Solicitation 1807-252

San Gabriel Ranch Road Bridge

Bid Designation: Public

Williamson County, Texas

Bid 1807-252
San Gabriel Ranch Road Bridge

Bid Number	1807-252
Bid Title	San Gabriel Ranch Road Bridge
Expected Expenditure	**$2,000,000.00** (This price is expected - not guaranteed)
Bid Start Date	In Held
Bid End Date	Aug 29, 2018 2:30:00 PM CDT
Question & Answer End Date	Aug 24, 2018 4:00:00 PM CDT
Bid Contact	Melissa Gurka Purchasing Specialist II 512-**943**-3860 melissa.gurka@wilco.org
Contract Duration	**150 days**
Contract Renewal	Not Applicable
Prices Good for	**365 days**
Pre-Bid Conference	**Aug 16, 2018 10:00:00 AM CDT** **Attendance is optional** **Location: 3151 Southeast Interloop** **Georgetown, TX**
Bid Comments	**Williamson County is seeking qualified contractors to provide experienced soil and channel excavation, grading, bridge construction, sub-grade stabilization, flex base, asphalt paving, and metal beam guard fence installation for San Gabriel Ranch Road Bridge at Lackey Creek as detailed in the plans.**

Item Response Form

Item	**1807-252--01-01 -** Total Bid Price
Quantity	**1 each**
Unit Price	
Delivery Location	**Williamson County, Texas** No Location Specified

Qty 1

Description
Total bid price.

Item	**1807-252--01-02 -** Please attach all documents to this line.
Quantity	**1 each**

Prices are not requested for this item.

Delivery Location	**Williamson County, Texas**

No Location Specified

Qty 1

Description
Please attach all documents to this line.

PUBLIC ANNOUNCEMENT AND GENERAL INFORMATION

WILLIAMSON COUNTY PURCHASING DEPARTMENT
SOLICITATION 1807-252
San Gabriel Ranch Road Bridge

BIDS MUST BE RECEIVED ON OR BEFORE:
Aug 29, 2018 2:30:00 PM CDT

BIDS WILL BE PUBLICLY OPENED:
Aug 29, 2018 2:30:00 PM CDT

Notice is hereby given that sealed Bids for the above-mentioned goods and/or services will be accepted by the Williamson County Purchasing Department. Williamson County uses BidSync to distribute and receive bids. Specifications for this IFB may be obtained by registering at www.bidsync.com.

Williamson County prefers and requests electronic submittal of this Bid.

All electronic bids must be submitted via: www.bidsync.com

Electronic bids are requested, however paper bids will currently still be received, until further notice and may be mailed or delivered to the address listed below.

Bidders are strongly encouraged to carefully read this entire IFB.

All interested Bidders are invited to submit a Bid in accordance with the Instructions and General Requirements, Bid Format, Bid Specifications, and Definitions, Terms and Conditions stated in this IFB.

Please note that a complete package must be submitted choosing one of the above two methods. Split packages submitted will be considered "unresponsive" and will not be accepted or evaluated.

Williamson County will not accept any Bids received after the submittal deadline, and shall return such Bids unopened to the Bidder.

General Information:

- If mailed or delivered in person, Bids and Bid addenda are to be delivered in sealed envelope on or before the submittal deadline, as noted in the Public Announcement and General Information listed above for this IFB, to:

  Williamson County Purchasing Department
  Attn: **BID NAME AND NUMBER**
  901 South Austin Avenue
  Georgetown, Texas 78626

  - Bidders should list the Bid Number, Bid Name, Name and Address of Bidder, and the Date of the Bid opening on the outside of the box or envelope and note "Sealed Bid Enclosed."
  - Bidder should submit one (1) original.
  - Williamson County will NOT be responsible for unmarked or improperly marked envelopes.
  - Williamson County will not accept any responsibility for Bids being delivered by third party carriers.
  - Facsimile transmittals will NOT be accepted.

- Bids will be opened publicly in a manner; however, to avoid public disclosure of contents only the names and of Bidders and prices will be read aloud.

- All submitted questions with their answers will be posted and updated on www.bidsync.com.

- It is the Bidder's responsibility to review all documents in BidSync, including any Addenda that may have been added after the document packet was originally released and posted.

  - Any Addenda and/or other information relevant to the IFB will be posted on www.bidsync.com.

  - The Williamson County Purchasing Department takes no responsibility to ensure any interested Bidder has obtained any outstanding addenda or additional information.

Bidder References

List the last (3) companies or governmental agencies, where the same or similar goods and/or services as contained in this IFB package, were recently provided by Bidder.

Reference 1

Client Name: Location:

Contact Name: Title:

Phone: E-mail

Contract Date To: Contract Date From: Contract Value: $

Scope of Work:

Reference 2

Client Name: Location:

Contact Name: Title:

Phone: E-mail

Contract Date To: Contract Date From: Contract Value: $

Scope of Work:

Reference 3

Client Name: Location:

Contact Name: Title:

Phone: E-mail

Contract Date To: Contract Date From: Contract Value: $

Scope of Work:

CONFLICT OF INTEREST QUESTIONNAIRE

For vendor doing business with local governmental entity

FORM CIQ

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

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

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

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

OFFICE USE ONLY

Date Received

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

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

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

Name of Officer

4 Describe each employment or other business relationship with the local government officer, or a family member of the officer, as described by Section 176.003(a)(2)(A). Also describe any family relationship with the local government officer. Complete subparts A and B for each employment or business relationship described. Attach additional pages to this Form CIQ as necessary.

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

☐ Yes ☐ No

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

☐ Yes ☐ No

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

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

7 Signature is not required if completing in BIDSYNC electronically;

Signature of vendor doing business with the governmental entity

Date

Form provided by Texas Ethics Commission www.ethics.state.tx.us Revised 11/30/2015

CONFLICT OF INTEREST QUESTIONNAIRE

For vendor doing business with local governmental entity

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

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

(A) a transaction that is subject to rate or fee regulation by a federal, state, or local governmental entity or anagency of a federal, state, or local governmental entity;

(B) a transaction conducted at a price and subject to terms available to the public; or

(C) a purchase or lease of goods or services from a person that is chartered by a state or federal agency andthat is subject to regular examination by, and reporting to, that agency.

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

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

***

(2) the vendor:

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

(i) a contract between the local governmental entity and vendor has been executed;or

(ii) the local governmental entity is considering entering into a contract with thevendor;

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

(i) a contract between the local governmental entity and vendor has been executed;

or (ii) the local governmental entity is considering entering into a contract with the vendor.

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

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

(1) has an employment or other business relationship with a local government officer of that localgovernmental entity, or a family member of the officer, described by Section 176.003(a)(2)(A);

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

(3) has a family relationship with a local government officer of that local governmental entity. (a-1) The completed conflict of interest questionnaire must be filed with the appropriate records administrator not later than the seventh business day after the later of:

(2) the date that the vendor:

(A) begins discussions or negotiations to enter into a contract with the local governmentalentity; or

(B) submits to the local governmental entity an application, response to a request for proposalsor bids, correspondence, or another writing related to a potential contract with the local governmental entity; or

(3) the date the vendor becomes aware:

(A) of an employment or other business relationship with a local government officer, or a family member of the officer, described by Subsection (a);

(B) that the vendor has given one or more gifts described by Subsection (a); or(C) of a family relationship with a local government officer.

BID AFFIDAVIT

This form must be completed, signed, notarized and returned with Bid package

The undersigned attests that the company named below, under the provisions of Subtitle F, Title 10, Texas Government Code Chapter 2270:

1. Does not boycott Israel currently; and
2. Will not boycott Israel during the term of the contract.

Pursuant to Section 2270.001, Texas Government Code:

1. "Boycott Israel" means refusing to deal with, terminating business activities with, or otherwise taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations specifically with Israel, or with a person or entity doing business in Israel or in an Israeli-controlled territory, but does not include an action made for ordinary business purposes; and
2. "Company" means a for-profit sole proprietorship, organization, association, corporation, partnership, joint venture, limited partnership, or any limited liability company, including a wholly owned subsidiary, majority-owned subsidiary, parent company or affiliate of those entities or business associations that exist to make a profit.

The undersigned certifies that the IFB and the Bidder's Bid have been carefully reviewed and are submitted as correct and final. Bidder further certifies and agrees to furnish any and/or all goods and/or services upon which prices are extended at the price Bid, and upon the conditions contained in the IFB.

I hereby certify that the foregoing Bid has not been prepared in collusion with any other Bidder or other person or persons engaged in the same line of business prior to the official opening of this Bid. Further, I certify that the Bidder is not now, nor has been for the past six (6) months, directly or indirectly concerned in any pool or agreement or combination, to control the price of services/commodities Bid on, or to influence any person or persons to submit a Bid or not to submit a Bid thereon."

Name of Bidder:	
Address of Bidder:	
Email:	
Telephone:	
Printed Name of Person Submitting Affidavit:	
Signature of Person Submitting Affidavit:	

Cooperative Purchasing Program

Check one of the following options below. A non-affirmative Bid will in no way have a negative impact on the County's evaluation of the Bid.

☐	I will offer the quoted prices to all authorized entities during the term of the County's Contract.
☐	I will not offer the quoted prices to all authorized entities.

If no box is checked, the Bidder agrees to make best efforts in good faith to offer the quoted prices to all authorized entities.

BEFORE ME, the undersigned authority, a Notary Public, personally appeared _____ (*Name of Signer*), who after being by me duly sworn, did depose and say: "I, _____, (*Name of Signer*) am a duly authorized officer of/agent for _____ (*Name of Bidder*) and have been duly authorized to execute the foregoing on behalf of the said _____ (*Name of Bidder*).

SUBSCRIBED AND SWORN to before me by the above-named _____

on this the _____ day of _____, 20_____.

_____

Notary Public in and for

The State of _____

The County of _____

SIGNATURE AND NOTARY NOT REQUIRED IF COMPLETING IN BIDSYNC ELECTRONICALLY.

Williamson County – Invitation for Bid (IFB)

SECTION 1 - DEFINITIONS

Addendum/Addenda – means any written or graphic instruments issued by the County prior to the consideration of Bids which modify or interpret the Bid Documents by additions, deletions, clarifications, or corrections.

Agreement/Ensuing Agreement(s) – means the Successful Bidder may be required by the County to sign an additional Agreement containing terms necessary to ensure compliance with the IFB and the Bidder's Bid. Such Ensuing Agreement(s) shall contain the Bid specifications, terms and conditions that are derived from the IFB.

Bid Documents – means the Legal Notice, IFB including attachments, and any Addenda issued by the County prior to the consideration of any Bids.

Bid – means the completed and signed bid form, (sometimes referred to as the Price Sheet), and ALL required forms and documentation listed in the IFB package which have been submitted in accordance with the terms and conditions described in the IFB package. A Bid submitted in accordance with this IFB is irrevocable during the specified period for evaluation and acceptance of Bids unless a waiver is obtained from the Williamson County Purchasing Agent.

Bidder – means a person or entity who submits a Bid in response to this IFB.

Contract – means this IFB and the Bid of the Successful Bidder shall become a Contract between the Successful Bidder and the County once the Successful Bidder's Bid is properly accepted by the Williamson County Commissioners Court.

Commissioner's Court – means the Williamson County Commissioners Court.

County – means Williamson County, a political subdivision of the State of Texas.

Invitation for Bid (IFB) – means this document, together with the attachments thereto and any future Addenda issued by the County.

Successful Bidder – means the liable Bidder to whom the County intends to award the Contract.

SECTION 2 - BID FORMAT AND SUBMISSION

2.1 ORGANIZATION OF BID CONTENTS FOR SUBMITTAL

Each Bid should be organized and items submitted in the order described below:

A. Transmittal Letter. Please see Section 2.3, Transmittal Letter, for more information.

B. Price Sheet.

C. Conflict of Interest Questionnaire. Please see Section 2.2, Conflict of Interest, for more information in regards to this. Please note that even if you deem there to be no Conflict of Interest, this signed questionnaire must be included in your package.

D. References. Please see Section 3.15, References, for more information.

E. Bid Affidavit.

F. Form 1295. Please see Section 2.4, Certificate of Interested Parties – Form 1295.

2.2 CONFLICT OF INTEREST

No public official shall have interest in a Contract, in accordance with Vernon's Texas Codes Annotated, Local Government Code, Title 5, Subtitle C, Chapter 171, as amended.

As of January 1, 2006, all Bidders are responsible for complying with Local Government Code, Title 5, Subtitle C, Chapter 176. Additional information may be obtained from the County's website at the following link:

http://www.wilco.org/CountyDepartments/Purchasing/ConflictofInterestDisclosure/tabid/689/language/en US/Default.aspx

Each Bidder must disclose any existing or potential conflict of interest relative to the performance of the requirements of this IFB. **Examples of potential conflicts of interest may include an existing business or personal relationship between the Bidder, its principal, or any affiliate or subcontractor with the County or any other entity or person involved in any way with the project that is subject to this IFB**. Similarly, any personal or business relationship between the Bidder, the principals, or any affiliate or subcontractor with any employee, or official of the County or its suppliers must be disclosed. Any such relationship that might be perceived or represented as a conflict must be disclosed. Failure to disclose any such relationship or reveal personal relationships with the County employees or officials may be cause for termination.

The County will decide if an actual or perceived conflict should result in Bid disqualification.

By submitting a Bid in response to this IFB, all Bidders affirm they have not given, nor intend to give, at any time hereafter, any economic opportunity, future employment, gift, loan, gratuity, special discount, trip, favor, or service to a the County public servant or any employee, official or representative of same, in connection with this procurement.

Each Bidder must provide a Conflict of Interest Statement with their Bid Package. Package may be deemed incomplete without this form.

2.3 TRANSMITTAL LETTER

The Bidder should submit a Transmittal Letter that provides the following information:

A. Name and address of individual or business entity submitting the Bid.

B. Name, physical address, email address, business and fax number of the Bidder's principal contact person regarding all contractual matters relating to this IFB.

C. The Bid's Federal Employer Identification Number.

D. If the Proposal being submitted will have an effect on air quality for the County (as it relates to any state, federal, or voluntary air quality standard), then the Respondent is encouraged to provide information in narrative indicating the anticipated air quality impact. See Section 4.36, Air Quality for more information.

2.4 CERTIFICATE OF INTERESTED PARTIES – FORM 1295

As of January 1, 2016, all Successful Bidders are responsible for complying with the Texas Government Code, Section 2252.908. The law states that the County may not enter into certain contracts with a Bidder unless the Bidder submits a disclosure of interested parties to the County at the time the Bidder submits the signed Contract. The law applies only to a Contract of the County on or after January 1, 2016 that either:

A. Requires an action or vote by the Commissioners Court before the Contract may be signed (all contracts that fall under the jurisdiction of the Commissioners Court approval, such as contracts resulting from an Initiation for Bid (IFB), RFP, Request for Qualifications (RFQ), etc., excluding, but not limited to, certain Juvenile Service contracts, contracts funded with Sheriff's seized fun monies, etc.); or
B. Has a value of at least $1,000,000.

By January 1, 2016, the Texas Ethics Commission will make available on its website, a new filing application that must be used to file Form 1295. Information regarding how to use the filing application is available on the Texas Ethics Commission website at the following link:

https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm

A Respondent must:

A. Use the online application to process the required information on Form 1295.

B. Print a copy of the form which will contain a unique certification number.

C. An authorized agent of the Bidder must sign the printed copy of the form.

D. Have the form notarized.

E. File the completed Form 1295 and certification of filing (scanning and emailing form is sufficient) with Williamson County Purchasing Agent at the time the signed Contract is submitted for approval.

After the Commissioners Court award of the Contract, the County shall notify the Texas Ethics Commission, using the Texas Ethics Commission's filing application, of the receipt of the filed Form 1295 and certification of filing not later than the 30th day after the date the Contract binds all parties to the Contract. The Texas Ethics Commission will post the completed Form 1295 to its website within seven business days after receiving notice from the County.

2.5 ETHICS

The Bidder shall not accept or offer gifts or anything of value nor enter into any business arrangement with any employee, official or agent of the County.

2.6 BID SUBMITTAL DEADLINE

The Bid is due no later than the submittal date and time set forth in the Public Announcement and General Information listed in this IFB package. Contents of each Bid shall be submitted in accordance with this IFB.

2.7 DELIVERY OF BIDS

The County uses BidSync to distribute and receive Bids and proposals. It is preferred that Bids submitted electronically through BidSync; however, Bidders can submit a hard copy.

Refer to www.bidsync.com for further information on how to submit electronically.

If mailed or delivered in person, Bids and Bid Addenda are to be delivered in sealed envelope on or before the submittal deadline, as noted in the Public Announcement and General Information listed in this IFB package, to:

Williamson County Purchasing Department
Attn: **Bid Name and Number**
901 South Austin Avenue
Georgetown, Texas 78626

Also, all Bidders should list their Name and Address, and the Date of the Bid opening on the outside the box or envelope and note "Sealed Bid Enclosed." The County will not accept any Bids received after the submittal deadline, and shall return such Bids unopened to the Bidder. The County will not accept any responsibility for Bids being delivered by third party carriers.

Bids will be opened publically and the names of Bidders and pricing will be read aloud.

SECTION 3 - INSTRUCTIONS AND GENERAL REQUIREMENTS

3.1 INSTRUCTIONS

Read this document carefully, and follow all instructions and requirements. All Bidders are responsible for fulfilling all requirements and specifications. Be sure to have a clear understanding of this IFB.

General requirements apply to all advertised IFBs; however, these may be superseded, in whole or in part, by the bid specifications, Addenda and modifications issued as a part of this IFB. Be sure your Bid package is complete.

3.2 AMBIGUITY, CONFLICT, OR OTHER ERRORS IN THIS IFB

If a Bidder discovers any ambiguity, conflict, discrepancy, omission or other error in this IFB, the Bidder shall immediately notify the County Purchasing Department of such error in writing and request modification or clarification of the document.

Modifications will be made by issuing Addenda. If the Bidder fails to notify the County prior to the date and time fixed for submission of Bids of an error or ambiguity in the IFB known to the Bidder, or an error or ambiguity that reasonably should have been known to the Bidder, then the Bidder shall be deemed to have waived the error or ambiguity or its later resolution.

The County may also modify the IFB, no later than forty-eight (48) hours prior to the date and time fixed for submission of Bids, by issuance of an Addendum. All Addenda will be numbered consecutively, beginning with one (1).

3.3 NOTIFICATION OF MOST CURRENT ADDRESS

All Bidders in receipt of this IFB shall notify the Williamson County Purchasing Department of any address changes, contact person changes, and/or telephone number changes no later than forty-eight (48) hours prior to the date and time fixed for submission of Bids.

3.4 SIGNATURE OF BIDDER

A. If the Bidder is a Corporation or Limited Liability Company, the legal name of the Corporation Limited Liability Company shall be provided together with the signature of the officer or officers authorized to sign on behalf of such entity.

B. If the Bidder is a General Partnership, the true name of the firm shall be provided with the signature of each partner authorized to sign.

C. If the Bidder is a Limited Partnership, the name of the Limited Partner's General Partner shall provided with the signature of the officer authorized to sign on behalf of the General Partner.

D. If the Bidder is a Sole Proprietor(s) (individual), each Sole Proprietor(s) shall sign.

E. If signature is by an agent, other than the Sole Proprietor(s) or an officer of a Corporation, Limited Liability Company, General Partner or a member of a General Partnership, a power of attorney equivalent document must be submitted to the Williamson County Purchasing Department.

3.5 ASSUMED BUSINESS NAME

If the Bidder operates business under an Assumed Business Name, the Bidder must have on file with the Williamson County Clerk a current Assumed Name Certificate and provide a file marked copy of same.

3.6 BID OBLIGATION

The contents of the IFB, Bid, and any clarification thereof submitted by the Successful Bidder shall become part of the contractual obligation and incorporated by reference into the Contract and any Ensuing Agreement(s).

3.7 COMPLIANCE WITH IFB SPECIFICATIONS

It is intended that this IFB describe the requirements and the Bid format in sufficient detail to secure comparable Bids. Failure to comply with all provisions of the IFB may, at the sole discretion of the County, result in disqualification.

3.8 WITHDRAWAL OF BID

The Bidder may withdraw its Bid by submitting a written request with the company letterhead and the signature of an authorized individual, as described in Section 3.4, Signature of Bidder, to the Williamson County Purchasing Department any time prior to the submission deadline.

The Bidder may submit a new Bid prior to the deadline. Alterations of the Bid in any manner will not be considered if submitted after the deadline. Withdrawal of a Bid after the deadline will be subject to written approval of the Williamson County Purchasing Agent.

3.9 EVALUATION AND AWARD

The County reserves the right to use all pertinent information (also learned from sources other than disclosed in the Bid process) that might affect the County's judgment as to the appropriateness of award to the lowest and best evaluated Bid. This information may be appended to the Bid evaluation process results. Information on a Bidder from reliable sources, and not within the Bidder's Bid, may also be noted and made part of the evaluation file. The County shall have sole discretion for determining the reliability of the source.

To ensure the proper and fair evaluation of a solicitation, the County prohibits unsolicited communication initiated by the Bidder to the County Official or Employee evaluating or considering the Bids prior to the time an award has been made. Unsolicited communication may be ground for disqualifying the offending Bidder from consideration or award of the solicitation, or any future solicitation.

Communication between the Bidder and the County will be initiated by the appropriate County Official Employee in order to obtain information or clarification needed to develop a proper and accurate evaluation of the solicitation.

The County intends to award a Contract to the most responsible and responsive Bidder whose Bid will be most advantageous to the County. In accordance with Texas Government Code and Local Government Code, the County may consider, to the extent allowed by law, the following:

A. Price;
B. The Bidder's experience and reputation;
C. Quality of the Bidder's goods and/or services;
D. The Bidder's safety record;
E. The Bidder's proposed personnel;
F. The Bidder's financial capabilities; and
G. Any other relevant factors specifically listed in this IFB or authorized by law.

3.10 CONDISERATION OF LOCATION OF PRINCIPAL OFFICE

Pursuant to Texas Local Government Code, Section 271.905, in purchasing any real property or personal property that is not affixed to real property, if the County receives one or more Bids from a Bidder whose principal place of business is in Williamson County and whose Bid is within three (3) percent of the lowest Bid price received by the County from a Bidder who is not a resident of Williamson County, the County may enter into a contract with:

A. The lowest Bidder; or the Bidder whose principal place of business is in Williamson County if the Commissioners Court determines, in writing, that the local Bidder offers the County the best combination of contract price and additional economic development opportunities Williamson County created by the contract award, including the employment of residents Williamson County and increased tax revenues to Williamson County.

3.11. REJECTION OR ACCEPTANCE

It is understood that the Commissioners Court of Williamson County, Texas, reserves the right to accept or reject any and/or all Bids for any or all goods and/or services covered in this IFB, and to waive informalities or defects in the Bid or to accept such Bid, if it shall deem to be in the best interest of the County.

Awards should be made approximately sixty (60) business days after the Bid opening date. Results may be obtained by viewing the Williamson County vendor portal at the following link:

http://www.wilco.org/CountyDepartments/Purchasing/SearchforaPastBid/tabid/5213/language/en-US/Default.aspx

3.12 RESPONSIBILITY

It is expected that a prospective Bidder will be able to affirmatively demonstrate responsibility. A prospective Bidder should be able to meet the following requirements:

A. Have adequate financial resources, or the ability to obtain such resources as required;
B. Be able to comply with the required or proposed delivery schedule;
C. Have a satisfactory record of performance that can be determined thru references provided; and
D. Be otherwise qualified and eligible to receive an award.

The County may request representation and other information sufficient to determine the Bidder's ability to meet these minimum standards listed above.

3.13 FIRM PRICING

For unit price items, all of the items listed are to be on a "per unit" basis, stating a firm price per unit or unit quantity of each item. The Bidder must submit a firm price that must be good from the date of Bid opening for the fixed period of time set out in this IFB. Unless the IFB expressly states otherwise, this period shall be until the end of the Initial Contract Period.

Bids which do not state a fixed price, or which are subject to change without notice, will not be considered. The Court may award a Contract for the period implied or expressly stated in the lowest and best Bid.

3.14 PURCHASE ORDERS

If required by the Williamson County Purchasing Department, a purchase order(s) may be generated to the Successful Bidder for goods and/or services. If a purchase order is issued, the purchase order number must appear on all itemized invoices and/or requests for payment.

3.15 SILENCE OF SPECIFICATIONS

The apparent silence of these specifications as to any detail or to the apparent omission from it of a detailed description concerning any point, shall be regarded as meaning that only the best practices are to prevail. All interpretations of these specifications shall be made on the basis of this statement.

3.16 REFERENCES

The County may require the Bidder to supply a list of at least three (3) references where like services and/or goods have been supplied by their firm within the past five (5) years, to include names, titles, phone numbers and email addresses of key personnel, and dates of performance.

The County may contact some or all of the references in order to determine the Respondent performance record on work similar to that described in this RFP. The County reserves the right to contact references other than those provided in the response and to use the information gained from them in the evaluation process.

References, if requested, should be provided in accordance with this IFB. Bid may not be deemed complete without the inclusion of requested references.

SECTION 4 - TERMS AND CONDITIONS

4.1 VENUE AND GOVERNING LAW

The Bidder hereby agrees and acknowledges that venue and jurisdiction of any suit, right, or cause of action arising out of or in connection with this IFB, the Contract and any Ensuing Agreement(s), shall lie exclusively in either Williamson County, Texas or in the Austin Division of the Western Federal District of Texas, and the parties hereto expressly consent and submit to such jurisdiction. Furthermore, except to the extent that this IFB, the Contract and any Ensuing Agreement(s) is governed by the laws of the United States, this IFB, the Contract and any Ensuing Agreement(s) shall be governed by and construed in accordance with the laws of the State of Texas, excluding, however, its choice of law rules.

4.2 INCORPORATION BY REFERENCE AND PRECEDENCE

A. The Contract shall be derived from the IFB and its Addenda (if applicable), and the Bidder's Bid. In the event of a dispute under the Contract, applicable documents will be referred to for the purpose of clarification or for additional detail in the following order of precedence:

   1. The IFB and its Addenda (if applicable); and

   2. The Bidder's Bid.

B. In the event the County requires that an Ensuing Agreement be executed following award and a dispute arises between the terms and conditions of the Ensuing Agreement, the IFB and its Addenda (if applicable), and the Bidder's Bid, applicable documents will be referred to for the purpose of clarification or for additional detail in the following order of precedence:

   1. Terms and conditions of the Ensuing Agreement;

   2. The IFB its Addenda; and

   3. The Bidder's Bid.

4.3 OWNERSHIP OF BID

Each Bid shall become the property of the County upon submittal and will not be returned to Bidders unless received after the submittal deadline.

4.4 DISQUALIFICATION OF BIDDER

Upon signing and submittal of the Bid, a Bidder offering to sell supplies, materials, services, or equipment to the County, certifies that the Bidder has not violated the antitrust laws of the State of Texas codified in Business & Commerce Code, Section 15.01, or the Federal Antitrust Laws, and has not communicated directly or indirectly the offer made to any competitor or any other person engaged in such line of business. Any or all Bids may be rejected if the County believes that collusion exists among the Bidders.

4.5 FUNDING

The County intends to budget and make sufficient funds available and authorize funds for expenditure to finance the costs of the Contract. All Bidders understand and agree that the County's payment of amounts under the Contract shall be contingent on the County receiving appropriations or other expenditure authority sufficient to allow the County, in the exercise of reasonable administrative discretion, to make payments under this Contract.

4.6 ASSIGNMENT, SUCCESSORS AND ASSIGNS

The Successful Bidder may not assign, sell, or otherwise transfer the Contract or any other rights or interests obtained under the Contract without written permission of the Commissioners Court. The Contract and any Ensuing Agreement(s) shall be binding upon and inure to the benefit of the contracting parties hereto and their respective successors and permitted assigns.

4.7 IMPLIED REQUIREMENTS

Products or services not specifically described or required in the IFB, but are necessary to provide the functional capabilities described by the Bidder, shall be implied and deemed to be included in the Bid.

4.8 TERMINATION

A. **Termination for Cause:** The County reserves the right to terminate the Contract and/or any Ensuing Agreement(s) for default if the Successful Bidder breaches any of the Bid specifications, terms and conditions, including warranties of the Bidder, if any, or if the Successful Bidder becomes insolvent or commits acts of bankruptcy. Such right of termination is in addition to and not in lieu of any other remedies the County may have at law or in equity or as may otherwise provided hereunder. Default may be construed as, but not limited to, failure to deliver the proper goods and/or services within the proper amount of time, and/or to properly perform any and all other requirements to the County's satisfaction, and/or to meet all other obligations and requirements.

B. **Termination for Convenience:** The County may terminate the Contract and/or any Ensuing Agreement(s) for convenience and without cause or further liability, upon no less than thirty (30) calendar days written notice to the Successful Bidder. The County reserves the right to extend this period if it is in the best interest of the County. In the event the County exercises its right to terminate without cause, it is understood and agreed that only the amounts due to the Successful Bidder for goods, commodities and/or services provided and expenses incurred to and including the date of termination, will be due and payable. No penalty will be assessed for the County termination for convenience.

4.9 NON-PERFORMANCE

It is the objective of the County to obtain complete and satisfactory performance of the requirements set forth herein. In addition to any other remedies available at law, in equity or that may be set out herein, failure to perform may result in a deduction of payment equal to the amount of the goods and/or services that were not provided and/or performed to the County's satisfaction.

In the event of such non-performance, the County shall have the right, but shall not be obligated, to complete the services itself or by others and/or purchase the goods from other sources. If the County elects to acquire the goods or perform the services itself or by others, pursuant to the foregoing, the Successful Bidder shall reimburse the County, within ten (10) calendar days of demand, for all costs incurred by the County (including, without limitation, applicable, general, and administrative expenses, and field overhead, and the cost of necessary equipment, materials, and field labor) in correcting the nonperformance which the Successful Bidder fails to meet pursuant to the requirements set out herein. In the event the Successful Bidder refuses to reimburse the County as set out in this provision, the County shall have the right to deduct such reimbursement amounts from any amounts that may be then owing or that may become owing in the future to the Successful Bidder.

4.10 PROPRIETARY INFORMATION AND THE TEXAS PUBLIC INFORMATION ACT

All material submitted to the County shall become public property and subject to the Texas Public Information Act upon receipt. If a Bidder does not desire proprietary information in the Bid to be disclosed, each page must be clearly identified and marked proprietary at time of submittal or, more

preferably, all proprietary information may be placed in a folder or appendix and be clearly identified and marked as being proprietary. Failure to clearly identify and mark information as being proprietary as set forth under this provision will result in all unmarked information being deemed non-proprietary and available to the public. For all information that has not been clearly identified and marked as proprietary by the Bidder, the County may choose to place such information on the County's website and/or a similar public database without obtaining any type of prior consent from the Bidder.

