Waller County, Texas Invitation for Bid



Construction of Riley Road Roadway & Bridge Replacement for Waller County Engineering BID 25-001

SUBMIT BIDS TO:

Waller County County Clerk's Office Joe Kuciemba Annex 425 FM 1488, Suite 112 Hempstead, TX 77445

SUBMIT NO LATER THAN:

Thursday, July 10, 2025 1:00 PM (CST)

ENVELOPE TO BE LABELED:

Bid 25-001 Riley Road

ALL BIDS MUST BE RECEIVED AND TIME/DATE STAMPED BY THE COUNTY CLERK'S OFICE OF WALLER COUNTY ON OR BEFORE THE SPECIFIED TIME/DATE STATED ABOVE. BIDS RECEIVED AS REQUIRED WILL BE OPENED AND PUBLICLY READ AFTER DUE DATE. BIDS RECEIVED AFTER THE SPECIFIED TIME WILL BE RETURNED UNOPENED.

Results will not be given by phone. Results will be provided to bidder in writing after Commissioners Court award. Requests for information must be in writing and directed to Jaime Kovar, Purchasing Director, j.kovar@wallercounty.us

Vendor Responsibilities:

- Download and complete any addendums posted on the Waller County website.
- Submit response in accordance with requirements stated in the document.
- DO NOT submit responses via email, as they will not be accepted.

Invitation for Bids

SECTION 1. GENERAL REQUIREMENTS

- 1.1 <u>Entire Document</u>: Read this entire document carefully. Follow all instructions. You are responsible for fulfilling all requirements and specifications. Be sure you understand them.
- 1.2 <u>Applicability</u>: General Requirements apply to all advertised Invitations for Bid; however, these may be superseded, in whole or in part, by the scope, special requirements, specifications, special specifications or other data contained herein.
- 1.3 <u>Governing Law</u>: Bidder is advised that these requirements shall be fully governed by the laws of the State of Texas and that Waller County may request and rely on advice, decisions and opinions of the Attorney General of Texas and the Waller County District Attorney concerning any portion of these requirements.
- 1.4 <u>Bid Form Completion</u>: Complete one (1) bid form, sign, and return with completed submittal to County Clerk's Office of Waller County. An authorized representative of the Bidder must sign the Contract Sheet. The contract will be binding only when approved by the Waller County Commissioners Court, signed by the County Judge of Waller County and a purchase order authorizing the item(s) desired has been issued. The use of corrective fluid is not acceptable and may result in the disqualification of bid. If an error is made, the bidder must draw a line through the error and initial each change.

If an Excel pricing form is included and/or posted on the County's website amongst this Invitation for Bid, the vendor must download, complete, and save the Excel file (not a PDF of the Excel file) of the pricing form on a flash drive. The Excel file on the flash drive must be downloadable by the Purchasing Director in order to copy and paste the Bidder's pricing to the County's tabulation. The flash drive must be labeled and included in the same sealed envelope with the respondent's completed Bid along with a printed copy of the pricing form completed by the vendor.

- 1.5 <u>Bid Returns</u>: Bidders must return a completed Bid Package in a sealed envelope to the County Clerk's Office of Waller County, 425 FM 1488, Hempstead, TX 77445, no later than 1:00 P.M. (CST) on the date specified. The Bid Package is the set of documents outlining the requirements and details of the Project that is provided by the County to potential Bidders, and the complete, properly signed Bid. Late bids will not be accepted.
- 1.6 <u>Addenda</u>: No interpretation of the meaning of the drawings, specifications or other bid documents will be made to any bidder orally. All requests for such interpretations must be made in writing addressed to Jaime Kovar, Procurement Director by email at: <u>J.Kovar@wallercounty.us</u>. Any and all interpretations and any supplemental instructions will be in the form of written addenda to the contract documents which will be posted on Waller County's website. Addenda will ONLY be issued by the Waller County Procurement Director. It is the sole responsibility of each bidder to insure receipt of any and all addenda. All addenda issued will become part of the Contract Documents. Bidders must sign and include any and all issued addenda in the returned bid package. The deadline for submission of questions and/or clarification is no later than July 3, 2025 at 10:00 AM (CST). Requests received after the deadline will not be responded to due to the time constraints of this bid process.

- 1.7 <u>References</u>: All Bidders must submit, WITH BID, at least three (3) references from clients for whom a project similar to that specified herein has been successfully accomplished. References must include clients' name, contact person, and telephone number.
- 1.8 <u>Bid Bond</u>: All Bidders must submit, WITH BID, a cashier's check or certified check for at least five percent (5%) of the total bid price, payable to the order of Waller County, or a Bid Bond in the same amount issued by a surety, acceptable to Waller County, authorized to do business in the State of Texas, as a guarantee that the Bidder will do the work described herein at the rates stated herein. The cashier's check or certified check submitted by an unsuccessful Bidder will be returned only after a written request to do so has been received by the Procurement Director.
- 1.9 <u>Material Safety Data Sheets</u>: Under the "Hazardous Communication Act", commonly known as the "Texas Right to Know Act", a Bidder must provide to Waller County and using departments, with each delivery, material safety data sheets, which are, applicable to hazardous substances defined in the Act. Bidders are obligated to maintain a current, updated file in Waller County. Failure of the Bidder to maintain such a file will be cause to reject any bid applying thereto.
- 1.10 <u>Pricing</u>: Prices for all goods and/or services shall be firm for the duration of the Contract and shall be stated on the bid sheet. The Bid submitted to the County shall be inclusive of all costs necessary to complete the Project. No price changes, additions, or subsequent qualifications will be honored during the course of the Contract, unless made in accordance with the Contract's General Terms and Conditions. All prices must be written in ink or typewritten.
- 1.11 <u>Term Contracts</u>: If the Contract is intended to cover a specific time period, said time will be given in the specifications under Scope.
- 1.12 <u>Recycled Materials</u>: Pursuant to Texas Health and Safety Code § 361.426, Waller County encourages the use of products made of recycled materials and shall give preference in purchasing to products made of recycled materials if the products meet applicable specifications as to quantity and quality. Waller County will be the sole judge in determining product preference application.
- 1.13 <u>Evaluation</u>: Evaluation shall be used as a determinant as to which bid items or services are the most efficient and/or most economical for Waller County. It shall be based on all factors which have a bearing on price and performance of the items in the user environment. All Bids are subject to tabulation by the Procurement Director and recommendation to Waller County Commissioners Court. Compliance with all bid requirements, delivery, and needs of the using department are considerations in evaluating bids. Pricing is NOT the only criteria in determining the lowest responsible bidder, or for making a recommendation. The Waller County Procurement Director reserves the right to contact any Bidder, at any time, to clarify, verify, or request information with regard to any Bid.
- 1.14 <u>Disqualification of Bidder</u>: Upon signing the Contract Sheet, a Bidder offering to provide supplies, materials, services, or equipment to Waller County certifies that the Bidder has not violated the antitrust laws of this state codified in section 15.01, et seq., Business & Commerce Code, or the federal antitrust laws, and has not communicated directly or indirectly the bid made to any competitor or any other person engaged in such line of

business. Any and all Bids may be rejected if Waller County believes that collusion exists among the Bidders. Bids in which the prices appear to be unbalanced may be rejected. If multiple Bids are submitted by a Bidder and after the Bids are opened, one of the Bids is withdrawn, the result will be that all of the Bids submitted by that Bidder will be withdrawn; however, nothing herein prohibits a vendor from submitting multiple Bids for different products or services.

- 1.15 <u>Awards</u>: Waller County reserves the right to award the Contract to the lowest responsible bidder in accordance with the laws of the State of Texas, to waive any formality or irregularity, to make awards to more than one Bidder, and to reject any or all Bids.
- 1.16 <u>Contract Obligation</u>: A Bid does not become binding upon the Bidder until it is accepted by official action of the Waller County Commissioners Court, and a Contract does not become binding on the County of the Bidders until it is approved by official action of the Waller County Commissioners Court and executed by the County Judge or another person authorized by the Waller County Commissioners Court. Department heads are not authorized to sign agreements for Waller County. Binding agreements shall remain in effect until all products and/or services covered by this purchase have been satisfactorily delivered and accepted.

SECTION 2. PRE-BID CONFERENCE

2.1 <u>Pre-Bid Conference</u>: A pre-bid conference will not be conducted for this Project.

SECTION 3. SCOPE

<u>3.1</u> <u>Scope</u>: It is the intent of Waller County to contract with one (1) vendor for all materials, supplies, equipment, tools, services, labor, and supervision necessary to complete the Project, as defined in the Contract General Terms and Conditions.

SECTION 4. ESTIMATED BUDGET AND PROJECT COMPLETION DATE

- 4.1 <u>Estimated Budget</u>: \$878,498.55
- 4.2 <u>Estimated Completion Date</u>: Three to four (3-4) months beginning on the issuance date of the Notice to Proceed.

SECTION 5. ENCLOSURE

- 5.1 <u>Enclosure #1</u>: Specifications and Plans
- 5.2 <u>Enclosure #2</u>: Geotechnical Data

SECTION 6. PRICING

6.1 <u>Excel Bid Pricing Form</u>: Bidders are required to obtain and complete the Excel Bid Pricing Form on the Waller County website and return to County Clerk's Office, as stated in Section 1.4 and 1.5.

SECTION 7. PERFORMANCE AND PAYMENT BONDS

7.1 <u>Bonds Required</u>: The Bidder must provide to the County a payment bond and performance bond, each in the amount of 100% of the total Contract Price. Bonds must be submitted to the Procurement Director within ten (10) calendar days after receipt of notification of bid award. Such bonds shall be executed by a solvent surety company duly authorized to do business and licensed in the State of Texas to issue surety bonds with a Best Rating of A/VII or better. Waller County reserves the right to accept or reject any surety company proposed by the Contractor. In the event Waller County rejects the proposed surety company, the Contractor will be afforded five (5) additional days to submit the required bonds issued by a surety company acceptable to Waller County.

An attorney-in-fact or agent who signs a bid bond, performance bond, or payment bond must file with each bond a certified and effectively dated copy of his or her power of attorney or authority to act.

SECTION 8. REQUIRED FORMS

- 8.1 <u>Required Forms</u>: All Bidders are required to complete and return with their Bids the following forms:
 - a. Electronic Excel file of Pricing Form on flash drive and printed hard copy
 - b. Bidder's Business Information Sheet
 - c. Contract Special Terms & Conditions
 - d. Contract Sheet
 - e. W-9 Form
 - f. Texas Ethics Commission Form 1295:
 - i. Effective January 1, 2016 all contracts executed by Commissioners Court, regardless of the dollar amount, will require completion of Form 1295 "Certificate of Interested Parties", as required by Texas Government Code §2252.908. All vendors submitting a response to a formal Bid, RFP, SOQ or any contracts, contract amendments, renewals or change orders are required to complete the Form 1295 online through the State of Texas Ethics Commission website. Please visit: https://www.ethics.state.tx.us/filinginfo/1295/.
 - ii. On-line instructions:
 - a. Name of governmental entity is to read: <u>Waller County, Texas</u>.
 - b. Identification number used by the governmental entity is: <u>B25-001</u>.
 - c. Description is the title of the solicitation: <u>Riley Road Roadway &</u> <u>Bridge Replacement.</u>

SECTION 9. AWARD

9.1 <u>Award</u>: The contract will be awarded to the overall lowest responsible bidder.

Bidder's Business Information Sheet

By submitting a Bid, Bidder is seeking to enter into a legal contract with the County. As such, a Bidder must be an individual or a legal business entity capable of entering into a binding contract. Bidders must completely and accurately provide the information requested below or your Bid may be deemed non-responsive.

Name of Company:

pe of Business (please check one):
□ Individual/Sole Proprietor
□ Corporation
□ Limited Liability Company
□ Partnership
□ Other
ther, please specify
te of Incorporation (if applicable):
leral Employer Identification Number:
ncipal Place of Business Address:
me and Address for Notices to be Sent Under Contract General Terms and Conditions Section 19:

List any other names the Company uses, or is known by (dba, aka, etc.):

Company Name

Date

Signature of Authorized Company Official

Printed Name

Contract General Terms and Conditions

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SECTION 1. DEFINITONS

- 1.1 <u>Addendum</u>: Written instruments issued by Waller County which clarify, correct, or change the bidding requirements or the Contract Documents prior to the Due Date.
- 1.2 <u>Authorized Representative</u>: The Waller County Engineer.
- 1.3 <u>Bid</u>: A complete, properly signed response to an Invitation for Bid that, if accepted, would bind the Bidder to perform the resultant contract.
- 1.4 <u>Bidder</u>: A person, firm, or entity that submits a Bid in response to an Invitation for Bid.
- 1.5 <u>Bid Documents</u>: The advertisement or Invitation for Bids, Bid form, the Price Sheet, the Contract Sheet, Specifications and Plans, Geotechnical Data, the Special Terms and Conditions Form, the Contract General Terms and Conditions, Bidder's Business Information Sheet, Form, and Addenda.
- 1.6 <u>Calendar Day</u>: Any day of the week, no days being excepted.
- 1.7 <u>Construction Site</u>: The area designated by the County where construction work on the Project is carried out.
- 1.8 <u>Contract</u>: The binding legal agreement between the County and the Contractor. The Contract represents the entire and integrated agreement between the County and the Contractor for performance of the Work, as evidenced by the Contract Documents.
- 1.9 <u>Contract Price</u>: the moneys payable by the County to the Contractor for completion of the Work in accordance with the Contract Documents.
- 1.10 <u>Contract Sheet</u>: the form provided in the Bid Documents.
- 1.11 <u>Contract Time</u>: The number of days allowed for completion of the Work as defined by the Contract Sheet. When any period is referred to in days, it will be computed to exclude the first and last day of such period. A day of twenty-four hours measured from midnight to the next midnight will constitute a day.
- 1.12 <u>Contractor</u>: The individual, firm, corporation, or other business entity with whom the County has entered into the Contract for the performance of the Work.
- 1.13 <u>County</u>: Waller County, Texas, a political subdivision of the State of Texas.
- 1.14Design Engineer:Firm: IEA, Inc.
Texas P.E. Firm registration No. F-10161
Address: 13501 Katy Freeway, Suite 3425, Houston, Texas 77079
- 1.15 <u>Design Engineer Representative</u>: The authorized representative of the Design Engineer who may be assigned to the site or any part thereof.
- 1.16 <u>Drawings</u>: Those portions of the Contract Documents which are graphic representations of the scope, extent and character of the Work to be furnished and performed by Contractor, and which have been approved by the County. Drawings may include plans, elevations, sections, details, schedules, and diagrams. Shop Drawings are not included in the definitions of Drawings.
- 1.17 <u>Due Date</u>: The date and time specified for receipt of Bids.

- 1.18 <u>Final Completion</u>: The point in time when the County determines that all Work has been completed and final payment to Contractor will be made in accordance with the Contract Documents.
- 1.19 <u>Invitation for Bid ("IFB")</u>: A solicitation requesting pricing for a specified good or service which has been advertised for Bid in a newspaper.
- 1.20 <u>Minor Change</u>: A written change in the Work that is ordered by the Authorized Representative, that does not change the Contract Price or Contract Time, and is consistent with the scope of the Contract.
- 1.21 <u>Notice to Proceed</u>: A written notice given by the Authorized Representative of the County to Contractor identifying the date on which the Work will commence, and on which Contractor shall start to perform Contractor's obligations under the Contract Documents.
- 1.22 <u>Project</u>: the construction of Riley Road Roadway and Bridge Replacement as specified in the Contract Documents.
- 1.23 <u>Schedule of Values</u>: an itemized list of each activity and all materials and labor required to complete the Project, and the corresponding values of each. When summed up, the Schedule of Values shall equal the total Contract Price.
- 1.24 <u>Shop Drawings</u>: All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor as required by the Contract Documents.
- 1.25 <u>Specifications and Plans</u>: Those portions of the Contract Documents consisting of written technical descriptions as applied to the Work, which set forth to Contractor, in detail, the requirements which must be met by all materials, equipment, construction systems, standards, workmanship, equipment, and services in order to render a completed and useful project.
- 1.26 <u>Subcontractor</u>: An individual, firm, corporation, or other business entity having a direct contract with Contractor for the performance of a portion of the Work under the Contract.
- 1.27 <u>Substantial Completion</u>: The stage in the progress of the Work when the Work, or designated portion thereof, is sufficiently complete in accordance with the Contract Documents so that the County can occupy or utilize the Work for its intended use, as evidenced by a Certificate of Substantial Completion approved by the County.
- 1.28 <u>Superintendent</u>: The representative of Contractor authorized in writing to receive and fulfill instructions from the Authorized Representative, and who shall supervise and direct construction of the Work.
- 1.29 <u>Supplier</u>: An individual or entity that furnishes materials or equipment to be incorporated in the Work by the Contractor or any Subcontractor.
- 1.30 <u>Transfer Date</u>: the date on which the care, custody, and control of the Project passes to Waller County.
- 1.31 <u>Work</u>: The entire completed construction, or the various separately identifiable parts thereof, required to be furnished under the Contract Documents. It includes the procurement, delivery, and proper construction and/or installation of all materials, facilities, and associated appurtenances necessary to fulfill the winning Bidder's

obligations under the Contract, including the coordination and administration of all services necessary for the Contractor, its agents, and/or subcontractors to fulfill Contractor's obligations under the Contract.

SECTION 2. CONTRACT DOCUMENTS

- 2.1 <u>The Contract Documents</u>: The Contract Documents are composed of the following:
 - a. Contract Sheet
 - b. Invitation for Bid
 - c. Price Sheet
 - d. Specifications and Plans
 - e. Geotechnical Data
 - f. Contract Special Terms and Conditions, if any
 - g. Contract General Terms and Conditions
 - h. Bidder's Business Information Sheet
 - i. Forms
- 2.2 <u>Intent</u>: The purpose of the Contract Documents is to include all information necessary for the proper execution and timely completion of the Work by Contractor. The Contractor will execute the Work described in and reasonably inferable from the Contract Documents as necessary to produce the results indicated by the Contract Documents. The Contract Documents are complimentary, and what is required by one shall be as binding as if required by all.
- 2.3 <u>Exclusion of Professional Services</u>: Contractor shall neither perform nor provide professional services as defined by Texas Government Code Chapter 2254 under this Contract.
- 2.4 <u>Order of Precedence</u>: In the event of a conflict between any of the Contract Documents, they shall be given precedence in the order provided in Section 2.1.
- 2.5 <u>Interpretation</u>: In the event of any dispute concerning the terms of the Contract Documents, the County's interpretation shall govern.

SECTION 3. PROJECT DURATION

- 3.1 <u>Project Timeline</u>: Bidder agrees to complete all work required by the Contract Documents as indicated on the Contract Sheet after issuance of a purchase order by the County, and issuance of a Notice to Proceed by the Authorized Representative. The Contract Time will begin to run on the date the Notice to Proceed is issued.
- 3.2 <u>Liquidated Damages</u>: The Contractor or its surety shall be liable for liquidated damages for the failure of the Contractor to timely complete the Work or any portion thereof within the Contract Time. The Contractor shall pay the County one thousand five hundred dollars (\$1,500) per day for each calendar day beyond the scheduled completion date specified herein, unless the contract time has been adjusted by a Change Order. If the Contractor pays liquidated damages to the County, the County will place the Contractor on one (1) year probation. The County will issue written notice to the Contractor of the probation, and

the one (1) year probation period will begin to run on the date of issuance of the written notice. If the Contractor becomes responsible for liquidated damages on any other project during the probation period, the Contractor will be disqualified from any County work for a period of two (2) years, beginning on the issuance date of the written notice of the one (1) year probation period.

SECTION 4. CONTRACTOR'S RESPONSIBILITY FOR WORK

- 4.1 <u>Preconstruction Work</u>: Contractor shall perform the following preconstruction work upon written request from the County:
 - a. Cause Contractor's personnel to meet with the County and the Design Engineer to discuss the status of the Project;
 - b. Review drawings and specifications with the Design Engineer to determine the Project's compliance with applicable codes; and
 - c. Submit to the Road & Bridge Department a Schedule of Values for all of the Work, subdivided into component parts in sufficient detail to serve as the basis for progress payments during construction. At a minimum, the Schedule of Values must be broken out by trade and split between materials and labor. Prices will be deemed to include an appropriate amount of overhead and profit applicable to each item of Work. The Schedule of Values must be prepared in such form and supported by such data to substantiate its accuracy as the Road & Bridge Department may require.
- 4.2 <u>Construction Work</u>: Contractor shall perform the following construction work:
 - a. All preparatory work at the Construction Site identified herein, including but not limited to: soil and concrete testing, demolition of improvements existing at the construction site, and any other actions necessary for construction to begin in compliance with all laws and regulations pertaining to the Project, including those related to archaeological and environmental requirements.
 - b. Construct and install the Project on the construction site in accordance with the Contract Documents.
 - c. Furnish all materials, supplies, equipment, tools, labor, supervision, utilities, transportation, and other materials and services necessary to complete the Project.
- 4.3 <u>Reporting and Resolving Discrepancies</u>: If, during the performance of the Work, the Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provisions of any such law or regulation applicable to the performance of the Work or of any such standard, specification, manual or code, or instructions of any Supplier, Contractor shall not proceed with the Work affected thereby until an amendment or supplement to the Contract Documents has been issued. The Contractor shall be liable to the Contractor knew or reasonable should have known.
- 4.4 <u>Reporting Design Defects</u>: The Contractor shall provide written disclosure to the County if the Contractor learns of a defect, inaccuracy, inadequacy, or insufficiency in the Contract Documents, plans, specifications, or other design documents that the Contractor discovers,

or reasonably should have discovered by the use of ordinary diligence. The Contractor shall provide written disclosure within a reasonable time of learning of the defect, but not later than two (2) days after the discovery. Contractor shall not proceed with the Work affected thereby until instructed in writing by the Authorized Representative. If the Contractor fails to disclose a defect under this section of which the Contractor knew or reasonably should have known, the Contractor shall be liable to the County for the consequences of the defect(s) that result from the failure to disclose.

- Minor Changes in the Work: Waller County acknowledges that in order to accomplish the 4.5 efficient completion of the Project within the Contract Time, the Contractor may submit requests for Minor Changes in writing to the Authorized Representative in stages for approval or consent. Upon any request for a Minor Change submitted by the Contractor for review and approval, the Authorized Representative shall review the same, and shall diligently and promptly give the Contractor written notice of the Authorized Representative's approval or disapproval. The written approval or disapproval will be provided to the Contractor no later than fourteen (14) calendar days after receipt of the written request for Minor Change. If disapproved, the Authorized Representative's written decision shall set forth in detail all reasons for the disapproval. The Authorized Representative's right to disapprove any Minor Change shall be limited to the elements that: (a) do not conform substantially to matters previously approved, (b) have not been previously presented and approved, and that the Contractor fails to demonstrate is reasonably necessary for completion of the Project, or (c) are violations of this Contract or applicable laws and regulations.
- 4.6 <u>Change Orders</u>: A Change Order is required for all changes in the Project that require (a) an adjustment in the Contract Price, (b) an adjustment in the Contract Time, or (c) a material change in the overall scope or function of the Project. Change Orders may only be approved by the Waller County Commissioners Court. A Change Order must be approved before Contractor commences such change. Such procedure shall be the exclusive means to effect such changes in the Project.
 - a. If at any time Waller County desires to make any change in the Project requiring the issuance of a Change Order, Waller County will provide the Contractor with a written notice describing the change. Within a reasonable period of time after receiving such notice, the Contractor shall provide Waller County with a Change Order that describes the proposed change, and proposes changes, if any, to the Contractor has provided a Change Order, the County will provide a written approval or disapproval of the Change Order not later than the 28th calendar day after receipt of the proposed Change Order. Upon approval of the Change Order, the Contractor shall perform the work in accordance with such Change Order. All work performed pursuant to a Change Order shall be performed in accordance with the terms of this Contract.
 - b. No action, acquiescence, or inaction by Waller County or any representative of Waller County shall be construed to be a waiver of requirements set forth in this Contract in regard to Change Orders, or as a ratification of a violation of such requirements. All acts in violation of this provision shall be considered void.

- c. A Change Order is only effective if it is approved by the Waller County Commissioners Court, and signed by an authorized representative of both the County and the Contractor.
- d. The Contract Price and the Schedule of Values shall be adjusted only as a result of a Change Order requiring such adjustment. Any extra work performed without a proper Change Order shall be considered voluntary and not subject to additional compensation.
- 4.7 <u>Review and Approval of Changes</u>: If the County disapproves of a Minor Change or Change Order, the Contractor shall have the right to alter such Minor Change or proposed Change Order to the satisfaction of the County, and resubmit the matter for evaluation. Any resubmission shall be subject to review and approval by the County.
 - a. The County and the Contractor shall attempt in good faith to resolve any disputes concerning a Minor Change or Change Order expeditiously, so as not to delay the completion of the Project in accordance with this Contract.
 - b. Waller County recognizes the importance of expeditious action upon all matters submitted to the County for review and approval, and of expeditious response to those aspects of the Project which require approval of governmental authorities having jurisdiction thereover. Waller County shall exercise its rights of review and approval hereunder with due diligence, reasonableness, and good faith. The County shall use its reasonable efforts to expedite any required review of the Project or other matters by any governmental authority.
- 4.8 <u>Site Access</u>: Prior to the Transfer Date, the County and the Contractor shall have uninterrupted access to the construction site. Subsequent to the Transfer Date, Waller County will permit the Contractor, the Design Engineer, and their representatives and subcontractors to enter upon the Project at times reasonably necessary to complete the punch list items.
- 4.9 <u>Applicable Laws and Regulations</u>: Contractor shall perform its obligations pursuant to this Contract in accordance with all applicable federal, state, and local statutes, ordinances laws, regulations, and executive, administrative and judicial orders. The Contractor may be entitled to an extension of time if changes in said applicable laws and regulations cause any delay in the performance of the Contractor's obligations under this Contract.
- 4.10 <u>Environmental Regulations</u>: Contractor shall plan and execute its operations in compliance with all applicable Federal, state, and local laws and regulations concerning control and abatement of water pollution and prevention and control of air pollution.
- 4.11 <u>Material Safety Data Sheets</u>: Contractor shall be responsible for providing and coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the site in accordance with laws and regulations.
- 4.12 <u>Permits</u>: Contractor shall obtain, possess, and pay for all permits, licenses, and fees required to complete the Project. The permits shall be in the name of Waller County.
- 4.13 <u>Familiarity with Project</u>: The Contractor represents and agrees that it is thoroughly familiar with all phases of the Project, all matters and conditions that may affect the construction

and successful completion of the Project, and had the opportunity to conduct any and all additional inquiry, tests, and investigations that it deemed necessary and proper. Contractor further certifies that it has: (a) visited and examined the construction site, the obstacles thereon, if any, and observed all conditions that may affect the Project (b) determined the nature and location of the Project, (c) understands the general and local conditions which affect the Project, and (d) investigated the labor and materials market as they are relevant to the Project. Contractor represents and agrees that it is able to successfully complete the Project for the Contract Price.

- 4.14 <u>Contractor</u>: Contractor specifically represents that is has carefully examined the plans, the geotechnical report, if any, and the site of the proposed Work and is thoroughly familiar with all of the conditions surrounding construction of the Project, having had the opportunity to conduct any and all additional inquiry, tests, and investigation that he or she deems necessary and proper. The Contractor acknowledges the receipt of the geotechnical report, if any, and agrees that the report, while it is an accurate record of the geotechnical conditions at the boring locations, is not a guarantee of specific site conditions which may vary between boring locations.
- 4.15 <u>Duty to Notify of Unforeseen Conditions:</u> The Contractor must notify the County in writing as soon as reasonably possible, but no later than three (3) calendar days, if unforeseen conditions are encountered at the site which are i) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents, or ii) unknown physical conditions of an unusual nature, that differ materially from those normally encountered in the type of work being performed under this Contract. Contractor may not disturb the conditions until the County conducts an investigation. The Authorized Representative and the Design Engineer will promptly investigate such conditions. If it is determined that such conditions differ materially and cause an increase or decrease in the Contractor's cost of or time required for performance of any part of the Work, the Authorized Representative will recommend an equitable adjustment in the Contract Price, Contract Time, or both. If it determined that such conditions are not materially different from those indicated in the Contract Documents, the Authorized Representative will notify the Contractor in writing of such findings, and the Contract will not be adjusted.
- 4.16 <u>Contractor's General Warranty</u>: The Contractor warrants and guarantees to the County that all work performed on the Project will conform to the Contract Documents, be performed in a good and workmanlike manner in accordance with the Contract Documents, and will not be defective. The Contractor shall promptly correct defective work and damage that results from the Contractor's failure to exercise reasonable care in performing the Work, or from the Contractor's failure to perform the Work in a good and workmanlike manner. The Contractor shall use qualified, careful, and efficient contractors, subcontractors, employees, and workers in conformity with the provisions of this Contract. This Section 4.16 shall survive the termination or expiration of the Contract.
- 4.17 <u>Contractor's Guarantee</u>: The Contractor warrants and guarantees to the County that: (a) the Contractor possesses the skill and knowledge ordinarily possessed by well-informed members of its trade or profession, (b) the Contractor will use its best efforts to ensure that the services provided under this Contract are performed, delivered, and conducted in accordance with the best professional standards and in accordance with industry standards, and (c) the Contractor is fully experienced and properly qualified, equipped, organized and

financed to successfully complete the Project. The services and materials provided by the Contractor to Waller County will conform to the representations contained in this Contract, including all attachments, schedules, and exhibits.

- 4.18 <u>No Limitation on Implied Warranties</u>: The Contractor shall not limit or exclude any implied warranties, and shall extend such warranties for the goods or services provided under this Contract.
- 4.19 <u>Work Performed Contrary to Law or Regulations</u>: If Contractor performs any Work knowing or having reason to know that it is contrary to laws or regulations, the Contractor shall bear all claims, costs, losses, and damages arising therefrom.
- 4.20 <u>Warranties and Guarantees Cumulative</u>: The Contractor's warranties and guarantees shall be cumulative, deemed consistent and not in conflict, are intended to be given full force and effect, and are to be interpreted expansively to give the County the broadest warranty protection. The Contractor's obligation to perform and complete the Work in a good and workmanlike manner in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
 - a. Observations by County or the Design Engineer, or any of their officials, officers, representatives, employees, or agents;
 - b. Recommendation of any payment by County, or any of its officials, officers, representatives, employees, or agents;
 - c. The issuance of a certificate of Substantial Completion or any payment by the County to the Contractor under the Contract Documents;
 - d. Use or occupancy of the Project or any part thereof by the County or the public;
 - e. Any acceptance by the County, or failure to do so;
 - f. Any review of a Shop Drawing or sample submittal;
 - g. Any inspection, test, or approval by other; or
 - h. Any correction by the County of defective work.
- 4.21 <u>Contractor's Personnel</u>. Contractor shall maintain a work force adequate to accomplish the Work within the Contract Time. Contractor shall employ only competent, orderly, personnel for the Project that are skilled in the performance of the type of Work required under this Contract.
- 4.22 <u>Contractor's Supervision</u>: Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. The Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall be responsible to see that the completed Work complies accurately with the Contract Documents.
- 4.23 <u>Contractor's Superintendent</u>: Beginning on the execution of the Contract, and continuing until Final Completion, the Contractor shall identify and maintain a competent and

qualified superintendent who shall be authorized to act on behalf of the Contractor and with whom Waller County may consult at all reasonable times. The superintendent must be an employee of the Contractor, unless such requirement is waived in writing by the Authorized Representative. The superintendent shall not be transferred from the Project without the County's consent, which shall not be unreasonably withheld or delayed. Notwithstanding the foregoing, the superintendent is not required to be assigned solely to the Project, and shall be entitled to spend reasonable time working on matters unrelated to the Project, so long as such work on other matters does not render the superintendent unavailable to the Project or to Waller County. If the superintendent is transferred from the Project, Waller County shall have the right to approve the replacement superintendent. The County's approval shall not be unreasonably withheld or delayed. The Contractor shall replace the superintendent upon the County's request in the event that the superintendent is unable to perform to the County's satisfaction.

- 4.24 <u>Effect of Obligation</u>: The obligation to maintain the superintendent and work force shall not be construed to: (a) preclude the promotion of any of Contractor's employees assigned to the Project, or (b) give rise to any liability of the Contractor in the event an employee assigned to the Project leaves the Contractor's employment, or (c) imply that the County has an employer/employee relationship with Contractor, or any of its employees.
- 4.25 <u>Wages</u>: Contractor shall pay workers on the Project in accordance with Section 15, and not less than the wage rates, including fringe benefits, as published by the Department of Labor for Building Construction and Heavy and Highway Trades, as applicable.
- 4.26 <u>Subcontractors</u>: The Contractor shall not employ any Subcontractor, Supplier, or other person or organization, whether initially or as a substitute, against whom the County may have a reasonable objection. Contractor shall not substitute any Subcontractor, person, or organization that has been accepted by the County, unless the substitute has been accepted in writing by the County. No acceptance by the County of any Subcontractor, Supplier, or other person or organization shall constitute a waiver of any right of the County to reject defective work. Contractor shall provide County with a complete list of any Subcontractors it intends to use on the Project. In the event that Subcontractors are used on the Project, the Subcontractor must agree to be bound by the terms of this Contract.
- 4.27 <u>Responsibility for Subcontractors</u>: The Contractor shall be fully responsible to the County for all acts and omissions of the Subcontractors, Suppliers, and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with Contractor just as Contractor is responsible for the Contractor's own acts and omissions. Nothing in the Contract Documents shall create for the benefit of any such Subcontractor, Supplier, or other person or organization any contractual relationship between the County and any such Subcontractor, Supplier, or other person or organization, nor shall it create any obligation on the part of the County to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other person or organization except as may otherwise be required by laws and regulations.
- 4.28 <u>Construction Site Order</u>: The Contractor shall at all times maintain good discipline and order on the construction site. If Contractor becomes aware that any employee, subcontractor, or subcontractor's employee is incompetent, disorderly, abusive, disobedient, has knowingly violated safety regulations, has possessed any firearm in

contravention of applicable Texas law, has possessed or was under the influence of alcohol or drugs on the job, or has violated any federal, state, or local law, rule, or ordinance. Contractor shall immediately remove such worker or representative, including an officer or owner of Contractor or any Subcontractor from performing work on the Project, and may not subsequently allow such worker or representative at the construction site without the County's written consent. Contractor, the Design Engineer, Subcontractors, and workers or employees shall comply with all applicable health, safety, and loss prevention rules of applicable governmental authorities. The Contractor shall at all times enforce strict discipline and good order among its employees and workers, and shall not employ on the Project any unfit person or anyone not skilled in the work assigned to him. Waller County may, upon thirty (30) days written notice to the Contractor and without cause, require the removal of any individual from performing work on the Project.

- 4.29 Construction Site Conditions: Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the site and land and areas identified by the Designated Representative, and other land and areas permitted by laws and regulations, right-of-way, permits, and easements. Contractor shall not unreasonably encumber the premises with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas, resulting from the performance of the Work. During the progress of the Work, and on a daily basis, Contractor shall keep the premises free from accumulations of waste materials, rubbish, and other debris resulting from the Work. At the completion of the Work, Contractor shall remove all waste materials, rubbish, and debris from and about the premises, as well as all tools, appliances, construction equipment and machinery, and surplus materials. Contractor shall leave the site clean and ready for use by County at Substantial Completion of the Work. Contractor shall restore to original condition all property not designated for alteration by the Contract Documents. If the Contractor fails to clean up at the completion of the Work, the County may do so, and charge the cost thereof to the Contractor.
- 4.30 <u>Inspection</u>: The Project and all parts thereof shall be subject to inspection from time to time by inspectors designated by Waller County. No such inspections shall relieve the Contractor of any of its obligations hereunder. Neither failure to inspect, nor failure to discover defects or reject any of the work as not in accordance with the Contract Documents shall be construed to imply an acceptance of such work or to relieve the Contractor of any of its obligations hereunder. Waller County agrees that its right of inspection shall be used reasonably and in a timely manner so as not to delay orderly completion of the Project.
- 4.31 <u>Safety</u>: The Contractor shall be responsible for initiating, maintain, and supervising all safety precautions and programs in connection with performing work on the Project. The Contractor shall comply with all applicable laws and regulations of any public body having jurisdiction for the safety of persons or property, or to protect them from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. The Contractor shall comply with all federal, state, and local occupational hazard and safety standards, codes and regulations applicable in the jurisdiction where the Project is located. The Contractor shall include the substance of this clause in its entirety in all subcontracts for any work to be performed at the construction site.

- 4.32 Responsibility for Property: Contractor shall notify owners of adjacent property and of underground facilities, and utility owners when performance of work on the Project may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property. All damage, injury, or loss to any materials or equipment used in furtherance of the Project, whether stored on or off site, and to any other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and underground facilities not designated for removal, relocation, or replacement in the course of construction that is caused, directly or indirectly, in whole or in part, by the Contractor, Subcontractor, or any personal or entity directly or indirectly employed by them shall be remedied by Contractor. Contractor is solely responsible for the location and protection of any and all public utility lines and utility customer service lines in the Work area. "Public utility lines" means the utility distribution and supply system, and "utility customer service lines" means the utility lines connecting customers to the utility distribution and collection system. Generally, existing utility customer service line connections are not shown on the Drawings. The Contractor shall exercise due care to locate, mark, uncover, and otherwise protect all such lines in the construction zone and any of Contractor's work or storage areas, and to notify appropriate authorities of relevant activity in the construction zone. Contractor's responsibility for the location and protection of utilities is primary and nondelegable.
- 4.33 <u>Protection Against Risks</u>: The Contractor shall take all necessary and adequate precautions to protect against conditions created during the progress of the Project which involve a risk of bodily harm or death to persons, or a risk of damage or loss to any property. The Contractor shall regularly inspect all work, materials, and equipment to discover and determine any such conditions, and shall be responsible for discovery, determination, and correction of any such conditions.
- 4.34 <u>Hazardous Materials</u>: Contractor shall be responsible for any hazardous materials brought to the site by the Contractor, Subcontractor, Suppliers, or anyone else for whom Contract is responsible, and shall be responsible for the use, storage, and remediation of any such hazardous materials. The Contractor shall immediately notify the County of any hazardous material uncovered or revealed at the Construction Site which was not shown, indicated, or identified in the Contract Documents to be within the scope of the Work and which may present a substantial danger to persons or property exposed thereto in connection with the Work at the site. The Contractor shall immediately notify the Authorized Representative of any suspected hazardous materials encountered before or during the performance of the Work, and shall take all necessary precautions to avoid further disturbance of the materials.
- 4.35 <u>Contractor's Duties Continue Until Final Acceptance</u>: Contractor's duties and responsibilities for safety and protection of the Work and property shall continue until such time as the Project is completed, and the County has issued a written notice indicating final acceptance of the completed Project.
- 4.36 <u>No Excessive Loading</u>: Contractor shall no load, nor permit any part of any structure to be loaded in any manner that will endanger the structure. The Contractor shall not subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

- 4.37 <u>Texas Department of Transportation:</u> the Contractor shall perform the Work in accordance with any applicable rules, regulations, and standards adopted by the Texas Department of Transportation.
- 4.38 <u>Meetings and Cooperation</u>: Contractor shall meet with the County or its Authorized Representative on an as needed basis to ensure the Work is performed satisfactorily. The Contractor shall cooperate at all times with the County, and other contractors providing services to the County to maintain maximum security and efficiency.
- 4.39 Equipment and Materials: Except as expressly provided otherwise, the Contractor shall furnish and pay for all construction, transportation, installation, materials, labor, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and any other equipment, facilities, and incidentals required for the furnishing, performance, testing, start-up, and completion of the Project within the time specified, except for professional services as defined by Texas Government Code Chapter 2254. Such equipment and facilities shall be of good quality and new (including new products made of recycled materials, pursuant to Texas Health and Safety Code § 361.426), and fit for the uses intended. Defective items shall be removed from the construction site promptly and at the Contractor's expense. If requested by the Authorized Representative, Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment used for the Project. All materials and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, unless otherwise provided in the Contract Documents. Any Supplier or manufacturer furnishing these items shall be experienced in the design and construction of such materials, and shall be an established supplier of the items and materials. The Contractor shall schedule its other operations so as not to interfere with its duty to timely furnish the necessary equipment, materials facilities, and personnel to operate the same at the times necessary for the orderly and timely completion of the Project. Title to materials delivered to the Construction Site or a staging area will pass to the County upon delivery without the necessity for further documentation. Risk of loss will not pass to the County until Final Acceptance.
- 4.40 <u>Defective Work</u>: The County and the Design Engineer may disapprove or reject Work with either believes to be defective, or believes will not produce a completed Project that conforms to the Contract Documents, or will jeopardize the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. The Contract shall bear all losses, damages, costs, and claims related to remedying defective work.
- 4.41 <u>Uncovering Work</u>: The Contractor shall uncover the Work in the following circumstances:
 - a. If any Work, including the work of Subcontractors or others, that is to be inspected, tested, or approved is covered by the Contractor or Subcontractor without written concurrence of the Authorized Representative, or if any Work is covered contrary to the written request of the Authorized Representative, it must, if requested by the Authorized Representative, be uncovered and recovered at the Contractor's expense.
 - b. If the Authorized Representative considers it necessary or advisable that covered Work be observed, inspected, or tested, the Contractor shall uncover, expose, or

otherwise mark available for observation, inspection, or testing that portion of the Work in question, furnishing all necessary labor, material, and equipment. If it is found that such Work is defective, the Contractor shall pay all claims, costs, losses, and damages caused by, arising out of, or resulting from such uncovering, exposure, observation, inspection, and testing and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and the County shall be entitled to an appropriate decrease in the Contract Amount, and may make claim therefore. If such Work is not found to be defective, the Contract Time, or both, which is directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction.

- 4.42 <u>Contractor's Remedy for Delay, Disruption, or Hindrance</u>. Contractor and County contemplate that Contractor's performance may be delayed, disrupted, or interfered with by unanticipated causes including but not limited to the following:
 - a. Severe and unavoidable natural disasters such as fires, floods, epidemics and earthquakes;
 - b. Abnormal weather conditions;
 - c. Acts or failures to act of the County, third party utility owners, or other third party entities; and
 - d. Acts of war or terrorism.

Contractor and the County agree Contractor's sole remedy for delays in performance of the Work, whether or not such delays are foreseeable, is an extension of the Contract Time, except as provided in Section 4.43. Contractor shall receive no compensation or damages of any kind for delays, disruptions, or hindrances to the Work. The County's exercise of any of its rights or remedies under the Contract including, without limitation, ordering changes in the Work or directing suspension, rescheduling, or correction of the Work, regardless of the extent or frequency of the County's exercise of such rights or remedies, shall not be construed as intentional interference with Contractor's performance of the Work. The sole remedy of Contractor for any delay, disruption, or hindrance caused by the County's exercise of any of its rights or remedies under the Contract Time, except as expressly provided in Section 4.43.

In no event shall the Contractor be entitled to any compensation or recovery of any special damages in connection with any delays, disruptions, or hindrances, including without limitation: consequential damages, lost opportunity costs, impact damages, indirect damages, exemplary damages, compensation for unjust enrichment, attorney's fees or other similar damages or costs.

4.43 <u>Direct and Unavoidable Costs</u>: In the event the County is the sole cause of a delay, disruption, or hindrance by acts or omissions that constitute fraud, intentional misrepresentation, gross negligence, or intentional interference with Contractor's performance of the Work, Contractor may receive compensation for direct and unavoidable

extra costs only to the extent such acts continue after Contractor notifies the County in writing of such conduct. The direct and unavoidable costs must be specifically proved, and caused solely by the proven wrong. When such extra compensation is claimed, a written statement thereof shall be presented by Contractor to the County, and if found by the County to be correct, shall be approved.

4.44 <u>No Authority to Act of Behalf of County</u>: The Contractor agrees and understands that neither it, nor any of its agents, employees, or Subcontractors may act in the name of the County unless specifically authorized in writing by the County.

