



FY25-ENG-53 Addendum 1 Anderson Columbia Co., Inc. Supplier Response

Event Information

Number: FY25-ENG-53 Addendum 1
Title: West Laredo Multi-modal Trade Corridor - Phase II (Flecha/Las Cruces Realignment Project)
Type: Invitation For Bid
Issue Date: 8/3/2025
Deadline: 8/29/2025 10:00 AM (CT)
Notes: Bidders are strongly encouraged to submit their Request for Bid electronically through the use of Cit-E-Bid or in person - hand delivery. Bids without the required check or original bond will NOT be considered. Mailed responses (i.e. USPS, FedEx, UPS), telegraphic, email or facsimile responses will NOT be considered. Copies of the construction plans and specifications may be viewed and/or downloaded free of charge from the City of Laredo website at:
<https://www.cityoflaredo.com/>
<https://cityoflaredo.ionwave.net/>

Construction Companies are strongly encouraged to submit their Request for Bid electronically through the use of Cit-E-Bid

and you must register as a supplier/consultant prior to submitting. If bidder needs to hand-deliver sealed Request For Bid, please follow the steps below:

MANUAL REQUEST FOR BID DROP OFF-PROCEDURES

Note: Manual Bids will be accepted up to the first 45 minutes of the hour before they are due. For example, if bid is due at 4:00 P.M., bids will be accepted up to 3:45 P.M. of the date due.

1. Please make sure that the bid is in a sealed envelope marked with the following:

- Request for Bid Title
- Name of Company submitting Bid
- Address of Company submitting Bid
- Phone number of Company submitting Bid

2. Please notify security officer that you are there to drop off an Request for Bid with the City Secretary's office. The security officer will notify the City Secretary's office and one of our staff members will go downstairs to receive the package.

3. All persons should wait outside until we pick the envelope up, go back up to the 3rd floor to time-stamp the envelope, make a copy of it and bring it back to you. **(We highly recommend persons to wait to receive a copy of the time-stamped envelope.)**

Thank you for your understanding and help at this time of trying to stay healthy and safe.

Anderson Columbia Co., Inc. Information

Address: 2210 Vo-Tech Drive
P.O. Box 565
Weslaco, TX 78599
Phone: (956) 969-4614
Web Address: andersoncolumbia.com

By submitting your response, you certify that you are authorized to represent and bind your company.

Berry O'Bryan

Signature

Submitted at 8/29/2025 08:36:38 AM (CT)

mary.hernandez@andersoncolumbia.com

Email

Requested Attachments

39.0 TAB A - COMPANY INFORMATION QUESTIONNAIRE

TAB A.pdf

This form shall be submitted by all firm(s) or entity(ies) seeking a contract with the City of Laredo.

40.0 TAB B - Conflict of Interest Disclosure

TAB B.pdf

This form shall be submitted by all firm(s) or entity(ies) seeking a contract with the City of Laredo.

41.0 Tab C - Non-Collusive Affidavit

TAB C.pdf

This form shall be submitted by all firm(s) or entity(ies) seeking a contract with the City of Laredo.

42.0 Tab D - Discretionary Contracts Disclosure

TAB D.pdf

This form shall be submitted by all firm(s) or entity(ies) seeking a contract with the City of Laredo.

43.0 Tab E - Certificate of Interested Parties (Form 1295)

TAB E.pdf

Form 1295 must be submitted to the Texas Ethics Commission within ten (10) days upon receiving notice of award of contract. This form must be submitted within the allotted time otherwise this may result in the cancellation of the contract.

359700 West Laredo Multi_Project Manual_08.01.25

PROJECT MANUAL.pdf

Bidders shall review and include all required documents as part of the bid package.

359700 LasCruces_100__08.01.25

No response

Bidders shall review and be familiar with the complete set of construction documents for this project.

Bid Bond

No response

For Bidders electing to submit Bids and Bid Guaranties electronically via Cit-E-Bid, Guaranties will be verified by the Owner prior to bid certification and electronic copies of Bid Guaranties will not be returned to bidders.

Addendum No. 1 - Las Cruces

ADDENDUM 1.pdf

Bidders shall review and acknowledge Addendum No. 1.

Bid Attributes

1 1.0 GENERAL TERMS AND CONDITIONS FOR REQUEST FOR BID

Interested Respondents or Bidders are required to submit a Request for Bid (RFB) upon the following expressed conditions:

(a) Bidders shall thoroughly examine the specifications, schedule instructions and other contract documents. Once the award has been made, failure to read all specifications, instructions, and the contract documents of the City of Laredo shall not be cause to alter the original contract or for a bidder to request additional compensation. (b) Bidders shall make all investigations necessary to thoroughly inform themselves regarding the services being requested. No pleas of ignorance by the bidder of conditions that exist or that may hereafter exist as a result of failure or omission on the part of the bidder to make the necessary examinations and investigations, or failure to fulfill in every detail the requirements of the contract documents will be accepted as a basis for varying the requirements of the City or the compensation to the bidder. (c) Bidders shall familiarize themselves with conditions relating to the scope, specifications, and restrictions regarding the execution of work to be performed under the contract. It is the bidder's responsibility to obtain any additional information it deems necessary to submit in its RFB, as well as in the performance of the contract. (d) Bidders are advised that City contracts are subject to all legal requirements provided for in the City Charter and/or applicable City Ordinances, State and Federal Statutes. (e) The City of Laredo reserves the right to reject any RFB (submittals). (f) The City of Laredo will not reimburse any firm for any costs involved in the preparation and submission of an RFB, amendments or other relevant documents associated with the RFB.

☒ I have read and understand this section.

2 2.0 PREPARATION OF SUBMITTALS

Submittals shall be prepared in accordance with the following:

(a) **Bidders are strongly encouraged to submit their proposals electronically through the use of the City of Laredo's electronic procurement system: *Cit-E-Bid***, or in-person – hand-delivered to the City Secretary's office, City Hall, 1110 Houston Street (3rd Floor), Laredo, Texas 78040. Mailed bids (i.e. USPS, FedEx, UPS), telegraphic, or facsimile submittals **will not** be allowed/considered. (b) If hand-delivered, all information required by the Request For Bid shall be furnished. The bidder shall print or type the business name and manually sign the schedule. (c) Alternate Proposals will not be considered unless authorized by the invitation for submittals or any applicable addendum.

☒ I have read and understand this section.

3 3.0 SUBMISSION OF BIDS

(a) Request for Bid (RFB) and changes thereto shall be enclosed in sealed envelopes, properly addressed and to include the date and hour of the opening. (b) Unless otherwise noted on the Notice to Bidders cover sheet, all hand delivered bids must be submitted to the City Secretary's office, City Hall, 1110 Houston Street (3rd Floor), Laredo, Texas, 78040. (c) RFB forms can be downloaded and printed through Cit-E-Bid. Mailed bids (i.e. USPS, FedEx, UPS), telegraphic, or facsimile submittals **will not** be allowed/considered. (d) The City shall pay no costs or other amounts incurred by any entity in responding to this RFB, or as a result of issuance of this RFB.

☒ I have read and understand this section.

4 4.0 REJECTION OF REQUEST FOR BID

The City may reject a Request For Bid (RFB) if: (a) Bidder misstates or conceals any material fact in the RFB. (b) RFB does not strictly conform to the law or the requirements of the RFB. (c) Bidder is delinquent in the payment of taxes, including state and local, City of Laredo taxes; a bidder is considered delinquent, regardless of any contract or agreed judgments to pay such delinquent taxes. (d) No RFB submitted herein shall be considered unless the bidder warrants that, upon execution of a contract with the City of Laredo, bidder will not engage in employment practices such as discriminating against employees because of race, color, sex, creed, or national origin. The bidder will submit such reports as the City may, therefore, require assuring compliance with said practices. (e) The City may reject all RFB's or any part of an RFB whenever it is deemed necessary.

☒ I have read and understand this section.

5 5.0 WITHDRAWAL OF REQUEST OF BID

Bids or proposals may not be withdrawn after they have been opened unless approved by the City Council.

☒ I have read and understand this section.

6 6.0 LATE SUBMITTALS OR MODIFICATIONS

RFB's and modifications received after the time set for the bid or proposal receiving deadline will **not** be considered. Late bids or submittals shall be returned to the bidder or vendor unopened.

☒ I have read and understand this section.

7 7.0 CLARIFICATIONS OR OBJECTION TO REQUEST FOR BID (RFB/Submittal)

If any person contemplating submitting an RFB for this contract is in doubt as to the true meaning of the specifications, or other RFB documents or any part thereof, they may submit to the City Purchasing Agent or City Engineer. All requests for information shall be made in writing through email or Question & Response section on Cit-E-Bid system no later than the Question Deadline date to: CITY OF LAREDO PURCHASING AGENT - 5512 Thomas Avenue Laredo, TX 78041; and/or CITY ENGINEER Ramon E. Chavez, P.E., 1110 Houston St., Laredo, TX 78040; email: rchavez@ci.laredo.tx.us. Any bidder submitting questions shall make reference to a specific RFB number, section, page and item of this solicitation. Questions untimely submitted may not elicit a response. It is the bidder's responsibility to follow up and make certain that the request was received. In case there are changes, additions, and/or edits to the original scope, an addendum will be issued by the Purchasing Agent or City Engineer to all vendors through Cit-E-Bid system under Questions and Responses section to clarify any inquiries. The City will not be responsible for any other interpretations of the RFB during the RFB process, bidder, or any persons acting on their behalf, shall not contact any City official or employee staff except those specifically designated in this or another subsequent solicitation document.

PROTEST

The following sequence of activities must take place in filing a protest:

(a) To be performed by protesting Respondent: Within ten (10) calendar days prior to the time that the City Council considers the recommendation of the City's evaluation committee, the protesting Respondent must provide written protest to the City Purchasing Officer. Such protest must include specific reasons for the protest. (b) To be performed by City's Purchasing Officer: Shall review the records of procurement and determine legitimacy and procedural correctness. With five (5) working days, the City Purchasing Officer shall provide written response to the protesting Respondent of the decision. (c) If the protesting Respondent is not satisfied with the decision of the City Purchasing Officer, such protesting Respondent may appeal to the City Manager of the City of Laredo. If the protesting Respondent cannot resolve the issue with the City Manager, he shall be entitled to address his concerns when the City Council of the City of Laredo considers the awarding of the contract. Such appeal may be made only after exhausting all administrative procedures through the City Manager. (d) All protests must be duly submitted via Certified Mail to: City of Laredo - Purchasing Agent 5512 Thomas Ave. Laredo, Texas 78041.

The respondents must agree to maintain current, updated disclosure of information on file with the City's Purchasing Office throughout the term of the contract.

Respondents doing business with the City of Laredo shall comply with all applicable provisions of the City of Laredo's Code of Ethics. **Ordinance No. 2012-0-126 (as amended).**

The City will require any and all Respondents to submit a **Non-Collusive Affidavit (Form C)**. The Respondent will be required to state that the party submitting a proposal or bid, that such proposal or bid is genuine and not collusive or sham; that said Respondent/Bidder has not colluded, conspired, connived or agreed, directly or indirectly, with any Respondent/Bidder or Person, to put in a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the bid price or affiant or of any other Respondent/Bidder, or to fix any overhead, profit or cost element of said bid price, or of that of any other Respondent/Bidder, or to secure any advantage against the City of Laredo or any person interested in the proposed contract; and that all statements in said proposal or bid are true.

The City will require several forms to be submitted as part of their bids; these required forms are listed on section **20.0 Checklist (required forms).**

☒ I have read and understand this section.

8 8.0 AWARD OF CONTRACT

The selection and award shall be based on the basis of being the lowest responsive responsible bidder, demonstrated competence and qualifications to perform the services. The bidder or vendor shall bear the burden of proof of compliance with the City of Laredo Engineering Department specifications.

☒ I have read and understand this section.

9 9.0 PAYMENTS & INVOICING

All invoices to the City of Laredo have a 30-day term from receipt of completion of services. All invoices shall be mailed to the **Engineering Department, 1110 Houston St., City Hall (2nd Floor), Laredo, Texas 78040**. Electronic Funds Transfer (EFT) payments are also available; if electronic payments are preferred, an Electronic Funds Transfer (EFT) Authorization form needs to be completed and returned via e-mail to **jjolly@ci.laredo.tx.us**. For more information, please contact **Mr. Jorge Jolly, Accounts Payable Manager at (956) 791-7328**.

☒ I have read and understand this section.

10 10.0 CONTRACT REQUIREMENTS

(a) CODE OF ETHICS - Consultants, firms, contractor or vendors doing business with the City of Laredo shall comply with all provisions of the City of Laredo's Code of Ethics (Ordinance 2012-O-126 as amended) Consultants, firms, contractor or vendors may be required to participate in Code of Ethics training.

(b) PROHIBITED CONTACTS DURING CONTRACT SOLICITATION PERIOD - A person or entity who seeks or applies for a city contract or any other person acting on behalf of such person or entity is prohibited from contacting city officials and employees regarding such a contract after a Request for Proposal (RFP), Request for Qualification (RFQ) or other solicitation has been released. This no-contact provision shall conclude when the contract is awarded. If contact is required, such contact will be done in accordance with procedures incorporated into the solicitation document. Violation of this provision by respondents or their agents may lead to disqualification of their offer from consideration.

(c) COMPANY INFORMATION QUESTIONNAIRE (Form Attached: Section 39.0-Tab A) - This form shall be submitted by all firms(s) or entity(ies) seeking a contract with the City of Laredo.

(d) CONFLICT OF INTEREST DISCLOSURE (Form Attached: Section 40.0-Tab B) - This form shall be submitted by all firms(s) or entity(ies) seeking a contract with the City of Laredo.

(e) NON-COLLUSIVE AFFIDAVIT (Form Attached: Section 41.0-Tab C) - The City of Laredo requires consultants, firms, contractors, and vendors to submit a Non-Collusive Affidavit. Consultants, firms, contractors, or vendors will be required to state that the party submitting a SOQ, proposal or bid, that such SOQ, proposal or bid is genuine and not collusive or sham; that said respondent or bidder has not colluded, conspired, connived or agreed, directly or indirectly, with any respondent or bidder or person, to put in a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the bid price or affiant or of any other respondent or bidder, or to fix any overhead, profit or cost element of said bid price, or of that of any other respondent or bidder, or to secure any advantage against the City of Laredo or any person interested in the proposed contract; and that all statements in said response, proposal or bid are true.

(f) DISCRETIONARY CONTRACTS DISCLOSURE (Form Attached: Section 42.0-Tab D)

This form shall be submitted by all firms(s) or entity(ies) seeking a contract with the City of Laredo.

(g) CERTIFICATE OF INTERESTED PARTIES (Form 1295) (Form Attached: Section 43.0-Tab E)

Implementation of House Bill 1295: In an effort to comply with state law the certificate of interested parties must be filled out once a vendor has been granted a contract. All of this information can be found on the state of Texas website, please use this link provided, <https://www.ethics.state.tx.us/filinginfo/1295/>. In 2015, the Texas Legislature adopted House Bill 1295, which added section 2252.908 of the Government Code. The law states that a governmental entity or state agency may not enter into certain contracts with a business entity unless the business entity submits a disclosure of interested parties to the governmental entity or state agency at the time the business entity submits the signed contract to the governmental entity or state agency. The law applies only to a contract of a governmental entity or state agency that either (1) requires an action or vote by the governing body of the entity or agency before the contract may be signed or (2) has a value of at least \$1 million. The disclosure requirement applies to a contract entered into on or after January 1, 2016. In order to comply with state law the Certificate of Interested Parties (Form 1295) must be submitted to the Texas Ethics Commission within 10 days upon receiving notice of award of contract. This form must be submitted within the allotted time otherwise this may result in the cancellation of the contract.

(h) TITLE VI ASSURANCE

The Engineering Department for the City of Laredo along with the Texas Department of Transportation, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S. C. ss 2000d to 2000d-4) and the Regulations, hereby notifies all providers that it will affirmatively insure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit Statements of Qualifications in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

(i) INSURANCE REQUIREMENTS

When required and specified in the City of Laredo bid specifications, the successful bidder(s) shall furnish the City with Certificate of Insurance herein required upon execution of the contract and shall maintain said policies in full

force and effect at all times during the term of this contract.

(a) Commercial General Liability insurance at minimum combined single limits of \$1,000,000 per-occurrence and \$2,000,000 general aggregate for bodily injury and property damage, which coverage shall include products/completed operations (\$1,000,000 products/ completed operations aggregate), and XCU (Explosion, Collapse, Underground) hazards. Coverage for products/completed operations must be maintained for at least two (2) years after the construction work has been completed. Coverage must be amended to provide for an each-project aggregate limit of insurance. An alternative would be to have separate limits for all lines of General Liability coverage for each project.

(b) Workers Compensation insurance at statutory limits, including Employers Liability coverage a minimum limit of \$1,000,000 each-occurrence each accident/\$1,000,000 by disease each-occurrence/\$1,000,000 by disease aggregate.

(c) Commercial Automobile Liability insurance at minimum combined single limits of \$1,000,000 per-occurrence for bodily injury and property damage, including owned, non-owned, and hired car coverage.

(d) Any Subcontractor(s) hired by the Contractor shall maintain insurance coverage equal to that required of the Contractor. It is the responsibility of the Contractor to assure compliance with this provision. The City of Laredo accepts no responsibility arising from the conduct, or lack of conduct, of the Subcontractor. The independent subcontractor performing onsite labor will extend completed operations to additional insured parties.

(e) A Comprehensive General Liability insurance form may be used in lieu of a Commercial General Liability insurance form. In this event, coverage must be written on an occurrence basis, at limits of \$1,000,000 each-occurrence, combined single limit, and coverage must include a broad form Comprehensive General Liability Endorsement, products/completed operations, XCU hazards, and contractual liability.

(f) With reference to the foregoing insurance requirement, Contractor shall specifically endorse applicable insurance policies as follows:

1. The City of Laredo shall be named as a primary and non-contributory additional insured with respect to General Liability and Automobile Liability. The additional insured for General Liability shall include operations and completed operations. Completed operation are to be kept in force for a period of 10 years.

2. All liability policies shall contain no cross-liability exclusions or insured versus insured restrictions.

3. A waiver of subrogation in favor of the City of Laredo shall be contained in the Workers compensation, Builders Risk, and all liability policies.

4. All insurance policies shall be endorsed to require the insurer to immediately notify The City of Laredo of any material change in the insurance coverage.

5. All insurance policies shall be endorsed to the effect that The City of Laredo will receive at least sixty- (60) days' notice prior to cancellation or non-renewal of the insurance.

6. All insurance policies, which name The City of Laredo as an additional insured, must be endorsed to read as primary coverage regardless of the application of other insurance.

7. Required limits may be satisfied by any combination of primary and umbrella liability insurances.

8. Contractor may maintain reasonable and customary deductibles, subject to approval by The City of Laredo.

9. Insurance must be purchased from insurers that are financially acceptable to the City of Laredo. Insurer must be rated A- or greater by AM Best Rating with an admitted carrier licensed by the Texas Department of Insurance.

(g) All insurance must be written on forms filed with and approved by the Texas Department of Insurance. Certificates of Insurance shall be prepared and executed by the insurance company or its authorized agent and shall contain provisions representing and warranting the following:

1. Sets forth all endorsements and insurance coverages according to requirements and instructions contained herein.

2. Certificates of insurance shall be accompanied by a copy of each required endorsement including the notice of cancellation or termination provisions to the City of Laredo for each required type of insurance.

(h) Upon receipt of a verified claim and at the request of the City of Laredo, Contractor shall furnish The City of Laredo with certified copies of all required insurance policies.

☒ I have read and understand this section.

1 11.0 SCOPE OF WORK

This project consists of realigning approximately 916.27 LF of roadway from Las Cruces to FM 1472 (Mines Rd) including Obliterating Abandon Roadway, D-GR HMA TY-B, D-GR HMA TY-C, Concrete Box Culvert, concrete sidewalks, Concrete Curb, Metal Beam Guard Fence, ADA ramps, traffic signals, etc.

☒ I have read and understand this section.

1 2	12.0 BID OR PROPOSAL PREPARATION COST The City of Laredo will not reimburse any proposer for any costs involved in the preparation and submission of bids, proposals, amendments or other relevant documents associated with the RFB. <input checked="" type="checkbox"/> I have read and understand this section.
1 3	13.0 TERM OF AGREEMENT Construction contract time for the project is one hundred seventy-four (174) working days. <input checked="" type="checkbox"/> I have read and understand this section.
1 4	14.0 GENERAL CONDITIONS Interested bidders shall familiarize themselves with conditions relating to the scope, specifications, and restrictions regarding the execution of work to be performed under the contract. It is the bidder's responsibility to obtain any additional information it deems necessary to submit in its RFB proposal, as well as in the performance of the contract. Information contained in this document should not be considered all-inclusive. All questions or clarification regarding this RFB proposal request must be submitted to in writing to the City of Laredo Engineering and/or Purchasing Department on or before question deadline scheduled. All questions shall be made in writing, and the person submitting the request will be responsible for its prompt delivery. <div style="text-align: center;"> City of Laredo Engineering Department 1110 Houston St. Laredo, Texas 78040 (956) 791-7346 </div> Each question, along with the City's response will be provided in writing to all prospective bidders and included as an addendum to the RFB document. Any verbal communication regarding this request for qualifications will be considered non-binding on either party. <input checked="" type="checkbox"/> I have read and understand this section.
1 5	15.0 ADDITIONAL DISCUSSIONS When determining the need for additional discussions following bid submission and evaluation, the City will determine based upon State procedures and the size and complexity of a project, the need for additional discussions following bid submission and evaluation. <input checked="" type="checkbox"/> I have read and understand this section.
1 6	16.0 TENTATIVE SCHEDULE FOR PROJECT AWARD 1st Advertisement date: August 3, 2025 2nd Advertisement date: August 10, 2025 Pre-Bid Conference: August 13, 2025 Questions Deadline: August 18, 2025 Bid Due Date: August 29, 2025 Anticipated City Council Award: October 2025 Footnote: The City of Laredo reserves the right to adjust time and dates on above projected schedule if it's in the best interest of the City of Laredo. Contract awards will be awarded upon funding availability. <input checked="" type="checkbox"/> I have read and understand this section.
1 7	17.0 SPECIAL ACCOMMODATIONS To request special accommodations pursuant to the Americans with Disabilities Act (ADA), please notify the contact shown below, a minimum of 48 hours prior to a scheduled meeting. Please e-mail: Lorena Lopez-Mata at llopez@ci.laredo.tx.us using the standard subject line: Special Accommodations, "FY25-ENG-53 West Laredo Multi-modal Trade Corridor - Phase II (Flecha/Las Cruces Realignment Project)" To request special accommodations pursuant to the Language Assistance Plan (LAP), for those with limited English proficiency who need the RFB or other information translated into another language please notify the contact shown below. Please e-mail: Lorena Lopez-Mata at llopez@ci.laredo.tx.us using the standard subject line: Language Assistance Request, "FY25-ENG-53 West Laredo Multi-modal Trade Corridor - Phase II (Flecha/Las Cruces Realignment Project)" . <input checked="" type="checkbox"/> I have read and understand this section.

18.0 DISQUALIFICATION AND DEBARMENT CERTIFICATION

By submitting this Request for Bid, the bidder certifies that it is not currently debarred or eligible for debarment from the City of Laredo pursuant to **Ordinance No. 2017-O-098** and that it is not an agent of a person or entity that is currently debarred from receiving contracts from any political subdivision or agency of the State of Texas. The contract parties are prohibited from making any award at any tier to any party that is debarred or suspended or otherwise excluded from or ineligible for participation in Federal Assistance Programs under Executive Order 12549, "Debarment and Suspension." By executing this agreement, the bidder certifies that it is not currently debarred, suspended, or otherwise excluded from or ineligible for participation in Federal Assistance Programs under Executive Order 12549. The parties to this contract shall require any party to a subcontract or purchase order awarded under this contract to certify its eligibility to receive Federal funds and, when requested by the City, to furnish a copy of the certification.

☒ I have read and understand this section.

19.0 DISPOSITION OF SUBMITTALS / TEXAS PUBLIC INFORMATION ACT ADHERENCE

All bids or submittals and/or any portions thereof become the property of City upon receipt and will not be returned. Any information deemed to be confidential by bidder should be clearly noted on the page(s) where confidential information is contained. However, City cannot guarantee that it will not be compelled to disclose all or part of any public record under the Texas Public Information Act, since information deemed to be confidential by bidder may not be considered confidential under Texas law, or pursuant to a court order. The City of Laredo, by Records Management Ordinance No. 91-O-19, manages records from their creation to their ultimate disposition, consistent with the Texas Local Government Records Act and accepted records management practice; the City also follows the records retention guidelines set out by the Texas State Library and Archives Commission (TSLAC).

☒ I have read and understand this section.

20.0 REQUIRED FORMS AND CONTENTS OF RFB SUBMISSION

For an RFB to be considered it must contain the following information:

CHECKLIST

39.0 Tab A - Company Information Questionnaire
40.0 Tab B - Conflict of Interest Disclosure
41.0 Tab C - Non-Collusive Affidavit
42.0 Tab D - Discretionary Contracts Disclosure
43.0 Tab E - Certificate of Interested Parties (Form 1295)
Request for Bid Response
Bid Bond (Electronic)
Addendum No. 1

Bids without the required check or original bond will NOT be considered.

☒ I have read and understand this section.

21.0 ADDENDUMS

The City of Laredo reserves the right to issue addenda to solicitations as necessary. Addenda are used to clarify, revise, or otherwise modify solicitation documents. All submitting parties are responsible for acknowledging receipt of each addendum issued. Failure to acknowledge any issued addendum will result in the submission being returned and considered incomplete.

Important Notice:

Addendum notifications will be sent to the email address associated with each submission. It is the submitting party's responsibility to monitor the provided email address and ensure that all addenda are received and acknowledged. Failure to acknowledge any issued addendum will result in the submission being returned and considered incomplete.

☒ I have read and understand this section.

1 Package Header

BASE BID

Quantity: 1 UOM: EA Total: \$6,289,051.00

Package Items

1.1 PREPARING ROW

Quantity: 9 UOM: STA Price: \$5,600.00 Total: \$50,400.00

1.2 REMOVING CONC (MEDIANS)

Quantity: 460 UOM: SY Price: \$20.00 Total: \$9,200.00

1.3 REMOVING CONC (DRIVEWAYS)

Quantity: 904 UOM: SY Price: \$20.00 Total: \$18,080.00

1.4 REMOVING CONC (CURB)

Quantity: 597 UOM: LF Price: \$12.00 Total: \$7,164.00

1.5 OBLITERATING ABANDONED ROAD

Quantity: 2425 UOM: SY Price: \$10.00 Total: \$24,250.00

1.6 EXCAVATION (ROADWAY)

Quantity: 483 UOM: CY Price: \$15.00 Total: \$7,245.00

1.7 EXCAVATION (CHANNEL)

Quantity: 2661 UOM: CY Price: \$28.00 Total: \$74,508.00

1.8 EMBANK (FNL)(DC)(TY A)

Quantity: 3983 UOM: CY Price: \$37.00 Total: \$147,371.00

1.9 HYDRO MULCH SEED (TEMP_WARM)

Quantity: 611 UOM: SY Price: \$4.50 Total: \$2,749.50

1.10 HYDRO MULCH SEED (TEMP_COOL)

Quantity: 611 UOM: SY Price: \$4.50 Total: \$2,749.50

1.11 DRILL SEED (PERM_RURAL_SAND)

Quantity: 2142 UOM: SY Price: \$2.00 Total: \$4,284.00

1.12 VEGETATIVE WATERING

Quantity: 247 UOM: TGL Price: \$85.00 Total: \$20,995.00

1.13 D-GR HMA TY-B PG64-22

Quantity: 5137 UOM: TON Price: \$123.00 Total: \$631,851.00

1.14 D-GR HMA TY-C SAC-B PG70-22 (EXEMPT)

Quantity: 732 UOM: TON Price: \$170.00 Total: \$124,440.00

1.15 STRUCTURE EXCAVATION

Quantity: 4125 UOM: CY Price: \$20.00 Total: \$82,500.00

1.16 TRENCH EXCAVATION PROTECTION

Quantity: 699 UOM: LF Price: \$14.00 Total: \$9,786.00

1.17 TEMPORARY SPL SHORING

Quantity: 1460 UOM: SF Price: \$30.00 Total: \$43,800.00

1.18 DRILL SHAFT (TRF SIG POLE)(48 IN)Quantity: 66 UOM: LFPrice: \$860.00Total: \$56,760.00**1.19 CL C CONC (RAIL FOUNDATION)**Quantity: 85 UOM: CYPrice: \$770.00Total: \$65,450.00**1.20 RIPRAP (CONC) (5 IN)**Quantity: 274 UOM: CYPrice: \$690.00Total: \$189,060.00**1.21 RIPRAP (MOW STRIP) (4 IN)**Quantity: 15 UOM: CYPrice: \$690.00Total: \$10,350.00**1.22 RIPRAP (STONE COMMON)(DRY) (18 IN)**Quantity: 35 UOM: CYPrice: \$350.00Total: \$12,250.00**1.23 RAIL (TY C1W)**Quantity: 469 UOM: LFPrice: \$540.00Total: \$253,260.00**1.24 CONC BOX CULV (10 FT X 7 FT)**Quantity: 910 UOM: LFPrice: \$2,350.00Total: \$2,138,500.00**1.25 RC PIPE (CL III) (24 IN)**Quantity: 300 UOM: LFPrice: \$120.00Total: \$36,000.00**1.26 RC PIPE (CL III) (48 IN)**Quantity: 326 UOM: LFPrice: \$350.00Total: \$114,100.00**1.27 JCTBOX (COMPL) (PJB) (6FTX6FT)**Quantity: 2 UOM: EAPrice: \$16,000.00Total: \$32,000.00**1.28 INLET (COMPL) (PCO) (3FT) (NONE)**Quantity: 1 UOM: EAPrice: \$7,700.00Total: \$7,700.00**1.29 INLET (COMPL) (PCO) (3FT) (BOTH)**Quantity: 2 UOM: EAPrice: \$10,000.00Total: \$20,000.00**1.30 INLET (COMPL) (PCO) (5FT) (NONE)**Quantity: 1 UOM: EAPrice: \$15,000.00Total: \$15,000.00**1.31 INLET (COMPL) (TRAFFIC) (TY X-5)**Quantity: 1 UOM: EAPrice: \$82,250.00Total: \$82,250.00**1.32 WINGWALL (PW - 1) (HW=10 FT)**Quantity: 1 UOM: EAPrice: \$85,000.00Total: \$85,000.00**1.33 WINGWALL (PW - 1) (HW=11 FT)**Quantity: 1 UOM: EAPrice: \$98,000.00Total: \$98,000.00**1.34 REMOV STR (HEADWALL)**Quantity: 2 UOM: EAPrice: \$2,000.00Total: \$4,000.00**1.35 REMOV STR (PIPE)**Quantity: 108 UOM: LFPrice: \$17.00Total: \$1,836.00**1.36 MOBILIZATION**Quantity: 1 UOM: LSPrice: \$600,000.00Total: \$600,000.00

1.37 BARRICADES, SIGNS AND TRAFFIC HANDLING

Quantity: 10 UOM: MO Price: \$3,500.00 Total: \$35,000.00

1.38 PORTABLE CHANGEABLE MESSAGE SIGN

Quantity: 48 UOM: DAY Price: \$70.00 Total: \$3,360.00

1.39 ROCK FILTER DAMS INSTALL (TY 3)

Quantity: 57 UOM: LF Price: \$110.00 Total: \$6,270.00

1.40 ROCK FILTER DAMS (REMOVE)

Quantity: 57 UOM: LF Price: \$85.00 Total: \$4,845.00

1.41 CONSTRUCTION EXITS (INSTALL)(TY I)

Quantity: 156 UOM: SY Price: \$82.00 Total: \$12,792.00

1.42 CONSTRUCTION EXITS (REMOVE)

Quantity: 156 UOM: SY Price: \$60.00 Total: \$9,360.00

1.43 TEMPORARY SEDIMENT CONTROL FENCE

Quantity: 751 UOM: LF Price: \$7.00 Total: \$5,257.00

1.44 TEMPORARY SEDIMENT CONTROL FENCE REMOVE

Quantity: 751 UOM: LF Price: \$5.00 Total: \$3,755.00

1.45 PORT CTB (FUR & INST)(LOW PROF) (TY 1)

Quantity: 200 UOM: LF Price: \$60.00 Total: \$12,000.00

1.46 PORT CTB (FUR & INST)(LOW PROF) (TY 2)

Quantity: 40 UOM: LF Price: \$60.00 Total: \$2,400.00

1.47 PORT CTB (MOVE)(LOW PROF) (TY 1)

Quantity: 400 UOM: LF Price: \$35.00 Total: \$14,000.00

1.48 PORT CTB (MOVE)(LOW PROF) (TY 2)

Quantity: 80 UOM: LF Price: \$35.00 Total: \$2,800.00

1.49 PORT CTB (REMOVE)(LOW PROF) (TY 1)

Quantity: 200 UOM: LF Price: \$50.00 Total: \$10,000.00

1.50 PORT CTB (REMOVE)(LOW PROF) (TY 2)

Quantity: 40 UOM: LF Price: \$50.00 Total: \$2,000.00

1.51 REMOVE AND RELAY PAVERS

Quantity: 153 UOM: SY Price: \$140.00 Total: \$21,420.00

1.52 CONC CURB (TY II)

Quantity: 420 UOM: LF Price: \$38.00 Total: \$15,960.00

1.53 CONC CURB & GUTTER (TY II)

Quantity: 2138 UOM: LF Price: \$58.00 Total: \$124,004.00

1.54 CONC CURB (TY B) MOUNTABLE

Quantity: 276 UOM: LF Price: \$68.00 Total: \$18,768.00

1.55 DRIVEWAYS (CONC)

Quantity: 422 UOM: SY Price: \$150.00 Total: \$63,300.00

1.56 DRIVEWAYS (ACP)Quantity: 317 UOM: SYPrice: \$140.00Total: \$44,380.00**1.57 CONC SIDEWALKS (4")**Quantity: 1023 UOM: SYPrice: \$125.00Total: \$127,875.00**1.58 CURB RAMPS (TY 7)**Quantity: 3 UOM: EAPrice: \$4,500.00Total: \$13,500.00**1.59 MTL THRIE-BEAM GD FEN (TIM POST)**Quantity: 112.5 UOM: LFPrice: \$64.00Total: \$7,200.00**1.60 MTL BEAM GD FEN TRANS (THRIE-BEAM)**Quantity: 3 UOM: EAPrice: \$5,000.00Total: \$15,000.00**1.61 DOWNSTREAM ANCHOR TERMINAL SECTION**Quantity: 1 UOM: EAPrice: \$3,000.00Total: \$3,000.00**1.62 MTL BM GD FEN TRANS (NON - SYM)**Quantity: 1 UOM: EAPrice: \$1,500.00Total: \$1,500.00**1.63 GUARDRAIL END TREATMENT (INSTALL)**Quantity: 2 UOM: EAPrice: \$6,000.00Total: \$12,000.00**1.64 CRASH CUSH ATTEN (INSTL)(R)(N)(TL3)**Quantity: 1 UOM: EAPrice: \$40,000.00Total: \$40,000.00**1.65 CONDT (PVC) (SCH 40) (2")**Quantity: 140 UOM: LFPrice: \$20.00Total: \$2,800.00**1.66 CONDT (PVC) (SCH 40) (4")**Quantity: 617 UOM: LFPrice: \$40.00Total: \$24,680.00**1.67 CONDT (PVC) (SCH 80) (2") (BORE)**Quantity: 450 UOM: LFPrice: \$50.00Total: \$22,500.00**1.68 CONDT (PVC) (SCH 80) (4") (BORE)**Quantity: 620 UOM: LFPrice: \$60.00Total: \$37,200.00**1.69 ELECTRICAL CONDUCTOR (NO. 6) BARE**Quantity: 1450 UOM: LFPrice: \$3.00Total: \$4,350.00**1.70 ELECTRICAL CONDUCTOR (NO. 6) INSULATED**Quantity: 120 UOM: LFPrice: \$4.00Total: \$480.00**1.71 TRAY CABLE (4 CONDR) (12 AWG)**Quantity: 1040 UOM: LFPrice: \$5.00Total: \$5,200.00**1.72 GROUND BOX TY D (162922) W/APRON**Quantity: 3 UOM: EAPrice: \$1,500.00Total: \$4,500.00**1.73 ALUMINUM SIGNS (TY A)**Quantity: 6.56 UOM: SFPrice: \$100.00Total: \$656.00**1.74 IN SM RD SN SUP & AM TY10BWG (1) SA (P)**Quantity: 14 UOM: EAPrice: \$1,000.00Total: \$14,000.00

1.75 REMOVE SM RD SN SUP & AMQuantity: 9 UOM: EAPrice: \$100.00Total: \$900.00**1.76 REFL PAV MRK TY I (W) 8" (DOT) (100MIL)**Quantity: 86 UOM: LFPrice: \$3.00Total: \$258.00**1.77 REFL PAV MRK TY I (W) 8" (SLD) (100MIL)**Quantity: 931 UOM: LFPrice: \$2.00Total: \$1,862.00**1.78 REFL PAV MRK TY I (W) 24" (SLD) (100MIL)**Quantity: 188 UOM: LFPrice: \$20.00Total: \$3,760.00**1.79 REFL PAV MRK TY I (W) (ARROW) (100MIL)**Quantity: 7 UOM: EAPrice: \$250.00Total: \$1,750.00**1.80 REFL PAV MRK TY I (W) (DBL ARROW) (100MIL)**Quantity: 3 UOM: EAPrice: \$400.00Total: \$1,200.00**1.81 REFL PAV MRK TY I (W) (WORD) (100MIL)**Quantity: 5 UOM: EAPrice: \$300.00Total: \$1,500.00**1.82 REFL PAV MRK TY I (Y) 24" (SLD) (100MIL)**Quantity: 153 UOM: LFPrice: \$22.00Total: \$3,366.00**1.83 REFL PAV MRK TY I (Y) (MED NOSE) (100MIL)**Quantity: 2 UOM: EAPrice: \$600.00Total: \$1,200.00**1.84 REFL PAV MRK TY I (W) 6" (SLD) (100MIL)**Quantity: 1792 UOM: LFPrice: \$1.50Total: \$2,688.00**1.85 REFL PAV MRK TY I (Y) 6" (BRK) (100MIL)**Quantity: 100 UOM: LFPrice: \$3.00Total: \$300.00**1.86 REFL PAV MRK TY I (Y) 6" (SLD) (100MIL)**Quantity: 4490 UOM: LFPrice: \$1.50Total: \$6,735.00**1.87 REFL PAV MRKR TY I-C**Quantity: 43 UOM: EAPrice: \$9.00Total: \$387.00**1.88 REFL PAV MRKR TY II-A-A**Quantity: 151 UOM: EAPrice: \$9.00Total: \$1,359.00**1.89 INSTALL HWY TRF SIG (ISOLATED)**Quantity: 1 UOM: EAPrice: \$50,000.00Total: \$50,000.00**1.90 REMOVING TRAFFIC SIGNALS**Quantity: 1 UOM: EAPrice: \$16,000.00Total: \$16,000.00**1.91 TEMP TRAF SIGNALS**Quantity: 1 UOM: EAPrice: \$100,000.00Total: \$100,000.00**1.92 VEH SIG SEC (12IN) LED (GRN)**Quantity: 12 UOM: EAPrice: \$400.00Total: \$4,800.00**1.93 VEH SIG SEC (12IN) LED (GRN ARW)**Quantity: 4 UOM: EAPrice: \$400.00Total: \$1,600.00

1.94 VEH SIG SEC (12IN) LED (YEL)Quantity: 12 UOM: EAPrice: \$400.00Total: \$4,800.00**1.95 VEH SIG SEC (12IN) LED (YEL ARW)**Quantity: 8 UOM: EAPrice: \$400.00Total: \$3,200.00**1.96 VEH SIG SEC (12IN) LED (RED)**Quantity: 12 UOM: EAPrice: \$400.00Total: \$4,800.00**1.97 VEH SIG SEC (12IN) LED (RED ARW)**Quantity: 4 UOM: EAPrice: \$500.00Total: \$2,000.00**1.98 PED SIG SEC (LED) (COUNTDOWN)**Quantity: 6 UOM: EAPrice: \$1,000.00Total: \$6,000.00**1.99 BACKPLATE W/REF BRDR (3SEC) (VENT) ALUM**Quantity: 12 UOM: EAPrice: \$300.00Total: \$3,600.00**1.100 BACKPLATE W/REF BRDR (4SEC) (VENT) ALUM**Quantity: 4 UOM: EAPrice: \$350.00Total: \$1,400.00**1.101 TRF SIG CBL (TY A)(12 AWG) (4 CONDR)**Quantity: 1465 UOM: LFPrice: \$3.00Total: \$4,395.00**1.102 TRF SIG CBL (TY A) (12AWG) (5 CONDR)**Quantity: 600 UOM: LFPrice: \$4.00Total: \$2,400.00**1.103 TRF SIG CBL (TY A) (12AWG) (7 CONDR)**Quantity: 1095 UOM: LFPrice: \$5.00Total: \$5,475.00**1.104 TRF SIG CBL (TY A) (12AWG) (9 CONDR)**Quantity: 805 UOM: LFPrice: \$6.00Total: \$4,830.00**1.105 TRF SIG CBL (TY A) (14AWG) (2 CONDR)**Quantity: 1310 UOM: LFPrice: \$2.50Total: \$3,275.00**1.106 INS TRF SIG PL AM (S) 1 ARM (60') LUM**Quantity: 2 UOM: EAPrice: \$36,000.00Total: \$72,000.00**1.107 INS TRF SIG PL AM (S) 1 ARM (65') LUM**Quantity: 1 UOM: EAPrice: \$38,000.00Total: \$38,000.00**1.108 PED POLE ASSEMBLY**Quantity: 3 UOM: EAPrice: \$5,000.00Total: \$15,000.00**1.109 PED DETECT PUSH BUTTON (APS)**Quantity: 7 UOM: EAPrice: \$1,200.00Total: \$8,400.00**1.110 PED DETECTOR CONTROLLER UNIT**Quantity: 1 UOM: EAPrice: \$5,000.00Total: \$5,000.00**1.111 BONDING COURSE**Quantity: 500 UOM: GALPrice: \$6.00Total: \$3,000.00**1.112 ITS SYSTEM INTERGRATION**Quantity: 1 UOM: LSPrice: \$60,000.00Total: \$60,000.00

1.113 8" WATER LINE (PVC C900 DR-14)Quantity: 95 UOM: LFPrice: Total: **1.114 8" 45 DEGREE BEND**Quantity: 4 UOM: EAPrice: Total: **1.115 REMOVE/DISPOSE 8" WATER LINE (DI)**Quantity: 95 UOM: LFPrice: Total: **1.116 8" DI to PVC TRANSITION COUPLING**Quantity: 2 UOM: EAPrice: Total: **Response Total: \$6,289,051.00**

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39.0 Tab A – Company Information Questionnaire

Company Information Questionnaire:

Please complete all information requested below and submit with your bid/response package

"The undersigned affirms that they are duly authorized to execute this contract, that this company, corporation, firm, partnership or individual has not prepared this bid in collusion with any other bidder, and that the contents of this bid as to prices, terms or conditions of said bid have not been communicated by the undersigned nor by any employee or agent to any other person engaged in this type of business prior to the official opening of this request. By submitting this bid the vendor agrees to the City of Laredo specifications and all terms and conditions stipulated in the proposed document. That I, individually and on behalf of the business named in this Business Questionnaire, do by my signature below, certify that the information provided in the questionnaire is true and correct ".

Name of Offeror (Business) ANDERSON COLUMBIA CO., INC.

Signature
of person authorized to sign bid/response

Date AUGUST 29, 2025

Print Name BERRY O'BRYAN
of person authorized to sign bid/response

Title: VICE PRESIDENT

Business Address: 8114 STATE HIGHWAY 359

City, State, Zip Code: LAREDO, TEXAS 78043

Telephone Number: 956-726-9819 Fax Number: N/A

Contact Person Email Address: TXEST@ANDERSONCOLUMBIA.COM

Federal Tax ID Number: 59-2871935

Bidders Principal/Corporate Place of Business Address: P.O. BOX 1829, LAKE CITY, FL 32056

Indicated Status of Business:

Corporation ☒ Partnership ☐ Sole Proprietorship ☐ Other: ☐

If other state business status: FLORIDA

State how long under its present business name: 37 YEARS

If applicable, list all other names under which the Business identified above operated in the last five years.

N/A

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Will bidder/proposer provide a copy of its financial statements for the last two years, if requested by the City of Laredo? ☒ Yes / ☐ No

Has the business, or any officer or partner thereof, failed to complete a contract? Yes / ☒ No

Is any litigation pending against the Business? Yes / ☒ No

Is offeror currently for sale or involved in any transaction to expand or to become acquired by another business entity? Yes / ☒ No

If yes, offer need to explain the expected impact both in organizational and directional terms.

Has the Business ever been declared "not responsive" for the purpose of any governmental agency contract award? Yes / ☒ No

Has the Business been debarred, suspended, proposed for debarment, suspended, proposed for debarment, declared ineligible, voluntarily excluded, or otherwise disqualified from bidding, proposing, or contracting? Yes / ☒ No

Are there any proceedings, pending relating to the Business responsibility, debarment, suspension, voluntary exclusion, or qualification to receive a public contract? Yes / ☒ No

Has the government or other public entity requested or required enforcement of any of its rights under a surety agreement on the basis of default or in lieu of declaring the Business in default? Yes / ☒ No

Is the Business in arrears in any contract or debt? Yes / ☒ No

Has the Business been a defaulter, as a principal, surety, or otherwise? Yes / ☒ No

Have liquidated damages or penalty provisions been assessed against the Business for failure to complete work on time or for any other reason? Yes / ☒ No

State if company is a certified minority business enterprise:

Historically Underutilized Business (HUB): Yes ☒ No ☐ Disadvantaged Business Enterprise (DBE): Yes ☒ No ☐

Small Disadvantaged Business Enterprise (SDBC) Yes ☒ No ☐ Other: Please specify N/A

This company is not a certified minority business: ☒

The above minority information is requested for statistical and tracking purposes only and will not influence the amount of expenditure the City will make with any given company

40.0 Tab B – Conflict of Interest Disclosure (Three Pages)

A form disclosing potential conflicts of interest involving counties, cities, and other local government entities may be required to be filed after January 1, 2006, by vendors or potential vendors to local government entities. The new requirements are set forth in Chapter 176 of the Texas Local Government Code added by H.B. No. 914 of the last Texas Legislature.

Companies and individuals who contract, or seek to contract, with the City of Laredo and its agents may be required to file with the **City Secretary's Office, 1110 Houston Street, Laredo, Texas 78040**, a Conflict of Interest Questionnaire that describes affiliations or business relationships with the City of Laredo officers, or certain family members or business relationships of the City of Laredo officer, with which such persons do business, or any gifts in an amount of \$250.00 or more to the listed City of Laredo officer (s) or certain family members.

The new requirements are in addition to any other disclosures required by law. The dates for filing disclosure statements begin on January 1, 2006. A violation of the filing requirements is *a* Class C misdemeanor.

The Conflict of Interest Questionnaire (Form CIQ) may be downloaded from http://www.ethics.state.tx.us/whatsnew/conflict_forms.htm.

The City of Laredo officials who come within Chapter 176 of the Local Government Code relating to filing of **Conflicts of Interest Questionnaire (Form CIQ)** include:

1. **Mayor**
2. **Council Members**
3. **City Manager**
4. **Members of the Fire Fighters and Police Officers Civil Service Commission.**
5. **Members of the Planning and Zoning Commission.**
6. **Members of the Board of Adjustments**
7. **Members of the Building Standards Board**
8. **Parks & Leisure Advisory Committee Member,**
9. **Historic District Land Board Member,**
10. **Ethics Commission Board Member,**
11. **The Board of Commissioners of the Laredo Housing Authority**
12. **The Executive Director of the Laredo Housing Authority**
13. **Any other City of Laredo decision making board member**

If additional information is needed please contact Miguel A. Pescador, Purchasing Agent at 956-790-1825

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► check box if applicable ◀

☒ I HAVE READ THIS FORM AND ATTEST THAT THERE IS NO CONFLICT OF INTEREST THUS NO VIOLATION OF SECTION 176.006, LOCAL GOVERNMENT CODE EXISTS.

Berry O'Bryan, Vice President

Name


Signature

August 29, 2025

Date

CONFLICT OF INTEREST QUESTIONNAIRE For vendor or other person doing business with local governmental entity		FORM CIQ
<p>This questionnaire reflects changes made to the law by H.B. 1491, 80th Leg., Regular Session.</p> <p>This questionnaire is being filed in accordance with Chapter 176, Local Government Code by a person who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the person meets requirements under Section 176.006(a).</p> <p>By law this questionnaire must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the person becomes aware of facts that require the statement to be filed. See Section 176.006, Local Government Code.</p> <p>A person commits an offense if the person knowingly violates Section 176.006, Local Government Code. An offense under this section is a Class C misdemeanor.</p>	<div style="border: 1px solid black; padding: 2px; text-align: center;">OFFICE USE ONLY</div> <p>Date Received</p>	
1 Name of person who has a business relationship with local governmental entity. ANDERSON COLUMBIA CO., INC.		
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 the originally filed questionnaire becomes incomplete or inaccurate.)	N/A	
3 Name of local government officer with whom filer has employment or business relationship. N/A _____ Name of Officer		

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4. This section (item 3 including subparts A, B, C & D) must be completed for each officer with whom the filer has an employment or other business relationship as defined by Section 176.001(1-a), Local Government pages to this Form CIQ as necessary.

A. Is the local government officer named in this section receiving or likely to receive taxable income, income, other than investment income, from the filer of the questionnaire? ☐ Yes ☐ No N/A

B. Is the filer of the questionnaire receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer named in this section AND the taxable income is not received from the local governmental entity? ☐ Yes ☐ No N/A

C. Is the filer of this questionnaire employed by a corporation or other business entity with respect to which the local government officer serves an officer or director, or holds an ownership of 10 percent or more? ☐ Yes ☐ No N/A

D. Describe each employment or business relationship with the local government officer named in this section.



Signature of person doing business with the governmental entity

August 29, 2025

Date

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41.0 Tab C – AFFIDAVIT

Project: FY25-ENG-53

Form of Non-Collusive Affidavit

AFFIDAVIT

STATE OF TEXAS {}
COUNTY OF WEBB {}

Berry O'Bryan

Being first duly sworn, deposes and says:

That he/she is Vice President of Anderson Columbia Co., Inc.
(a Partner or officer of the firm of, etc.)

The party making the foregoing proposal or bid, that such proposal or bid is genuine and not collusive or shame; that said Bidder has not colluded, conspired, connived or agreed directly or indirectly, with any Bidder or Person, to put in a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the bid price or affiant or of any other Bidder or to fix any overhead, profit or cost element of said bid price, or of that of any other Bidder, or to secure any advantage against the City of Laredo or any person interested in the proposed Contract; and that all statements in said proposal or bid are true.



Signature of:

Bidder, if the Bidder is an individual
Partner, if the Bidder is a Partnership
Officer, if the Bidder is a Corporation

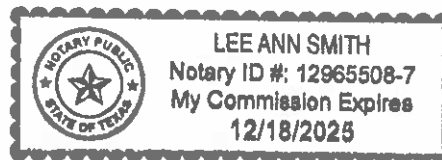
Subscribed and sworn before me this 29th day of August 20 25.



Notary Public

My commission expires:

12/18/2025



CITY OF LAREDO
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42.0 Tab D: City of Laredo - Discretionary Contracts Disclosure (4 pages)

Please fill out this form online, print completed form and submit with proposal to originating department. All questions must be answered.

For details on use of this form, see Section 4.01 if the City's Ethics Code.

*This is a ☒ New Submission or ☐ Correction or ☐ Update to previous submission.

***1. Name of person submitting this disclosure form.**

Berry		O'Bryan	
First	M.I.	Last	Suffix

***2. Contract Information.**

a) Contract or Project name(s):

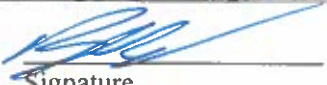
FY25-ENG-53-WEST LAREDO MULTI-MODAL TRADE CORRIDOR-PHASE II
(FLECHAS CRUCES REALIGNMENT PROJECT)

b) Originating Department(s):

ENGINEERING

***3 Name of individual(s) or entity(ies) seeking a contract with the city (i.e. parties to the contract)**

Anderson Columbia Co., Inc.

Name (Print)		Name (Print)	Signature
Name (Print)	Signature	Name (Print)	Signature
Name (Print)	Signature	Name (Print)	Signature
Name (Print)	Signature	Name (Print)	Signature

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***4. List any business entity(ies) that is a partner, parent, subsidiary business entity(ies) of the individual or entity listed in Question 3**

☒ Not applicable. Contracting party(ies) does not have partner, parent, or subsidiary business entities.

☐ Name of partner, parent, or subsidiary business entity(ies):

***5. List any individuals or entities that will be subcontractors on this contract.**

☐ Not applicable. No subcontractors will be retained for this contract.

☒ Subcontractors may be retained, but have not been selected at the time of this submission.

☐ List of subcontractors:

***6. List any attorneys, lobbyists, or consultants that have been retained to assist in seeking this contract.**

☒ Not applicable. No attorneys, lobbyists, or consultants that have been retained to assist in seeking this contract.

☐ List of attorneys, lobbyists, or consultants that have been retained to assist in seeking this contract:

***7. Disclosure of political contributions.**

List any campaign or officeholder contributions made by the following individuals in the past 24 months totaling more than \$100 to any current member of City Council, former member of City Council, any candidate for City Council, or to any political action committee that contributes to City Council elections.

- a) Any individual seeking contract with the city (Question 3)
- b) Any owner or officer of entity seeking contract with the city (Question 3)
- c) Any individual or owner or officer of any entity listed above as partner, parent, or subsidiary business (Question 4)
- d) Any subcontractor or owner/office of subcontracting entity for the contract (Question 5)
- e) The spouse of any individual listed in response to (a) through (d) above
- f) Any attorney, lobbyist, or consultant retained to assist in seeking contract (Question 6)

☒ Not applicable. No campaign or officeholder contributions have been made in the preceding 24 months by these individuals.

☐ List of contributors:

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Updates on Contributions Required

Information regarding contributions must be updated by submission of a revised form from the date of the submission of this form, up through the time City Council takes action on the contracts identified in response to Question 2 and continuing for 30 calendar days after the contract has been awarded.

***8. Disclosure of conflict of interest**

Are you aware of any fact(s) with regard to this contract that would raise a "conflict of interest" issue under Section 2.01 of the Ethics Code for any City Council member or board/commission member that has not or will not be raised by these city officials?

☒ I am not aware of any conflict(s) of interest issues under Section 2.01 of the Ethics Code for members of City Council or a city board/commission.

☐ I am aware of the following conflict(s) of interest:

***Acknowledgements**

☒ Updates Required

I understand that this form must be updated by submission of a revised form if there is any change in the information before the discretionary contract is the subject of action by the City Council, and no later than five (5) business days after any changes has occurred, whichever comes first. This include information about political contributions made after the initial submission and up until thirty (30) calendar days after the contract has been awarded.

☒ No Contract with City Officials or Staff during Contract Evaluation

I understand that a person or entity who seeks or applies for city contract or any other person acting on behalf of that person or entity is prohibited from contracting city officials and employees regarding the contract after a Request for Proposal (RFP), Request for Qualifications (RFQ), or other solicitation has been released.

This no-contract provision shall conclude when the contract is posted as a City of Laredo Council agenda item. If contact is required with city officials or employees, the contact shall take place in accordance with procedures incorporated into the solicitation documents. Violation of this prohibited contacts provision set out in Section 2.09 of the Ethics Code by respondents or their agents may lead to disqualification of their offer from consideration.

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PURCHASING DIVISION**

***Conflict of Interest Questionnaire (CIQ)**

Chapter 176 of the Local Government Code requires contractor and vendors to submit a Conflict of Interest Form (CIQ) to the Office the of City Secretary.

☒ I acknowledge that I have been advised of the requirement to file a CIQ form under Chapter 176 of the Local Government Code.

***Oath**

☒ I swear or affirm that the statements contained in this Discretionary Contracts Disclosure Form, including any attachments, to the best of my knowledge and belief are true, correct, and complete.


Name (Print) Berry O'Bryan

Signature

Title Vice President

Anderson Columbia Co., Inc.

August 29, 2025

Company or DBA

Date

Please fill this form out online, print and submit completed form with proposal to origination department. All questions must be answered. If necessary to mail, send to:

City of Laredo
P.O. Box 579
Laredo, TX 78042-0579

43.0 Tab E – Certificate of Interested Parties (Form 1295)

In an effort to comply with state law the certificate of interested parties must be filled out once a vendor has been granted a contract. All of this information can be found on the State of Texas website, please use this link provided, <https://www.ethics.state.tx.us/tec/1295-Info.htm>.

Implementation of House Bill 1295

43.1 Certificate of Interested Parties (Form 1295):

In 2015, the Texas Legislature adopted House Bill 1295, which added section 2252.908 of the Government Code. The law states that a governmental entity or state agency may not enter into certain contracts with a business entity unless the business entity submits a disclosure of interested parties to the governmental entity or state agency at the time the business entity submits the signed contract to the governmental entity or state agency. The law applies only to a contract of a governmental entity or state agency that either (1) requires an action or vote by the governing body of the entity or agency before the contract may be signed or (2) has a value of at least \$1 million. The disclosure requirement applies to a contract entered into on or after January 1, 2016.

The Texas Ethics Commission was required to adopt rules necessary to implement that law, prescribe the disclosure of interested parties form, and post a copy of the form on the commission's website. The commission adopted the Certificate of Interested Parties form (Form 1295) on October 5, 2015. The commission also adopted new rules (Chapter 46) on November 30, 2015, to implement the law. The commission does not have any additional authority to enforce or interpret House Bill 1295.

43.2 Filing Process: Starting on January 1, 2016, the commission will make available on its website a new filing application that must be used to file Form 1295. A business entity must use the application to enter the required information on Form 1295 and print a copy of the completed form, which will include a certification of filing that will contain a unique certification number. An authorized agent of the business entity must sign the printed copy of the form and have the form notarized. The completed Form 1295 with the certification of filing must be filed with the governmental body or state agency with which the business entity is entering into the contract.

The governmental entity or state agency must notify the commission, using the commission's filing application, of the receipt of the filed Form 1295 with the certification of filing not later than the 30th day after the date the contract binds all parties to the contract. The commission will post the completed Form 1295 to its website within seven business days after receiving notice from the governmental entity or state agency.

Information regarding how to use the filing application will be available on this site starting on January 1, 2016.

Additional Information: [HB 1295](#)

Certificate of Interested Parties ([Form 1295](#))

New Chapter 46, Ethics Commission Rules:

[46.1. Application](#)

[46.3. Definitions](#)

[46.5. Disclosure of Interested Parties Form](#)

**CITY OF LAREDO
PURCHASING DIVISION**

CERTIFICATE OF INTERESTED PARTIES

FORM 1295

Complete Nos. 1 – 4 and 6 if there are interested parties
Complete Nos. 1,2,3,5, and 6 if there are no interested parties.

OFFICE USE ONLY

1. Name of business entity filing form, and the city, state, and country of the business entity's place of business.

ANDERSON COLUMBIA CO., INC., LAREDO, TX, USA

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

ANDERSON COLUMBIA CO., INC., LAREDO, TX, USA

3. Provide the identification number used by the governmental entity or state agency to track or identify the contract and provide a description of the goods or services to be provided under the contract. 59-2871935

4. Name of Interested Party	City, State, Country (place of business)	Nature of Interest (check applicable)	
		Controlling	Intermediary

5. Check only if there is NO Interested Party. ☒

6. **AFFIDAVIT** I swear, or affirm, under penalty of perjury, that the above disclosure is true and correct.

Subscribed and sworn before me this 29th day of August 2025

Lee Ann Smith
Notary Public

My commission expires:

12/18/2025



Signature of officer administering oath

Printed name of officer administering oath

Title of officer administering oath

ADD ADDITIONAL PAGES AS NECESSARY

Form provided by Texas Ethics Commission



ISO 9001:2015 CERTIFIED

ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS

7109 N. Bartlett, Suite 201 • Laredo, Texas 78041 • Phone (956) 729-7844

August 22, 2025

Eluid De Los Santos, P.E. City Engineer
City of Laredo, Engineering Department
1110 Houston St.
Laredo, Texas, 78040

359700

RE: Addendum #1
West Laredo Multi-modal Trade Corridor – Phase II
Flecha/Las Cruces Realignment Project

Dear Mr. De Los Santos,

Please accept this letter as formal notification of Addendum #1 for the West Laredo Multi-modal Trade Corridor – Phase II (Flecha/Las Cruces Realignment) Project. This addendum incorporates several key updates and revisions necessary for the bidding process.

Key revisions addressed in Addendum #1:

Pre-Bid Meeting Question/Answer: Answers to key questions raised during the Pre-Bid meeting held on 8/13/25 are included to clarify project expectations and address potential bidder's concerns.

August 13, 2025 Pre-Bid Meeting Questions

- 1) Are we (contractors) responsible for testing Lab overtime?
A. The contractor is responsible for the Testing Lab and Construction Inspector overtime if decides to work outside of City Schedule.
- 2) Is this a Working Day or Calendar Day Project?
A. Working Day Project. Contractor must obtain permission to work on weekends and holidays
- 3) For testing that fails, who is responsible for retesting?
A. Retesting is the responsibility of the Contractor
- 4) Is there an alternate for concrete pavement?
A. There are no alternates
- 5) Is there an Engineers Estimate?
A. The City does not disclose Engineers Estimate
- 6) Can we get a list of registered traffic signal contractors?
A. Contractor shall meet the requirements listed in the plans and specifications
- 7) **General Notes** are only indicated in the plan set and are not included in the specification
- 8) The required **Child Support** form is not located adjacent to the Bid Form but is found later in the specifications and attached

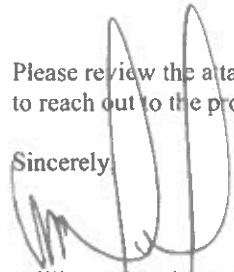
Cit-E-Bid posted questions

- 9) Would you please post the pre-bid attendees list?
A. List attached
- 10) What is the estimated cost range?
A. The City does not disclose the estimated construction cost.

Employee-Owned Since 1988

Please review the attached Addendum #1 and incorporate its revisions into your bidding process. We encourage you to reach out to the project team if you have any questions or require further clarification.

Sincerely,

A handwritten signature in black ink, appearing to read 'William Schaefer', is written over the word 'Sincerely,'.

William Schaefer, P.E.
Senior Project Manager
KCI Technologies, Inc.



ISO 9001:2015 CERTIFIED

ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS

7109 N. Bartlett, Suite 201 • Laredo, Texas 78041 • Phone (956) 729-7844

SIGN-IN SHEET

West Laredo Multi-Modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)

Project No: DMO 2012 (628) CSI: 0922-33-076

AUGUST 13, 2025 (10:00 AM)

Name	Company	Email	Phone
Juan Hernandez	South Texas Oilfield Services	Juanh3998@gmail.com	(956) 763-6751
Edward L. Ochoa	KCI Technologies	eduard.ochoa@kci.com	956-729-7844
Juan Zamora	SAL Const.	JZamoraSal@gmail.com	956-314-7247
Evelyn Gomez	COL Engineering	egomez@ci.bredo.tx.us	956-791-7347
Anga Duncan	TXDOT	angaduncan@txdot.gov	956-712-7419
Johathan Ramirez	TXDOT	johathan.ramirez@txdot.gov	956-712-7495
Luis Velazquez	STX Civil	lv@stxcivil.com	956-489-7014
Noel Perez	South Texas Oilfield Ser.	Noel.Perez@stxos.com	361-227-0573
Elvira Dela Sentera	City of Laredo Engineering	elviradelasentera@laredo.tx.us	456-791-7354
Raymundo Guadalupe	CID Group	gj.madrignol@cidgroupinc.com	956-351-6970
Bill Schaeffer	KCI Technologies	william.schaeffer@kci.com	956-729-7844
Joe Grisanti Jr	Spartan Construction	joe@spartan-const.com	415-760-6171
Miguel Gomez	Mage 4 Group	miguel@g4construction.co	956-286-9731

TH
ams

CHILD SUPPORT STATEMENT

Under Section 231.006, Family Code, the vendor or applicant certifies that the individual or business entity named in this contract, bid, or application is not ineligible to receive the specified grant, loan, or payment and acknowledges that this contract may be terminated and payment may be withheld if this certification is inaccurate.

State of Texas Child Support Business Ownership Form

West Laredo Multi-modal Trade Corridor
- Phase II

County: Webb

Project Name: (Flecha/Las Cruces Realignment Project)

TxDOT CSJ: 0922-33-076

LG Project Number: DMO 2012 (628)

Business Entity Submitting Bid: Anderson Columbia Co., Inc.

Section 231.006, Family Code, requires a bid for a contract paid from state funds to include the names and social security number of individuals owning 25% or more of the business entity submitting the bid.

1. In the spaces below please provide the names and social security number of individuals owning 25% or more of the business.

Name	Social Security Number
<u></u>	<u></u>
<u></u>	<u></u>
<u></u>	<u></u>
<u></u>	<u></u>

2. Please check the box below if no individual owns 25% or more of the business.

☒ No individual own 25% or more of the business.

Except as provided by Section 231.302(d), Family Code, a social security number is confidential and may be disclosed only for the purpose of responding to a request for information from an agency operating under the provisions of Part A and D to Title IV of the Federal Social Security Act (42 USC Section 601-617 and 651-699).

Under Section 231.006, Family Code, the vendor or applicant certifies that the individual or business entity named in this contract, bid, or application is not ineligible to receive the specified grant, loan, or payment and acknowledges that this contract may be terminated and payment may be withheld if this certification is inaccurate.

The information collected on this form will be maintained by City of Laredo. With few exceptions, you are entitled on request to be informed about the information collected about you. Under Sections 552.021 and 552.023 of the Texas Government Code, you also are entitled to receive and review the information. Under Section 559.004 of the Government Code, you are also entitled to have information about you corrected that you believe is incorrect.



Signature

Berry O'Bryan

Printed Name

8/29/25

Date

IF THIS PROJECT IS A JOINT VENTURE,

ALL PARTIES TO THE JOINT VENTURE MUST PROVIDE A COMPLETED FORM.

CITY OF LAREDO
ENGINEERING DEPARTMENT
PLANS AND SPECIFICATIONS FOR
PROJECT MANUAL:

**West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)**

Project No: DMO 2012 (628)

CSJ: 0922-33-076

BID ISSUE DATE: August 4, 2025

Honorable Dr. Victor D. Treviño, Mayor

Gilbert Gonzalez
Council Member
District I

Ricardo Richie Rangel, Jr.
Council Member
District II

Melissa R. Cigarroa
Council Member
District III

Ricardo “Rick” Garza
Council Member
District IV



Ruben Gutierrez, Jr
Council Member
District V

Dr. David Tyler King
Council Member
District VI

Vanessa Perez
Mayor Pro Tempore
District VII

Alyssa Cigarroa
Council Member
District VIII

Joesph Neeb
City Manager

Eliud De Los Santos, P.E.
City Engineer
1110 Houston Street
Laredo, TX 78040
(956) 791-7346

Prepared by:



KCI Technologies, Inc
7109 N. Bartlett Ave., Suite 201
Laredo, TX 78041 (956) 729-7844
www.KCI.com
Texas Registered Engineering Firm (TBPE Firm No. F-10573)

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Engineers Seal Page

Control: 0922-33-076
Project: DMO 2012 (628)
Highway: CS
County: Webb

“The enclosed specifications, special specifications, special provisions, general notes and specification data in this document have been issued by me or under my responsible supervision as being applicable to this project. Alteration of a sealed document without proper notification of the responsible engineer is an offense under the Texas Engineering Practice Act.”

The seal appearing on this document
was authorized by Kyle Gass, P.E. on 7/31/25




KYLE GASS, P.E.

CITY OF LAREDO
ENGINEERING DEPARTMENT

PROJECT SCHEDULE



**West Laredo Multi-modal Trade Corridor - Phase II
(Flecha/Las Cruces Realignment Project)
Project No: DMO 2012 (628)
CSJ: 0922-33-076**

Sunday, August 3, 2025	Advertise for Bids
Sunday, August 10, 2025	Advertise for Bids
Wednesday, August 13, 2025	Pre-Bid Meeting at 10:00 A.M. (NON-Mandatory) Engineering Department and Teams Meeting
Monday, August 18, 2025	Cut-off questions at 12:00 P.M.
Friday, August 22, 2025	Issue Addendum
Friday, August 29, 2025	Receive at 10:00 A.M. at the City Secretary's Office and Cit-E-Bid Opening at City Secretary's Office and using WebEx Meeting
Friday, September 12, 2025	Bid tabulations and recommendation letter to City
Wednesday, September 17, 2025	Bid tabulations and recommendation letter from City to TxDOT
Friday, September 26, 2025	Award letter from TxDOT to City
City Council meeting October 2025	Award Bid (Tentative)

County: WEBB
Project: DMO 2012 (628)
CSJ: 0922-33-076
Highway: CS
Limits: From: From intersection of FM
1472 and Flecha Lane
To: 0.174 mi east of FM 1472

Right of Way Acquisition Certification

This is to certify that all right-of-way has been acquired in accordance with the current FHWA directive(s) covering the acquisition of real property.

Relocation Advisory Assistance Certification

This is to certify that this project did not cause any displacement and the steps relative to relocation advisory assistance and payments under the current State requirement(s) covering the administration of the Highway Relocation Assistance Program were not required.

Right of Way Encroachment Certification

This is to certify that all right of way encroachments have been removed except for those encroachments listed below which will possibly remain after final acceptance of the project. These encroachments will not impair the highway or interfere with the free and safe flow of traffic thereon and do not impose a constructability issue. This temporary encroachment occupancy does not equate to permission or a right of occupancy and all encroachments will be disposed of or remedied in accordance with State and Federal requirements (refer to TxDOT memorandum dated May 16, 1994). A special provision, "Important Notice to Contractors", indicating description, location and status, is included in the proposal documenting the existence of the following encroachments.

DESCRIPTION	LOCATION	STATUS
Mobile Truck plumbing	Property 621206	Removal by City of Laredo prior to construction

Utility Clearance Certification

This is to certify that all utilities have been adjusted in accordance with the appropriate directives covering the adjustment of utilities, except those utilities listed below which will be adjusted in accordance with the appropriate directives. All of the utility companies have been contacted and it has been determined that the below listed dates are estimated and subject to change prior to letting. The adjustment of utilities in accordance with the below dates will not impede or delay the Contractor in construction of this project.

STA./LOCATION	DESCRIPTION	OWNER	EXPECTED COMPLETION DATE
11+97	Electric poles and overhead lines (Crossing)	AEP Texas	September 2025
20+38 23' O/S Left	Underground gas line (Parallel)	Centerpoint Energy	September 2025
11+97	Overhead lines on Electric poles (Crossing)	AT&T	September 2025
11+97	Overhead lines on Electric poles (Crossing)	Spectrum	September 2025

Railroad Clearance Certification

This is to certify that railroad work was not required for this project.

For Local Governmental Entity:

Ramon E. Chavez

Name: Ramon E. Chavez, P.E.

Title: City Engineer / Assistant City Manager

City of Laredo

Date: 07/10/2025

For Texas Department of Transportation:

DocuSigned by:

Epigmenio "Epi" Gonzalez, P.E.

A5A9889ECD1E4F7...

Epigmenio "Epi" Gonzalez, P.E.

District Engineer

TxDOT Laredo District

Date: 7/16/2025

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(Flecha/Las Cruces Realignment Project)
CSJ: 0922-33-076**

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**DIVISION A
SECTION A-1**

NOTICE TO BIDDERS

The City of Laredo, hereafter called OWNER, is requesting Bids for the furnishing of all necessary materials, machinery, equipment, labor, superintendence, and all other services and appurtenances required for **FY25-ENG-53 West Laredo Multi-modal Trade Corridor - Phase II (Flecha/Las Cruces Realignment Project)**.

Bidders are cautioned to refer to other sections of the Project Specifications Manual, Drawings, Addenda and other Bid Documents included in the Bid package for further details.

Sealed bids will be received by the City Secretary's Office, located at 1110 Houston Street, 3rd Floor, City Hall Building, Laredo, Texas, or submitted electronically via Cit-E-Bid, until **10:00 AM on Friday, August 29, 2025. Bids will be publicly opened, read aloud, and taken under advisement at that same time and date.**

FY25-ENG-53

West Laredo Multi-modal Trade Corridor - Phase II (Flecha/Las Cruces Realignment Project).

This project consists of realigning approximately 916.27 LF of roadway from Las Cruces to FM 1472 (Mines Rd) including Obliterating Abandon Roadway, D-GR HMA TY-B, D-GR HMA TY-C, Concrete Box Culvert, concrete sidewalks, Concrete Curb, Metal Beam Guard Fence, ADA ramps, traffic signals, etc.

Construction contract time for this project is on hundred seventy-four (174) working days.

All complete Bid Proposal in the hands of the designated official at the time set in this Notice to Bidders shall be considered. All Bids Proposal shall be accompanied by an acceptable Bid Deposit in an amount of not less than five percent (5%) of the total Base Bid. Bid Deposit will be verified by the Owner prior to bid certification. Bids without an acceptable Bid Deposit will NOT be considered. Hand-delivered Bid Proposals and Bid Guaranties must be original and must be sealed in an envelope plainly marked with the name of the project as shown above, and the name and address of the Bidder. For Bidders electing to submit Bids and Bid Guaranties electronically via Cit-E-Bid, Bid Guaranties will be verified by Owner prior to bid certification and electronic copies of Bid Guaranties will not be returned to Bidders. Mailed bids (i.e. USPS, FedEx, UPS), telegraphic, or facsimile submittals will not be allowed/considered. Refer to Section A-2 Information to Bidders for complete information.

Contractor must comply with the Federal Labor Standards Provision, Davis Bacon Act, Equal Opportunity Clause, Wage Determination and HUD and Urban Development Federal Requirements especially as it regards payrolls and basic records. All materials shall follow the Build America, Buy America Act (BABAA).

Bidders are expressly advised to review Item 3L of the General Conditions of the proposed Contract as to the causes which may lead to the disqualification of a bidder and/or the rejection of a bid proposal. Unless all bids are rejected, the Owner agrees to give Notice of Award of Contract to the successful bidder within ninety (90) days of the bid opening.

Bidders are expected to inspect the site of the work and inform themselves regarding all local conditions.

Bidders are advised to review the **Key Points of Public Right-of-Way Ordinance** on Legal Relations and Responsibilities to the Public Division 7L.17.6. The entire ordinance may be viewed at the following website under Building Services Department:
<http://www.ci.laredo.tx.us/Building/>

A pre-bid meeting for prospective bidders will be held on Wednesday, August 13, 2025, at 10:00 AM at the City of Laredo Engineering Department, located on the 2nd Floor of City Hall. Bidders may also participate electronically via the following link:

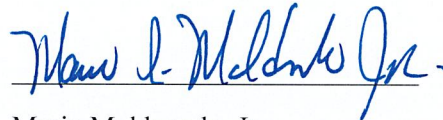
Join the meeting now:

https://teams.microsoft.com/l/meetup-join/19%3ameeting_OTRiMmI0NTQtMjM0MC00NGJmLTg5ODQtODRkNDBjZDBlOTYw%40thread.v2/0?context=%7b%22id%22%3a%229d2e45ad-bf93-4895-b24b-9bbd03698a60%22%2c%22oid%22%3a%224d4583fa-d48b-4044-b0fb-e388945179d7%22%7d

Meeting ID: 297 216 481 203 4

Passcode: 4Y6m8Nq3

The Construction Documents and Specification may be viewed and/or downloaded free of charge from either of the following City of Laredo websites:
<https://cityoflaredo.ionwave.net/>



Mario Maldonado, Jr.
City Secretary

Publication dates:
Sunday, August 3, 2025
Sunday, August 10, 2025

REC'D CITY SEC OFF
JUL 31 '25 PM3:36

SECTION A-2

INFORMATION TO BIDDERS

Sealed bids will be received at **City Secretary's Office, 1110 Houston Street, 3rd floor, City Hall Building, Laredo, Texas, or electronically through Cit-E-Bid** for the furnishing of all necessary materials, machinery, equipment, labor, superintendence, and all other services and appurtenances required for certain **improvements** in the City of Laredo and shall include acknowledgment of addenda submitted, and all other documents included in said bid call. Said bids shall be marked,

Project Name:
West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
CSJ: 0922-33-076

This project consists of realigning 916.27 LF of roadway from Las Cruces to FM 1472 (Mines Rd) including 2,575 SY Obliterating Abandon Roadway, 4,710 ton D-GR HMA TY-B, 690 ton D-GR HMA TY-C, 907 LF Concrete Box Culvert, 1,030 SY concrete sidewalk, 2,669 LF Concrete Curb, Metal Beam Guard Fence, ADA ramps, traffic signals, etc.

Construction contract time for the project is one hundred seventy-four (174) working days.

The following DBE goal is established for the Project: 6.0%

Bids shall be based on a per unit of work basis and shall include dollar amounts for each specific unit in improvements listed including those items listed as alternatives as per the proposal sheet included in the specifications of this project.

Each proposal and a proposal guaranty must be originals and must be sealed in an envelope plainly marked with the name of the project as shown above, and the name and address of the Bidder. For Bidders electing to submit Bids and Bid Guaranties electronically via Cit-E-Bid, Bid Guaranties will be verified by the Owner prior to bid certification and electronic copies of Bid Guaranties will not be returned to Bidders. Mailed bids (i.e. USPS, FedEx, UPS), telegraphic, or facsimile submittals will not be allowed/considered. Only the bids and bid guaranties actually in the hands of the designated official at the time set in this Notice to Bidders shall be considered.

Further, on federally funded projects, contractor must comply with the Federal Labor Standards Provision, Davis Bacon Act, Equal Opportunity Clause, Wage Determination and HUD and Urban Development Federal Requirements especially as it regards payrolls and basic records. All structural and reinforcement steel shall follow the Build America, Buy America Act (BABAA)

Only the bids and bid guaranties actually in the hands of the designated official at the time set in this Notice to Bidders shall be considered. Bids submitted by telephone, telegraph, or fax, will not be considered.

The City reserves the right to award the contract on the basis of the alternative which appears most advantageous to the City, to reject any or all bids, to waive objections based on failure to comply with formalities, and to allow the correction of obvious or patent errors. Bidders are expressly advised to review Item 3L of the General Conditions of the proposed contract as to the causes which may lead to the disqualification of a bidder and/or the rejection of a bid proposal. Unless all bids are rejected, Owner agrees to give Notice of Award of contract to the successful bidder within ninety (90) days from the date of the bid opening.

Bidders for the construction work must submit a satisfactory cashier's or certified check, or bidder's bond having a minimum **Best's Rating A** according to Best's Key Rating Guide Latest Edition from a surety duly authorized and licensed in the State of Texas, payable without recourse to the order of the City of Laredo, Texas, in an amount not less than five percent (5%) of the total bid based on the bid which check or bond shall be submitted as a guarantee that the bidder will enter into a contract, and execute performance and payment bonds within ten (10) days after Notice of Award of contract is given to him for contracts in excess of \$50,000.00. Bids without the required check or bond will NOT be considered.

The successful bidder for the construction of the improvements must furnish a Certificate of Insurance, and a satisfactory Performance Bond in the amount of 100% of the total contract price, and a satisfactory Payment Bond in such amount, duly executed by such bidder as principal and by a corporate surety duly authorized so to act under the laws of the State of Texas. The successful bidder will be required to provide Performance and Payment Bonds issued by an insurance company which meets the minimum State requirements and is licensed in the State of Texas, and has a Best's Key according to Best's Key Rating Guide Latest Edition as follows:

<u>Construction Contract</u>	<u>Minimum Best's Rating</u>
50,001 - 250,000	A
250,000 - 1,000,000	A
Over 1,000,000	A

All lump sum and unit prices must be stated in both script and figures.

Bidders are expected to inspect the site of the work and to inform themselves regarding all local conditions.

The Instructions to Bidders, Forms of Bid, Form of Contract, Plans, Specifications, Form of Bid Bond, Performance and Payment Bonds and other contractual documents may be examined free of charge at the City of Laredo Engineering Department, 1110 Houston Street, Laredo, Texas 78040.

Copies of the plans and specifications may be reviewed free of charge at the City Engineer's office, 1110 Houston Street, Laredo, Texas, or on the Cit-E-Bid web page under the Attachments Section. <https://cityoflaredo.ionwave.net/>

Bid proposals over \$50,000.00 shall comply with all conditions of the bid documents.

In the event the base bid amount is \$50,000.00 or LESS than \$50,000.00, a Payment Bond and Performance Bond will NOT BE REQUIRED. A Bid Guarantee in the form of a Cashier's or Certified Check or Bid Bond and the Certificate of Insurance however, WILL BE REQUIRED. Under the above conditions, the successful bidder for the project is hereby advised that the total contract price will be paid in ONE PAYMENT upon completion and acceptance of the project by the City of Laredo. Cashier's checks are not to be released until a contract for the project has been approved by City Council and signed by the City Manager.

Any other division or section of this project's specifications having reference to Bid Guarantee, Cashier's or Certified Check, Bid Bond, Payment Bond, or Performance Bond, or having mention at all, to the requirements of bonds, is hereby amended to concur with the above conditions ONLY when the base bid is LESS THAN \$50,000.00.

Bidders are advised to contact the City Engineering Department at 1110 Houston Street, Laredo, Texas, 78040, telephone number (956) 791-7346, for visits to project site, and for any additional information required on the project.

Contractor's attention is directed to Special Provision 000-6233, "Important Notice to Contractors" and "Statement of Materials and Other Charges" which will be included in all projects, beginning with the September 1991 letting. These establish the procedures whereby the Contractor will be permitted to obtain an exemption from the sales tax on certain materials. See Comptroller's Rule 2.291 and Texas Tax Code Chapter 151, as amended by House Bill Number 11, Acts 1991, 72nd Legislature, First called Session. The Contractor will be required to separate the charges for materials from all other charges and will be furnished an Exemption Certificate of each contract the Department. Also, the Contractor must issue resale certificates to suppliers. Sales tax permit applications and information regarding resale certificates may also be obtained by calling the State Comptroller's toll-free number 1-800-252-5555.

Disadvantaged Business Enterprise (DBE) Program Commitment Agreement Form

This commitment is subject to the award and receipt of a signed contract from the City of Laredo for the subject project.

Project #:		County:		Contract-CSJ:	
Items of work to be performed (attach a list of work items if more room is required):					
Bid Item #	Item Description	Unit of Measure	Unit Price	Quantity	Total Per Item
Total					
<p>The contractor certifies by signature on this agreement that subcontracts will be executed between the prime contractor and the DBE subcontractors as listed on the agreement form. If a DBE Subcontractor is unable to perform the work as listed on this agreement form, the prime contractor will follow the substitution/replacement approval process as outlined in the Contract DBE Special Provision.</p>					
IMPORTANT: The signatures of the prime contractor and the DBE, and the total commitment amount must always be on the same page.					
Prime Contractor:			Name/Title (please print):		
Address:			Signature:		
Phone:	Fax:				
E-mail:			Date:		
DBE:			Name/Title (please print):		
Vendor No.:			Signature:		
Address:					
Phone:	Fax:		Date:		
E-mail:					
Subcontractor (if the DBE will be a second tier sub):			Name/Title (please print):		
Address:			Signature:		
Phone:	Fax:				
E-mail:			Date:		

The City of Laredo maintains the information collected through this form. With few exceptions, you are entitled on request to be informed about the information that we collect about you. Under §§552.021 and 552.023 of the Texas Government Code, you also are entitled to receive and review the information. Under §559.004 of the Government Code, you are also entitled to have us correct information about you that is incorrect.

All commitments are to be submitted in this format to the City's designated DBE Liaison.

DBE Final Report

The DBE final report form should be filled out by the contractor and submitted to the City upon completion of the project. The report should reflect all DBE activity on the project. The report will aid in expediting the final estimate for payment. If the DBE goal requirements were not met, documentation supporting good faith efforts must be submitted.

Project: _____ Contract CSJ: _____
 County: _____ Control Project: _____
 Letting Date: _____ DBE Goal: _____ %
 Contractor: _____ Contract Amount: _____

Vendor Number	Name of DBE Sub/Supplier	RC or RN	DBE Goal – Total Amount Paid to Date†	Amount Paid to Non-DBE 2nd Tier Subs & Haulers‡	For City Use Only

* Race-Conscious or Race-Neutral.

† Goal/commitment progress report amount and/or race-neutral amount. Do not subtract non-DBE second-tier subcontractors and haulers from this column.

‡ DBE subcontractors paid to non-DBE subcontractors/haulers.

Was there a project under-run caused by a City change order that impacted DBE Goal attainment? ☐ Yes ☐ No Change Order Number _____

This is to certify that _____ % of the work was completed by Disadvantaged Business Enterprises as stated above.

By _____ Per: _____
 Name of General Contractor Contractor's Signature

Subscribed and sworn to before me, this _____ day of _____, A.D. _____

Notary Public _____ County _____

My commission expires: _____

The City maintains the information collected through this form. With few exceptions, you are entitled on request, to be informed about the information that is collected about you. Under §§552.021 and 552.023 of the Texas Government Code, you also are entitled to receive and review the information. Under §559.004 of the Government Code, you are also entitled to have us correct information about you that is incorrect.

DBE Good Faith Effort Plan

NAME OF PROJECT: _____

SECTION A - BIDDER INFORMATION:

Name of Firm: _____

Address: _____

City: _____ State: _____ Zip: _____

Contact Person: _____ Telephone: _____

Email Address: _____

Age of Firm (Number of Years in Business): _____ Years

Annual Gross Receipts of the Firm: _____ Less than \$500,000 _____ \$500,000 to \$1 million
_____ \$1 million to \$2 million _____ \$2 million to \$5 million
_____ Over \$5 million

Is your firm Certified: Yes _____ No: _____ If certified, Certification Number: _____

Type of Certification _____ DBE _____ MBE _____ WBE _____ AABE _____ SBE

1. List **ALL SUBCONTRACTORS/SUPPLIERS** that will be utilized on this contract. A Letter of Intent (DBE Form 2) must be submitted for all subcontractors/suppliers listed below within seven (7) business days from the bid date.

Name & Address of Company	Scope of Work/Supplies to be Performed/Provided by Firm	Estimated Contract Amount	If Firm is DBE Certified, Provide Certification Number
1.			
2.			
3.			
4.			
5.			
6.			

(Use Additional Sheets if Necessary)

SECTION B – DBE COMMITMENTS

The DBE goal on this project is: 6.0 %

1. The undersigned bidder has satisfied the requirements of the bid specification in the following manner (please check the appropriate space:

☐ The bidder/offeror is committed to a minimum of _____ % DBE utilization on this contract.

☐ The bidder/offeror (if unable to meet the DBE goal of _____ %) is committed to a minimum of _____ % DBE utilization on this contract. *(If contractor is unable to meet the goal, please fill out Section C and submit documentation demonstrating good faith efforts).*

2. Name and phone number of person appointed to coordinate and administer the Federal DBE requirements on this project.

Name: _____

Title: _____

Phone Number: _____

IF DBE GOAL WAS MET, PROCEED TO PAGE 4 AND SIGN THE GFEP. IF GOAL WAS NOT MET, PROCEED TO SECTION C.

SECTION C – GOOD FAITH EFFORTS (Fill out only, if the DBE goal was not achieved).

1. List all firms you contacted with subcontracting/supply opportunities for this project that will not be utilized for this contact by choice of the bidder, subcontractor, or supplier. *Written notices to firms contacted by the bidder for specific scopes of work identified for subcontracting/supply opportunities must be provided to subcontractor/supplier not less than five (5) business days prior to bid/proposal due date.* The following information is required for all firms that were contacted of subcontracting/supply opportunities:

Name & Address of Company	Scope of Work/Supplies to be Performed/ Provided by Firm	If Firm is DBE Certified, Provide Certification Number	Date Written Notice Was Sent and Method (Letter, Fax, E-mail)	Reason Agreement Was Not Reached
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

(Use additional sheets as needed)

In order to verify a bidder's good faith efforts, please provide to the City with copies of the written notices to all firms contacted by the bidder for specific scopes of work identified in relation to the subcontracting/supply opportunities in the above named project. Copies of said notices must be provided to the DBE Liaison within five (5) business days after the bid is due. Such notices shall include information on the plans, specifications and scope of work.

2. Did you attend the pre-bid conference scheduled by the City for this project? _____ Yes _____ No

3. List all DBE listings or directories, contractor associations, and/or any other associations utilized to solicit DBE subcontractors/suppliers:

4. Discuss efforts made to define additional elements of the work proposed to be performed by DBEs in order to increase the likelihood of achieving the goal: _____
- _____
- _____
5. Indicate advertisement mediums used for soliciting bids from DBEs. (Please attach a copy of the advertisement(s):
- _____
- _____
6. Discuss efforts made to assist interested DBEs in obtaining bonding, lines of credit, or insurance: _____
- _____
- _____
7. Discuss efforts made to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services: _____
- _____
- _____

AFFIRMATION

I HEREBY AFFIRM THAT THE ABOVE INFORMATION IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE. I FURTHER UNDERSTAND AND AGREE THAT, THIS DOCUMENT SHALL BE ATTACHED THERETO AND BECOME A BINDING PART OF THE CONTRACT.

NAME AND TITLE OF AUTHORIZED OFFICIAL: _____

SIGNATURE: _____ DATE: _____

NOTE:

1. If the DBE goal was not met, the TCI DBE Liaison Officer will evaluate the "good faith efforts" of a firm. The Good Faith Effort Plan for Federally Funded Contracts must be approved by the Transportation and Capital Improvements Department DBE Liaison Officer prior to award of contract.
2. If the DBE Liaison determines that the bidder has not made good faith efforts, then the bidder shall have the opportunity to appeal this decision to the Transportation and Capital Improvements Department Director. The Director shall review the written documentation presented by bidder and determine whether bidder has adequately documented good faith efforts. If the Director determines that the bidder did not make good faith efforts to meet the goal, this final decision is not administratively appealable to the Department of Transportation.

FOR City of Laredo TCI DEPT USE ONLY:

Plan Reviewed by _____ Date: _____

Signature of DBE Liaison

Recommendation: Approval: _____ Denial: _____

Revised:
DBE GFEP FOR CONSTRUCTION CONTRACTS

DBE Monthly Progress Report

Project: _____ Contract CSJ: _____
 County: _____ District: _____
 Letting Date: _____ For Month of (Mo./Yr.): _____
 Contractor: _____ Contract Amount: _____
 DBE Goal: _____% DBE Goal Dollars: _____

Vendor Number	Name of DBE Sub/Supplier	* RC or RN	** DBE \$ Amt Paid for Work Performed this Period (X)	*** \$ Amt Paid to Non-DBE 2nd Tier Subs and Haulers (Y)	Amt Paid to DBEs to Date (X-Y)	For City use Only

* Race Conscious or Race Neutral.

** Goal/commitment progress report amount and/or race-neutral amount. **Do not subtract** non-DBE second-tier subcontractors and haulers from this column.

*** Report amount of payment DBE subcontractors paid to non-DBE subcontractors/haulers.

If using a non-DBE hauling firm that leases from DBE truck owner-operators, payments made to each owner- operator must be reported separately.

Any changes to the DBE commitments must be reported to the City and TxDOT.

Submission of this report for periods of negative DBE activity is required. This report is required until all DBE subcontracting or material supply activity is completed.

I hereby certify that the above is a true and correct statement of the amounts paid to the DBE firms listed above.

Signature: _____ Date: _____
Company Official

This report must be sent to the City's DBE Liaison within 15 days following the end of the calendar month.

The City maintains the information collected through this form. With few exceptions, you are entitled on request to be informed about the information that is collected about you. Under §§552.021 and 552.023 of the Texas Government Code, you also are entitled to receive and review the information. Under §559.004 of the Government Code, you are also entitled to have us correct information about you that is incorrect.

DBE Prime Contractor Payments to Non-DBE Subcontractors

Name of Non-DBE Subcontractor	\$ Amount Paid This Period	Total \$ Amount Paid

Send this report to the City's DBE Liaison. Report is due within 15 days following the end of each calendar month.

Signature: _____ Date: _____
of Company Official

The City of Laredo maintains the information collected through this form. With few exceptions, you are entitled on request to be informed about the information that is collected about you. Under §§552.021 and 552.023 of the Texas Government Code, you also are entitled to receive and review the information. Under §559.004 of the Government Code, you are also entitled to have us correct information about you that is incorrect.

Disadvantaged Business Enterprise Percentage Goal

City Project Number: DMO 2012 (628)

TxDOT CSJ Number: 0922-33-076

The goal for Disadvantaged Business Enterprise (DBE) participation in the work to be performed under this construction contract is __6__% of the Contract amount.

Prompt Pay Certification

In accordance with the requirements of Article 9, "Payment Provisions for Subcontractors," submit this certification form to the City prior to the end of the month following the month payments were received from the City and the month following the month when final acceptance occurred, at the end of the project. (Final submission may be made prior to final acceptance if all subcontractor work and supplier material furnished for the project is complete and the subcontractors and suppliers final payments have been made in full.) The City may withhold payments or suspend work for failure to submit this form or provide prompt payment in accordance with the contract. This certification is applicable to materials the Contractor purchases to remain as part of the final project and to first tier subcontractors on the project and associated project specific locations. (Subcontractors and suppliers are to comply with the prompt payment requirements.)

Certification

"I certify that to the best of my knowledge and with the exception of those subcontractors or suppliers listed below, all subcontractors and suppliers have been paid in accordance with the contract (10 days after receiving payment for the work performed by the subcontractor) and that any retainage held on a subcontractor or supplier's work has been released within 10 days after satisfactory completion of all of the subcontractors' or suppliers' work."