The County will, to the extent allowed by law, endeavor to protect from public disclosure the information that has been identified and marked as proprietary. The final decision as to what information must be disclosed, however, lies with the Texas Attorney General.

To the extent, if any, that any provision in this IFB or in the Bidder's Bid is in conflict with Texas Government Code, Chapter 552, as amended (the "Public Information Act"), the same shall be of no force or effect. Furthermore, it is expressly understood, and agreed, that the County, and its officers and employees, may request advice, decisions and opinions of the Attorney General of the State of Texas in regard to the application of the Public Information Act to any items or data furnished to the County as to whether or not the same are available to the public. It is further understood that the County, and its officers and employees, shall have the right to rely on the advice, decisions and opinions of the Attorney General, and that the County, its officers and employees shall have no liability or obligation to any party hereto for the disclosure to the public, or to any person or persons, of any items or data furnished to the County by a party hereto, in reliance of any advice, decision or opinion of the Attorney General of the State of Texas.

4.11 RIGHT TO AUDIT

The Successful Bidder agrees that the County or its duly authorized representatives shall, until the expiration of three (3) years after termination or expiration of the services to be performed, have access to and the right to examine and photocopy any and all books, documents, papers and records of the Successful Bidder, which are directly pertinent to the services to be performed or goods to be delivered for the purposes of making audits, examinations, excerpts and transcriptions. The Successful Bidder agrees that the County shall have access during normal working hours to all necessary facilities and shall be provided adequate and appropriate work space in order to conduct audits in compliance with the provisions of this section. The County shall give the Successful Bidder reasonable advance notice of intended audits.

4.12 TESTING AND INSPECTIONS

The County reserves the right to inspect and test equipment, supplies, materials and goods for quality and compliance with this IFB, and ability to meet the needs of the user. Demonstration units must be available for review. Should the goods or services fail to meet requirements and/or be unavailable for evaluation, the County can deem the Bidder to be in breach and terminate the Contract and/or any Ensuing Agreement(s).

4.13 BID PREPARATION COSTS

The cost of developing Bids is the sole responsibility of the Bidders and shall not be charged to the County. There is no expressed or implied obligation for the County to reimburse the Bidders for any expense incurred in preparing a Bid in response to this IFB and the County will not reimburse the Bidders for such expenses.

4.14 INDEMNIFICATION

The Successful Bidder shall indemnify, defend and save harmless, the County, its officials, employees, agents and agent's employees from, and against, all claims, liability, and expenses including reasonable attorneys' fees, arising from activities of the Bidder, its agents, servants or employees, performed hereunder that result from the negligent act, error, or omission of the Bidder or any of the Bidder

agents, servants or employees, as well as all claims of loss or damage to the Bidder's and the County property, equipment, and/or supplies.

Furthermore, the County, its officials, employees, agents and agents' employees shall not be liable for damages to the Successful Bidder arising from any act of any third party, including, but not limited to, theft. The Successful Bidder further agrees to indemnify, defend and save harmless, the County from its officials, employee, agents and agents' employees against all claims of whatever nature arising from any accident, injury, or damage whatsoever, caused to any person, or the property of any person, occurring in relation to the Successful Bidder's performance of any services requested hereunder during the term of the Contract and/or any Ensuing Agreement(s).

The Successful Bidder shall timely report all claims, demands, suits, actions, proceedings, liens or judgements to the County and shall, upon the receipt of any claim, demand, suit, action, proceeding, lien or judgement, not later than the fifteenth (15^{th}) day of each month; provide the County with a written report on each such matter, setting forth the status of each matter, the schedule or planned proceedings with respect to each matter and the cooperation or assistance, if any, of the County required by the Successful Bidder in the defense of each matter. The Successful Bidder's duty to defend, indemnify and hold the County harmless shall be absolute. It shall not abate or end by reason of the expiration or termination of the Contract and/or any Ensuing Agreement(s), unless otherwise agreed by the County in writing. The provisions of this section shall survive the termination of the Contract and shall remain in full force and effect with respect to all such matters no matter when they arise.

In the event of any dispute between the parties, as to whether a claim, demand, suit, action, proceeding, lien or judgement, that appears to have been caused by or appears to have arisen out of or in connection with acts or omissions of the County, the Bidder shall nevertheless fully defend such claim, demand, suit or action, proceeding, lien or judgement, until and unless there is a determination by a court of competent jurisdiction that the acts and omissions of the Bidder are not an issue in the matter.

The Successful Bidder's indemnification shall cover, and the Successful Bidder agrees to, indemnify the County, in the event the County is found to have been negligent for having selected the Successful Bidder to perform the work described in this request. The provision by the Successful Bidder of insurance shall not limit the liability of the Successful Bidder under the Contract and/or any Ensuing Agreement(s).

4.15 WAIVER OF SUBROGATION

The Successful Bidder and the Successful Bidder's insurance carrier waive any and all rights whatsoever with regard to subrogation against the County as an indirect party to any suit arising out of personal or property damages resulting from the Bidder's performance under this Contract and any Ensuing Agreement(s).

4.16 RELATIONSHIP OF THE PARTIES

The Successful Bidder shall be an independent contractor and shall assume all of the rights, obligations, liabilities, applicable to it as such independent contractor hereunder and any provisions herein which may appear to give the County the right to direct the Successful Bidder as to details of doing work herein covered, or to exercise a measure of control over the work, shall be deemed to mean that the Successful Bidder shall follow the desires of the County in the results of the work only. The County shall not retain or have the right to control the Successful Bidder's means, methods or details pertaining to the Successful Bidder's performance of the work. The County and the Successful Bidder hereby agree and declare that the Successful Bidder is an independent contractor and as such meets the qualifications of an "Independent Contractor" under Texas Workers Compensation Act, Texas Labor Code, Section 406.141, that the Successful Bidder is not an employee of the County, and that the Successful Bidder and its employees, agents and subcontractors shall not be entitled to workers compensation coverage or any other type of insurance coverage held by the County.

4.17 SOLE PROVIDER

The Successful Bidder agrees and acknowledges that it shall not be considered a sole provider of the goods and/or services described herein and that the County may contract with other providers of such goods and/or services if the County deems, at its sole discretion, that multiple providers of the same goods and/or services will serve the best interest of the County.

4.18 FORCE MAJEURE

If the party obligated to perform is prevented from performance by an act of war, order of legal authority, act of God, or other unavoidable cause not attributable to the fault or negligence of said party, the other party shall grant such party relief from the performance. The burden of proof for the need of such relief shall rest upon the party obligated to perform. To obtain release based on force majeure, the party obligated to perform shall file a written request with the other party.

4.19 SEVERABILITY

If any provision of this IFB, the Contract or any Ensuing Agreement(s) shall be held invalid or unenforceable by any court of competent jurisdiction, such holding shall not invalidate or render unenforceable any other provision thereof, but rather the entire IFB, Contract or any Ensuing Agreement (s) will be construed as if not containing the particular invalid or unenforceable provision or provisions, and the rights and obligation of the parties shall be construed and enforced in accordance therewith. The parties acknowledge that if any provision of this IFB, the Contract or any Ensuing Agreement(s) is determined to be invalid or unenforceable, it is the desire and intention of each that such provision be reformed and construed in such a manner that it will, to the maximum extent practicable, give effect to the intent of this IFB, the Contract or any Ensuing Agreement(s) and be deemed to be validated and enforceable.

4.20 EQUAL OPPORTUNITY

Neither party shall discriminate against any employee or applicant for employment because of race, color, sex, religion or national origin.

4.21 NOTICE

Any notice to be given shall be in writing and may be distributed by personal delivery, or by registered or certified mail, return receipt requested, addressed to the proper party, at the following address:

The County: Williamson County Purchasing Department
Attn: Purchasing Agent
901 South Austin Avenue
Georgetown, Texas 78626

The Bidder: Address set out in Bidder's Transmittal Letter.

Notices given in accordance with this provision shall be effective upon (1) receipt by the party to which notice is given, or (2) on the third (3rd) calendar day following mailing, whichever occurs first.

4.22 SALES AND USE TAX EXEMPTION

The County is a body, corporate and politic, under the laws of the State of Texas and claims exemption from sales and use taxes under Texas Tax Code, Section 151.309, as amended, and the services and/or goods subject hereof are being secured for use by the County.

4.23 COMPLIANCE WITH LAWS

The County and the Successful Bidder shall comply with all federal, state, and local laws, statutes, ordinances, rules and regulations, and the orders and decrees of any courts or administrative bodies or tribunals in any matter affecting the performance of the Contract and any Ensuing Agreement(s), including, without limitation, Workers' Compensation laws, salary and wage statutes and regulations, licensing laws and regulations. When required, the Successful Bidder shall furnish the County with certification of compliance with said laws, statues, ordinances, rules, regulations, orders, and decrees above specified.

4.24 INCORPORATION OF EXHIBITS, APPENDICES AND ATTACHMENTS

All of the Exhibits, Appendices and Attachments referred to herein are incorporated by reference as if set forth verbatim herein. Any conflicting terms in the Contract documents will be resolved at the sole discretion of the Commissioners Court.

4.25 NO WAIVER OF IMMUNITIES

Nothing herein shall be deemed to waive, modify or amend any legal defense available at law or in equity to the County, its past or present officers, employees, or agents, nor to create any legal rights or claim on behalf of any third party. The County does not waive, modify, or alter to any extent whatsoever the availability of the defense of governmental immunity under the laws of the State of Texas and of the United States.

4.26 NO WAIVER

The failure or delay of any party to enforce at any time or any period of time any of the provisions of this IFB, the Contract or any Ensuing Agreement(s) shall not constitute a present or future waiver of such provisions nor the right of either party to enforce each and every provision. Furthermore, no term or provision hereof shall be deemed waived and no breach excused unless such waiver or consent shall be in writing and signed by the party claimed to have waived or consented. Any consent by any party to, or waiver of, a breach by the other, whether expressed or implied, shall not constitute a consent to, waiver of or excuse for any other, different or subsequent breach.

4.27 CURRENT REVENUES

The obligations of the parties under the Contract and any Ensuing Agreement(s) do not constitute a general obligation or indebtedness of the County for which the County is obligated to levy, pledge, or collect any of taxation. It is understood and agreed that the County shall have the right to terminate the Contract and any Ensuing Agreement(s) at the end of any the County fiscal year if the governing body of the County does not appropriate sufficient funds as determined by the County's budget for the fiscal year in question. The County may effect such termination by giving written notice of termination to the Successful Bidder at the end of its then-current fiscal year.

4.28 FOB DESTINATION

To the extent applicable to this IFB, all of the items listed are to be Free On Board to final destination (FOB Destination) with all transportation charges if applicable to be included in the Bid, unless otherwise specified in the Invitation for Bids. The title and risk of loss of the goods shall not pass to the County until receipt and acceptance takes place at the FOB Destination point.

4.29 BINDING EFFECT

This Contract and any Ensuing Agreement(s) shall be binding upon and inure to the benefit of the parties and their respective permitted assigns and successors.

4.30 ASSIGNMENT

The Successful Bidder's interest and duties hereunder may not be assigned or delegated to a third party without the express written consent of the County.

4.31 SAFETY

The Successful Bidder is responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with any services to be provided hereunder. The safety program shall comply with all applicable requirements of the current federal Occupational Safety and Health Act and all other applicable federal, state and local laws and regulations.

4.32 GENERAL OBLIGATIONS AND RELIANCE

The Successful Bidder shall perform all services and/or provide all goods, as well as those reasonably inferable and necessary for completion and provision of services and/or goods required hereunder. The Successful Bidder shall keep the County informed of the progress and quality of the services. The Successful Bidder agrees and acknowledges that the County is relying on the Successful Bidder's represented expertise and ability to provide the goods and/or services described herein. The Successful Bidder agrees to use its best efforts, skill, judgment, and abilities to perform its obligations in accordance with the highest standards used in the profession and to further the interests of the County accordance with the County's requirements and procedures. The Successful Bidder's duties, set forth herein, shall at no time be in any way diminished by reason of any approval by the County, n shall the Successful Bidder be released from any liability by reason of such approval by the County, it being understood that the County at all times is ultimately relying upon the Successful Bidder's skill and knowledge in performing the services and providing any goods required hereunder.

4.33 ESTIMATED QUANTITIES

To the extent applicable to this IFB, the estimated quantity of each item listed in this IFB is only estimate; the actual quantity to be purchased may be more or less. The County is not obligated purchase any minimum amount, and the County may purchase any reasonable amount greater than t estimate for the same unit price. Any limit on quantities available must be stated expressly in the Bid.

4.34 CONTRACTUAL DEVELOPMENT

The contents of the IFB and the Successful Bidder's Bid will become an integral part of the Contract, but may be modified, at the County's sole discretion, by provisions of an Ensuing Agreement. Therefore, the Bidder must agree to an inclusion of an Ensuing Agreement of the Bid specifications, terms and conditions of this IFB. If an Ensuing Agreement is required under this IFB, information relative to t Agreement will be located in the Additional Stipulations Section of this IFB.

4.35 SURVIVABILITY

All applicable agreements that were entered into between the Successful Bidder and the County, under the terms and conditions of the Contract and/or any Ensuing Agreement(s), shall survive the expiration or termination thereof for ninety (90) days unless a new contract has been awarded.

The County may exercise, by written notice to the Successful Bidder no later than ten (10) calendar days of the Contract expiration, this clause for emergencies only.

4.36 AIR QUALITY

In determining the overall best Bid, the County may, to the extent applicable, exercise the option granted to local governments under the Texas Local Government Code, Section 271.907.

This option allows the County to evaluate Bids and give preference to goods and/or services of a Bidder that demonstrates that the Bidder meets or exceeds any and all state or federal environmental standards, including voluntary standards, relating to air quality. If the Bid being submitted will have an effect on air quality for the County (as it relates to any state, federal, or voluntary air quality standard), then the Bidder is encouraged to provide information in narrative indicating the anticipated air quality impact. All Bidders are expected to meet all mandated state and federal air quality standards.

4.37 ENTIRE AGREEMENT

The Contract and any Ensuing Agreement(s) shall supersede all prior Agreements, written or oral between the Successful Bidder and the County and shall constitute the entire Agreement and understanding between the parties with respect to the services and/or goods to be provided. Each of the provisions herein shall be binding upon the parties and may not be waived, modified, amended or altered, except by writing signed by the Successful Bidder and the County.

4.38 PAYMENT

The County's payment for goods and services shall be governed by the Texas Government Code, Chapter 2251. An invoice shall be deemed overdue the thirty-first (31st) day after the later of the following:

A. The date the County receives the goods under the Contract;
B. The date the performance of the service under the Contract is completed; or
C. The date the Williamson County Auditor receives an invoice for the goods or services.

Interest charges for any overdue payments shall be paid by the County in accordance with Texas Government Code, Section 2251.025. More specifically, the rate of interest that shall accrue on a late payment is the rate in effect on September 1 of the County's fiscal year in which the payment becomes due. The said rate in effect on September 1 shall be equal to the sum of one (1) percent, and the prime rate published in the Wall Street Journal on the first (1st) day of July of the preceding fiscal year that does not fall on a Saturday or Sunday.

In the event that an error appears in an invoice submitted by the Successful Bidder, the County shall notify the Successful Bidder of the error not later than the twenty-first (21st) day after the date the County receives the invoice. If the error is resolved in favor of the Successful Bidder, the Successful Bidder shall be entitled to receive interest on the unpaid balance of the invoice submitted by the Successful Bidder beginning on the date that the payment for the invoice became overdue. If the error is resolved in favor of the County, the Successful Bidder shall submit a corrected invoice that must be paid in accordance within the time set forth above. The unpaid balance accrues interest as provided by the Texas Government Code, Chapter 2251, if the corrected invoice is not paid by the appropriate date.

As a minimum, invoices shall include:

A. Name, address, and telephone number of the Successful Bidder and similar information in the event the payment is to be made to a different address.

B. The County Contract, Purchase Order.

C. Identification of items or service as outlined in the Contract.

D. Quantity or quantities, applicable unit prices, total prices and total amount.

E. Any additional payment information which may be called for by the Contract.

Payment inquiries should be directed to the following address:

Williamson County Auditor's Office, Accounts Payable Department
Email: accountspayable@wilco.org
Phone: 512-943-1500

4.39 CONTRACTUAL FORMATION AND ENSUING AGREEMENT

The IFB and the Bidder's Bid, when properly accepted by the Commissioners Court, shall constitute a Contract equally binding between the Successful Bidder and the County.

If an Ensuing Agreement is required by this IFB, that information will be provided in Special Provisions section of this IFB. The Successful Bidder shall be required to execute the Agreement at the Williamson County Purchasing Department approximately ten (10) calendar days after the Successful Bidder is notified of award. The Ensuing Agreement shall be in the same form as the Agreement which is attached to the end of this IFB. The only anticipated changes in the Ensuing Agreement will be to include additional exhibits, to fill in blanks to identify the Successful Bidder, and terms relating to the compensation, or to revise the Agreement to accommodate corrections, changes in the scope of services, or changes pursuant to Addenda issued. **Bidders should raise any questions regarding the terms of the Agreement in the form of written questions or submittals as described in the Public Announcement and General Information portion of this IFB.** Because the signed Ensuing Agreement will be substantively and substantially derived from the attached Agreement, each Bidder is urged to seek independent legal counsel as to any questions about the terms, conditions or provisions contained in the Agreement *before* submitting a Bid. Again, the attached Agreement, if applicable, contains important legal provisions and is considered part and parcel of this IFB. Failure or refusal to sign aforesaid Agreement shall be grounds for the County to revoke any award which has been issued, forfeit Bid security, if applicable, and select another Bidder.

4.40 COOPERATIVE PURCHASING PROGRAM

During the term of the Contract resulting from this IFB, the County would like to afford the same prices, terms and conditions to other political subdivisions or public entities. Another entity's participation in the Contract resulting from this IFB is subject to a properly authorized Purchasing Cooperative Inter-local Agreement with the County. Any liability created by purchase orders issued against the Contract shall be the sole responsibility of the governmental agency placing the order.

4.41 INSURANCE REQUIREMENTS

To the extent applicable Insurance information will appear in the Additional Stipulations section that is in this IFB Package.

4.42 BIDDERS BOND, WARRANTY BOND, PERFORMANCE AND PAYMENT BONDS

To the extent applicable Bond information will appear in the Additional Stipulations section that is in this IFB Package.

4.43 LEGAL LIABILITY INFORMATION

The Successful Bidder shall disclose all legal liability information by listing any pending litigation anticipated litigation that your firm is involved in including, but not limited to, potential or actual legal matters with private parties and any local, state, federal or international governmental entities. The County reserves the right to consider legal liability information in the recommendation of any proposed contract to the Commissioners Court.

4.44 INCLEMENT WEATHER

In case of inclement weather or any other unforeseen event causing the County to close for business on the date of a Bid submission deadline, the Bid closing will automatically be postponed until the next business day the County is open. If inclement weather conditions or any other unforeseen event causes delays in carrier service operations, the County may issue an Addendum to all known Bidders interested in the project to extend the deadline. It will be the responsibility of the Bidder to notify the County of their interest in the project if these conditions are impacting their ability to turn in a submission within the stated deadline. The County reserves the right to make the final judgement call to extend any deadline.

4.45 PREVAILING WAGE RATES

To the extent this procurement is for the construction of a public work, including a building, highway, road, excavation, and repair work or other project development or improvement, paid for in whole or in part from public funds, without regard to whether the work is done under public supervision or direction, Texas Government Code, Chapter 2258, shall apply and the contractor shall pay not less than the wage scale of the various classes of labor as shown on the "Prevailing Wage Schedule" provided by the County. Pursuant to Texas Government Code, Section 2258.022(a)(2), the County has determined the general prevailing rate of the "Prevailing Wage Schedule" in the locality in which the public work is to be performed for each craft or type of worker needed to execute the contract and the prevailing rate for legal holiday and overtime work by using the prevailing wage rate as determined by the United States Department of Labor in accordance with the United States Code, Section 276a (Davis-Bacon Act).

The specified wage rates are minimum rates only, and are not representations that qualified labor adequate to perform the work is available locally at the prevailing wage rates. The County is not bound to pay—and will not consider—any claims for additional compensation made by any contractor because the contractor pays wages in excess of the applicable minimum rate contained in the Contract Documents. The "Prevailing Wage Schedule" is not a representation that quantities of qualified labor adequate to perform the work may be found locally at the specified wage rates.

For classifications not shown, workers shall not be paid less than the wage indicated for laborers. The contractor shall notify each worker commencing work on the project the worker's job classification and the established minimum wage rate required to be paid, as well as the actual amount being paid. The notice must be delivered to and signed in acknowledgement of receipt by the employee and must list both the monetary wages and fringe benefits to be paid or furnished for each classification in which the worker is assigned duties. When requested by the County, competent evidence of compliance with the Texas Prevailing Wage Law shall be furnished by contractor. A copy of each worker wage rate notification shall be submitted to the County with the Application for Payment for the period during which the worker began on-site activities.

Should the contractor at any time become aware that a particular skill or trade not reflected on the County's "Prevailing Wage Schedule" will be or is being employed in the work, whether by the contractor or by a subcontractor, the contractor shall promptly inform the County and shall specify a wage rate for that skill or trade, which shall bind the contractor.

The contractor and any subcontractor shall pay to the County a penalty of sixty dollars ($60.00) for each worker employed for each calendar day, or portion thereof, that the worker is paid less than the wage rates stipulated in the "Prevailing Wage Schedule" or any supplement thereto. The contractor and each subcontractor shall keep, or cause to be kept, an accurate record showing the names and occupations of all workers employed in connection with the work, and showing the actual per diem wages paid to each worker, which records shall be open at all reasonable hours for the inspection by the County.

Within thirty-one (31) days of receipt of information concerning a violation of the Texas Government Code Chapter 2258, the County shall make an initial determination as to whether good cause exists to believe a violation occurred. The County's decision on the initial determination shall be reduced to writing and sent to the contractor or subcontractor against whom the violation was alleged, and to the affected worker. When a good cause finding is made, the County shall retain the full amounts claimed by the claimant or claimants as the difference between wages paid and wages due under the "Prevailing Wage Schedule" and any supplements thereto, together with the applicable penalties, such amounts being subtracted from successive progress payments pending a final decision on the violation.

After the County makes its initial determination, the affected contractor or subcontractor and worker have fourteen (14) calendar days in which to resolve the issue of whether a violation occurred, including the amount that should be retained by the County or paid to the affected worker. If the contractor or subcontractor and affected worker reach an agreement concerning the worker's claim, the contractor shall promptly notify the County in a written document signed by the worker. It the contractor or Subcontractor and affected worker do not agree before the fifteenth (15th) calendar day after the County determination, the contractor or subcontractor and affected worker must participate in binding arbitration in accordance with the Texas General Arbitration Act, Chapter 171, (Texas Civil Practice and Remedies Code). The parties to the arbitration have ten (10) calendar days after the expiration of the fifteen (15) calendar days referred to above, to agree on an arbitrator; if by the eleventh (11th) calendar day there is no agreement to an arbitrator, a district court shall appoint an arbitrator on the petition of any of the parties to the arbitration.

If an arbitrator determines that a violation has occurred, the arbitrator shall assess and award against the contractor or subcontractor the amount of penalty as provided above and the amount owed the worker. The County may use any amounts retained hereunder to pay the worker the amount as designated in the arbitration award. If the County has not retained enough from the contractor or subcontractor to pay the worker in accordance with the arbitration award, the worker has a right of action against the contractor and subcontractor as appropriate, and the surety of either to receive the amount owed, attorneys' fees and court costs. The contractor shall promptly furnish a copy of the arbitration award to the County.

Money retained pursuant to the provisions above shall be used to pay the claimant or claimants the difference between the amount the worker received in wages for labor on the project at the rate paid by the contractor or subcontractor and the amount the worker would have received at the general prevailing wage rate as provided by the agreement of the claimant and the contractor or subcontractor affected, or in the arbitrator's award. The full statutory penalty of sixty dollars ($60.00) per calendar day of violation per worker shall be retained by Williamson County to offset its administrative costs, pursuant to Texas Government Code, Section, 2258.023. Any retained funds in excess of these amounts shall be paid to the contractor on the earlier of the next progress payment or final payment. Provided, however, that the County shall have no duty to release any funds to either the claimant or the contractor until it has received the notices of agreement or the arbitration award as provided under the provision herein-above.

4.46 CONFIDENTIALITY

The Bidder expressly agrees that it will not use any direct or incidental confidential information that may be obtained while working in a governmental setting for its own benefit, and agrees that it will not access unauthorized areas or confidential information and it will not disclose any information to unauthorized third parties, and will take care to guard the security of the information at all times.

WILLIAMSON COUNTY
1848

WILLIAMSON COUNTY
PROJECT CONSTRUCTION MANUAL

FOR
SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK

Bid No._____

Bid Date: <TBD>
Bid Time: <TBD>

Williamson County, Texas
Purchasing Department
901 South Austin Avenue
Georgetown, TX 78626

MARCH 2018

STATE OF TEXAS
DUSTIN G. MORTENSEN
100000
LICENSED
PROFESSIONAL ENGINEER

3/15/2018

Dustin Mortensen

FREESE AND NICHOLS, INC.
TEXAS REGISTERED
ENGINEERING FIRM
F-2144

The enclosed Texas Department of Transportation Specifications, Special Specifications, Special Provisions, General Notes and Specification Data in this document have be selected by me, or under by responsible supervision as being applicable to this project. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

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SECTION 1
ADDENDA

ADDENDUM NO. __

Date:

Owner: **Williamson County, Texas**

Project Name:

Project No:

This Addendum forms a part of the Contract and clarifies, corrects or modifies the original Construction Documents, dated _____. Acknowledge receipt of this addendum in space provided on Bid Form. Failure to do so may subject bidder to disqualification.

DESCRIPTION OF ADDITION OR CHANGE:

This addendum consists of __ page(s).

_____
Approved by ENGINEER

END

EXAMPLE

SECTION 2
BID FORM

Bid Item	TxDOT Item	Description	Unit	Estimated Quantity	Unit Price	Total Price
1	500 6001	MOBILIZATION	LS	1		
2	506 6002	ROCK FILTER DAMS (INSTALL) (TY 2)	LF	210		
3	506 6011	ROCK FILTER DAMS (REMOVE)	LF	210		
4	506 6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	645		
5	506 6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	645		
6	100 6001	PREPARING ROW	AC	3.2		
7		Care of Water During Construction	LS	1		
8	496 6007	REMOV STR (PIPE)	LF	48		
9		ABANDON 30-INCH CMP	LS	1		
10	110 6004	EXCAVATION (ROADWAY AND CHANNEL)	CY	15,000		
11	132 6007	EMBANKMENT (FINAL)(ORD COMP)(TY D)	CY	10,000		
12	432 6032	RIPRAP (STONE PROTECTION)(15 IN)	CY	500		
13	432 6036	RIPRAP (STONE PROTECTION)(30 IN)	CY	3,000		
14		Rock Vane	LF	200		
15		Coir Mat - Erosion Control	SY	1,400		
16	160 6003	FURNISHING AND PLACING TOPSOIL (4")	SY	6,900		
17	166 6001	FERTIILZER	AC	1.5		
18	164 6003	BROADCAST SEED (PERM) (RURAL) (CLAY)	SY	6,900		
19	168 6001	Vegetative Watering	MG	257		
20	169 6004	SOIL RETENTION BLANKETS (CL 1) (TY D)	SY	5,500		
21	402 6001	TRENCH EXCAVATION PROTECTION	LF	688		
22	7032 6132	Pipe Water Main (DI)(8")	LF	288		
23		8-inch Coated 150 psi Steel Pipe with Insulation (Suspended - includes pipe supports)	LF	138		
24		8-inch PVC Bypass Line	LS	1		
25		Remove Existing 8-inch PVC Waterline	LF	460		
26		2-inch Manual Air Release Corporation Stop (Complete)	EA	1		
27		8-inch Gate Valve and Box (Complete)	EA	2		
28		Concrete Encasement for Waterline	CY	7		
29	247 6238	FL BS (CMP IN PLC) (TY A GR 4) (12")	SY	1,261		
30	260 6002	LIME (HYDRATED LIME (SLURRY))	TON	10		
31	260 6079	LIME TRT (SUBGRADE) (6")	SY	1,261		
32	340 6122	D-GR HMA(SQ) TY-D PG70-22	TON	218		
33	310 6027	PRIME COAT(MC-30 OR AE-P)	GAL	227		
34	416 6001	DRILL SHAFT (18 IN)	LF	52		
35	416 6004	DRILL SHAFT (36 IN)	LF	306		
36	420 6013	CL C CONC (ABUT)	CY	58.6		
37	420 6029	CL C CONC (CAP)	CY	15.5		
38	420 6037	CL C CONC (COLUMN)	CY	14.1		
39	422 6001	REINF CONC SLAB	SF	5,148		
40	422 6013	BRIDGE SIDEWALK	SF	980		
41	422 6015	APPROACH SLAB	CY	70		
42	422 6023	SHEAR KEY	CY	30		
43	425 6036	PRESTR CONC GIRDER (TX34)	LF	710		
44	428 6001	PENETRATING CONCRETE SURFACE TREATMENT	SY	808.4		
45	434 6001	ELASTOMERIC BEARING (PLAIN)	EA	20		
46	442 6008	STR STEEL (MISCELLANEOUS BRIDGE)	LB	154		
47	450 6004	RAIL (TY T221)	LF	172		
48	450 6030	RAIL (TY C221)	LF	162		

Bid Item	TxDOT Item	Description	Unit	Estimated Quantity	Unit Price	Total Price
49	454 6001	SEALED EXPANSION JOINT (4 IN) (SEJ - A)	LF	73		
50	540 6001	MTL W-BEAM GD FEN (TIM POST)	LF	95		
51	540 6007	MTL BEAM GD FEN TRANS (TL2)	EA	4		
52	540 6016	DOWNSTREAM ANCHOR TERMINAL SECTION	EA	2		
53	544 6001	GUARDRAIL END TREATMENT (INSTALL)	EA	2		
54	644 6001	IN SM RD SN SUP&AM TY10BWG (1) SA (P)	EA	1		
55	618 6078	CONDT (RM) (4")	LF	138		
56	618 6058	CONDT (PVC) (SCH 80) (4")	LF	300		
57	540 6014	SHORT RADIUS	LF	31		
58	540 6005	TERMINAL ANCHOR SECTION	EA	4		
59	432 6046	RIPRAP (MOW STRIP)(5 IN)	CY	18		
60	530 6005	DRIVEWAYS (ACP)	SY	116		
					Project Total	

SECTION 3
TECHNICAL SPECIFICATIONS

GENERAL NOTES AND TECHNICAL SPECIFICATIONS

Definition of Terms

Asphalt Season: April 1 through September 30.