SECTION 5. PREVAILING WAGES

5.1 <u>Required Compliance with Texas Government Code Chapter 2258</u>: This Project is subject to the prevailing wage rate requirements of Chapter 2258 of the Texas Government Code, and the Davis-Bacon Act Wage Determination # TX20250038 provided below. All persons employed by Contractor shall be compensated at not less than the rates shown below. Contractor shall keep records of each worker employed by the Contractor or a subcontractor in the construction of the Project, including each worker's name, occupation, and the actual per diem wage paid to each worker. Said records shall be open at all reasonable hours to inspection by the County and its officers and agents. If Contractor pays any worker less than the below stated rates at any time, the Contractor shall pay Waller County sixty dollars (\$60.00) per day for each worker employed by the Contractor for the provision of services described herein for each calendar day or part of the day that the worker is paid less than the below stated rates. Contractors may also visit www.wdol.gov/dba.aspx.

General Decision Number: TX20250038 01/05/2024

Superseded General Decision Number: TX20240038

State: Texas

Construction Type: Highway

Counties: Austin, Brazoria, Chambers, Fort Bend, Galveston, Hardin, Harris, Jefferson, Liberty, Montgomery, Orange, San Jacinto and Waller Counties in Texas.

HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, building structures in rest area projects & railroad construction; bascule, suspension & spandrel arch bridges designed for commercial navigation, bridges involving marine construction; and other major bridges).

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658.

Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extend-ed (e.g., an option is exercised) on or after January 30, 2022, Executive Order 14026

generally applies to the contract. The contractor must pay all covered workers at least \$17.75 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent per-forming on that contract in 2025.

If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the con-tract is not renewed or extended on or after January 30, 2022, Executive Order 13658 generally applies to the contract. The contractor must pay all covered workers at least \$13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2025.

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

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

Modification Number Publication Date

0 01/03/2025

SUTX2011-013 08/10/2011

	1111800
CEMENT MASON/CONCRETE FINISHER (Paving a	and
Structures)	\$ 12.98 **
ELECTRICIAN	\$ 27.11
FORM BUILDER/FORM SETTER	
Paving & Curb Structures	\$ 12.34 ** \$ 12.23 **
LABORER	
Asphalt Raker Flagger Laborer, Common Laborer, Utility Pipelayer Work Zone Barricade Servicer	\$ 12.36 ** \$ 10.33 ** \$ 11.02 ** \$ 11.73 ** \$ 12.12 ** \$ 11.67 **
PAINTER (Structures)	\$ 18.62
POWER EQUIPMENT OPERATOR:	
Asphalt Distributor Asphalt Paving Machine Broom or Sweeper Concrete Pavement Finishing Machine Concrete Paving, Curing, Float, Texturing Machine	\$ 14.06 ** \$ 14.32 ** \$ 12.68 ** \$ 13.07 ** \$ 11.71 **
Concrete Saw	\$ 13.99 **

Rates Fringes

Crane, Hydraulic 80 Tons or less	\$ 13.86 **
Crane, Lattice boom 80 tons or less	\$ 14.97 **
Crane, Lattice boom over 80 Tons	\$ 15.80 **
Crawler Tractor	\$ 13.68 **
Excavator, 50,000 pounds or less	\$ 12.71 **
Excavator, Over 50,000 pounds	\$ 14.53 **
Foundation Drill, Crawler Mounted	\$ 17.43 **
Foundation Drill, Truck Mounted	\$ 15.89 **
Front End Loader 3 CY or Less	\$ 13.32 **
Front End Loader, Over 3 CY	\$ 13.17 **
Loader/Backhoe	\$ 14.29 **
Mechanic	\$ 16.96 **
Milling Machine	\$ 13.53 **
Motor Grader, Fine Grade	\$ 15.69 **
Motor Grader, Rough	\$ 14.23 **
Off Road Hauler	\$ 14.60 **
Pavement Marking Machine	\$ 11.18 **
Piledriver	\$ 14.95 **
Roller, Asphalt	\$ 11.95 **
Roller, Other	\$ 11.57 **
Scraper	\$ 13.47 **
Spreader Box	\$ 13.58 **
Servicer	\$ 13.97 **
Steel Worker	
Reinforcing Steel	\$ 15.15 **
Structural Steel Welder	\$ 12.85 **
Structural Steel	\$ 14.39 **
TRUCK DRIVER	
Low Boy Float	\$ 16.03 **
Single Axle	\$ 11.46 **
Single or Tandem Axle Dump	\$ 11.48 **
Tandem Axle Tractor w/Semi Trailer	\$ 12.27 **

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

** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$17.75) or 13658 (\$13.30). Please see the Note at the top of the wage determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including their agencies, are a party.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

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

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

Union Rate Identifiers

A four-letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2024, in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing this classification and rate.

Union Average Rate Identifiers

Thes UAVG identifier indicates that no single majority rate prevailed for those classifications; but that, 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The "SU" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFLA2022-007 6/27/2024. SU indicates that the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6 (c) (1).

State Adopted Rate Identifiers

The "SA" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Main. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the SA identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

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

- * a survey underlying a wage determination
- * an existing published wage determination
- * an initial WHD letter setting forth a position on a wage determination matter
- * an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to da-visbaconinfo@dol.gov or by mail to:

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

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage

Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

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

2.) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

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

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

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

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

SECTION 6. PAYMENT

- 6.1 <u>Payment</u>: Waller County shall pay the Contractor according to the contract in current funds for the Contractor's performance, as stated herein, after issuance of a Notice to Proceed and a purchase order issued by the Waller County Procurement Director. In no event will Contractor be paid the entire contract price prior to beginning work, or prior to completion of the work.
- 6.2 <u>Retainage</u>: The County shall withhold a ten percent (10%) retainage from each Application for Payment, which shall be paid subject to Sections 6.6 and 6.7.
- 6.3 <u>Applications for Payment</u>: Waller County shall make progress payments to the Contractor as provided below.
 - a. The Contractor shall submit Applications for Payment to the Waller County Auditor, 425 FM 1488, Suite 119, Hempstead, Texas 77445 in a form acceptable to the County. Each Application for Payment must be filled out and signed by the Contractor, and cover the Work that is completed as of the date of the Application and be accompanied by sufficient supporting documentation.

- b. With each Application for Payment, the Contractor must submit an affidavit certifying that Contractor has paid in full any bills submitted to the Contractor for labor, material and expendable equipment that Contractor used in the performance of Work or the provision of services under the Contract. The certifying affidavit must be provided to the County before the applicable Application for Payment will be approved for payment.
- c. Applications for Payment shall not include requests for payment related to changes in the Work which have not been authorized through a Change Order.
- d. Applications for Payment shall not include requests for payment of amounts that the Contractor does not intend to pay to a Subcontractor or Supplier because of a dispute or other reason.
- e. The period covered by each Application for Payment shall be one calendar month beginning on the first day of the month, and ending on the last day of the month. A complete and accurate Application for Payment must be submitted to the County Auditor not later than the 15th day of the month following the month in which the work was performed.
- f. The Application for Payment shall indicate the percentage of completion of each portion of the Project as of the end of the period covered by the application for payment.
- g. Subject to the provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:
 - i. Take that portion of the contract sum properly allocable to the completed Project less retainage of ten percent (10%).
 - ii. Add that portion of the contract sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved by Waller County, suitably stored off the site at a location agreed upon in writing), less retainage of ten percent (10%).
 - iii. Subtract the aggregate of previous payments made by Waller County.
- h. Payment will be made by the County in accordance with Texas Government Code, Chapter 2251.
- 6.4 <u>Final Payment</u>: If, upon Final Completion and on the basis of observation of the Work during construction, final inspection, and review of the final Application for Payment and accompanying documentation as required by the Contract Documents, the Authorized Representative is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, there are no outstanding claims, and punch list items have been completed, the Authorized Representative will recommend the final Application for Payment for approval to the Waller County Commissioners Court. Final payment shall constitute the entire unpaid, undisputed balance of the Contract Price. The Contractor may make application for final payment following the procedure for progress payments after the Contractor has complied with the

requirements of Section 6.3 to the County's satisfaction, and delivered the following documents:

- a. Affidavit by Contractor certifying the payment of all debts and claims;
- b. The Record Documents identified in Section 13;
- c. Consent to surety, if any, to final payment. If surety is not provided, complete and legally effective releases or waivers that are satisfactory to the County of all claims arising out of or filed in connection with the Work;
- d. Certificate evidencing that any applicable requirement for insurance will remain in force after final payment and through the warranty period;
- e. Proof of performance bond extension through warranty period, if a performance bond was required; and
- f. Any other documentation called for in the Contract Documents.

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

- 6.5 <u>Review of Applications for Payment and Payment</u>: The Authorized Representative will, within seven (7) calendar days after receipt of each Application for Payment, either indicate a recommendation for payment and forward the Application for processing by the County, or return the Application to the Contractor indicating the Authorized Representative's reasons for not recommending payment. If the Authorized Representative does not recommend payment, the Contractor shall make the necessary corrections and resubmit the Application.
 - a. By recommending payment, the Authorized Representative does not represent that:
 - i. Exhaustive or continuous on-site inspections have been made to check the quality or quantity of the Work;
 - ii. Examination has been made to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Price; or
 - iii. Contractor's construction means, methods, techniques, sequences, or procedures have been reviewed.
- 6.6 <u>County's Right to Withhold Payment</u>: The County may withhold or nullify the whole or part of any payment to such extent as the County deems necessary in the event that:
 - a. Defective work is not remedied as required by the County and in the time frame required by the County;
 - b. A third party files a claim or there is reasonable evidence indicating probable filing of such claims;
 - c. Contractor fails to make payments properly to Subcontractors for labor, materials, or equipment;

- d. There is reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Amount;
- e. There is damage to the County or another contractor;
- f. There is reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;
- g. The Contractor fails to submit a schedule of values in accordance with the Contract Documents;
- h. The Contractor fails to maintain a record of changes on drawings and documents;
- i. The Contractor fails to maintain weekly payroll reports and, as applicable, provide copies of reports in a timely manner upon request of the County;
- j. The Contractor fails to submit monthly subcontractor reports;
- k. Contractor neglects or unsatisfactorily prosecutes of the Work, including fails to clean up; or
- 1. The Contractor fails to comply with any provision of the Contract Documents.
- 6.7 <u>Reason for Withholding Payment Removed</u>: When the above reasons for withholding payment are removed, the Contractor shall resubmit an Application for Payment for the value of the Work performed. Payment will be made in accordance with Texas Government Code Chapter 2251.
- 6.8 Payment to Subcontractors when Payment Withheld: Subcontractors may request Partial Payment when the County withholds payment of an invoice to the Contractor for any reason listed in Section 6.6. If the payment is withheld by the County, the Contractor shall notify all affected Subcontractors within two (2) working days of notice that payment is being withheld. Upon notification, Subcontractors may submit a formal written request for Partial Payment to the Contractor and the County. If directed by the County, the Contractor shall within three (3) working days resubmit to the County an invoice for the same period that includes only work performed by the requesting Subcontractors during this period. The County will review this resubmitted invoice. Upon receipt of payment for the resubmitted invoice, the Contractor shall pay the Subcontractor within ten (10) calendar days.

SECTION 7. COMPLETION, TRANSER, AND ACCEPTANCE

7.1 <u>Substantial Completion</u>: When the Contractor considers that the Work, or a portion thereof which the County agrees to accept separately, is substantially complete, the Contractor shall notify the Authorized Representative, and request a determination as to whether the Work, or a designated portion thereof is substantially complete. If the Authorized Representative does not consider the Work to be substantially complete, the Authorized Representative will notify Contractor in writing, and give the reasons therefor. If Owner's Representative considers the Work to be substantially complete, the Authorized Representative will prepare and deliver a Certificate of Substantial Completion, which shall establish the date of Substantial Completion, shall include a punch list of items to be completed or corrected before final payment, and shall establish the time within which the Contractor shall finish the punch list. Failure to include an item on the punch list does not alter the Contractor's responsibility to complete all Work in accordance with the Contract Documents. If an inspection is required by public authorities having jurisdiction over the Work, such inspection must be made and passed before the Work, or any portion thereof will be considered substantially complete.

- 7.2 <u>Final Inspection</u>: Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, the County will make a final inspection with Contractor, and provide written notice of all the particulars in which inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.
- 7.3 <u>Punch List</u>: Upon the occurrence of Substantial Completion, the punch list items shall be promptly commenced and thereafter completed within thirty (30) days after final completion.

SECTION 8. TERM, SUSPENTION OF WORK, AND TERMINATION

- 8.1 <u>Agreement Term</u>: The term of this Agreement shall begin on the date of execution, and shall continue until the complete performance of the terms and conditions of this Contract by the parties unless either party terminates this Contract in accordance with its terms.
- 8.2 <u>Suspension by County for Convenience</u>: The County may, in its sole discretion and without cause, order the Contractor in writing to suspend or interrupt the Project in whole or in part for such period of time as the County may determine. In the event the County suspends or interrupts the Work, an adjustment may be made to account for any change in the actual cost of performance of the Work caused by the suspension, or interruption. No adjustment shall be made for an increase in the Contract Price if the performance of the work is, was, or would have been so suspended, delayed, or interrupted by another cause for which the Contractor is responsible, or when an equitable adjustment is made or denied under another provision of this Contract.
- 8.3 <u>Automatic Termination</u>: This Agreement shall automatically terminate upon complete performance of the terms and conditions of the Agreement by each Party, or otherwise in accordance with its terms.
- 8.4 <u>Termination for Insolvency and Bankruptcy</u>: The County, in its sole discretion, may immediately terminate this Agreement without notice or the opportunity to cure if Contractor becomes insolvent or files any petition for bankruptcy.
- 8.5 <u>Termination for Cause</u>: Upon seven (7) calendar days' notice to Contractor, the County may terminate the Contract for cause if the Contractor:
 - a. Persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
 - b. Fails to make payment to Subcontractors for materials or labor in accordance with respective agreements between the Contractor and the Subcontractor;
 - c. Disregards laws, ordinances, rules, regulations, or orders of public authority having jurisdiction concerning the Project: or
 - d. Otherwise commits substantial breach of a provision of the Contract Documents.
- 8.6 <u>Termination for Convenience</u>: Upon seven (7) calendar days' written notice to Contractor,

the County may, in its sole discretion and without penalty or prejudice to any right or remedy of County, terminate this Contract for convenience and without cause at any time. The written notice must be provided in accordance with Section 18.19. The notice must state the reasons for such termination, and provide an effective date of the termination. The notice may also contain instructions necessary to protect, store, or decommission any incomplete work or systems, and/or for safety. Upon receipt of such notice, Contractor shall immediately proceed with the following obligations regardless of whether a dispute regarding the Contract exists:

- a. Stop all work;
- b. Comply with any instructions contained in the termination notice;
- c. Place no further subcontracts or order for materials or services;
- d. Terminate all subcontracts for convenience;
- e. Cancel all materials and equipment orders as applicable; and
- f. Take appropriate action to protect and preserve all property related to the Contract which is in the possession of Contractor.
- 8.7 <u>Notice of Termination</u>: The terminating Party shall provide seven (7) days written notice of termination to the other Party as provided in Section 18.19.
- 8.8 <u>Discretionary Opportunity to Cure</u>: A Party receiving notice of termination for failure to perform in accordance with the terms of this Agreement shall have the opportunity to cure its failure to perform beginning on the day of its receipt of the written notice, and continuing for thirty (30) calendar days thereafter. The cure, if made, shall be to the terminating Party's satisfaction. If no cure is made, the Agreement will terminate on the date specified in the written termination notice, or if no date is specified, on the thirtieth (30th) calendar day after the date of receipt of the notice, unless otherwise agreed by the Parties.
- 8.9 <u>County's Rights After Termination</u>: In the event of termination, the County may immediately take possession of the site, and of all materials, equipment, tools, and construction equipment and machinery thereon. The County may finish the Project by whatever reasonable method it deems expedient.
- 8.10 <u>Duty to Mitigate</u>: In the event of termination or suspension under this Contract, the Contractor shall take all reasonable actions to mitigate its damages and any and all claims which may be asserted against the County.
- 8.11 <u>Responsibility During Demobilization</u>: While demobilizing, the Contractor shall take all necessary and reasonable actions to preserve and protect the Work, the site, and other property of the County or others at the site.
- 8.12 <u>Payment After Termination</u>: In the event the County terminates the Contract, the County shall pay the Contractor only for work performed prior to the date of termination, and that is satisfactory to County. Contractor shall not be entitled to lost or anticipated profits should the County choose to exercise its option to terminate. Not later than 30 days after the date of termination, the Contractor shall submit to County a final termination settlement proposal to the County for Work already performed. It any of the Work contained in the

settlement proposal is not satisfactory to the County, the County shall provide written notice to the Contractor. The County shall only pay for the portion of the Work that it determines in good faith to be satisfactory. If Contractor fails to submit the settlement proposal within the time specified, the County may unilaterally determine the amount owed to Contractor. Payment of the amount determined by the County shall be full satisfaction of any claim or debt due by County to Contractor under the Contract.

SECTION 9. RIGHT TO ASSURANCE

9.1 <u>Right to Assurance</u>: In the event that the county has a reason to question the Contractor's intent or ability to perform its obligations under the Contract, the County may demand that the Contractor give written assurance of its intent to perform, its plan to properly continue performance, and a detailed timeline for completion of the Project. The Contractor shall provide a written response to County that addresses the County's demand for written assurance within five (5) business days. If Contractor fails to provide the written response, the County may treat the failure as an anticipatory repudiation of the Contract.

SECTION 10. INSURANCE

- 10.1 <u>Insurance Coverages</u>: Contractor shall carry insurance in the types and amounts indicated below, which shall include items owned by the County in the care, custody, and control of the Contractor prior to and during construction and warranty period. It is intended that policies required by this Contract covering both the County and the Contractor shall be considered primary coverages as applicable. Contractor shall provide the County with certificates of insurance evidencing compliance with the requirements of this Section. The certificates shall indicate the name of the Contractor, the name of the insurance company, the policy number, and the term and limits of coverage. The insurance coverage must be with a company having Best's rating of A/VII or better, authorized to do business in the State of Texas at the time the policies are issued and in force, and shall be of the following types and limits:
 - a. Workers Compensation insurance in accordance with applicable law. Substitutes to genuine Workers' Compensation Insurance will not be allowed.
 - b. Employers' Liability insurance with limits of not less than \$1,000,000 per injury by accident, \$1,000,000 per injury by disease, and \$1,000,000 per bodily injury by disease.
 - c. Comprehensive general liability insurance with a limit of not less than \$1,000,000 each occurrence and \$2,000,000 in the annual aggregate. Policy shall cover liability for bodily injury, personal injury, and property damage and products/completed operations arising out of the business operations of the policy holder.
 - d. Business Automobile Liability coverage for owned, non-owned, and hired vehicles, with a combined Bodily Injury/Property Damage with minimum limits of not less than \$1,000,000 each accident. The policy shall cover liability arising from the operation of licensed vehicles by policyholder.
 - e. Builder's Risk Insurance or Installation Insurance on an all risk physical loss form in the Contract Amount. Coverage shall continue until the Work is accepted by the County. The County shall be a loss payee on the policy. If off-site storage is

permitted, coverage shall include transit and storage in an amount sufficient to protect property being transported or stored.

- 10.2 <u>Additional Insured</u>: Contractor's insurance policies that cover performance under this Contract shall name the County an additional insured, except for Workers' Compensation and Professional Liability, if required. All endorsements naming the County as additional insured, waivers, and notices of cancellation of endorsements, as well as the Certificates of Insurance shall indicate: Waller County, Texas, 425 FM 1488, Suite 106, Hempstead, Texas 77445.
- 10.3 <u>Certificates of Insurance</u>: Contractor shall provide the County with properly executed certificates of such insurance before the Contract is executed as verification of the coverage required in Section 10.1. The certificates shall indicate that all required insurance coverages are effective as of the Effective Date, and that such insurance shall not be canceled, except on thirty (30) days prior written notice to the County. The Contract shall not commence Work until the required insurance is obtained and until such insurance has been reviewed by the County. The Contractor must also provide Certificates of Insurance when a previously identified policy period has expired as verification of continuing coverage.
- 10.4 <u>Certified Copies of Insurance Policies</u>: The Contractor shall provide the County with certified copies of the required insurance policies and endorsements thereto upon request and without expense to the County.
- 10.5 <u>Responsibility for Insurance</u>: The Contractor shall be responsible for premiums, deductibles, and self-insured retentions, if any, state in the policies. All deductibles or self-insurance retentions shall be disclosed on the Certificates of Insurance.
- 10.6 <u>No Decrease in Liability</u>: The County's acceptance or approval of the certificates of insurance or certified copies of insurance policies shall not relieve, decrease, or limit Contractor's liability. The insurance coverages required under this Contract are required minimum and are not intended to limit the responsibility of liability of the Contractor.
- 10.7 <u>No Cancellation or Modification</u>: The Contractor shall continuously maintain the required insurance coverages during the Contract Term. Contractor shall not cancel or modify the insurance coverages required by this Agreement without providing thirty (30) days written notice to the County. Contractor shall not allow a lapse in the insurance coverage specified in this Contract for the duration of the Contract.
- 10.8 <u>Workers Compensation Certification</u>: By signing this Contract or providing or causing to be provided a certificate of coverage, the Contractor is representing to the County that all employees of the Contractor who will provided services on the Project will be covered by workers' compensation coverage for the duration of the Project, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with the appropriate insurance carrier or, in the case of self-insured, with the Texas Worker's Compensation Commission's Division of Self-Insurance Regulation. Providing false or misleading information may subject Contractor to administrative penalties, criminal penalties, civil penalties, or other civil actions.
- 10.9 <u>County Occupancy</u>: All insurance shall provide for the County to take occupancy of the Work or any part thereof during the term of said insurance.

10.10 <u>Failure to Comply</u>: Contractor's failure to comply with any of these provisions is a breach of Contract by Contractor which entitles the County to declare the Contract void if Contractor does not remedy the breach within ten (10) days after receipt of notice of breach from the County.

SECTION 11. BONDS

- 11.1 <u>Bonds Required</u>: The Contractor must furnish the County with both a Performance Bond and a Payment Bond. Bonds shall be executed on forms acceptable to the County. Performance Bonds and Payment Bonds must be issued in an amount of one hundred percent (100%) of the Contract Amount as security for the faithful performance and/or payment of all of Contractor's obligations under the Contract Documents. Performance Bonds and Payment Bonds shall be issued by a solvent surety company duly authorized to do business in the State of Texas, and licensed in the State of Texas to issue surety bonds with a Best Rating of A/VII or better, and shall meet any other requirements established by law or by the County pursuant to applicable law.
- 11.2 <u>Surety Acceptable to County</u>: The surety company must be acceptable to the County. If the County rejects the Contractor's proposed surety company, the Contractor must obtain the required bonds from a surety acceptable to the County within five (5) days of the County's rejection.
- 11.3 <u>Extension Through Warranty Period</u>: The required Performance Bond must extend through any applicable warranty period.
- 11.4 <u>Bond Signed by Agent</u>: All bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act.
- 11.5 <u>Surety Declares Bankruptcy</u>: If the surety on any bond furnished by the Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in the State of Texas, or it ceases to meet the requirements of the preceding paragraph, Contractor shall within ten (10) days thereafter substitute another bond and surety, both of which must be acceptable to the County.

SECTION 12. INDEMNIFICATION

- 12.1 INDEMNITY FOR BODILY INJURY OR DEATH CLAIMS: TO THE FULLEST EXTENT PERMITTING BY LAW, CONTRACTOR SHALL INDEMNIFY, DEFEND, AND HOLD HARMLESS THE COUNTY AND ITS OFFICERS, DIRECTORS, CONTRACTORS, EMPLOYEES, REPRESENTATIVES, AND AGENTS FROM AND AGAINST ALL CLAIMS, LOSSES, EXPENSES, COSTS, DEMANDS, SUITS, CAUSES OF ACTION, AND DAMAGES, INCLUDING WITHOUT LIMITATION, ATTORNEYS' FEES AND EXPENSES, FOR BODILY INJURY OR DEATH OF ANY EMPLOYEE OF CONTRACTOR, ITS AGENTS, OR ITS SUBCONTRACTORS OF EVERY TIER, EVEN IF THE BODILY INJURY OR DEATH IS CAUSED BY OR ALLEDGED TO HAVE BEEN CAUSED BY THE SOLE OR PARTIAL NEGLIGENCE, FAULT, OR STRICT LIABILITY OF ANY INDEMNITEE
- 12.2 <u>GENERAL INDEMNITY</u>: CONTRACTOR, ITS OFFICERS, DIRECTORS, PARTNERS, CONTRACTORS, EMPLOYEES, REPRESENTATIVES, AGENTS, SUCCESSORS, ASSIGNS, VENDORS, GRANTEES, AND/OR TRUSTEES

(COLLECTIVELY REFERRED TO AS "CONTRACTOR" FOR PURPOSES OF THIS SECTION), AGREE TO RELEASE, DEFEND, INDEMNIFY, AND HOLD HARMLESS THE COUNTY AND ITS OFFICERS, OFFICIALS, DEPARTMENT HEADS, REPRESENTATIVES, AGENTS, AND EMPLOYEES (COLLECTIVELY **REFERRED TO AS "COUNTY" FOR PUPOSES OF THIS SECTION) FROM ANY** AND ALL CLAIMS, DEMANDS, DAMAGES, INJURIES - INCLUDING DEATH AND BODILY INJURY – LIABILITIES, AND EXPENSES (INCLUDING ATTORNEY'S FEES AND COSTS OF DEFENSE) ARISING DIRECTLY OUT OF OR RESULTING FROM THE OPERATION OR PERFORMANCE OF CONTRACTOR UNDER THIS AGREEMENT. THE COUNTY WILL NOT ACCEPT LIABILITY FOR INJURIES THAT ARE THE RESULT OF THE MALFEASANCE, ACTION, NEGLIGENCE, OR **OMMISION** OF CONTRACTOR. CONTRACTOR AGREES TO ACCEPT LIABILITY FOR INJURIES TO ITSELF OR OTHERS CAUSED BY ITS OWN NEGLIGENCE, MALFEASANCE, ACTION, OR OMMISSION. THIS INDEMNIFICATION **PROVISION IS ALSO SPECIFICALLY INTENDED TO APPLY TO, BUT NOT** BE LIMITED TO, ANY AND ALL CLAIMS, WHETHER CIVIL OR CRIMINAL, BROUGHT AGAINST COUNTY BY ANY GOVERNMENT AUTHORITY OR AGENCY RELATED TO ANY PERSON PROVIDING SERVICES UNDER THIS AGREEMENT THAT ARE BASED ON ANY FEDERAL IMMIGATION LAW AND ANY AND ALL CLAIMS, DEMANDS, DAMAGES, ACTIONS, AND CAUSES OF ACTION OF EVERY KIND AND NATURE, KNOWN AND UNKNOWN, EXISTING OR CLAIMED TO EXIST, RELATING TO OR ARISING OUT OF ANY EMPLOYMENT RELATIONSHIP BETWEEN CONTRACTOR AND ITS EMPLOYEES OR SUBCONTRACTORS AS A RESULT OF THAT SUBCONTRACTOR'S OR **EMPLOYEE'S EMPLOYMENT** AND/OR SEPARATION FROM **EMPLOYMENT** WITH THE CONTRACTOR, INCLUDING BUT NOT LIMITED TO ANY DISCRIMINATION CLAIM BASED ON SEX, SEXUAL ORIENTATION OR PREFERENCE, RACE, RELIGION, COLOR, NATIONAL ORIGIN, AGE OR DISABILITY UNDER FEDERAL, STATE OR LOCAL LAW, RULE OR REGULATION, AND/OR ANY CLAIM FOR WRONGFUL TERMINATION, BACK PAY, FUTURE WAGE LOSS, OVERTIME PAY, EMPLOYEE BENEFITS, INJURY SUBJECT TO RELIEF UNDER THE WORKERS' COMPENSATION ACT OR WOULD BE SUBJECT TO RELIEF **UNDER ANY POLICY FOR WORKERS COMPENSATION INSURANCE, AND** ANY OTHER CLAIM, WHETHER IN TORT, AGREEMENT, OR OTHERWISE.

COUNTY SHALL HAVE THE RIGHT TO APPROVE DEFENSE COUNSEL TO BE RETAINED BY CONTRACTOR IN FULFILLING ITS OBLIGATION TO DEFEND AND INDEMNIFY COUNTY HEREUNDER, UNLESS SUCH RIGHT IS EXPRESSLY WAIVED BY COUNTY IN WRITING. COUNTY RESERVES THE RIGHT TO PROVIDE A PORTION OR ALL OF ITS OWN DEFENSE; HOWEVER, COUNTY IS UNDER NO OBLIGATION TO DO SO. ANY SUCH ACTION BY COUNTY IS NOT TO BE CONSTRUED AS A WAIVER OF CONTRACTOR'S OBLIGATION TO DEFEND COUNTY OR AS A WAIVER OF CONTRACTOR'S OBLIGATION TO INDEMNIFY COUNTY PURSUANT TO THIS AGREEMENT. IF CONTRACTOR FAILS TO RETAIN COUNTY APPROVED DEFENSE COUNSEL WITHIN TEN (10) BUSINESS DAYS OF COUNTY'S WRITTEN NOTICE THAT COUNTY IS INVOKING ITS RIGHT TO INDEMNIFICATION UNDER THIS AGREEMENT, COUNTY SHALL HAVE THE RIGHT TO RETAIN DEFENSE COUNSEL ON ITS OWN BEHALF, AND CONTRACTOR SHALL BE LIABLE FOR ALL REASONABLE ATTORNEY FEES AND COSTS INCURRED BY COUNTY. CONTRACTOR AND COUNTY AGREE TO FURNISH TIMELY WRITTEN NOTICE TO EACH OTHER OF ANY SUCH CLAIM.

THIS SECTION SHALL SURVIVE THE TERMINATION OF THIS AGREEMENT.

SECTION 13. RECORDS AND AUDITS

- 13.1 <u>Record Copy</u>: Contractor shall maintain a record copy of all Drawings, Specifications, Addenda, Change Orders, and written interpretations and clarifications in good order and annotated to show all changes made during construction. These documents, together with all final samples and all final Shop Drawings shall be available to the County and the Design Engineer during performance of the Work. Upon Substantial Completion of the Work, these records and documents, samples, and Shop Drawings shall be promptly delivered to the Authorized Representative.
- 13.2 <u>Document Ownership</u>: The County shall be the absolute and unqualified owner of all drawings, preliminary layouts, record drawings, sketches, as-built drawings and other documents, including those identified in Section 13.1, prepared by the Contractor pursuant to this Contract. The Contractor shall deliver all such documents to the County prior to submitting the final Application for Payment. Neither the Contractor nor any Subcontractor shall reuse any such documents or copies on any other project without the written consent of both the County and the Design Engineer.
- 13.3 <u>Record Preservation and Maintenance</u>: The Contractor shall maintain and preserve accurate and complete records relating to the Project for a period of five (5) years measured from the expiration of the defects period, termination of this Contract, until all audit and litigation matters that the County has brought to the attention of the Contractor are resolved, or as otherwise required by law, whichever is longer. Upon request, the Contractor shall provide the County with such records. This Section 13.3 shall survive termination of the Contract.
- 13.4 <u>Right to Inspect, Examine, Reproduce, and Audit</u>: Waller County, and any of its duly authorized employees or agents, shall have the right to inspect, examine, reproduce, and audit the books and records of the Contractor generated by or on behalf of Contractor, whether paper, electronic, or other media, which are in any way related to performance of or compliance with this Contract, including, but not limited to:
 - a. Accounting records;
 - b. Written policies and procedures;
 - c. Subcontract files (including proposals of successful and unsuccessful bidders, and other related documents);
 - d. Original estimates and estimating work sheets;
- e. Correspondence;
- f. Change Order files;
- g. Back charge logs and supporting documentation;
- h. General ledger entries detailing cash and trade discounts earned, insurance rates, and dividends;
- i. Lump sum agreements between Contractor and any Subcontractor or Supplier;
- j. Records necessary to evaluate Contract compliance, Change Order pricing, and any Claim submitted by Contractor or any of its payees; and
- k. Any other Contractor record that may substantiate any charge related to this Contract.
- 13.5 <u>Survival of Terms</u>: Waller County's right to inspect, examine, reproduce, and audit under this section for the same period of years that Contractor is required to maintain and preserve records under Section 13.3.

SECTION 14. SILENCE OF SPECIFICATIONS

14.1 <u>Silence of Specifications</u>: The apparent silence of specifications as to any detail, or the apparent omission of a detailed description concerning any point, shall be regarded as meaning that only the best commercial practice is to prevail, and that only material and workmanship of the finest quality are to be used. All interpretations of specifications shall be made on the basis of this statement. The items furnished under this contract shall be new, unused of the latest product in production for commercial trade. The materials used and workmanship provided shall be of the highest quality.

SECTION 15. INDEPENDENT CONTRACTOR

15.1 <u>Independent Contractor</u>: The Contractor and its employees are independent contractors. Contractor shall exercise independent judgment in performing its duties under this Contract, and is solely responsible for setting working hours, scheduling or prioritizing its work flow, and determining how the work is to be performed. No term or provision of this Contract shall be construed as creating an employer/employee relationship, partnership, or a joint venture. Contractor agrees and understands that the Contract does not grant any rights or privileges established for employees of the County.

SECTION 16. LIMIT OF APPROPRIATIONS

16.1 <u>Limit of Appropriations</u>: Funds for payment of this Contract have been provided through the County budget approved by Commissioners Court for this fiscal year only. The State of Texas law prohibits the obligation and expenditure of public funds beyond the current fiscal year. The fiscal year for the County extends from January 1 of each calendar year until December 31 of the same calendar year. It is the expectation of the County that funding will be available to pay for the expenditures related to this Contract. Notwithstanding anything to the contrary in this Contract, if at any time during the term of this Contract the County's following fiscal year, does not adopt a budget for expenditures, or is only able to partially fund the expenditures required by this Contract, the County may, upon giving Contractor written notice of such failure, terminate this Contract, or a part hereof without any further liability to Contractor. Neither County, its elected officials, employees, agents, insurers, attorneys, nor any other individual acting on behalf of County may make any representation or warranty as to whether any appropriation will, from time to time, be made by the Waller County Commissioners Court. The failure of County to appropriate sufficient funds will not cause the County to be in default under this Agreement, and Contractor's sole and exclusive remedy shall be to terminate this Agreement. The County shall pay Contractor for any services already rendered under this Contract prior to the effective date of the termination.

SECTION 17. TEXAS REQUIRED CERTIFICATIONS

- 17.1 <u>No Boycotting Israel</u>: By signature affixed hereto, Contractor certifies that it does not currently boycott Israel, and will not boycott Israel during the term of this Contract.
- 17.2 <u>Texas Comptroller's List of Prohibited Companies</u>: By signature affixed hereto, Contractor certifies that it is not listed on the website of the Texas Comptroller concerning the listing of companies that are identified under Texas Government Code §§ 806.051, 807.051, or 2253.153.
- 17.3 <u>No Energy Company Boycott</u>: By signature affixed hereto, Contractor certifies that it does not currently boycott energy companies, and will not boycott energy companies during the term of this Contract.
- 17.4 <u>No Discrimination Against Firearm and Ammunition Industries</u>: By signature affixed hereto, Contractor certifies that it does not currently discriminate against firearm and ammunition industries, and that it will not during the term of this Contract.

SECTION 18. MISCELLANEOUS PROVISIONS

- 18.1 <u>Jurisdiction and Venue</u>: This Contract is made in and shall be construed according to the laws of the State of Texas, without regard to its conflict of laws provisions. Venue of any court action(s) brought directly or indirectly by reason of this Contract shall be in a court of competent jurisdiction in Waller County, Texas. This Contract is made and is to be performed in Waller County, Texas.
- 18.2 <u>Right of Review</u>: The County may review any and all of the goods and services performed by Contractor under this Agreement. The County is granted the right to audit, at the County's election, all of Contractor's records and billings related to the performance of this Contract as may be reasonably necessary. Any payment, settlement, satisfaction, or release made or provided during the course of performance of this Contract shall be subject to County's rights as may be disclosed by a review under this Section.
- 18.3 <u>No Waiver</u>: No claim or right arising out of a breach of this Contract can be discharged in whole or in part by a waiver or renunciation of the claim or right unless the waiver or renunciation is supported by consideration and is in writing signed by the aggrieved Party. The County's failure to require strict performance of any provision of this Contract does not waive or diminish the County's right thereafter to demand strict compliance with that or any other provision. The County's waiver or failure to exercise in any respect any right provided for in this Contract shall not be deemed a waiver of any further right under this Contract. The County does not waive, modify, or alter to any extent any of its defenses, immunities, or remedies.

- 18.4 <u>No Personal Liability</u>: Nothing herein shall be construed as creating any personal liability for any officer, agent, or employee of the County.
- 18.5 <u>Severability</u>: If any provision of this agreement is invalid, illegal, or unenforceable under any applicable statute, court decision, or rule of law, it is to that extent deemed to be omitted. In such event, there shall be substituted for such deleted provision a provision as similar as possible in terms and in effect to such deleted provision that is valid, legal, or enforceable. The remainder of the agreement shall be valid and enforceable to the maximum extent possible.
- 18.6 <u>Entire Agreement</u>: This Contract, together with all of its appendices, embodies the complete agreement of the Parties hereto, superseding all oral or written previous and contemporary agreements between the Parties and relating to matters in this Contract. By entering into this Contract, the Parties do not intend to create any obligations, express or implied, other than those specifically set out in this Contract.
- 18.7 <u>Modification</u>: The Contract may not be modified, altered, or amended except by written instrument duly authorized by the Waller County Commissioners Court and executed by both Parties.
- 18.8 <u>Titles Not Restrictive</u>: The titles assigned to the various sections and paragraphs of this Contract are for convenience only. Titles shall not be considered restrictive of the subject matter of any part of this Contract.
- 18.9 <u>Tax Exempt</u>: The County is a tax-exempt entity under Texas Tax Code § 151.039, and will not pay a tax from which it is exempt. Tax exempt paperwork will be provided upon written request for the purchase of any items qualifying for exemption under this Contract. In accordance with applicable laws and regulations, Contractor shall issue its Texas Resale Certificate to vendors and subcontractors for items that qualify for exemption. The Contractor shall be responsible for paying any and all taxes assessed, in whole or in part, on the Project or the Work. The County will not pay for, or reimburse Contractor for any tax from which it is exempt.
- 18.10 <u>No Arbitration</u>: A dispute arising under this Contract shall not be subject to arbitration.
- 18.11 <u>Waiver of Subrogation</u>: Contractor, Subcontractor's, and their insurance carriers waive any and all rights whatsoever with regard to subrogation against County as indirect parties to any suit arising out of personal or property damages resulting from Contractor's or Subcontractor's, or their employees' performance under this Contract.
- 18.12 <u>Successors and Assigns</u>: Waller County and the Contractor bind themselves, and their permitted successors executors, administrators, and assigns to this Contract. Neither Party shall assign, sublet, or transfer its interest, in whole or in part, in this Contract without the prior written consent of the other Party. The following conditions must be met before any permitted assignment becomes effective: a) Contractor must give written notice of a proposed assignment to the County at least thirty (30) days prior to the effective date of the assignment; b) the assignee must explicitly accept all of Contractor's obligations under this Contract; c) Contractor must retain its obligations to the County under this Contract until the assignment is effective; d) the assignment must be executed by both Contractor and the assignee; e) Contractor must provide the County a fully executed assignment agreement

not later than five (5) business days after the assignment is signed, and f) the County provides a signed, written consent to the assignment.

- 18.13 <u>Illegal Price Fixing</u>: Contractor agrees to assign to the County any rights it may have to bring antitrust suits against its Suppliers for overcharges on materials incorporated in the Project growing out of illegal price fixing agreements. Contractor further agrees to cooperate with the County should the County which to prosecute suits against Suppliers for illegal price fixing.
- 18.14 <u>Right to Offset</u>: No money shall be paid by the County upon any claim, debt, demand, or account to any person, firm, corporation, or entity who owes taxes or any other debt to the County. The County shall be entitled to offset any such debt, claims, demand, or account by deducting the amount of taxes due to the County from any payment due to the Contractor. No assignment, or transfer of any such debt, claim, demand, or account after said taxes are due or other debt accrues shall affect the right of the County to so offset said taxes or other debt against the Contractor.
- 18.15 <u>No Third-Party Beneficiaries</u>: This Contract does not inure to the benefit of any third party, except permitted successor or assigns.
- 18.16 <u>Authority to Sign</u>: Signatories to this Contract represent and warrant that they have the authority to bind the respective parties.
- 18.17 <u>Public Communications</u>: Contractor shall not, under any circumstance, release any material or information developed in the performance of its services hereunder without the express written permission of the County, except where required by law to do so. If required by law to release any material or information, Contractor shall notify the County before the release. County shall be solely responsible for communicating with and providing information to the news media, citizens of Waller County, and other governmental agencies.
- 18.18 <u>Confidentiality</u>: The County is bound by Texas Government Code Chapter 552, the Public Information Act, and other laws concerning government records. Contractor shall clearly and noticeably mark all confidential information and documents it provides to the County pursuant to this Contract. The County will make good faith efforts to promptly notify Contractor if any such information is requested in a public information request, subpoena, or other method so Contractor may argue against the release of such information. Contractor recognizes and understands that the final decision as to what information must be disclosed pursuant to the PIA lies with the Texas Attorney General. Contractor further agrees that the County may furnish information acquired through or pursuant to this Contract and that is requested through the PIA to the Texas Attorney General for a determination of whether the information must be disclosed. Neither the County, nor any of its officers, or employees shall have any liability or obligation to any party for the disclosure to the public, or to any person or persons, of any items or data furnished to the County by Contractor in reliance on any statute, court opinion, court order, or the advice, decision, or opinion of the Texas Attorney General.
- 18.19 <u>Notices</u>: Notices delivered hereunder shall be in writing and shall be delivered by personal delivery or certified mail, return receipt requested. Mailed notices shall be deemed received three (3) business days after the notice is placed in the mail with proper postage paid. Any

notice or certification to be provided pursuant to this Agreement shall be delivered to the following persons, unless a substitute representative is designated in writing:

To the County

Attn: County Judge 425 FM 1488, Suite 106 Hempstead, Texas 77445

With a copy to:

Waller County Road & Bridge Dept. Attn: Ross McCall 775 Bus 290 East Hempstead, Texas 77445 To Contractor:

As indicated on Bidder's Business Information Sheet

END

Contract Special Terms and Conditions

Bidder must clearly identify on this form whether it requests any Special Terms and Conditions that deviate from the Bid Documents, including the Contract Documents, or any other requirements contained in the IFB. Complete and detailed information regarding deviations must be clearly identified on this form. The County will consider any Special Terms and Conditions in its Contract award decision, and reserves the right to accept or reject a Bid based upon any submitted deviation.

In the absence of the identification on this form of requested deviations, Bidder must fully comply with the Bid Documents and Contract Documents and all other requirements associated with this IFB if awarded a Contract under this IFB. A deviation will not be effective unless it is accepted by the County. The County may, in its sole discretion, seek clarification from and/or communicate with Bidder(s) regarding any submitted deviation, consistent with general procurement principles of fair competition. The County reserves the right to accept or reject a Bid based upon any submitted deviation.

Please mark one of the following:

□ Bidder requests NO deviations.

 \Box Bidder requests deviations.

Specifically identify the language and location or section of the Bid Documents and/or Contract Documents that Bidder is requesting a deviation from, and provide the specific language to be substituted as Special Terms and Conditions. Attach the sheet(s) containing the requested deviations to his form.

Company Name

Date

Signature of Authorized Company Official

Printed Name

Contract Sheet

Contract Sheet Bid 25-001

THE STATE OF TEXAS COUNTY OF WALLER

This Contract is made and entered into on the _____ day of _____, 2025, by and between Waller County, Texas, a political subdivision of the State of Texas ("County"), acting through County Judge Carbett "Trey" Duhon, III by virtue of an order of Waller County Commissioners Court, and ______, of the City of ______, County of ______, and State of ______ ("Contractor") (referred to individually as "Party," and collectively as "Parties").

In consideration of the promises, performances, payments, and agreements set forth herein, Contractor hereby agrees to commence and complete the following Project: **Construction of Riley Road Roadway & Bridge Replacement for Waller County**, and all Work in accordance with the Contract Documents, which are incorporated herein by reference and made a part hereof for all purposes as if each were set out at length, word for word, and the County agrees to pay the Contractor the total amount of:

\$	
(Figures)	(Words)

The Contractor hereby agrees to commence work on the date specified in the written Notice to Proceed to be issued by the County, and to finally complete construction of the improvements, as required by the Contract Documents within ______ calendar days. Waiver of any breach of this Contract shall not constitute waiver of any subsequent breach.

