 13.13.

3.9 FIELD QUALITY CONTROL

- A. Inform Engineer immediately if materials being used are not producing required results or need modification. Engineer has the right to stop use of any material at any time.

3.10 INSPECTION

- A. After manhole wall sealing or manhole rehabilitation has been completed, visually inspect the manhole in the presence of Engineer. Check for cleanliness and for elimination of active leaks.
- B. At completion of manhole rehabilitation assist Engineer in verifying installation of minimum coating thickness of concrete liner. Test several points on the manhole wall. Repair verification points prior to final acceptance for payment.
- C. During application of corrosion resistant liner, a wet film thickness gauge, meeting ASTM D4414, shall be used. Measurements shall be taken, documented and attested by the Contractor for submission to the Owner.
- D. At completion of manhole rehabilitation, assist Engineer in inspection of installation, sealing and grouting of fiberglass liner.
- E. Provide all testing results to Engineer in the form of a submittal per Section 01 33 00 – Submittals.

3.11 TESTING

- A. After completion of manhole construction, wall sealing, or rehabilitation, but prior to backfilling, test manholes for water tightness using hydrostatic or vacuum testing procedures.
- B. 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.

C. Vacuum Testing:

1. 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.
2. Evacuate manhole with vacuum pump to 10 inches mercury (Hg), disconnect pump, and monitor vacuum for the time period specified in Table 02732-4, Vacuum Test Time Table.
3. If the drop in vacuum exceeds 1 inch Hg over the specified time period tabulated above, locate leaks, complete repairs necessary to seal manhole and repeat test procedure until satisfactory results are obtained.

D. 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.

E. After the coating product(s) have set in accordance with manufacturer instructions, all surfaces shall be inspected for holidays with high-voltage holiday detection equipment. Reference NACE RPO 188-99 for performing holiday detection. All detected holidays shall be marked and repaired by abrading the coating surface with grit disk paper or other hand tooling method. After abrading and cleaning, additional coating can be hand applied to the repair area. All touch-up/repair procedures shall follow the coating manufacturer's recommendations. Documentation on areas tested, results and repairs made shall be provided to Owner by Contractor.

F. Visual inspection shall be made by the Project Engineer and/or Inspector. Any deficiencies in the finished coating shall be marked and repaired according to the procedures set forth herein by Contractor.

END OF SECTION

SECTION 33 60 03

ABANDONMENT OF SANITARY SEWERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Abandonment in place of existing sanitary sewers and manholes.

1.2 MEASUREMENT AND PAYMENT

A. Unit Price:

1. Abandonment of Manholes shall be measured and paid for by 'each' manhole abandoned as per the plans and specifications regardless of the size, depth, and type. The Contractor shall obtain concurrence from the Owner's Representative prior to performing the work. Payment will be full compensation for excavation, demolition, removal and disposal of debris, salvaging of materials as noted, bedding and backfill (includes cement stabilized sand) as per specifications, plugs, and surface restoration.
2. Payment for grout fill and abandonment of existing sewers is on linear foot basis for each diameter of sewer being abandoned. Measurement will be along centerline.
3. Payment will be full compensation for all material, equipment, and labor required for complete abandonment grouting, including air venting, testing, temporary plugs, fill lines, excavations, and incidentals.
4. No separate payment will be made for abandoning sewer in-place without grout filling. Include cost of such abandonment-in-place in related work. Acceptability of grout material is based on achieving average strength within range of 75 to 150 psi as defined in Paragraph 2.1B.1. Grout that is out of range after placement may be accepted with price adjustment of 1.0 percent price deduction for each psi average compressive strength below 75 psi and 0.5 percent price deduction for each psi average compressive strength above 150 psi, as applicable to material volume represented by test series. Shrinkage in grout material placements shall be remedied by Contractor according to Paragraph 3.4H without additional compensation.
5. Plugging the existing sewer main shall be measured and paid for by each plug as shown on the plans, regardless of the depth, at the sizes indicated in the Proposal Form.

1.3 DEFINITIONS

- A. Abandonment. Sanitary sewer abandonment consists of demolition and removal of any portion of manholes existing within the specified depth of the surface, and the abandonment in place of sewer lines and manholes as specified in this Section.
- B. Flowable Fill. Flowable fill (abandonment grout) shall be a controlled low-strength material consisting of a fluid mixture of cement, fly ash, aggregate, water and with admixtures as necessary to provide workable properties. Placement of flowable fill may be by grouting techniques in sewer pipes or other restricted areas, or as mass placement by chutes or tremie methods in unrestricted locations with open access. The long-term hardened strength shall be within a specified range.
- C. Ballast. Large aggregate either replaced with the voids subsequently filled with flowable fill injected by grouting method; or in areas with open access, placed individually and sequentially at the same time as the flowable fill placement.
- D. Backgrouting. A secondary stage pressure grouting to ensure that voids have been filled within the abandoned sewer. Back grouting will only be required at critical locations indicated on the Drawings or if there is evidence of incomplete flowable fill placements.