County: Williamson County acting through the County Engineer's Office.

Contractor: Successful bidder of the IFB.

Engineer: Williamson County Engineer, or designee.

Inspector: Engineer, or designee, supplied full time or part time to the contractor's crew for the oversight of the work.

Specifications: Texas Department of Transportation Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges 2014.

TxDOT: Texas Department of Transportation

Working Day: Monday through Friday (excluding County approved holidays), if weather permits the performance of the contract (as determined by the Inspector) for a continuous period of at least 8 hrs. (excluding lunch) between 7:00 A.M. and 6:00 P.M. Time begins with crews on site with equipment and ready for operation.

General Notes

Unless set forth otherwise, all Work performed shall comply with requirements which pertain to the various items of Work included as Standard Specification for Construction of Highways, Streets and Bridges of the Texas Department of Transportation, adopted November 1, 2014, which is incorporated herein by reference for all purposes. In the event that any specification set out herein conflicts with the said TxDOT specifications, the specification set out herein shall control and govern.

The Contractor will be given written Notice to Proceed on this project. The project shall begin within five (5) working days after such notification and shall continue for one hundred fifty (150) working days.

Contractor specifically acknowledges that Williamson County will sustain damages for each working day beyond the date in which work is to begin. Once the written Notice to Proceed is given by Williamson County, the Contractor has five (5) working days to begin the work. Contractor agrees that two-hundred and No/100 Dollars ($200.00) per working day shall be retained by Williamson County from any amounts due Contractor for every day that Contractor does not begin the overlay work.

Contractor specifically acknowledges that Williamson County will sustain damages for each working day beyond the required dates of completion of the work. Because of the impracticality and extreme difficulty of fixing and ascertaining Williamson County's actual damages, Contractor agrees that two-hundred and No/100 Dollars ($200.00) per working day shall be retained by Williamson County from any amounts due Contractor for every day that Contractor does not complete the work.

Periods of time (i) during which Williamson County suspends the work by written notice to Contractor, or (ii) during which contractor has performed work and is waiting for Williamson County's acceptance, or (iii) during which a delay directly related to delays caused by "Acts of God", non-county governmental processes, national emergency, or any other causes beyond Contractor's or Williamson County's reasonable control, shall not be taken into account in computing the amount retained. In the event that work received by Williamson County is found to be incomplete, the period of time from the end of the performance of the work to the receipt of subsequent performance necessary to produce completed work will be taken into account in computing the number of days and the amount retained.

Contractor shall submit a basic work plan, bar chart, or schedule for the Engineer to review one week prior to commencement of work.

Contractor shall not begin asphalt work prior to the beginning of the asphalt season (April 1), nor after the ending of the asphalt season (September 30), except with the approval of the Engineer.

Once work begins, Contractor shall continuously execute the work until completion, unless otherwise directed by Engineer.

Nighttime, weekend and holiday work is allowed with prior approval by Engineer.

The Contractor shall perform work during appropriate weather conditions, unless otherwise directed by the Engineer. If work is performed at the Contractor's option during, or prior to, inclement weather conditions and the work is damaged, the Contractor is responsible for all costs associated with replacing the work.

Contractor shall determine the exact location of all existing utilities before commencing work, and is fully responsible for any and all damages associated by Contractor's failure to locate and preserve utilities.

Do not park equipment or make stockpiles where driver sight distance to residences, businesses and side street intersections is obstructed, especially after work hours. If it is necessary to park where drivers' views are blocked, Contractor shall make every effort to flag traffic accordingly. Give the travelling public first priority.

An English-speaking Superintendent shall be available on the project at all times when work is being performed. The Contractor shall provide the Inspector with contact information for the Superintendent.

The contractor shall provide at least one portable restroom near the work site at all times in order to provide a bathroom to individuals providing work hereunder.

If multiple days are required to complete work, Contractor shall not leave work in hazardous conditions, as determined by Engineer.

Contractor shall maintain positive drainage for permanent and temporary site conditions for duration of project.

Provide a smooth, clean sawcut along the existing asphalt pavement structure, as directed. Consider subsidiary to the pertinent Items.

Contractor shall be responsible for hauling and disposing of all removed materials off the project site. Consider subsidiary to the pertinent Items.

The actual quantity required may vary from the estimated quantities in the contract. The Contractor shall be compensated for completed work based on actual quantities per bid item.

Testing may be performed at the request of the County any time during the length of the contract through an independent testing laboratory. Testing may be requested by the County on any and/or all items on this contract. If the results determine the item did not meet specifications, then the cost of the testing will be borne by the Contractor. If the results of the test determine that the item did meet specifications, the cost of the testing will be borne by the County.

Final cleanup will include the removal of excess material considered detrimental to vegetation growth within the working area. Materials such as excess asphalt and other materials, as specified by the Engineer, will be removed at the Contractor’s expense.

All construction equipment involved in roadway work shall be equipped with a permanently mounted 360 degree revolving or strobe warning light with amber lens. This light shall have a minimum lens height of 5 inches and a diameter of 5 inches.

This light shall have a mounting height of not less than 6 feet above the roadway surface and shall be visible from all sides. This equipment shall also have attached at each side of the rear end of the vehicle an approved orange warning flag mounted not less than 6 feet above the roadway surface.

Contractor shall abide by all easement agreements between County and property owners. Copies of these agreements will be made available to the successful bidder.

Care shall be exercised to prevent damage to all property in and around the construction zone. The Contractor shall be liable for the repair and restoration of any property damaged as a result of the contractor's prosecution of the work. This shall include, but is not limited to, re-vegetation of all areas damaged or destroyed by construction. Contractor will be held liable and responsible for such areas until growth is reestablished to the satisfaction of the County.

Ornamental landscape plantings of trees, shrubs and grasses that are damaged or destroyed during construction shall be replaced with plant material of comparable size and quality approved by the County.

The Contractor may be required to trim, prune and remove brush and trees in order to construct the project or to provide a vertical clearance of at least 14 feet. For this operation, the method shall be approved by the Inspector.

Contractor's equipment and vehicles shall not be maintained on-site during construction, except at designated sites as approved by the Inspector.

ITEM 9 – MEASUREMENT AND PAYMENT

Measurement and payment for the bid items are described in Special Project Provisions 01 29 00, Bid Item Measurement and Payment Procedures.

ITEM 132 – EMBANKMENT

All materials brought to the project site shall have a maximum PI of 25 and minimum PI of 6. Borrow sources shall be submitted and approved by the Inspector prior to delivery to the project.

ITEM 160 – TOPSOIL

Obtain approval of all topsoil sources before digging begins. The County reserves the right to take samples, as needed, to assure that the material meets the PI and other requirements as indicated in the Specifications (Fertility, Organics, Erodibility, etc.).

No Sandy Loam allowed, unless the project dictates otherwise.

Construct topsoil stockpiles of no more than five (5) feet in height.

Track ALL topsoiled slopes left idle for more than 14 days, within or at the end of the 14-day idle period, to prevent erosion. Tracking consists of operating a tracked vehicle or equipment up and down the slope, leaving track marks perpendicular to the direction of the slope. Retrack slopes after rain event, as directed. Consider the tracking of slopes to prevent erosion as subsidiary to the pertinent Items.

Upon final grading, immediately track all topsoiled slopes to prevent erosion as directed.

Consider subsidiary to the pertinent Items.

Place topsoil four (4) inches thick on all new fill and excavated slopes not designated to receive riprap.

ITEM 164 – SEEDING FOR EROSION CONTROL

Seeding to be distributed uniformly over the area shown on the Typical Section in the plans.

After 60 days, areas with little or no growth shall be re-seeded at contractor's expense.

ITEM 166 – FERTILIZER

Fertilizer shall be applied before seeding.

Fertilizer shall be delivered in bags unless otherwise specified or approved prior to delivery. Bags shall be clearly labeled showing contents. When non-bagged, loose fertilizer is approved, documentation will be required for each load of material delivered verifying authenticity of material.

Fertilizer shall be granular and essentially dust free.

ITEM 168 – VEGETATIVE WATERING

The Contractor shall obtain water at a source that is metered or shall furnish the manufacturer's specifications showing tank capacity for each truck used.

The Contractor shall notify the Inspector prior to watering that the Inspector may verify meter readings or truck counts.

Water all areas of the project to be top soiled and seeded. Maintain the seed bed in a condition favorable for the growth of grass.

Watering can be postponed immediately after a rainfall on the site of ½ inch or greater, but shall be resumed before the soil dries out, continue watering until final acceptance.

Watering rates shall be 12,000 gallons/acre per working day for 15 consecutive working days.

Rate and frequency may be adjusted with the approval of the Engineer, to meet site conditions.

ITEM 247 – FLEXIBLE BASE

Unless otherwise specified or approved, use new materials for the work. Secure the Engineer's approval of the proposed source of materials to be used before their delivery. Materials can be approved at a supply source or staging area but may be re-inspected.

Flexible Base shall be Type A, Grade 4 and shall conform to the requirements of Table 1:

Table 1: Material Requirements

Property	Grade 4
Master gradation sieve size (cumulative % retained)	
2 1/2 "	-
1 3/4 "	0
7/8 "	10-35
3/8"	30-65
# 4	45-75
# 40	70-90
#200	87-95
Liquid Limit, % Max	35
Plastic Index, Max	10
Wet ball mill, % Max	40
Wet ball mill, % Max Increase passing the #40 sieve	20
Min. Compressive Strength, psi	
Lateral pressure 0 psi	35
Lateral pressure 15 psi	175

ITEM 260 – LIME TREATMENT (ROAD MIXED)

Subgrade stabilization is required. Lime stabilization shall be used and shall be performed in accordance with TxDOT Item 260, unless otherwise approved.

If the addition of lime as described in Item 260 is not feasible, an alternate stabilizing design shall be proposed and submitted for approval. Increased base thickness does not

effectively compensate for subgrade soil with high shrink/swell potential and will not be approved without additional stabilization.

If the soil has a sulfate content greater than 7,000 ppm, removal and replacement with select fill may be required.

Organic content of the natural subgrade shall be tested in accordance with Tex-148-E. If the organic content is 1% or greater, additional lime shall be added to compensate for the additional reaction. Target lime content shall be verified with Tex-121-E, Pt. III for soil modification.

Lime shall be a hydrated lime slurry delivered to the site, spread on the proof-rolled natural subgrade and mixed with a rotary mixer within 6 hours of spreading in accordance with TxDOT Item 260. A pH of 12.4 must be achieved for stabilization. Confirmation testing is required.

Stabilize subgrade with 5% lime slurry.

Alternative application and mixing processes may be approved.

ITEM 300 – ASPHALTS, OILS, AND EMULSIONS

No engine oil shall be used as a component of any asphalt or emulsion.

Non-Tracking Tack Coat Emulsion shall be applied on milled edge/end transition prior to HMAC placement and considered subsidiary to the pertinent Items.

ITEM 340

Perform work during appropriate weather conditions, unless otherwise directed. If work is performed at the Contractor's option, during, or prior to, inclement weather conditions, and the work is damaged, the Contractor is responsible for all costs associated with replacing the work.

ITEM 340 - DENSE-GRADED HOT-MIX ASPHALT (SMALL QUANTITY)

Provide mixture Type D, where applicable, using PG binder 70-22. Unless otherwise approved, provide Type D mixtures that have no less than 5% asphalt binder.

Recycled Asphalt Shingles (RAS) are not permitted. Recycled Asphalt Pavement (RAP) is not permitted in the surface course.

Target laboratory molded density is 96.5% for all mixtures without RAP and when using a Texas Gyratory Compactor (TGC) for designing the mixture.

When using Superpave Gyratory Compactor (SGC) to design mixtures, submit the SGC mix design to the Engineer for approval.

Minimum VMA during production shall be equal to or greater than Design VMA as shown in Table 8 for all mixture types.

All mixtures must meet the Hamburg requirement as stated in the table below.

High-Temperature Binder Grade	**Test Method**	**Hamburg Wheel Test Requirements [1]**
		Minimum # of Passes @ 0.5" Rut Depth, Tested @122°F
PG 64 or lower	Tex-242-F	7,000
PG 70	Tex-242-F	15,000
PG 76 or higher	Tex-242-F	20,000

1. The Engineer may accept Hamburg Wheel test results for production and placement if no more than 1of the 5 most recent tests is below the specified number of passes and the failing test is no more than 2,000 passes below the specified number of passes.

The County may at any time request that paving operation be stopped, if there is observance of pavement irregularities which could adversely affect the pavement quality.

HMAC shall be placed in layers/lifts as identified in the plans. Lifts shall be compacted thoroughly and uniformly to obtain the compaction and cross section identified in the plans.

Under no circumstances shall the HMA material be dumped on or near the job site and then reloaded for hauling to the site for placement.

All HMA construction joints shall be staggered for each proceeding lift. Ensure placement sequence to avoid excess distance of longitudinal joint lapback not to exceed one day's production rates.

Submit any proposed adjustments or changes to a job mix formula to the Engineer before production of the new job mix formula.

The Contractor shall provide saw cutting where necessary. This shall not be paid for directly, but shall be considered subsidiary to Bid Item Dense-Graded Hot Mix Asphalt.

1. The Contractor shall utilize a material transfer device per Item 320, a grade reference (such as a ski) for the overlay operations. Consider subsidiary to the pertinent Items.

2. Incorporate a maintain a 3H:1V safety wedge for any roadway edge of 2 inches or greater against adjacent travel lanes. Consider subsidiary to the pertinent Items.
3. Taper transverse faces at ends of passes as directed.
4. Make transverse tapers on each end of each pass using a minimum slope rate of 60H:1V. Tapers shall be removed directly before placement of the final HMA. Consider subsidiary to the pertinent Items.
5. Use a 10 ft. straightedge, where allowed, on all surface and intermediate pavement layers, as directed by the Inspector.

Acceptance Plan is not applicable to this project; no bonus and/or penalty are allowed. Acceptance of work will follow the specification as outlined with the clarification below.

Provide performance grade (PG) binders that do not contain Recycled Engine Oil Bottoms (REOBs) or Poly Phosphoric Acid (PPA).

For Mixture Design Verification, provide the Engineer with two 5-gallon buckets of each aggregate stockpile to be used on the project and three gallons of each PG binder from the plant to be used on the project. Sufficient quantities of any other additives that will be used in the HMA mixture shall also be provided.

Prior to allowing production of the trial batch, the Engineer will use the materials provided by the Contractor to perform the following tests to verify the HMA mixture design.

1. Indirect Tensile Test in accordance with Tex-226-F
2. Hamburg Wheel Test in accordance with Tex-242-F
3. Overlay Test in accordance with Tex-248-F
4. Cantabro Test in accordance with Tex-245-F

For mixtures designed with a Texas Gyratory Compactor (TGC), the Engineer may require that the target laboratory molded density be raised to no more than 97.5% or may lower the design number of gyrations to no less than 35 for mixtures designed with an SGC if any of the following conditions exist.

1. The Indirect Tensile Test results in a value greater than 200 PSI
2. The Hamburg Wheel Test results in a value less than 3.0 mm
3. The Overlay Test results in a value less than 100 cycles
4. The Cantabro Test results in a value of more than 20% loss

In lieu of or in addition to evaluating the mixture design prior to allowing a trial batch to be produced, the Engineer may also evaluate the mixture produced during the trial batch for compliance with the 4 tests listed above.

Sequence of Construction

1. Install erosion and sedimentation controls prior to any construction activity.
2. Establish pumping or other dewatering system. (See Note 1).
3. Lower lake to a minimum elevation of 883 ft.
4. Maintain lowered lake throughout construction.
5. Excavate channel from station 6+22 to approximately station 5+00 and place acceptable fill materials in auxiliary spillway channel.
6. Install rock riprap in from station 6+22 to approximately station 5+00.
7. Modify dewatering system to manage creek flows through project area.
8. Excavate channel from station 5+00 to station 1+50 and place acceptable fill materials in auxiliary spillway channel.
9. Install rock riprap from station 5+00 to station 1+50.
10. Grout existing 30-inch principal spillway culvert and remove the two 30-inch culverts.
11. Complete fill of auxiliary spillway approach and discharge channel.
12. Construct bridge.
13. Remove existing asphalt roadway.
14. Construct roadway subgrade, base and asphalt surface.
15. Perform site restoration within the limits of construction. Place 4-inches of top soil and revegetate all disturbed areas.

Notes

1. County must approve method to lower and maintain lowered lake. The contractor is required to submit a dewatering plan and shop drawings for approval. Lake lowering may involve pumps, siphons or other means proposed by the Contractor and approved by the County. Excavating the top of dam to the lake elevation and allowing flow over the top of the embankment shall not be allowed. Any method which results in uncontrolled erosion of the embankment shall not be allowed. See Special Project Provisions 31 23 19.01, Care of Water During Construction. The dewatering plan shall include:

    a. Plans and procedures for permanently lowering the lake, handling flood flows, overtopping flows, waves, lake water, tailwater, leakage and dewatering excavations including pumping. Submit plans and procedures at least 30 days prior to the start of the care of water measures. This plan shall outline the Contractor’s proposed work schedules, including shift schedules, beginning and ending dates, and equipment. Modifications to these plans shall be submitted for review by the Engineer prior to implementing the changes.

    b. Shop Drawings - Layouts and details of diversion barriers, diversion siphons, berms, and cofferdams including modifications to existing auxiliary spillway grade and embankment for use in flood protection and dewatering for construction. Layouts, designs, and details shall be prepared by a licensed Professional Engineer in compliance with the state's dam safety

criteria of Title 30 of the Texas Administrative Code, Chapter 299 DAMS AND RESERVOIRS. Include in submittal Texas Commission on Environmental Quality (TCEQ) dam safety manager's written determination as to whether or not the design and construction must comply with state dam safety regulations.

c. Environmental controls associated with excavation dewatering plan.

2. The contractor will develop and implement a Stormwater Pollution Prevention Plan (SWPPP) that meets TCEQ criteria. The plan will be submitted for review and approval by FNI, the County and TCEQ. The construction drawings show minimum locations for temporary sediment control fence and rock filter dams. Additional controls for temporary stabilization will be added by the contractor as needed by his methods.

GOVERNING SPECIFICATIONS (STANDARD SPECIFICATIONS, SPECIAL PROVISIONS, AND SPECIAL SPECIFICATIONS)

WHERE DISCREPANCIES OCCUR BETWEEN THE VARIOUS GOVERNING SPECIFICATIONS, THE SPECIAL PROVISIONS SHALL GOVERN OVER BOTH STANDARD SPECIFICATIONS AND SPECIAL SPECIFICATIONS.

ALL SPECIFICATIONS AND SPECIAL PROVISIONS APPLICABLE TO THIS PROJECT ARE IDENTIFIED AS FOLLOWS:

STANDARD SPECIFICATIONS: ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION NOVEMBER 1, 2014. STANDARD SPECIFICATIONS ARE INCORPORATED INTO THE CONTRACT BY REFERENCE.

ITEMS 1 – 9 ARE SUPERSEDED BY THE CONTRACT GENERAL AND SPECIAL CONDITIONS, WHERE APPLICABLE. WHEREVER, IN THE TXDOT STANDARD SPECIFICATIONS, REFERENCE IS MADE TO THE STATE OF TEXAS, THE DEPARTMENT AND ITS REPRESENTATIVES, SUCH REFERENCE SHALL BE TAKEN TO MEAN WILLIAMSON COUNTY AND ITS REPRESENTATIVES.

Item	TxDOT Specification
100	Preparing Right of Way
105	Removing Treated and Untreated Base and Asphalt Pavement
110	Excavation
132	Embankment
160	Topsoil
164	Seeding for Erosion Control
166	Fertilizer
168	Vegetative Watering
169	Soil Retention Blankets
204	Sprinkling
210	Rolling
216	Proof Rolling
247	Flexible Base
260	Lime Treatment (Road-Mixed)
340	Dense-Graded Hot-Mix Asphalt (Small Quantity)
401	Flowable Backfill
402	Trench Excavation Protection
416	Drilled Shaft Foundations
420	Concrete Substructures
421	Hydraulic Cement Concrete
422	Concrete Superstructures
425	Precast Prestressed Concrete Structural Members

427	Surface Finishes for Concrete
428	Penetrating Concrete Surface Treatment
432	Riprap
434	Bridge Bearings
438	Cleaning and Sealing Joints
440	Reinforcement for Concrete
441	Steel Structures
441	Metal for Structures
445	Galvanizing
448	Structural Field Welding
449	Anchor Bolts
450	Railing
454	Bridge Expansion Joints
500	Mobilization
502	Barricades, Signs, and Traffic Handling
506	Temporary Erosion, Sedimentation, and Environmental Controls
530	Intersections, Driveways, and Turnouts
540	Metal Beam Guard Fence
544	Guardrail End Treatments
618	Conduit
644	Small Roadside Sign Assemblies
SS7032	Water Mains and Service Lines

SPECIAL PROJECT PROVISIONS: THE CONTENT OF THE SPECIAL PROJECT PROVISIONS ARE INCLUDED ON THE FOLLOWING PAGES.

01 29 00	Bid Item Measurement and Payment Procedures
31 23 19.01	Care of Water During Construction
31 23 33	Trenching and Backfill
31 37 00	Partially Grouted Riprap
33 10 13	Disinfecting of Water Utility Distribution
33 42 42	Culvert Abandonment

GENERAL: THE ABOVE-LISTED SPECIFICATION ITEMS AND SPECIAL PROJECT PROVISIONS ARE THOSE IDENTIFIED BY THE ENGINEER AS PERTAINING TO THIS PROJECT. THESE, TOGETHER WITH SUCH OTHER PERTINENT ITEMS, IF ANY, AS MAY BE REFERRED TO IN THE ABOVE-LISTED SPECIFICATION ITEMS AND SPECIAL PROJECT PROVISIONS, CONSTITUTE THE COMPLETE SPECIFICATIONS FOR THIS PROJECT.

SPECIAL PROJECT PROVISIONS

01 29 00 BID ITEM MEASUREMENT AND PAYMENT PROCEDURES

1.00 GENERAL

1.01 MEASUREMENT PROCEDURES

A. Measure the Work described in the Agreement for payment. Payment will be made only for the actual measured and/or computed length, area, solid contents, number and weight, unless otherwise specifically provided. No extra or customary measurements of any kind will be allowed.

1.02 BASIS OF PAYMENT

A. The Basis of Payment is established for the following bid items:

1. MOBILIZATION – Item No. 1

   This item will be described, measured and paid per TxDOT Item 500.

2. Items No. 2 through 5

   These items will be described, measured and paid per the TxDOT Item number listed on the bid form. Preparation, maintenance, and implementation of the SWPPP, and complying with Texas Commission on Environmental Quality (TCEQ) regulations; Texas Pollution Discharge Elimination System (TPDES) General Permit requirements (Permit No. TXR150000), to include submittal and termination of permit notifications, and in accordance with the plans and specifications is subsidiary to these items.

3. PREPARING ROW – Item No. 6

   This item will be described, measured and paid per TxDOT Item 100.

4. CARE OF WATER – Item No. 7

   a. Measurement: No measurements are required.

   b. Payment: Payment shall be at the cost bid per lump sum (LS). Payment shall constitute full compensation for all costs of furnishing the labor, equipment, and materials for any temporary cofferdams, diversions, and drainage channels; installing pumps, siphons, valves, and other equipment as required; dewatering excavations; maintaining the Work free from water; handling storm water runoff; and removing the temporary protective works. Refer to Special Project Prvoisions Section 31 23 19.01, CARE OF WATER DURING CONSTRUCTION. This item shall include handling, removing, and diverting any flood flows and stream flows and any other water encountered during the progress of the work. This item shall include, but is not limited to, all labor, materials, equipment, transportation, submittals, and incidentals necessary to build, maintain, and operate cofferdams, diversion barriers, diversion siphons, channels, flumes, sumps, valves, and other temporary works as needed to manage floodwater, divert river flow, or pass other surface water through or around the construction site and away from construction work while it is in progress. Remove the temporary works, equipment, and materials after completion in strict accordance with the specifications.

Partial payments will be made based upon the ratio of calendar days in the pay request period to the total number of calendar days for the Contract.

5. REMOV STR (PIPE) – Item No. 8

   This item is to remove the two culverts near station 1+20. It will be measured to the linear foot (LF) and paid per TxDOT Item 496.

6. ABANDON 30-INCH CMP – Item No. 9

   a. Measurement: Measurement is not required.

   b. Payment: Payment shall be at the cost bid per lump sum (LS). which price shall constitute full compensation for all costs of furnishing the labor, equipment, and materials for excavation, removing and disposing portions of pipe, furnishing and mixing grout, constructing bulkheads and air vents, placing grout, and backfilling excavations.

7. EXCAVATION – Item No. 10

   This item will be described, measured and paid per TxDOT Item 110.

8. EMBANKMENT – Item No. 11

   This item will be described, measured and paid per TxDOT Item 132.

9. RIPRAP (STONE PROTECTION)(15 IN) and RIPRAP (STONE PROTECTION)(30 IN)– Items No. 12 and 13

   These items will be described, measured and paid per TxDOT Item 432. Filter fabric and grout for the partially grouted riprap, are subsidiary to these items.

10. Rock Vane – Item No. 14

    a. Measurement: Measurement shall be based on linear foot (LF) of rock vane placed to the neat lines and grades indicated on the Drawings with no adjustments for slopes. This is a plans quantity measurement item. Additional measurements or calculations will be made if adjustments of quantities are required. Filter fabric at the rock vanes is subsidiary to the rock vane.

    b. Payment: Payment shall be at the unit price bid per linear foot (LF) of in-place rock vane, which price shall constitute full compensation for all costs of furnishing the labor, equipment, and materials for importing and placing of the geotextile and rock riprap. This item shall include, but is not limited to, transportation, submittals, and incidentals for ground preparation, furnishing and installing geotextile filter, compaction, bedding material, header, footer, sill rocks, and stone filling fine placement. No allowance will be made for increased quantities due to unapproved over-excavation or over-placement, and the quantities in excess of the specified area and thickness will be provided at the Contractor's expense.

11. COIR MATTING – Item No. 15

    a. Measurement: Measurement shall be made by the square yard (SY) of matting complete and in place. Areas shall be measured based on their horizontal projection with no adjustments for sloped surfaces or anchor trenches.

b. Payment: Payment shall be made at the unit price bid per square yard (SY) of matting as shown on the drawings, which price shall be full compensation for providing labor, equipment, materials, water, and weed control, and for maintaining the slopes and areas to receive grassing, placing, watering, fertilizing, and maintaining the areas until final acceptance has been made and other work necessary and incidental to this phase of work.

12. FURNISHING AND PLACING TOPSOIL – Item No. 16

    This item will be described, measured and paid per TxDOT Item 160.

13. FERTILIZER – Item No. 17

    This item will be described, measured and paid per TxDOT Item 166.

14. BROADCAST SEED – Item No. 18

    Seeding to be distributed uniformly over all disturbed areas. After 60 days, areas with little or no growth shall be re-seeded at contractor's expense. This item will be described, measured and paid per TxDOT Item 164.

15. VEGETATIVE WATERING – Item No. 19

    a. Measurement: The Contractor shall obtain water at a source that is metered or shall furnish the manufacturer's specifications showing tank capacity for each truck used. The Contractor shall notify the Inspector prior to watering that the Inspector may verify meter readings or truck counts.

    b. Payment: Payment shall be per TxDOT Item 168.

16. SOIL RETENTION BLANKETS (Class 1, TY D) – Item No. 20

    This item will be described, measured and paid per TxDOT Item 169.

17. TRENCH EXCAVATION PROTECTION – Item No. 21

    Contractor must provide for the safety and health of workers in a trench. The Contractor shall develop, design, and implement the trench safety system. The Contractor shall bear the sole responsibility for the adequacy of the trench safety system and providing "a safe place to work" for the workman. This item will be described, measured and paid per TxDOT Item 402.

18. PIPE WATER MAIN (DI)(8")– Item No. 22

    This item will be described, measured, and paid per TxDOT Item SS7032.

19. 8-INCH COATED 150 PSI STEEL PIPE WITH INSULATION (SUSPENDED - INCLUDES PIPE SUPPORTS) – Item No. 23

    a. Measurement: This item shall be measured by the unit price bid for each horizontal linear foot of pipe installed.

    b. Payment: Payment for this item shall be measured by the unit price bid for each horizontal linear foot of pipe installed and shall be complete (suspended with pipe supports) in place for the type, size and depth constructed. Said price shall be full compensation for furnishing all materials, including pipe, couplings, pipe supports, pumping, concrete, plugs, laying and jointing, hauling, removal of all

spoils, water, labor, all testing, tools, equipment, and other incidentals necessary to complete the work in accordance with the plans and specifications.

20. 8-INCH PVC BYPASS LINE – Item No. 24

    a. Measurement: No measurement is required.

    b. Payment: Payment shall be at the cost bid per lump sum (LS). which price shall constitute full compensation for all costs of providing the bypass line, connecting to the waterline beyond the project limits, maintaining water service throughout the project, protecting the bypass during construction, and removal and disposal of bypass line.

21. REMOVE EXISTING 8-INCH PVC WATERLINE – Item No. 25

    a. Measurement: Waterline removal shall be measured by the unit price bid for each horizontal linear foot of pipe removed.

    b. Payment: Payment for remove existing 8-inch PVC waterline shall be measured by the unit price bid for each horizontal linear foot of pipe removed and shall be complete (excavation backfilled and compacted) in place. Said price shall be full compensation for furnishing all materials, trenching, pumping, concrete, plugs, backfilling, select bedding and initial backfill material, tamping, hauling and disposal of existing pipe, removal of all spoils, water, labor, all testing, tools, equipment, and other incidentals necessary to complete the work in accordance with the plans and specifications.

22. 2-INCH MANUAL AIR RELEASE CORPORATION STOP (COMPLETE)– Item No. 26

    a. Measurement: Work shall be measured at the unit bid price for each manual air release as indicated on the Drawings.

    b. Payment: Payment for the work performed for installation of each air release will be made at the unit price bid for each. This shall include but not be limited to acquisition of the air release, excavation, installation of the valve, backfilling, compaction, site restoration, testing, and hauling and disposal of surplus excavated material.

23. 8-INCH GATE VALVE AND BOX (COMPLETE)– Item No. 27

    This item will be described, measured, and paid per TxDOT Item SS7032.