In consideration of the award and execution of this Contract, and in consideration of the waiver of its right to attorney's fees by the County, the Contractor knowingly and intentionally waives its right to attorney's fees under Texas Local Government Code Section 271.153 in any administrative proceeding, alternative dispute resolution proceeding, or litigation arising out of or connected to this Contract.

The County agrees to pay the Contractor from available funds for performance of the Contract in accordance with the Bind and provisions of the Contract Documents, subject to additions and deductions, as provided therein.

The County's payment obligations are payable only and solely from funds available for the purposes of this Contract.

It is further agreed that this contract shall not become binding or effective until signed by the parties hereto and a purchase order authorizing the items desired has been issued.

Although drafted by the County, the Contract, in the event of any disputes over its meaning or application, shall be interpreted fairly and reasonably, and neither more strongly for nor against either Party.

This Contract is executed to be effective upon the date of the last signature affixed hereto.

The undersigned, by their signature, represents that they are authorized to bind the Contractor to fully comply with the Contract. The Contractor, by signing below, acknowledges that they have read the entire Contract, and agree to be bound by the terms contained therein.

Approved this	day of	20	
- pprover mile			

Waller County, Texas

County Judge, Carbett "Trey" Duhon, III

By: Signature of Contractor

Date

Date

Printed Name and Title of Signatory

ATTEST

Debbie Hollan, County Clerk

Request for Taxpayer Identification Number and Certification

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

Before	fore you begin. For guidance related to the purpose of Form W-9, see Purpose of Form, below.								
	1	Name of entity/individual. An entry is required. (For a sole proprietor or disregarded entity, enter the overtity's name on line 2.)	vner's name on line	1, and enter the business/disregarded					
	2	Business name/disregarded entity name, if different from above.							
Print or type. Specific Instructions on page 3.	3a 3b	 Check the appropriate box for federal tax classification of the entity/individual whose name is entered only one of the following seven boxes. Individual/sole proprietor C C corporation Partnership LLC. Enter the tax classification (C = C corporation, S = S corporation, P = Partnership) Note: Check the "LLC" box above and, in the entry space, enter the appropriate code (C, S, or P) for classification of the LLC, unless it is a disregarded entity. A disregarded entity should instead check box for the tax classification of its owner. Other (see instructions) If on line 3a you checked "Partnership" or "Trust/estate," or checked "LLC" and entered "P" as its tax and you are providing this form to a partnership, trust, or estate in which you have an ownership in this box if you have any foreign partners, owners, or beneficiaries. See instructions 	on line 1. Check	 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3): Exempt payee code (if any) Exemption from Foreign Account Tax Compliance Act (FATCA) reporting code (if any) (Applies to accounts maintained outside the United States.) 					
See	5	Address (number, street, and apt. or suite no.). See instructions.	Requester's name a	and address (optional)					
	6	City, state, and ZIP code							
	7	List account number(s) here (optional)							
Par	t I	Taxpayer Identification Number (TIN)							
			Social sec	curity number					

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid	Soc	cial secu	rity r	iumb	er		
backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other			_			-	
entities, it is your employer identification number (EIN). If you do not have a number, see How to get a TIN later	or						
///v, idioi.	Em	ployer i	lentif	ficati	on ni	umb	er

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

Part II Certification

Under penalties of perjury, I certify that:

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

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

Sign	Signature of
Here	U.S. person

General Instructions

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

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

What's New

Line 3a has been modified to clarify how a disregarded entity completes this line. An LLC that is a disregarded entity should check the appropriate box for the tax classification of its owner. Otherwise, it should check the "LLC" box and enter its appropriate tax classification. New line 3b has been added to this form. A flow-through entity is required to complete this line to indicate that it has direct or indirect foreign partners, owners, or beneficiaries when it provides the Form W-9 to another flow-through entity in which it has an ownership interest. This change is intended to provide a flow-through entity with information regarding the status of its indirect foreign partners, owners, or beneficiaries, so that it can satisfy any applicable reporting requirements. For example, a partnership that has any indirect foreign partners may be required to complete Schedules K-2 and K-3. See the Partnership Instructions for Schedules K-2 and K-3 (Form 1065).

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS is giving you this form because they

Date

must obtain your correct taxpayer identification number (TIN), which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

• Form 1099-INT (interest earned or paid).

• Form 1099-DIV (dividends, including those from stocks or mutual funds).

• Form 1099-MISC (various types of income, prizes, awards, or gross proceeds).

• Form 1099-NEC (nonemployee compensation).

• Form 1099-B (stock or mutual fund sales and certain other transactions by brokers).

• Form 1099-S (proceeds from real estate transactions).

• Form 1099-K (merchant card and third-party network transactions).

• Form 1098 (home mortgage interest), 1098-E (student loan interest), and 1098-T (tuition).

• Form 1099-C (canceled debt).

Form 1099-A (acquisition or abandonment of secured property).

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

Caution: If you don't return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See *What is backup withholding*, later.

By signing the filled-out form, you:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued);

2. Certify that you are not subject to backup withholding; or

3. Claim exemption from backup withholding if you are a U.S. exempt payee; and

4. Certify to your non-foreign status for purposes of withholding under chapter 3 or 4 of the Code (if applicable); and

5. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting is correct. See *What Is FATCA Reporting*, later, for further information.

Note: If you are a U.S. person and a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

• An individual who is a U.S. citizen or U.S. resident alien;

 A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States;

An estate (other than a foreign estate); or

• A domestic trust (as defined in Regulations section 301.7701-7).

Establishing U.S. status for purposes of chapter 3 and chapter 4 withholding. Payments made to foreign persons, including certain distributions, allocations of income, or transfers of sales proceeds, may be subject to withholding under chapter 3 or chapter 4 of the Code (sections 1441–1474). Under those rules, if a Form W-9 or other certification of non-foreign status has not been received, a withholding agent, transferee, or partnership (payor) generally applies presumption rules that may require the payor to withhold applicable tax from the recipient, owner, transferor, or partner (payee). See Pub. 515, Withholding of Tax on Nonresident Aliens and Foreign Entities.

The following persons must provide Form W-9 to the payor for purposes of establishing its non-foreign status.

• In the case of a disregarded entity with a U.S. owner, the U.S. owner of the disregarded entity and not the disregarded entity.

 In the case of a grantor trust with a U.S. grantor or other U.S. owner, generally, the U.S. grantor or other U.S. owner of the grantor trust and not the grantor trust.

• In the case of a U.S. trust (other than a grantor trust), the U.S. trust and not the beneficiaries of the trust.

See Pub. 515 for more information on providing a Form W-9 or a certification of non-foreign status to avoid withholding.

Foreign person. If you are a foreign person or the U.S. branch of a foreign bank that has elected to be treated as a U.S. person (under Regulations section 1.1441-1(b)(2)(iv) or other applicable section for chapter 3 or 4 purposes), do not use Form W-9. Instead, use the appropriate Form W-8 or Form 8233 (see Pub. 515). If you are a qualified foreign pension fund under Regulations section 1.897(I)-1(d), or a partnership that is wholly owned by qualified foreign pension funds, that is treated as a non-foreign person for purposes of section 1445 withholding, do not use Form W-9. Instead, use Form W-8EXP (or other certification of non-foreign status).

Nonresident alien who becomes a resident alien. Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a saving clause. Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the payee has otherwise become a U.S. resident alien for tax purposes.

If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement to Form W-9 that specifies the following five items.

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.

2. The treaty article addressing the income.

3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.

4. The type and amount of income that qualifies for the exemption from tax.

5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

Example. Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident alien for tax purposes if their stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first Protocol) and is relying on this exception to claim an exemption from tax on their scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a nonresident alien or a foreign entity, give the requester the appropriate completed Form W-8 or Form 8233.

Backup Withholding

What is backup withholding? Persons making certain payments to you must under certain conditions withhold and pay to the IRS 24% of such payments. This is called "backup withholding." Payments that may be subject to backup withholding include, but are not limited to, interest, tax-exempt interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, payments made in settlement of payment card and third-party network transactions, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will not be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

Payments you receive will be subject to backup withholding if:

1. You do not furnish your TIN to the requester;

2. You do not certify your TIN when required (see the instructions for Part II for details);

3. The IRS tells the requester that you furnished an incorrect TIN;

4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only); or

5. You do not certify to the requester that you are not subject to backup withholding, as described in item 4 under "*By signing the filled-out form*" above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See *Exempt payee code*, later, and the separate Instructions for the Requester of Form W-9 for more information.

See also Establishing U.S. status for purposes of chapter 3 and chapter 4 withholding, earlier.

What Is FATCA Reporting?

The Foreign Account Tax Compliance Act (FATCA) requires a participating foreign financial institution to report all U.S. account holders that are specified U.S. persons. Certain payees are exempt from FATCA reporting. See *Exemption from FATCA reporting code*, later, and the Instructions for the Requester of Form W-9 for more information.

Updating Your Information

You must provide updated information to any person to whom you claimed to be an exempt payee if you are no longer an exempt payee and anticipate receiving reportable payments in the future from this person. For example, you may need to provide updated information if you are a C corporation that elects to be an S corporation, or if you are no longer tax exempt. In addition, you must furnish a new Form W-9 if the name or TIN changes for the account, for example, if the grantor of a grantor trust dies.

Penalties

Failure to furnish TIN. If you fail to furnish your correct TIN to a requester, you are subject to a penalty of \$50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

Civil penalty for false information with respect to withholding. If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a \$500 penalty.

Criminal penalty for falsifying information. Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

Misuse of TINs. If the requester discloses or uses TINs in violation of federal law, the requester may be subject to civil and criminal penalties.

Specific Instructions

Line 1

You must enter one of the following on this line; **do not** leave this line blank. The name should match the name on your tax return.

If this Form W-9 is for a joint account (other than an account maintained by a foreign financial institution (FFI)), list first, and then circle, the name of the person or entity whose number you entered in Part I of Form W-9. If you are providing Form W-9 to an FFI to document a joint account, each holder of the account that is a U.S. person must provide a Form W-9.

• Individual. Generally, enter the name shown on your tax return. If you have changed your last name without informing the Social Security Administration (SSA) of the name change, enter your first name, the last name as shown on your social security card, and your new last name.

Note for ITIN applicant: Enter your individual name as it was entered on your Form W-7 application, line 1a. This should also be the same as the name you entered on the Form 1040 you filed with your application.

• **Sole proprietor.** Enter your individual name as shown on your Form 1040 on line 1. Enter your business, trade, or "doing business as" (DBA) name on line 2.

• Partnership, C corporation, S corporation, or LLC, other than a disregarded entity. Enter the entity's name as shown on the entity's tax return on line 1 and any business, trade, or DBA name on line 2.

• Other entities. Enter your name as shown on required U.S. federal tax documents on line 1. This name should match the name shown on the charter or other legal document creating the entity. Enter any business, trade, or DBA name on line 2.

• **Disregarded entity.** In general, a business entity that has a single owner, including an LLC, and is not a corporation, is disregarded as an entity separate from its owner (a disregarded entity). See Regulations section 301.7701-2(c)(2). A disregarded entity should check the appropriate box for the tax classification of its owner. Enter the owner's name on line 1. The name of the owner entered on line 1 should never be a disregarded entity. The name on line 1 should be the name shown on the income tax return on which the income should be reported. For

example, if a foreign LLC that is treated as a disregarded entity for U.S. federal tax purposes has a single owner that is a U.S. person, the U.S. owner's name is required to be provided on line 1. If the direct owner of the entity is also a disregarded entity, enter the first owner that is not disregarded for federal tax purposes. Enter the disregarded entity's name on line 2. If the owner of the disregarded entity is a foreign person, the owner must complete an appropriate Form W-8 instead of a Form W-9. This is the case even if the foreign person has a U.S. TIN.

Line 2

If you have a business name, trade name, DBA name, or disregarded entity name, enter it on line 2.

Line 3a

Check the appropriate box on line 3a for the U.S. federal tax classification of the person whose name is entered on line 1. Check only one box on line 3a.

IF the entity/individual on line 1 is a(n)	THEN check the box for			
Corporation	Corporation.			
 Individual or 	Individual/sole proprietor.			
Sole proprietorship				
 LLC classified as a partnership for U.S. federal tax purposes or 	Limited liability company and enter the appropriate tax			
 LLC that has filed Form 8832 or 2553 electing to be taxed as a corporation 	classification: P = Partnership, C = C corporation, or S = S corporation.			
Partnership	Partnership.			
Trust/estate	Trust/estate.			

Line 3b

Check this box if you are a partnership (including an LLC classified as a partnership for U.S. federal tax purposes), trust, or estate that has any foreign partners, owners, or beneficiaries, and you are providing this form to a partnership, trust, or estate, in which you have an ownership interest. You must check the box on line 3b if you receive a Form W-8 (or documentary evidence) from any partner, owner, or beneficiary establishing foreign status or if you receive a Form W-9 from any partner, owner, or beneficiary that has checked the box on line 3b.

Note: A partnership that provides a Form W-9 and checks box 3b may be required to complete Schedules K-2 and K-3 (Form 1065). For more information, see the Partnership Instructions for Schedules K-2 and K-3 (Form 1065).

If you are required to complete line 3b but fail to do so, you may not receive the information necessary to file a correct information return with the IRS or furnish a correct payee statement to your partners or beneficiaries. See, for example, sections 6698, 6722, and 6724 for penalties that may apply.

Line 4 Exemptions

If you are exempt from backup withholding and/or FATCA reporting, enter in the appropriate space on line 4 any code(s) that may apply to you.

Exempt payee code.

• Generally, individuals (including sole proprietors) are not exempt from backup withholding.

• Except as provided below, corporations are exempt from backup withholding for certain payments, including interest and dividends.

• Corporations are not exempt from backup withholding for payments made in settlement of payment card or third-party network transactions.

• Corporations are not exempt from backup withholding with respect to attorneys' fees or gross proceeds paid to attorneys, and corporations that provide medical or health care services are not exempt with respect to payments reportable on Form 1099-MISC.

The following codes identify payees that are exempt from backup withholding. Enter the appropriate code in the space on line 4.

1—An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2).

2-The United States or any of its agencies or instrumentalities.

3—A state, the District of Columbia, a U.S. commonwealth or territory, or any of their political subdivisions or instrumentalities.

4—A foreign government or any of its political subdivisions, agencies, or instrumentalities.

5-A corporation.

6-A dealer in securities or commodities required to register in the United States, the District of Columbia, or a U.S. commonwealth or territory.

 $7-\mathrm{A}$ futures commission merchant registered with the Commodity Futures Trading Commission.

8—A real estate investment trust.

9—An entity registered at all times during the tax year under the Investment Company Act of 1940.

10—A common trust fund operated by a bank under section 584(a).

11-A financial institution as defined under section 581.

12-A middleman known in the investment community as a nominee or custodian.

13-A trust exempt from tax under section 664 or described in section 4947.

The following chart shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 13.

IF the payment is for	THEN the payment is exempt for					
Interest and dividend payments	All exempt payees except for 7.					
Broker transactions	Exempt payees 1 through 4 and 6 through 11 and all C corporations. S corporations must not enter an exempt payee code because they are exempt only for sales of noncovered securities acquired prior to 2012.					
Barter exchange transactions and patronage dividends	Exempt payees 1 through 4.					
• Payments over \$600 required to be reported and direct sales over \$5,000 ¹	Generally, exempt payees 1 through 5. ²					
Payments made in settlement of payment card or third-party network transactions	Exempt payees 1 through 4.					

¹See Form 1099-MISC, Miscellaneous Information, and its instructions.

² However, the following payments made to a corporation and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, gross proceeds paid to an attorney reportable under section 6045(f), and payments for services paid by a federal executive agency.

Exemption from FATCA reporting code. The following codes identify payees that are exempt from reporting under FATCA. These codes apply to persons submitting this form for accounts maintained outside of the United States by certain foreign financial institutions. Therefore, if you are only submitting this form for an account you hold in the United States, you may leave this field blank. Consult with the person requesting this form if you are uncertain if the financial institution is subject to these requirements. A requester may indicate that a code is not required by providing you with a Form W-9 with "Not Applicable" (or any similar indication) entered on the line for a FATCA exemption code.

A—An organization exempt from tax under section 501(a) or any individual retirement plan as defined in section 7701(a)(37).

B-The United States or any of its agencies or instrumentalities.

C-A state, the District of Columbia, a U.S. commonwealth or territory, or any of their political subdivisions or instrumentalities.

D-A corporation the stock of which is regularly traded on one or more established securities markets, as described in Regulations section 1.1472-1(c)(1)(i).

E-A corporation that is a member of the same expanded affiliated group as a corporation described in Regulations section 1.1472-1(c)(1)(i).

F-A dealer in securities, commodities, or derivative financial instruments (including notional principal contracts, futures, forwards, and options) that is registered as such under the laws of the United States or any state.

G-A real estate investment trust.

H-A regulated investment company as defined in section 851 or an entity registered at all times during the tax year under the Investment Company Act of 1940.

I-A common trust fund as defined in section 584(a).

J-A bank as defined in section 581.

K-A broker.

L-A trust exempt from tax under section 664 or described in section 4947(a)(1).

M—A tax-exempt trust under a section 403(b) plan or section 457(g) plan.

Note: You may wish to consult with the financial institution requesting this form to determine whether the FATCA code and/or exempt payee code should be completed.

Line 5

Enter your address (number, street, and apartment or suite number). This is where the requester of this Form W-9 will mail your information returns. If this address differs from the one the requester already has on file, enter "NEW" at the top. If a new address is provided, there is still a chance the old address will be used until the payor changes your address in their records.

Line 6

Enter your city, state, and ZIP code.

Part I. Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. If you are a resident alien and you do not have, and are not eligible to get, an SSN, your TIN is your IRS ITIN. Enter it in the entry space for the Social security number. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN.

If you are a single-member LLC that is disregarded as an entity separate from its owner, enter the owner's SSN (or EIN, if the owner has one). If the LLC is classified as a corporation or partnership, enter the entity's EIN.

Note: See *What Name and Number To Give the Requester*, later, for further clarification of name and TIN combinations.

How to get a TIN. If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local SSA office or get this form online at *www.SSA.gov.* You may also get this form by calling 800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at *www.irs.gov/EIN.* Go to *www.irs.gov/Forms* to view, download, or print Form W-7 and/or Form SS-4. Or, you can go to *www.irs.gov/OrderForms* to place an order and have Form W-7 and/or Form SS-4 mailed to you within 15 business days.

If you are asked to complete Form W-9 but do not have a TIN, apply for a TIN and enter "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, you will generally have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

Note: Entering "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon. See also *Establishing U.S. status for purposes of chapter 3 and chapter 4 withholding*, earlier, for when you may instead be subject to withholding under chapter 3 or 4 of the Code.

Caution: A disregarded U.S. entity that has a foreign owner must use the appropriate Form W-8.

Part II. Certification

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if item 1, 4, or 5 below indicates otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). In the case of a disregarded entity, the person identified on line 1 must sign. Exempt payees, see *Exempt payee code*, earlier.

Signature requirements. Complete the certification as indicated in items 1 through 5 below.

1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983. You must give your correct TIN, but you do not have to sign the certification.

2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983. You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.

3. Real estate transactions. You must sign the certification. You may cross out item 2 of the certification.

4. Other payments. You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments made in settlement of payment card and third-party network transactions, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).

5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), ABLE accounts (under section 529A), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions. You must give your correct

TIN, but you do not have to sign the certification. What Name and Number To Give the Requester

For this type of account: Give name and SSN of: 1. Individual The individual 2. Two or more individuals (joint account) The actual owner of the account or, other than an account maintained by if combined funds, the first individual an FFI on the account¹ 3. Two or more U.S. persons Each holder of the account (joint account maintained by an FFI) 4. Custodial account of a minor The minor² (Uniform Gift to Minors Act) 5. a. The usual revocable savings trust The grantor-trustee1 (grantor is also trustee) b. So-called trust account that is not The actual owner a legal or valid trust under state law The owner³ 6. Sole proprietorship or disregarded entity owned by an individual 7. Grantor trust filing under Optional The grantor Filing Method 1 (see Regulations section 1.671-4(b)(2)(i)(A))*

For this type of account: Give name and EIN of: 8. Disregarded entity not owned by an individual The owner 9. A valid trust, estate, or pension trust Legal entity⁴

The corporation

The partnership

The public entity

The broker or nominee

- 9. A valid trust, estate, or pension trust
 10. Corporation or LLC electing corporate status on Form 8832 or Form 2553
- 11. Association, club, religious, charitable, The organization educational, or other tax-exempt
- 12. Partnership or multi-member LLC

organization

- 13. A broker or registered nominee
- 14. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments
 15. Grantor trust filing Form 1041 or
- 15. Grantor trust filing Form 1041 or under the Optional Filing Method 2, requiring Form 1099 (see Regulations section 1.671-4(b)(2)(i)(B))**

¹List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

²Circle the minor's name and furnish the minor's SSN.

³You must show your individual name on line 1, and enter your business or DBA name, if any, on line 2. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

⁴List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.)

* **Note:** The grantor must also provide a Form W-9 to the trustee of the trust.

** For more information on optional filing methods for grantor trusts, see the Instructions for Form 1041.

Note: If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

Secure Your Tax Records From Identity Theft

Identity theft occurs when someone uses your personal information, such as your name, SSN, or other identifying information, without your permission to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- Protect your SSN,
- · Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax return preparer.

If your tax records are affected by identity theft and you receive a notice from the IRS, respond right away to the name and phone number printed on the IRS notice or letter.

If your tax records are not currently affected by identity theft but you think you are at risk due to a lost or stolen purse or wallet, questionable credit card activity, or a questionable credit report, contact the IRS Identity Theft Hotline at 800-908-4490 or submit Form 14039.

For more information, see Pub. 5027, Identity Theft Information for Taxpayers.

Victims of identity theft who are experiencing economic harm or a systemic problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 877-777-4778 or TTY/TDD 800-829-4059.

Protect yourself from suspicious emails or phishing schemes. Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.

The IRS does not initiate contacts with taxpayers via emails. Also, the IRS does not request personal detailed information through email or ask taxpayers for the PIN numbers, passwords, or similar secret access information for their credit card, bank, or other financial accounts.

If you receive an unsolicited email claiming to be from the IRS, forward this message to *phishing@irs.gov*. You may also report misuse of the IRS name, logo, or other IRS property to the Treasury Inspector General for Tax Administration (TIGTA) at 800-366-4484. You can forward suspicious emails to the Federal Trade Commission at *spam@uce.gov* or report them at *www.ftc.gov/complaint*. You can contact the FTC at *www.ftc.gov/idtheft* or 877-IDTHEFT (877-438-4338). If you have been the victim of identity theft, see *www.ldentityTheft.gov* and Pub. 5027.

Go to *www.irs.gov/IdentityTheft* to learn more about identity theft and how to reduce your risk.

Privacy Act Notice

Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons (including federal agencies) who are required to file information returns with the IRS to report interest, dividends, or certain other income paid to you; mortgage interest you paid; the acquisition or abandonment of secured property; the cancellation of debt; or contributions you made to an IRA, Archer MSA, or HSA. The person collecting this form uses the information on the form to file information returns with the IRS, reporting the above information. Routine uses of this information include giving it to the Department of Justice for civil and criminal litigation and to cities, states, the District of Columbia, and U.S. commonwealths and territories for use in administering their laws. The information may also be disclosed to other countries under a treaty, to federal and state agencies to enforce civil and criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism. You must provide your TIN whether or not you are required to file a tax return. Under section 3406, payors must generally withhold a percentage of taxable interest, dividends, and certain other payments to a payee who does not give a TIN to the payor. Certain penalties may also apply for providing false or fraudulent information.

ITEM CODE	ITEM DESCRIPTION	REFERENCE ITEMS
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Item 104	REMOVING CONCRETE	
Item 105	REMOVING TREATED AND UNTREATED BASE AND ASPHALT PAVEMENT	
Item 110	EXCAVATION	132
Item 132	EMBANKMENT	100, 110, 160, 204, 210, 216, 400
Item 164	SEEDING FOR EROSION CONTROL	162, 166, 168
Item 166	FERTILIZER	520
Item 168	VEGETATIVE WATERING	
Item 276	CEMENT TREATMENT (PLANT-MIXED)	204, 210, 216, 247, 300, 310, 520
Item 310	PRIME COAT	300, 316
Item 341	DENSE-GRADED HOT-MIX ASPHALT	300, 301, 320, 504, 520, 585
Item 400	EXCAVATION AND BACKFILL FOR STRUCTURES	110, 132, 401, 402, 403, 416, 420, 421, 423
Item 416	DRILLED SHAFT FOUNDATIONS	405, 420, 421, 423, 440, 448
Item 420	CONCRETE SUBSTRUCTURES	400, 404, 421, 422, 426, 427, 440, 441, 448
Item 422	CONCRETE SUPERSTRUCTURES	420, 421, 424, 440, 448, 454, 780
Item 425	PRECAST PRESTRESSED CONCRETE STRUCTURAL MEMBERS	409, 420, 421, 424, 426, 427, 434, 440, 442, 445, 448, 504
Item 432	RIPRAP	247, 420, 421, 431, 440
Item 450	RAILING	420, 421, 422, 424, 440, 441, 442, 445, 446, 448, 540
Item 454	BRIDGE EXPANSION JOINTS	429, 442, 785
Item 466	HEADWALLS AND WINGWALLS	400, 420, 421, 432, 440, 464
Item 502	BARRICADES, SIGNS, AND TRAFFIC HANDLING	503, 505, 510
Item 505	TRUCK-MOUNTED ATTENUATOR (TMA) AND TRAILER ATTENUATOR (TA)	
Item 506	TEMPORARY EROSION, SEDIMENTATION, AND ENVIRONMENTAL CONTROLS	161, 432, 556
Item 508	CONSTRUCTING DETOURS	292, 340
Item 512	PORTABLE TRAFFIC BARRIER	420, 421, 424, 440, 442, 445, 502, 514
Item 540	METAL BEAM GUARD FENCE	421, 441, 445, 492, 529
Item 544	GUARDRAIL END TREATMENTS	
Item 658	DELINEATOR AND OBJECT MARKER ASSEMBLIES	445
Item 662	WORK ZONE PAVEMENT MARKINGS	666, 668, 672, 677
Item 666	RETROREFLECTORIZED PAVEMENT MARKINGS	316, 502, 667, 677, 678
Item 672	RAISED PAVEMENT MARKERS	677, 678
Item 677	ELIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS	300, 302, 315, 316

SPECIAL PROVISIONS WILL GOVERN AND TAKE PRECEDENCE OVER THE SPECIFICATIONS ENUMERATED HERON WHEREVER IN CONFLICT THEREWITH.

SP000-001	NONDISCRIMINATION: Provides for the inclusion of nondiscrimination clauses into every contract subject to Title VI of the Civil Rights Act of
	1964. (2014 SP 000-002)
SP000-002	CERTIFICATION OF NONDISCRIMINATION IN EMPLOYMENT: Add certification of having had a previous contract or subcontract subject to the
	equal opportunity clause required by the Equal Employment Opportunity Regulations of the Secretary of Labor. (2014 SP 000-006)
SP000-004	ON-THE-JOB TRAINING PROGRAM: Revises the process by which training assignments are based. (2014 SP 000-006)
SP000-007	CARGO PREFERENCE ACT REQUIREMENTS IN FEDERAL AID CONTRACTS: Notification of the requirement to comply with the U.S. Department
SP000-016	NOTICE OF CONTRACTOR PERFORMANCE EVALUATIONS: In accordance with 43 TAC subchapter 9.26, this special provision notifies the
	contractor of the evaluation of contractor performance under 43 TAC subchapter 9.23. (2014 SP 000-659)
SP000-017	CERTIFICATE OF INTERESTED PARTIES (FORM 1295): Revised notification, no longer required to submit a signed notarized Certificate of
	Interested Parties Disclosure form 1295 at contract execution, with contract amendments (COs), extensions, and renewals. (2014 SP 000-
	1019)
SP000-022	DISADVANTAGED BUSINESS ENTERPRISE IN FEDERAL AID: For project in Waller County. This is the 2014 DBE special provision. This is to be
	used for 2024 specifications until special provision reflecting the final rule is processed.
SP000-024	REQUIRED CONTRACT PROVISIONS. ALL FEDERAL-AID PROJECTS (REV. 10-23) (FORM FHWA 1273)
SP000-025	WAGE RATES
SP000-031	SCHEDULE OF LIQUIDATED DAMAGES
SP006-001	Comply with the latest provisions of Buy America pertaining to steel and iron in accordance with 23 CFR S635.410.
SP300-003	Tables 3 and 18 have been updated with specific values for polymer seperation and with reference to Tex-554-C. Specificaion limits for cement
	mixing in Table 8 has been updated to reflect the values in SS 3096 (2014). Required for all projects using Asphalts, Oils, and Emulsions,
	beginning with the February 2025 letting. However, use of this Special Provision prior to the February 2025 letting is at the District's option

WALLER COUNTY ROAD & BRIDGE REPLACEMENT WALLER COUNTY, TEXAS

RILEY ROAD ROADWAY & BRIDGE REPLACEMENT BIRCH CREEK

707



DESIGN SPEED = 40 MPH ADT: EXISTING BRIDGE ID: 122370AA0313002 PROPOSED BRIDGE ID

INDEX OF SHEETS

SEE SHEET 2 FOR INDEX OF SHEETS

PRECINCT 3

PRECINCT 4



Signed by: FB37A5230EA6465.

J. ROSS MCCALL, PE COUNTY ENGINEER

6/16/2025

DATE:

Docusign Envelope ID: 9431C2BD-1389-4D24-AB2B-C78D8339542E

		GENERAL			BRIDGE STANDARDS
	1	TITLE SHEET	##	60	CRR
	2	INDEX OF SHEET	##	61-62	CSAB
	3	RILEY RD AT BIRCH CREEK TYPICAL SECTIONS	##	63-64	FD
	4	OVERALL SUMMARY OF QUANTITIES	##	65-66	IGD
			##	67-69	IGEB
		TRAFFIC CONTROL	##	70-71	IGMS
		<u>marie connol</u>	##	72	IGSK
	5	RILEY RD AT BIRCH CREEK TRAFFIC CONTROL PLAN TYPICAL SECTIONS	##	73	IGTS
	6	RILEY RD AT BIRCH CREEK TRAFFIC CONTROL PLAN PHASE 1 LAYOUT STEP A	##	74	NBIS
	7	RILEY RD AT BIRCH CREEK TRAFFIC CONTROL PLAN PHASE I LAYOUT STEP B	##	75-78	PCP
	8	RILEY RD AT BIRCH CREEK TRAFFIC CONTROL PLAN PHASE 2 LAYOUT STEP A	##	79	PCP-FAB
	9	RILEY RD AT BIRCH CREEK TRAFFIC CONTROL PLAN PHASE 2 LATOUT STEP B	##	80-81	T631LS
		TRAFFIC CONTROL STANDARDS			TRAFFIC
#	10-21	DC(1) 21 TUDU DC(12) 21		82	RILEY RD AT BIRCH CREEK SIGNING AND PAVEMENT MARKING LAYOUT
#	22.23	BC(1)-21 THRU BC(12)-21		02	MEET ND AT DINCH CREEK SJONING AND TAVEPIENT PIANNING EATOOT
#	22 25				
#	25	TCP(1-1)-18			<u>TRAFFIC STANDARDS</u>
#	26	ICP(1-2)-18	#	83	D&OM(1)-20
#	27	WZ(RCD)-13	" #	84	D&OM(2)-20
#	28	WZ(STPM)-23	#	85	D&OM(3)-20
<i>n</i>	20	WZ(TD)-17	#	86	D&OM(4)-20
		2010////	#	87	D&OM(5)-20
		<u>ROADWAY</u>	" #	88	PM(1)-22
	29-30	RILEY RD AT RIRCH CREEK SURVEY CONTROL SHEET	" #	89	PM(2)-22
	31	RILEY RD AT BIRCH CREEK HORIZONTAL ALIGNMENT DATA			
	32	RILEY RD AT BIRCH CREEK REMOVAL LAYOUT			
	33-34	RILEY RD AT BIRCH CREEK PLAN AND PROFILE			
	35	RILEY RD AT BIRCH CREEK GRADING PLAN		90	EPIC
				91-92	RILEY RD AT RIRCH CREEK STORM WATER POLITITION PREVENTION PLAN (SW3P)
		ROADWAY_STANDARDS		93	RILEY RD AT BIRCH CREEK SW3P LAYOUT
#	36	BED-14			ENVIRONMENTAL STANDARDS
#	37	GF(31)-19			
#	38	GF(31)D4T-19	#	94	EC(1)-16
#	39	GF(31)MS-19	#	95	EC(2)-16
#	40	SGT(10S)31-16			
#	41	SGT(11S)31-18			
#	42	SGT(125)31-18			
#	43	SGT(15)31-20			
#	44	TE(HMAC)-11			
		DRAINAGE			
	45-47	RILEY ROAD AT RIRCH CREEK HYDRAUU'C DATA CHEET			
	48	NILLI NUAD AL DINUTI UNEEN TEDRAULIU DATA STEET RILEY ROAD BRIDGE AT RIRCH CREEK SCOLIR ENVELOPE			
		MELT NOAD DNIDGE AT DINCH CREEK SCOUR ENVELUPE			
		DRAINAGE STANDARDS			
#	49	CH-PW-0			
		BRIDGE			
	50	RILEY RD AT BIRCH CREEK - ESTIMATED QUANTITIES & BEARING SEAT ELEVATIONS			
	51	RILEY RD AT BIRCH CREEK - BRIDGE LAYOUT			
	52-53	RILEY RD AT BIRCH CREEK - TYPICAL SECTIONS			
	54-55	RILEY RD AT BIRCH CREEK - ABUTMENT DETAILS			
	56	RILEY RD AT BIRCH CREEK - FOUNDATION LAYOUT			
	57	RILEY RD AT BIRCH CREEK - FRAMING PLAN			
	58	RILEY RD AT BIRCH CREEK - 100.000' PRESTRESSED CONC I-GIRDER UNIT			
	59	IGND			

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT. 4/11/2025 DATE ##THE STANDARD SHEETS SPECIFICALLY IDENTIFIED HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT. 4/11/2025 SIGNATURE DATE NO. DATE REVISION APPROV 13501 KATY FREEWAY SUITE 3425 FIRM REGISTRATION No. HOUSTON, TEXAS 77079 F-10161 (832) 494-3800 IΕΑ WALLER COUNTY * RILEY RD AT BIRCH CREEK INDEX OF SHEETS SHEET 1 OF 1 DRAWING BY DATE HIGHWAY 4/11/2025 RILEY RD TL SHEET NO. 2 CHECKED BY PROJECT NO. WO IEA Project No:







NOTES

1. CONTRACTOR SHALL SCARIFY AND MOISTURE CONDITION THE EXISTING SUBGRADE TO 6" AND SUBSEQUENTLY RECOMPACT SUBGRADE TO PROVIDE 95% OF MAXIMUM DRY DENSITY AT 0% TO +3% OPTIMUM MOISTURE



					SUMMARY OF R	DADWAY ITEMS						
LOCATION	110	110	132	276	310	341	432	432	466	540	540	544
	7001	7002	7001	7129	7013	7001	7002	7013	7107	7001	7015	7001
	EXCAV (ROADWAY)	EXCAV (CHANNEL)	EMBANK (FNL)(OC)(TY A)	CEM TRT(PLNT MX)(CL L)(TYA)(GR1-2)(12")	PRIME COAT(MC-30 OR AE-P)	D-GR HMA TY-B PG64-22	RIPRAP (CONC)(5 IN)	RIPRAP (MOW STRIP)(4 IN)	HEADWALL (CH - PW - 0) (DIA = 48 IN)	MTL W-BEAM GD FEN (TIM POST)	DOWNSTREAM ANCHOR TERMINAL SECTION	GUARDRAIL END TREATMENT (INSTALL)
	СҮ	СҮ	СҮ	SY	GAL	τον	СҮ	СҮ	EA	LF	EA	EA
RILEY RD AT BIRCH CREEK	323	1018	390	1499	330	239	15	17	1	75	2	2
PROJECT TOTALS	323	1018	390	1499	330	239	15	17	1	75	2	2

	SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS									
LOCATION	502 7001	505 7001	508 7001	512 7009	512 7010	512 7057	512 7058	662 7068		
	BARRICADES, SIGNS AND TRAFFIC HANDLING	TMA (STATIONARY)	CONSTRUCTING DETOURS	PORT CTB (FUR & INST)(LOW PROF)(TY 1)	PORT CTB (FUR & INST)(LOW PROF)(TY 2)	PORT CTB (REMOVE)(LOW PROF)(TY 1)	PORT CTB (REMOVE)(LOW PROF)(TY 2)	WK ZN PAV MRK REMOV (W)6"(SLD)		
	мо	DAY	SY	LF	LF	LF	LF	LF		
PHASE 1 STEP A		1	98							
PHASE 1 STEP B		2						696		
PHASE 2 STEP A				100	40			1460		
PHASE 2 STEP B		2				100	40	150		
PROJECT TOTALS	5	5	98	100	40	100	40	2306		

SUMMARY OF PAVEMENT MARKING ITEMS									
LOCATION	644	658	658	666	666	672			
	7065	7016	7019	7265	7269	7004			
	RELOCATE SM RD SN SUP&AM TY 10BWG	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF1 (BI)	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)	RE PROFILE PM TY I(W)6"(SLD)(0 90MIL)	RE PROFILE PM TY I(Y)6"(SLD)(09 OMIL)	REFL PAV MRKR TY II-A-A			
	EA	EA	EA	LF	LF	EA			
RILEY RD AT BIRCH CREEK	5	10	8	1315	1315	17			
PROJECT TOTALS	5	10	8	1315	1315	17			

SUMMARY OF REMOVAL ITEMS							
LOCATION	100	104	105				
	7002	7029	7032				
	PREPARING ROW	REMOV CONC (HEADWALL)	RMV (12") TRT/UNTRT BASE & ASPH PAV				
	STA	CY	SY				
RILEY RD AT BIRCH CREEK	7	40	1552				
PROJECT TOTALS	7	40	1552				

SUMMARY OF EROSION CONTROL ITEMS										
LOCATION	160	162	164	164	166	168	506	506	506	506
	7002	7002	7009	7013	7001	7001	7002	7011	7039	7041
	FURN & PLACE TOPSOIL (4")	BLOCK SODDING	DRILL SEED (PERM_RURAL_ SAND)	DRILL SEED (TEMP_WARM)	FERTILIZER *	VEGETATIVE WATERING	ROCK FILTER DAMS (INSTALL) (TY 2)	ROCK FILTER DAMS (REMOVE)	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)
	SY	SY	SY	SY	AC	TGL	LF	LF	LF	LF
RILEY RD AT BIRCH CREEK	419	419	1512	756	0.09	48	120	120	1320	1320
PROJECT TOTALS	419	419	1512	756	0.09	48	120	120	1320	1320

		SUMMARY	OF BRIDGE ITEN	15				
LOCATION	400	416	420	422	425	432	450	454
	7010	7006	7012	7001	7003	7002	7021	7001
	CEM STABIL BKFL	DRILL SHAFT (36 IN)	CL C CONC (ABUT)	REINF CONC SLAB	PRESTR CONC GIRDER (TX40)	RIPRAP (CONC)(5 IN)	RAIL (TY T631LS)	TYPE A JOINT
	СҮ	LF	СҮ	SF	LF	СҮ	LF	LF
PHASE 1								
2 - ABUTMENTS	28	234	22.5					
1 - 100.00' PRESTR CONC Tx GIRDER UNIT 1				1300	298.5	17	120	26
PHASE 2								
2 - ABUTMENTS	21	117	17.5					
1 - 100.00' PRESTR CONC T× GIRDER UNIT 1				1300	199	17	120	26
PROJECT TOTALS	49	351	40	2600	497.5	34	240	52





JOHN A. HASKINS, III 114305 4/23/2025							
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IYPICAL SECTIONS							
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SHEET NO. 7



- 3. CONSTRUCT WESTBOUND HALF OF PROPOSED BRIDGE STRUCTURE (DRILL SHAFTS, WINGWALLS, AND BRIDGE DECK) AS SHOWN ON TCP LAYOUT SHEET.
- 2. MODIFY EROSION CONTROL MEASURES IN ACCORDANCE WITH SWP3 SITE PLAN.
- PHASE 2 STEP A: 1. OPEN PROPOSED EASTBOUND RILEY ROAD TO TRAFFIC. MAINTAIN WESTBOUND TRAFFIC ON TEMPORARY BRIDGE.
- SEQUENCE OF WORK:







SEQUENCE OF WORK: PHASE 2 STEP B:



SET PROJECT BARRICADES AND ADVANCE WARNING SIGNS AS SHOWN ON TCP (1-2b)
 MODIFY EROSION CONTROL MEASURES IN ACCORDANCE WITH SWP3 SITE PLAN.

5. REMOVE EXISTING WESTBOUND RILEY ROAD PAVEMENT AND TEMPORARY PAVEMENT.

4. REMOVE REMAINING TEMPORARY BRIDGE (BY OTHERS). REMOVE CRASH CUSHION ATTENUATORS.

6. CONSTRUCT PROPOSED WESTBOUND PAVEMENT ALONG RILEY ROAD AS SHOWN ON TCP LAYOUT SHEET.

3. CLOSE EXISTING WESTBOUND RILEY ROAD AND ESTABLISH ONE LANE, TWO-WAY TRAFFIC ON PROPOSED EASTBOUND RILEY ROAD USING A FLAGGING OPERATION (SEE NOTES 1 AND 2).



<u>LEGEND</u>

- ➡ EXISTING LANE
- PHASE CONSTRUCTION
- TEMP PAVEMENT (THIS PHASE)
- TEMP PAVEMENT (PREVIOUS PHASE)
- PREVIOUS PHASE CONSTRUCTION
- CONCRETE RIPRAP
- LPCTB
- CHANNELIZING DEVICE

NOTES:

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- 1. CONTRACTOR TO CONSTRUCT APPROPRIATE RIDING SURFACE AND OPEN RILEY ROAD TO 2-LANE, 2-WAY TRAFFIC AT THE END OF EACH WORK DAY.
- 2. UTILIZE UNEVEN LANES SIGN (CW8-11) IF RIDING SURFACE AT THE END OF WORK DAY HAS AN ELEVATION DIFFRENCE GREATER THAN 1 INCH BETWEEN ADJACENT TRAVEL LANES.
- 3. ALLOWABLE TIMES FOR TEMPORARY LANE CLOSURES SHALL BE LIMITED TO MONDAY THROUGH FRIDAY, 9:00 AM THROUGH 4:00 PM
- 4. PLACE PORTABLE LOW PROFILE CONCRETE BARRIER AS SHOWN ON THE PLANS TO PROTECT BRIDGE RAIL PRIOR TO OPENING WESTBOUND LANE TO TRAFFIC AT THE END OF EACH WORK DAY.



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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

- 1. The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
- The development and design of the Traffic Control Plan (TCP) is the 2. responsibility of the Engineer.
- The Contractor may propose changes to the TCP that are signed and sealed 3. by a licensed professional engineer for approval. The Engineer may develop. sign and seal Contractor proposed changes.
- 4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.
- 5. Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets," the TxDOT "Roadway Design Manual" or engineering judgment.
- When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.
- The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.
- 8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.
- The temporary traffic control devices shown in the illustrations of the 9. BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.
- 10. Where highway construction or maintenance work is being undertaken, other than mobile operations as defined by the Texas Manual on Uniform Traffic Control Devices, CSJ limit signs are required. CSJ limit signs are shown ON BC(2). THE OBEY WARNING SIGNS STATE LAW sign. STAY ALERT TALK OR TEXT LATER and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. The BEGIN ROAD WORK NEXT X MILES. CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits. For mobile operations, ČSJ limit signs are not required.
- 11. Traffic control devices should be in place only while work is actually in progress or a definite need exists.
- 12. The Engineer has the final decision on the location of all traffic control devices.
- 13. Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

WORKER SAFETY NOTES:

- 1. Workers on foot who are exposed to traffic or to construction equipment within the right-of-way shall wear high-visibility safety apparel meeting the requirements of ISEA "American National Standard for High-Visibility" Apparel," or equivalent revisions, and labeled as ANSI 107-2004 standard performance for Class 2 or 3 risk exposure. Class 3 garments should be considered for high traffic volume work areas or night time work.
- 2. Except in emergency situations, flagger stations shall be illuminated when flagging is used at night.