Project Name: _____ CSJ: _____

Estimate Period: _____ or _____
Month Year Final Subcontractor and Supplier Payment Date

Signature Title Date

Printed Name: _____

The following firms have not been paid for reasons listed:

Firm	* Reason for Non-Payment

*Only reasons based on dispute on subcontractor or supplier noncompliance may be accepted.

This certification is for the City's information only and does not place any obligations on the part of the City with regard to any part, including but not limited to, any subcontractor and Contractor's surety.

The City of Laredo maintains the information collected through this form. With few exceptions, you are entitled on request to be informed about the information that we collect about you. Under Sections 552.021 and 552.023 of the Government Code, you also are entitled to receive and review this information. Under Section 559.004 of the Government Code, you are also entitled to have us correct information about you that is incorrect.

SECTION A-3

ADVISE TO BIDDERS

Project Name:

**West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
CSJ: 0922-33-076**

The Contractor's attention is directed to the State of Texas Comptroller of Public Accounts Limited Sales Excise and Use Tax Rules and Regulations, Paragraph 3 of Ruling No. 9. Repairmen and Contractors (amended April 3, 1972). Reference Article 20.01 (T). Upon compliance with certain conditions, this ruling provides for exemption from this tax of materials incorporated into work done for an exempt agency under a Contract. The City is an exempt agency.

Any Bidder may elect to exclude this sales tax from his bid. If the Bidder submitting the lowest acceptable bid for performing the work on this project elects to comply with the above ruling on any bid item included in this Contract by obtaining any necessary permit or permits from the State Comptroller allowing the purchase of material for incorporation into this project without having to pay the Limited Sales, Excise and Use Tax at the time of purchase, he shall upon Award of Contract submit a statement in satisfactory form in which his bid prices to the City for materials are listed separately from all other charges, either by bid item or by total as required by the comptroller. This statement shall be included in and made part of the Contract.

The City will make no further allowance for and will make no price adjustment above or below the originally bid unit price on account of this tax. It shall be the Contractor's sole responsibility, if he elects to exclude the sales tax from his bid, to comply with the aforementioned Ruling No. 9 and with any other applicable rules, regulation, or laws pertaining to the Texas Limited Sales, Excise and Use Tax which may now or at any time during the performance of this Contract be in effect, and the City shall have no responsibility for any sales or use tax which the Contractor may be required to pass as a result of his failure or the City's failure to comply with said rules, regulations or laws, or as the result of the performance of the Contract or any part thereof by the Contractor.

Bidders are cautioned that materials which are not permanently incorporated into the work are not eligible for exemption and are not to be included in the statements as "Materials" (example: fuel, lubricants, tools, forming materials, etc.).

SECTION A-4

INFORMATION TO CONTRACTORS

Project Name:

**West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
CSJ: 0922-33-076**

The Contractor's attention is directed to Special Provision 000-6233, "Important Notice to Contractors", and "Statement of Materials and Other Charges" which will be included in all projects, beginning with the September, 1991 letting. These establish the procedures whereby the Contractor will be permitted to obtain an exemption from the sales tax on certain materials. See Comptroller's Rule 3.291 and Texas Tax Code, Chapter 151, as amended by House Bill Number 11, acts 1991, 72nd Legislature, First Called Session. The Contractor will be required to separate the charges for materials from all other charges and will be furnished an Exemption Certificate for each contract by the Department. Also, the Contractor must issue resale certificates to suppliers. Sales tax permit applications and information regarding resale certificates may be obtained by calling the State Comptrollers' toll free number 1-800-252-5555.

Issued 10/29/91

SPECIAL PROVISION
No. 000-6233
IMPORTANT NOTICE TO CONTRACTORS

The Contractor's attention is directed to Rule 3.291, paragraphs (a) (1), defining separated contracts, subsection (b) (3) discussing separated contracts, and subsection (c) discussing exempt contracts. Reference: Texas Tax Code, Chapter 151.

Contractors should note those organizations in subsection (c) that the rule shows as being exempt no longer qualify for the exemption. The rule states that contractors improving realty for organizations listed in Texas Tax Code 151.309 and 151.310 are exempt from tax. **THIS IS NO LONGER TRUE EFFECTIVE WITH CONTRACTS SIGNED ON OR AFTER AUGUST 15, 1991.**

Only those contracts with school districts and nonprofit hospitals qualify
for the exemption discussed in subsection (c) of Rule 3.291.

The Comptroller is amending the rule to reflect this change.

If the low bidder elects to operate under a separated contract as defined by Rule 3.291, by obtaining the necessary permits from the State Comptroller's office allowing the purchase of materials for incorporation in this project without having to pay the Limited Sales and Use Tax at the time of purchase, the low bidder shall identify separately from all other charges the total agreed contract price for materials incorporated into the project. This form shall be filled out by the low bidder in each of the two bound copies of the contract. Total materials shall only include materials physically incorporated into the realty.

If the Contractor operates under a "separated contract", the Department will furnish the Contractor with an exemption certificate for the applicable materials.

In order to comply with the requirements of Rule 3.291, as mentioned above, it will be necessary for the Contractor to obtain a sales tax permit.

It will also be necessary that the contractor issue resale certificates to his suppliers.

Sales tax application for a sales tax permit and information regarding resale certificates may be obtained by writing to:

Comptroller of Public Accounts
Capital Station
Austin, Texas 78774

The Contractor may also receive information or request sales tax permit applications by calling the State Comptrollers' toll-free number 1-800-252-5555.

Subcontractors are eligible for sales tax exemption if the subcontract is made in such manner that the charges for materials is separated from all other charges. The procedure described above will affect a satisfactory separation. When subcontractors are handled in this manner, the Contractor must issue a resale certificate to the subcontractor and the subcontractor, in turn, must issue a resale certificate to his supplier.

STATEMENT OF MATERIALS AND OTHER CHARGES

Project Name:
West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
CSJ: 0922-33-076

MATERIALS INCORPORATED INTO THE PROJECT: \$ _____

ALL OTHER CHARGES: \$ _____

*TOTAL: \$ _____

*This total must agree with the total figure shown in the Item and Quantity Sheets in the bound contract.

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

NOTE: ONLY THE COPY OF THIS FORM IN THE BOUND CONTRACTS IS TO BE FILLED OUT.

Project Acceptance Requirements

Items required by The City of Laredo for Acceptance of the Project.

Project Name _____

Consultant _____

Contractor _____

Date _____

REQUIRED ITEMS	SUBMITTED		RESUBMIT	COMMENTS
	YES	N/A		
Completion of Punch List				
Engineers / Architects Completion Report				
Affidavit of Payments of Debts & Claims & Release of Liens from the Contractor.				
Warranty Letter from the Contractor to the City of Laredo				
Warranty Statement Form				
Certificate of Occupancy from Building Development Services				
Legal Description & Physical Address				
Reproducible Record Drawings				
Electronic Record Drawings (CD with PDF files /ACAD)				
Final Payment Request				

CITY OF LAREDO
CONTRACTOR'S APPLICATION FOR PAYMENT

PROJECT: West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
CSJ: 0922-33-076

ESTIMATE NO.:
DATE FROM:
TO:

ORIGINAL CONTRACT:	TOTAL WORK TO DATE:	\$
CHANGE ORDERS:	MATERIALS ON HAND:	\$
	10% RETAINAGE:	\$
TOTAL TO DATE:	PREVIOUS PAYMENTS:	\$
% COMPLETE:	AMOUNT DUE:	\$

CERTIFICATE OF CONTRACTOR:

I certify that all items and amounts shown on this request for partial payment are correct and that all work has been performed and/or materials supplied in full in accordance with the requirements on the contract documents.

(CONTRACTOR)

By: _____
Signature Date

Print Name

CERTIFICATE OF FIELD REPRESENTATIVE:

I have checked this request for partial payment against the notes and reports of my inspections of the project and in my opinion the statement of work performed and/or material supplied is accurate and that the contractor is observing the requirements of the contract documents.

(INSPECTOR)

By: _____
Signature Date

Print Name

CERTIFICATE OF ENGINEER:

I certify that I have checked and verified the above and foregoing request for partial payment and that it is a true and correct statement of work performed and/or material supplied by the contractor and that same has been performed and/or supplied in full accordance with the requirements of the contract documents.

(CONSULTANT)

By: _____
Signature Date

Print Name

RECOMMENDED FOR PAYMENT:

VERIFIED FOR PAYMENT:

Eliud De Los Santos, P.E, City Engineer

DATE: _____

Favio R. Rodriguez, P.E

DATE: _____

APPROVED FOR PAYMENT: DATE:

Finance Department

**AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS
AND RELEASE OF LIENS**

**TO: CITY OF LAREDO
WEBB COUNTY, TEXAS**

**Project Name:
West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
CSJ: 0922-33-076**

By this instrument the undersigned contractor engaged in the construction of the above project certifies that on this date, or anytime prior thereto, except listed below, contractor has paid in full or has otherwise satisfied all obligations for all materials and for all known indebtedness and claims against the project, its land, improvements and equipment of every kind.

The undersigned hereby certifies that he has received all payments currently due under his contract for work on the project above referred. Therefore, the undersigned does hereby waive and/or release any and all liens against the property, project and as of the _____ day of _____, 2024.

Company Name

STATE OF TEXAS:

COUNTY OF _____:

Before me, the undersigned authority, on this day personally appeared _____, known to me to be the person whose name is subscribed to the foregoing instrument, and being first duly sworn, acknowledge to me that he executed the same for the purposes and consideration therein expressed and declared to me that the statements therein are true.

SWORN AND SUBSCRIBED TO before me this _____ day of _____,
_____.

NOTARY PUBLIC
MY COMMISSION EXPIRES:

MATERIALS ON HAND INVENTORY

Project:

Contractor: _____

Estimate No. _____ Dates: From _____ to _____

No.	Invoice No.	Vendor	Balance Last Period	Received Current	Placed Current	Balance

FORM LETTER FOR CERTIFICATE OF WARRANTY

DATE:

Mr. Eliud De Los Santos, P.E., City Engineer
City Engineer
City of Laredo
1110 Houston St.
Laredo, Texas 78040

Re:

Dear Mr. De Los Santos:

_____ guarantees all materials and workmanship on the above referred project to be free of defects for a period of one (1) year from the date of acceptance by the owner. Upon notice, any defective materials or faulty workmanship developing within this period, will be replace at no cost to the owner.

Sincerely,

Company Name

ACKNOWLEDGEMENT

STATE OF TEXAS

COUNTY OF _____

Before me, Notary Public for and in _____ County, State of _____ on this personally appeared _____ known to me to be person(s) whose name(s) subscribed to the foregoing affidavit and acknowledge to me that he executed the same for the purpose and consideration expressed therein.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, THIS _____ DAY OF _____, _____.

Notary Public in and for
_____ County, State of _____ My Commission Expires:

FORM LETTER FOR ENGINEERING COMPLETION REPORT

DATE:

Mr. Eliud De Los Santos, P.E.,
City Engineer
1110 Houston Street
Laredo, Texas 78040

Re:

Dear Mr. De Los Santos:

In accordance with the contracts between _____ and The City of Laredo, Webb County, Texas, and pursuant to the specifications in the contract documents, I take this opportunity to file this Completion Report with reference to the above mentioned project as follows:

STATE OF _____

COUNTY OF _____

This is to Certify that I, _____ Registered Professional Engineer, have inspected the work accomplished by _____ and, under contract with The City of Laredo, Webb County, Texas, found that workmanship and materials supplied are in accordance with plans and specifications for said project, and as amended by the "AS-BUILT" drawings.

SIGNED THIS THE _____ DAY OF _____, 2024.

_____, P.E.

P.E. SEAL

**COVER PAGE
FOR
BID PROPOSAL**



**CITY OF LAREDO
West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)**

**Project No: DMO 2012 (628)
CSJ: 0922-33-076
BID ISSUE DATE: August 4, 2025**

**Required Submission of one original of the Bid Package
Sheets from Section A-5 (20 pages)**

Initial and date acknowledgement of :

Addenda (if any)
Wage Determination
Labor Provisions
Affirmative Action Programs
Child Support

SECTION A-5

BID PROPOSAL

To: The City of Laredo, Texas

Honorable Dr. Victor D. Treviño, Mayor

From: _____
Contractor

Address: _____

Phone: _____

Fax: _____

Project Name:
West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
CSJ: 0922-33-076

pursuant to Notice to Bidders, the undersigned bidder hereby proposes to furnish the labor, materials, and equipment in accordance with the plans and specifications, general conditions of the agreement, special provisions of the Agreement, and Addenda, if any. The bidder binds himself upon acceptance of his proposal to execute a contract and bonds accompanying form of performing and completing the said work within the time stated as required by the detailed specifications at the following unit prices. The quantities shown below are based on the Engineer's estimate of quantities and it is agreed that the quantities may be increased or diminished, and may be considered necessary in the opinion of the City of Laredo, Texas to complete the work fully as planned and contemplated, and that all quantities of work, either increased or decreased, are to be performed at the unit prices set forth below (except as provided in the General Conditions of the Agreement or the specifications, the contract documents).

Acknowledgment of Addenda: (Please initial and date):

Addendum No. 1: _____

Addendum No. 2: _____

Addendum No. 3: _____

Addendum No. 4: _____

Addendum No. 5: _____

Acknowledgment of other documents: (Please initial and date):

Wage Determination: _____

Labor Provisions: _____

Affirmative Action Program: _____

Child Support Statement: _____

Project Name:
West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
CSJ: 0922-33-076

Form of Non-Collusive Affidavit

A F F I D A V I T

STATE OF TEXAS {}
COUNTY OF WEBB {}

being first duly sworn, deposes and says

That he is _____
(a Partner or Officer of the firm of, etc.)

the party making the foregoing proposal or bid, that such proposal or bid is genuine and not collusive or sham; that said Bidder has not colluded, conspired, connived or agreed, directly or indirectly, with any Bidder or Person, to put in a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the bid price or affiant or of any other Bidder or to fix any overhead, profit or cost element of said bid price, or of that of any other Bidder, or to secure any advantage against the City of Laredo or any person interested in the proposed Contract; and that all statements in said proposal or bid are true.

Signature of (Print and Sign)

Bidder, if the Bidder is an individual
Partner, if the Bidder is a Partnership
Officer, if the Bidder is a Corporation

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

Notary Public

My Commission expires

INFORMATON TO CONTRACTORS

Project Name:

**West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
CSJ: 0922-33-076**

The Contractor's attention is directed to Special Provision 000-6233, "Important Notice to Contractors", and "Statement of Materials and Other Charges" which will be included in all projects, beginning with the September, 1991 letting. These establish the procedures whereby the Contractor will be permitted to obtain an exemption from the sales tax on certain materials. See Comptroller's Rule 3.291 and Texas Tax Code, Chapter 151, as amended by House Bill Number 11, acts 1991, 72nd Legislature, First Called Session. The Contractor will be required to separate the charges for materials from all other charges. Also, the Contractor must issue resale certificates to suppliers. Sales tax permit applications and information regarding resale certificates may be obtained by calling the State Comptrollers' toll free number 1-800-252-5555.

SPECIAL PROVISION
No. 000-6233
IMPORTANT NOTICE TO CONTRACTORS

The Contractor's attention is directed to Rule 3.291, paragraphs (a) (1), defining separated contracts, subsection (b) (3) discussing separated contracts, and subsection (c) discussing exempt contracts. Reference: Texas Tax Code, Chapter 151.

Contractors should note those organizations in subsection (c) that the rule shows as being exempt no longer qualify for the exemption. The rule states that contractors improving realty for organizations listed in Texas Tax Code 151.309 and 151.310 are exempt from tax. **THIS IS NO LONGER TRUE EFFECTIVE WITH CONTRACTS SIGNED ON OR AFTER AUGUST 15, 1991.**

Only those contracts with school districts and nonprofit hospitals qualify
for the exemption discussed in subsection (c) of Rule 3.291.

The Comptroller is amending the rule to reflect this change.

If the low bidder elects to operate under a separated contract as defined by Rule 3.291, by obtaining the necessary permits from the State Comptroller's office allowing the purchase of materials for incorporation in this project without having to pay the Limited Sales and Use Tax at the time of purchase, the low bidder shall identify separately from all other charges the total agreed contract price for materials incorporated into the project. This form shall be filled out by the low bidder in each of the two bound copies of the contract. Total materials shall only include materials physically incorporated into the realty.

In order to comply with the requirements of Rule 3.291, as mentioned above, it will be necessary for the Contractor to obtain a sales tax permit.

It will also be necessary that the contractor issue resale certificates to his suppliers.

Sales tax application for a sales tax permit and information regarding resale certificates may be obtained by writing to:

Comptroller of Public Accounts
Capital Station
Austin, Texas 78774

The Contractor may also receive information or request sales tax permit applications by calling the State Comptrollers' toll-free number 1-800-252-5555.

Subcontractors are eligible for sales tax exemption if the subcontract is made in such manner that the charges for materials is separated from all other charges. The procedure described above will affect a satisfactory separation. When subcontractors are handled in this manner, the Contractor must issue a resale certificate to the subcontractor and the subcontractor, in turn, must issue a resale certificate to his supplier.

STATEMENT OF MATERIALS AND OTHER CHARGES

Project Name:
West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
CSJ: 0922-33-076

BASE BID

MATERIALS INCORPORATED INTO THE PROJECT: \$ _____

ALL OTHER CHARGES: \$ _____

*TOTAL: \$ _____

JOINT UTILITY BID

MATERIALS INCORPORATED INTO THE PROJECT: \$ _____

ALL OTHER CHARGES: \$ _____

*TOTAL: \$ _____

*This total must agree with the total figure shown in the Item and Quantity Sheets in the bound contract.

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

NOTE: ONLY THE COPY OF THIS FORM IN THE BOUND CONTRACTS IS TO BE FILLED OUT.

**INFORMATION FROM BIDDERS
MUST BE COMPLETED AND SUBMITTED WITH BID PROPOSAL**

**Project Name:
West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
CSJ: 0922-33-076**

Statement of Qualifications: (Similar Projects Completed by Bidder)

1. Name of Project: _____
 Value of Contract: _____
 Date Completed: _____
2. Name of Project: _____
 Value of Contract: _____
 Date Completed: _____
3. Name of Project: _____
 Value of Contract: _____
 Date Completed: _____

Experience Data: (Include name and experience record of the Superintendent)

Financial Status: A confidential financial statement will be submitted by the
apparent successful low Bidder only if the Owner deems it
necessary.

NOTE: TO BE SUBMITTED UPON REQUEST

IS NOT AN ACCEPTABLE ANSWER.

Project Name:
West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
CSJ: 0922-33-076

Proposed Progress Schedules:

Data on Equipment to be used on the Work: (Include the number of machines, the type, capacity, age and conditions and location)

Subcontractors: (Submit a list of proposed Subcontractors. List sources, types and manufacturers of proposed materials)

NOTE: TO BE SUBMITTED UPON REQUEST
IS NOT AN ACCEPTABLE ANSWER.

Printed Name of Authorized Signer _____

Signature of Authorized Signer _____ DATE _____

PROJECT : West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
COUNTY : WEBB

PROPOSAL SHEET
TxDOT
FORM 234-B I-61-5M

ALT	ITEM - CODE			BASE BID UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	100	7002		PREPARING ROW DOLLARS and CENTS	STA	9.000	1
	104	7008		REMOVING CONC (MEDIANS) DOLLARS and CENTS	SY	460.000	2
	104	7011		REMOVING CONC (DRIVEWAYS) DOLLARS and CENTS	SY	904.000	3
	104	7016		REMOVING CONC (CURB) DOLLARS and CENTS	LF	597.000	4
	106	7002		OBLITERATING ABANDONED ROAD DOLLARS and CENTS	SY	2,425.000	5
	110	7001		EXCAVATION (ROADWAY) DOLLARS and CENTS	CY	483.000	6
	110	7002		EXCAVATION (CHANNEL) DOLLARS and CENTS	CY	2,661.000	7
	132	7002		EMBANK (FNL)(DC)(TY A) DOLLARS and CENTS	CY	3,983.000	8
	164	7021		HYDRO MULCH SEED (TEMP_WARM) DOLLARS and CENTS	SY	611.000	9
	164	7022		HYDRO MULCH SEED (TEMP_COOL) DOLLARS and CENTS	SY	611.000	10
	164	7009		DRILL SEED (PERM_RURAL_SAND) DOLLARS and CENTS	SY	2,142.000	11
	168	7001		VEGETATIVE WATERING DOLLARS and CENTS	TGL	247.000	12

Printed Name of Authorized Signer _____

Signature of Authorized Signer _____ DATE _____

PROJECT : West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
COUNTY : WEBB

PROPOSAL SHEET
TxDOT
FORM 234-B I-61-5M

ALT	ITEM - CODE			BASE BID UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	341	7001		D-GR HMA TY-B PG64-22 and DOLLARS CENTS	TON	5,137.000	13
	341	7037		D-GR HMA TY-C SAC-B PG70-22 (EXEMPT) and DOLLARS CENTS	TON	732.000	14
	400	7001		STRUCTURE EXCAVATION and DOLLARS CENTS	CY	4,125.000	15
	402	7001		TRENCH EXCAVATION PROTECTION and DOLLARS CENTS	LF	699.000	16
	403	7001		TEMPORARY SPL SHORING and DOLLARS CENTS	SF	1,460.000	17
	416	7046		DRILL SHAFT (TRF SIG POLE)(48 IN) and DOLLARS CENTS	LF	66.000	18
	420	7052		CL C CONC (RAIL FOUNDATION) and DOLLARS CENTS	CY	85.000	19
	432	7002		RIPRAP (CONC) (5 IN) and DOLLARS CENTS	CY	274.000	20
	432	7013		RIPRAP (MOW STRIP) (4 IN) and DOLLARS CENTS	CY	15.000	21
	432	7033		RIPRAP (STONE COMMON)(DRY) (18 IN) and DOLLARS CENTS	CY	35.000	22
	450	7030		RAIL (TY C1W) and DOLLARS CENTS	LF	469.000	23
	462	7035		CONC BOX CULV (10 FT X 7 FT) and DOLLARS CENTS	LF	910.000	24

Printed Name of Authorized Signer _____

Signature of Authorized Signer _____ DATE _____

PROJECT : West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
COUNTY : WEBB

PROPOSAL SHEET
TxDOT
FORM 234-B I-61-5M

ALT	ITEM - CODE			BASE BID UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	464	7005		RC PIPE (CL III) (24 IN) DOLLARS CENTS and	LF	300.000	25
	464	7011		RC PIPE (CL III) (48 IN) DOLLARS CENTS and	LF	326.000	26
	465	7011		JCTBOX (COMPL) (PJB) (6FTX6FT) DOLLARS CENTS and	EA	2.000	27
	465	7013		INLET (COMPL) (PCO) (3FT) (NONE) DOLLARS CENTS and	EA	1.000	28
	465	7016		INLET (COMPL) (PCO) (3FT) (BOTH) DOLLARS CENTS and	EA	2.000	29
	465	7021		INLET (COMPL) (PCO) (5FT) (NONE) DOLLARS CENTS and	EA	1.000	30
	465	9999		INLET (COMPL) (TRAFFIC) (TY X-5) DOLLARS CENTS and	EA	1.000	31
	466	7180		WINGWALL (PW - 1) (HW=10 FT) DOLLARS CENTS and	EA	1.000	32
	466	7181		WINGWALL (PW - 1) (HW=11 FT) DOLLARS CENTS and	EA	1.000	33
	496	7006		REMOV STR (HEADWALL) DOLLARS CENTS and	EA	2.000	34
	496	7007		REMOV STR (PIPE) DOLLARS CENTS and	LF	108.000	35
	500	7001		MOBILIZATION DOLLARS CENTS and	LS	1.000	36

Printed Name of Authorized Signer _____

Signature of Authorized Signer _____ DATE _____

PROJECT : West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
COUNTY : WEBB

PROPOSAL SHEET
TxDOT
FORM 234-B I-61-5M

ALT	ITEM - CODE			BASE BID UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	502	7001		BARRICADES, SIGNS AND TRAFFIC HANDLING DOLLARS and CENTS	MO	10.000	37
	503	7001		PORTABLE CHANGEABLE MESSAGE SIGN DOLLARS and CENTS	DAY	48.000	38
	506	7003	001	ROCK FILTER DAMS INSTALL (TY 3) DOLLARS and CENTS	LF	57.000	39
	506	7011	001	ROCK FILTER DAMS (REMOVE) DOLLARS and CENTS	LF	57.000	40
	506	7020	001	CONSTRUCTION EXITS (INSTALL)(TY I) DOLLARS and CENTS	SY	156.000	41
	506	7024	001	CONSTRUCTION EXITS (REMOVE) DOLLARS and CENTS	SY	156.000	42
	506	7039	001	TEMPORARY SEDIMENT CONTROL FENCE DOLLARS and CENTS	LF	751.000	43
	506	7041		TEMPORARY SEDIMENT CONTROL FENCE REMOVE DOLLARS and CENTS	LF	751.000	44
	512	7009		PORT CTB (FUR & INST)(LOW PROF) (TY 1) DOLLARS and CENTS	LF	200.000	45
	512	7010		PORT CTB (FUR & INST)(LOW PROF) (TY 2) DOLLARS and CENTS	LF	40.000	46
	512	7033		PORT CTB (MOVE)(LOW PROF) (TY 1) DOLLARS and CENTS	LF	400.000	47
	512	7034		PORT CTB (MOVE)(LOW PROF) (TY 2) DOLLARS and CENTS	LF	80.000	48

Printed Name of Authorized Signer _____

Signature of Authorized Signer _____ DATE _____

PROJECT : West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
COUNTY : WEBB

PROPOSAL SHEET
TxDOT
FORM 234-B I-61-5M

ALT	ITEM - CODE			BASE BID UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	512	7057		PORT CTB (REMOVE)(LOW PROF) (TY 1) and DOLLARS CENTS	LF	200.000	49
	512	7058		PORT CTB (REMOVE)(LOW PROF) (TY 2) and DOLLARS CENTS	LF	40.000	50
	528	7003		REMOVE AND RELAY PAVERS and DOLLARS CENTS	SY	153.000	51
	529	7002		CONC CURB (TY II) and DOLLARS CENTS	LF	420.000	52
	529	7009		CONC CURB & GUTTER (TY II) and DOLLARS CENTS	LF	2,138.000	53
	529	9999		CONC CURB (TY B) MOUNTABLE and DOLLARS CENTS	LF	276.000	54
	530	7006		DRIVEWAYS (CONC) and DOLLARS CENTS	SY	422.000	55
	530	7010		DRIVEWAYS (ACP) and DOLLARS CENTS	SY	317.000	56
	531	7001		CONC SIDEWALKS (4") and DOLLARS CENTS	SY	1,023.000	57
	531	7010		CURB RAMPS (TY 7) and DOLLARS CENTS	EA	3.000	58
	540	7003		MTL THRIE-BEAM GD FEN (TIM POST) and DOLLARS CENTS	LF	112.500	59
	540	7005		MTL BEAM GD FEN TRANS (THRIE-BEAM) and DOLLARS CENTS	EA	3.000	60

Printed Name of Authorized Signer _____

Signature of Authorized Signer _____ DATE _____

PROJECT : West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
COUNTY : WEBB

PROPOSAL SHEET
TxDOT
FORM 234-B I-61-5M

ALT	ITEM - CODE			BASE BID UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	540	7015		DOWNSTREAM ANCHOR TERMINAL SECTION DOLLARS and CENTS	EA	1.000	61
	540	7016		MTL BM GD FEN TRANS (NON - SYM) DOLLARS and CENTS	EA	1.000	62
	544	7001		GUARDRAIL END TREATMENT (INSTALL) DOLLARS and CENTS	EA	2.000	63
	545	7010		CRASH CUSH ATTEN (INSTL)(R)(N)(TL3) DOLLARS and CENTS	EA	1.000	64
	618	7030		CONDT (PVC) (SCH 40) (2") DOLLARS and CENTS	LF	140.000	65
	618	7040		CONDT (PVC) (SCH 40) (4") DOLLARS and CENTS	LF	617.000	66
	618	7055		CONDT (PVC) (SCH 80) (2") (BORE) DOLLARS and CENTS	LF	450.000	67
	618	7065		CONDT (PVC) (SCH 80) (4") (BORE) DOLLARS and CENTS	LF	620.000	68
	620	7009		ELECTRICAL CONDUCTOR (NO. 6) BARE DOLLARS and CENTS	LF	1,450.000	69
	620	7010		ELECTRICAL CONDUCTOR (NO. 6) INSULATED DOLLARS and CENTS	LF	120.000	70
	621	7006		TRAY CABLE (4 CONDR) (12 AWG) DOLLARS and CENTS	LF	1,040.000	71
	624	7008		GROUND BOX TY D (162922) W/APRON DOLLARS and CENTS	EA	3.000	72

Printed Name of Authorized Signer _____

Signature of Authorized Signer _____ DATE _____

PROJECT : West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
COUNTY : WEBB

PROPOSAL SHEET
TxDOT
FORM 234-B I-61-5M

ALT	ITEM - CODE			BASE BID UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	636	7001		ALUMINUM SIGNS (TY A) DOLLARS and CENTS	SF	6.560	73
	644	7001		IN SM RD SN SUP & AM TY10BWG (1) SA (P) DOLLARS and CENTS	EA	14.000	74
	644	7073		REMOVE SM RD SN SUP & AM DOLLARS and CENTS	EA	9.000	75
	666	7018		REFL PAV MRK TY I (W) 8" (DOT) (100MIL) DOLLARS and CENTS	LF	86.000	76
	666	7024		REFL PAV MRK TY I (W) 8" (SLD) (100MIL) DOLLARS and CENTS	LF	931.000	77
	666	7036		REFL PAV MRK TY I (W) 24" (SLD) (100MIL) DOLLARS and CENTS	LF	188.000	78
	666	7042		REFL PAV MRK TY I (W) (ARROW) (100MIL) DOLLARS and CENTS	EA	7.000	79
	666	7045		REFL PAV MRK TY I (W) (DBL ARROW) (100MIL) DOLLARS and CENTS	EA	3.000	80
	666	7066		REFL PAV MRK TY I (W) (WORD) (100MIL) DOLLARS and CENTS	EA	5.000	81
	666	7123		REFL PAV MRK TY I (Y) 24" (SLD) (100MIL) DOLLARS and CENTS	LF	153.000	82
	666	7132		REFL PAV MRK TY I (Y) (MED NOSE) (100MIL) DOLLARS and CENTS	EA	2.000	83
	666	7411		REFL PAV MRK TY I (W) 6" (SLD) (100MIL) DOLLARS and CENTS	LF	1,792.000	84

Printed Name of Authorized Signer _____

Signature of Authorized Signer _____ DATE _____

PROJECT : West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
COUNTY : WEBB

PROPOSAL SHEET
TxDOT
FORM 234-B I-61-5M

ALT	ITEM - CODE			BASE BID UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	666	7420		REFL PAV MRK TY I (Y) 6" (BRK) (100MIL) DOLLARS CENTS and	LF	100.000	85
	666	7423		REFL PAV MRK TY I (Y) 6" (SLD) (100MIL) DOLLARS CENTS and	LF	4,490.000	86
	672	7002		REFL PAV MRKR TY I-C DOLLARS CENTS and	EA	43.000	87
	672	7004		REFL PAV MRKR TY II-A-A DOLLARS CENTS and	EA	151.000	88
	680	7002		INSTALL HWY TRF SIG (ISOLATED) DOLLARS CENTS and	EA	1.000	89
	680	7004		REMOVING TRAFFIC SIGNALS DOLLARS CENTS and	EA	1.000	90
	681	7001		TEMP TRAF SIGNALS DOLLARS CENTS and	EA	1.000	91
	682	7001		VEH SIG SEC (12IN) LED (GRN) DOLLARS CENTS and	EA	12.000	92
	682	7002		VEH SIG SEC (12IN) LED (GRN ARW) DOLLARS CENTS and	EA	4.000	93
	682	7003		VEH SIG SEC (12IN) LED (YEL) DOLLARS CENTS and	EA	12.000	94
	682	7004		VEH SIG SEC (12IN) LED (YEL ARW) DOLLARS CENTS and	EA	8.000	95
	682	7005		VEH SIG SEC (12IN) LED (RED) DOLLARS CENTS and	EA	12.000	96

Printed Name of Authorized Signer _____

Signature of Authorized Signer _____ DATE _____

PROJECT : West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
COUNTY : WEBB

PROPOSAL SHEET
TxDOT
FORM 234-B I-61-5M

ALT	ITEM - CODE			BASE BID UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	682	7006		VEH SIG SEC (12IN) LED (RED ARW) and DOLLARS CENTS	EA	4.000	97
	682	7018		PED SIG SEC (LED) (COUNTDOWN) and DOLLARS CENTS	EA	6.000	98
	682	7042		BACKPLATE W/REF BRDR (3SEC) (VENT) ALUM and DOLLARS CENTS	EA	12.000	99
	682	7043		BACKPLATE W/REF BRDR (4SEC) (VENT) ALUM and DOLLARS CENTS	EA	4.000	100
	684	7009		TRF SIG CBL (TY A)(12 AWG) (4 CONDR) and DOLLARS CENTS	LF	1,465.000	101
	684	7010		TRF SIG CBL (TY A) (12AWG) (5 CONDR) and DOLLARS CENTS	LF	600.000	102
	684	7012		TRF SIG CBL (TY A) (12AWG) (7 CONDR) and DOLLARS CENTS	LF	1,095.000	103
	684	7014		TRF SIG CBL (TY A) (12AWG) (9 CONDR) and DOLLARS CENTS	LF	805.000	104
	684	7028		TRF SIG CBL (TY A) (14AWG) (2 CONDR) and DOLLARS CENTS	LF	1,310.000	105
	686	7063		INS TRF SIG PL AM (S) 1 ARM (60') LUM and DOLLARS CENTS	EA	2.000	106
	686	7067		INS TRF SIG PL AM (S) 1 ARM (65') LUM and DOLLARS CENTS	EA	1.000	107
	687	7001		PED POLE ASSEMBLY and DOLLARS CENTS	EA	3.000	108

Printed Name of Authorized Signer _____

Signature of Authorized Signer _____ DATE _____

PROJECT : West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
COUNTY : WEBB

PROPOSAL SHEET
TxDOT
FORM 234-B I-61-5M

ALT	ITEM - CODE			BASE BID UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	688	7001		PED DETECT PUSH BUTTON (APS) and DOLLARS CENTS	EA	7.000	109
	688	7003		PED DETECTOR CONTROLLER UNIT and DOLLARS CENTS	EA	1.000	110
	3007	7001		BONDING COURSE and DOLLARS CENTS	GAL	500.000	111
	6009	9999		ITS SYSTEM INTERGRATION and DOLLARS CENTS	LS	1.000	112

Printed Name of Authorized Signer _____

Signature of Authorized Signer _____ DATE _____

PROJECT : West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
COUNTY : WEBB

PROPOSAL SHEET
TxDOT
FORM 234-B I-61-5M

ALT	ITEM - CODE			JOINT UTILITY BID UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	104	.01		8" WATER LINE (PVC C900 DR-14) and DOLLARS CENTS	LF	95.000	113
	104	.02		8" 45 DEGREE BEND and DOLLARS CENTS	EA	4.000	114
	128	.01		REMOVE/DISPOSE 8" WATER LINE (DI) and DOLLARS CENTS	LF	95.000	115
	132	.01		8" DI to PVC TRANSITION COUPLING and DOLLARS CENTS	EA	2.000	116

Contractor

Signature Title

Address City/State Zip Code

Telephone Number:() _____

Fax Number:() _____

Date: _____

NOTE 1: ALL BID ITEMS WILL BE PAID FOR WHEN COMPLETE IN PLACE, TESTED, AND ACCEPTED BY THE OWNER.

NOTE 2: THE CITY OF LAREDO RESERVES THE RIGHT TO AWARD THE BASE BID OR ANY OF THE ALTNERATE BIDS LISTED ABOVE TO REJECT ALL BIDS IF FUNDINGS IS NOT AVAILABLE.

BID BOND

Project Name:
West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
CSJ: 0922-33-076

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned

as Principal, and _____ as
Surety, are hereby held and firmly bound unto

as Owner in the penal sum of _____
for payment of which, well and truly to be made, we hereby jointly a severally bid
ourselves, our heirs, executors, administrations, successors and assigns.

Signed, this _____ day of _____, 20____.

The condition of the above obligation is such that whereas the Principal has submitted to

_____ a certain Bid,
attached hereto and hereby made a part hereof to enter into a Contract in writing for the

NOW, THEREFORE,

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

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

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

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

Principal (Print and Sign)

Surety

By: _____

SECTION A-6

CHECKLIST FOR BIDDERS

Project Name:

**West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
CSJ: 0922-33-076**

All information required by the terms of the Bid Documents must be furnished.

MISTAKES OR OMISSIONS CAN BE COSTLY AND CAN RESULT IN THE REJECTION OF YOUR BID. Important items for you to check are included in but not limited to, those listed below. This checklist is furnished only to assist you in submitting a proper bid. Check as you read. **DO NOT INCLUDE THIS CHECKLIST WITH YOUR BID.**

- ☐ Have you acknowledged receipt of all addenda to the plans and specifications?
- ☐ Is your bid properly signed? (Refer to Bid Documents)
- ☐ If a bid guarantee is required, is it included in your bid? (A late bid guarantee is treated the same as a late bid)
- ☐ Is your bid guarantee in the proper amount? (Usually 5% of total bid price)
- ☐ Your bid guarantee must be in the form of a Bidder's Bond, a Certified Check or Cashier's Check.
- ☐ If your bid guarantee is in the form of a Bidder's Bond, is the bond properly signed by both the bidder and surety and are all required seals affixed?
- ☐ Is the surety company qualified and licensed by the State of Texas as required by the provisions of the bid documents?
- ☐ Is the name in which you submitted the bid the same on your bid proposal as on the Bidder's Bond?
- ☐ If required have you entered a unit price for each bid item?
- ☐ If required have you entered the unit price or lump sum price in both words and figures? (Unit Price or Lump Sum price in words govern)
- ☐ Are decimals in unit prices in the proper places? Are your figures legible?
- ☐ Are the extensions of your unit prices, and your total bid price correct?

- [] Is proposal being submitted complete together with Information from Bidders?
- [] Are all erasures or corrections initialized by the person signing the bid or by an authorized representative of the person signing the bid.
- [] Do not restrict your bid by altering any provisions of the Bid Document or by attaching any documents to the Proposal that takes exception to the Bid Documents.
- [] Have you included all pages of the Proposal with your bid? Are all blanks in the Proposal properly completed (equipment brands, alternate materials, etc.)?
- [] Have you included Child Support Statement and form requirements with your bid?
- [] Is the envelope containing your bid properly identified that it is a sealed bid and does it contain the correct project name and bid opening date?
- [] Will your bid arrive on time? Late bids will not be considered (Item 2L)
Generally, bids must be received by the City Secretary, City Hall on the date and time specified in the Notice to Bidders. (Other times or dates will be clearly specified in the Notice).
- [] **On Federally Funded Projects, contractor must submit certified weekly payrolls with a copy to City Engineering Files.**

SECTION A-7

CONSTRUCTION CONTRACT

Project Name:

**West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
CSJ: 0922-33-076**

Agenda Item:

STATE OF TEXAS
COUNTY OF WEBB

THIS AGREEMENT, made this _____ day of _____ 20__, by and between the City of Laredo, Texas, acting by and through its duly authorized City Manager hereinafter termed the Owner, and _____, of the City of _____, County of _____, State of _____, his/their executors, administrators, heirs, successors, or assigns, hereinafter termed the Contractor.

WHEREAS, the Owner desired to enter into Contract for the _____ in accordance with the provisions of the Invitation for Bids, the Specifications and Plans titled as above, and published by City of Laredo, Texas, 1110 Houston Street, (mailing address: P.O. Box 579), Laredo, Texas 78040 all of which are a part thereof; and,

WHEREAS, the Contractor has been engaged in and now does such work and represents that he is fully equipped, competent and capable to perform the above desired and outlined work, and is ready and willing to perform the work in accordance with the provisions of the Invitation for Bids, the Specifications and Plans, titled, " _____ "

WITNESS:

THAT for and in consideration of the payments and agreements hereinafter mentioned to be made and performed by the Owner, the Contractor hereby agrees at the unit price set forth in his Bid, made a part thereof totaling the sum of

_____ (\$ _____) based on the Engineer's estimate of quantities, payable in the manner set out in Item 9L, General Provisions of the contractual Documents to commence and complete the _____ in the City of Laredo, Tx, in accordance with Instructions to Bidders, Special Provisions, General Provisions, Technical Provisions, and all other requirements of the contractual Documents, and in accordance with the Specifications and Plans (including all maps, plats, blueprints, and other drawings and printed or written explanatory matter thereof) prepared by the Owner's Engineer, a part thereof and collectively, together with this Agreement constitute the entire Contract; and the Contractor agrees to furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, bonds, insurance and other accessories and services, and whatever else may be necessary to complete the said construction in accordance with said specifications, plans, and other contractual documents including such proposal.

Project Name:
West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
CSJ: 0922-33-076

Said Contractor further agrees to begin the work on or before the tenth day following the date set by the Owner in the written notice to proceed and to complete the work within

_____.
The Contractor further agrees to pay the sum of \$ _____ for each consecutive day there-in-after as herein provided in **Division B, Section 1.**

And the Owner in consideration of the full and true performance of the said work by said Contractor hereby agrees to and binds itself to pay the said Contractor the unit price set forth in the attached Bid, and in the manner provided in the Specifications.

IN WITNESS WHEREOF, the OWNER AND THE CONTRACTOR have
hereunto set their hand this _____ day of _____, 20__.

WITNESS:

Contractor/Firm (Signature)

Signature

Signature

(Print)

Title: _____

(Print)

Address

Address

City/State/Zip Code

Telephone Number:

Fax Number

E-mail address

ATTEST:

CITY OF LAREDO, TEXAS

Mario Maldonado, Jr.
City Secretary

Joseph Neeb
City Manager

APPROVED AS TO FORM:

City Attorney

Section A-8

CITY OF LAREDO INSURANCE PROVISIONS AND LIMITS

Contractor shall provide and continuously maintain the minimum insurance coverages set forth below during the term of its agreement with the City of Laredo; and Contractor shall require its subcontractors to purchase the same types and amounts of insurance, at a minimum, as set forth below with respect to statutory workers' compensation and liability insurance.

1. Commercial general liability standard ISO insurance at minimum combined single limits of \$1,000,000 per-occurrence and \$2,000,000 general aggregate for bodily injury and property damage, which coverage shall include: products/completed operations (\$2,000,000 products/completed operations aggregate); XCU (explosion, collapse, underground) hazards; and contractual liability. Without limitation, the commercial general liability coverage must cover all operations required in the contract, as well as contractual liability for the indemnity obligations assumed by the Contractor in the contract. Coverage must be written on an occurrence form.
2. Workers' compensation insurance at statutory limits, including employers' liability coverage at minimum limits of \$1,000,000 each-occurrence, each accident/\$1,000,000 by disease each-occurrence/\$1,000,000 by disease aggregate.
3. Commercial automobile liability insurance at a minimum combined single limit of \$1,000,000 per-occurrence for bodily injury and property damage, including non-owned and hired car coverage and owned vehicles if any are owned.
4. Umbrella liability or following-form excess liability at minimum limits, reference page four for project costs over \$1,000,000. Coverage must be at least as broad as the underlying commercial general liability, auto liability, and employer's liability.
5. Pollution Legal Liability if applicable:
 - a. Project costs of \$1,000,000 to \$10,000,000 and over \$10,000,000; reference page four for limits.
 - b. Contractors Pollution Liability:
 - > Applies to operations that include the use, application, or consumption of pollutants.
 - > Retro date shall not be later than the inception date of contract.
 - > Contractual liability coverage to be included in contractor's pollution liability coverage.
 - c. Environmental Liability:
 - i. Applies to asbestos and removal of other hazardous materials and/or repair, maintenance, installation, construction operations that are high hazard.
 - > \$5,000,000 per-claim/\$10,000,000 aggregate minimum.
 - > Retro date shall not be later than the inception date of contract.
 - > Contractual liability coverage to be included in contractor's pollution liability coverage.
 - > At a minimum, coverage must apply to on-premises and transit operations.
6. Professional liability applies to professional services which include but are not limited to design build contractors, engineers, and architects at minimum limits of \$1,000,000 per-claim/\$2,000,000 annual aggregate. The retro date shall not be later than the inception date of the contract. Reference page four for limits based on project cost.

7. Builders Risk if applicable:

- a. "All-risk" including collapse, flood, and earthquake, to be written on completed value form.
- b. Coverage to include limits of at least \$250,000 for off-premises storage and transit of construction materials. Soft costs to be included at a minimum limit of \$500,000.
- c. Thirty (30)-day occupancy clause to apply.
- d. No testing exclusion should apply.

With reference to the foregoing insurance requirements, Contractor shall specifically endorse applicable insurance policies as follows:

1. City of Laredo shall be named as an additional insured on a primary and non-contributory basis, regardless of the application of other insurance, with respect to all liability coverages, except for the professional liability and workers' compensation.
2. All liability policies shall contain no cross-liability exclusions or insured versus insured restrictions.
3. A waiver of subrogation in favor of City of Laredo shall be contained in all policies.
4. All insurance policies shall be endorsed to require the insurer to immediately notify City of Laredo of any material change in the insurance coverage.
5. All insurance policies shall be endorsed to the effect that City of Laredo will receive at least thirty (30) days' notice prior to cancellation or non-renewal of the insurance.
6. The additional insured coverage in the CGL policy in favor of City of Laredo must apply to the ongoing operations of Contractor for contract costs or up to \$1,000,000 and expanded to include product s/completed operation for contract costs in excess of \$1,000,000.
7. Required limits may be satisfied by any combination of primary and umbrella/excess liability insurances.
8. Contractor may maintain reasonable and customary deductibles, subject to approval by City of Laredo.
9. Insurance must be purchased from insurers that are financially acceptable to City of Laredo with a minimum *A.M Best* financial rating of A-:VII.
10. Coverage for commercial general liability, professional liability, and pollution legal liability must be maintained for at least one (I) to two (2) years after the project is completed.
11. For project s in excess of \$10,000,000 in cost, a per-project aggregate limit must be included in the commercial general liability.

All insurance must be written on standard ISO or equivalent forms. Certificates of insurance shall be prepared and executed by the insurance company, or its authorized agent, shall be furnished to City of Laredo within five (5) business days of being notified of the award of the contract, and shall contain provisions representing and warranting the following:

Shall set forth all endorsements and insurance coverages according to requirements and instructions contained herein.

Shall specifically set forth the notice-of-cancellation or termination provisions to City of Laredo.

Copies of all required endorsements must be attached to the certificate of insurance. The certificates of insurance must be updated and resubmitted to the City of Laredo to show renewal coverages, as applicable, at least thirty (30) days prior to expiration of any one or more policies.

Upon request, Contractor shall furnish City of Laredo with certified copies of all insurance policies.

All of the above insurance provisions and limits are the minimum requirements, as referenced, and may be modified at the sole discretion of the City of Laredo.

BONDS

Bonds are required for public works contracts under the following circumstance:

1. A Bid or Proposal Bond is required in the amount of the bid submitted to the City of Laredo.
2. Performance Bond when the contract is in excess of \$100,000, in a personal sum equal to 100% of the contract cost.
3. Payment or Labor and Material Bond when a contract is in excess of \$50,000, each in a personal sum equal to 100% of the contract cost.

CITY OF LAREDO INSURANCE PROVISIONS AND LIMITS

<u>CONTRACT COST</u>	<u>TYPE OF INSURANCE</u>	<u>LIMITS</u>
Less than \$1,000,000	Umbrella Liability Professional Liability	Not Required \$1,000,000 Per-Claim/ \$2,000,000 Aggregate
\$1,000,000 to \$5,000,000	Umbrella Liability Professional Liability	\$4,000,000 Per-Occ \$1,500,000 Per-Claim/ \$3,000,000 Aggregate
\$5,000,000 to \$10,000,000	Umbrella Liability Professional Liability	\$9,000,000 to \$10,000,000 Per-Occ \$1,500,000 Per-Claim/ \$3,000,000 Aggregate to \$2,000,000 Per- Claim/\$4,000,000 Aggregate
Over \$10,000,000	Umbrella Liability Professional Liability	\$10,000,000 or Higher \$2,000,000 Per-Claim/ \$4,000,000 Aggregate or Higher
\$1,000,000 to \$10,000,000	Contractor's Pollution Legal Liability	\$1,000,000 Per-Claim/ \$2,000,000 Aggregate
Over \$10,000,000	Contractor's Pollution Legal Liability	\$2,000,000 Per-Claim/ \$4,000,000 Aggregate

TAIL COVERAGE

\$1,000,000 to \$5,000,000	Commercial General Liability, Professional Liability, and Pollution Legal Liability	One (1) Year
Over \$5,000,000	Commercial General Liability, Professional Liability, and Pollution Legal Liability	Two (2) Years
Any Contract Size	Hazardous Environmental Work	Two (2) Years

SECTION A-9
PERFORMANCE BOND

(As required by Chapter 2253, Texas Government Code)

THE STATE OF {}
COUNTY OF {}

KNOW ALL MEN BY THESE PRESENTS: That we (1) _____
_____ a (2) _____
_____ of hereafter called Principal and (3) _____
_____ of _____, State of _____
_____, hereinafter called the Surety, are held and firmly bound unto (4) _____
_____ of _____
hereinafter called Owner, in the penal sum of _____
_____ (\$ _____)
Dollars in lawful money of the United States, to be paid in (5)

WEBB COUNTY, TEXAS

_____ for the payment of which sum well and truly to be made, we bind
ourselves, our heirs, executors, administrators and successors, jointly and severally,
firmly by these presents.

THE CONDITIONS OF THIS OBLIGATION is such that Whereas, the Principal entered
into a certain Contract with (6) _____
the Owner, dated the _____ day of _____ a copy
of which is hereto attached and made a part hereof for the Construction of:

(hereinafter called the "Work")

These notes refer to the numbers in body of Contract above:

Date of Bond must not be prior to Date of Contract.

- (1) Correct name of Contractor.
- (2) A Corporation, or Partnership or an Individual, as case may be.

- (3) Correct name of Surety.
- (4) Correct name of Owner.
- (5) County and State.
- (6) Owner.

NOW THEREFORE, if the Principals shall well, truly and faithfully perform the work in accordance with the Plans, Specifications and Contract Documents during the original term thereof, and any extensions thereof which may be granted by the Owner with or without notice to the Surety, and if he shall satisfy all claims and demands incurred under such Contract, and shall fully indemnify and save harmless the Owner from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the owner all outlay and expense which the Owner may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED FURTHER, that if any legal action be filed upon this Bond, venue shall lie WEBB County, State of Texas, and that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder or the Specifications accompanying the same shall in any wise affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to the Specifications.

IN WITNESS WHEREOF, this Instrument is executed in six counterparts, each one of which shall be deemed an original, this the _____ day of _____.

ATTEST:

(Principal) Secretary
(Print and Sign)

PRINCIPAL (Print and Sign)

By: _____

(SEAL)

Address (State and Zip Code)

Witness as to Principal (Print and Sign)

Telephone Number

Address (State and Zip Code)

ATTEST:

Secretary (Print and Sign)

(SEAL)

(Surety) Secretary

(SEAL)

Witness as to Surety (Print and Sign)

Address (State and Zip Code)

SURETY: (Surety)

By: _____
(Print and Sign)

Address (State and Zip Code)

Telephone No. (Area Code)

PAYMENT BOND

(As required by Chapter 2253, Texas Government Code)

THE STATE OF {}

COUNTY OF {}

KNOW ALL MEN BY THESE PRESENTS: That we (1) _____

_____ (2) _____

of _____ hereinafter called Principal and (3) _____

of _____, State of _____, hereinafter called

the Surety, are held and firmly bound unto (4) _____ of

_____ hereinafter called Owner, and unto all

Persons, Firms, and Corporations who may furnish materials for, or perform labor upon

the building or improvements hereinafter referred to in the penal sum of _____

_____ (\$ _____)

Dollars in lawful money of the United States, to be paid in (5) WEBB COUNTY, TEXAS for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITIONS OF THIS OBLIGATION is such that Whereas, the Principal entered into a certain Contract with (6) _____

the Owner, dated the _____ day of _____ a copy

of which is hereto attached and made a part hereof for the construction of:

(hereinafter called the "Work")

These footnotes refer to the numbers in body of contract above:

Date of Bond must not be prior to Date of Contract.

- (1) Correct name of Contractor.
- (2) A Corporation, or Partnership or an Individual, as case may be.
- (3) Correct name of Surety.
- (4) Correct name of Owner.
- (5) County and State.
- (6) Owner.

NOW THEREFORE, if the Principals shall well, truly and faithfully perform the work in accordance with the Plans, Specifications and Contract Documents during the original term thereof, and any extensions thereof which may be granted by the Owner with or without notice to the Surety, and if he shall satisfy all claims and demands incurred under such Contract, then this obligation shall be null and void; otherwise to remain in full force and effect.

This Bond is made and entered into solely for the [protection](#) of all claimants supplying labor and material in the prosecution of the work provided for in said Contract, and all such claimants shall have a direct right of action under the Bond as provided in [Section 2253.073, Texas Government Code](#).

PROVIDED FURTHER, that if any legal action be filed upon this Bond, venue shall lie WEBB County, State of Texas, and that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder or the Specifications accompanying the same shall in any wise affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to the Specifications.

PROVIDED FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in six counterparts, each one of which shall be deemed an original, this the _____ day of _____.

ATTEST:

(Principal) Secretary
(Print and Sign)

PRINCIPAL (Print and Sign)

By: _____

(SEAL)

Address (State and Zip Code)

Witness as to Principal (Print and Sign)

Telephone Number

(SEAL)

Surety

ATTEST:

(Surety Secretary) (Print and Sign)

(SEAL)

By:_____
(Print and Sign)

Address (State and Zip Code)

Telephone Number

NOTE: If Contractor is Partnership, all Partners should execute Bond.

PERFORMANCE - PAYMENT BOND FORM
M-24, 25, Attach. Sa

Business (Print)

Address (State and Zip Code)

Telephone Number (Area Code)

ATTEST:

(Print and Sign)

(State and Zip Code)

Address (State and Zip Code)

ATTEST:

(Print and Sign)

(SEAL)
Individual Principal (Print and
Sign)

Business - Address

Telephone Number (Area Code)

Corporate Principal

Business Address Name

Telephone Number (Area Code)

(Affix Corporate Seal)

By: _____
(Sign and Print)

Address (State and Zip Code)

Corporate Surety

Business Address

(Affix Corporate Seal)

Telephone:

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, _____, certify that I am the _____,
Secretary of the Corporation named as Principal in the within Bond; that _____
_____, who signed the said Bond on behalf of the Principal was
then _____, of said Corporation; that I
know his signature thereof is genuine; and that said Bond was duly signed, sealed, an
attested for and in behalf of said Corporation by authority of its governing body.

Title

Date: _____

(Affix Corporate Seal)

Telephone No.

The rate of premium on this Bond is _____ per thousand. Total of premium
charge

\$ _____

NOTE: The above must be filled in by Corporate Surety. Power-of-Attorney of person
signed for Surety company must be attached.

SECTION A-10

NOTICE OF AWARD

Project Name:
West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
CSJ: 0922-33-076

The City of Laredo has considered the bids submitted for the above described project in response to its advertisement for bids dated _____, 20__ and _____, 20__, and related information to Bidders.

You are hereby notified that your bid in the net amount of \$_____ has been favorable considered for the project by the City Council at its regular council meeting on _____, 20__. Pursuant to the information to Bidders you are asked to provide five (5) original signed contracts and to return the same, along with the required original Certificate of Insurance, and Payment Bond and Performance Bond within ten (10) days of your receipt of this Notice, for the approval and signature of the City Manager.

For the purpose of effective date of the required Certificate of Insurance, and the Performance Bond and the Payment Bond, the date of _____, 20__, may be considered the date of the contract, if the Documents are approved by the City Manager.

If you fail to submit the signed Contract Performance and Payment Bonds, and the Certificate of Insurance within ten (10) working days from your receipt of this Notice, your bid will be considered as withdrawn and your bid bond will be forfeited, unless an extension for submittals has been requested in writing and approved by the City.

The Construction Contract time of _____ (____) working/calendar days is to be strictly adhered to per Division B Section 1 and contractor agrees to pay liquidated damages for late completion an amount of \$_____ for each consecutive day exceeding the contract time allotted.

You are asked to acknowledge receipt of this Notice by signing in the appropriate place below.

Dated this the ____ day of _____ of 20__.

CITY OF LAREDO ENGINEERING DEPT.

Eliud De Los Santos, P.E.
City Engineer

ACKNOWLEDGMENT:

Receipt of this Notice is hereby acknowledged

Dated this _____

Authorized Signature

Title: _____

Div-A Notice of Award

SECTION A-11

CERTIFICATE OF OWNER'S ATTORNEY

Project Name:
West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
CSJ: 0922-33-076

Awarded by the City Council:

I, the City Attorney, the duly authorized and acting legal representative of THE CITY OF LAREDO, do hereby certify as follows:

I have examined the attached Contract(s) and Surety bonds and the manner of execution thereof, and I am of the opinion that each of the aforesaid Agreements has been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have full power and authority to execute said Agreements on behalf of the respective parties named thereon; and that the foregoing Agreements constitute valid and legally binding obligations upon the parties executing the same in accordance with terms, conditions, and provisions thereof.

City Attorney

Date: _____

SECTION A-12

NOTICE TO PROCEED

Date: _____

To: _____

Project Name:
West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
CSJ: 0922-33-076

In accordance with the construction contract dated _____ you are hereby authorized to proceed on _____.
Contract time is **One hundred seventy-four (174)** working days. Completion date for the project is approximately _____, _____.

CITY OF LAREDO ENGINEERING DEPT.

Eliud De Los Santos, P.E.
City Engineer

The above NOTICE TO PROCEED is hereby acknowledged by

on this the _____ day of _____.

Authorized Signature

Typed Name:

Title: _____

**DIVISION B
SECTION 1**

CONTRACT TIME & LIQUIDATED DAMAGES

**Project Name:
West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
CSJ: 0922-33-076**

The Contract Performance for this project shall be **One hundred seventy-four (174) working days** defined in the Specifications under Local Government General Requirements and Covenants 1L.

The time set forth in the proposal for the completion of the work is an essential element of the Contract. For each day under the conditions described in the preceding Paragraph that any work shall remain uncompleted after the expiration of the days specified in the Contract, together with any additional days allowed, the amount per day given in the following schedule will be deducted from the money due or to become due the Contractor, as liquidated damages for late completion of the specified work.

FOR AMOUNT OF CONTRACT		
From More Than	To and Including	Amount of Penalty Per Day over Contract Time
\$0	\$100,000	\$200
100,000	500,000	400
500,000	1,000,000	550
1,000,000	2,000,000	700
2,000,000	5,000,000	850
5,000,000	10,000,000	1,200
10,000,000	15,000,000	1,500
15,000,000	20,000,000	1,700
20,000,000	Over 20,000,000	2,500

SECTION B-4

INSPECTION BY CITY

Project Name:

**West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
CSJ: 0922-33-076**

The work covered by these Specifications shall at all times be subject to inspection by the City of Laredo (City) authorized inspectors.

The Contractor shall furnish the City Inspector with every reasonable facility for ascertaining whether the work performed is substandard and deviates from the requirements of the plans and specifications. The City Inspector shall have the authority to halt the construction of any portion of the work not meeting requirements until such time as said work has been corrected to the satisfaction of the Inspector and the Engineer.

City's normal working hours are Monday through Friday, **not including Saturdays, Sundays, or legal holidays observed by the City** from 8:00 A.M. to 5:00 P.M. The contractor shall notify the City at least twenty-four (24) hours in advance for any work that is to be scheduled beyond the limits of the City's working hours, and the Contractor shall not begin any such work scheduled unless proper inspection and/or testing has been pre-arranged with the City, with the cost for such inspection beyond the City's working hours borne by the Contractor. **However, should the City opt to expedite a project and chooses a calendar day contract for such endeavor, the City will bear the 8:00 A.M. to 5:00 P.M. inspection cost only, and the contractor pays for time beyond the city's working hours limit.**

Payment due for overtime inspection is expected to be processed timely, otherwise the City may elect to deduct said amount due from the contractor's monthly estimate. See Article 9L.4 Scope of Payment.

SECTION B-5

Project Name:

**West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
CSJ: 0922-33-076**

The general contractor shall erect two (2) signs, unless otherwise noted by the City Engineers, at the project site identifying the project and indicating that the City of Laredo is participating in the development of the project.

The project signs shall be substantially in accordance with the drawing printed on the following page and shall be made from $\frac{3}{4}$ inch plywood, placed in a prominent location and maintained in good condition until completion of the project.

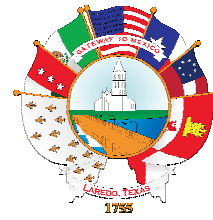
THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THE PROJECT

CONSTRUCTION SIGN WHEN THE WORK HAS BEEN COMPLETED



City of Laredo, Texas

West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)
CSJ: 0922-33-076



Honorable Dr. Victor D. Treviño
Mayor

Vanessa Perez – Mayor Pro-Tempore
Gilbert Gonzalez – Council Member District I
Ricardo Richie Rangel, Jr. – Council Member District II
Melissa R. Cigarroa – Council Member District III

Ricardo “Rick” Garza – Council Member District IV
Ruben Gutierrez, Jr. – Council Member District V
Dr. David Tyler King – Council Member District VI
Alyssa Cigarroa – Council Member District VIII

Joseph Neeb, City Manager
(956)791-7300

Eliud De Los Santos, P.E.
City Engineer
(956)791-7346

KCI Technologies, Inc
7109 N. Bartlett Ave., Suite 201
Laredo, TX 78041
(956) 729-7844

Contractor's Name
Address
City, State, Zip Code
Telephone Number
Fax Number

NOTE: Signs are to be installed in ground on 4' x 4' posts
Blue borders
White background
Red letter
Two (2) project signs are required - 4' x 8'

SECTION B-6

ILLEGAL DUMPING

The general contractor shall not dispose of any material whatsoever taken from the project site, onto any areas not considered to be legal dump sites. Materials such as broken concrete, asphalt, rebar, trash, etc. are to be disposed of properly, i.e. at the city landfill or as directed by the city engineer. Unless otherwise noted, no material, including dirt, is to be dumped or place into an existing creek or channel.

The general contractor is hereby instructed to contact the City of Laredo Environmental Dept. at 956-794-1650 for additional information on illegal dumping city ordinances.

*Building construction debris should be hauled to the Landfill only by a **franchised hauler**.

CSJ: 0922-33-076
PROJECT: DMO 2003 (512)
COUNTY: WEBB
HIGHWAY: LAS CRUCES REALIGNMENT

**CITY OF LAREDO
GENERAL AND SPECIAL SPECIFICATIONS FOR LAM
VERSION 2024**

ITEM NO. DESCRIPTION

Items 1L TO 9L General Requirements and Covenants

**TEXAS DEPARTMENT OF TRANSPORTATION
GOVERNING SPECIFICATIONS AND SPECIAL PROVISIONS**

All standard specifications and special provisions applicable to this project are identified as follows:

**STANDARD SPECIFICATIONS: ADOPTED BY THE TEXAS DEPARTMENT OF
TRANSPORTATION SEPTEMBER 1, 2024. STANDARD SPECIFICATIONS
ARE INCORPORATED INTO THE CONTRACT BY REFERENCE.**

ITEM NO. DESCRIPTION

100	Preparing Right of Way (002)
104	Removing Concrete
106	Obliterating Abandoned Road
110	Excavation
132	Embankment (100)(204)(210)(216)(400)
164	Seeding for Erosion Control (162)(166)(168)
168	Vegetative Watering
341	Dense-Graded Hot-Mix Asphalt
402	Trench Excavation Protection
403	Temporary Special Shoring
416	Drilled Shaft Foundations (420)(421)(440)(448)
432	Riprap (420)(421)(427)(440)
450	Railing
462	Concrete Box Culverts and Storm Drains (400)(420)(421)(424)(440)(464)
464	Reinforced Concrete Pipe (400)
465	Manholes and Inlets (400)(420)(421)(440)(471)
466	Headwalls and Wingwalls (400)(420)(421)(430)(440)(464)
496	Removing Structures

500	Mobilization
502	Barricades, Signs and Traffic Handling
503	Portable Changeable Message Sign
506	Temporary Erosion, Sedimentation, and Environmental Controls
512	Portable Concrete Traffic Barrier (421)(440)(442)
528	Colored Textured Concrete and Landscape Pavers (420)(421)(440)
529	Concrete Curb, Gutter, and Combined Curb and Gutter (360)(420)(421)(440)
530	Intersections, Driveways, and Turnouts (247)(260)(263)(275)(276)(292)(316)(330)(334)(340)(360)(421)(440)
531	Sidewalks (104)(360)(420)(421)(440)(530)
540	Metal Beam Guard Fence
544	Guardrail End Treatments
618	Conduit (400)(445)(476)(622)
620	Electrical Conductors
624	Ground Boxes (421)(440)
628	Electrical Services (441)(445)(449)(618)(620)(627)(656)
644	Small Roadside Sign Supports and Assemblies (421)(440)(441)(442)(445)(634)(636)(643)(656)
666	Reflectorized Pavement Markings (316)(318)(662)(677)(678)
672	Raised Pavement Markers (677)(678)
680	Installation of Highway Traffic Signals (610)(625)(627)(634)(636)(656)
681	Temporary Traffic Signals
682	Vehicle and Pedestrian Signal Heads
684	Traffic Signal Cables
686	Traffic Signal Pole Assemblies (Steel) (421)(441)(442)(445)(449)
687	Pedestal Pole Assemblies (Steel) (445)(449)(656)
688	Pedestrian and Vehicle Detectors

**SPECIAL PROVISIONS: SPECIAL PROVISIONS WILL GOVERN AND TAKE
PRECEDENCE OVER THE SPECIFICATIONS ENUMERATED HEREON
WHATEVER IN CONFLICT WITH**

Required Contract Provisions	FEDERAL-AID CONSTRUCTION CONTRACTS FHWA-1273 – Revised October 23, 2023
Required Contract Provisions	Wage Rates
Required Contract Provisions	Contractor Certifications
Required Contract Provisions	Child Support Statement
Required Contract Provisions	Prohibition on certain telecommunications equipment or services

Special Provision	000-001L: Nondiscrimination
Special Provision	000-002L: Certification of nondiscrimination in employment
Special Provision	000-007L: Cargo Preference Act requirements in federal aid contracts
Special Provision	000-018L: Schedule of liquidated damages
Special Provision	000-022L: Disadvantaged business enterprise in federal-aid contracts
Special Provision	006-001L: Control of materials
Special Provision	506-001L: Temporary erosion, sedimentation, and environmental controls

SPECIAL SPECIFICATIONS - TxDOT

SS3005	Spray Applied Underseal Membrane
SS3007	Bonding Course
SS6005	Networking Intelligent Transportation System (ITS) Communications Cable
SS6008	Radar Vehicle Detection System for Signalized Intersection Control
SS6009	ITS System Integration
SS6014	Intelligent Transportation System (ITS) Radio
SS6018	Digital Closed-Circuit Television (CCTV) Field Equipment

SPECIAL SPECIFICATIONS - CITY OF LAREDO

102	Excavation and Backfill for Utilities
104	PVC Pipe
106	Ductile Iron Pipe
110	Water Valves
116	Hydrostatic Tests for Pressure Mains
120	Concrete Encasement, cradles, saddles and collars
128	Disposal of Materials
130	DI Fittings
132	Pipe and Joint Restraints
134	Flowable Backfill
136	Cement Stabilized Backfill

Items 1L–9L

Local Government General Requirements and Covenants

Introduction

Local Government General Requirements

For all projects with State or Federal funds, and/or all projects on the State Highway System regardless of funding source, a Local Government must either adopt the latest TxDOT Standard Specifications, Special Specifications, and required Special Provisions or request TxDOT written approval of alternate, equivalent specifications. TxDOT's *"2024 Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges"* are the latest TxDOT Standard Specifications. These "General Requirements" along with additional requirements specified by the particular local government, are intended as a template for Items 1-10 in TxDOT's Standard Specifications on projects let by a local government that is on the State Highway System or includes reimbursement to the local government using FHWA or TxDOT funds.

This document is intended to be used as a template that allows local governments to modify Items 1-10 to meet their particular needs while assuring that all local, state, and federal statutory requirements are addressed. As this document modifies a TxDOT publication, there may be a question about terminology. In general, the "Owner" or the "Engineer" references the local government or its representatives (Consulting Engineers, etc.). Reference to "Department" or "Engineer" in the construction and maintenance specifications refers to the local government, except when it is referencing a TxDOT specification, manual, material specification, Material Producers List or test method.

Foreword

OUTLINE OF SPECIFICATIONS

Each specification is outlined by articles and sections. The basic articles required for a specification are:

1. DESCRIPTION
2. MATERIALS
3. EQUIPMENT
4. CONSTRUCTION OR WORK METHODS
5. MEASUREMENT
6. PAYMENT

Some articles are not used in every item. Measurement and Payment articles are combined when the work described is subsidiary to bid items of the Contract.

HIERARCHY OF ORGANIZATIONAL ELEMENTS

Here “XXX” represents the item number. The hierarchy of organizational elements available below the item level is as follows:

XXX.1., Article
XXX.1.1., Section
XXX.1.1.1., Section
XXX.1.1.1.1., Section
XXX.1.1.1.1.1., Section
XXX.1.1.1.1.1.1., Section

The term section is used for all breaks below the article.

Item 1L

Abbreviations and Definitions



1. APPLICABILITY

Wherever the following terms are used in these specifications or other Contract documents, the intent and meaning will be interpreted as shown below.

2. ABBREVIATIONS

AAR	Association of American Railroads
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ACPA	American Concrete Pipe Association
AI	Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ALSC	American Lumber Standard Committee, Inc.
AMPP	Association for Materials Protection and Performance
AMRL	AASHTO Materials Reference Laboratory
ANLA	American Nursery and Landscape Association
ANSI	American National Standards Institute
APA	The Engineered Wood Association
API	American Petroleum Institute
APWA	American Public Works Association
AREMA	American Railway Engineering and Maintenance-of-Way Association
ASBI	American Segmental Bridge Institute
ASCE	American Society of Civil Engineers
ASLA	American Society of Landscape Architects
ASME	American Society of Mechanical Engineers
ASNT	American Society for Nondestructive Testing
ASTM	American Society for Testing and Materials
AWC	American Wood Council
AWG	American Wire Gage
AWPA	American Wood Protection Association
AWPI	American Wood Preservers Institute
AWS	American Welding Society
AWWA	American Water Works Association
BMP	Best Management Practices
CFR	Code of Federal Regulations
CMP	Corrugated Metal Pipe
COE	U.S. Army Corps of Engineers
CRSI	Concrete Reinforcing Steel Institute
DBE	Disadvantaged Business Enterprise
DMS	Departmental Materials Specification
EIA	Electronic Industries Alliance
EPA	U.S. Environmental Protection Agency
FHWA	Federal Highway Administration, U.S. Department of Transportation
FSS	Federal Specifications and Standards (General Services Administration)
GSA	General Services Administration
HUB	Historically Underutilized Business
ICEA	Insulated Cable Engineers Association

IEEE	Institute of Electrical and Electronics Engineers
IESNA	Illuminating Engineering Society of North America
IMSA	International Municipal Signal Association
ISO	International Organization for Standardization
ITE	Institute of Transportation Engineers
ITS	Intelligent Transportation System
LG	Local Government
LRFD	Load and Resistance Factor Design
MASH	Manual for Assessing Safety Hardware
MPL	Material Producer List
NCHRP	National Cooperative Highway Research Program
NCR	Nonconformance Report
NEC	National Electrical Code (Published by NFPA)
NEMA	National Electrical Manufacturers Association
NEPA	National Environmental Policy Act
NESC	National Electrical Safety Code
NFPA	National Fire Protection Association
NIST	National Institute of Standards and Technology
NPCA	National Precast Concrete Association
NRM	Nonhazardous Recyclable Material
NRMCA	National Ready Mixed Concrete Association
NSBA	National Steel Bridge Alliance
OSHA	Occupational Safety and Health Administration, U.S. Department of Labor
PCA	Portland Cement Association
PCI	Precast/Prestressed Concrete Institute
PPI	Plastics Pipe Institute
PS&E	Plans, Specifications, and Estimates
PSL	Project Specific Location
PTI	Post-Tension Institute
QA	Quality Assurance
QC	Quality Control
RCP	Reinforced Concrete Pipe
RPLS	Registered Public Land Surveyor
RRC	Railroad Commission of Texas
SBE	Small Business Enterprise
SFPA	Southern Forest Products Association
SI	International System of Units
SPIB	Southern Pine Inspection Bureau
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TDLR	Texas Department of Licensing and Regulation
TMUTCD	Texas Manual on Uniform Traffic Control Devices
UL	Underwriters Laboratory, Inc.
USC	United States Code
WRI	Wire Reinforcement Institute
WWPA	Western Wood Products Association

3. DEFINITIONS

- 3.1. **Abrasive Blasting.** Spraying blasts of pressurized air combined with abrasive media.
- 3.2. **Actual Cost.** Contractor's actual cost to provide labor, material, equipment, and project overhead necessary for the work.
- 3.3. **Addendum.** Change in proposal forms developed between advertising and bid submittal deadline.

- 3.4. **Additive Alternate.** A bid item contained in a proposal that is not a regular item or a replacement alternate bid item. The additive alternate item(s) include work that may be added to the base bid at the time of letting.
- 3.5. **Advertisement.** The public announcement required by law inviting bids for work to be performed or materials to be furnished.
- 3.6. **Affiliates.** Two or more Bidders are affiliated if they share common officers, directors, or stockholders; a family member of an officer, director, or stockholder of one Bidder serves in a similar capacity in another of the Bidders; an individual who has an interest in, or controls a part of, one Bidder either directly or indirectly also has an interest in, or controls a part of, another of the Bidders; the Bidders are so closely connected or associated that one of the Bidders, either directly or indirectly, controls or has the power to control another Bidder; one Bidder controls or has the power to control another Bidder; or the Bidders are closely allied through an established course of dealings, including, but not limited to, the lending of financial assistance. Refer to 43 TAC § 9.12(g), "Affiliated Entities."
- 3.7. **Air Blasting.** Spraying blasts of pressurized air free of oil and moisture.
- 3.8. **Air Temperature.** The temperature measured in degrees Fahrenheit (°F) in the shade, not in the direct rays of the sun, and away from artificial heat.
- 3.9. **Anticipated Profit.** Profit for work not performed.
- 3.10. **Apparent Low Bidder.** The Bidder determined to have the numerically lowest total bid as a result of the tabulation of bids by the Owner.
- 3.11. **Architect of Record.** A person registered as an architect or licensed as a landscape architect, in conformance with State law, exercising overall responsibility for the design or a significant portion of the design and performing certain Contract administration responsibilities as described in the Contract; or a firm employed by the Owner to provide professional architectural services.
- 3.12. **Arterial Highway.** A highway used primarily for through traffic and usually on a continuous route.
- 3.13. **Available Bidding Capacity.** Not applicable to Locally Let projects.
- 3.14. **Award.** The Owner's acceptance of a Contractor's bid for a proposed Contract that authorizes the Owner to enter into a Contract.
- 3.15. **Bid.** The offer from the Bidder for performing the work described in the proposal.
- 3.16. **Bid Bond.** The security executed by the Contractor and the Surety furnished to the Owner to guarantee payment of liquidated damages if the Contractor fails to enter into an awarded Contract.
- 3.17. **Bid Error.** A mathematical mistake made by a Bidder in the unit price entered into the proposal.
- 3.18. **Bidder.** An individual, partnership, limited liability company, corporation, or joint venture submitting a bid for a proposed Contract.
- 3.19. **Bidders Questionnaire.** A prequalification form that reflects detailed equipment and experience data but waives audited financial data.
- 3.20. **Bidding Capacity.** Not applicable to Locally Let projects.
- 3.21. **Blast Cleaning.** Using one of the blasting methods including, but not limited to water blasting, low-pressure water blasting, high-pressure water blasting, abrasive blasting, water-abrasive blasting, shot blasting, slurry blasting, water -injected abrasive blasting, and brush blasting.

- 3.22. **Bridge.** A structure, including supports, erected over a depression or an obstruction (e.g., water, a highway, or a railway) with a roadway or track for carrying traffic or other moving loads, and having an opening measured along the center of the roadway of more than 20 ft. between faces of abutments, spring lines of arches, or extreme ends of the openings for multiple box culverts.
- 3.23. **Brush Blasting.** Sweeping lightly with an abrasive blast to remove loose material.
- 3.24. **Building Contract.** Not applicable to Locally Let projects.
- 3.25. **Callout Work.** Contracts, or work items in Contracts, that require a Contractor's response on an as-needed basis (e.g., see Item 351, "Flexible Pavement Structure Repair").
- 3.26. **Certificate of Insurance.** A form approved by the Owner covering insurance requirements stated in the Contract.
- 3.27. **Change Order.** Written order to the Contractor detailing changes to the specified work, item quantities, or any other modification to the Contract.
- 3.28. **City.** The City of Laredo, Texas, a home-rule, Texas Municipal Corporation located in Webb County and identified as "City" in the Contract and these General Conditions, is referred throughout the Contract Documents as if singular in number. Whenever the term "City" is found in this Contract or the Contract Documents, such term shall include City's agents, elected officials, employees, officers, directors, volunteers, representatives, successors and assigns.
- 3.29. **City Council.** The duly elected members of the council of the City of Laredo, Texas.
- 3.30. **Commission.** The Texas Transportation Commission or authorized representative.
- 3.31. **Concrete Construction Joint.** A joint formed by placing plastic concrete in direct contact with concrete that has attained its initial set.
- 3.32. **Concrete Repair Manual.** TxDOT manual specifying methods and procedures for concrete repair as an extension of the standard specifications.
- 3.33. **ConcreteWorks®.** TxDOT-owned software for concrete heat analysis. Software is available on the TxDOT's website.
- 3.34. **Confidential Questionnaire.** A prequalification form that reflects detailed financial and experience data.
- 3.35. **Construction Contract.** A Contract entered under state law for the construction, reconstruction, repair, or maintenance of a segment of the Owner's or State transportation highway system.
- 3.36. **Consultant.** The licensed professional engineer or engineering firm, or the architect or architectural firm, registered in the State of Texas and under Contract to the Owner to perform professional services. The consultant may be the Engineer or architect of record or may provide services through and be subcontracted to the Engineer or architect of record.
- 3.37. **Contract.** The agreement between the Owner and the Contractor establishing the obligations of the parties for furnishing of materials and performance of the work prescribed in the Contract documents.
- 3.38. **Contract Documents.** Elements of the Contract including, but not limited to, the plans, specifications incorporated by reference, special provisions, special specifications, Contract bonds, change orders, and supplemental agreements.
- 3.39. **Contract Time.** The number of working days specified for completion of the work, including authorized additional working days.

- 3.40. **Contractor.** The individual, partnership, limited liability company, corporation, or joint venture and all principals and representatives with which the Contract is made by the Owner.
- 3.41. **Control of Access.** The condition in which the right to access of owners or occupants of abutting land or other persons in connection with a highway is fully or partially controlled by public authority.
- 3.42. **Control Point.** An established point shown on the plans to provide vertical and horizontal references for geometric control for construction.
- 3.43. **Controlled Access Highway.** Any highway to or from which access is denied or controlled, in whole or in part, from or to abutting land or intersecting streets, roads, highways, alleys, or other public or private ways.
- 3.44. **Cross-Sections.** Graphic representations of the original ground and the proposed facility, at right angles to the centerline or base line.
- 3.45. **Culvert.** Any buried structure providing an opening under a roadway for drainage or other purposes. Culverts may also be classified as bridges. (See Section 1.3.22., "Bridge.")
- 3.46. **Cycle.** The activity necessary for performing the specified work within the right of way project limits once.
- 3.47. **Daily Road-User Cost.** Damages based on the estimated daily cost of inconvenience to the traveling public resulting from the work.
- 3.48. **Debar (Debarment).** Disqualification of an entity from bidding on or entering into a Contract with the Owner, from participating as a subcontractor under a Contract with the Owner, and from participating as a supplier of materials or equipment to be used under a Contract with the Owner.
- 3.49. **Department.** The Texas Department of Transportation (TxDOT).
- 3.50. **Departmental Materials Specifications.** Reference specifications for various materials published by the Materials and Tests Division.
- 3.51. **Detour.** A temporary traffic route around a closed portion of a road.
- 3.52. **Direct Traffic Culvert.** Concrete box culvert whose top slab is used as the final riding surface or is to have an overlay or other riding surface treatment.
- 3.53. **Disadvantaged Business Enterprise.** A for-profit small business certified through the Texas Unified Certification Program in accordance with 49 CFR Part 26, that is at least 51% owned by one or more socially and economically disadvantaged individuals, or in the case of a publicly owned business, in which at least 51% of the stock is owned by one or more socially and economically disadvantaged individuals, and whose management and daily business operations are controlled by one or more of the individuals who own it.
- 3.54. **Divided Highway.** A highway with separate roadways intended to move traffic in opposite directions.
- 3.55. **Easement.** A real property right acquired by one party to use land belonging to another party for a specified purpose.
- 3.56. **Electronic Vault.** The Owner's bidding system where electronic bids are stored before bid opening.
- 3.57. **Engineer.** The Chief Engineer of the Owner or the authorized representative of the Chief Engineer.
- 3.58. **Equipment Watch.** Publication containing equipment rental rates.
- 3.59. **Escalation Ladder.** A process to determine issue resolution during the course of the Contract.

- 3.60. **Expressway.** A divided arterial highway for through traffic with full or partial control of access and generally with grade separations at intersections.
- 3.61. **Family Member.** A family member of an individual is the individual's parent, parent's spouse, stepparent, stepparent's spouse, sibling, sibling's spouse, spouse, child, child's spouse, spouse's child, spouse's child's spouse, grandchild, grandparent, uncle, uncle's spouse, aunt, aunt's spouse, first cousin, or first cousin's spouse. Refer to 43 TAC § 9.12(g), "Affiliated Entities."
- 3.62. **Force Account.** Payment for directed work based on the actual cost of labor, equipment, and materials furnished with markups for project overhead and profit.
- 3.63. **Freeway.** An expressway with full control of access.
- 3.64. **Frontage Road.** A local street or road auxiliary to and located along an arterial highway for service to abutting property and adjacent areas and for control of access (sometimes known as a service road, access road, or insulator road).
- 3.65. **Hazardous Materials or Waste.** Hazardous materials or waste include, but are not limited to, explosives, compressed gas, flammable liquids, flammable solids, combustible liquids, oxidizers, poisons, radioactive materials, corrosives, etiologic agents, and other material classified as hazardous by 40 CFR 261, or applicable state and federal regulations.
- 3.66. **High-Pressure Water Blasting.** Water blasting with pressures between 5,000 and 10,000 psi.
- 3.67. **Highway, Street, or Road.** General terms denoting a public way for purposes of and related to vehicular, pedestrian, and bicycle travel, including the entire area within the right of way including Intersections and Easements; all related structures, improvements, and appurtenances, including but not limited to the roadside and roadside facilities, drainage systems, signal systems, and other traffic in formation and control systems; or other structures or improvements that directly or indirectly serve public travel. Recommended usage in urban areas is highway or street, and in rural areas, highway or road.
- 3.68. **Historically Underutilized Business (HUB).** A corporation, sole proprietorship, partnership, or joint venture formed for the purpose of making a profit certified by the Texas Building and Procurement Commission, and 51% owned by one or more persons who are economically disadvantaged because of their identification as members of certain groups, including African Americans, Hispanic Americans, Asian-Pacific Americans, Native Americans, or women, and have a proportionate interest and demonstrate active participation in the control, operation, and management of the business' affairs. Individuals meeting the HUB definition are required to be residents of the State of Texas. Businesses that do not have their primary headquarters in the State of Texas are not eligible for HUB certification.
- 3.69. **In Writing.** Communication memorialized, including written or electronic documentation by email or letter only.
- 3.70. **Incentive and Disincentive Provisions.** An adjustment to the Contract price of a predetermined amount for each day the work is completed ahead of or behind the specified milestone, phase, or Contract completion dates. The amount of the incentive and disincentive is determined based on estimated costs for engineering, traffic control, delays to the motorists, and other items involved in the Contract.
- 3.71. **Independent Assurance Tests.** Tests used to evaluate the sampling and testing techniques and equipment used in the acceptance program. The tests are performed by the Owner and are not used for acceptance purposes.
- 3.72. **Inspector.** The person assigned by the Engineer to inspect for compliance with the Contract any or all parts of the work and the materials used.

- 3.73. **Intelligent Transportation System.** An integrated system that uses video and other electronic detection devices to monitor traffic flows.
- 3.74. **Intersection.** The general area where two or more highways, streets, or roads join or cross, including the roadway and roadside facilities for vehicular, pedestrian, and bicycle traffic movements within it.
- 3.75. **Island.** An area within a roadway from which vehicular traffic is intended to be excluded, together with any area at the approach occupied by protective deflecting or warning devices.
- 3.76. **Joint Venture.** Any combination of individuals, partnerships, limited liability companies, or corporations submitting a single bid proposal.
- 3.77. **Lane Rental.** A method to assess the Contractor daily or hourly rental fees for each lane, shoulder, or combination of lanes and shoulders taken out of service.
- 3.78. **Letting.** The receipt, opening, tabulation, and determination of the apparent low Bidder.
- 3.79. **Letting Official.** The employee empowered by the Owner to officially receive bids and close the receipt of bids at a letting.
- 3.80. **Licensed Professional Engineer.** A person who has been duly licensed by the Texas Board of Professional Engineers to engage in the practice of engineering in the State of Texas; also referred to as a Professional Engineer.
- 3.81. **Limits of Construction.** An area with established boundaries, identified within the highway right of way and easements, where the Contractor is permitted to perform the work.
- 3.82. **Local Street or Road.** A street or road primarily for access to residence, business, or other abutting property.
- 3.83. **Low-Pressure Water Blasting.** Water blasting with pressures between 3,000 and 5,000 psi.
- 3.84. **Major Item.** An item of work included in the Contract that has a total cost equal to or greater than 5% of the original Contract or \$100,000 whichever is less. A major item at the time of bid will remain a major item. An item not originally a major item does not become one through the course of the Contract.
- 3.85. **Material Producer List.** TxDOT-maintained list of approved products, materials, laboratories, service providers, manufacturers, and producers.
- 3.86. **Materially Unbalanced Bid.** A bid that generates a reasonable doubt that award to the Bidder submitting a mathematically unbalanced bid will result in the lowest ultimate cost to the Owner.
- 3.87. **Materials Contract.** Not applicable to Locally Let projects.
- 3.88. **Materials Supplier's Questionnaire.** A prequalification form that reflects basic information, such as company contact, signature authority, and other requirements, but waives financial, equipment, and experience data.
- 3.89. **Mathematically Unbalanced Bid.** A bid containing bid prices that do not reflect reasonable actual costs plus a reasonable proportionate share of the Bidder's anticipated profit, overhead costs, and other indirect costs.
- 3.90. **Median.** The portion of a divided highway separating the traffic lanes in opposite directions.
- 3.91. **Milestone Date.** The date that a specific portion of the work is to be completed before the completion date for all work under the Contract.

- 3.92. **Monolithic Concrete Placement.** The placement of plastic concrete in such manner and sequence to prevent a construction joint.
- 3.93. **National Holidays.** January 1, the last Monday in May, July 4, the first Monday in September, the fourth Thursday in November, December 24, and December 25.
- 3.94. **Nonhazardous Recyclable Material.** A material recovered or diverted from the nonhazardous waste stream for the purposes of reuse or recycling in the manufacture of products that may otherwise be produced using raw or virgin materials.
- 3.95. **Nonresident Bidder.** A Bidder whose principal place of business is not in Texas. This includes a Bidder whose ultimate parent company or majority owner does not have its principal place of business in Texas.
- 3.96. **Nonresponsive Proposal.** A proposal that does not meet the criteria for acceptance contained in the proposal form.
- 3.97. **Non-Site-Specific Contracts.** Contracts where a geographic region is specified for the work and work orders, with or without plans, detail the limits and work to be performed.
- 3.98. **Notification.** Either written or oral instruction to the Contractor. Voice mail is oral notification.
- 3.99. **Owner.** See **City**
- 3.100. **Pavement.** That part of the roadway with a constructed surface for the use of vehicular traffic.
- 3.101. **Pavement Structure.** Combination of surface course and base course placed on a subgrade to support the traffic load and distribute it to the roadbed.
- 3.101.1. **Base Course.** One or more layers of specified material thickness placed on a subgrade to support a surface course.
- 3.101.2. **Subgrade.** The top surface of a roadbed upon which the pavement structure, shoulders, and curbs are constructed.
- 3.101.3. **Subgrade Treatment.** Modifying or stabilizing material in the subgrade.
- 3.101.4. **Surface Course.** Pavement structure layers designed to accommodate the traffic load. The top layer resists skidding, traffic abrasion, and the disintegrating effects of climate and is sometimes called the wearing course.
- 3.102. **Payment Bond.** The security executed by the Contractor and the Surety, furnished to the Owner to guarantee payment of all legal debts of the Contractor pertaining to the Contract.
- 3.103. **Performance Bond.** The security executed by the Contractor and the Surety, furnished to the Owner to guarantee the completion of the work in accordance with the terms of the Contract.
- 3.104. **Plans.** The drawings approved by the Engineer, including true reproductions of the drawings that may show the location, character, dimensions, and details of the work and are a part of the Contract. Documents may include drawings or digital files.
- 3.105. **Power of Attorney for Surety Bonds.** An instrument under corporate seal appointing an attorney-in-fact to act on behalf of a Surety in signing bonds.
- 3.106. **Prequalification.** The process for determining a Contractor's eligibility to bid work.

- 3.107. **Prequalification Statement.** The forms on which required information is furnished concerning the Contractor's ability to perform and finance the work.
- 3.108. **Project-Specific Location.** A material source, plant, waste site, parking area, storage area, field office, staging area, haul road, or other similar location either outside the project limits or within the project limits but not specifically addressed in the Contract.
- 3.109. **Proposal.** The offer from the Bidder submitted on the prescribed form, including addenda issued, giving unit bid prices for performing the work described in the plans and specifications.
- 3.110. **Proposal Form.** The form printed and sent to the Bidder by the Owner or printed by the Bidder from the Owner's bidding system.
- 3.111. **Proposal Guaranty.** The security furnished by the Bidder as a guarantee that the Bidder will enter into a Contract if awarded the work.
- 3.112. **Quality Assurance (QA).** Sampling, testing, inspection, and other activities conducted by the Engineer to determine payment and make acceptance decisions.
- 3.113. **Quality Control (QC).** Sampling, testing, and other process control activities conducted by the Contractor to monitor production and placement operations.
- 3.114. **Ramp.** A section of highway for the primary purpose of making connections with other highways.
- 3.115. **Recurring Maintenance Work Contracts.** Contracts or work for which maintenance is needed at the same location on more than one occasion (e.g., mowing Contracts for which mowing cycles are requested on multiple occasions).
- 3.116. **Referee Tests.** Tests requested to resolve differences between Contractor and Engineer test results.
- 3.117. **Regular Item.** A bid item contained in a proposal and not designated as an additive alternate or replacement alternate bid item.
- 3.118. **Rental Rate Blue Book for Construction Equipment.** Publication containing equipment rental rates.
- 3.119. **Repair.** Performed under Transportation Code §223, Subchapter A for Highway Improvement Contracts and includes restoration of a Highway, Street, or Road by replacing or putting together, in whole or in part, what is torn, broken, or otherwise damaged. Repair denotes the process of restoring all or part of a Highway, Street, or Road that has been subjected to decay, waste, injury, partial destruction, erosion, dilapidation, degradation, etc.
- 3.120. **Replacement Alternate.** A bid item identified the proposal form that a Bidder may substitute for a specific regular item of work.
- 3.121. **Responsive Bid.** A proposal that meets all requirements of the proposal form for acceptance.
- 3.122. **Right of Way.** A general term denoting land or property devoted to transportation purposes.
- 3.123. **Roadbed.** The graded portion of a highway prepared as foundation for the pavement structure and shoulders. On divided highways, the depressed median type and the raised median type highways are considered to have two roadbeds. Highways with a flush median are considered to have one roadbed. Frontage roads are considered separate roadbeds.
- 3.124. **Road Master.** A railroad maintenance official in charge of a division of railway.