24. CONCRETE ENCASEMENT FOR WATERLINE- Item No. 28

    a. Measurement: Measurement shall be based on cubic yards (CY) measured to the neat lines, grades, and dimensions indicated on the drawings.

       Payment: Payment for Concrete Encasement of waterline shall be at the unit price bid per cubic yard (CY) of in-place concrete, which shall constitute full compensation for all costs of furnishing the labor, equipment, materials and mix designs for mixing, placing, curing, and finishing of concrete.

25. Items No. 29 through 60

    These items will be described, measured and paid per the TxDOT Item number listed on the bid form.

2.00 PRODUCTS (NOT APPLICABLE)

3.00 EXECUTION (NOT APPLICABLE)

END OF SECTION

31 23 19.01 CARE OF WATER DURING CONSTRUCTION

1.00 GENERAL

1.01 WORK INCLUDED

A. Furnish labor, materials, equipment and incidentals necessary to operate pumps, piping and other facilities to assist in the removal of rainfall, surface water, lake water, tailwater, and ground water, and provide protection from flood waters and waves. Build and maintain the necessary temporary impounding works, cofferdams, dikes, berms, culverts, bridges, channels, flashboards, and diversions. Remove the temporary works, equipment, and materials after completion in strict accordance with this section of the specifications and the applicable drawings.

B. Provide erosion and sediment controls as integral part of care of water in accordance with specifications, drawings, SWPPP and USACE permit for the project.

1.02 SUBMITTALS

A. Submittals shall include:

1. Record Data - Plans and procedures for permanently lowering the lake, handling flood flows, overtopping flows, waves, lake water, tailwater, leakage and dewatering excavations including pumping. Submit plans and procedures at least 30 days prior to the start of the care of water measures. This plan shall outline the Contractor's proposed work schedules, including shift schedules, beginning and ending dates, and equipment. Modifications to these plans shall be submitted for review by the Engineer prior to implementing the changes.

2. Record Data - Evacuation plan for increased water flow conditions due to spillway releases from upstream structures and local drainage.

3. Shop Drawing - Layouts and details of diversion barriers, diversion siphons, berms, and cofferdams including modifications to existing auxiliary spillway grade and embankment for use in flood protection and dewatering for construction. Layouts, designs, and details shall be prepared by a licensed Professional Engineer in compliance with the state's dam safety criteria of Title 30 of the Texas Administrative Code, Chapter 299 DAMS AND RESERVOIRS.

4. Record Data - Environmental controls associated with excavation dewatering plan.

B. Review or approval of submittals does not relieve the Contractor of full responsibility and liability for care of water during construction.

1.03 EXISTING CONDITIONS

A. Inflows are composed of runoff from drainage areas upstream from the site. The drainage basin to the site is approximately 5.5 square miles.

B. The lake level varies based on stream flow. The 30-inch principal spillway culvert maintains a minimum lake level of 889 feet, except in times of no inflow. When inflows exceed the capacity of the 30-inch principal spillway culvert, the lake level rises and the two 30-inch

culverts may engage. Additional inflow may cause overtopping of the roadway near station 1+20, and may overtop the entire dam. The dam has overtopped at least twice since 1970.

C. Contractor shall assume that there will be flow in the creek throughout construction.

2.00 PRODUCTS (NOT APPLICABLE)

3.00 EXECUTION

3.01 FLOOD FLOWS AND OTHER WATER

A. The Contractor is responsible for handling and diverting any flood flows, stream flows, or any other water, including groundwater encountered during the progress of the work. Build, maintain, and operate cofferdams, channels, flumes, sumps, and other temporary works as needed to pass floodwater or divert stream flow or pass other surface water through or around the construction site and away from construction work while it is in progress. Secure, operate, move, or otherwise take action to protect all equipment, materials, and supplies. Unless otherwise approved by the Engineer, a diversion must discharge into the same natural watercourse in which its headworks are located. Full responsibility for the successful dewatering of the work areas and control of flows away from the Work areas rest with the Contractor. Remove protective works, after they have served their purpose, in a manner satisfactory to the Engineer.

B. Contractor shall not extend the tops of the cofferdams, berms, or other systems for care of water so as to cause the 100-year flow to exceed the 100-year level with the dam in pre-construction condition.

3.02 DEWATERING EXCAVATED AND OTHER FOUNDATION AREAS

A. The Contractor is responsible for dewatering foundations for all areas during construction of the works of improvement, including areas of required backfills. Lower the water table as needed to keep work areas free of standing water or excessive muddy conditions as needed for proper performance of the construction work as indicated in the specifications. Furnish, prepare, and maintain drains, sumps, casings, well points, and other equipment needed to dewater areas for required construction work. Any dewatering method that causes a loss of fines from foundation areas shall not be permitted. Keep available standby equipment to assure the proper and continuous operation of any dewatering systems. Provide continuous monitoring (24 hours per day) of the dewatering system to assure continuous operation.

3.03 EVACUATION OF SITE DURING INCREASED FLOWS AND FLOODING CONDITIONS

A. Protect and remove all equipment, materials, and personnel during normal flow conditions and increased flow conditions resulting from local drainage or any other increased flow condition. Any damage or loss of equipment and materials shall be at the Contractor's sole expense. The County shall not be liable for any damages or costs associated with Contractor's failure to adequately protect the work areas or to move equipment, personnel, and materials.

3.04 LAKE LOWERING

A. Contractor may lower the lake via pumps, siphons, or other means proposed by the Contractor and approved by the Engineer.

B. Excavating the top of dam to the lake elevation and allowing flow over the top of the embankment shall not be allowed.

C. Any method which results in uncontrolled erosion of the embankment shall not be allowed.

END OF SECTION

31 23 33 TRENCHING AND BACKFILL

1.00 GENERAL

1.01 WORK INCLUDED

A. Furnish labor, materials, equipment and incidentals necessary to perform operations in trenching, pipe bedding, backfilling, clearing, grubbing and site preparation; handling, storage, transportation and disposal of excavated material; pumping and dewatering; preparation of subgrades; protection of adjacent property; fills, grading; and other appurtenant work. Trenching, backfilling, and pipe embedment procedures shall be in full compliance with TxDOT Item 402, Trench Excavation Protection. Earth removed from excavations and which is not required for backfill shall be removed from the Site by the Contractor at his own expense, unless arrangements are made with the Engineer to allow disposal on Site. If permitted, the Contractor shall dump and spread excess earth in a manner agreed upon by the Contractor and the Engineer. Excavations, other than trench excavation, are not part of this Section.

1.02 QUALITY ASSURANCE

A. Classification:

1. Excavations shall include material of whatever nature encountered, including but not limited to clays, sands, gravels, conglomeritic boulders, weathered clay shales, rock, debris and abandoned existing structures. Excavation and trenching shall include the removal and subsequent handling of materials excavated or otherwise handled in the performance of the Work.

2. Bidders must satisfy themselves as to the actual existing subsurface conditions prior to the submittal of a proposal to complete the proposed Work.

3. Trench excavation shall consist of excavation to the lines and grades indicated, required for installation of the pipe, pipe bedding, backfill, and to accommodate trench safety systems.

1.03 SUBMITTALS

A. Submittals shall include:

1. Sieve analysis on embedment materials.

2. Test results indicating soil resistivity for embedment material used on metal pipe.

1.04 REFERENCE SPECIFICATIONS

A. TxDOT Item 402, Trench Excavation Protection

1.05 STANDARDS

A. The following publications, referred to hereafter by basic designation only, form a part of this Section to the extent indicated by the references thereto:

1. American Society for Testing and Materials (ASTM) Standards:

ASTM C33	Standard Specification for Concrete Aggregates
ASTM C88	Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C125	Standard Terminology Relating to Concrete and Concrete Aggregates
ASTM C131	Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C535	Standard Test Method for Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Lost Angeles Machine
ASTM D448	Standard Classification for Size of Aggregate for Road Bridge Construction
ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lb/ft^3 (600 kN-m/m^3)
ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D2487	Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D4253	Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table
ASTM D4254	Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density
ASTM D6938	Standard Test Method for In-Place Density and Water Content of Soil and Soil-aggregate by Nuclear Methods (Shallow Depth)
ASTM G57	Standard Test Method for Field Measurement of Soil Resistivity Using the Wenner Four-Electrode Method

B. Any other testing required by these specifications and not specifically referenced to a standard shall be performed under ASTM or other appropriate standards as designated by the Engineer.

C. Reference herein or on the Drawings to soil classifications shall be understood to be according to ASTM D2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

1.06 DELIVERY AND STORAGE

A. Excavated materials to be used for backfill may be deposited in stockpiles at points convenient for rehandling the material during the backfilling process. The location of stockpiles shall be within the limits of construction easements or public right-of-way. The location of stockpiles is subject to the approval of the Engineer. Keep drainage channels clear of stockpiled materials.

1.07 JOB CONDITIONS

A. Place no embedment or backfill material during freezing weather or upon frozen subgrades or previously placed frozen embedment or backfill materials.

2.00 PRODUCTS

2.01 MATERIALS

A. Class 12 Earth Fill: Consist of soils suitable for topsoil which are relatively free of stones or other objectionable debris, which have sufficient humus content to readily support vegetative growth. The suitability of soils for topsoil shall be subject to the approval of the Engineer.

B. Class 10 Aggregate Fill: Consists of washed and screened natural sands or sands manufactured by crushing stones complying with the requirements and tests of "Standard Specifications for Concrete Aggregates", ASTM C33. The gradation as included in ASTM C33 is as follows:

Sieve Size Square Opening	Percent Passing
3/8"	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	10-30
No. 100	2-10

1. Class 10 Aggregate Fill shall have not more than 45 percent passing any sieve and retained on the next consecutive sieve of those shown above, and its fineness modulus, as defined in ASTM C125, shall be not less than 2.3 nor more than 3.1.

2.02 MIXES; SAND-CEMENT BACKFILL

A. A minimum sand and cement mixture of 25 parts sand and 2 parts cement will be required.

1. Fine Sand: 25 Cubic Feet.
2. Cement: 2 Bags (minimum).
3. Water: Optimum moisture.

B. Sand shall be free of any cohesive material and shall meet the following gradation and plasticity index requirements:

Sieve Size	Percent Passing
1"	100
1/2"	95-100

No. 40	80-100

C. PI and LL Amounts:

1. Plasticity Index: 10 Maximum.
2. Liquid Limit: 25 or less.

3.00 EXECUTION

3.01 PREPARATION

A. Site:

1. Clear sites of logs, trees, roots, brush, tree trimmings and other objectionable materials and debris which are to be occupied by pipe trenches, and grub stumps. Designate material not salvaged for reuse as surface material as spoiled and dispose of material in accordance with Paragraph 3.01.E, Disposal of Spoil Material.
2. Do not remove trees outside of the required working area unless their removal is authorized in writing by the Engineer and with the approval of the local governing authority. Adequately protect the trees left standing from permanent damage by construction operations. Standing trees may be trimmed where necessary to facilitate construction, but only with written authorization from the Engineer.

B. Dewatering:

1. Provide and maintain adequate dewatering equipment to remove and dispose of surface and ground water entering the excavations, trenches, or other parts of the Work. Keep each excavation dry during subgrade preparation and continually thereafter until the proposed pipe is installed. Maintain the proper procedures necessary to protect against damage to the proposed Work from hydrostatic pressure, flotation, or other water related causes.
2. Dewater excavations which extend down to or below ground water elevation by lowering and keeping the ground water level a minimum of 2 feet below the bottom of the excavation.
3. Divert surface water or otherwise prevent water from entering excavated areas to the fullest extent possible without causing damage to adjacent property.
4. Provide and maintain any piping or conduit necessary to facilitate drainage. Do not alter area drainage patterns to the extent that adjacent property and landowners become threatened with localized flooding and/or water damage. Should such a situation occur, the Contractor shall be responsible for repairing the damage at no additional cost to the County.

C. Protection of Existing Structures and Utilities:

1. Prior to the start of construction, communicate with the representatives of the local utility companies, including the oil, gas, telephone and communications companies, and local water and sewer utilities operating in the location of the proposed construction area. Seek the utility companies' assistance in locating existing facilities to avoid conflicts during construction. The location, number, depth, and owner of utilities

indicated are for information purposes only, and all utilities and structures may not be shown or may not be in the location shown.

2. Where construction endangers adjacent structures, utilities, embankments and/or roadways, the Contractor shall, at this own expense, carefully support and protect such structures so that no damage occurs throughout the construction process. In case damage should occur, the Contractor shall be responsible for restoring the damaged structure to a condition acceptable to the County of that structure and shall bear all cost of such reparations.

3. Repair or replace damaged street surfaces, driveways, sidewalks, curbs, gutters, fences, drainage structures, or other such facilities to the satisfaction of the County. Structures shall be returned to a condition equal to or better than the original condition and of same or better material and quality.

D. Blasting: Blasting shall not be allowed in any instance.

E. Disposal of Spoil Material:

1. Suitable material from excavations which meets the requirements for pipe backfill material as indicated, except stripping excavation, may be reused. Designate the remaining excavated materials as spoiled material and dispose of material off the Site in accordance with all applicable laws, ordinances, and codes. Contractor shall be responsible for the storage, transportation, and deposition of spoiled material and shall be responsible for acquiring the necessary permits, and the payment of fees and duties at no additional cost to the County.

2. No burning of materials shall be permitted on the Site.

3.02 TRENCH EXCAVATION

A. General: The trenches shall be excavated to the alignment and depth indicated or as necessary for the proper installation of the pipe and appurtenances. Brace and dewater the trench if necessary so that the workmen may work therein safely and efficiently. Any specific requirement listed in Paragraph 3.00, Execution, may be modified as necessary to meet OSHA requirements. However, if trench widths are wider than indicated, the Contractor shall be responsible for determining and furnishing the proper class of embedment and piping for the installation with no additional compensation to the Contractor.

B. Trench Width: The trench widths shall be as shown on the Drawings.

C. Pipe Foundation Subgrade:

1. Excavate the trench to an even grade to permit the installation of the pipe so that the full length of the pipe barrel is supported on the proper depth of bedding material. The entire foundation subgrade area in the bottom of the excavations shall be firm, stable material, and the material shall not be disturbed below required grade except as described in this Section. Where the character of the subgrade material is such that proper subgrade cannot be obtained at the elevation indicated, deepen the excavation to a satisfactory subgrade material.

2. Remove the material until a firm, stable, and uniform bearing is reached and the subgrade brought back to the required grade with the specified bedding material

compacted in place or with lean concrete material. The expense of replacing any unsatisfactory subgrade shall be borne by the Contractor.

D. Correcting Faulty Grade: Should any part of the trench be excavated below required grade, correct the trench with bedding material, thoroughly compacted, or with lean concrete, at no additional compensation to the Contractor.

E. Care of Surface Material for Reuse: If local conditions permit reuse, keep surface material suitable for reuse separate from the general excavation material.

F. Trenching Methods: The use of any suitable trench digging machinery is permitted except in places where such operations may cause damage, above or below ground, in which case, employ hand methods.

G. Pipe Clearance in Rock: Remove ledge rock, rock fragments, shale, or other rock to provide proper clearance for bedding materials. Provide adequate clearance for properly jointing pipe laid in rock trenches at bell holes.

3.03 BACKFILL

A. Aggregate Fill Bedding:

1. After the trench has been cut to the depths indicated, bring up the bedding layer to a point slightly above grade in maximum 4-inch lifts and uniformly compact to the density indicated. Form bell holes and scoop out a trough to grade so that the pipe is uniformly supported by the embedment material. Lay and joint the pipe. Bring up the embedment material in maximum 4-inch lifts on either side of the pipe to the elevation above the pipe shown on the Drawings. Uniformly compact the pipe as indicated.

2. After moisture is gone from the embedment material, place utility detection tape and backfill and compact the remaining backfill by tamping or other appropriate methods. Water jetting shall not be permitted.

B. Compaction Requirements:

1. Compact earth fill and cohesive aggregate fill in maximum 4-inch lifts with pneumatic rollers or power hand tampers and make a minimum of eight passes.

2. Compact cohesionless aggregate fill in maximum 4-inch lifts with vibratory rollers or vibratory plate power hand compactors and make a minimum of eight passes.

3. The acceptability of the compaction equipment shall be based upon the results of a test section. Compact earth fill and cohesive aggregate fill to a minimum of 95 percent of maximum dry density as determined by ASTM D698, Standard Proctor.

4. Compact Class 1 and 2 earth fill at a moisture content within minus 0 to plus 5 percentage points of the optimum moisture content. Compact the remaining classes of earth fill and cohesive aggregate fill at a moisture content within minus 2 to plus 5 percentage points of optimum moisture content. The moisture ranges listed above are minimum and maximum limits. A tighter moisture range within these limits may be required to consistently achieve the specified density.

5. Compact cohesionless aggregate fill on which it is not practical to control the density by “Proctor” methods to a minimum of 75 percent relative density as determined by ASTM

D4253 and D 4254, or at the discretion of the Engineer, by a field compaction mold method correlated to ASTM D4253 and D 4254.

6. Compact cohesionless aggregate fill at a moisture content within a range that accommodates consistent placement and compaction to the minimum relative density specified above.

3.04 FINISHING

A. Grade and rake areas smooth and even which do not receive any type of paved surface, to allow drainage to drain away from the structures and toward the roads and streets or the natural drainage course. Break up large clods of earth and remove rocks, trash or debris near the surface.

B. Finish the top portion of backfill beneath established sodded (lawn) areas with not less than 6 inches of topsoil corresponding to, or better than, that underlying adjoining sodded areas.

3.05 FIELD QUALITY CONTROL

A. Compact backfill and appropriate embedment material to a minimum of 95 percent of maximum density at a moisture content of 0 to plus 5 percent of optimum for backfill and at optimum for sand-cement embedment as determined by ASTM D698, Standard Proctor.

B. Make periodic tests of compaction for conformance with this Section by an approved testing laboratory selected and paid for by the Owner. Contractor shall pay for re-testing until acceptable test results are obtained.

3.06 CLEAN AND ADJUST

A. Remove surplus pipeline materials, tools, rubbish and temporary structures and leave the construction site clean, to the satisfaction of the Engineer.

END OF SECTION

31 37 00 PARTIALLY GROUTED RIPRAP

1.00 GENERAL

1.01 WORK INCLUDED

A. Furnish labor, materials, equipment, tools and incidentals necessary to produce and place the riprap.

1.02 SUBMITTALS

A. Grout Mix Design

2.00

2.00 PRODUCTS

2.01 MATERIALS

A. Grout:

1. Grout shall be composed of 1 part Portland cement, 2 parts fine aggregate (sand) and 2 parts ¼-inch minus aggregate. The portland cement and aggregate shall be dry-mixed to a uniform mixture. Water shall be added as the mixing continues until the grout attains a consistency that will enable it to flow into the openings. wet grout density ranging from 120 to 140 lb/cu ft.
2. Minimum 28-day compressive strength of 3,000 psi.
3. Minimum air content of 5 percent.
4. Anti-washout additive if grout will be placed underwater
5. Consistency for placement shall be tested using the standard slump test. The diameter of the grout is measured after pulling the cone without tapping, and then again after 15 taps on the test table. Target values for the measurement are as follows:
    a. For placement in the dry: 34 to 38 cm diameter without tapping, 50 to 54 cm after 15 taps.
    b. For placement under water: 30 to 34 cm without tapping, 34 to 38 cm after 15 taps

3.00 EXECUTION

3.01 GROUT PLACEMENT

A. Grout shall be placed at a rate of 3.4-4.1 cu ft/sq yd of riprap in a 1 ft by 1 ft grid line pattern. The grout line shall be placed with 2/3 of the grout line residing in the upper half of the riprap layer and 1/3 of the grout line penetrating into the lower half. Grout shall be placed by a hose or tremie, or by automated mechanical means.

END OF SECTION

33 10 13 DISINFECTING OF WATER UTILITY DISTRIBUTION

1.00 GENERAL

1.01 WORK INCLUDED

A. Disinfect the facilities for pumping, storing, or conveying potable water to comply with the standards for potable water of the regulatory agency of jurisdiction. Potable water is defined as any water that has been filtered, disinfected or otherwise treated to the meet regulatory standards (in the water treatment plant this includes the inside surfaces of the filters).

B. Disinfect piping systems that are used to convey water, solutions, or chemicals to the potable water facilities.

C. Test water from the disinfected system per regulatory standards to verify that water is acceptable. Repeat procedure if tests do not meet standards.

2.00 PRODUCTS

2.01 MATERIALS

A. Liquid Chlorine: Meeting the requirements of AWWA B301.

B. Calcium Hypochlorite: Meeting the requirements of AWWA B300.

3.00 EXECUTION

3.01 NEW FACILITIES

A. Coordinate with the facility owner prior to disinfection to ensure that disinfection procedures are acceptable, and an owner's representative is present if needed.

B. New facilities shall be thoroughly disinfected in accordance with AWWA Standard C651 - Water Mains, C652 - Storage Facilities, C653 – Water Treatment Plants, and then flushed and sampled before being placed in service. Samples shall be collected and tested in accordance with the TCEQ Rules and Regulations, Chapter 290.

C. During construction keep basins, pipe, fittings, equipment, and appurtenances free from dirt and debris.

1. Clean basins thoroughly before disinfection.

2. Seal the open ends of pipe with water-tight plugs when pipe is not being laid.

3. Pump water from trenches before removing the plug when water accumulates in the trench.

D. Complete hydrostatic test of the line prior to disinfection.

E. Wash the surfaces to be disinfected.

1. Flush pipelines. The minimum quantity of water used for flushing must exceed the capacity of the line to ensure that clean water has traversed the entire length of pipe.

2. Power wash the surfaces of basins and reservoirs using high pressure wash systems.

F. Disinfect facilities per the following procedures of AWWA:

1. Water Mains: C651 - latest revision.
2. Water Storage Facilities: C652 - latest revision.
3. Water Treatment Plants: C653 - latest revision.

G. Fill the system with potable water. Test the water to see that it meets the requirements of the regulatory agency of jurisdiction for potable water. Monitor the system for 2 days. If water test fails to meet the prescribed standards, repeat the disinfection process until water meets quality standards for disinfection.

3.02 REPAIRS OR CONNECTIONS TO EXISTING LINES

A. Clean and sterilize the interior surfaces of new piping, fittings, equipment, and appurtenances to be installed in an existing potable water system or connected to an existing system.

B. Clean and sterilize the existing pipe or facilities for a minimum distance of 3 pipe diameters back from the ends of the pipe. Plug the ends of the line when work is not being performed on the pipe.

C. Perform sterilization by swabbing each item with a concentrated chlorine solution.

1. Each piece is to be disinfected prior to being assembled for installation in the existing pipe.
2. Disinfect each piece just prior to assembly to help prevent re contamination.
3. Plug the ends of the assembly until a new item is to be added to the assembly.
4. Store disinfected materials on blocks to prevent contact with the ground.

3.03 DISPOSAL OF FLUSHING AND DISINFECTION WATER

A. Chlorinated water used in flushing and disinfecting pipelines, storage tanks, or vessels prior to connection to the distribution system shall be disposed of by the Contractor in an acceptable manner. Chlorinated water must be “de-chlorinated” prior to disposal to eliminate adverse impacts to the surrounding environment. Water released to the environment shall meet all AWWA, EPA, and TCEQ regulatory requirements.

1. The Contractor is responsible for complying with all of the applicable requirements of the TPDES General Permit TXG670000, issued by the TCEQ, regarding the discharge of hydrostatic test water.
2. Residual chlorine concentrations may be reduced using sulfur dioxide, sodium bisulfite, sodium sulfite, sodium thiosulfate, or ascorbic acid.
3. The discharge must be to a splash pad or paved area, and may not be located within 300 feet of the intake for a domestic drinking water supply or 500 feet of any public or private water well.
4. An effluent water sample must be taken during the first hour of discharge at a location immediately near the point of discharge, and collected prior to commingling with storm water, wastewater, or other flows.

5. For discharges that extend beyond an hour in duration, a second sample must be taken of the last 10 percent of the effluent.
6. Sampling protocol, sample containers, holding times, preservation methods, and analytical methods must follow the requirements set forth in the general permit.
7. The effluent grab sample(s) must be analyzed for total residual chlorine by an accredited and certified laboratory.
8. Any noncompliance that endangers human health or safety, or the environment must be reported to the TCEQ in accordance with the general permit.
9. Any effluent violation which deviates from the permitted effluent limitation by more than 40 percent must be reported to the TCEQ in accordance with the general permit.
10. The Contractor must record all hydrostatic test water sample results on an approved DMR (EPA Form 3320-1). These monitoring records shall be retained for a period of 3 years from the date of the record and be readily available for review by the TCEQ upon request. See attached form

B. With the written permission of the Owner of the system, chlorinated water may be disposed of in a sanitary sewer system if one is available. In the case of larger pipelines and the larger volumes of water involved, the Contractor will not be permitted to use the sanitary sewer system for disposal even if one is available.

END OF SECTION

33 42 42 CULVERT ABANDONMENT

1.00 GENERAL

1.01 WORK INCLUDED

A. Furnish labor, materials, equipment, tools and incidentals necessary to dispose of portions of the existing principal spillway corrugated metal pipe and fill the remaining culverrt with non-shrink grout.

1.02 SUBMITTALS

A. Shop drawings, materials, and installation procedures for filling the pipe with grout.

B. Grouting procedures for filling the culvert with grout, including description of proposed grouting equipment and backup equipment, piping, valves, fittings and other equipment, proposed field trial test plan, sequencing of operations, and proposed methods to vent air from the pipes. The proposed method of grouting shall be designed to completely fill the pipes to ensure that no air voids remain.

C. Final concrete grout mix design.

2.00 PRODUCTS

2.01 MATERIALS

A. Non-Shrink Grout:

1. Grout mix shall be non-shrink with a water-to-cement ratio of no more than 0.40.
2. A maximum of 4 sacks per cubic yard of Portland cement will be used in the grout mix. Portland cement shall conform to the requirements of DMS-4600, and shall be Type I.
3. Aggregates shall conform to the requirements of Item 421, Hydraulic Cement Concrete.
4. Fly ash may be substituted for up to 20% of the Portland cement by weight. Fly ash shall conform to the requirements of DMS-4610, Fly Ash.
5. A plasticizing admixture shall be added at the site for flowability. Admixtures shall conform to the requirements of Material Specification 533, Chemical Admixtures for Concrete.
6. Grout shall have a minimum 28-day compressive strength of 2,500 psi.

3.00 EXECUTION

A. Culvert shall have all sediment and debris removed and flushed with clear water prior to pumping grout.

B. Grout shall be pumped from the downstream end of the culvert.

C. A vent tube of minimum ¾" diameter shall be located at the culvert's upstream end and shall rise at least one foot above the pipe crown. Grout shall be placed until all air is vented and competent grout remains in the riser vent.

D. A hold pressure of 5 pounds per square inch (psi) shall be required until the grout sets to ensure complete filling.

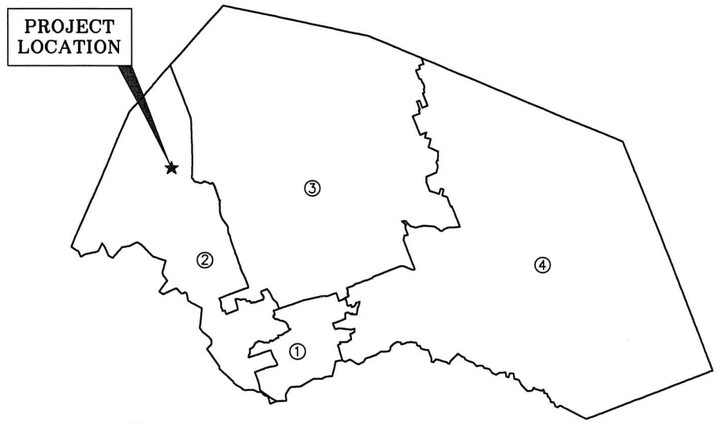
E. The upstream and downstream ends of the abandoned, grouted pipes shall be covered with a minimum of 3 feet of earthfill and blended into adjacent surfaces.

END OF SECTION

WILLIAMSON COUNTY, TEXAS

CONSTRUCTION PLANS FOR

SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK



Ⓧ PRECINCT

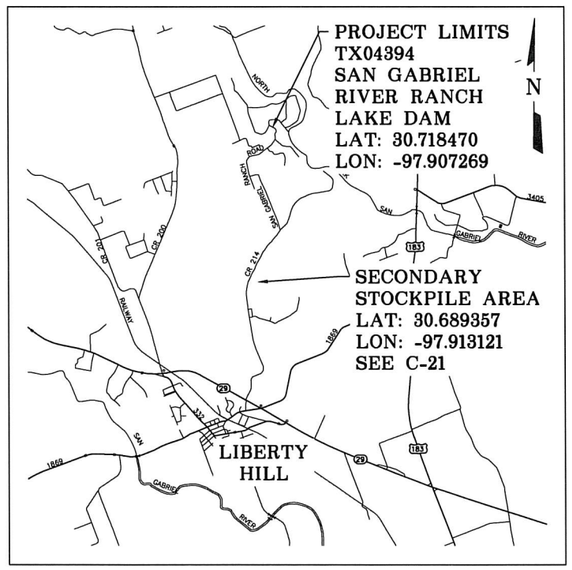
WILLIAMSON COUNTY
LOCATION MAP
N.T.S.

MARCH 2018

FUNCTIONAL CLASSIFICATION - COLLECTOR
PROJECT DESIGN SPEED - 15 MPH
2013 ADT - 1118

GENERAL PROJECT INFO:
CONSTRUCTION OF SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK FOR REMOVAL OF SAN GABRIEL RIVER RANCH LAKE DAM. CONSISTING OF GRADING, DRAINAGE, CHANNEL EXCAVATION, STRUCTURES, SUBGRADE STABILIZATION, FLEX BASE, ASPHALT PAVING, MBGF AND SIGNING.

LIMITS:
FROM THE INTERSECTION OF REMUDA DRIVE AND SAN GABRIEL RANCH ROAD TO SOUTH OF LACKEY CREEK, APPROXIMATELY 570 LF IN LENGTH.



VICINITY MAP
N.T.S.

STATE OF TEXAS
DUSTIN G. MORTENSEN
100000
LICENSED
PROFESSIONAL ENGINEER
3/14/2018

TXDOT STANDARD SPECIFICATION FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES ADOPTED ON NOVEMBER 1, 2014 AND ALL APPLICABLE SPECIAL PROVISIONS AND SPECIAL SPECIFICATIONS AS INDICATED IN THE BID DOCUMENTS SHALL GOVERN ON THIS PROJECT.