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

- 1. Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources.
- 2. Work zone traffic control devices shall be compliant with the Manual for Assessing safety Hardware (MASH).

THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT http://www.txdot.gov
COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS)"
STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD)
TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD)
TRAFFIC ENGINEERING STANDARD SHEETS

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TYPICAL	CONSTRUCTION	WARNING	SIGN	SIZE	AND	SPACING 1,5,6

SIZE

Sign Number or Series	Conventional Road	Expressway/ Freeway		
CW20 ⁴ CW21 CW22 CW23 CW25	48" × 48"	48" × 48"		
CW1, CW2, CW7, CW8, CW9, CW11, CW14	36" × 36"	48" × 48"		
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12	48" × 48"	48" × 48"		

Posted Speed	Sign∆ Spacing "X"
MPH	Feet (Apprx.)
30	120
35	160
40	240
45	320
50	400
55	500 ²
60	600 ²
65	700 ²
70	800 ²
75	900 ²
80	1000 ²
*	* 3

SPACING

★ For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

ightarrow Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

GENERAL NOTES

- 1. Special or larger size signs may be used as necessary.
- 2. Distance between signs should be increased as required to have 1500 feet advance warning.
- 3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
- 4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may be used on low volume crossroads at the discretion of the Engineer as per TMUTCD Part 5. See Note 2 under "Typical Location of Crossroad Signs".
- 5. Only diamond shaped warning sign sizes are indicated.

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6. See sign size listing in "TMUTCD", Sign Appendix or the "Standard Highway Sign Designs for Texas" manual for complete list of available sign design sizes.

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BARRICADE AND CONSTRUCTION PROJECT LIMIT									
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GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit should be included on the design of the traffic control plans when restricted geometrics with a lower design speed are present in the work zone and modification of the geometrics to a higher design speed is not feasible.

Long/Intermediate Term Work Zone Speed Limit signs, when approved as described above, should be posted and visible to the motorist when work activity is present. Work activity may also be defined as a change in the roadway that requires a reduced speed for motorists to safely negotiate the work area, including:

- a) rough road or damaged pavement surface
- b) substantial alteration of roadway geometrics (diversions)
- c) construction detours
- d) grade
- e) width

f) other conditions readily apparent to the driver

As long as any of these conditions exist, the work zone speed limit signs should remain in place.

SHORT TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit may be included on the design of the traffic control plans when workers or equipment are not behind concrete barrier, when work activity is within 10 feet of the traveled way or actually in the traveled way.

Short Term Work Zone Speed Limit signs should be posted and visible to the motorists only when work activity is present. When work activity is not present, signs shall be removed or covered. (See Removing or Covering on BC(4)).

GENERAL NOTES

- 1. Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
- 2. Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
- 3. Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.

4. Frequency of work zone speed limit signs should be: 40 mph and greater 0.2 to 2 miles 35 mph and less 0.2 to 1 mile

- 5. Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
- 6. Fabrication, erection and maintenance of the "ADVANCE SPEED LIMIT" (CW3-5) sign, "WORK ZONE"(G20-5aP) plaque and the "SPEED LIMIT"(R2-1)signs shall not be paid for directly, but shall be considered subsidiary to Item 502.
- 7. Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
- 8. Techniques that may help reduce traffic speeds include but are not limited to: A. Law enforcement.
 - B. Flagger stationed next to sign.
 - C. Portable changeable message sign (PCMS).
 - D. Low-power (drone) radar transmitter.
 - E. Speed monitor trailers or signs.
- 9. Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.

10. For more specific guidance concerning the type of work, work zone conditions and factors impacting allowable regulatory construction speed zone reduction see TxDOT form #1204 in the TxDOT e-form system.

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GENERAL NOTES FOR WORK ZONE SIGNS

- Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
- Wooden sign posts shall be painted white. Barricades shall NOT be used as sign supports
- guide the traveling public safely through the work zone.
- 5. the Inspector's TxDOT diary and having both the Inspector and Contractor initial and date the agreed upon changes.
- the Engineer can verify the correct procedures are being followed.
- damaged or marred reflective sheeting as directed by the Engineer/Inspector.
- for identification shall be 1 inch.

The Contractor shall replace damaged wood posts. New or damaged wood sign posts shall not be spliced.

- <u>DURATION OF WORK (as defined by the "Texas Manual on Uniform Traffic Control Devices" Part 6)</u>
- regard to crashworthiness and duration of work requirements.
 - a. Long-term stationary work that occupies a location more than 3 days. more than one hour.
- Short-term stationary daytime work that occupies a location for more than 1 hour in a single daylight period. c.
- Short, duration work that occupies a location up to 1 hour. d.
- e.

SIGN MOUNTING HEIGHT

- as shown for supplemental plaques mounted below other signs.
- the ground. Long-term/Intermediate-term Signs may be used in Lieu of Short-term/Short Duration signing.
- Short-term/Short Duration signs shall be used only during daylight and shall be removed at the end of the workday or raised to
- appropriate Long-term/Intermediate sign height.

SIZE OF SIGNS

The Contractor shall furnish the sign sizes shown on BC (2) unless otherwise shown in the plans or as directed by the Engineer.

SIGN SUBSTRATES

- "Mesh" type materials are NOT an approved sign substrate, regardless of the tightness of the weave. centers. The Engineer may approve other methods of splicing the sign face.

REFLECTIVE SHEETING

- 1. All signs shall be retroreflective and constructed of sheeting meeting the color and retro-reflectivity requirements of DMS-8300

SIGN LETTERS

1. All sign letters and numbers shall be clear, and open rounded type uppercase alphabet letters as approved by the Federal Highway first class workmanship in accordance with Department Standards and Specifications.

REMOVING OR COVERING

- When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
- intersections where the sign may be seen from approaching traffic. Signs installed on wooden skids shall not be turned at 90 degree angles to the roadway. These signs should be removed or completely
- covered when not required.
- entire sign face and maintain their opaque properties under automobile headlights at night, without damaging the sign sheeting. Burlap shall NOT be used to cover signs.
- Duct tape or other adhesive material shall NOT be affixed to a sign face.
- Signs and anchor stubs shall be removed and holes backfilled upon completion of work.

SIGN SUPPORT WEIGHTS

- 1. Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used. The sandbags will be tied shut to keep the sand from spilling and to maintain a
- constant weight.
- Rock, concrete, iron, steel or other solid objects shall not be permitted for use as sign support weights. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs.
- Sandbags shall be made of a durable material that tears upon vehicular
- impact. Rubber (such as tire inner tubes) shall NOT be used. Rubber ballasts designed for channelizing devices should not be used for ballast on portable sign supports. Sign supports designed and manufactured with rubber bases may be used when shown on the CWZTCD list.
- Sandbags shall only be placed along or laid over the base supports of the traffic control device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners. Sandbags shall be placed along the length of the skids to weigh down the sign support.
- Sandbags shall NOT be placed under the skid and shall not be used to level sign supports placed on slopes.

FLAGS ON SIGNS

1. Flags may be used to draw attention to warning signs. When used, the flag shall be 16 inches square or larger and shall be orange or fluorescent red-orange in color. Flags shall not be allowed to cover any portion of the sign face.

xas Engineering Practice Act". 1xDOT assumes no responsibility results or damages resulting fro any for this stando TxDOT for d to other

All signs shall be installed in accordance with the plans or as directed by the Engineer. Signs shall be used to regulate, warn, and

The Contractor may furnish either the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD). The Engineer/Inspector may require the Contractor to furnish other work zone signs that are shown in the TMUTCD but may have been omitted from the plans. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in

The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZICD) for small roadside signs. Supports for temporary large roadside signs shall meet the requirements detailed on the Temporary Large Roadside Signs (TLRS) standard sheets. The Contractor shall install the sign support in accordance with the manufacturer's recommendations. If there is a guestion regarding installation procedures, the Contractor shall furnish the Engineer a copy of the manufacturer's installation recommendations so

The Contractor is responsible for installing signs on approved supports and replacing signs with damaged or cracked substrates and/or

Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used

The types of sign supports, sign mounting height, the size of signs, and the type of sign substrates can vary based on the type of work being performed. The Engineer is responsible for selecting the appropriate size sign for the type of work being performed. The Contractor is responsible for ensuring the sign support, sign mounting height and substrate meets manufacturer's recommendations in

Intermediate-term stationary - work that occupies a location more than one daylight period up to 3 days, or nighttime work lasting

Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

The bottom of Long-term/intermediate-term signs shall be at least 7 feet, but not more than 9 feet, above the paved surface, except

The bottom of Short-term/Short Duration signs shall be a minimum of 1 foot above the pavement surface but no more than 2 feet above

Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

The Contractor shall ensure the sign substrate is installed in accordance with the manufacturer's recommendations for the type of sign support that is being used. The CWZICD lists each substrate that can be used on the different types and models of sign supports. All wooden individual sign panels fabricated from 2 or more pieces shall have one or more plywood cleat, 1/2" thick by 6" wide, fastened to the back of the sign and extending fully across the sign. The cleat shall be attached to the back of the sign using wood screws that do not penetrate the face of the sign panel. The screws shall be placed on both sides of the splice and spaced at 6"

for rigid signs or DMS-8310 for roll-up signs. The web address for DMS specifications is shown on BC(1). White sheeting, meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background. 3. Orange sheeting, meeting the requirements of DMS-8300 Type B_{FL} or Type C_{FL}, shall be used for rigid signs with orange backgrounds.

Administration (FHWA) and as published in the "Standard Highway Sign Design for Texas" manual. Signs, letters and numbers shall be of

Long-term stationary or intermediate stationary signs installed on square metal tubing may be turned away from traffic 90 degrees when the sign message is not applicable. This technique may not be used for signs installed in the median of divided highways or near any

When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the

SHEET 4 OF 12

Texas Department of Transportation Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

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WHEN NOT IN USE, REMOVE THE PCMS FROM THE RIGHT-OF-WAY OR PLACE THE PCMS BEHIND BARRIER OR GUARDRAIL WITH SIGN PANEL TURNED PARALLEL TO TRAFFIC

PORTABLE CHANGEABLE MESSAGE SIGNS

- 1. The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
- Messages on PCMS should contain no more than 8 words (about four to 2. eight characters per word), not including simple words such as "TO," "FOR, " "AT, " etc.
- 3. Messages should consist of a single phase, or two phases that alternate. Three-phase messages are not allowed. Each phase of the message should convey a single thought, and must be understood by itself.
- 4. Use the word "EXIT" to refer to an exit ramp on a freeway; i.e., "EXIT CLOSED." Do not use the term "RAMP."
- Always use the route or interstate designation (IH, US, SH, FM) 5. along with the number when referring to a roadway.
- When in use, the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
- The message term "WEEKEND" should be used only if the work is to 7. start on Saturday morning and end by Sunday evening at midnight. Actual days and hours of work should be displayed on the PCMS if work is to begin on Friday evening and/or continue into Monday morning.
- The Engineer/Inspector may select one of two options which are available for displaying a two-phase message on a PCMS. Each phase may be displayed for either four seconds each or for three seconds each.
- Do not "flash" messages or words included in a message. The message 9. should be steady burn or continuous while displayed.
- 10. Do not present redundant information on a two-phase message; i.e., keeping two lines of the message the same and changing the third line.
- Do not use the word "Danger" in message.
 Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
- 13. Do not display messages that scroll horizontally or vertically across the face of the sign.
- 14. The following table lists abbreviated words and two-word phrases that are acceptable for use on a PCMS. Both words in a phrase must be displayed together, Words or phrases not on this list should not be abbreviated, unless shown in the TMUTCD.
- 15. PCMS character height should be at least 18 inches for trailer mounted units. They should be visible from at least 1/2 (.5) mile and the text should be legible from at least 600 feet at night and 800 feet in daylight. Truck mounted units must have a character height of 10 inches and must be legible from at least 400 feet.
- 16. Each line of text should be centered on the message board rather than left or right justified.
- 17. If disabled, the PCMS should default to an illegible display that will not alarm motorists and will only be used to alert workers that the PCMS has malfunctioned. A pattern such as a series of horizontal solid bars is appropriate.

WORD OR PHRASE	ABBREVIATION	WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD	Major	MAJ
Alternate	ALT	Miles	MI
Avenue	AVE	Miles Per Hour	MPH
Best Route	BEST RTE	Minor	MNR
Boulevard	BLVD	Monday	MON
Bridge	BRDG	Normal	NORM
Cannot	CANT	North	N
Center	CTR	Nor thbound	(route) N
Construction Ahead	CONST AHD	Parking Boad	PKING
CROSSING	XING	Rodd Right Long	
Detour Route	DETOUR RTE	Saturday	
Do Not	DONT	Service Pood	
East	E	Shoulder	
Eastbound	(route) E	SLipperv	SLIP
Emergency	EMER	South	C
Emergency Vehicle	EMER VEH	Southbound	(route) S
Entrance, Enter	ENT	Speed	SPD
Express Lane	EXP LN	Street	ST
Expressway	EXPWY	Sunday	SUN
XXXX Feet	XXXX FT	Telephone	PHONE
Fog Ahead	FOG AHD	Temporary	TEMP
Freeway	FRWY, FWY	Thursday	THURS
Freeway Blocked	FWY BLKD	To Downtown	TO DWNTN
Friday	FRI	Traffic	TRAF
Hazardous Driving	HAZ DRIVING	Trovelers	
Hazardous Material	HAZMAT	Tuesday	THES
High-Occupancy	HOV	Time Minutes	
Vehicle	HWY	Lipper Level	
Highway		Vehicles (s)	
Hour(s)	HR, HRS	Warning	WARN
Information	INFO	Wednesday	WED
lt Is	ITS	Weight Limit	
Junction	JCT	West	W
Left	LFT	Westbound	(route) W
Left Lane	LFT LN	Wet Pavement	WET PVMT
Lane Closed	LN CLOSED	Will Not	WONT
Lower Level	LWR LEVEL		1
Maintenance	MAINT		

designation # IH-number, US-number, SH-number, FM-number

RECOMMENDED	PHASES	AND	FORMATS	FOR	PCMS	MESSAGES	DUF

(The Engineer may approve other messages not specifically covered here.)

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

	•	0.000	2.0.
FREEWAY CLOSED X MILE	FRONTAGE ROAD CLOSED	ROADWORK XXX FT	ROAD REPAIRS XXXX FT
ROAD CLOSED AT SH XXX	SHOULDER CLOSED XXX FT	FLAGGER XXXX FT	LANE NARROWS XXXX FT
ROAD CLSD AT FM XXXX	RIGHT LN CLOSED XXX FT	RIGHT LN NARROWS XXXX FT	TWO-WAY TRAFFIC XX MILE
RIGHT X LANES CLOSED	RIGHT X LANES OPEN	MERGING TRAFFIC XXXX FT	CONST TRAFFIC XXX FT
CENTER LANE CLOSED	DAYTIME LANE CLOSURES	LOOSE GRAVEL XXXX FT	UNEVEN LANES XXXX FT
NIGHT LANE CLOSURES	I-XX SOUTH EXIT CLOSED	DETOUR X MILE	ROUGH ROAD XXXX FT
VARIOUS LANES CLOSED	EXIT XXX CLOSED X MILE	ROADWORK PAST SH XXXX	ROADWORK NEXT FRI-SUN
EXIT CLOSED	RIGHT LN TO BE CLOSED	BUMP XXXX FT	US XXX EXIT X MILES
MALL DRIVEWAY CLOSED	X LANES CLOSED TUE - FRI	TRAFFIC SIGNAL XXXX FT	LANES SHIFT *
XXXXXXXX BLVD CLOSED	X LANES SHIFT in Phase	1 must be used with	STAY IN LANE in Phos

Other Cond	ition List
ROADWORK XXX FT	ROAD REPAIRS XXXX FT
FLAGGER XXXX FT	LANE NARROWS XXXX FT
RIGHT LN NARROWS XXXX FT	TWO-WAY TRAFFIC XX MILE
MERGING TRAFFIC XXXX FT	CONST TRAFFIC XXX FT
LOOSE GRAVEL XXXX FT	UNEVEN LANES XXXX FT
DETOUR X MILE	ROUGH ROAD XXXX FT
ROADWORK PAST SH XXXX	ROADWORK NEXT FRI-SUN
BUMP XXXX FT	US XXX EXIT X MILES
TRAFFIC SIGNAL XXXX FT	L ANE S SH I F T

Action to Take/Effect on Travel List MERGE FORM RIGHT X LINES RIGHT DETOUR USE XXXXX NEXT RD EXIT X EXITS USE USE EXIT EXIT XXX I-XX NORTH STAY ON USE US XXX I-XX F SOUTH TO I-XX N TRUCKS WATCH USE FOR US XXX N TRUCKS WATCH EXPECT FOR DELAYS TRUCKS PREPARE EXPECT DELAYS ТΟ STOP REDUCE END SPEED SHOULDER XXX FT USE WATCH USE OTHER FOR ROUTES WORKERS STAY ĪΝ LANE

APPLICATION GUIDELINES

- 1. Only 1 or 2 phases are to be used on a PCMS. 2. The 1st phase (or both) should be selected from the
- "Road/Lane/Ramp Closure List" and the "Other Condition List".
- 3. A 2nd phase can be selected from the "Action to Take/Effect on Travel, Location, General Warning, or Advance Notice Phase Lists".
- 4. A Location Phase is necessary only if a distance or location is not included in the first phase selected.
- 5. If two PCMS are used in sequence, they must be separated by a minimum of 1000 ft. Each PCMS shall be limited to two phases, and should be understandable by themselves.
- 6. For advance notice, when the current date is within seven days of the actual work date, calendar days should be replaced with days of the week. Advance notification should typically be for no more than one week prior to the work.

WORDING ALTERNATIVES

- 1. The words RIGHT, LEFT and ALL can be interchanged as appropriate. 2. Roadway designations IH, US, SH, FM and LP can be interchanged as
- appropriate.
- be interchanged as appropriate.
- 4. Highway names and numbers replaced as appropriate.
- 5. ROAD, HIGHWAY and FREEWAY can be interchanged as needed.
- 6. AHEAD may be used instead of distances if necessary. 7. FT and MI. MILE and MILES interchanged as appropriate.
- 8. AT. BEFORE and PAST interchanged as needed.
- 9. Distances or AHEAD can be eliminated from the message if a location phase is used.

PCMS SIGNS WITHIN THE R.O.W. SHALL BE BEHIND GUARDRAIL OR CONCRETE BARRIER OR SHALL HAVE A MINIMUM OF FOUR (4) PLASTIC DRUMS PLACED PERPENDICULAR TO TRAFFIC ON THE UPSTREAM SIDE OF THE PCMS, WHEN EXPOSED TO ONE DIRECTION OF TRAFFIC. WHEN EXPOSED TO TWO WAY TRAFFIC. THE FOUR DRUMS SHOULD BE PLACED WITH ONE DRUM AT EACH OF THE FOUR CORNERS OF THE UNIT.

FULL MATRIX PCMS SIGNS

- 1. When Full Matrix PCMS signs are used, the character height and legibility/visibility requirements shall be maintained as listed in Note 15 under "PORTABLE CHANGEABLE MESSAGE SIGNS" above.
- 2. When symbol signs, such as the "Flagger Symbol" (CW20-7) are represented graphically on the Full Matrix PCMS sign and, with the approval of the Engineer, it shall maintain the legibility/visibility requirement listed above
- When symbol signs are represented graphically on the Full Matrix PCMS, they shall only supplement the use of the static sign represented, and shall not substitute for, or replace that sign.
- 4. A full matrix PCMS may be used to simulate a flashing arrow board provided it meets the visibility, flash rate and dimming requirements on BC(7), for the some size arrow.

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RING ROADWORK ACTIVITIES

Phase 2: Possible Component Lists



* * See Application Guidelines Note 6.

XX AM

EAST, WEST, NORTH and SOUTH (or abbreviations E, W, N and S) can



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GENERAL NOTES

- 1. For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
- 2. For intermediate term stationary work zones on freeways, drums should be used as the primary channelizing device but may be replaced in tangent sections by vertical panels, or 42" two-piece cones. In tangent sections, one-piece cones may be used with the approval of the Engineer but only if personnel are present on the project at all times to maintain the cones in proper position and location.
- 3. For short term stationary work zones on freeways, drums are the preferred channelizing device but may be replaced in tapers, transitions and tangent sections by vertical panels, two-piece cones or one-piece cones as approved by the Engineer.
- 4. Drums and all related items shall comply with the requirements of the current version of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
- 5. Drums, bases, and related materials shall exhibit good workmanship and shall be free from objectionable marks or defects that would adversely affect their appearance or serviceability.
- 6. The Contractor shall have a maximum of 24 hours to replace any plastic drums identified for replacement by the Engineer/Inspector. The replacement device must be an approved device.

GENERAL DESIGN REQUIREMENTS

- Pre-gualified plastic drums shall meet the following requirements:
- 1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
- 2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
- 3. Plastic drums shall be constructed of lightweight flexible, and deformable materials. The Contractor shall NOT use metal drums or single piece plastic drums as channelization devices or sign supports.
- 4. Drums shall present a profile that is a minimum of 18 inches in width at the 36 inch height when viewed from any direction. The height of drum unit (body installed on base) shall be a minimum of 36 inches and a maximum of 42 inches.
- The top of the drum shall have a built-in handle for easy pickup and shall be designed to drain water and not collect debris. The handle shall have a minimum of two widely spaced 9/16 inch diameter holes to allow attachment of a warning light, warning reflector unit or approved compliant sign.
- 6. The exterior of the drum body shall have a minimum of four alternating orange and white retroreflective circumferential stripes not less than 4 inches nor greater than 8 inches in width. Any non-reflectorized space between any two adjacent stripes shall not exceed 2 inches in width.
- 7. Bases shall have a maximum width of 36 inches, a maximum height of 4 inches, and a minimum of two footholds of sufficient size to allow base to be held down while separating the drum body from the base.
- 8. Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
- 9. Drum body shall have a maximum unballasted weight of 11 lbs.
- 10. Drum and base shall be marked with manufacturer's name and model number.

RETROREFLECTIVE SHEETING

- 1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
- 2. The sheeting shall be suitable for use on and shall adhere to the drum surface such that, upon vehicular impact, the sheeting shall remain adhered in-place and exhibit no delaminating, cracking, or loss of retroreflectivity other than that loss due to abrasion of the sheeting surface.

BALLAST

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- 1. Unballasted bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, should weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other ballasting devices as approved by the Engineer. Stacking of sandbags will be allowed, however height of sandbags above pavement surface may not exceed 12 inches.
- 2. Bases with built-in ballast shall weigh between 40 lbs. and 50 lbs. Built-in ballast can be constructed of an integral crumb rubber base or a solid rubber base.
- Recycled truck tire sidewalls may be used for ballast on drums approved for this type of ballast on the CWZTCD list.
- 4. The ballast shall not be heavy objects, water, or any material that would become hazardous to motorists, pedestrians, or workers when the drum is struck by a vehicle.
- 5. When used in regions susceptible to freezing, drums shall have drainage holes in the bottoms so that water will not collect and freeze becoming a hazard when struck by a vehicle.
- 6. Ballast shall not be placed on top of drums.
- 7. Adhesives may be used to secure base of drums to pavement.





DETECTABLE PEDESTRIAN BARRICADES

- 1. When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility. Refer to WZ(BTS-2) for Pedestrian Control requirements for Sidewalk Diversions, Sidewalk Detours and Crosswalk Closures. 2. Where pedestrians with visual disabilities normally use the
- closed sidewalk, a Detectable Pedestrian Barricade shall be placed across the full width of the closed sidewalk instead of a Type 3 Barricade.
- 3. Detectable pedestrian barricades similar to the one pictured above, longitudinal channelizing devices, some concrete barriers, and wood or chain link fencing with a continuous detectable edging can satisfactorily delineate a pedestrian
- 4. Tape, rope, or plastic chain strung between devices are not detectable, do not comply with the design standards in the "Americans with Disabilities Act Accessibility Guidelines (ADAAG)" and should not be used as a control for pedestrian movements.
- 5, Warning lights shall not be attached to detectable pedestrian barricades.
- 6. Detectable pedestrian barricades should use 8" nominal barricade rails as shown on BC(10) provided that the top rail provides a smooth continuous rail suitable for hand trailing with no splinters, burrs, or sharp edges.

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(Maximum Sign Dimension)

Chevron CW1-8, Opposing Traffic Lane

Divider, Driveway sign D70a, Keep Right

R4 series or other signs as approved

by Engineer



12" x 24" Vertical Panel mount with diagonals sloping down towards travel way

Plywood, Aluminum or Metal sign substrates shall NOT be used on plastic drums

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

- 1. Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
- 2. Chevrons and other work zone signs with an orange background shall be manufactured with Type B_{FL} or Type C_{FL} Orange sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Sign Face Material," unless otherwise specified in the plans.
- 3. Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type A or Type B. Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
- 4. Other sign messages (text or symbolic) may be used as approved by the Engineer. Sign dimensions shall not exceed 18 inches in width or 24 inches in height, except for the R9 series signs discussed in note 8 below.
- 5. Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
- 6. Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
- 7. Chevrons may be placed on drums on the outside of curves, on merging tapers or on shifting tapers. When used in these locations, they may be placed on every drum or spaced not more than on every third drum. A minimum of three (3) should be used at each location called for in the plans.
- 8. R9-9, R9-10, R9-11 and R9-11a Sidewalk Closed signs which are 24 inches wide may be mounted on plastic drums, with approval of the Engineer.

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- 1. The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
- 2. Chevrons are intended to give notice of a sharp change of alignment with the direction of travel and provide additional emphasis and guidance for vehicle operators with regard to changes in horizontal alignment of the roadway.
- 3. Chevrons, when used, shall be erected on the outside of a sharp curve or turn, or on the far side of an intersection. They shall be in line with and at right angles to approaching traffic. Spacing should be such that the motorist always has three in view, until the change in alignment eliminates its need.
- 4. To be effective, the chevron should be visible for at least 500 feet.
- 5. Chevrons shall be orange with a black nonreflective legend. Sheeting for the chevron shall be retroreflective Type B_{FL} or Type C_{FL} conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.
- 6. For Long Term Stationary use on tapers or transitions on freeways and divided highways, self-righting chevrons may be used to supplement plastic drums but not to replace plastic drums.

CHEVRONS



LONGITUDINAL CHANNELIZING DEVICES (LCD)

- 1. LCDs are crashworthy, lightweight, deformable devices that are highly visible, have good target value and can be connected together. They are not designed to contain or redirect a vehicle on impact.
- 3. LCDs shall be placed in accordance to application and installation requirements specific to the device, and
- 4. LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
- 5. LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(7) when placed roughly parallel to the travel lanes.
- 6. LCDs used as barricades placed perpendicular to traffic should have at least one row of reflective sheeting meeting the requirements for barricade rails as shown on BC(10). Place reflective sheeting near the top of the LCD along the full length of the device.

WATER BALLASTED SYSTEMS USED AS BARRIERS

- Water ballasted systems used as barriers shall not be used solely to channelize road users, but also to protect the work space per the appropriate Manual for Assessing Safety Hardware (MASH) crashworthiness requirements based on roadway speed and barrier application.
- 2. Water ballosted systems used to channelize vehicular traffic shall be supplemented with retroreflective delineation or channelizing devices to improve daytime/nighttime visibility. They may also be supplemented with pavement markings.
- 3. Water ballasted systems used as barriers shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
- 4. Water ballasted systems used as barriers should not be used for a merging taper except in low speed (less than 45 MPH) urban areas. When used on a taper in a low speed urban area, the taper shall be delineated and the taper length should be designed to optimize road user operations considering the available geometric conditions.
- When water ballasted systems used as barriers have blunt ends exposed to traffic, they should be attenuated as per manufacturer recommendations or flared to a point outside the clear zone.

If used to channelize pedestrians, longitudinal channelizing devices or water ballasted systems must have a continuous detectable bottom for users of long canes and the top of the unit shall not be less than 32 inches in height.

HOLLOW OR WATER BALLASTED SYSTEMS USED AS LONGITUDINAL CHANNELIZING DEVICES OR BARRIERS

GENERAL NOTES

- 1. Work Zone channelizing devices illustrated on this sheet may be installed in close proximity to traffic and are suitable for use on high or low speed roadways. The Engineer/Inspector shall ensure that spacing and placement is uniform and in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
- 2. Channelizing devices shown on this sheet may have a driveable, fixed or portable base. The requirement for self-righting channelizing devices must be specified in the General Notes or other plan sheets.
- 3. Channelizing devices on self-righting supports should be used in work zone areas where channelizing devices are frequently impacted by errant vehicles or vehicle related wind gusts making alignment of the channelizing devices difficult to maintain. Locations of these devices shall be detailed elsewhere in the plans. These devices shall conform to the TMUTCD and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
- 4. The Contractor shall maintain devices in a clean condition and replace damaged, nonreflective, faded, or broken devices and bases as required by the Engineer/Inspector. The Contractor shall be required to maintain proper device spacing and alignment.
- 5. Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh a minimum of 30 lbs.
- Pavement surfaces shall be prepared in a manner that ensures proper bonding between the adhesives, the fixed mount bases and the pavement surface. Adhesives shall be prepared and applied according to the manufacturer's recommendations.
- 7. The installation and removal of channelizing devices shall not cause detrimental effects to the final pavement surfaces, including pavement surface discoloration or surface integrity. Driveable bases shall not be permitted on final pavement surfaces. The Engineer/Inspector shall approve all application and removal procedures of fixed bases.

Posted Speed	Formula	D Tap	Minimur esirab er Len X X	n Ie gths	Suggested Spacin Channe Dev	d Maximum ng of lizing ices
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent
30	2	150'	1651	180'	30'	60′
35	$L = \frac{WS^{-1}}{60}$	205'	225'	245'	35′	70′
40	60	265'	295′	320'	40'	80′
45		450′	495′	540'	45′	90 <i>'</i>
50		500'	550'	600'	50'	100'
55	1 = WS	550'	605′	660 <i>′</i>	55'	110′
60	2-43	600'	660 <i>'</i>	720'	60 <i>'</i>	120′
65		650′	715′	780′	65 <i>'</i>	130'
70		700'	770'	840′	70'	140'
75		750′	8251	900'	75'	150'
80		8001	880'	960'	80'	160'

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

★★Taper lengths have been rounded off.

S=Posted Speed (MPH)

L=Length of Taper (FT.) W=Width of Offset (FT.)

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WORK ZONE PAVEMENT MARKINGS

GENERAL

- The Contractor shall be responsible for maintaining work zone and existing pavement markings, in accordance with the standard specifications and special provisions, on all roadways open to traffic within the CSJ limits unless otherwise stated in the plans.
- Color, patterns and dimensions shall be in conformance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
- Additional supplemental pavement marking details may be found in the plans or specifications.
- Pavement markings shall be installed in accordance with the TMUTCD and as shown on the plans.
- When short term markings are required on the plans, short term markings shall conform with the TMUTCD, the plans and details as shown on the Standard Plan Sheet WZ (STPM).
- 6. When standard pavement markings are not in place and the roadway is opened to traffic, DO NOT PASS signs shall be erected to mark the beginning of the sections where passing is prohibited and PASS WITH CARE signs at the beginning of sections where passing is permitted.
- All work zone pavement markings shall be installed in accordance with Item 662, "Work Zone Pavement Markings."

RAISED PAVEMENT MARKERS

- 1. Raised pavement markers are to be placed according to the patterns on $\mathsf{BC}\left(\mathsf{12}\right)$.
- All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and Departmental Material Specification DMS-4200 or DMS-4300.

PREFABRICATED PAVEMENT MARKINGS

- 1. Removable prefabricated pavement markings shall meet the requirements of DMS-8241.
- Non-removable prefabricated pavement markings (foil back) shall meet the requirements of DMS-8240.

MAINTAINING WORK ZONE PAVEMENT MARKINGS

- The Contractor will be responsible for maintaining work zone pavement markings within the work limits.
- Work zone pavement markings shall be inspected in accordance with the frequency and reporting requirements of work zone traffic control device inspections as required by Form 599.
- 3. The markings should provide a visible reference for a minimum distance of 300 feet during normal daylight hours and 160 feet when illuminated by automobile low-beam headlights at night, unless sight distance is restricted by roadway geometrics.
- Markings failing to meet this criteria within the first 30 days after placement shall be replaced at the expense of the Contractor as per Specification Item 662.

REMOVAL OF PAVEMENT MARKINGS

- Pavement markings that are no longer applicable, could create confusion or direct a motorist toward or into the closed portion of the roadway shall be removed or obliterated before the roadway is opened to traffic.
- The above shall not apply to detours in place for less than three days, where flaggers and/or sufficient channelizing devices are used in lieu of markings to outline the detour route.
- Pavement markings shall be removed to the fullest extent possible, so as not to leave a discernable marking. This shall be by any method approved by TxDOT Specification Item 677 for "Eliminating Existing Pavement Markings and Markers".
- 4. The removal of pavement markings may require resurfacing or seal coating portions of the roadway as described in Item 677.
- Subject to the approval of the Engineer, any method that proves to be successful on a particular type pavement may be used.
- Blast cleaning may be used but will not be required unless specifically shown in the plans.
- 7. Over-painting of the markings SHALL NOT BE permitted.
- 8. Removal of raised pavement markers shall be as directed by the Engineer.
- Removal of existing pavement markings and markers will be paid for directly in accordance with Item 677, "ELIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS," unless otherwise stated in the plans.
- 10.Black-out marking tape may be used to cover conflicting existing markings for periods less than two weeks when approved by the Engineer.

Temporary Flexible-Reflective Roadway Marker Tabs



STAPLES OR NAILS SHALL NOT BE USED TO SECU TEMPORARY FLEXIBLE-REFLECTIVE ROADWAY MARK TABS TO THE PAVEMENT SURFACE

- Temporary flexible-reflective roadway marker tabs used as guider shall meet the requirements of DMS-8242.
- Tabs detailed on this sheet are to be inspected and accepted by Engineer or designated representative. Sampling and testing is r normally required, however at the option of the Engineer, either or "B" below may be imposed to assure quality before placement or roadway.
 - A. Select five (5) or more tabs at random from each lot or st and submit to the Construction Division, Materials and Pay Section to determine specification compliance.
 - B. Select five (5) tabs and perform the following test. Affix (5) tabs at 24 inch intervals on an asphaltic pavement in straight line. Using a medium size passenger vehicle or pi run over the markers with the front and rear tires at a sp of 35 to 40 miles per hour, four (4) times in each directi more than one (1) out of the five (5) reflective surfaces be lost or displaced as a result of this test.
- 3. Small design variances may be noted between tab manufacturers.
- 4. See Standard Sheet WZ(STPM) for tab placement on new pavements. Standard Sheet TCP(7-1) for tab placement on seal coat work.

RAISED PAVEMENT MARKERS USED AS GUIDEMARK

- Raised pavement markers used as guidemarks shall be from the approduct list, and meet the requirements of DMS-4200.
- All temporary construction raised pavement markers provided on project shall be of the same manufacturer.
- Adhesive for guidemarks shall be bituminous material hot applie butyl rubber pad for all surfaces, or thermoplastic for concret surfaces.

Guidemarks shall be designated as:

YELLOW - (two amber reflective surfaces with yellow body). WHITE - (one silver reflective surface with white body).

DATE:

	DEPARTMENTAL MATERIAL SPECIFICA	TIONS
	PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
	TRAFFIC BUTTONS	DMS-4300
		DMS-6100
EW	BITUMINOUS ADDESIVE FOR PAVEMENT MARKERS	DMS-6130
57	DEPMANENT DEFEADLATED DAVENENT MARKENS	DMS - 9240
	TEMPORARY REMOVABLE PREFABRICATED	DW3 0240
	PAVEMENT MARKINGS	DMS-8241
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- in temporary work zone locations, where the posted speed

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	LEGE	ND	
e	Type 3 Barricade		Channelizing Devices
□¤	Heavy Work Vehicle	K	Truck Mounted Attenuator (TMA)
Ē	Trailer Mounted Flashing Arrow Board		Portable Changeable Message Sign (PCMS)
-	Sign	2	Traffic Flow
\bigtriangleup	Flag	ц	Flagger

Posted Speed	Formula	D Tap	Minimur esirab er Len X X	n Ie gths	Suggester Spacin Channe Dev	d Maximum ng of lizing ices	Minimum Sign Spacing "x"	Suggested Longitudinal Buffer Space
*		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent	Distance	"B"
30	2	150'	1651	180'	30′	60′	120′	90'
35	$L = \frac{WS}{60}$	205′	225'	245'	35′	70'	160′	120'
40	60	265′	295′	320'	40′	80′	240′	1551
45		450 <i>'</i>	495′	540′	45′	90'	320′	1951
50		500'	550 <i>'</i>	600′	50 <i>'</i>	100'	400′	240'
55	1 = W S	550'	605′	660 <i>'</i>	55′	110'	500 <i>1</i>	295 <i>'</i>
60	L - # 5	600'	660 <i>'</i>	720'	60′	120'	600 <i>'</i>	350′
65		650 <i>'</i>	715′	780′	65 <i>1</i>	130'	700′	410′
70		700'	770'	840'	70'	140'	800′	475′
75		750'	825'	900′	75′	150'	900′	540′

* Conventional Roads Only

XX Taper lengths have been rounded off.

L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

		TYPICAL U	JSAGE	
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	1	1		

GENERAL NOTES

- 1. Flags attached to signs where shown are REQUIRED.
- All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
- Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
- 4. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
- Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
 See TCP(5-1) for shoulder work on divided highways, expressways and
- freeways. 7. CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D
- "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

· •	Texas Department	nt of Tra	ansp	ortation	Traffic Operations Division Standard
CW20-1D 48" X 48" (Flags-	TRAFFIC CONVEN SHOU TCP	CON TIOI LDEI (1-	ITF NA R	ROL PL L ROA WORK	-AN D
See notes 1 & 7)	FILE: tcp1-1-18.dgn	DN:		CK: DW:	CK:
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e 7 7 7	z Type	e 3 Bo	rrica	de		CI	hanneliz	ing Devices	
) Heav	y Wor	k Veh	icle	K	Tı A'	ruck Mour ttenuator	nted r (TMA)	
	Tra Flas	iler N shing	lounte Arrow	d Board	M	Р М	ortable lessage S	Changeable ign (PCMS)	
-	Sign	٦			\Diamond	т	raffic F	low	
\bigtriangleup	Fla	9			L	F	lagger]
Formula	D Tap	Minimur esirab er Leno X X	n le gths	Suggeste Spaci Channe Dev	ed Maxim ing of elizing vices	um	Minimum Sign Spacing	Suggested Longitudinal Buffer Space	Stopping Sight Distance
	10' Offset	11' Offset	12' Offset	On a Taper	On a Tangen	t,	Distance	"B"	
	150'	1651	180'	30′	60′		120'	90,	200'
$L = \frac{WS}{60}$	205'	225'	245'	35′	70'		160'	120'	250 <i>'</i>
60	265'	295'	320'	40′	80'		240′	155'	305′
	450′	495′	540ʻ	45′	90'		320'	195'	360′
	500'	550'	600 <i>ʻ</i>	50'	100'		400 <i>'</i>	240'	425′
I = WS	550'	605′	660'	55′	110'		500 <i>'</i>	295 <i>'</i>	495 <i>′</i>
- "2	600'	660'	720'	60′	120'		600'	350'	570′
	650 <i>'</i>	715′	780'	65′	130'		700′	410′	645′
	7001	770'	840'	70'	140'		8001	475′	730′
	750'	825′	900′	75′	150'		900'	540'	8201

X Conventional Roads Only

XX Taper lengths have been rounded off.

L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

		TYPICAL L	ISAGE	
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	4	~		

1. Flags attached to signs where shown are REQUIRED.

2, All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.

3. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4D "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.

4. Sign spacing may be increased or an additional CW20-1D "ROAD WORK AHEAD" sign may be used if advance warning ahead of the flagger or R1-2 "YIELD" sign is less than 1500 feet. 5. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.

6. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.

7. R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work spaces should be no longer than one half city block. In rural areas on roadways with less than 2000 ADT, work spaces should be no longer than 400 feet.

8. R1-2 "YIELD" sign with R1-20P "TO ONCOMING TRAFFIC" plaque shall be placed on a support at a 7 foot minimum mounting height.

9. Flaggers should use two-way radios or other methods of communication to control traffic. 10. Length of work space should be based on the ability of flaggers to communicate. 11. If the work space is located near a horizontal or vertical curve, the buffer distances

should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).

12. Channelizing devices on the center-line may be omitted when a pilot car is leading traffic and approved by the Engineer.

3. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

Texas Departme	ent of Tra	ansp	ortatio	n	Traffic Operations Division Standard
TRAFFIC ONE-L TRAFI	CON ANE FIC		ROL WO-N NTR		_AN (
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	LEGEND
<u>~~~~</u>	Type 3 Barricade
4	Sign

Posted Speed X	Minimum Sign Spacing "X" Distance
30	120′
35	160'
40	240'
45	320'
50	400′
55	500'
60	600′
65	700′
70	800'
75	900'

* Conventional Roads Only

GENERAL NOTES

- This sheet is intended to provide details for temporary work zone road closures. For permanent road closure details see the D&OM standards.
- Barricades used shall meet the requirements shown on Barricade and Construction Standard BC(10) and listed on the Compliant Work Zone Traffic Control Devices list (CWZTCD).
- Stockpiled materials shall not be placed on the traffic side of barricades.
- 4. Barricades at the road closure should extend from pavement edge to pavement edge.
- 5. Detour signing shown is intended to illustrate the type of signing that is appropriate for numbered routes or un-numbered routes as labeled. It does not indicate the full extent of detour signing required. Detour routes should be signed as shown elsewhere in the plans.
- 6. If the road is open for a significant distance beyond the intersection or there are significant origin/destination points beyond the intersection, the signs and barricades at this location should be located at the edge of the traveled way.
- 7. The Street Name (M4-12T) sign is to be placed above the DETOUR (M4-9S) sign.
- 8. For urban areas where there is a shorter distance between the intersection and the actual closure location, the ROAD CLOSED XX MILES AHEAD (R11-3a) sign may be replaced with a ROAD CLOSED TO THRU TRAFFIC (R11-4) sign. If adequate space does not exist between the intersection and the closure a single ROAD CLOSED AHEAD (CW20-3D) sign spaced as per the table above may replace the ROAD CLOSED 1000 FT (CW20-3C) signs.
- Signs and barricades shown shall be subsidiary to Item 502. Locations where these details will be required shall be as shown elsewhere in the plans.