- 3.125. **Roadside.** The areas between the outside edges of the shoulders and the right of way boundaries. Unpaved median areas between inside shoulders of divided highways and areas within interchanges are included.
- 3.126. **Roadway.** The portion of the highway (including shoulders) used by the traveling public.
- 3.127. **Routine Maintenance Contract.** Not applicable to Locally Let projects.
- 3.128. **Sandblasting, Dry.** Spraying blasts of pressurized air combined with sand.
- 3.129. **Sandblasting, Wet.** Spraying blasts of pressurized water combined with sand.
- 3.130. **Shot Blasting.** Spraying blasts of pressurized air combined with metal shot.
- 3.131. **Shoulder.** That portion of the roadway contiguous with the traffic lanes for accommodation of stopped vehicles for emergency use or for lateral support of base and surface courses.
- 3.132. **Sidewalk.** Portion of the right of way constructed exclusively for pedestrian use.
- 3.133. **Slurry Blasting.** Spraying blasts of pressurized air combined with a mixture of water and abrasive media.
- 3.134. **Small Business Enterprise.** A firm (including affiliates) whose annual gross receipts do not exceed the U.S. Small Business Administration's size standards for 4 consecutive yr.
- 3.135. **Special Provisions.** Additions or revisions to these standard specifications or special specifications.
- 3.136. **Special Specifications.** Supplemental specifications applicable to the Contract not covered by these standard specifications.
- 3.137. **Specifications.** Directives or requirements issued or made pertaining to the method and manner of performing the work or to quantities and qualities of materials to be furnished under the Contract. References to DMSs, ASTM or AASHTO specifications imply the latest standard or tentative standard in effect on the date of the proposal. The Engineer will consider incorporation of subsequent changes to these documents in accordance with Item 4, "Scope of Work."
- 3.138. **State.** The State of Texas.
- 3.139. **State Holiday.** A holiday authorized by the State Legislature excluding optional State holidays and not listed in Section 1.3.91., "National Holidays." A list of State holidays can be found on the TxDOT's website.
- 3.140. **Station.** A unit of measurement consisting of 100 horizontal ft.
- 3.141. **Subcontract.** The agreement between the Contractor and subcontractor establishing the obligations of the parties for furnishing of materials and performance of the work prescribed in the Contract documents.
- 3.142. **Subcontractor.** An individual, partnership, limited liability company, corporation, or any combination thereof that the Contractor sublets, or proposes to sublet, any portion of a Contract, excluding a material supplier, a hauling firm hauling only from a commercial source to the project, a truck owner-operator, a wholly owned subsidiary, or specialty-type businesses such as security companies and rental companies.
- 3.143. **Subsidiary.** Materials, labor, or other elements that because of their nature or quantity have not been identified as a separate item and are included within the items on which they necessarily depend.
- 3.144. **Substantial Completion of Work.** The date (day) when all project work requiring lane or shoulder closures or obstructions is completed, and traffic is following the lane arrangement as shown on the plans for the finished roadway; all pavement construction and surfacing are complete; and traffic control devices and pavement markings are in their final position, unless otherwise shown on the plans. The Engineer may make

an exception for permanent pavement markings provided the lack of markings does not cause a disruption to traffic flow or an unsafe condition for the traveling public, and work zone pavement markings are in place.

- 3.145. **Substructure.** The part of the structure below the bridge seats but not including bearings, drilled shafts, or piling. Parapets, back walls, wing walls of the abutments, and drainage structures are considered parts of the substructure.
- 3.146. **Superintendent.** The representative of the Contractor who is available at all times and able to receive instructions from the Engineer or authorized Owner representatives and to act for the Contractor.
- 3.147. **Superstructure.** The part of the structure above the bridge seats or above the springing lines of arches and including the bearings. Flatwork construction may be considered superstructure.
- 3.148. **Supplemental Agreement.** Written agreement entered into between the Contractor and the Owner and approved by the Surety, covering alterations and changes in the Contract. A supplemental agreement is used by the Owner whenever the modifications include assignment of the Contract from one entity to another or other cases as desired by the Owner.
- 3.149. **Surety.** The corporate body or bodies authorized to do business in Texas bound with and for the Contractor for the faithful performance of the work covered by the Contract and for the payment for all labor and material supplied in the prosecution of the work.
- 3.150. **Surplus Materials.** Any debris or material related to the Contract not incorporated into the work.
- 3.151. **Suspension.** Action taken by the Owner or federal government pursuant to regulation that prohibits a person or company from entering into a Contract, or from participating as a subcontractor, or supplier of materials or equipment used in a highway improvement Contract as defined in Transportation Code, Chapter 223, Subchapter A.
- 3.152. **Traffic Lane.** The strip of roadway intended to accommodate the forward movement of a single line of vehicles.
- 3.153. **Traveled Way.** The portion of the roadway for the movement of vehicles, exclusive of shoulders and auxiliary lanes.
- 3.154. **Truck Owner-Operator.** An individual who owns and operates one truck for hire.
- 3.155. **UT-Bridge.** TxDOT-owned software for steel girder erection. Software is available on the TxDOT's website.
- 3.156. **UT-Lift.** TxDOT-owned software for steel girder erection. Software is available on the TxDOT's website.
- 3.157. **Utility.** Privately, publicly, or cooperatively owned lines, facilities, and systems for producing, transmitting, or distributing communications, power, heat, gas, oil, water, waste, or stormwater that are not connected with the highway drainage, signal systems, or other products that directly or indirectly serve the public; the utility company.
- 3.158. **Verification Tests.** Tests used to verify accuracy of QC and QA and mixture design testing.
- 3.159. **Water-Abrasive Blasting.** Spraying blasts of pressurized water combined with abrasive media.
- 3.160. **Water Blasting.** Spraying blasts of pressurized water of at least 3,000 psi.
- 3.161. **Water-Injected Abrasive Blasting.** Abrasive blasting with water injected into the abrasive and air stream at the nozzle.
- 3.162. **Wholly Owned Subsidiary.** A legal entity owned entirely by the Contractor or subcontractor.

- 3.163. **Work.** The furnishing of all labor, materials, equipment, and incidentals necessary for the successful completion of the Contract.
- 3.164. **Work Order.** Written notice to the Contractor to begin the work. The work order may include the date when work and time charges will begin, the allowable number of working days, and plan sheets providing details specific to a location or to an item of work for non-site-specific work. A work order is part of the Contract.
- 3.165. **Written Notice.** Written notice is considered to have been duly given if delivered in person to the individual or member to whom it is intended or if sent by regular, registered, or certified mail and delivered to the last known business address; sent by facsimile to the last known phone number; or sent by email to the last known address. The date of the letter will serve as the beginning day of notice. Unclaimed mail or failure to provide current contact information will not be considered a failure to provide written notice.
- 3.166. **Other Definitions.** As used in the Contract Documents, the following additional terms have the following meanings:
- “provide” means to furnish, install, fabricate, deliver and erect, including all services, materials, appurtenances and all other expenses necessary to complete in place and ready for operation or use;
 - “shall” means the mandatory action of the party of which reference is being made;
 - “as required” means as prescribed in the Contract Documents; and
 - “as necessary” means all action essential or needed to complete the work in accordance with the Contract Documents and applicable laws, ordinances, construction codes and regulations.
 - “party” shall refer to City or Contractor individually
 - “parties” shall refer to City and Contractor collectively

Item 2L

Instructions to Bidders



1. INTRODUCTION

Instructions to the Contractor in these specifications are generally written in active voice, imperative mood. The subject of imperative sentences is understood to be "the Contractor." The Owner's responsibilities are generally written in passive voice, indicative mood. Phrases such as "as approved," "unless otherwise approved," "upon approval," "as directed," "as verified," "as ordered," and "as determined" refer to actions of the Engineer unless otherwise stated, and it is understood that the directions, orders, or instructions to which they relate are within the limitations of and authorized by the Contract.

2. ELIGIBILITY OF BIDDERS

Utilize the INFORMATION FROM BIDDERS contained in the PROPSAL at the time of bid opening. Comply with all technical prequalification requirements in the proposal.

- 2.1. **Bidder's Questionnaire (BQ).** Bidders prequalified with a BQ (aka INFORMATION FROM BIDDERS) are only eligible to bid on projects identified as being waived from the requirements of "Confidential Questionnaire (CQ)." Submit the BQ contained within the PROPOSAL for approval.

3. ISSUING PROPOSAL FORMS

The Owner will issue a proposal form to a prequalified Bidder if the Engineer's estimate is within that Bidder's available bidding capacity. Request a proposal form electronically from the Owner's website. A proposal form printed directly from the Owner's website is for informational purposes only and will not be accepted as an official proposal form. In the case of a joint venture (JV), all JV participants must be prequalified. An equally divided portion of the Engineer's estimate must be within each participant's available bidding capacity.

The Owner will not issue a proposal form if one or more of the following apply:

- the Bidder is suspended or debarred by the Commission or TxDOT,
- the Bidder has not fulfilled the requirements for prequalification,
- the Bidder does not have the available bidding capacity,
- the Bidder is prohibited from rebidding a specific proposal form due to a bid error on the original proposal form,
- the Bidder failed to enter into a Contract on the original award,
- the Bidder was defaulted or terminated on the original Contract, unless the Owner terminated in the best interest of the State or the public,
- the Bidder or a subsidiary or affiliate of the Bidder has received compensation from the Owner to participate in the preparation of the plans or specifications on which the bid or Contract is based,
- the Bidder is ineligible to bid on any proposed Contract in accordance with Article 7L.15., "Responsibility for Damage Claims,"
- the Bidder failed to attend a mandatory pre-bid conference,
- the Bidder or affiliate of the Bidder that was originally determined as the apparent low Bidder on a project but was deemed nonresponsive for failure to submit a DBE commitment as specified in Article 2L.14., "Disadvantaged Business Enterprise (DBE)," is prohibited from rebidding that specific project, or
- the Bidder or affiliate of the Bidder that was originally determined as the apparent low Bidder on a project but was deemed nonresponsive for failure to register or participate in the Department of

Homeland Security (DHS) E-Verify system as specified in Article 2.15., "Department of Homeland Security (DHS) E-Verify System," is prohibited from rebidding that specific project.

4. INTERPRETING ESTIMATED QUANTITIES

The quantities listed on the proposal form are approximate and will be used for the comparison of bids. Payments will be made for the work performed in accordance with the Contract.

5. EXAMINING DOCUMENTS AND WORK LOCATIONS

Examine the proposal form, plans, specifications, and specified work locations before submitting a bid for the work. Submitting a bid will be considered evidence that the Bidder has performed this examination. Borings, soil profiles, water elevations, and underground utilities shown on the plans were obtained for the Owner's use in the preparation of the plans. This information is provided for the Bidder's information only, and the Owner makes no representation as to the accuracy of the data. Be aware of the difficulty of accurately classifying all material encountered in making foundation investigations, the possible erosion of stream channels and banks after survey data have been obtained, and the unreliability of water elevations other than for the date recorded.

Oral explanations, instructions, or consideration for Contractor-proposed changes on the proposal form given during the bidding process are not binding. Only requirements included on the proposal form, associated specifications, plans, and Owner-issued addenda are binding. Request explanations of documents in adequate time to allow the Owner to reply before the bid opening.

Immediately notify the Owner of any error, omission, or ambiguity discovered in any part of the proposal form and Contract documents. The Owner will issue addenda when appropriate.

6. PREPARING THE BID

Prepare the bid on the proposal form furnished by the Owner. Informational proposal forms printed from the Owner's website will not be accepted.

Specify a unit price in dollars and cents for each regular item and additive alternate item, or replacement alternate item for which an estimated quantity is given.

When "Working Days" is an item, submit the number of working days to be used to complete the Contract or phases of the Contract shown on the plans.

The Owner will not accept an incomplete bid. A bid that has one or more of the deficiencies listed below is considered incomplete:

- certifications were not acknowledged,
- a regular item or the additive alternate item is left blank,
- a regular item and the corresponding replacement alternate item are left blank,
- the proposal form submitted had the incorrect number of items,
- the Bidder did not acknowledge all addenda, or
- additionally, for printed bids:
 - the blank spaces for each item as required on the bid form are not filled in by writing in words in ink,
 - the bid was not signed in ink in the complete and correct name of the bidder making the bid, and signed by the person or persons authorized to bind the bidder, or
 - unit prices were not stated in dollars and cents for each bid item listed on the bid form, except in the case of a regular bid item that has an alternate bid item.

7. NONRESPONSIVE BID

The Owner will not accept a nonresponsive bid. A bid that has one or more of the deficiencies listed below is considered nonresponsive:

- the bid was not in the hands of the Letting Official at the time and location specified in the advertisement,
- a proposal form was submitted for the same project by a Bidder or Bidders and one or more of its partners or affiliates, the Bidder was not authorized to receive a proposal form under Article 2L.3., "Issuing Proposal Forms,"
- the Bidder failed to acknowledge receipt of all addenda issued,
- the proposal form was signed by a person who was not authorized to bind the Bidder or Bidders,
- the proposal guaranty did not comply with the requirements contained in this Item,
- the bid was in a form other than the official proposal form issued by the Owner,
- the Bidder modified the bid in a manner that altered the conditions or requirements for work as stated in the proposal form,
- the Bidder bid more than the maximum or less than the minimum number of allowable working days shown on the plans when working days was an item,
- a typed proposal form does not contain the information in the format shown on the "Example of Bid Prices Submitted by Computer Printout" on the proposal form,
- the Bidder did not meet the requirements of the technical qualification,
- the Bidder failed to submit a DBE commitment as specified in Article 2L.14., "Disadvantaged Business Enterprise (DBE)," or
- the Bidder failed to participate in the DHS E-Verify system as specified in Article 2L.15., "Department of Homeland Security (DHS) E-Verify System."
- The bidder is not prequalified by TxDOT

8. ELECTRONIC BID

The Bidder is responsible for taking the appropriate measures to submit a bid. These measures include, but are not limited to acquiring hardware, software, and Internet connectivity needed for submitting a bid via the Owner's bidding system.

- 8.1. **Proposal Form.** Use the electronic proposal form in the Owner's bidding system. When regular bid items have corresponding replacement alternate items, select the bid item or group of items to be used for the bid tabulation. Acknowledge all addenda listed in the Owner's bidding system.

The electronic proposal form does not contain the special provisions, special specifications, general notes, and other Contract documents. These documents are included by reference.

- 8.2. **Proposal Guaranty.** Provide a proposal guaranty in the amount indicated on the proposal form. Use an electronic bid bond. Guaranty checks or printed bid bonds will not be accepted.

For a JV, the bond must be in the name of all JV participants. Enter the bond authorization code into the Owner's bidding system.

It is the Bidder's responsibility to ensure the electronic bid bond is issued in the name or Owner vendor identification numbers of the Bidder or Bidders.

- 8.3. **Submittal of Bid.** Submit the bid to the vault using the Owner's bidding system.

- 8.4. **Revising the Proposal Form.** Make desired changes in the Owner's bidding system up until the time and date set for the opening of bids. The last bid submitted to the vault will be used for tabulation purposes.

- 8.5. **Withdrawing a Bid.** Submit an electronic or written request to withdraw a bid before the time and date set for the opening. The Owner will not accept oral requests. An electronic request must be made using the Owner's bidding system.

If a bidder is unable to withdraw an electronic bid using the Owner's bidding system, a written request may be submitted. A written request must be signed and submitted to the Letting Official conducting the letting, with proof of identification. The request must be made by a person authorized to bind the Bidder or Bidders. In the case of a JV, the Owner will accept a request from any person authorized to bind a party to the JV. The Owner may require written delegation of authority to withdraw a bid when the individual sent to withdraw the bid is not authorized to bind the Bidder or Bidders.

9. PRINTED BID

- 9.1. **Proposal Form.** Mark all entries in ink. As an alternative to hand writing the unit prices on the proposal form, submit a typed proposal form. A typed proposal form must contain the information in the format shown on the "Example of Bid Prices Submitted by Computer Printout" on the proposal form.

When regular bid items have corresponding replacement alternate items, select the bid item or group of items to be used for the bid tabulation. Acknowledge all addenda by checking the appropriate box on the addendum acknowledgement page. Provide the complete and correct name of the Bidder submitting the bid. A person authorized to bind the Bidder must sign the proposal form. In the case of a JV, provide the complete and correct name of all Bidders submitting the bid. In the case of a JV, the person signing the proposal form must be authorized to bind all JV participants.

- 9.2. **Proposal Guaranty.** Provide a proposal guaranty in the amount indicated on the proposal form. Use either a guaranty check or a printed bid bond. An electronic bid bond may be used as the guaranty. Ensure the electronic bid bond meets the requirements of Section 2L.8.2., "Proposal Guaranty," and submit the electronic bid bond with the printed bid.

- 9.2.1. **Guaranty Check.** When used, make the check payable to the Owner. The check must be a cashier's check, money order, or teller's check drawn by or on a state or national bank, or a state or federally chartered credit union (collectively referred to as "bank"). The check must be dated on or before the date of the bid opening. Postdated checks will not be accepted. The type of check or money order must be indicated on the face of the instrument, except in the case of a teller's check, and the instrument must be no more than 90 days old. A check must be made payable at or through the institution issuing the instrument, be drawn by a bank and on a bank, or be payable at or through a bank. The Owner will not accept personal checks, certified checks, or other types of money orders.

- 9.2.2. **Bid Bond.** When a bond is used, use the bid bond form provided by the Owner. Submit the bid bond in the amount specified with the powers of attorney dated and attached. The bond must be dated on or before the date of the bid opening, bear the impressed seal of the Surety, and be signed by the Bidder or Bidders and an authorized individual of the Surety. As an alternative for JV Bidders, each Bidder may submit a separate bid bond completed as outlined in this Section. Bid bonds will only be accepted from Sureties authorized to execute a bond under and in accordance with state law.

- 9.3. **Submittal of Bid.** Place the completed proposal form and the proposal guaranty in a sealed envelope marked to indicate the contents.

When submitting by mail or delivery service, place the envelope in another sealed envelope and address as indicated in the official advertisement. It is the Bidder's responsibility to ensure that the sealed bid arrives at the location described on or before the time and date set for the bid opening. To be accepted, the bid must be in the hands of the Letting Official by that time of opening regardless of the method chosen for delivery.

- 9.4. **Revising the Proposal Form.** Make desired changes to the proposal form in ink, initial each change made, and submit the proposal to the Letting Official. Correction fluid or tape will be considered a change to the bid and requires the initials of the Bidder. The Owner will not revise a bid on behalf of a Bidder.

- 9.5. **Withdrawing a Bid.** Submit to the Letting Official conducting the letting a written request to withdraw a bid before the time and date set for the opening. The Owner will not accept oral requests. A written request must be signed and submitted to the Letting Official conducting the letting, with proof of identification. The request must be made by a person authorized to bind the Bidder or Bidders. In the case of a JV, the Owner will accept a request from any person authorized to bind a party to the JV. The Owner may require written delegation of authority to withdraw a bid when the individual sent to withdraw the bid is not authorized to bind the Bidder or Bidders.

10. OPENING AND READING OF BIDS

At the time, date, and location specified in the official advertisement, the Letting Official will publicly open and read bids.

11. TABULATING BIDS

- 11.1. **Official Total Bid Amount.** The Owner will sum the products of the quantities and the unit prices bid on the proposal form to determine the official total bid amount, except as provided in Section 2L.11.5., "Consideration of Unit Prices." The official total bid amount is the basis for determining the apparent low Bidder. The total bid amounts will be compared and the results made public.
- 11.2. **Consideration of Bid Format.** When a Bidder submits both an electronic bid and a printed bid that are responsive, the unit bid prices in the electronic bid will be used to determine the total bid amount. If the electronic bid is incomplete or nonresponsive, the printed bid will be used in the tabulation of the total bid amount.
- If a Bidder submits two or more printed bids, all responsive bids will be tabulated. The bid with the lowest tabulation will be used to determine the total bid amount.
- 11.3. **Rounding of Unit Prices.** The Owner will round off all unit bids involving fractional parts of a cent to the nearest one-tenth cent (\$0.001) in determining the amount of the bid as well as computing the amount due for payment of each item under the Contract. For rounding purposes, entries that contain five-hundredths of a cent (\$0.0005) or more will be rounded up to the next highest tenth of a cent, while entries that contain less than five-hundredths of a cent will be rounded down to the next lowest tenth of a cent and in accordance with Section 2L.11.5., "Consideration of Unit Prices." Bids less than one-tenth of a cent (\$0.001) will be rounded to one-tenth of a cent (\$0.001). When credit items are included (negative unit prices), rounding is performed on the absolute value.
- 11.4. **Interpretation of Unit Prices.** The Owner will make a documented determination of the unit bid price if a unit bid price is illegible or conflicting in the case of replacement alternate items. The Owner's determination will be final.
- 11.5. **Consideration of Unit Prices.** Unit bid price entries such as no dollars and no cents, zero dollars and zero cents, or numerical entries of less than \$0.001 will be tabulated as one-tenth of a cent (\$0.001). Proposals in which unit bid prices have been left blank are incomplete and nonresponsive.
- 11.5.1. **Alternate Items.** If a proposal has a regular and corresponding alternate item or group of items, the proposal will be considered complete if:
- the regular item or group of regular items has unit prices entered,
 - the alternate item or group of alternate items has unit prices entered, or
 - both regular item or group of regular items and alternate item or group of alternate items have unit prices entered. The Owner will use the price bid for the regular or the alternate item, or group of items, that will result in the lowest cost to the State.

The bid will be considered incomplete and nonresponsive if:

- a regular item or group of regular items is left blank, or

- a corresponding alternate item or group of alternate items is left blank.

11.5.2. **Additive Alternate Items.** The Owner will sum the products of the quantities and the unit prices bid for the regular items on the proposal form to determine the total bid amount for the base bid. The official total bid amount will be determined by the summation of the base bid plus a predetermined order of additive alternate items, not to exceed the Owner's budgeted amount for the Contract. An estimate of the budgeted amount may be shown on the plans.

The Contract will identify the base bid work and additive alternate work to be performed. The Owner makes no guarantee that the additive alternate work will be required.

11.5.3. **A + B Bidding.** The official total bid amount will be determined by the summation of the Contract amount and the time element. The Owner will use the following formula to make the calculation:

$$A + B1 + B2 + BX + \dots + BT$$

The Contract amount, equal to A in the formula, is determined by the summation of the products of the approximate quantities shown in the proposal and the unit bid prices bid, and the time element, equal to B1, B2, BX (when phases are included as bid components), and BT (substantial completion of the project when included as a bid component), of the bid is determined by multiplying the number of working days bid to substantially complete the project, or phases, by the daily road-user cost (RUC) shown on the plans. When partial days are bid, they will be rounded up to the nearest whole day.

The formula above determines the low Bidder and establishes the Contract time or time for specific phases of the Contract.

11.5.4. **Rubber Additives.** For proposed Contracts without federal funds, if an alternate item for "Hot Asphalt-Rubber Surface Treatments" or "Hot-Mix Asphalt Concrete Pavement" that contains ground tire rubber is shown on the proposal form and the Bidder bids that alternate item, the amounts bid for "Hot Asphalt-Rubber" and "Aggregate" or "Hot-Mix Asphalt Concrete" will be reduced to 85% of the amounts actually bid. This reduction will only be used for the purposes of determining the lowest Bidder. To qualify, the ground tire rubber used must be produced from scrap tire ground in a facility in Texas. Payment for "Hot Asphalt-Rubber" and "Aggregate" or "Hot-Mix Asphalt Concrete" will be at the actual unit prices bid.

11.5.5. **Home State Bidding Preference.** For the purpose of determining the apparent low Bidder on proposed Contracts without federal funds, the Owner will select the option that results in the greatest bidding preference to the resident Bidder.

11.5.5.1. **Reverse Application of Non-Resident Bidder's Home State Bidding Preference.** The total bid amount will be based upon the reverse application of the non-resident Bidder's home state bidding preference, if any. This will also apply to another state's preference for a Bidder that offers materials grown, produced, processed, or manufactured in that state.

Any reverse application of the home state bidding preference will be the greater of the following:

- the amount by which a resident Bidder would be required to underbid the non-resident Bidder to obtain a comparable contract in the state in which the non-resident's principal place of business is located; or
- the amount by which a resident Bidder would be required to underbid the non-resident Bidder to obtain a comparable contract in the state in which a majority of the manufacturing relating to the Contract will be performed.

11.5.5.2. **Texas Home State Bidding Preference.** A Bidder will be considered the apparent low Bidder if the Bidder's home office is located in this state and their bid does not exceed an amount equal to 105% of the apparent low bid received from a Bidder whose home office is not located in this state. This will not apply to a Bidder from a bordering state whose state does not give a preference to a Bidder in a manner similar to this Section.

12. CONSIDERATION OF BID ERRORS

The Owner will consider a claim of a bid error by the apparent low Bidder if the following requirements have been met:

- a written notification is submitted to the Owner within 5 business days after the date the bid is opened and
- the submittal identifies the items of work involved and includes bidding documentation. The Owner may request clarification of submitted documentation.

The Owner will evaluate the claim of a bid error by the apparent low Bidder by considering the following:

- the bid error relates to a material item of work,
- the bid error amount is a significant portion of the total bid,
- the bid error occurred despite the exercise of ordinary care, and
- the delay of the proposed work will not impact cost and safety to the public.

Acceptance of the bid error claim by the Owner will result in the rejection of all bids. The erring Contractor will not be allowed to bid the project when it is re-let. Rejection of bids due to the Contractor's bid error may result in the application of remedial actions by the Owner.

13. TIE BIDS

If the official total bid amount for two or more Bidders is equal and those bids are the lowest submitted, each tie Bidder will be given an opportunity to withdraw their bid. If two or more tie Bidders do not withdraw their bids, the low Bidder will be determined by a coin toss or a series of coin tosses when there are more than two Bidders. If all tie Bidders request to withdraw their bids, no withdrawals will be allowed and the low Bidder will be determined by a coin toss or a series of coin tosses when there are more than two Bidders. The Letting Official will preside over the proceedings.

14. DISADVANTAGED BUSINESS ENTERPRISE (DBE)

The apparent low bidder must submit DBE commitment information on federally funded projects with DBE goals within 5 calendar days (as defined in 49 CFR Part 26, Subpart A) of bid opening. For a submission that meets the 5-day requirement, administrative corrections will be allowed.

If the apparent low Bidder fails to submit their DBE information within the specified timeframe, they will be deemed nonresponsive. The Bidder forfeiting the proposal guaranty will not be considered in future proposals for the same work unless there has been a substantial change in the design of the work. The Owner may recommend that the Commission:

- reject all bids, or
- award the Contract to the new apparent low Bidder, if the new apparent low Bidder has already submitted DBE information to the Owner.

If the new apparent low Bidder did not submit the required DBE information:

- the new apparent low Bidder will not be deemed nonresponsive,
- the new apparent low Bidder's guaranty will not be forfeited,
- the Owner will reject all bids,
- the new apparent low Bidder will remain eligible to receive future proposals for the same project, and
- the proposal guaranty of the original apparent low bidder will become the property of the Owner, not as a penalty, but as liquidated damages.

15. DEPARTMENT OF HOMELAND SECURITY (DHS) E-VERIFY SYSTEM

The Owner will not award a Contract to a Contractor that is not registered in the DHS E-Verify system. Remain active in E-Verify throughout the life of the Contract. In addition, in accordance with Article 8L.2., "Subcontracting," sixth paragraph, include this requirement in all subcontracts and require that subcontractors remain active in E-Verify until their work is completed.

If the apparent low Bidder does not appear in the DHS E-Verify system before award, the Contractor must submit documentation showing that they are compliant within 5 calendar days after bid opening. A Contractor that fails to comply or respond within the deadline will be declared nonresponsive. The Bidder forfeiting the proposal guaranty will not be considered in future proposals for the same work unless there has been a substantial change in the scope of the work.

The Owner may recommend to:

- reject all bids or
- award the Contract to the new apparent low Bidder, if the Owner is able to verify the Bidder's participation in the DHS E-Verify system.

If the Owner is unable to verify the new apparent low Bidder's participation in the DHS E-Verify system:

- the new apparent low Bidder will not be deemed nonresponsive,
- the new apparent low Bidder's guaranty will not be forfeited,
- the Owner will reject all bids,
- the new apparent low Bidder will remain eligible to receive future proposals for the same project, and
- the proposal guaranty of the original low bidder will become the property of the Owner, not as a penalty, but as liquidated damages.

Item 3L

Award and Execution of Contract



1. AWARD OF CONTRACT

The Owner or original award authority will award, reject, or defer the Contract within 90 days after the opening of the proposal. The Owner reserves the right to reject any or all proposals and to waive technicalities in the best interest of the Owner.

1.1. **Award.** The Owner or original award authority will award the Contract to the low Bidder as determined in accordance with Article 2L.11., "Tabulating Bids." The Owner may award a Contract to the second lowest Bidder when the following requirements have been met:

- the low Bidder withdraws their bid or fails to enter into Contract,
- the second lowest Bidder agrees to perform the work at the unit bid prices of the low Bidder,
- the Owner recommends in writing the award of the Contract to the second lowest Bidder, and
- the Owner's governing body agrees with the Owner recommendation for award to the second lowest Bidder.

1.2. **Rejection.** The Owner or original award authority will reject the Contract if:

- collusion may have existed among the Bidders. Collusion participants will not be allowed to bid future proposals for the same Contract,
- the low bid is mathematically and materially unbalanced. The Bidder will not be allowed to bid future proposals for the same Contract,
- the lowest bid is higher than the Owner's estimate, and re-advertising for bids may result in a lower bid,
- the low bid contains a bid error that satisfies the requirements and criteria in Article 2L.12., "Consideration of Bid Errors," or
- rejection of the Contract is in the best interest of the Owner.

1.3. **Deferral.** The Owner may defer the award or rejection of the Contract when deferral is in the best interest of the Owner.

2. RESCINDING OF AWARD

The Owner or original award authority reserves the right to cancel the award of any Contract before Contract execution with no compensation due when the cancellation is in the best interest of the Owner. The Owner will return the proposal guaranty to the Contractor.

3. DISADVANTAGED BUSINESS ENTERPRISE (DBE) AND SMALL BUSINESS ENTERPRISE (SBE)

Submit all DBE and SBE information in the timeframe specified when required by the proposal.

4. EXECUTION OF CONTRACT

Provide the following within 15 days after written notification of award of the Contract.

4.1. **Contract.** Execute the Contract as prescribed by the Owner.

4.2. **Bonds.** Bonds are required for public works contracts under the following circumstance:

1. A Bid or Proposal Bond is required in the amount of the bid submitted to the City of Laredo.
2. Performance Bond when the contract is in excess of \$100,000, in a personal sum equal to 100% of the contract cost.
3. Payment or Labor and Material Bond when a contract is in excess of \$50,000, each in a personal sum equal to 100% of the contract cost.

4.3. **Insurance.** For construction and building Contracts, submit a certificate of insurance showing coverages in accordance with the Contract requirements.

Insurances must cover the work for the duration of the Contract and must remain in effect until final acceptance. Provide project-specific insurance, not listed in Table 1, until acceptance of the work covered by the project-specific insurance or as approved by the Engineer. Failure to obtain and maintain insurance for the contracted work may result in suspension of work or default of the Contract. If the insurance expires and coverage lapses for any reason, stop all work until the Owner receives an acceptable certificate of insurance.

Provide the Owner with a certificate of insurance verifying the types and amounts of coverage shown in Table 1. The certificate of insurance must be in a form approved by the Texas Department of Insurance. Certificates of insurance for commercial general liability, auto liability, and workers' compensation must include the Contractor's prequalified name in the "Insured" field. Any certificate of insurance provided must be available for public inspection.

Contractor shall provide and continuously maintain the minimum insurance coverages set forth below during the term of its agreement with the City of Laredo; and Contractor shall require its subcontractors to purchase the same types and amounts of insurance, at a minimum, as set forth below with respect to statutory workers' compensation and liability insurance.

1. Commercial general liability standard ISO insurance at minimum combined single limits of \$1,000,000 per-occurrence and \$2,000,000 general aggregate for bodily injury and property damage, which coverage shall include: products/completed operations (\$2,000,000 products/completed operations aggregate); XCU (explosion, collapse, underground) hazards; and contractual liability. Without limitation, the commercial general liability coverage must cover all operations required in the contract, as well as contractual liability for the indemnity obligations assumed by the Contractor in the contract. Coverage must be written on an occurrence form.
2. Workers' compensation insurance at statutory limits, including employers' liability coverage at minimum limits of \$1,000,000 each-occurrence, each accident/\$1,000,000 by disease each-occurrence/\$1,000,000 by disease aggregate.
3. Commercial automobile liability insurance at a minimum combined single limit of \$1,000,000 per-occurrence for bodily injury and property damage, including non-owned and hired car coverage and owned vehicles if any are owned.
4. Umbrella liability or following-form excess liability at minimum limits, reference page four for project costs over \$1,000,000. Coverage must be at least as broad as the underlying commercial general liability, auto liability, and employer's liability.

5. Pollution Legal Liability if applicable
 - a. Project costs of \$1,000,000 to \$10,000,000 and over \$10,000,000; reference page four for limits.
 - b. Contractors Pollution Liability:
 - > Applies to operations that include the use, application, or consumption of pollutants.
 - > Retro date shall not be later than the inception date of contract.
 - > Contractual liability coverage to be included in contractor's pollution liability coverage.
 - c. Environmental Liability
 - i) Applies to asbestos and removal of other hazardous materials and/or repair, maintenance, installation, construction operations that are high hazard.
 - > \$5,000,000 per-claim/\$10,000,000 aggregate minimum.
 - > Retro date shall not be later than the inception date of contract.
 - > Contractual liability coverage to be included in contractor's pollution liability coverage.
 - > At a minimum, coverage must apply to on-premises and transit operations.
6. Professional liability applies to professional services which include but are not limited to design build contractors, engineers, and architects at minimum limits of \$1,000,000 per-claim/\$2,000,000 annual aggregate. The retro date shall not be later than the inception date of the contract. Reference page four for limits based on project cost.
7. Builders Risk, if applicable:
 - a. "All-risk" including collapse, flood, and earthquake, to be written on completed value form.
 - b. Coverage to include limits of at least \$250,000 for off-premises storage and transit of construction materials. Soft costs to be included at a minimum limit of \$500,000.
 - c. Thirty (30)-day occupancy clause to apply.
 - d. No testing exclusion should apply.

With reference to the foregoing insurance requirements, Contractor shall specifically endorse applicable insurance policies as follows:

1. City of Laredo shall be named as an additional insured on a primary and non-contributory basis, regardless of the application of other insurance, with respect to all liability coverages, except for the professional liability and workers' compensation.
2. All liability policies shall contain no cross-liability exclusions or insured versus insured restrictions.
3. A waiver of subrogation in favor of City of Laredo shall be contained in all policies.
4. All insurance policies shall be endorsed to require the insurer to immediately notify City of Laredo of any material change in the insurance coverage.
5. All insurance policies shall be endorsed to the effect that City of Laredo will receive at least thirty(30) days' notice prior to cancellation or non-renewal of the insurance.
6. The additional insured coverage in the CGL policy in favor of City of Laredo must apply to the ongoing operations of Contractor for contract costs or up to \$1,000,000 and expanded to include product s/completed operation for contract costs in excess of \$1,000,000.
7. Required limits may be satisfied by any combination of primary and umbrella/excess liability insurances.

8. Contractor may maintain reasonable and customary deductibles, subject to approval by City of Laredo.
9. Insurance must be purchased from insurers that are financially acceptable to City of Laredo with a minimum A.M Best financial rating of A-:VII.
10. Coverage for commercial general liability, professional liability, and pollution legal liability must be maintained for at least one (1) to two (2) years after the project is completed.
11. For projects in excess of \$10,000,000 in cost, a per-project aggregate limit must be included in the commercial general liability.

Table 1
Insurance Requirements

CONTRACT COST	Type of Insurance	LIMITS
Less than \$1,000,000	Umbrella Liability Professional Liability	Not Required \$1,000,000 Per-Claim/ \$2,000,000 Aggregate
\$1,000,000 to \$5,000,000	Umbrella Liability Professional Liability	\$4,000,000 Per-Occ \$1,500,000 Per-Claim/ \$3,000,000 Aggregate
\$5,000,000 to \$10,000,000	Umbrella Liability Professional Liability	\$9,000,000 to \$10,000,000 Per-Occ \$1,500,000 Per-Claim/ \$3,000,000 Aggregate to \$2,000,000 Per Claim/\$4,000,000 Aggregate
Over \$10,000,000	Umbrella Liability Professional Liability	\$10,000,000 or higher \$2,000,000 Per-Claim/ \$4,000,000 Aggregate Or Higher
\$1,000,000 to \$10,000,000	Contractor's Pollution Legal Liability	\$1,000,000 Per-Claim/ \$2,000,000 Aggregate
Over \$10,000,000	Contractor's Pollution Legal Liability	\$2,000,000 Per-Claim/ \$4,000,000 Aggregate
TAIL COVERAGE		
\$1,000,000 to \$5,000,000	Commercial General Liability, Professional Liability, and Pollution Legal Liability	One (1) Year
\$1,000,000 to \$5,000,000	Commercial General Liability, Professional Liability, and Pollution Legal Liability	Two (2) Years
Any Contract Size	Hazardous Environmental Work	Two (2) Years

The Contractor shall not commence work under this Contract until he/she has obtained all the insurance required under this paragraph and such insurance has been approved by the Owner, nor shall the Contractor allow any subcontractor to commence work on his/her Sub-Contract until the insurance required of the Subcontractor has been so obtained and approved.

a. Compensation Insurance: The Contractor shall procure and shall maintain during the life of this Contract Workmen's Compensation Insurance as required by applicable State or Territorial law for all of his/her employees to be engaged in work at the site of the project under this Contract and, in case of any such work sublet, the Contractor shall require the Subcontractor similarly to provide Workmen's Compensation Insurance for all of the latter's employees to be engaged in such work unless such employees are covered by the protection afforded by the Contractor's Workmen's Compensation Insurance. In the case where any class of employees engaged in hazardous work on the project under this Contract and is not protected under the Workmen's Compensation Statute, The Contractor shall provide and shall cause each Subcontractor to provide adequate employee's liability insurance for the protection of such of his/her employee as are not otherwise protected.

b. Contractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance: The Contractor shall procure and shall maintain during the life of his Contract: Contractor's Public Liability Insurance, Contractor's Property Damage Insurance and Vehicle Liability Insurance in the amount of not less than \$200,000 for bodily injury, including accidental death, to any one person and an amount not less than \$300,000 on account of any one occurrence; Property Damage in the amount not less than \$100,000 per occurrence and \$200,000 aggregate; and Vehicle Liability of \$100,000 for any one person or \$200,000 for each occurrence.

c. Subcontractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance: The Contractor shall either (1) require each of his/her Subcontractor to procure and shall maintain during the life of his /her Subcontractor, Subcontractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance of the type and in the amount specified in Subparagraph b. above or, (2) insure the activities of his/her Subcontractors in his/her policy specified in Subparagraph b. above. By signing the Contract, the Contractor certifies compliance with all applicable laws, rules, and regulations pertaining to workers' compensation insurance. This certification includes all subcontractors. Pay all deductibles stated in the policy. Subcontractors must meet the requirements shown in Table 2, either through their own coverage or through the Contractor's coverage.

d. Scope of Insurance and Special Hazards: The insurance required under Subparagraph b. and c. above shall provide adequate protection for the Contractor and his/her Subcontractor's, respectively, against damage claims which may arise from operations under this Contract, whether such operations be by the insured or by any one directly or indirectly employed by him/her and also against any of the special hazard which may be encountered in the performance of this Contract.

e. Builder's Risk Insurance (Fire and Extended Coverage): The Contractor shall procure and shall maintain during the life of this Contract Builder's Risk Insurance (Fire and Extended Coverage on a 100 percent (100%) completed value basis on the insurable portion of the project. The Owner, the Contractor, and Subcontractor (as their interests may appear), shall be named as the Insured.

f. Proof of Carriage of Insurance: The Contractor shall furnish the Owner with certificates showing the type, amount, class of operations covered, effective dates and dates of expiration of policies. Such certificates shall also contain substantially the following statement: "The Insurance covered by this certificate will not be cancelled or materially altered, except after ten (10) days written notice has been received by the Owner". The Owner, the Contractor, and Subcontractor (as their interests may appear), shall be named as the Insured.

g. The City of Laredo shall be named as an additional insured with respect to General Liability and Automobile Liability. A blanket waiver of subrogation in favor of the City of Laredo shall be contained in the Workers Compensation, and all liability policies.

The workers' compensation policy must include a waiver of subrogation endorsement in favor of the Owner.

For building-facilities contracts, provide all risk builder's risk insurance to protect the Owner against loss by storm, fire, or extended coverage perils on work and materials intended for use on the project, including the adjacent structure. Name the Owner under the Lost Payable clause.

For contracts with railroad requirements, see project-specific details for additional insurance requirements.

Provide a substitute Surety on the Contract bonds in the original full Contract amount within 15 days of notification if the Surety is declared bankrupt or insolvent, the Surety's underwriting limitation drops below the Contract amount or the Surety's right to do business is terminated by the Owner. The substitute Surety must be authorized by the laws of the Owner and acceptable to the Owner. Work will be suspended until a substitute Surety is provided. Working day charges will be suspended for 15 days or until an acceptable Surety is provided, whichever is sooner.

The work performed under this Section will not be measured or paid for directly, but will be subsidiary to pertinent Items.

4.4. **Business Ownership Information.** Submit the names and Social Security numbers of all individuals owning 25% or more of the firm, or firms in the case of a joint venture, on the Owner's form.

4.5. **Railroad Documents.** Provide all required documents for satisfaction of railroad requirements for projects that have work involving railroad right of way. Comply with the requirements of Article 5L.8., "Cooperation with Railroads."

5. FAILURE TO ENTER CONTRACT

If the Contractor fails to comply with all the requirements in Article 3L.4., "Execution of Contract," the proposal guaranty will become the property of the Owner, not as a penalty, but as liquidated damages. The Contractor forfeiting the proposal guaranty will not be considered in future proposals for the same work unless there has been a substantial change in design of the work.

6. APPROVAL AND EXECUTION OF CONTRACT

The Contract will be approved and signed under authority of the Owner.

7. RETURN OF PROPOSAL GUARANTY

The proposal guaranty check of the low Bidder will be retained until after the Contract has been rejected or awarded and executed. Bid bonds will not be returned.

8. BEGINNING OF WORK

Do not begin work until authorized in writing by the Owner.

Verify all quantities of materials shown on the plans before ordering.

9. ASSIGNMENT OF CONTRACT

Do not assign, sell, transfer, or otherwise dispose of the Contract or any portion of the rights, title, or interest (including claims) without the approval of the Owner or original award authority. The Owner must deem any proposed assignment justified and legally acceptable before the assignment can take place.

10. EXCLUDED PARTIES

The Contractor certifies by signing the Contract that the Contractor will not enter into any subcontract with a subcontractor that is debarred or suspended by the Owner or any federal agency.

Item 4L

Scope of Work



1. CONTRACT INTENT

The intent of the Contract is to describe the completed work to be performed. Furnish materials, supplies, tools, equipment, labor, and other incidentals necessary for the proper prosecution and completion of the work in accordance with Contract documents.

2. PRECONSTRUCTION CONFERENCE

Before starting work, schedule and attend a preconstruction conference with the Engineer. Failure to schedule and attend a preconstruction conference is not grounds for delaying the beginning of working day charges. The preconstruction conference may be scheduled with the safety preconstruction meeting described in Section 7L 2.2., "Safety Preconstruction Meeting" and the railroad coordination meeting described in Article 5L 8., "Cooperation with Railroads." Work with the Engineer to resolve or escalate all issues. Execute the project pledge and establish an issue escalation ladder.

2.1. **Project Pledge.** Contractor representatives at the level of foreman and above will certify in writing they will approach the construction of this project in a manner consistent with delivering a high-quality project in a safe, cost-effective, and timely manner, and they will be committed to not allowing personality conflicts or personal interests to interfere with providing the public with a quality project. Failure to uphold this commitment may result in grounds for removal from the project.

2.2. **Issue Resolution Process.** An issue is any aspect of the Contract where parties of the Contract do not agree. The individuals identified at the lowest level of the issue escalation ladder will initiate the issue resolution process by escalating any issue that remains unresolved within the timeframe outlined in the issue escalation ladder.

Work with the Engineer to resolve all issues during the course of the Contract. Refer to Article 4L 7., "Dispute or Claims Procedure," for all unresolved issues.

3. PARTNERING – NOT APPLICABLE

The intent of this Article is to promote an environment of trust, mutual respect, integrity, and fair dealing between the Owner and the Contractor.

Informal partnering does not make use of a facilitator and is led by the Engineer in charge of the work and the Contractor's counterpart, while formal partnering uses the services of a facilitator (internal or external).

3.1. **Procedures for Partnering Meetings and Format.** Informal partnering is required, unless formal partnering is mutually agreed upon instead of the informal partnering.

3.2. **Facilitators.** The facilitator is to act as a neutral party seeking to initiate cooperative working relationships. This individual must have the technical knowledge and ability to lead and guide discussions. Choose either an internal or external facilitator. The facilitator must be acceptable to the Engineer.

3.2.1. **Internal Facilitators.** An Owner or Contractor staff member may be selected as the facilitator at no additional cost to either party.

3.2.2. **External Facilitators.** A private firm or individual that is independent of the Contractor and the Owner may be selected as the facilitator. Submit the facilitator's name and estimated fees for approval before contracting with the facilitator.

3.3. **Meetings and Arrangements.** Coordinate with the Engineer for meeting dates and times, locations including third party facilities, and other needs and appurtenances including but not limited to audio or visual equipment. Make all meeting arrangements for formal partnering. Use Owner facilities or facilities in the vicinity of the project if available. Submit the estimated meeting costs for approval before finalizing arrangements.

Coordinate facilitator discussions before the partnering meeting to allow the facilitator time to prepare an appropriate agenda. Prepare a list of attendees with job titles and include critical Contractor, subcontractor, and supplier staff on the list. Provide the facilitator with the list of attendees and invite the attendees listed.

The Owner will invite and provide a list of attendees that includes, but is not limited to Owner, TxDOT, other local governments, law enforcement, railroad, and utility representatives.

Participate in additional partnering meetings as mutually agreed upon.

3.4. **Payment.** Expenses for labor, Contractor equipment, or overhead will not be allowed. Markups as prescribed in Article 9L 7., "Payment for Extra Work and Force Account Method," will not be allowed.

Informal partnering will be conducted with each party responsible for their own costs.

For formal partnering using internal facilitators, the Contractor will be responsible for arrangements and for expenses incurred by their internal facilitator, including but not limited to meals, travel, and lodging. Owner facilitators may be used at no additional cost.

For formal partnering using external facilitators, submit an invoice to the Engineer for reimbursement. The Owner will reimburse the Contractor for half of the eligible expenses as approved. For external facilitators not approved by the Owner but used at the Contractor's option, the Contractor will be responsible for all costs of the external facilitator.

For meeting facilities and appurtenances, submit an invoice to the Engineer for reimbursement. The Owner will reimburse the Contractor for half of the eligible expenses as approved.

4. CHANGES IN THE WORK

The Engineer reserves the right to make changes in the work, including addition, reduction, or elimination of quantities and alterations needed to complete the Contract. Perform the work as altered. These changes will not invalidate the Contract nor release the Surety. The Contractor is responsible for notifying the sureties of any changes to the Contract.

If the changes in quantities or the alterations do not significantly change the character of the work under the Contract, the altered work will be paid for at the Contract unit price. If the changes in quantities or the alterations significantly change the character of the work, the Contract will be amended by a change order. If no unit prices exist, this will be considered extra work and the Contract will be amended by a change order. Provide cost justification as requested, in an acceptable format.

Payment will not be made for anticipated profits on work that is eliminated.

Agree on the scope of work and the basis of payment for the change order before beginning the work. If there is no agreement, the Engineer may order the work to proceed under Article 9L 7., "Payment for Extra Work and Force Account Method," or by making an interim adjustment to the Contract. In the case of an adjustment, the Engineer will consider modifying the compensation after the work is performed.

A significant change in the character of the work occurs when:

- the character of the work for any item as altered differs materially in kind or nature from that in the Contract, or
- a major item of work varies by more than 25% from the original Contract quantity,

When the quantity of work to be done under any major item of the Contract is more than 125% of the original quantity stated in the Contract, then either party to the Contract may request an adjustment to the unit price on the portion of the work that is above 125%.

When the quantity of work to be done under any major item of the Contract is less than 75% of the original quantity stated in the Contract, then either party to the Contract may request an adjustment to the unit price.

If the changes require additional working days to complete the Contract, Contract working days will be adjusted in accordance with Item 8L, "Prosecution and Progress."

5. DIFFERING SITE CONDITIONS

During the progress of the work, differing subsurface or latent physical conditions may be encountered at the site. The two types of differing site conditions are defined as:

- those that differ materially from those indicated in the Contract, and
- unknown physical conditions of an unusual nature differing materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the Contract.

Notify the Engineer in writing when differing site conditions are encountered. The Engineer will notify the Contractor in writing when the Owner discovers differing site conditions. Unless directed otherwise, suspend work on the affected items and leave the site undisturbed. The Engineer will investigate the conditions and determine whether differing site conditions exist. The Engineer will provide written notification of the determination whether or not an adjustment of the Contract is warranted. If the differing site conditions cause an increase or decrease in the cost or number of working days specified for the performance of the Contract, the Engineer will make adjustments, excluding the loss of anticipated profits, in accordance with the Contract. Additional compensation will be made only if the required written notice has been provided by either the Contractor or the Engineer.

6. REQUESTS FOR ADDITIONAL COMPENSATION AND DAMAGES

Notify the Engineer in writing of any intent to request additional compensation once there is knowledge of the basis for the request. An assessment of damages is not required to be part of this notice but is desirable. The intent of the written notice requirement is to provide the Engineer an opportunity to evaluate the request and to keep an accurate account of the actual costs that may arise. Minimize impacts and costs.

If written notice is not given, the Contractor waives the right to additional compensation unless the circumstances could have reasonably prevented the Contractor from knowing the cost impact before performing the work. Notice of the request and the documentation of the costs will not be construed as proof or substantiation of the validity of the request. Submit the request in enough detail to enable the Engineer to determine the basis for entitlement, adjustment in the number of working days specified in the Contract, and compensation.

Compensable damages occur when impacts that are the responsibility of the Owner result in additional costs to the Contractor that could not have been reasonably anticipated at the time of letting. Costs of performing additional work are not considered damages. Notify the Engineer in writing as soon as possible for Contractor damages. The intent is to reimburse the Contractor for actual expenses arising from a compensable impact. No profit or markups, other than labor burden, will be allowed. For damages, labor burden will be reimbursed at 35% unless the Contractor can justify higher actual cost. Justification for a higher percentage must be in conformance with the methodology provided by the Owner, submitted

separately for project overhead labor and direct labor, and determined and submitted by a Certified Public Accountant (CPA). Submit CPA-prepared labor burden rates directly to the Owner for approval.

The Owner will not consider fees and interest on requests for additional compensation and damages. Fees include, but are not limited to preparation, attorney, printing, shipping, and various other fees.

If the Contractor requests compensation for damages and the damages are determined to be compensable, then standby equipment costs and project overhead compensation will be based on the duration of the compensable damage and will be limited as follows.

- 6.1. **Standby Equipment Costs.** Payment will be made in accordance with Section 9L 7.1.4.3., "Standby Equipment Costs."
- 6.2. **Project Overhead.** Project overhead is defined as the administrative and supervisory expenses incurred at the work locations. When delay to project completion occurs, reimbursement for project overhead for the Contractor will be made using the following options at the Contractor's discretion:
- reimbursed at 6% (computed as daily cost by dividing 6% of the original Contract amount by the number of original Contract work days), or
 - actual documented costs for the impacted period.
- Project overhead for delays impacting subcontractors will be determined from actual documented costs submitted by the Contractor.
- Time extensions and suspensions alone will not be justification for reimbursement for project overhead.
- 6.3. **Home Office Overhead.** The Owner will not compensate the Contractor for home office overhead.

7. DISPUTE OR CLAIMS PROCEDURE

The dispute resolution policy promotes a cooperative attitude between the Engineer, Contractor, and Contractor's subcontractors working through the Contractor. Emphasis is placed on resolving issues while they are still current, at the Owner's office, and in an informal manner. Open sharing of information is encouraged by all parties involved so the information provided completely and accurately reflects the issues and facts. If information is not shared, decisions may be limited to relying on the documentation that is available for review.

The Owner's goal is to have a dispute settled by the Engineer before elevating it as a claim to the Owner.

If a dispute cannot be resolved, initiate the Contract claim procedure by submitting a claim to the Owner.

The Contractor, or subcontractor through the Contractor, will file a Contract claim request and a detailed report that provides the basis for the claim. The detailed report will include relevant facts of the claim, cost or other data supporting the claim, a description of any additional compensation requested, and documents supporting the claim.

The claim must include the following certification: "I certify that the claim is made in good faith; that the supporting data are accurate and complete to the best of my knowledge and belief; that the amount requested accurately reflects the contract adjustment for which the Contractor believes the Owner is liable; and that I am duly authorized to certify the claim on behalf of the Contractor."

File a claim after completion of the Contract or when required for orderly performance of the Contract. For a claim resulting from enforcement of a warranty period, file the claim no later than 1 yr. after expiration of the warranty period. For all other claims, file the claim no later than 1 yr. after the date the Owner issues notice to the Contractor that they are in default, the date the Owner terminates the Contract, or the date of final acceptance of the Contract. It is the Contractor's responsibility to submit requests in a timely manner.

Item 5L

Control of the Work



1. AUTHORITY OF ENGINEER

The Engineer has the authority to observe, test, inspect, approve, and accept the work (either in writing or orally). The Engineer decides all questions about the quality and acceptability of materials, work performed, work progress, Contract interpretations, applicability of standard details, and acceptable Contract fulfillment. The Engineer has the authority to enforce and make effective these decisions.

- Unless noted elsewhere in the Contract or by the Engineer, payment for Contractor work is in accordance with the Contract requirements at that time. This payment does not eliminate the Contractor's responsibilities for the work as defined in Article 7L.17., "Contractor's Responsibility for Work," or Article 5L.12., "Final Acceptance."
- The Engineer acts as a referee in all questions arising under the terms of the Contract.
- The Engineer's decisions are final and binding.

The Engineer will pursue and document actions against the Contractor as warranted to address Contract performance issues. Contract remedies include, but are not limited to, the following:

- requiring the Contractor to remove and replace defective work, or reducing payment for defective work,
- removing an individual from the project,
- suspending the work without suspending working day charges,
- assessing standard liquidated damages to recover the Owner's administrative costs, including additional project-specific liquidated damages when specified in the Contract withholding estimates, and
- declaring the Contractor to be in default of the Contract

The Engineer will consider and document any events outside the Contractor's control that contributed to the failure to meet performance standards, including consideration of sufficient time.

Follow the issue escalation ladder if there is disagreement regarding the application of Contract remedies.

2. PLANS AND WORKING DRAWINGS

When required, provide working drawings to supplement the plans with all necessary details not included on the Contract plans. Prepare and furnish working drawings in a timely manner and obtain approval, if required, before the beginning of the associated work. For all working drawing submittal requirements, the Engineer may allow electronic and other alternative submission procedures. Have a licensed professional engineer sign, seal, and date the working drawings as shown in Table 1.

Prepare working drawings using United States standard measures in the English language. The routing of submittals for review and approval will be established at the preconstruction conference. The Contractor is responsible for the accuracy, coordination, and conformity of the various components and details of the working drawings. Owner approval of the Contractor's working drawings will not relieve the Contractor of any responsibility under the Contract. The work performed in accordance with this Article will not be measured or paid for directly, but will be subsidiary to pertinent Items.

Table 1
Signature and Approval Requirements for Working Drawings

Working Drawings For		Requires Licensed Professional Engineer's Signature, Seal, and Date	Requires Owner Approval
1. Alternate or optional designs submitted by Contractor		Yes	Yes
2. Supplementary shop and fabrication drawings for structural Items		No unless required on the plans	See applicable Item
3. Contractor-proposed temporary facilities that affect the public safety, not included on the plans		Yes	Yes
4. Form and falsework details	Bridges, retaining walls, and other major structures	Yes unless otherwise shown on the plans	No ¹
	Minor structures	No unless otherwise shown on the plans	No
5. Erection drawings		Yes	No ^{1,2}
6. Contractor-proposed major modifications to traffic control plan		Yes	Yes

1. The Engineer may require that the Contractor have a licensed professional engineer certify that the temporary works are constructed according to the sealed drawings.
2. Approval is required for items spanning over live traffic or where safety of the traveling public is affected, as determined by the Engineer.

Submit shop drawings electronically for the fabrication of structural items in accordance with the Owner's procedures and as directed for other items required by the Contract. References to 11 × 17-in. sheets in individual specifications for structural items imply electronic computer-aided design sheets.

3. CONFORMITY WITH PLANS, SPECIFICATIONS, AND SPECIAL PROVISIONS

Furnish materials and perform work in reasonably close conformity with the lines, grades, cross-sections, dimensions, details, gradations, physical and chemical characteristics of materials, and other requirements shown in the Contract. Reasonably close conformity limits are defined in the respective Items of the Contract or, if not defined, as determined by the Engineer. Obtain approval before deviating from the plans and approved working drawings. Do not perform work beyond the lines and grades shown on the plans or any extra work without the Engineer's authority. Work performed beyond the lines and grades shown on the plans or any extra work performed without authority is considered unauthorized and excluded from pay consideration. The Owner will not pay for material rejected due to improper fabrication, excess quantity, or any other reasons within the Contractor's control.

- 3.1. **Acceptance of Defective or Unauthorized Work.** When work fails to meet Contract requirements, but is adequate to serve the design purpose, the Engineer will decide the extent to which the work will be accepted and remain in place. The Engineer will document the basis of acceptance by letter and may adjust the Contract price.
- 3.2. **Correction of Defective or Unauthorized Work.** When work fails to meet Contract requirements and is inadequate to serve the design purpose, it will be considered defective. Correct, or remove and replace, the work at the Contractor's expense, as directed.

The Owner has the authority to correct or to remove and replace defective or unauthorized work. The cost may be deducted from any money due or to become due to the Contractor.

4. COORDINATION OF PLANS, SPECIFICATIONS, AND SPECIAL PROVISIONS

The specifications, accompanying plans, special provisions, change orders, and supplemental agreements are intended to work together and be interpreted as a whole.

Numerical dimensions govern over scaled dimensions. Special provisions govern over plans (including general notes), which govern over standard specifications and special specifications. Job-specific plan sheets govern over standard plan sheets.

However, in the case of conflict between plans (including general notes) and specifications regarding responsibilities for hazardous materials and traffic control in Items 1L–9L, “Local Government General Requirements and Covenants,” and Item 502, “Barricades, Signs, and Traffic Handling,” special provisions govern over standard specifications and special specifications, which govern over the plans.

Notify the Engineer promptly of any omissions, errors, or discrepancies upon discovery so necessary corrections and interpretations can be made. Failure to promptly notify the Engineer of discovered omissions, errors, or discrepancies will constitute a waiver of all Contract claims against the Owner for misunderstandings or ambiguities that result from the errors, omissions, or discrepancies.

5. COOPERATION OF CONTRACTOR

Cooperate with the Engineer. Respond promptly to instructions from the Engineer. Provide all information necessary for the successful completion of the Contract.

Designate in writing a competent, English-speaking Superintendent employed by the Contractor. The Superintendent must be experienced in the work being performed and capable of reading and understanding the Contract. Ensure the Superintendent is available at all times and able to receive instructions from the Engineer or authorized Owner representatives and to act for the Contractor. The Engineer may suspend work without suspending working day charges if a Superintendent is not available or does not meet the above criteria.

At the written request of the Engineer, immediately remove from the project any employee or representative of the Contractor or a subcontractor who, in the opinion of the Engineer, does not perform work in a proper and skillful manner or who is disrespectful, intemperate, disorderly, uncooperative, or otherwise objectionable. Do not reinstate these individuals without the written consent of the Engineer.

Furnish suitable machinery, equipment, and construction forces for the proper prosecution of the work.

Provide adequate lighting to address quality requirements and inspection of nighttime work.

6. COOPERATING WITH UTILITIES

Use established safety practices when working near utilities. Consult with the appropriate utilities before beginning work. Notify the Engineer immediately of utility conflicts. The Engineer will decide whether to adjust utilities or adjust the work to eliminate or lessen the conflict. Unless otherwise shown on the plans, the Engineer will make necessary arrangements with the utility owner when utility adjustments are required.

Use work procedures that protect utilities or appurtenances that remain in place during construction. Cooperate with utility companies to remove and rearrange utilities to avoid service interruption or duplicate work by the utility companies. Allow utilities access to the right of way.

Immediately notify the appropriate utility of service interruptions resulting from damage due to construction activities. Cooperate with utilities until service is restored. Maintain access to fire hydrants when necessary.

7. COOPERATION BETWEEN CONTRACTORS

Cooperate and coordinate with other Contractors working within the limits or adjacent to the limits.

8. COOPERATION WITH RAILROADS

Plan and prosecute portions of the work involving a railway to avoid interference with or hindrance to the railroad company.

If the work is on railroad right of way, do not interfere with the operation of the railroad company's trains or other property.

- 8.1. **Railroad Coordination Meeting.** When shown on the plans or directed by the Engineer, schedule and attend a railroad coordination meeting with the Engineer before beginning work or as agreed upon (may be a part of the preconstruction conference described in Article 4L.2., "Preconstruction Conference"). Prepare a list of attendees and invite personnel, including, but not limited to Owner, Contractor, subcontractor, and railroad representatives.

Provide the invitation to the railroad representatives at least 21 calendar days before the railroad coordination meeting.

- 8.2. **Project-Specific Information.** Refer to project-specific plan sheets in the Contract for specific information concerning the work to be completed by the Contractor and the railroad within railroad right of way; railroad right of way locations impacted by construction; percentage of Contract work at each location; train movements at each location; and requirements for railroad insurance, flagging, and Right of Entry (ROE) Agreements.

- 8.3. **Right of Entry Agreement by the Owner.** When shown on the plans, the process for obtaining a fully executed ROE Agreement is as follows.

- The Owner will send the unexecuted ROE Agreement to the Contractor with the unexecuted Contract.
- Partially execute the ROE Agreement and return it to the Owner with the partially executed Contract and required insurance.
- The Owner will coordinate with the railroad company regarding the further execution of the ROE Agreement and associated fees. The Owner will pay any ROE Agreement fees directly to the railroad company.
- Once the Owner has received the fully executed ROE Agreement from the railroad company, the Owner will forward the fully executed ROE Agreement to the Contractor.

- 8.4. **Right of Entry Agreement by the Contractor.** When shown on the plans, contact the railroad company to obtain the ROE Agreement before beginning work on the Contract.

Provide the required insurance to the Owner before beginning work on the Contract.

Execute the ROE Agreement and pay any associated fees to the railroad company. Provide a copy of the fully executed ROE Agreement to the Owner.

9. CONSTRUCTION SURVEYING

Use Method C unless otherwise specified in the Contract. Upon request, the Engineer will allow the Contractor to copy available earthwork cross-sections, computer printouts or data files, and other information necessary to establish and control work. Preserve all control points, stakes, marks, and right of way markers. Assume cost and responsibility of replacing disturbed control points, stakes, marks, and right of way markers damaged by the Contractor's or its subcontractor's operations. If the Owner repairs disturbed control points, stakes, marks, or right of way markers, the cost of repair may be deducted from money due or to become

due to the Contractor. Replace right of way markers under the direction of an RPLS. This work performed under this Article will not be measured or paid for directly, but will be subsidiary to pertinent Items.

The Engineer reserves the right to make measurements and surveys to determine the accuracy of the work and determine pay quantities. The Engineer's measurements and surveys do not relieve the Contractor's responsibility for accuracy of work. Allow the Engineer adequate time to verify the surveying.

- 9.1. **Method A.** The Engineer will set control points for establishing lines, slopes, grades, and centerlines and for providing both vertical and horizontal control.

At minimum, provide a controlling pair of monument points at both the beginning and end of construction project for projects less than 2 mi. in length. For projects greater than 2 mi. in length, monuments will be set in pairs at a minimum of 2 mi. based on the overall length of the project. Use these control points as reference to perform the work.

Furnish materials, equipment, and qualified workforce necessary for the construction survey work. Place construction points, stakes, and marks at intervals sufficient to control work to established tolerances. Place construction stakes at intervals of no more than 100 ft., or as directed. Place stakes and marks so as not to interfere with normal maintenance operations.

- 9.2. **Method B.** The Engineer will set adequate control points, stakes, stationing, and marks to establish lines, slopes, grades, and centerlines. Furnish additional work, stakes, materials, and templates necessary for marking and maintaining points and lines.

- 9.3. **Method C.** Set adequate control points, stakes, and marks to establish lines, slopes, grades, and centerlines. Place construction points, stakes, and marks at intervals sufficient to control work to established tolerances. Place construction stakes at intervals of no more than 100 ft., or as directed. Place stakes and marks so as not to interfere with normal maintenance operations.

10. INSPECTION

Inspectors are authorized representatives of the Engineer. Inspectors are authorized to examine all work performed and materials furnished, including preparation, fabrication, and material manufacture. Inspectors inform the Contractor of failures to meet Contract requirements. Inspectors may reject work or materials and may suspend work until any issues can be referred to and decided by the Engineer. The Engineer may authorize Inspectors to adjust the traffic control. Inspectors cannot alter, add, or waive Contract provisions, issue instructions contrary to the Contract, act as foremen for the Contractor, or interfere with the management of the work. Inspection or lack of inspection will not relieve the Contractor from obligation to provide materials or perform the work in accordance with the Contract.

Provide safe access to all parts of the work and provide information and assistance to the Engineer to allow a complete and detailed inspection. Give the Engineer sufficient notice to inspect the work. Work performed without suitable inspection, as determined by the Engineer, may be ordered removed and replaced at Contractor's expense. Remove or uncover portions of finished work as directed. Once inspected, restore work to Contract requirements. If the uncovered work is acceptable, the costs to uncover, remove, and replace or make good the parts removed will be paid for in accordance with Article 4L.4., "Changes in the Work." If the work is unacceptable, assume all costs associated with repair or replacement, including the costs to uncover, remove, and replace or make good the parts removed.

When a government entity, utility, railroad company, or other entity accepts or pays a portion of the Contract, that organization's representatives may inspect the work but cannot direct the Contractor. The right of inspection does not make that entity a party to the Contract and does not interfere with the rights of the parties to the Contract.

11. FINAL CLEANUP

Upon completion of the work, remove construction project litter, debris, objectionable material, temporary structures, excess materials, and equipment from the work locations. Clean and restore property damaged by the Contractor's operations during the prosecution of the work. Leave the work locations in a neat and presentable condition.

Remove from the right of way cofferdams, construction buildings, material and fabrication plants, temporary structures, excess materials, and debris resulting from construction. Where work is in a stream, remove debris to the ground line of the bed of the stream. Leave stream channels and rights of way in a neat and presentable condition. Clean structures to the flow line or the elevation of the outfall channel, whichever is higher. Dispose of all excess material in accordance with federal, state, and local regulations.

The work performed under this Article will not be paid for directly, but will be subsidiary to Items of the Contract.

12. FINAL ACCEPTANCE

12.1. **Routine Maintenance Contracts.** Not applicable to Locally Let projects.

12.2. **Construction Contracts.** Final acceptance is made when all work is complete and the Engineer, in writing, accepts all work for the work locations in the Contract. Final acceptance relieves the Contractor from further Contract responsibilities.

12.2.1. **Work Completed.** Work completed must include work for vegetative establishment and maintenance, test and performance periods, and work to meet the requirements of Article 5L.11., "Final Cleanup."

12.2.2. **Final Inspection.** After all work is complete, the Engineer in charge of the work will request a final inspection by the Engineer authorized to accept the work.

The final inspection will be made as soon as possible and not later than 10 calendar days after the request. No working day charges will be made between the date of request and final inspection.

After the final inspection, if the work is satisfactory, the Engineer will notify the Contractor in writing of the final acceptance of the work. If the final inspection finds any work to be unsatisfactory, the Engineer will identify in writing all deficiencies in the work requiring correction. Correct the deficiencies identified. Working day charges will resume if these deficiencies are not corrected within 7 calendar days, unless otherwise authorized by the Engineer. Upon correction, the Engineer will inspect to verify that all deficiencies were corrected satisfactorily. The Engineer will provide written notice of the final acceptance.

12.2.3. **Final Measurement.** Final measurements and pay quantity adjustments may be made after final acceptance. Final acceptance will not be held for final measurements or pay quantity adjustments.

12.2.4. **Removal of Traffic Control Devices.** Remove any remaining construction traffic control devices and advance warning signs upon final acceptance or as directed.

12.3. **Multiple Work Orders.** Not applicable to Locally Let projects.

Item 6L

Control of Materials



1. SOURCE CONTROL

Use only materials that meet Contract requirements. Unless otherwise specified or approved, use new materials for the Work. Secure the Engineer's approval of the proposed source of materials to be used before their delivery. Materials can be approved at a supply source or staging area but may be inspected in accordance with Article 6L.4., "Sampling, Testing, and Inspection."

- 1.1. **Buy America.** Comply with the latest provisions of Buy America pertaining to steel and iron in accordance with 23 CFR § 635.410. Use steel or iron materials manufactured in the United States except when waived in accordance with Section 6L 1.2., "Buy America Exceptions."

Submit a notarized original of the TxDOT FORM D-9-USA-1 (Department Form 1818 or equivalent) with the proper attachments for verification of compliance.

Manufacturing includes any process that modifies the chemical content, physical shape or size, or final finish of a product. The manufacturing process begins with initial melting and mixing and continues through fabrication (e.g., cutting, drilling, welding, and bending) and coating (e.g., paint, galvanizing, and epoxy).

- 1.2. **Buy America Exceptions.** Use of iron and steel manufactured in the United States is required unless the material meets an exception below.
- A waiver exists exempting the material from Buy America compliance.
 - The total value of foreign iron and steel products, including delivery, does not exceed 0.1% of the total Contract cost or \$2,500, whichever is greater. The Contractor must provide documentation showing under threshold in advance for the Engineer's consideration.
 - Foreign iron or steel may be allowed when the Contract contains an alternate item for a foreign source iron or steel product and the Contract is awarded based on the alternate item.
 - The materials are temporarily installed or are supplies, tools, and equipment not incorporated into the project. Temporarily installed means the materials and products must be removed at the end of the project or may be removed at the Contractor's convenience with the Engineer's approval.

- 1.3. **Buy Texas.** Not Applicable.

2. MATERIAL QUALITY

Correct or remove materials that fail to meet Contract requirements or that do not produce satisfactory results. Reimburse the Owner for cost incurred if additional sampling and testing are required by a change of source.

Materials not meeting Contract requirements will be rejected unless the Engineer approves corrective actions. Upon rejection, immediately remove and replace rejected materials.

If the Contractor does not comply with this Article, the Owner may remove and replace defective material. The cost of testing, removal, and replacement will be deducted from the payments due to the Contractor.

3. MANUFACTURER WARRANTIES

Transfer to the Owner warranties and guarantees required by the Contract or received as part of normal trade practice.

4. SAMPLING, TESTING, AND INSPECTION

Incorporate into the work only material that has been inspected, tested, and accepted by the Engineer. Remove, at the Contractor's expense, materials from the work locations that are used without prior testing and approval or written permission of the Engineer.

The material requirements and standard test methods in effect at the time the proposed Contract is advertised govern. Unless otherwise specified, the Engineer will perform testing at Owner's expense. In addition to facilities and equipment required by the Contract, furnish facilities and calibrated equipment required for tests to control the manufacture of construction items. If requested, provide a complete written statement of the origin, composition, and manufacture of materials.

All materials used are subject to inspection or testing at any time during preparation or use. Material that has been tested and approved at a supply source or staging area may be inspected or tested before or during incorporation into the work and rejected if it does not meet Contract requirements. Copies of test results are available upon request. Do not use material that, after approval, becomes unfit for use.

Unless otherwise specified in the Contract, all testing must be performed within the United States and witnessed by the Engineer. If materials or processes require testing outside the contiguous 48 United States, reimburse the Owner for inspection expenses.

5. PLANT INSPECTION AND TESTING

The Engineer may but is not obligated to inspect materials at the acquisition or manufacturing source. Material samples will be obtained and tested for compliance with quality requirements.

If inspection is at the plant, meet the following conditions unless otherwise specified:

- cooperate fully and assist the Engineer during the inspection,
- ensure the Engineer has full access to all parts of the plant used to manufacture or produce materials,
- in accordance with pertinent items and the Contract provide a facility at the plant for use by the Engineer as an office or laboratory
- provide and maintain adequate safety measures and restroom facilities, and
- furnish and calibrate scales, measuring devices, and other necessary equipment in accordance with the Contract.

The Engineer may provide inspection for periods other than daylight hours if:

- continuous production of materials for Owner's use is necessary due to the production volume being handled at the plant, and
- the lighting is adequate to allow satisfactory inspection.

6. STORAGE OF MATERIALS

Store and handle materials to preserve their quality and fitness for the work. Store materials so that they can be easily inspected and retested. Place materials under cover, on wooden platforms, or on other hard, clean surfaces as necessary or when directed.

Obtain approval to store materials on the right of way. Storage space off the right of way is at the Contractor's expense.

7. OWNER-FURNISHED MATERIAL

The Owner will supply materials as shown on the plans. The cost of handling and placing materials supplied by the Owner will not be paid for directly, but will be subsidiary to the Item in which they are used. Assume responsibility for materials upon receipt.

8. USE OF MATERIALS FOUND ON THE RIGHT OF WAY

Material found in the excavation areas and meeting the Owner's specifications may be used in the work. This material will be paid for at the Contract bid price for excavation and under the Item for which the material is used.

Do not excavate or remove any material from within the right of way that is not within the limits of the excavation without written permission. If excavation is allowed within a right of way project-specific location, replace the removed material with suitable material at no cost to the Owner as directed.

9. RECYCLED MATERIALS

The Owner will not allow hazardous wastes, as defined in 30 TAC § 335, proposed for recycling to be used on the project. Use nonhazardous recyclable materials (NRMs) only if the specification for the Item does not disallow or restrict use. Determine whether NRMs are regulated under 30 TAC §§ 312, 330, 332, 334, or 335, and comply with all general prohibitions and requirements. Use NRMs in accordance with [DMS-11000](#), "Evaluating and Using Nonhazardous Recyclable Materials Guidelines," and furnish all documentation in the manner prescribed by the Owner.

10. HAZARDOUS MATERIALS

Comply with the requirements of Article 7L.12., "Responsibility for Hazardous Materials."

Notify the Engineer immediately when a visual observation or odor indicates that materials on sites owned or controlled by the Owner may contain hazardous materials. Except when the contract includes bid items for the Contractor to remove hazardous materials, the Owner is responsible for testing, removing, and disposing of hazardous materials not introduced by the Contractor. The Engineer may suspend work wholly or in part during the testing, removing, or disposing of hazardous materials, except in the case where hazardous materials are introduced by the Contractor.

Use materials that are free of hazardous materials. Notify the Engineer immediately if materials are suspected to contain hazardous materials. If materials delivered to the project by the Contractor are suspected to contain hazardous materials, have an approved commercial laboratory test the materials for the presence of hazardous materials as approved. Remove, remediate, and dispose of any of these materials found to contain hazardous materials. The work required to comply with this Section will be at the Contractor's expense if materials are found to contain hazardous materials. Working day charges will not be suspended and extensions of working days will not be granted for activities related to handling hazardous material introduced by the Contractor. If suspected materials are not found to contain hazardous materials, the Owner will reimburse the Contractor for hazardous materials testing and will adjust working day charges if the Contractor can show that this work impacted the critical path.

- 10.1. **Painted Steel Requirements.** Coatings on existing steel contain hazardous materials unless otherwise shown on the plans. Remove paint and dispose of steel coated with paint containing hazardous materials in accordance with the following.

Removing Paint from Steel. For contracts that are specifically for painting steel, include the cleaning and painting of steel under Item 446, "Field Cleaning and Painting Steel," as a pay item. Perform work in accordance with that Item.

For projects where paint must be removed to allow for the dismantling of steel or to perform other work, the Owner will provide for a separate contractor (third party) to remove paint containing hazardous materials before or during the Contract. Remove paint covering existing steel shown not to contain hazardous materials in accordance with Item 446.

- 10.1.1. **Removal and Disposal of Painted Steel.** For steel able to be dismantled by unbolting, paint removal will not be performed by the Owner. The Owner will remove paint, at locations shown on the plans or as agreed, for the Contractor's cutting and dismantling purposes. Use Owner-cleaned locations for dismantling when provided or provide own means of dismantling at other locations.

Painted steel to be retained by the Owner will be shown on the plans. For painted steel that contains hazardous materials, dispose of the painted steel at a steel recycling or smelting facility unless otherwise shown on the plans. Maintain and make available to the Engineer invoices and other records obtained from the facility showing the received weight of the steel and the facility name. Dispose of steel that does not contain hazardous material coatings in conformance with federal, state, and local regulations.

- 10.2. **Asbestos Requirements.** The plans will indicate locations or elements where asbestos-containing materials (ACMs) are known to be present. Where ACMs are known to exist or where previously unknown ACM has been found, the Owner will arrange for abatement by a separate contractor before or during the Contract. Notify the Engineer of proposed dates of demolition or removal of structural elements with ACM at least 60 days before beginning work to allow the Owner sufficient time for abatement.

The Texas Department of State Health Services (DSHS), Asbestos Programs Branch, is responsible for administering the requirements of the National Emissions Standards for Hazardous Air Pollutants, (NESHAP), in accordance with 40 CFR Part 61, Subpart M, and the Texas Asbestos Health Protection Rules (TAHPR). Based on EPA guidance and regulatory background information, bridges are considered to be a regulated "facility" under NESHAP; therefore, federal standards for demolition and renovation apply.

The Owner is required to notify DSHS at least 10 working days (by postmarked date) before initiating demolition or renovation of each structure shown on the plans. If the actual demolition, renovation, or removal date is changed or delayed, notify the Engineer in writing of the revised dates in sufficient time to allow for the Owner's notification to DSHS to be postmarked at least 10 days in advance of the actual work.

The Owner retains the right to determine the actual advance notice needed for the change in date to address post office business days and staff availability.

- 10.3. **Asbestos or Lead Abatement.** Provide traffic control as shown on the plans, and coordinate and cooperate with the third party and the Owner for managing or removing hazardous materials. Work for the traffic control shown on the plans and coordination work will not be paid for directly, but will be subsidiary to pertinent Items.

11. SURPLUS MATERIALS

Take ownership of surplus materials unless otherwise shown on the plans or directed. Remove and dispose of materials in conformance with federal, state, and local regulations. If requested, provide an appropriate level of documentation to verify proper disposal. When materials are disposed of on private property, provide written authorization from the property owner for the use of the property for this purpose upon request.

Item 7L

Legal Relations and Responsibilities



1. ETHICS – NOT APPLICABLE TO LOCALLY LET PROJECTS

2. SAFETY

- 2.1. **Safety Point of Contact.** Designate, in writing, a Contractor Safety Point of Contact (CSPOC). The Owner will assign an employee for their point of contact designated as Owner's Safety Point of Contact OSPOC. The Contract requires that the Contractor's and subcontractor's employees use the appropriate personal protective equipment (PPE) (e.g., hardhats, safety vests, and protective toe footwear) to meet regulations.

The Contractor will require that crew leaders and foremen (including subcontractors) have attended the required training.

- 2.2. **Safety Preconstruction Meeting.** In cooperation with the Engineer, schedule and attend a safety preconstruction meeting (may be a part of the preconstruction conference in accordance with Article 4L.2., "Preconstruction Conference"). Attendees for this safety preconstruction meeting will be:

- the Contractor,
- subcontractors,
- the Owner,
- local law enforcement, and
- other personnel who play an active role on the project.

- 2.3. **Safety Contingency.** To improve the effectiveness of traffic handling and enhance safety during the course of this project, a safety contingency fund may have been included in the project budget for traffic control plan adjustments and other safety-related improvements.

Costs associated with the adjustments or improvements will be paid for in accordance with Article 9L.7., "Payment for Extra Work and Force Account Method." Article 9L.7., "Payment for Extra Work and Force Account Method," is not intended to be used in lieu of bid items established by the Contract.

- 2.4. **Public Safety and Convenience.** In accordance with the Contract and as directed, provide for the safety and convenience of the public and property. Keep existing roadways open to traffic or construct and maintain detours and temporary structures for safe public travel. Manage construction to minimize disruption to traffic. Maintain the roadway in a good and passable condition, including proper drainage, and provide for ingress and egress to adjacent property.

If the construction of the project requires the closing of a roadway, as directed, coordinate the closure with the Engineer and work to ensure all lanes and ramps possible are available during peak traffic periods before, during, and after significant traffic generator events to avoid any adverse economic impact on the municipalities during:

- dates or events as shown on the plans, and
- other dates as directed.

Store all equipment not in use in a manner and at locations that will not interfere with the safe passage of traffic.

If the Engineer determines that any of the requirements of this Article have not been met, the Engineer may take corrective action. This will not change the legal responsibilities set forth in the Contract. The cost to the Owner for this work will be deducted from any money due or to become due to the Contractor.

- 2.5. **Use of Blue Warning Lights.** Texas Transportation Code § 547.105 authorizes the use of warning lights to promote safety and provides an effective means of gaining the traveling public's attention as they drive in areas where construction crews are present. To influence the public to move over when high-risk construction activities are taking place, minimize the use of blue warning lights. These lights must be used only while performing work on or near the travel lanes or shoulder where the traveling public encounters construction crews that are not protected by a standard work zone setup, such as a lane closure, a shoulder closure, or one-way traffic control. Refrain from leaving the warning lights engaged while traveling from one work location to another or while parked on the right of way away from the pavement or a work zone.
- 2.6. **Barricades, Signs, and Traffic Handling.** Comply with the requirements of Item 502 "Barricades, Signs, and Traffic Handling," and as directed. Provide traffic control devices as shown on the plans and in accordance with the TMUTCD. When authorized or directed, provide additional signs or traffic control devices not required by the plans.
- If an unexpected situation arises that causes the Contractor to believe that the traffic control should be changed, make all reasonable efforts to promptly contact the Engineer. Take prudent actions until the Engineer can be contacted.
- The Engineer will inspect the traffic control devices. Comply with the results of the inspection in the prescribed timeframe.
- The work performed and materials furnished in accordance with this Section and Item 502 have no bearing on the prosecution of Items 1L–10L, "General Requirements and Covenants," of the Contract. This includes, but is not limited to installing, relocating, and removing project limit advance warning signs.
- 2.6.1. **Contractor Responsible Person and Alternate.** Designate in writing a Contractor's Responsible Person (CRP) and an alternate to be the representative of the Contractor who is responsible for taking or directing corrective measures regarding the traffic control. The CRP or alternate must be accessible by telephone 24 hr. per day and able to respond when notified. The CRP and alternate must comply with the requirements of Section 7L.2.6.5., "Training."
- 2.6.2. **Flaggers.** Designate, in writing, a flagger instructor who will serve as a flagging supervisor and is responsible for training and assuring that all flaggers are qualified to perform flagging duties. Certify to the Engineer that all flaggers will be trained and make available upon request a list of flaggers trained to perform flagging duties.
- Provide flaggers as directed. Flaggers must be courteous and able to effectively communicate with the public. When directing traffic, flaggers must dress appropriately; wear high-visibility safety apparel; use flags, signs, stop-slow paddles, and other hand-signaling devices; and follow the flagging procedures in the TMUTCD. Comply with the requirements of Section 7L.2.6.5., "Training."
- 2.6.3. **Law Enforcement Personnel.** Provide uniformed law enforcement personnel with patrol vehicles as directed. Document the work zone traffic services provided in the manner prescribed by the Owner. Law enforcement personnel providing work zone traffic services must be trained for the service they perform. Comply with Section 7L.2.6.5., "Training."
- 2.6.4. **Other Work Zone Personnel.** Workers involved with traffic control, including the maintenance of the traffic control, must comply with the requirements of Section 7L.2.6.5., "Training."
- 2.6.5. **Training.** Train workers involved with the traffic control using Department-approved training as shown on the "Traffic Control Training" MPL.

Coordinate enrollment, pay associated fees, and successfully complete Department-approved training or Contractor-developed training. Training is valid for the period prescribed by the provider. Except for law enforcement personnel training, refresher training is required every 4 yr. from the date of completion unless otherwise specified by the course provider. The Engineer may require training at a specified frequency instead of the period prescribed based on the Owner's needs. Training and associated fees will not be measured or paid for directly, but will be subsidiary to pertinent Items.

Certify to the Engineer that workers involved in traffic control and other work zone personnel have been trained and make available upon request a copy of the certification of completion to the Engineer. The certification of completion includes:

- name of provider and course title,
- name of participant,
- date of completion, and
- date of expiration.

Where Contractor-developed training or a TxDOT-approved training course does not produce a certification, maintain a log of attendees. Make the log available upon request. Provide a log that is legible and includes:

- printed name and signature of participant,
- name and title of trainer, and
- date of training.

2.6.5.1. **Contractor-Developed Training.** Develop and deliver Contractor-developed training meeting the minimum requirements established by the Owner. The outline for this training must be submitted to the Engineer for approval at the preconstruction meeting. The CRP or designated alternate may deliver the training instead of the TxDOT-approved training. The work performed and materials furnished to develop and deliver the training will not be measured or paid for directly, but will be subsidiary to pertinent Items.

2.6.5.1.1. **Flagger Training Minimum Requirements.** A Contractor's certified flagging instructor is permitted to train other flaggers.

2.6.5.1.2. **Other Contractor-Developed Training for Other Work Zone Personnel.** For other work zone personnel, the Contractor may provide training meeting the curriculum described below instead of TxDOT-approved training.

Minimum curriculum for Contractor-provided training is as follows.

Contractor-developed training must provide information on the use of PPE, occupational hazards and health risks, and other pertinent topics related to traffic management. The type and amount of training will depend on the job duties and responsibilities. Develop training applicable to the work being performed. Develop training to include the following topics.

- Adopt a company safety motto: "The Life You Save May Be Your Own," or similar.
- Purpose of the training includes the following.
 - "It's the Law."
 - Make work zones safer for workers and motorists.
 - Understand what is needed for traffic control.
 - Save lives including your own.
- Personal and co-worker safety includes the following.
 - **High-Visibility Safety Apparel.** Discuss compliant requirements; inspect regularly for fading and reduced reflective properties; if night operations are required, discuss the additional and appropriate required apparel in addition to special night work risks; and if moving operations are underway, discuss appropriate safety measures specific to the situation and traffic control plan.

- **Blind Areas.** A blind area is the area around a vehicle or piece of construction equipment not visible to the operators, either by line of sight or indirectly by mirrors. Discuss the “Circle of Safety” around equipment and vehicles; use of spotters; maintaining eye contact with equipment operators; and use of hand signals.
- **Runovers and Backovers.** Remain alert at all times; keep a safe distance from traffic; avoid turning your back to traffic, and if you must, then use a spotter; and stay behind protective barriers, whenever possible. It is not safe to sit on or lean against a concrete barrier; these barriers can deflect 4 ft. or more when struck by a vehicle.
- Look out for each other and warn co-workers.
- Be courteous to motorists.
- Do not run across active roadways.
- Workers must obey traffic laws and drive courteously while operating vehicles in the work zones.
- Workers must be made aware of company distracted driving policies.
- **Nighttime Operations.** Focus on projects with a nighttime element.
- **Traffic Control Training.** Basics of traffic control include the following.
 - Identify work zone traffic control supervisor and other appropriate persons to report issues to when they arise.
 - Emphasize that work zone traffic control devices must be in clean and undamaged condition. If devices have been hit but not damaged, return them to their correct place and report to the traffic control supervisor. If devices have been damaged, replace with new devices and report to the traffic control supervisor. If devices are dirty, faded, or have missing or damaged reflective tape, clean or replace them and report to the traffic control supervisor. Show examples of unacceptable device conditions. Discuss various types of traffic control devices to be used and where spacing requirements can be found.
 - **Channelizing Devices and Barricades with Slanted Stripes.** Stripes must slant in the direction in which you want traffic to stay or move; demonstrate this with a device.
 - **Traffic Queuing.** Workers must be made aware of traffic queuing and the dangers created by it. Workers must be instructed to immediately notify the traffic control supervisor and other supervisory personnel if traffic is queuing beyond advance warning sign and devices or construction limits.
 - **Signs.** Signs must be straight and not leaning. Report problems to the traffic control supervisor or other as designated for immediate repair. Covered signs must be fully covered. If covers are damaged or out of place, report to the traffic control supervisor or other as designated.

3. LAWS TO BE OBSERVED

Comply with all federal, state, and local laws, ordinances, and regulations that affect the performance of the work. The Contractor is not required to comply with city electrical ordinances not included in this Contract. Indemnify and save harmless the Owner and its representatives against any claim arising from violation by the Contractor of any law, ordinance, or regulation.

This Contract is between the Owner and the Contractor only. No person or entity may claim third-party beneficiary status under this Contract or any of its provisions, nor may any non-party sue for personal injuries or property damage under this Contract.

4. PERMITS, LICENSES, AND TAXES

Procure all permits and licenses; pay all charges, fees, and taxes; and give all notices necessary and incidental to the due and lawful prosecution of work, except for permits provided by the Owner and as specified in Article 7L.7., “Preservation of Cultural and Natural Resources and the Environment.”

5. PATENTED DEVICES, MATERIAL, AND PROCESSES

Indemnify and save harmless the Owner from any claims for infringement from the Contractor's use of any patented design, device, material, process, trademark, or copyright selected by the Contractor and used in connection with the work. Indemnify and save harmless the Owner against any costs, expenses, or damages that it may be obliged to pay, by reason of this infringement, at any time during the prosecution or after the completion of the work.

6. PERSONAL LIABILITY OF PUBLIC OFFICIALS

Owner employees are agents and representatives of the Owner and will incur no liability, personal or otherwise, in carrying out the provisions of the Contract or in exercising any power or authority granted under the Contract.

7. PRESERVATION OF CULTURAL AND NATURAL RESOURCES AND THE ENVIRONMENT

Project-specific information pertinent to cultural and natural resources is included in the plan set in the General Notes and on the Environmental Permits, Issues, and Commitments (EPIC) sheet. Adhere to all guidance, Best Management Practices (BMPs), and permits shown on the plans. Signing the Contract certifies compliance with all applicable laws, rules, and regulations pertaining to the preservation of cultural resources, natural resources, and the environment as issued by the following or other agencies.

- OSHA
- TCEQ
- Texas Department of Transportation
- Texas Historical Commission
- Texas Parks and Wildlife Department
- Texas Railroad Commission
- U.S. Army Corps of Engineers (USACE)
- U.S. Department of Energy
- U.S. Department of Transportation
- EPA
- Federal Emergency Management Agency
- U.S. Fish and Wildlife Service

All subcontractors must also comply with applicable environmental laws, rules, regulations, and requirements in the Contract.

- 7.1. **Cultural Resources.** Cease all work immediately if a site, building, or location of historical, archeological, educational, or scientific interest is discovered within the right of way. The site, building, or location will be investigated and evaluated by the Owner.
- 7.2. **Protected and Imperiled Species and Wildlife.** Cease all work immediately and within 50 ft. if a protected or imperiled species, or any species assumed to be protected or imperiled, or wildlife is encountered onsite. Allow any animals to leave the area. Do not kill any wildlife. Contact Owner's environmental staff to investigate and evaluate any species or wildlife issues.
- 7.3. **Migratory Birds.** Bird and nest removal must not occur during vegetation clearing, construction, or maintenance activities on structures where birds or nests are present during the nesting season, as shown on the plans. If work will occur during the nesting season, measures to prevent nest establishment must be used before the start of nesting season or any activity. Contact Owner's environmental staff for assistance with birds and nests.

7.4. **Texas Pollutant Discharge Elimination System (TPDES) Permits and Stormwater Pollution Prevention Plans (SWP3s).**

7.4.1. Projects with Less than 1 Acre of Soil Disturbance Including Required Associated Project Specific Locations (PSLs) in Accordance with TPDES Construction General Permit (CGP) No. TXR150000. No construction site notice (CSN) posting will be required for soil disturbances within the right of way. Adhere to the requirements of the SWP3 and environmental layout as shown on the plans.

7.4.2. Projects with 1 Acre but Less than 5 Acres of Soil Disturbance Including Required Associated PSLs in Accordance with TPDES CGP No. TXR150000. The Owner and the Contractor will operate under a shared SWP3 for portions of the project in the right of way.

The Owner will be considered the primary operator with operational control over plans and specifications as defined in TPDES CGP No. TXR150000 for construction activity in the right of way. The Owner will post a small CSN and follow other requirements as defined in TPDES CGP No. TXR150000 as the entity having operational control over plans and specifications for work shown on the plans in the right of way.

The Contractor will be considered the primary operator with day-to-day operational control as defined in TPDES CGP No. TXR150000 for construction activity in the right of way. In addition to the Owner's actions, the Contractor will post a small CSN and follow other requirements as defined in TPDES CGP No. TXR150000 as the entity having day-to-day operational control of the work shown on the plans in the right of way. This is in addition to the Contractor being responsible for TPDES CGP No. TXR150000 requirements for on-right-of-way and off-right-of-way PSLs. The Contractor will adhere to all requirements of the SWP3 and environmental layout as shown on the plans. The Contractor will be responsible for implementing the SWP3 for the project site as shown on the plans, in conformance with specifications, in accordance with TPDES CGP No. TXR150000, and as directed. Notification to Municipal Separate Storm Sewer System (MS4) operators (when applicable) upon project initiation and completion must be provided in accordance with TPDES CGP No. TXR150000 requirements. A signed copy of the small CSN will be provided to MS4 operators (where applicable) at least 2 days before commencing construction.

With the Engineer's concurrence upon the completion of soil disturbing activities and achieving permanent stabilization of 70% native background vegetation cover, the CSN may be removed.

7.4.3. **Projects with 5 Acres or More of Soil Disturbance Including Required Associated PSLs in Accordance with TPDES CGP No. TXR150000.** The Owner and the Contractor will operate under a shared SWP3 for portions of the project in the right of way. The Owner will be considered the primary operator with operational control over plans and specifications as defined in TPDES CGP No. TXR150000 for construction activities in the right of way. The Owner will post a large CSN and file a Notice of Intent (NOI); Notice of Change (NOC), if applicable; and Notice of Termination (NOT), along with other requirements in accordance with TPDES CGP No. TXR150000, as the entity having operational control over plans and specifications for work shown on the plans in the right of way.

The Contractor will be considered the primary operator for day-to-day operational control as defined in TPDES CGP No. TXR150000 for construction activities in the right of way. In addition to the Owner's actions, the Contractor will file an NOI; NOC, if applicable; and NOT and post a large CSN along with other requirements as the entity having day-to-day operational control of the work shown on the plans in the right of way. This is in addition to the Contractor being responsible for TPDES CGP No. TXR150000 requirements for on-right-of-way and off-right-of way PSLs. Adhere to all requirements of the SWP3 and environmental layout as shown on the plans.

7.4.3.1. **Notice of Intent (NOI).** Contractor will submit an NOI to TCEQ in accordance with TPDES CGP No. TXR150000 requirements. NOI must be submitted at least 7 days before commencement of construction activities at the project site. Contractor must file NOI under the same Regulated Entity Number (RN) as the Owner. Provide a signed copy to the Engineer and any other MS4 operators (where applicable) at the time of submittal. The Owner will submit their NOI before Contractor submission and will provide a copy for Contractor's use in completing the Contractor's NOI form.