1.4 REFERENCE STANDARDS

- A. ASTM C 150 - Standard Specifications for Portland Cement
- B. ASTM C 494 - Standard Specification for Chemical Admixture for Concrete
- C. ASTM C 618 - Standard Specification for Fly Ash and Raw or Calcinated Natural Pozzolan for use as Mineral Admixture in Portland Cement Concrete
- D. ASTM C 937 - Standard Specification for Grout Fluidifier for Pre-placed Aggregate Concrete
- E. ASTM C 940 - Standard Test Method for Expansion and Bleeding of Freshly Mixed Grout for Replaced Aggregate Concrete in the Laboratory
- F. ASTM C 1017 - Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete
- G. ASTM C 1107 - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Non-shrink)

1.5 SUBMITTALS

- A. Submittals shall conform to requirements of Section 01 33 00 - Submittals.
- B. Flowable fill mix design report:
 - 1. Flowable fill type and production method. Describe if the fill will be mixed to final proportions and consistency in batch plant or if constituents will be added in transit mixer at the placement location.

2. Use of ballast. Provide percentage of ballast of the total placement and size limits for the ballast if fill is intended to be used with ballast.
 3. Aggregate gradation of fill. The aggregate gradation of the mix (excluding ballast) shall be used as a pilot curve for quality control during production.
 4. Fill mix constituents and proportions including materials by weight and volume, and air content but excluding ballast. Give types and amounts of admixtures including air entrainment or air generating compounds.
 5. Fill densities and viscosities, including wet density at the point of placement.
 6. Initial time of set.
 7. Bleeding and shrinkage.
 8. Compressive strength.
- C. Technical information for equipment and operational procedures including projected slurry injection rate, grout pressure, method of controlling grout pressure, bulkhead and vent design, and number of stages of grout application.
- D. Experience record for the proposed crew, showing a minimum of 100 cubic yards of flowable fill placed using the proposed or similar equipment and methods.
- E. At least 60 days prior to commencing any abandonment activities, submit a plan for abandonment, describing the proposed grouting sequence, bypass pumping requirements and plugging, if any, and other information pertinent to completion of the work.

PART 2 - PRODUCTS

2.1 FLOWABLE FILL

- A. Design Mix Criteria. Provide design of one or more mixes to meet the design criteria and conditions for placement. Present the information required by Paragraph 1.05B in the mix design report including the following:
1. Cement: ASTM C150 Type I or II. Volume and weight per cubic yard of fill. Provide minimum cement content of 100 pounds per cubic yard.
 2. Fly ash: ASTM C618 Class C or F. Volume and weight per cubic yard of fill. Provide minimum Fly ash content of 200 pounds per cubic yard.
 3. Potable water: Volume and weight per cubic yard of fill. Amount of water determined by mix design testing.
 4. Aggregate gradation: 100 percent passing the 3/8 inch sieve and not more than 10 percent passing the #200 sieve. The mix design report shall define a pilot gradation based on the following sieve sizes 3/8-inch, Nos. 4, 8, 16, 30, 50, 100 and 200. Do not deviate from the pilot gradation by more than +/-10 percentage points for any sieve for the production material.

5. Aggregate source material: Screened or crushed aggregate, pit or bank run fine gravels or sand, or crushed concrete. If crushed concrete is used, at least 30 percent of natural aggregate shall be added as necessary to provide workability.
6. Admixtures: Use admixtures meeting ASTM C494 and ASTM C107 as needed to improve pumpability, to control time of set, and reduce bleeding.
7. Fluidifier: Use a fluidifier meeting ASTM C397 as necessary to hold the solid constituents in suspension. Add a shrinkage compensator if necessary.
8. Performance additive: Use a flowable fill performance additive, such as Darafill or approved equal, to control the fill properties.

B. Flowable Fill Requirements

1. Unconfined compressive strength: minimum 75 psi and maximum 150 psi at 56 days as determined based on an average of three tests for the same placement. Present at least three acceptable strength tests for the proposed mix design in the mix design report.
2. Placement characteristics: self-leveling.
3. Shrinkage characteristics: non-shrink.
4. Water bleeding for fill to be placed by grouting method in sewers: not to exceed 2 percent according to ASTM C940.
5. Minimum wet density: 90 pounds per cubic foot.

2.2 BALLAST

- A. Ballast material: natural rock or concrete pieces with a minimum size equal to at least 10 times the maximum aggregate size of the flowable fill and a maximum size of 24 inches. The maximum dimension shall not be more than 20 percent of the minimum dimension of the space to be filled.
- B. Ballast composition: free of any regulated waste material.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Have fill mix design reports and other submittals required by Paragraph 1.5 accepted by the Engineer prior to start of placement. Notify the Engineer at least 24 hours in advance of grouting with flowable fill.
- B. Select fill placement equipment and follow procedures with sufficient safety and care to avoid damage to existing underground utilities and structures. Operate equipment at a pressure that will not distort or imperil any portion of the work, new or existing.