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	LEGEND	
× / / / /	Type 3 Barricade	
• • •	Channelizing Devices	
F	Trailer Mounted Flashing Arrow Board	
_	Sign	
~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	Safety glare screen	
DEPAR	TMENTAL MATERIAL SPECIFIC	ATIONS
CTON FACE A	ANTEDIAL S	DMS-8300
SIGN FACE M	MATENTALS	DIVIS 0300
DELINEATOR: MODULAR GL	ARE SCREENS FOR HEADLIGHT BARRIER	DMS-8600 DMS-8610
Only pi the Compl CWZTCD) de	S AND OBJECT MARKERS ARE SCREENS FOR HEADLIGHT BARRIER re-qualified products shall be used, iant Work Zone Traffic Control Device scribes pre-qualified products and th	DMS-8600 DMS-8610 A copy of s List" heir sources
Only path Only path the Compl CWZTCD) de and may be	ARE SCREENS FOR HEADLIGHT BARRIER ARE SCREENS FOR HEADLIGHT BARRIER iant Work Zone Traffic Control Device scribes pre-qualified products and th e found at the following web address:	A copy of s List"



ABBREVIATIONS







	SURVEY CONTROL (SURFACE COORDINATES)										
POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION							
H-02	14,013,222.76	2,967,773.92	269.58	SET 5/8"IRON ROD WITH CAP STAMPED "ALLY"							
H-03	14,013,128.52	2,967,070.30	263.26	SET 5/8"IRON ROD WITH CAP STAMPED "ALLY"							
H-04	14,012,836.64	2,966,486.46	263.79	SET 5/8"IRON ROD WITH CAP STAMPED "ALLY"							
H-05	14,012,933.01	2,966,702.85	260.06	SET 5/8"IRON ROD WITH CAP STAMPED "ALLY"							
	1.1,0.2,000.01	2,000,02.00	200.00								

	TEMPORAR	Y BENCHMARK
POINT NO.	ELEVATION	DESCRIPTION
TBM	273.64	80D NAIL SET ON A POWERPOLE

RI .	RII	FY	CONTINUE

		Station	Northing	Easting
Element: Circular	_			
PRC	(PRC)	106+19.41 R1	14013109.0571	2967073.2999
PI	(PI)	107+60.92 R1	14013169.0464	2967201.4629
СС	(CC)		14012316.5736	2967444.2377
PT	(PT)	109+00.00 R1	14013185.5804	2967342.0016
	Radius:	875		
	Delta:	18°22'22.97"	Right	
	Degree of Curvature (Arc):	06°32'53.12"		
	Length:	280.5864		
	Tangent:	141.5079		
	Chord:	279.3858		
	Middle Ordinate:	11.2229		
	External:	11.3687		
	Back Tangent Direction:	N64°55'01.59"E		
	Back Radial Direction:	S25°04'58.41"E		
	Chord Direction:	N74°06'13.08"E		
	Ahead Radial Direction:	S06°42'35.44"E		
	Ahead Tangent Direction:	N83°17'24.56"E		

	Alignment Name:	22 BL RILEY			
		Station	Northing	Easting	
Element: Linear		07 . 00 00 01	14010744 5010	2000220 2007	
POT	(POT)	97+00.00 RI	14012744.5313	2966229.3052	
PC	(PC)	99+96.56 R1	14012863.0496	2966501.1570	
	Tangential Direction:	N66°26'39.90"E			
	Tangential Length:	296.5637			
Element: Circular					
PC	(PC)	99+96.56 R1	14012863.0496	2966501.1570	
PI	(PI)	100+77.02 R1	14012895.2033	2966574.9097	
CC	(CC)		14008068.8508	2968591.2666	
PT	(PT)	101+57.46 R1	14012925.0731	2966649.6166	
	Radius:	5230			
	Delta:	01°45'45.75"	Right		
	Degree of Curvature (Arc):	01°05'43.88"			
	Longth	160 0012			
	Length:	100.9012			
	Tangent:	80.4569			
	Chord:	160.8949			
	Middle Ordinate:	0.6188			
	External:	0.6188			
	Back Tangent Direction:	N66°26'39.90"E			
	Back Radial Direction	523°33'20 10"F			
	Chard Direction.	N67º10122 77			
		CO1947 24 20			
	Anead Radial Direction:	521°4/ 34.36"E			
	Ahead Tangent Direction:	N68°12'25.64"E			
Element: Linear					
PT	(PT)	101+57.46 R1	14012925.0731	2966649.6166	
PC	(PC)	101+59.10 R1	14012925.6797	2966651.1336	
	Tangential Direction:	N68°12'25 64"F			
	Tangantial Longth	1 6220			
	rangentiai Length:	1.0338			
Element: Circular					
PC	(PC)	101+59.10 R1	14012925.6797	2966651.1336	
PI	(PI)	102+39.56 R1	14012955.5495	2966725.8405	
СС	(CC)		14017781.9020	2964709.4836	
PT	(PT)	103+20.00 R1	14012987.7033	2966799.5932	
	Radius	5230			
	Nadias.	01945145 751	Loft		
	Denta.	014545.75	Len		
	Degree of Curvature (Arc):	01°05'43.88"			
	Length:	160.9013			
	Tangent:	80.457			
	Chord:	160.895			
	Middle Ordinate:	0.6188			
	External:	0.6188			
	Back Tangent Direction:	N68°12'25 64"E			
	Back Tangent Direction.	N08 12 23.04 E			
	Back Radial Direction:	S21°47'34.36"E			
	Chord Direction:	N67°19'32.77"E			
	Ahead Radial Direction:	S23°33'20.11"E			
	Ahead Tangent Direction:	N66°26'39.89"E			
Element: Linear					
PT	(PT)	103+20.00 R1	14012987 7033	2966799 5932	
		104+80 00 01	14013051 6454	2966046 2600	
ru	(PC)		17013031.0434	2300340.2009	
	i angential Direction:	₩00°20'39.89"E			
	Tangential Length:	160			
Element: Circular					
PC	(PC)	104+80.00 R1	14013051.6454	2966946.2609	
PI	(PI)	105+49.71 R1	14013079.5046	2967010.1630	
сс			14017845 8442	2964856 1512	
		106+10 /101	1/012100 0571	2067072 2000	
PKC	(PRC)	100+19.41K1	14013109.05/1	290/0/3.2995	
	Radius:	5230			
	Delta:	01°31'38.30"	Left		
	Degree of Curvature (Arc):	01°05'43.88"			
	Length	139.4136			
	Tangonti	60 7100			
	rangent:	120 109-			
	Chord:	139.4095			
	Middle Ordinate:	0.4645			
	External:	0.4646			
	Back Tangent Direction:	N66°26'39.89"E			
	Back Radial Direction	523°33'20 11"F			
	Chard Direction	N65%0150 741E			
		COENC 40 50.74"E			
	Anead Radial Direction:	525°04'58.41"E			
	Ahead Tangent Direction:	N64°55'01.59"E			

JOHN A. HASKINS, III 114305 4/11/2025								
NO.	DATE	REVISION	APPROV.					
		13501 KATY FREEWAY SUITE 3425 F HOUSTON, TEXAS 77079 832) 494-3800	IRM REGISTRATION No. F-10161					
		WALLER	COUNTY					
		RILEY RD						
	AT BIRCH CREEK HORIZONTAL ALIGNMENT DATA							
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255	WALLER COUNTY
250	RILEY RD
245	AT BIRCH CREEK ROADWAY
240	PLAN AND PROFILE
	SHEET 2 OF 2 DRAWING BY DATE HIGHWAY

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NOTES: * CONTRACTOR TO REESTABLISH GRADE AFTER INSTALLATION OF SLOPE PAVING TE OF TEL * JOHN A. HASKINS, III 114305 A TOMAKEN C





GENERAL NOTES

1. For more detail: See GF(31), SGT()31, GF(31)TR, and GF(31)TL2 standard sheets. 2. Quantities of metal beam guard fence (MBGF) at individual bridge ends

3. Use average daily traffic (ADT) for the current year to determine MBGF length of need in accordance with the Roadway Design Manual unless otherwise specified. Where significant traffic volume growth is anticipated on low volume (0-750 ADT) highways, use length determinations for the higher volume

4. MBGF may not be required to shield departure end of bridge unless other obstacles within the horizontal clearance limits or opposing traffic indicate

5. Downstream anchor terminals (DAT) are only for downstream end anchorage use, outside the horizontal clearance area of opposing traffic.

6. Direct connection of MBGF to concrete rails are only for downstream rail connections outside the horizontal clearance area of opposing traffic. (This requires a minimum of three standard line posts plus the DAT terminal,

7. The crown shall be widened to accommodate MBGF. Typically the "front slope" break should be 2'- 0" from the back of the MBGF post. This applies to new construction on new alignment or where existing roadway cross section is to be widened to increase roadway width. This does not apply to rehab-ilitation work where existing roadway crown width is to be retained (See Typical Cross Section at MBGF).

8. For restrictive bridge widths: The MBGF should be properly transitioned from the existing bridge rail to the adjoining MBGF (See MBGF Transition Standards). Metal beam guard fence at these bridge location(s) shall be flared at the rate of 25:1 or flatter, and be of the length necessary to locate the terminal end at the 2 ft. "maximum" offset from the shoulder edge

9. Transition length and post spacing will vary depending on the transition type. Transition type will be shown elsewhere in the plans.

10. A minimum 25' length of MBGF will be required.



Edge of shoulder widened crown

Note: All rail elements shall be lapped in the direction of adjacent traffic.

DETAIL A

Showing Downstream Rail Attachment

				_					
Texas Department of Transportation									
BRIDGE END DETAILS (METAL BEAM GUARD FENCE APPLICATIONS TO RIGID RAILS) BFD-14									
E	BED-	· 1	4	R.4	1172	,			
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PURPOSE SUL S R R T X DOT DAMAGE ЯR MADE SUL TS S N K I ND RECT ANY ANTY OF NO WARR CTT". ENGINEERING PRACTICE OF THIS STANDARD TO THE "TEXAS CONVERSION ₽Ë GOVERNED IS STANDARD D RESPONSI THIS 9 DISCLAIMER: THE USE OF TXDOT ASSUM

GENERAL NOTES

1. THE TYPE OF POST (ROUND WOOD POST, RECTANGULAR WOOD POST, OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. THE EXACT POSITION OF MBGF SHALL BE SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER, STEEL POSTS TO BE GALVANIZED IN ACCORDANCE WITH ITEM 445. "GALVANIZING.

RAIL ELEMENTS SHALL MEET THE REQUIREMENTS OF ITEM 540, "METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED IN THE PLANS. THE CONTRACTOR MAY FURNISH RAIL ELEMENTS OF 25'- 0", OR 12'- 6" (NOM.) LENGTHS. RAIL ELEMENTS MAY HAVE SLOTTED HOLES AT $3'-1 \frac{1}{2}$ " C-C OR 6'-3" C-C. A SPECIAL LENGTH OF RAIL MAY BE MANUFACTURED TO ACCOMMODATE THE DOWNSTREAM ANCHOR TERMINAL (DAT) AND THE

3. BUTTON HEAD "POST BOLTS & NUTS" SHALL MEET THE REQUIREMENTS OF (ASTM A307), AND SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND 5/4" WASHER (FWC16g) AND NOT MORE THAN 1" BEYOND IT. TRIM REMAINING BOLT LENGTH TO MEET REQUIRED LENGTH.

4. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING. FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.

6. THE LATERAL APPROACH TO THE GUARD FENCE, SHALL HAVE A MAXIMUM SLOPE OF 1V:10H.

7. IF SHOWN ELSEWHERE IN THE PLANS OR AS DIRECTED BY THE ENGINEER, THE GUARD FENCE MAY BE FLARED

8. UNLESS OTHERWISE SHOWN IN THE PLANS. GUARD FENCE PLACED IN THE VICINITY OF CURBS SHALL BE POSITIONED SO THAT THE FACE OF CURB IS LOCATED DIRECTLY BELOW OR BEHIND THE FACE OF THE RAIL. RAIL PLACED OVER CURBS SHALL BE INSTALLED SO THAT THE POST BOLT IS LOCATED APPROXIMATELY 25

9. APPLICATIONS IN SOLID ROCK ARE ONLY ALLOWED WITH STEEL POSTS. IF SOLID ROCK IS ENCOUNTERED WITHIN 0 TO 18" OF THE FINISHED GRADE, DRILL A 24" DIA. HOLE, 24" INTO THE ROCK. IF SOLID ROCK IS ENCOUNTERED BELOW 18", DRILL A 12" DIA. HOLE, 12" INTO THE ROCK OR TO THE STANDARD EMBEDMENT DEPTH, WHICHEVER MAYBE LESS. ANY EXCESS POST LENGTH, AFTER MEETING THESE DEPTHS, MAY BE FIELD CUT TO ENSURE PROPER GUARDRAIL MOUNTING HEIGHT. BACKFILL WITH COARSE AGGREGATE MATERIAL.

11. SPECIAL FABRICATION WILL BE REQUIRED AT INSTALLATION LOCATIONS HAVING A CURVATURE OF LESS

12. UNLESS OTHERWISE SHOWN IN THE PLANS, A COMPOSITE MATERIAL BLOCK THAT MEETS THE REQUIREMENTS OF DMS-7210, "COMPOSITE MATERIAL POSTS AND BLOCKS FOR METAL BEAM GUARD FENCE" MAY BE SUBSTITUTED FOR BLOCKS OF SIMILAR DIMENSIONS. THE CONSTRUCTION DIVISION, TXDOT MAINTAINS A MATERIAL PRODUCER LIST (MPL) FOR PRODUCERS OF MATERIALS CONFORMING TO DMS-7210 ONLY PRODUCERS

13. FOR THE LOW FILL CULVERT OPTION, POSTS LOCATED PARTIALLY OR WHOLLY BETWEEN PRECAST BOX CULVERT UNITS, THE USE OF A CAST-IN-PLACE CONCRETE CLOSURE BETWEEN BOXES IS REQUIRED. THE LENGTH OF THE CAST-IN-PLACE CONCRETE CLOSURE SHALL ACCOMMODATE THE PLACEMENT OF THE LOW FILL CULVERT OPTION.

14. GUARDRAIL HEIGHT MEASUREMENT: WHEN THE GUARDRAIL IS LOCATED ABOVE PAVEMENT, MEASURE THE HEIGHT S FROM THE PAVEMENT TO THE TOP OF THE W-BEAM RAIL. WHEN THE GUARDRAIL IS LOCATED UP TO 2 FT. OFF OF THE EDGE OF PAVEMENT OR FOR A PAVEMENT OVERLAY, USE A 10-FOOT STRAIGHTEDGE TO EXTEND THE PAVEMENT/SHOULDER SLOPE TO THE BACK OF RAIL, MEASURE FROM THE BOTTOM OF STRAIGHTEDGE TO THE TOP OF RAIL. FOR GUARDRAIL LOCATED DOWN A 10:1 SLOPE, MEASURE FROM THE NOMINAL TERRAIN.

> NOTE: TRANSISTIONS TO BRIDGE RAILS OR TRAFFIC BARRIERS. SEE GF (31) TL3 TR STANDARD FOR HIGH-SPEED TL-3 TRANSITIONS. SEE GF (31) TL2 TR STANDARD FOR LOW-SPEED TL-2 TRANSITIONS.









for the proper installation of metal guard fence and

Xture						
Note 8)						
inforced Concrete Mow Strip	Texas Department	of Tra	nspo	ortation		Design Division Standard
	METAL BEAN (MOW	0 N 51	GU. FR	ARD IP)	FE	NCE
			~~		T A N	
	IL-3 MAS	H	LU	MPL		11
in					_	
	GF (3	1)	MS	5-19	9	
	FILE: gf31ms19.dgn	DN: T×	DOT	ск: КМ	DW:VP	CK:CGL/AG
	CTXDOT: NOVEMBER 2019	CONT	SECT	JOB		HIGHWAY
	REVISIONS				R	ILEY RD
		DIST		COUNTY	(.	SHEET NO.
				WALLE	R	39



1. F	OR SPECI	FIC INF STEM, C	GENERAL NOTES DRMATION REGARDING INSTALLATION AND TECHNIC ONTACT: TRINITY HIGHWAY AT 1(888)323-6374. FREFWAY DALLAS IX 75-07	AL GUIDANCE
2. F	OR INSTA		, REPAIR AND MAINTENANCE REFER TO THE;	PN+ 6202378
3. 4 F	APPLY HIG	H INTEN	SITY REFLECTIVE SHEETING, "OBJECT MARKER" O E DEVICE PER MANUFACTURER'S RECOMMENDATIONS	N THE
DW 4. F	OBJECT MA	RKER SH	ALL CONFORM TO THE STANDARDS REQUIRED IN TE	KAS MUTCD. LATEST
5. H	ARDWARE	(BOLTS,	NUTS, & WASHERS) SHALL BE GALVANIZED IN AC	CORDANCE WITH
6. A	A COMPOSI	TE MATE	RIAL BLOCKOUT THAT MEETS THE REQUIREMENTS O ED FOR BLOCKOUTS OF SIMILAR DIMENSIONS, SEE	F DMS-7210, CONSTRUCTION
. i	IVISION IF SOLID	MATERIA ROCK IS	PRODUCER LIST (MPL) FOR CERTIFIED PRODUCE ENCOUNTERED SEE THE MANUFACTURER'S INSTALL	RS. ATION MANUAL
CE 4	AND REFER POSTS SHA	TO THE	LATEST ROADWAY MBGF STANDARD FOR INSTALLAT BE SET IN CONCRETE.	ION GUIDANCE.
9. j	IT IS ACC GRADE LIN	EPTABLE E OR WI	TO INSTALL THE SOFTSTOD IMPACT HEAD PARALL TH AN UPWARD TILT.	EL TO THE
10. E	DO NOT AT	TACH TH	E SOFTSTOP SYSTEM DIRECTLY TO A RIGID BARRI	ER.
12. A	SE CURVED	ATE OF	UP TO 25:1 MAY BE USED TO PREVENT THE TERMI	NAL HEAD
F	ROM ENCR	OACHING D FOR S	ON THE SHOULDER, THE FLARE MAY BE DECREASE PECIFIC INSTALLATIONS, IF DIRECTED BY THE E	O OR NGINEER.
	NOTE: A	THE INS VARY FR	TALLATION HEIGHT OF FULLY ASSEMBLED ANCHOR DM 3-⅔" MIN. TO 4" MAX. ABOVE FINISHED GRAD	POST WILL)E.
	NOTE: B	PART PN PART PN	5852B RIGHT-SIDE (HIGH INTENSITY REFLECTIV) 5851B LEFT-SIDE (HIGH INTENSITY REFLECTIV)	SHEETING) SHEETING)
	NOTERC	W-BEAM GUARDRA	SPLICE LOCATED BETWEEN LINE POST(4)AND LINE IL PANEL 25'-O" PN:61G RAIL 25'-O" PN:15215G	POST (5)
		LAP GUA	RDRAIL IN DIRECTION OF TRAFFIC FLOW.	
	PART 6202378	QTY	MAIN SYSTEM COMPONENTS	ST. REV.)
	15208A	1	SoftStop HEAD (SEE MANUAL FOR RIGHT-LEFT	APPROACH)
	152156	1	SoftStop ANCHOR RAIL (12GA) WITH CUTOUT	SLOTS
ASHER	152054	1	SoftStop DOWNSTREAM W-BEAM RAIL (12GA) (25' - 0")
52066	152036	1	POST #1 - (SYTP) $(4' - 9 \frac{1}{2})$	
HER 20	150006	1	POST #2 - (SYTP) $(6' - 0")$	
20	5330	6	POST #3 THRU #8 - I-BEAM (W6 x 8.5) (6'-	0")
TERNATE /	4076B	7	BLOCKOUT - WOOD (ROUTED) (6" x 8" x 14")	
оскоит <	6777B	7	BLOCKOUT - COMPOSITE $(4" \times 7 \frac{1}{2}" \times 14")$	
SEE	15204A	1	ANCHOR PADDLE	
	15207G	1	ANCHOR KEEPER PLATE (24 GA)	
	152066	1	ANCHOR PLATE WASHER (1/2" THICK)	
	152016	2	ANCHOR POST ANGLE (10" LONG)	
	15202G	1		
TIGHTENED	49020	1		
ASSEMBLY,	39020	1	1 ROUND WASHER F436	
AMING THE	37170	2	34" x 2 1/2" HEX BOLT A325	
	37016	4	3/4" ROUND WASHER F436	
, A	3704G	2	34" HEAVY HEX NUT A563 GR.DH	
	33600	16	5%8" × 1 ¼1" ₩-BEAM RAIL SPLICE BOLTS HGR	
\sim	3340G	25	5% W-BEAM RAIL SPLICE NUTS HGR	
	35000	7	3/8" × 10" HGR POST BOLT A307	
	33910 4490r	1	/8 A I 74 TEA TU DULI AJZO	
	43726	4	%" WASHER F436	
	105285G	2	%6 " × 2 1/2 " HEX HD BOLT GR-5	
D067	105286G	1	%6 " × 1 1/2 " HEX HD BOLT GR-5	
DEPTH	32400	6	% "ROUND WASHER (WIDE)	
	3245G	3	%6" HEX NUT A563 GR.DH	NOTETB
				Design Division
		_	Texas Department of Transportation	Standard
			TRINITY HIGHWAY	r
			SOFTSTOP END TERM	[NAL
			MASH - TL-3	
<u>W</u>			SGT (105) 31-16	
		F	LLE: SQT10S3116 DW: TXDOT CK: KM DW:	VP CK: MB/VP
		(TXDOT: JULY 2016 CONT SECT JOB	HIGHWAY
RESENTATIO	ON OF THE	F	REVISIONS	RILEY RD
ION ASSEME	BLY MANUA	L.	DIST COUNTY	SHEET NO.
			WALLER	40



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JRED						GENERAL NOTES	
	۱.	FOR GUI (LTS	SPECI DANCE) - B	IFIC IN OF TH ARRIER	NFORMATION E SYSTEM, SYSTEMS,	N REGARDING INSTALLATION AND TECHNICAL CONTACT: LINDSAY TRANSPORTATION SOLUTIO INC. AT (707) 374-6800	NS
10	2.	FOR INS	INSTA TALLA	ALLATION I	ON, REPAIR NSTRUCTIO	R, & MAINTENANCE REFER TO THE; MAX-TENSI(N MANUAL. P/N MANMAX REV D (ECN 3516).	N
EMBLY	3.	APPI FRO MAR	LY HIO NT FAO KER SI	GH INTI CE OF HALL C	ENSITY REF THE DEVICI ONFORM TO	LECTIVE SHEETING, "OBJECT MARKER" ON THE E PER MANUFACTURE'S RECOMMENDATIONS. OBJ THE STANDARDS REQUIRED IN TEXAS MUTCD.	ECT
	4.	F OR ROA	POST	(LEAVI MOW ST	E-OUT) INS RIP STAND	STALLATION AND GUIDANCE SEE TXDOT'S LATES	ST
~	5.		STEEL ESS O		ONENTS ARE	GALVANIZED PER ASTM A123 OR EQUIVALENT	
	6.	SYS	TEM SH	HOWN U	SING STEEL	. WIDE FLANGE POST WITH COMPOSITE BLOCKO	JTS.
	7.	COMF MAY DIV	POSITE BESI ISION	E MATEI UBSTIT MATER	RIAL BLOCH UTED FOR I IAL PRODUC	KOUT THAT MEETS THE REQUIREMENTS OF DMS- BLOCKOUTS SIMILAR DIMENSIONS, SEE CONSTR CER LIST(MPL)FOR CERTIFIED PRODUCERS.	7210, UCTION
	8.	REFI	ER TO	INSTAI	LLATION MA	ANUAL FOR SPECIFIC PANEL LAPPING GUIDANCE	
	9.	IF : MAN	SOLID UAL FO	ROCK OR INS	IS ENCOUNT	FERED SEE THE MANUFACTURER'S INSTALLATION GUIDANCE.	N
	10.	POS	STS S⊦	ALL NO	OT BE SET	IN CONCRETE.	
۲ – ۱	11.	A [DR	DR I V I N I V I NG	NG CAP POST	WITH A TI TO PREVEN	IMBER OR PLASTIC INSERT SHALL BE USED WHE T DAMAGE TO THE GALVANIZING ON TOP OF TH	E POST.
Ŧ	12.	MA) OF	C-TENS GUARI	DRAIL.	YSTEM SHAL	L NEVER BE INSTALLED WITHIN A CURVED SEC	TION
- /4 "	13.	IF WI	A DEL TH TE	INEAT XAS MU	ION MARKEF	R IS REQUIRED, MARKER SHALL BE IN ACCORDA	NCE
+	14.	THE	E SYST E ALSO	TEM IS	SHOWN WIT WED.	TH 12'-6" MBGF PANELS, 25'-0" MBGF PANELS	5
	15.	AN		JM OF 1	12'-6" OF	12GA. MBGF IS REQUIRED IMMEDIATELY DOWNS	STREAM
- '/8 "		01					
		ſ	TEN #	PART	NUMBER	DESCRIPTION	QTY
		F	1	BSI-16	610060-00	SOIL ANCHOR - GALVANIZED	1
+		┝	2	BSI-16	610061-00	GROUND STRUT - GALVANIZED	
-		-	4	BSI-16	610062-00	WAX-TENSION IMPACT HEAD	1
OST		F	5	BSI-16	610064-00	TSS PANEL - TRAFFIC SIDE SLIDER	1
		- F	-				
			6	BSI-16	610065-00	ISS PANEL - INNER SIDE SLIDER	1
•			6 7	BSI-16 BSI-16	610065-00 610066-00	ISS PANEL - INNER SIDE SLIDER TOOTH - GEOMET	1
۵-			6 7 8	BSI-16 BSI-16 BSI-16	610065-00 610066-00 610067-00	ISS PANEL - INNER SIDE SLIDER TOOTH - GEOMET RSS PLATE - REAR SIDE SLIDER	1 1 1
۵ –		-	6 7 8 9	BSI-16 BSI-16 BSI-16 B06105	610065-00 610066-00 610067-00 58	ISS PANEL - INNER SIDE SLIDER TOOTH - GEOMET RSS PLATE - REAR SIDE SLIDER CABLE FRICTION PLATE - HEAD UNIT	1 1 1 1
4-			6 7 8 9 10	BSI-16 BSI-16 BSI-16 BO6105 BSI-16	610065-00 610066-00 610067-00 58 610069-00	ISS PANEL - INNER SIDE SLIDER TOOTH - GEOMET RSS PLATE - REAR SIDE SLIDER CABLE FRICTION PLATE - HEAD UNIT CABLE ASSEMBLY - MASH X-TENSION	1 1 1 2 8
۹			6 7 8 9 10 11	BSI-16 BSI-16 BSI-16 BO6105 BSI-16 BSI-16 BSI-16	610065-00 610066-00 610067-00 58 610069-00 012078-00 34	ISS PANEL - INNER SIDE SLIDER TOOTH - GEOMET RSS PLATE - REAR SIDE SLIDER CABLE FRICTION PLATE - HEAD UNIT CABLE ASSEMBLY - MASH X-TENSION X-LITE LINE POST-GALVANIZED R* W-BEAM COMPOSITE-BLOCKOUT XILLO	1 1 1 2 8 8
۵.		-	6 7 8 9 10 11 12 13	BSI-16 BSI-16 BSI-16 BO6105 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16	610065-00 610066-00 610067-00 58 610069-00 012078-00 34 004386	ISS PANEL - INNER SIDE SLIDER TOOTH - GEOMET RSS PLATE - REAR SIDE SLIDER CABLE FRICTION PLATE - HEAD UNIT CABLE ASSEMBLY - MASH X-TENSION X-LITE LINE POST-GALVANIZED 8" W-BEAM COMPOSITE-BLOCKOUT XTI10 12'-6" W-BEAM GUARD FENCE PANELS 12GA.	1 1 1 2 8 8 8 4
۵ —			6 7 8 9 10 11 12 13 14	BSI-16 BSI-16 BO6105 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-11	610065-00 610066-00 610067-00 58 610069-00 012078-00 34 004386 102027-00	ISS PANEL - INNER SIDE SLIDER TOOTH - GEOMET RSS PLATE - REAR SIDE SLIDER CABLE FRICTION PLATE - HEAD UNIT CABLE ASSEMBLY - MASH X-TENSION X-LITE LINE POST-GALVANIZED 8" W-BEAM COMPOSITE-BLOCKOUT XTI10 12'-6" W-BEAM GUARD FENCE PANELS 12GA. X-LITE SQUARE WASHER	1 1 1 2 8 8 8 4 1
۹			6 7 8 9 10 11 12 13 14 15	BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-40 BSI-40 BSI-20	610065-00 61006-00 610067-00 58 610069-00 012078-00 34 004386 102027-00 001886	ISS PANEL - INNER SIDE SLIDER TOOTH - GEOMET RSS PLATE - REAR SIDE SLIDER CABLE FRICTION PLATE - HEAD UNIT CABLE ASSEMBLY - MASH X-TENSION X-LITE LINE POST-GALVANIZED 8" W-BEAM COMPOSITE-BLOCKOUT XTIIO 12'-6" W-BEAM GUARD FENCE PANELS 12GA. X-LITE SQUARE WASHER %" X 7" THREAD BOLT HH (GR.5)GEOMET	1 1 1 2 8 8 4 1 1
۹			6 7 8 9 10 11 12 13 14 15 16	BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-17 BSI-20 BSI-20	610065-00 610066-00 610067-00 58 610069-00 012078-00 34 004386 102027-00 001886 001885	ISS PANEL - INNER SIDE SLIDER TOOTH - GEOMET RSS PLATE - REAR SIDE SLIDER CABLE FRICTION PLATE - HEAD UNIT CABLE ASSEMBLY - MASH X-TENSION X-LITE LINE POST-GALVANIZED 8" W-BEAM COMPOSITE-BLOCKOUT XTIIO 12'-6" W-BEAM GUARD FENCE PANELS 12GA. X-LITE SQUARE WASHER %" X 7" THREAD BOLT HH (GR.5)GEOMET %" X 3" ALL-THREAD BOLT HH (GR.5)GEOMET	1 1 1 2 8 8 4 1 1 1 4
۹			6 7 8 9 10 11 12 13 14 15 16 17	BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-20 BSI-20 400111	610065-00 610066-00 610067-00 58 610069-00 012078-00 34 004386 102027-00 001886 001885 15 5	ISS PANEL - INNER SIDE SLIDER TOOTH - GEOMET RSS PLATE - REAR SIDE SLIDER CABLE FRICTION PLATE - HEAD UNIT CABLE ASSEMBLY - MASH X-TENSION X-LITE LINE POST-GALVANIZED 8" W-BEAM COMPOSITE-BLOCKOUT XTI10 12'-6" W-BEAM GUARD FENCE PANELS 12GA. X-LITE SQUARE WASHER %" X 7" THREAD BOLT HH (GR.5)GEOMET %" X 3" ALL-THREAD BOLT HH (GR.5)GEOMET %" X 1 ¼" GUARD FENCE BOLTS (GR.2)MGAL	1 1 1 2 8 8 8 4 1 1 4 4 8
۵			6 7 8 9 10 11 12 13 14 15 16 17 18	BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-20 BSI-20 400111 200184	610065-00 610066-00 610067-00 58 610069-00 012078-00 34 004386 102027-00 001886 001885 15 40 27	ISS PANEL - INNER SIDE SLIDER TOOTH - GEOMET RSS PLATE - REAR SIDE SLIDER CABLE FRICTION PLATE - HEAD UNIT CABLE ASSEMBLY - MASH X-TENSION X-LITE LINE POST-GALVANIZED 8" W-BEAM COMPOSITE-BLOCKOUT XTI10 12'-6" W-BEAM GUARD FENCE PANELS 12GA. X-LITE SQUARE WASHER %" X 7" THREAD BOLT HH (GR.5)GEOMET %" X 3" ALL-THREAD BOLT HH (GR.5)GEOMET %" X 1 ¼" GUARD FENCE BOLTS (GR.2)MGAL %" X 10" GUARD FENCE BOLTS (GR.2)MGAL	1 1 2 8 8 4 1 1 4 8 8 8 2
A			6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-20 BSI-20 400111 20018- 20016	610065-00 610066-00 610067-00 58 610069-00 012078-00 34 004386 102027-00 001886 001885 15 40 40 40 40 40 40 40 40 40 40	ISS PANEL - INNER SIDE SLIDER TOOTH - GEOMET RSS PLATE - REAR SIDE SLIDER CABLE FRICTION PLATE - HEAD UNIT CABLE ASSEMBLY - MASH X-TENSION X-LITE LINE POST-GALVANIZED 8" W-BEAM COMPOSITE-BLOCKOUT XTI10 12'-6" W-BEAM CUARD FENCE PANELS 12GA. X-LITE SQUARE WASHER %" X 7" THREAD BOLT HH (GR.5)GEOMET %" X 3" ALL-THREAD BOLT HH (GR.5)GEOMET %" X 1 1/4" GUARD FENCE BOLTS (GR.2)MGAL %" WASHER F436 STRUCTURAL MGAL %" WASHER F436 STRUCTURAL MGAL	1 1 1 2 8 8 4 1 1 4 8 8 2 59
A			6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-20 BSI-20 400111 200184 200163 400111 BSI-20	610065-00 610067-00 58 610069-00 012078-00 34 004386 102027-00 001886 001885 15 40 36 16 001888	ISS PANEL - INNER SIDE SLIDER TOOTH - GEOMET RSS PLATE - REAR SIDE SLIDER CABLE FRICTION PLATE - HEAD UNIT CABLE ASSEMBLY - MASH X-TENSION X-LITE LINE POST-GALVANIZED 8" W-BEAM COMPOSITE-BLOCKOUT XTI10 12'-6" W-BEAM GUARD FENCE PANELS 12GA. X-LITE SQUARE WASHER %" X 7" THREAD BOLT HH (GR.5)GEOMET %" X 3" ALL-THREAD BOLT HH (GR.5)GEOMET %" X 1 1/4" GUARD FENCE BOLTS (GR.2)MGAL %" WASHER F436 STRUCTURAL MGAL %" RECESSED GUARD FENCE NUT (GR.2)MGAL %" X 2" ALL THREAD BOLT (GR.2)MGAL %" X 2" ALL THREAD BOLT (GR.5)GEOMET	1 1 1 2 8 8 4 1 1 4 8 8 2 59 1
A			6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-20 BSI-20 BSI-20 400111 BSI-20 BSI-20 BSI-21	610065-00 610067-00 58 610069-00 012078-00 34 004386 102027-00 001886 001885 15 40 36 16 001888 701063-00	ISS PANEL - INNER SIDE SLIDER TOOTH - GEOMET RSS PLATE - REAR SIDE SLIDER CABLE FRICTION PLATE - HEAD UNIT CABLE ASSEMBLY - MASH X-TENSION X-LITE LINE POST-GALVANIZED 8" W-BEAM COMPOSITE-BLOCKOUT XTIIO 12'-6" W-BEAM GUARD FENCE PANELS 12GA. X-LITE SQUARE WASHER %" X 7" THREAD BOLT HH (GR.5)GEOMET ¼" X 3" ALL-THREAD BOLT HH (GR.5)GEOMET %" X 1 ¼" GUARD FENCE BOLTS (GR.2)MGAL %" WASHER F436 STRUCTURAL MGAL %" X 2" ALL THREAD BOLT (GR.5)GEOMET %" X 2" ALL THREAD BOLT (GR.5)GEOMET DELINEATION MOUNTING (BRACKET)	1 1 1 2 8 8 4 1 1 4 48 8 2 59 1 1
A			6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-17 BSI-20 BSI-20 BSI-20 BSI-20 BSI-21 BSI-20 BSI-17 BSI-20	610065-00 610067-00 58 610069-00 012078-00 34 004386 102027-00 001886 001885 15 40 001885 15 40 001888 701063-00 001887	ISS PANEL - INNER SIDE SLIDER TOOTH - GEOMET RSS PLATE - REAR SIDE SLIDER CABLE FRICTION PLATE - HEAD UNIT CABLE ASSEMBLY - MASH X-TENSION X-LITE LINE POST-GALVANIZED 8" W-BEAM COMPOSITE-BLOCKOUT XTIIO 12'-6" W-BEAM GUARD FENCE PANELS 12GA. X-LITE SQUARE WASHER %" X 7" THREAD BOLT HH (GR.5)GEOMET ¼" X 3" ALL-THREAD BOLT HH (GR.5)GEOMET ¼" X 10" GUARD FENCE BOLTS (GR.2)MGAL %" WASHER F436 STRUCTURAL MGAL %" X 2" ALL THREAD BOLT (GR.2)MGAL %" X 2" ALL THREAD BOLT (GR.2)MGAL	1 1 1 2 8 8 4 1 1 4 48 8 2 59 1 1 7
A			6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-16 BSI-20 400111 BSI-20 BSI-20 400111 BSI-20 BSI-17 BSI-20 BSI-17 BSI-20 BSI-17	610065-00 610066-00 610067-00 58 610069-00 012078-00 004386 0045 0	ISS PANEL - INNER SIDE SLIDER TOOTH - GEOMET RSS PLATE - REAR SIDE SLIDER CABLE FRICTION PLATE - HEAD UNIT CABLE ASSEMBLY - MASH X-TENSION X-LITE LINE POST-GALVANIZED 8" W-BEAM COMPOSITE-BLOCKOUT XTIIO 12'-6" W-BEAM GUARD FENCE PANELS 12GA. X-LITE SQUARE WASHER %" X 7" THREAD BOLT HH (GR.5)GEOMET %" X 3" ALL-THREAD BOLT HH (GR.5)GEOMET %" X 1 1/4" GUARD FENCE BOLTS (GR.2)MGAL %" WASHER F436 STRUCTURAL MGAL %" RECESSED GUARD FENCE NUT (GR.2)MGAL %" X 2" ALL THREAD BOLT (GR.5)GEOMET DELINEATION MOUNTING (BRACKET) 1/4" X 3/4" SCREW SD HH 410SS GUARDRAIL WASHER RECT AASHTO FWR03	1 1 1 2 8 8 4 1 1 4 48 8 2 59 1 1 7 1
A -	*		6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26	BSI-10 BSI-10 BSI-10 BSI-10 BSI-10 BSI-10 BSI-10 BSI-10 BSI-20 BSI-20 400111 BSI-20 BSI-20 400111 BSI-20 BSI-11 BSI-20 BSI-12 BSI-20 BSI-12 C400205 SEE NC	610065-00 610066-00 610067-00 58 610067-00 012078-00 012078-00 004386 102027-00 001886 001885 15 40 001888 701063-00 001887 51 51 51 51 51 51 51 51 51 51	ISS PANEL - INNER SIDE SLIDER TOOTH - GEOMET RSS PLATE - REAR SIDE SLIDER CABLE FRICTION PLATE - HEAD UNIT CABLE ASSEMBLY - MASH X-TENSION X-LITE LINE POST-GALVANIZED 8" W-BEAM COMPOSITE-BLOCKOUT XTIIO 12'-6" W-BEAM GUARD FENCE PANELS 12GA. X-LITE SQUARE WASHER 5%" X 1" THREAD BOLT HH (GR.5)GEOMET 34" X 3" ALL-THREAD BOLT HH (GR.5)GEOMET 34" X 10" GUARD FENCE BOLTS (GR.2)MGAL 34" WASHER F436 STRUCTURAL MGAL 34" RECESSED GUARD FENCE NUT (GR.2)MGAL 34" X 2" ALL THREAD BOLT (GR.5)GEOMET DELINEATION MOUNTING (BRACKET) 14" X 34" SCREW SD HH 410SS GUARDRAIL WASHER RECT AASHTO FWR03 HIGH INTENSITY REFLECTIVE SHEETING	1 1 1 2 8 8 4 1 1 4 48 8 2 59 1 1 7 1 1 2
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GENERAL NOTES

FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: ROAD SYSTEMS, INC. (432)263-2435. 3616 OLD HOWARD COUNTY AIRPORT, BIG SPRING, TX 79720

FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE; MSKT END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL (PUBLICATION~062717).

3. APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.

FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.

5. HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM. 6. SYSTEM SHOWN USING STEEL WIDE FLANGE POSTS WITH COMPOSITE BLOCKOUTS.

7. A COMPOSITE MATERIAL BLOCKOUTS THAT MEETS THE REQUIREMENTS OF DMS-7210, MAY BE SUBSTITUTED FOR BLOCKOUTS OF SIMILAR DIMENSIONS. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.

8. IF SOLID ROCK IS ENCOUNTERED IN THE AREA OF (POST 1) AND / OR (POST 2) CONTACT THE MANUFACTURER, & REFER TO THE LATEST ROADWAY MBGF STANDARD FOR INSTALLATION GUIDANCE 9. POSTS SHALL NOT BE SET IN CONCRETE.

10. SYSTEM MUST BE ATTACHED TO STANDARD 31" MBGF.

11. UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL WITHIN THE MSKT SYSTEM BE CURVED.

12. A FLARE RATE OF UP TO 25:1 MAY BE USED TO PREVENT THE TERMINAL HEAD FROM ENCROACHING ON THE SHOULDER. THE FLARE MAY BE DECREASED OR ELIMINATED FOR SPECIFIC INSTALLATIONS, IF DIRECTED BY THE ENGINEER.

13. THE SYSTEM IS SHOWN WITH TWO 12'-6" MBGF PANELS, ONE 25'-0" MBGF PANEL IS ALSO ALLOWED IN THEIR PLACE.

A DRIVING CAP WITH A TIMBER OR PLASTIC INSERT SHALL BE USED WHEN DRIVING POSTS 3-8 TO PREVENT DAMAGE TO THE GALVANIZING ON TOP OF THE POST. SPECIAL DRIVING CAP TO BE USED ON LOWER POSTS 1 & 2 TO PREVENT DAMAGE TO THE WELDED PLATES.

	ITEM	QTY	MAIN SYSTEM COMPONENTS	I TEM NUMBERS
	Α	1	MSKT IMPACT HEAD	MS3000
	В	1	W-BEAM GUARDRAIL END SECTION, 12 Ga.	SF1303
	С	1	POST 1 - TOP (6" X 6" X 1/8" TUBE)	MTPHP1A
	D	1	POST 1 - BOTTOM (6' W6X15)	MTPHP1B
	Е	1	POST 2 - ASSEMBLY TOP	UHP2A
	F	1	POST 2 - ASSEMBLY BOTTOM (6' W6X9)	HP2B
	G	1	BEARING PLATE	E750
	н	1	CABLE ANCHOR BOX	S760
	J	1	BCT CABLE ANCHOR ASSEMBLY	E770
	к	1	GROUND STRUT	MS785
	L	6	W6×9 OR W6×8.5 STEEL POST	P621
NOTES: ¥	м	6	COMPOSITE BLOCKOUTS	CBSP-14
	N	1	W-BEAM MGS RAIL SECTION (9'-4 1/2")	G12025
	0	2	W-BEAM MGS RAIL SECTION (12'-6")	G1203A
	Р	6	WOOD BLOCKOUT 6" X 8" X 14"	P675
	Q	1	W-BEAM MGS RAIL SECTION (25'-0")	G1209
			SMALL HARDWARE	
PANEL	a	2	5/6 " × 1" HEX BOLT (GRD 5)	B5160104A
	b	4	% " WASHER	W0516
	с	2	% " HEX NUT	N0516
	d	25	5% " Dio. × 1 ¼ " SPLICE BOLT (POST 2)	B580122
	е	2	% " Dia. × 9" HEX BOLT (GRD A449)	B580904A
	f	3	%s" WASHER	W050
	g	33	%" Dia. H.G.R NUT	N050
	h	1	¾" Dia. × 8 ½" HEX BOLT (GRD A449)	B340854A
	j	1	¾" Dia. HEX NUT	N030
	ĸ	2	1 ANCHOR CABLE HEX NUT	N100
	I	2	1 ANCHOR CABLE WASHER	W100
	m	8	1/2" × 1 1/4" A325 BOLT WITH CAPTIVE WASHER	SB12A
	n	8	1/2" STRUCTURAL NUTS	N012A
	0	8	1 1/16 " O.D. × 16" I.D. STRUCTURAL WASHERS	WO12A
	P	1	BEARING PLATE RETAINER TIE	CT-100ST
	q	6	5%8" × 10" H.G.R. BOLT	B581002
	r	1	OBJECT MARKER 18" X 18"	E3151
		Г		
			¥	

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SOEV WHAT: M ITS TXDOT FOR ANY PURPOSE DAMAGES RESULTING FROM ЯR IS MADE RESULTS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT THE "TEXAS I CONVERSION ₽Ë DISCLAIMER: THE USE OF THIS STANDARD IS GOVERNED TXDOT ASSUWES NO RESPONSIBILITY FOR T

GENERAL NOTI	ES
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1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: SPIG INDUSTRY, INC. AT 1(267) 644-9510. 14675 INDUSTRIAL PARK RD; BRISTOL, VA 24202

2. FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE MANUFACTURER'S; SGET END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL.

MANUFACTURER WILL APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER' TO THE FACE PLATE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. THE OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD. 4. THE NOMINAL HEIGHT OF THE GUARDRAIL BEAM IS 31 INCHES WITH A TOLERANCE OF +/- ONE INCH.

5. FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.

6. (POST 2 THROUGH POST 8) ARE MODIFIED STEEL-YIELDING POSTS WITH YIELDING HOLES AT GROUND LEVEL. THERE ARE NO SUBSTITUTE POSTS. 7. POSTS SHALL NOT BE SET IN CONCRETE.