- 7.4.3.2. **Notice of Change (NOC).** Upon concurrence of the Engineer, submit an NOC to TCEQ within 14 days of discovery of a change or revision to the NOI as required by the CGP. Provide a signed copy of the NOC to the Engineer and any other MS4 operators (where applicable) at the time of submittal.
- 7.4.3.3. **Notice of Termination (NOT).** Upon concurrence of the Engineer, submit an NOT to TCEQ within 30 days of the Engineer's approval that 70% native background vegetative cover is met or equivalent permanent stabilization has been employed in accordance with TPDES CGP No. TXR150000. Provide a signed copy of the NOT to the Engineer and any other MS4 operators (where applicable) at the time of submittal.
- 7.4.4. **Training.** Not applicable to Locally Let Projects.
- 7.5. **Work in Waters of the United States.** For work in the right of way, the Owner will obtain any required Section 404 permits from U.S. Army Corps of Engineers USACE before work begins. Adhere to all agreements, mitigation plans, and standard BMPs required by the permit. When Contractor-initiated changes in the construction method change the impacts on Waters of the United States, obtain new or revised Section 404 permits.
- 7.6. **Work in Navigable Waters of the United States.** For work in the right of way, the Owner will obtain any required Section 9 permits from the U.S. Coast Guard before work begins. Adhere to the stipulations of the permits and associated BMPs. When Contractor-initiated changes in the construction method change the impacts on Navigable Waters of the United States, obtain new or revised Section 9 permits.
- 7.7. **Work over Recharge or Contributing Zone of Protected Aquifers.** Make every reasonable effort to minimize the degradation of water quality resulting from impacts relating to work over the recharge or contributing zones of protected aquifers, as defined and delineated by TCEQ. Use BMPs and perform work in accordance with the Contract requirements.
- 7.8. **Project Specific Locations.** For all PSLs on or off the right of way (e.g., material sources, waste sites, parking areas, storage areas, field offices, staging areas, and haul roads), comply with all applicable laws, rules, and regulations pertaining to the preservation of cultural resources, natural resources, and the environment in accordance with Section 7L 7.1., "Cultural Resources." All subcontractors must also comply with applicable environmental laws, rules, regulations, and requirements in the Contract. Maintain documentation of environmental compliance activities, including environmental consultant reports and correspondence with the resource agencies. Provide documentation upon request. Obtain written approval from the Engineer for all PSLs in the right of way not specifically addressed on the plans. Prepare an SWP3 for all Contractor facilities, such as asphalt or concrete plants located within right of way. Comply with all TCEQ permit requirements for portable facilities, such as concrete batch plants, rock crushers, and asphalt plants. Ensure compliance with all environmental issues, such as Section 404 permits, wetland delineation, endangered species consultation requirements, or archeological and historic site impacts. Obtain all permits and clearances in advance.
- 7.9. **Contractor Responsibility.** If the Contractor initiates changes to the Contract and the Owner approves the changes, the Contractor is responsible for obtaining clearances and coordinating with the appropriate regulatory agencies.

8. AGRICULTURAL IRRIGATION

Regulate the sequence of work and make provisions as necessary to provide for agricultural irrigation or drainage during the work. Meet with the service provider or landowner to determine the proper time and sequence when irrigation demands will permit shutting off water flows to perform work.

Unless otherwise shown on the plans, the work performed in accordance with this Article will not be measured or paid for directly, but will be subsidiary to pertinent Items.

9. SANITARY PROVISIONS

Provide and maintain adequate, neat, and sanitary toilet accommodations for employees, including State employees, in compliance with the requirements and regulations of the Texas Department of State Health Services or other authorities having jurisdiction.

10. ABATEMENT AND MITIGATION OF EXCESSIVE OR UNNECESSARY NOISE

Minimize noise throughout all phases of the Contract. Exercise particular and special efforts to avoid the creation of unnecessary noise impact on adjacent noise-sensitive receptors in the placement of non-mobile equipment, such as air compressors, generators, and pumps. Place mobile and stationary equipment to cause the least disruption to normal adjacent activities.

All equipment associated with the work must be equipped with components to suppress excessive noise, and these components must be maintained in their original operating condition considering normal depreciation. Noise attenuation devices installed by the manufacturer, such as mufflers, engine covers, and insulation, must not be removed or rendered ineffectual, or be permitted to remain off the equipment while the equipment is in use.

11. USING EXPLOSIVES

Do not endanger life or property. When required by the plans or requested, provide a written blasting plan. The Owner retains the right to reject the blasting plan. Store all explosives securely, and clearly mark all storage places with "DANGER—EXPLOSIVES." Store, handle, and use explosives and highly flammable material in compliance with federal, state, and local laws, ordinances, and regulations. Assume liability for property damage, injury, or death resulting from the use of explosives.

Give at least 48-hr. advance notice to the appropriate railroad representative before doing any blasting work involving the use of electric blasting caps within 200 ft. of any railroad track.

12. RESPONSIBILITY FOR HAZARDOUS MATERIALS

Comply with the requirements of Article 6L.10., "Hazardous Materials." Indemnify and save harmless the Owner and its agents and employees from all suits, actions, or claims and from all liability and damages for any injury or damage to any person or property arising from the generation or disposition of hazardous materials introduced by the Contractor on any work done by the Contractor on Owner-owned or controlled sites. Indemnify and save harmless the Owner and its representatives from any liability or responsibility arising out of the Contractor's generation or disposition of any hazardous materials obtained, processed, stored, or shipped, on sites not owned or controlled by the Owner. Reimburse the Owner for all payments, fees, or restitution the Owner is required to make as a result of the Contractor's actions.

13. RESTORING SURFACES OPENED BY PERMISSION

Do not authorize anyone to make an opening in the highway for utilities, drainage, or any other reason without written permission from the Engineer. Repair all openings as directed. Payment for repair of surfaces opened by permission will be made in conformance with pertinent Items or in accordance with Article 4L.4., "Changes in the Work." Costs associated with openings made with Contractor authorization but without Owner approval will not be paid.

14. PROTECTING ADJACENT PROPERTY

Protect adjacent property from damage. If any damage results from an act or omission on the part of or on behalf of the Contractor, take corrective action to restore the damaged property to a condition similar or equal to that existing before the damage was done.

15. RESPONSIBILITY FOR DAMAGE CLAIMS

Indemnify and save harmless the Owner and its agents and employees from all suits, actions, or claims and from all liability and damages for any injury or damage to any person or property due to the Contractor's negligence in the performance of the work and from any claims arising or amounts recovered under any laws, including workers' compensation and the Texas Tort Claims Act. Indemnify and save harmless the Owner and assume responsibility for all damages and injury to property of any character occurring during the prosecution of the work resulting from any act, omission, neglect, or misconduct on the Contractor's part in the manner or method of executing the work; from failure to properly execute the work; or from defective work or material.

Pipelines and other underground installations that may or may not be shown on the plans may be located within the right of way. Indemnify and save harmless the Owner from any suits or claims resulting from damage by the Contractor's operations to any pipeline or underground installation. Make available the scheduled sequence of work to the respective utility owners so that they may coordinate and schedule adjustments of their utilities that conflict with the proposed work.

16. HAULING AND LOADS ON ROADWAYS AND STRUCTURES

Comply with federal and state laws concerning legal gross and axle weights. Except for the designated Interstate system, vehicles with a valid yearly overweight tolerance permit may haul materials to the work locations at the permitted load. Provide copies of the yearly overweight tolerance permits to the Engineer upon request. Construction equipment is not exempt from oversize or overweight permitting requirements on roadways open to the traveling public.

Protect existing bridges and other structures that will remain in use by the traveling public during and after the completion of the Contract. Construction traffic on roadways, bridges, and culverts within the limits of the work, including any structures under construction that will remain in service during and after completion of the Contract, is subject to legal size and weight limitations.

Additional temporary fill may be required by the Engineer for hauling purposes for the protection of certain structures. This additional fill will not be paid for directly, but will be subsidiary to pertinent Items.

Replace or restore to original condition any structure damaged by the Contractor's operations.

The Engineer may allow equipment with oversize or non-divisible overweight loads to operate without a permit within the work locations on pavement structures not open to the traveling public. Submit Contractor-proposed changes to traffic control plans for approval, in accordance with Item 502. The following Sections further address overweight allowances. The Owner will make available to the Contractor any available plans and material reports for existing structures.

- 16.1. Overweight Construction Traffic Crossing Structures.** The Engineer may allow crossing of a structure not open to the public within the work locations when divisible or non-divisible loads exceed legal weight limitations, including limits for load-posted bridges. Obtain written permission to make these crossings. Submit for approval a structural analysis by a licensed professional engineer indicating that the excessive loads should be allowed. Provide a manufacturer's certificate of equipment weight that includes the weight distribution on the various axles and any additional parts, such as counterweights, the configuration of the axles, or other information necessary for the analysis. Submit the structural analysis and supporting documentation sufficiently in advance of the move to allow for review by the Engineer. Permission may be granted if the Engineer finds that no damage or overstresses exceeding those normally allowed for occasional overweight loads will result to structures that will remain in use after Contract completion. Provide temporary matting or other protective measures as directed.

Schedule loads so that only one vehicle is on any span or continuous unit at any time. Use barricades, fences, or other positive methods to prevent other vehicular access to structures at any time the overweight load is on any span or continuous unit.

- 16.2. **Construction Equipment Operating on Structures.** Cranes and other construction equipment used to perform construction operations that exceed legal weight limits may be allowed on structures. Before any operation that may require placement of equipment on a structure, submit for approval a detailed structural analysis prepared by a licensed professional engineer.
- Submit the structural analysis and supporting documentation sufficiently in advance of the use to allow for review by the Engineer. Include all axle loads and configurations, spacing of tracks or wheels, tire loads, outrigger placements, center of gravity, equipment weight, and predicted loads on tires and outriggers for all planned movements, swings, or boom reaches. The analysis must demonstrate that no overstresses exceeding those normally allowed for occasional overweight loads will occur.
- 16.3. **Loads on Structures.** Do not store or stockpile material on bridge structures without written permission. If required, submit a structural analysis and supporting documentation by a licensed professional engineer for review by the Engineer. Permission may be granted if the Engineer finds that no damage or overstresses exceeding those normally allowed for occasional overweight loads will result to structures that will remain in use after Contract completion. Provide temporary matting or other protective measures as directed.
- 16.4. **Hauling Divisible Overweight Loads on Pavement Within Work Locations.** The Engineer may allow divisible overweight loads on pavement structures within the work locations not open to the traveling public. Obtain written approval before hauling the overweight loads. Include calculations to demonstrate that there will be no damage or overstress to the pavement structure.

17. CONTRACTOR'S RESPONSIBILITY FOR WORK

Until final acceptance of the Contract, take every precaution against injury or damage to any part of the work by the action of the elements or by any other cause, whether arising from the execution or from the non-execution of the work. Protect all materials to be used in the work at all times, including periods of suspension.

When any roadway or portion of the roadway is in suitable condition for travel, it may be opened to traffic as directed. Opening of the roadway to traffic does not constitute final acceptance.

Repair damage to all work until final acceptance. Repair damage to existing facilities in accordance with the Contract or as directed by the Engineer. Repair damage to existing facilities or work caused by Contractor operations at the Contractor's expense. Repair work for damage that was not due to the Contractor's operations will not be paid for except as provided below.

- 17.1. **Reimbursable Repair.** Except for damage to appurtenances listed in Section 7L.17.2.1., "Unreimbursed Repair," the Contractor will be reimbursed for repair of damage caused by:
- motor vehicle, watercraft, aircraft, or railroad-train incident;
 - vandalism; or
 - Acts of God, such as earthquake, tidal wave, tornado, hurricane, or other cataclysmic phenomena of nature.
- 17.2. **Appurtenances.**
- 17.2.1. **Unreimbursed Repair.** Except for destruction (not reusable) due to Acts of God, reimbursement will not be made for repair of damage to the following temporary appurtenances, regardless of cause:
- signs,
 - barricades, and
 - other work zone traffic control devices.

Crash cushion attenuators and guardrail end treatments are reimbursed in accordance with Section 7L.17.2.2., "Reimbursed Repair." Truck-mounted attenuators, trailer attenuators, and portable changeable message signs are eligible for reimbursed repair in accordance with Section 7L.17.2.2.,

"Reimbursed Repair." Reimbursement will only be made when the Engineer directs the placement of the device in a location other than what is depicted in the Contract and the Contractor is unable to seek reimbursement from third-party insurance.

Where the Contractor retains replaced appurtenances after completion of the project, the Owner will limit the reimbursement to the cost that is above the salvage value at the end of the project.

17.2.2. **Reimbursed Repair.** Reimbursement will be made for repair of damage due to the causes listed in Section 7L.17.1, "Reimbursable Repair."

17.3. **Roadways and Structures.** Until final acceptance, the Contractor is responsible for all work constructed under the Contract. The Owner will not reimburse the Contractor for repair work to new construction, unless the failure or damage is due to one of the causes listed in Section 7L.17.1, "Reimbursable Repair."

The Owner will be responsible for the cost for repair of damage to existing roadways and structures not caused by the Contractor's operations.

17.4. **Detours.** The Contractor will be responsible for the cost of maintenance of detours constructed under the Contract, unless the failure or damage is due to one of the causes listed in Section 7L.17.1, "Reimbursable Repair." In addition, the Engineer will reimburse the Contractor for repairs to detours when failures occur for reasons beyond the Contractor's control. Reimbursement will be made for repairs to detours constructed unless the failure was due to materials and workmanship. The Owner will be responsible for the cost of maintenance of existing streets and roadways used for detours or handling traffic.

17.5. **Relief from Maintenance.** The Engineer may relieve the Contractor from responsibility of maintenance in accordance with this Section. This relief does not release the Contractor from responsibility for defective materials or work or constitute final acceptance. The Engineer will direct the Contractor to remove advance warning signs upon issuance of relief from maintenance.

17.5.1. **Isolated Work Locations.** For isolated work locations, when all work is completed, including work in accordance with Article 5L.11., "Final Cleanup," the Engineer may relieve the Contractor from responsibility for maintenance.

17.5.2. **Work Except for Vegetative Establishment and Test Periods.** When all work for all or isolated work locations has been completed, including work in accordance with Article 5L.11., "Final Cleanup," with the exception of vegetative establishment and maintenance periods and test and performance periods, the Engineer may relieve the Contractor from responsibility for maintenance of completed portions of work.

17.5.3. **Work Suspension.** When all work is suspended for an extended period of time, the Engineer may relieve the Contractor from responsibility for maintenance of completed portions of work during the period of suspension.

17.5.4. **When Directed by the Engineer.** The Engineer may relieve the Contractor from the responsibility for maintenance when directed.

17.6. **Basis of Payment.** When reimbursement for repair work is allowed and performed, payment will be made in conformance with pertinent Items or in accordance with Article 4L.4., "Changes in the Work."

18. ELECTRICAL REQUIREMENTS

18.1. **Definitions.**

18.1.1. **Electrical Work.** Electrical work is work performed for:

- Item 610, "Roadway Illumination Assemblies,"
- Item 614, "High Mast Illumination Assemblies,"
- Item 616, "Performance Testing of Lighting Systems,"

- Item 617, "Temporary Roadway Illumination,"
- Item 618, "Conduit,"
- Item 620, "Electrical Conductors,"
- Item 621, "Tray Cable,"
- Item 622, "Duct Cable,"
- Item 628, "Electrical Services,"
- Item 680, "Highway Traffic Signals,"
- Item 681, "Temporary Traffic Signals,"
- Item 684, "Traffic Signal Cables,"
- Item 685, "Roadside Flashing Beacon Assemblies,"
- other Items that involve either the distribution of electrical power greater than 50 volts or the installation of conduit and duct banks,
- the installation of conduit and wiring associated with Item 624, "Ground Boxes" and Item 656, "Foundations for Traffic Control Devices," and
- the installation of the conduit system for communication and fiber optic cable.

Electrical work does not include the installation of communications or fiber optic cable, or the connections for low-voltage and inherently power-limited circuits, such as electronic or communications equipment. Assembly and placement of poles, structures, cabinets, enclosures, manholes, or other hardware will not be considered electrical work if no wiring, wiring connection, or conduit work is done at the time of assembly and placement.

18.1.2. **Specialized Electrical Work.** Specialized electrical work is work that includes the electrical service and feeders, sub-feeders, branch circuits, controls, raceways, and enclosures for the following:

- pump stations,
- moveable bridges,
- ferry slips,
- motor control centers,
- facilities required in accordance with Item 504, "Field Office and Laboratory,"
- rest area or other public buildings,
- weigh-in-motion stations,
- electrical services larger than 200 amps,
- electrical services with main or branch circuit breaker sizes not shown in the Contract, and
- any three-phase electrical power.

18.1.3. **Certified Person.** A certified person is a person who has passed the test from TxDOT's course TRF450, "TxDOT Roadway Illuminations and Electrical Installations," or other courses as approved by the Traffic Safety Division. Submit a current and valid TRF certification upon request. Texas A&M Engineering Extension Service (TEEX) certifications for "TxDOT Electrical Systems" course will not be accepted.

18.1.4. **Licensed Electrician.** A licensed electrician is a person with a current and valid unrestricted master electrical license, or unrestricted journeyman electrical license, who is supervised or directed by an unrestricted master electrician. An unrestricted master electrician need not be on the work locations at all times while electrical work is being done, but the unrestricted master electrician must approve work performed by the unrestricted journeyman. Licensed electrician requirements by city ordinances do not apply to on State system work.

The unrestricted journeyman and unrestricted master electrician licenses must be issued by the Texas Department of Licensing and Regulation or by a city in Texas with a population of 50,000 or greater that issues licenses based on passing a written test and demonstrating experience.

The Engineer may accept other states' electrical licenses. Submit documentation of the requirements for obtaining that license. Acceptance of the license will be based on sufficient evidence that the license was issued based on:

- passing a test based on the NEC like that used by Texas licensing officials, and
- sufficient electrical experience commensurate with general standards for an unrestricted master and unrestricted journeyman electrician in the State of Texas.

18.2.

Work Requirements. The qualifications required to perform electrical work and specialized electrical work are shown in Table 1.

Table 1 Work Requirements	
Type of Work	Qualifications to Perform Work
Electrical work with plans	Licensed electrician, certified person, or workers directly supervised by a licensed electrician or certified person
Electrical work without plans	Licensed electrician or workers directly supervised by a licensed electrician
Specialized electrical work	Licensed electrician or workers directly supervised by a licensed electrician
Replace lamps, starting aids, and changing fixtures	Licensed electrician, certified person, or workers directly supervised by a licensed electrician or certified person
Conduit in precast section with approved working drawings	Inspection by licensed electrician or certified person
Conduit in cast-in-place section	Inspection by licensed electrician or certified person
All other electrical work (e.g., troubleshooting, repairs, and component replacement)	Licensed electrician or workers directly supervised by a licensed electrician

"Directly supervised by a licensed electrician" means that a licensed electrician is physically present during all electrical work. "Directly supervised by a licensed electrician or certified person" means that a licensed electrician or certified person is physically present during all electrical work.

A non-certified person may install conduit in cast-in-place concrete sections if the work is verified by a certified person before concrete placement.

When IMSA certification is specified on the plans, the requirements shown in Table 1 will still apply to the installation of the conduit, ground boxes, electrical services, pole grounding, and electrical conductors installed in accordance with Item 620.

19.

PAYROLLS

Pay employees and contract labor no less than the predetermined wage rates shown in the Contract. Require that subcontractors pay no less than the predetermined wage rates shown in the Contract.

Payroll records must contain the information required by law. As an option, Form WH-347, "Payroll," is provided by the U.S. Department of Labor.

Maintain payroll and related records during the course of the Contract and preserve these records for 3 yr. following the completion of the Contract or as required by law.

19.1.

Minimum Wage Requirements for Federally Funded Contracts. Comply with the requirements of FHWA-1273, "Required Contract Provisions Federal-Aid Construction Contracts."

For construction contracts, submit payroll records to the Engineer using the manner prescribed by the Owner.

- 19.2. **Minimum Wage Requirements for State-Funded Contracts.** Comply with the requirements of 29 USC § 206 unless otherwise shown in the Contract.

For construction contracts, submit payroll records to the Engineer in the manner prescribed.

20. SECURITY INCIDENTS – NOT APPLICABLE TO LOCALLY LET PROJECTS

Item 8L

Prosecution and Progress



1. PROSECUTION OF WORK

Begin work within 30 calendar days after the authorization date to begin work. Prosecute the work continuously to completion within the working days specified. Unless otherwise shown on the plans, work may be prosecuted in concurrent phases if no changes are required to the traffic control plan or if a revised traffic control plan is approved. Notify the Engineer at least 24 hr. before beginning work or before beginning any new operation. Do not start new operations to the detriment of work already begun. Minimize interference to traffic.

2. SUBCONTRACTING

Do not sublet any portion of a construction Contract without the Engineer's written approval. A subcontract does not relieve any responsibility under the Contract and bonds. Ensure that all subcontracted work complies with all governing labor provisions.

The Contractor certifies by signing the Contract that the Contractor will not enter into any subcontract with a subcontractor that is debarred or suspended by the Commission, Owner, or any federal agency.

For federally funded contracts, ensure the required federal documents are physically attached to each subcontract agreement, including all tiered subcontract agreements.

For all DBE subcontracts, including all tiered DBE subcontracts, submit a copy of the executed subcontract agreement.

Upon request, submit a copy of the executed non-DBE subcontracts, including all tiered non-DBE subcontracts.

- 2.1. **Construction Contracts and Federally Funded Maintenance Contracts.** Perform work with own organization on at least 30% of the total original Contract cost (25% if the Contractor is an SBE on a wholly State- or local-funded Contract), excluding any specialty items as determined by the Engineer. Specialty items are those that require highly specialized knowledge, abilities, or equipment not usually available in the contracting firm expected to bid on the proposed Contract as a whole.

Specialty items will be shown on the plans or as determined by the Engineer. Bid cost of specialty items performed by subcontractors will be deducted from the total original Contract cost before computing the required amount of work to be performed by the Contractor's own organization.

The term "perform work with own organization" includes only:

- workers employed and paid directly by the Contractor or wholly owned subsidiary;
- equipment owned by the Contractor or wholly owned subsidiary;
- rented or leased equipment operated by the Contractor's employees or wholly owned subsidiary's employees;
- materials incorporated into the work if the majority of the value of the work involved in incorporating the material is performed by the Contractor's own organization, including a wholly owned subsidiary's organization; and

- labor provided by staff leasing firms licensed under Chapter 91 of the Texas Labor Code for nonsupervisory personnel if the Contractor or wholly owned subsidiary maintains direct control over the activities of the leased employees and includes them in the weekly payrolls.

Mobilization is not included in calculation of 30%.

When staff leasing firms provide materials or equipment, they are considered subcontractors. In these instances, submit staff leasing firms for approval as a subcontractor.

Copies of canceled checks and certified statements may be required to verify compliance with the requirements of this Section.

- 2.2. **State-Funded Maintenance Contracts.** Not applicable to locally let projects.
- 2.3. **Payments to Subcontractors.** Report payments for DBE subcontracts, including tiered DBE subcontracts, in the manner as prescribed by the Owner by the 20th day of each month.
- 2.3.1. **Payment Records.** Make payment and related records, including but not limited to copies of canceled checks, available for inspection by the Owner. Retain payment records for a period of 3 yr. following the completion of the Contract.
- 2.4. **Payrolls.** Comply with Article 7L.19., "Payrolls."

3. COMPUTATION OF CONTRACT TIME FOR COMPLETION

The number of working days is established by the Contract. For Contracts with work orders, the number of working days is established in each work order. Working day charges will begin when work begins as prescribed in Article 8L.1., "Prosecution of Work." Working day charges will continue in accordance with the Contract.

The development of the conceptual time determination is intended to establish the number of working days on the Contract. Upon request, the Engineer will provide the conceptual time determination schedule to the Contractor for informational purposes only. The schedule assumes generic resources, production rates, sequences of construction and average weather conditions based on historic data. Schedule labor, equipment, procurement of materials, subcontractor work, and all other necessary means to prosecute the work within the number of working days specified by the Contract.

- 3.1. **Working Day Charges.** Working days will be charged in accordance with Section 8L.3.1.4., "Standard Workweek," unless otherwise shown on the plans. Working days will be computed and charged in accordance with one of the following:
 - 3.1.1. **Five-Day Workweek.** Working days will be charged Monday–Friday, excluding national holidays, regardless of weather conditions or material availability. The Contractor has the option of working on Saturdays. Provide sufficient advance notice to the Engineer when scheduling work on Saturdays. Work on Sundays and national holidays will not be permitted without written permission of the Engineer. If work requiring an Inspector to be present or if critical path activities are performed on a Saturday, Sunday, or national holiday, and weather and other conditions permit the performance of work for 7 hr. between 7 A.M. and 6 P.M., a working day will be charged.
 - 3.1.2. **Six-Day Workweek.** Working days will be charged Monday–Saturday, excluding national holidays, regardless of weather conditions or material availability. Work on Sundays and national holidays will not be permitted without written permission of the Engineer. If work requiring an Inspector to be present or if critical path activities are performed on a Sunday or a national holiday, and weather or other conditions permit the performance of work for 7 hr. between 7 A.M. and 6 P.M., a working day will be charged.

- 3.1.3. **Seven-Day Workweek.** Working days will be charged Monday–Sunday, excluding national holidays, regardless of weather conditions or material availability. Work on national holidays will not be permitted without written permission of the Engineer. If work or critical path activities requiring an Inspector to be present are performed on any of these holidays, and weather or other conditions permit the performance of work for 7 hr. between 7 A.M. and 6 P.M., a working day will be charged.
- 3.1.4. **Standard Workweek.** Working days will be charged Monday–Friday, excluding national or State holidays, if weather or other conditions permit the performance of the principal unit of work underway, as determined by the Engineer, for a continuous period of at least 7 hr. between 7:00 A.M. and 6:00 P.M., unless otherwise shown in the Contract. The Contractor has the option of working on Saturdays or State holidays. Provide sufficient advance notice to the Engineer when scheduling work on Saturdays. Work on Sundays and national holidays will not be permitted without written permission of the Engineer. If work requiring an Inspector to be present or critical path activities are performed on a Saturday, Sunday, or holiday, and weather or other conditions permit the performance of work for 7 hr. between 7 A.M. and 6 P.M., a working day will be charged.
- 3.1.5. **Calendar Day.** Working days will be charged Sunday–Saturday, including all holidays, regardless of weather conditions, material availability, or other conditions not under the control of the Contractor.
- 3.1.6. **Other.** Working days will be charged as shown on the plans.
- A “Working Day” is defined as any day not including Saturdays, Sundays, or any legal holidays, observed by the City of Laredo, in which weather or other conditions, not under the control of the Contractor, will permit construction of the principal units of work for a continuous period of not less than seven (7) hours. If the contractor opts to work on Saturday, Sunday, or legal holiday requiring construction inspection, said days are considered working days and charged to the contract time, and the cost for such inspection borne by the contractor.
- City’s normal working hours are Monday through Friday, not including Saturdays, Sundays, or legal holidays observed by the City from 8:00 A.M. to 5:00 P.M. The contractor shall notify the City at least twenty-four (24) hours in advance for any work that is to be scheduled beyond the limits of the City’s working hours, and the Contractor shall not begin any such work scheduled unless proper inspection and/or testing has been pre-arranged with the City, with the cost for such inspection beyond the City’s working hours borne by the Contractor. However, should the City opt to expedite a project and chooses a calendar day contract for such endeavor, the City will bear the 8:00 A.M. to 5:00 P.M. inspection cost only, and the contractor pays for time beyond the city’s working hours limit.
- 3.2. **Restricted Work Hours.** Restrictions on Contractor work hours and the related definition for working day charges are as prescribed in this Article unless otherwise shown on the plans.
- 3.3. **Nighttime Work.** Nighttime work is allowed only when shown on the plans or directed or allowed by the Engineer. Nighttime work is defined as work performed from 30 min. after sunset to 30 min. before sunrise.
- 3.3.1. **Five-, Six-, and Seven-Day Workweeks.** Nighttime work that extends past midnight will be assigned to the following day for the purposes of approval for allowing work on Sundays or national holidays.
- 3.3.2. **Standard Workweek.**
- 3.3.2.1. **Nighttime Work Only.** When nighttime work is allowed or required and daytime work is not allowed, working day charges will be made when weather and other conditions permit the performance of the principal unit of work underway, as determined by the Engineer, for a continuous period of at least 7 hr. for the nighttime period, as defined in Section 8L.3.3., “Nighttime Work,” unless otherwise shown in the Contract.
- 3.3.2.2. **Nighttime Work and Daytime Work Requiring Inspector.** When nighttime work is performed or required and daytime work is allowed, working day charges will be made when weather and other conditions permit the performance of the principal unit of work underway, as determined by the Engineer, for a continuous period of at least 7 hr. for the nighttime period, as defined in Section 8L.3.3., “Nighttime Work,” or for a

continuous period of at least 7 hr. for the alternative daytime period unless otherwise shown in the Contract. Only one day will be charged for each 24hr. period. When the Engineer agrees to restrict work hours to the nighttime period only, working day charges will be in accordance with Section 8L.3.3.2.1., "Nighttime Work Only."

- 3.4. **Time Statements.** The Engineer will furnish the Contractor a monthly time statement. Review the monthly time statement for correctness. Report protests in writing, no later than 30 calendar days after receipt of the time statement, providing a detailed explanation for each day protested. Not filing a protest within 30 calendar days will indicate acceptance of the working day charges, and future consideration of that statement will not be permitted.

4. TEMPORARY SUSPENSION OF WORK OR WORKING DAY CHARGES

The Engineer may suspend the work, wholly or in part, and will provide notice and reasons for the suspension in writing. Suspend and resume work only as directed in writing.

When part of the work is suspended, the Engineer may suspend working day charges only when conditions not under the control of the Contractor prohibit the performance of critical path activities. When all of the work is suspended for reasons not under the control of the Contractor, the Engineer will suspend working day charges.

5. PROJECT SCHEDULES

Prepare, maintain, and submit project schedules for the work to be performed under this Contract. Project schedules are used to convey the Contractor's intended work plan to the Owner.

The work performed under this Article will not be measured or paid for directly, but will be subsidiary to pertinent items.

- 5.1. **Project Scheduler.** Designate an individual who will develop and maintain the progress schedule. The project scheduler will be prepared to discuss, in detail, the proposed sequence of work and methods of operation, and how that information will be communicated through the progress schedule at the preconstruction meeting. This individual will also attend the project meetings and make site visits to prepare, develop, and maintain the progress schedules.
- 5.2. **Progress Schedule.** Before starting work, prepare and submit a progress schedule based on the sequence of work and traffic control plan shown in the Contract. Prepare the progress schedule as a bar chart or critical path method (CPM) as shown on the plans. Include all planned work activities and sequences and show Contract completion within the number of working days specified. Incorporate major material procurements, known utility relocations, and other activities that may affect the completion of the Contract in the progress schedule. Show a beginning date, ending date, and duration in whole working days for each activity. Do not use activities exceeding 20 working days, unless agreed upon with the Engineer. Show an estimated production rate per working day for each work activity, unless otherwise agreed upon with the Engineer.
- 5.3. **Schedule Format.** Format all project schedules in accordance with the following.
- Begin the project schedule on the date of the start of Contract time or start of activities affecting work on the project.
 - Show the sequence and interdependence of activities required for complete performance of the work. If using a CPM schedule, show a predecessor and a successor for each activity.
 - Ensure all work sequences are logical and show a coordinated plan of the work.

CPM schedules must also:

- clearly and accurately identify the critical path as the longest continuous path;

- provide a legend for all abbreviations, run date, data date, project start date, and project completion date in the title block of each schedule submittal; and
- using calendars, incorporate seasonal weather conditions into the schedule for work (e.g., earthwork, concrete paving, structures, asphalt, and drainage) that may be influenced by temperature or precipitation. Also, incorporate non-work periods such as holidays, weekends, or other non-work days as identified in the Contract.

5.4. **Activity Format.** For each activity on the project schedule, provide:

- a concise description of the work represented by the activity,
- an activity duration in whole working days, and
- code activities so that organized plots of the schedule may be produced.

CPM schedules must also include the quantity of work and estimated production rate for major items of work. Provide enough information for review of the work being performed.

Total float is defined as the amount of time (in whole days) that an activity can be delayed before impacting the project's completion date. Total float is a shared commodity between the Owner and the Contractor.

5.5. **Schedule Types and Schedule Impacts.**

5.5.1. **Bar Chart.** Seven calendar days before the preconstruction meeting, prepare and submit a hard or electronic copy of the schedule using the bar chart method.

5.5.1.1. **Progress Schedule Reviews.** Update the project schedule and submit a hard or electronic copy when changes to the schedule occur or when requested.

5.5.2. **Critical Path Method.** Prepare and submit the schedule using the CPM. Submit an electronic copy to the Engineer within the timeframes specified. An electronic copy is defined as the scheduling software's native file, saved in a format acceptable to the Engineer. In all cases, an electronic format (.xer) of Primavera Project Planner and Enterprise Project Portfolio Management (P6) will be acceptable.

5.5.2.1. **Preliminary Schedule.** Unless otherwise agreed for a later submission, 7 calendar days before the preconstruction meeting, submit an electronic copy of the project schedule showing activities beginning with the authorization date to begin work and including activities to be performed within the first 90 calendar days from the work start date.

5.5.2.2. **Baseline Schedule.** The baseline schedule will be considered the Contractor's plan to successfully construct the project within the timeframe and construction sequencing indicated in the Contract. Submit electronic copies of the baseline schedule. When requested, submit two plots of the schedule: one organized with the activities logically grouped using the activity coding, and the other plot showing only the critical path determined by the longest path, not based on critical float.

Develop and submit the baseline schedule for review within the first 45 calendar days from the work start date unless the time for submission is extended by the Engineer.

5.5.2.2.1. **Review.** Within 15 calendar days of receipt of the schedule, the Engineer will evaluate and inform the Contractor if the schedule has been accepted. If the schedule is not accepted, the Engineer will provide comments to the Contractor for incorporation. Provide a revised schedule based on the Engineer's comments, or reasons for not doing so, within 10 calendar days. The Engineer's review and acceptance of the project schedule is for conformance to the requirements of the Contract documents only and does not relieve the Contractor of any responsibility for meeting the interim milestone dates (if specified) or the Contract completion date. Review and acceptance does not expressly or by implication warrant, acknowledge, or admit the reasonableness of the logic or durations of the project schedule. If the Contractor fails to define any element of work, activity, or logic and the Engineer's review does not detect this omission or error, the Contractor is responsible for correcting the error or omission.

Submit an acceptable baseline schedule before the 90th calendar day from the work start date unless the time for submission is extended by the Engineer.

- 5.5.2.3. **Progress Schedule.** Maintain and submit the progress schedule monthly for use by the Contractor and the Engineer. Submit an electronic copy as it will become an as-built record of the daily progress achieved on the project. If continuous progress of an activity is interrupted for any reason except non-work periods (e.g., holidays, weekend, or interference from temperature or precipitation), then the activity will show the actual finish date as that date of the start of the interruption and the activity will be broken into a subsequent activity (or activities, based on the number of interruptions) similarly numbered with successive alpha character as necessary. The original duration of the subsequent activity will be that of the remaining duration of the original activity. Relationships of the subsequent activity will match those of the original activity so that the integrity of the project schedule logic is maintained. Once established, the original durations and actual dates of all activities must remain unchanged. Revisions to the schedule may be made as necessary.

The project schedule must be revised when changes in construction phasing and sequencing occur or other changes that cause deviation from the original project schedule occur. Any revisions to the schedule must be listed in the monthly update narrative with the purpose of the revision and description of the impact on the project schedule's critical path and project completion date. Create the schedule revision using the latest update before the start of the revision.

Monthly updating of the project schedule will include updating of:

- the actual start dates for activities started,
- the actual finish dates for activities completed,
- the percentage of work completed and remaining duration for each activity started but not yet completed, and
- the calendars to show days actual work was performed on the various work activities.

The cutoff day for recording monthly progress will be the last day of each month. Submit the updated project schedule no later than the 20th calendar day of the following month. The Engineer will evaluate the updated schedule within 5 calendar days of receipt and inform the Contractor if it has or has not been accepted. If the schedule is not accepted, the Engineer will provide comments to the Contractor for incorporation. Provide a revised schedule based on the Engineer's comments, or reasons for not doing so, within 5 calendar days.

Provide a brief narrative in a bulleted statement format for major items that have impacted the schedule. Notify the Engineer if resource-leveling is being used.

- 5.5.2.3.1. **Project Schedule Summary Report (PSSR).** When shown on the plans, provide the PSSR instead of the narrative required in Section 8L.5.5.2.3., "Progress Schedule." The PSSR includes a listing of major items that have impacted the schedule and a summary of progress in days ahead or behind schedule. Include an explanation of the project progress for the period represented on the form provided by the Owner.

- 5.5.3. **Notice of Potential Time Impact.** Submit a notice of potential time impact when a Contract time extension or adjustment of milestone dates may be justified or when directed.

Failure to provide this notice in the timeframes specified above will compromise the Owner's ability to mitigate the impacts, and the Contractor forfeits the right to request a time extension or adjustment of milestone dates unless the circumstances are such that the Contractor could not reasonably have had knowledge of the impact at the time.

- 5.5.4. **Time Impact Analysis.** When directed, provide a time impact analysis. A time impact analysis is an evaluation of the effects of impacts on the project. A time impact analysis consists of the following steps.
- **Step 1.** Establish the status of the project immediately before the impact.
 - **Step 2.** Predict the effect of the impact on the schedule update used in Step 1.
 - **Step 3.** Track the effects of the impact on the schedule during its occurrence.

- **Step 4.** Establish the status of the project after the impact's effect has ended and provide details identifying any mitigating actions or circumstances used to keep the project ongoing during the impact period.

Determine the time impact by comparing the status of the work before the impact (Step 1) to the prediction of the effect of the impact (Step 2), if requested, and to actual effects of the impact once it is complete (Step 4). Unless otherwise approved by the Engineer, Steps 1, 3, and 4 must be completed before consideration of a Contract time extension or adjustment of a milestone date will be provided. Time extensions will be considered only when delays that affect milestone dates or the Contract completion date are beyond the Contractor's control. Submit Step 4 no later than 15 calendar days after the impact's effects have ended or when all the information on the effect has been realized.

Submit one electronic backup copy of the complete time impact analysis and a copy of the full project schedule incorporating the time impact analysis. If the project schedule is revised after the submittal of a time impact analysis, but before its approval, indicate in writing the need for any modification to the time impact analysis.

The Engineer will review the time impact analysis upon completion of Step 4. If this review detects revisions or changes to the schedule that had not been performed and identified in a narrative, the Engineer may reject the time impact analysis. If the Engineer is in agreement with the time impact analysis, a change order may be issued to grant additional working days, or to adjust interim milestones. Once a change order has been executed, incorporate the time impact analysis into the project schedule. The time impact analysis may also be used to support the settlement of disputes and claims. Compensation related to the time impact analysis may be provided at the completion of the analysis or the completion of the project to determine the true role the impact played on the final completion.

6. FAILURE TO COMPLETE WORK ON TIME

The time established for the completion of the work is an essential element of the Contract. If the Contractor fails to complete the work within the number of working days specified, working days will continue to be charged. Failure to complete the Contract, callout work, or a work order within the number of working days specified, including any approved additional working days, will result in liquidated damages for each working day charged over the number of working days specified. The dollar amount specified in the Contract will be deducted from any money due or to become due the Contractor for each working day the Contract, callout work, or work order remains incomplete. This amount will be assessed not as a penalty but as liquidated damages. The amount assessed for non-site-specific Contracts will be based on the estimated amount for each work order unless otherwise shown in the Contract. The amount assessed for each callout will be as specified in the Contract.

7. DEFAULT OF CONTRACT

7.1. **Declaration of Default.** The Engineer may declare the Contractor to be in default of the Contract if the Contractor:

- fails to begin the work within the number of days specified;
- fails to prosecute the work to assure completion within the number of days specified;
- is uncooperative, disruptive, or threatening;
- fails to perform the work in accordance with the Contract requirements;
- neglects or refuses to remove and replace rejected materials or unacceptable work;
- discontinues the prosecution of the work without the Engineer's approval;
- makes an unauthorized assignment;
- fails to resume work that has been discontinued within a reasonable number of days after notice to do so;
- fails to conduct the work in an acceptable manner; or
- commits fraud or other unfixable conduct as determined by the Owner.

If any of these conditions occur, the Engineer will give notice in writing to the Contractor and the Surety of the intent to declare the Contractor in default. If the Contractor does not proceed as directed within 10 days after the notice, the Owner will provide written notice to the Contractor and the Surety to declare the Contractor to be in default of the Contract. If the Contractor provides the Owner written notice of voluntary default of the Contract, the Owner may waive the 10-day notice of intent to declare the Contractor in default and immediately provide written notice of default to the Contractor and the Surety. Calendar day charges will continue until completion of the Contract. The Owner may suspend work in accordance with Article 8L.4., "Temporary Suspension of Work or Working Day Charges," to investigate apparent fraud or other unfixable conduct before defaulting the Contractor. The Contractor may be subject to sanctions under the state and/or federal laws and regulations. A default may result in the application of remedial action by the Owner.

The Owner will determine the method used for the completion of the remaining work as follows.

- For Contracts without performance bonds, the Owner will determine the most expeditious and efficient way to complete the work and recover damages from the Contractor.
- For Contracts with performance bonds, the Owner will require the Contractor's Surety to complete the remaining work in accordance with the terms of the original Contract. A completing Contractor will be considered a subcontractor of the Surety. The Owner reserves the right to approve or reject proposed subcontractors. Work may resume after the Owner receives and approves Certificates of Insurance as required in Section 3.4.3., "Insurance." Certificates of Insurance may be issued in the name of the completing Contractor. The Surety is responsible for making every effort to expedite the resumption of work and completion of the Contract. The Owner may complete the work using any or all materials at the work locations that it deems suitable and acceptable. Any costs incurred by the Owner for the completion of the work under the Contract will be the responsibility of the Surety.

From the time of notification of the default until work resumes (either by the Surety or the Owner), the Owner will maintain traffic control devices and will do any other work it deems necessary, unless otherwise agreed upon by the Owner and the Surety. All costs associated with this work will be deducted from money due to the Surety.

The Owner will hold all money earned but not disbursed by the date of default. Upon resumption of the work after the default, all payments will be made to the Surety. All costs and charges incurred by the Owner resulting from the default, including the cost of completing the work under the Contract, costs of maintaining traffic control devices, costs for other work deemed necessary, and any applicable liquidated damages or disincentives will be deducted from money due the Contractor for completed work. If these costs exceed the sum that would have been payable under the Contract, the Surety will be liable and pay the Owner the balance of these costs in excess of the Contract price. In case the costs incurred by the Owner are less than the amount that would have been payable under the Contract if the work had been completed by the Contractor, the Owner will be entitled to retain the difference.

Comply with Article 8L.2., "Subcontracting," and abide by the DBE commitments previously approved by the Owner. Section 8L.2.1., "Construction Contracts and Federally Funded Maintenance Contracts," is waived.

No markups as defined in Article 9L.7., "Payment for Extra Work and Force Account Method," will be allowed for the Surety.

- 7.2. **Wrongful Default.** If it is determined after the Contractor is declared in default, that the Contractor was not in default, the rights and obligations of all parties will be the same as if termination had been issued for the convenience of the public as provided in Article 8L.8., "Termination of Contract."

8. TERMINATION OF CONTRACT

The Owner may terminate the Contract in whole or in part whenever:

- the Contractor is prevented from proceeding with the work as a direct result of an executive order of the President of the United States or the Governor of the State;

- the Contractor is prevented from proceeding with the work due to a national emergency, or when the work to be performed under the Contract is stopped, directly or indirectly, because of the freezing or diversion of materials, equipment, or labor as the result of an order or a proclamation of the President of the United States;
- the Contractor is prevented from proceeding with the work due to an order of any federal authority;
- the Contractor is prevented from proceeding with the work by reason of a preliminary, special, or permanent restraining court order where the issuance of the restraining order is primarily caused by acts or omissions of persons or agencies other than the Contractor; or
- the Owner determines that termination of the Contract is in the best interest of the State or the public. This includes, but is not limited to, the discovery of significant hazardous material problems, right of way acquisition problems, or utility conflicts that would cause substantial delays or expense to the Contract.

8.1.

Procedures and Submittals. The Owner will provide written notice to the Contractor of termination specifying the extent of the termination and the effective date. Upon notice, immediately proceed in accordance with the following:

- stop work as specified in the notice,
- place no further subcontracts or orders for materials, services, or facilities, except as necessary to complete a critical portion of the Contract, as approved by the Engineer,
- terminate all subcontracts to the extent they relate to the work terminated,
- complete performance of the work not terminated,
- settle all outstanding liabilities and termination settlement proposals resulting from the termination of the Contract,
- create an inventory report, including all acceptable materials and products obtained for the Contract that have not been incorporated in the work that was terminated (include in the inventory report a description, quantity, location, source, cost, and payment status for each of the acceptable materials and products), and
- take any action necessary, or that the Engineer may direct, for the protection and preservation of the materials and products related to the Contract that are in the possession of the Contractor and in which the Owner has or may acquire an interest.

8.2.

Settlement Provisions. Within 60 calendar days of the date of the notice of termination, submit a final termination settlement proposal, unless otherwise approved. The Engineer will prepare a change order that reduces the affected quantities of work and adds acceptable costs for termination. No claim for loss of anticipated profits will be considered. The Owner will pay reasonable and verifiable termination costs, including:

- all work completed at the unit bid price and partial payment for incomplete work,
- the percentage of Item 500, "Mobilization," equivalent to the percentage of work complete or actual cost that can be supported by cost records, whichever is greater,
- expenses necessary for the preparation of termination settlement proposals and support data;
- the termination and settlement of subcontracts,
- storage, transportation, restocking, and other costs incurred necessary for the preservation, protection, or disposition of the termination inventory, and
- other expenses acceptable to the Owner.

Item 9L

Measurement and Payment



1. MEASUREMENT OF QUANTITIES

The Engineer will measure all completed work using United States standard measures, unless otherwise specified.

- 1.1. **Linear Measurement.** Unless otherwise specified, all longitudinal measurements for surface areas will be made along the actual surface of the roadway and not horizontally. No deduction will be made for structures in the roadway with an area of 9 sq. ft. or less. For all transverse measurements for areas of base courses, surface courses, and pavements, the dimensions to be used in calculating the pay areas will be the neat dimensions and will not exceed those shown on the plans, unless otherwise directed.
- 1.2. **Volume Measurement.** Transport materials measured for payment by volume in approved hauling vehicles. Display a unique identification mark on each vehicle. Furnish information necessary to calculate the volume capacity of each vehicle. The Engineer may require verification of volume through weight measurement. Use body shapes that allow the capacity to be verified. Load and level the load to the equipment's approved capacity. Loads not hauled in approved vehicles may be rejected.
- 1.3. **Weight Measurement.** Transport materials measured for payment by weight or truck measure in approved hauling vehicles. Furnish certified measurements, tare weights, and legal gross weight calculations for all haul units. Affix a permanent, legible number on the truck and on the trailer to correspond with the certified information. Furnish certified weights of loaded haul units transporting material if requested.

The material will be measured at the point of delivery. The cost of supplying these volume and weight capacities is subsidiary to the pertinent Item. For measurement by the ton, in the field, provide measurements in accordance with Item 520, "Weighing and Measuring Equipment," except for Items where ton measurements are measured by standard tables.

The Engineer may reject loads and suspend hauling operations for overloading.

- 1.3.1. **Hauling on Routes Accessible to the Traveling Public.** For payment purposes on haul routes accessible to the traveling public:
- If the gross vehicle weight is less than the maximum allowed by state law, including applicable yearly weight tolerance permit, the net weight of the load will be determined by deducting the tare weight of the vehicle from the gross weight.
 - If the gross vehicle weight is more than the maximum allowed by state law, including applicable yearly weight tolerance permit, the net weight of the load will be determined by deducting the tare weight of the vehicle from the maximum gross weight allowed.
- 1.3.2. **Hauling on Routes Not Accessible to the Traveling Public.** For payment purposes on haul routes that are not accessible to the traveling public where advance permission is obtained in writing from the Engineer:
- If the gross vehicle weight is less than the maximum allowed by the Engineer, including applicable yearly weight tolerance permit, the net weight of the load will be determined by deducting the tare weight of the vehicle from the gross weight.
 - If the gross vehicle weight is more than the maximum allowed by the Engineer, the net weight of the load will be determined by deducting the tare weight of the vehicle from the maximum gross weight allowed.

2. PLANS QUANTITY MEASUREMENT

Plans quantities may or may not represent the exact quantity of work performed or material moved, handled, or placed during the execution of the Contract. The estimated bid quantities are designated as final payment quantities, unless revised by the governing specifications or this Article.

If the quantity measured as outlined under "Measurement" varies by more than 5% (or as stipulated under "Measurement" for specific Items) from the total estimated quantity for an individual Item originally shown in the Contract, an adjustment may be made to the quantity of authorized work done for payment purposes.

When quantities are revised by a change in design approved by the Owner, by change order, or to correct an error on the plans, the plans quantity will be increased or decreased by the amount involved in the change, and the 5% variance will apply to the new plans quantity.

If the total Contract quantity multiplied by the unit bid price for an individual Item is less than \$250 and the Item is not originally a plans quantity Item, then the Item may be paid as a plans quantity Item if the Engineer and Contractor agree in writing to fix the final quantity as a plans quantity.

For Contracts with callout work and work orders, plans quantity measurement requirements are not applicable.

3. ADJUSTMENT OF QUANTITIES

The party to the Contract requesting the adjustment will provide field measurements and calculations showing the revised quantity. When approved, this revised quantity will constitute the final quantity for which payment will be made. Payment for revised quantity will be made at the unit price bid for that Item, except as provided for in Article 4L.4., "Changes in the Work."

4. SCOPE OF PAYMENT

Payment of the Contract unit price is full compensation for all materials, equipment, labor, tools, and supplies necessary to complete the Item of work under the Contract. Until final acceptance in accordance with Article 5L.12., "Final Acceptance," assume liability for completing the work according to the plans and specifications and any loss or damage arising from the performance of the work or from the action of the elements, infringement of patent, trademark, or copyright, except as provided elsewhere in the Contract.

The Owner will only pay for material incorporated into the work in accordance with the Contract. Payment of progress estimates will in no way affect the Contractor's obligation under the Contract to repair or replace any defective parts in the construction or to replace any defective materials used in the construction and to be responsible for all damages due to defects if the defects and damages are discovered on or before final inspection and acceptance of the work.

5. PROGRESS PAYMENTS

The Engineer will prepare a monthly estimate "APPLICATION FOR PAYMENT" of the amount of work performed, including materials in place. Incomplete items of work may be paid at an agreed upon percentage approved by the Engineer. Payment of the monthly estimate is determined at the Contract item prices less any withholdings or deductions in accordance with the Contract. Progress payments may be withheld for failure to comply with the Contract.

It is the Owner's intent to pay a Contractor for work through the last working day of the month; however, the use of early cut-off dates for monthly estimates and MOH is a project management practice to manage workload at the local level. Approval for using early cut-off dates is at the Owner's discretion. The earliest cut-off date for pay applications is the 25th of the month.

6. PAYMENT FOR MATERIAL ON HAND (MOH)

If payment for MOH is desired, request compensation for the invoice cost of acceptable nonperishable materials that have not been used in the work before the request, and that have been delivered to the work location or are in acceptable storage places. Nonperishable materials are those that do not have a shelf life or whose characteristics do not materially change when exposed to the elements. Include only materials that have been sampled, tested, approved, or certified, and are ready for incorporation into the work. Only materials that are completely constructed or fabricated on the Contractor's order for a specific Contract and are so marked and on which an approved test report has been issued are eligible. Payment for MOH may include the following types of items: concrete traffic barrier, precast concrete box culverts, concrete piling, reinforced concrete pipe, and illumination poles. Any repairs required after fabricated materials have been approved for storage will require the Engineer's approval before being made and will be made at the Contractor's expense. Include only those materials and products, when cumulated under an individual item or similar bid items, that have an invoice cost of at least \$1,000 in the request for MOH payment. (E.g., for MOH eligibility, various sizes of conductor are considered similar bid items and may be cumulated to meet the threshold; for small roadside signs, the sign supports, mounting bolts, and the sign face are considered one bid item or similar bid items for more than one pay item for sign supports.) Requests for MOH are to be submitted at least 2 days before but not later than the estimate cut-off date unless otherwise agreed. If there is a need to request MOH after the established cut-off date, the Owner can make accommodation as the need arises. This needed accommodation is to be the exception, though, and not the rule.

For Contracts with callout work and work orders, payment for MOH will only be made for materials authorized for purchase by the work order or by written approval of the Engineer.

If the request is acceptable, the Engineer will include payment for MOH in a progress payment. Payment for MOH does not constitute acceptance of the materials. Payment will not exceed the actual cost of the material as established by invoice, or the total cost for the associated item less reasonable placement costs, whichever is less. Materials for which the Contractor does not have a paid invoice within 60 days will not be eligible for payment and will be removed from the estimate. Payment may be limited to a portion of the invoice cost or unit price if shown elsewhere in the Contract. Payment for precast products fabricated or constructed by the Contractor for which invoices or freight bills are not available may be made based on statements of actual cost.

Submit the request on forms provided by the Owner. These forms may be electronically reproduced, provided they are in the same format and contain all the required information and certifications. Continue to submit monthly MOH forms until the total value of MOH is \$0.

By submitting a request for MOH payment, the Contractor expressly authorizes the Owner to audit MOH records and to perform process reviews of the record-keeping system. If the Owner determines noncompliance with any of the requirements of this provision, the Owner may exclude payment for any or all MOH for the duration of the Contract.

Maintain all records relating to MOH payment until final acceptance. Provide these records to the Engineer upon request.

7. PAYMENT FOR EXTRA WORK AND FORCE ACCOUNT METHOD

Payment for extra work directed, performed, and accepted will be made in accordance with Article 4L.4., "Changes in the Work." Payment for extra work may be established by agreed unit prices or by Force Account Method.

Agreed unit prices are unit prices that include markups and are comparable to recent bid prices for the same character of work. These unit prices may be established without additional breakdown justification.

When using Force Account Method, determine an estimated cost for the proposed work and establish labor and equipment rates and material costs. Maintain daily records of extra work and provide copies of these

records daily, signed by the Contractor's representative, for the Owner's verification. Request payment for the extra work no later than the 10th day of the month following the month in which the work was performed. Include copies of all applicable invoices. If the extra work to be performed has an estimated cost of less than \$10,000, submit for approval and payment an invoice of actual cost for materials, equipment, labor, tools, and incidentals necessary to complete the extra work. When added work requires mobilization that is exclusive to the added work, mobilization may be added to the force account invoice for payment.

- 7.1. **Markups.** Payment for extra work may include markups as compensation for the use of small tools, overhead expense, and profit.
- 7.1.1. **Labor.** Compensation will be made for payroll rates for each hour that the labor and foremen or others approved by the Engineer are actually engaged in the work. In no case will the rate of wages be less than the minimum shown in the Contract for a particular category. An additional 25% of this sum will be paid as compensation for overhead, superintendence, profit, and small tools.
- 7.1.2. **Insurance and Taxes.** An additional 55% of the labor cost, excluding the 25% compensation provided in Section 9L.7.1.1., "Labor," will be paid as compensation for labor insurance and labor taxes including the cost of premiums on non-project-specific liability (excluding vehicular) insurance, workers compensation insurance, Social Security, unemployment insurance taxes, and fringe benefits.
- 7.1.3. **Materials.** Compensation will be made for materials associated with the work based on actual delivered invoice costs, less any discount. An additional 25% of this sum will be paid as compensation for overhead and profit.
- 7.1.4. **Equipment.** Payment will be made for the established equipment hourly rates for each hour that the equipment is involved in the work. An additional 15% of this sum will be paid as compensation for overhead and profit not included in the rates.

Transportation cost for mobilizing equipment will be included if the equipment is mobilized from an offsite location.

- 7.1.4.1. **Contractor-Owned Equipment.** For Contractor-owned machinery, trucks, power tools, or other equipment, use the FHWA rental rates found in Equipment Watch multiplied by the regional adjustment factor and the rate adjustment factor to establish hourly rates. Use the rates in effect for each section of Equipment Watch at the time of use.

If a rate has not been established for a particular piece of equipment in Equipment Watch, the Engineer will allow a reasonable hourly rate. This price will include operating costs.

Payment for equipment will be made for the actual hours used in the work. The Owner reserves the right to withhold payment for low production or lack of progress. Payment will not be made for time lost for equipment breakdowns, time spent to repair equipment, or time after equipment is no longer needed.

If equipment is used intermittently while dedicated solely to the work, payment will be made for the duration the equipment is assigned to the work but no more than 8 hr. will be paid during a 24-hr. day, nor more than 40 hr. per week, nor more than 176 hr. per month, except when time is computed using a 6-day or 7-day workweek. When using a 6-day workweek, no more than 8 hr. will be paid during a 24-hr. day, nor more than 48 hr. per week, nor more than 211 hr. per month. When using a 7-day workweek, no more than 8 hr. will be paid during a 24-hr. day, nor more than 56 hr. per week, nor more than 246 hr. per month.

- 7.1.4.2. **Equipment Not Owned by the Contractor.** For equipment rented from a third party not owned by the Contractor, payment will be made at the invoice daily rental rate for each day the equipment is needed for the work. The Owner reserves the right to limit the daily rate to comparable FHWA rental rates found in Equipment Watch multiplied by the regional adjustment factor and the rate adjustment factor. When the invoice specifies that the rental rate does not include fuel, lubricants, repairs, and servicing, the Equipment Watch hourly operating cost for each hour the equipment is operated will be added.

When the invoice specifies equipment operators as a component of the equipment rental, payment will be made at the invoice rate for each operator for each day the equipment is needed for the work.

- 7.1.4.3. **Standby Equipment Costs.** Payment for standby equipment will be made in accordance with Section 9L.7.1.4., "Equipment." The 15% markup will be paid when standby is associated with extra work but will not be paid when standby is associated with damages.

- 7.1.4.3.1. **Contractor-Owned Equipment.** For Contractor-owned equipment:

- Standby will be paid at 50% of the monthly Equipment Watch rate after the regional and age adjustment factors have been applied. Operating costs will not be allowed. Calculate the standby rate as follows.

Standby rate = (FHWA hourly rate - operating costs) × 50%

- If an hourly rate is needed, divide the monthly Equipment Watch rate by 176.
- No more than 8 hr. of standby will be paid during a 24-hr. day period, nor more than 40 hr. per week.
- Standby costs will not be allowed during periods when the equipment would have otherwise been idle.

- 7.1.4.3.2. **Equipment Not Owned by the Contractor.** For equipment rented from a third party not owned by the Contractor:

- Standby will be paid at the invoice daily rental rate, excluding operating cost, which includes fuel, lubricants, repairs, and servicing. The Owner reserves the right to limit the daily standby rate to comparable FHWA rental rates found in Equipment Watch multiplied by the regional adjustment factor and the rate adjustment factor.
- Standby will be paid for equipment operators when included on the invoice and equipment operators are actually on standby.
- Standby costs will not be allowed during periods when the equipment would have otherwise been idle.

- 7.1.5. **Subcontracting.** An additional 5% of the actual invoice cost will be paid to the Contractor as compensation for administrative cost and profit.

- 7.1.6. **Law Enforcement Personnel.** An additional 5% of the actual invoice cost will be paid as compensation for administrative costs and profit.

- 7.1.7. **Railroad Flaggers.** An additional 5% of the actual invoice cost will be paid as compensation for administrative cost and profit.

- 7.1.8. **Bond Cost.** An additional 1% of the total compensation provided in Article 9.7., "Payment for Extra Work and Force Account Method," will be paid for the increase in bond.

8. RETAINAGE

The Owner will withhold retainage of 5% on the Contractor. The Contractor may withhold retainage on subcontractors in accordance with state and federal regulations.

9. PAYMENT PROVISIONS FOR SUBCONTRACTORS

For the purposes of this Article only, the term subcontractor includes suppliers, and the term work includes materials provided by suppliers at a location approved by the Engineer.

These requirements apply to all tiers of subcontractors. Incorporate the provisions of this Article into all subcontract or material purchase agreements.

Pay subcontractors for work performed within 10 days after receiving payment from the Owner.

Pay any retainage on a subcontractor's work within 10 days after satisfactory completion of all the subcontractor's work. Completed subcontractor work includes vegetative establishment, test, maintenance, performance, and other similar periods that are the responsibility of the subcontractor.

For the purpose of this Section, satisfactory completion is accomplished when:

- the subcontractor has fulfilled the Contract requirements of both the Owner and the subcontract for the subcontracted work, including the submittal of all information required by the Contract and the Owner, and
- the work done by the subcontractor has been inspected, approved, and paid by the Owner.

Provide a certification of prompt payment to certify that all subcontractors and suppliers were paid from the previous month's payments and retainage was released for those whose work is complete. Submit the certification in the manner prescribed by the Owner each month and the month following the month when final acceptance occurred.

The inspection and approval of a subcontractor's work does not eliminate the Contractor's responsibilities for the work as defined in Article 7L.17., "Contractor's Responsibility for Work."

10. FINAL PAYMENT

When the Contract has been completed, all work has been approved, final acceptance has been made in accordance with Article 5L.12., "Final Acceptance," and Contractor submittals have been received, the Engineer will prepare a final estimate for payment showing the total quantity of work completed and the money owed the Contractor. The final payment will reflect the entire sum due, less any sums previously paid.

REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS

- I. General
- II. Nondiscrimination
- III. Non-segregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion
- XI. Certification Regarding Use of Contract Funds for Lobbying
- XII. Use of United States-Flag Vessels:

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under title 23, United States Code, as required in 23 CFR 633.102(b) (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services). 23 CFR 633.102(e).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider. 23 CFR 633.102(e).

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services) in accordance with 23 CFR 633.102. The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in solicitation-for-bids or request-for-proposals documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract). 23 CFR 633.102(b).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work

performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract. 23 CFR 633.102(d).

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. 23 U.S.C. 114(b). The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors. 23 U.S.C. 101(a).

II. NONDISCRIMINATION (23 CFR 230.107(a); 23 CFR Part 230, Subpart A, Appendix A; EO 11246)

The provisions of this section related to 23 CFR Part 230, Subpart A, Appendix A are applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR Part 60, 29 CFR Parts 1625-1627, 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding \$10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR Part 60, and 29 CFR Parts 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), and Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR Part 230, Subpart A, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal Employment Opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (see 28 CFR Part 35, 29 CFR Part 1630, 29 CFR Parts 1625-1627, 41 CFR Part 60 and 49 CFR Part 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140, shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR Part 35 and 29 CFR Part 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract. 23 CFR 230.409 (g)(4) & (5).

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, sexual orientation, gender identity, color, national origin, age or disability. Such action shall include: 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, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action or are substantially involved in such action, will be made fully cognizant of and will implement the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer or other knowledgeable company official.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to ensure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action

within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs (i.e., apprenticeship and on-the-job training programs for the geographical area of contract performance). In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. 23 CFR 230.409. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide

sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants /

Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established thereunder. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment:

The contractor shall not discriminate on the grounds of race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors, suppliers, and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurances Required:

a. The requirements of 49 CFR Part 26 and the State DOT's FHWA-approved Disadvantaged Business Enterprise (DBE) program are incorporated by reference.

b. The contractor, subrecipient or subcontractor 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 49 CFR part 26 in the award and administration of DOT-assisted contracts. 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 such other remedy as the recipient deems appropriate, which may include, but is not limited to:

- (1) Withholding monthly progress payments;
- (2) Assessing sanctions;
- (3) Liquidated damages; and/or
- (4) Disqualifying the contractor from future bidding as non-responsible.

c. The Title VI and nondiscrimination provisions of U.S. DOT Order 1050.2A at Appendixes A and E are incorporated by reference. 49 CFR Part 21.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women.

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on [Form FHWA-1391](#). The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of more than \$10,000. 41 CFR 60-1.5.

As prescribed by 41 CFR 60-1.8, the contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location under the contractor's control where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding \$2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size), in accordance with 29 CFR 5.5. The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. 23 U.S.C. 113. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. 23 U.S.C. 101. Where applicable law requires that projects be treated as a project on a Federal-aid highway, the provisions of this subpart will apply regardless of the location of the project. Examples include: Surface Transportation Block Grant Program projects funded under 23 U.S.C. 133 [excluding recreational trails projects], the Nationally Significant Freight and Highway

Projects funded under 23 U.S.C. 117, and National Highway Freight Program projects funded under 23 U.S.C. 167.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages (29 CFR 5.5)

a. *Wage rates and fringe benefits.* All laborers and mechanics employed or working upon the site of the work (or otherwise working in construction or development of the project under a development statute), 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 basic hourly 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. As provided in paragraphs (d) and (e) of 29 CFR 5.5, the appropriate wage determinations are effective by operation of law even if they have not been attached to the contract. Contributions made or costs reasonably anticipated for bona fide fringe benefits under the Davis-Bacon Act ([40 U.S.C. 3141\(2\)\(B\)](#)) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.e. 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 must be paid the appropriate wage rate and fringe benefits on the wage determination for the classification(s) of work actually performed, without regard to skill, except as provided in paragraph 4. of this section. 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 classifications and wage rates conformed under paragraph 1.c. of this section) and the Davis-Bacon poster (WH-1321) must 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.

b. *Frequently recurring classifications.* (1) In addition to wage and fringe benefit rates that have been determined to be prevailing under the procedures set forth in [29 CFR part 1](#), a wage determination may contain, pursuant to § 1.3(f), wage and fringe benefit rates for classifications of laborers and mechanics for which conformance requests are regularly submitted pursuant to paragraph 1.c. of this section, provided that:

(i) The work performed by the classification is not performed by a classification in the wage determination for which a prevailing wage rate has been determined;

(ii) The classification is used in the area by the construction industry; and

(iii) The wage rate for the classification bears a reasonable relationship to the prevailing wage rates contained in the wage determination.

(2) The Administrator will establish wage rates for such classifications in accordance with paragraph 1.c.(1)(iii) of this section. Work performed in such a classification must be paid at no less than the wage and fringe benefit rate listed on the wage determination for such classification.

c. *Conformance.* (1) The contracting officer must 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 be classified in conformance with the wage determination. Conformance of an additional classification and wage rate and fringe benefits is appropriate only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is used in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) The conformance process may not be used to split, subdivide, or otherwise avoid application of classifications listed in the wage determination.

(3) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken will be sent by the contracting officer by email to DBAconformance@dol.gov. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(4) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer will, by email to DBAconformance@dol.gov, refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(5) The contracting officer must promptly notify the contractor of the action taken by the Wage and Hour Division

under paragraphs 1.c.(3) and (4) of this section. The contractor must furnish a written copy of such determination to each affected worker or it must be posted as a part of the wage determination. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 1.c.(3) or (4) of this section must 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.

d. *Fringe benefits not expressed as an hourly rate.* 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 may either pay the benefit as stated in the wage determination or may pay another bona fide fringe benefit or an hourly cash equivalent thereof.

e. *Unfunded plans.* 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, in accordance with the criteria set forth in § 5.28, 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.

f. *Interest.* In the event of a failure to pay all or part of the wages required by the contract, the contractor will be required to pay interest on any underpayment of wages.

2. Withholding (29 CFR 5.5)

a. *Withholding requirements.* The contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for the full amount of wages and monetary relief, including interest, required by the clauses set forth in this section for violations of this contract, or to satisfy any such liabilities required by any other Federal contract, or federally assisted contract subject to Davis-Bacon labor standards, that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to Davis-Bacon labor standards requirements and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld. In the event of a contractor's failure to pay any laborer or mechanic, including any apprentice or helper working on the site of the work all or part of the wages required by the contract, or upon the contractor's failure to submit the required records as discussed in paragraph 3.d. of this section, the contracting agency may on its own initiative and after written notice to the contractor, 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.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with paragraph

2.a. of this section or Section V, paragraph 3.a., or both, over claims to those funds by:

(1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;

(2) A contracting agency for its procurement costs;

(3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;

(4) A contractor's assignee(s);

(5) A contractor's successor(s); or

(6) A claim asserted under the Prompt Payment Act, [31 U.S.C. 3901](#)–3907.

3. Records and certified payrolls (29 CFR 5.5)

a. Basic record requirements (1) Length of record retention. All regular payrolls and other basic records must be maintained by the contractor and any subcontractor during the course of the work and preserved for all laborers and mechanics working at the site of the work (or otherwise working in construction or development of the project under a development statute) for a period of at least 3 years after all the work on the prime contract is completed.

(2) Information required. Such records must contain the name; Social Security number; last known address, telephone number, and email address of each such worker; each worker's correct classification(s) of work actually performed; 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 [40 U.S.C. 3141\(2\)\(B\)](#) of the Davis-Bacon Act); daily and weekly number of hours actually worked in total and on each covered contract; deductions made; and actual wages paid.

(3) Additional records relating to fringe benefits. Whenever the Secretary of Labor has found under paragraph 1.e. of this section 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 [40 U.S.C. 3141\(2\)\(B\)](#) of the Davis-Bacon Act, the contractor must 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.

(4) Additional records relating to apprenticeship. Contractors with apprentices working under approved programs must maintain written evidence of the registration of apprenticeship programs, the registration of the apprentices, and the ratios and wage rates prescribed in the applicable programs.

b. Certified payroll requirements (1) Frequency and method of submission. The contractor or subcontractor must submit weekly, for each week in which any DBA- or Related Acts-covered work is performed, certified payrolls to the contracting

agency. The prime contractor is responsible for the submission of all certified payrolls by all subcontractors. A contracting agency or prime contractor may permit or require contractors to submit certified payrolls through an electronic system, as long as the electronic system requires a legally valid electronic signature; the system allows the contractor, the contracting agency, and the Department of Labor to access the certified payrolls upon request for at least 3 years after the work on the prime contract has been completed; and the contracting agency or prime contractor permits other methods of submission in situations where the contractor is unable or limited in its ability to use or access the electronic system.

(2) Information required. The certified payrolls submitted must set out accurately and completely all of the information required to be maintained under paragraph 3.a.(2) of this section, except that full Social Security numbers and last known addresses, telephone numbers, and email addresses must not be included on weekly transmittals. Instead, the certified payrolls need only include an individually identifying number for each worker (e.g., the last four digits of the worker's Social Security number). The required weekly certified payroll information may be submitted using Optional Form WH-347 or in any other format desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division website at <https://www.dol.gov/sites/dolgov/files/WHDL/legacy/files/wh347.pdf> or its successor website. It is not a violation of this section for a prime contractor to require a subcontractor to provide full Social Security numbers and last known addresses, telephone numbers, and email addresses to the prime contractor for its own records, without weekly submission by the subcontractor to the contracting agency.

(3) Statement of Compliance. Each certified payroll submitted must be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor, or the contractor's or subcontractor's agent who pays or supervises the payment of the persons working on the contract, and must certify the following:

(i) That the certified payroll for the payroll period contains the information required to be provided under paragraph 3.b. of this section, the appropriate information and basic records are being maintained under paragraph 3.a. of this section, and such information and records are correct and complete;

(ii) That each laborer or mechanic (including each helper and apprentice) working 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 [29 CFR part 3](#); and

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification(s) of work actually performed, as specified in the applicable wage determination incorporated into the contract.

(4) Use of Optional Form WH-347. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 will satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(3) of this section.

(5) *Signature.* The signature by the contractor, subcontractor, or the contractor's or subcontractor's agent must be an original handwritten signature or a legally valid electronic signature.

(6) *Falsification.* The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under [18 U.S.C. 1001](#) and [31 U.S.C. 3729](#).

(7) *Length of certified payroll retention.* The contractor or subcontractor must preserve all certified payrolls during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

c. *Contracts, subcontracts, and related documents.* The contractor or subcontractor must maintain this contract or subcontract and related documents including, without limitation, bids, proposals, amendments, modifications, and extensions. The contractor or subcontractor must preserve these contracts, subcontracts, and related documents during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

d. *Required disclosures and access* (1) *Required record disclosures and access to workers.* The contractor or subcontractor must make the records required under paragraphs 3.a. through 3.c. of this section, and any other documents that the contracting agency, the State DOT, the FHWA, or the Department of Labor deems necessary to determine compliance with the labor standards provisions of any of the applicable statutes referenced by § 5.1, available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and must permit such representatives to interview workers during working hours on the job.

(2) *Sanctions for non-compliance with records and worker access requirements.* If the contractor or subcontractor fails to submit the required records or to make them available, or refuses to permit worker interviews during working hours on the job, the Federal agency may, after written notice to the contractor, sponsor, applicant, owner, or other entity, as the case may be, that maintains such records or that employs such workers, 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, or to permit worker interviews during working hours on the job, may be grounds for debarment action pursuant to § 5.12. In addition, any contractor or other person that fails to submit the required records or make those records available to WHD within the time WHD requests that the records be produced will be precluded from introducing as evidence in an administrative proceeding under [29 CFR part 6](#) any of the required records that were not provided or made available to WHD. WHD will take into consideration a reasonable request from the contractor or person for an extension of the time for submission of records. WHD will determine the reasonableness of the request and may consider, among other things, the location of the records and the volume of production.

(3) *Required information disclosures.* Contractors and subcontractors must maintain the full Social Security number and last known address, telephone number, and email address

of each covered worker, and must provide them upon request to the contracting agency, the State DOT, the FHWA, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or other compliance action.

4. Apprentices and equal employment opportunity (29 CFR 5.5)

a. *Apprentices (1) Rate of pay.* Apprentices will be permitted to work at less than the predetermined rate for the work they perform 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 (OA), or with a State Apprenticeship Agency recognized by the OA. A person who is not individually registered in the program, but who has been certified by the OA or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice, will be permitted to work at less than the predetermined rate for the work they perform in the first 90 days of probationary employment as an apprentice in such a program. In the event the OA or a State Apprenticeship Agency recognized by the OA withdraws approval of an apprenticeship program, the contractor will no longer be permitted to use apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(2) *Fringe benefits.* Apprentices must 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, fringe benefits must be paid in accordance with that determination.

(3) *Apprenticeship ratio.* The allowable ratio of apprentices to journeyworkers on the job site in any craft classification must not be greater than the ratio permitted to the contractor as to the entire work force under the registered program or the ratio applicable to the locality of the project pursuant to paragraph 4.a.(4) of this section. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in paragraph 4.a.(1) of this section, must 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 this section must be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(4) *Reciprocity of ratios and wage rates.* Where a contractor is performing construction on a project in a locality other than the locality in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyworker's hourly rate) applicable within the locality in which the construction is being performed must be observed. If there is no applicable ratio or wage rate for the locality of the project, the ratio and wage rate specified in the contractor's registered program must be observed.

b. *Equal employment opportunity.* The use of apprentices and journeyworkers under this part must be in conformity with

the equal employment opportunity requirements of Executive Order 11246, as amended, and [29 CFR part 30](#).

c. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. 23 CFR 230.111(e)(2). The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeyworkers shall not be greater than permitted by the terms of the particular program.

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 as provided in 29 CFR 5.5.

6. Subcontracts. The contractor or subcontractor must insert FHWA-1273 in any subcontracts, along with the applicable wage determination(s) and such other clauses or contract modifications as the contracting agency may by appropriate instructions require, and a clause requiring the subcontractors to include these clauses and wage determination(s) in any lower tier subcontracts. The prime contractor is responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this section. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and may be subject to debarment, as appropriate. 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 as provided in 29 CFR 5.5.

9. Disputes concerning labor standards. As provided in 29 CFR 5.5, 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 contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility. a. By entering into this contract, the contractor certifies that neither it 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 [40 U.S.C. 3144\(b\)](#) or § 5.12(a).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of [40 U.S.C. 3144\(b\)](#) or § 5.12(a).

c. The penalty for making false statements is prescribed in the U.S. Code, Title 18 Crimes and Criminal Procedure, [18 U.S.C. 1001](#).

11. Anti-retaliation. It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#);

b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#);

c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#); or

d. Informing any other person about their rights under the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#).

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

Pursuant to 29 CFR 5.5(b), the following clauses apply to any Federal-aid construction contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchpersons 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. 29 CFR 5.5.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph 1. of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages and interest from the date of the underpayment. 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 watchpersons and guards, employed in violation of the clause set forth in paragraph 1. of this section, in the sum currently provided in 29 CFR 5.5(b)(2)* for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph 1. of this section.

* \$31 as of January 15, 2023 (See 88 FR 88 FR 2210) as may be adjusted annually by the Department of Labor, pursuant to the Federal Civil Penalties Inflation Adjustment Act of 1990.

3. Withholding for unpaid wages and liquidated damages

a. *Withholding process.* The FHWA or the contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for any unpaid wages; monetary relief, including interest; and liquidated damages required by the clauses set forth in this section on this contract, 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 that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to the Contract Work Hours and Safety Standards Act and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with Section IV paragraph 2.a. or paragraph 3.a. of this section, or both, over claims to those funds by:

- (1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;
- (2) A contracting agency for its procurement costs;
- (3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;
- (4) A contractor's assignee(s);
- (5) A contractor's successor(s); or
- (6) A claim asserted under the Prompt Payment Act, [31 U.S.C. 3901](#)–3907.

4. Subcontracts. The contractor or subcontractor must insert in any subcontracts the clauses set forth in paragraphs 1. through 5. of this section and a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor is responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs 1. through 5. In the

event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and associated liquidated damages and may be subject to debarment, as appropriate.

5. Anti-retaliation. It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

- a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the Contract Work Hours and Safety Standards Act (CWHSSA) or its implementing regulations in this part;
- b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under CWHSSA or this part;
- c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under CWHSSA or this part; or
- d. Informing any other person about their rights under CWHSSA or this part.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System pursuant to 23 CFR 635.116.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term "perform work with its own organization" in paragraph 1 of Section VI refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions: (based on longstanding interpretation)

- (1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
- (2) the prime contractor remains responsible for the quality of the work of the leased employees;

(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract. 23 CFR 635.102.

2. Pursuant to 23 CFR 635.116(a), the contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. Pursuant to 23 CFR 635.116(c), the contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract. (based on long-standing interpretation of 23 CFR 635.116).

5. The 30-percent self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements. 23 CFR 635.116(d).

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR Part 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract. 23 CFR 635.108.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and

health standards (29 CFR Part 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704). 29 CFR 1926.10.

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR Part 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 11, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT (42 U.S.C. 7606; 2 CFR 200.88; EO 11738)

This provision is applicable to all Federal-aid construction contracts in excess of \$150,000 and to all related subcontracts. 48 CFR 2.101; 2 CFR 200.327.

By submission of this bid/proposal or the execution of this contract or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, subcontractor, supplier, or vendor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal Highway Administration and the Regional Office of the Environmental Protection Agency. 2 CFR Part 200, Appendix II.

The contractor agrees to include or cause to be included the requirements of this Section in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements. 2 CFR 200.327.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost \$25,000 or more – as defined in 2 CFR Parts 180 and 1200. 2 CFR 180.220 and 1200.220.

1. Instructions for Certification – First Tier Participants:

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction. 2 CFR 180.320.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default. 2 CFR 180.325.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances. 2 CFR 180.345 and 180.350.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900-180.1020, and 1200. "First Tier Covered Transactions" refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first 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 debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction. 2 CFR 180.330.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold. 2 CFR 180.220 and 180.300.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. 2 CFR 180.300; 180.320, and 180.325. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. 2 CFR 180.335. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (<https://www.sam.gov/>). 2 CFR 180.300, 180.320, and 180.325.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is 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 may terminate this transaction for cause or default. 2 CFR 180.325.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant 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 participating in covered transactions by any Federal department or agency, 2 CFR 180.335;.

(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, 2 CFR 180.800;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification, 2 CFR 180.700 and 180.800; 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. 2 CFR 180.335(d).

(5) Are not a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(6) Are not a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability (USDOT Order 4200.6 implementing appropriations act requirements).

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal. 2 CFR 180.335 and 180.340.

3. Instructions for Certification - Lower Tier Participants:

(Applicable to all subcontracts, purchase orders, and other lower tier transactions requiring prior FHWA approval or estimated to cost \$25,000 or more - 2 CFR Parts 180 and 1200). 2 CFR 180.220 and 1200.220.

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 which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances. 2 CFR 180.365.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900 – 180.1020, and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contractor). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

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 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. 2 CFR 1200.220 and 1200.332.

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 exceeding the \$25,000 threshold. 2 CFR 180.220 and 1200.220.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (<https://www.sam.gov/>), which is compiled by the General Services Administration. 2 CFR 180.300, 180.320, 180.330, and 180.335.

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 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 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. 2 CFR 180.325.

* * * * *

4. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

a. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals:

(1) is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.355;

(2) is a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(3) is a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability. (USDOT Order 4200.6 implementing appropriations act requirements)

b. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000. 49 CFR Part 20, App. A.

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or

cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

XII. USE OF UNITED STATES-FLAG VESSELS:

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, or any other covered transaction. 46 CFR Part 381.

This requirement applies to material or equipment that is acquired for a specific Federal-aid highway project. 46 CFR 381.7. It is not applicable to goods or materials that come into inventories independent of an FHWA funded-contract.

When oceanic shipments (or shipments across the Great Lakes) are necessary for materials or equipment acquired for a specific Federal-aid construction project, the bidder, proposer, contractor, subcontractor, or vendor agrees:

1. To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels. 46 CFR 381.7.

2. To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b)(1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Office of Cargo and Commercial Sealift (MAR-620), Maritime Administration, Washington, DC 20590. (MARAD requires copies of the ocean carrier's (master) bills of lading, certified onboard, dated, with rates and charges. These bills of lading may contain business sensitive information and therefore may be submitted directly to MARAD by the Ocean Transportation Intermediary on behalf of the contractor). 46 CFR 381.7.

**ATTACHMENT A - EMPLOYMENT AND MATERIALS
PREFERENCE FOR APPALACHIAN DEVELOPMENT
HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS
ROAD CONTRACTS (23 CFR 633, Subpart B, Appendix B)**

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

The wage rates listed herein are those predetermined by the Secretary of Labor and State Statute and listed in the United States Department of Labor's (USDOL) General Decisions dated 01-03-2025 and are the minimum wages to be paid accordingly for each specified classification. To determine the applicable wage rate zone, a list entitled "TEXAS COUNTIES IDENTIFIED BY WAGE RATE ZONES" is provided in the contract. Any wage rate that is not listed in the USDOL's general decision, must be requested by the contractor through the completion of an Additional Classification and Wage Rate Request and be submitted for approval. A blank cell indicates that the classification and wage rate are not listed on the USDOL's general decision and therefore must be requested by the contractor through the completion of an Additional Classification and Wage Rate Request. **IMPORTANT NOTICE FOR STATE PROJECTS:** only the controlling wage rate zone applies to the contract. Effective 01-03-2025.

CLASS. #	CLASSIFICATION DESCRIPTION	ZONE TX02 *(TX20250002)	ZONE TX03 *(TX20250003)	ZONE TX04 *(TX20250004)	ZONE TX05 *(TX20250005)	ZONE TX06 *(TX20250006)	ZONE TX07 *(TX20250007)	ZONE TX08 *(TX20250008)	ZONE TX24 *(TX20250024)	ZONE TX25 *(TX20250025)	ZONE TX27 *(TX20250027)	ZONE TX28 *(TX20250028)	ZONE TX29 *(TX20250029)	ZONE TX30 *(TX20250030)	ZONE TX37 *(TX20250037)	ZONE TX38 *(TX20250038)	ZONE TX42 *(TX20250042)
1428	Agricultural Tractor Operator						\$12.69					\$12.35			\$11.75		
1300	Asphalt Distributor Operator	\$14.87	\$13.48	\$13.88	\$15.72	\$15.58	\$15.55	\$15.72	\$13.28	\$15.32	\$15.62	\$14.36	\$14.25	\$14.03	\$13.75	\$14.06	\$14.40
1303	Asphalt Paving Machine Operator	\$13.40	\$12.25	\$12.35	\$13.87	\$14.05	\$14.36	\$14.20	\$13.26	\$13.99	\$14.68	\$12.92	\$13.44	\$12.53	\$14.00	\$14.32	\$12.99
1106	Asphalt Raker	\$12.28	\$10.61	\$12.02	\$14.21	\$11.65	\$12.12	\$11.64	\$11.44	\$12.69	\$12.05	\$11.34	\$11.67	\$11.40	\$12.59	\$12.36	\$11.78
1112	Batching Plant Operator, Asphalt																
1115	Batching Plant Operator, Concrete																
1214	Blaster																
1615	Boom Truck Operator						\$18.36										
1444	Boring Machine Operator																
1305	Broom or Sweeper Operator	\$11.21	\$10.33	\$10.08	\$11.99		\$11.04	\$11.62		\$11.74	\$11.41	\$10.30		\$10.23	\$10.60	\$12.68	\$11.05
1144	Communications Cable Installer																
1124	Concrete Finisher, Paving and Structures	\$13.55	\$12.46	\$13.16	\$12.85	\$12.64	\$12.56	\$12.77	\$12.44	\$14.12	\$13.04	\$13.38	\$12.64	\$12.80	\$12.79	\$12.98	\$13.32
1318	Concrete Pavement Finishing Machine Operator				\$16.05		\$15.48			\$16.05		\$19.31				\$13.07	
1315	Concrete Paving, Curing, Float, Texturing Machine Operator											\$16.34				\$11.71	
1333	Concrete Saw Operator				\$14.67					\$14.48	\$17.33					\$13.99	
1399	Concrete/Gunite Pump Operator																
1344	Crane Operator, Hydraulic 60 tons or less				\$18.22		\$18.36			\$18.12	\$18.04	\$20.21			\$18.63	\$13.86	
1345	Crane Operator, Hydraulic Over 80 Tons																
1342	Crane Operator, Lattice Boom 80 Tons or Less	\$16.82	\$14.39	\$13.85	\$17.27		\$15.87			\$17.27		\$14.67			\$16.42	\$14.97	\$13.87
1343	Crane Operator, Lattice Boom Over 80 Tons				\$20.52		\$19.38			\$20.52		\$17.49			\$25.13	\$15.80	
1306	Crawler Tractor Operator	\$13.96	\$16.63	\$13.62	\$14.26		\$15.67			\$14.07	\$13.15	\$13.38			\$14.60	\$13.68	\$13.50
1351	Crusher or Screen Plant Operator																
1446	Directional Drilling Locator						\$11.67										
1445	Directional Drilling Operator				\$20.32		\$17.24										
1139	Electrician	\$20.96		\$19.87	\$19.80		\$26.35		\$20.27	\$19.80		\$20.92				\$27.11	\$19.87
1347	Excavator Operator, 50,000 pounds or less	\$13.46	\$12.56	\$13.67	\$17.19		\$12.88	\$14.38	\$13.49	\$17.19		\$13.88			\$14.09	\$12.71	\$14.42
1348	Excavator Operator, Over 50,000 pounds		\$15.23	\$13.52	\$17.04		\$17.71			\$16.99	\$18.80	\$16.22				\$14.53	\$13.52
1150	Flagger	\$9.30	\$9.10	\$8.50	\$10.28	\$8.81	\$9.45	\$8.70		\$10.06	\$9.71	\$9.03	\$8.81	\$9.08	\$9.90	\$10.33	\$8.10
1151	Form Builder/Setter, Structures	\$13.52	\$12.30	\$13.38	\$12.91	\$12.71	\$12.87	\$12.38	\$12.26	\$13.84	\$12.98	\$13.07	\$13.61	\$12.82	\$14.73	\$12.23	\$12.25
1160	Form Setter, Paving & Curb	\$12.36	\$12.16	\$13.93	\$11.83	\$10.71	\$12.94			\$13.16	\$12.54	\$11.33	\$10.69		\$13.33	\$12.34	\$13.93
1360	Foundation Drill Operator, Crawler Mounted				\$17.99					\$17.99						\$17.43	
1363	Foundation Drill Operator, Truck Mounted		\$16.86	\$22.05	\$21.51		\$16.93			\$21.07	\$20.20	\$20.76		\$17.54	\$21.39	\$15.89	\$22.05
1369	Front End Loader Operator, 3 CY or Less	\$12.28	\$13.49	\$13.40	\$13.85		\$13.04	\$13.15	\$13.29	\$13.69	\$12.64	\$12.89			\$13.51	\$13.32	\$12.17
1372	Front End Loader Operator, Over 3 CY	\$12.77	\$13.69	\$12.33	\$14.96		\$13.21	\$12.86	\$13.57	\$14.72	\$13.75	\$12.32			\$13.19	\$13.17	\$13.02
1329	Joint Sealer																
1172	Laborer, Common	\$10.30	\$9.86	\$10.08	\$10.51	\$10.71	\$10.50	\$10.24	\$10.58	\$10.72	\$10.45	\$10.30	\$10.25	\$10.03	\$10.54	\$11.02	\$10.15
1175	Laborer, Utility	\$11.80	\$11.53	\$12.70	\$12.17	\$11.81	\$12.27	\$12.11	\$11.33	\$12.32	\$11.80	\$11.53	\$11.23	\$11.50	\$11.95	\$11.73	\$12.37
1346	Loader/Backhoe Operator	\$14.18	\$12.77	\$12.97	\$15.68		\$14.12			\$15.18	\$13.58	\$12.87		\$13.21	\$14.13	\$14.29	\$12.90
1187	Mechanic	\$20.14	\$15.47	\$17.47	\$17.74	\$17.00	\$17.10			\$17.68	\$18.94	\$18.58	\$17.00	\$16.61	\$18.46	\$16.96	\$17.47

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1380	Milling Machine Operator	\$15.54	\$14.64	\$12.22	\$14.29		\$14.18			\$14.32	\$14.35	\$12.86			\$14.75	\$13.53	\$12.80
1390	Motor Grader Operator, Fine Grade	\$17.49	\$16.52	\$16.88	\$17.12	\$18.37	\$18.51	\$16.69	\$16.13	\$17.19	\$18.35	\$17.07	\$17.74	\$17.47	\$17.08	\$15.69	\$20.01
1393	Motor Grader Operator, Rough	\$16.15	\$14.62	\$15.83	\$16.20	\$17.07	\$14.63	\$18.50		\$16.02	\$16.44	\$15.12	\$16.85	\$14.47	\$17.39	\$14.23	\$15.53
1413	Off Road Hauler			\$10.08	\$12.26		\$11.88			\$12.25		\$12.23			\$13.00	\$14.60	
1196	Painter, Structures					\$21.29	\$18.34						\$21.29			\$18.62	
1396	Pavement Marking Machine Operator	\$16.42		\$13.10	\$13.55		\$19.17	\$12.01		\$13.63	\$14.60	\$13.17		\$16.65	\$10.54	\$11.18	\$13.10
1443	Percussion or Rotary Drill Operator																
1202	Piledriver															\$14.95	
1205	Pipelayer		\$11.87	\$14.64	\$13.17	\$11.17	\$12.79		\$11.37	\$13.24	\$12.66	\$13.24	\$11.17	\$11.67		\$12.12	\$14.64
1384	Reclaimer/Pulverizer Operator	\$12.85			\$11.90		\$12.88			\$11.01		\$10.46					
1500	Reinforcing Steel Worker	\$13.50	\$14.07	\$17.53	\$16.17		\$14.00			\$16.18	\$12.74	\$15.83		\$17.10		\$15.15	\$17.72
1402	Roller Operator, Asphalt	\$10.95		\$11.96	\$13.29		\$12.78	\$11.61		\$13.08	\$12.36	\$11.68			\$11.71	\$11.95	\$11.50
1405	Roller Operator, Other	\$10.36		\$10.44	\$11.82		\$10.50	\$11.64		\$11.51	\$10.59	\$10.30		\$12.04	\$12.85	\$11.57	\$10.66
1411	Scraper Operator	\$10.61	\$11.07	\$10.85	\$12.88		\$12.27		\$11.12	\$12.96	\$11.88	\$12.43		\$11.22	\$13.95	\$13.47	\$10.89
1417	Self-Propelled Hammer Operator																
1194	Servicer	\$13.98	\$12.34	\$14.11	\$14.74		\$14.51	\$15.56	\$13.44	\$14.58	\$14.31	\$13.83		\$12.43	\$13.72	\$13.97	\$14.11
1513	Sign Erector																
1708	Slurry Seal or Micro-Surfacing Machine Operator																
1341	Small Slipform Machine Operator									\$15.96							
1515	Spreader Box Operator	\$12.60		\$13.12	\$14.71		\$14.04			\$14.73	\$13.84	\$13.68		\$13.45	\$11.83	\$13.58	\$14.05
1705	Structural Steel Welder															\$12.85	
1509	Structural Steel Worker						\$19.29									\$14.39	
1339	Subgrade Trimmer																
1143	Telecommunication Technician																
1145	Traffic Signal/Light Pole Worker						\$16.00										
1440	Trenching Machine Operator, Heavy						\$18.48										
1437	Trenching Machine Operator, Light																
1609	Truck Driver Lowboy-Float	\$14.46	\$13.63	\$13.41	\$15.00	\$15.93	\$15.66			\$16.24	\$16.39	\$14.30	\$16.62	\$15.63	\$14.28	\$16.03	\$13.41
1612	Truck Driver Transit-Mix				\$14.14					\$14.14							
1600	Truck Driver, Single Axle	\$12.74	\$10.82	\$10.75	\$13.04	\$11.61	\$11.79	\$13.53	\$13.16	\$12.31	\$13.40	\$10.30	\$11.61		\$11.97	\$11.46	\$10.75
1606	Truck Driver, Single or Tandem Axle Dump Truck	\$11.33	\$14.53	\$11.95	\$12.95		\$11.68		\$14.06	\$12.62	\$11.45	\$12.28		\$13.08	\$11.68	\$11.48	\$11.10
1607	Truck Driver, Tandem Axle Tractor with Semi Trailer	\$12.49	\$12.12	\$12.50	\$13.42		\$12.81	\$13.16		\$12.86	\$16.22	\$12.50			\$13.80	\$12.27	\$12.50
1441	Tunneling Machine Operator, Heavy																
1442	Tunneling Machine Operator, Light																
1706	Welder		\$14.02		\$14.86		\$15.97		\$13.74	\$14.84					\$13.78		
1520	Work Zone Barricade Servicer	\$10.30	\$12.88	\$11.46	\$11.70	\$11.57	\$11.85	\$10.77		\$11.68	\$12.20	\$11.22	\$11.51	\$12.96	\$10.54	\$11.67	\$11.76

Notes:

*Represents the USDOL wage decision.