WILLIAMSON COUNTY
DEPARTMENT OF INFRASTRUCTURE
3151 S.E. INNER LOOP, SUITE B
GEORGETOWN, TEXAS 78626
512-943-3330
www.wilco.org

WILLIAMSON COUNTY 1848

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Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

WIC16278

APPROVED AND RECOMMENDED FOR CONSTRUCTION

J. TERRON EVERTSON, P.E. COUNTY ENGINEER 3/16/18 DATE

ACAD Rel 19.0s (LMS Tech) User: CJG
[DDL12372][N:\STANDARD\CV-TOL-PL-COVER.DWG LAYOUT: Layout1
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3/13/2018 12:58 PM
Date: Mar 13, 2018 - 3:58pm User: 02462 File: N:\STANDARD\GN-COVER.dwg

SYMBOLS LEGEND

- DRAINAGE EASEMENT
- EXISTING PROPERTY LINE
- RIGHT-OF-WAY LINE
- 358 EXISTING CONTOUR
- CONSERVATION POOL
- EDGE OF WATER
- —X— EXISTING FENCE
- OE EXISTING OVERHEAD ELECTRIC LINES
- FOC FOC EXISTING FIBER OPTIC LINE
- W EXISTING WATER LINES
- LOC LIMITS OF CONSTRUCTION
- EXISTING EDGE OF PAVEMENT
- SF SF SF SILT FENCE
- TEMPORARY CONSTRUCTION EASEMENT
- B-X EXISTING BOREHOLES
- EXISTING POWER POLE
- CP#53 EXISTING BENCHMARK
- WATER LEVELS
- CONCRETE
- STABILIZED CONSTRUCTION ENTRANCE
- ROCK RIPRAP
- COIR MAT
- CUT SLOPE
- FILL SLOPE
- LEFT RIGHT ORIENTATION WHEN LOOKING DOWNSTREAM
- SECTION NUMBER / DIRECTION IN WHICH SECTION IS TAKEN / SHEET ON WHICH SECTION IS SHOWN
- DETAIL NUMBER / SHEET ON WHICH DETAIL IS TAKEN

ABBREVIATIONS

ADD'L	ADDITIONAL
APPROX.	APPROXIMATELY
℄, BL	BASELINE
BMP	BEST MANAGEMENT PRACTICE
BM	BENCH MARK
C/C	CENTER TO CENTER
CFS	CUBIC FEET PER SECOND
℄	CENTERLINE
CLR	CLEAR
CJ	CONSTRUCTION JOINT
CT. J.	CONTRACTION JOINT
DEG.	DEGREES
ø	DIAMETER
DWLS	DOWELS
DS	DOWNSTREAM
EA	EACH
EF	EACH FACE
EW	EACH WAY
E	EAST, EASTING
ELEV., EL	ELEVATION
EQ	EQUAL
EQ SPA	EQUALLY SPACED
EXIST.	EXISTING
EXP JT	EXPANSION JOINT
', FT	FEET
℄	FLOW LINE
I.D.	INSIDE DIAMETER
IF	INSIDE FACE
",IN.	INCHES
LOC	LIMITS OF CONSTRUCTION
MAX.	MAXIMUM
MIN.	MINIMUM
NOI	NOTICE OF INTENT
N	NORTH, NORTHING
N.T.S.	NOT TO SCALE
O.C.	ON CENTER
OF	OUTSIDE FACE
PSI	POUNDS PER SQUARE INCH
R	RADIUS
REINF.	REINFORCED, REINFORCING
RQMT.	REQUIREMENT
SCH.	SCHEDULE
SHT.	SHEET
SF	SILT FENCE
SPA	SPACING
STA.	STATION
STD	STANDARD
S.S.	STAINLESS STEEL
SWPPP	STORM WATER POLLUTION PREVENTION PLAN
S.D.	STUB DIVERSION
T & B	TOP AND BOTTOM
TYP	TYPICAL
U.N.O	UNLESS NOTED OTHERWISE
US	UPSTREAM
WPAP	WATER POLLUTION ABATEMENT PLAN
YR	YEAR

INDEX OF DRAWINGS

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G-5	TEMPORARY EROSION CONTROL
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C-3	TYPICAL SECTIONS
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S-6	ABUTMENT 3 PLAN
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S-8	BENT 2 PLAN
S-9	FRAMING PLAN
S-10	SLAB PLAN AND DETAIL
S-11	HANGER DETAIL & PROFILE

TXDOT STANDARD DETAILS

~GF(31)-14	METAL BEAM GUARD FENCE
~MBGF(SR)-11	METAL BEAM GUARD FENCE (SHORT RADIUS)
~GF(31)TL2-11	METAL BEAM GUARD FENCE TRANSITION
~GF(31)DAT-14	METAL BEAM GUARD FENCE (DOWNSTREAM ANCHOR TERMINAL)
~GF(31)MS-17	METAL BEAM GUARD FENCE (MOW STRIP)
~BED-14	BRIDGE END DETAILS
~SGT(8)31-17	SINGLE GUARDRAIL TERMINAL (SKT-31) WOOD POST
~TE(HMAC)-11	TAPERED EDGE DETAILS HMAC PAVEMENT
~EC(1)-16	TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTRO MEASURES (FENCE & VERTICAL TRACKING)
~EC(2)-16	TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES (ROCK FILTER DAMS)
~EC(3)-13	TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES (CONSTRUCTION EXITS)
~EC(9)-16	TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES (EROSION CONTROL LOG)
~TSR(3)-13	TYPICAL SIGN REQUIREMENTS (INDEPENDENT MOUNTED)
~TSR(4)-13	TYPICAL SIGN REQUIREMENTS (INDEPENDENT MOUNTED)
~SMD(GEN)-08	SIGN MOUNTING DETAILS - GENERAL NOTES/DETAILS
~SMD(SLIP-1)-08	SIGN MOUNTING DETAILS - GENERAL NOTES/DETAILS
~SMD(SLIP-2)-08	SIGN MOUNTING DETAILS - TRIANGULAR SLIPBASE SYSTEM
~SMD(SLIP-3)-08	SIGN MOUNTING DETAILS - TRIANGULAR SLIPBASE SYSTEM

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED WITH A "~" HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

SEAN BARRY, P.E. NO. 114177 — DATE 3/14/2018

STATE OF TEXAS · SEAN D. BARRY · 114177 · LICENSED · PROFESSIONAL ENGINEER

*IGD	PRESTRESSED CONCRETE I-GIRDER DETAILS
*IGND	PRESTRESSED I-GIRDER NON-STANDARD DESIGNS
*IGEB	ELASTOMERIC BEARING & GIRDER END DETAILS
*IGCS	CONTINUOUS SLAB DETAILS
*IGMS	MISCELLANEOUS SLAB DETAILS
*IGTS	THICKENED SLAB END DETAILS
*MEBR (C)	MINIMUM ERECTION AND BRACING REQUIREMENTS
*BAS-A	BRIDGE APPROACH SLAB, (ACP)
*FD	COMMON FOUNDATION DETAILS
*T221	CONCRETE PARAPET (32" TALL)
*C221	T221 W/STEEL PIPE RAIL (42" TALL)
*BRSM	BRIDGE RAISED SIDEWALK AND MEDIAN DETAILS
*SEJ-A	SEALED EXPANSION JOINT (TYPE A)
*BS-EJCP	BRIDGE SIDEWALK EXPANSION PLATE (ALL SKEWS)
*PCP	PRE-STRESSED CONCRETE PANELS DECK DETAILS
*PMDF	PERMANENT METAL DECK FORMS
*CSAB	CEMENT STABILIZED ABUTMENT BACKFILL
*CRR	CONCRETE RIPRAP (TYPE RR8 & RR9)

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED WITH A "*" HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

ANTONIO DIAZ, P.E. NO. 32713 — DATE 3/13/18

STATE OF TEXAS · ANTONIO DIAZ · 32713 · LICENSED · PROFESSIONAL ENGINEER

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

STATE OF TEXAS · DUSTIN G. MORTENSEN · 100000 · LICENSED · PROFESSIONAL ENGINEER
3/14/2018

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WILLIAMSON COUNTY, TEXAS

SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK

GENERAL NOTES AND SHEET INDEX

F&N JOB NO.	WIC16278
DATE	03/13/18
DESIGNED:	SV
DRAWN:	MDB
REVISED:	
CHECKED:	AD
FILE NAME	GN-WIC-INDEX.dwg

NO.	ISSUE	BY	DATE

Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

VERIFY SCALE 0 1"

SHEET G-1

SEQ.

ITEM - CODE			DESCRIPTION	UNIT	TOTAL		
ITEM NO.	DESC CODE	SP NO			EST.		FINAL
500	6001		MOBILIZATION	LS	1		
506	6002		ROCK FILTER DAMS (INSTALL) (TY 2)	LF	210		
506	6011		ROCK FILTER DAMS (REMOVE)	LF	210		
506	6038		TEMP SEDMT CONT FENCE (INSTALL)	LF	645		
506	6039		TEMP SEDMT CONT FENCE (REMOVE)	LF	645		
100	6001		PREPARING ROW	AC	3.2		
			Care of Water During Construction	LS	1		
496	6007		REMOV STR (PIPE)	LF	48		
			ABANDON 30-INCH CMP	LS	1		
110	6004		EXCAVATION (ROADWAY AND CHANNEL)	CY	15,000		
132	6007		EMBANKMENT (FINAL)(ORD COMP)(TY D)	CY	10,000		
432	6032		RIPRAP (STONE PROTECTION)(15 IN)	CY	500		
432	6036		RIPRAP (STONE PROTECTION)(30 IN)	CY	3,000		
			Rock Vane	LF	200		
			Coir Mat - Erosion Control	SY	1,400		
160	6003		FURNISHING AND PLACING TOPSOIL (4")	SY	6,900		
166	6001		FERTIILZER	AC	1.5		
164	6003		BROADCAST SEED (PERM) (RURAL) (CLAY)	SY	6,900		
168	6001		Vegetative Watering	MG	257		
169	6004		SOIL RETENTION BLANKETS (CL 1) (TY D)	SY	5,500		
402	6001		TRENCH EXCAVATION PROTECTION	LF	688		
7032	6132		Pipe Water Main (DI)(8")	LF	288		
			8-inch Coated 150 psi Steel Pipe with Insulation (Suspended - includes pipe supports	LF	138		
			8-inch PVC Bypass Line	LS	1		
			Remove Existing 8-inch PVC Waterline	LF	460		
			2-inch Manual Air Release Corporation Stop (Complete)	EA	1		
			8-inch Gate Valve and Box (Complete)	EA	2		
			Concrete Encasement for Waterline	CY	7		
247	6238		FL BS (CMP IN PLC) (TY A GR 4) (12")	SY	1,261		
260	6002		LIME (HYDRATED LIME (SLURRY))	TON	10		
260	6079		LIME TRT (SUBGRADE) (6")	SY	1,261		
340	6122		D-GR HMA(SQ) TY-D PG70-22	TON	218		
310	6027		PRIME COAT(MC-30 OR AE-P)	GAL	227		
416	6001		DRILL SHAFT (18 IN)	LF	52		
416	6004		DRILL SHAFT (36 IN)	LF	306		
420	6013		CL C CONC (ABUT)	CY	58.6		
420	6029		CL C CONC (CAP)	CY	15.5		
420	6037		CL C CONC (COLUMN)	CY	14.1		
422	6001		REINF CONC SLAB	SF	5,148		
422	6013		BRIDGE SIDEWALK	SF	980		
422	6015		APPROACH SLAB	CY	70		
422	6023		SHEAR KEY	CY	30		
425	6036		PRESTR CONC GIRDER (TX34)	LF	710		
428	6001		PENETRATING CONCRETE SURFACE TREATMENT	SY	808.4		
434	6001		ELASTOMERIC BEARING (PLAIN)	EA	20		
442	6008		STR STEEL (MISCELLANEOUS BRIDGE)	LB	154		
450	6004		RAIL (TY T221)	LF	171.5		
450	6030		RAIL (TY C221)	LF	161.5		
454	6001		SEALED EXPANSION JOINT (4 IN) (SEJ - A)	LF	72.6		
540	6001		MTL W-BEAM GD FEN (TIM POST)	LF	95		
540	6007		MTL BEAM GD FEN TRANS (TL2)	EA	4		
540	6016		DOWNSTREAM ANCHOR TERMINAL SECTION	EA	2		
544	6001		GUARDRAIL END TREATMENT (INSTALL)	EA	2		
644	6001		IN SM RD SN SUP&AM TY10BWG (1) SA (P)	EA	1		
618	6078		CONDT (RM) (4")	LF	138		
618	6058		CONDT (PVC) (SCH 80) (4")	LF	300		
540	6014		SHORT RADIUS	LF	31		
540	6005		TERMINAL ANCHOR SECTION	EA	4		
432	6046		RIPRAP (MOW STRIP)(5 IN)	CY	18		
530	6005		DRIVEWAYS (ACP)	SY	116		

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

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WILLIAMSON COUNTY, TEXAS

SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK

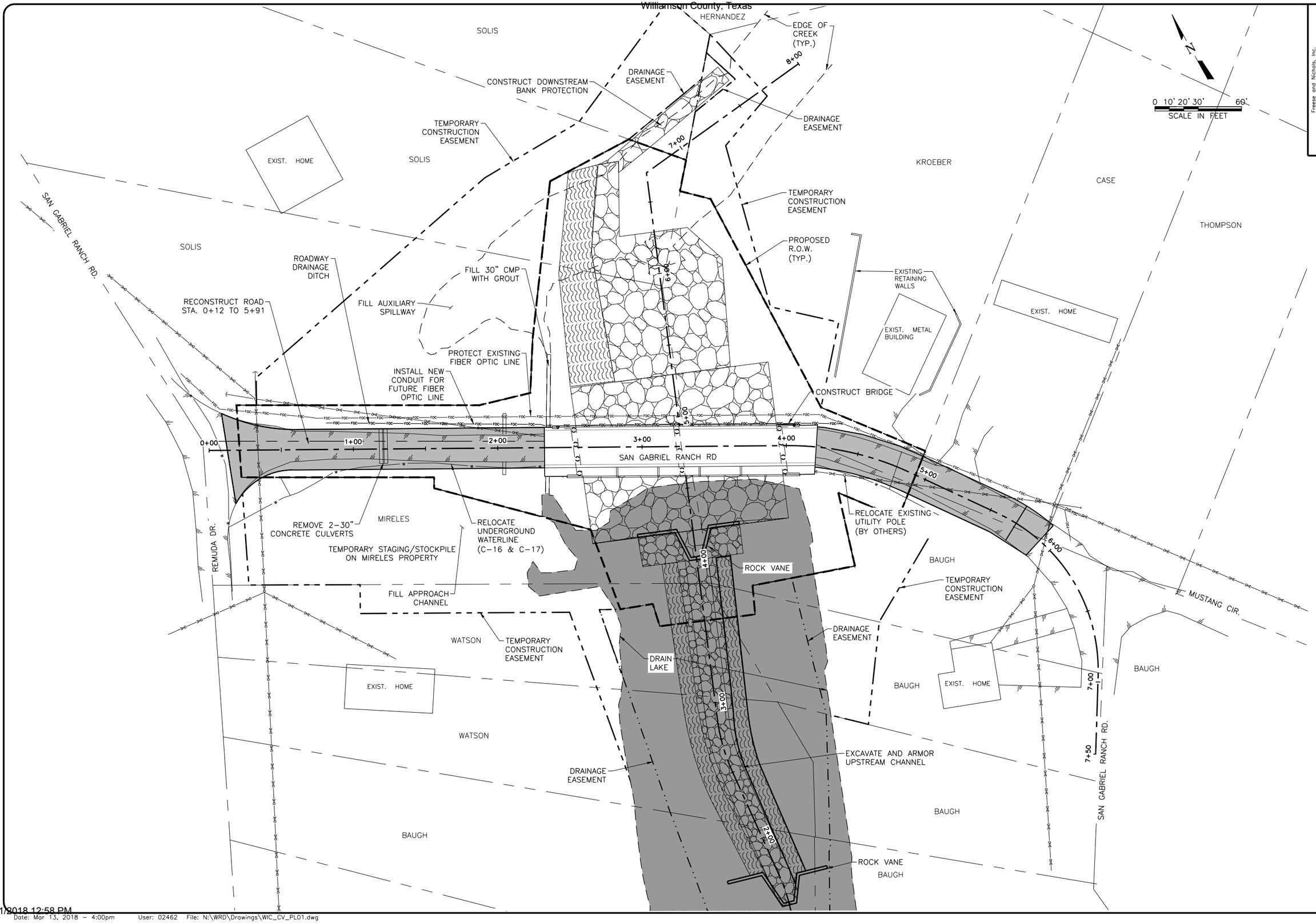
SUMMARY OF ESTIMATED QUANTITIES

NO.	ISSUE	BY	DATE

FAN JOB NO. WIC16278
DATE 03/13/18
DESIGNED: SV
DRAWN: MDB
REVISED:
CHECKED: AD
FILE NAME GN-WIC-QUANT01.dwg

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET G-2
SEQ.



Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144
STATE OF TEXAS
DUSTIN G. MORTENSEN
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3/14/2018
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WILLIAMSON COUNTY, TEXAS

SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK

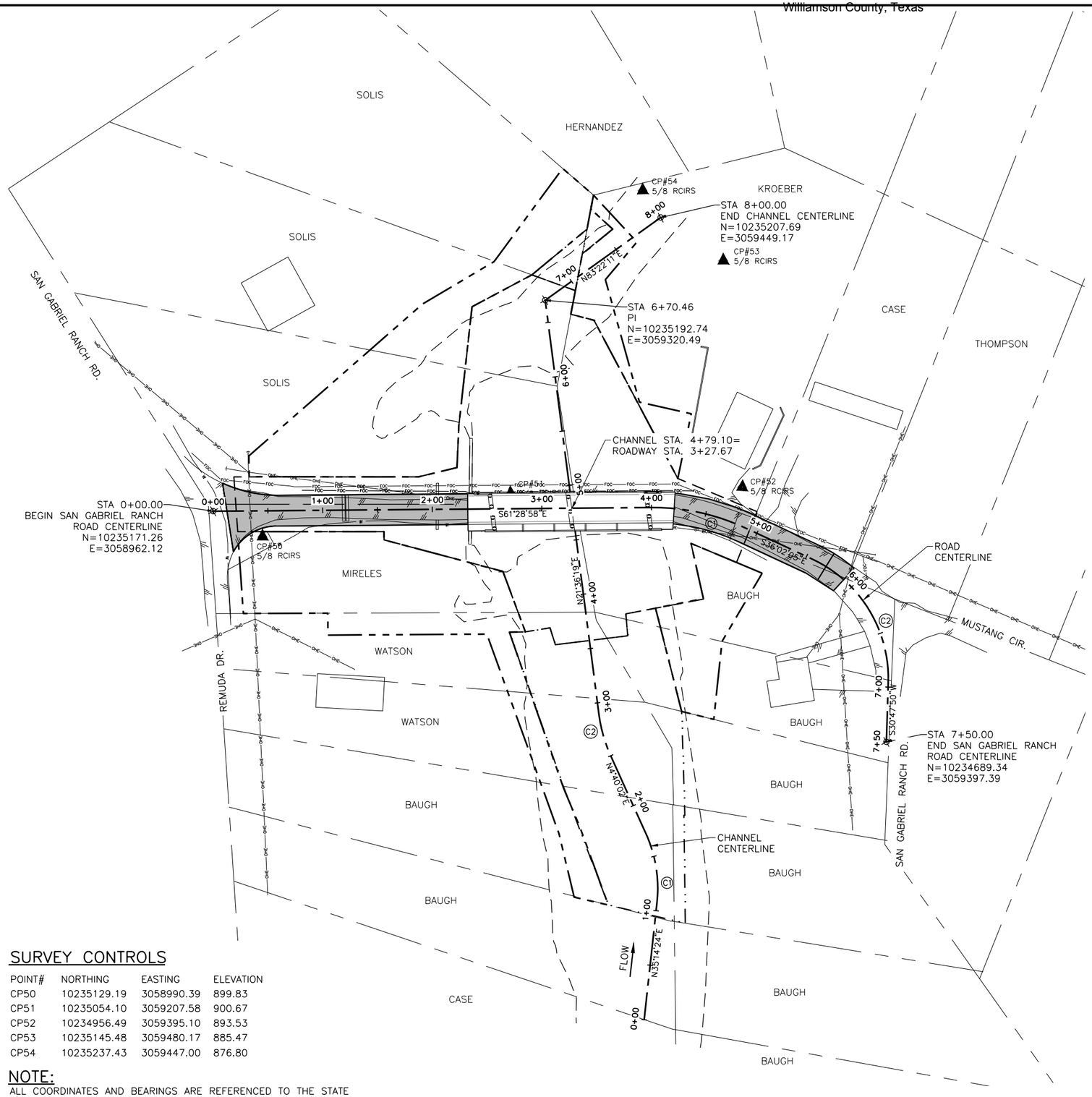
PROPERTY BOUNDARIES AND WORK ITEMS

NO.	ISSUE	BY	DATE

FAN JOB NO. WIC16278
DATE 03/13/18
DESIGNED: SV
DRAWN: MDB
CHECKED: AD
REVISED:
FILE NAME WIC_CV_PL01.dwg

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET G-3
SEQ.



SURVEY CONTROLS

POINT#	NORTHING	EASTING	ELEVATION
CP50	10235129.19	3058990.39	899.83
CP51	10235054.10	3059207.58	900.67
CP52	10234956.49	3059395.10	893.53
CP53	10235145.48	3059480.17	885.47
CP54	10235237.43	3059447.00	876.80

NOTE:

ALL COORDINATES AND BEARINGS ARE REFERENCED TO THE STATE PLANE COORDINATE SYSTEM, TEXAS CENTRAL ZONE 4203, WITH HORIZONTAL DATUM OF NAD 83 AND A SURFACE ADJUSTMENT FACTOR OF 1.000144967. ELEVATION INFORMATION IS REFERENCED TO NAVD88.

0 50' 100'
SCALE IN FEET

PROPOSED CHANNEL ALIGNMENT TABLE

DESCRIPTION	STATION	NORTHING	EASTING
BEGIN	0+00	10234574.78	3059081.18
PC C1	1+07.67	10234662.71	3059143.31
PT C1	1+68.60	10234719.10	3059164.61
PC C2	2+50.47	10234800.70	3059171.30
PT C2	2+88.90	10234837.99	3059179.99
PI	6+70.46	10235192.74	3059320.49
END	8+00	10235207.71	3059449.28

CHANNEL CURVE DATA

NUMBER	DELTA	TANGENT	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING
C1	29° 05' 28"	31.14	120.00	60.93	60.28	N20° 41' 40.64"E
C2	16° 56' 17"	19.36	130.00	38.43	38.29	N13° 08' 10.56"E

PROPOSED ROAD ALIGNMENT TABLE

DESCRIPTION	STATION	NORTHING	EASTING
BEGIN	0+00	10235171.26	3058962.12
PC C1	4+00.13	10234980.23	3059313.70
PT C1	4+88.07	10234922.73	3059379.29
PC C2	5+55.79	10234867.97	3059419.12
PT C2	6+95.76	10234735.94	3059425.16
END	7+50	10234689.35	3059397.39

ROAD CURVE DATA

NUMBER	DELTA	TANGENT	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING
C1	25° 26' 53"	44.71	198.00	87.94	87.22	S48° 45' 31.55"E
C2	66° 49' 55"	79.17	120.00	139.97	132.17	S02° 37' 7.63"E

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144
STATE OF TEXAS DUSTIN G. MORTENSEN 100000 LICENSED PROFESSIONAL ENGINEER
3/14/2018
FREESE NICHOLS
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Austin, Texas 78759
Phone - (512) 617-3100
Fax - (512) 617-3101

WILLIAMSON COUNTY, TEXAS

SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK

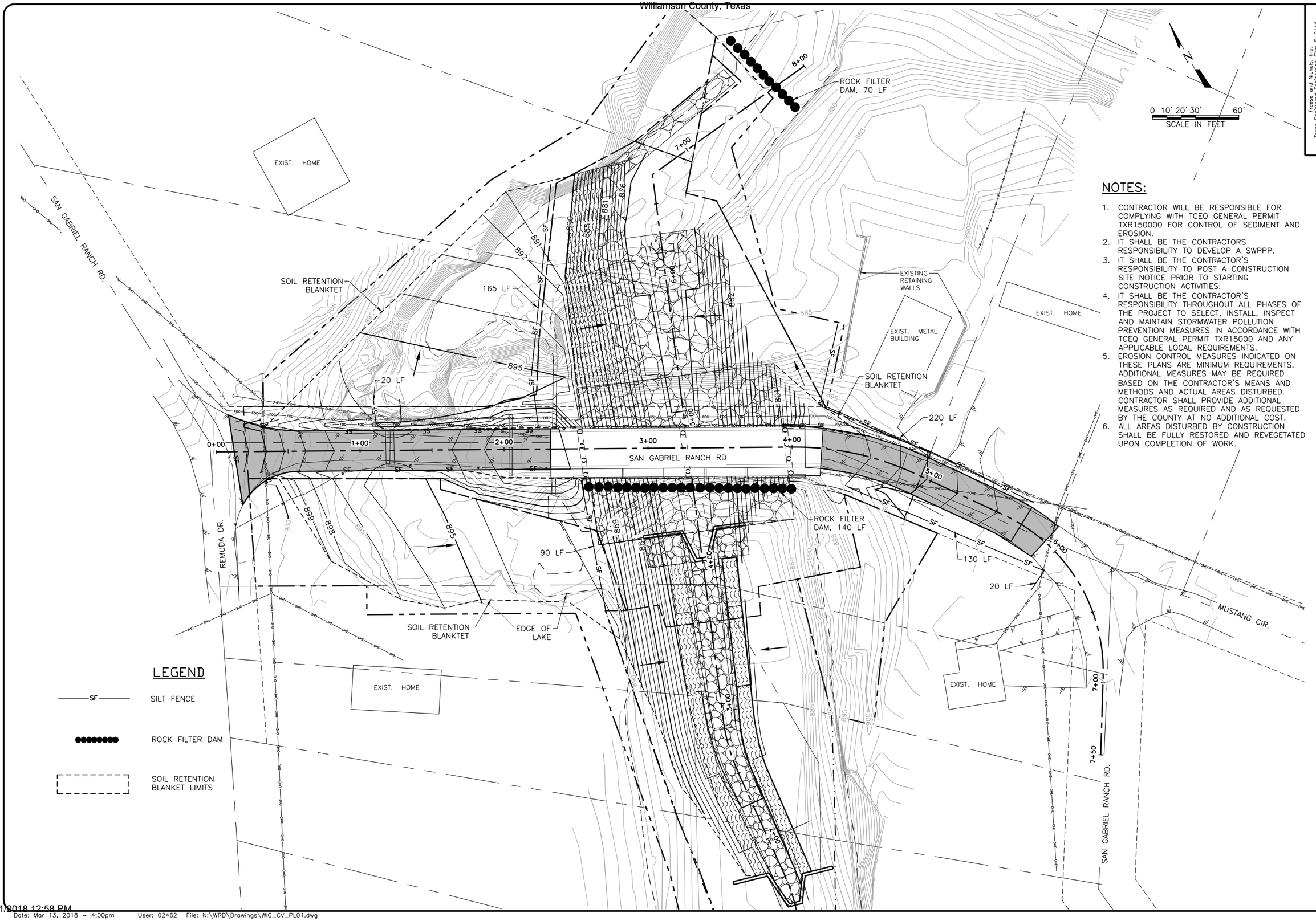
SURVEY CONTROLS AND BASELINES

F&N JOB NO. WIC16278
DATE 03/13/18
DESIGNED: SV
DRAWN: MRB
CHECKED: AD
FILE NAME WIC_CV_PL01.dwg

NO.	ISSUE	DATE	BY
	REVISED:		

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET G-4
SEQ.



NOTES:

1. CONTRACTOR WILL BE RESPONSIBLE FOR COMPLYING WITH TCEQ GENERAL PERMIT TXR150000 FOR CONTROL OF SEDIMENT AND EROSION.
2. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO DEVELOP A SWPPP.
3. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO POST A CONSTRUCTION SITE NOTICE PRIOR TO STARTING CONSTRUCTION ACTIVITIES.
4. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY THROUGHOUT ALL PHASES OF THE PROJECT TO SELECT, INSTALL, INSPECT AND MAINTAIN STORMWATER POLLUTION PREVENTION MEASURES IN ACCORDANCE WITH TCEQ GENERAL PERMIT TXR15000 AND ANY APPLICABLE LOCAL REQUIREMENTS.
5. EROSION CONTROL MEASURES INDICATED ON THESE PLANS ARE MINIMUM REQUIREMENTS. ADDITIONAL MEASURES MAY BE REQUIRED BASED ON THE CONTRACTOR'S MEANS AND METHODS AND ACTUAL AREAS DISTURBED. CONTRACTOR SHALL PROVIDE ADDITIONAL MEASURES AS REQUIRED AND AS REQUESTED BY THE COUNTY AT NO ADDITIONAL COST.
6. ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE FULLY RESTORED AND REVEGETATED UPON COMPLETION OF WORK.

LEGEND

- SF — SILT FENCE
- ROCK FILTER DAM
- SOIL RETENTION BLANKET LIMITS

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WILLIAMSON COUNTY, TEXAS

SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK

TEMPORARY EROSION CONTROL

NO.	ISSUE	BY	DATE

FNI JOB NO. WIC16278
DATE 03/13/18
DESIGNED: SV
DRAWN: MSB
REVISED:
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FILE NAME WIC_CV_PL01.dwg

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0 1"

SHEET G-5
SEQ.