IF SOLID ROCK IS ENCOUNTERED FOR ANY OF THE POSTS IN THE SYSTEM, CONTACT THE MANUFACTURER FOR SPECIFIC INSTALLATION GUIDANCE.

HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM. 10. A COMPOSITE MATERIAL BLOCKOUT THAT MEETS DMS-7210 REQUIREMENTS MAY BE SUBSTITUTED FOR AN APPROVED WOOD BLOCKOUT. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.

THE ENTIRE SYSTEM MUST BE INSTALLED IN A STRAIGHT LINE WITHOUT ANY CURVE. HOWEVER, THE SYSTEM CAN BE OFFSET BY TWO FEET AS SHOWN ON THE APPROACH GRADING DETAIL TO HELP OFF-SET THE IMPACT HEAD FROM SHOULDER OF THE ROAD.

	ITEM	QTY	MAIN SYSTEM COMPONENTS	ITEM #
	Α	1	SGET IMPACT HEAD	SIHIA
	В	1	MODIFIED GUARDRAIL PANEL 12'-6" 12GA	126SPZGP
is	B2	1	MODIFIED GUARDRAIL PANEL 9'-4 1/2" 12GA	GP94
	С	2	STANDARD GUARDRAIL PANEL 12'-6" 12GA	GP126
— * –	D	1	STANDARD GUARDRAIL PANEL 25'-0" 12GA	GP25
TENC	Е	7	MODIFIED YIELDING I-BEAM POST W6×8.5	YP6MOD
TIFW2	F	6	COMPOSITE BLOCKOUT 6" X 8" X 14"	CBO8
**-	G	6	WOOD BLOCKOUT 6" X 8" X 14"	WBO8
N	н	1	STRUT 3" X 3" X 80" x 1/4" A36 ANGLE	STR80
	I	1	FOUNDATION TUBE 6" X 8" X 72" × 3/4"	FNDT6
	J	1	WOOD BREAKAWAY POST 5 $\frac{1}{2}$ x 7 $\frac{1}{2}$ x 50"	WBRK50
	ĸ	1	WOOD STRIKE BLOCK	WSBLK14
	L	1	STRIKE PLATE 1/2" A36 BENT PLATE	SPL T8
		1	REINFORCEMENT PLATE 12 GA. GR55	REPLT17
	N	1	GUARDRATI GRABBER 2 1/2" X 2 1/2" X 16 1/2"	GGR17
		1	BEARING PLATE 8" X 8 54" X 54" A36	BPI TR
		1		
		1		
	u		SMALL HARDWARF	LOLOI
	a	1	5%" X 12" GUARDRAIL BOLT 307A HDG	120RBL T
ENT	Ь	7	%" X 10" GUARDRAIL BOLT 307A HDG	10GRBL T
	č	77		
	d d	7	56" FLAT WASHER FARE ARE ARE	59EW/36
	P	1	54" LOCK WASHER HDC	50FW430
,	- E - F	70		SOLW EQUINECZ
	r	29		
	y F	2	72 X Z SIKUI BULI A325 HUG	ZBL I
	n	6	1/2 X I V4" PLATE BULT A325 HDG	125BLT
	i	16	1/2" FLAT WASHER F436 A325 HDG	12FWF436
	j	8	1/2" LOCK WASHER HDG	12LW
	ĸ	8	1/2" HEX NUT A563 HDG	12HN563
	I	4	∦8" X 3" HEX LAG SCREW GR5 HDG	38LS
	m	4	⅛" FLAT WASHER F436 A325 HDG	38FW844
	n	2	1" FLAT WASHER F436 A325 HDG	1FWF436
	0	2	1" HEX NUT A563DH HDG	1 HN563
:н	р	1	18" TO 24" LONG ZIP TIE RATED 175-200LB	ZPT18
	P	1	1 1/2 " X 4" SCH-40 PVC PIPE	PSPCR4
	r	1	RFID CHIP RATED MIL-STD-810F	RFID810F
	s	1	IMPACT HEAD REFLECTIVE SHEETING	RS30M
			*	Design
				Division
_			Iexas Department of Transportation	Standard
			SPIG INDUSTRY. LI	_C
			SINGLE GUARDRAIL TER	MINAL
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TxDOT for any purpose damages resulting from ያዖ is made resul†s any kind incorrect anty of or for i No warr formats Engineering Practice Act". of this standard to other "Texas the con Şţ for † this standard is gover nes no responsibility i DISCLAIMER: The use of TxDOT assum

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GENERAL NOTES

- 1. UNLESS OTHERWISE SHOWN IN THE PLANS, A VERTICAL EDGE IS PERMISSIBLE FOR HMAC PLACED GREATER THAN 5" BELOW THE EDGE OF PAVEMENT AND FOR THICKNESS OF HMAC LESS THAN 2.5"
- 2. FOR FURTHER INFORMATION REGARDING THE ROADSIDE AND PAVEMENT DETAILS, SEE TYPICAL SECTIONS.
- 3. PAYMENT FOR TAPERED EDGE WILL BE IN ACCORDANCE WITH APPLICABLE ITEMS IN THE CONTRACT.
- 4. THE SLOPE OF THE TAPERED EDGE SHALL BE 1.75H:1V OR FLATTER.
- 5. THE TAPERED EDGE SHALL BE PRODUCED BY USE OF A SCREED ATTACHMENT CAPABLE OF PRODUCING A SMOOTH COMPACTED SURFACE. ADDITIONAL COMPACTING EFFORT BEHIND THE SCREED IS NOT REQUIRED.

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1. DRAINAGE 2. DESIGN A 3. THE OFF-ON FHWA 4. DISCHARC EQUATION NO HYDRO METHOD (THIS SIT AND ZONE MAP =484 USACE HE FOR THE BRIDGE A Solution ALL ELEN 10. THE DOWN DEPTH WI 11.LOCAL FP COORDINA BRIDGE REPLACEMENT AT BIRCH CREEK DRAW" FOR ADDITIONAL INFORMATION. 12.REFER TO LEGEND -DRAINAGE AREA ID ้เอิ XX -DRAINAGE AREA SQ.MI. DRAINAGE AREA BOUNDARY DRAINAGE FLOW ARROW REFERENCES: 1. TxDOT'S HYDRAULIC DESIGN MANUAL (SEPTEMBER 2019). 2. TOPOGRAPHIC DATA SOURCES: HOUSTON-GALVESTON AREA COUNCIL LIDAR 2008- 3.28FT RESOLUTION

HYDROLOGIC COMPUTAT	Ι
RILEY ROAD OMEGA EM REGRESSIONEOUATION (Equation 4-12 and Table 4-4 of Tx CONTRIBUTINGDRAINAGE AREA (SQ.MI.) MEAN ANNUAL PRECIPITATION IN) MAIN CHANNEL SLOPE (FT/FT) OMEGA EM (FIGURE4-5) PEAK FLOWRATE (2-YR),(CFS) PEAK FLOWRATE (10-YR),(CFS) PEAK FLOWRATE (25-YR),(CFS) PEAK FLOWRATE (50-YR),(CFS) PEAK FLOWRATE (100-YR),(CFS) PEAK FLOWRATE (100-YR),(CFS)	
Regression equation	
$Q_2 = P^{1.398} S^{0.270} \times 10^{[0.776]} \Omega^+ + 50.98 - 50.30$	A^{-0}
$Q_5 = P^{1.203} S^{0.403} \times 10^{[0.918} \Omega^{+13.62-11.9}$ $Q_{10} = P^{1.203} S^{0.403} \times 10^{[0.918} \Omega^{+13.62-11.9}$	7 <i>A</i> -
$Q_{25} = P^{1.140} S^{0.446} \times 10^{[0.945 \Omega + 11.79 - 9.81]}$	9 <i>A</i> -
$Q_{50} = P^{1.105} S^{0.476} \times 10^{[0.961 \Omega + 11.17 - 8.99]}$	7 <i>A</i> -
$Q_{100} = P^{1.0/1} S^{0.507} \times 10^{[0.969] \Omega} + 10.82 - 8.4$ $Q_{200} = P^{1.034} S^{0.531} \times 10^{[0.975] \Omega} + 10.61 - 8.0$	48A 58A
$Q_{250} = P^{1.021} S^{0.541} \times 10^{[0.977]\Omega} + 10.56 - 7.94$	43 <i>A</i>
$Q_{500} = P^{0.988} S^{0.569} imes 10^{[0.976 \Omega + 10.40 - 7.60]}$	05 A
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-SYSTEM PROJECT DESIGN STORM WAS DE POLICY 'SAME OR SLIGHTLY BETTER' T	TE I HAI
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OLOGY CHECK WAS PERFORMED IN ADDITI	ON
GIVEN NATURE OF BRIDGE CROSSING (OF	F - :
TE WAS DESIGNATED AS ZONE "A" UPSTR E "AE" DOWNSTREAM WITHIN WALLER COU 473CØ100E, EFFECTIVE DATE FEBRUARY	EAI NT 18,
EC-RAS VERSION 6.6 AND 1D STEADY ST HYDRAULIC ANALYSIS.	ATI
AND CHANNEL SURVEY WAS PROVIDED BY NS,LLC ON 11/15/2024.	ALI
VATIONS BASED ON THE NAVD88 VERTICA	LI
NSTREAM BOUNDARY CONDITION WAS ESTA ITH A DOWNSTREAM SLOPE OF 0.0015 FT	BL /F
PA OF WALLER COUNTY WAS CONTACTED F ATION 12/19/2024.	OR
	PO

NOTES:

DAT

STREAM PROFILE

26 262-260 258-256-254-252-250+ 0 100 200

	MULTIPLE OPENING DISCHARGE DATA							
Q (CFS)	2-YR	5-YR	10-YR	25-YR	50-YR	100-YF		
PRE-PROJECT CONDITION								
MAIN BRIDGE	763	1,396	1,457	1,390	1,343	1,373		
CULVERT	30	165	638	1,554	2,315	3,116		
	PC	OST-PROJE	CT CONDI	TION				
MAIN BRIDGE	768	1,517	2,049	2,870	3,229	3,272		
CULVERT	25	44	46	71	429	1,217		

WEIR FLOW DATA							
	2-YR	5-YR	10-YR	25-YR	50-YR	100-YR	
Q (CFS)	793	1,561	2,095	2,941	3,658	4,489	
EXIST	0	102	572	1,492	2,259	3,046	
PROP	0	0	0	8	354	1,140	

NOTES:

- 1. DESIGN AND CHECK STORM EVENTS ARE 2-YR AND 100-YR.
- THE OFF-SYSTEM PROJECT DESIGN STORM WAS DETERMINED BASED ON FHWA "SAME 2. OR SLIGHTLY BETTER" THAN EXISTING.
- DISCHARGES WERE CALCULATED FOLLOWING THE OMEGA EM REGRESSION EQUATIONS 3. AS PROVIDED IN TxDOT HYDRAULIC DESIGN MANUAL.
- THIS SITE WAS DESIGNATED AS ZONE "A" UPSTREAM OF THE BRIDGE AND ZONE "AE" DOWNSTREAN WITHIN WALLER COUNTY, FLOOD INSURANCE MAP =48473C0100E, EFFECTIVE DATE FEBRUARY 18, 2009. 4.
- USACE HEC-RAS VERSION 6.6 UTILIZED FOR THE HYDRAULIC ANALYSIS. 5.
- 6. ALL ELEVATIONS BASED ON THE NAVD88 VERTICAL DATUM.
- THE DOWNSTREAM BOUNDARY CONDITION WAS ESTABLISHED USING NORMAL DEPTH WITH A DOWNSTREAM SLOPE OF 0.0015 FT/FT. MULTIPLE OPENING ANALYSIS APPROACH WAS USED TO MODEL FLOW THROUGH BRIDGE AND CULVERT. 7.
- 8. BASED ON THE WSE DATA, POST-PROJECT WSE DURING 2-YR DESIGN STORM IS LESS THAN THE PRE-PROJECT WSE. 9.
- THE MODEL CONVERGES (PROPOSED WSE = EXISTING WSE) IS ACHIEVED AT RS 3463 FOR THE 2-YR STORM EVENT. 10.
- DURING THE 100-YR STORM EVENT, A RISE OF 0.67 FT WAS OBSERVED WITHIN RIGHT OF WAY AT XS 2387, AND A MAXIMUM INCREASE OF Ø.61 FT WAS OBSERVED OUTSIDE OF THE RIGHT OF WAY AT XS 2489 IN POST-PROJECT CONDITIONS.NO INSURABLE STRUCTURES WERE IMPACTED BASED ON THE AERIAL IMAGERY AND 100-YR INUNDATION BOUNDARY.

EXISTING STREAM CROSS-SECTION @ STRUCTURE

PROPOSED STREAM CROSS-SECTION @ STRUCTURE

	SHEET	2	OF 3
DRAWING BY	DATE		HIGHWAY
CMS	3/25/2025		RILEY RD
CHECKED BY	PROJECT NO.		SHEET NO.
AR			46

PRE-PROJECT CONDITIONS - 2YR MULTIPLE OPENING OUTPUT

Plan: PRE-COND River 1 Reach 1 RS: 2340 Open#1: Bridge Profile: 2-YR

E.G. US. (ft)	259.04	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	258.80	E.G. Elev (ft)	258.97	258.86
Q Total (cfs)	762.74	W.S. Elev (ft)	258.68	258.63
Q Bridge (cfs)	762.74	Crit W.S. (ft)	256.18	256.03
Q Weir (cfs)		Max Chl Dpth (ft)	7.12	7.07
Weir Sta Lft (ft)		Vel Total (ft/s)	3.16	3.17
Weir Sta Rgt (ft)		Flow Area (sq ft)	241.23	240.91
Weir Submerg		Froude # Chl	0.35	0.33
Weir Max Depth (ft)		Specif Force (cu ft)	607.61	611.71
Min El Weir Flow (ft)	261.11	Hydr Depth (ft)	2.78	2.78
Min El Prs (ft)	259.89	W.P. Total (ft)	115.09	114.32
Delta EG (ft)	0.27	Conv. Total (cfs)	13834.6	14563.1
Delta WS (ft)	0.24	Top Width (ft)	86.80	86.68
BR Open Area (sq ft)	340.36	Frctn Loss (ft)	0.08	0.08
BR Open Vel (ft/s)	3.17	C & E Loss (ft)	0.03	0.02
BR Sluice Coef		Shear Total (lb/sq ft)	0.40	0.36
BR Sel Method	Energy only	Power Total (lb/ft s)	1.26	1.14

Plan: PRE-COND River 1 Reach 1 RS: 2340 Open#2: Culvert #1 Profile: 2-YR

Q Culv Group (cfs)	30.26	Culv Full Len (ft)	
# Barrels	1	Culv Vel US (ft/s)	3.21
Q Barrel (cfs)	30.26	Culv Vel DS (ft/s)	2.87
E.G. US. (ft)	259.00	Culv Inv El Up (ft)	255.95
W.S. US. (ft)	259.00	Culv Inv El Dn (ft)	255.64
E.G. DS (ft)	258.77	Culv Frctn Ls (ft)	0.03
W.S. DS (ft)	258.77	Culv Exit Loss (ft)	0.13
Delta EG (ft)	0.23	Culv Entr Loss (ft)	80.0
Delta WS (ft)	0.23	Q Weir (cfs)	
E.G. IC (ft)	258.21	Weir Sta Lft (ft)	
E.G. OC (ft)	259.00	Weir Sta Rgt (ft)	
Culvert Control	Outlet	Weir Submerg	
Culv WS Inlet (ft)	258.76	Weir Max Depth (ft)	
Culv WS Outlet (ft)	258.77	Weir Avg Depth (ft)	
Culv Nml Depth (ft)	1.39	Weir Flow Area (sq ft)	
Culv Crt Depth (ft)	1.63	Min El Weir Flow (ft)	260.12

PRE-PROJECT CONDITIONS - 100YR MULTIPLE OPENING OUTPUT

Plan: PRE-COND River	1 Reach 1 RS:	2340 Open#1: Bridge	Profile: 100-YR	
E.G. US. (ft)	263.50	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	263.45	E.G. Elev (ft)	263.35	263.13
Q Total (cfs)	1373.13	W.S. Elev (ft)	263.18	262.99
Q Bridge (cfs)	1141.72	Crit W.S. (ft)	257.95	257.53
Q Weir (cfs)		Max Chl Dpth (ft)	11.62	11.43
Weir Sta Lft (ft)		Vel Total (ft/s)	2.03	2.06
Weir Sta Rgt (ft)		Flow Area (sq ft)	563.37	552.95
Weir Submerg		Froude # Chl	0.17	0.16
Weir Max Depth (ft)		Specif Force (cu ft)	2213.06	2185.22
Min El Weir Flow (ft)	261.26	Hydr Depth (ft)	1.99	1.87
Min El Prs (ft)	259.89	W.P. Total (ft)	501.20	513.54
Delta EG (ft)	0.41	Conv. Total (cfs)	15673.3	15925.8
Delta WS (ft)	0.40	Top Width (ft)	283.68	295.97
BR Open Area (sq ft)	340.36	Frctn Loss (ft)	0.21	0.02
BR Open Vel (ft/s)	3.35	C & E Loss (ft)	0.02	0.08
BR Sluice Coef		Shear Total (lb/sq ft)	0.54	0.50
BR Sel Method	Energy only	Power Total (lb/ft s)	1.09	1.03

Plan: PRE-COND River 1 Reach 1 RS: 2340 Open#2: Culvert #1 Profile: 100-YR

Q Culv Group (cfs)	52.04	Culv Full Len (ft)	47.00
# Barrels	1	Culv Vel US (ft/s)	4.14
Q Barrel (cfs)	52.04	Culv Vel DS (ft/s)	4.14
E.G. US. (ft)	263.46	Culv Inv El Up (ft)	255.95
W.S. US. (ft)	263.37	Culv Inv El Dn (ft)	255.64
E.G. DS (ft)	263.09	Culv Frctn Ls (ft)	0.06
W.S. DS (ft)	263.00	Culv Exit Loss (ft)	0.18
Delta EG (ft)	0.37	Culv Entr Loss (ft)	0.13
Delta WS (ft)	0.37	Q Weir (cfs)	3063.84
E.G. IC (ft)	263.37	Weir Sta Lft (ft)	333.33
E.G. OC (ft)	263.46	Weir Sta Rgt (ft)	638.90
Culvert Control	Outlet	Weir Submerg	0.84
Culv WS Inlet (ft)	259.95	Weir Max Depth (ft)	3.31
Culv WS Outlet (ft)	259.64	Weir Avg Depth (ft)	2.40
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	734.84
Culv Crt Depth (ft)	2.17	Min El Weir Flow (ft)	260.12

POST-PROJECT CONDITIONS - 2YR MULTPLE OPENING OU

E.G. US. (ft)	258.96	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	258.70	E.G. Elev (ft)	258.84	258.83
Q Total (cfs)	767.87	W.S. Elev (ft)	258.77	258.76
Q Bridge (cfs)	767.87	Crit W.S. (ft)	256.13	255.96
Q Weir (cfs)		Max Chl Dpth (ft)	7.21	7.20
Weir Sta Lft (ft)		Vel Total (ft/s)	2.04	1.93
Weir Sta Rgt (ft)		Flow Area (sq ft)	376.76	397.56
Weir Submerg		Froude # Chl	0.16	0.14
Weir Max Depth (ft)		Specif Force (cu ft)	878.18	943.67
Min El Weir Flow (ft)	263.54	Hydr Depth (ft)	3.77	3.98
Min El Prs (ft)	259.36	W.P. Total (ft)	103.40	103.13
Delta EG (ft)	0.19	Conv. Total (cfs)	39927.3	46092.1
Delta WS (ft)	0.13	Top Width (ft)	100.00	100.00
BR Open Area (sq ft)	435.80	Frctn Loss (ft)	0.01	0.02
BR Open Vel (ft/s)	2.04	C & E Loss (ft)	0.00	0.04
BR Sluice Coef		Shear Total (lb/sq ft)	0.08	0.07
BR Sel Method	Energy only	Power Total (lb/ft s)	0.17	0.13

Plan: POST-COND River 1 Reach 1 RS: 2340 Open#2: Culvert #1 Profile: 2-YR

Q Culv Group (cfs)	25.13	Culv Full Len (ft)	
# Barrels	1	Culv Vel US (ft/s)	2.66
Q Barrel (cfs)	25.13	Culv Vel DS (ft/s)	2.38
E.G. US. (ft)	258.93	Culv Inv El Up (ft)	255.95
W.S. US. (ft)	258.93	Culv Inv El Dn (ft)	255.64
E.G. DS (ft)	258.77	Culv Frctn Ls (ft)	0.02
W.S. DS (ft)	258.77	Culv Exit Loss (ft)	0.09
Delta EG (ft)	0.16	Culv Entr Loss (ft)	0.05
Delta WS (ft)	0.16	Q Weir (cfs)	
E.G. IC (ft)	257.98	Weir Sta Lft (ft)	
E.G. OC (ft)	258.93	Weir Sta Rgt (ft)	
Culvert Control	Outlet	Weir Submerg	
Culv WS Inlet (ft)	258.76	Weir Max Depth (ft)	
Culv WS Outlet (ft)	258.77	Weir Avg Depth (ft)	
Culv Nml Depth (ft)	1.26	Weir Flow Area (sq ft)	
Culv Crt Depth (ft)	1.48	Min El Weir Flow (ft)	262.14
			-

POST-PROJECT CONDITIONS - 100YR MULTIPLE OPENING OUTPUT

Plan: POST-COND Rive	r 1 Reach 1 RS	:2340 Open#1: Bridge	Profile: 100-YR	
E.G. US. (ft)	264.06	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	263.83	E.G. Elev (ft)	263.78	263.53
Q Total (cfs)	3271.57	W.S. Elev (ft)	262.88	262.58
Q Bridge (cfs)	3271.57	Crit W.S. (ft)	258.32	258.05
Q Weir (cfs)		Max Chl Dpth (ft)	11.32	11.01
Weir Sta Lft (ft)		Vel Total (ft/s)	7.51	7.15
Weir Sta Rgt (ft)		Flow Area (sq ft)	435.80	457.48
Weir Submerg		Froude # Chl	0.40	0.42
Weir Max Depth (ft)		Specif Force (cu ft)	3373.78	3389.83
Min El Weir Flow (ft)	263.54	Hydr Depth (ft)		
Min El Prs (ft)	259.36	W.P. Total (ft)	204.58	204.33
Delta EG (ft)	0.97	Conv. Total (cfs)	32225.0	37286.4
Delta WS (ft)	0.97	Top Width (ft)		
BR Open Area (sq ft)	435.80	Frctn Loss (ft)	0.23	0.08
BR Open Vel (ft/s)	7.51	C & E Loss (ft)	0.02	0.36
BR Sluice Coef		Shear Total (lb/sq ft)	1.37	1.08
BR Sel Method	Energy only	Power Total (lb/ft s)	10.29	7.70

Plan: POST-COND River 1 Reach 1 RS: 2340 Open#2: Culvert #1 Profile: 100-YR

Q Culv Group (cfs)	77.27	Culv Full Len (ft)	47.00
# Barrels	1	Culv Vel US (ft/s)	6.15
Q Barrel (cfs)	77.27	Culv Vel DS (ft/s)	6.15
E.G. US. (ft)	264.09	Culv Inv El Up (ft)	255.95
W.S. US. (ft)	264.08	Culv Inv El Dn (ft)	255.64
E.G. DS (ft)	263.09	Culv Frctn Ls (ft)	0.14
W.S. DS (ft)	263.08	Culv Exit Loss (ft)	0.57
Delta EG (ft)	1.00	Culv Entr Loss (ft)	0.29
Delta WS (ft)	1.01	Q Weir (cfs)	1140.15
E.G. IC (ft)	264.01	Weir Sta Lft (ft)	344.10
E.G. OC (ft)	264.09	Weir Sta Rgt (ft)	664.07
Culvert Control	Outlet	Weir Submerg	0.28
Culv WS Inlet (ft)	259.95	Weir Max Depth (ft)	1.94
Culv WS Outlet (ft)	259.64	Weir Avg Depth (ft)	1.19
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	381.21
Culv Crt Depth (ft)	2.66	Min El Weir Flow (ft)	262.14

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NOTES:

- 1. DESIGN AND CHECK STORM EVENTS ARE 2-YR AND 100-YR.
- 2. USACE HEC-RAS VERSION 6.6 AND 1D STEADY STATE MODEL UTILIZED FOR THE HYDRAULIC ANALYSIS.
- 3. ALL ELEVATIONS BASED ON THE NAVD88 VERTICAL DATUM.
- 4. THE DOWNSTREAM BOUNDARY CONDITION WAS ESTABLISHED USING NORMAL DEPTH WITH A DOWNSTREAM SLOPE OF 0.0015 FT/FT

		0	10 2	20	40 FT
			HORIZONTAL	SCALE IN FEET	
	290				
	280				
	270				
	260				
	250				
	240				
	230				
	220				
	210				
05+00			I		
1 I 7 E D E O B					
AULIC/SCOU AT BIRCH C AL INFORMA	R REPOR REEK DR TION.	RT FOR RAW''	Man San San San San San San San San San S	KYLE P. MOYNIHAN	
AS CONTACI	ED FOR	INITIAL			04/11/2025
AND THE For thei	HYDRAUL R RECOF	IC RDS ON	NO. DATE	REVISION 13501 KATY FREEWAY SUITE 3425 FIRI HOUSTON, TEXAS 77079 (332) 494-3800	APPROV. M REGISTRATION No. F-10161
PE RR8)(TH Gulations	ICKNESS Slope f	5 5 IN) Pavement		WALLER C	OUNTY
IGATION F CEMENT" G L STRATA.	OR RILE EOTECH	Y RD.AT Report		RILEY ROAD	
			AT BI SC	KCH CREEK D OUR ENVELOF	KAW PE
			DRAWING BY	DATE SHEET	I OF 1 HIGHWAY
			CMS CHECKED BY	3/24/2025 PROJECT NO.	KILEY RD SHEET NO.

AR

48

TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL

5

		Ð	Values for	One Pipe		Values To for Each Ac	Be Added ddt'l Pipe	
	ope	f Pip		Reinf	Conc		Reinf	Conc
	S	ia of)	W	(Lbs)	(CY)	W	(Lbs)	(CY)
		09		(1)	2		0	(2)
		12"	9' - 0"	122	1.1	1' - 9"	15	0.2
ever.		15"	10' - 3"	136	1.3	2' - 2"	16	0.2
latso		18	11' - 6"	163	1.5	2' - 8''	19	0.3
e wh use.		21	12 - 9	200	1.8	3 - 1	31	0.4
m its		24	14 - 0	217	2.1	3 - 7	37	0.4
ny pu g fro		27	15 - 5	234	2.4	3 - 11 4' - 4"	40	0.5
for ar sultin	Ξ.	33"	17' - 9"	314	3.1	4 - 4	43	0.0
is res d gn	2	36"	19' - 0"	371	3.9	5' - 1"	46	0.8
V TxE mage		42"	21' - 6"	442	4.9	5' - 10"	52	1.0
de by or dai		48"	25' - 0"	569	6.4	6' - 7"	59	1.3
s ma ults c		54"	27' - 6"	701	7.5	7' - 6"	82	1.6
t resi		60"	30' - 0"	794	8.8	8' - 3"	90	1.8
any k orrec CD -		66"	32' - 6"	894	10.2	8' - 9"	96	2.0
y of a rinco je∕		72"	35' - 0"	1,055	11.7	9' - 4''	103	2.3
or foi		12"	13' - 0"	175	1.6	1' - 9"	14	0.2
o wai nats		15"	14' - 9"	193	1.9	2' - 2"	17	0.2
D Lon		18"	16' - 6"	228	2.2	2' - 8"	19	0.3
[∋] Act other /5.		21"	18' - 3"	299	2.6	3' - 1"	31	0.4
actice d to (24"	20' - 0"	323	3.0	3' - 7"	33	0.4
g Pra In S		27"	21' - 9"	371	3.5	3' - 11"	37	0.5
s sta PIO		30"	23' - 6"	415	4.0	4' - 4"	40	0.5
of thi	3:1	33"	25' - 3"	469	4.6	4' - 8"	43	0.6
as El sion (s i g		36"	27' - 0"	556	5.7	5' - 1"	46	0.8
"Tex nvers De		42"	30' - 6"	675	7.1	5' - 10"	52	1.0
the te co		48"	35' - 6"	837	9.2	6' - 7"	59	1.3
for the		54"	39' - 0"	1,015	11.0	7' - 6"	84	1.6
bR Sility		60"	42' - 6"	1,171	12.9	8' - 3"	91	1.8
s go onsit		66"	46' - 0"	1,298	14.9	8' - 9"	98	2.0
lard i Ro		72"	49' - 6"	1,561	17.1	9' - 4"	103	2.3
stanc s no e y		12"	17' - 0"	229	2.0	1' - 9"	15	0.2
ER: this s the sume		15"	19' - 3"	266	2.4	2' - 2"	17	0.2
AIME se of T ass		18"	21' - 6"	308	2.9	2' - 8''	19	0.3
he us		21"	23' - 9"	382	3.5	3' - 1"	31	0.3
		24	20 - 0	430	3.9	3 - 7 2' 11''	34	0.4
DW		27	20 - 3 30' 6"	530	4.7 5.2	3 - 11	37	0.5
08	-	32"	30 - 0	603	5.2	4 - 4	40	0.0
301	4	36"	35' - 0"	738	7.5		47	0.0
s/5		42"	39' - 6"	881	9.3	5' - 10"	52	1.0
ect		48"	46' - 0"	1,102	12.1	6' - 7"	61	1.3
į		- 54"	50' - 6"	1,364	14.4	7' - 6"	84	1.6
/Pr		60"	55' - 0"	1,547	16.9	8' - 3"	91	1.8
nts		66"	59' - 6"	1,741	19.5	8' - 9"	98	2.0
Jane 1		72"	64' - 0"	2,077	22.4	9' - 4"	102	2.3
ocr		12"	25' - 0"	336	3.0	1' - 9"	14	0.2
0/1		15"	28' - 3"	384	3.6	2' - 2"	17	0.2
10-1		18"	31' - 6"	452	4.2	2' - 8"	19	0.3
۸d -		21"	34' - 9"	581	5.1	3' - 1"	31	0.4
ied		24"	38' - 0"	644	5.8	3' - 7"	34	0.4
Ę		27"	41' - 3"	737	6.9	3' - 11"	37	0.5
PV		30"	44' - 6"	807	7.7	4' - 4"	39	0.6
e .	6:1	33"	47' - 9"	912	8.9	4' - 8"	44	0.6
23: 111		36"	51' - 0"	1,108	11.0	5' - 1"	48	0.8
12: Der		42"	57' - 6"	1,318	13.7	5' - 10"	54	1.0
- wq		48"	67' - 0"	1,682	17.9	6' - 7"	59	1.3
325 90-		54"	73' - 6"	2,072	21.3	7' - 6"	83	1.6
/2(//i€		60"	80' - 0"	2,351	24.9	8' - 3"	89	1.8
- \ - : *		66"	86' - 6"	2,643	28.9	8' - 9"	96	2.0
4 Q		72"	93' - 0"	3,121	33.1	9' - 4"	101	2.3

Bars A2 Bars F2

Bars A1

TABLE OF CONSTANT DIMENSIONS

Dia of Pipe (D)	G	к (5)	н	т	E
12"	0' - 9"	1' - 0"	2' - 8"	0'- 9"	1'- 9"
15"	0' - 11"	1' - 0"	2' - 11"	0' - 9"	1'- 9"
18"	1' - 2"	1' - 0"	3' - 2"	0'- 9"	1'- 9"
21"	1' - 4"	1' - 0"	3' - 5"	0'- 9"	2'- 0"
24"	1' - 7"	1' - 0"	3' - 8"	0'- 9"	2' - 0"
27"	1' - 8"	1' - 0"	3' - 11"	0'- 9"	2' - 3"
30"	1' - 10"	1' - 0"	4' - 2"	0' - 9"	2' - 3"
33"	1' - 11"	1' - 0"	4' - 5"	0'- 9"	2' - 6"
36"	2' - 1"	1' - 0"	4' - 8"	1'- 0"	2' - 6"
42"	2' - 4"	1' - 0"	5' - 2"	1'- 0"	2' - 9"
48"	2' - 7"	1' - 3"	5'- 11"	1'- 0"	3' - 0"
54"	3' - 0"	1' - 3"	6' - 5"	1'- 0"	3' - 3"
60"	3' - 3"	1' - 3"	6' - 11"	1'- 0"	3' - 6"
66"	3' - 3"	1' - 3"	7' - 5"	1' - 0"	3' - 9"
72"	3' - 4"	1' - 3"	7' - 11"	1' - 0"	4' - 0"

6 TABLE OF **REINFORCING STEEL**

Bar	Size	Spa	No.
A1	#5	~	2
A2	#5	1' - 6"	~
Е	#5	~	2
F	#5	1' - 0"	~

SECTION AT

CENTER OF PIPE

MATERIAL NOTES: Provide Grade 60 reinforcing steel. Provide Class C concrete (fc = 3,600 psi).

GENERAL NOTES: Designed according to AASHTO LRFD Bridge Design Specifications.

Do not mount bridge rails of any type directly to

these culvert headwalls. This standard may not be used for wall heights, H, exceeding the values shown.

Cover dimensions are clear dimensions, unless noted otherwise. einforcing dimensions are out-to-out of bars.

Texas Department	of Tra	nsp	ortation		Bi Di St	ridge ivisio tanda	n hrd
CONCRETE HEADWALLS							
WITH PARALL	EL	WI	NGS F	FC	R		
NON-SKEWED	PIP	F (=F	2TS		
	• ••		002				
		Cł	H-PW	/_()		
FILE: CD-CH-PW0-20 don	DN: TYD	<u>от</u>		DW-		ск	
CTxDOT February 2020	CONT	SECT	JOB	5.	1,001	HIGHWA	Y
REVISIONS					RI	LEY	RD
	DIST	<u> </u>	COUNTY			SHEE	T NO.
			WALLE	R		- 49)

	ESTIMATED BRIDGE QUANTITIES								
	17	EM 400	416	420	422	425	432	450	454
	BID CC	DE 7010	7006	7012	7001	7003	7002	7021	7001
	DESCRIPTION	CEM STABIL BKFL	DRILL SHAFT (36 IN)	CL C CONC (ABUT)	REINF CONC SLAB	PRESTR CONC GIRDER (TX40)	RIPRAP (CONC)(5 IN)	RAIL (TY T631LS)	TYPE A JOINT
	UNIT	CY	LF	СҮ	SF	LF	CY	LF	LF
	PHASE 1								
D	2 - ABUTMENTS	28	234	22.5					
Ϋ́́Ε	1 - 100.00' PRESTR CONC Tx-GIRDER UNIT 1				1,300	298.5	17	120	26
ΓE	PHASE 2								
RI	2 - ABUTMENTS	21	117	17.5					
	1 - 100.00' PRESTR CONC Tx-GIRDER UNIT 1				1,300	199.0	17	120	26
	TOTAL	49	351	40.0	2,600	497.5	34	240	52

BEARING SEAT ELEVATIONS

		GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4	GIRDER 5
ABUT	1 (FWD)	259.138	259.241	259.331	259.234	259.138
ABUT	2 (BK)	259.138	259.241	259.331	259.234	259.138

JOSEPH M. LOPEZ, P.E. 141382 (C E N SCON AL EVEN 4/9/2025						
DATE	RE	VISION	APPROV.			
13501 KATY FREEWAY SUITE 3425 HOUSTON, TEXAS 77079 (832) 494-3800						
WALLER COUNTY						
R	RILEY	RD				
AT B	IRCH	CREEK				
ESTIMATED QUANTITIES & BEARING SEAT ELEVATIONS						
		SHEET	1 OF _1			
FILE:	DN: JL	ск: DJ DV	V: СК:			
(C)TxDOT	CONT SE	ст јов	HIGHWAY			
REVISIONS			RILEY RD			
	DIST	COUNTY	SHEET NO.			
		WALLER	50			

Docusign Envelope ID: 9431C2BD-1389-4D24-AB2B-C78D8339542E

260 250 240 230 220 210	FILE:	VALLER CO RILEY RD BIRCH CREEK DGE LAYOUT	APPROV. REGISTRATION No. F-10161 DUNTY EET 1 OF 1 DW: CK: MICHWAY RILEY RD NY Suffer Y/D
260 250 240 230 220	The second secon	1 KATY FREEWAY TE 3425 SJTON, TEXAS 77079 2) 494-3800 WALLER CO RILEY RD BIRCH CREEK DGE LAYOUT SH. ON: JL CK: DJ CONT SECT JOC	APPROV. REGISTRATION No. F-10161 DUNTY EET 1 OF 1 DW: CK: DW: CK: HIGHWAY
260 250 240 230 220	AT I	WALLER CO RILEY RD BIRCH CREEK DGE LAYOUT	APPROV. REGISTRATION NO. F-10161 DUNTY EET 1 OF 1
260 250 240 230 220	AT L	WALLER CO	
270 260 250 240 230	AT L BRI	WALLER CO RILEY RD BIRCH CREEK DGE LAYOUT	APPROV.
260 250 240 230		WALLER CO	APPROV. REGISTRATION No. F-10161
260 250 240		WALLER CO	APPROV. REGISTRATION No. F-10161
260 250 240		WALLER CC	APPROV. REGISTRATION NO. F-10161
260 250 240		01 KATY FREEWAY TE 3425 SJSTON, TEXAS 77079 2) 494-3800	APPROV. REGISTRATION NO. F-10161
260 250		01 KATY FREEWAY TE 3425 SJSTON, TEXAS 77079 2) 494-3800	APPROV. REGISTRATION NO. F-10161
260 250		01 KATY FREEWAY TE 3425 FIRM JSTON, TEXAS 77079 2) 494-3800	APPROV. REGISTRATION No. F-10161
260		01 KATY FREEWAY TE 3425 FIRM I JSTON, TEXAS 77079 2) 494-3800	APPROV. REGISTRATION No. F-10161
260		01 KATY FREEWAY TE 3425 FIRM	APPROV.
			APPROV.
270	DATE	REVISION	
270			
270			
	'ù	SSIONAL ENGY	~ /11/2025
280	_ \$	141382	JUNE -
	OL	SEPH M. LOPEZ, P.E.	Joen hopen-
		*	
290	<u>ہم ا</u>	ATE OF TEHAS	
	HORIZ	ONTAL SCALE IN FEET	
HL93 LOADI	NG –	10 20	
	SUPERSTRUCTU	RE INV/OPR RATINGS	1.08/2.07
	PROP NBI NC). 12-237-AA03-13-xx	(
X	DESIGN SPEL EXIST NBI NO	D = 40MPH D = 237-AA03-13-00	2
	FUNCTION		
- OE			
178,178,178,178,178 			
00	9. SEE STANDARD DRA	WINGS FOR FOUNDAT	ION DETAILS.
	8. DKILLED SHAFTS HA BEARING AND SKIN AT THE LENGTHS SI	/E BEEN DESIGNED W FRICTION. SHAFTS SH HOWN OR DEEPER.	IALL BE FOUNDED
	ABUTMENT BACKFILL	DETAILS.	
• •	PROPOSED GRADING 7. SEE CSAB STANDARI	D FOR CEMENT STARII	IZED
	6. SEE ROADWAY DRAV	VINGS FOR RIPRAP GE	OMETRY AND
	UTILITIES PRIOR TO E	EXCAVATION AND/OR	DRILLING. HOLE PROFILES
	4. CONTRACTOR SHALL	VERIFY LOCATIONS C	PF ALL
	3. ALL DIMENSIONS ARI VERTICAL AND MUST	E EITHER HORIZONTAI	L OR GRADE,
	2. VERIFY ALL DIMENSIC COMMENCING WORK		
- <u>x</u> :		ONS AND ELEVATIONS	PRIOR TO
×:	DESIGN MANUAL (SE	PT 2024) DNS AND ELEVATIONS	PRIOR TO

GENERAL NOTES

JOSEPH M. LOPEZ, P.E. 141382 V.C.E.N.S. VON AL ENS 4/9/2025						
DATE	REV	ISION	APPROV.			
IEA SUITE HOUST (832) 45	(ATY FREEWAY 3425 ON, TEXAS 770 34-3800	FIRM REGISTI 79 F-101	RATION No. 61			
WALLER COUNTY						
RILEY RD						
TYPICAL SECTIONS						
FIL F:	DN: II	SHEET	1 OF 2			
©TxD0T	CONT SECT	JOB	HIGHWAY			
REVISIONS			RILEY RD			
	DIST	COUNTY	SHEET NO.			
		WALLER	52			

JOSEPH M. LOPEZ, P.E. 141382 C.E. N.S. VON ALLENS 4/10/2025						
DATE	REVISION	APPROV.				
IEA (832) 494	ATY FREEWAY 425 FIRM F DN, TEXAS 77079 4-3800	REGISTRATION №. F-10161				
WALLER COUNTY						
RILEY RD AT BIRCH CREEK						
TYPICAL SECTIONS						
54 F.	SHI	ET 2 OF 2				
C TXDOT	CONT SECT IOB	HIGHWAY				
REVISIONS	,	RILEY RD				
	DIST COUN	ITY SHEET NO.				
	WAL	.LER <u>53</u>				

ELEVATIONS

ELEV

258.953

259.213

258.953

WP

"A"

"B"

"C"

ELEVATIONS

ELEV

256.533

256.713

256.533

DS

1

2

3

WORK POINT ELEVATIONS			TOP ELEVA	OF DS ATIONS
WP	ELEV		DS	ELEV
"A"	258.953		1	256.533
"B"	259.213		2	256.713
"C"	258.953		3	256.533

GENERAL NOTES

- DESIGNED IN ACCORDANCE WITH 2020 AASHTO LRED BRIDGE DESIGN SPECIFICATIONS, 9TH EDITION WITH CURRENT INTERIM REVISIONS AND TXDOT BRIDGE DESIGN MANUAL (SEPT 2024) 1.
- 2. SEE BRIDGE LAYOUT FOR HEADER SLOPE AND FOUNDATION TYPE, SIZE, AND LENGTH
- SEE CONCRETE RIPRAP (CRR) STANDARD SHEET FOR RIPRAP З. ATTACHMENT DETAILS.
- 4. SEE APPLICABLE RAIL DETAILS FOR RAIL ANCHORAGE IN WINGWALLS.
- DETAILS FOR ABUTMENT 1 ARE SHOWN. ABUTMENT 2 IS OPPOSITE HAND. 5.

MATERIAL NOTES

- 1. PROVIDE CLASS C CONCRETE (f^{*}c = 3600 psi).
- 2. PROVIDE GRADE 60 REINFORCING STEEL.
- 3. GALVANIZE BARS D.