Any worker employed on this project shall be paid at the rate of one and one half (1-1/2) times the regular rate for every hour worked in excess of forty (40) hours per week.

For reference, the titles and descriptions for the classifications listed here are detailed further in the AGC of Texas' *Standard Job Classifications and Descriptions for Highway, Heavy, Utilities, and Industrial Construction in Texas* posted on the AGC's Web site for any contractor.

**TEXAS COUNTIES IDENTIFIED BY
WAGE RATE ZONES: 2, 3, 4, 5, 6, 7, 8, 24, 25, 27, 28, 29, 30, 37, 38, 42**

County Name	Zone	County Name	Zone	County Name	Zone	County Name	Zone
Anderson	28	Donley	37	Karnes	27	Reagan	37
Andrews	37	Duval	30	Kaufman	25	Real	37
Angelina	28	Eastland	37	Kendall	7	Red River	28
Aransas	29	Ector	2	Kenedy	30	Reeves	8
Archer	25	Edwards	8	Kent	37	Refugio	27
Armstrong	2	El Paso	24	Kerr	27	Roberts	37
Atascosa	7	Ellis	25	Kimble	37	Robertson	7
Austin	38	Erath	28	King	37	Rockwall	25
Bailey	37	Falls	28	Kinney	8	Runnels	37
Bandera	7	Fannin	28	Kleberg	27	Rusk	4
Bastrop	7	Fayette	27	Knox	37	Sabine	28
Baylor	37	Fisher	37	Lamar	28	San Augustine	28
Bee	27	Floyd	37	Lamb	37	San Jacinto	38
Bell	7	Foard	37	Lampasas	7	San Patricio	29
Bexar	7	Fort Bend	38	LaSalle	30	San Saba	37
Blanco	27	Franklin	28	Lavaca	27	Schleicher	37
Borden	37	Freestone	28	Lee	27	Scurry	37
Bosque	28	Frio	27	Leon	28	Shackelford	37
Bowie	4	Gaines	37	Liberty	38	Shelby	28
Brazoria	38	Galveston	38	Limestone	28	Sherman	37
Brazos	7	Garza	37	Lipscomb	37	Smith	4
Brewster	8	Gillespie	27	Live Oak	27	Somervell	28
Briscoe	37	Glasscock	37	Llano	27	Starr	30
Brooks	30	Goliad	29	Loving	37	Stephens	37
Brown	37	Gonzales	27	Lubbock	2	Sterling	37
Burleson	7	Gray	37	Lynn	37	Stonewall	37
Burnet	27	Grayson	25	Madison	28	Sutton	8
Caldwell	7	Gregg	4	Marion	28	Swisher	37
Calhoun	29	Grimes	28	Martin	37	Tarrant	25
Callahan	25	Guadalupe	7	Mason	27	Taylor	2
Cameron	3	Hale	37	Matagorda	27	Terrell	8
Camp	28	Hall	37	Maverick	30	Terry	37
Carson	2	Hamilton	28	McCulloch	37	Throckmorton	37
Cass	28	Hansford	37	McLennan	7	Titus	28
Castro	37	Hardeman	37	McMullen	30	Tom Green	2
Chambers	38	Hardin	38	Medina	7	Travis	7
Cherokee	28	Harris	38	Menard	37	Trinity	28
Childress	37	Harrison	42	Midland	2	Tyler	28
Clay	25	Hartley	37	Milam	28	Upshur	4
Cochran	37	Haskell	37	Mills	37	Upton	37
Coke	37	Hays	7	Mitchell	37	Uvalde	30
Coleman	37	Hemphill	37	Montague	37	Val Verde	8
Collin	25	Henderson	28	Montgomery	38	Van Zandt	28
Collingsworth	37	Hidalgo	3	Moore	37	Victoria	6
Colorado	27	Hill	28	Morris	28	Walker	28
Comal	7	Hockley	37	Motley	37	Waller	38
Comanche	37	Hood	28	Nacogdoches	28	Ward	37
Concho	37	Hopkins	28	Navarro	28	Washington	28
Cooke	37	Houston	28	Newton	28	Webb	3
Coryell	7	Howard	37	Nolan	37	Wharton	27
Cottle	37	Hudspeth	8	Nueces	29	Wheeler	37
Crane	37	Hunt	25	Ochiltree	37	Wichita	5
Crockett	8	Hutchinson	37	Oldham	37	Wilbarger	37
Crosby	2	Irion	2	Orange	38	Willacy	30
Culberson	8	Jack	28	Palo Pinto	28	Williamson	7
Dallam	37	Jackson	27	Panola	28	Wilson	7
Dallas	25	Jasper	28	Parker	25	Winkler	37
Dawson	37	Jeff Davis	8	Parmer	37	Wise	25
Deaf Smith	37	Jefferson	38	Pecos	8	Wood	28
Delta	25	Jim Hogg	30	Polk	28	Yoakum	37
Denton	25	Jim Wells	27	Potter	2	Young	37
DeWitt	27	Johnson	25	Presidio	8	Zapata	30
Dickens	37	Jones	25	Rains	28	Zavala	30
Dimmit	30			Randall	2		

CONTRACTOR'S ASSURANCE

(Subcontracts-Federal Aid Projects)

By signing this proposal, the contractor is giving assurances that all subcontract agreements will incorporate the Standard Specification and Special Provisions to Section 9.9., Payment Provisions for Subcontractors, all subcontract agreements exceeding \$2,000 will incorporate the applicable Wage Determination Decision, and all subcontract agreements will incorporate the following:

Special Provision	Certification of Nondiscrimination in Employment
Special Provision	Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246)
Special Provision	Standard Federal Equal Employment Opportunity
Construction	Construction Specifications (Executive Order 11246)
Form FHWA 1273	Required Contract Provisions Federal-aid Construction Contracts (Form FHWA 1273 must also be physically attached to subcontracts and all lower-tier subcontracts)
Special Provision	Nondiscrimination (Include provisions of Sections 3.1 – 3.6 in all subcontracts and agreements for materials)
Special Provision	Cargo Preference Act Requirements in Federal-Aid Contracts
Special Provision	Disadvantaged Business Enterprise in Federal-Aid Contracts

CERTIFICATION TO NOT BOYCOTT ENERGY COMPANIES

Pursuant to Texas Government Code §809.051, the Department must include a provision requiring a written verification affirming that the Contractor does not boycott energy companies, as defined in Government Code §809.001, and will not boycott energy companies during the term of the contract. This provision applies to a contract that:

- 1) is with a Contractor that is not a sole proprietorship,
- 2) is with a Contractor with 10 or more full-time employees, and
- 3) has a value of \$100,000 or more.

By signing the contract, the Contractor certifies that it does not boycott energy companies and will not boycott energy companies during the term of this contract. "Boycott" means taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations with a company because the company: (1) engages in the exploration, production, utilization, transportation, sale, or manufacturing of fossil fuel-based energy and does not commit or pledge to meet environmental standards beyond applicable federal and state law; or (2) does business with a company described by (1).

Violation of this certification may result in action by the Department.

CERTIFICATION TO NOT BOYCOTT ISRAEL

Pursuant to Texas Government Code §2271.002, the Department must include a provision requiring a written verification affirming that the Contractor does not boycott Israel, as defined in Government Code §808.001, and will not boycott Israel during the term of the contract. This provision applies to a contract that:

- 1) is with a Contractor that is not a sole proprietorship,
- 2) is with a Contractor with 10 or more full-time employees, and
- 3) has a value of \$100,000 or more.

By signing the contract, the Contractor certifies that it does not boycott Israel and will not boycott Israel during the term of this contract. "Boycott" 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.

Violation of this certification may result in action by the Department.

CERTIFICATION REGARDING DISCLOSURE OF PUBLIC INFORMATION

Pursuant to Subchapter J, Chapter 552, Texas Government Code, contractors executing a contract with a governmental body that results in the expenditure of at least \$1 million in public funds must:

- 1) preserve all contracting information* as provided by the records retention requirements applicable to Texas Department of Transportation (TxDOT) for the duration of the contract,
- 2) on request of TxDOT, promptly provide any contracting information related to the contract that is in the custody or possession of the entity, and
- 3) on completion of the contract, either:
 - a. provide, at no cost to TxDOT, all contracting information related to the contract that is in the custody or possession of the entity, or
 - b. preserve the contracting information related to the contract as provided by the records retention requirements applicable to TxDOT

The requirements of Subchapter J, Chapter 552, Government Code, may apply to this contract, and the contractor or vendor agrees that the contract can be terminated if the contractor or vendor knowingly or intentionally fails to comply with a requirement of that subchapter.

By entering into Contract, the Contractor agrees to:

- provide, or make available, to TxDOT and any authorized governmental investigating or auditing agency all records, including electronic and payment records related to the contract, for the same period provided by the records retention schedule applicable to TxDOT, and
- ensure that all subcontracts include a clause requiring the same.

* As defined in Government Code §552.003, "Contracting information" means the following information maintained by a governmental body or sent between a governmental body and a vendor, contractor, potential vendor, or potential contractor:

- 1) information in a voucher or contract relating to the receipt or expenditure of public funds by a governmental body;
- 2) solicitation or bid documents relating to a contract with a governmental body;
- 3) communications sent between a governmental body and a vendor, contractor, potential vendor, or potential contractor during the solicitation, evaluation, or negotiation of a contract;
- 4) documents, including bid tabulations, showing the criteria by which a governmental body evaluates each vendor, contractor, potential vendor, or potential contractor responding to a solicitation and, if applicable, an explanation of why the vendor or contractor was selected; and
- 5) communications and other information sent between a governmental body and a vendor or contractor related to the performance of a final contract with the governmental body or work performed on behalf of the governmental body.

CERTIFICATION TO NOT DISCRIMINATE AGAINST FIREARM ENTITIES OR FIREARM TRADE ASSOCIATIONS

Pursuant to Texas Government Code §2274.002, the Department must include a provision requiring a written verification affirming that the Contractor:

- 1) does not have a practice, policy, guidance, or directive that discriminates against a firearm entity or firearm trade association, as defined in Government Code §2274.001, and
- 2) will not discriminate against a firearm entity or firearm trade association during the term of the contract.

This provision applies to a contract that:

- 1) is with a Contractor that is not a sole proprietorship,
- 2) is with a Contractor with 10 or more full-time employees, and
- 3) has a value of \$100,000 or more.

By signing the contract, the Contractor certifies that it does not discriminate against a firearm entity or firearm trade association as described and will not do so during the term of this contract. "Discriminate against a firearm entity or firearm trade association" means, with respect to the entity or association, to: (1) refuse to engage in the trade of any goods or services with the entity or association based solely on its status as a firearm entity or firearm trade association; (2) refrain from continuing an existing business relationship with the entity or association based solely on its status as a firearm entity or firearm trade association; or (3) terminate an existing business relationship with the entity or association based solely on its status as a firearm entity or firearm trade association. "Discriminate against a firearm entity or firearm trade association" does not include: (1) the established policies of a merchant, retail seller, or platform that restrict or prohibit the listing or selling of ammunition, firearms, or firearm accessories; (2) a company's refusal to engage in the trade of any goods or services, decision to refrain from continuing an existing business relationship, or decision to terminate an existing business relationship to comply with federal, state, or local law, policy, or regulations or a directive by a regulatory agency, or for any traditional business reason that is specific to the customer or potential customer and not based solely on an entity's or association's status as a firearm entity or firearm trade association.

Violation of this certification may result in action by the Department.

CHILD SUPPORT STATEMENT

Under Section 231.006, Family Code, the vendor or applicant certifies that the individual or business entity named in this contract, bid, or application is not ineligible to receive the specified grant, loan, or payment and acknowledges that this contract may be terminated and payment may be withheld if this certification is inaccurate.

State of Texas Child Support Business Ownership Form

West Laredo Multi-modal Trade Corridor
– Phase II

County: Webb

Project Name: (Flecha/Las Cruces Realignment Project)

TxDOT CSJ: 0922-33-076

LG Project Number: DMO 2012 (628)

Business Entity Submitting Bid: _____

Section 231.006, Family Code, requires a bid for a contract paid from state funds to include the names and social security number of individuals owning 25% or more of the business entity submitting the bid.

1. In the spaces below please provide the names and social security number of individuals owning 25% or more of the business.

Name	Social Security Number
_____	_____
_____	_____
_____	_____
_____	_____

2. Please check the box below if no individual owns 25% or more of the business.

(☐) No individual own 25% or more of the business.

Except as provided by Section 231.302(d), Family Code, a social security number is confidential and may be disclosed only for the purpose of responding to a request for information from an agency operating under the provisions of Part A and D to Title IV of the Federal Social Security Act (42 USC Section 601-617 and 651-699).

Under Section 231.006, Family Code, the vendor or applicant certifies that the individual or business entity named in this contract, bid, or application is not ineligible to receive the specified grant, loan, or payment and acknowledges that this contract may be terminated and payment may be withheld if this certification is inaccurate.

The information collected on this form will be maintained by City of Laredo. With few exceptions, you are entitled on request to be informed about the information collected about you. Under Sections 552.021 and 552.023 of the Texas Government Code, you also are entitled to receive and review the information. Under Section 559.004 of the Government Code, you are also entitled to have information about you corrected that you believe is incorrect.

Signature

Date

Printed Name

IF THIS PROJECT IS A JOINT VENTURE,

ALL PARTIES TO THE JOINT VENTURE MUST PROVIDE A COMPLETED FORM.

Prohibition on Certain Telecommunications Equipment or Services

The Federal Register Notice issued the Final Rule and states that the amendment to 2 CFR 200.216 is effective on August 13, 2020. The new 2 CFR 200.471 regulation provides clarity that the telecommunications and video surveillance costs associated with 2 CFR 200.216 are unallowable for services and equipment from these specific providers. [OMB's Federal Register Notice](#) includes the new 2 CFR 200.216 and 2 CFR 200.471 regulations.

Per the Federal Law referenced above, use of services, systems, or services or systems that contain components produced by any of the following manufacturers is strictly prohibited for use on this project. Therefore, for any telecommunications, CCTV, or video surveillance equipment, services or systems cannot be manufactured by, or have components manufactured by:

- Huawei Technologies Company,
- ZTE Corporation (any subsidiary and affiliate of such entities),
- Hyatera Communications Corporation,
- Hangzhou Hikvision Digital Technology Company,
- Dahua Technology Company (any subsidiary and affiliate of such entities).

Violation of this requirement will require replacement of the equipment at the contractor's expense.

Special Provision to Item 000

Nondiscrimination



1. DESCRIPTION

All recipients of federal financial assistance are required to comply with various nondiscrimination laws, including Title VI of the Civil Rights Act of 1964, as amended (Title VI). Title VI forbids discrimination against anyone in the United States on the grounds of race, color, or national origin by any agency receiving federal funds.

The Owner, as a recipient of federal financial assistance, and under Title VI and related statutes, ensures that no person will on the grounds of race, religion (where the primary objective of the financial assistance is to provide employment in accordance with 42 USC 2000d-3), color, national origin, sex, age, or disability be excluded from participation in, be denied the benefits of, or otherwise be subjected to discrimination under any of Owner's programs or activities.

2. DEFINITION OF TERMS

Where the term "Contractor" appears in the following six nondiscrimination clauses, the term "Contractor" is understood to include all parties to Contracts or agreements with the Owner.

3. NONDISCRIMINATION PROVISIONS

During the performance of this Contract, the Contractor agrees as follows.

- 3.1. **Compliance with Regulations.** The Contractor must comply with the Regulations pertinent to nondiscrimination in federally assisted programs of the United States Department of Transportation 49 CFR 21, as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this Contract.
- 3.2. **Nondiscrimination.** The Contractor, regarding the work performed during the Contract, must not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Contractor must not participate either directly or indirectly in the discrimination prohibited by Section 21.5 of the Regulations, including employment practices when the Contract covers a program set forth in Appendix B of the Regulations.
- 3.3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment.** In all solicitations either by competitive bidding or negotiation made by the Contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, the Contractor must notify each potential subcontractor or supplier of the Contractor's obligations under this Contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.
- 3.4. **Information and Reports.** The Contractor must provide all information and reports required by the Regulations or directives issued pursuant thereto, and must permit access to its books, records, accounts, other sources of information, and facilities as may be determined by the Recipient or the Owner to be pertinent to ascertain compliance with such Regulations, orders, and instructions. Where any information required of a Contractor is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor must so certify to the Owner, or the Texas Department of Transportation as appropriate, and must set forth what efforts it has made to obtain the information.
- 3.5. **Sanctions for Noncompliance.** In the event of the Contractor's noncompliance with the nondiscrimination provisions of this Contract, the Owner must impose such Contract sanctions as it or the Owner may

determine to be appropriate, including, but not limited to actions defined in Article 5.1., “Authority of Engineer.”

- 3.6. **Incorporation of Provisions.** The Contractor must include the provisions of Sections 3.1–3.6 in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations or directives issued pursuant thereto. The Contractor must take such action with respect to any subcontract or procurement as the Owner may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, that, in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the Contractor may request the Owner to enter into such litigation to protect the interests of the Owner, and, in addition, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

Special Provision to Item 000

Certification of Nondiscrimination in Employment



1. GENERAL

By signing this proposal, the Bidder certifies that it has participated in a previous Contract or subcontract subject to the equal opportunity clause, as required by Executive Order (EO) 10925, 11114, or 11246, or if it has not participated in a previous Contract of this type, or if it has had previous Contracts or subcontracts and has not filed, it will file with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance, a Federal Government contracting or administering agency, or the former President's Committee on Equal Employment Opportunity (EEO), all reports due under the applicable filing requirements.

Note—The above certification is required by the EEO Regulations of the Secretary of Labor [41 CFR 60-1.7(b)(1)], and must be submitted by Bidders and proposed subcontractors only in connection with Contracts and subcontracts that are subject to the equal opportunity clause. Contracts and subcontracts that are exempt from the equal opportunity clause are set forth in 41 CFR 60-1.5. (Generally only Contracts or subcontracts of \$10,000 or less are exempt.)

Currently, Standard Form 100 (EEO-1) is the only report required by the EOs or their implementing regulations.

Proposed prime Contractors and subcontractors that have participated in a previous Contract or subcontract subject to the EO and have not filed the required reports should note that 41 CFR 60-1.7(b)(1) prevents the award of Contracts and subcontracts unless such Contractor submits a report covering the delinquent period or such other period specified by FHWA or by the Director, Office of Federal Contract Compliance, U.S. Department of Labor.

Special Provision 000

Cargo Preference Act Requirements in Federal Aid Contracts



1. DESCRIPTION

All recipients of federal financial assistance are required to comply with the U.S. Department of Transportation's Cargo Preference Act requirements, 46 CFR 381, "Use of United States-Flag Vessels."

This requirement applies to material or equipment that is acquired specifically for a federal-aid highway project. It is not applicable to goods or materials that come into inventories independent of an FHWA-funded Contract.

When oceanic shipments are necessary for materials or equipment acquired for a specific federal-aid construction project, the Contractor agrees to:

- use privately owned United States-flag commercial vessels to ship at least 50% of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this Contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels;
- furnish a legible copy of a rated, onboard commercial ocean bill of lading in English for each shipment of cargo described in Paragraph (b)(1) of 46 CFR 381, Section 7, "Federal Grant, Guaranty, Loan and Advance of Funds Agreements," within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, to both the Engineer (through the prime Contractor in the case of subcontractor bills of lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590; and
- insert the substance of the provisions of this clause in all subcontracts issued pursuant to this Contract.

Special Provision to Item 000

Schedule of Liquidated Damages



The dollar amount of daily contract administration Liquidated Damages per Working Day is \$850.00

FOR AMOUNT OF CONTRACT		
From More Than	To and Including	Amount of Penalty Per Day over Contract Time
\$0	\$100,000	\$200
100,000	500,000	400
500,000	1,000,000	550
1,000,000	2,000,000	700
2,000,000	5,000,000	850
5,000,000	10,000,000	1,200
10,000,000	15,000,000	1,500
15,000,000	20,000,000	1,700
20,000,000	Over 20,000,000	2,500

Special Provision to Item 000

Disadvantaged Business Enterprise in Federal-Aid Contracts



1. DESCRIPTION

The purpose of this Special Provision is to carry out the U.S. Department of Transportation's (DOT) policy of ensuring nondiscrimination in the award and administration of DOT-assisted Contracts and creating a level playing field on which firms owned and controlled by individuals who are determined to be socially and economically disadvantaged can compete fairly for DOT-assisted Contracts.

2. DISADVANTAGED BUSINESS ENTERPRISE IN FEDERAL-AID CONTRACTS

- 2.1. **Policy.** It is the policy of the DOT and the Texas Department of Transportation (Department) that DBEs, as defined in 49 CFR Part 26, Subpart A, and the Department's DBE Program, will have the opportunity to participate in the performance of Contracts financed in whole or in part with federal funds. The DBE requirements of 49 CFR Part 26, and the Department's DBE Program, apply to this Contract as follows.

The Contractor must solicit DBEs through reasonable and available means, as defined in 49 CFR Part 26, Appendix A, and the Department's DBE Program, or show a good faith effort to meet the DBE goal for this Contract.

The Contractor, subrecipient, or subcontractor will not discriminate on the basis of race, color, national origin, or sex in the performance of this Contract. Carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted Contracts. Failure to carry out these requirements is a material breach of this Contract, which may result in the termination of this Contract or such other remedy as the Owner deems appropriate.

The requirements of this Special Provision must be physically included in any subcontract.

By signing the Contract proposal, the Bidder is certifying that the DBE goal as stated in the proposal will be met by obtaining commitments from eligible DBEs or that the Bidder will provide acceptable evidence of good faith effort to meet the commitment.

2.2. Definitions.

- 2.2.1. **Administrative Reconsideration.** A process by which the low bidder may request reconsideration when the Department determines the good faith effort (GFE) requirements have not been met.

- 2.2.2. **Commercially Useful Function (CUF).** A CUF occurs when a DBE has the responsibility for the execution of the work and carrying out such responsibilities by actually performing, managing, and supervising the work.

- 2.2.3. **Disadvantaged Business Enterprise (DBE).** A for-profit small business certified through the Texas Unified Certification Program in accordance with 49 CFR Part 26, that is at least 51% owned by one or more socially and economically disadvantaged individuals, or in the case of a publicly owned business, in which is at least 51% of the stock is owned by one or more socially and economically disadvantaged individuals, and whose management and daily business operations are controlled by one or more of the individuals who own it.

- 2.2.4. **DBE Joint Venture.** An association of a DBE firm and one or more other firms to carry out a single business enterprise for profit for which purpose they combine their property, capital, efforts, skills, and knowledge, and in which the DBE is responsible for a distinct, clearly defined portion of the work of the Contract and whose share in the capital contribution, control, management, risks, and profits of the joint venture are commensurate with its ownership interest.
- 2.2.5. **DOT.** The U.S. Department of Transportation, including the Office of the Secretary, the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), and the Federal Aviation Administration (FAA).
- 2.2.6. **Federal-Aid Contract.** Any Contract between the Owner and a Contractor that is paid for in whole or in part with DOT financial assistance.
- 2.2.7. **Good Faith Effort.** All necessary and reasonable steps to achieve the contract goal which, by their scope, intensity, and appropriateness to the objective, could reasonably be expected to obtain enough DBE participation, even if not fully successful. Good faith efforts are evaluated before award and throughout performance of the Contract. For guidance on good faith efforts, see 49 CFR Part 26, Appendix A.
- 2.2.8. **North American Industry Classification System (NAICS).** A designation that best describes the primary business of a firm. The NAICS is described in the North American Industry Classification Manual—United States, which is available on the Internet at the U.S. Census Bureau website: <https://www.census.gov/naics/>.
- 2.2.9. **Race-Conscious.** A measure or program that is focused specifically on assisting only DBEs, including women-owned businesses.
- 2.2.10. **Race-Neutral DBE Participation.** Any participation by a DBE through customary competitive procurement procedures.
- 2.2.11. **Texas Unified Certification Program (TUCP) Directory.** An online directory listing all DBEs currently certified by the TUCP. The Directory identifies DBE firms whose participation on a Contract may be counted toward achievement of the assigned DBE Contract goal.
- 2.3. **Contractor's Responsibilities.**
- 2.3.1. **DBE Liaison Officer.** Designate a DBE liaison officer who will administer the Contractor's DBE program and who will be responsible for maintenance of records of efforts and contacts made to subcontract with DBEs.
- 2.3.2. **Compliance Tracking System (CTS).** This Contract is subject to Contract compliance tracking. Contractors and DBEs are required to provide any noted and requested Contract compliance-related data to the Owner. This includes, but is not limited to, commitments, payments, substitutions, and good faith efforts. Contractors and DBEs are responsible for responding by any noted response date or due date to any instructions or request for information by the Owner, and to check the system on a regular basis. A Contractor is responsible for ensuring all DBEs have completed all requested items and that their contact information is accurate and up-to-date. The Owner may require additional information related to the Contract to be provided at any time before, during, or after contract award.
- In its sole discretion, the Owner may require that contract compliance tracking data be submitted by Contractors and DBEs in an alternative format prescribed by the Owner.
- 2.3.3. **Apparent Low Bidder.** The apparent low bidder must submit DBE commitments to satisfy the DBE goal or submit good faith effort Form 2603 and supporting documentation demonstrating why the goal could not be achieved, in whole or part, no later than 5 calendar days after bid opening. The means of transmittal and the risk of timely receipt of the information will be the bidder's responsibility and no extension of the 5-calendar-day timeframe will be allowed for any reason.

2.3.4. **DBE Contractor.** A DBE Contractor may receive credit toward the DBE goal for work performed by its own forces and work subcontracted to DBEs. If a DBE subcontracts to a non-DBE, that information must be reported monthly.

2.3.5. **DBE Committal.** Only those DBEs certified by the TUCP are eligible to be used for goal attainment. The Department maintains the TUCP DBE Directory. The Directory can be accessed at the following Internet address: <https://txdot.txdotcms.com/>.

A DBE must be certified on the day the commitment is considered and at time of subcontract execution. It is the Contractor's responsibility to ensure firms identified for participation are approved certified DBE firms.

The Bidder is responsible to ensure that all submittals are checked for accuracy. Any and all omissions, deletions, and/or errors that may affect the end result of the commitment package are the sole liabilities of the bidder.

Commitments in excess of the goal are considered race-neutral commitments.

2.3.6. **Good Faith Effort Requirements.** A Contractor who cannot meet the Contract goal, in whole or in part, must make adequate good faith efforts to obtain DBE participation as so stated and defined in 49 CFR Part 26, Appendix A.

2.3.6.1. **Administrative Reconsideration.** If the Owner determines that the apparent low bidder has failed to satisfy the good faith efforts requirement, the Owner will notify the Bidder of the failure and will give the Bidder an opportunity to provide written documentation or argument concerning the issue of whether it met the goal or made adequate good faith efforts to do so.

The Bidder must request an administrative reconsideration of that determination within 3 days of the date of receipt of the notice. The request must be submitted directly to the Owner.

If a request for administrative reconsideration is not filed within the period specified the determination made is final and further administrative appeal is barred.

If a reconsideration request is timely received, the reconsideration decision will be made by the Department's DBE liaison officer or, if the DBE liaison officer took part in the original determination, the Department's executive director will appoint a department employee to perform the administrative reconsideration. The employee will hold a senior leadership position and will report directly to the executive director.

The meeting or written documentation must be provided or held within 7 days of the date the request was submitted.

The Department will provide to the Owner a written decision, which will then be provided to the Bidder if the Bidder did or did not make adequate good faith efforts to meet the Contract goal. The reconsideration decision is final and is not administratively appealed to DOT.

2.3.7. **Determination of DBE Participation.** The work performed by the DBE must be reasonably construed to be included in the work area and NAICS work code identified by the Contractor in the approved commitment.

Participation by a DBE on a Contract will not be counted toward DBE goals until the amount of the participation has been paid to the DBE.

Payments made to a DBE that was not on the original commitment may be counted toward the Contract goal if that DBE was certified as a DBE before the execution of the subcontract and has performed a Commercially Useful Function.

The total amount paid to the DBE for work performed with its own forces is counted toward the DBE goal. When a DBE subcontracts part of the work of its Contract to another firm, the value of the subcontracted work may be counted toward DBE goals only if the subcontractor is itself a DBE.

DBE Goal credit for the DBE subcontractors leasing of equipment or purchasing of supplies from the Contractor or its affiliates is not allowed. Project materials or supplies acquired from an affiliate of the Contractor cannot directly or indirectly (second or lower tier subcontractor) be used for DBE goal credit.

If a DBE firm is declared ineligible due to DBE decertification after the execution of the DBE's subcontract, the DBE firm may complete the work and the DBE firm's participation will be counted toward the Contract goal. If the DBE firm is decertified before the DBE firm has signed a subcontract, the Contractor is obligated to replace the ineligible DBE firm or demonstrate that it has made good faith efforts to do so.

The Contractor may count 100% of its expenditure to a DBE manufacturer. According to 49 CFR 26.55(e)(1)(i), a DBE manufacturer is a firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment required under the Contract and of the general character described by the specifications.

The Contractor may count only 60% of its expenditure to a DBE regular dealer. According to 49 CFR 26.55(e)(2)(i), a DBE regular dealer is a firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles, or equipment of the general character described by the specifications and required under the Contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business. A firm may be a regular dealer in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating, or maintaining a place of business if the firm both owns and operates distribution equipment for the products. Any supplementing of regular dealers' own distribution equipment must be by a long-term lease agreement and not on an ad hoc or contract-by-contract basis. A long-term lease with a third-party transportation company is not eligible for 60% goal credit.

With respect to materials or supplies purchased from a DBE that is neither a manufacturer nor a regular dealer, the Contractor may count the entire amount of fees or commissions charged for assistance in the procurement of the materials and supplies, or fees or transportation charges for the delivery of materials or supplies required on a jobsite.

A Contractor may count toward its DBE goal a portion of the total value of the Contract amount paid to a DBE joint venture equal to the distinct, clearly defined portion of the work of the Contract performed by the DBE.

- 2.3.8. **Commercially Useful Function.** It is the Contractor's obligation to ensure that each DBE used on federal-assisted contracts performs a commercially useful function on the Contract.

The Owner will monitor performance during the Contract to ensure each DBE is performing a CUF.

Under the terms established in 49 CFR 26.55, a DBE performs a CUF when it is responsible for execution of the work of the Contract and is carrying out its responsibilities by actually performing, managing, and supervising the work involved.

With respect to material and supplies used on the Contract, a DBE must be responsible for negotiating price, determining quality and quantity, ordering the material, installing the material, if applicable, and paying for the material itself.

With respect to trucking, the DBE trucking firm must own and operate at least one fully licensed, insured, and operational truck used on the Contract. The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the Contract. The DBE may also lease trucks from a non-DBE firm, including from an owner-operator. The DBE that leases trucks equipped

with drivers from a non-DBE is entitled to credit for the total value of transportation services provided by non-DBE leased trucks equipped with drivers not to exceed the value of transportation services on the Contract provided by DBE-owned trucks or leased trucks with DBE employee drivers. Additional participation by non-DBE owned trucks equipped with drivers receives credit only for the fee or commission it receives as a result of the lease arrangement.

A DBE does not perform a CUF when its role is limited to that of an extra participant in a transaction, Contract, or project through which funds are passed to obtain the appearance of DBE participation. The Owner will evaluate similar transactions involving non-DBEs to determine whether a DBE is an extra participant.

If a DBE does not perform or exercise responsibility for at least 30% of the total cost of its Contract with its own work force, or the DBE subcontracts a greater portion of the work than would be expected on the basis of normal industry practice for the type of work involved, the Owner will presume that the DBE is not performing a CUF.

If the Owner determines that a DBE is not performing a CUF, no work performed by such DBE will count as eligible participation. The denial period of time may occur before or after a determination has been made by the Owner.

In case of the denial of credit for non-performance of a CUF, the Contractor will be required to provide a substitute DBE to meet the Contract goal or provide an adequate good faith effort when applicable.

- 2.3.8.1. **Rebuttal of a Finding of No Commercially Useful Function.** Consistent with the provisions of 49 CFR 26.55(c)(4)&(5), before the Owner makes a final finding that no CUF has been performed by a DBE, the Owner will notify the DBE and provide the DBE the opportunity to provide rebuttal information.

CUF determinations are not subject to administrative appeal to DOT.

- 2.3.9. **Joint Check.** The use of joint checks between a Contractor and a DBE is allowed with Owner approval. To obtain approval, the Contractor must submit a completed Form 2178, "DBE Joint Check Approval," to the Owner.

The Owner will closely monitor the use of joint checks to ensure that such a practice does not erode the independence of the DBE nor inhibit the DBE's ability to perform a CUF. When joint checks are used, DBE credit toward the Contract goal will be allowed only when the subcontractor is performing a CUF in accordance with 49 CFR 26.55(c)(1).

Long-term or open-ended joint checking arrangements may be a basis for further scrutiny and may result in the lack of participation towards the Contract goal requirement if DBE independence cannot be established.

Joint checks will not be allowed simply for the convenience of the Contractor.

If the proper procedures are not followed or the Owner determines that the arrangements result in a lack of independence for the DBE involved, no credit for the DBE's participation as it relates to the material cost will be used toward the Contract goal requirement, and the Contractor will need to make up the difference elsewhere on the project.

- 2.3.10. **DBE Termination and Substitution.** No DBE named in the commitment submitted under Section 2.3.5. will be terminated for convenience, in whole or part, without the Owner's approval. This includes, but is not limited to, instances in which a Contractor seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm.

Unless consent is provided, the Contractor will not be entitled to any payment for work or material unless it is performed or supplied by the listed DBE.

The Contractor, before submitting its request to terminate, must first give written notice to the DBE of its intent to terminate and the reason for the termination. The Contractor will copy the Owner on the Notice of Intent to terminate.

The DBE has 5 calendar days to respond to the Contractor's notice and will advise the Contractor and the Owner of the reasons, if any, why it objects to the proposed termination of its subcontract and why the Owner should not approve the prime Contractor's request for termination.

The Owner may provide a shorter response time if required in a particular case as a matter of public necessity.

The Owner will consider both the Contractor's request and DBE's stated position before approving the request. The Owner may provide a written approval only if it agrees, for reasons stated in its concurrence document, that the Contractor has good cause to terminate the DBE. If the Owner does not approve the request, the Contractor must continue to use the committed DBE firm in accordance with the Contract. For guidance on what good cause includes, see 49 CFR 26.53.

Good cause does not exist if the Contractor seeks to terminate, reduce, or substitute a DBE it relied upon to obtain the Contract so that the Contractor can self-perform the work for which the DBE firm was engaged.

When a DBE subcontractor is terminated, make good faith efforts to find, as a substitute for the original DBE, another DBE to perform, at least to the extent needed to meet the established Contract goal, the work that the original DBE was to have performed under the Contract.

Submit the completed Form 2228, "DBE Termination Substitution Request," within seven (7) days, which may be extended for an additional 7 days if necessary at the request of the Contractor. The Owner will provide a written determination to the Contractor stating whether or not good faith efforts have been demonstrated. If the Owner determines that good faith efforts were not demonstrated, the Contractor will have the opportunity to appeal the determination to the Department.

- 2.3.11. **Reports and Records.** By the 15th of each month and after work begins, report payments to meet the DBE goal and for DBE race-neutral participation on projects with or without goals. These payment reports will be required until all DBE subcontracting or material supply activity is completed. Negative payment reports are required when no activity has occurred in a monthly period.

Notify the Owner if payment to any DBE subcontractor is withheld or reduced.

Before receiving final payment from the Owner, the Contractor must indicate a final payment on the compliance tracking system. The final payment is a summary of all payments made to the DBEs on the project.

All records must be retained for a period of 3 years following completion of the Contract work, and must be available at reasonable times and places for inspection by authorized representatives of the Owner, the Department, or the DOT. Provide copies of subcontracts or agreements and other documentation upon request.

- 2.3.12. **Failure to Comply.** If the Owner determines the Contractor has failed to demonstrate good faith efforts to meet the assigned goal, the Contractor will be given an opportunity for reconsideration by the Department.

A Contractor's failure to comply with the requirements of this Special Provision will constitute a material breach of this Contract. In such a case, the Owner reserves the right to terminate the Contract; to deduct the

amount of DBE goal not accomplished by DBEs from the money due or to become due the Contractor; or to secure a refund, not as a penalty but as liquidated damages, to the Owner or such other remedy or remedies as the Owner deems appropriate.

2.3.13. **Investigations.** The Owner may conduct reviews or investigations of participants as necessary. All participants, including, but not limited to, DBEs and complainants using DBE Subcontractors to meet the Contract goal, are required to cooperate fully and promptly with compliance reviews, investigations, and other requests for information.

2.3.14. **Falsification and Misrepresentation.** If the Owner determines that a Contractor or subcontractor was a knowing and willing participant in any intended or actual subcontracting arrangement contrived to artificially inflate DBE participation or any other business arrangement determined by the Owner to be unallowable, or if the Contractor engages in repeated violations, falsification, or misrepresentation, the Owner may:

- refuse to count any fraudulent or misrepresented DBE participation;
- withhold progress payments to the Contractor commensurate with the violation;
- refer the matter to the Office of Inspector General of the US Department of Transportation for investigation; and/or
- seek any other available contractual remedy.

Special Provision to Item 6L

Control of Materials



Item 6L, "Control of Materials" of the Standard Specifications is amended with respect to the clauses cited below. No other clauses or requirements of this Item are waived or changed.

Section 1.1. "Buy America," and Section 1.2., "Buy America Exceptions," are voided and replaced by the following.

- 1.1. **Buy America.** Comply with the latest provisions of Build America, Buy America Act (BABA Act) of the Bipartisan Infrastructure Law and applicable CFR, which restrict funds being made available from Federal financial assistance programs unless all the iron products, steel products, manufactured products, and construction materials used in the project are produced in the United States. Use iron or steel products, manufactured products, or construction materials produced in the United States for all permanently installed materials and products except when defined in Section 1.1.5., "Buy America Exceptions."

A material is solely classified based on its status at the time it is brought to the work site as either an iron or steel product, construction material, manufactured product, or Section 70917(c) material. Refer to the Buy America Material Classification Sheet found at <https://www.txdot.gov/business/resources/materials/buy-america-material-classification-sheet.html> for additional clarification on material classification.

- 1.1.1. **Iron or Steel.** Iron or steel products means articles, materials, or supplies that consist of iron or steel or a combination of both. For iron or steel products, manufacturing includes any process that modifies the chemical content, physical shape or size, or final finish of a product. The manufacturing process begins with initial melting and mixing and continues through fabrication (e.g., cutting, drilling, welding, bending.) and coating (e.g., paint, galvanizing, epoxy).

For iron or steel products, submit a notarized original FORM D-9-USA-1 (Department Form 1818) with the proper attachments for verification of compliance.

- 1.1.2. **Section 70917(c) Materials.** Section 70917(c) materials mean cement and cementitious material; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives. Section 70917(c) materials do not require domestic sourcing or Buy America certification.

- 1.1.3. **Construction Materials.** Construction materials are classified as articles, materials, or supplies that consist of only one of the items listed in bullets below. Minor additions (as determined by the plans or the Engineer) to any of the items listed is still a construction material.

- non-ferrous metals,
- plastic and polymer-based products (including polyvinyl chloride, composite building materials, and polymers used in fiber optic cables),
- glass (including optic glass),
- fiber optic cable (including drop cable),
- optical fiber,
- lumber,
- engineered wood, or
- drywall.

For construction materials, submit a Construction Material Buy America Certification Form (Department Form 2806) for verification of compliance that all manufacturing processes, as required, occurred in the

United States. Each construction material has specific certification requirements stated below. Provide additional documentation as requested.

Details shown on the plans provide additional clarification on Buy America requirements.

For non-ferrous metals, certification requires all manufacturing processes, from initial smelting or melting through final shaping, coating, and assembly, occurred in the United States.

For plastic and polymer-based products (including polyvinyl chloride, composite building materials, and polymers used in fiber optic cables), certification requires all manufacturing processes, from initial combination of constituent plastic or polymer-based inputs, or, where applicable, constituent composite materials, until the item is in its final form, occurred in the United States.

For glass (including optic glass), certification requires all manufacturing processes, from initial batching and melting of raw materials through annealing, cooling, and cutting, occurred in the United States.

For fiber optic cable (including drop cable), certification requires all manufacturing processes, from the initial ribboning (if applicable), through buffering, fiber stranding and jacketing, occurred in the United States. All manufacturing processes also include the standards for glass and optical fiber, but not for non-ferrous metals, plastic and polymer-based products, or any others.

For optical fiber, certification requires all manufacturing processes, from the initial preform fabrication stage through the completion of the draw, occurred in the United States.

For lumber, certification requires all manufacturing processes, from initial debarking through treatment and planing, occurred in the United States.

For engineered wood, certification requires all manufacturing processes from the initial combination of constituent materials until the wood product is in its final form, occurred in the United States.

For drywall, certification requires all manufacturing processes, from initial blending of mined or synthetic gypsum plaster and additives through cutting and drying of sandwiched panels, occurred in the United States.

1.1.4. **Manufactured Products.** Materials classified as a manufactured product are currently waived from Buy America requirements by an FHWA general waiver and are not required to be domestically sourced. However, iron or steel products incorporated into manufactured products must meet iron and steel compliance requirements.

1.1.5. **Buy America Exceptions.** Use of iron, steel, construction materials, and manufactured products manufactured in the United States is required unless the material meets an exception below.

- A waiver exists exempting the material from Buy America compliance.
- The total value of the non-compliant products (other than iron or steel products) is no more than the lesser of \$1,000,000 or 5% of Total Applicable Costs for the project. Total Applicable Cost means the actual cost of all materials requiring Buy America compliance including iron, steel, or other materials that are within the scope of existing waivers. Contractor must provide documentation showing under threshold in advance for Engineer's consideration.
- The total value of foreign iron and steel products, including delivery, does not exceed 0.1% of the total Contract cost or \$2,500, whichever is greater. The Contractor must provide documentation showing under threshold in advance for the Engineer's consideration.
- Foreign steel may be allowed when the Contract contains an alternate item for a foreign source iron or steel product and the Contract is awarded based on the alternate item.

- The materials are temporarily installed or are supplies, tools, and equipment not incorporated into the project. Temporarily installed means the materials and products must be removed at the end of the project or may be removed at the Contractor's convenience with the Engineer's approval.

Special Provision to Item 506

Temporary Erosion, Sedimentation, and Environmental Controls



For this project, item 506, "Temporary Erosion, Sedimentation, and Environmental Controls," of the standard specifications, is hereby voided and replaced with the following.

1. DESCRIPTION

Install, maintain, and remove erosion, sedimentation, and environmental control measures to prevent or reduce the discharge of pollutants in accordance with the Storm Water Pollution Prevention Plan (SWP3) in the plans and the Texas Pollutant Discharge Elimination System (TPDES) General Permit TXR150000.

2. MATERIALS

Furnish materials in accordance with the following:

- Item 161, "Compost"
- Item 432, "Riprap"
- Item 556, "Pipe Underdrains"

2.1. Rock Filter Dams.

2.1.1. **Aggregate.** Furnish aggregate with hardness, durability, cleanliness, and resistance to crumbling, flaking, and eroding acceptable to the Owner. Provide the following:

- Types 1, 2, and 4 Rock Filter Dams. Use 3 to 6 in. aggregate.
- Type 3 Rock Filter Dams. Use 4 to 8 in. aggregate.

2.1.2. **Wire.** Provide minimum 20 gauge galvanized wire for the steel wire mesh and tie wires for Types 2 and 3 rock filter dams. Type 4 dams require:

- a double-twisted, hexagonal weave with a nominal mesh opening of 2-1/2 in. × 3-1/4 in.;
- minimum 0.0866 in. steel wire for netting;
- minimum 0.1063 in. steel wire for selvages and corners; and
- minimum 0.0866 in. for binding or tie wire.

2.1.3. **Sandbag Material.** Furnish sandbags meeting Section 506.2.8., "Sandbags," except that any gradation of aggregate may be used to fill the sandbags.

2.2. **Temporary Pipe Slope Drains.** Provide corrugated metal pipe, polyvinyl chloride (PVC) pipe, flexible tubing, watertight connection bands, grommet materials, prefabricated fittings, and flared entrance sections that conform to the plans. Recycled and other materials meeting these requirements are allowed if approved.

Furnish concrete in accordance with Item 432, "Riprap."

2.3. **Temporary Paved Flumes.** Furnish asphalt concrete, hydraulic cement concrete, or other comparable non-erodible material that conforms to the plans. Provide rock or rubble with a minimum diameter of 6 in. and a maximum volume of 1/2 cu. ft. for the construction of energy dissipaters.

- 2.4. **Construction Exits.** Provide materials that meet the details shown on the plans and this Section.
- 2.4.1. **Rock Construction Exit.** Provide crushed aggregate for long- and short-term construction exits. Furnish aggregates that are clean, hard, durable, and free from adherent coatings such as salt, alkali, dirt, clay, loam, shale, soft or flaky materials, and organic and injurious matter. Use 4- to 8-in. aggregate for Type 1. Use 2- to 4-in. aggregate for Type 3.
- 2.4.2. **Timber Construction Exit.** Furnish No. 2 quality or better railroad ties and timbers for long-term construction exits, free of large and loose knots and treated to control rot. Fasten timbers with nuts and bolts or lag bolts, of at least 1/2 in. diameter, unless otherwise shown on the plans or allowed. Provide plywood or pressed wafer board at least 1/2 in. thick for short-term exits.
- 2.4.3. **Foundation Course.** Provide a foundation course consisting of flexible base, bituminous concrete, hydraulic cement concrete, or other materials as shown on the plans or directed.
- 2.5. **Embankment for Erosion Control.** Provide rock, loam, clay, topsoil, or other earth materials that will form a stable embankment to meet the intended use.
- 2.6. **Pipe.** Provide pipe outlet material in accordance with Item 556, "Pipe Underdrains," and details shown on the plans.
- 2.7. **Construction Perimeter Fence.**
- 2.7.1. **Posts.** Provide essentially straight wood or steel posts that are at least 60 in. long. Furnish soft wood posts with a minimum diameter of 3 in., or use nominal 2 × 4 in. boards. Furnish hardwood posts with a minimum cross-section of 1-1/2 × 1-1/5 in. Furnish T- or L-shaped steel posts with a minimum weight of 0.5 lb. per foot.
- 2.7.2. **Fence.** Provide orange construction fencing as approved.
- 2.7.3. **Fence Wire.** Provide 11 gauge or larger galvanized smooth or twisted wire. Provide 16 gauge or larger tie wire.
- 2.7.4. **Flagging.** Provide brightly-colored flagging that is fade-resistant and at least 3/4 in. wide to provide maximum visibility both day and night.
- 2.7.5. **Staples.** Provide staples with a crown at least 1/2 in. wide and legs at least 1/2 in. long.
- 2.7.6. **Used Materials.** Previously used materials meeting the applicable requirements may be used if approved.
- 2.8. **Sandbags.** Provide sandbag material of polypropylene, polyethylene, or polyamide woven fabric with a minimum unit weight of 4 oz. per square yard, a Mullen burst-strength exceeding 300 psi, and an ultraviolet stability exceeding 70%.

Use natural coarse sand or manufactured sand meeting the gradation given in Table 1 to fill sandbags. Filled sandbags must be 24 to 30 in. long, 16 to 18 in. wide, and 6 to 8 in. thick.

Table 1
Sand Gradation

Sieve #	Retained (% by Weight)
4	Maximum 3%
100	Minimum 80%
200	Minimum 95%

Aggregate may be used instead of sand for situations where sandbags are not adjacent to traffic. The aggregate size shall not exceed 3/8 in.

- 2.9. **Temporary Sediment Control Fence.** Provide a net-reinforced fence using woven geo-textile fabric. Logos visible to the traveling public will not be allowed.
- 2.9.1. **Fabric.** Provide fabric materials in accordance with DMS-6230, "Temporary Sediment Control Fence Fabric."
- 2.9.2. **Posts.** Provide essentially straight wood or steel posts with a minimum length of 48 in., unless otherwise shown on the plans. Furnish soft wood posts at least 3 in. in diameter, or use nominal 2 × 4 in. boards. Furnish hardwood posts with a minimum cross-section of 1-1/2 × 1-1/2 in. Furnish T- or L-shaped steel posts with a minimum weight of 1.3 lb. per foot.
- 2.9.3. **Net Reinforcement.** Provide net reinforcement of at least 12-1/2 gauge galvanized welded wire mesh, with a maximum opening size of 2 × 4 in., at least 24 in. wide, unless otherwise shown on the plans.
- 2.9.4. **Staples.** Provide staples with a crown at least 3/4 in. wide and legs 1/2 in. long.
- 2.9.5. **Used Materials.** Use recycled material meeting the applicable requirements if approved.
- 2.10. **Biodegradable Erosion Control Logs.**
- 2.10.1. **Core Material.** Furnish core material that is biodegradable or recyclable. Use compost, mulch, aspen excelsior wood fibers, chipped site vegetation, agricultural rice or wheat straw, coconut fiber, 100% recyclable fibers, or any other acceptable material unless specifically called out on the plans. Permit no more than 5% of the material to escape from the containment mesh. Furnish compost meeting the requirements of Item 161, "Compost."
- 2.10.2. **Containment Mesh.** Furnish containment mesh that is 100% biodegradable, photodegradable, or recyclable such as burlap, twine, UV photodegradable plastic, polyester, or any other acceptable material.
- Furnish biodegradable or photodegradable containment mesh when log will remain in place as part of a vegetative system.
- Furnish recyclable containment mesh for temporary installations.
- 2.10.3. **Size.** Furnish biodegradable erosion control logs with diameters shown on the plans or as directed. Stuff containment mesh densely so logs do not deform.

3. CONSTRUCTION

- 3.1. **Contractor Responsibilities.** Implement the Owner's Storm Water Pollution Prevention Plan (SWP3) for the project in accordance with the plans and specifications, TPDES General Permit TXR150000, and as directed by the Owner. Develop and implement an SWP3 for project-specific material supply plants within and outside of the Owner's right of way in accordance with the specific or general storm water permit requirements. Prevent water pollution from storm water associated with construction activity from entering any surface water or private property on or adjacent to the project site.
- 3.2. **General.**
- 3.2.1. **Phasing.** Implement control measures in the area to be disturbed before beginning construction, or as directed. Limit the disturbance to the area shown on the plans or as directed. If, in the opinion of the Owner, the Contractor cannot control soil erosion and sedimentation resulting from construction operations, the Owner will limit the disturbed area to that which the Contractor is able to control. Minimize disturbance to vegetation.
- 3.2.2. **Maintenance.** Immediately correct ineffective control measures. Implement additional controls as directed. Remove excavated material within the time requirements specified in the applicable storm water permit.

- 3.2.3. **Stabilization.** Stabilize disturbed areas where construction activities will be temporarily stopped in accordance with the applicable storm water permit. Establish a uniform vegetative cover. The project will not be accepted until a 70% density of existing adjacent undisturbed areas is obtained, unless otherwise shown on the plans. When shown on the plans, the Owner may accept the project when adequate controls are in place that will control erosion, sedimentation, and water pollution until sufficient vegetative cover can be established.
- 3.2.4. **Finished Work.** Upon acceptance of vegetative cover, remove and dispose of all temporary control measures, temporary embankments, bridges, matting, falsework, piling, debris, or other obstructions placed during construction that are not a part of the finished work, or as directed.
- 3.2.5. **Restricted Activities and Required Precautions.** Do not discharge onto the ground or surface waters any pollutants such as chemicals, raw sewage, fuels, lubricants, coolants, hydraulic fluids, bitumens, or any other petroleum product. Operate and maintain equipment on-site to prevent actual or potential water pollution. Manage, control, and dispose of litter on-site such that no adverse impacts to water quality occur. Prevent dust from creating a potential or actual unsafe condition, public nuisance, or condition endangering the value, utility, or appearance of any property. Wash out concrete trucks only as described in the TPDES General Permit TXR150000. Utilize appropriate controls to minimize the offsite transport of suspended sediments and other pollutants if it is necessary to pump or channel standing water (i.e. dewatering). Prevent discharges that would contribute to a violation of Edwards Aquifer Rules, water quality standards, the impairment of a listed water body, or other state or federal law.
- 3.3. **Installation, Maintenance, and Removal Work.** Perform work in accordance with the SWP3, according to manufacturers' guidelines, and in accordance with the TPDES General Permit TXR150000. Install and maintain the integrity of temporary erosion and sedimentation control devices to accumulate silt and debris until soil disturbing activities are completed and permanent erosion control features are in place or the disturbed area has been adequately stabilized as determined by the Owner. . If a device ceases to function as intended, repair or replace the device or portions thereof as necessary. Remove sediment, debris, and litter. When approved, sediments may be disposed of within embankments, or in the right of way in areas where the material will not contribute to further siltation. Dispose of removed material in accordance with federal, state, and local regulations.
- Remove devices upon approval or as directed. Finish-grade and dress the area upon removal. Stabilize disturbed areas in accordance with the permit, and as shown on the plans or directed. Materials removed are considered consumed by the project. Retain ownership of stockpiled material and remove it from the project when new installations or replacements are no longer required.
- 3.3.1. **Rock Filter Dams for Erosion Control.** Remove trees, brush, stumps, and other objectionable material that may interfere with the construction of rock filter dams. Place sandbags as a foundation when required or at the Contractor's option.
- Place the aggregate to the lines, height, and slopes specified, without undue voids for Types 1, 2, 3, and 5. Place the aggregate on the mesh and then fold the mesh at the upstream side over the aggregate and secure it to itself on the downstream side with wire ties, or hog rings for Types 2 and 3, or as directed. Place rock filter dams perpendicular to the flow of the stream or channel unless otherwise directed. Construct filter dams according to the following criteria unless otherwise shown on the plans:
- 3.3.1.1. **Type 1 (Non-reinforced).**
- 3.3.1.1.1. **Height.** At least 18 in. measured vertically from existing ground to top of filter dam.
- 3.3.1.1.2. **Top Width.** At least 2 ft.
- 3.3.1.1.3. **Slopes.** No steeper than 2:1.
- 3.3.1.2. **Type 2 (Reinforced).**

- 3.3.1.2.1. **Height.** At least 18 in. measured vertically from existing ground to top of filter dam.
- 3.3.1.2.2. **Top Width.** At least 2 ft.
- 3.3.1.2.3. **Slopes.** No steeper than 2:1.
- 3.3.1.3. **Type 3 (Reinforced).**
 - 3.3.1.3.1. **Height.** At least 36 in. measured vertically from existing ground to top of filter dam.
 - 3.3.1.3.2. **Top Width.** At least 2 ft.
 - 3.3.1.3.3. **Slopes.** No steeper than 2:1.
- 3.3.1.4. **Type 4 (Sack Gabions).** Unfold sack gabions and smooth out kinks and bends. Connect the sides by lacing in a single loop–double loop pattern on 4- to 5-in. spacing for vertical filling. Pull the end lacing rod at one end until tight, wrap around the end, and twist 4 times. Fill with stone at the filling end, pull the rod tight, cut the wire with approximately 6 in. remaining, and twist wires 4 times.

Place the sack flat in a filling trough, fill with stone, connect sides, and secure ends as described above for horizontal filling.

Lift and place without damaging the gabion. Shape sack gabions to existing contours.
- 3.3.1.5. **Type 5.** Provide rock filter dams as shown on the plans.
- 3.3.2. **Temporary Pipe Slope Drains.** Install pipe with a slope as shown on the plans or as directed. Construct embankment for the drainage system in 8-in. lifts to the required elevations. Hand-tamp the soil around and under the entrance section to the top of the embankment as shown on the plans or as directed. Form the top of the embankment or earth dike over the pipe slope drain at least 1 ft. higher than the top of the inlet pipe at all points. Secure the pipe with hold-downs or hold-down grommets spaced a maximum of 10 ft. on center. Construct the energy dissipaters or sediment traps as shown on the plans or as directed. Construct the sediment trap using concrete or rubble riprap in accordance with Item 432, "Riprap," when designated on the plans.
- 3.3.3. **Temporary Paved Flumes.** Construct paved flumes as shown on the plans or as directed. Provide excavation and embankment (including compaction of the subgrade) of material to the dimensions shown on the plans unless otherwise indicated. Install a rock or rubble riprap energy dissipater, constructed from the materials specified above, to a minimum depth of 9 in. at the flume outlet to the limits shown on the plans or as directed.
- 3.3.4. **Construction Exits.** Prevent traffic from crossing or exiting the construction site or moving directly onto a public roadway, alley, sidewalk, parking area, or other right of way areas other than at the location of construction exits when tracking conditions exist. Construct exits for either long- or short-term use.
 - 3.3.4.1. **Long-Term.** Place the exit over a foundation course as required. Grade the foundation course or compacted subgrade to direct runoff from the construction exits to a sediment trap as shown on the plans or as directed. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed.
 - 3.3.4.1.1. **Type 1.** Construct to a depth of at least 8 in. using crushed aggregate as shown on the plans or as directed.
 - 3.3.4.1.2. **Type 2.** Construct using railroad ties and timbers as shown on the plans or as directed.
 - 3.3.4.2. **Short-Term.**

- 3.3.4.2.1. **Type 3.** Construct using crushed aggregate, plywood, or wafer board. This type of exit may be used for daily operations where long-term exits are not practical.
- 3.3.4.2.2. **Type 4.** Construct as shown on the plans or as directed.
- 3.3.5. **Earthwork for Erosion Control.** Perform excavation and embankment operations to minimize erosion and to remove collected sediments from other erosion control devices.
- 3.3.5.1. **Excavation and Embankment for Erosion Control Features.** Place earth dikes, swales, or combinations of both along the low crown of daily lift placement, or as directed, to prevent runoff spillover. Place swales and dikes at other locations as shown on the plans or as directed to prevent runoff spillover or to divert runoff. Construct cuts with the low end blocked with undisturbed earth to prevent erosion of hillsides. Construct sediment traps at drainage structures in conjunction with other erosion control measures as shown on the plans or as directed.
- Create a sediment basin, where required, providing 3,600 cu. ft. of storage per acre drained, or equivalent control measures for drainage locations that serve an area with 10 or more disturbed acres at one time, not including offsite areas.
- 3.3.5.2. **Excavation of Sediment and Debris.** Remove sediment and debris when accumulation affects the performance of the devices, after a rain, and when directed.
- 3.3.6. **Construction Perimeter Fence.** Construct, align, and locate fencing as shown on the plans or as directed.
- 3.3.6.1. **Installation of Posts.** Embed posts 18 in. deep or adequately anchor in rock, with a spacing of 8 to 10 ft.
- 3.3.6.2. **Wire Attachment.** Attach the top wire to the posts at least 3 ft. from the ground. Attach the lower wire midway between the ground and the top wire.
- 3.3.6.3. **Flag Attachment.** Attach flagging to both wire strands midway between each post. Use flagging at least 18 in. long. Tie flagging to the wire using a square knot.
- 3.3.7. **Sandbags for Erosion Control.** Construct a berm or dam of sandbags that will intercept sediment-laden storm water runoff from disturbed areas, create a retention pond, detain sediment, and release water in sheet flow. Fill each bag with sand so that at least the top 6 in. of the bag is unfilled to allow for proper tying of the open end. Place the sandbags with their tied ends in the same direction. Offset subsequent rows of sandbags 1/2 the length of the preceding row. Place a single layer of sandbags downstream as a secondary debris trap. Place additional sandbags as necessary or as directed for supplementary support to berms or dams of sandbags or earth.
- 3.3.8. **Temporary Sediment-Control Fence.** Provide temporary sediment-control fence near the downstream perimeter of a disturbed area to intercept sediment from sheet flow. Incorporate the fence into erosion-control measures used to control sediment in areas of higher flow. Install the fence as shown on the plans, as specified in this Section, or as directed.
- 3.3.8.1. **Installation of Posts.** Embed posts at least 18 in. deep, or adequately anchor, if in rock, with a spacing of 6 to 8 ft. and install on a slight angle toward the runoff source.
- 3.3.8.2. **Fabric Anchoring.** Dig trenches along the uphill side of the fence to anchor 6 to 8 in. of fabric. Provide a minimum trench cross-section of 6 × 6 in. Place the fabric against the side of the trench and align approximately 2 in. of fabric along the bottom in the upstream direction. Backfill the trench, then hand-tamp.
- 3.3.8.3. **Fabric and Net Reinforcement Attachment.** Attach the reinforcement to wooden posts with staples, or to steel posts with T-clips, in at least 4 places equally spaced unless otherwise shown on the plans. Sewn vertical pockets may be used to attach reinforcement to end posts. Fasten the fabric to the top strand of reinforcement by hog rings or cord every 15 in. or less.

- 3.3.8.4. **Fabric and Net Splices.** Locate splices at a fence post with a minimum lap of 6 in. attached in at least 6 places equally spaced unless otherwise shown on the plans. Do not locate splices in concentrated flow areas.
- Requirements for installation of used temporary sediment-control fence include the following:
- fabric with minimal or no visible signs of biodegradation (weak fibers),
 - fabric without excessive patching (more than 1 patch every 15 to 20 ft.),
 - posts without bends, and
 - backing without holes.
- 3.3.9. **Biodegradable Erosion Control Logs.** Install biodegradable erosion control logs near the downstream perimeter of a disturbed area to intercept sediment from sheet flow. Incorporate the biodegradable erosion control logs into the erosion measures used to control sediment in areas of higher flow. Install, align, and locate the biodegradable erosion control logs as specified below, as shown in plans or as directed.
- Secure biodegradable erosion control logs in a method adequate to prevent displacement as a result of normal rain events, prevent damage to the logs, and to the satisfaction of the Owner such that flow is not allowed under the logs. Temporarily removing and replacing biodegradable erosion logs as to facilitate daily work is allowed at the Contractor's expense.
- 3.3.10. **Vertical Tracking.** Perform vertical tracking on slopes to temporarily stabilize soil. Provide equipment with a track undercarriage capable of producing a linear soil impression measuring a minimum of 12 in. long × 2 to 4 in. wide × 1/2 to 2 in. deep. Do not exceed 12 in. between track impressions. Install continuous linear track impressions where the 12 in. length impressions are perpendicular to the slope. Vertical tracking is required on projects where soil disturbing activities have occurred unless otherwise approved.

4. MEASUREMENT

- 4.1. **Rock Filter Dams.** Installation or removal of rock filter dams will be measured by the foot or by the cubic yard. The measured volume will include sandbags, when used.
- 4.1.1. **Linear Measurement.** When rock filter dams are measured by the foot, measurement will be along the centerline of the top of the dam.
- 4.1.2. **Volume Measurement.** When rock filter dams are measured by the cubic yard, measurement will be based on the volume of rock computed by the method of average end areas.
- 4.1.2.1. **Installation.** Measurement will be made in final position.
- 4.1.2.2. **Removal.** Measurement will be made at the point of removal.
- 4.2. **Temporary Pipe Slope Drains.** Temporary pipe slope drains will be measured by the foot.
- 4.3. **Temporary Paved Flumes.** Temporary paved flumes will be measured by the square yard of surface area. The measured area will include the energy dissipater at the flume outlet.
- 4.4. **Construction Exits.** Construction exits will be measured by the square yard of surface area.
- 4.5. **Earthwork for Erosion and Sediment Control.**
- 4.5.1. **Equipment and Labor Measurement.** Equipment and labor used will be measured by the actual number of hours the equipment is operated and the labor is engaged in the work.
- 4.5.2. **Volume Measurement.**

- 4.5.2.1. **In Place.**
- 4.5.2.1.1. **Excavation.** Excavation will be measured by the cubic yard in its original position and the volume computed by the method of average end areas.
- 4.5.2.1.2. **Embankment.** Embankment will be measured by the cubic yard in its final position by the method of average end areas. The volume of embankment will be determined between:
- the original ground surfaces or the surface upon that the embankment is to be constructed for the feature and
 - the lines, grades and slopes of the accepted embankment for the feature.
- 4.5.2.2. **In Vehicles.** Excavation and embankment quantities will be combined and paid for under "Earthwork (Erosion and Sediment Control, In Vehicle)." Excavation will be measured by the cubic yard in vehicles at the point of removal. Embankment will be measured by the cubic yard in vehicles measured at the point of delivery. Shrinkage or swelling factors will not be considered in determining the calculated quantities.
- 4.6. **Construction Perimeter Fence.** Construction perimeter fence will be measured by the foot.
- 4.7. **Sandbags for Erosion Control.** Sandbags will be measured as each sandbag or by the foot along the top of sandbag berms or dams.
- 4.8. **Temporary Sediment-Control Fence.** Installation or removal of temporary sediment-control fence will be measured by the foot.
- 4.9. **Biodegradable Erosion Control Logs.** Installation or removal of biodegradable erosion control logs will be measured by the foot along the centerline of the top of the control logs.
- 4.10. **Vertical Tracking.** Vertical tracking will not be measured or paid for directly but is considered subsidiary to this Item.

5. PAYMENT

The following will not be paid for directly but are subsidiary to pertinent Items:

- erosion-control measures for Contractor project-specific locations (PSLs) inside and outside the right of way (such as construction and haul roads, field offices, equipment and supply areas, plants, and material sources);
- removal of litter, unless a separate pay item is shown on the plans;
- repair to devices and features damaged by Contractor operations;
- added measures and maintenance needed due to negligence, carelessness, lack of maintenance, and failure to install permanent controls;
- removal and reinstallation of devices and features needed for the convenience of the Contractor;
- finish grading and dressing upon removal of the device; and
- minor adjustments including but not limited to plumbing posts, reattaching fabric, minor grading to maintain slopes on an erosion embankment feature, or moving small numbers of sandbags.

Stabilization of disturbed areas will be paid for under pertinent Items.

Furnishing and installing pipe for outfalls associated with sediment traps and ponds will not be paid for directly but is subsidiary to the excavation and embankment under this Item.

- 5.1. **Rock Filter Dams.** The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid as follows:

- 5.1.1. **Installation.** Installation will be paid for as “Rock Filter Dams (Install)” of the type specified. This price is full compensation for furnishing and operating equipment, finish backfill and grading, lacing, proper disposal, labor, materials, tools, and incidentals.

- 5.1.2. **Removal.** Removal will be paid for as “Rock Filter Dams (Remove).” This price is full compensation for furnishing and operating equipment, proper disposal, labor, materials, tools, and incidentals.

When the Owner directs that the rock filter dam installation or portions thereof be replaced, payment will be made at the unit price bid for “Rock Filter Dams (Remove)” and for “Rock Filter Dams (Install)” of the type specified. This price is full compensation for furnishing and operating equipment, finish backfill and grading, lacing, proper disposal, labor, materials, tools, and incidentals.

- 5.2. **Temporary Pipe Slope Drains.** The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” will be paid for at the unit price bid for “Temporary Pipe Slope Drains” of the size specified. This price is full compensation for furnishing materials, removal and disposal, furnishing and operating equipment, labor, tools, and incidentals.

Removal of temporary pipe slope drains will not be paid for directly but is subsidiary to the installation Item. When the Owner directs that the pipe slope drain installation or portions thereof be replaced, payment will be made at the unit price bid for “Temporary Pipe Slope Drains” of the size specified, which is full compensation for the removal and reinstallation of the pipe drain.

Earthwork required for the pipe slope drain installation, including construction of the sediment trap, will be measured and paid for under “Earthwork for Erosion and Sediment Control.”

Riprap concrete or stone, when used as an energy dissipater or as a stabilized sediment trap, will be measured and paid for in accordance with Item 432, “Riprap.”

- 5.3. **Temporary Paved Flumes.** The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” will be paid for at the unit price bid for “Temporary Paved Flume (Install)” or “Temporary Paved Flume (Remove).” This price is full compensation for furnishing and placing materials, removal and disposal, equipment, labor, tools, and incidentals.

When the Owner directs that the paved flume installation or portions thereof be replaced, payment will be made at the unit prices bid for “Temporary Paved Flume (Remove)” and “Temporary Paved Flume (Install).” These prices are full compensation for the removal and replacement of the paved flume and for equipment, labor, tools, and incidentals.

Earthwork required for the paved flume installation, including construction of a sediment trap, will be measured and paid for under “Earthwork for Erosion and Sediment Control.”

- 5.4. **Construction Exits.** Contractor-required construction exits from off right of way locations or on-right of way PSLs will not be paid for directly but are subsidiary to pertinent Items.

The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” for construction exits needed on right of way access to work areas required by the Owner will be paid for at the unit price bid for “Construction Exits (Install)” of the type specified or “Construction Exits (Remove).” This price is full compensation for furnishing and placing materials, excavating, removal and disposal, cleaning vehicles, labor, tools, and incidentals.

When the Owner directs that a construction exit or portion thereof be removed and replaced, payment will be made at the unit prices bid for “Construction Exit (Remove)” and “Construction Exit (Install)” of the type specified. These prices are full compensation for the removal and replacement of the construction exit and for equipment, labor, tools, and incidentals.

Construction of sediment traps used in conjunction with the construction exit will be measured and paid for under "Earthwork for Erosion and Sediment Control."

5.5. **Earthwork for Erosion and Sediment Control.**

- 5.5.1. **Initial Earthwork for Erosion and Sediment Control.** The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Excavation (Erosion and Sediment Control, In Place)," "Embankment (Erosion and Sediment Control, In Place)," "Excavation (Erosion and Sediment Control, In Vehicle)," "Embankment (Erosion and Sediment Control, In Vehicle)," or "Earthwork (Erosion and Sediment Control, In Vehicle)."

This price is full compensation for excavation and embankment including hauling, disposal of material not used elsewhere on the project; embankments including furnishing material from approved sources and construction of erosion-control features; and equipment, labor, tools, and incidentals.

Sprinkling and rolling required by this Item will not be paid for directly, but will be subsidiary to this Item.

- 5.5.2. **Maintenance Earthwork for Erosion and Sediment Control for Cleaning and Restoring Control Measures.** The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid under a Contractor Force Account Item from invoice provided to the Owner.

This price is full compensation for excavation, embankment, and re-grading including removal of accumulated sediment in various erosion control installations as directed, hauling, and disposal of material not used elsewhere on the project; excavation for construction of erosion-control features; embankments including furnishing material from approved sources and construction of erosion-control features; and equipment, labor, tools, and incidentals.

Earthwork needed to remove and obliterate erosion-control features will not be paid for directly but is subsidiary to pertinent Items unless otherwise shown on the plans.

Sprinkling and rolling required by this Item will not be paid for directly, but will be subsidiary to this Item.

- 5.6. **Construction Perimeter Fence.** The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Construction Perimeter Fence." This price is full compensation for furnishing and placing the fence; digging, fence posts, wire, and flagging; removal and disposal; and materials, equipment, labor, tools, and incidentals.

Removal of construction perimeter fence will not be paid for directly but is subsidiary to the installation Item. When the Owner directs that the perimeter fence installation or portions thereof be removed and replaced, payment will be made at the unit price bid for "Construction Perimeter Fence," which is full compensation for the removal and reinstallation of the construction perimeter fence.

- 5.7. **Sandbags for Erosion Control.** Sandbags will be paid for at the unit price bid for "Sandbags for Erosion Control" (of the height specified when measurement is by the foot). This price is full compensation for materials, placing sandbags, removal and disposal, equipment, labor, tools, and incidentals.

Removal of sandbags will not be paid for directly but is subsidiary to the installation Item. When the Owner directs that the sandbag installation or portions thereof be replaced, payment will be made at the unit price bid for "Sandbags for Erosion Control," which is full compensation for the reinstallation of the sandbags.

- 5.8. **Temporary Sediment-Control Fence.** The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid as follows:

- 5.8.1. **Installation.** Installation will be paid for as "Temporary Sediment-Control Fence (Install)." This price is full compensation for furnishing and operating equipment finish backfill and grading, lacing, proper disposal, labor, materials, tools, and incidentals.
- 5.8.2. **Removal.** Removal will be paid for as "Temporary Sediment-Control Fence (Remove)." This price is full compensation for furnishing and operating equipment, proper disposal, labor, materials, tools, and incidentals.
- 5.9. **Biodegradable Erosion Control Logs.** The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid as follows:
- 5.9.1. **Installation.** Installation will be paid for as "Biodegradable Erosion Control Logs (Install)" of the size specified. This price is full compensation for furnishing and operating equipment finish backfill and grading, staking, proper disposal, labor, materials, tools, and incidentals.
- 5.9.2. **Removal.** Removal will be paid for as "Biodegradable Erosion Control Logs (Remove)." This price is full compensation for furnishing and operating equipment, proper disposal, labor, materials, tools, and incidentals.
- 5.10. **Vertical Tracking.** Vertical tracking will not be measured or paid for directly but is considered subsidiary to this Item.

Special Specification 3005

Spray Applied Underseal Membrane



1. DESCRIPTION

- 1.1. **Underseal Membrane.** Furnish a smooth and homogeneous spray-applied underseal membrane polymer-modified emulsion (EBL) in accordance with Section 300.2.4., "Emulsified Asphalt." The membrane must be applied by a spray-paver and covered immediately with a compacted mixture of aggregate, asphalt binder, and additives mixed hot in a mixing plant.

2. EQUIPMENT

- 2.1. **Spray Paver.** Furnish a spray paver in accordance with Item 320, "Equipment for Asphalt Concrete Pavement."
- 2.2. **Membrane Storage Tank and Distribution System.** Equip the spray paver with an insulated storage tank and distribution system in accordance with Item 320.

3. CONSTRUCTION METHODS

- 3.1. **Surface Preparation.** Remove existing raised pavement markers. Repair any damage incurred by removal as directed. Remove dirt, dust, or other harmful material before sealing. When shown on the plans, remove vegetation and blade pavement edges.
- 3.2. **Membrane Placement.** Uniformly apply the membrane at an application rate between 0.10 – 0.22 gal. per square yard for bonding, and 0.22 – 0.40 gal. per square yard for sealing. The Engineer may adjust the application rate, taking into consideration the existing pavement surface conditions. Spray the membrane using a metered mechanical pressure spray bar at a temperature of 140°F–180°F. Monitor the membrane application rate and adjust the rate when directed. Verify that the spray bar can apply the membrane at a uniform rate across the entire paving width. Do not let the wheels or other parts of the paving machine contact the freshly applied membrane. Apply a uniform membrane coat to all contact surfaces and all joints as shown on the plans. Do not dilute the membrane at the terminal, in the field, or at any other location before use. Prevent splattering of the membrane when placed adjacent to curb, gutter, and other structures.
- 3.3. **Quality Control.** Stop application if it is not uniform due to streaking, ridging, pooling, or flowing off the roadway surface. Verify equipment condition, operating procedures, application temperature, and material properties. Determine and correct the cause of non-uniform application.

The Engineer may perform independent tests to confirm contractor compliance and may require testing differences or failing results to be resolved before resuming production.

The Engineer may stop the application and require construction of test strips at the Contractor's expense if any of the following occurs:

- non-uniformity of application continues after corrective action;
- in three consecutive shots, application rate differs by more than 0.02 gal. per square yard from the rate directed; or
- any shot differs by more than 0.04 gal. per square yard from the rate directed.

The Engineer will approve the test strip location. The Engineer may require additional test strips until surface treatment application meets specification requirements.

- 3.4. **Membrane Sampling.** The Engineer will obtain a 1-qt. sample of the polymer-modified emulsion, for each lot of mixture produced, in accordance with [Tex-500-C](#), Part III. The Engineer will notify the Contractor when the sampling will occur and will witness the collection of the sample. Obtain the sample at approximately the same time the mixture random sample is obtained. Label the can with the corresponding lot and subplot numbers, producer name, producer facility, grade, District, date sampled, and project information, including highway and CSJ number. The Engineer will retain these samples for 2 mo.

At least once per project, the Engineer will collect split samples of the polymer-modified emulsion. The Engineer will submit one split sample to the Materials and Tests Division to verify compliance with Item 300, and will retain the other split sample for 2 mo. The Engineer may test as often as necessary to ensure the residual of the emulsion is greater than or equal to the specification requirement in Item 300, Asphalts, Oils, and Emulsions.”

4. MEASUREMENT

Unless otherwise noted on the plans, underseal membrane material will be measured by one of the following methods:

- 4.1. **Volume.** Underseal membrane material will be measured at the applied temperature by strapping the tank before and after road application and determining the net volume in gallons from the distributor’s calibrated strap stick. The Engineer will witness all strapping operations for volume determination.

The Engineer may allow the use of a metering device to determine asphalt volume used and application rate if the device is accurate within 1.5% of the strapped volume.

- 4.2. **Weight.** Underseal membrane material will be measured in tons using certified scales meeting the requirements of Item 320, unless otherwise approved. The transporting truck must have a seal attached to the driving device and other openings. The Engineer may require random checking on public scales, at the Contractor’s expense, to verify weight accuracy.

Upon completion or temporary suspension, any remaining membrane material will be weighed by a certified public weigher or measured by volume in a calibrated tank, and the quantity converted to tons at the measured temperature. The quantity to be measured will be the number of tons received, minus the number of tons remaining after all directed work is complete, and minus the amount used for other Items.

5. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” will be subsidiary to the unit bid price for “Bonding Course.” These prices are full compensation for all materials, equipment, labor, tools, and incidentals necessary to complete the work.

Special Specification 3007

Bonding Course



1.	DESCRIPTION
	Construct a bonding course using a Tracking-Resistant Asphalt Interlayer (TRAIL) or a Spray Applied Underseal Membrane before the placement of a new hot-mix asphalt concrete pavement.
2.	MATERIALS
	Furnish asphalt materials in accordance with Article 300.2., "Materials" for one of the following two options:
2.1.	TRAIL. Furnish asphalt material described as "tack" for typical use in the TRAIL Material Producer List. Do not dilute emulsified asphalts at the terminal, in the field, or at any other location before use, unless required in conformance with the manufacturer's recommendation for approved TRAIL products on the MPL.
2.2.	Underseal Membrane. Furnish asphalt material meeting the requirements of Special Specification 3005, "Spray Applied Underseal Membrane." Do not dilute emulsified asphalts at the terminal, in the field, or at any other location before use.
	Furnish asphalt material for applying tack coat to all miscellaneous contact surfaces when approved by the Engineer:
2.3.	Miscellaneous Tack. Furnish CSS-1H, SS-1H, EBL, or a PG binder with a minimum high-temperature grade of PG 58 for tack coat binder in accordance with Item 300, Asphalts, Oils, and Emulsions. Specialized tack coat materials on the MPL for Tracking Resistant Asphalt Interlayer (TRAIL) will be allowed or required when shown on the plans. Do not dilute emulsified asphalts at the terminal, in the field, or at any other location before use, unless required in conformance with the manufacturer's recommendation for approved TRAIL products on the MPL.
2.4.	Sampling. The Engineer will obtain at least one sample of the tack coat binder per project per source in accordance with Tex-500-C, Part III, and test it to verify compliance with Item 300. The Engineer will notify the Contractor when the sampling will occur and will witness the collection of the sample from the asphalt distributor immediately before use. Label the can with the corresponding lot and subplot numbers, producer, producer facility location, grade, district, date sampled, all applicable bills of lading (if available), and project information, including highway and control-section-job (CSJ) number. For emulsions, the Engineer may test as often as necessary to ensure the residual of the emulsion is greater than or equal to the specification requirement in Item 300.
3.	EQUIPMENT
3.1.	TRAIL. Provide the equipment recommended by the producer.
3.2.	Underseal Membrane. Provide in accordance with Special Specification 3005, "Spray Applied Underseal Membrane."
4.	CONSTRUCTION
4.1.	Preparation. Clean the surface before placing the bonding course. Apply bonding course uniformly at the approved rate, unless otherwise directed. The Engineer will set the rate between 0.04 – 0.14 gal. of residual asphalt per square yard of surface area. The Engineer may adjust the application rate, taking into

consideration the existing pavement surface conditions. Prevent splattering of the bonding course when placed adjacent to curb, gutter, and structures,

Apply a thin, uniform tack coat to all miscellaneous contact surfaces of curbs, structures, and joints. Prevent splattering of the tack coat when placed adjacent to curb, gutter, and structures.

4.2. **TRAIL.** Perform the following construction methods when applying a TRAIL for a bonding course:

4.2.2. **Test Strips.** When required by the Engineer, perform a test strip of TRAIL at a location on or near the project as directed. Allow the strip to cure for a maximum of 30 min. Drive over the test strip with equipment used during laid-down construction to simulate the effect of paving equipment. There should be no evidence of tracking or picking up of the TRAIL material on the wheels of the equipment.

4.2.3. **Placement.** Uniformly apply the TRAIL material to all areas where mix will be placed, including joints, at the rate shown on the plans or as directed, within 15°F of the approved temperature, and not above the maximum allowable temperature. Unless otherwise directed, uniformly apply the TRAIL material at a minimum rate specified on the plans. The Engineer will set the application rate between 0.06 – 0.14 gal. per square yard for emulsion TRAIL and the application rate between 0.08 – 0.12 gal. per square yard for hot-applied TRAIL.

4.3. **Underseal Membrane.** Place in accordance with Special Specification 3005, "Spray Applied Underseal Membrane."

4.3.2. **Placement.** Do not allow any loose mixture onto the prepared surface before application of the membrane. Unless otherwise directed, uniformly apply the membrane to all areas where mix will be placed, including joints, at the rate shown on the plans. Unless otherwise directed, uniformly apply the membrane at the minimum rate specified on the plans. The Engineer may adjust the application rate, taking into consideration the existing pavement surface conditions. The Engineer will set the application rate between 0.10 – 0.22 gal. per square yard for underseal membrane.

4.4. **Quality Control.** Stop application if it is not uniform due to streaking, ridging, pooling, or flowing off the roadway surface. Verify equipment condition, operating procedures, application temperature, and material properties. Determine and correct the cause of non-uniform application.

The Engineer may perform independent tests to confirm contractor compliance and may require testing differences or failing results to be resolved before resuming production.

The Engineer may stop the application and require construction of test strips at the Contractor's expense if any of the following occurs:

- non-uniformity of application continues after corrective action;
- evidence of tracking or picking up of the TRAIL;
- in three consecutive shots, application rate differs by more than 0.02 gal. per square yard from the rate directed; or
- any shot differs by more than 0.04 gal. per square yard from the rate directed.

The Engineer will approve the test strip location. The Engineer may require additional test strips until surface treatment application meets specification requirements.

5. MEASUREMENT

5.1. **Volume.** Asphalt material, including all components, will be measured at the applied temperature by strapping the tank before and after road application. The distributor calibrated strap stick will be used for measuring the asphalt level in the distributor asphalt tank. The certified tank chart will be used to determine the beginning gallons and the final gallons in the distributor tank. The quantity to be measured for payment will be the difference between the beginning gallons and the final gallons.

5. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Bonding Course." These prices are full compensation for surface preparation; furnishing, preparing, hauling, Miscellaneous Tack used for all miscellaneous contact surfaces, and placing materials; removing existing pavement markers and excess aggregate; rolling; cleaning up stockpiles; and equipment, labor, tools, and incidentals.

Special Specification 6009

ITS System Integration



1. DESCRIPTION

This Item will govern the integration of all furnished equipment and software as shown on the plans, as detailed in this Special Specification, and as directed. Furnish, install, test, and integrate all traffic management hardware and software into the Advanced Traffic Management System (ATMS) and the Department or local Traffic Management Center (TMC), as specified in the plans. The Contractor must select, install, and integrate the equipment and software as required to achieve a complete and fully operational Traffic Management System (TMS) as shown on the plans, as detailed in this Special Specification, and as directed.

2. SYSTEM EQUIPMENT AND INSTALLATION

Install, interconnect, test, integrate, and make all new equipment fully operational with system in accordance with the National Electrical Code (NEC).

Select, install, and integrate all new equipment and software as required to achieve a complete and fully operational system as shown on the plans, as detailed in this Special Specification, and as directed.

3. SYSTEM INTEGRATION

Provide an end-to-end communication system for integration into the Department or local TMCs. Equipment includes, but is not limited to proposed and existing:

- Bluetooth Detectors (when shown on the plans),
- Closed-Circuit Televisions (CCTV) equipment (when shown on the plans),
- Dynamic Message Signs (DMS) equipment (when shown on the plans),
- Highway Advisory Radios (HAR) (when shown on the plans),
- Hub Cabinets, Hub Buildings and Environmentally Controlled Underground Vaults (ECUV) (when shown on the plans),
- Lane Control Signs (LCS) equipment (when shown on the plans),
- Lane Management Systems (LMS) (when shown on the plans),
- Fiber optic cable (when shown on the plans),
- Radar Vehicle Sensing Devices (RVSD) equipment (when shown on the plans),
- Traffic Signals (when shown on the plans),
- Radar Vehicle Detection Systems (RVSD) for Traffic Signals (when shown on the plans),
- Wireless Communication Systems (when shown on the plans),
- Wrong Way Driver Detection Systems (WWD) (when shown on the plans),
- Video Imaging Vehicle Detection Systems (VIVDS) (when shown on the plans),
- Roadway Weather Information Systems (RWIS) (when shown on the plans),
- Over Height Vehicle Detection Systems (when shown on the plans),
- Low Water Crossing Systems (when shown on the plans),
- Cellular Modems (when shown on the plans), and
- Equipment not on this list but shown on the plans and General Notes.

Provide, install, and make operational a complete and functional system. Install and integrate all field, central, and communications components.

Perform work inside proposed or existing enclosures, when required, including re-routing, re-assignment, re-wiring, reconfiguration, re-switching, and re-cabling, based on the proposed configuration as shown in the plans and as detailed in the specifications. Perform all work in accordance with the plans and as necessary to achieve a fully functional and operational system, including all re-routing, terminations, connections, splicing, and re-assignments.

4. TESTING, TRAINING, DOCUMENTATION, FINAL ACCEPTANCE AND WARRANTY

All testing, training, documentation, final acceptance and warranty requirements will be in accordance with Special Specification, "Testing, Training, Documentation, Final Acceptance, and Warranty."

5. MEASUREMENT

The complete "System Integration" item as detailed in the plans and described in the specifications will be measured as a lump sum unit.

6. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "ITS System Integration." This price shall be full compensation for preparing, furnishing, and installing all materials, equipment, and incidentals necessary to provide an integrated system. Items not specifically mentioned or addressed in this specification but are necessary for a complete and operational system as described herein, shall be provided by the Contractor and will not be paid for directly, but shall be considered incidental to this Item.

Special Specification 6005

Networking Intelligent Transportation System (ITS) Communications Cable



1. DESCRIPTION

Furnish, install, and test twisted-pair cable for networking and telecommunication uses in the field environment.

2. MATERIALS

2.1. **General Requirements.** Provide new cable and connectors that are in conformance with the details shown on the plans and in the Specifications. The cable must be free of deformations, holes, splits, and splices.

ITS networking copper cables must be constructed for installation in an outdoor underground conduit environment. All cable provided for underground installation must contain the outside plant designation for outdoor usage and must be rated non-plenum.

Provide cable in compliance with the most current version of the following industry standards:

- NFPA National Electric Code (NEC),
- Rural Electrification Administration (REA) -PE-22 (7 CFR 1755.403), PE-39 (7 CFR 1755.390),
- ANSI /TIA-568-C, EIA/TIA-568-B.2-2001 (Category 5E Cable),
- EIA-232, EIA-422, EIA-485,
- TSB-36, and
- Underwriters Laboratory (UL).

Included in this Item are the ITS cable types listed in Table 1.

Table 1
Common Networking ITS Communication Cable Types

Cable Type	Nominal AWG Gauge	Application
category 5e Ethernet cable	#24 AWG	Standard 100Base-Tx, Gigabit Ethernet, up to 100 MHz bandwidth performance
category 6 Ethernet cable	#24 AWG	Gigabit Ethernet; up to 250MHz bandwidth performance
category 7 Ethernet cable	#24 AWG	10-Gigabit Ethernet, up to 600 MHz bandwidth performance. <u>Category 7 cable is not typically utilized for ITS device applications.</u> Category 7 cable applications include high bandwidth performance at network layer switches with 10 Gigabit connections.
serial communications cable (RS-232, RS-422, RS-485)	#22, #24 AWG	Serial port applications, low bandwidth, and small data rate transmission (<100 kb/s)
shielded twisted pair cable	#18-24 AWG	Telephone communications, below 16 MHz bandwidth performance
unshielded twisted pair (UTP) cable	#18-24 AWG	

Included in this Item are all terminating connectors and associated equipment required for installation and testing in a field environment.

Provide cable conforming to the gauge, type, and length shown on the plans. Ensure the cable gauge supplied meets the bandwidth requirements specific to the cable application and run length.

Provide signal amplification or repeater locations for communications cable runs as shown on the plans and in the Specifications.

When selecting serial communications cable for longer cable runs, verify the conductor gauge to be provided will meet signal loss requirements for cable application. Refer to Table 2 for typical cable distance limitations for ITS serial communications cable.

Table 2
Typical Network Communications Cable
Distance Limitations

Cable Type	Recommended Maximum Cable Run ¹
RS-232	50 ft.
RS-422 (4 wire system)	500 ft.
RS-485 (2 wire system)	500 ft.
category 5e	300 ft.
category 6	300 ft.

1. Cable distance limitation to be verified according to manufacturer for the cable application.

All cable provided must be manufactured with permanent markings at approximate 2-ft. intervals on the outer jacket according to manufacturer name, serial number, type, UL list and classification for identification purposes. All pairs must be color coded using standard North American communication industry colors to uniquely identify each pair in the cable.

- 2.2. **Physical Requirements.** Provide networking communications cable meeting the following physical requirements.
- 2.2.1. **Conductor.** All networking cable must be constructed of solid bare copper conductor.
- 2.2.2. **Insulation.** All networking cable must be of foamed, cellular dielectric construction. Dielectric material must adhere to and support the center cable conductor.
- 2.2.2.1. **Insulation Material.** Serial communications cable insulation must be high-density polyethylene (HDPE) or equivalent. Ethernet networking cable insulation must be polyolefin or HDPE. UTP cable insulation must be polyethylene, polyolefin, polypropylene, or fluorinated ethylene propylene.
- 2.2.3. **Shielding.** Serial communications cable shielding must contain combination foil-polyester and copper braid shield to reduce EMI interference. Ethernet networking cable must contain a combination foil-polyester shield.
- 2.2.3.1. **Coverage.** Serial communications cable must be constructed of 100% effective foil coverage, minimum 65% braided coverage. Ethernet networking cable (category 5e, 6, 7) must contain 100% effective foil cover.
- 2.2.4. **Outer Jacket.** Outer jacket must be rated for heavy duty ultraviolet (UV) exposure, sunlight, oil, and weather resistance necessary for outdoor installation.
- 2.2.4.1. **Jacket Material.** All networking cable outer jackets must be of PVC or polyethylene construction.
- 2.2.5. **Connectors.** Connectors must be matching, weather resistant, water and moisture proof, and outdoor-rated hardware that meet cable operating voltage, temperature, and impedance characteristics. Connectors must prevent the entry and collection of moisture to the cable and electrical connection point. Provide cable sealant during installation to seal connections from moisture and corrosion.

- 2.3. **Electrical and Mechanical Requirements.** Ethernet networking cable as shown on the plans must be in accordance with the TIA/EIA-568-C standard, and according to performance characteristics defined in TIA/EIA-568-C.4-1. All Ethernet networking cable provided must meet IEEE 802.3af and IEEE 802.3at for Power over Ethernet (PoE) applications.
- Serial communications cable and UTP must conform to the following requirements:
- 2.3.1. **Capacitance.** Serial communications cable capacitance must not exceed 35 picofarads (pF) per foot of cable. UTP cable capacitance must not exceed 15 pF per foot of cable.
- 2.3.2. **Inductance.** Serial communications cable inductance must not exceed 0.30 microhenry's (μH) per foot of cable.
- 2.3.3. **Impedance.** Provide 100-ohm nominal impedance for UTP cables and according to the manufacturer recommendation for cable application.
- 2.3.4. **Attenuation.** Attenuation of the cable must be compliant with requirements of the proposed application.
- 2.3.5. **Resistance.** The DC resistance of the serial communications cable inner conductor must not exceed 20 ohms per 1000 ft.
- 2.4. **Environmental Design Requirements.**
- 2.4.1. **Installation Temperature Rating.** Cable must be rated for an outside ambient temperature range of -20°F to 165°F.
- 2.4.2. **Storage Temperature Rating.** Cable must be rated for a storage temperature range of -40°F to 165°F.

3. CONSTRUCTION METHODS

- 3.1. **General.** Cable must be installed in accordance with the following industry procedures:
- ANSI/TIA -568-C,
 - BICSI Telecommunications Distribution Methods Manual (TDMM) and Information Transport Systems Installation (ITSIM),
 - NFPA National Electric Code (NEC),
 - USDA Construction of Direct Buried Plant, and
 - ICEA Standard for Aerial Service Wire - ANSI/ICEA 5-89-648.
- 3.1.1. **Cable Storage.** All uninstalled cable must be stored according to manufacturer recommended bend radius and cable reel requirements.
- 3.1.2. **Cable Labeling.** All cable must be labeled using pre-laminated labels with UV protection according to usage at all terminations. Provide weatherproof labels rated for outdoor use.
- 3.1.3. **Installation Procedure.** All cable must be inspected and tested for continuity when received, with results compared with factory pre-shipping tests. Inspect the cable nomenclature to make certain that the correct product has been received. Notify the supplier (or manufacturer) of all discrepancies for immediate correction.

Install the network cable routed as shown on the plans and follow the manufacturer recommendations for installation.

Ensure that all exposed cable ends are covered and protected against moisture and dust penetration at all times during installation. Protect cable ends during storage, cable pulls, and post-installation.