- C. As necessary, clean sewer lines and video with closed circuit television to identify connections, locate obstructions, and assess the condition of the pipe. Locate previously unidentified connections, which have not been redirected and reconnected as a part of this project, and report them to the Engineer. During placement of the fill, compensate for any irregularities in the sewer pipe, such as obstructions, open joints, or broken pipe to ensure no voids remain unfilled.
- D. Perform demolition work prior to starting fill placement. Clean placement areas of sewers and manholes of debris that may hinder fill placement. Remove excessive amounts of sludge and any other substances that may degrade performance of the fill. Do not leave sludge or other debris in place if filling more than 2 percent of the placement volume. Dispose of waste material in compliance with Section 01 74 19 – Construction Waste Management and Disposal.
- E. Remove free water prior to starting fill placement.

3.2 EQUIPMENT

- A. Mix flowable fill in an automated batch plant and deliver it to the site in ready-mix trucks. Performance additives may be added at the placement site if required by mix design.
- B. Use concrete or grout pumps capable of continuous delivery at the planned placement rate.

3.3 DEMOLITION OF ABANDONED SANITARY SEWER MANHOLES, PIPELINE STRUCTURES AND FORCE MAINS PRIOR TO ABANDONMENT

- A. Remove manhole frames and covers and any castings from other existing pipeline structures. Deliver these castings to the Owner's storage yard. Alternatively, salvaged castings may be used upon approval by the Engineer for construction of new manholes on this project.
- B. Demolish and remove precast concrete adjustment rings and corner section, or brick and mortar corbel and chimney, or other pipeline structure, to a minimum depth of 4 feet below finished grade. The structure may be removed to a greater depth, but not deeper than 18 inches above the crown of the abandoned sewer.
- C. If the adjacent sewer lines are not to be filled, place temporary plugs in each line connecting to the manhole in preparation for filling the manhole.
- D. Excavate overburden from force mains to be abandoned at the locations indicated on the Drawings, conforming to Section 31 21 33 – Trenching, Backfilling, and Compaction for Utilities. Cut the existing force main, if necessary, to provide an end surface perpendicular to the axis of the pipe and suitable for the plug to be installed. Remove any force main piping material remaining outside of the segment to be abandoned.

3.4 INSTALLATION

- A. Abandon sewer lines by completely filling the sewer line with flowable fill. Abandon manholes and other structures by filling with flowable fill, together with ballast as applicable, within the depth of structures left in place.
- B. Place flowable fill to fill the volume between the manholes as completely as practicable. Continuously place flowable fill from manhole to manhole with no intermediate pour points, but not exceeding 500 feet in length. Any deviation beyond this footage must be approved by the Owner.
- C. Have the filling operation performed by experienced crews with equipment to monitor density of the flowable fill and to control pressure.
- D. Temporarily plug sewer lines which are to remain in operation during pouring/pumping to keep the lines free of flowable fill.
- E. Pump flowable fill through bulkheads constructed for placement of two 2-inch PVC pipes or use other suitable construction methods to contain the flowable fill in the lines to be abandoned. These pipes will act as injection points or vents for placement of flowable fill.
- F. Place flowable fill under pressure flow conditions into a properly vented open system until flowable fill emerges from the vent pipes. Pump flowable fill with sufficient pressure to overcome friction and to fill the sewer from the downstream end, to discharge at the upstream end.
- G. Inject flowable fill through replaced ballast using grouting equipment and a series of grout pipes discharging at the bottom of the placement, allowing the fill to rise through the ballast effectively filling all voids. Alternatively, sequentially place individual pieces of ballast at the same time as flowable fill is placed. Do not fill with ballast more than 50 percent of the volume at any level to prevent nesting and void formation.
- H. Remediate placement of flowable fill which does not fill voids in a sewer, in manhole or other structures, or where voids develop due to excessive shrinkage or bleeding of the fill by using pressure grouting either from inside the sewer or from the surface.
- I. Backfill to the surface, above the pipe or structures left in place, with flowable fill in restricted areas, compacted bank run sand in unrestricted areas to be paved or select fill in unrestricted areas outside of pavement. Place and compact backfill, other than flowable fill, in compliance with Section 31 21 33 – Trenching, Backfilling, and Compaction for Utilities.
- J. Collect and dispose of excess flowable fill material and other debris in accordance with Section 01 74 19 – Construction Waste Management and Disposal.

3.5 FIELD QUALITY CONTROL

- A. Provide batch plant tickets for each truck delivery of flowable fill. Note on the tickets addition of admixtures at the site.

- B. Check flow characteristics and workability of the fill as the placement proceeds.
- C. Obtain at least three test cylinders for each placement area for determination of 56 day compressive strength and bleeding. The acceptance of the placement will be based on the average strength of the three tests.
- D. Record the volume of ballast together with the flowable fill placement for the same space to demonstrate that voids have been filled.

3.6 PROTECTION OF PERSONS AND PROPERTY

- A. Provide safe working conditions for employees throughout demolition and removal operations. Observe safety requirements for work below grade.
- B. Maintain safe access to adjacent property and buildings. Do not obstruct roadways, sidewalks or passageways adjacent to the work.

END OF SECTION

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