- (1) 4 SPACES AT 1'-0" MAX
- 2 PROJECT BARS 5'-5"

			BAR	NO	SIZE	LENGT	Н	WEIGHT
		*	Α	10	#11	30'-5	"	1,616
 ** H 10 #6 28-5° 428 ** H 10 #6 28-5° 428 ** H 11-6° 408 ** H 12-22 485 113-44 ** H 12-22 485 133-4* ** H 12-20 * 12 ** H 11-6* ** H 11-6*<td></td><td></td><td>D</td><td>3</td><td>#9</td><td>1'-8</td><td></td><td>17</td>			D	3	#9	1'-8		17
		**	н	10	#6	28'-6		428
			L	18	#6	4'-0		108
			S	34	#5	11'-6	n	408
			U	4	#6	8'-1		49
wirit 24 #6 11.5* 240 wirit 22 #4 7.10* 115 wirit 22 #4 7.10* 115 wirit 22 #4 7.10* 13.5 wirit 22 #4 7.10* 14.5 10 20040000000000000000000000000000000000			V	25	#5	13'-4		348
Image: 22 #4 17.20* 115 Image: 21 #45 Image: 21 #4 16 Image: 21 #4 16 Image: 21 #45 Image: 21 #45 <td></td> <td></td> <td>wH1</td> <td>14</td> <td>#6</td> <td>11'-5</td> <td></td> <td>240</td>			wH1	14	#6	11'-5		240
Image: 10 million of the second se			wH2	24	#6	9'-8		348
(a) www_with_ites 13:4* 306 yein/street (a) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c)			wS	22	#4	7'-10	"	115
 (4) <u>keurs street</u> <u>bs</u> <u>3.983</u> <u>c. (C CONC (ABUT)</u>. <u>c v 20.0</u> <i>x</i>-INCLUDES ONE(1) 5'-3' (AP SPLICE * - INCLUDES ONE(1) 2'-10" LAP SPLICE (a) S SPACES AT 1'-0" MAX (b) QUANTITIES SHOWN ARE FOR A SINGLE ABUTMENT (c) LAP BARS AS REQUIRED WITH LENGTHS SHOWN: #11 = 5'-3" #6 = 2'-10" (c) FOR CONTRACTORS INFORMATION ONLY (c) FOR CONTRACTORS INFORMATION ONLY (c) COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE: REINFORCING BAR DIMENSIONS SHOWN ARE OUT-TO-OUT OF BAR. (c) VER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE: REINFORCING BAR DIMENSIONS SHOWN ARE OUT-TO-OUT OF BAR. (c) VER DIMENSIONS ON CLEAR DIMENSIONS SHOWN ARE OUT-TO-OUT OF BAR. (c) VER DIMENSIONS ON CLEAR DIMENSIONS SHOWN ARE OUT-TO-OUT OF BAR. (c) VER DIMENSIONS ON CLEAR DIMENSIONS SHOWN ARE OUT-TO-OUT OF BAR. (c) VER DIMENSIONS ON CLEAR DIMENSIONS SHOWN ARE OUT-TO-OUT OF BAR. (c) VER DIMENSIO			wV	22	#5	13'-4		306
[CL CCONC (ABUT) CY 20.0 * - INCLUDES ONE(1) 2'-10" LAP SPLICE ** - INCLUDES ONE AT 1'-0" MAX COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE. Image: Cover Attended Atten		(4)	REINF ST	TEEL			LB	3,983
<form></form>			CL C CO	NC (ABUT	7)		СҮ	20.0
	 (1) 5 CONC (ABOT) * - INCLUDES ONE(1) 5'-3" LAP SPLICE ** - INCLUDES ONE(1) 2'-10" LAP SPLICE (1) 5 SPACES AT 1'-0" MAX (2) QUANTITIES SHOWN ARE FOR A SINGLE ABUTMENT (3) LAP BARS AS REQUIRED WITH LENGTHS SHOWN: #11 = 5'-3" #6 = 2'-10" (4) FOR CONTRACTORS INFORMATION ONLY COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE. REINFORCING BAR DIMENSIONS SHOWN ARE OUT-TO-OUT OF BAR.							
DATE REVISION APPROV. Image: Structure of the s		JOSEPH M. LOPEZ, P.E. 141382 0.5.5						perz
DATE REVISION APPROV. ISOI IATY REEWAY MUSTON, TEXAS 77079 FRM REGISTRATION NG. F-10161 ISOI VALLER COUNTY FRM REGISTRATION NG. F-10161 ISOI VALLER COUNTY WALLER COUNTY ISOI VALLEY RD AT BIRCH CREEK ABUTMENT DETAILS SHEET 2 OF 2 FILE: ON: JL CONT SECT 100 INGHWAY REVISIONS ISOI VALUER OUNT ISOI VALUER INGHWAY ISOI VALUER INGHWAY ISOI VALUER INGHWAY ISOI COUNTY SHEET NO. ISOI COUNTY SHEET NO.								
DATE REVISION APPROV. ISOI KATT FREEWAY SUITE 3425 HOUSTON, TEXAS 77070 ISO2 494-3800 ISON REVISION WALLER COUNTY RILEY RD AT BIRCH CREEK ABUTMENT DETAILS SHEET 2 OF 2 FILE: ON: JL CK: DJ OW: CK: CTADOT CONT SECT JOB MIGHWAY REVISIONS I COUNTY SHEET NO. DIST COUNTY SHEET NO.								
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RILEY RD AT BIRCH CREEK ABUTMENT DETAILS FILE: DN: JL CK: DJ DW: CK: TXDOT CONT SECT JOB HIGHWAY REVISIONS REVISIONS REVISIONS DIST COUNTY SHEET NO, WALLER 55		WALLER COUNTY						
THELT ND AT BIRCH CREEK ABUTMENT DETAILS FILE: ON: JL CK: DJ DW: CK: CTXDOT CONT SECT JOB HIGHWAY REVISIONS REVISIONS RILEY RD DIST COUNTY SHEET NO. UNIT SHEET NO.				D II	EY DI	 ר		
AT BIRCH CREEK ABUTMENT DETAILS SHEET 2 OF 2 FILE: ON: JL CK: DJ DW: CK: CTXDOT CONT SECT JOB HIGHWAY REVISIONS REVISIONS DIST COUNTY SHEET NO. DIST COUNTY SHEET NO. DIST COUNTY SHEET NO.				NIL		ر ر		
ABUTMENT DETAILS SHEET 2 OF 2 FILE: ON: JL CK: DJ DW: CK: ©TXDOT CONT SECT JOB HIGHWAY REVISIONS I RILEY RD DIST COUNTY SHEET NO. UST WALLER 55 ST		AT BIRCH CREEK						
ABUTMENT DETAILS SHEET 2 OF 2 FILE: DN: JL CK: DJ DW: CK: © TXDOT CONT SECT JOB HIGHWAY REVISIONS DIST COUNTY SHEET NO. UST WALLER 55			4.54	17845				
FILE: DN: JL CK: DJ DW: CK: © TXDOT CONT SECT JOB HIGHWAY REVISIONS DIST COUNTY SHEET NO. DIST COUNTY SHEET NO. WALLER 55			ABL	JIME	NIDE	TAILS		
SHEET 2 OF 2 FILE: DN: JL CK: DJ DW: CK: ©TXDOT CONT SECT JOB HIGHWAY REVISIONS I RILEY RD DIST COUNTY SHEET NO. WALLER 55								
REVISIONS RILEY RD DIST COUNTY SHEET NO. WALLER 55		FILE: ©TxDOT		DN:	JL DNT SECT	SHEET ck: DJ DW job	2 (OF 2
DIST COUNTY SHEET NO. WALLER 55		REVISIO	ONS				R	ILEY RD
WALLER 33				DI	ST	COUNTY		SHEET NO.
					1	WALLER		22

TABLE OF ESTIMATED ABUTMENT QUANTITIES (2)

ALL ABUTMENTS ARE ON BEARING N23°33'20.1"W

GENERAL NOTES

- 1. DESIGNED IN ACCORDANCE WITH 2020 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 9TH EDITION WITH CURRENT INTERIM REVISIONS AND TXDOT BRIDGE DESIGN MANUAL (SEPT 2024)
- 2. SEE COMMON FOUNDATION DETAILS (FD) STANDARD SHEET FOR ALL ABUTMENT FOUNDATION DETAILS AND NOTES NOT SHOWN.
- 3. SEE BRIDGE LAYOUT FOR DRILLED SHAFT LENGTHS.

- · -	
0 PI	105+49.71
Δ	01°31'38.3" (LT)
D	01°05'43.9"
Т	69.71'
L	139.41'
R	5230.00'
PC	104+80.00
PT	106+19.41

JOSE	TE OF PH M LC 1413 1413 1413 1413 1413	DPEZ	7.5 , P.E. 4/9/202	h /	opey
		-			
DATE		REVI.	SION	APPR	OV.
Sume (832)4	KATY FREE 3425 TON, TEXA: 94-3800	5 77075 _EI	FIRM REGISTE F-101	ration 61	No.
R AT BI FOUND	ILEY IRCH ATIO	′R CH NL	D REEK .AYOUT		
			SHEET	1	<u>OF 1</u>
FILE:	DN: JL		Ск: DJ DW:		СК:
	CONT	SECT	JOB		HIGHWAY
REVISIONS				F	RILEY RD
	DIST		COUNTY		SHEET NO.
	1		WALLER		56

TX40 (TYP)

BEAM REPORT

HORIZONTAL DISTANCE TRUE DISTANCE

C-C BRG.

98.000

98.000

98.000

98.000

98.000

GIRDER REPORT, SPAN 1

C-C BENT

GIRDER 1 100.000

GIRDER 2 100.000

GIRDER 3 100.000

GIRDER 4 100.000

GIRDER 5 100.000

(2)

BOT. BM. FLG.

99.500

99.500

99.500

99.500

99.500

GIRDER

SLOPE

0.0000

0.0000

0.0000

0.0000

0.0000

BENT REPORT

ABUTMENT NO.1 (N 23° 33' 20" W) DISTANCE BETWEEN STATION LINE AND GIRDER 1 10.000 L GIRDER SPA GIRDER ANGLE (C.L. BENT) D M S SPAN 1 GIRDER 1 90 0 0 3.000 GIRDER 2 5.167 90 0 0 GIRDER 3 90 0 0 5.167 90 0 0 90 0 0 GIRDER 4 4.833 GIRDER 5 4.833 TOTAL 23.000

ABUTMENT NO.2 (N 23° 33' 20" W) DISTANCE BETWEEN STATION LINE AND GIRDER 1 10.000 L

		GIRDER SPA	GIRD	ER Al	VGLE	
		(C.L. BENT)	D	М	S	
SPAN 1	GIRDER 1	3.000	90	0	0	
	GIRDER 2	5.167	90	0	0	
	GIRDER 3	5.167	90	0	0	
	GIRDER 4	4.833	90	0	0	
	GIRDER 5	4.833	90	0	0	
	TOTAL	23.000				

SEE ELASTOMERIC BEARING & GIRDER END DETAILS (IGEB) STANDARD FOR ORIENTATION OF DIMENSIONS.

GIRDER LENGTHS SHOWN ARE BOTTOM GIRDER FLANGE WITH ADJUSTMENTS MADE FOR GIRDER SLOPE.

PI 105+49.71 Δ 01°31'38.3" (LT) D 01°05'43.9" 69.71 139.41 5230.00**'**



TYPICAL TRANSVERSE SECTION

€ GIRDER #3	€ GIRDER #4
DETAIL	"A"
LE OF ESTIMATED	TABLE OF D

TABLE OF ESTIMATED QUANTITIES									
SPAN	REINF CONCRETE	PRESTR CONCRETE GIRDERS	TOTAL REINF STEEL						
	JLAD	(TX40)	JICEL						
	SF	LF	LB						
1	2,600	497.50	5,980						
TOTAL 2,600 497.50 5,980									
REINFO	ORCING STEEL	WEIGHT IS CALCUL	ATED						

2,600	497.50	5,980	
RCING STEEL	WEIGHT IS CALCUL	ATED	
AN APPROXIM	ATE FACTOR OF 2.3	8 LBS/SF	

USING

Т	ED	TABL L	E OF L DEFLE(DEAD I CTION:	LOAE S
		CRAN	CIRDER	"A"	"B"
	REINF	SPAN	GIRDER	FT	FT
	STEEL		1	-0.107	-0.152
	IB		2	-0.099	-0.141
	5 980	1	3	-0.096	-0.136
-	5,000		4	-0.093	-0.132

			_					
OF L FLE(DEAD I	LOAD S		T.	ABLE D	OF SE EPTH	ECTIO S	N
	"A"	"B"		CDAN		"X" AT	"Y" AT	"Z" AT
INDEN	FT	FT		SPAN	GINDEN	CL BRG	CL BRG	CL SPAN
1	-0.107	-0.152			1	12	52	10
2	-0.099	-0.141			2	12	52	10 1/4
3	-0.096	-0.136		1	3	12	52	10 1/4
4	-0.093	-0.132			4	12	52	10 1/8
5	-0.104	-0.147			5	12	52	9 7/8

BAR	7
BAR	
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DEAD LOAD





(TYP)



- DESIGNED IN ACCORDANCE WITH 2020 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 9TH EDITION WITH CURRENT INTERIM REVISIONS AND TXDOT BRIDGE DESIGN MANUAL (SEPT 2024) 1.
- SEE I-GIRDER THICKENED SLAB END DETAILS (IGTS) STANDARD FOR DETAILS AND QUANTITY ADJUSTMENTS. 2.
- SEE PRESTRESSED CONCRETE PANELS (PCP) STANDARD AND PRESTRESSED CONCRETE PANEL FABRICATION DETAILS (PCP-FAB) STANDARD FOR PANEL DETAILS NOT SHOWN. З.
- SEE I-GIRDER MISCELLANEOUS SLAB DETAILS (IGMS) STANDARD FOR MISCELLANEOUS DETAILS. 4.
- SEE APPLICABLE RAIL DETAILS FOR RAIL ANCHORAGE IN SLAB. 5.
- SEE PERMANENT METAL DECK FORMS (PMDF) STANDARD FOR DETAILS AND QUANTITY ADJUSTMENTS IF THIS OPTION IS USED.

MATERIAL NOTES

- 1. PROVIDE CLASS S CONCRETE (f^{*}c = 4000 psi).
- 2. PROVIDE GRADE 60 REINFORCING STEEL.
- PROVIDE BAR LAPS WHERE REQUIRED AS FOLLOWS: UNCOATED ~ #4 = 1'-7" З.
- DEFORMED WELDED WIRE REINFORCEMENT (WWR)(ASTM 1064) OF EQUAL SIZE AND SPACING MAY BE SUBSTITUTED FOR BARS A, D, OA, P OR T UNLESS NOTED OTHERWISE. 4.

Y VALUE SHOWN IS BASED ON THEORETICAL GIRDER CAMBER DEAD LOAD DEFLECTION FROM AN 8 1/2 CONCRETE SLAB, A CONSTANT ROADWAY GRADE, AND USING PRECAST PANELS (PCP). THE CONTRACTOR WILL ADJUST THIS VALUE AS NECESSARY FOR ANY ROADWAY VERTICAL CURVE. 1

COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE.

WALLER

.58





Degusian Envola	D 04240200 420		70000006400
Docusion Envelo	0010.94316260-130)9-4UZ4-ADZD-U	10000090420

	DESIGNED GIRDERS DEPRESSED			Сомо	RETE	OPTIONAL DESIGN					LC	DAD RA	ATING								
					PR	ESTRESS	SING STR	ANDS		STR	AND			DESIGN	DESIGN	REQUIRED	LIVE	LOAD		FACTO	ORS
STRUCTURE	SPAN NO.	GIRDER NO.	GIRDER TYPE	NON- STD STRAND PATTERN	TOTAL NO.	SIZE	STRGTH fpu	е" Ф	"e" END	NO.	TO END	RELEASE STRENGTH	MINIMUM 28 DAY COMP STRENGTH f ² C	COMP STRESS (TOP Ç) (SERVICE I)	TENSILE STRESS (BOTTOM Q) (SERVICE III)	ULTIMATE MOMENT CAPACITY (STRENGTH I)	FAC	TOR	STREN	IGTH I	SERVICE III
						(in)	(ksi)	(in)	(in)		(in)	(ksi)	(ksi)	fct(ksi)	fcb(ksi)	(kip-ft)	Moment	Shear	Inv	Opr	Inv
Riley Rd	1	1	Tx40		32	0.6	270	14.23	8.60	6	36.5	5.100	5.800	3.728	-3.774	4351	0.470	0.609	1.78	2.30	1.24
	1	2	Tx40		28	0.6	270	14.60	10.03	4	36.5	4.800	5.600	3.607	-3.649	4203	0.453	0.609	1.59	2.07	1.08
	1	3	Tx40		28	0.6	270	14.60	10.03	4	36.5	4.800	5.600	3.570	-3.597	4129	0.443	0.596	1.63	2.11	1.13
	1	4	Tx40		28	0.6	270	14.60	10.03	4	36.5	4.800	5.600	3.533	-3.544	4055	0.433	0.584	1.67	2.16	1.18

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TYPE Tx62 & Tx70

NON-STANDARD STRAND PATTERNS

PATTERN	STRAND ARRANGEMENT AT € OF GIRDER

(1) Based on the following allowable stresses (ksi):

Compression = 0.65 f[•]ci

Tension = 0.24 √ f[•]ci

Optional designs must likewise conform.

(2) Portion of full HL93.

DESIGN NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications. Load rated using Load and Resistance Factor Rating according to

AASHTO Manual for Bridge Evaluation. Optional designs for girders 120 feet or longer must have a calculated residual camber equal to or greater than that of the designed girder.

Prestress losses for the designed girders have been calculated for a relative humidity of 60 percent. Optional designs must likewise conform

FABRICATION NOTES:

Provide Class H concrete.

Provide Grade 60 reinforcing steel bars.

Use low relaxation strands, each pretensioned to 75 percent of fpu.

Strand debonding must comply with Item 424.4.2.2.2.4. Full-length debonded strands are only permitted in positions marked Δ . Double wrap full-length debonded strands in outer most position of each row.

When shown on this sheet, the Fabricator has the option of furnishing either the designed girder or an approved optional design. All optional design submittals must be signed, sealed and dated by a Professional Engineer registered in the State of Texas.

Seal cracks in girder ends exceeding 0.005" in width as directed by the Engineer. The Fabricator is permitted to decrease the spacing of Bars R and S by providing additional bars to help limit crack width provided the decreased spacing results in no less than 1" clear between bars. The Fabricator must take an approved corrective action if cracks greater than 0.005" form on a repetitive basis.

DEPRESSED STRAND DESIGNS:

Locate strands for the designed girder as low as possible on the 2" grid system unless a non-standard strand pattern is indicated. Fill row "2.5", then row "4.5", then row "6.5", etc., beginning each row in the "A" position and working outward until the required number of strands is reached. All strands in the "A" position must be depressed, maintaining the 2" spacing so that, at the girder ends, the upper two strands are in the position shown in the table.









- (1) Usual limit of Cement Stabilized Backfill is at end of wingwall. Extend CSB limits as required to maintain a slope no steeper than 1:1 at bottom of backfill.
- (2) Bench backfill as shown with 12" (approximate) bench depths.
- (3) Where MSE retaining walls are present, adjust CSB limits to accommodate the select fill zone. See retaining wall details for additional information.
- (4) When distance between select fill zones is less than 5'-0", MSE select fill may be substituted for cement stabilized backfill with approval from the Engineer.
- (5) If shown in the plans, flowable backfill can be used as a substitute for cement stabilized backfill with the following constraints:

a). If flowable backfill is to be placed over MSE backfill, then a filter fabric will be placed over the MSE backfill prior to placement of the flowable fill; and

b). Place flowable fill in lifts not exceeding 2 feet in height. Place each successive lift when the previous lift has stiffened/hardened (i.e. has lost its flowability).



See the Bridge Layout for selected Option. Option 1 is intended for construction only requiring plasticity index (PI) controlled embankment fill or excavation in competent soils/rocks in order to construct the abutment. Option 2 is intended for new construction requiring high plasticity embankment fill with a PI greater than 30 or pavement built in poor native soil. Poor soils are defined as high plasticity clays or expansive clays.

Construct abuttment backfill in accordance with Item 400, "Excavation and Backfill for Structures." Provide Cement Stabilized Backfill (CSB) meeting the

Provide Cement Stabilized Backfill (CSB) meeting the requirements of Item 400, "Excavation and Backfill for Structures,"

to the limits shown at bridge abutments. If required elsewhere in the plans, provide Flowable Backfill meeting the requirements of Item 401, "Flowable Backfill," to the limits shown at bridge abutments.

Details are drawn showing left forward skew. See Bridge Layout for actual skew direction.

These details do not apply when concrete block retaining walls are used in lieu of wingwalls.

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CEMENT STABILIZED ABUTMENT BACKFILL BRIDGE ABUTMENT								
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DRILLED SHAFT SECTIONS

- (1) #3 spiral at 6" pitch (one and a half flat turns top and bottom).
- 2 Min extension into supported element: #6 Bars = 1'-11" #7 Bars = 2'-0" #9 Bars = 2'-3"
- (3) Min lap with column reinf: #7 Bars = 2'-11" #9 Bars = 3'-9" #11 Bars = 4'-8"
- (4) Min extension into supported element: #6 Bars = 1'-11" #7 Bars = 2'-3" #9 Bars = 2'-9"
- 5 Drilled shafts may extend to the bottom of bent caps for "H" heights of 6 ft and less (as shown on the Bridge Layout), if approved. This option can only be used when the drilled shaft diameter equals the column diameter. Obtain approval of the forming method above the ground line prior to construction. No adjustments in payment will be made if this option is used.
- (6) 1'-0" Min, unless shown otherwise on plans.
- (7) Or as shown on plans.

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If unable to avoid conflict with wingwall piling at exterior pile group regardless of which pile would be battered back, one pile in group may be

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TAE Q	BLE (UAN [*] 30" (OF FOOTI TITIES FO COLUMNS	NG PR					
ONE 3 PILE FOOTING								
No.	Size	Length	Weig					

Bar	No.	Size	Lengti	h	Weight			
F1	11	#4	3'- 2'	23				
F2	6	#4	8'- 2'	-	33			
F3	6	#4	6'- 11	-	28			
F4	8	#9	3'- 2'	1	86			
F5	4	#9	6'- 11		94			
F6	4	#9	8'- 2'	ı	111			
FC	12	#4	3'- 6'	I	28			
FD (10)	8	#9	8'- 1	1	220			
Reinfo	orcing S	Steel		Lb	623			
Class	C" Cor	ncrete		4.8				
ONE 4 PILE FOOTING								
Bar	No.	Size	Lengti	Weight				
F1	20	#4	7'- 2'	96				
F2	16	#8	7'- 2'	306				
FC	16	#4	3'- 6'	37				
FD (10)	8	#9	8'- 1	220				
Reinfo	orcing S	Steel		Lb	659			
Class	C" Cor	ncrete		СҮ	6.3			
		ONE 5 F	PILE FOOTI	NG				
Bar	No.	Size	Lengtl	h	Weight			
F1	20	#4	8'- 2'	ı	109			
F2	16	#9	8'- 2'		444			
FC	24	#4	3'- 6'		56			
FD (10)	8	#9	8'- 1	1	220			
Reinfo	orcing S	Steel		Lb	829			
Class	C" Cor	ncrete		СҮ	8.0			

	Top reinforcement	
Ð	Bottom reinforcement	

CONSTRUCTION NOTES:

- See Bridge Layout for foundation type required. Use these foundation details unless shown otherwise.
- Drive piling under abutment wingwalls to a minimum resistance of 10 Tons/Pile unless shown otherwise.
- Provide Class C Concrete (fc = 3,600 psi), unless shown otherwise. Provide Grade 60 reinforcing steel. Galvanize reinforcing if shown elsewhere in the plans.

Provide bar laps for drilled shaft reinforcing, where required, as follows:

Uncoated or galvanized (#6) ~ 2'-6" Uncoated or galvanized (#7) ~ 2'-11"

- Uncoated or galvanized (#9) ~ 3'-9"

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing bar dimensions shown are out-to-out of bar.

DESIGNER NOTES:

Do not use the drilled shaft details shown on this standard for retaining wall, noise wall, barrier, or sign foundations without structural evaluation. Do not use the footings shown on this standard in direct contact with salt water or exposed to salt water spray.

- Maximum allowable pile loads for the footings shown are: 72 Tons/Pile with 24" Dia Columns 80 Tons/Pile with 30" Dia Columns
 - 100 Tons/Pile with 36" Dia Columns
 - 120 Tons/Pile with 42" Dia Columns

Texas Department of Transportation

Bridge Division Standard

COMMON FOUNDATION DETAILS

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Girder	"D"	"B"	"Yt"	"Yb"	Area	"/x"	"/y"	Weight (10)
Туре	(in.)	(in.)	(in.)	(in.)	(in.²)	(in.4)	(in.4)	(plf)
Tx28	28	6	15.02	12.98	585	52,772	40,559	630
Tx34	34	12	18.49	15.51	627	88,355	40,731	675
Tx40	40	18	21.90	18.10	669	134,990	40,902	720
Tx46	46	22	25.90	20.10	761	198,089	46,478	819
Tx54	54	30	30.49	23.51	817	299,740	46,707	880
Tx62	62	37 ½"	33.72	28.28	910	463,072	57,351	980
Tx70	70	45 ½"	38.09	31.91	966	628,747	57,579	1,040

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Skew

angle

– Face of abut backwall

inverted-T stem or

€ interior bent

- Face of abut backwall, inverted-T stem or

€ interior bent

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5 ½"

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45° SKEW

Bar B

Min Iap 15

Δ.

Skew

angle

⊢ Face of abut backwall,

inverted-T stem or

C interior bent





- 1 Dowel at doweled girder end [labeled (D) on Bridge Layout]. Required for outside girder only or as shown on substructure
- 2 For purposes of computing bearing seat elevations, nominal centerline of bearing must be defined as shown. The actual center of bearing pad may vary from this line.
- (3) For transition bents with backwall, girder and elastomeric bearings must receive the same treatment as shown for abutments.
- (4) When angle exceeds 0°, one or both girders ends must be skewed to maintain the clearance between girder ends as shown in view.
- 5 See Table of Bearing Pad Dimensions for bearing size. Girder end skew angles in Table not applicable for this situation. Table reflects girder conflicts of this type on radial bents only.

GENERAL NOTES:

These details accommodate skew angles up to 60°.

Shop drawings for approval are required. A bearing layout which identifies location and orientation of all bearings must be developed by the bearing fabricator. Permanently mark each bearing in accordance with the bearing layout. A copy of the bearing layout is to be provided to the

Cost of furnishing and installing elastomeric bearings, including beveled and embedded steel plates, must be included in unit price bid for "Prestressed Concrete Girders."

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TABLE OF BEARING PAD DIMENSIONS										
Bent Type	Girder Type	der Bearing Girder Type Skew A		Pad Size Length x Width	Pad Dimer	Clip nsions				
type	ijpe	(13)	Range	Lenger X Waan	"A"	"B"				
		G-1-"N"	0° thru 21°	8" x 21"						
RIITMENTS	Tx28,Tx34,	G-2-"N"	21°+ thru 30°	8" x 21"	1 ½"	2 ½"				
IVERTED-T	& Tx54	G-3-"N"	30°+ thru 45°	9" x 21"	4 ½"	4 ½"				
AND		G-4-"N"	45°+ thru 60°	15" Dia						
BENTS		G-5-"N"	0° thru 21°	9" x 21"						
WITH	Tx62	G-6-"N"	21°+ thru 30°	9" x 21"	1 ½"	2 ½"				
CKWALLS \land Tx70		$\begin{array}{c} \alpha \\ Tx70 \end{array}$ G-7-"N" 30°+ thru 45° 10" x 21"				4 ½"				
		G-8-"N"	45°+ thru 60°	10" x 21"	7 ¼"	4 ¼"				
	Tx28.Tx34.									
VVENTIONAL	Tx40,Tx46									
BENTS	& Tx54	G-1-"N"	0° thru 60°	8" x 21"						
	Tx62 & Tx70	G-5-"N"	0° thru 60°	9" x 21"						
VVENTIONAL		G-1-"N"	0° thru 18°	8" x 21"						
	Tx28,Tx34,	G-2-"N"	18°+ thru 30°	8" x 21"	1 1/2"	2 ½"				
WITH	& Tx54	G-9-"N"	30°+ thru 45°	8" x 21"	3"	3"				
SKEWED		G-10-"N"	45°+ thru 60°	9" x 21"	6"	3 ½"				
GIRDER		G-5-"N"	0° thru 18°	9" x 21"						
	Tx62	G-5-"N"	18°+ thru 30°	9" x 21"						
(GIRDER	c	001								
ONFLICTS)	& Tx70	G-11-"N"	30°+ thru 45°	9" x 21"	1 ½"	1 ½"				

2 For purposes of computing bearing seat elevations, nominal centerline of bearing must be defined as shown. The actual center of bearing pad may vary from this line.

(6) 3" for inverted-T.

7 Place centerline pad as near nominal centerline bearing as possible between limits shown.

8 Girder end skew angle is equal to 90° minus the girder angle except at some conflicting girders.

9 Provide 2" dia hole only at locations required. See Substructure details for location.

(10) See Table of Bearing Pad Dimensions for dimensions.

(11) Maximum and minimum layer thicknesses shown are for elastomer only, on tapered layers.

(12) Locate Permanent Mark here.

13 Indicate BEARING TYPE on all pads. For tapered pads, locate BEARING TYPE on the high side. The Fabricator must include the value of "N" (amount of taper in $\frac{1}{8}$ " increments) in this mark. Examples: N=0, (for 0" taper) N=1, (for $\frac{1}{8}$ " taper)

N=2, (for $\frac{1}{4}$ " taper)

(etc.)

Fabricated pad top surface slope must not vary from plan girder slope by more than $\begin{pmatrix} 0.0625^{"}\\ Length \text{ or } Dia \end{pmatrix}$ IN/IN.

(14) Substructure dimensions must satisfy the minimums provided to accommodate the elastomeric bearings shown on this standard.

(15) See sheet 3 of 3 for beveled plate use when slopes exceed 5 percent.

(16) If girder end is skewed for a girder conflict at an interior bent and a beveled sole plate is required, use bearing type for abutments at this location. Location of bearing centerline is to be set as for abutments in this case.

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ELASTOMERIC BEARING AND GIRDER END DETAILS PRESTR CONCRETE I-GIRDERS						5 L S S	
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Provide constant thickness elastomeric bearings with beveled and embedded steel sole plates in accordance with these details when the girder slope exceeds 5 percent or if otherwise required in the

On the shop drawings, dimension sole plates to the nearest $\frac{1}{46}$ " based on required thickness at centerline of bearing and slope of girder. Thickness tolerance variation from the approved shop drawings is $\frac{1}{16}$ " +/-, except variation from a plane parallel to the theoretical top surface can not exceed 4/s^a total. Bearing surface tolerances listed in Item 424, "Precast Concrete Structural Member (Fabrication)" apply to embedded and beveled plates

Steel plate must conform to ASTM A36, A572 Gr 50, or A709 Gr 36 or Gr 50. Hot dip galvanize both the embedded plate and beveled sole plate after fabrication. Seal weld caps to embedded plate

When determining if relocation of screw holes and studs are necessary for skewed girder ends, minimum clearance from screw

Tap threads in the embedded plate only. Drill and tap prior to

 2^{4}_{4} Didniced backs of the second probability of ASTM F835. Electroplating must conform to ASTM B633, SC 2, Type I. Provide screws long enough to maintain a $\frac{3}{4}$ ^a minimum embedment into the embedded plate and galvanized cap. Provide galvanized steel caps (16 ga Min) with a nominal 1" inside diameter and deep enough to accommodate the screws, but not less than $\frac{1}{2}$ " deep or

Install beveled sole plates prior to shipping girders. Installed screw heads must not protrude below the bottom of the beveled

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HAUNCH REINFORCING DETAIL









TYPICAL PART TRANSVERSE SLAB SECTION WITHOUT PCP(4)

Top reinforcing steel not shown for clarity.



Where flanges project under slab of adjacent span, provide a minimum of $\frac{1}{2}$ " clearance between top of girder and bottom of adjacent slab. Polystyrene or other suitable compressible material may be used as a filler.

TREATMENT AT GIRDER END FOR SKEWED SPANS





- (1) Space Bars U with girder Bars R in all areas where measured haunch exceeds 3 $\frac{1}{2}$ ".
- (2) Roughen outside of PVC with coarse rasp or equal to ensure bond with cast-in-place concrete.
- (3) Bars B(#4) spaced at 9" Max with 2" end cover. Overhang option, Contractor may end alternating bars B(#4) at centerline of outside girder.
- (4) Provide Grade 60 reinforcing steel. Provide bar laps, where required, as follows: Uncoated ~ #4 = 1'-7" Epoxy coated ~ #4 = 2'-5"
- (5) Class 7 silicone sealant that conforms to DMS-6310. Install when ambient temperature is between 55°F and 85°F and rising. Engineer to determine allowable hours for sealant application.
- (6) 1 ¼" backer rod must be compatible with joint sealant. Use of multiple pieces to create a backer rod cross section is not permitted. Top of backer rod must be convex as shown.
- (7) The maximum distance between Type A expansion joints is 100'. See Bridge Layout for location of joints.
- (8) Drain entrance formed in rail or sidewalk.
- 9 Water may not be discharged onto girders.
- (10) All drain pipe and fittings to be 4" diameter (Sch 40) PVC. See Item 481 "Pipe for Drains" for pipe, connections and solvent welding. Bend reinforcing steel to clear PVC 1". Drain length and location is as directed by the Engineer. Drains are not permitted over roadways or railways, or within 10'-0" of bent caps. Degrease outside of exposed PVC, apply acrylic water base primer, then coat with same surface finishing material as used for outside girder face. Variations of the above designs, as required for the type of rail used and its location on the structure, may be installed with the approval and direction of the Engineer.



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8"

BARS W (#4)



DRIP BEAD DETAIL

(11) See Layout for joint type.

- (12) Dowels DD (#11) spaced at 5 ft Max. See Inverted-T bents for quantity and location.
- (13) Space Bars Y (#4) at 12" Max. Use 2" end cover. Number of Bars Y must satisfy spacing limit. Place parallel to bent.
- (14) Space Bars W at 12[•] Max (3" from end of cap). Tilt if necessary to maintain cover requirements. Place parallel to longitudinal slab reinforcement.
- (15) See Span Details for type of joint and joint locations.





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BRIDGE CLASS CULVERT SIGN PLACEMENT



SHEETING REQUIREMENTS

	_	
Usage	Color	Sign Face Material
Background	White	Type B or C Sheeting
Letters and Symbols	Black	Type B or C Sheeting

- 1) Bridge identification sign location
- (2) Alternate sign placement location for exterior concrete beams.
- (3) If adjacent bridges are less than 2 feet apart, these signs may be omitted.
- (4) ¹/₄" Diameter stainless steel expansion anchor with hex nut, washer, and spring-lock washer.

SIGN NOTES:

Standard sign designs can be found in the Standard Highway Sign Designs for Texas (SHSD). Use the Clearview Alphabet CV-2W for the letters and

Use the Clearview Alphabet CV-2W for the letters and symbols.

MATERIAL NOTES:

Provide lateral spacing between letters and numerals conforming with the SHSD, and any approved changes thereto. Provide a balanced appearance when spacing is not shown.

Provide aluminum sign blanks with a minimum thickness of 0.080" that meet the requirements of DMS-7110. Provide sign face materials that meet the requirements of

DMS-8300 and the sheeting requirements of a three the requirements of DMS-8300 and the sheeting requirements shown in the table. Provide $\frac{1}{4}$ diameter stainless steel expansion anchors with one hex head nut, one flat washer, and one helical

spring-lock washer each. Use torque controlled mechanical expansion anchors that are approved for use in cracked concrete by the International Code Council, Evaluation Service (ICC-ES). Provide anchor products that have a designated ICC-ES

Provide anchor products that have a designated ICC-ES Evaluation Report number. The approval status must be maintained on the ICC-ES website under Division 031600 for Concrete Anchors.

Unless otherwise approved by the Engineer: do not use adhesive anchors; do not use expansion anchors that are not included in the ICC-ES approval list; and do not use expansion anchors that are only approved for use in uncracked concrete.

Use anchors manufactured with stainless steel expansion wedges. Anchors manufactured with carbon steel expansion wedges are not allowed. Anchor bodies can be either zinc-plated carbon steel or stainless steel. For application in marine environments, provide both stainless steel anchor bodies and expansion wedges.

GENERAL NOTES:

Prior to hole drilling, locate rebar to ensure clearing of existing reinforcement and/or strands.

Prior to installation, obtain approval of sign locations from the Engineer. Avoid placement of sign over travel lanes and pedestrian walkways. Submit proposed installation method to Engineer prior to beginning work. Install anchors as shown on plans and in accordance with the anchor manufacturer's published installation instructions.

Do not install anchors sections of members under tension. For new construction, the signs and anchors are subsidiary to the bridge. For installations on existing structures, the signs and anchors are paid under Item 442, "Metal for Structures." Each sign weighs 28 lbs.

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(2) Allowed for prestressed concrete I-girders, not allowed on other beam types.

- (3) To reduce the quantity of cast-in-place concrete, bedding strip thickness may be increased in $\frac{1}{4}$ increments. Bedding strips must be comprised of one layer. Bord bedding strips to the beams with an adhesive compatible with bedding strips. Bedding strips over 2.5" high may need to be bonded to panels. The same thickness strip must be used under any one panel edge and the maximum change in thickness between adjacent panels is $\frac{1}{4}$ ". Alternatively, bedding strips may be cut to grade. Panels may be supported by an alternate method, using a commercial product, if approved by the Engineer of Bridge Design, Bridge Division. If bedding strips exceed 6[•] high for I-Girders, 4[•] high for all other beam types, use "Special Grading Detail for Concrete Beams" or submit an alternate method to the Bridge Division for approval.
- (4) Height must not exceed twice the width.

(2

Panels not

allowed in bay

if distance shown

is less than 3".

Panel (Typ)

Beam Bar R (#4)

(8)

- (5) Provide clear cover as indicated unless otherwise shown on span details.
- (6) See span details and thickened slab end details for top slab reinforcement and clear cover. Longitudinal top slab reinforcement may rest on top of prestressed concrete panels if necessary to maintain clear cover.
- (7) Space Bars UP(#4) with Beam Bars R(#4) in all areas where measured haunch exceeds 3 $\frac{1}{2}$ " with I-girders, and 3" for all other beam types. Incline Bars UP as needed to maintain clear cover (45° Max). Epoxy coating for Bars UP is not reauired.
- (8) Do not locate construction joints on top of a panel.
- (9) Butt adjacent bedding strips together with adhesive. Cut v-notches, approximately $\frac{1}{4}$ " deep, in the top of the bedding strips at 8' o.c..



(Panel reinforcing not shown for clarity The gap cannot be considered as a panel fabrication tolerance. Adjust panel placement to minimize joint openings.)



BEDDING STRIP DETAIL (9)

CONSTRUCTION NOTES:

Erected panels must bear uniformly on bedding strips of extruded polystyrene placed along top flange edges.

Placing panels to minimize joint openings is recommended. If additional blocking is needed, special grading details for supporting the panels and extra reinforcing between beam and slab will be considered subsidiary to deck construction.

Bars U, shown on PCP-FAB, may be bent over or cut off if necessary.

Care must be taken to ensure proper cleaning of construction debris and consolidation of concrete material under the edges of the panels. Bedding strips must be placed at beam flange edges so that adequate space is provided for the mortar to flow a

minimum of 1 $\frac{1}{2}$ " under the panels as the slab concrete is placed To allow the proper amount of mortar to flow between beam and panel, the minimum vertical opening must be at least $\frac{1}{2}$. Roadway cross-slope reduces the opening available for entry of the mortar. Bedding strips varying in thickness across the beam are therefore required.

For clear span between U-beams less than or equal to 18", see Permissible Slab Forming Detail on Miscellaneous Slab Detail (UBMS) standard sheet.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel in the cast-in-place slab. See "Table of Reinforcing Steel" for size and spacing of reinforcement. If the top and bottom layer of reinforcing steel is shown on the

span details to be epoxy coated, then the D, E, P, & Z bars must be epoxy coated.

Provide bar Laps, where required, as follows: Uncoated ~ #4 = 1 -7 Epoxy Coated $\sim #4 = 2'-5"$

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications. Panel placement may follow either Option 1 or Option 2 except Option 1 must be used if the skew exceeds 45 degrees.

Use of prestressed concrete panels is not permitted for

horizontally curved steel plate or tub girders. See span details for other possible restrictions on their use.

These details are to be used in conjunction with the span details, Prestressed Concrete Panel Fabrication Details (PCP-FAB) standard and other applicable standard drawings.

When panel support (bedding strips) deviates from what is shown herein, provide details signed and sealed by a professional Engineer Any additional reinforcement or concrete required on this standard is considered subsidiary to the bid Item "Reinforced Concrete Slab."

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing bar dimensions shown are out-to-out of bar.

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DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act." No warranty of any kind is made by TxDOT for any purpose TXDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its

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reinforcing is not required. Use the same top mat as shown on the

prior to completing interior panel placement is recommended. Saw cutting panels to fit is acceptable when approved by the Engineer Minimum distance from a saw cut edge to a panel strand is $1\frac{1}{2}$ ".

modified as shown on this drawing. The Contractor is responsible for coordinating this modification with the beam fabricator prior to

bearing centerline location, and dowel location with Engineer and Contractor. Show appropriate changes on girder and bearing shop

Bending of anchor studs of expansion joints shown on shown or Armor Joint Details (AJ) and Sealed Expansion Joint Type B (SEJ-B), Type M (SEJ-M), and Type S (SEJ-S(O)) standards is permissible if necessary to clear top of end panels. The Contractor is responsible shop drawings for approval when modifications to expansion joint

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TABLE A (4)(5)								
Beam Type	Normal (In.)	Min (In.)	Max (In.)					
А	3	2 ½	3 ½					
В	3	2 ½	3 ½					
С	4	3	4 ½					
IV	6	4	7 ½					
VI	6 ½	4 ½	8 ½					
U40 - 54	5 ½	5 ½	7					
Tx28-70	6	5	7 ½					
XB20 - 40	4	3	4 ½					
XSB12 - 15	4	3	4 ½					

	TABLE B (4)(5)								
Vormal (In.)	Min (In.)	Max (In.)							
2 ³ ⁄4	2 ½	2 ³ ⁄4							
3 ¼	3	3 ¼							
4	3	4 ¾							
5	3 ½	6 ¼							
	Vormal (In.) 2 ³ / ₄ 3 ¹ / ₄ 4 5	Normal (ln.) Min (ln.) 2 ³ / ₄ 2 ¹ / ₂ 3 ¹ / ₄ 3 4 3 5 3 ¹ / ₂							

GENERAL NOTES:

Provide Class H concrete for panels. Release strength

fci=3,500 psi. Minimum 28 day strength fc=5,000 psi.

Provide $\frac{3}{4}$ " chamfer along bottom edge of panel on beam side. Do not use epoxy-coated reinforcing steel bar or strand in panels. Remove laitance from top panel surface. Finish top of panel to a roughness between a No. 6 and No. 9

concrete surface profile, inclusive, as specified by the International Concrete Repair Institute (ICRI). Shop drawings for the fabrication of panels will not require the

Engineer's approval if fabrication is in accordance with the details shown on this standard.

A panel layout which identifies location of each panel must be developed by the Fabricator. Permanently mark each panel in accordance with the panel layout. A copy of the layout is to be provided to the Engineer.

TRANSVERSE PANEL REINFORCEMENT: For panel widths over 5', use ³/₈" or ¹/₂" Dia (270k) prestressing strands with a tension of 14.4 kips per strand.

For panel widths over 3'-6" up to and including 5', use $\frac{3}{2}$ " or $\frac{1}{2}$ " Dia (270k) prestressing strands with a tension of 14.4 kip per strand. Optionally, (#4) Grade 60 reinforcing bars may be used in lieu of prestressed strands.

For panel widths up to 3'-6", use (#4) Grade 60 reinforcing bars (prestressed strands alone are not allowed). Place reinforcing bars at least two bar diameters away from each prestressed strand. Place transverse panel reinforcement at panel centroid and space at 6" Max.

LONGITUDINAL PANEL REINFORCEMENT:

Any of the following options may be used for longitudinal panel reinforcement

1. (#3) Grade 60 reinforcing steel at 6" Max Spacing. No splices allowed

2. $\frac{3}{8}$ " Dia prestressing strands at 4 $\frac{1}{2}$ " Max Spacing (unstressed). No splices allowed.

3. ¹/₂" or 0.6" Dia prestressing strands at 6" Max Spacing (unstressed). No splices allowed.

4. Deformed Welded Wire Reinforcement (WWR) (ASTM A1064) providing 0.22 sq in per foot of panel width. Wires larger than D11 not permitted. Provide transverse wires to ensure proper handling of reinforcement. One splice per panel is allowed. See WWR Splice Detail.

No combination of longitudinal reinforcement options in a panel is allowed

Place longitudinal panel reinforcement above or below transverse panel reinforcement. Must be placed above transverse panel reinforcement for skewed end panels with supplemental (#4) reinforcement

HL93 LOADING Bridge Division Standard Texas Department of Transportation **PRESTRESSED CONCRETE** PANEL FABRICATION DETAILS **PCP-FAB** DN: TXDOT CK: TXDOT DW: TXDOT CK: TXDO C)TxDOT October 2024 CONT SECT JOB HIGHWA RILEY RD 79 WALLER



- F436) and one regular lock washer placed under heavy hex nut (ASTM A563). One

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	SHEET 1 OF 2								
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07/20	20: Allowing 9'-4 ½" or 6'-3" W-Beam sections.	DIST		COUNTY		SHEET NO.			
03/20	23: MBGF Notes.			WALLER		80			



MBGF AND END TREATMENT NOTES:

This traffic railing must be anchored by metal beam guard fence (MBGF) and/or guard fence end treatments. Determine MBGF length of need in accordance with the Roadway Design Manual, unless otherwise specified. The minimum MBGF length of need required for anchoring the railing is: SGT; or DAT plus 12.5' of MBGF, as applicable. Provide CRT posts as shown in "Roadway Elevation of Rail." The SGT and DAT plus 12.5' MBGF must be installed tangent to primary roadway.