- 3.1.4. **Conduit Fill Requirements.** Install cable as shown on the plans and ensure that NEC and TIA/EIA fill requirements must be met for all cable runs.
- 3.1.5. **Cable Slack Requirements.** Provide 25 ft. cable slack maximum in pull boxes and per manufacturer requirements.
- 3.1.6. **Spacing Requirements.** Provide minimum 12-in. spacing between electrical power cable and communications cable types as described for underground installations within NEC Sections 840.44 and 840.47.
- 3.2. **Testing.** Procedures for the tests noted below are to be in accordance with industry standard practice and recorded in accordance with ANSI/TIA/EIA rules for documentation for the cable type. Perform tests in accordance with testing requirements in this Item. For all tests, provide test forms to be used that compare measured results with threshold values. The following tests must be performed, recorded, and submitted to verify the cable performance and installation:
- 3.2.1. **Cable Continuity.** Perform cable continuity test for center conductor and shield continuity and record results. The test must be performed on received cable reels to identify any discrepancies and upon final installed cable interconnections. Test continuity of each pair to show a resistance of not more than 8 ohms per 1000 ft. of conductor. Use meter with a minimum input resistance measurement to be in accordance with RUS 7 CFR 1755.403 Copper Cable Telecommunications Plant Measurements.
- 3.2.2. **Time Domain Reflectometry (TDR).** Perform TDR test for impedance continuity per manufacturer recommendations in coaxial cable interconnections and record results.
- 3.2.3. **Ground Resistance.** Use a Megohmmeter to perform ground resistance testing of all conductors including the shield, and conductor-to-conductor, including all individual conductors to the shield. Ensure that all conductor tests, including the shield, read infinity to ground, and from conductor to conductor and all individual conductors to the shield, read infinity. Replace cable not meeting the infinity test result at no expense to the department, whether one or multiple readings per cable are defective.
- 3.2.4. **Visual Inspection.** Where cable installation is visible, perform visual inspection (with a Department representative) to verify any evidence of the following:
- cable damage (cracks, shield damage, kinks, knots, jacket damage, crushed cable),
 - bend radius violations (at conduit fittings, cabinet locations), and
 - cable crimping method—use of manufacturers specified cable crimp tool only (use of pliers not permitted).
- 3.3. **Documentation.** Submit three copies of the following materials for each cable type provided for approval prior item supply:
- manufacturer cutsheets and complete specifications (physical, electrical, mechanical, and environmental),
 - manufacturer warranty information,
 - independent test lab certification, and
 - blank test forms.
- Submit three copies of the following materials for each cable run provided for approval post installation:
- test results,
 - completed test forms,

- cable continuity test,
- TDR test,
- “As-built” documentation for cable path as shown on the plans,
- complete maintenance and trouble-shooting procedures, and
- furnish additional information as shown on the plans.

3.4. **Warranty.** Warrant all cable against defects or failure in design, materials, and workmanship in conformance with the manufacturer's standard warranty.

Supply cable with no less than 95% of the manufacturer's warranty remaining on the date that equipment invoices are submitted for final payment. Any material with less than 95% warranty remaining will be rejected.

Warrant all cable furnished and installed to perform in conformance with the manufacturer published specifications for a period of 1 yr. after final acceptance of the project by the Department. Provide for “on-site” repair or replacement within two working days and at no cost to the Department. Repair or replace any defective cable, at the manufacturer's option, at no cost to the Department.

Special Specification 6008

Radar Vehicle Detection System for Signalized Intersection Control



1. DESCRIPTION

Furnish, install, relocate, or remove radar vehicle detection systems (RVDS) of the specified devices at signalized intersections to provide the required zones of detection as shown on the plans, or as directed.

2. MATERIALS

- 2.1. **General.** Except as allowed for relocation of RVDS equipment, ensure all equipment and component parts are new in accordance with Division Specification TO-8000, "Radar Vehicle Detection System," Section 1.0–Section 6.0, and in an operable condition at time of delivery and installation.

The Traffic Safety Division, Traffic Management Section, (TRF-TM) updates TxDOT Material producer list (MPL) of all RVDSs conforming to this Specification. New materials appearing on the MPL require no further sampling and testing before use unless deemed necessary by the Engineer or TRF-TM. Provide prequalified RVDSs from the TxDOT MPL.

Ensure all RVDSs serving the same detection purpose within the project are from the same manufacturer. RVDS devices are classified by their functional requirements. The functional requirements are for radar presence detection devices (RPDDs) and radar advance detection devices (RADDs). The RVDS system classifications are RVDS (RPDD Only), RVDS (RADD Only), and RVDS (RPDD and RADD).

Provide each RVDS sensor with a mounting bracket designed to mount directly to a pole, mast arm, or other structure. Ensure bracket is designed such that the sensor can be tilted vertically and horizontally for alignment and then locked into place after proper alignment is achieved. All hardware must be designed to support the load of the RVDS sensor and mounting bracket.

- 2.2. **Configuration.** Ensure the RVDS provides vehicle detection as required on the plans, or as directed.

Ensure the RVDS does not require tuning or recalibration to maintain performance once initial calibration and configuration are complete. RVDS must not require cleaning or adjustment to maintain performance.

RVDS must self-recover from power failure once power is restored.

- 2.3. **Cabling.** Provide appropriate length of all cables necessary to make the RVDS fully operational at each installation site.

- 2.4. **Software.** Ensure the RVDS manufacturer includes all software required to configure and monitor operation of RVDS field equipment locally and remotely. RVDS software must be a stable production release.

Software must allow the user to configure, operate, exercise, diagnose, and read status of all RVDS features and functions using a laptop computer.

Software must include the ability to save a local copy of RVDS field device configurations and load saved configurations to RVDS field devices.

Ensure all licenses required for operation and use of software are included at no additional cost.

Software updates must be provided at no additional cost during the warranty period.

- 2.5. **Electrical.** All conductors supplying the equipment must meet NEC requirements.

Ensure equipment is designed to protect personnel from exposure to high voltage during installation, operation, and maintenance.

- 2.6. **Mechanical.** Ensure that all parts are fabricated from corrosion-resistant materials, such as plastic, stainless steel, aluminum, or brass.

Ensure that all screws, nuts, and locking washers are corrosion-resistant. Do not use self-tapping screws.

Ensure equipment is clearly and permanently marked with manufacturer name or trademark, part number, date of manufacture, and serial number.

Ensure RVDS is modular in design for ease of field replacement and maintenance. Provide a sensor that will minimize weight and wind loading when mounted on a traffic signal pole or mast arm.

All printed circuit boards must have conformal coating.

- 2.7. **Environmental.** RVDS sensor must be able to withstand the maximum wind load based on the Department's basic wind velocity zone map standard without any damage or loosening from structure.

The RVDS enclosure must conform to criteria set forth in NEMA 250 for Type 4X enclosures.

The RVDS must meet all NEMA TS2 environmental requirements for temperature, humidity, transients, vibration, and shock.

- 2.8. **Connectors and Harnesses.** Ensure all conductors are properly color-coded and identified.

Ensure cable connector design prohibits improper connections. Cable connector pins are plated to improve conductivity and resist corrosion.

Connections for data and power must be made to the RVDS sensor using waterproof, quick-disconnect connectors. Pigtails from the sensor to a waterproof junction box (NEMA 4) or an approved waterproof connector must be allowed for splicing. The pigtails must not be shorter than 3 ft. unless otherwise shown on the plans.

3. CONSTRUCTION

- 3.1. **System Installation.** Install RVDS system devices according to the manufacturer's recommendations to provide properly functioning detection as required. This must include the installation of sensors on signal poles or mast arms, controller interface modules, power and surge protection panels, cabling and all associated equipment, software, serial and Ethernet communication ports, and connectors and hardware required to set up and operate. Ensure that the supplier of the RVDS provides competent onsite support representative during installation to supervise installation and testing of the RVDS. Ensure the radar sensor locations are optimal for system operation and operate as required. Maintain safe construction practices during equipment installation.

Ensure installation and configuration of software on Department computers are included with the RVDS.

Take care to prevent damage to any support structures. Any equipment or structure damaged or lost must be replaced by the Contractor (with items approved) at no cost to the Department.

- 3.2. **Mechanical Components.** Ensure that all fasteners, including bolts, nuts, and washers with a diameter less than 5/8 in. are Type 316 or Type 304 stainless steel and meet ASTM F593 and ASTM F594 for corrosion

resistance. Ensure that all bolts and nuts 5/8 in. and more in diameter are galvanized and meet ASTM A307. Separate dissimilar metals with an inert dielectric material.

- 3.3. **Wiring.** Install all wiring and electrical work supplying power to the equipment in a neat, skillful manner. Supply and install all wiring necessary to interconnect RVDS sensors to the traffic signal cabinet to complete the work. Furnish and install any additional required wiring at no additional cost to the Department.

Wiring must be cut to proper length before installation. Provide cable slack for ease of removal and replacement. All cable slack must be neatly laced with lacing or straps in the bottom of the cabinet. Ensure cables are secured with clamps.

- 3.4. **Grounding.** Ensure all RVDS components, cabinets, and supports are grounded in accordance with the NEC and manufacturer recommendations.

- 3.5. **Relocation of RVDS Field Equipment.** Perform the relocation in strict conformance with the requirements herein and as shown on the plans. Completion of the work must present a neat, skillful, and finished appearance. Maintain safe construction practices during relocation.

Inspect the existing RVDS field equipment with a representative from the Department and document any evidence of damage before removal. Conduct a pre-removal test in accordance with the testing requirements contained in this Specification to document operational functionality. Remove and deliver equipment that fails inspection to the Department.

Before removal of existing RVDS field equipment, disconnect and isolate the power cables from the electric power supply and disconnect all communication cabling from the equipment located inside the cabinet. Coil and store power and communication cabling inside the cabinet until relocation. Remove existing RVDS field equipment as shown on the plans only when authorized.

Take care to prevent damage to any support structures. Any equipment or structure damaged or lost must be replaced by the Contractor (with items approved) at no cost to the Department.

Make all arrangements for connection to the power supply and communication source, including any permits required for the work under the Contract. Provide wire for the power connection at least the minimum size indicated on the plans and insulated for 600 V. Meet the NEC.

- 3.6. **Removal of RVDS Field Equipment.** Perform the removal in strict conformance with the requirements herein and as shown on the plans. Completion of the work must present a neat, skillful, and finished appearance. Maintain safe construction practices during removal.

Disconnect and isolate any existing electrical supply before removal of existing field equipment.

Take care to prevent damage to any support structures. Any equipment or structure damaged or lost must be replaced by the Contractor (with items approved) at no cost to the Department.

All materials not designated for reuse or retention by the Department will become the property of the Contractor and be removed from the project site at the Contractor's expense. Deliver items to be retained by the Department to a location shown on the plans or General Notes. The Contractor is fully responsible for any removed equipment until released.

- 3.7. **Documentation.** Provide electronic copies of operation and maintenance manuals, along with a copy of all product documentation on electronic media. Include the following documentation.

- Complete and accurate schematic diagrams
- Complete installation procedures
- Manufacturer's specifications (functional, electrical, mechanical, and environmental)
- Complete maintenance and troubleshooting procedures

- Explanation of product operation
- Warranty as specified in Section 3.8., "Warranty"

The RVDS must pass testing to ensure functionality and reliability before delivery. This includes functional tests for internal subassemblies, a 24-hr. minimum unit level burn-in test, and a unit functionality test. Provide test results and supporting documentation, including serial number tested, for each RVDS. If requested, manufacturing data per serial number must be provided for each RVDS.

Unless deemed unnecessary by the Engineer or TRF-TM, provide certification from an independent laboratory demonstrating compliance with NEMA TS2 environmental requirements for temperature, humidity, transients, vibration, and shock.

Unless deemed unnecessary by the Engineer or TRF-TM, provide third-party enclosure test results demonstrating the sensor enclosure meets Type 4X criteria.

Unless deemed unnecessary by the Engineer or TRF-TM, provide evidence of RVDS manufacturer's quality assurance program, including proof of RVDS manufacturer ISO 9001 certification or other quality management system programs for manufacturing RVDS.

- 3.8. **Warranty.** Ensure that the detection system has a manufacturer's warranty covering defects for at least 5 yr. from the date of final acceptance. In addition to the terms required by TO-8000, Article 8, ensure the warranty includes providing replacements, within 10 calendar days of notification, for defective parts and equipment during the warranty period at no cost to the Department.

- 3.9. **Training and Support.** Provide manufacturer-approved end user training to the Department and their representatives. Training must include instruction in system configuration, operation, and maintenance. Provide training for at least 10 Department-designated representatives up to 8 hr., including class and field training.

Ensure that the detection system manufacturer will provide product support for at least 5 yr. from the date of final acceptance.

4. TESTING

Perform the following tests on equipment and systems unless otherwise shown on the plans. The Department may witness all the tests.

- 4.1. **Stand-Alone Test.** Conduct a stand-alone test for each unit after installation. The test must exercise all stand-alone (non-network) functional operations and verify that RVDS is placing detector contact closure to assigned detector channels in the traffic signal controller assembly. Notify the Engineer 5 working days before conducting this test.
- 4.2. **Consequences of Test Failure.** If a unit fails a test, provide a new unit, and then repeat the test until successfully completed.
- 4.3. **Final Acceptance Test.** Conduct a final acceptance test on the complete functional system. Demonstrate all control, monitoring, and communication requirements and operate the system for 30 days. The Engineer will furnish a letter of approval stating the first day of the final acceptance test.
- 4.4. **Consequences of Final Acceptance Test Failure.** If a defect within the system is detected during the final acceptance test, document and correct the source of failure. Once corrective measures are taken, monitor the point of failure until a consecutive 30-day period free of defects is achieved.

4.5. Relocation.

- 4.5.1. Pre-Test.** Provide five copies of the test procedures, including tests of the basic functionality of the unit, and blank data forms to the Engineer for review and comment as part of material documentation requirements. Functionality tests may include, but not be limited to, physical inspection of the unit and cable assemblies. Include the sequence of the tests in the procedures along with acceptance thresholds. The Engineer will comment on and approve or reject test procedures within 30 days after Contractor submittal of test procedures. Rejected test procedures must be resubmitted within 10 days. Review time is in calendar days. Conduct all tests in accordance with the approved test procedures.

Conduct basic functionality testing before removal of RVDS field equipment. Test all functional operations of the equipment in the presence of representatives of the Contractor and the Department. Ensure that both representatives sign the test report indicating that the equipment has passed or failed each function. Once removed, the equipment will become the responsibility of the Contractor until accepted by the Department. Compare test data prior to removal and after installation. The performance test results after relocation must be equal to or better than the test results before removal. Repair or replace the failing components within the system so that the system can pass the performance test after relocation.

- 4.5.2. Post-Test.** Testing of the RVDS field equipment is to relieve the Contractor of system maintenance. The Contractor will be relieved of the responsibility for system maintenance in accordance with Item 7, "Legal Relations and Responsibilities," after a successful test period. The Contractor will not be required to pay for electrical energy consumed by the system.

After all existing RVDS field equipment has been installed, conduct approved continuity, stand-alone, and performance tests. Furnish test data forms containing the sequence of tests, including all the data taken as well as quantitative results for all tests. Submit the test data forms to the Engineer at least 30 days before the day the tests are to begin. Obtain approval of test procedures before submission of equipment for tests. Send at least one copy of the data forms to the Engineer.

Conduct an approved stand-alone test of the equipment installation at the field sites. At minimum, exercise all stand-alone (non-network) functional operations of the field equipment with all the equipment installed per the plans as directed. Complete the approved data forms with test results and submit them to the Engineer for review and either acceptance or rejection of equipment. Give at least 30 working days' notice before all tests to allow the Engineer or their representative to observe each test.

The Department must conduct approved RVDS field equipment system tests on the field equipment with the central equipment. The tests must, at minimum, exercise all remote-control functions and display the return status codes from the controller.

If any unit fails to pass a test, prepare and deliver a report to the Engineer. Describe the nature of the failure and the corrective action needed. If the failure is the result of improper installation or damage during reinstallation, reinstall or replace the unit and repeat the test until the unit passes successfully, at no additional cost to the Department or extension of the Contract period.

Special Specification 6014

Intelligent Transportation System (ITS) Radio



1. DESCRIPTION

Furnish, install, remove, or relocate an Intelligent Transportation System (ITS) radio at locations shown on the plans, or as directed.

2. MATERIALS

Provide new materials that are in accordance with the details shown on the plans and the requirements of this Item. Supply all equipment and hardware needed for a complete functioning system. Materials for equipment to be relocated will be "as-is." The Contractor will protect the existing equipment from further wear or damage.

3. EQUIPMENT

- 3.1. **General.** The ITS radio consists of a radio, power supply, antenna, antenna cables, lightning protection, grounding, all necessary mounting hardware, and radio configuration software.

Utilize the latest industry practiced techniques in equipment design and construction of parts, subassemblies, circuits, cards, and modules. Design equipment for ease of maintenance. Ensure that all component parts are readily accessible for inspection and maintenance, using hand tools. Provide test points for checking essential voltages, waveforms, signals, and similar data.

Ensure that all external screws, nuts, and locking washers are made of corrosion resistant material. Do not use self-tapping screws unless specifically approved.

Provide parts made of corrosion resistant material such as plastic, stainless steel, anodized aluminum, or brass.

Protect all materials used in construction from fungus growth and moisture deterioration.

Separate dissimilar metals by an inert dielectric material.

- 3.2. **Radio.** Each radio will be a point-to-point or point-to-multi-point single-band or dual-band radio operating in the license-free frequency as shown on the plans or as directed. Provide a radio that meets all the following minimums:

- 3.2.1. **Frequency.** FCC unlicensed, 900 MHz, 2.4 GHz, or 5 GHz, as specified on the plans, or as directed.

- 3.2.2. **Channel Selection.** Dynamic Frequency Selection, with a manual override option.

- 3.2.3. **Minimum Range.** 15 mi., line of sight.

- 3.2.4. **Transmit Power.** User selectable, up to the maximum allowed by FCC rules, to at least 21 dBm, in 1 dBm steps (maximum step size). Maximum output power limited by FCC Part 15 rules for unlicensed frequencies.

- 3.2.5. **Receive Sensitivity.** Adaptive.

- 3.2.6. **Modulation.** Adaptive modulation and space diversity to provide maximum throughput.

- 3.2.7. **Forward Error Correction.** Provide forward error correction.
- 3.2.8. **Security.** Minimum security for the point-to-point backhaul network is the Advanced Encryption Standard, 128 bit block size (AES-128). Meet ISO/IEC 18033-3 standards. Minimum security for communications with Wi-Fi units is WPA2.
- 3.2.9. **Throughput.** Minimum out-of-the-box throughput of 100 Mbps for frequencies between 2.4 and 5 GHz. Minimum out-of-the-box throughput of 1 Mbps for the 900 Mhz frequency. Minimum measured throughput in the field of 50 Mbps for frequencies between 2.4 and 5 GHz.
- 3.2.10. **Networking Standards.** Provide at least the following:
- IEEE 802.1d—Ethernet Bridging,
 - IEEE 802.1p—Traffic Prioritization,
 - IEEE 802.1q—Virtual Local Area Network (VLAN),
 - IEEE 802.3—2012 Ethernet, and
 - IEEE 802.11-2009—Wi-Fi (a/b/g/n) or most current version.
- 3.2.11. **Network Interface.** Minimum of one functional 10/100 Base-T RJ-45 port.
- 3.2.12. **On-Board Alignment Tools.** Provide a radio with on-board alignment tools for use aligning the antenna. These could be external LED indicators, audible indicators, or other approved mechanism; and
- 3.2.13. **FCC Certification.** Provide at least the following:
- FCC Part 15.400 (U-NII);
 - FCC Part 15.247 (ISM) 20 Mbps; and
 - FCC Part 15, Class B.
- 3.3. **Power.** Provide ITS radios meeting all specified requirements when the input power is 115 VAC \pm 20%, 60 Hz \pm 3 Hz, and that maximum power required does not exceed 35 W, including optional equipment.
- Provide appropriate voltage conversion, power injectors, or other power supply hardware if the radio equipment or any radio-related ancillary devices require operating voltages other than 115 VAC or rely on Power over Ethernet (PoE or PoE+). Appropriate voltage converters or injectors must accept an input voltage of 115 VAC as noted above. Provide any required Power over Ethernet (PoE or PoE+) devices that are 802.3af-2003 or 802.3at-2009 compliant, meeting the power requirements of the radio equipment.
- The Contractor must verify with the local power service provider to ensure that the provided equipment is compatible with the installed equipment. The Contractor must supply and install any additional equipment required for proper operation of the Radio System per the design.
- Every numbered table and figure must be referenced in the accompanying text. Tables and figures should appear in the order they are referred to, no matter how fleeting the reference.
- 3.4. **Antennas.** Furnish and install radio antennas of the number and type specified on the plans, or as directed. These may include, but are not limited to:
- connectorized omni,
 - yagi,
 - sectorized (i.e. 45, 60, 90, 120 etc. degree increments),
 - parabolic antennas, and
 - integrated flat panel antennas.
- Meet the following specifications:
- antenna gain as specified in the plans,

- minimum wind rating of 110 mph,
- voltage standing wave ratio (VSWR) value not exceeding 1.5 for the radio frequency specified on the plans,
- reflection coefficient value not exceeding 0.20,
- reflected power value not exceeding 4%, and
- impedance matched to the impedance of the system so that voltage is in phase with the current (typically 50 ohms).

3.5. **Antenna Coaxial Cables.**

3.5.1. **Nominal impedance.** Matched to the antenna's impedance to minimize the voltage standing wave ratio (VSWR), typically 50 ohms.

3.5.2. **Maximum Attenuation.** 5 dB/100 ft. at the frequency specified on the plans.

3.5.3. **Maximum Cable Length.** 10 ft. maximum length from radio to antenna when radio is mounted on an external structure. 100 ft. maximum length from radio to antenna when radio is mounted in the cabinet and the antenna is mounted on the structure. Select external cable so that maximum cable attenuation is less than 5 dB total.

3.6. **Network Cable.** Provide Cat 5e shielded wire that meets the following minimum requirements:

- shielded twisted pair with drain wire,
- AWG24 solid bare copper,
- CMX outdoor rated for direct bury,
- outdoor UV rated jacket, and
- TIA/EIA-568B.2 and ISO/IEC 11801 standards.

Maximum run length for Cat 5e cable is 250 ft., or per the manufacturer's specifications.

3.7. **Lightning Protection.** Furnish and install surge protection on all coaxial cables mounted adjacent to and bonded to the cabinet ground bus. Include all mounting hardware necessary.

3.8. **Power Service Protection.** Provide equipment with readily accessible circuit protection devices (i.e. circuit breakers or fuses) for equipment and power source protection. Circuit protection devices may be resettable or replaceable.

Provide circuit breakers or fuses sized such that no wire, component, connector, PC board, or assembly will be subjected to sustained current in excess of their respective design limits upon the failure of any single circuit element of wiring.

Provide UL Listed Type 1 or Type 2 Surge Protection Device (SPD) and labeled to UL1449 Third Edition, posted at UL.com, under Certifications UL Category Code VZCA, and have a 20kA I-nominal rating. Provide SPD rated as NEMA 4. Provide an SPD with integral EMI/RFI line filtering if shown on the plans.

Provide automatic recovery from power failure within 30 sec. after resumption of power.

Provide a GFCI duplex outlet for ITS radio equipment at existing locations as shown on the plans. Provide this outlet in addition to the existing outlets within the cabinet.

3.9. **Maximum Weight.** Provide equipment with a weight not exceeding 25 lbs.

3.10. **Maximum Dimensions.**

3.10.1. **Outdoor Units.** 16 in. × 16 in. × 9 in. for integrated units, not including antenna.

- 3.10.2. **Used in Cabinets.** Provide equipment that easily fits on a single shelf without cabinet modifications.
- 3.11. **Modular Design.** Provide a modular ITS radio System design to allow components to be readily replaced in the field.
- Label with UV resistant methods to identify all modules and assemblies with name, model number, serial number and any other pertinent information required to facilitate equipment maintenance.
- 3.12. **Network Topologies.** Point-to-Point or Point-to-Multi-Point, as shown on the plans, or as directed.
- 3.13. **Connectors and Harnesses.** All external connections must be made of connectors that are keyed uniquely to preclude improper hookups. Color code and label all cables to and from the connectors on both ends.
- Provide connecting harnesses of appropriate length and terminated with matching connectors for interconnection with the communications system equipment.
- Plate all pins and mating connectors with a minimum of 20 microns of metallic native element gold (Au). Use heat shrink tubing for all solder type connections to ensure that it protects the connection from short circuiting.
- Label with UV resistant methods to identify all assemblies with name, model number, serial number, and any other pertinent information required to facilitate equipment maintenance.
- Provide external waterproof connections that conform to IEC 60529 Section 14.2.7, or latest revision, for IP 66 or greater rating.
- 3.14. **Mechanical Requirements.** Provide equipment that is modular in design such that it can be easily replaced in the field.
- Label with UV resistant methods to identify each unit with name, model number, serial number, and any other pertinent information required to facilitate equipment maintenance.
- Coat all printed circuit boards with a clear-coat moisture and fungus resistant material (conformal coating).
- 3.15. **Environmental Requirements.** Ensure that equipment is in accordance with NEMA TS2-2003 (R2008), International Electrotechnical Commission (IEC) 60529, and NEMA 250-2008, or most current version, for the following categories:
- 3.15.1. **Temperature and Humidity.** Provide equipment that is in accordance with NEMA TS2 Section 2.1.5.1., or latest revision, and meets all the specified requirements during and after being subjected to any combination of the following conditions:
- ambient temperature range of -30 to 165°F,
 - temperature shock not exceeding 30°F per hour,
 - relative humidity of 0% to 100%, and
 - moisture condensation on all exterior surfaces caused by temperature changes.
- 3.15.2. **Vibration.** Provide equipment that is in accordance with NEMA TS2 Section 2.1.9. and Section 2.2.3., or most current version, and meets all the specified requirements during and after being subjected to a vibration of 5 Hz to 30 Hz up to 0.5 g applied in each of three mutually perpendicular planes for 30 min.
- 3.15.3. **Shock.** Provide equipment that is in accordance with NEMA TS2 Section 2.1.10. and Section 2.2.4., or latest revision, and does not yield permanent mechanical deformation or any damage that renders the unit inoperable when subjected to a shock of 10g applied in each of three mutually perpendicular planes for 30 min.

- 3.15.4. **Environmental Contaminants.** Provide equipment that is in accordance with IEC 60529 Section 14.2.6., or latest revision, for IP 66 or greater rating when providing a pressurized unit.
- Provide equipment that in accordance with IEC 60529 Section 14.2.7., or latest revision, for IP 66 or greater rating when providing a non-pressurized unit.
- 3.15.5. **External Icing.** Provide equipment that is tested in accordance with NEMA 250-2003 Section 5.6., or latest revision.
- 3.15.6. **Corrosion.** Provide equipment that is tested in accordance with NEMA 250-2003 Section 5.10., or latest revision, when located in coastal Districts. Coastal Districts are Beaumont (BMT), Corpus Christi (CRP), Houston (HOU), Pharr (PHR), and Yoakum (YKM).
- 3.16. **Radio Configuration and Management Software.** Provide any and all programming and software required to make operational and support the radio system. The programming and software will be installed in the appropriate equipment at the time of acceptance testing and will be used in the acceptance testing. Provide operations manuals, installation requirements, and licenses. Provide software with at least the following features.
- 3.16.1. **Radio Configuration.** Configuration is achieved through the following:
- a comprehensive configuration menu allowing the user to control all programmable radio settings;
 - a network tree which automatically discovers, organizes, displays, and searches for a radio; and
 - the ability to save individual radio configurations in a file that can be used to program replacement radios.
- 3.16.2. **Diagnostic Routines.** Provide the following diagnostic routines:
- 3.16.2.1. **Bandwidth Test.** For all communication links to a specific radio, including transmit and receive characteristics at the remote radios. Display signal strengths for transmit and receive. Provide client connection quality (CCQ).
- 3.16.2.2. **Spectrum Scan.** Determine the amount of background signal noise present for the specified frequency. Detect specific channels which experience interference to the extent that they are not adequate for the transmission or receipt of data. Include an option to exclude these frequencies from use.
- 3.16.2.3. **Ping Test.** Measure and display the time it takes a packet of data to travel to and from another device in milliseconds and percent packet loss. Measure and display the variance in a minimum of seven successive ping tests (jitter).
- 3.16.3. **Networking Tools.** Provide the following network tools:
- provide a firewall configuration tool to manage multicast and broadcast traffic,
 - provide user selection of spanning tree protocol (STP) and rapid spanning tree pProtocol (RSTP) options,
 - provide virtual local area network (VLAN) configuration tools;, and
 - provide quality of service (QoS) selection and configuration tools.
- 3.16.4. **Alarms.** Provide the following alarm features:
- provide 24 hr. monitoring of user selected alarms; and
 - provide option of sending email and text messages of triggered alarms.

4. CONSTRUCTION AND WORK METHODS

- 4.1. **General.** Provide and install all materials, including support, calibration, and test equipment, to ensure an operating and functional wireless radio system. This includes installation of power and data cables, and the

power grounding and lightning suppression systems. Before beginning installation, inspect each site to verify suitability of the design for installation, grounding, and lightning protection. Provide written documentation to the Engineer for approval before installation. Utilize the latest available industry standard construction techniques with a minimum number of parts, subassemblies, circuits, cards, and modules to maximize standardization and commonality. Design equipment for ease of maintenance and orient component parts to be readily accessible for inspection and maintenance.

- 4.2. **Radio Mounting.** Provide and install all necessary radio mounts, standoffs, brackets, hardware, and grounding assemblies for the mounting surface shown in the plans. Install all radios at specified locations as shown on the plans. Any deviation between actual mounting location and those specified must be pre-approved.
- 4.3. **Antenna Mounts.** Provide and install all antenna mounts, standoffs, brackets, hardware, transmission line, hanger kits, grounding kits, and lightning suppressors for the mounting surface shown in the plans. Install all antennas at specified center lines. Perform antenna alignment for each path and compare with path calculations. Any variation between calculated and actual values must be brought to the attention of the Engineer.
- 4.4. **System Power and Grounding.** Before installation, provide a written description of the proposed grounding and lightning protection design. Connect the equipment to the 115 V circuits provided in the equipment cabinets at the sites. Bond all equipment racks in conformance with the approved manufacturer's installation specification. Ground all equipment racks to the single-point ground for the site. Provide grounding and lightning protection for all cable runs at the top of the support structure and at the equipment cabinet entry port. If the equipment cabinet and associated entry port is not collocated on the support structure, the grounding and lightning protection will also be provided at the bottom of the support structure.
- 4.5. **System Optimization.** Optimize equipment alignment and settings at each site to provide a complete, operational system.
- 4.6. **Conductors.** Provide conductors that meet the requirements of the most current version of the National Electrical Code (NEC) Provide conductors that are cut to proper length before assembly. It is not permissible to "double-back" conductors to take up slack inside the cabinet. Lace conductors neatly with nylon lacing or plastic straps. Organize conductors neatly inside the cabinet and secure cables with clamps. When connecting to hardware inside the cabinet, provide service loops at connection points. No splicing of cables or exposed conductors are allowed. Label with UV resistant methods to identify all conductors.
- 4.7. **Relocation.** Perform the relocation in strict conformance with the requirements herein and as shown on the plans. Completion of the work will present a neat, workmanlike, and finished appearance. Maintain safe construction practices during relocation.

Inspect the existing radio equipment, with a representative from the Department, and document any evidence of damage before removal. Conduct a pre-removal test in conformance with the testing requirements contained in this Item to document operational functionality. Remove and deliver to the Department existing radio equipment that fail inspection.

Before removal of existing radio equipment, disconnect and isolate the power cables from the electric power supply and disconnect all communication cabling from the equipment located inside the cabinet. Coil and store power and communication cabling inside the cabinet until such time that it can be relocated. Remove existing radio equipment as shown on the plans only at such time as authorized.

Use care to prevent damage to any support structures. Any components of the radio equipment or support structure damaged or lost will be replaced by the Contractor at no cost to the Department. Contractor to document and report to the Engineer any existing damage to equipment before removal.

Make all arrangements for connection to the power supply and communication source including any permits required for the work to be done under the Contract. Provide wire for the power connection at least the

minimum size indicated on the plans and insulated for 600 volts. The power connection will meet the requirements of the most current version of the NEC.

- 4.8. **Removal.** Disconnect and isolate any existing electrical power supply before removal of existing radio equipment.

Perform removal in strict conformance with the requirements herein stated and the lines, grades, details, and dimensions shown on the plans. Completion of the work will present a neat, workmanlike, and finished appearance.

Any components of the radio equipment damaged or lost will be replaced by the Contractor (with items requiring the approval of the Engineer) at no cost to the Department.

All materials not designated for reuse or retention by the Department will become the property of the Contractor and be removed from the project site at the Contractor's expense. Deliver items to be retained by the Department to a location designated on the plan sheets or General Notes. The Contractor is fully responsible for any removed equipment until released.

- 4.9. **Contractor Experience Requirements.** Utilize installers, testers, and integrators with at least the following requirements:

- 4.9.1. **Minimum Experience.** Three years continuous existence offering services in the installation of wireless communications. Experience must include the following:

- 4.9.1.1. Conducting radio installation studies consisting of:

- signal noise studies,
- spectrum analysis,
- antenna gain radio power calculations,
- system attenuation, and
- measurement of standing wave ratios.

- 4.9.1.2. Installation, troubleshooting, and repair of broadband radio systems consisting of:

- equipment installation,
- configuration of radios,
- antenna calibration, and
- cabling.

- 4.9.1.3. Installation, troubleshooting, and repair of interconnected Ethernet networks (LAN and WAN) consisting of:

- cabling,
- switch or router configuration, and
- network analysis.

- 4.9.2. **Completed Projects.** Three projects consisting of wireless communications installation, troubleshooting, and repair. Each project must include transmitting signals over a minimum of 1 mi. distance and installation of a minimum of three devices.

- 4.9.3. **Equipment Experience.** One project (may be one of the three in the preceding paragraph) in which the personnel worked in cooperation with technical representatives of equipment suppliers to perform specific stages of work. Contractor will not be required to furnish equipment on this project from the supplier who furnished documentation demonstrating this experience.

Submit the names, addresses, and telephone numbers of the references that can be contacted to verify the experience requirements given above.

4.10. **Documentation.**

Provide all licenses, where required, for any software or hardware in the system.

Provide a medical statement as to the safety of the unit to the general public (example: Pacemakers, etc.).

Provide proof of installer qualifications.

Provide all documentation described in this Specification, including written reports for:

- verification of the suitability of the design for installation, grounding, and lightning protection;
- communication link throughput tests;
- equipment grounding tests;
- system level test results to include performance charts, link summaries, climatic factors, losses, and standards, and
- wiring connection diagrams for the field installation and central installation.

4.11. **Testing.**

4.11.1. **New Installations.** Unless otherwise shown on the plans, perform the following tests on the applicable equipment or systems.

4.11.1.1. **Test Procedures Documentation.** Provide five copies of the test plan procedures and target values, as well as blank data forms 60 days before testing for each test required in this Specification. Include the sequence of the tests in the procedures. The Engineer will approve test procedures before submission of equipment for tests. Conduct all tests in conformance with the approved test procedures.

Record test data on the data forms, as well as quantitative results. No bid item measurement or payment will be made until the Engineer has verified the test results meet the minimum requirements of the Specification. The data forms for all tests, except design approval tests, must be signed by an authorized representative of the Contractor.

Provide written notice to the Engineer within 48 hr. of discovery of any testing discrepancy performed in testing by the Contractor. Furnish data forms containing the acceptable range of expected results as well as the measured values.

4.11.1.2. **Design Approval Test.** Conduct a design approval test on randomly selected units from the prototype design manufacturing run. If only one design prototype is manufactured, perform this test on that unit. If supplying multiple types of the equipment, provide and test a sample of each type.

Certification from an independent testing laboratory of a successfully completed design approval test is acceptable. Ensure that the testing by this laboratory is performed in accordance with the requirements of this Specification. Failure of independent tests to comply with the requirements of this Specification will be grounds for rejection of any certification.

Provide a copy of the certification to the District in which this equipment is installed. The data forms for the design approval tests must be signed by an authorized representative (company official) of the equipment manufacturer or by an authorized representative of an independent testing facility.

Notify the Engineer ten working days before conducting this testing. The Department may witness all the tests. Perform the following tests:

4.11.1.2.1. **Power Service Transients.** Provide UL Listed Type 1 or Type 2 SPD and labeled to UL1449 Third Edition, posted at UL.com, under Certifications UL Category Code VZCA, and have a 20kA I-nominal rating. Provide SPD rated as NEMA 4. SPD with integral EMI/RFI line filtering may be required if shown on the plans.

- 4.11.1.2.2. **Temperature and Condensation.** Meet the performance requirements, specified in this Item, when subjected to the following conditions in the order specified below:
- stabilize the equipment at -30°F and test as specified in the NEMA TS2 standard, Sections 2.2.7.3., “Low-Temperature Low-Voltage Tests” and Section 2.2.7.4., “Low-Temperature High-Voltage Tests,” or most current version,
 - allow the equipment to warm up to room temperature in an atmosphere having relative humidity of at least 40%. Operate the equipment for 2 hr., while wet, without degradation or failure, and
 - stabilize the equipment at 165°F and test as specified in the NEMA TS2 standard, Sections 2.2.7.5., “High-Temperature High Voltage Tests” and Section 2.2.7.6., “High-Temperature Low-Voltage Tests,” or most current version.
- 4.11.1.2.3. **Relative Humidity.** Meet the performance requirements, specified in this Item, within 30 min. of being subjected to a temperature of 165°F and a relative humidity of 18% for 48 hr.
- 4.11.1.2.4. **Vibration.** Show no degradation of mechanical structure, soldered components, or plug-in components, and operate in accordance with the manufacturer's equipment specifications after being subjected to the vibration tests as described in the NEMA TS2 standard, Section 2.2.8., “Vibration Test,” or most current version.
- 4.11.1.2.5. **Power Interruption.** Provide automatic recovery from power failure within 305 sec. after resumption of power.
- 4.11.1.3. **Demonstration Test.** Conduct a demonstration test on applicable equipment at an approved Contractor facility. The Contractor may submit procedures and results from previous projects in the same District as this project, provided the materials and equipment are identical. Provide previous procedures and results no more than 5 yr. old. Notify the Engineer ten working days before conducting this testing. The Department may witness all the tests. Perform the following tests:
- 4.11.1.3.1. **Examination of Product.** Examine each unit carefully to verify that the materials, design, construction, markings, and workmanship are in accordance with the requirements of this Item,
- 4.11.1.3.2. **Continuity Tests.** Check the wiring to determine accordance with the requirements of the appropriate paragraphs in this Item, and
- 4.11.1.3.3. **Operational Test.** Operate each unit for at least 15 min. to permit equipment temperature stabilization and an adequate number of performance characteristics to ensure compliance with the requirements of this Item.
- 4.11.1.4. **Field Acceptance Test.** Following completion of equipment installation and operational optimization, submit an acceptance test plan to the Engineer for review and approval. During the official acceptance testing, provide the technical staff to conduct the measurements and adjustments called for in the testing. The Engineer will participate in the testing as the official test witness. Each page of the acceptance test document will provide for data recording of the test results, and the name of Contractor's representative conducting the test as well as a suitable field for the test date and signature of the Department's test witness. Upon the Engineer's approval of the test plan and the test schedule, the acceptance testing may begin.
- Conduct a field acceptance test for each unit after installation as required to demonstrate compliance with the functional requirements with this Item. Exercise all stand-alone (non-network) functional operations. Provide a factory certified representative for installation and testing of the equipment. Notify the Engineer five working days before conducting this test. The field acceptance test will consist of at least the following:
- 4.11.1.4.1. **Physical Construction.** Verify physical construction is completed in conformance with the plans and Specification.
- 4.11.1.4.2. **Electrical Connections.** Verify that all connectors for grounding, surge suppression, and electrical distribution are tightened correctly and are quality connectors. Verify all power supplies and circuits are

operating under the proper voltages. Verify all power and communications cables are terminated correctly, secured inside the cabinet, and fitted with appropriate connectors.

- 4.11.1.4.3. **Grounding.** Field test equipment grounding for all ITS radio equipment installed in the field and provide written documentation to the Engineer. Where earth ground resistance values exceed 5 ohms, develop mitigation measures for consideration. Once mitigation measures are installed, re-test that ground and update the documentation.
- 4.11.1.4.4. **Interference.** Conduct a test site survey and interference analysis before the installation of the equipment. Measure the existing signal noise levels at each installation site for the proposed radio frequency, identify potential sources of interference, and document the findings in a written report to the Engineer. The purpose of this survey is to verify that the parameters measured during the design process have not substantially changed. If the new survey indicates that the proposed radio system will not function as designed, develop proposed mitigation strategies. Adjust antenna polarities and channel plans on equipment to minimize interference from other sources.
- 4.11.1.4.5. **Communication Link Quality.** Conduct signal tests for each communication link, including data throughput, transmit power and frequency, receiver performance and frequency, proper operation of switch over, proper operation of alarm and switches, and bit error rate (BER). Document results in a written report to the Engineer. Where measured throughput drops below 50 Mbps on any link, develop mitigation measures for consideration. Once mitigation measures, if any, are implemented on a communications link, re-test that link and update the documentation.
- 4.11.1.4.6. **System Paths.** Include the following in testing of the installed system paths:
- measure and record the transmitter and receiver channel frequency and polarity;
 - measure and record the transmitter power;
 - measure and record the receiver fade margin, perform a 1-hr. bit error rate test (BERT) on the primary equipment and record results; and
 - verify the operation of all local alarm and control points using the alarm and monitoring equipment provided.
- 4.11.1.4.7. **Alarms.** Test and verify the operation of the alarms and monitor equipment in conformance with the acceptance test criteria.
- 4.11.1.5. **System Integration Test.** Conduct a system integration test on the complete functional system. Demonstrate all control and monitor functions for each system component for 72 hr. Notify the Engineer ten working days before conducting this testing. The Department may witness all the tests.

Provide systems integration test procedures for proper adjustment and calibration of subsystem components. Proper adjustment and calibration involves documenting settings used to meet functional requirements while providing a margin for adjustment when future conditions change. Utilize the Department's control software (when available) to perform subsystem testing. At a minimum, utilize this software to verify communication to the Department's equipment. The Contractor is responsible for being familiar with any existing Department equipment and software.

The failure of any one component material or equipment item in a system integration test is justification for rejecting the entire subsystem. Each subsystem component must function as a complete integrated subsystem.

- 4.11.1.6. **Final Acceptance Test.** Following completion of the demonstration test, field acceptance test, and system integration test for all subsystems, provide completed data forms containing all the data taken, including quantitative results for all tests, a set of "as-built" working drawings, and a written request to begin a data communication and final acceptance test. Provide "as-built" working drawings indicating the actual material, equipment, and construction of the various subsystem components.

Within ten calendar days of the request, execute a data communications test using a Department-supplied software program. The data communications test may be executed by the Engineer or the Contractor with the prior approval of the Engineer. The purpose of this test is to verify that the communications plan will operate with application software provided by the Department or Contractor-supplied software approved.

Perform the data communications test for a period of 72 hr. Ensure that the test can be performed for a continuous 72 hr. during a normal work week. If a message error or component failure occurs anywhere in the network, restart the 72-hr. test once repairs are completed. All components of the communications network must operate as an integral system for the duration of the test.

A message error is defined as the occurrence of a parity error, framing error, or data error in any component of the message. The error-free message rate is defined as the ratio of the number of messages in which no message error occurs to the number of messages transmitted. The error-free message rate must exceed 99.99% for acceptable transmission quality, both for the system as a whole and for each component of the network.

Provide all additional test results to the Engineer for review once a successful data communications test has been completed. If all the requirements of this special provision have been satisfied, Contract time will be suspended and all subsystems will be placed into operation and operate as a complete ITS radio communication system as intended for at least 30 calendar days.

Notify the Engineer of any defects suspected in integration or function of material or equipment. Investigate any suspected defects and correct if necessary. Provide a report of findings within two calendar days of notice of any suspected defects. Describe the nature of the any defects reported and any corrective action taken in the report. The integrated subsystems must operate defect free as a single complete system for at least 72 continuous hours during the 30-calendar day review period. If the number of defects or frequency of failures prevents all subsystems from operating as described above, the Engineer may reject the entire system integration test results and resume Contract time. Provide any necessary corrections and resubmit system integration test results and a request to begin a final acceptance test which may include "as-built" plans and a data communications test.

The project will not be accepted, notwithstanding other provisions in the Contract, until the system, inclusive of all subsystems, has operated satisfactorily for a period of 90 days and in full compliance with the plans and specifications after approval of all submitted test results and reports.

- 4.11.1.7. **Consequences of Test Failure.** If a unit fails a test, submit a report describing the nature of the failure and the actions taken to remedy the situation before modification or replacement of the unit. If a unit requires modification, correct the fault and repeat the test until successfully completed. Correct minor discrepancies within 30 days of written notice to the Engineer. If a unit requires replacement, provide a new unit, and then repeat the test until successfully completed. Malfunctions that will substantially delay receipt and acceptance of the unit will be enough cause for rejection of the unit.

Failure to satisfy the requirements of any test is considered a defect and the equipment is subject to rejection. The rejected equipment may be offered again for retest provided all noncompliance has been corrected.

If a failure pattern develops in similar units within the system, implement corrective measures, including modification or replacement of units, to all similar units within the system as directed. Perform the corrective measures at no additional cost to the Department or extension of time in Contract period.

- 4.11.1.7.1. **Consequences of Design Approval Test Failure.** If the equipment fails the design approval test, correct the fault, and repeat the design approval test until successfully completed.

- 4.11.1.7.2. **Consequences of Demonstration Test Failure.** If the equipment fails the demonstration test, correct the fault, and repeat the demonstration test until successfully completed.

4.11.1.7.3. **Consequences of Field Acceptance Test Failure.** If the equipment fails the field acceptance test, correct the fault, and repeat the field acceptance test until successfully completed.

4.11.1.7.4. **Consequence of System Integration Test Failure.** If the equipment fails the system integration test, correct the fault, and repeat the systems integration test until successfully completed.

4.11.1.7.5. **Consequences of Final Acceptance Test Failure.** If a defect within the system is detected during the final acceptance test, document and correct the source of failure. Once corrective measures are taken, monitor the point of failure until a consecutive 30-day period free of defects is achieved.

If after completion of the initial test period, the system downtime exceeds 72 hr. or individual points of failure have not operated for 30 consecutive days free of defects, extend the test period by an amount of time equal to the greater of the downtime in excess of 72 hr. or the number of days required to complete the performance requirement of the individual point of failure.

4.11.2. **Relocation and Removal.**

4.11.2.1. **Pre-Test.** Conduct performance testing before removal of radio equipment. Test all functional operations, identified in this Item, of the equipment in the presence of representatives of the Contractor and the Department. Ensure that both representatives sign the test report indicating that the equipment has passed or failed each function. Once removed, the equipment becomes the responsibility of the Contractor until accepted. Compare test data before removal and test data after installation. The performance test results after relocation must be equal to or better than the test results before removal. Repair or replace those components within the system which failed after relocation but which passed before removal.

4.11.2.2. **Post Test.** Testing of the radio equipment is for the purpose of relieving the Contractor of maintenance of the system. The Contractor will be relieved of the responsibility for maintenance of the system in accordance with Item 7, "Legal Relations and Responsibilities", after a successful test period. The Contractor will not be required to pay for electrical energy consumed by the system.

After all existing radio equipment has been installed, conduct approved continuity, stand alone, and equipment system tests. Furnish test data forms containing the sequence of tests including all the data recorded as well as quantitative results for all tests. Submit the test data forms to the Engineer at least 30 days before the day the tests are to begin. Obtain Engineer's approval of test procedures before submission of equipment for tests. Provide at least one copy of the data forms to the Engineer.

Conduct an approved stand-alone test of the equipment installation at the field sites. At a minimum, exercise all stand-alone (non-network) functional operations of the field equipment with all the equipment installed per the plans as directed. Complete the approved data forms with test results and provide to the Engineer for review and either acceptance or rejection of equipment. Provide at least 30 working days' notice before all tests to permit the Engineer or his representative to observe each test.

The Department must conduct approved radio system tests on the field equipment with the Department's central control software. The tests will, as a minimum, exercise all remote-control functions and display the return status codes from the equipment.

If any unit fails to pass a test, prepare a report, and deliver the report to the Engineer. Describe in the report the nature of the failure and the corrective action needed. If the failure is the result of improper installation or damage during reinstallation, reinstall or replace the unit and repeat the test until the unit passes successfully, at no additional cost to the Department or extension of time to the Contract period.

4.12. **Training.** Conduct a training class (minimum of 8 hr., unless otherwise noted in the plans) for up to ten representatives designated by the Department on procedures of installation, operations, testing, maintenance, and repair of all equipment specified within this Specification. Submit to the Engineer for approval, ten copies of the training material at least 30 days before the training begins. Conduct training within the local area unless otherwise authorized.

- 4.13. **Warranty.** Warrant the equipment against defects or failure in design, materials, and workmanship for a minimum of 3 yr. or in conformance with the manufacturer's standard warranty if that warranty period is greater. The start date of the manufacturer's standard warranty will begin after the equipment has successfully passed all tests contained in the final acceptance test plan. Any ITS radio equipment with less than 100% of its warranty remaining after the final acceptance test is completed will not be accepted by the Department. Guarantee that equipment furnished and installed for this project performs according to the manufacturer's published specifications. Assign, to the Department, all manufacturer's normal warranties or guarantees on all electronic, electrical, and mechanical equipment, materials, technical data, and products furnished for and installed on the project.

Repair or replace any malfunctioning ITS radio equipment at the Contractor's expense before beginning the final acceptance test plan.

Repair or replace, at the manufacturer's option, defective equipment during the warranty period at no cost to the Department. Any replaced units will inherit the remainder of the failed unit's warranty period.

Furnish replacement parts and all equipment, with transportation prepaid, within ten business days of notification of failure by the Department.

During the warranty period, provide technical support from the supplier. Provide this support within 4 hr. of request and provided by factory certified personnel or factory certified installers of the equipment.

Provide ongoing software and firmware updates during the warranty period at no cost to the Department. All updates will be tested and approved by the Department before installation by the Department.

The Manufacturer or the Contractor must maintain an inventory of parts to support maintenance and repair of all ITS radio equipment based on the terms of the warranty.

Special Specification 6018

Digital Closed-Circuit Television (CCTV) Field Equipment



1. DESCRIPTION

Furnish, install, relocate, or remove closed-circuit television (CCTV) field equipment at locations shown on the plans, or as directed.

2. MATERIALS

2.1. **General Requirements.** Fabricate, provide, assemble, and install materials that are new, corrosion-resistant, and in strict accordance with the details shown on the plans and in the Specifications.

Provide CCTV field equipment that is compatible with software currently in operation to interface with the existing equipment and software located in the Department's Traffic Management Control (TMC) Centers across the state.

CCTV field equipment must include the following.

- Color video camera units
- Camera lenses, filters, control circuits, and accessories
- Camera housing
- Medium-duty pan and tilt units with click-and-drag position control
- Video and camera control and power cable connectors and assemblies
- Video, data, and power surge suppression
- Built-in ID generator

2.2. **Functional Requirements for Digital CCTV.** Provide color video cameras that produce digital video in standard definition or high definition that meet the following functional requirements.

2.2.1. **General.**

2.2.1.1. **Digital Signal Processing (DSP).**

- Digital zoom
- Auto and manual iris control
- Auto and manual exposure control with built-in frame buffer
- Auto and manual focus control
- Built-in ID generator, with white letters on black outline minimum or approved equivalent

2.2.1.2. **Image Pickup Device.** Progressive scan digital CCD or CMOS sensor, 1.2-megapixel (1,200,000 pixels) or better.

2.2.1.3. **Resolution.** Support the following resolutions.

- 720p (1,280-pixel × 720-pixel array)
- 1,080p (1,920-pixel × 1,080-pixel array)
- D1 (720-pixel × 480-pixel array)
- CIF (352-pixel × 240-pixel array)
- VGA (640-pixel × 480-pixel array) at minimum depending on video stream configuration

- 2.2.1.4. **Frame Rate.** Allow user-selectable frame rates at 30, 15, seven, four, two, and one frame per second.
- 2.2.1.5. **Data Rate.** Scalable from 64 Kbps to 8 Mbps.
- 2.2.1.6. **Video Stream Format.** Allow simultaneous encoding and transmission of at least two configurable digital video streams in conformance with Moving Picture Experts Group- (MPEG-) 4, Part 10 (H.264). Support configuration of the following at minimum.
- H.264
 - H.265
 - H.264 + H.264
- 2.2.1.7. **Video Stream.** Support uni-cast (one-to-one) and multi-cast (one-to-many).
- 2.2.1.8. **Aspect Ratio.** Support width-to-height aspect ratio of 16:9.
- 2.2.1.9. **Image Quality.** Ensure that video produced by the camera is true; accurate; distortion-free; and free of transfer smear, oversaturation, and any other image defect that negatively impacts image quality under all lighting and weather conditions in color and monochromatic modes.
- 2.2.1.10. **Wide Dynamic Range (WDR).** Operation with manual override option.
- 2.2.1.11. **Overexposure Protection.** Minimize glare and incur no permanent damage to the camera when pointed directly at strong light sources, including the sun, for brief periods.
- 2.2.1.12. **Geometric Distortion.** Zero.
- 2.2.1.13. **Signal-to-Noise Ratio (AGC Off).** Minimum 50 dB (weighted at 4.5 MHz).
- 2.2.1.14. **Electronic Shutter Speed.** Automatic shutter that is user selectable down to at least 1/10,000 sec.
- 2.2.1.15. **Electronic Image Stabilization.** User-selectable on or off electronic image stabilization at 5 Hz and 10 Hz minimum.
- 2.2.1.16. **Day (Color) and Night (Mono).** Auto and manual switchover and iris control with user-selectable modes for auto and manual control capabilities.
- 2.2.1.17. **Auto White Balance.** Color quality that is maintained by a continuous through-the-lens automatic white balance for color temperatures from 2,850 K to greater than 5,100 K with less than 10-IRE unit unbalance.
- 2.2.1.18. **Inverted Operation.** Automatic image inversion or “flip” when rotating through 0° or 180° vertical tilt positions when not an integrated unit.
- 2.2.1.19. **Mean Time Before Failure.** At least 43,800 hr. or 5 yr. without mechanical malfunction or failure. Act of God failures are exempt.
- 2.2.2. **Lens.** Provide an integral lens assembly for each camera with the following features.
- An f/1.6 or better glass multi-coated zoom lens with variable focal lengths with a minimum 30X zoom range
 - 12X auto and manual digital zoom minimum
 - Automatic and manual focus and iris control
- Provide lenses with capabilities for remote control of the zoom, focus, and iris operations. Provide mechanical or electrical means to protect the motors from over-running in extreme positions. Lens and controller system must be capable of auto iris and remote manual iris operation. Lens must be capable of

auto and manual zoom and focus control. Use motorized iris as opposed to auto iris type for system control capability.

- 2.2.3. **Network Interface Requirements.** Provide CCTV field equipment that can integrate with the Department's Lonestar™ software and into the Department's TMC CCTV control sub-systems by NTCIP 1205 Version 1.08 or higher, Open Network Video Interface Forum (ONVIF), or approved equal. Support Cohu, Pelco D, or Pelco P protocols, or approved equal, for control.

Provide camera equipment with a local area network (LAN) connection that supports the requirements detailed in IEEE 802.3 for 10/100 Ethernet connections for half-duplex or full-duplex, and provide auto negotiation. Provide equipment with at least one Ethernet port that has a 10/100 Base-TX connection. Provide connectors that conform to EIA and TIA requirements.

Support, at minimum, RTP, RTSP, UDP/IP, TCP/IP, IPv4, HTTP, IGMPv2, DHCP, NTP, IEEE 802.1x, Ethernet 802.3u, SNMP, RADIUS Key, and Telnet.

Provide camera equipment that supports local and remote configuration and management. Configuration and management functions must include access to all user-programmed features, including, but not limited to, network configuration, video settings, device monitoring, control setting, and security functions. Configuration and management must be achieved by serial login, Telnet login, web-based interface, or manufacturer software. Provide manufacturer software with camera for local configuration, system maintenance, and management control.

- 2.3. **Cable Assembly.** Provide camera power and communication cable assembly equipped with cables used for video feed; camera control, including PTZ function; communications signaling; and power supply. Camera power and communication cable may be configured as a composite cable or series of isolated cables. The following cable functions may be required depending on the data and video communication interface requirements, as shown on the plans.

- 2.3.1. **Ethernet.** Provide a shielded twisted pair (STP) Category 6 (or equivalent) at minimum rated for outdoor use in conformance with TIA/EIA 568B. Cable must not exceed an attenuation of 30 dB per 300 ft. of cable at 100 MHz.

- 2.3.2. **Power.** Provide three-wire, insulated for 300 V minimum, 115-VAC or 24-VAC power cabling between the camera and the power supply. If 24-VAC power is required, provide needed power supply conversion equipment.

Power may be achieved using Power over Ethernet (PoE) by a power supply or mid-span PoE injector, that must be considered part of the camera unit, and must conform to IEEE 802.3af or IEEE 802.3at or latest revision.

Provide power and communication cable assembly the entire length of the camera support structure from the camera to the cabinet with an additional 25 ft. of slack in the cabinet. Determine the appropriate length required for each site. The cable assembly must be considered part of the camera unit.

Provide any necessary data, video, or power conversion hardware to successfully integrate the camera unit into the field equipment cabinet hardware components and onto the communications backbone.

- 2.4. **Video Encoding Interoperability.** Video encoding and decoding equipment may be used by software or hardware means. Ensure camera's encoded video is interoperable with hardware and software decoders from other manufacturers. Ensure the camera's encoded video can be decoded by at least two other manufacturer's software or hardware decoders that are in use by the Department. Contact the Department for decoders supported before procurement of camera unit.

- 2.5. **Camera Housing.** Provide camera housing assembly and hardware material that reflects sunlight.

Provide camera housing with a sunshield to reduce the solar heating of the camera. The total weight of the camera (including housing, sunshield, and all internal components) must not exceed 25 lb.

Construct viewing window so that unrestricted camera views can be obtained at all camera and lens positions.

Provide gaskets at cable entry point to the camera housing to prevent moisture or dust entry.

When shown on the plans or identified in the General Notes, provide heating or cooling functionality with temperature sensors to maintain internal temperatures within the manufacturer-required operating temperature range.

- 2.6. **Pan-Tilt Unit.** Furnish and install a medium-duty anodized aluminum weatherproof pan-tilt unit at each camera site, conforming to NEMA 4X and IP-66 rating or better, when not integral to the camera unit and housing. Provide mounting adapter and required attachment hardware to install the pan-tilt unit to the pole or mounting bracket. Identify the type of mounting bracket and bolt pattern on shop drawings.

Provide a unit capable of at least 180° vertical range of movement and horizontal movement of 360°, full, continuous-rotation movement.

Provide a unit that has a pan and tilt speed of 20° per second minimum and is user-adjustable through the full speed range. Unit must be capable of simultaneous pan-tilt movements with variable pan-tilt positioning control allowing variable speeds that are proportional through the zoom range.

Provide pan-tilt unit with drive accuracy and drive repeatability of less than 1° and an automatic pre-position speed of 120° per second minimum to a user-defined preset position that is user-adjustable.

Provide a pan-tilt unit, when not integral to the camera housing, that can maintain static position and does not move by more than 1° in any direction in speeds greater than 35 mph.

Ensure that the pan-tilt unit has seals and gaskets to protect the motors, gears, and cables and that the seals and gaskets are resistant to ozone, ultraviolet radiation, and other pollutants inherent to all local environmental conditions.

When shown on the plans or identified in the General Notes, provide pan-tilt unit with heater that conforms to NEMA 4X when not integral to the camera unit and housing.

- 2.7. **Preset Functions.** Provide a camera unit capable of storing at least 62 presets for pan, tilt, zoom, and focus settings.

Provide a camera unit capable of user-programmable tours with at least four tours of up to 32 presets per tour. Any tours may be programmed for panning tours.

Provide a camera unit capable of user-programmable sector zones with at least eight zones allowing right and left pan limitations.

Provide a camera unit capable of user-programmable privacy zones with at least eight zones and click-and-drag position control by software.

- 2.8. **Connectors.** Provide and install connectors that are compatible with the communications equipment interfaces identified in Section 2.2.3. Network Interface and Section 2.3. Cable Assembly. Supply all mating connectors. Provide all connector pins and mating connectors that are plated to achieve good electrical connection and resistance to corrosion.

- 2.9. **Source ID Generator.** Use a built-in ID generator to insert camera ID over each of the camera-generated videos.

Provide at least two lines of alphanumeric, case-specific text supporting at least 20 ASCII characters per line, with a minimum character height of 20 pixels, that is user-programmable for displaying any combination of ID information consisting of at least camera, preset, privacy mask, low-pressure warning, compass, and time and date.

Allow user-selectable location of text to be displayed on the video image at the extreme top or bottom. Text display on the side of the image display is prohibited.

Automatically display the programmed ID with its associated video signal that can be turned on or off by user command.

In the event of signal loss or video signal failure, ID generator must automatically pass through failure message to display over video.

Submit list of available text displays to the Department as part of the documentation requirements.

- 2.10. **Cabinet Installation.** Install video communication equipment in a pole-mounted equipment cabinet or in a ground-mounted equipment cabinet as shown on the plans. Meet the following criteria.
- Contains all the lightning protection devices for data and video.
 - Grounded to earth ground.
 - Provides connectors for all inputs and outputs for data and video and additional ports for testing video and communications. Use the external connectors for testing and for connections to communication devices.
- 2.11. **Surge Protection.** Provide surge protection for the camera meeting the following requirements.
- **Mounting Adapter.** Electrically bonded to mounting structure.
 - **Pan-Tilt Mechanism.** Electrically bonded to mounting adapter.
 - **Camera Housing.** Electrically bonded to pan-tilt mechanism.
 - **Power and Control Cable Surge Protector.** Integrated into cabinet surge protection system.
- 2.12. **Power Requirements.** Provide CCTV field equipment meeting all its specified requirements when the input power is 115 VAC $\pm 20\%$, 60 Hz ± 3 Hz. Maximum power required must not exceed 200 W, including optional equipment.
- Provide appropriate voltage conversion, power injectors, or other power supply hardware if the camera equipment or any camera-related ancillary devices require operating voltages other than 115 VAC $\pm 20\%$, such as 24 VAC or 12 VDC from solar power systems, or rely on PoE. Appropriate voltage converters or injectors must accept an input voltage of 115 VAC or 12 VDC from solar power systems as shown on the plans.
- 2.13. **Primary Input Power Interruption.** Provide CCTV field equipment that meets NEMA TS2, Section 2.1.4., "Power Interruption," for traffic control system or most current version.
- 2.14. **Power Service Transients.** Provide CCTV field equipment that meets NEMA TS2, Section 2.1.6., "Transients, Power Service" or most current version.
- 2.15. **Power Service Protection.** Provide equipment that contains readily accessible, manually resettable or replaceable circuit protection devices (such as circuit breakers or fuses) for equipment and power source protection. Provide circuit breakers or fuses sized appropriately such that no wire, component, connector, PC board, or assembly is subject to current loads more than their respective design limits upon failure of any single circuit element or wiring.
- 2.16. **Modular Design.** Provide CCTV field equipment hardware installed inside the cabinet that is modular in design and that can be either shelf-mountable or EIA 19-in. rack mountable. Clearly identify modules and

assemblies with name, model number, serial number, and any other pertinent information required to facilitate equipment maintenance.

- 2.17. **Connectors and Harnesses.** Make all external connections using connectors that are uniquely keyed to preclude improper hookups. Color-code and appropriately label with UV-resistant material all wires to and from the connectors. Provide connecting harnesses of appropriate length and terminated with matching connectors for interconnection with the communications system equipment. Provide corrosion-resistant plated pins and mating connectors to improve conductivity. All connectors using solder-type connections must have each soldered connection covered by a piece of heat-shrink tubing securely shrunk to protect the connection for short-circuiting.
- Provide a wiring diagram detailing wire function and connector pin-out.
- 2.18. **Environmental Design Requirements.** Provide equipment that conforms to NEMA TS2-2003 (R2008), International Electrotechnical Commission (IEC) 60529, and NEMA 250-2008 or most current version, for the following categories.
- 2.18.1. **Temperature.** Provide equipment that conforms to NEMA TS2, Section 2.1.5.1, or latest revision, and meets all the specified requirements during and after being subjected to any combination of the following conditions.
- Ambient temperature range of -30°F–165°F
 - Temperature shock not exceeding 30°F per hour
 - Relative humidity of 0%–100%
- Moisture condensation on all exterior surfaces caused by temperature changes
- Provisions for a heater and blower function are required to maintain internal temperatures within the manufacturer's operating temperatures for temperature ranges internal to the camera unit not conforming to NEMA TS2, Section 2.1.5.1.
- 2.18.2. **Vibration.** Provide equipment that conforms to NEMA TS2, Section 2.1.9. and Section 2.2.3., or most current version, and meets all the specified requirements during and after being subjected to a vibration of 5 Hz–30 Hz up to 0.5 g applied in each of three mutually perpendicular planes for 30 min.
- 2.18.3. **Shock.** Provide equipment that conforms to NEMA TS2, Section 2.1.10. and Section 2.2.4., or most current version, and does not yield permanent mechanical deformation or any damage that renders the unit inoperable when subjected to a shock of 10 g applied in each of three mutually perpendicular planes for 30 min.
- 2.18.4. **Environmental Contaminants.** Provide equipment that conforms to IEC 60529, Section 14.2.6, or most current version, for IP-66 or greater rating when providing a pressurized unit.
- Provide equipment that conforms to IEC 60529, Section 14.2.7., or most current version, for IP-67 or greater rating when providing a non-pressurized unit.
- 2.18.5. **External Icing.** Provide equipment that is tested to conform to NEMA 250-2003, Section 5.6 or latest revision.
- 2.18.6. **Corrosion.** Provide equipment that is tested to conform to NEMA 250-2003, Section 5.10. or latest revision, when located in Coastal Districts. Coastal Districts are Beaumont (BMT), Corpus Christi (CRP), Houston (HOU), Pharr (PHR), and Yoakum (YKM).
- 2.18.7. **Wind Rating.** Equipment must be operational in adverse weather conditions and able to withstand wind loads in accordance with Department's basic wind velocity zone map standard as shown on the plans without permanent damage to mechanical and electrical equipment.

3. CONSTRUCTION

- 3.1. **General.** Maximize standardization and consistency by using industry-standard techniques in equipment design and construction, with the minimum number of parts, subassemblies, circuits, cards, and modules. Design equipment for ease of maintenance.

Provide mounting bracket assemblies or apparatus to mount equipment on the following structures as detailed on the plans or in the ITS standards.

- ITS pole
- Overhead sign bridge or cantilever overhead sign structure
- Retaining wall
- Concrete column or parapet

Provide mounting bracket design with documentation submitted for approval before fabrication. Include all mounting plates, screws, bolts, nuts, washers, and ancillary hardware needed to fabricate the entire mounting bracket.

- 3.2. **Mechanical Components.** Provide stainless steel external screws, nuts, and locking washers. Self-tapping screws are not acceptable.

Provide parts that are made of corrosion-resistant material (e.g., plastic, stainless steel, anodized aluminum, or brass).

Protect all materials used in construction from fungus growth and deterioration due to sustained moisture.

Separate dissimilar metals by an inert dielectric material.

- 3.3. **Wiring.** Provide wiring that meets the NEC most current version. Provide wires that are cut to proper length before assembly. It is not acceptable to “double-back” wires to take up slack inside the cabinet. Lace wires neatly with nylon lacing or plastic straps. Organize cables inside the cabinet and secure cables with clamps. Provide service loops at connection points when connecting to hardware inside the cabinet. No splicing of cables or exposed wiring is allowed. Clearly label all wiring.

- 3.4. **Relocation of CCTV Field Equipment.** Perform the relocation in strict conformance with the requirements herein and as shown on the plans. Completion of the work must present a neat, workmanlike, and finished appearance. Maintain safe construction practices during relocation.

Inspect the existing CCTV field equipment with a representative from the Department, and document any evidence of damage before removal. Conduct a pre-removal test in accordance with the testing requirements contained in this Specification to document operational functionality. Remove and deliver to the Department existing CCTV field equipment that fails inspection.

Before removal of existing CCTV field equipment, disconnect and isolate the power cables from the electric power supply and disconnect all communication cabling from the equipment located inside the cabinet. Coil and store power and communication cabling inside the cabinet until it can be relocated. Remove existing CCTV field equipment as shown on the plans only when authorized.

Use care to prevent damage to any support structures. Any portion of CCTV field equipment or camera pole structure damaged or lost must be replaced by the Contractor at their expense. Contractor must document and report to the Department any existing damage to equipment before removal.

Make all arrangements for connection to the power supply and communication source, including any permits required for the work under the Contract. Provide wire for the power connection at least the minimum size indicated on the plans and insulated for 600 V. Meet the requirements of the NEC most current version.

- 3.5. **Removal of CCTV Field Equipment.** Disconnect and isolate any existing electrical power supply before removal of existing CCTV field equipment.

Perform removal in strict conformance with this Specification and the lines, grades, details, and dimensions shown on the plans. Completion of the work must present a neat, workmanlike, and finished appearance.

Any portion of the CCTV field equipment or cabinet internal components damaged or lost must be replaced by the Contractor (with items requiring approval) at no cost to the Department.

All materials not designated for reuse or retention by the Department will become the property of the Contractor and be removed from the project site at the Contractor's expense. Deliver items to be retained by the Department to a location shown on the plans or in the General Notes. The Contractor is fully responsible for any removed equipment until released.

- 3.6. **Contractor Experience Requirements.** Contractor or designated subcontractor must meet the following experience requirements.

- 3.6.1. **Minimum Experience.** Three years of continuous existence offering services in the installation of CCTV camera systems.

- 3.6.2. **Completed Projects.** Three completed projects consisting of at least five cameras in each project where the personnel installed, tested, and integrated CCTV cameras on outdoor, one or more permanently mounted structures and related camera control and transmission equipment. The completed CCTV camera system installations must have been in continuous satisfactory operation for at least 1 yr.

- 3.6.3. **Equipment Experience.** Three projects (may be the three in Section 3.6.2., "Completed Projects") in which the personnel worked in cooperation with technical representatives of equipment suppliers to perform specific stages of work. The Contractor is not required to furnish equipment on this project from the supplier that furnished documentation demonstrating this experience.

Submit the names, addresses, and telephone numbers of the references that can be contacted to verify the experience requirements.

- 3.7. **Documentation Requirements.** Provide at least two complete sets of operation and maintenance manuals in bound hard-copy format, as well as an electronic copy in Adobe PDF format on a CD/DVD or removable flash drive, that include the following.

- Complete and accurate wiring schematic diagrams.
- Complete installation procedures.
- Compliance matrix documenting conformance to this Specification.
- Complete performance specifications (functional, electrical, mechanical, and environmental) on the unit
- Complete parts list, including names of vendors for parts not identified by universal part number, such as JEDEC, RETMA, or EIA.
- Pictorial of component layout on circuit board.
- ID generator list of text display options.
- Complete maintenance and troubleshooting procedures.
- Complete stage-by-stage explanation of circuit theory and operation.
- Testing procedures and blank test forms.
- Recovery procedures for malfunction.
- Instructions for gathering maintenance assistance from manufacturer.
- Certification documentation verifying conformance with environmental and testing requirements contained in the Special Specification. Certifications may be provided by the manufacturer or independent laboratories.

Identify material that is copyrighted or proprietary in nature as part of the documentation submittal. The Department will comply with sensitive material, secure submittal documentation, and not distribute without written approval.

3.8. **Testing.**

3.8.1. **New Installations.** Unless otherwise shown on the plans, perform the following tests on the applicable equipment or systems.

3.8.1.1. **Test Procedures Documentation.** Provide five copies of the test procedures, including tests identified in Section 3.8.1.2. "Design Approval Test," Section 3.8.1.7. "Consequences of Test Failure," and blank data forms, to the Engineer for review and comment as part of material documentation requirements for each test required on this project. Include the sequence of the tests in the procedures. The Engineer will comment, approve, or reject test procedures within 30 days after Contractor submittal of test procedures. Contractor must resubmit if necessary rejected test procedures for final approval within 10 days. Review time is in calendar days. Conduct all tests in accordance with the approved test procedures.

Record test data on the data forms, as well as quantitative results. No bid item measurement or payment will be made until the Engineer has verified the test results meet the minimum requirements of the Specification. The data forms for all tests, except design approval tests, must be signed by an authorized representative of the Contractor.

Provide written notice within 48 hr. of discovery of any testing discrepancy identified during testing by the Contractor. Furnish data forms containing the acceptable range of expected results as well as the measured values.

3.8.1.2. **Design Approval Test.** Conduct a design approval test on one randomly selected unit from the prototype design manufacturing run. If only one design prototype is manufactured, perform this test on that unit. If supplying multiple types of equipment, provide and test a sample of each type.

Certification from an independent testing laboratory of a successfully completed design approval test is acceptable. Ensure that the testing by this laboratory is performed in accordance with this Specification. Failure of independent tests to comply with this Specification will be grounds for rejection of any certification.

Provide a copy of the certification to the District in which this Contract is executed. The data forms for the design approval tests must be signed by an authorized representative (company official) of the equipment manufacturer or by an authorized representative of an independent testing facility.

Notify the Engineer 10 working days before conducting this testing. The Department may witness all the tests. Perform the following tests.

3.8.1.2.1. **Power Service Transients.** Provide equipment that meets the performance requirements specified herein when subjected to the power service transients as specified in NEMA TS2, Section 2.2.7.2, "Transient Tests (Power Service)." of the NEMA TS2 standard, most current version.

3.8.1.2.2. **Temperature and Condensation.** Provide equipment that meets the performance requirements specified herein when subjected to the following conditions in the order specified below.

- Stabilize the equipment at -30°F and test as specified in NEMA TS2, Section 2.2.7.3, "Low-Temperature Low-Voltage Tests," and Section 2.2.7.4, "Low-Temperature High-Voltage Tests." of the NEMA TS2 standard, most current version
- Allow the equipment to warm up to room temperature in an atmosphere with relative humidity of at least 40%. Operate the equipment for 2 hr., while wet, without degradation or failure.
- Stabilize the equipment at 165°F and test as specified in NEMA TS2, Section 2.2.7.5, "High-Temperature High Voltage Tests," and Section 2.2.7.6, "High-Temperature Low-Voltage Tests." of the NEMA TS2 standard, most current version

- 3.8.1.2.3. **Relative Humidity.** Provide equipment that meets the performance requirements specified herein within 30 min. of being subjected to a temperature of 165°F and a relative humidity of 18% for 48 hr.
- 3.8.1.2.4. **Vibration.** Provide equipment that shows no degradation of mechanical structure, soldered components, or plug-in components and operates in accordance with the manufacturer's equipment specifications after being subjected to the vibration tests as described in NEMA TS2, Section 2.2.8, "Vibration Test" of the NEMA TS2 standard, most current version.
- 3.8.1.2.5. **Power Interruption.** Provide equipment that meets the performance requirements specified herein when subjected to nominal input voltage variations as specified in NEMA TS2, Section 2.2.10., "Power Interruption Test." of the NEMA TS2 standard, most current version.
- 3.8.1.3. **Demonstration Test.** Conduct a demonstration test on applicable equipment at an approved Contractor facility. The Contractor may submit procedures and results from previous contracts in the same District as this Contract provided the materials and equipment are identical and results are less than 5 yr. old. Notify the Engineer 10 working days before conducting this testing. The Department may witness all the tests. Perform the following tests.
- 3.8.1.3.1. **Examination of Product.** Examine each unit carefully and document that the materials, design, construction, markings, and workmanship comply with this Specification.
- 3.8.1.3.2. **Continuity Tests.** Check the wiring to determine conformance with the requirements of the appropriate paragraphs of this Specification.
- 3.8.1.3.3. **Operational Test.** Operate each unit for at least 15 min. to permit equipment temperature stabilization and an adequate number of performance characteristics to ensure compliance with this Specification.
- 3.8.1.4. **Field Acceptance (Stand-Alone) Test.** Conduct a field acceptance test for each unit after installation as required by the Engineer to demonstrate compliance with the functional requirements of this Specification. Exercise all stand-alone (non-network) functional operations. Notify the Engineer 5 working days before conducting this test. The field acceptance test may consist of the following.
- 3.8.1.4.1. **Physical Construction.** Document physical construction is completed in accordance with the plans and Specification.
- 3.8.1.4.2. **Electrical and Communication.** Document that all connectors for grounding, surge suppression, and electrical distribution are tightened correctly. Document all power supplies and circuits are operating under the proper voltages. Document all power and communications cables are terminated correctly, secured inside the cabinet, and fitted with appropriate connectors.
- 3.8.1.4.3. **Video Signal.** For analog signal format, conduct an impedance test, through a short 75-ohm coaxial cable connected to an oscilloscope waveform monitor, to ensure 75-ohm output impedance to conform to NTSC standards.
- Using a digital, hand-held, battery-operated meter, conduct a test and measure the following video signal characteristics, if applicable.
- 3.8.1.4.3.1. **Sync.** Document the amplitude of the video synchronizing pulse and check for correct video level, coaxial cable continuity, and correct termination at 40 IRE.
- 3.8.1.4.3.2. **Luminance.** Document the white level and correct brightness setting at 100 IRE.
- 3.8.1.4.3.3. **Composite.** Document the overall amplitude of the video signal is at 140 IRE or 1 V peak to peak.
- 3.8.1.4.3.4. **Color Burst.** Document color burst amplitude at 40 IRE.

- 3.8.1.4.3.5. **Ground Loop.** Document that no ground loop exists in the video picture. Ground loop voltages in a video signal cause bars to be present on the video picture.
- Document video image is present and free of oversaturation and any other image defect in color and monochrome modes.
- Document video support of uni-cast and multi-cast video transmission modes.
- Document the video signal from the camera is present and of consistent quality at all connection points between the camera, the cabinet, and any video conversion hardware.
- 3.8.1.4.4. **Communication.** For digital camera models, document network connection to the camera by ping or Telnet session from a remote PC.
- 3.8.1.4.5. **Pan-Tilt Mechanism.** Exercise pan, tilt, zoom, and focus on all directions, and execute at least three other unique programming commands, specified by the Department, to ensure that the communication link between the cabinet and the camera is functioning properly.
- 3.8.1.5. **System Integration Test.** Conduct a system integration test on the complete functional system. Demonstrate all control and monitor functions for each system component for 72 hr. Notify the Engineer 10 working days before conducting this testing. The Department may witness all the tests.
- Provide systems integration test procedures for proper adjustment and calibration of subsystem components. Proper adjustment and calibration involve documenting settings used to meet functional requirements while providing a margin for adjustment when future conditions change. Use the Department control software (when available) to perform subsystem testing. At minimum, use this software to verify commands and confirmations, as well as detector actuations and occupancy dwell time. The Contractor must be familiar with any existing Department equipment and software.
- The failure of any one component material or equipment item in a system integration test is justification for rejecting the entire subsystem. Each subsystem component must function as a complete integrated subsystem for a minimal continuous 72-hr. period during the system integration test.
- 3.8.1.6. **Final Acceptance Test.** Following completion of the demonstration test, stand-alone test, and system integration test for all subsystems, provide completed data forms containing all the data taken, including quantitative results for all tests, a set of as-built working drawings, and a written request to begin a data communication and final acceptance test. Provide as-built working drawings indicating the actual material, equipment, and construction of the various subsystem components, including established and calculated XY coordinates based on project control points, when shown on the plans. Perform field surveying and calculations under the supervision of and sealed by a licensed land surveyor.
- Within 10 calendar days of the request, execute a data communications test using a Department-supplied software program or Contractor-supplied software approved by the Department. The data communications test may be executed by the Engineer or the Contractor with prior approval. The purpose of this test is to verify that the communications plant will operate with application software provided by the State.
- Perform the data communications test for 72 hr. If a message error or component failure occurs anywhere in the network, resume the test once repairs are completed. All components of the communications network must operate as an integral system for the duration of the test.
- A message error is defined as the occurrence of a parity error, framing error, or data error in any component of the message. The error-free message rate is defined as the ratio of the number of messages in which no message error occurs to the number of messages transmitted. The error-free message rate must exceed 99.99% for acceptable transmission quality, for the system and each component of the network.

Provide all additional test results for review once a successful data communications test has been completed. If all the requirements of this Specification have been satisfied, Contract time must stop, and all subsystems must be placed into operation and operate as a complete system for 90 days.

Notify the Engineer of any defects suspected in integration or function of material or equipment. Investigate any suspected defects and correct if necessary. Provide a report of finding within 2 calendar days of notice of any suspected defects. Describe the nature of any defects reported and any corrective action taken in the report. The integrated subsystems must operate defect-free as a single complete system for at least 72 hr. during a 30-calendar day review period. If the number of defects or frequency of failures prevents any subsystems from operating as described above, the Engineer may reject the entire subsystems integration test results and resume Contract time. Provide any necessary corrections and resubmit subsystems integration test results and a request to begin a final acceptance test that may include as-built plans and a data communications test.

The CCTV field equipment under this Specification will not be accepted until the system, including all subsystems, has operated satisfactorily for 90 days and in full compliance with the plans and Specifications after approval of all submitted test results and reports.

- 3.8.1.7. **Consequences of Test Failure.** If a unit fails a test, submit a report describing the nature of the failure and the actions taken to remedy the situation before modification or replacement of the unit. If a unit requires modification, correct the fault, and then repeat the test until successfully completed. Correct minor discrepancies within 30 days of written notice. If a unit requires replacement, provide a new unit, and then repeat the test until successfully completed. Major discrepancies that will delay receipt and acceptance of the unit will be enough cause for rejection of the unit.

Failure to satisfy the requirements of any test is considered a defect, and the equipment is subject to rejection. The rejected equipment may be offered again for retest provided all noncompliance has been corrected.

If a failure pattern develops in similar units within the system, implement corrective measures, including modification or replacement of units, on all similar units within the system as directed. Perform the corrective measures without additional cost or extension of the Contract period.

- 3.8.1.7.1. **Consequences of Design Approval Test Failure.** If the equipment fails the design approval test, correct the fault within 30 days and then repeat the design approval test until successfully completed.
- 3.8.1.7.2. **Consequences of Demonstration Test Failure.** If the equipment fails the demonstration test, correct the fault within 30 days and then repeat the demonstration test until successfully completed.
- 3.8.1.7.3. **Consequences of Field Acceptance (Stand-Alone) Test Failure.** If the equipment fails the stand-alone test, correct the fault within 30 days and then repeat the stand-alone test until successfully completed.
- 3.8.1.7.4. **Consequence of System Integration Test Failure.** If the equipment fails the system integration test, correct the fault within 30 days and then repeat the system integration test until successfully completed.
- 3.8.1.7.5. **Consequences of Final Acceptance Test Failure.** If a defect within the system is detected during the final acceptance test, document and correct the source of failure. Once corrective measures are taken, monitor the point of failure until a 30-consecutive-day period free of defects is achieved.

If after completion of the initial test period the system downtime exceeds 72 hr. or individual points of failure have not operated for 30 consecutive days free of defects, extend the test period by an amount of time equal to the greater of the downtime more than 72 hr. or the number of days required to complete the performance requirement of the individual point of failure.

- 3.8.2. **Relocation and Removal.**

- 3.8.2.1. **Pre-Test.** Provide five copies of the test procedures, including tests of the basic functionality of the unit and blank data forms, to the Engineer for review and comment as part of material documentation requirements. Functionality tests may include, but are not limited to, physical inspection of the unit and cable assemblies, lens iris and zoom control, video signal, and pan-tilt mechanism. Include the sequence of the tests in the procedures along with acceptance thresholds. The Engineer will comment, approve, or reject test procedures within 30 days after Contractor submittal of test procedures. Contractor must resubmit if necessary rejected test procedures for final approval within 10 days. Review time is in calendar days. Conduct all tests in accordance with the approved test procedures.

Conduct basic functionality testing before removal of CCTV field equipment. Test all functional operations of the equipment in the presence of Contractor and Department representatives. Ensure that both representatives sign the test report indicating that the equipment has passed or failed each function. Once removed, the equipment will become the responsibility of the Contractor until accepted by the Department. Compare test data before removal and test data after installation. The performance test results after relocation must be equal to or better than the test results before removal. Repair or replace those components within the system that failed after relocation but passed before removal.

- 3.8.2.2. **Post-Test.** Testing of the CCTV field equipment is to relieve the Contractor of system maintenance. The Contractor will be relieved of the responsibility for maintenance of the system in accordance with Item 7, "Legal Relations and Responsibilities," after a successful test period. The Contractor is not required to pay for electrical energy consumed by the system.

After all existing CCTV field equipment has been installed, conduct approved continuity, stand-alone, and equipment system tests. Furnish test data forms containing the sequence of tests, including all the data taken as well as quantitative results for all tests. Submit the test data forms at least 30 days before the day the tests are to begin. Obtain approval of test procedures before submission of equipment for tests. Send at least one copy of the data forms to the Engineer.

Conduct an approved stand-alone test of the equipment installation at the field site. At minimum, exercise all stand-alone (non-network) functional operations of the field equipment with all the equipment installed per the plans as directed. Complete the approved data forms with test results and submit to the Engineer for review and either acceptance or rejection of equipment. Provide at least 30 working days' notice before all tests to permit the Engineer or their representative to observe each test.

The Department will conduct approved CCTV field equipment system tests on the field equipment with the central equipment. The tests must, at minimum, exercise all remote control functions and display the return status codes from the controller.

If any unit fails to pass a test, prepare and deliver a report to the Engineer. Describe in the report the nature of the failure and the corrective action needed. If the failure is the result of improper installation or damage during reinstallation, reinstall or replace the unit and repeat the test until the unit passes successfully, at no additional cost to the Department or extension of the Contract period.

- 3.9. **Warranty.** Warrant the equipment against defects or failure in design, materials, and workmanship for at least 3 yr. or in accordance with the manufacturer's standard warranty if that warranty period is greater. The start date of the manufacturer's standard warranty will begin after the equipment has successfully passed all tests contained in the final acceptance test plan. Any CCTV field equipment with less than 90% of its warranty remaining after the final acceptance test is completed will not be accepted by the Department. Guarantee that equipment furnished and installed for this project performs according to the manufacturer's published specifications. Assign, to the Department, all manufacturer's normal warranties or guarantees on all electronic, electrical, and mechanical equipment, materials, technical data, and products furnished for and installed on the project.

CCTV field equipment must be repaired or replaced at the Contractor's expense before completion of the final acceptance test plan in the event of a malfunction or failure. Furnish replacement parts for all equipment within 10 days of notification of failure by the Department.

- 3.10. **Training.** Conduct a training class on installation, operations, programming hardware settings, IP programming, port settings, testing, maintenance, troubleshooting, and repair of all equipment specified herein for at least 24 hr., unless otherwise directed, for up to 10 representatives designated by the Department. Submit to the Engineer for approval 10 copies of the training material at least 30 days before the training begins. Conduct training within the local area unless otherwise authorized. Consider operations using Department's Lonestar software when developing training modules.

Revised Geotechnical Engineering Report

West Laredo Corridor, Phase II

Las Cruces Drive

Laredo, Texas

March 21, 2014

Terracon Project No. 89145003A

Prepared for:

Civil Engineering Consultants, Inc.
Laredo, Texas

Prepared by:

Terracon Consultants, Inc.
Laredo, Texas

terracon.com

Terracon

Environmental



Facilities



Geotechnical



Materials

March 21, 2014



Civil Engineering Consultants, Inc.
9652 McPherson Road, Suite No. 700
Laredo, Texas 78045

Attn: Mr. Frank Ramos, P.E.
P: [956] 729 7844
F: [956] 729 7854
E: framos@cectexas.com

Re: Revised Geotechnical Engineering Report
West Laredo Corridor, Phase II
Las Cruces Drive
Laredo, Texas
Terracon Project No. 89145003A

Dear Mr. Ramos:

Terracon Consultants, Inc. (Terracon) is pleased to submit our revised Geotechnical Engineering Report for the proposed realignment of Las Cruces Drive along Mines Road (FM 1472) in Laredo, Texas. We trust that this report is responsive to your project needs.

We appreciate the opportunity to work with you on this project and look forward to providing Construction Materials Testing services. Please contact us if you have any questions or if we can be of further assistance.

Sincerely,
Terracon Consultants, Inc.
(Firm Registration: TX-P-3272)

Martin Reyes, E.I.T.
Senior Staff Engineer

Gregory P. Stieben, P.E.
Senior Consultant



APR review by Joseph A. Wasse, P.E. – 89145003A

Copies To: Addressee: (2) Bound & (1) Electronic
Civil Engineering Consultants: Mr. Jeffrey G. Puig, P.E. jpuig@cectexas.com: (1) Electronic
Civil Engineering Consultants: Mr. Kyle Gass, P.E. kgass@cectexas.com: (1) Electronic

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Exhibit B-1	Laboratory Testing
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Exhibit C-3 thru C-8	Slope Stability Analyses

EXECUTIVE SUMMARY

This summary should be used in conjunction with the entire report for design purposes. It should be recognized that details were not included or fully developed in this section, and the report must be read in its entirety for a comprehensive understanding of the items contained herein. The section titled **GENERAL COMMENTS** should be read for an understanding of the report limitations.

A geotechnical investigation has been performed for the proposed realignment of Las Cruces Drive along Mines Road (FM 1472) in Laredo, Texas. As requested, two borings were drilled to depths of approximately 40 feet below the existing grade within the proposed roadway alignment.

Based on the information obtained from our subsurface exploration, the site can be developed for the proposed project. The following geotechnical considerations were identified:

- The subsurface soils at this site generally consist of Sandy Lean Clay (CL) and Clayey Sand (SC) underlain by Shale.
- Groundwater was observed at this site in borings B-1 and B-2 between depths of about 5 to 6 feet during and upon completion of the drilling operations. Note that this shallow groundwater condition will likely create some difficulties during construction.
- According to City of Laredo standards the on-site soils appear to be suitable for use as select fill.
- A shallow foundation system would be appropriate to support the structural loads imposed by the proposed culvert structure, provided the site is prepared as recommended in this report. Alternatively, the culvert may supported by drilled shafts. Shallow foundations are also appropriate to support retaining walls and other miscellaneous structures.
- Consideration should be given to additional subsurface exploration or testing within or near the creekbed. It is possible that soft or compressible soils may be present in that area.
- Flexible and rigid pavement systems may be considered for this project.
- Close observation of the construction operations discussed herein will be critical in achieving the design subgrade support. Therefore, we recommend that Terracon be retained to observe this portion of work.

REVISED
GEOTECHNICAL ENGINEERING REPORT
WEST LAREDO CORRIDOR, PHASE II
LAS CRUCES DRIVE
LAREDO, TEXAS
TERRACON PROJECT NO. 89145003A
MARCH 21, 2014

1.0 INTRODUCTION

As requested, Terracon is pleased to submit our revised Geotechnical Engineering Report for the proposed realignment of Las Cruces Drive along Mines Road (FM 1472) in Laredo, Texas. This project was authorized by Mr. Kyle Gass, P.E. through signature of the a Professional Services Subconsultant agreement between Civil Engineering Consultants, Don Durden, Inc. (CEC) and Terracon Consultants, Inc. dated January 22, 2014. The project scope was performed in general accordance with Terracon Proposal No. P89130179C, dated January 21, 2014

The purposes of this report were to describe the subsurface conditions observed at the boring locations drilled for this study, analyze and evaluate the test data, and provide recommendations with respect to:

- Subsurface soil conditions
- Soil parameters for foundation design
- Slope stability analysis
- Groundwater conditions
- Pavement recommendations
- Earthwork recommendations

2.0 PROJECT INFORMATION

2.1 Project Description

ITEM	DESCRIPTION
Pavements/Structures	The project will include about 1,100 feet of new right-of-way improvements on Las Cruces Drive. Based on information provided to us, a creek crossing will be made using a culvert structure, likely consisting of a seven 10 ft by 6 ft MBC structure. The project will also include retaining walls and related underground utilities.
Construction Type	Pavements will likely consist of flexible sections; however, rigid sections have been included in the event that a rigid pavement is to be considered. Related utility lines will be PVC material, sanitary sewer manholes will be concrete or fiber-glass material.

ITEM	DESCRIPTION
Traffic Loads	Based on information provided to us by CEC, the roadway realignment will be classified as a Major Collector. For the analyses, traffic loads of 3.7M (flexible) and 4.9M (rigid) ESALs were used as per a "Traffic Analysis for Highway Design" memorandum, dated September 6, 2012, provided by TxDOT, and verified by CEC in an email transmission, dated March 13, 2014.
Grading	Cuts and fills for the pavements are estimated to be between 1 and 2 feet for this project site. Cuts on the order of 7 to 8 feet will be required for the proposed culvert installation.

2.2 Site Location and Description

Item	Description
Location	The proposed roadway realignment of Las Cruces Drive along Mines Road (FM 1472) is located in northwestern Laredo, Texas. The existing Las Cruces Drive will be adjusted from its current alignment to the southwest to align with Flecha Lane to the west of Mines Road.
Current Ground Cover	Native grass, brush, cactus, mesquite trees and bare soils.
Existing Improvements	Portions of the roadway alignment will be located within undeveloped land and the other portions will be in developed properties.
Existing Topography	Most of the roadway alignment is relatively flat and level with exception of an 8-foot deep creek channel at or near station 16+00.

3.0 SUBSURFACE CONDITIONS

3.1 Geology

The Geologic Atlas of Texas, Laredo Sheet, 1976, published by the University of Texas at Austin, Bureau of Economic Geology, has mapped the Fluvatile Terrace Deposits (Qt) of the Pleistocene geologic age in the vicinity of the site. The Fluvatile Terrace Deposits (Qt) consists of gravel, sand, silt and clay; composed of materials similar to those present in contiguous alluvium. The Fluvatile Terrace Deposits (Qt) are underlain the Laredo Formation (EI), consisting of shale.