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WILLIAMSON COUNTY, TEXAS

SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK

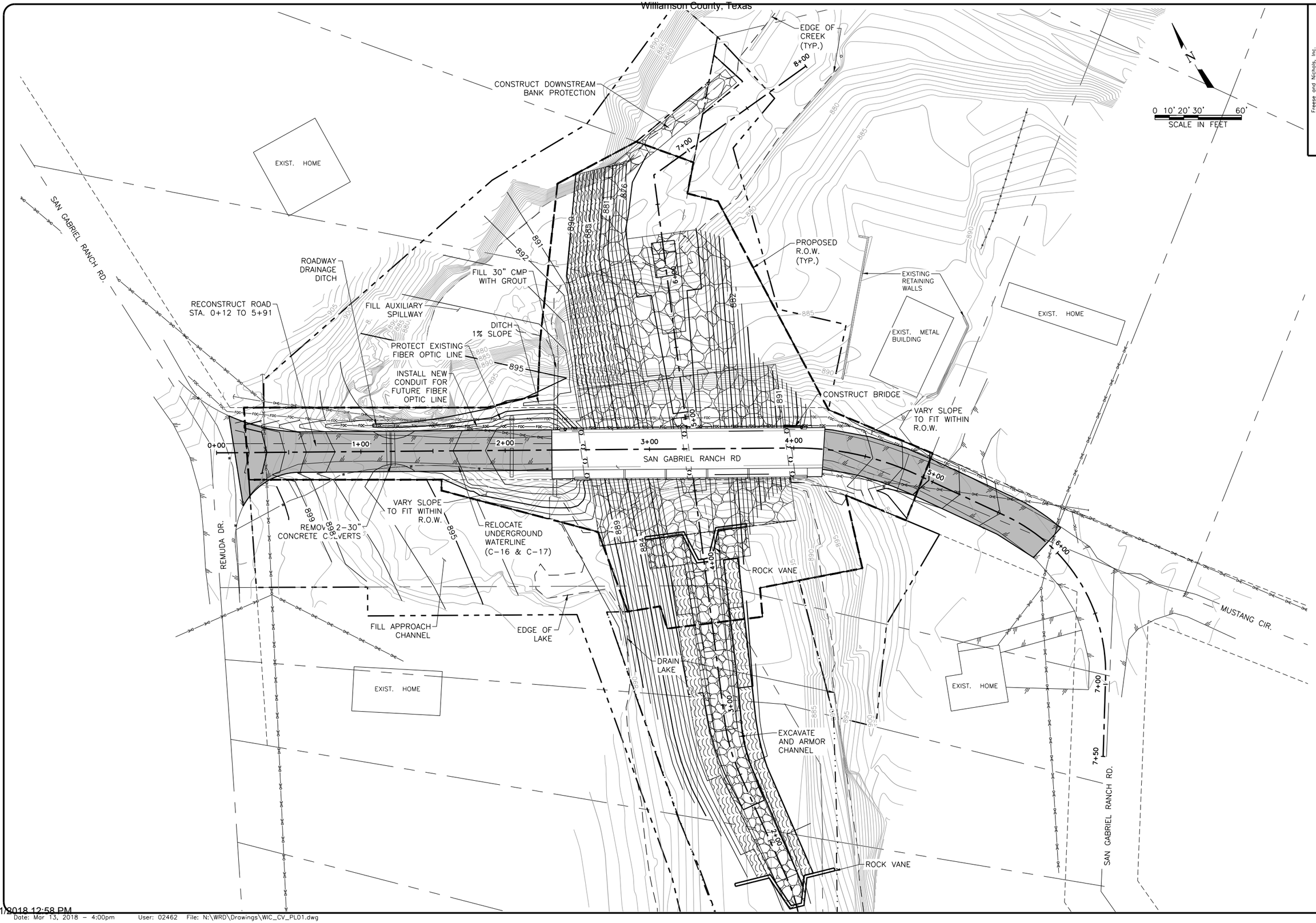
EXISTING SITE PLAN

NO.	ISSUE	BY	DATE

F&N JOB NO. WIC16278
DATE 03/13/18
DESIGNED: SV
DRAWN: MDB
REVISED:
CHECKED: AD
FILE NAME WIC_CV_PL01.dwg

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET C-1
SEQ.



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WILLIAMSON COUNTY, TEXAS

SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK

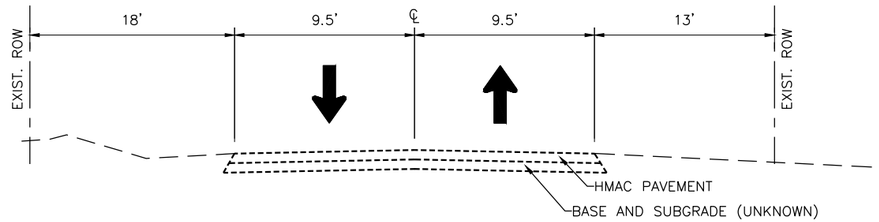
PROPOSED SITE PLAN

NO.	ISSUE	BY	DATE

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DATE 03/13/18
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DRAWN: MDB
REVISED:
CHECKED: AD
FILE NAME WIC_CV_PL01.dwg

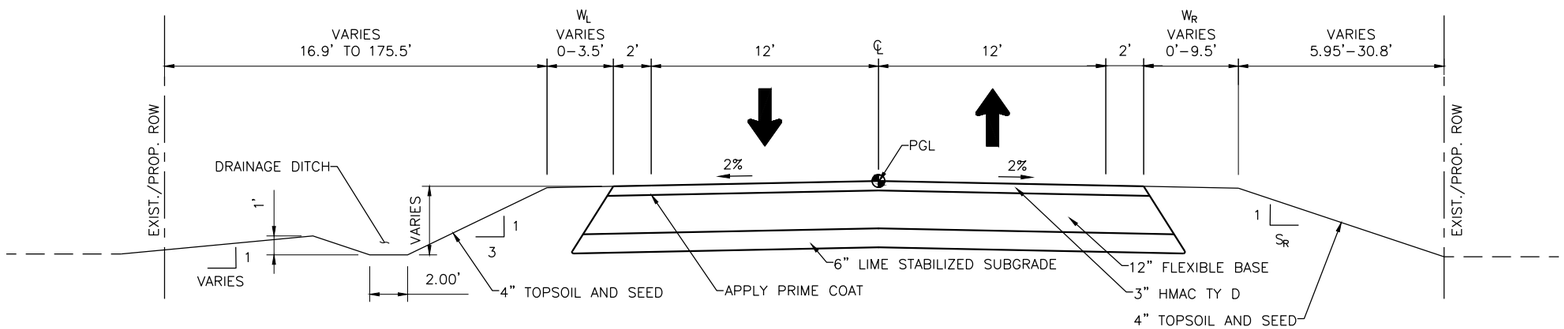
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET C-2
SEQ.



1 EXISTING ROAD TYPICAL SECTION

SCALE: NOT TO SCALE

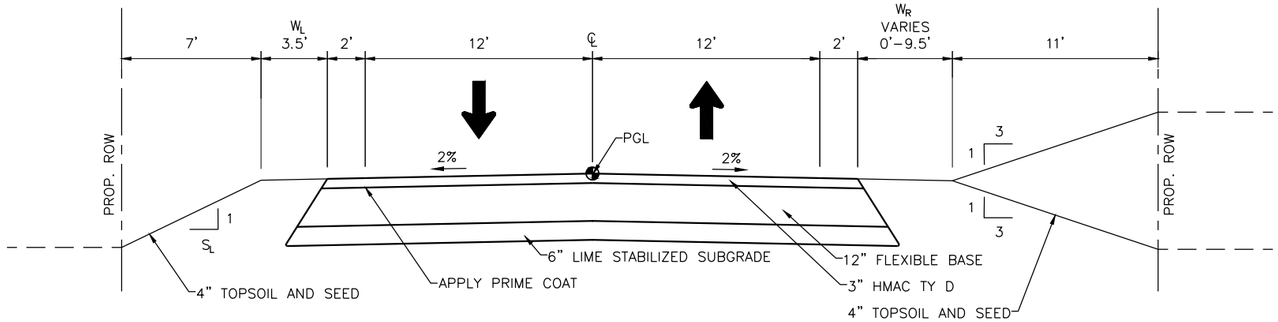


2 PROPOSED ROAD TYPICAL SECTION STA. 0+12.64 TO 2+54

SCALE: NOT TO SCALE

STA. 0+12.64 TO 1+91.00, W_L=0'
STA. 1+91.00 TO 2+01.00, TRANSITION
STA. 2+01.00 TO 2+37.86, W_L=3.5'

STA. 0+12.64 TO 1+56.00, W_R=0', SR=3H:1V
STA. 1+56.00 TO 1+77.00, W_R=TRANSITION, S_R VARIES FROM 3H:1V TO APPROX. 1H:1V AS NEEDED TO STAY WITHIN ROW
STA. 1+77.00 TO 2+47.62, W_R=9.5', S_R VARIES FROM 3H:1V TO APPROX. 1H:1V AS NEEDED TO STAY WITHIN ROW

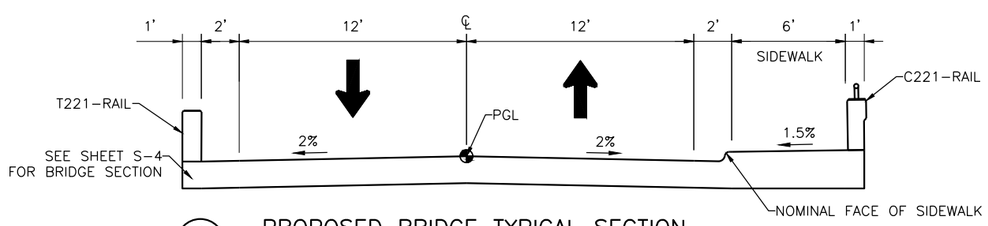


3 PROPOSED ROAD TYPICAL SECTION STA. 4+09 TO 5+91

SCALE: NOT TO SCALE

STA. 4+09.36 TO 5+91.00, S_L VARIES FROM 3H:1V TO APPROX. 1H:1V AS NEEDED TO STAY WITHIN ROW

STA. 4+09.12 TO 4+50.00, W_R=9.5'
STA. 4+50.00 TO 4+71.00, TRANSITION
STA. 4+71.00 TO 5+91.00, W_R=0'



4 PROPOSED BRIDGE TYPICAL SECTION

SCALE: NOT TO SCALE

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Texas Registered Engineering Firm F-2144

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SEAN D. BARRY
114177
LICENSED PROFESSIONAL ENGINEER
3/13/2018

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Fax – (512) 617-3101

WILLIAMSON COUNTY, TEXAS

SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK

TYPICAL SECTIONS

Williamson County, Texas

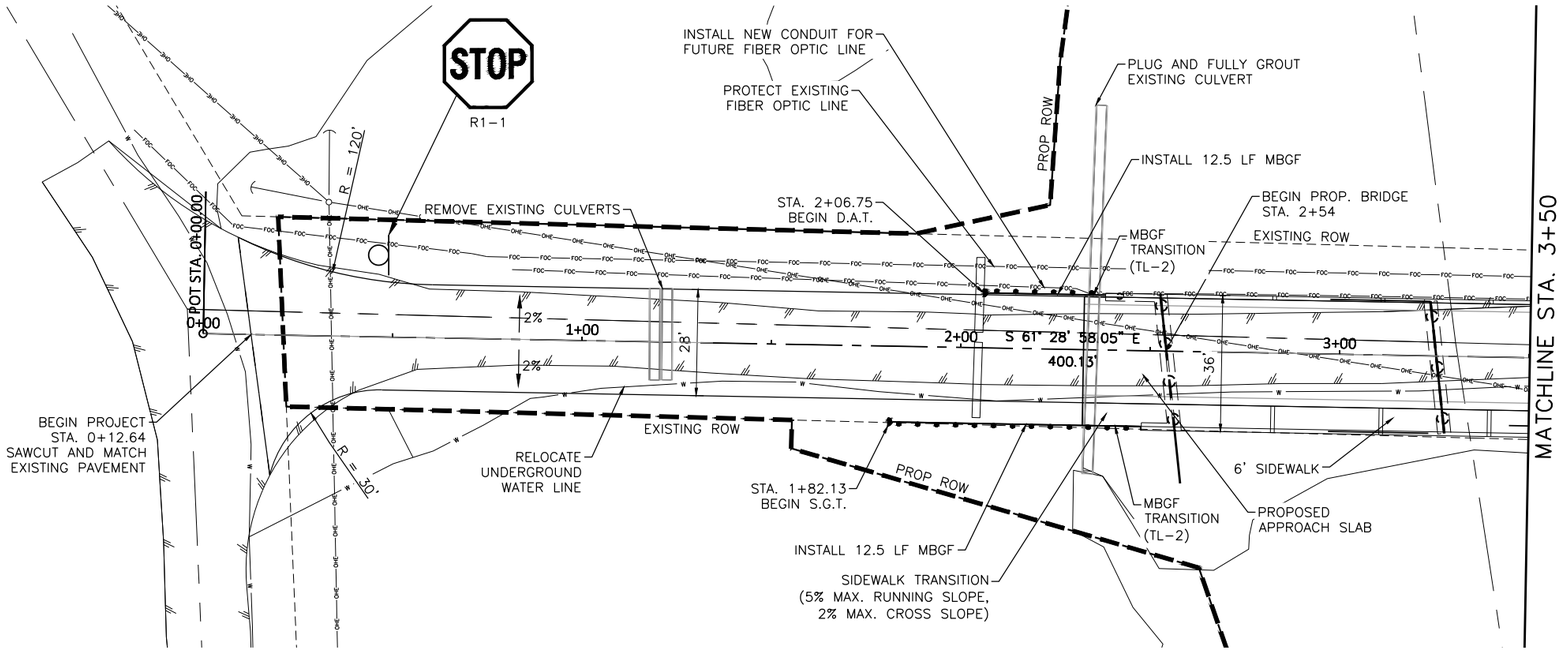
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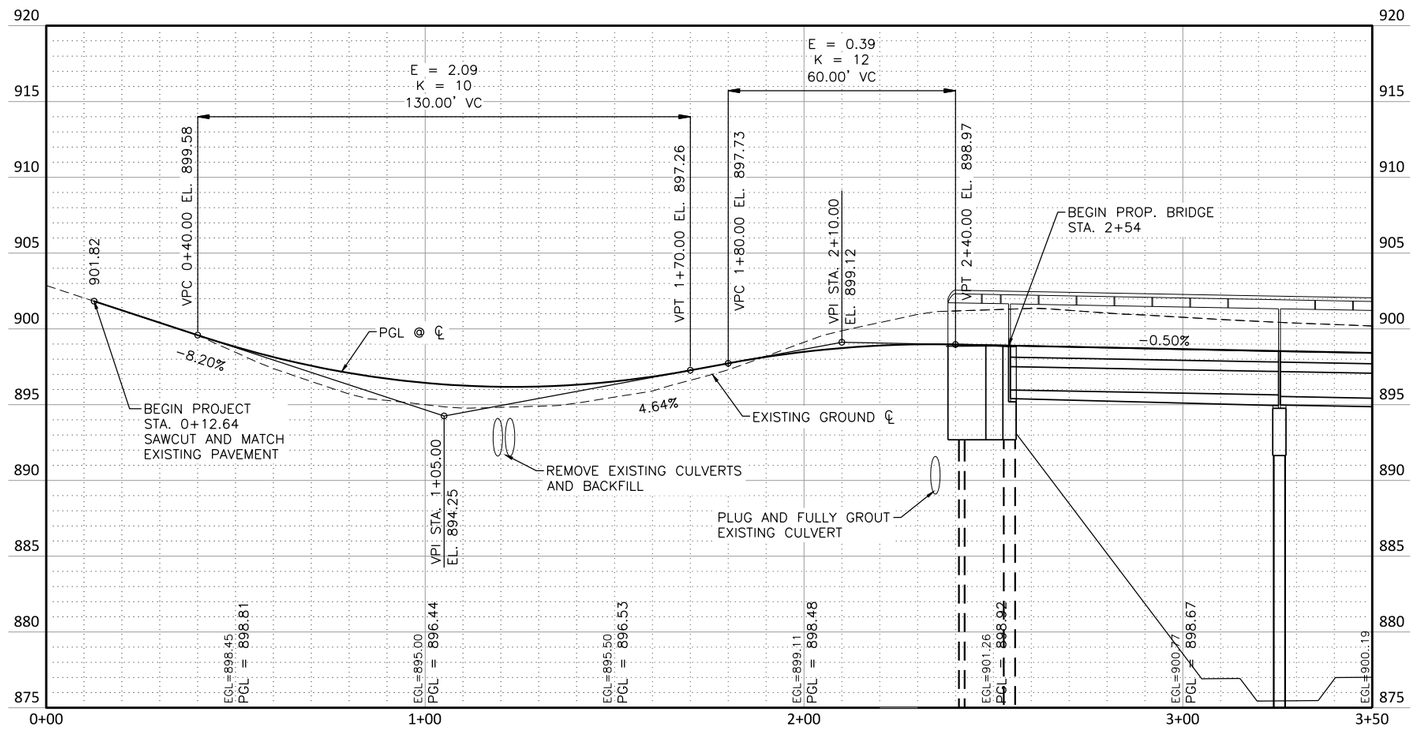
F&N JOB NO. W1C16278
DATE 03/13/18
DESIGNED: SDB
DRAWN: BP
REVISED:
CHECKED: JNR
FILE NAME CV-TRT-PP-ROAD.dwg

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET C-3
SEQ.

512-807-2922





Beginning chain SGRR description

Point SGRR01 N 10,235,171.2614 E 3,058,962.1162 Sta 0+00.00

Course from SGRR01 to PC SGRR_CUR01 S 61° 28' 58.05" E Dist 400.1318

Curve Data

Curve SGRR_CUR01					
P.I. Station	4+44.84	N	10,234,958.8845	E	3,059,352.9857
Delta =	25° 26' 53.00" (RT)				
Degree =	28° 56' 14.14"				
Tangent =	44.7085				
Length =	87.9422				
Radius =	198.0000				
External =	4.9848				
Long Chord =	87.2211				
Mid. Ord. =	4.8624				
P.C. Station	4+00.13	N	10,234,980.2294	E	3,059,313.7015
P.T. Station	4+88.07	N	10,234,922.7306	E	3,059,379.2866
C.I.	N 10,234,806.2520		E 3,059,219.1718		
Back =	S 61° 28' 58.05" E				
Ahead =	S 36° 02' 05.05" E				
Chord Bear =	S 48° 45' 31.55" E				

Course from PT SGRR_CUR01 to PC SGRR_CUR02 S 36° 02' 05.05" E Dist 67.7151

Curve Data

Curve SGRR_CUR02					
P.I. Station	6+34.96	N	10,234,803.9477	E	3,059,465.6975
Delta =	66° 49' 54.85" (RT)				
Degree =	47° 44' 47.34"				
Length =	139.9724				
Radius =	120.0000				
External =	23.7652				
Long Chord =	132.1712				
Mid. Ord. =	19.8367				
P.C. Station	5+55.79	N	10,234,867.9721	E	3,059,419.1217
P.T. Station	6+95.76	N	10,234,735.9389	E	3,059,425.1607
C.C.	N 10,234,797.3790		E 3,059,322.0825		
Back =	S 36° 02' 05.05" E				
Ahead =	S 30° 47' 49.80" W				
Chord Bear =	S 2° 37' 07.63" E				

Course from PT SGRR_CUR02 to SGRR06 S 30° 47' 49.80" W Dist 70.1161

Point SGRR06 N 10,234,675.7102 E 3,059,389.2612 Sta 7+65.88

Ending chain SGRR description

LEGEND

EXISTING GROUND

PROPOSED GRADE

N

0 10' 20' 40'
HORIZONTAL SCALE

0 5' 10'
VERTICAL SCALE

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

STATE OF TEXAS
SEAN D. BARRY
114177
LICENSED PROFESSIONAL ENGINEER
3/13/2018

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WILLIAMSON COUNTY, TEXAS

SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK

PAVEMENT PLAN AND PROFILE 1

STA. 0+00 TO STA 3+50

WILLIAMSON COUNTY, TEXAS

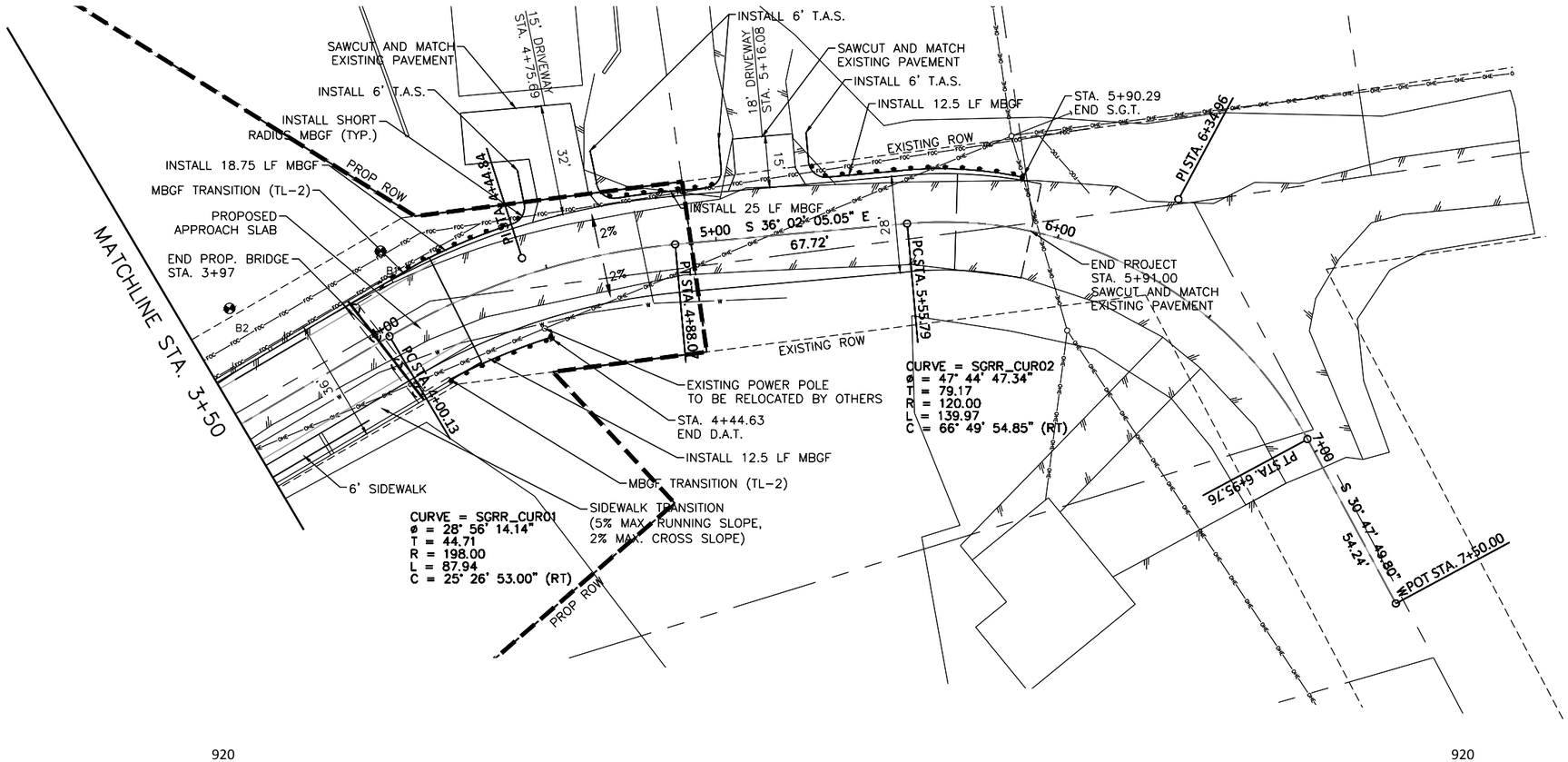
NO.	ISSUE	BY	DATE

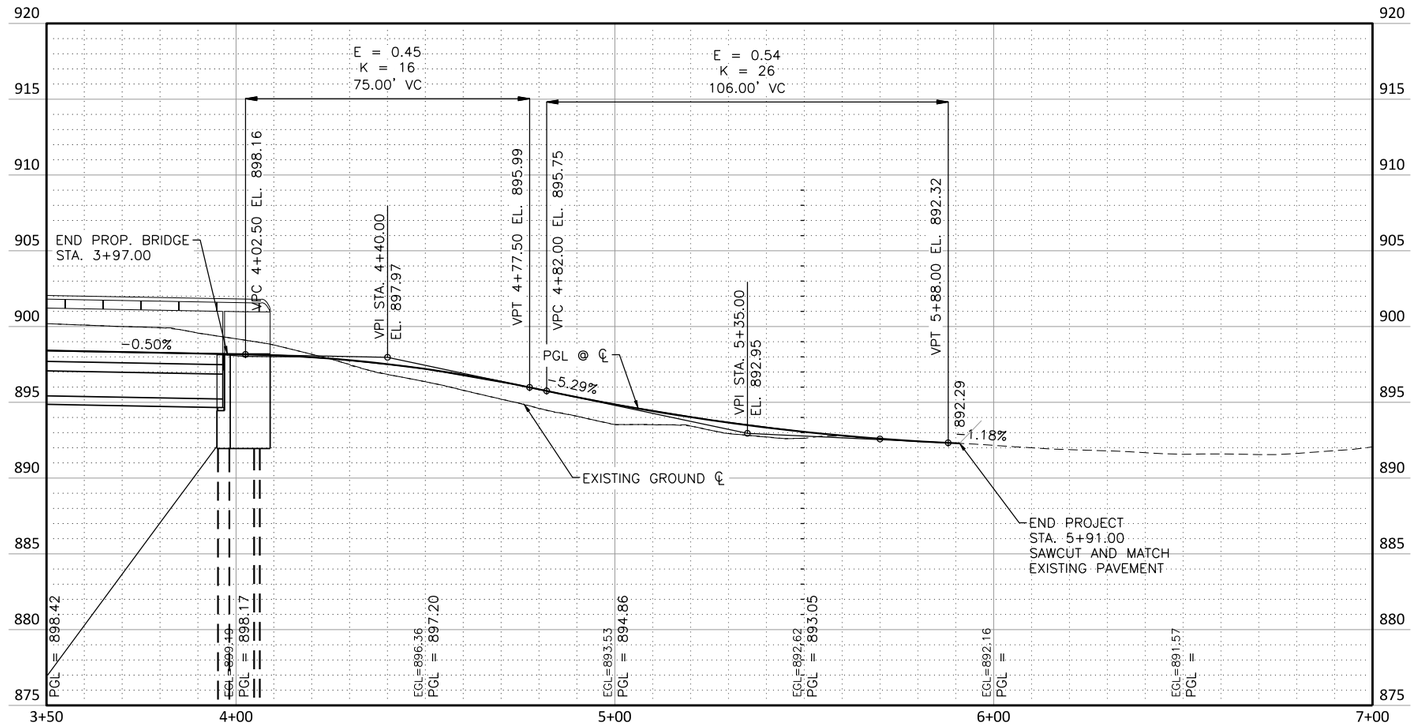
FAN JOB NO. WIC16278
DATE 03/13/18
DESIGNED: SDB
DRAWN: BP
REVISED:
CHECKED: JNR
FILE NAME CV-TRT-PP-ROAD.dwg

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0 1"

SHEET C-4
SEQ.