CONSTRUCTION NOTES:

Face of rail post must be plumb unless otherwise approved by the Engineer. Post must be perpendicular to adjacent roadway grade. Use epoxy mortar under post base plates if gaps larger than $\frac{V_{16}}{r_{16}}$ exist.

Fully anchored guardrail must be attached to each end of rail. A metal beam guard fence transition is not used with this rail. At the Contractor's option anchor bolts may be an adhesive anchor system. See "Material Notes".

Test adhesive anchors in accordance with Item 450.3.3, "Tests". Test 3 anchors per 100 anchors installed. Perform corrective measures to provide adequate capacity if any of the tests do not meet the required test load. Repair damage from testing as directed.

It is recommended to show a Rail Layout with rail posts and W-beam splices. Fabricator must submit erection drawings to the Engineer for approval.

Round or chamfer exposed edges of rail post and backer plate to approximately ${}^{1\!}_{1\!6}{}^{\rm c}$ by grinding.

Shop drawings are not required for this rail.

MATERIAL NOTES:

Galvanize all steel components.

Anchor bolts for base plate must be ⁵/₈" Dia ASTM F3125 Gr A325 or A449 bolts (or ASTM A193 Gr B7 or F1554 Gr 105 threaded rods with one tack welded heavy hex nut each) with one hardened steel washer (ASTM F436) and one regular lock washer placed under each heavy hex nut. Nuts must conform to ASTM A563 requirements.

Optional adhesive anchorage system must be $\frac{5}{6}$ " Dia ASTM A193 Gr B7 or F1554 Gr 105 fully threaded rods with one hardened steel washer (ASTM F436) and one regular lock washer placed under each heavy hex nut. Nuts must conform to ASTM A563 requirements. Embed fully threaded rod into slab and/or abutment wingwall using a Type III, Class C, D, E, or F anchor adhesive. Minimum adhesive anchor embedment depth is $4\frac{3}{2}$ ". Anchor adhesive chosen must be able to achieve a nominal bond strength in tension of a single anchor, Na, of 8 kips (edge distance must be accounted for). Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing."

W-beam must meet the requirements of Item 540, "Metal Beam Guard Fence" except as modified in the plans. The Contractor may furnish rail elements of 25'-0" or 12'-6" (Nominal) lengths and a single rail element of 9'-4 $\frac{1}{2}$ " or 6'-3" (Nominal) length. W-Beam must have slotted holes at 3'-1 $\frac{1}{2}$ ".

Some part numbers from the "Task Force 13" Guide to Standardized Highway Barrier Hardware have been furnished for quick reference.

GENERAL NOTES:

This railing has been successfully evaluated by full-scale crash test to meet MASH TL-2 criteria. This railing can be used for speeds of 45 mph and less.

This rail is designed to deflect approximately 2' to 2'-6" as it contains and redirects the errant vehicle. This rail may not be installed on top of or behind curbs that project above finished grade, on bridges with expansion joints providing more than 5" movement, on retaining walls, or on grade separations and interchanges.

Repairs to impact-damaged post and base plate unit are not permitted. Replace all impact-damaged posts with a new post and base plate unit.

Average weight of railing with no overlay: 13 plf total.

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ONE DIRECTION LARGE ARROW (W1-6) sign should be located at approximately and perpendicular to the extension of the centerline of the tangent section of approach lane.





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55		100		200		160		
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35		60		120	+	120		
30)	55		110	+	80		
25	,	50		100	1	80		
20		40		80	1	80		
15	5	35		70	1	40		

If the degree of curve is not known, delineator spacing may be determined based on the Advisory Speed of the curve. Use the delineator curve spacing for each Advisory Speed (MPH).

DELINEATOR AN	D OBJECT MARKER APPLI	CATION AND SPACING
CONDITION	REQUIRED TREATMENT	MINIMUM SPACING
rwy./Exp. Tangent	RPMs	See PM-series and FPM-series standard sheets
rwy./Exp. Curve	Single delineators on right side	See delineator spacing table
rwy/Exp.Ramp	Single delineators on at least one side of ramp (should be on outside of curves) (see Detail 3 on D&OM(4))	100 feet on ramp tangents Use delineator spacing table for ramp curves ("straightway spacing" does not apply to ramp curves)
Acceleration/Deceleration Lane	Double delineators (see Detail 3 on D&OM(4))	100 feet (See Detail 3 on D & OM (4))
Truck Escape Ramp	Single red delineators on both sides	50 feet
Bridge Rail (steel or concrete)and Metal Beam Guard Fence	Bi-Directional Delineators when undivided with one lane each direction Single Delineators when multiple lanes each direction	Equal spacing (100'max) but not less than 3 delineators
concrete Traffic Barrier (CTB) or Steel Traffic Barrier	Barrier reflectors matching the color of the edge line	Equal spacing 100′ max
Cable Barrier	Reflectors matching the color of the edge line	Every 5th cable barrier post (up to 100'max)
Guard Rail Terminus/Impact Head	Divided highway - Object marker on approach end Undivided 2-lane highways - Object marker on approach and departure end	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5) and D & OM (6)
Bridges with no Approach Rail	Type 3 Object Marker (OM-3) at end of rail and 3 single delineators approaching rail	See D & OM(5)
Reduced Width Approaches to Bridge Rail	Type 2 and Type 3 Object Markers (OM-3) and 3 single delineators approaching bridge	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end
		See D & OM (5)
Luiverts without MBGF	Type 2 Object Markers	See Detail 2 on D & OM(4)
Crossovers	Double yellow delineators and RPMs	See Detail 1 on D & OM (4)
Pavement Narrowing (lane merge) on Freeways/Expressway	Single delineators adjacent to affected lane for full length of transition	100 feet
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- or barrier reflectors are placed.
- way driver applications

	LEGEND							
Ж	Bi-directio Delineator							
\mathbf{X}	Delineator							
_	Sign							

1. Unless indicated otherwise, the delineator or barrier reflector color shall conform to the color of the pavement edge line on the side of the road where the delineators

2. Barrier reflectors may be used to replace required delineators.

3. Single red delineators may be mounted on the back side of delineator posts for wrong

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MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

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VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

Comply with the Hazard Communication Act (the Act) for personnel who will be working with hazardous materials by conducting safety meetings prior to beginning construction and making workers aware of potential hazards in the workplace. Ensure that all workers are provided with personal protective equipment appropriate for any hazardous materials used. Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act.

Maintain an adequate supply of on-site spill response materials, as indicated in the MSDS. In the event of a spill, take actions to mitigate the spill as indicated in the MSDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup

Contact the Engineer if any of the following are detected: * Dead or distressed vegetation (not identified as normal) Trash piles, drums, canister, barrels, etc.

Does the project involve any bridge class structure rehabilitation or

replacements (bridge class structures not including box culverts)?

No No

If "No", then no further action is required. If "Yes", then TxDOT is responsible for completing asbestos assessment/inspection.

Are the results of the asbestos inspection positive (is asbestos present)? No No

If "Yes", then TxDOT must retain a DSHS licensed asbestos consultant to assist with the notification, develop abatement/mitigation procedures, and perform management activities as necessary. The notification form to DSHS must be postmarked at least 15 working days prior to scheduled demolition.

If "No", then TxDOT is still required to notify DSHS 15 working days prior to any

In either case, the Contractor is responsible for providing the date(s) for abatement activities and/or demolition with careful coordination between the Engineer and asbestos consultant in order to minimize construction delays and subsequent claims.

Any other evidence indicating possible hazardous materials or contamination discovered on site. Hazardous Materials or Contamination Issues Specific to this Project:

Required Action

(includes regional issues such as Edwards Aquifer District, etc.)

Required Action

Design Division Standard Texas Department of Transportation ENVIRONMENTAL PERMITS. ISSUES AND COMMITMENTS EPIC ILE: epic.dgn DN: TXDOT CK: RG DW: VP CK: AR C)TxDOT: February 2015 CONT SECT JOB HIGHWAY REVISIONS RILEY RD 2-12-2011 (DS) -07-14 ADDED NOTE SECTION IV. DIST -23-2015 SECTION I (CHANGED ITEM 1122) ITEM 506, ADDED GRASSY SWALES, 90 WALLER

	Envelope ID: 9431C2BD-138	9-4D24-AB2B-676D6339342E				
	STORMWATER POLL	UTION PRVENTION PLAN (SWP3):	1 8 PROJECT SPECIFIC LOO	CATIONS (PSI s)	1 10 ΡΟΤΕΝΤΙΔΙ ΡΟΙ Ι ΙΙΤΔΝ	ITS AND SOURCES
	This SWP3 has been developed in accordance with TxDOT policy for projects disturbing less than 1 acre of soil, and not part of a larger common plan of development.		1.8 PROJECT SPECIFIC LOCATIONS (PSLS): PSLs must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. PSLs may be identified during preconstruction meetings or during the construction		 Sediment laden stormwater from stormwater conveyance over disturbed area Fuels, oils, and lubricants from construction vehicles, equipment 	
	For projects with less than one acre of soil disturbing activity and that have Environmental, Permits, Issues, and Commitments (EPICs) dependent on stormwater controls and water quality measures TxDOT will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc.		 process. Please choose from the options below: I PSLs determined during preconstruction meeting PSLs determined during construction 		and storage Solvents, paints, adhesives, etc. from various construction activities	
			No PSLs planned for construction			
	at the project field office,	Area Office, or electronically.	Туре	Sheet #s	activities	
, dgn	This SWP3 is consistent applicable stormwater pla permits, issues, and com	with requirements specified in ans, and the project's environmental mitments (EPICs).			 Contaminated water from exca water Sanitary waste from onsite res 	avation or dewatering pump-out
/p3a2	1.0 SITE/PROJECT DE	ESCRIPTION			I Trash from various construction activities/receptacles	
ental/sw	1.1 PROJECT CONTROL SECTION JOB (CSJ):				 Long-term stockpiles of material and waste I Discharges from concrete washout activities, runoff from concrete cutting activities, and 	
mor	1.2 PROJECT LIMITS:				other concrete related activities	
Envi	From: Riley Road a	at Birch Creek			□ Other:	
et/9.	То:				□ Other:	
у Б	1.3 PROJECT COORD	INATES:	All off-ROW PSLs required by th	he Contractor are the Contractor's		<u> </u>
gn/Pl	BEGIN: (Lat) <u>N30°14'15.44"</u> ,(Long) <u>W95°50'25.68"</u>		responsibility. The Contractor shall secure all permits required by local, state, federal laws for off-ROW PSLs. The contractor shall provide diagrams, areas of disturbance, acreage, and			
Desid	END: (Lat) <u>N30°14'17.83"</u> ,(Long) <u>W95°50'18.79"</u>					
- 4	1.4 TOTAL PROJECT AREA (Acres):		BMPs for all off-ROW PSLs with	in one mile of the project.		
BRG	1.5 TOTAL AREA TO BE DISTURBED (Acres):		1.9 CONSTRUCTION ACTIVITIES: (Use the following list as a starting point when developing the		Receiving waters must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. Include Segment # for receiving waters.	
Road	1.6 NATURE OF CONSTRUCTION ACTIVITY:					
ri ley	Construction of bridge re replacing bridge.	placement consisting of	Construction Activity Schedule and Ceasing Record in Attachment 2.3.) Mobilization Install sediment and erosion controls Blade existing topsoil into windrows, prep ROW, clear and grub		Tributaries	Classified Waterbody
S					Birch Creek (Not impaired)	
P.						
Ē	1.7 MAJOR SOIL TYPES:		Blade existing topsoil into wine	drows, prep ROW, clear and grub		
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1.12 ROLES AND RESPONSIBILITIES: TXDOT

X Development of plans and specifications

X Perform SWP3 inspections

X Maintain SWP3 records and update to reflect daily operations Other:

□ Other:

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

- X Day To Day Operational Control X Maintain schedule of major construction activities X Install, maintain and modify BMPs
- Other: _____

□ Other: _____

STORMWATER POLLUTION PREVENTION PLAN (SWP3) (Less Than 1 Acre)



[®] July 2023 Sheet 1 of 2

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FED. RD. DIV. NO.	PROJECT NO.				SHEET NO.	
					91	
STATE		STATE DIST.	COUNTY			
TEXAS	S		WA	LLER		
CONT.		SECT.	JOB	HIGHWAY NO.		
				RILEY	RD	

STORMWATER POLLUTION PRVENTION PLAN (SWP3): 2.3 PERMANENT CONTROLS: 2.0 BEST MANAGEMENT PRACTICES (BMPs) (Coordinate post-construction BMPs with appropriate TxDOT AND CONTROLS, INSPECTION, AND maintenance sections.) MAINTENANCE 2.5 POLLUTION PREVENTION MEASURES: BMPs To Be Left In Place Post Construction: X Chemical Management Stationing The Contractor shall be the responsible party for implementing X Concrete and Materials Waste Management Type From То the BMPs described herein and for complying with the SWP3 X Debris and Trash Management for control of erosion and sedimentation during day-to-day X Dust Control operations. The Contractor shall implement changes to this X Sanitary Facilities SWP3 approved by TxDOT within the times specified in this X Other: SWP3 or the CGP. X Other: 2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs: Other: T/P ☑ □ Protection of Existing Vegetation □ Other:_____ Vegetated Buffer Zones X Soil Retention Blankets Geotextiles □ □ Mulching/ Hydromulching □ □ Soil Surface Treatments X □ Temporary Seeding Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets □ X Permanent Planting, Sodding or Seeding located in Attachment 1.2 of this SWP3 □ □ Biodegradable Erosion Control Logs 2.6 VEGETATED BUFFER ZONES: 🛛 🗆 Rock Filter Dams/ Rock Check Dams Natural vegetated buffers shall be maintained as feasible to 🛛 🗆 Vertical Tracking protect adjacent surface waters. If vegetated natural buffer Interceptor Swale zones are not feasible due to site geometry, the appropriate 🗆 🛛 Riprap additional sediment control measures have been incorporated Diversion Dike into this SWP3. Temporary Pipe Slope Drain 2.4 OFFSITE VEHICLE TRACKING CONTROLS: □ □ Embankment for Erosion Control Stationing Paved Flumes Type X Excess dirt/mud on road removed daily From То 🛛 🖾 Other: Haul roads dampened for dust control □ X Other: ____ X Loaded haul trucks to be covered with tarpaulin Other: ______ Stabilized construction exit Daily street sweeping □ □ Other: X Other: 2.2 SEDIMENT CONTROL BMPs: Other: T/P □ □ Biodegradable Erosion Control Logs Other: X □ Dewatering Controls □ □ Inlet Protection Other: ☑ □ Rock Filter Dams/ Rock Check Dams □ □ Sandbag Berms X □ Sediment Control Fence □ □ Stabilized Construction Exit □ □ Floating Turbidity Barrier Μ Vegetated Buffer Zones Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets □ □ Vegetated Filter Strips 25 located in Attachment 1.2 of this SWP3 12:26: bent le □ □ Other:_____ □ □ Other:_____ 4/11/2025 □ □ Other:_____ □ □ Other:____

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

- X Fire hydrant flushings
- X Irrigation drainage
- X Pavement washwater (where spills or leaks have not occurred, and detergents are not used)
- X Potable water sources
- X Springs
- X Uncontaminated groundwater
- X Water used to wash vehicles or control dust
- X Other allowable non-stormwater discharges as allowed by TPDES GP TXR150000.

2.8 DEWATERING:

Dewatering discharges of accumulated stormwater, groundwater, and surface water including discharges from dewatering of trenches, excavations, foundations, vaults, and other points of accumulation are prohibited unless managed by appropriate controls to prevent and minimize the offsite discharge of sediment and other pollutants.

2.9 INSPECTIONS:

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.3 of this SWP3 .

2.10 MAINTENANCE:

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.3 of this SWP3.

STORMWATER POLLUTION **PREVENTION PLAN (SWP3)** (Less Than 1 Acre)

²²³ July 2023 Sheet 2 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.				SHEET NO.
					92
STATE		STATE DIST.	COUNTY		
TEXA	S		WA	WALLER	
CONT.		SECT.	JOB	HIGHWAY NO.	
				RILEY	RD




1. Vertical tracking is required on projects where soil distributing activities have occurred

2. Perform vertical tracking on slopes to temporarily stabilize soil.

3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.

5. Install continous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

Texas Department	D D Si	esign ivision tandard					
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES							
FENCE & VEF	S L I	CA	LTF	? A	СК	ING	
EC	(1) -	16				
FILE: ec116	DN: T x[OT 0	ск:КМ	DW:	VP	DN/CK: LS	
C TxDOT: JULY 2016	CONT	SECT	JOB			HIGHWAY	
REVISIONS					RI	LEY RD	
DIST COUNTY						SHEET NO.	
			WALLE	R		94	

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T×DOT damage

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Type 2 Rock Filter Dam		-(F	FD2	_			
Type 3 Rock Filter Dam		-(F	FD3	_			
Type 4 Rock Filter Dam		-(F	FD4	_			
Design Division Standard							
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES							
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POLLUTION CO ROCK F EC	0N1 1L1 (2	(R) (E) () -	DL M R DAI	E MS	ASI S	JRES	
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FILE: ec216 © TxDOT: JULY 2016 REVISIONS	ONI IL (2	R (FE) -	DL M R DA 16 ck: KM	E A	ASU S VP	DN/CK: LS HIGHWAY LEY RD	
FILE: ec216 © T×DOT: JULY 2016 REVISIONS	ONT IL (2 DN: TXD CONT DIST	R (FE) -				DN/CK: LS AIGHWAY LEY RD SHEET NO.	



GEOTECHNICAL INVESTIGATION FOR

RILEY RD. AT BIRCH CREEK DRAW BRIDGE REPLACEMENT PROJECT

(EXIST. NBI: 12-237-0-AA03-13-002) (PROP. NBI: 12-237-0-XXXX-XX-TBD) Waller County, Texas

Prepared For: IEA, Inc.

Prepared By: B2Z Engineering, LLC [Texas Registered Engineering Firm F-11187]

> B2Z Project No. 8086-12 March 28, 2025



David A. Saenz, P.E., C.F.M. Project Manager / Project Engineer

900 S. Stewart Rd., Suite 4, Mission, TX, 78572 www.B2ZEng.com

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INTRODUCTION

B2Z Engineering, LLC (B2Z) was contracted by **IEA, Inc. (IEA)** under overall client Waller County, to perform a subsurface geotechnical investigation to assist in the preparation of Plans, Specifications, and Estimates (PS&E) for the proposed Riley Rd. at Birch Creek Draw Bridge Replacement Project (TxDOT Bridge ID# 122370AA0313002).

This report provides soil boring logs, foundation recommendations for bridge structures and general construction considerations.

GENERAL PROJECT OVERVIEW

Project Description

B2Z is pleased to submit this document presenting our findings as the result of a subsurface geotechnical exploration performed at the request of **IEA**. The project site is located within Waller County, Texas, approx. 1.3 miles west of the intersection of FM 1774 and Riley Road (along Riley Road) (west of Fetzer, TX & approx. 1.7 miles south of Todd Mission, Texas). It is our understanding that the project involves the construction of a proposed bridge replacement. General site plan sheet/project layout for the proposed structures was provided by the Client and is included in <u>Appendix D</u>. No final grading plans or structural loads for the structure were provided; thus all foundation and site improvement recommendations as provided in this report are based on the geotechnical properties of the soils and generalized assumptions as noted.

Scope and Limitations of Investigation

This report has been prepared in general accordance with accepted geotechnical engineering practices for the subject project site and the anticipated construction. No specific warranty program or other special standards, except acceptable industry standards were followed during the course of this investigation and analysis. This geotechnical report is intended for use by **IEA** and any direct representatives or affiliates. This geotechnical report may not contain sufficient information for purposes of other parties, or other uses in determining construction means and methods.

The strata, shown on the boring logs (included in <u>Appendix B</u>), represent the subsurface conditions at the boring locations at the time of our investigation. These strata designate approximate boundaries between subsurface materials; however, their actual transition may be gradual or may occur at varying depths. It should be noted that the exploratory borings were performed within the limits of the proposed project as approved and agreed upon by all previously noted parties prior to the commencement of our field operations.

The benchmarks of this geotechnical study are to:

- 1. explore the general existing subsurface conditions at the site
- 2. evaluate the relevant engineering properties of the subsurface materials
- 3. provide deep foundation capacity curves of in-situ soils (*TxDOT Wincore*)
- 4. provide soil scour parameters for use in scour analysis
- 5. provide general recommendations for construction

The scope of this geotechnical engineering study does not include an environmental assessment of the air, soil, rock or water conditions on or adjacent to the site. No environmental opinions are presented in this report. If environmental clearances are needed prior to construction, please contact our offices for assistance in this matter.

EXISTING SURFACE AND SUB-SURFACE CONDITIONS

Site Location / Description

The project site is located within Waller County, Texas, approx. 1.3 miles west of the intersection of FM 1774 and Riley Road (along Riley Road) (west of Fetzer, TX & approx. 1.7 miles south of Todd Mission, Texas). It is our understanding that the project involves the construction of a proposed bridge replacement. No clearing was required for site access.

SITE INVESTIGATION

Soil Borings and Laboratory Tests

Subsurface conditions at the site were evaluated through two (2) structural borings (designated as B-01 & B-02) drilled to a depth of seventy (70) feet below natural ground. The boring locations were drilled at the placements as shown on Figures in <u>Appendix A</u>. Borings were staked in the field utilizing hand-held GPS. The soil borings were drilled and sampled in general accordance with American Society of Testing Materials Procedures (ASTM) D420 and D1452 using a truck mounted drilling rig equipped with automatic hammer and using solid stem augers and mud rotary operation (mud rotary operation utilized below water strike elevation noted on each boring log in <u>Appendix B</u>).

As part of the drilling procedure, Texas Cone Penetration (TCP) field tests were performed at five (5) foot depth intervals for use in determination of soil strength parameters. TCP tests were executed in compliance with TxDOT test procedures (Tex-132-E, Texas Cone Penetration) and results were reported as blows per increment on the boring logs. A 170-pound hammer was used to drive the conical driving point through three (3) - six-inch increments. The first six-inch increment (or 12 blows, whichever was reached first), typically referred to as the seating drive, was not included in the blow count as per the test procedure. The number of blows required to drive the sampler through the subsequent two (2) - six-inch increments were recorded as the TCP results (and were included on the boring logs in <u>Appendix B</u>). Where very dense or hard material was encountered (resulting in less than 6 inches of movement per 50 blows) the cone was driven for a minimum 100 blows, and the depth of penetration for the first and second 50 blows was recorded as the TCP results.

As part of the sampling procedure, soil samples were collected through auger grab, split spoon (where possible) & wash rotary Sampling during the drilling process (soil sampling was collected at drilling intervals between TCP tests). Representative portions of the samples were identified, packaged, sealed in containers (to reduce moisture loss) and transported to our laboratory. In the laboratory, each sample was evaluated and visually classified by a member of the Geotechnical Engineering staff. The properties of the strata were evaluated by a series of laboratory index tests (Tex-142-E, Laboratory Classification of Soils for Engineering Purposes and ASTM D 2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)). A summary of the laboratory data and their corresponding depths are presented on the boring logs in <u>Appendix B</u>.

Existing Pavement Structure Thickness

Pavement structure measurements for Asphaltic Concrete Pavement (ACP) and Flexible Base were recorded in the field at varying selected locations of the Geotechnical Borings for the project (as coordinated with the Client). Measurement of Concrete Pavement, ACP and Flexible Base layers was completed in accordance with Tex-140-E – Measuring Thickness of Pavement Layer. The results are as follows (<u>Table 1</u>):

Boring #	*Depth of ACP Noted (in.)	Depth of Flex. Base Noted (in.)
B-01	4	8
B-02	4	8

 Table 1 – Summary of Existing Pavement Structure Thickness

 *all depths are referenced from existing natural ground

Subsurface Stratigraphy

Based on the results of the field and laboratory sample analyses, the subsurface soils at the project location can be characterized as an upper stratum of tan/gray to reddish brownish gray clayey sand in the upper 25 feet above a lower stratum of grayish brown to tan poorly graded sand with silt and clay extending to the bottom of the boring. The Soil Strata and Descriptions noted are typical summarized representation of the site stratigraphy. The lines designating the interfaces between strata on the boring logs represent approximate boundaries. Transitions between strata may be gradual and may occur at varying depths.

Water Strikes

During the drilling operations, water strikes were encountered only at both borings (approx. 8 feet below top of ground (approx. Elev. = +257 feet). It should be noted that fluctuations in groundwater levels are influenced by variations in rainfall and surface water run-off from season to season. The construction process itself may also cause variations in the groundwater level. If the water level is critical to the construction process, we recommend Contractor check the subsurface water conditions immediately prior to construction excavation.

GEOTECHNICAL BORING ANALYSIS

Moisture Content

The moisture content of a soil is defined as the ratio of the weight of the water in the sample to the dry weight of the soil sample. The moisture contents for the samples obtained as part of our geotechnical exploration were performed in compliance with ASTM procedure D2216 (and Tex-103-E). A comprehensive list of all moisture contents by corresponding depth can be found on the boring logs.

Plasticity Index

The Plasticity Index (PI) is defined as the difference between the liquid limit and the plastic limit of a soil. These limits are commonly referred to as the Atterberg limits, which describe the consistency of soils with respect to their varying moisture contents. The plasticity indices for the samples obtained as part of our geotechnical exploration were performed in compliance with ASTM procedure D4318 (and Tex-104-E thru Tex-106-E). A comprehensive list of all plasticity indices by corresponding depth can be found on the boring logs.

Particle Size Analysis (Determination of Fines Content)

The standard grain size analysis is used to determine the relative proportions of different grain sizes as they are distributed along a range of different sized sieves. The minus 200 sieve analysis is used commonly as a tool for soil classification and identification using the Unified Soils Classification System. Results for this test are reported as a percentage of soil passing the No. 200 sieve, which has openings 0.075mm wide. The particle size analyses for the samples obtained as part of our geotechnical exploration were performed in compliance with ASTM procedure D1140 (and Tex-111-E). A comprehensive list of all fines contents by corresponding depth can be found on the boring logs.

Particle Size Analysis (Gradation Curves – D50 & D90)

Full standard gradation analysis is used in defining percentages of soil particle diameters. The diameter of soil particles corresponding to 50% (D50) and 90% (D90) finer in the soil samples were derived from sieve and hydrometer analyses (establishment of particle-size distribution curve) for use in Hydraulic Scour Analysis. The results are presented in <u>Table 2</u> (the full gradation curves can be found in <u>Appendix B</u>):

Boring #	*Sample Depth (ft.)	**D50 (mm)	D90 (mm)		
B-01	5	0.094	2.24		
B-02	10	0.149	0.33		

Table 2 – D50 & D90 Values for Scour Analysis

*all depths are referenced from existing natural ground **D50 values should be limited to 0.20 millimeters in cohesive material (see following paragraph) In accordance with the TxDOT Geotechnical Manual (2020), we recommend D50 values be limited to 7.87×10^{-3} inches (0.20 millimeters) for this channel in cohesive material. In addition (and if required), it should be noted, the TxDOT Geotechnical Manual (2020) recommends Pier Scour utilize equations in HEC-18 with a reduction factor of 0.5 for soils with 11% or more clay.

Subgrade Index Testing & Soil Classification (Pavement)

Subgrade soil samples were tested to determine the Atterberg Limits (description of consistency/behavior of soils with respect to varying moisture contents) including the Liquid Limit (LL), Plastic Limit (PL) and Plasticity Index (PI). The PI is defined as the difference between the LL and the PL of a soil (PI = LL-PL). Atterberg Limits testing was completed in accordance with ASTM D4318 (TxDOT Tex-104-E, 105-E and 106-E). In addition, the samples were tested for the minus 200 sieve analysis (percentage of soil passing through (finer than) the No. 200 sieve size – openings of 0.075 mm). Sieve testing was completed in accordance with ASTM D1140 (TxDOT Tex-111-E). In general, these tests were utilized to verify existing soil types (verification of visual inspection) and determine subgrade adequacy & suitability for pavement applications. The results of the tests were used to properly classify each subgrade sample in accordance with the Unified Soil Classification System (USCS) as detailed in ASTM D2487 (TxDOT Tex-142-E). The results of the testing are provided on the boring logs in Appendix B. A summary of the results is provided for reference as follows (Table 3):

	Soil Classification Testing Results							
	*Upper Soil Layer (Depths - 0 to 5 ft.)				*Lower Soil Layer (Depths - 5 to 10 ft.)			
Location	LL	PI	-200	USCS Class	LL	PI	-200	USCS Class
B-01	53	39	43.9	SC	~	۲	46.7	SC
B-02	~	~	33.4	SC	19	12	27.9	SC

 Table 3 – Subgrade Index Testing & Soil Classification (Cont.)

*all depths are referenced from existing natural ground

Based on the information as referenced in the tables, the site soils typically fell within the limits of general stabilization (recommended PI of 10 or greater as referenced from the National Lime Association and PI of 12 or greater as referenced from the US Army Corps of Engineers (USACOE)).

Sulfate Content of Soil (Concrete Structures & Pavement)

The presence of high concentrations of water-soluble sulfates (SO_4) in soils can be detrimental to concrete structures in direct contact. Concrete exposed to these sulfate rich soils (buried concrete structures, foundations, slabs-on-grade) are vulnerable to deterioration in the form of expansion, cracking and spalling. In order to detect levels of water-soluble sulfates in the soils, we performed testing on these soils in accordance with Tex-145-E (Determining Sulfate Content in Soils – Colorimetric Method).

In pavement foundations (subgrades), high concentrations of sulfates in soils may cause problems in terms of high levels of swelling and heaving when lime/cement stabilization is introduced. The reaction is highly chemical based on the combination of Calcium (provided by the addition of lime or cement), Aluminum (a basic chemical unit of clay), Water (utilized for compaction and stabilization reaction), and Sulfates. When soils containing significant amounts of sulfates are combined with typical roadway construction compaction methods (compacting with lime and/or cement and water), the result is the formation of ettringite, a high swelling mineral that is known to cause substantial heaving. Sulfate testing was performed in accordance with TxDOT Tex-145-E at each boring location within a typical depth range of 0 to 10 feet (general depth of subgrade). According to the TxDOT publication "Guidelines for Treatment of Sulfate Rich Soils and Bases in Pavement Structures," moderately to highly expansive soils (PI >15) will fall into one of three ranges based on Sulfate Concentration (SC) which determine treatment.

- Level 1: SC <= 3000 ppm Low Potential for Sulfate Heave ~ Traditional Treatment
- Level 2: 3000 < SC <= 8000 ppm Moderate Potential for Sulfate Heave ~ Modified Treatment
- Level 3: SC > 8000 ppm High Potential for Sulfate Heave ~ Alternative Treatment

The results of the sulfate testing and general levels are as follows (<u>Table 4</u>):

	Water-Soluble Sulfate	Sulfate Level for Conc.	Sulfate Level for
Location	Level (at 5 ft. depths)	Foundations (Need Sulfate	Pavement (Based on
	(Parts Per Million)	Resistant Concrete?)	Upper 5 ft)
B-01	320	No	1
B-02	<100	No	1

 Table 4 – Summary of Sulfate Contents (Concrete Foundations & Pavement)

 *all dants are referenced from cristing natural around

*all depths are referenced from existing natural ground

Lime Series Testing (Pavement)

Lime stabilization of subgrade soils requires testing to ensure appropriate and adequate lime is added to soil to induce the required stabilization results. The Lime Series Test was utilized to determine these limits in compliance with TxDOT procedure Tex-128-E (Determining Soil pH) and Tex-121-E Part III (Soil-Lime Testing ~ Part III – Determining Stabilization Ability of Lime by Soil pH). The basic test involves taking a sample of soil and measuring initial pH followed by the addition of various incremental percentages of lime (2%, 4%, 6%, etc.) and re-testing pH to establish a relationship. The basic criteria states that the lowest percentage of lime that produces a pH of 12.4 is the minimum lime percentage required to stabilize the soil. At this level cation exchange will occur resulting in modification of the soil particle structure to achieve improved workability and decrease swell and plasticity. The results are as follows (Table 5 & Figure 1):

Lime Series Table							
Location	Raw pH	2% Lime pH	4% Lime pH	6% Lime pH	8% Lime pH		
B-01	8.0	11.5	12.3	12.4	12.4		
B-02	7.3	12.0	12.3	12.4	12.4		

Table 5 –	Summary	of Lime	Series	Testing	(Pavement)
	•				()



Figure 1 – Summary of Lime Series Testing (Pavement)

On the basis of inspection and analysis of the data presented, it is noted that the minimum required amounts of lime needed for stabilization (to reach the pH of 12.4 threshold) ranges throughout the project from approximately 4% to 8% lime by weight. Through analysis of the graphical representations of the data we note only minor increases to the pH levels between the upper-most lime values (the bulk of the increase comes in the 0 to 2% additions with appreciable increases to the 2 to 4% range).

FOUNDATION & PAVEMENT RECOMMENDATIONS

Proposed Project Foundation System Information

The proposed structure crossings are to be completed through the use of girders supported on deep foundations (drilled shafts) at abutments and bents.

Deep Foundation Capacity (Capacity Curves)

Texas Cone Penetration (TCP) test results were used to calculate foundation capacity curves for various deep foundation options. From coordination with Client, deep foundation options for use on this project will include round reinforced concrete drilled shafts. Design curves for three drilled shaft sizes most likely to be used (30, 36 and 42 inch diameter) have been provided in <u>Appendix C</u>. Capacity curves were generated through the Texas Department of Transportation (TxDOT) WINCORE software program (version 3.3). The foundation capacities include the

effects of point bearing and skin friction to account for total foundation capacity. The capacity curves were generated incorporating a disregard of the top 10 feet of each boring.

It is imperative for designers to note that the depth of foundation determined by way of the foundation capacity curves provided is a generalized model. Final foundation tip elevations should be determined with engineering judgment and modified based on each individual case. During final foundation design the foundation designer will need to take into account the final elevation of borings, final elevation of finished grade (groundline) at foundation elements and any additional disregarded depth that may be deemed necessary.

Deep Foundation Recommendations (Drilled Shafts)

Drilled Shafts

B2Z recommends all Drilled Shaft construction be in accordance with the requirements of TxDOT 2024 'Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges', Item 416 – Drilled Shaft Foundations. Contractor should be aware that the use of casing and/or slurry to maintain stable excavations may be necessary. In terms of concrete, we recommend special attention be made to minimum/maximum slump of concrete required for drilled shafts (and requirements of slump retention). If differing site conditions (unanticipated or unusual strata) are encountered during construction, **B2Z** shall be contacted to provide review and possible re-analysis if so required.

Summary of Subgrade Testing & Design Recommendations (Pavement)

Based on the information contained in the 'Subgrade Index Testing & Soil Classification', 'Sulfate Content Testing', and 'Lime Series Testing' sections of this report; the recommendations for treatment of subgrade soils for this project are as follows:

For this project, if lime is utilized in the subgrade, we recommend utilizing a minimum of 4% lime (by weight) in the subgrade for lime stabilization.

REFERENCES

- 1. TxDOT, 2024, "Standard Specification for the Construction of Highways, Streets, and Bridges", Austin, TX.
- 2. TxDOT, 2020 "Geotechnical Manual", Austin, TX
- 3. TxDOT, Current, "100-E, Soils & Aggregates Test Procedures", Austin, TX.
- 4. American Society of Testing Materials, Volume 04.08, Soil and Rock (I): D420- D5779, Current
- 5. TxDOT, 2021, "Pavement Design Manual", Austin, TX (06/2021)
- 6. TxDOT Construction Division, 2005, "Guidelines for Treatment of Sulfate-Rich Soils and Bases in Pavement Structures", Austin, TX.
- 7. TxDOT and Texas Transportation Institute (TTI), 2011, "Flexible Pavement Design System FPS 21: User's Manual", Austin, TX
- 8. Garfield, et. al., 2009, "CTR Technical Report 0-5824-1 Improved Correlation between Texas Cone Penetrometer Blow Count and Undrained Shear Strength of Soft Clays", TxDOT/Center for Transportation Research at UT Austin/FHWA

APPENDIX A – FIGURES



Figure 1 – General Project Location



Figure 2 – Boring Location Map

APPENDIX B – BORING LOGS & GRADATION CURVES



WinCore

Version 3.3

County Waller Highway Riley Rd. CSJ

DRILLING LOG

Hole	B-01	District	Houston
Structure	Brg @ Birch Creek Draw	Date	9/25/2024
Station	103+06.49	Grnd. Elev.	261.17 ft
Offset	3.53' LT	GW Elev.	253.17 ft

	1	Towas Cana		Triaxi	al Test		Prop	oertie	s	
Elev. (ft)	0 G	Penetrometer	Strata Description	Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	Additional Remarks
-			SAND, Clayey Sand, Red to Brown/Gray	;						
		8 (6) 27 (6)	Med. Dense, Moist to Wet (30)					~~		000 40 0%
5 -						17.0	53	39		-200=43.9%
-										
10 -		7 (6) 10 (6)				10.8				-200=46.7%
		22 (6) 23 (6)				16.4	44	20		
15 -						10.4	41	20		
-										
20 -		16 (6) 17 (6)				17.8				-200=20.4%
		14 (6) 11 (6)				17.7	0	0		
230.2 25 -			SAND, Silty Sand, Brown/Gray,							
-			Med. Dense, Wet (SM)							
231.2 30 -		9 (6) 10 (6)	SAND Poorly-Graded Sand w/ Silt			16.4				-200=5.8%
-			Brown/Gray to Lt. Brown, w/ Traces							
35 -		15 (6) 15 (6)	of Fine Gravel, Med. Dense to Dense, Wet (SP-SM)			19.0	0	0		
		18 (6) 16 (6)								000-0.0%
40 -						15.5				-200=3.6%
45 -		27 (6) 27 (6)				19.0	0	0		
		18 (6) 19 (6)				14 7				-200=4.2%
50 -						14.1				200 4.270
-										
55 -		18 (6) 20 (6)				16.5	0	0		
-										
60 -		33 (6) 33 (6)				19.3				-200=7.0%
-		22 (6) 29 (6)				<u> </u>				
196.2 65 -		22 (0) 39 (0)	SAND, Clayey Sand, Lt. Brown,			21.5	27	15		
-			w/ Traces of Fine Gravel, Dense,							
		44 (6) 50 (5.5)	wet (SC)			44.7				-200=42.1%
	1									
75 -	1									
Remarks	Remarks: Boring Locate (GPS - Lat., Long.) = 30°14'16.48"N, 95°50'22.70"W. Elev. Approx. (Based on Google Earth). Exist. Pave Str. ACP = 4 in., Flex. Base = 6 in.									

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.

:

Logger: RS



WinCore

Version 3.3

County Waller Highway Riley Rd. CSJ

DRILLING LOG

Hole

Structure

Station

Offset

B-02	District	Houston
Brg @ Birch Creek Draw	Date	9/25/2024
104+70.09	Grnd. Elev.	261.86 ft
0.66' LT	GW Elev.	253.86 ft

	1	T		Triaxi	Triaxial Test Properties		s			
Elev. (ft)	0 G	Penetrometer	Strata Description	Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	Additional Remarks
-			SAND, Clayey Sand, Tan/Gray to							
-		50 (5 5) 50 (<i>1</i>)	to Wet (SC)							000 00 <i>(%)</i>
5 -		30 (3.3) 30 (4)				16.8				-200=33.4%
-										
10 -		8 (6) 7 (6)				16.4	19	12		-200=27.9%
-										
-		12 (6) 9 (6)				<u> </u>				222-22 23/
15 -		12 (0) 5 (0)				28.5				-200=23.2%
-	_									
20 -		8 (6) 11 (6)				22.4	29	12		-
-	_									
-		8 (6) 11 (6)				40.4				000-5 7%
236.9 25 -			SAND, Poorly-Graded Sand w/ Clay,			18.4				-200=5.7%
-			Tan, Loose, Wet (SP-SC)							
30 -	-	5 (6) 5 (6)				21.3	28	13		
-										
-	-	9 (6) 10 (6)				20.0				200-0 4%
35 -						20.0				-200-9.1%
-										
221.9 40 -		13 (6) 13 (6)				21.9	0	0		
-			SAND, Poorly-Graded Sand w/ Silt, Tan. Med. Dense. Wet (SP-SM)							
		13 (6) 12 (6)				17 9				200-7 7%
45 -						17.0				-200-7.776
-	-									
50 -		15 (6) 10 (6)				16.0	0	0		
-	-									
-		12 (6) 13 (6)				17.6				-200=6.2%
- 55 -	-									
-										
201.9 60 -		9 (6) 17 (6)	SAND Poorly-Graded Sand w/ Clay			19.6	33	20		-
-			Tan, Med. Dense to Dense, Wet							
65 -		17 (6) 19 (6)	(SP-SC)			18.4				-200=8.1%
-										
-		47 (6) 60 (4)					_			
191.9 70 -		41 (0) 50 (4)				20.5	24	13		
75 -										
Pomarka	. D.	oring Locate (CBS	$= 1 \text{ at } 1 \text{ ong} = 30^{\circ}14^{\circ}17 \text{ or N} \text{ or } 00^{\circ}20^{\circ}20^{\circ}$	96"\\\/	Elov App	rov (P	2601	ton	Google	Farth) Evist Davo Str
Tellidik	э. Б А(CP = 4 in., Flex. Ba	$r_{1} = 2a_{1}$, $r_{2} = 2019$, $r_{2} = 3014$ 17.00 N, $r_{2} = 5020$ ase = 6 in.	.30 VV. I	Liev. App	IUX. (D	ase(1 011	Google	Latury. Exist. Fave Su.

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.

:

Logger: NR

GRAIN SIZE NO P200 (B2Z) IEA - RILEY RD AT BIRCH CREEK - WALLER COUNTY.GPJ GEODESIGN.GDT PRINT DATE: 12/17/24:



BOULDERS		GRA	AVEL	SAND FINI			FINES	ES	
	COBBEES	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY	

KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	D90	D60	D50	D30	D10	GRAVEL (PERCENT)	SAND (PERCENT)	SILT (PERCENT)	CLAY (PERCENT)
•	B-1	5.0		2.24	0.17	0.094			2	49	13	34
X	B-2	10.0		0.33	0.17	0.149	0.080		0	71	14	14

	GRAIN- SIZE TEST RESULTS	
	RILEY RD AT BIRCH CREEK – WALLER COUNTY RILEY RD AT BIRCH CREEK (WALLER COUNTY)	FIGURE

APPENDIX C – FOUNDATION CAPACITY CURVES

















B:\JOBS\IEA\Waller County - Riley Rd at Birch Creek Geo (6360)\Tech Prod\Borings\Info from Lab\6360-IEA - Waller County - Riley Rd at Birch Creek.CLG









APPENDIX D – INFO PROVIDED BY CLIENT





HL93	LOADING	0 HORIZC	10 DNTAL SC	ALE	20 IN FEET		
	290	Jos	SEPH M. LO 14138	DPEZ	₹		
	270		SSION A	SED	Pre De	elin 25/2025	2:23:02 PM
	210						
	260	DATE		REVI:	SION	APPR	OV.
		IEA SUT HOU (832)	1 KATY FREE E 3425 STON, TEXAS 494-3800	WAY 6 77079	FIRM REGIST	RAT I ON 161	No.
	250		NALL	_Ef	R COU	NT	Y
	240	Aller COURT					
				′ D			
			VILE I	R	U		
	230	AT B	BIRCH	Cł	REEK		
		BRI <u>I</u>	D <u>GE L</u>	<u>A</u>	<u>'O</u> UT		
	220					_	05 5
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			CONT	SECT	jOB		HIGHWAY
	210	REVISIONS				F	RILEY RD
			DIST		COUNTY WALLER		SHEET NO.