3.2 Typical Profile

We were provided with a schematic drawing of the proposed roadway realignment. Our field personnel used the drawing to identify approximate boring locations. Based on the results of the borings, subsurface conditions on the project site can be generalized as follows:

Approximate Depth of Stratum, feet	Material Encountered	Consistency/Density
0 to 7.5	SANDY LEAN CLAY (CL) ¹ ; brown	Medium stiff
0 to 20	CLAYEY SAND (SC) ² ; brown and	Loose to very dense

Approximate Depth of Stratum, feet	Material Encountered	Consistency/Density
	yellowish brown	
15 to 40	SHALE ³ ; bluish gray	Hard
¹ The SANDY LEAN CLAY (CL) material could undergo low to moderate volumetric changes (shrink/swell) should it experience changes in its in-place moisture content. Encountered in boring B-1.		
² The CLAYEY SAND (SC) material would be expected to undergo low volumetric changes (shrink/swell) should it experience changes in its in-place moisture content. This material is considered volumetrically stable with regards to change in moisture content due to its granular nature. It may transmit water easily during rainfall events.		
³ The SHALE material could undergo moderate volumetric changes (shrink/swell) should it experience changes in its in-place moisture content.		

Conditions encountered at each boring location are indicated on the individual boring logs. Stratification boundaries on the boring logs represent the approximate location of changes in soil types; in-situ, the transition between materials may be gradual. Details for each of the borings can be found on the boring logs in Appendix A of this report.

3.3 Groundwater

The boreholes were observed while drilling and after completion for the presence and level of groundwater. The water levels observed in the boreholes are noted on the attached boring logs, and are summarized below:

Boring No.	Depth to groundwater first observed while drilling, ft. ¹	Depth to groundwater after 15 minutes wait period, ft. ¹
B-1	13.0 (El. 403.6)	6.0 (El. 410.6)
B-2	8.0 (El. 409.4)	5.0 (El. 412.4)
¹ Depths measured from existing ground surface at time of measurement to intervals of 15 minutes.		

Based on a preliminary grading plan provided by CEC, the proposed invert of the culvert will be at about El 411.40 feet. Given the thickness of the invert slab and the need to perform some over-excavation beneath the culvert, it is likely that groundwater will be present at the base of the excavation. A shallow groundwater condition in the clayey sands revealed at that depth will become a general hindrance to equipment due to rutting and pumping of the soil surface. The Contractor will need to be prepared for this situation, and may need to install a dewatering system to successfully complete the construction.

Long term observations in piezometers or observation wells sealed from the influence of surface water are generally required to more accurately evaluate groundwater levels and fluctuations. Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the borings were performed. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

3.4 Variations in Subsurface Conditions

The subsurface conditions were explored by two soil borings, one on either side of the creek. No subsurface exploration was made in the creek bottom. It should be noted that the soil conditions in that area may vary significantly from those revealed by the two borings. It is likely that in the past the creek bottom scoured, and subsequently backfilled with sedimentation. This material may be softer and more compressible than the soil conditions encountered by the borings. Considerations should be given to additional subsurface exploration or testing within or near the creekbed.

4.0 RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION.

The following recommendations are based upon the data obtained from our field and laboratory programs, project information provided to us and on our experience with similar subsurface and site conditions.

4.1 Geotechnical Considerations

The near surface soils within portions of this site exhibited increased silt/sand content with depth and low to moderate plasticity. These moisture sensitive soils tend to lose significant strength with increases in their in-situ moisture contents. Therefore, these surficial soils may pose construction difficulties, especially during and after periods of wet weather conditions. Also, as noted above, the excavation for the culvert will likely extend below the existing groundwater level. The Contractor must be prepared to deal with this condition, and possibly may need to install a dewatering system.

Based on our findings, the subsurface soils at this site generally exhibit a low expansion potential. Based on the information developed from our field and laboratory programs and on method TEX-124-E in the Texas Department of Transportation (TxDOT) Manual of Testing Procedures, we estimate that the subgrade soils at this site exhibit a Potential Vertical Rise (PVR) of about 1 inch in their present conditions. The actual movements could be greater if inadequate drainage, ponded water, and/or other sources of moisture are allowed to infiltrate beneath the structures after construction.

4.2 Earthwork

The following presents recommendations for site preparation and placement of engineered fills on the project. The recommendations presented for design and construction of earth supported elements including foundations are contingent upon the following recommendations outlined in this section.

Earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of engineered fill if any, foundation bearing soils, and other geotechnical conditions exposed during the construction of the project.

4.2.1 General Site Preparation

Construction operations may encounter difficulties due to the wet or soft surface soils becoming a general hindrance to equipment due to rutting and pumping of the soil surface, especially during and soon after periods of wet weather. If the subgrade cannot be adequately compacted to minimum densities as described in the “**Compaction Requirements**” section of this report, one of the following measures may be required:

- Removal and replacement with select fill;
- Drying by natural means if the schedule allows;
- Chemical treatment; and
- Possible installation of a dewatering system.

Prior to placing any fill, all loose material and any otherwise unsuitable materials should be removed from the construction area. Wet or dry material should either be removed or moisture conditioned and re-compacted. After stripping and grubbing, the subgrade should be proof-rolled where possible to aid in locating loose or soft areas. Proof-rolling can be performed with a 15-ton roller or fully loaded dump truck. Soft, dry and low-density soil should be removed or compacted in place prior to placing fill.

4.2.2 Fill Materials and Placement

Select fill and on-site soils should meet the following criteria.

Fill Type ¹	USCS Classification	Acceptable Location for Placement
Granular select fill ²	Varies	Can be used in pavement areas and as a pad beneath the proposed culvert.
Select fill	CL and/or SC (10≤PI≤20)	Can be used to construct all grade adjustments within the proposed development and pavement areas.
On-site soils	Varies	The on-site soils appear suitable for use as select fill within the pavement, landscape and behind the curb areas provided they are free of organics and debris. Unless indicated otherwise in this report.
¹	Prior to any filling operations, samples of the proposed borrow and on-site materials should be obtained for laboratory moisture-density testing. The tests will provide a basis for evaluation of fill compaction by in-place density testing. A qualified soil technician should perform sufficient in-place density tests during the filling operations to evaluate that proper levels of compaction, including dry unit weight and moisture content, are being attained.	
²	Granular select fill should consist of 2004 TxDOT Item 247, Type A or B, Grade 1 or 2 crushed limestone or gravel base material. Granular select fill can also consist of crushed concrete meeting the criteria specified in the 2004 TxDOT Item 247, Type D, Grade 1 or 2.	

4.2.3 Compaction Requirements

Item	Description
Fill Lift Thickness	All fill should be placed in thin; loose lifts about 8 inches, with compacted thickness not exceeding 6 inches.
Compaction of On-site and Select Fill Materials	95% of the material's maximum dry density (TEX 114E).
Compaction of Granular Select Fill	98% of the material's maximum dry density (TEX 113E).
Moisture Content of Pavement Subgrade	The materials should be moisture conditioned between optimum and +4 percentage points of the optimum moisture content. Unless indicated otherwise.
Moisture Content of Select Fill and Granular Select Fill	The materials should be moisture conditioned between -2 and +3 percentage points of the optimum moisture content.

4.3 Culvert Structure

The culvert structure may bear directly on the prepared subgrade, as described above. Consideration should be given to additional subsurface exploration or testing within or near the creekbed. It is possible that soft or compressible soils may be present in that area. The presence of a compressible zone within the creekbed could result in damaging differential movements relative to the less compressible zones on either side of the creek. If a soft, compressible zone is revealed, it should be removed and replaced as outlined in the **Earthwork** portion of this report.

To provide a strong, level bearing surface, we recommend a minimum of 6 inches of granular select fill be placed and compacted as outlined above. The select fill pad will also serve as a working platform during construction. Also, as noted above, the excavation for the culvert will likely extend below the existing groundwater level. The Contractor must be prepared to deal with this condition, and possibly may need to install a dewatering system. Prior to the installation of the culvert, the subgrade must consist of a firm, non-yielding surface.

The culvert should be designed to withstand the lateral earth pressures imposed by the backfill soils. For the culvert, the “at-rest” pressures provided in the **Lateral Earth Pressures** section of this report apply. The culvert must be designed to support the loading imposed by the overlying backfill, pavement section, and surcharge loading.

4.4 Drilled Shafts

The designers may choose to support the proposed culvert on drilled shafts to avoid the potential construction difficulties created by a shallow groundwater condition. Due to the presence of loose sand deposits, shallow groundwater, and highly cemented shale at this site, underreamed shafts will be difficult to construct. The contractor should be prepared to utilize casing or slurry techniques to control groundwater influx during excavation. Therefore, recommendations are only provided for straight-sided shafts. The following presents recommendations regarding axial loading and settlement. Should drilled shafts be selected for the design, additional recommendations can be provided regarding lateral loading, shaft installation, and scour.

4.4.1 Axial Loading

Compressive axial loads on shaft foundations are resisted by both skin friction along the shaft and by end bearing at the base of the shaft. End bearing and skin friction recommendations for each boring are contained in **Appendix A** at the end of this report. Results from laboratory and field TCP data were used to determine end bearing and skin friction values. The boring logs, soil strength analysis, skin friction, point bearing and foundation capacity parameters provided in this report were obtained and supported by the TxDOT engineering software program WinCore, which analyses and reports soil borings in accordance with TxDOT standards.

4.4.2 Settlement

For drilled shafts, total settlements, based on the allowable bearing pressures provided in **Appendix A**, should be less than one (1) inch for properly designed and constructed straight-sided drilled piers. Settlement beneath individual shafts will be primarily elastic with most of the settlement occurring during construction. Differential settlement may also occur between adjacent shafts. The amount of differential settlement could approach 50 to 75 percent of the total shaft settlement. For properly designed and constructed shafts, differential settlement between adjacent shafts is estimated to be less than three-fourths ($\frac{3}{4}$) of an inch. Settlement response of drilled shafts is impacted more by the quality of construction than by soil-structure interaction. Improper shaft installation could result in differential settlements that are significantly greater than we have estimated.

4.5 Shallow Footings

Shallow spread footings may be used to support the headwall loads of the proposed culvert. The following provides recommendations for shallow footings.

4.5.1 Capacity

The spread footings should be at least 3 feet below bottom of the wall. Spread footings may be designed for an allowable bearing pressure of 2,000 psf, based on dead load conditions or 3,000 psf based on total load, whichever results in a larger bearing surface. The above dead load bearing pressures include a factor of safety of 3. The total load bearing pressures include a factor of safety of 2.

The spread footings can provide some uplift resistance for those structures subjected to wind, soil pressures, or other induced structural loading. The uplift resistance of a spread footing may be computed using the effective weight of the soil above the spread footing along with the weight of the spread footing and structure. A buoyant soil unit weight of 50 pcf may be assumed for the on-site soils placed as fill above the footing, provided the fill is properly compacted.

4.5.2 Construction Considerations

Footing foundations should preferably be neat excavated. Excavation should be accomplished with a smooth-mouthed bucket. If a toothed bucket is used, excavation with this bucket should be stopped 6 inches above the final excavation surface and the excavation completed with a smooth-mouthed bucket or by hand labor. Due to the presence of sand, caving of footing excavations may occur. Therefore, the contractor should be prepared to use forms.

If the footing foundations are overexcavated and formed, the backfill around the foundation sides should be achieved with compacted select fill, lean concrete, compacted cement stabilized sand (two sacks cement to one cubic yard of sand) or flowable fill. Compaction of select fill should be as described below.

The bearing surface should be excavated with a slight slope to create an internal sump for runoff water collection and removal. If surface runoff water in excess of 2 inches accumulates at the bottom of the excavation, it should be pumped out prior to concrete placement. Under no circumstances should water be allowed to adversely affect the quality of the bearing surface.

If the spread footing is buried, backfill above the foundation maybe the excavated on-site soils or select fill soils. Backfill soils should be compacted to at least 95 percent of the maximum dry density as determined by the moisture/density relationship test (TEX 114E). Moisture contents for on-site soils ranging from -2 to +3 and imported select fill soils should range from -2 to +3 percentage points of the optimum moisture content. The backfill should be placed in thin, loose lifts not to exceed 8 inches, with compacted thickness not to exceed 6 inches.

4.6 Slope Stability

Slopes will be created at this site during channel grading operations. The stability of a created or constructed slope is dependent on several criteria which include:

- The height of the slope
- The slope angle
- The material comprising the slope
- Erosion considerations

Global slope stability analyses were performed utilizing a commercial slope stability software program, SLIDE. This software calculates the factor of safety against slope failure using a two-dimensional limiting equilibrium method. The slope stability analyses were performed for the short-term (end of construction) and long-term conditions for the channel cross-section provided to us by CEC.

Based on the field and laboratory test results and our past experience with similar soils, the strength parameters in the following tables were used in the global stability analyses.

Soil Parameters for Global Stability Analyses						
Soil Description	Depth (feet)	Unit Weight (pcf)	Short-Term		Long-Term	
			c (psf)	ϕ (deg)	c' (psf)	ϕ' (deg)
Clayey Sand	0 – 15	120	0	28	0	28
Shale	15 – 40	150	4,000	33	250	25

Where,

- c Unconsolidated-Undrained Cohesion
- ϕ Unconsolidated-Undrained Friction Angle
- c' Consolidated-Drained Cohesion
- ϕ' Consolidated-Drained Friction Angle

A summary of the global stability analyses for the channel is presented in the table below. The results are also presented graphically in Appendix C.

Summary Of Global Stability Analyses for Channel		
Channel	Short-Term	Long-Term
	1.80	1.82
Minimum Factors of Safety Required by TxDOT	1.3	1.3

Our global stability analyses indicate that the minimum factors of safety for the short-term and long-term conditions are satisfied in both cases. At the time of this report, the final channel grading plan is not available. We understand slopes will also be created to the north of the site following the removal of a portion of the existing Las Cruces Drive. If possible, those slopes should be 3H:1V, or flatter. Also, the design will need to consider matching of the existing slope angles beyond the limits of the project site.

A slope angle of 3H:1V is generally considered to be the steepest slope that can be properly maintained using commercially available equipment. Steeper slopes might be considered if the face of the slope is protected from erosion and/or if the fill section is reinforced with soil reinforcement such as geogrid. Steeper slopes would generally have to be “maintenance free” since available construction equipment would not be usable on some slopes. Any surcharge loads should not be placed within 10 feet of the crest of any slope at this site.

Erosion due to surface runoff could potentially weaken the strength of the material comprising the slope, and thus, the slope stability. Erosion control such as riprap, gabions, erosion control blankets, turf reinforcement mats, or other stabilization methods should be addressed to protect the slope. Further protection of the sloped section may be provided with the use of concrete terrace drains or other interceptor drains designed to protect the slope from surface water. Maintenance of the slope should be done on as “as needed basis”.

4.7 Erosion and Scour Considerations

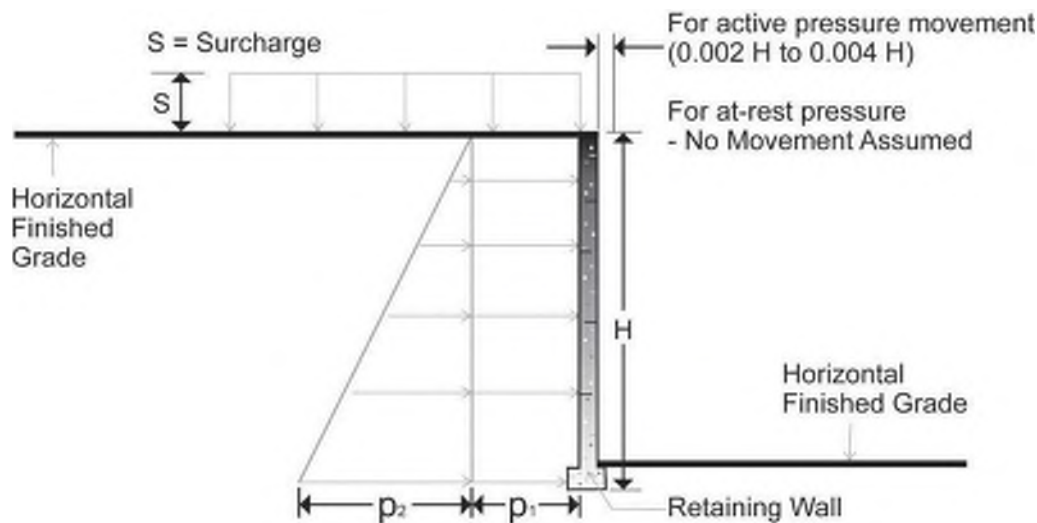
The level of the creek will rise during flood events. The structure can be designed to withstand these high water events. However, the creek bank will be subject to erosion and the creek bed will be subject to scour. Distribution Analysis test results are presented in Appendix B. If erosion is not controlled, then it is possible that a loss of ground will occur that could affect the abutments or the soils behind the abutments. Several methods are currently available to help

control erosion and include: rip-rap (concrete, boulder, or cobble), gabions, erosion blankets, etc. Each of these methods will require periodic maintenance for them to be effective during the life of the structure.

4.8 Lateral Earth Pressures

The lateral earth pressure recommendations given in the following paragraphs are applicable to the design of culverts and rigid retaining walls subject to slight rotation, such as cantilever, or gravity type concrete walls. These recommendations are not applicable to the design of modular block, geogrid reinforced backfill (MSE) walls.

Earth pressures will be influenced by structural design of the walls, conditions of wall restraint, methods of construction and/or compaction and the strength of the materials being restrained. Two wall restraint conditions are shown. Active earth pressure is commonly used for design of free-standing cantilever retaining walls and assumes some wall movement. The "at-rest" condition assumes no wall movement, as is the case with a culvert. The recommended design lateral earth pressures do not include a factor of safety and do not provide for possible unbalanced hydrostatic pressure on the walls.



Earth Pressure Coefficients

Earth Pressure Conditions	Coefficient for Backfill Type	Equivalent Fluid Density, pcf	Surcharge Pressure, psf (p_1)	Earth Pressure, psf (p_2)
Active, K_a	Granular – 0.33	40	$(0.33)S$	$(40)H$
	On-site Soil – 0.49	59	$(0.49)S$	$(59)H$
At-Rest, K_o	Granular – 0.46	55	$(0.46)S$	$(55)H$
	On-site Soil – 0.66	79	$(0.66)S$	$(79)H$
Passive, K_p	Granular – 3.4	425	---	---
	On-site Soil – 2.0	245	---	---

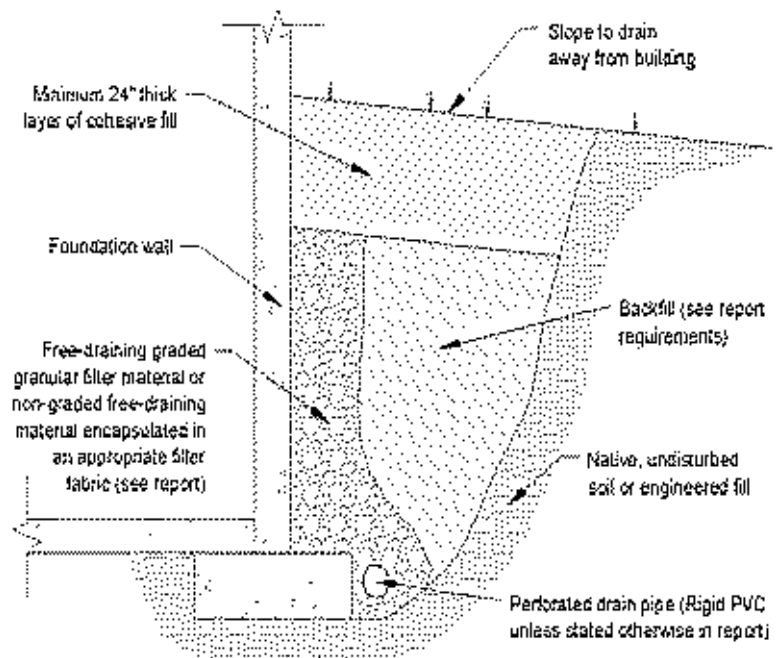
Applicable conditions to the above include:

- For active earth pressure, wall must rotate about base, with top lateral movements of about $0.002 H$ to $0.004 H$, where H is wall height.
- For passive earth pressure to develop, wall must move horizontally to mobilize resistance.
- Uniform surcharge, where S is surcharge pressure.
- In-situ soil backfill weight a maximum of 120 pcf.
- Horizontal backfill compacted at least 95 percent of standard Proctor maximum dry density.
- Loading from heavy compaction equipment not included.
- No unbalanced hydrostatic pressures acting on wall.
- No dynamic loading.
- No safety factor included in soil parameters.
- Ignore passive pressure within the scour depth and to a depth of 3 feet.

Backfill placed against structures should consist of granular soils or low plasticity cohesive soils. On-site soils are suitable for use as backfill behind walls. For the granular values to be valid, the granular backfill must extend out from the base of the wall at an angle of at least 45 and 60 degrees from vertical for the active and passive cases, respectively. To calculate the resistance to sliding, a value of 0.35 should be used as the ultimate coefficient of friction between the footing and the underlying soil. An allowable bearing pressure of 1,500 psf can be used for the wall footings. The wall footing should bear at least 3 feet below the bottom of the wall.

To control the water level behind the wall, we recommend a perimeter drain be installed at the foundation level as shown on the adjacent figure and described in the following notes.

- Granular backfill in this case consists of ASTM No. 57 stone or equivalent.
- Perforated pipe should be rigid PVC, sized to transport the expected water.
- Exterior ground surface should consist of a 24 inch clay cap sloped to drain as designed.
- The clay cap can be replaced by a pavement section.
- Weep holes can be considered in lieu of perimeter drains for retaining walls if the water seepage will not impact the structure.



If adequate drainage is not possible, then combined hydrostatic and lateral earth pressures should be calculated for on-site soils backfill using an equivalent fluid weighing 90 and 100 pcf for active and at-rest conditions, respectively. For granular backfill, an equivalent fluid weighing 85 and 90 pcf should be used for active and at-rest, respectively. These pressures do not include the influence of surcharge or equipment loading, which should be added. Heavy equipment should not operate within a distance closer than the exposed height of retaining walls to prevent lateral pressures more than those provided.

4.9 Seismic Considerations

Description	Value
2012 International Building Code Site Classification (IBC) ¹	D ²
Maximum Considered Earthquake 0.2 second Spectral Acceleration (S_s) ³	0.071 g
Maximum Considered Earthquake 1.0 second Spectral Acceleration (S_1) ³	0.018 g
¹ The site class definition was determined using CPT N-values in conjunction with section 1613.3.2 in the 2012 IBC and Table 20.3-1, Chapter 20 of the 2010 ASCE-7.	
² Section 20.1 in the 2010 ASCE-7 requires a site soil profile determination extending to a depth of 100 feet for seismic site classification. The current scope does not include the required 100 foot soil profile determination. Borings extended to a maximum depth of 40 feet, and this seismic site class definition considers that competent soil continues below the maximum depth of the subsurface exploration. Additional exploration to deeper depths would be needed to confirm the conditions below the current depth of exploration.	
³ The Spectral Acceleration values were determined using publicly available information provided on the United States Geological Survey (USGS) website. The spectral acceleration values can be used to determine the site coefficients using Tables 1613.3.3 (1) and 1613.3.3 (2) in the 2012 IBC.	

4.10 Underground Utility Design Recommendations and Construction Considerations

The recommendations and criteria presented in the following subsections can be used to aid in the design and analysis of buried pipes and utilities at this site.

4.10.1 Trench Bearing Pressures

The subsurface soils have sufficient bearing capacity to support buried pipes. A net allowable bearing pressure of 1,500 pounds per square foot (psf) maybe used to support the buried pipes. This bearing pressure includes a factor of safety of 3. The bearing pressure also assumes that the bearing surface will be relatively free and clean of any soft or moist material and loose debris.

4.10.2 Modulus of Soil Reaction

A modulus of soil reaction for the in-situ soil, E_s or E_n , of at least 700 psi may be used in the design of the flexible pipe. Additionally, the modulus of soil reaction, E_b or sometimes referred to as E' , of the backfill material supporting the sides of the pipe is also used in the design of the flexible piping. This value is a function of several variables that include:

- Soil type that comprises the backfill material supporting the pipe sides.

- Degree of compaction of the backfill material supporting the pipe sides.
- Lift thickness of the backfill material supporting the pipe sides.

Values for E_b (E') vary, depending on the pipe backfill and bedding materials. Fine-grained soils consisting of primarily clay and silt should not be used for bedding materials and backfill around the pipe. More specific information regarding this design parameter is included in ASTM D2321 entitled "Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity Flow Applications". The following table presents typical modulus of soil reaction values, E_b , for various backfill materials at different compaction ranges.

Type of Material	Modulus of Soil Reaction, E_b ¹ , psi, For Degrees of Compaction			
	Dumped (no compaction)	Slight <85%	Moderate 85% to 95%	High >95%
Fine Grained Soil (LL<50): CL, ML	NR	NR	NR	NR
Fine Grained Soil (LL<50) with >25% Coarse-Grained Material: CL, ML or	NR	NR	1000	2000
Coarse-Grained Soil with fines: GM, GC, SM, SC				
Coarse-Grained Soil with <12% fines: GW, GP, SW, SP	NR	1000	2000	3000
Crushed Rock	1000	3000		

¹ These values do not include a factor of safety. A factor of safety may be needed for design purposes. These values are for use in predicting the initial deflections only. If a high degree of compaction is not achieved in the backfill adjacent to the sides of the pipe, an approximate deflection lag factor should be applied for long-term deflection estimates. It should be noted that LL refers to the Liquid Limit, and NR means that the use of these materials is not recommended by ASTM D2321 for the backfill envelope.

4.10.3 Excavations

Various excavations are planned for site improvements. The actual excavation depths were not provided to us at the time of this report submittal. However, shoring, bracing, sloping, benching or a combination of each will be required during excavation or trenching of the surrounding soils during construction operations. If groundwater seepage occurs in an excavation with a sand side slope, instability could occur, even for a relatively flat slope. Temporary dewatering or shoring may be required to address this condition. Excavations and trenches should follow Occupational Safety and Health Administration (OSHA) Safety and Health Standards (29 CFR Part 1926 Revised, 1989), state and federal standards and guidelines. All excavation and safety/health issues are responsibility of the contractor.

4.10.4 Trench Backfill

Appropriate trench backfill is generally determined by several factors including the bearing capacity of the soil supporting the pipe, requirements of the pipe manufacturer regarding support of the pipe, and the proposed improvements at the ground surface along the trench. Pipe manufacturers generally require a specified bedding and granular material around the pipe.

Typically, the bedding and embedment material around buried utilities is designed to support and protect the piping. The backfill material above the embedment also helps to protect the piping and to support any overlying structure, roadway, or other improvement. Inadequate compaction of this material can lead to excessive settlement of the backfill, stress in the pipe, and premature distress to any overlying improvement. Therefore, we recommend that the embedment and backfill material be properly placed, moisture conditioned, and compacted in accordance with the appropriate project documents or those requirements established by applicable city or county standard specifications for public works construction.

Backfill beneath roadways should attempt to match the soil type exposed in the excavation sidewalls. As a compaction guideline, we recommend that all trench backfill be placed in loose lifts not to exceed 8 inches, moisture conditioned between -2 and plus +3 percentage points of the optimum moisture content, and compacted to at least 95 percent of the maximum dry density as evaluated by TEX-114-E.

Flowable fill can be used as an alternative to soil backfill, particularly beneath roadways. Flowable fill typically consists of a mixture of sand, portland cement, fly ash, and water and is readily available from ready-mixed concrete suppliers. This very low strength cementitious fill is placed in a slurry form and readily takes the shape of the excavation. Properly designed and placed, it can be excavated by a backhoe for future repairs or modifications as required.

Embedment backfill along the sides to the top of the pipe and possibly 12 to 24 inches above the pipe should consist of materials that are acceptable to the project civil engineer or materials meeting those requirements established by any applicable city or county standard specifications for public works construction. To avoid potential damage to the pipe, the embedment material should not contain materials exceeding 3 inches in maximum dimension. Onsite soils should be suitable as backfill above the embedment material provided that the soils do not contain deleterious material or particles exceeding 3 inches in maximum dimension.

Construction equipment with wheel or gross loads exceeding the pipe's design strength should not be driven over or close to the pipeline. Additional cover placed on top of the pipe or an alternate route should be provided for machinery producing excessive loads.

4.11 Pavements

As we stated before, we understand that the pavements at this site will consist of flexible pavement sections; however, rigid sections are included in this report in the event that a rigid pavement is to be considered. Discussion for both types of pavements will be addressed in the following sections.

4.11.1 New Roadway Realignment

The City of Laredo requires pavement subgrade modification for soil with a Plasticity Index (PI) value of 20 and greater. Based on a grading plan provided to us, we understand that cuts and fills are estimated to be between 1 and 2 feet for this project site. We anticipate that the proposed pavement subgrade alignment will have a Plasticity Index (PI) ranging from 7 to 19 based on the borings drilled at this site. Therefore, subgrade modification may not be required for the existing pavement subgrade.

Our subsurface soil exploration determined that the near-surface on-site soils are suitable sources of borrow material. These soils may be used as fill provided they are excavated, stockpiled and tested prior to use in the pavement areas.

Sulfate tests were performed on samples collected from the site to observe for a possible adverse reaction with chemical treatment such as lime or cement. The test results indicate sulfate values in the range of 2,306 ppm to 27,800 ppm. Therefore, lime or cement subgrade stabilization should not be considered as an option to improve its strength and load carrying capacity. We recommend using one of the following subgrade stabilization alternatives to maintain the PI and reduce swell potential.

- Sub Base Layer;
- Asphalt Stabilized Base;
- Thicker Granular Base section in combination with geogrid;

As requested, on-site Dynamic Cone Penetrometer (DCP) tests were performed at the boring locations to assess and evaluate the in-place strength of undisturbed subgrade. Based on the results of our DCP field testing program and according to the provided correlation values of DCP versus CBR as described in ASTM D 6951, the correlated CBR values are presented in Appendix A; we recommend that a CBR value of about 3 be used in the pavement design analysis for the existing subgrade. The results of the DCP tests are included in Appendix A of this report.

Pavements are designed using either a California Bearing Ratio (CBR) value or modulus of subgrade reaction (k). Based on published correlations between k and CBR values, an estimated k value of 80 pound per cubic inch (pci) and Effective Roadbed Soil Resilient Modulus (Mr) of 4,500 pounds per square inch (psi) for the natural subgrade may be used for this site.

We understand that the roadway realignment will be classified as **Major Collector**. If this is not applicable, we need to revise our design recommendations. The design traffic loads were obtained from a "Traffic Analysis for Highway Design" memorandum, dated September 6, 2012, provided by TxDOT. Other design parameters listed in the City of Laredo Ordinance were used for the roadway pavement design.

The traffic data and assumptions that were used for the proposed pavement section are as follows:

Major Collector	
18-Kip ESAL	3,7M (flexible) / 4.9M (rigid)
Reliability, %	90
Initial Serviceability Index, p_o	4.2 flexible and 4.5 rigid
Terminal Serviceability Index, p_t	2.5 flexible and rigid
Standard Deviation, S_o	0.45 flexible and 0.35 rigid
Design Life, years	20
Estimated CBR	3

Pavement sections were designed and analyzed utilizing the TxDOT FPS 21 software program. The resulting pavement options are described below:

Minimum Recommended <u>Flexible</u> Pavement Section Thickness, inches Crushed Limestone Base			
Component	Option 1	Option 2	Option 3
Hot Mix Asphaltic Concrete (HMAC) Type C or D	2	6.5	6.5
HMAC Base Course Type A	8.5	---	---
Granular Base Course ^{1, 2}	8.5	20	16
Geogrid ³	---	---	Yes
Moisture Conditioned Subgrade	6	6	6
¹	Asphaltic base material may be used in place of granular base course material. Every 2.5 inches of granular base course material may be replaced with 1 inch of asphaltic base material. However, the minimum thickness of the asphaltic base material is 4 inches.		
²	The prime coat should consist of sealing the granular base with prime oil such as an MC-30 or an emulsion as indicated by the TxDOT standards.		
³	The geogrid should be Tensar TriAx TX-140, TX-5 or equivalent material and should be placed on top of the moisture conditioned and compacted subgrade.		

Minimum Recommended <u>Rigid Pavement Section Thickness, inches</u> ¹	
Component	
Reinforced Concrete	11
Stego Wrap Vapor Barrier ²	yes
Moisture Conditioned Subgrade	6

1	The thickness design analysis used for concrete pavement is not highly sensitive to the type of subgrade supporting the concrete pavement. However, a subbase consisting of 6-inches of crushed limestone base material immediately beneath the concrete will be less affected by water, sulfate attack and traffic loads and should help to provide improved long term, uniform support for the concrete pavement. As a result, the life and performance of the pavement should be improved. We recommend that this be considered for concrete pavement. The base material also will separate the concrete slab from the high sulfate subgrade soils. Thus, reducing sulfate attack on concrete structures. If a granular subbase or any other appropriate vapor barrier is not used, we recommend using a sulfate-resistant concrete mix with preapproved concrete chemical admixtures by the engineer.
2	Stego Wrap Vapor Barrier can be used to isolate soil materials containing sulfate from the concrete pavement. The vapor barrier should be placed on top of the moisture conditioned and compacted subgrade. For additional information, please refer to Stego's manufacturer prior to installation. Also, the sulfate issue could be addressed as part of the concrete mix design.

4.11.2 Pavement Section Materials

Presented below are selection and preparation guidelines for various materials that may be used to construct the pavement sections. Submittals should be made for each pavement material. The submittals should be reviewed by the geotechnical engineer and appropriate members of the design team and should provide test information necessary to verify full compliance with the recommended or specified material properties.

Hot Mix Asphaltic Concrete Surface Course and Base Course - The asphaltic concrete surface and base courses should be plant mixed, hot laid types C or D (surface course) and A or B (base course) respectively, meeting the master specifications requirements of 2004 TxDOT Standard Specifications Item 341 and Item SS 3224 (2011) and specific criteria for the job mix formula. The mix should be compacted between 91 and 95 percent of the maximum theoretical density as measured by Tex-227-F. The grade of the asphalt cement should be PG 70-22. However, this requirement may be waived at the engineer's discretion if the asphalt supplier warrants that the asphalt cement can meet all applicable safety, environmental and constructability requirements. Aggregates known to be prone to stripping should not be used in the hot mix.

Pavement specimens, which should be either cores or sections of asphaltic pavement, should be tested according to Test Method TEX-207-F. The nuclear-density gauge or other methods which correlate satisfactorily with results obtained from project pavement specimens may be used when approved by the Engineer. Unless otherwise shown on the plans, the Contractor should be responsible for obtaining the required pavement specimens at their expense and in a manner and at locations selected by the Engineer.

Concrete: Concrete should have a minimum 28-day design compressive strength of 4,000 psi. ASTM C150, Type I/II cement is commonly used in the local area and is appropriate for this project according to ACI standards.

Granular Base Course: The base material should be composed of crushed limestone base materials meeting the requirements of 2004 TxDOT Standard Specification Manual Item 247, Type A, Grade 1 or 2.

The base should be compacted to at least 98 percent of the maximum dry density as determined by the modified moisture-density relationship (TEX 113E) at moisture contents ranging between -2 and +3 percentage points of the optimum moisture content.

Prime Coat - The prime coat should consist of sealing the base with prime oil such as an MC-30 or an emulsion. The prime coat should be applied at a rate of about 0.2 to 0.5 gallons per square yard with materials which meet TxDOT 2004 Standard Specifications Item 300. The prime coat will help to reduce penetration of rainfall and other moisture which penetrates the base. However, due to weathering and traffic, treatment will probably be necessary on a periodic basis to protect the base. In addition, isolated areas of the base which have developed pot holes or other distress may need to be removed and replaced prior to application of a prime coat for maintenance. The prime coat without additional surface treatment may not be very effective when using non-treated base material.

Moisture Conditioned Subgrade: The subgrade should be scarified to a depth of 8 inches and moisture conditioned between -2 and +3 percentage points of the optimum moisture content. The subgrade should then be compacted to at least 95 percent of the maximum dry density determined in accordance with Tex-114-E. This should result in a compacted, moisture conditioned layer about 6 inches thick.

4.11.3 Pavement Joints and Reinforcement

The following is recommended for all concrete pavement sections in this report. Refer to ACI 330 "Guide for Design and Construction of Concrete Parking Lots" and "TxDOT Standard Specifications" for additional information.

Item	Description
Reinforcing Steel	N ^o 3 reinforcing steel bars at 12 inches on-center-each-way, Grade 60. N ^o 4 reinforcing steel bars at 18 inches on-center-each-way, Grade 60.
Contraction Joint Spacing	15 feet each way for pavement thickness of 6 inches or greater. Saw cut control joints should be cut within 6 to 12 hours of concrete placement.
Contraction Joint Depth	At least ¼ of pavement thickness.

Item	Description
Contraction Joint Width	One-fourth inch or as required by joint sealant manufacturer.
Construction Joint Spacing	To attempt to limit the quantity of joints in the pavement, consideration can be given to installing construction joints at contraction joint locations, where it is applicable.
Construction Joint Depth/Width	Full depth of pavement thickness. Construct sealant reservoir along one edge of the joint. Width of reservoir to be ¼ inch or as required by joint sealant manufacturer. Depth of reservoir to be at least ¼ of pavement thickness.
Isolation Joint Spacing	As required to isolate pavement from structures, etc.
Isolation Joint Depth	Full depth of pavement thickness.
Isolation Joint Width	One-half to 1 inch or as required by the joint sealant manufacturer.
Expansion Joint	It is recommended installing expansion joints every 90 feet for pavements with long and straight sections. <u>All</u> joints should be sealed. If all joints, including saw cuts, are not sealed then expansion joints should be installed.

Construction joints in the 11-inch thick concrete pavement should include dowels with the following dimensions:

Dowel Diameter	1½ inch
Dowel Spacing	12 inches on center
Dowel Length	16 inches
Dowel Embedment	7 inches

4.12 Sulfate Considerations

Sulfate tests were performed on selected samples collected from the borings to check for a possible adverse reaction with lime or cement treatment. Test locations and depths were chosen to provide a range of test locations regards to depth and across the site. Tests were not performed in all borings depth. Sulfate content concentrations for the borings along with their approximate depth and nearest boring number are as follow:

Boring No.	Approximate Depth, feet	Sulfate Content, ppm
B-1	2.5 - 4	27,800
B-1	18.5 - 20	5,560
B-2	2.5 - 4	15,333
B-2	8.5 - 10	2,306

The test results indicate sulfate values between 2,306 and 27,800 ppm. The sulfate effect at this site is considered to be severe to very severe. Using the criteria from ACI 201.2R, the test results classify as Class 2 and 3 exposure, respectively.

The test results indicate that the sulfate concentrations in the soils are above levels deemed to be of a high risk for adverse reactions when mixed with a calcium-based additive TxDOT (>3,000 ppm), the National Lime Association (>3,000 ppm) and AASHTO (>5,000 ppm). Due to the sulfate rich soils encountered at this site, cement and/or lime soil treatment should not be used for pavement subgrade.

Concrete exposed to these materials is also subject to sulfate attack which can result in the deterioration of the concrete over time. The American Concrete Institute (ACI) and the Texas Department of Transportation (TxDOT) provide guidance and specifications regarding sulfates in soil and groundwater.

5.0 GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide observation and testing services during grading, excavation, foundation construction and other earth-related construction phases of the project.

The analysis and recommendations presented in this report are based upon the data obtained from the borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur away from our boring, across the site, or due to the modifying effects of weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, and bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

APPENDIX A
FIELD EXPLORATION

FIELD EXPLORATION DESCRIPTION

Terracon personnel used the site plan provided by the client to establish the bore locations in the field. A copy of the Bore Location Plan indicating the approximate boring locations is included in Appendix A. The location of the borings should be considered accurate only to the degree implied by the means and methods used to define them.

A truck-mounted, rotary drill rig equipped with continuous flight augers was used to advance the boreholes. The Texas Department of Transportation (TxDOT) employs a drilling protocol in which no samples are taken from the subsurface and only field penetration tests are conducted. The field penetration tests are referred to as the Texas Cone Penetrometer (TCP) test. The test is described in the Foundation Exploration and Design Manual of the Bridge Division of TxDOT (1974). The cone is a 3-inch diameter, 60 degree steel cone and is described in TEX-132-E. Selected soil samples were recovered by driving a 2-inch O.D. split-barrel sampler. The samples were sealed and transported to our laboratory for testing and classification.

Our field representative prepared the field logs as part of the drilling operations. The field logs included visual classifications of the materials encountered during drilling and our field representative interpretation of the subsurface conditions between samples. The boring logs included with this report represent the engineer's interpretation of the field logs and include modifications based on visual observations and testing of the samples in the laboratory.

In addition, on-site Dynamic Cone Penetrometer (DCP) tests were performed at this site to evaluate the in-place strength of undisturbed soil. The DCP tests extended to about 24 inches below existing grade, test results are presented in this Appendix. The DCP measures the penetration resistance of a 17.6 pound hammer through undisturbed soil and/or compacted materials. The penetration resistance may be related to in-situ strength such as estimated in-situ CBR (California Bearing Ratio), shear strength of strata, thickness of strata and bearing capacity. The tests have been performed according to ASTM D 6951.

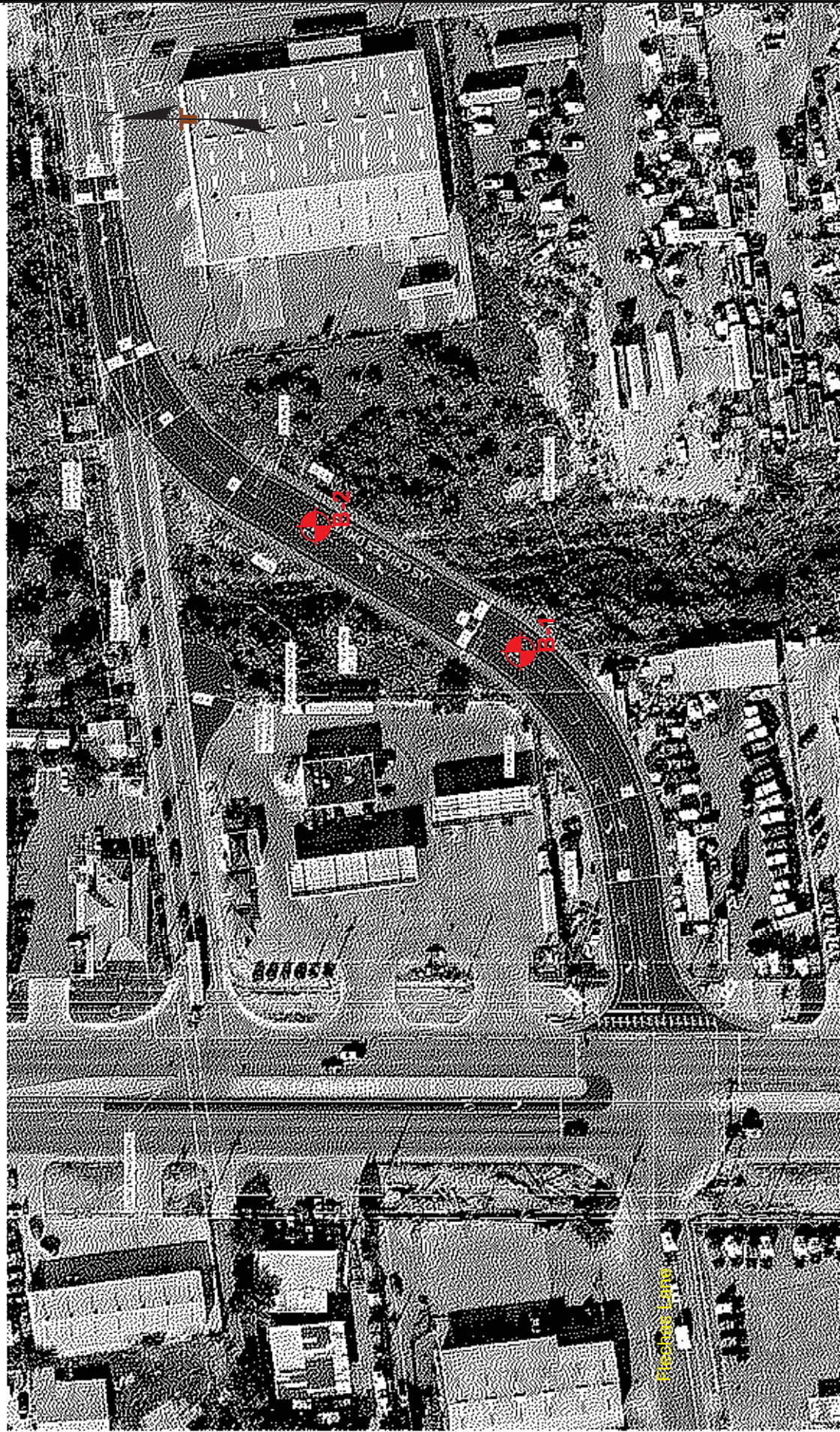
The scope of services for our geotechnical engineering services does not include addressing any environmental issues pertinent to the site.



PROJECT SITE

Source: Google Earth, 2009

	Project Mngr:	MR	Project No.	89145003	SITE LOCATION PLAN		EXHIBIT	
	Drawn By:	LC	Scale:	N.T.S.				
	Checked By:	MR	File No.	89145003	West Laredo Corridor, Phase II Las Cruces Drive Laredo, Texas			
	Approved By:	MR	Date:	02.10.2014				
			Consulting Engineers and Scientists			A-2		
615 GALE STREET, BUILDING B			LAREDO, TX 78041					
PH. (956) 729-1100			FAX. (956) 791-1071					



LEGEND:

--- APPROXIMATE BORE LOCATION

Project Mgr: MR
Drawn By: LC
Checked By: MR
Approved By: MR

Project No: 89145003
Scale: N.T.S.
File No: 89145003
Date: 02.10.2014

Terracon
Consulting Engineers and Scientists
615 GALE STREET, BUILDING B LAREDO, TX 78041
PH. (956) 729-1100 FAX. (956) 791-0071

BORE LOCATION PLAN

West Laredo Corridor, Phase II
Las Cruces Drive
Laredo, Texas

EXHIBIT

A-3



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Webb
Highway West Laredo Corridor, Ph. Structure
CSJ 0922-33-076

Hole B-1
Roadway Realignment
Station 15+00
Offset

District Laredo
Date 1/29/2014
Grnd. Elev. 416.61 ft
GW Elev. 410.61 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Deviator Press. (psi)	Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
409.1	5	3 (6) 4 (6)	CLAY, very soft to soft, brown, sandy lean (CL)			16	34	19		(-) 200 = 60%; yellowish brown
		2 (6) 4 (6)				19	33	18		
		3 (6) 3 (6)				18				
396.6	10	6 (6) 8 (6)	SAND, loose to dense, yellowish brown, clayey (SC)			19				(-) 200 = 47%
		50 (4) 50 (1)				18	32	13		
		50 (3) 50 (1)				18				
376.6	20	50 (1) 50 (1)	SHALE, hard, bluish gray, sandy, strong cementation							strong cementation below 15 ft
		50 (1) 50 (1)				36	22			
		50 (1) 50 (1)								
376.6	30	50 (1) 50 (1)	SHALE, hard, bluish gray, sandy, strong cementation							(-) 200 = 45%
		50 (1) 50 (1)				38	24			
		50 (1) 50 (1)								
376.6	40	50 (1) 50 (1)	SHALE, hard, bluish gray, sandy, strong cementation							
		50 (1) 50 (1)								
		50 (1) 50 (1)								

Remarks: Dry Augered from 0 to 40 feet. Groundwater was observed during and after drilling operations 403.61/410.61 ft.

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Alpha & Omega

Logger: Jorge Rodriguez

Organization: Terracon Consultants, Inc.



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Webb

Highway West Laredo Corridor, Ph. Structure

CSJ 0922-33-076

Hole

B-2

Roadway Realignment

Station 17+00

Offset

District Laredo

Date 1/29/2014

Grnd. Elev. 417.40 ft

GW Elev. 412.40 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
		7 (6) 6 (6)	SAND, very loose to slightly compact, brown, clayey (SC)			13	25	7		(-) 200 = 46%; with silt
5		3 (6) 2 (6)					28	11		
		2 (6) 2 (6)								(-) 200 = 24%; gravel at 7 ft.
10		11 (6) 19 (6)				18				
402.4 15		50 (3) 50 (2)	SHALE, hard, bluish gray, strong cementation			12	35	18		
20		50 (3) 50 (1)				19				(-) 200 = 56%
25		50 (1) 50 (1)				18	34	18		
30		50 (2) 50 (1)				18				(-) 200 = 61%
35		50 (1) 50 (0)					28	12		
377.4 40		50 (1) 50 (0)								

Remarks: Dry Augered from 0 to 40 feet. Groundwater was observed during and after drilling operations 409.40/412.40 ft.

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Alpha & Omega

Logger: Jorge Rodriguez

Organization: Terracon Consultants, Inc.



SOIL STRENGTH ANALYSIS

WinCore
Version 3.1

County	Webb	Hole	B-1	District	Laredo
Highway	West Laredo Corridor, Ph. 15	Structure	Roadway Realignment	Date	1/29/2014
Control	0922-33-076	Station	15+00	Grnd. Elev.	416.61 ft
		Offset		GW Elev.	403.61 ft

TCP Capacity Values Used

Soil reduction factor of 0.7 applied

Strata No.	Elev. (Feet)		Design Type	Soil Factor	TCP N Value	TCP Unit Friction (TSF)	Accumulative Friction (T/F)
	From	To					
1	416.6	412.4	CL	60	7	0.08	0.35
1	412.4	409.1	CL	60	6	0.07	0.57
2	409.1	407.4	SC	70	6	0.06	0.68
2	407.4	403.6	SC	70	14	0.14	1.20
2	403.6	396.6	SC	70	240	1.35	10.65
3	396.6	393.6	OTHER	80	300	1.69	15.71
3	393.6	388.6	OTHER	80	600	3.25	31.96
3	388.6	383.6	OTHER	80	600	3.25	48.21
3	383.6	379.1	OTHER	80	600	3.25	62.84
3	379.1	376.6	OTHER	80	600	3.25	70.96

SKIN FRICTION DESIGN

County	Webb
--------	------

Highway West Laredo Corridor, Ph. Structure

Control 0922-33-076

Male

Structure

Station

Offset

0-9

Roadway Realignment

15.00

District

Laredo

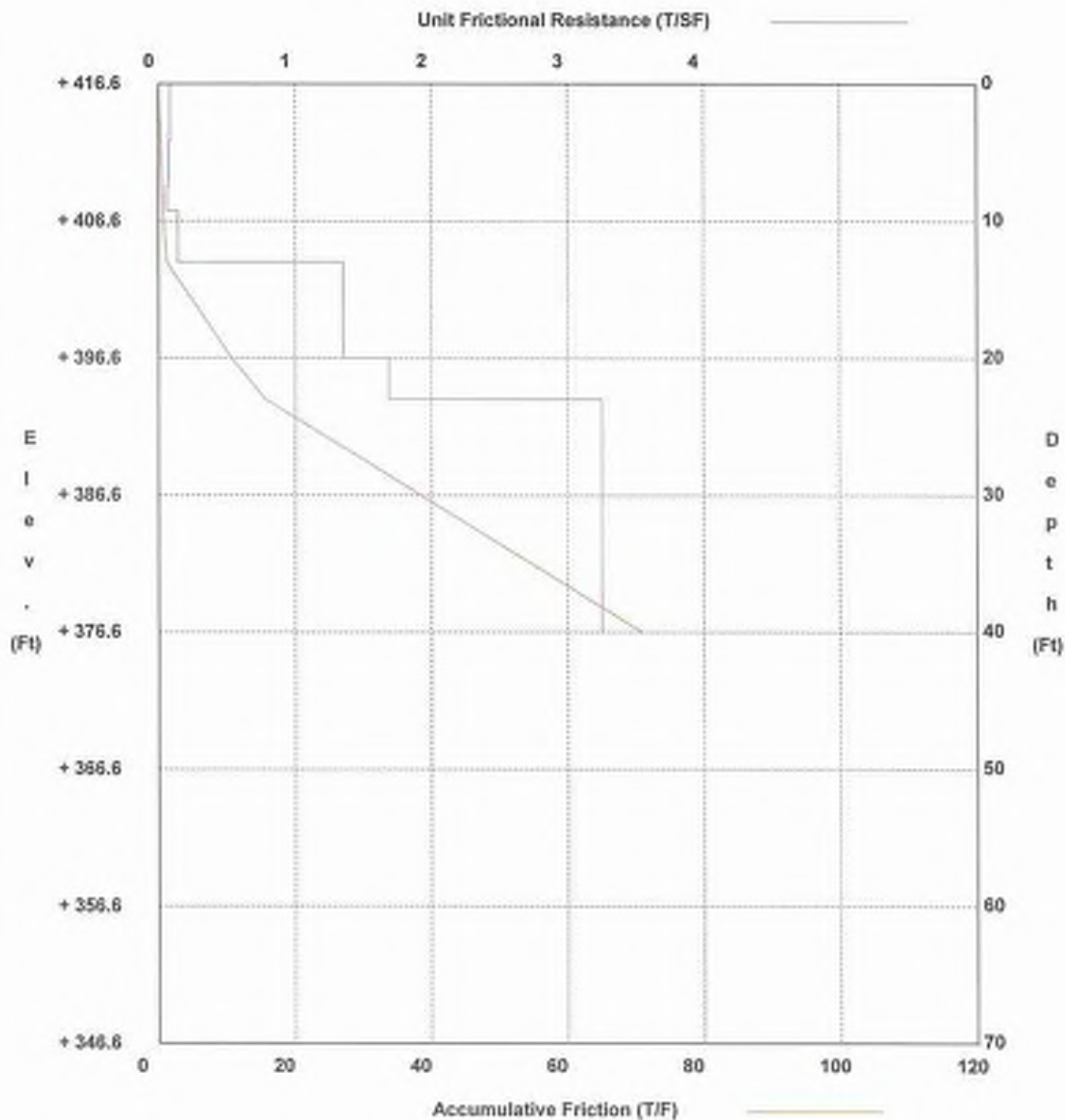
Date 1/29/2014

Grnd. Elev. 496.61 ft

GW Elev. 483.61 ft.

Drilled Shaft Design: Soil Reduction Factor = 0.7

TCP Friction Values Used





POINT BEARING DESIGN

WinCore
Version 3.1

County Webb

Highway West Laredo Corridor, Ph. Structure

Control 0922-33-076

Hole

Station

Offset

B-1

Roadway Realignment

15+00

District

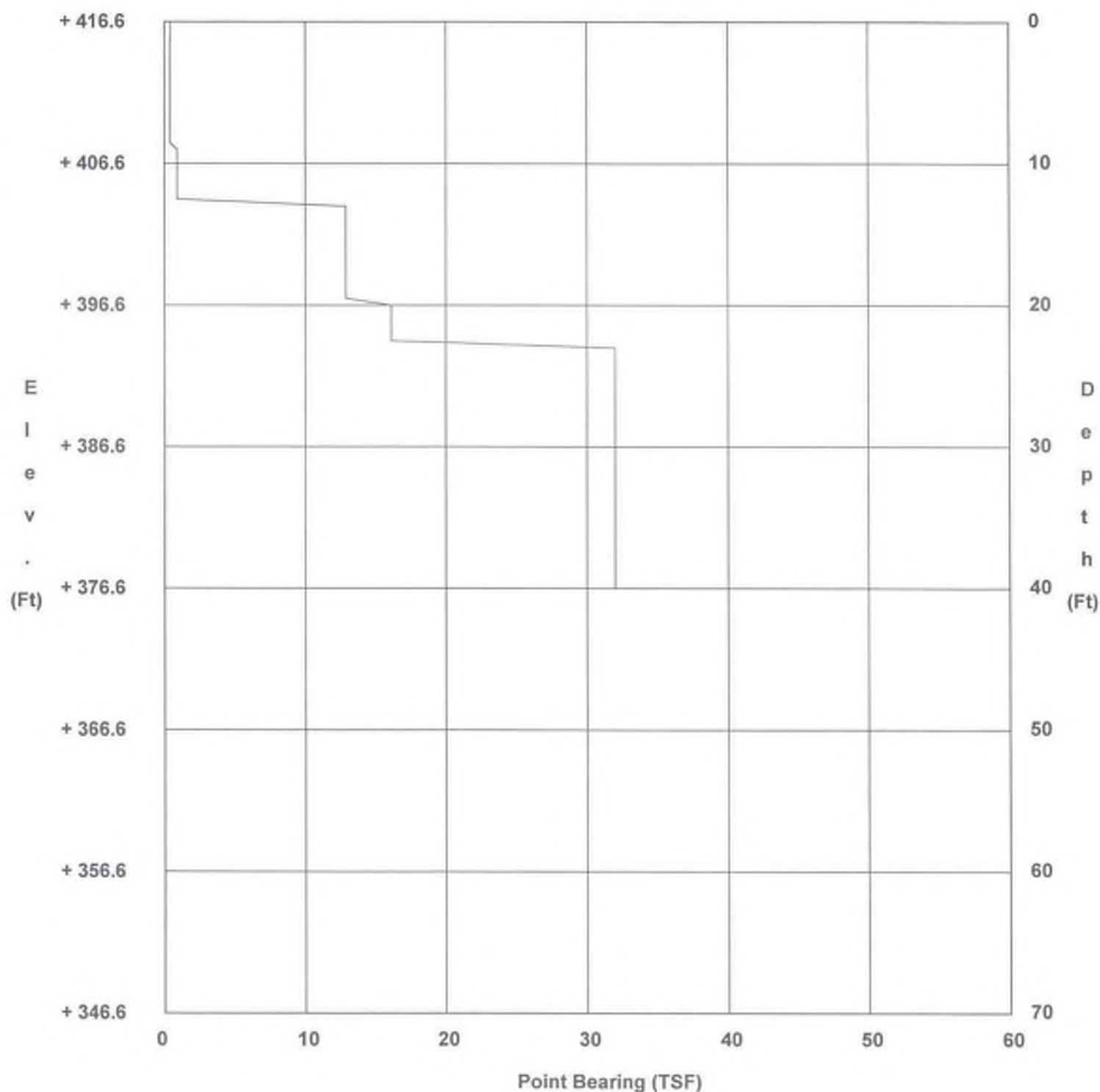
Date 1/29/2014

Grnd. Elev. 416.61 ft

GW Elev. 403.61 ft

Diameters Below Tip Checked = 2

TCP Bearing Values Used





FOUNDATION CAPACITY

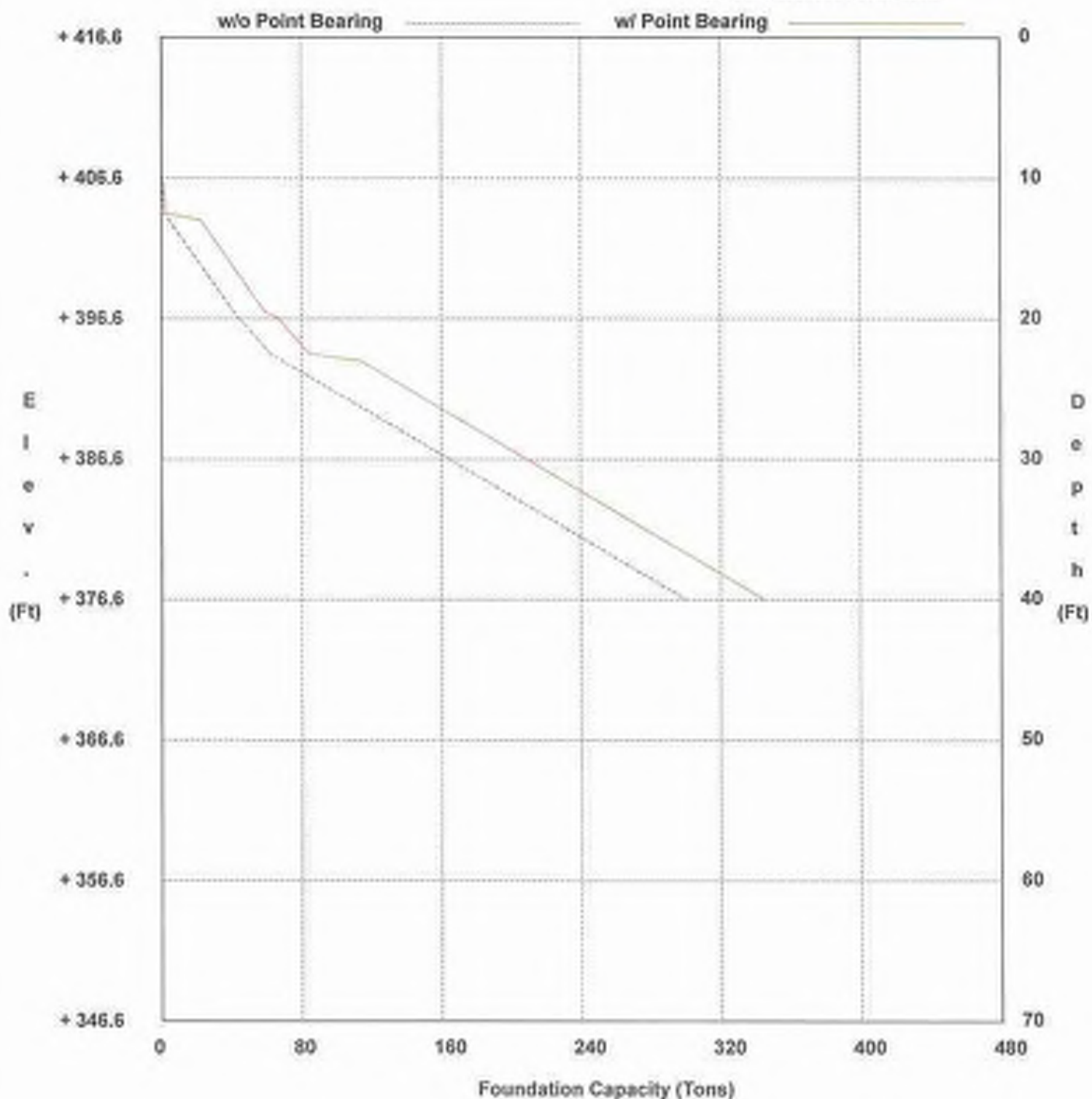
WisCore
Version 3.1

County	Webb	Hole	B-1	District	Laredo
Highway	West Laredo Corridor, Ph. Structure	Structure	Roadway Realignment	Date	1/23/2014
Control	6922-33-076	Station	15+00	Grnd. Elev.	416.61 ft
		Offset		GW Elev.	403.61 ft

16 inch Drilled Shaft
75 ton Design Load
Tip Elevation = + 395.11

+416.61 Top Hole Elevation
+405.61 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used





SOIL STRENGTH ANALYSIS

WinCore
Version 3.1

County	Webb	Hole	B-2	District	Laredo
Highway	West Laredo Corridor, Ph. B	Structure	Roadway Realignment	Date	1/29/2014
Control	0922-33-076	Station	17+00	Grnd. Elev.	417.40 ft
		Offset		GW Elev.	409.40 ft

TCP Capacity Values Used

Soil reduction factor of 0.7 applied

Strata No.	Elev. (Feet)		Design Type	Soil Factor	TCP N Value	TCP Unit Friction (TSF)	Accumulative Friction (T/F)
	From	To					
1	417.4	413.2	SC	70	13	0.13	0.55
1	413.2	410.7	SC	70	5	0.05	0.68
1	410.7	408.2	SC	70	4	0.04	0.78
1	408.2	402.4	SC	70	30	0.30	2.50
2	402.4	399.4	OTHER	80	240	1.35	6.55
2	399.4	394.4	OTHER	80	300	1.69	14.99
2	394.4	389.4	OTHER	80	600	3.25	31.24
2	389.4	384.4	OTHER	80	400	2.25	42.48
2	384.4	379.9	OTHER	80	1200	3.25	57.11
2	379.9	377.4	OTHER	80	1200	3.25	65.23



SKIN FRICTION DESIGN

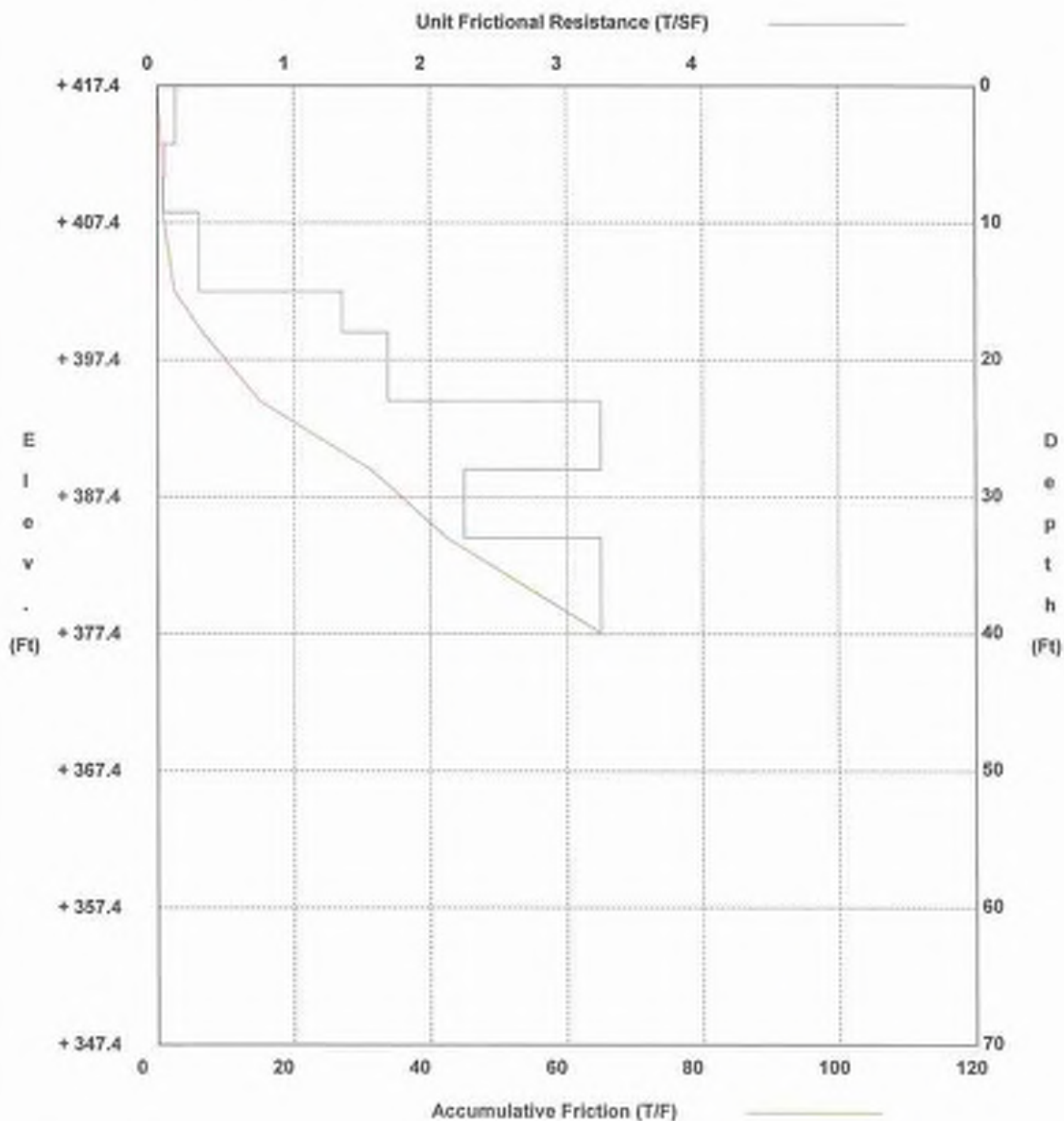
WinCore
Version 3.1

County	Webb	Hole	B-2
Highway	West Laredo Corridor, Ph. Structure	Station	Roadway Realignment
Control	0922-33-076	Offset	17+60

District	Laredo
Date	1/29/2014
Grid Elev.	417.40 ft
GW Elev.	409.40 ft

Drilled Shaft Design: Soil Reduction Factor = 0.7

TCP Friction Values Used





POINT BEARING DESIGN

WinCore
Version 3.1

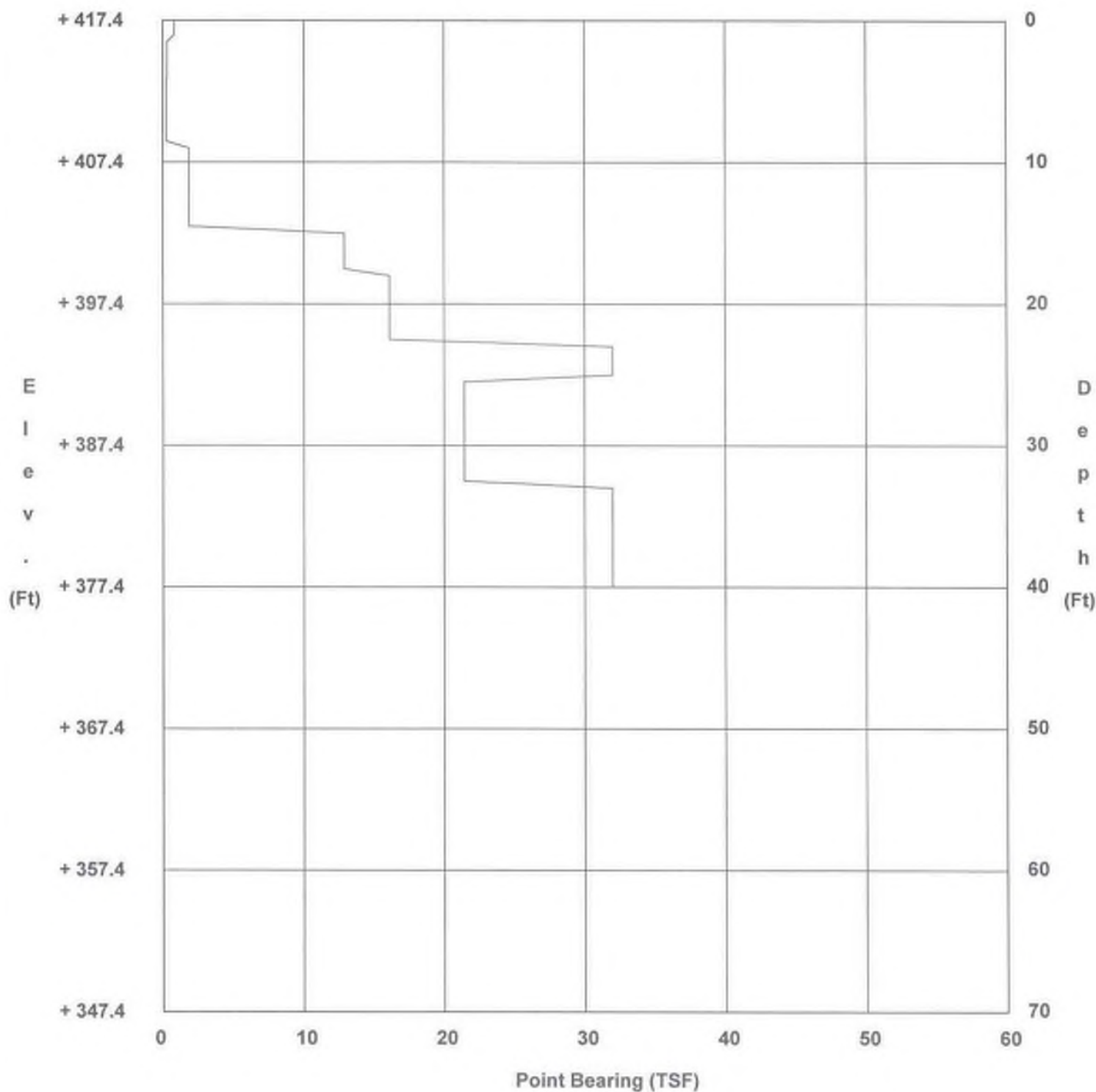
County Webb
Highway West Laredo Corridor, Ph.
Control 0922-33-076

Hole B-2
Structure Roadway Realignment
Station 17+00
Offset

District Laredo
Date 1/29/2014
Grnd. Elev. 417.40 ft
GW Elev. 409.40 ft

Diameters Below Tip Checked = 2

TCP Bearing Values Used





WinCore
Version 3.1

FOUNDATION CAPACITY

County	Webb	Hole	B-2	District	Laredo
Highway	West Laredo Corridor, Ph.	Structure	Roadway Realignment	Date	1/29/2014
Control	0922-33-078	Station	17+00	Grnd. Elev.	417.40 ft
		Offset		GW Elev.	409.40 ft

55 inch Drilled Shaft

75 ton Design Load

Tip Elevation = + 395.4

+417.40 Top Hole Elevation

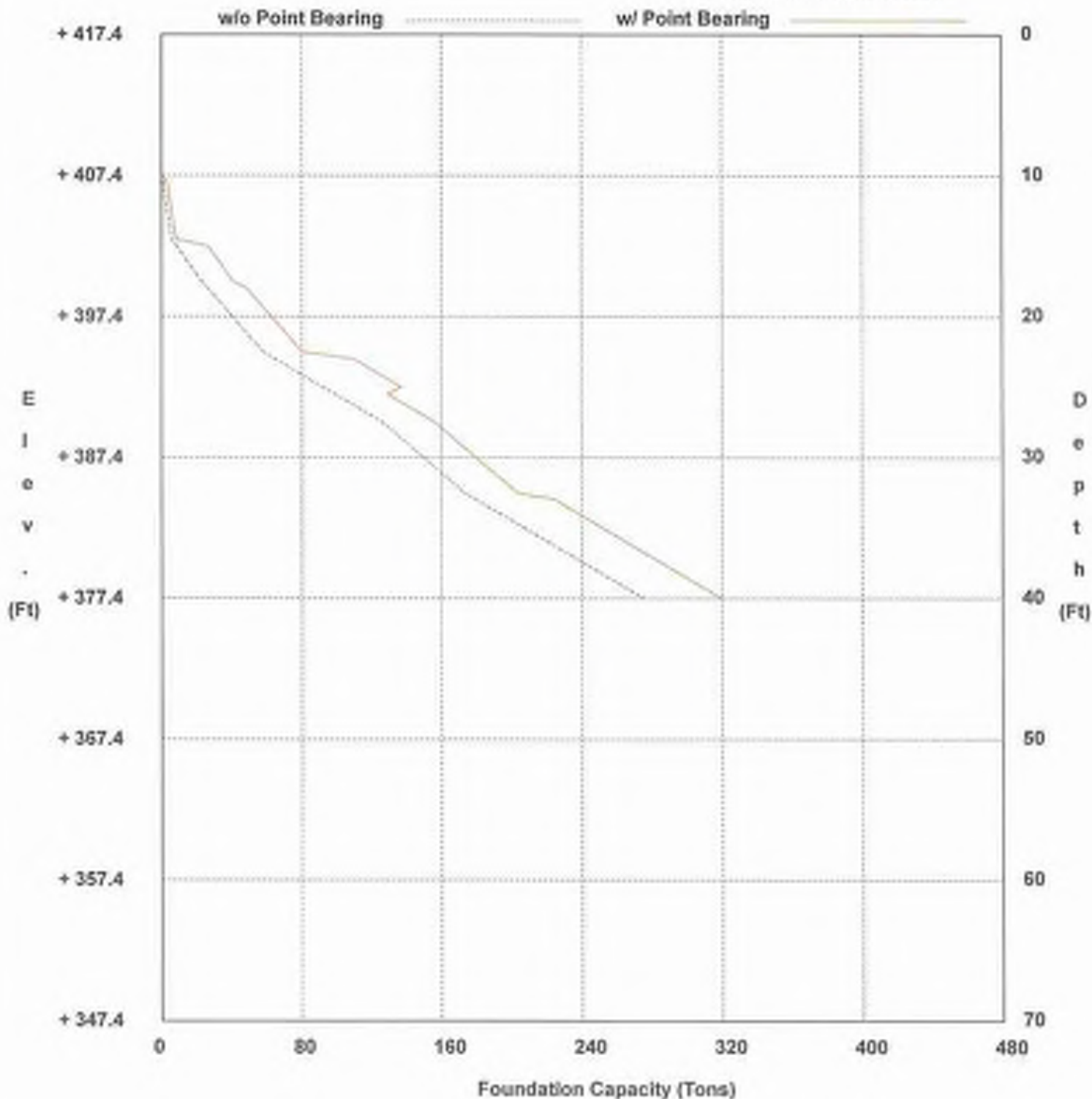
+407.4 Disregard Elevation

Disregard above hard strata disabled

Pb: 2 Diameters Below Tip Checked

TCP Capacity Values Used

0.7 Soil Reduction Factor Used



DCP TEST DATA

 Project: West Laredo Corridor, Phase II
 Location: B-1

 Date: 1/23/2014

 Soil Type(s): Low plasticity Clay with CBR<10

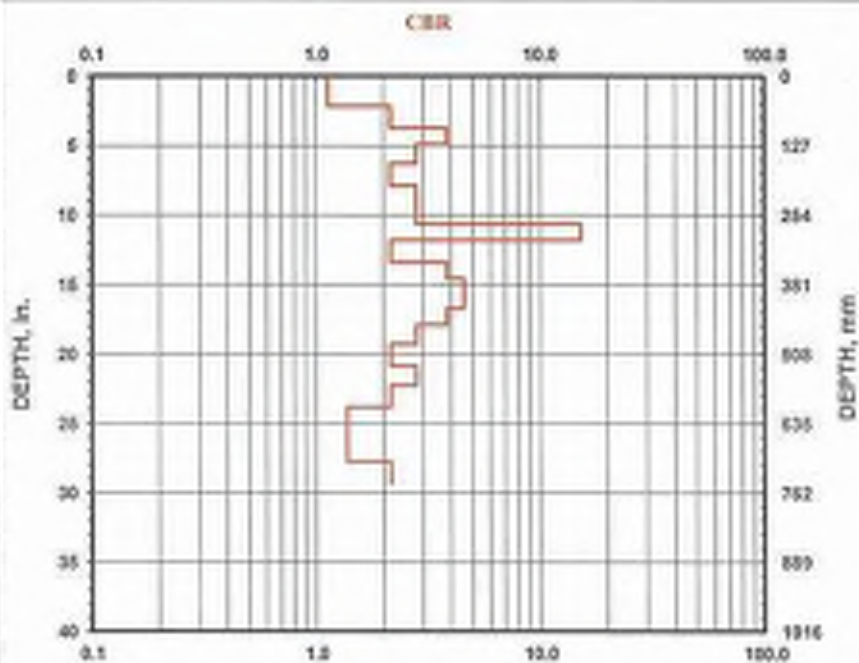
Hammer

- ☐ 10.1 lb.
☒ 17.5 lb.
☐ Both hammers used

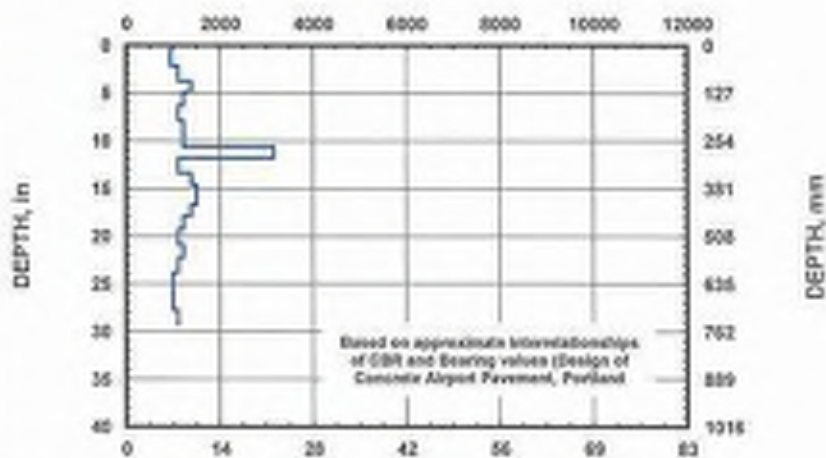
Soil Type

- ☐ C4
☒ C1
☐ All other soils

No. of Blows	Accumulative Penetration	Type of Hammer
0	0	1
1	55	1
1	85	1
1	125	1
1	160	1
1	200	1
1	235	1
1	270	1
2	300	1
1	340	1
1	370	1
2	425	1
1	455	1
1	490	1
1	530	1
1	565	1
1	605	1
1	655	1
1	705	1
1	765	1



BEARING CAPACITY, psf



BEARING CAPACITY, psi

APPENDIX B
LABORATORY TESTING

LABORATORY TESTING

Samples retrieved during the field exploration were taken to the laboratory for further observation by the project geotechnical engineer and were classified in accordance with the Unified Soil Classification System (USCS) described in this Appendix. At that time, the field descriptions were confirmed or modified as necessary and an applicable laboratory testing program was formulated to determine engineering properties of the subsurface materials.

Laboratory tests were conducted on selected soil samples and the test results are presented in this appendix. The laboratory test results were used for the geotechnical engineering analyses, and the development of foundation and earthwork recommendations. Laboratory tests were performed in general accordance with the applicable ASTM, local or other accepted standards.

Selected soil samples obtained from the site were tested for the following engineering properties:

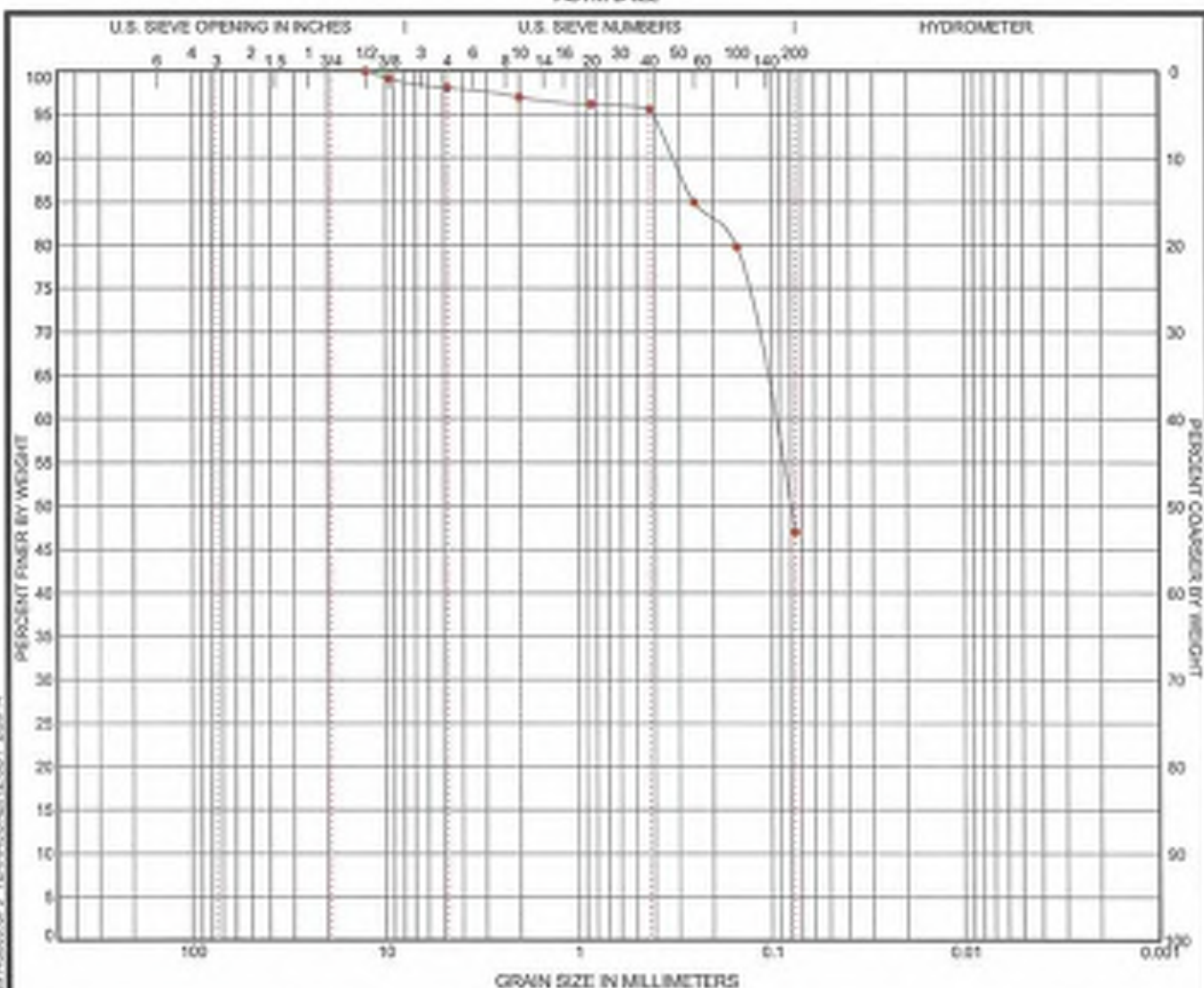
- In-situ Water Content
- Atterberg Limits
- Amount of Material In-Soil Finer than the N^o 200 Mesh (75- μ m) Sieve
- Sulfate concentration (colorimetric method)

Sample Disposal

All samples were returned to our laboratory. The samples not tested in the laboratory will be stored for a period of 30 days subsequent to submittal of this report and will be discarded after this period, unless other arrangements are made prior to the disposal period.

GRAIN SIZE DISTRIBUTION

ASTM D422



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BORING ID	DEPTH	% COBBLES	% GRAVEL	% SAND	% SILT	% FINES	% CLAY	USCS
Creek	1	0.0	1.9	51.6		47.8		SC

GRAIN SIZE			
D_{10}	0.075		
D_{30}			
D_{60}			
COEFFICIENTS			
C_u			
C_c			

SIEVE (size)	PERCENT FINER	
1 1/2"		
1"		
3/4"		
1/2"	100.0	
3/8"	99.13	
#4	98.07	
#10	96.98	
#20	96.2	
#40	95.63	
#60	94.93	
#100	79.8	
#200	47.82	

SOIL DESCRIPTION
● Clayey Sand
REMARKS
● Grab sample from the stream bank.

PROJECT: West Laredo Corridor, Phase II

SITE: Realignment of Las Cruces Drive
Laredo, Texas

Terracon
615 Gale Street, Building B
Laredo, Texas

PROJECT NUMBER: 88145003












CLIENT: Civil Engineering Consultants, Inc.
Laredo, Texas

EXHIBIT: B-2

APPENDIX C
SUPPORTING DOCUMENTS

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING			WATER LEVEL		Water Initially Encountered	FIELD TESTS	(HP) Hand Penetrometer
					Water Level After a Specified Period of Time		(T) Torvane
					Water Level After a Specified Period of Time		(b/f) Standard Penetration Test (blows per foot)
							(PID) Photo-Ionization Detector
	Auger	Split Spoon					(OVA) Organic Vapor Analyzer

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS	RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels, sands and silts.			CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
	Descriptive Term (Density)	Standard Penetration or N-Value Blows/Ft.	Ring Sampler Blows/Ft.	Descriptive Term (Consistency)	Unconfined Compressive Strength, Qu, tsf	Standard Penetration or N-Value Blows/Ft.
	Very Loose	0 - 3	0 - 6	Very Soft	less than 0.25	0 - 1
	Loose	4 - 9	7 - 18	Soft	0.25 to 0.50	2 - 4
	Medium Dense	10 - 29	19 - 58	Medium-Stiff	0.50 to 1.00	4 - 8
	Dense	30 - 50	59 - 98	Stiff	1.00 to 2.00	8 - 15
	Very Dense	> 50	≥ 99	Very Stiff	2.00 to 4.00	15 - 30
				Hard	> 4.00	> 30

RELATIVE PROPORTIONS OF SAND AND GRAVEL

<u>Descriptive Term(s) of other constituents</u>	<u>Percent of Dry Weight</u>
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

<u>Major Component of Sample</u>	<u>Particle Size</u>
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm)
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

<u>Descriptive Term(s) of other constituents</u>	<u>Percent of Dry Weight</u>
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

<u>Term</u>	<u>Plasticity Index</u>
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests ^A					Soil Classification	
					Group Symbol	Group Name ^B
Coarse Grained Soils: More than 50% retained on No. 200 sieve	Gravels: More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels: Less than 5% fines ^C	Cu ≥ 4 and 1 ≤ Cc ≤ 3 ^E Cu < 4 and/or 1 > Cc > 3 ^E	GW	Well-graded gravel ^F	
		Gravels with Fines: More than 12% fines ^C	Fines classify as ML or MH	GM	Silty gravel ^{F,G,H}	
			Fines classify as CL or CH	GC	Clayey gravel ^{F,G,H}	
		Sands: 50% or more of coarse fraction passes No. 4 sieve	Clean Sands: Less than 5% fines ^D	Cu ≥ 6 and 1 ≤ Cc ≤ 3 ^E Cu < 6 and/or 1 > Cc > 3 ^E	SW	Well-graded sand ^I
	Sands with Fines: More than 12% fines ^D		Fines classify as ML or MH	SM	Silty sand ^{G,H,I}	
			Fines classify as CL or CH	SC	Clayey sand ^{G,H,I}	
	Fine-Grained Soils: 50% or more passes the No. 200 sieve		Silts and Clays: Liquid limit less than 50	Inorganic:	PI > 7 and plots on or above “A” line ^J	CL
		PI < 4 or plots below “A” line ^J			ML	Silt ^{K,L,M}
Organic:		Liquid limit - oven dried		< 0.75	OL	Organic clay ^{K,L,M,N}
		Liquid limit - not dried				Organic silt ^{K,L,M,O}
Silts and Clays: Liquid limit 50 or more		Inorganic:	PI plots on or above “A” line	CH	Fat clay ^{K,L,M}	
			PI plots below “A” line	MH	Elastic Silt ^{K,L,M}	
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay ^{K,L,M,P}
			Liquid limit - not dried			Organic silt ^{K,L,M,Q}
Highly organic soils:	Primarily organic matter, dark in color, and organic odor			PT	Peat	

^A Based on the material passing the 3-inch (75-mm) sieve

^B If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

^C Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

^D Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

$$^E Cu = D_{60}/D_{10} \quad Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$$

^F If soil contains $\geq 15\%$ sand, add "with sand" to group name.

^G If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

^H If fines are organic, add "with organic fines" to group name.

^I If soil contains $\geq 15\%$ gravel, add "with gravel" to group name.

^J If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

^K If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

^L If soil contains $\geq 30\%$ plus No. 200 predominantly sand, add "sandy" to group name.

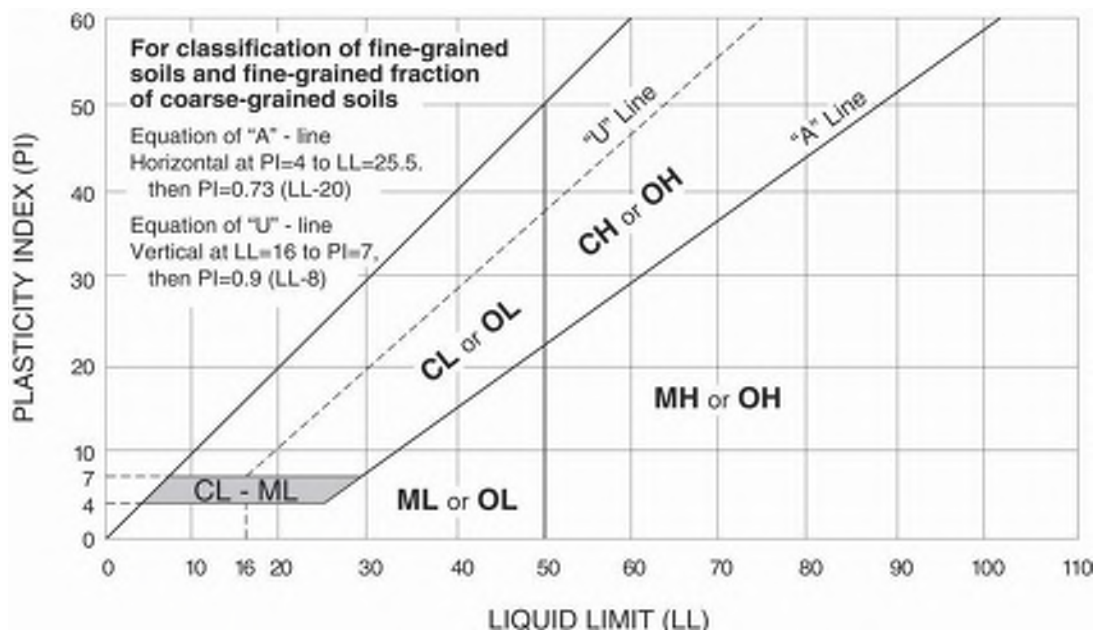
^M If soil contains $\geq 30\%$ plus No. 200, predominantly gravel, add "gravelly" to group name.

^N $PI \geq 4$ and plots on or above "A" line.

^O $PI < 4$ or plots below "A" line.

^P PI plots on or above "A" line.

^Q PI plots below "A" line.