TBPE FIRM F-2144





LEGEND

EXISTING GROUND

PROPOSED GRADE

N

0 10' 20' 40'
HORIZONTAL SCALE

0 5' 10'
VERTICAL SCALE

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

STATE OF TEXAS
SEAN D. BARRY
114177
LICENSED PROFESSIONAL ENGINEER
3/13/2018

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WILLIAMSON COUNTY, TEXAS

SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK

PAVEMENT PLAN AND PROFILE 2
STA. 3+50 TO END

WILLIAMSON County, Texas

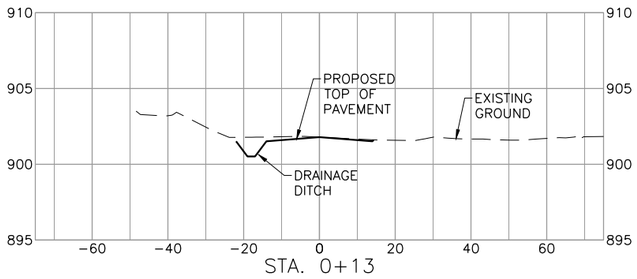
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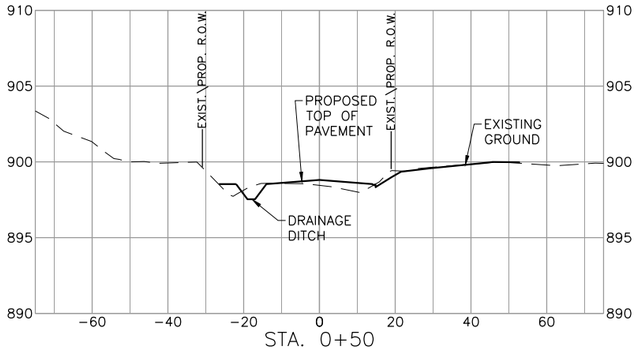
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DATE 03/13/18
DESIGNED: SGB
DRAWN: BP
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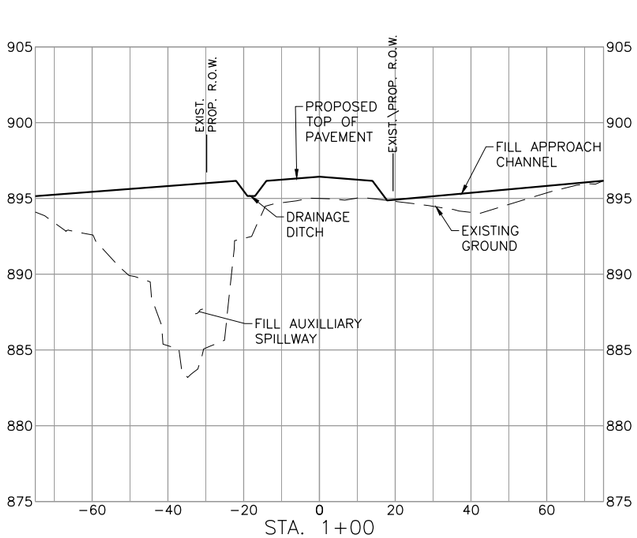
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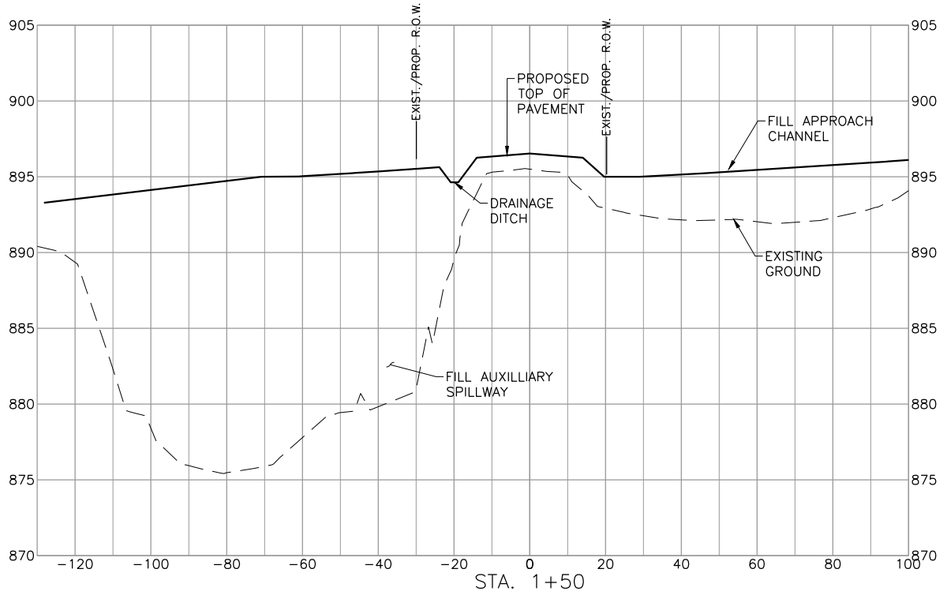
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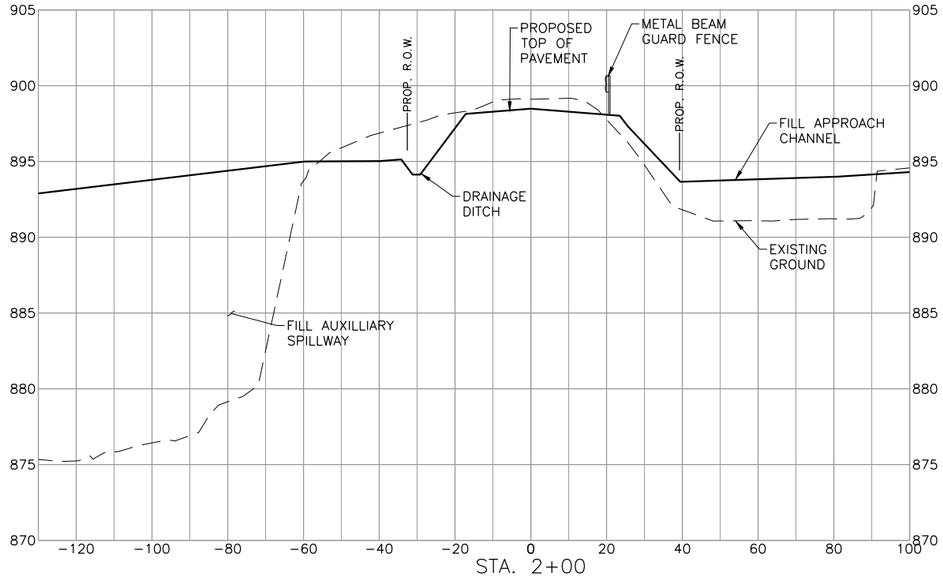
Bid Set 2018











0 20' 40'
SCALE IN FEET
HORIZONTAL

0 5' 10'
SCALE IN FEET
VERTICAL

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

STATE OF TEXAS
DUSTIN C. MORTENSEN
103000
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3/14/2018

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WILLIAMSON COUNTY, TEXAS
SAN GABRIEL RANCH ROAD BRIDGE
AT LACKEY CREEK

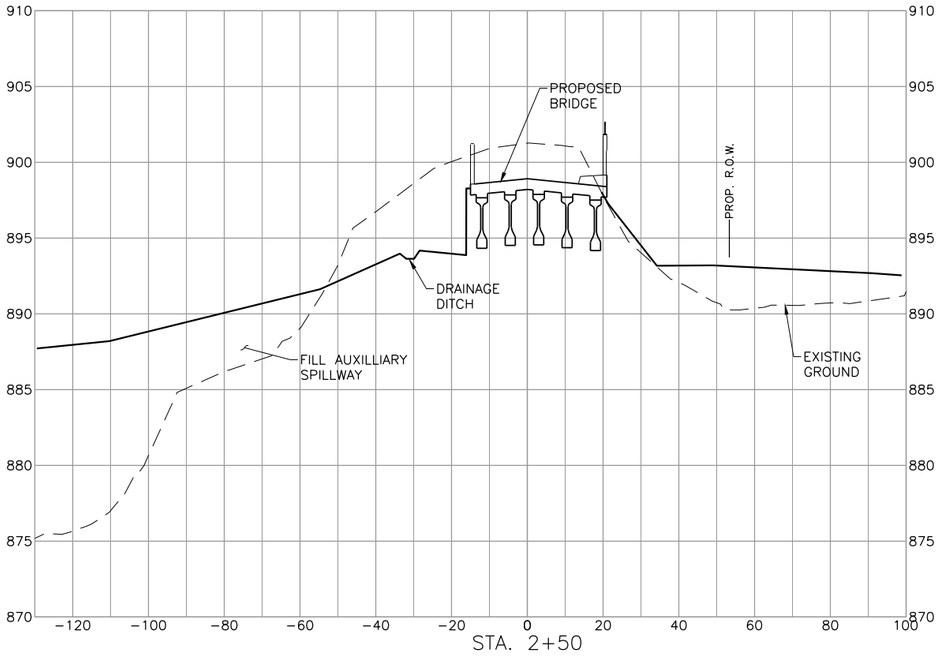
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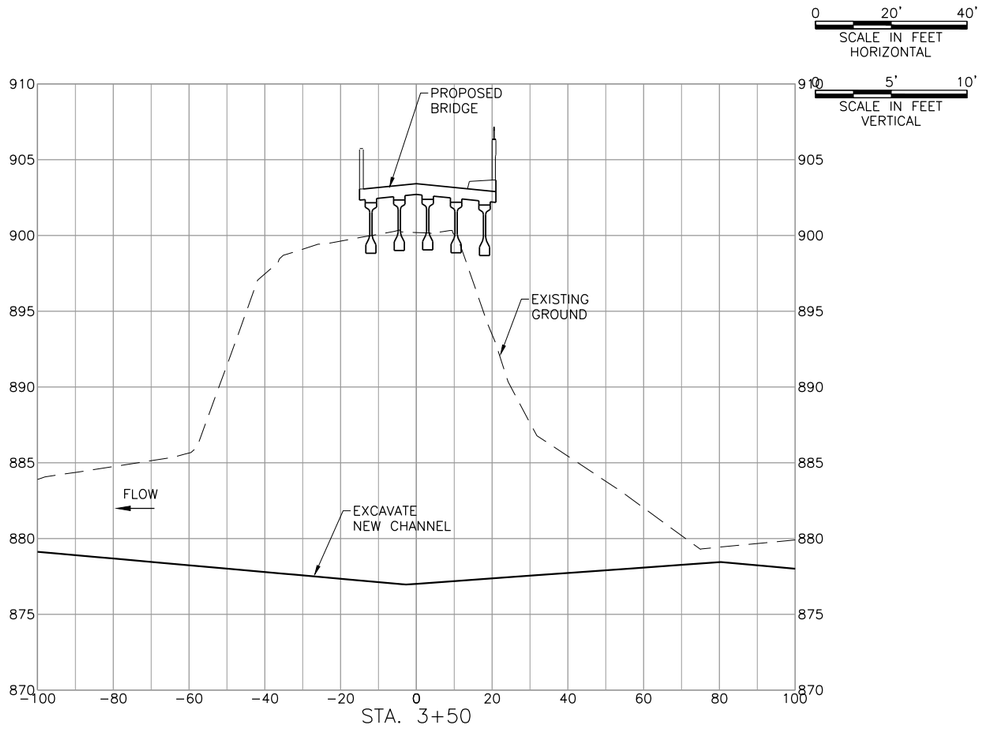
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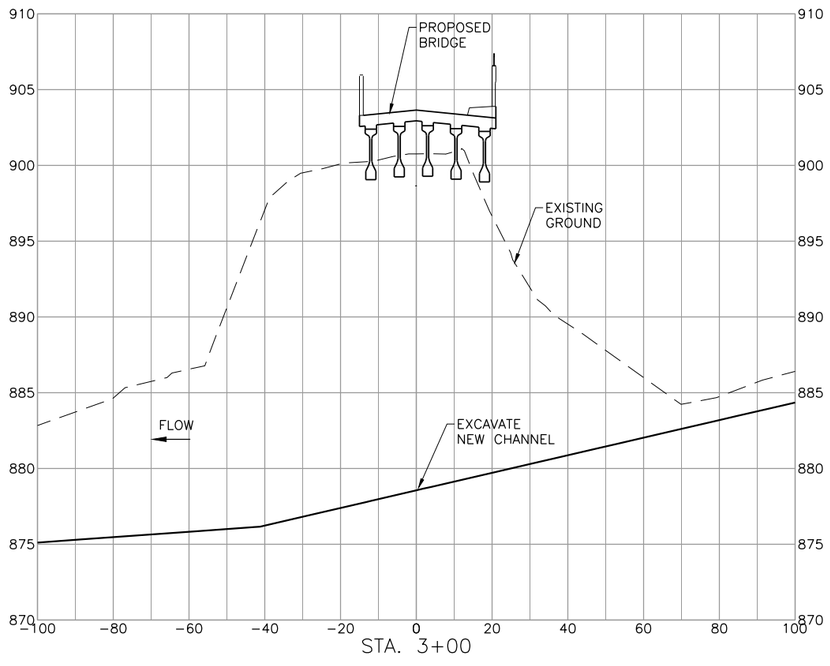
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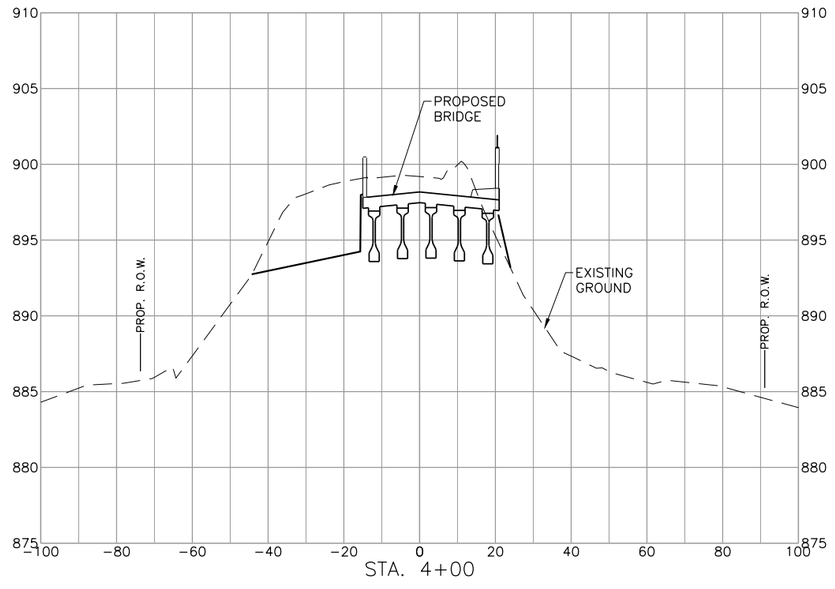
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET C-6
SEQ.









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WILLIAMSON COUNTY, TEXAS

SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK

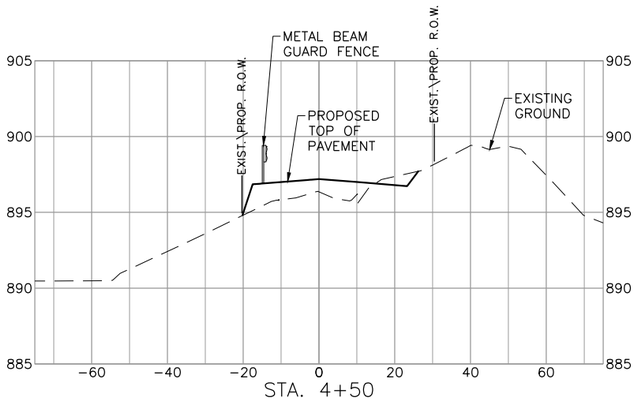
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NO.	ISSUE	BY	DATE

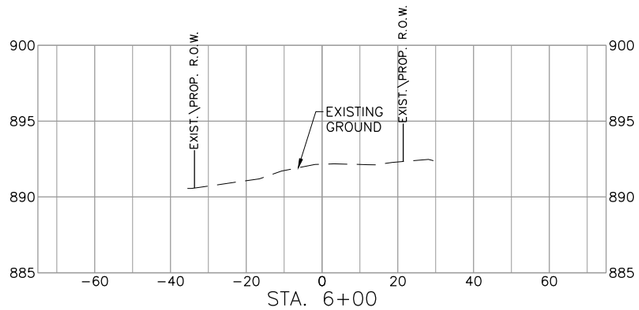
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DATE 03/13/18
DESIGNED: SV
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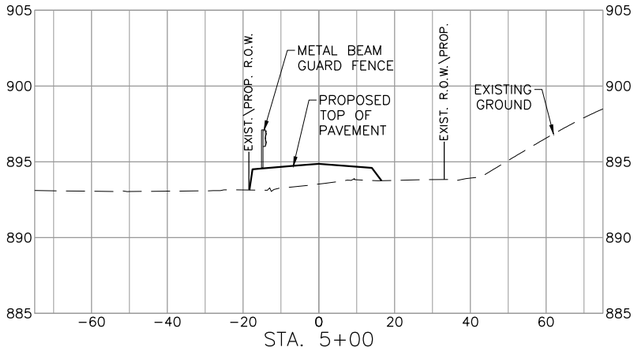
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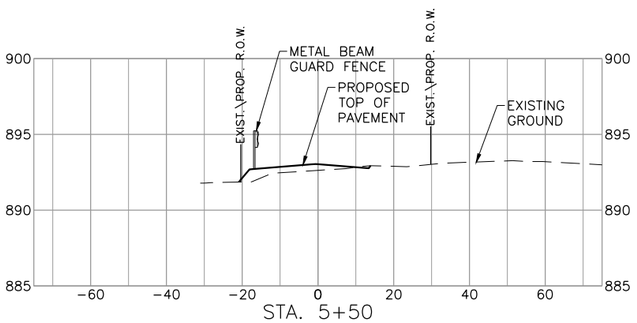
STA. 4+50



STA. 6+00



STA. 5+00



STA. 5+50

0 20' 40'
SCALE IN FEET
HORIZONTAL

0 5' 10'
SCALE IN FEET
VERTICAL

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Texas Registered Engineering Firm F-2144

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LICENSED
PROFESSIONAL ENGINEER
3/14/2018

FREESE NICHOLS
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Austin, Texas 78759
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WILLIAMSON COUNTY, TEXAS
SAN GABRIEL RANCH ROAD BRIDGE
AT LACKEY CREEK

SAN GABRIEL ROAD CROSS SECTIONS 3

NO.	ISSUE	BY	DATE

FAN JOB NO. WIC16278
DATE 03/13/18
DESIGNED: SV
DRAWN: MKB
REVISED:
CHECKED: AD
FILE NAME CV-XSEC01.dwg

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

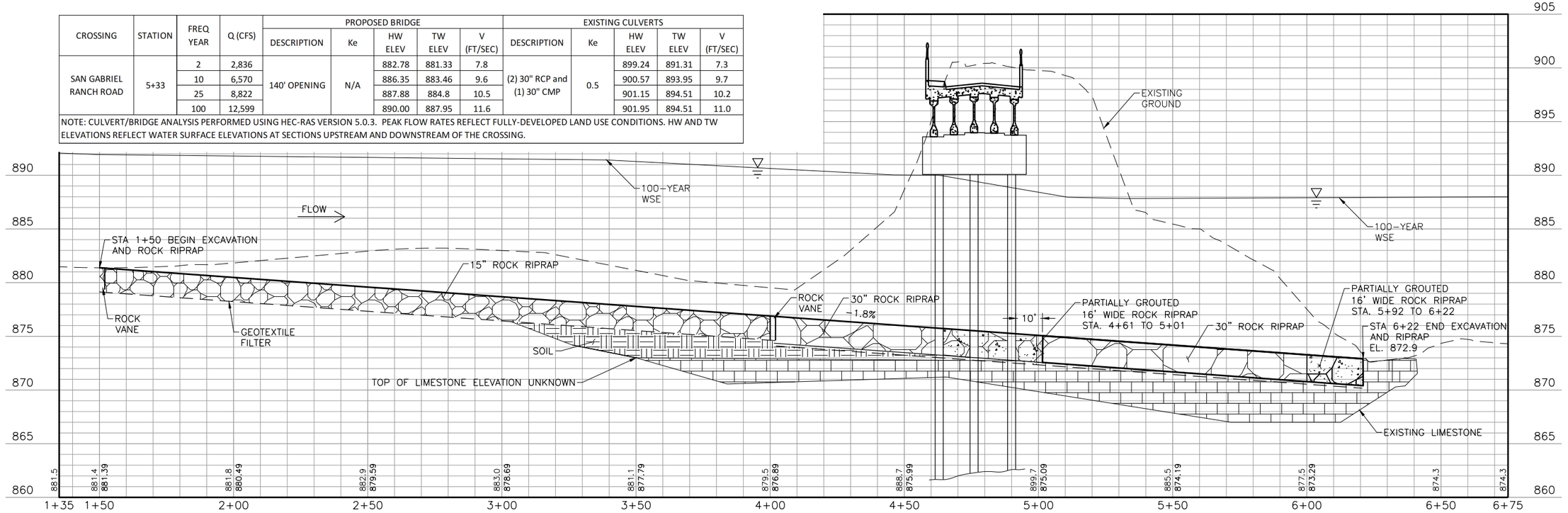
SHEET C-8
SEQ.



PLAN
0 10' 20' 40'
SCALE IN FEET

CROSSING	STATION	FREQ YEAR	Q (CFS)	PROPOSED BRIDGE DESCRIPTION	Ke	HW ELEV	TW ELEV	V (FT/SEC)	EXISTING CULVERTS DESCRIPTION	Ke	HW ELEV	TW ELEV	V (FT/SEC)
SAN GABRIEL RANCH ROAD	5+33	2	2,836	140' OPENING	N/A	882.78	881.33	7.8	(2) 30" RCP and (1) 30" CMP	0.5	899.24	891.31	7.3
		10	6,570			886.35	883.46	9.6			900.57	893.95	9.7
		25	8,822			887.88	884.8	10.5			901.15	894.51	10.2
		100	12,599			890.00	887.95	11.6			901.95	894.51	11.0

NOTE: CULVERT/BRIDGE ANALYSIS PERFORMED USING HEC-RAS VERSION 5.0.3. PEAK FLOW RATES REFLECT FULLY-DEVELOPED LAND USE CONDITIONS. HW AND TW ELEVATIONS REFLECT WATER SURFACE ELEVATIONS AT SECTIONS UPSTREAM AND DOWNSTREAM OF THE CROSSING.



CENTERLINE PROFILE
0 20' 40' SCALE IN FEET HORIZONTAL
0 5' 10' SCALE IN FEET VERTICAL

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

STATE OF TEXAS
DUSTIN G. MORTENSEN
100000
LICENSED PROFESSIONAL ENGINEER
3/14/2018

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WILLIAMSON COUNTY, TEXAS
SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK

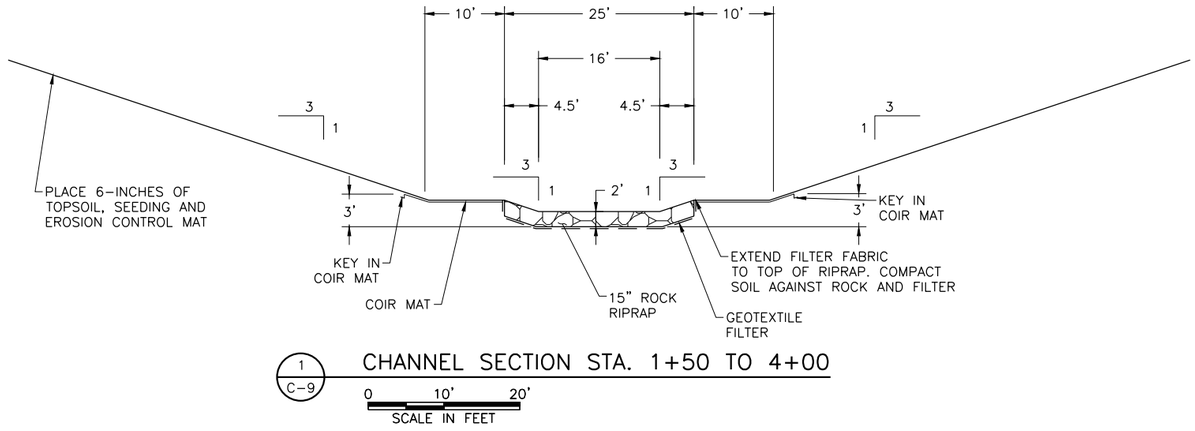
LACKEY CREEK PLAN AND PROFILE

FAN JOB NO. WIC16278
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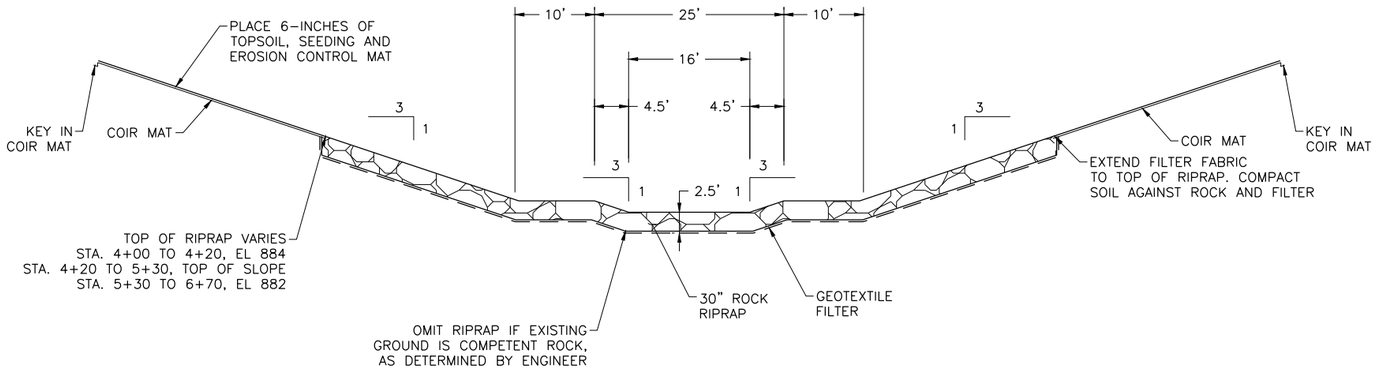
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET C-9
SEQ.



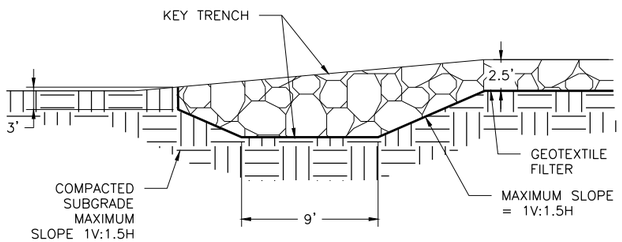
1 / C-9 CHANNEL SECTION STA. 1+50 TO 4+00

0 10' 20'
SCALE IN FEET



2 / C-9 CHANNEL SECTION STA. 4+00 TO 6+22

0 10' 20'
SCALE IN FEET



3 / C-9 BANK TO RIPRAP TRANSITION

0 5' 10'
SCALE IN FEET

Table 1
In-Place Riprap Gradation Requirements

Size	Maximum Size (lb.)	90% Size[1] (lb.)	50% Size[2] (lb.)	8% Size[3] (lb.)
15 in.	320	170-300	60-165	20
30 in.	2,600	1,150-2,250	400-900	40

1. Defined as that size such that 10% of the total riprap stone, by weight, is larger and 90% is smaller.
2. Defined as that size such that 50% of the total riprap stone, by weight, is larger and 50% is smaller.
3. Defined as that size such that 92% of the total riprap stone, by weight, is larger and 8% is smaller.

Table 2
Guide for Comparing the Stone Size in Inches to Stone Weight

Size	Dmax (in.)	D90 (in.)	D50 (in.)	D8 (in.)
15 in.	16.10	13.04-15.75	9.21-12.91	6.39
30 in.	32.36	24.65-30.84	17.34-22.72	8.05

Sized based on a specific gravity of 2.5 and using the following equation for the intermediate axis diameter $D = 12*\{W/(Gs*62.4*0.85)\}^{1/3}$
where:
D=intermediate axis diameter in inches
W=weight of stone in pounds
Gs=Specific Gravity of stone.
Note-If the Specific Gravity of the stone is different than 2.5, then the above equation can be used to determine the appropriate size using the actual specific gravity

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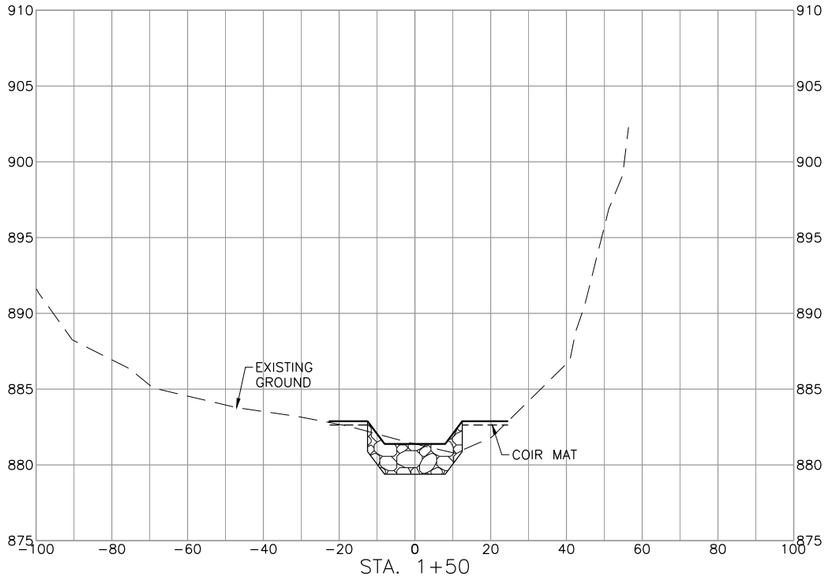
TYPICAL CHANNEL SECTIONS

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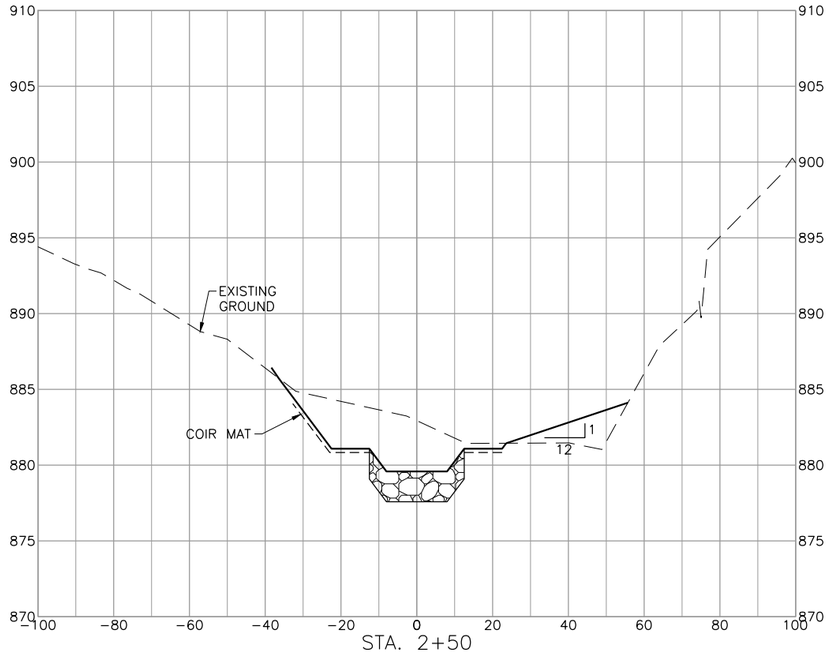
NO. | ISSUE | BY | DATE

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0 1"

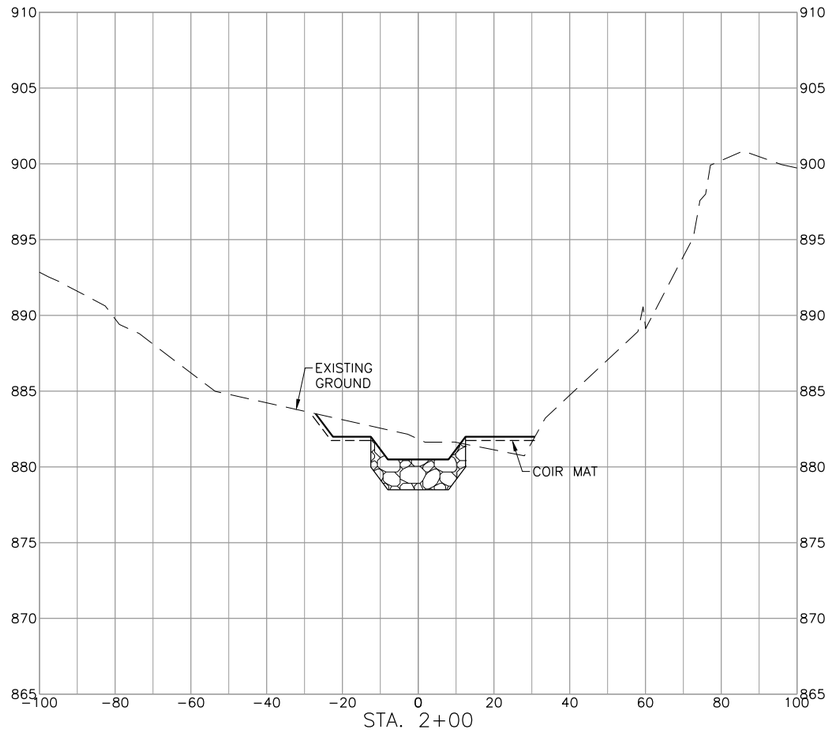
SHEET C-10
SEQ.