Texas Department of Transportation

TEXAS DEPARTMENT OF TRANSPORTATION

FP S21-1.3

FLEXIBLE PAVEMENT SYSTEM

Release:12-7-2012

PAVEMENT DESIGN TYPE #4--ACP+ASPH STAB BASE+FLEX BASE OVER SUBGRADE

FROM	DIST.-22	COUNTY-240	CONT.	SECT.	JOB	HIGHWAY	DATE	PAGE
000	Laredo	WEBB	0922	33	076	Las Cruces	3/17/2014	1

COMMENTS ABOUT THIS PROBLEM

FMR design of TA 35
 Use cement stabilized subbase
 Traffic 2 million

BASIC DESIGN CRITERIA

LENGTH OF THE ANALYSIS PERIOD (YEARS)	20.0
MINIMUM TIME TO FIRST OVERLAY (YEARS)	10.0
MINIMUM TIME BETWEEN OVERLAYS (YEARS)	3.0
DESIGN CONFIDENCE LEVEL (55.0%)	5
SERVICEABILITY INDEX OF THE INITIAL STRUCTURE	4.2
FINAL SERVICEABILITY INDEX P2	2.5
SERVICEABILITY INDEX P1 AFTER AN OVERLAY	4.2
DISTRICT TEMPERATURE CONSTANT	31.0
SUBGRADE ELASTIC MODULUS by COUNTY (ksi)	8.00
INTEREST RATE OR TIME VALUE OF MONEY (PERCENT)	7.0

PROGRAM CONTROLS AND CONSTRAINTS

NUMBER OF SUMMARY OUTPUT PAGES DESIRED (8 DESIGNS/PAGE)	3
MAX FUNDS AVAILABLE PER SQ.YD. FOR INITIAL DESIGN (DOLLARS)	99.00
MAXIMUM ALLOWED THICKNESS OF INITIAL CONSTRUCTION (INCHES)	69.0
ACCUMULATED MAX DEPTH OF ALL OVERLAYS (INCHES) (EXCLUDING LEVEL-UP)	6.0

TRAFFIC DATA

ADT AT BEGINNING OF ANALYSIS PERIOD (VEHICLES/DAY)	14300.
ADT AT END OF TWENTY YEARS (VEHICLES/DAY)	20000.
ONE-DIRECTION 20YEAR 18 kip ESAL (millions)	3.700
AVERAGE APPROACH SPEED TO THE OVERLAY ZONE(MPH)	45.0
AVERAGE SPEED THROUGH OVERLAY ZONE (OVERLAY DIRECTION) (MPH)	45.0
AVERAGE SPEED THROUGH OVERLAY ZONE (NON-OVERLAY DIRECTION) (MPH)	45.0
PROPORTION OF ADT ARRIVING EACH HOUR OF CONSTRUCTION (PERCENT)	1.0
PERCENT TRUCKS IN ADT	7.8



Texas Department of Transportation

TEXAS DEPARTMENT OF TRANSPORTATION FLEXIBLE PAVEMENT SYSTEM

FP S21-1.3

Release:12-7-2012

PAVEMENT DESIGN TYPE #4 --ACF+ ASPH STAB BASE + FLEX BASE OVER SUBGRADE

PROJ	DIST.	COUNTY	CON.	SECT.	JOB	HIGHWAY	DATE	PAGE
000	Laredo	WEBB	0922	33	075	Las Cruces	3/17/2014	2

INPUT DATA CONTINUED

CONSTRUCTION AND MAINTENANCE DATA

MINIMUM OVERLAY THICKNESS (INCHES)	1.5
OVERLAY CONSTRUCTION TIME (HOURS/DAY)	12.0
ASPHALTIC CONCRETE COMPACTED DENSITY (TONS/C.Y.)	1.90
ASPHALTIC CONCRETE PRODUCTION RATE (TONS/HOUR)	200.0
WIDTH OF EACH LANE (FEET)	12.0
FIRST YEAR COST OF ROUTINE MAINTENANCE (DOLLARS/LANE-MILE)	0.00
ANNUAL INCREMENTAL INCREASE IN MAINTENANCE COST (DOLLARS/LANE-MILE)	0.00

DETOUR DESIGN FOR OVERLAYS

TRAFFIC MODEL USED DURING OVERLAYING	2
TOTAL NUMBER OF LANES OF THE FACILITY	2
NUMBER OF OPEN LANES IN RESTRICTED ZONE (OVERLAY DIRECTION)	0
NUMBER OF OPEN LANES IN RESTRICTED ZONE (NON-OVERLAY DIRECTION)	1
DISTANCE TRAFFIC IS SLOWED (OVERLAY DIRECTION) (MILES)	0.60
DISTANCE TRAFFIC IS SLOWED (NON-OVERLAY DIRECTION) (MILES)	0.60
DETOUR DISTANCE AROUND THE OVERLAY ZONE (MILES)	0.00

PAVING MATERIALS INFORMATION

LAYER CODE	MATERIALS NAME	COST PER CY	E MODULUS	POISSON RATIO	MIN. DEPTH	MAX. DEPTH	SALVAGE PCT.
1	A. ASPH CONC PAVT	115.00	500000	0.35	2.00	2.00	30.00
2	B. ASPH STAB BASE	100.00	400000	0.35	4.00	10.00	50.00
3	C FLEXIBLE BASE	37.00	24000	0.33	6.00	12.00	75.00
4	D SUBGRADE(200)	2.00	8000	0.40	200.00	200.00	90.00



Texas Department of Transportation

TEXAS DEPARTMENT OF TRANSPORTATION

FPS21-1.3

FLEXIBLE PAVEMENT SYSTEM

Release:12-7-2012

PAVEMENT DESIGN TYPE # 4 -- ACP + ASPH STAB BASE + FLEX BASE OVER SUBGRADE

PROB	DIST.-22	COUNTY-240	CONT.	SECT.	JOB	HIGHWAY	DATE	PAGE
000	Laredo	WEBB	0922	33	076	Las Cruces	3/17/2014	3

C. LEVEL C

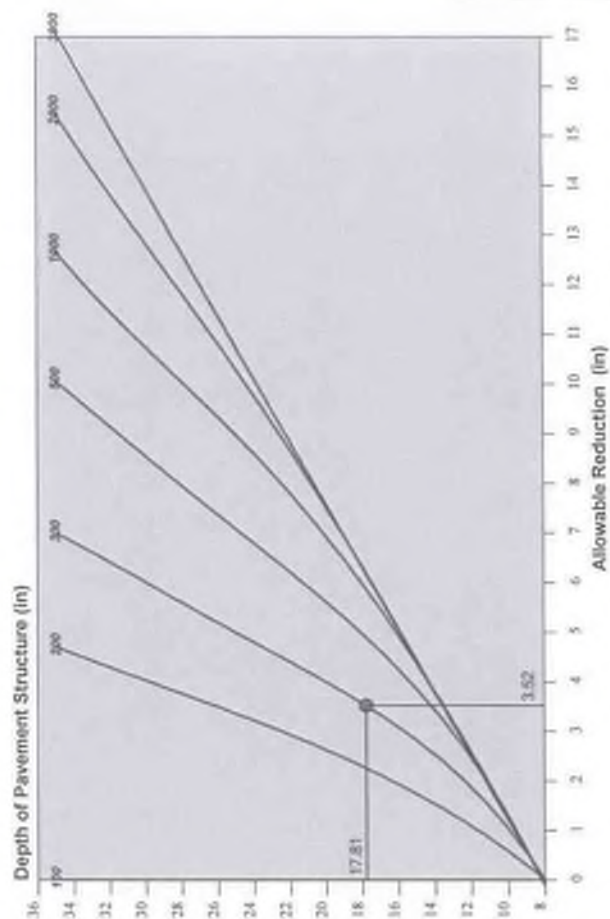
SUMMARY OF THE BEST DESIGN STRATEGIES
IN ORDER OF INCREASING TOTAL COST

	1	2	3	4	5
MATERIAL ARRANGEMENT	ABC	ABC	ABC	ABC	ABC
INIT. CONST. COST	30.25	30.61	37.56	34.00	38.74
OVERLAY CONST. COST	3.25	3.04	0.00	3.25	0.00
USER COST	0.00	0.00	0.00	0.00	0.00
ROUTINE MAINT. COST	0.00	0.00	0.00	0.00	0.00
SALVAGE VALUE	-6.14	-6.26	-7.50	-6.81	-7.68
TOTAL COST	27.36	27.39	30.05	30.44	31.06
NUMBER OF LAYERS	3	3	3	3	3
LAYER DEPTH (INCHES)					
D(1)	2.00	2.00	2.00	2.00	2.00
D(2)	6.00	6.50	9.00	5.50	8.50
D(3)	7.00	6.00	6.00	12.00	8.50
NO.OF PERF.PERIODS	2	2	1	2	1
PERF. TIME (YEARS)					
T(1)	10.	11.	22.	10.	20.
T(2)	24.	26.		24.	
OVERLAY POLICY(INCH)					
(INCLUDING LEVEL-UP)					
O(1)	2.0	2.0		2.0	

THE TOTAL NUMBER OF FEASIBLE DESIGNS CONSIDERED WAS

116

Thickness (inches)	Modulus (ksi)	Poisson's Ratio	Material Name
2.00	500.00	0.35	ASPH CONC PNT
8.50	400.00	0.35	ASPH STAB BASE
8.50	24.00	0.35	FLEXIBLE BASE
200.00	8.00	0.40	SUBGRADE(200)
	800.00	0.15	Bed Rock



INPUT PARAMETERS:

The Heaviest Wheel Loads Daily (ATHWLD)	12800.0 (lb)
Percentage of Tandem Axles	70.0 (%)
Modified Coefficient Value	300.0
Design Wheel Load	16640.0 (lb)
Subgrade Texas Triaxial Class Number (TTC)	4.41
User Input TTC based on historical TEX-117-E	

RESULT:

Triaxial Thickness Required	17.8 (in)
The FPS Design Thickness	19.0 (in)
Allowable Thickness Reduction	3.5 (in)
Modified Triaxial Thickness	14.3 (in)

TRIAxIAL CHECK CONCLUSION:

The Design OK !

FPS 21 Triaxial Design Check Output (FPS21-1.3Release-12-7-2012)

Highway	Las Cruces	Problem	000
C-S-J	0922 - 33 - 076	Date	3/17/2014
District	Laredo	County	WEBB
Design Type: Asphalt concrete • Asphalt Stabilized Base • Flexible Base over Subgrade			

Design- 5

Thick (in)	Modulus (ksi)	Poisson's Ratio	Mat.Type	Performance:	
2.00	500.0	0.35	ASPH CONC PVMT	• No. of Perf. Period	1
				• Perf. Time (year)	20.1
8.50	400.0	0.35	ASPH STAB BASE	• Overlay Policy (in)	

Cost:

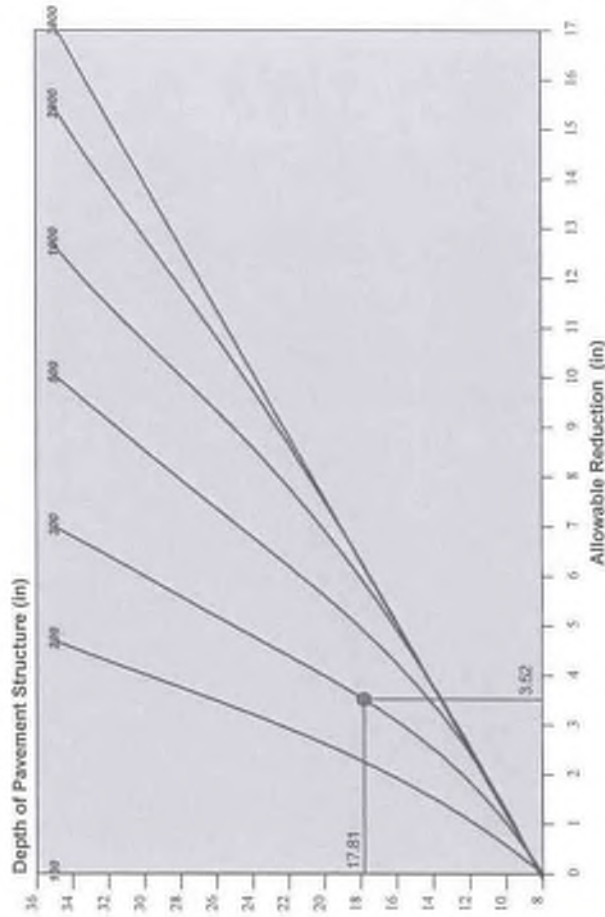
8.50	24.0	0.33	FLEXIBLE BASE	• Initial Construction Cost	38.736
				• Overlay Construction Cost	0.000
				• User Cost	0.000
				• Routine Maintain Cost	0.000
				• Salvage Value	-7.680
200.00	8.0	0.40	SUBGRADE(200)	• Total Cost of Pavement	31.056

Total Life: 20.1 years Cost: \$31.06

FPS 21 Feasible Design Plotting Output (FPS21-1.3Release:12-7-2012)

Highway	Las Cruces	Problem	000
C-S-J	0602 - 33 - 076	Date	3/17/2014
District	Laredo	County	WEBB
Design Type: Asphalt concrete + Asphalt Stabilized Base + Flexible Base over Subgrade			

Thickness (inches)	Modulus (ksi)	Poisson's Ratio	Material Name
2.00	500.00	0.35	ASPH CONC PMVT
9.00	400.00	0.35	ASPH STAB BASE
6.00	24.00	0.33	FLEXIBLE BASE
200.00	8.00	0.40	SUBGRADE(200)
	800.00	0.15	Bed Rock



INPUT PARAMETERS:

The Heaviest Wheel Loads Daily (ATHWLD) 12800.0 (lb)

Percentage of Tandem/Axles 70.0 (%)

Modified Cohesionmeter Value 300.0

Design Wheel Load 16640.0 (lb)

Subgrade Texas Triaxial Class Number (TTC) 4.41

User Input TTC based on historical TEX-117-E

RESULT:

Triaxial Thickness Required 17.8 (in)

The FPS Design Thickness 17.0 (in)

Allowable Thickness Reduction 3.5 (in)

Modified Triaxial Thickness 14.3 (in)

TRIAxIAL CHECK CONCLUSION:

The Design OK !

FPS 21 Triaxial Design Check Output (FPS21-1.3Release:12-7-2012)

Highway	Las Cruces	Problem
C-S-J	0922 - 33 - 076	Date
District	Laredo	County
Design Type: Asphalt concrete + Asphalt Stabilized Base + Flexible Base over Subgrade		
		000
		3/17/2014
		WE08

Design- 3

Thick (in)	Modulus (ksi)	Poisson's Ratio	Mat.Type	Performance:	
2.00	500.0	0.35	ASPH CONC PVMT	• No. of Perf. Period	1
				• Perf. Time (year)	21.7
				• Overlay Policy (in)	

9.00 400.0 0.35 ASPH STAB BASE

Cost:

6.00	24.0	0.33	FLEXIBLE BASE	• Initial Construction Cost	37.556
				• Overlay Construction Cost	0.000
				• User Cost	0.000
				• Routine Maintain Cost	0.000
				• Salvage Value	-7.505
200.00	8.0	0.40	SUBGRADE(200)	• Total Cost of Pavement	30.051

Total Life: 21.7 years Cost: \$30.05

FPS 21 Feasible Design Plotting Output (FPS21-1.3Release:12-7-2012)

Highway	Las Cruces	Problem	000
C-S-J	0922 - 33 - 076	Date	3/17/2014
District	Laredo	County	WEBB
Design Type: Asphalt concrete + Asphalt Stabilized Base + Flexible Base over Subgrade			



Texas Department of Transportation

TEXAS DEPARTMENT OF TRANSPORTATION

FP-521-13

FLEXIBLE PAVEMENT SYSTEM

Release:12-7-2012

PAVEMENT DESIGN TYPE #7 -- USER DEFINED PAVEMENT

PRCB	DIST.-22	COUNTY-240	CONT.	SECT.	JOB	HIGHWAY	DATE	PAGE
000	Laredo	WEBB	0922	33	076	Las Cruces	3/17/2014	1

COMMENTS ABOUT THIS PROBLEM

FDR design of IN 35
Use cement stabilized subbase
Traffic 2 million

BASIC DESIGN CRITERIA

LENGTH OF THE ANALYSIS PERIOD (YEARS)	20.0
MINIMUM TIME TO FIRST OVERLAY (YEARS)	10.0
MINIMUM TIME BETWEEN OVERLAYS (YEARS)	3.0
DESIGN CONFIDENCE LEVEL (95.0%)	0
SERVICEABILITY INDEX OF THE INITIAL STRUCTURE	4.2
FINAL SERVICEABILITY INDEX R2	2.5
SERVICEABILITY INDEX R1 AFTER AN OVERLAY	4.2
DISTRICT TEMPERATURE CONSTANT	31.0
SUBGRADE ELASTIC MODULUS BY COUNTY (ksi)	8.00
INTEREST RATE OR TIME VALUE OF MONEY (PERCENT)	7.0

PROGRAM CONTROLS AND CONSTRAINTS

NUMBER OF SUMMARY OUTPUT PAGES DESIRED (1.0 DESIGNS/PAGE)	3
MAX FONDS AVAILABLE PER SQ.YD. FOR INITIAL DESIGN (DOLLARS)	99.00
MAXIMUM ALLOWED THICKNESS OF INITIAL CONSTRUCTION (INCHES)	60.0
ACCUMULATED MAX DEPTH OF ALL OVERLAYS (INCHES) (EXCLUDING LEVEL-UP)	6.0

TRAFFIC DATA

ADT AT BEGINNING OF ANALYSIS PERIOD (VEHICLES/DAY)	14300.
ADT AT END OF TWENTY YEARS (VEHICLES/DAY)	20000.
ONE-DIRECTION 20YEAR 18 kip ESAL (millions)	3.700
AVERAGE APPROACH SPEED TO THE OVERLAY ZONE(MPH)	45.0
AVERAGE SPEED THROUGH OVERLAY ZONE (OVERLAY DIRECTION) (MPH)	45.0
AVERAGE SPEED THROUGH OVERLAY ZONE (NON-OVERLAY DIRECTION) (MPH)	45.0
PROPORTION OF ADT ARRIVING EACH HOUR OF CONSTRUCTION (PERCENT)	1.0
PERCENT TRUCKS IN ADT	3.8



Texas Department of Transportation

TEXAS DEPARTMENT OF TRANSPORTATION

FP S21-1.3

FLEXIBLE PAVEMENT SYSTEM

Release:12-7-2012

PAVEMENT DESIGN TYPE # 7 -- USER DEFINED PAVEMENT

PROB	DIST.-22	COUNTY-240	CONT.	SECT.	JOB	HIGHWAY	DATE	PAGE
000	Laredo	WEBB	0922	33	076	Las Cruces	3/17/2014	2

INPUT DATA CONTINUED

CONSTRUCTION AND MAINTENANCE DATA

MINIMUM OVERLAY THICKNESS (INCHES)	1.5
OVERLAY CONSTRUCTION TIME (HOURS/DAY)	12.0
ASPHALTIC CONCRETE COMPACTED DENSITY (TONS/C.Y.)	1.90
ASPHALTIC CONCRETE PRODUCTION RATE (TONS/HOUR)	200.0
WIDTH OF EACH LANE (FEET)	12.0
FIRST YEAR COST OF ROUTINE MAINTENANCE (DOLLARS/LANE-MILE)	0.00
ANNUAL INCREMENTAL INCREASE IN MAINTENANCE COST (DOLLARS/LANE-MILE)	0.00

DETOUR DESIGN FOR OVERLAYS

TRAFFIC MODEL USED DURING OVERLAYING	2
TOTAL NUMBER OF LANES OF THE FACILITY	2
NUMBER OF OPEN LANES IN RESTRICTED ZONE (OVERLAY DIRECTION)	0
NUMBER OF OPEN LANES IN RESTRICTED ZONE (NON-OVERLAY DIRECTION)	1
DISTANCE TRAFFIC IS SLOWED (OVERLAY DIRECTION) (MILES)	0.60
DISTANCE TRAFFIC IS SLOWED (NON-OVERLAY DIRECTION) (MILES)	0.60
DETOUR DISTANCE AROUND THE OVERLAY ZONE (MILES)	0.00

PAVING MATERIALS INFORMATION

LAYER CODE	MATERIALS NAME	COST PER CY	E MODULUS	POISSON RATIO	MIN. DEPTH	MAX. DEPTH	SALVAGE PCT.
1	C DENSE-GRADED HMA	115.00	650000.	0.35	4.00	12.00	90.00
2	M FLEXIBLE BASE	37.00	50000.	0.35	6.00	12.00	75.00
3	M FLEXIBLE BASE	37.00	50000.	0.35	6.00	12.00	75.00
4	M FLEXIBLE BASE	37.00	50000.	0.35	6.00	12.00	75.00
5	T SUBGRADE	2.00	8000.	0.40	200.00	200.00	90.00

WARNING :

THERE ARE MORE THAN 1000 FEASIBLE INITIAL DESIGNS FOR THIS SET OF MATERIALS

CONSTRAINTS SHOULD BE REVISED - PROBLEM CONTINUES



Texas Department of Transportation

TEXAS DEPARTMENT OF TRANSPORTATION

FP 521-1.3

FLEXIBLE PAVEMENT SYSTEM

Release:12-7-2012

PAVEMENT DESIGN TYPE # 7-- USER DEFINED PAVEMENT

PROJ	DIST.-22	COUNTY-240	CONT.	SECT.	JOB	HIGHWAY	DATE	PAGE
000	Laredo	WEBB	0922	33	076	Las Cruces	3/17/2014	3

C. LEVEL C

SUMMARY OF THE BEST DESIGN STRATEGIES IN ORDER OF INCREASING TOTAL COST

	1	2	3	4	5	6	7	8
MATERIAL ARRANGEMENT	CMOM	CMOM	CMOM	CMOM	CMOM	CMOM	CMOM	CMOM
INIT. CONST. COST	33.39	33.39	34.47	40.86	41.32	41.32	41.32	41.32
OVERLAY CONST. COST	3.25	3.25	2.84	0.00	0.00	0.00	0.00	0.00
USER COST	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ROUTINE MAINT. COST	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SALVAGE VALUE	-8.14	-8.14	-8.41	-8.79	-8.81	-8.81	-8.81	-8.81
TOTAL COST	28.50	28.50	28.86	32.87	32.51	32.51	32.51	32.51
NUMBER OF LAYERS	4	4	4	4	4	4	4	4
LAYER DEPTH (INCHES)								
D(1)	4.50	4.50	5.00	7.50	6.50	6.50	6.50	6.50
D(2)	6.50	6.00	6.00	6.00	6.00	7.50	7.00	6.50
D(3)	6.00	6.50	6.00	6.00	6.00	6.50	7.00	7.50
D(4)	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
NO. OF PERI. PERIODS	2	2	2	1	1	1	1	1
PERI. TIME (YEARS)								
T(1)	10.	10.	12.	22.	20.	20.	20.	20.
T(2)	24.	24.	28.					
OVERLAY POLICY (INCH)								
(INCLUDING LEVEL-UP)								
O(1)	2.0	2.0	2.0					

THE TOTAL NUMBER OF FEASIBLE DESIGNS CONSIDERED WAS

540



TEXAS DEPARTMENT OF TRANSPORTATION

FPS21-1.3

FLEXIBLE PAVEMENT SYSTEM

Release:12-7-2012

PAVEMENT DESIGN TYPE # 7 - USER DEFINED PAVEMENT

PROB	DIST.-22	COUNTY-240	CONT.	SECT.	JOB	HIGHWAY	DATE	PAGE
000	Laredo	WEBB	0922	33	076	Las Cruces	3/17/2014	4

C. LEVEL C SUMMARY OF THE BEST DESIGN STRATEGIES
IN ORDER OF INCREASING TOTAL COST
9

MATERIAL ARRANGEMENT	CMMM
INIT. CONST. COST	41.32
OVERLAY CONST. COST	0.00
USER COST	0.00
ROUTINE MAINT. COST	0.00
SALVAGE VALUE	-8.81

TOTAL COST	32.51
------------	-------

NUMBER OF LAYERS	4
------------------	---

LAYER DEPTH (INCHES)

D(1)	6.50
D(2)	6.00
D(3)	8.00
D(4)	6.00

NO.OF PERF.PERIODS	1
--------------------	---

PERF. TIME (YEARS)

T(1)	20.
------	-----

OVERLAY POLICY(INCH)

(INCLUDING LEVEL-UP)

THE TOTAL NUMBER OF FEASIBLE DESIGNS CONSIDERED WAS 940

INPUT PARAMETERS:

The Heaviest Wheel Loads Daily (ATHWLD)	12000.0 (lb)
Percentage of Tandem/Axes	50.0 (%)
Modified Cohesionmeter Value	800.0
Design Wheel Load	15600.0 (lb)
Subgrade Texas Triaxial Class Number (TTC)	4.41
Calculated TTC based on input soil PI	
User Input Sub-Grade Plasticity Index (PI)	19.00

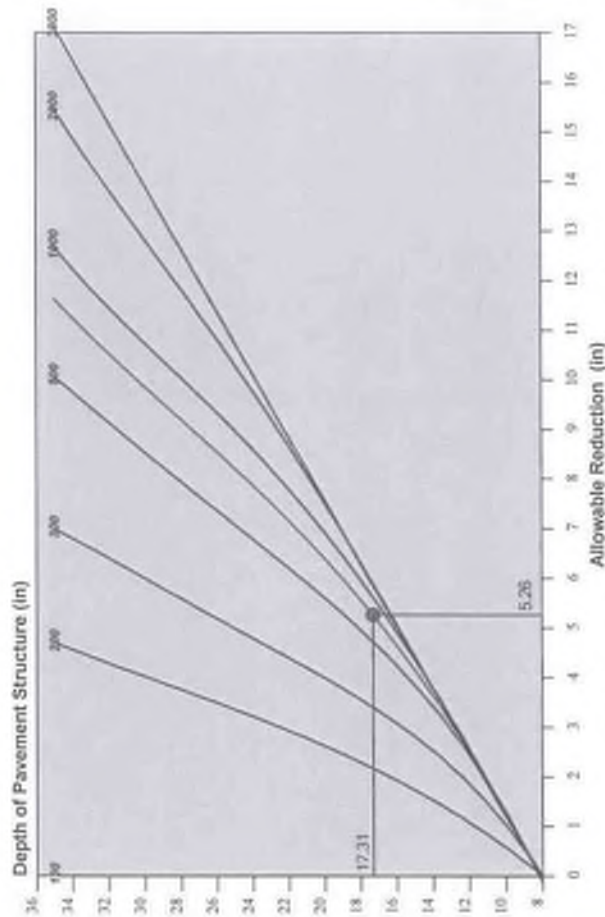
RESULT:

Triaxial Thickness Required	17.3 (in)
The FPS Design Thickness	26.5 (in)
Allowable Thickness Reduction	5.3 (in)
Modified Triaxial Thickness	12.0 (in)

TRIAxIAL CHECK CONCLUSION:

The Design OK !

Thickness (inches)	Modulus (ksi)	Poisson's Ratio	Material Name
6.50	650.00	0.35	DENSE-GRADED HMA Thick
8.00	50.00	0.35	FLEXIBLE BASE
6.00	50.00	0.35	FLEXIBLE BASE
6.00	50.00	0.35	FLEXIBLE BASE
200.00	8.00	0.40	SUBGRADE
	800.00	0.15	Bed Rock



Thickness Reduction Chart for Stabilized Layers

FPS 21 Triaxial Design Check Output (FPS21-1.3Release:12-7-2012)

Highway	Las Cruces	Problem	000
C-S-J	0922 - 33 - 076	Date	3/17/2014
District	Laredo	County	WEBB

Design Type: Clear Defined Pavement Design

Design- 5

Thick (in)	Modulus (ksi)	Poisson's Ratio	Mat.Type	Performance:	
6.50	650.0	0.35	DENSE-GRADED HMA Thick	• No. of Perf. Period	1
				• Perf. Time (year)	20.2
				• Overlay Policy (in)	

8.00 50.0 0.35 FLEXIBLE BASE

6.00 50.0 0.35 FLEXIBLE BASE

6.00 50.0 0.35 FLEXIBLE BASE

200.00 8.0 0.40 SUBGRADE

Cost:

• Initial Construction Cost	41.319
• Overlay Construction Cost	0.000
• User Cost	0.000
• Routine Maintain Cost	0.000
• Salvage Value	-8.813
• Total Cost of Pavement	32.506

Total Life: 20.2 years Cost: \$32.51

FPS 21 Feasible Design Plotting Output (FPS21-1.3Release:12-7-2012)

Highway	Las Cruces	Problem	000
C-S-J	0922 - 33 - 076	Date	3/17/2014
District	Laredo	County	WEBB

Design Type: User Defined Pavement Design

Pavement Design

(AASHTO 1993 Method)

Design Inputs

Sugrade Support

Asphalt**Concrete**

	CBR =	3			
	Mr =	4500	psi	k =	80
Reliability		90	%		90
Standard Deviation	So =	0.45			0.35
Initial Serviceability	Po =	4.2			4.5
Terminal Serviceability	Pt =	2.5			2.5
Design Serviceability Loss,	Δ PSI =	1.7			2.0

Layer Coefficients:

AC Surface and Binder	$a_1 =$	0.44
AC Base	$a_2 =$	0.44
Aggregate Base	$a_3 =$	0.14
Subbase	$a_3 =$	0.00

Concrete Compressive Strength =	4000	psi
Modulus of Elasticity of Concrete =	3,600	ksi
Modulus of Rupture of Concrete: =	580	
Load Transfer ("J" Factor) =	3.8	
Drainage Coefficient =	1.0	

Asphalt Section Traffic (18 kip ESAL) =

Major Collector

3,700,000

Asphalt Pavement Section**Drainage, m**

AC Surface + Binder		2.0	in.
Asphalt Base		6.5	in.
Aggregate Base	1.0	10.0	in.
Subbase	1.0	6.0	in.

Structural Number: 5.14**Structural Number - Required 5.10**

Concrete Section Traffic (18 kip ESAL) =

Major Collector

4,900,000

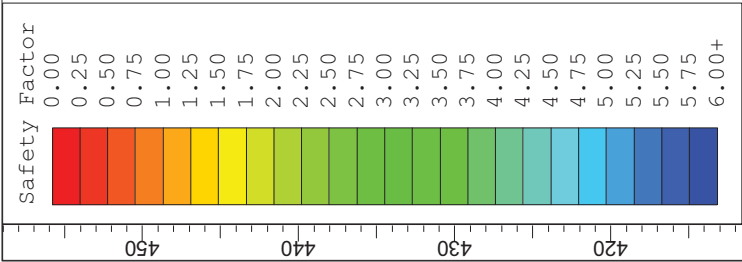
Concrete Pavement Section**10.7** in.

Project: West Laredo Corridor, Phase II Location: Laredo, Texas

Project No. 89145003

Date: 03/17/14

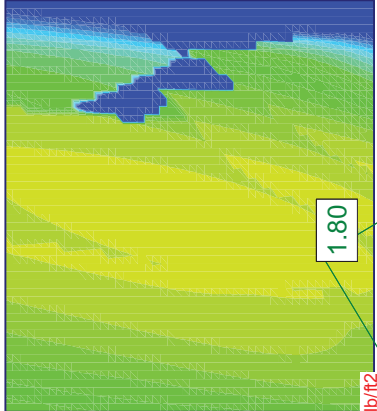




West Laredo Corridor Phase II
End-of-Construction Conditions

Material: Clayey Sand
Unit Weight: 120 lb/ft³
Cohesion: 0 psf
Friction Angle: 28 degrees

Material: Shale
Unit Weight: 150 lb/ft³
Cohesion: 4000 psf
Friction Angle: 33 degrees



1.80

250.00 lb/ft²

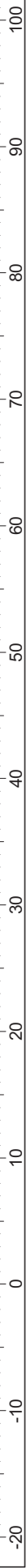
62.50 lb/ft²

62.50 lb/ft²

W

Clayey Sand

Shale





CITY OF LAREDO

UTILITY SPECIFICATIONS:

**West Laredo Multi-modal Trade Corridor – Phase II
(Flecha/Las Cruces Realignment Project)**

Project No: DMO 2012 (628)

CSJ: 0922-33-076

SECTION 102

EXCAVATION AND BACKFILL FOR UTILITIES

D-102.01 SCOPE: This section shall govern all excavation and backfill which will be encountered during the work, and supplements those paragraphs pertaining to excavation in Sections entitled "SPECIFICATIONS FOR SDR 26-GRAVITY SEWER PIPING", "WATER LINE CONSTRUCTION", AND "PVC PIPE WATER CONDUITS & INSTALLATION" of these specifications.

D-102.02 CLASSIFICATION: All excavation for this Project shall be considered unclassified. The Contractor is expected to determine the nature of the work and to make his bid prices reflective of the actual conditions which will be encountered. No claim for extra compensation shall be made by the Contractor due to rock, or other unfavorable excavation conditions encountered during the course of the work.

D-102.03 EXISTING UTILITIES: Before commencing excavation, the Contractor shall notify all utility companies with sufficient lead time, and confirm the location of existing underground lines and conduits in the work area by calling 811.

D-102.04 CLEARING: The Contractor shall do all clearing, grubbing, etc. necessary to complete the work.

D-102.05 DEWATERING: The Contractor shall provide and maintain adequate equipment to remove and dispose of all surface and ground-water entering excavations, trenches, or other parts of the work.

D-102.06 EXCAVATION: Unless otherwise ordered by the Engineer in writing, trench shall be as indicated in the Drawings, and trenching for water lines shall be excavated to a depth of five feet.

D-102.07 SHEETING AND SHORING: Where necessary to protect workmen, the work, or the existing structures, the Contractor shall sheet, brace, and shore the excavation to prevent caving or sliding. This item is further described in Division D, Section 802, entitled "SHEETING AND BRACING".

D-102.08 DISPOSAL OF EXCESS SOIL: Unless otherwise specified, the Contractor shall dispose of all unsuitable or excess excavation spoil daily. Disposal shall be made at a location and in a manner which is acceptable to the Owner.

D-102.09 PIPE ZONE: The "pipe zone" shall mean that portion of the trench which extends from 24 " above the top of the pipe joints to the bottom of the excavation. "Above the pipe zone" shall mean that portion of the trench which shall extend from 24" above the top of the pipe joints to the top of the finished surface.

D-102.10 BLASTING: Shall be prohibited except where allowed in writing by the City and Engineer. The Contractor shall take all necessary precautions as specified in the General Provisions of these Specifications. The Contractor shall be solely responsible for any damage incurred due to blasting.

D-102.11 OVER-EXCAVATION: In the event of over-excavation, the over-excavated depth of the trench shall be filled with the appropriate bedding material.

D-102.12 STABILIZATION: Subgrades for pipe work shall be firm, dense, and thoroughly consolidated. The subgrade shall be free of mud, muck, loose material and debris, and shall remain firm and intact under the workmen's feet.

D-102.13 PIPE EMBEDMENT & PIPE ZONE BACKFILL: The first layer of backfill shall be sufficient to provide a compacted depth of one-half the outside diameter of the barrel. This layer shall be placed by hand and tamped with hand or pneumatic tampers. The rest of the pipe zone shall be placed in a similar manner in layers not to exceed 8" loose measure to the top of the pipe zone. Unless otherwise specified, the embedment and material in the pipe zone shall be zero P.I. sand or gravel material, as specified by the engineer. Select excavation material may be acceptable; however, the contractor shall be required to submit ample sieve analysis results from a reputable independent testing laboratory to the engineer in order to use such materials for embedment. Backfill material containing rock over 3" in any dimension shall not be used in trenches under paved areas. The pipe trench shall be backfilled in a manner so as to prevent future settlement for a period of one year after date of final payment. All secondary backfill material shall be as required on section D-102.14, 1.2.

Before leaving the work at night or any other time, the upper ends of all pipes shall be securely closed with a tight fitting plug and provisions shall be made to keep the line from floating out of place should the trench fill with water. Any damage to the lines from failure to follow these provisions shall be repaired at Contractor's expense.

Provisions must be made at all times to keep the interior of the pipe that has been laid free from dirt, silt, gravel, and any other foreign matter and any such material that is deposited within the pipe from any cause whatsoever must be removed as the work progresses.

D-102.14 BACKFILLING: All trenches and excavations shall be backfilled within 24 hours after pipes are installed therein unless other means of protecting the pipe is directed by the Engineer. At no times, however, shall any backfilling be done until the Engineer has inspected the pipe to be covered. Backfilling requirements:

Materials:

1.1. Initial (primary) backfill to a point of 12 inches above the top of pipe shall be done as follows:

1.1.1. Suitable excavated material placed in uniform lifts not more than 6 inches in depth and shall be compacted to the density specified herein. The maximum dry density and optimum moisture shall be determined as per TxDOT Tex-114-E. Test for in place density shall be in accordance with TxDOT Tex-115-E within 24 hours after compaction. Each lift shall be compacted to the required density and moisture as shown below, unless otherwise shown on the plans:

<u>Subgrade Material</u>	<u>Density</u>	<u>Moisture Content</u>
<u>PI ≤ 20</u>	<u>≥ 95 % of Max Dry Density</u>	<u>± 2% of Opt. or greater</u>
<u>PI > 20</u>	<u>≥ 95 % of Max Dry Density</u>	<u>≥ Opt. Moisture</u>

- 1.1.2. Zero PI Sand. When shown on the plans, backfill the primary trench zone with zero PI sand. Non-plastic material meeting the specifications below will not be required to be tested for density.

OPTION ZERO P.I.
SIEVE ANALYSIS

Passing 3/8" sieve	95-100%
Passing 1/4" sieve	85-100%
Passing No.40 sieve	75-100%
Passing No.80 sieve	20- 90%
Passing No.200 sieve	00- 20%

The sand shall be placed in layers no to exceed 10 inches in depth and lightly tamped to consolidate the mass against pipe and earth surfaces.

There is no separate item for sand, unless shown on the plans as a separate pay item.

- 1.1.3. Flowable Backfill. When shown on the plans, conform with Division D Section 134.

There is no separate item for sand, unless shown on the plans as a separate pay item.

- 1.1.4. Select Fill or Flexible Base (gravel, caliche, crushed limestone).

Clean gravel approved by the engineer may be used for backfill from the bottom of the trench to the 12 inches above the top of pipe. The gravel shall be placed in layers no to exceed 10 inches in depth and lightly tamped to consolidate the mass against pipe and earth surfaces.

Flexible base material (caliche, crushed limestone) may be used from the bottom of the trench to 12 inches above the top of the pipe or to the bottom of the street base in lifts no to exceed 8 inches. Material shall contain the required moisture to obtain the density for each layer to no less of 95% of the maximum dry density. There is no separate item for sand, unless shown on the plans as a separate pay item.

- 1.2. Secondary Backfill. After the initial backfill has been completed at a point of 12 inches above the top of pipe, the material for secondary backfill shall be placed in uniform layers no more than 10 inches in depth (loose measurement) and shall be compacted to the required density specified herein. Excavation material used for secondary backfill shall comply with the following unless shown on the plans:

Secondary Backfill

Under Pavement		
-		
<u>Subgrade Mat.</u>	<u>PI < 20</u>	<u>PI > 20</u>
<u>Density</u>	<u>≥ 95% Max Dry Dens.</u>	<u>≥ 95% Max Dry Dens.</u>
<u>Moisture Cont.</u>	<u>± 2% of Opt. or greater</u>	<u>≥ Opt. Moisture</u>
-		

Within the R.O.W. or Easement		
-		
<u>Subgrade Mat.</u>	<u>PI < 20</u>	<u>PI > 20</u>
<u>Density</u>	<u>≥ 90% Max Dry Dens.</u>	<u>≥ 90% Max Dry Dens.</u>
<u>Moisture Cont.</u>	<u>± 2% of Opt. or greater</u>	<u>≥ Opt. Moisture</u>
-		

(1).Timing of backfill: All trenches and excavation shall be backfilled within twenty-four (24) hours after pipes are installed, unless other means of protecting pipe is directed by the Engineer.

At no time, however, shall any backfilling be done until the Engineer has inspected the pipe to be covered. In the case the trench cannot be backfilled, steel plates shall be used to protect the public.

(2).Backfill placement: After the bedding has been prepared and the pipes installed as required by the pertinent specifications, selected materials from excavation or borrow shall be placed along both sides of the pipe equally in uniform layers not exceeding six (6) inches in depth (loose measurement) in the primary backfill zone and ten (10) inches in depth (loose measurement) in the secondary backfill zone, wetted if required, and thoroughly compacted so that on each side of the pipe there shall be a berm of thoroughly compacted material at least as wide as the external diameter of the pipe, except insofar as undisturbed material obtrudes into this area.

(3).Addition to backfill: Whenever excavation is made for installing pipe culverts or sewers across private property or beyond the limits of the embankment, the top soil removed in excavating the trench shall be kept separate and replaced, as nearly as feasible, in its original position, and the entire area involved in the construction operations shall be restored to a presentable condition.

(4).Earth trench: In earth trench, the pipe shall be placed on the natural, undisturbed earth foundation with the trench bottom flat or nearly so. Where rock, shale, or boulders are encountered in the trench, the same shall be removed to a depth of six (6) inches below the grade line and the trench shall be refilled with good, sound earth, gravel, or granular material up to original grade and tamped into place.

(5).Inspection: Prior to the final approval of the utility lines, the Engineer, accompanied by the Contractor's representative, shall make a thorough inspection by appropriate methods of the entire installation. Any indication of defects in material or workmanship or obstruction in the pipe due to the Contractor's negligence shall be corrected by the Contractor without additional

compensation and in a manner as directed by the Engineer.

- ① **GENERAL:** There are five (5) different conditions for backfill of proposed pipe. The plans indicate which condition shall prevail in each section or block of the "pipe route". If the plans do not indicate a backfill condition, Condition "A" shall prevail.

Please refer to the appendix for Utility Trench Backfill Methods.

D-102.15 WATER JETTING: Only in "Condition C" above, and for pipe diameters of 12" or less, and in trenches 8' or less, and only when authority is obtained in writing from the City Engineer, backfill may be compacted with water by use of the jetting method. When using the jetting method, backfill above the pipe zone shall be placed in lifts not to exceed 5 feet. Water jetting shall be delivered under sufficient volume and pressure through an approved jetting hose and pipe nozzle. The jetting hose shall have a minimum inside dimension of two inches (2"). The jetting hose shall be connected to an approved minimum two inches (2") water pump capable of delivering water at the volume and pressure as required by the Engineer. The pipe nozzle shall be of sufficient length to introduce the water at a depth of not less than one foot (1') above the preceding lift. Points of trench jetting shall be staggered along the length of the trench and spaced at not more than three feet (3') on centers. Each five feet (5') lift shall be jetted initially at a depth of not more than one foot (1') above the preceding lift. Sufficient water shall be introduced into the secondary backfill to cause complete subsidence of the backfill and develop free standing water at the surface of each lift. After the final lift has been jetted as approved, twelve (12) hours shall be allowed for the reduction of the materials moisture content. When the backfill moisture content is acceptable for mechanical or pneumatic compaction, the surface shall be compacted to the satisfaction of the Engineer. The surface of the final lift of trenches subject to traffic shall be compacted by ditch tamping equipment.

D-102.16 SITE RESTORATION: The Contractor shall remove and dispose in an acceptable manner of all excess construction material, trash, debris, excess spoil material, etc., from the construction site. All pavement, fences, drainage structures, drainage ditches, and etc., shall be replaced to a condition as good as, or better than, the original structure as existed. The site shall be graded to a smooth well drained condition.

D-102.17 EXISTING GROUND WATER CONDITIONS: Where ground water conditions exist, the following shall apply inclusive of crushed stone or gravel backfilling. No pipe shall be laid in trench containing water. There will be no separate payment for trench dewatering or the materials, equipment, or labor required to reestablish wet trenches to the conditions and specifications required herein. Non-Storm Water Discharge Permit will need to be obtained from the Environmental Services Department.

D-102.18 DISPOSAL OF EXCAVATED MATERIALS: Excavated materials, so far as needed and of a suitable and acceptable character, shall be piled adjacent to the excavations to be used as backfill as required. All excavated material that is unsuitable for backfilling purposes or which is in excess of the amount required or needed to satisfactorily complete the backfill, shall be disposed of daily. The character and suitability of all backfill material shall meet the approval of the Engineer. Desirable top soil, or sod, etc., shall be carefully piled separately from the other excavated material

so that it can be placed in this original position when required. Excavated material shall be handled at all times in such manner as to cause a minimum of inconvenience to public travel and to permit safe and convenient access to private and public properties adjacent to or along the line of the work. In parkways and easements, where it is necessary to deposit excavated materials on lawns during the progress of the work, care shall be taken to prevent damage to such lawns. Where damage is done to such lawns all expense of replacing the lawn shall be borne by the Contractor.

D-102.19 REMOVAL AND REPLACEMENT OF SOD, SHRUBBERY, PLANTS, ETC.:

Where it is necessary to remove the sod, shrubbery, plants, etc., in order to make any excavation for this work, such areas as are backfilled shall have the same sod, shrubbery, plants, etc. replaced in good condition or if necessary to furnish new sod, shrubbery, or plants of the same kind and in good condition, same shall be furnished by the Contractor at his expense.

The sod, where removal is deemed necessary, shall be removed in squares cut out with a sharp spade or other satisfactory tool; the square shall be of such sizes that they may be conveniently handles without breaking. Such sod shall be removed in layers of not less than four inches (4") depth and shall be stored and given proper attention to protect sod from drying out, pending the time of replacement.

If trees and plants shall be removed, this work shall be done in the approved manner as to require protection of roots, branches, etc.; when backfilling is completed the trees and plants shall be replaced in their original position or as near such position as possible.

If irrigation system has to be removed and replaced, refer to Section 806.

D-102.20 PROTECTION OF TREES, PLANTS, SHRUBBERY, ETC.: In developed areas where trees, plants, shrubbery, etc., are adjacent to the line of work, the Contractor shall protect such trees, plants, or shrubbery by wooden boxes, frames, or guards of sufficient strength to prevent any injury from machinery, trucks, or workmen during the prosecution of the work.

D-102.21 Payment. No pay item will be included in the proposal nor direct payment made for excavation and backfill. The cost for placing the material shall be included in the unit price bid for the specific work function.

SECTION 104 PVC WATER PIPE

D-104.01 GENERAL

1. Description

This work shall consist of the construction, complete in place of PVC Water Pipe as specified herein, and in conformity with the lines, grades, dimensions, materials, and design shown on the plans.

D-104.02 PRODUCTS

1. Polyvinyl Chloride Water Pipe

A. GENERAL

All polyvinyl chloride (PVC) water pipe shall be of the rigid (UNPLASTICIZED) type and must bear the National Sanitation Foundation seal of approval for potable water pipe. Each joint of pipe shall consist of single continuous extrusion; bells or other components attached by solvent welding are not acceptable. Pipe shall be pressure rated at 305 psi (DR 14, C-900) as indicated.

Pipe shall have push-on, rubber joints of the bell and spigot type with thickened gaskets with rubber gasket joints. The wall thickness of each pipe bell and joint coupling must be greater than the standard pipe barrel thickness. Clearance must be provided in every gasket joint for both lateral pipe deflection and for linear expansion and contraction. Concrete thrust blocking shall be placed behind bends and tees. Concrete support cradles or blocking shall be required for support of all fire hydrants, valves and AWWA C110 fittings; such support shall be provided for AWWA C153 fittings when required by the Engineer.

Pipe installed in any project must be manufactured within last twelve (12) months.

B. APPLICABLE SPECIFICATIONS

Except as modified or supplemented herein, PVC pipe shall meet the following standards:

-DR 14, C-900, Class 305 PVC Pipe to be used for installation of water mains 8" to 12" not deeper than 16 feet unless specifically identified in the plans. The use of 6" diameter is allowed for the Fire Hydrant assembly and other stubouts. All installation methods, testing procedures and backfilling requirements must be followed as per these specifications.

-Fittings used with PVC Pressure pipe shall be AWWA C-110 or AWWA C-153 compact ductile iron mechanical joint fittings manufactured in USA with 316 stainless steel bolts, rods and nuts

-DR 21 for PVC Pressure Pipe, in 2 and 3 inches nominal size,

-DR 18, C905, Class 235, for water mains 16 to 24 inches nominal size. Any pipe greater than 24" requires a separate specification submittal.

Standard sizes, dimensions and tolerances shall be as follows:

Nominal Size (inches)	Outside Avg. (inches)	Diameter Tolerance (inches)	Wall Min. (inches)	Thickness Tolerance (inches)
6	6.900	+0.011	0.493	+0.046
8	9.050	+0.015	0.646	+0.060
12	13.200	+0.015	0.943	+0.088

All pipe 2" and larger must be approved Underwriter's Laboratories for use in buried water supply and fire protection systems.

Concrete steel cylinder pipe: Requires a separate submittal for review and approval by the Utilities Director

C. MATERIAL REQUIREMENTS

All pipe and fittings shall be made from clean, virgin, NSF approved, Class 12454B PVC free of defects. Clean reworked materials generated from the manufacturer's own production may be used within the current limits of the referenced AWWA C-900 or C-905.

D. MARKING

Permanent marking on each joint piece shall include the following at intervals of not more than 5 feet:

- Nominal pipe size and OD base (e.g., 4 CIPS)
- The type of plastic material (e.g., PVC 12454B)
- The Standard Dimension Ratio and the pressure rating in psi for water at 73 F (e.g., DR 14, 200 psi).
- The AWWA designation with which the pipe complies (e.g., AWWA C-900).
- The manufacturer's name or code and the National Sanitation Foundation (NSF) mark.
- Install the marking facing up.

E. TRACER TAPE

For all non-metallic pipe 8" and larger, directly above centerline of the pipe and approximately 18" below finished grade, shall be placed Conductive Tracer Detection Tape. The tape shall be encased in a protective, inert, plastic jacket and color coded in accordance with APWA Uniform Code.

D-104.03 EXECUTION

1. Excavation

Trench all shall be straight. The minimum width of trench excavation shall not be less than the internal diameter of the pipe plus twelve (12") inches. The pipe shall have a minimum cover

of 36" unless shown otherwise on the plans.

2. Embedment Using Gravel or Granular Material

Where rock shale or boulders are encountered in the trench, the same shall be removed to a depth of 6" below the grade line and the trench shall be refilled with sand, gravel, or up to the original grade and tamped into place. Where ground water is found, replace the backfill material with gravel or granular material as shown on the construction plans, otherwise, at least the bedding and primary backfill shall be replaced with gravel or granular material.

3. Pipe Laying

Pipe shall not be laid where the sub-grade is in a condition unsatisfactory to the Engineer. If sub-grade is soft, spongy, or disintegrated, the material shall be removed until a firm, stable and uniform bearing is reached and the sub-grade brought back to grade with suitable materials thoroughly compacted in place. Embedment for the pipe or the pipe itself will NOT be laid in water.

Where pipe is installed beneath railroad tracks, construction clearance to cross under railroad trackage shall be obtained by Contractor or facility owner from proper railroad authorities. Any expense of bracing or support to tracks during excavation operation beneath trackage shall be considered part of the contractor.

Where pipe shall be installed beneath State Highways, construction clearance and other requirements to cross under State Highways shall be obtained from State Highway District Engineer by facility owner.

Proper traffic control devices as per TMUTCD shall be placed and maintained to assure maximum traffic and pedestrian safety, or as directed by Local, Railroad, State Highway authorities or other governing agencies.

Owner will obtain all permits for construction, and will make a formal application for the right to cross canals, railroads, highways, pipe lines etc., Contractor must cooperate fully with all agencies involved while construction in areas controlled by such agencies.

Before pipe is laid, all dirt shall be removed from inside; and all lumps, blisters, excess coal tar, dirt, oil, and grease removed from both inside and outside of pipe.

After pipe is laid, care shall be taken to avoid entrance of dirt, water or small animals by use of tight bulk heads in all openings.

Contractor shall not leave more than 600 linear feet of open trench.

4. Service Saddles

Service saddles shall be of the un-hinged type on PVC Class 900 pipe (size 6" to 12"). The saddle body and bottom is to be of 85-5-5-5 solid brass or as per the latest regulations,

material as per ASTM B-62, single width with a minimum of two (2) silicone bronze bolts and a cc-thread.

Bronze saddles with bronze bolts must meet the latest revision of AWWA specifications for saddles to be used on Class 900 PVC pipes.

-Saddles 6" to 12" are to be Jones J-996, or approved equal.

-Saddles 14" to 16" are to be Jones J-979, or approved equal

On January 4, 2014 the water pipe, fittings and fixtures must comply with the S.3874 Reduction of Lead in Drinking Water Act SEC.2 (d) (1) (A) not containing more than 0.2 percent lead when used with respect to solder and flux and (B) not more than a weighted average of 0.25 percent lead when used with respect to the wetted surfaces of pipes, pipe fittings, plumbing fittings, and fixtures.

For tapping sleeve valves Stainless Steel Saddle including body , bolts and nuts shall be Type 316 as per ASTM A240M (to meet or exceed).

These specifications are not intended to eliminate any material or equipment of equal quality and purpose of that specified, but instead designed to set standards. If the contractor wishes to use equal material or equipment, he shall submit a sample and/or written proof of quality that substitute is of equal or better quality to Engineer and Water Utilities Engineer and shall function as these plans and specifications intend.

5. Pipe Joints

Manufacturer's recommendations shall be followed.

6. Pipe Restraints

- **Mechanical joints:** Refer to Section 132
- **Concrete Thrust Blocks**

Thrust blocks shall be made of concrete and shall only be used where specifically call for in the plans or otherwise indicated by the engineer or inspection, in addition to restraints when the pipe line changes direction, as at tees and bends; changes size, as at reducers (also some crosses and tees); stops, as at dead end; or is expected to develop thrust at valves. The dimensions of the thrust block shall be as per concrete mix used should be of a minimum strength of 2500 psi or as specified by Engineer, dimensions should be.

The size and type of thrust block depends on pressure, pipe size, kind of soil, and the type of fitting. View Concrete thrust block details Drawing No. 104.

Thrust based on 150 psi water pressure. Area based on 2,000 psf soil bearing

	TEE	90 BEND	45 BEND	22 1/2 BEND
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Pipe Size	Thrust (PSF)	Min. Req'd. Area (S.F.)	Thrust (PSF)	Min. Req'd. Area (S.F.)	Thrust (PSF)	Min. Req'd. Area (S.F.)	Thrust (PSF)	Min. Req'd. Area (S.F.)
6"	5700	3	8055	4	4365	2	2205	1
8"	9870	5	13950	7	7560	4	3825	2
10"	16125	8	22800	12	12360	6	6255	3
12"	22965	12	32460	16	17580	9	8910	5
14"	31155	16	44040	22	23865	12	12090	6
16"	40320	20	57015	29	30885	16	15645	8

7. Storage

Storage of PVC shall be in the shade or shall be covered with a suitable cover. PVC pipe shall not be exposed to the sun longer than 24 hours while being laid.

8. Hydrostatic Tests

All pipe lines constructed under this contract before being accepted shall be tested with a hydraulic test according to *Section 116"Hydrostatic Tests for Pressure Mains"*.

The cost of testing and finding leaks and repairing the same and re-testing, if necessary, shall be at the expense of the Contractor. The water required to fill the lines shall be furnished by the Contractor.

9. Line Disinfection

The completed water line shall be disinfected according to *Section 118"Disinfection of Potable Water Mains"*.

The chlorinated water shall then be discharged from the water line and replaced with fresh potable water.

The Contractor will furnish all labor materials and equipment necessary to complete the proper disinfection of the line and the cost of this operation shall be included in the bid price for installation of the distribution system.

10. Measurement

PVC pipe will be measured for payment in linear feet along the center line of the trench. No

deduction will be made for valves and fittings.

11. Payment

PVC pipe will be paid for at the unit price per linear foot, complete in place, as provided in the proposal and contract. The contract price per linear foot shall be the total compensation for the furnishing of all labor, materials, tools, equipment, and incidentals necessary to complete work, including excavation, granular embedment material, backfill, and disposal of surplus materials, in accordance with the plans and these specifications.

SECTION 106 DUCTILE IRON PIPE

GENERAL

D-106.01 DESCRIPTION:

1. Scope: This section describes the manufacture, construction, and installation of ductile iron pipe and fittings.

D-106.02 QUALITY ASSURANCE: Reference Standards:

- a. AWWA - C105, C110, C111, C115, C151, C153, C600, C651.
- b. ASTM - C33, C150

D-106.03 SUBMITTALS:

1. Submit manufacturer's data on pipe furnished, indicating compliance with the Specifications regarding dimensions, thickness, weights, and materials. Where flanged pipe is called for, submit complete piping layout indicating the length of each flanged joint to be furnished.

PRODUCTS

D-106.04 DUCTILE IRON PIPE AND FITTINGS:

1. GENERAL:

- a. Ductile iron pressure pipe six inches (6") in diameter and larger shall conform to the current American National Standard Specifications for Ductile Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids, AWWA C151 (A 21.51). The interior of the pipe shall be cement-mortar lining in accordance with the latest edition of ANSI/AWWA C104 Standard. All pipe shall be AWWA Class 150, or higher rated pipe.
- b. Ductile iron pipe less than six inches (6") in diameter shall be prohibited.

2. DESIGN REQUIREMENTS:

- a. The ductile iron shall conform in all respects to the Current Specification for Ductile Iron Castings, ASTM Designation A536.
- b. Thickness Class: Ductile iron pipe shall be Class 52 minimum unless otherwise shown on the plans.

3. JOINTS:

- a. All ductile iron pressure pipes shall be furnished with one of the following types of joints. Buried pipe shall be furnished with push-on or mechanical joint ends unless otherwise noted. Exposed pipe shall be flanged.

TYPE OF JOINT

REFERENCE STANDARD

Push-on Joint	AWWA C111
Mechanical Joint	AWWA C111
Flanged Ends	AWWA C110 & 115

- b. All screwed flanges shall be ductile iron.
 - c. Provide restrained joint inside encasement.
4. **COATING AND LINING:** All ductile iron pipe and all fittings shall be bituminous coated outside in accordance with AWWA Standards, and polyethylene wrapped as per **D-106.10**.
5. **UNDERWRITER'S APPROVAL:** Ductile iron pipe shall be approved by the Underwriter's Laboratory and shall be accepted by the State Fire Insurance Board for use in water distribution systems without penalty. All pipes shall be new.
6. **BOLTS AND NUTS:** Bolts and nuts for pipe mechanical joints shall be Type 316 stainless steel. Flange bolts and nuts for above ground installation shall conform to Type 304 stainless steel. Flange bolts and nuts for below ground or in a vault or submerged installations shall be Type 316 stainless steel.

D-106.05 FLANGE GASKETS: Flange gaskets shall be full faced and conform to Appendix A of AWWA C115.

EXECUTION

D-106.06 EXECUTION: Lay all pipes in accordance with AWWA C600, except as modified herein.

D-106.07 PIPE LAYING AND JOINTING:

1. After the subgrade and embedment materials have been placed and the length of pipe has been placed in the trench, center the spigot in the bell and apply the pipe joint lubricant recommended by the pipe manufacturer. Force the spigot "home" using cables or excavating machinery. Use timbers to protect the bell of the joint from damage during jointing operation, especially when excavating machinery is used to force the pipe home.
2. Lay the pipe in such a fashion that the full length of the barrel of the pipe is resting on the embedment. Excavate bell holes so the bell of the pipe does not touch the bottom of the ditch. Take precautions to prevent dirt and embedment materials from entering the joint space. No blocking up of the pipe or joints will be permitted.

D-106.08 CUTTING OF PIPE: Saw cut pipe for closure pieces in a neat, workmanlike manner without damage to the pipe. Make each cut square to the centerline of the pipe and bevel the outside edge of the pipe at the cut to the same configuration and dimensions as the factory applied spigot level.

D-106.9 PROTECTION OF PIPE: At all times when pipe laying is not in progress, cover the open ends of the pipeline with a water tight cap to prevent water, debris, and animals from entering the pipe. Remove all foreign matter or dirt from the pipe during laying operations. Do not lay pipe in water or when trench conditions are unsuitable for such work.

D-106.10 POLYETHYLENE TUBE PROTECTION: All buried cast iron and ductile iron pipe and fitting shall be provided with polyethylene tube protection. Install polyethylene tube according to AWWA C105. Completely cover all fitting and connections with 8 mil (minimum) low density polyethylene film or 4 mil (minimum) cross laminated high-density polyethylene meeting ANSI/AWWA Specification C-105 current, with all edges and laps taped securely to provide a continuous and watertight wrap. Repair all punctures of the polyethylene, including those caused in the placement of bedding aggregates, with duct tape to restore the continuous protective rap before backfilling.

D-106.11 HYDROSTATIC TESTS: All pipe lines constructed under this contract before being accepted shall be tested with a hydraulic test according to *Section 116"Hydrostatic Tests for Pressure Mains"*.

The cost of testing and finding leaks and repairing the same and re-testing, if necessary, shall be at the expense of the Contractor. The water required to fill the lines shall be furnished by the Contractor.

D-106.12 LINE DISINFECTION: The completed water line shall be disinfected according to *Section 118"Disinfection of Potable Water Mains"*.

The chlorinated water shall then be discharged from the water line and replaced with fresh potable water.

The Contractor will furnish all labor materials and equipment necessary to complete the proper disinfection of the line and the cost of this operation shall be included in the bid price for installation of the distribution system.

D-106.13 MEASUREMENT: Ductile Iron pipe will be measured for payment in linear feet along the center line of the trench. No deduction will be made for valves and fittings.

D-106.14 PAYMENT: Ductile Iron pipe will be paid for at the unit price per linear foot, complete in place, as provided in the proposal and contract. The contract price per linear foot shall be the total compensation for the furnishing of all labor, materials, tools, equipment, and incidentals necessary to complete work, including excavation, granular embedment material, backfill, and disposal of surplus materials, in accordance with the plans and these specifications.

SECTION 110 WATER VALVES

D 110.01 GENERAL

1. Description

This item to consist of valves furnished and installed as indicated. Unless otherwise indicated, all valves 4" and larger shall be AWWA type valves suitable design and fully equipped for service buried in earth, without need for further modification and shall be wrapped with 8 mil polyethylene film with all edges and laps securely taped to provide continuous wrap. Unless otherwise indicated, all valve stems shall be adjusted to situate the operating nut not less than 30" but not more than 36" below the proposed ground or paving surface of the finished project.

D 110.02 PRODUCTS

1. Materials

Contractor shall, as requested by the Utilities Director, submit descriptive information and evidence that materials and equipment Contractor proposes for incorporation into work is of the kind and quality that satisfies the specified functions and quality.

1. Iron Body Gate Valves, 6" to 12" shall comply with AWWA C509, resilient wedge gate valve.
2. Iron Body Gate Valves larger than 12", including Tapping Valve, shall conform to AWWA C515.
3. Stainless Steel Type 316 Tapping Sleeve:
 - a. Mechanical Joint end outlet and neck conforming to type 316 Stainless steel. The valve inlet flange shall have a machined projection or raised face complying with MSS SP-60 for accurate alignment to the mating recess in the tapping sleeve flange. Seat rings and body casting shall be over-sized as required to accommodate full size cutters; the outlet end shall be constructed and drilled to allow the drilling machine adapter to be attached directly to the valve.
 - b. Test plug ¾" NPT shall be stainless steel type 316
 - c. Body, bolts, nuts shall be stainless steel type 316, nuts coated to prevent galling.
 - d. SBR Body gasket to be full circumferential with hydro mechanical outlet seal, bridge plate to be stainless steel type 316.
4. Samples, Inspection and Testing Requirements.

All tests and inspections called for by the applicable standards shall be performed by the manufacturer. Upon request, results of these tests shall be made available to the City.
5. Other Requirements:

Each submittal shall be accompanied by:

 - Complete data covering the operator, including type and size, model number, etc., the manufacturer's name and address of his nearest service facility, the numbers of turns to fully open and close the valve, detailed instruction for calibrating the limit stops for open and closed positions and any other information which may be necessary to operate and maintain the operator.
 - Complete dimensional data and installation instructions for the valve assembly as it is to be installed, including the operator.

- Complete replacement parts lists and drawings, identifying every part from both the valve and operator.

2. Valves

1.
 - a. *Stem Seals*: All valves shall be approved O-ring type stem seals. At least two O-rings shall be in contact with the valve stem where it penetrates the valve body. All Valves must open counter clock and close clock wise.
 - b. *Operation*: All valves shall be approved O-ring type stem seals. At least two O-rings shall be in contact with the valve stem where it penetrates the valve body.
 - c. *Gearing*: Valves shall gear and, when necessary for proper bury depth and cover, shall be horizontal bevel-gear type enclosed in a lubricated gear case.
 - d. *Bypass*: Unless otherwise indicated, 16" and larger gate valve shall be equipped with a by pass of the non-rising stem type which meets the same AWWA standard required for the main valve.
 - e. *Valve Ends*: Valve ends shall be push-on, flanged or mechanical joint, as indicted or approved.
 - f. *Gear Case*: All geared valves shall have enclosed gear cases of the extended type, attached to the valve bonnet in a manner that makes it possible to replace the stem seal without disassembly and without disturbing the gears, bearing or gear lubricant. Gear cases shall be designed and fabricated with an opening to atmosphere so that water leakage past the stem seal does not enter the gear case.
 - g. *Valve Body*: Valves in 16" and larger sizes installed in the horizontal position shall have bronze rollers, tracks, scrapers, etc.
 - h. *Bolts*: The valves shall have bolts and nuts for the stuffing box and bonnet with the following compositions: type 316 stainless steel, nuts coated to prevent galling
 - i. *Stem*: The valve stem shall be made of bronze ASTM B-132 alloy C67600 bar stock material. The stem shall have at least one "anti-friction" thrust washer above and below the stem collar to reduce operating torque. Valves with cast stems or two piece stem collars are not acceptable.
 - j. *Body thickness*: The valve body, bonnet, stuffing box, and disc shall be composed of ASTM A-126 Class B grey iron or ASTM A395. The body and bonnet shall also adhere to the minimum wall thickness as set forth in Table 2, section 4.3.1 of AWWA C509.
 - k. *Resilient wedge*: The valve disc and guide lugs must be fully encapsulated in SBR ASTM D2000 rubber material. Guide caps of an acetal bearing material shall be placed over solid guide lugs to prevent abrasion and to reduce the operating torque.
 - l. *Coatings*: The valves shall have all internal and external ferrous surfaces coated with a fusion bonded thermosetting powder epoxy coating of 10 mils nominal thickness. The coating shall conform to AWWA C550.
 - m. The valve type shall be NRS (non-rising stem) or OS&Y (outside screw & yoke) as specified
 - n. The valve shall have an arrow cast on the operating nut or hand wheel showing opening direction. The direction of opening shall be as specified.
 - o. The NRS valves shall be provided with a 2" square operating nut and OS&Y valves shall be provided with a hand wheel. The bolt that attaches the operating nut to the stem shall be recessed into the operating nut so as not to interfere with valve wrench operation.
 - m. *Warranty*: The valves shall be warranted by the manufacturer against defects in materials or workmanship for a period of ten (10) years from the date of manufacture. The manufacturing facility for the valves must have current ISO certification.

D 110.03 EXECUTION**1. Construction Methods****1. *Setting Valves***

Unless otherwise indicated, main valves, blow-off valves and piping shall be set and jointed in the manner described for cleaning, laying, and jointing pipe.

Unless otherwise indicated, valves shall be set at the locations shown on the drawings as piping is being laid and such that their location does not conflict with other appurtenances such as curb ramps. A concrete or steel support shall be provided for each valve. Valves shall be installed so the tops of operating stems will be at the proper elevation required for the piping at the location indicated above but not exceeding 5ft. in depth. Valve boxes and valve stem casings shall be firmly supported and maintained, centered and aligned plum over the valve or operating stem, with the top of the box or casing installed flush with the finished ground or pavement in existing streets, and installed with the top of the box or casing approximately 6" below the standard street subgrade in streets which are excavated for paving construction or where such excavation is scheduled or elsewhere as directed by the Engineer.

2. *Protective Covering*

Unless otherwise indicated, all flanges, nuts, bolts, threaded outlets and all other steel component shall be coal tar coated and shall be wrapped with standard 8 mil (minimum) low density polyethylene film or 4 mil (minimum) cross laminated high-density polyethylene meeting ANSI/AWWA Specification C-105 current, with all edges and laps taped securely to provide a continuous and watertight wrap. Repair all punctures of the polyethylene, including those caused in the placement of bedding aggregates, with duct tape to restore the continuous protective rap before backfilling.

3. *Valve Box, Casing and Cover.*

Stems of all buried valves shall be protected by valve box assemblies. Valve box castings shall conform to ASTM A48, Class 30B. Testing shall be verified by the manufacturer. Valve box extension shall be as per manufacturer recommendations. Valve boxes shall be two piece, cast iron, screw type. The drop cover shall be lettered "WATER". A 24"x24"x6" thick minimum concrete collar around the valve box shall be provided.

D 110.04 MEASUREMENT

All types of valves will be measured per each complete assembly.

D 110.05 PAYMENT

Payment shall be full compensation in accordance with the pay item seen in the bid, for excavation, furnishing, hauling and placing valves and barrel extensions including all incidental and subsidiary material and work; preparing, shaping, dewatering, shoring of trenches, bedding, placing, adjusting to grade, couplings, sleeves, concrete support, joint restraints, valve stem extenders, concrete collars complete in place, and compacting backfill materials and for all other incidentals necessary to complete the installation, as indicated, complete in place.

SECTION 116 HYDROSTATIC TESTS FOR PRESSURE MAINS

D-116.01 GENERAL

1. Summary

A. Measurement and Payment

1. Separate payment will not be made for hydrostatic testing of water mains. Include costs for testing, repair of defects, and retesting required in this section in appropriate unit prices bid for water line construction.
2. The costs associated with purchase of water to fill proposed lines for flushing, disinfecting, chlorination, dechlorination, and hydrostatic testing shall be paid by the Contractor. Said costs shall be subsidiary to the unit price bid for construction of appropriate size of water line.

2. Quality Assurance

- ##### **A.**
- Contractor shall perform hydrostatic tests on water lines in accordance to AWWA C600-93 and these specifications. Hydrostatic test must be performed in the presence of the City of Laredo Utilities Inspector.

3. Submittals

- ##### **A.**
- Submit in accordance with the Standard General Conditions and Supplementary Conditions.
- ##### **B.**
- Copies of all testing results shall be submitted to the Engineer prior to acceptance of piping system.

D-116.02 PRODUCTS

1. Water

- ##### **A.**
- Water used to fill proposed lines, for flushing, for disinfection, and testing of lines shall be potable water from the City of Laredo. Contractor shall coordinate and contract with the City for a temporary construction meter to be located off an existing fire hydrant, if available; otherwise a temporary fire hydrant shall be furnished by the Contractor.

D-116.03 EXECUTION

1. General

- ##### **A.**
- Conduct pressure and leakage tests in accordance with Section 3 of AWWA C600 of these specifications. Contractor must notify City of Laredo Utilities Engineer 48 hours prior to pressure and leakage testing.
- ##### **B.**
- Commence test procedures when following conditions met.
1. Pipe section to be tested is clean and free of dirt, sand, or other foreign material.
 2. Pipe outlets plugged with test plugs. Plugs, pipes, fittings, and valves secured to prevent blowouts.
 3. Value of applied test pressure checked at each point in test section to ensure it does not exceed maximum allowable pressure of pipes, valves, fittings, and

appurtenances.

- C. Safety: Perform pressure testing in accordance with OSHA requirements and in manner protecting worker, bystanders, and adjacent property.
- D. Correct leaks defects, and retest until acceptable results obtained.

D-116.04 PRESSURE TESTS

- A. Test pressures shall be as follows:
 - 1. Water Main Test Pressure: 150 psi at highest elevation in test section.
- B. Test Procedure:
 - 1. Add water to expel air.
 - 2. Pressurizing equipment shall include regulator set to avoid over pressurizing and damaging otherwise acceptable line.
 - 3. Make test connection, subject main to normal water pressure, and examine for leaks.
 - 4. Apply test pressure by means of force pump of design and capacity that required pressure can be applied and maintained without interruption for duration of test.
 - 5. Measure test pressure by means of tested and properly calibrated pressure gauge.
 - 6. Maintain initial test pressure for sufficient length of time to permit inspecting piping under test, but not less than 30 min.
 - 7. In case repairs are required, repeat pressure test until pipe installation conforms to specified requirements.
 - 8. Perform final test at required test pressure for 4 hrs.
- C. Water main considered to have failed pressure test if applied pressure drops 1 psi.

D-116.05 LEAKAGE TEST

- A. Conduct pressure test and initial leakage test concurrently. Final leakage test may be waived by Engineer if found unnecessary to add water during duration of final pressure test.
- B. Leakage defined as quantity of water to be supplied into newly laid pipe, or section thereof, necessary to maintain specified leakage test pressure after main has been filled with water and entrapped air expelled.
 - 1. Leakage shall not exceed number of gph as determined by following formula for rubber-sealed joints.

$$L = \frac{ND(P)^{1/2}}{7,400}$$

Where:

- L= allowable leakage in gallons per hour
- N= number of joints under test
- D= nominal diameter of main in inches
- P= average pressure in lbs./sq. in. gauge during leakage test

2. If section under test contains joints of various diameter allowable leakage will be sum of computed leakage for each size of joint.

C. Test Procedure:

1. Submit test section to approximately 150 psi gauge pressure at highest elevation of water main under test.
2. Conduct final leakage test for 4 hours.
3. Repair defects and retest until acceptable results obtained.

D-116.06 MEASUREMENT AND PAYMENT

There will no separate measurement or payment for Hydrostatic Tests for Pressure Mains, all cost shall be included in the various bid items involved.

SECTION 120

CONCRETE ENCASEMENT, CRADLES, SADDLES, AND COLLARS

D-120.01 DESCRIPTION: This Item shall govern for placing concrete encasement, cradles, saddles, and collars, when called for the Project plans or as directed by the Engineer.

D-120.02 MATERIALS: Concrete: All concrete shall, at a minimum, conform to the provisions of TxDOT Specifications, (Item 421) 2004 edition or latest revision, "Concrete" (Class B) or shall be of the class noted on the plans.

D-120.03 CONSTRUCTION METHODS:

- 1. Concrete Encasement:** When concrete encasement is shown on the plans or when directed by the Engineer, the trench shall be excavated and fine graded to a depth conforming with details and sections shown on the plans. The pipe shall be supported by precast concrete blocks of the same strength as the concrete for encasement and securely tied down to prevent floatation. Encasement shall then be placed to a depth and width conforming with details and sections shown on the plans.
- 2. Concrete Cradles:** When concrete cradles are shown on the plans or when called for by the Engineer, the trench shall be prepared and the pipe supported in the same manner as described in this specification and shall be constructed in accordance with details and sections shown on the plans.
- 3. Concrete Saddles:** When shown on the plans or when directed by the Engineer, pipe to receive concrete saddle shall be backfilled in accordance with TxDOT (Item No. 402) "Excavation, Trenching, and Backfill" to the spring line and concrete placed for a depth and width conforming with details and sections shown on the plans.
- 4. Concrete Collars:** When shown on the plans or when directed by the Engineer, concrete collars shall be constructed in accordance with details and sections shown on the plans.

D-120.04 MEASUREMENT: "Concrete Encasement, Cradles, Saddles, and Collars", will be measured by the cubic yard of accepted work, complete in place. Reinforcing, if required, shall not be measured for payment.

D-120.05 PAYMENT: There will be no separate payment for Concrete Encasement, Cradles, Saddles, and Collars; all materials, manipulation, labor, tools, equipment, and incidentals necessary to complete the work shall be included in the various bid items involved.

SECTION 128

DISPOSAL OF WASTE MATERIAL AND SALVAGEABLE MATERIAL

D-128.01 GENERAL: Section includes disposal of waste material and salvageable material.

D-128.02 SUBMITTALS:

- A.** Obtain and submit disposal permits for proposed disposal sites if required by local ordinances, TCEQ and/or EPA.
- B.** Submit a copy of written permission from a property owner, along with description of property prior to disposal of excess material adjacent to the Project. Submit a written and signed release from property owner upon completion of disposal work.

EXECUTION

D-128.03 SALVAGEABLE MATERIAL:

Excavated Material: when indicated on plans, load haul, and deposit excavated material at a location or locations shown on plans outside the limits of project.

Base, Surface, and Bedding Material: Local shell, gravel, bituminous, or other base and surfacing material designated for salvage.

Pipe Culvert: Load culverts designated for salvage into designated trucks.

Other Salvageable Materials: Conform to requirements of individual specification section.

Coordinate disposal of material with Environmental Services Director.

D-128.04 EXCESS MATERIAL:

- A.** Vegetation, rubble, broken concrete, debris, asphaltic concrete pavement, excess soil, and other materials not designated for salvage, shall become property of the Contractor and shall be removed from the job site and legally disposed of.
- B.** Excess soil may be deposited on private property adjacent to the project when written permission is obtained from property owner. See Paragraph 128.02B above.
- C.** Waste materials shall be removed from the site on a daily basis, such that the site is maintained in a neat and orderly condition.

D-128.05 MEASUREMENT AND PAYMENT: There will be no separate payment for waste material disposal; all materials, manipulation, labor, tools, equipment, and incidentals necessary to complete the work shall be included in the various bid items involved.

SECTION 130 DUCTILE IRON FITTINGS

D-130.01 DESCRIPTION: This item shall consist of grey-iron and ductile-iron fittings installation and adjustment installed in accordance with these specifications and as directed by the Engineer.

D-130.02 MATERIALS AND CONSTRUCTION:

1. Fittings: All fittings shall conform to American Water Works Association (AWWA) Standards for Grey-Iron and Ductile-Iron Compact Fittings, and AWWA Standard C-153 for Ductile Iron Compact Fittings, Class D, manufactured in the USA. Fittings 6 inches through 24 inches in size shall be mechanical joint type unless otherwise specified on the plans. Fittings shall be installed with the thrust blocking and/or joint restraint, as shown in the plans. Adapters shall be used where necessary to provide a transition between asbestos-cement pipe and the fittings. All bolts and nuts shall be stainless steel type 316, nuts coated to prevent galling. Ductile Iron Fittings and restraints shall be wrapped with standard 8 mil (minimum) low density polyethylene film or 4 mil (minimum) cross laminated high-density polyethylene meeting ANSI/AWWA Specification C-105 current, with all edges and laps taped securely to provide a continuous and watertight wrap. Repair all punctures of the polyethylene, including those caused in the placement of bedding aggregates, with duct tape to restore the continuous protective rap before backfilling.
2. Cleaning Ductile-Iron: All lumps, blisters, and excess coal-tar coating shall be removed from the ends of cast-iron fittings. The outside of the spigot and the inside of the bell shall be wire-brushed and wiped clean, dry, and free from oil and grease before the pipe is laid. The interior of the pipe shall be blown clean with compressed air or swabbed out clean and dry as directed by the Engineer. Immediately prior to placing any pipe in the trench, the interior shall be cleaned by an approved brush or swab or with compressed air to remove all dirt and foreign materials. All pipe and fittings shall be suspended above ground to be inspected for defects by the Contractor.

D-130.04 MEASUREMENT: Ductile-Iron Fittings will be measured per each complete assembly.

D-130.05 PAYMENT: Payment for Cast-Iron and Ductile Iron Compact Fittings will be included in the unit price bid for all types and sizes installed. Such payment shall also include excavation, selected embedment material, anticorrosion embedment when specified, backfilling, hauling and disposition of surplus excavated materials, polyethylene wrapping, asphaltic material for ferrous surfaces, all glands, nuts, bolts, gaskets and concrete reaction and thrust blocking and joint restraint systems.

SECTION 132 PIPE JOINT RESTRAINT SYSTEMS

D 132.01 GENERAL

1. Description

This specification covers pipe joint restraint systems to be used on domestic water mains for PVC C-900 pipe sizes 4-inch through 12- inch diameter and PVC C-905 pipe sizes 16- inch through 24- inch diameter, and for Ductile Iron pipe sizes from 4-inch through 24-inch diameter. Joint restraint systems are classified as “mechanical joint” or non- metallic restrained joint “for the specific type of pipe joint to be restrained.

D 132.02 PRODUCTS

1. General Requirements

- A. Underwriter Laboratories (U.L) and Factory Mutual (FM) certifications are required on all restraint systems.
- B. Unless otherwise noted, restraint systems to be used on PVC C-900 and C-905 pipe shall meet or exceed A.S.T.M. Standard F1674-96, “Standard Test Methods for Joint Restraint Products for Use with PVC Pipe,” or the latest revision thereof and shall be made in USA only. Restraint systems used on ductile pipe shall meet or exceed U.L. Standard 194 and shall be made in USA only.
- C. Non-metallic restrained joint pipe and couplings shall be utilized specifically for C-900 PVC pipe and fittings in sizes 4”-12”, and for C-905 PVC pipe and fittings in size 16”.
- D. Each restraint system shall be packaged individually and include installation instructions.
- E. Each restraint system shall be wrapped with 8 mil. of polyethylene film with all edges and laps securely taped to provide continued wrap.

2. Specific Requirements:

A. Restrainer for PVC C-900/C-905 & Ductile Iron Push-on Type Connections:

- 1. Pipe restraints shall be utilized to prevent movement for push-on D.I. or PVC (C900&C905) (compression type) bell and spigot pipe connections or where a flexible coupling has been used to join two sections of plain-end pipe D.I. or PVC (C900&C905). The restrainer may be adapted to connect a plain end D.I. or PVC pipe to a ductile iron mechanical joint (MJ) bell fitting. The restrainer must not be directionally sensitive.

2. The pipe shall be restrained by a split retainer band. The band shall be cast ductile iron, meeting or exceeding ASTM A536-80, Grade 65-45-12. The inside face or contact surface of the band shall be of sufficient width to incorporate cast or machined non-directionally sensitive serration to grip the outside circumference of the pipe. The serration shall provide full (360 degrees) contact and maintain pipe roundness and avoid any localized points of stress. The split band casting shall be designed to “bottom-out” before clamping bolt forces (110ft-lb minimum torque) can over-stress the pipe, but will provide full non-directionally sensitive restraint at the rated pressures.
3. All T-head bolts, nuts and restraining rods shall be 316 Stainless Steel. Nuts coated to prevent galling.
4. The split ring type non-directionally sensitive restrainer system shall be capable of a test pressure twice the maximum sustained working pressure listed in section D and be for both D.I. and/or PVC C900.
5. Restraint systems sizes six through twelve inches shall be capable of use for both ductile iron and/or PVC C900.
6. The restraint system may consist of two types: the two split retainer rings and for new construction use only the one split and one solid cast backup ring.

B. Non-metallic restrained joint pipe and couplings for PVC C-900/C-905 Type Connections:

1. Gasketed restrained coupling connections shall join two sections of factory grooved PVC (C900/C-905) pipe, NSF 61. The restrainer coupling must not be directionally sensitive.
2. The coupling shall incorporate twin elastomeric sealing gaskets meeting the requirements of ASTM F-477 and shall be DR-14 Class 305 C-900 for 4” -12” pipe, meeting or exceeding the performance requirements of AWWA C-900, latest revision; and DR-18 C-905 for 16” pipe, meeting or exceeding the performance requirements of AWWA C-905, latest revision. The inside face or contact surface of the coupling connection shall be of sufficient width to incorporate a factory machined non-directionally sensitive groove in both pipe and coupling to grip the outside circumference of the pipe. The couplings shall provide full (360 degrees) contact and maintain pipe roundness and avoid and localized points of stress. The coupling shall be designed with an internal stop to align the precision-machined grooves in the coupling and pipe prior to installation of a non- metallic thermoplastic restraint spline, and will provide full non-directionally sensitive restraint at the rated pressures.

3. High-strength flexible thermoplastic spleens shall be inserted into mating precision –machined grooves in the pipe and coupling to provide full non-directional restraint with evenly distributed loading.
4. The non- metallic restrained joint pipe and couplings for PVC C-900/C-905 type non-directionally sensitive restrainer system shall be capable of a test pressure twice the maximum sustained working pressure and be for PVC: C-900 pipe sizes four (4) through twelve (12) inch, and C-905 pipe size sixteen (16) inch.
5. Non-metallic restrained joint pipe and couplings for PVC C-900 restrained systems sizes four (4) through twelve (12) inches shall be capable of use for both (DR 18) and four (4) through eight (8) inches for (DR 14) PVC C900 pipe. Non-metallic restrained joint pipe and couplings for PVC C-905 restrained systems size sixteen (16) inches shall be capable of use for (DR 18) PVC C905 pipe.
6. The non- metallic restrained joint pipe and couplings for PVC C-900 restraint system and for PVC C-905 restraint system shall consist of a pipe and couplings system produced by the same manufacturer meeting the performance qualifications of Factory Mutual (FM) and Underwriters Lab (UL).

D. Fitting Restraint for Ductile Iron Pipe (Only):

1. Radial bolt type restrainer systems shall be limited to ductile iron pipe in conjunction with Mechanical Joint (MJ) bell end pipe of fittings. The system shall utilize a standard MJ gasket with a ductile iron replacement gland conforming to ASTM A 536-80. The gland dimensions shall conform to Standard MJ bolt circle criteria.
2. Individual wedge restrainers shall be ductile iron heat treated to a minimum hardness of 370 BHN. The wedge screws shall be compressed to the outside wall of the pipe using a shoulder bolt and twist-off nuts to insure proper actuating of the restraining system.
3. All bolts, nuts and restraining rods shall be 316 Stainless Steel. Nuts coated to prevent galling.
4. Standard MJ gasket shall be virgin SBR meeting ASTM D-2000 3 BA 715 or 3 BA 515.

E. Maximum Sustained Working Pressure Requirements:

Nominal Diameter	PVC C-900 / C-905	Ductile Iron
4 & 6 inch	305 psi	350 psi
8 inch	305 psi	250 psi
10 & 12 inch	305 psi	200 psi

14 & 16 inch	235 psi	200 psi
20 & 24 inch	235 psi	200 psi

3. Tests:

The City of Laredo Utilities Department may, at no cost to the manufacturer, subject random joint restraint system products to testing by an independent laboratory for compliance with these standards. Any visible defect of failure to meet the quality standards herein will be ground for rejecting the entire order.

4. Product List:

The attached qualified product list identifies specified manufacturers models approved for installation in City of Laredo water distribution systems.

Recommended Manufacturers and Models: (Subject to Review & Approval by City of Laredo)

A. Slip on Joint Restraint Systems:

MANUFACTURER	MATERIAL		
	PVC C-900/C-905	Ductile Iron	D.I. 16" Above
Ford/Uni-Flange (4" - 16")	1390C	1390C	1390C
EBBA Iron Sales, Inc (4" -12")	1500	1700	1700
Romac Industries, Inc. (4" - 8")	Model 611	Model 611	470SJ

B. Non-Metallic Restrained Joint Pipe and Couplings for PVC C-900/C-905 RJ Type Connections:

Certain Teed Corporation,	Certa-Lok C-900/RJ 4" – 12" Class 305 (DR-14)
	Certa-Lok C-905/RJ 16" Class 235 (DR-18)

D. Fitting Restraint (MJ):

MANUFACTURER	MATERIAL	
	PVC C-900/C-905, DR-14/DR-18	Ductile Iron
EBBA Iron Sales, Inc.	2000 PV (Only C-900)	Megalug1100
Ford/Uni-Flange	UFR-1500-C 14"- 24"	Series 1400
Star Pipe Products (Domestic)	StarGrip Series 4000 (3"-12")	StarGrip Series 3000 (3"-12")

E. Restrained Flange Adapters:

MANUFACTURER	MATERIAL	
	PVC C-900	Ductile Iron
EBBA Iron Sales, Inc.	2100 Megaflange	2100 Megaflange
Ford/Uni-Flange	900	200, 400, 420

D 132.03 MEASUREMENT AND PAYMENT: There is no pay item for joint restraint systems. The cost of furnishing and installing joint restraints shall be included with and considered fully subsidiary to the unit bid price of the items that they restrain: pipe, valves, fittings, Etc.

SECTION 134
FLOWABLE BACKFILL
(Controlled Low Strength Material)

D-134.1 Description: Furnish and place flowable backfill for trench, hole, or other void without consolidation.

D-134.2 Materials.

A. Cement. Furnish cement conforming to **D-504.02**

B. Fine Aggregate. Provide fine aggregate that will stay in suspension in the mortar to the extent required for proper flow and that meets the gradation requirements of the aggregate gradation chart below.

Sieve Size	Percent Passing
3/4 in.	100
No. 200	0–30

Test fine aggregate gradation in accordance with Tex-401-A. Plasticity Index (PI) must not exceed 6 when tested in accordance with Tex-106-A.

C. Mixing Water. Use mixing water conforming to the requirements of TxDot Item 421, “Hydraulic Cement Concrete.”

D-134.3. Construction. Submit a construction method and plan, including mix design and shrinkage characteristics of the mix, for approval. Provide a means of filling the entire void area, and be able to demonstrate that this has been accomplished. Prevent the movement of any inserted structure from its designated location. If voids are found in the fill or if any of the requirements are not met as shown on the plans, remove and replace or correct the problem without additional cost to the City of Laredo. Unless otherwise shown on the plans, furnish a mix meeting the requirements of Sections **134.3.A**, “Strength,” and **134.3.B**, “Consistency.”

A. Strength. The 28-day compressive strength range, when tested in accordance with Tex-418-A, must be between 80 psi and 150 psi unless otherwise directed. Two specimens are required for a strength test, and the compressive strength is defined as the average of the breaking strength of the 2 cylinders.

B. Consistency. Design the mix to be placed without consolidation and to fill all intended voids. Fill an open-ended, 3-in.-diameter-by-6-in.-high cylinder to the top to test the consistency. Immediately pull the cylinder straight up. The correct consistency of the mix must produce a minimum 8-in.-diameter circular spread with no segregation.

When necessary, use specialty type admixtures to enhance the flowability, reduce shrinkage, and reduce segregation by maintaining solids in suspension.

Mix the flowable fill using a central-mixed concrete plant, ready-mix concrete truck, pug mill, or other approved method. Cure test specimens in accordance with Tex-447-A. The laboratory will sample, make, and test all specimens.

D-134.4 Placement

The controlled low strength material shall be placed directly into the excavation. The CLSM shall be placed in a uniform manner that will prevent voids in or segregation of the material. Foreign material which falls into the trench prior to and during placing of the CLSM shall be immediately removed. The CLSM shall have consistency, workability, plasticity, flow characteristics and pumpability (when required) such that the material when placed is self-compacting.

Mechanical compaction or vibration may be used to consolidate around structures, pipes, multiple conduits, etc. when directed by the engineer, otherwise no mechanical compaction or vibration shall be required.

When CLSM is used for backfill around water or sanitary sewer pipes install zero PI sand or gravel 12" above the top of the pipe. When CLSM is used for backfill around conduits,, the CLSM shall be placed equally on both sides of conduit to prevent lateral displacement. Also, the CLSM shall be placed in lifts. The height of each lift shall not exceed the depth that will cause floating of the pipe or conduit. When placing the CLSM in greater lift depths, sufficient anchorage shall be provided so the pipe or conduit will not float.

The minimum clear distance between the outside of the pipe or conduit and the side of the excavation (each side) shall be 12 inches

When CLSM is used behind retaining walls, the depth of each lift shall be limited so it will not induce hydraulic loads greater than the design loads.

For long trenches or installations which require a large amount of CLSM, bulkheads of wood, dirt, sand bags, etc. can be used to control the material's flowability. The bulkhead shall be removed prior to the continuation the backfilling.

A minimum of 24 hours shall elapse prior to backfilling the remaining portion of the trench with other backfill material in accordance with Section102, "Excavation and Backfill for Utilities".

D-134.5 Measurement: This item will be measured by the cubic yard of material placed when indicated as a separate pay item. Measurement will not include additional volume caused by slips, slides, or cave-ins resulting from contractor's operations.

D-134.6 Payment: When indicated as a separate pay item, the materials furnished and work performed will be paid for at the unit price bid as measured. This price is full compensation for furnishing, hauling, placing the materials, equipment, tools, labor, and incidentals. When the Project Manual, plans or other specifications indicate the use of flowable backfill as incidental to another pay item, no direct payment for the material will be made.

SECTION 136 CEMENT-STABILIZED BACKFILL

D-136.1. Description: When shown on the plans, backfill the excavation to the bottom of pavement base with cement-stabilized sand or caliche.

D-136.2 Materials:

- A. Cement: Cement shall consist of Type I Portland Cement conforming to ASTM C150
- B. Sand: Zero P.I. sand as aggregate for cement-stabilized backfill. Use only approved aggregate up to the bottom of existing pavement section base.
- C. Caliche
- D. Water: Water shall be clean and clear, free of oils, acids, alkalis, organic matter or other deleterious substances and shall conform to the requirements of ASTM C94.

D-136.3 Execution:

Sand/caliche-cement Mixture Product. The mixture shall consist of a minimum of two (2) sacks of Portland cement per cubic yard based on the dry weight of the aggregate. The mixture shall contain sufficient water to hydrate the cement (not flowable).

The cement, sand/caliche and water shall be mixed in a pugmill type mixer, which meets the approval of the Engineer. It shall be mixed for a minimum period of two minutes per batch. No mixing will be allowed on street surface.

D-136.4 Placement:

Place cement-stabilized backfill equally along the sides of structures to prevent strain on or displacement of the structure. Fill voids when placing cement-stabilized backfill. Use hand operated tampers if necessary to fill voids.

The sand cement mixture shall be placed in maximum eight (8) inch thick lifts, loose measure, and thoroughly rodded and tamped around the pipe, boxes, structures, bridge approaches and paving sections. Placement and compaction shall be performed in a manner that will thoroughly fill all voids without placing undue strain on or displacement of the structure.

Cement stabilized sand backfill below the top of sewers, manholes, inlets or other structures shall be placed equally along all sides of the structure. Cement stabilized sand backfill/bedding shall be placed in a manner that will completely fill all voids in the trench. Should compaction be required to fill all voids in the areas described, hand operated tampers may be used.

Materials not placed and not compacted within four (4) hours after mixing shall be rejected.

Do not place or compact sand/caliche-cement mixtures in standing or free water.

D-136.5 Performance:

Random samples of the delivered product will be taken in the field at the direction of the Engineer and tested. A minimum of one (1) sample per week or job shall be taken at random to represent a production that is less than one hundred (100) tons per week. Two (2) samples per week shall be taken at random to represent a production greater than one hundred (100) tons per week. The Engineer shall have the option to obtain additional samples for testing.

D-136.6 Measurement: When specified or shown on the plans as a pay item will be measured by the cubic yard. Measurement will not include additional volume caused by slips, slides, or cave-ins resulting from contractor's operations

D-136.6 Payment: When indicated as a separate pay item, the materials furnished and work performed will be paid for at the unit price bid as measured. This price is full compensation for furnishing, hauling, placing the materials, equipment, tools, labor, and incidentals. When the Project Manual, plans or other specifications indicate the use of cement stabilized sand as incidental to another pay item, no direct payment for the material will be made.