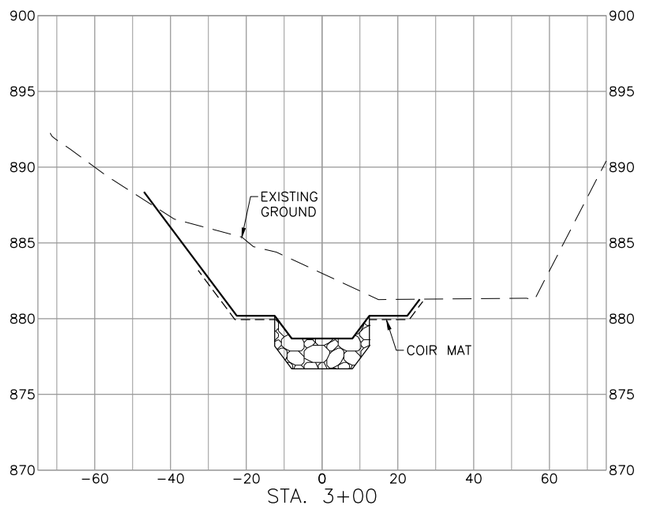
STA. 1+50



STA. 2+50



STA. 2+00



STA. 3+00

0 20' 40'
SCALE IN FEET
HORIZONTAL

0 5' 10'
SCALE IN FEET
VERTICAL

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SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK

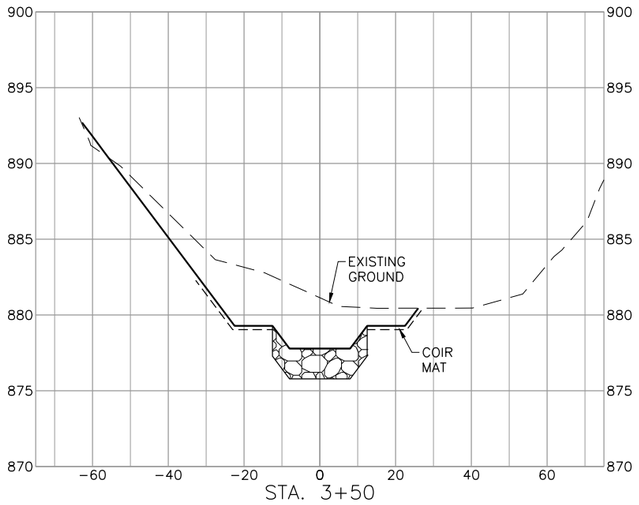
LACKEY CREEK CROSS SECTIONS 1

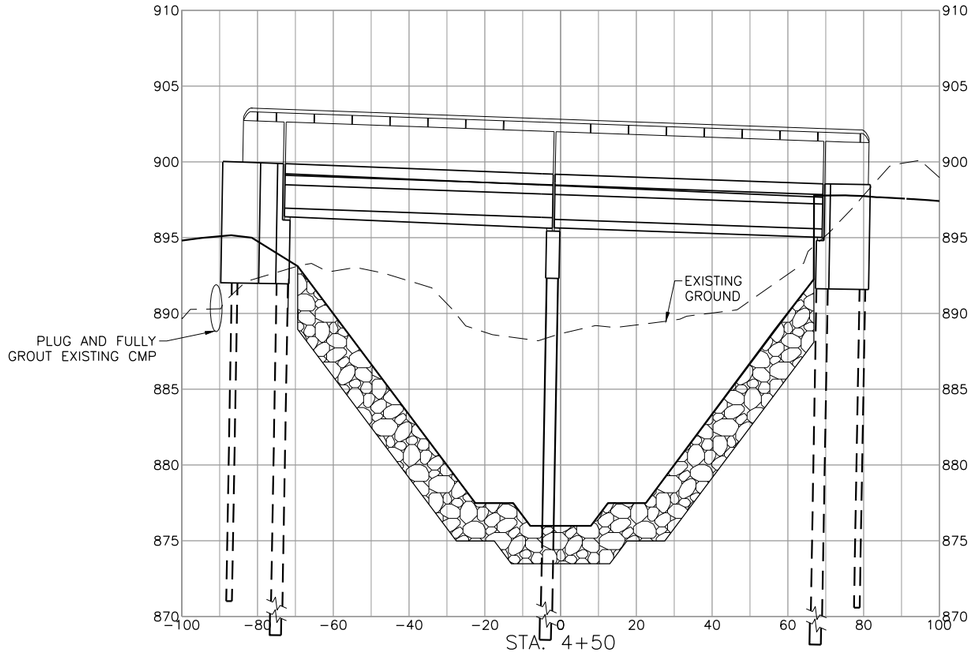
NO.	ISSUE	BY	DATE

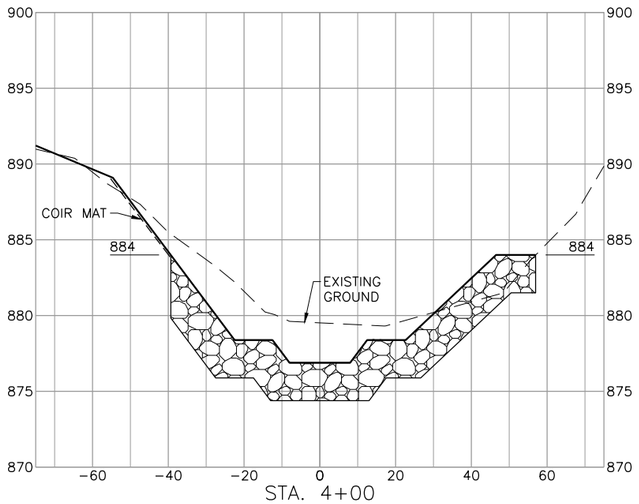
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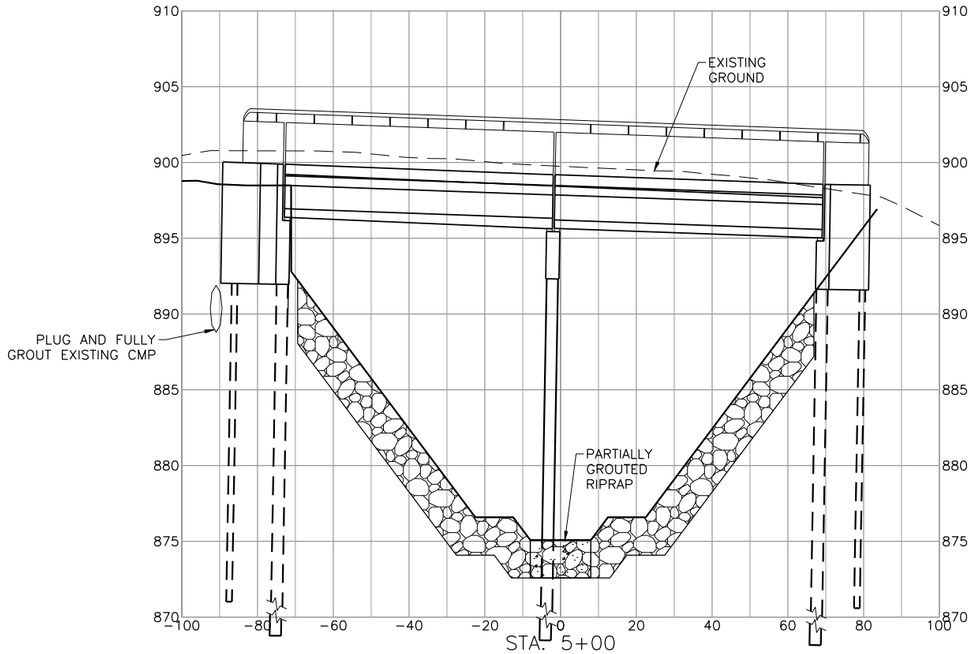
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET C-11
SEQ.









0 20' 40'
SCALE IN FEET
HORIZONTAL

0 5' 10'
SCALE IN FEET
VERTICAL

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AT LACKEY CREEK

LACKEY CREEK CROSS SECTIONS 2

NO.	ISSUE	BY	DATE

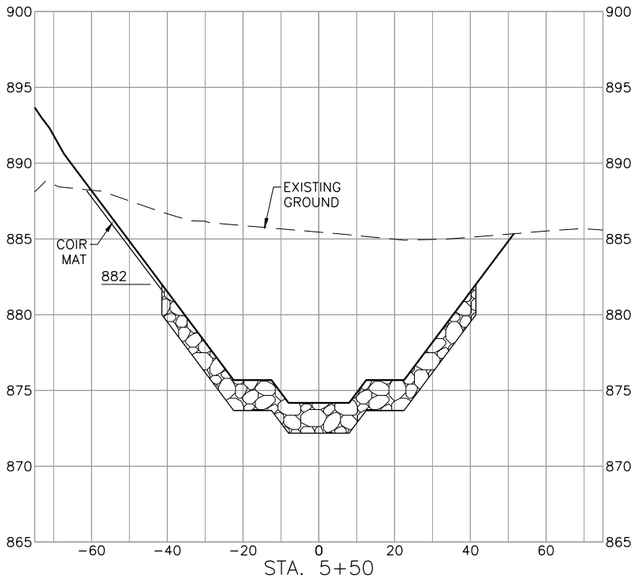
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DATE 03/13/18
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REVISED:
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FILE NAME CV-XSEC01.dwg

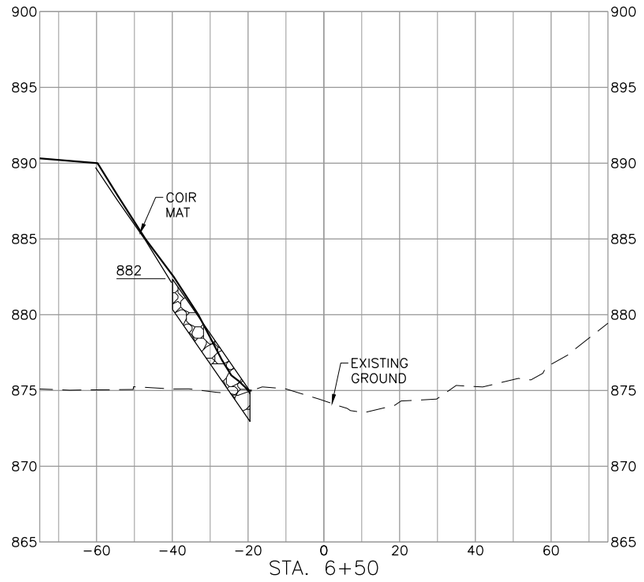
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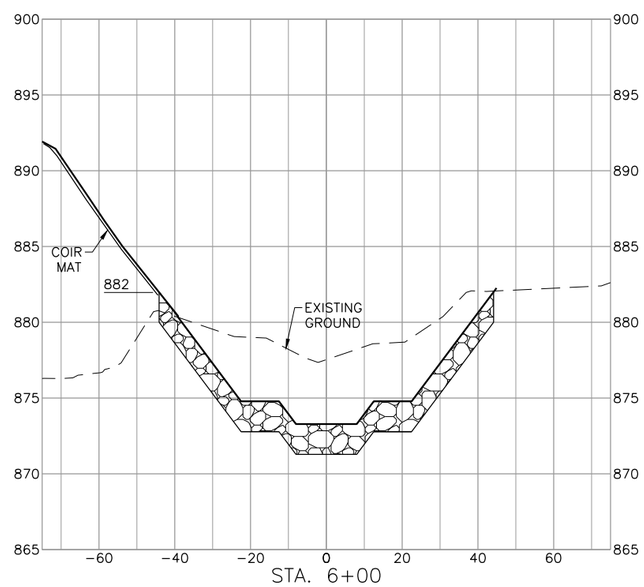
SHEET C-12
SEQ.

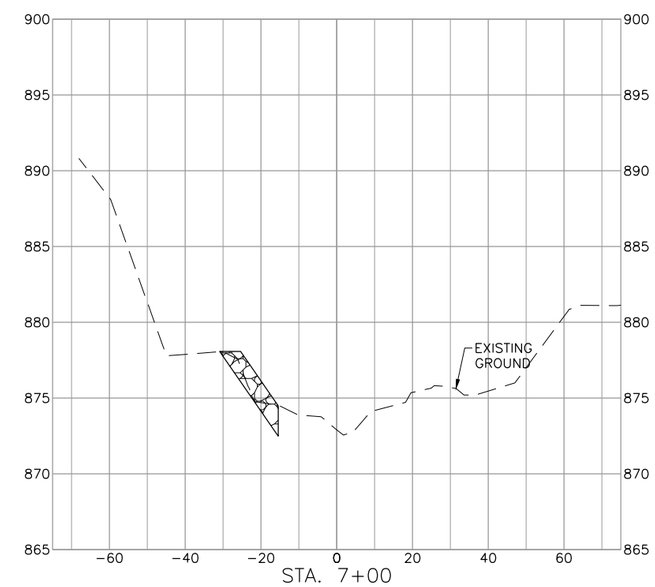
0 20' 40'
SCALE IN FEET
HORIZONTAL

0 5' 10'
SCALE IN FEET
VERTICAL









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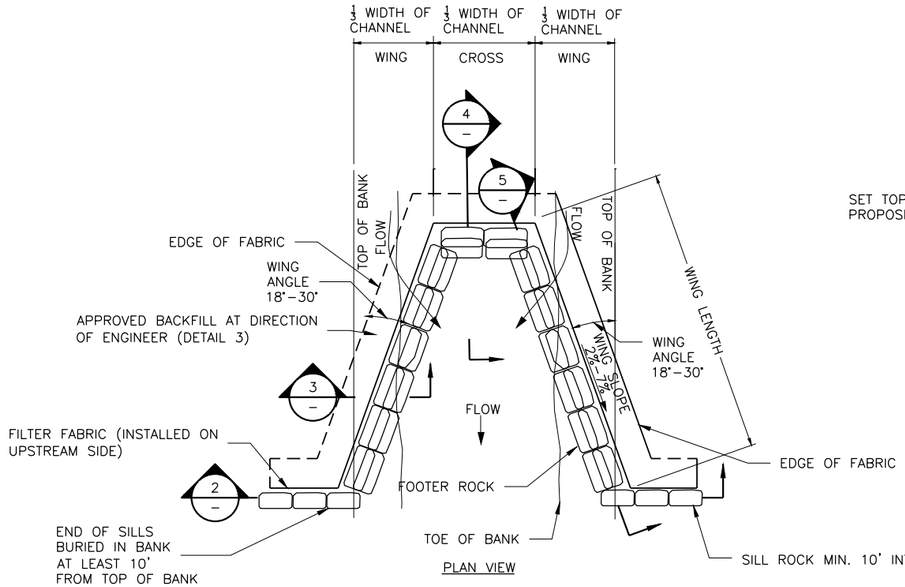
LACKEY CREEK CROSS SECTIONS 3

NO.	ISSUE	BY	DATE

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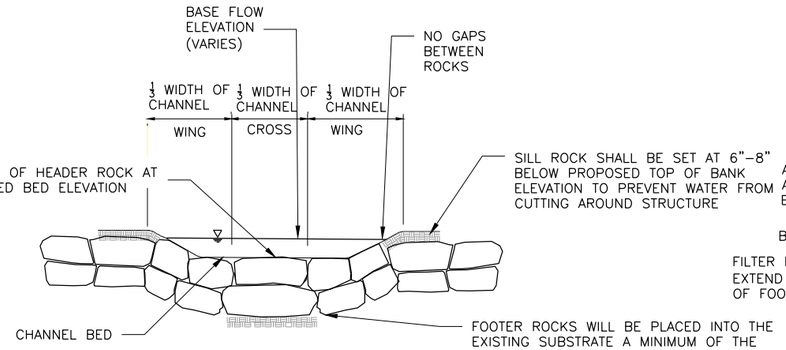
SHEET C-13
SEQ.



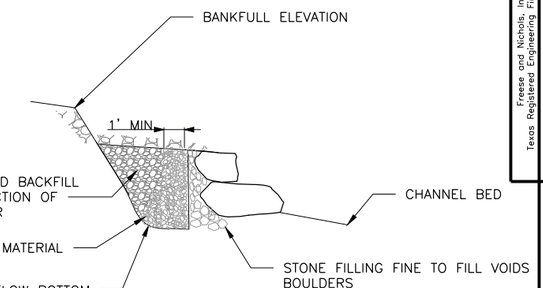
1 – ROCK VANE
NOT TO SCALE

NOTE:

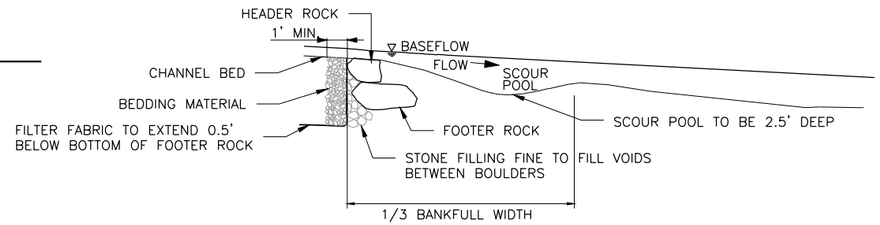
1. HEADER, FOOTER, AND SILL ROCKS TO BE 2'X1.5'X5' LIMESTONE BLOCK OR BOULDERS WEIGHING AT LEAST 1 TON.
2. VANE ARMS BACKFILLED WITH APPROVED BACKFILL AT DIRECTION OF ENGINEER.
3. BEDDING MATERIAL TO BE ASHTO M43 #57.
4. STONE FILLING FINE SHALL BE 3"X5" CRUSHED LIMESTONE.



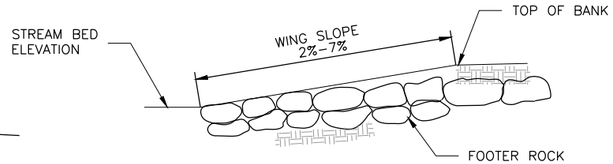
2 – UPSTREAM VIEW
NOT TO SCALE



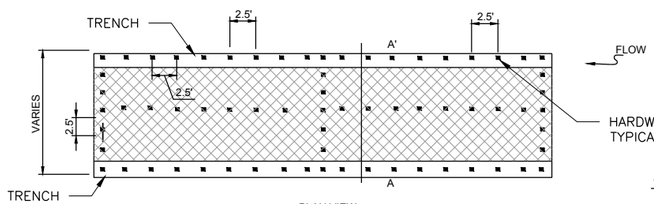
3 – SECTION VIEW
NOT TO SCALE



4 – PROFILE VIEW
NOT TO SCALE

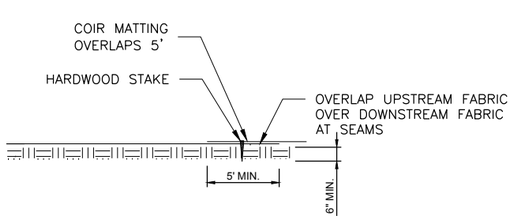


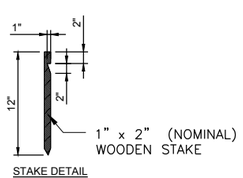
5 – SECTION VIEW
NOT TO SCALE

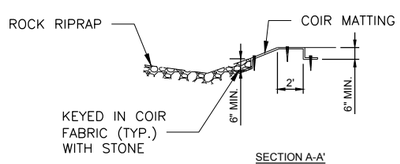


NOTES:

1. MAXIMUM SINGLE LENGTH OF MATTING/MESH IS 100'.
2. TOP AND BOTTOM EDGES OF MATTING/MESH SHALL BE KEYED IN.
3. COIR MATTING DETAIL SHOWN IS FOR PERMANENT INSTALLATION. TEMPORARY INSTALLATION FOR EROSION CONTROL PROTECTION SHALL BE TO THE EXTENT THAT THE PROJECT SITE NEEDS TO BE PROTECTED FOR EROSION AND SEDIMENT CONTROL DURING NON-WORKING HOURS.







6 – COIR MATTING
NOT TO SCALE

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WILLIAMSON COUNTY, TEXAS
SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK
MISC DETAILS

FAN JOB NO. WIC16278
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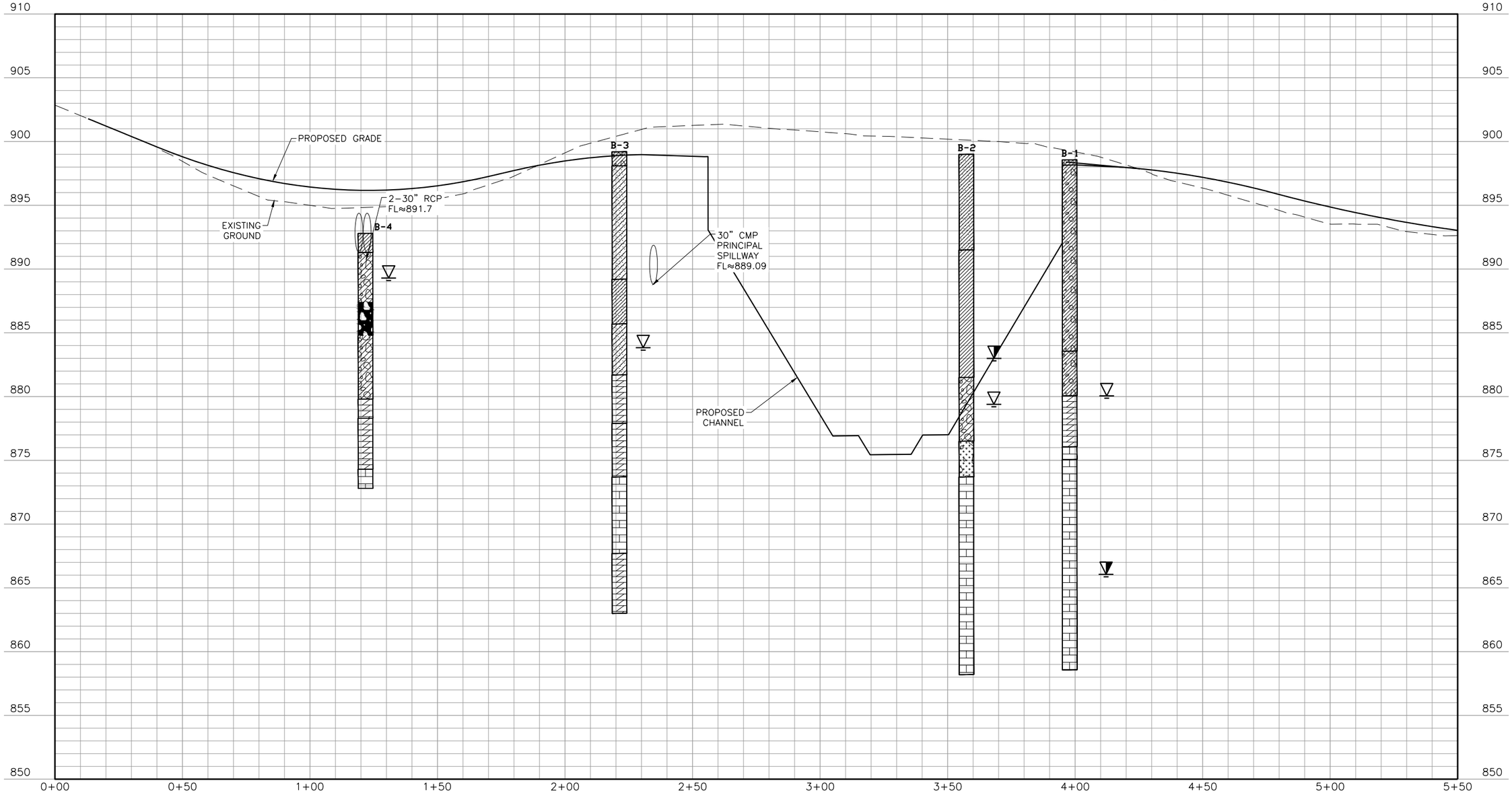
SHEET C–14
SEQ.

0 20' 40'
SCALE IN FEET
HORIZONTAL

0 4' 8'
SCALE IN FEET
VERTICAL

SOIL LEGEND

- USCS Low Plasticity Gravelly Clay
- Plasticity Sandy Clay
- Well-graded Gravelly Sand
- Marl
- USCS Low Plasticity Clay
- USCS Clayey Sand
- Limestone
- USCS Clayey Gravel
- Boulders and cobbles
- Water level at time of drilling
- Water level 24 hours after drilling



NOTE:
SEE SHEET C-1 FOR BORING LOCATIONS.

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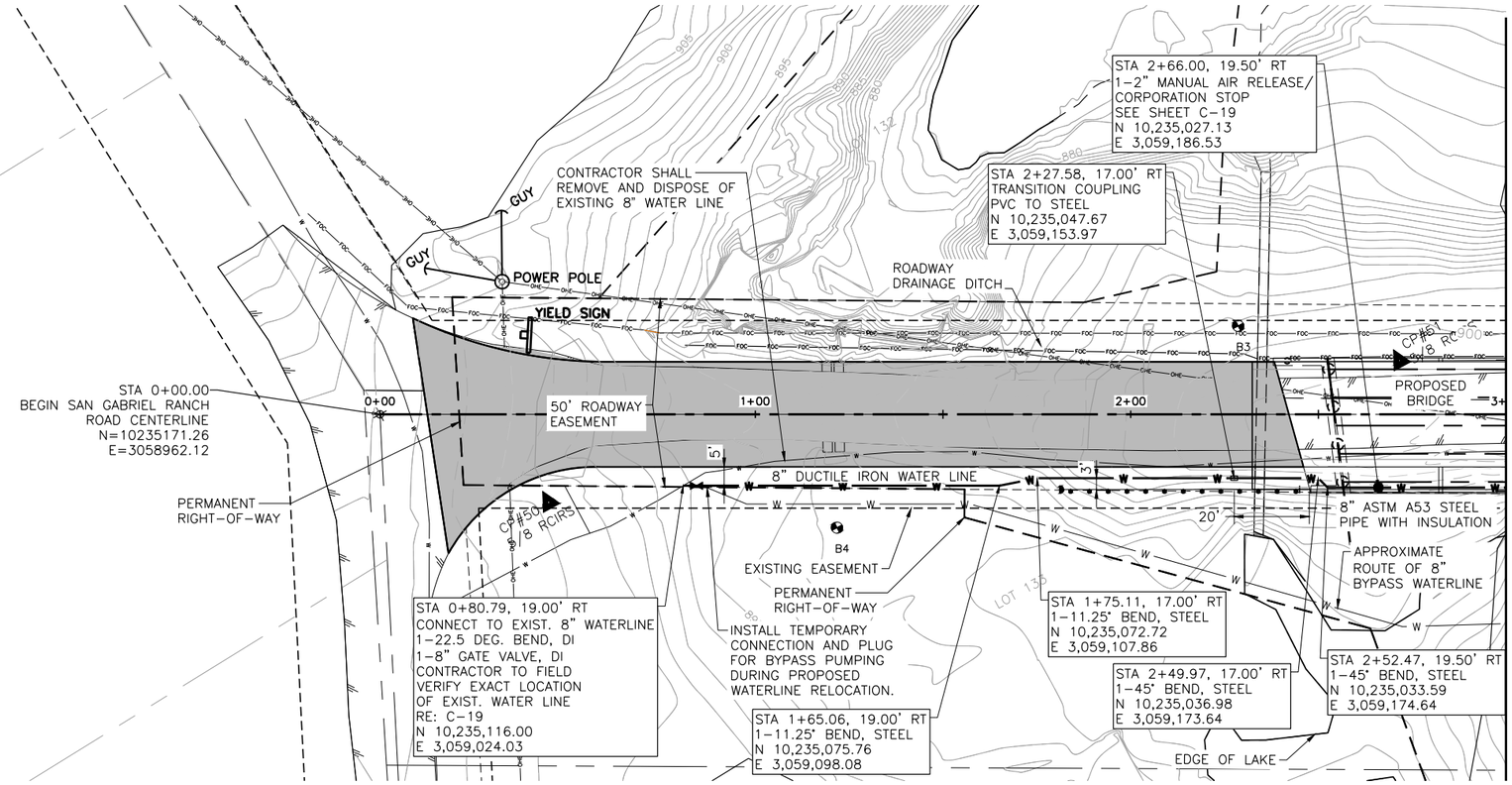
WILLIAMSON COUNTY, TEXAS
SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK
GEOLOGIC PROFILE

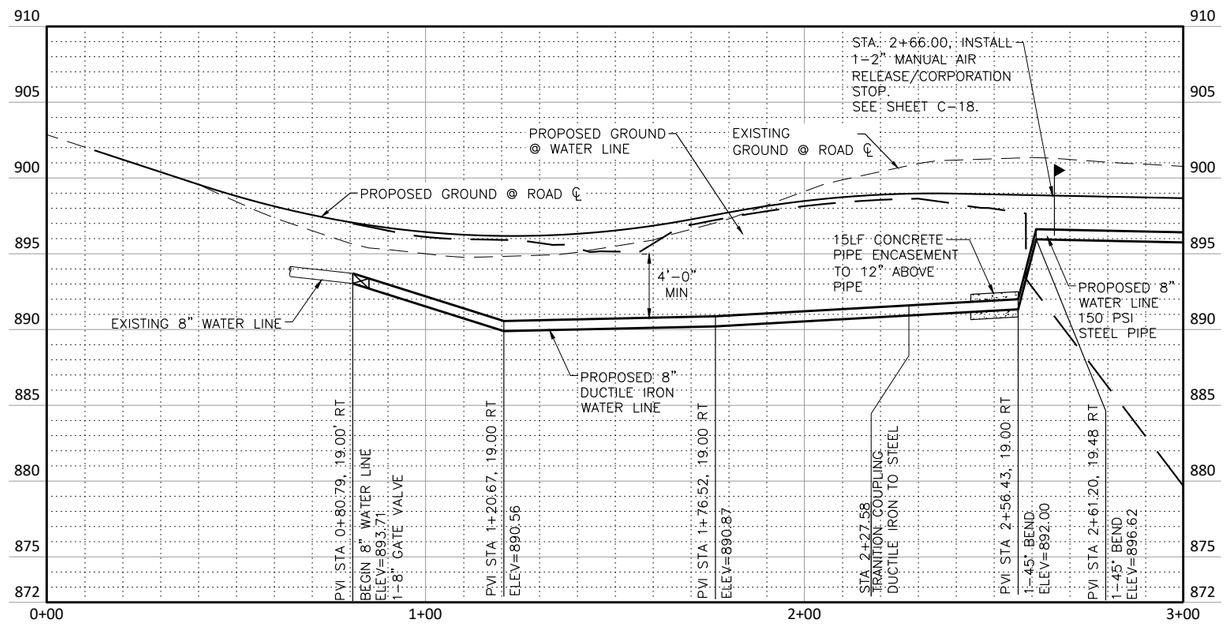
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SHEET C-15
SEQ.



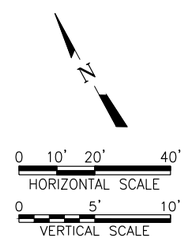


NOTES:

1. DEFLECT JOINTS AS REQUIRED TO ACHIEVE GRADES AND BENDS AS SHOWN. ALLOWABLE JOINT DEFLECTION SHALL BE NO GREATER THAN 75% OF PIPE MANUFACTURER'S RECOMMENDED MAXIMUM.
2. VERIFY DEPTH AND LOCATION OF TIE-IN TO EXISTING 8" WATER LINE PRIOR TO ORDERING MATERIAL.
3. PROVIDE REQUIRED TEMPORARY CONNECTIONS AND BYPASS PIPING TO PROVIDE UNINTERRUPTED SERVICE TO AQUA CUSTOMERS DURING CONSTRUCTION. ALIGNMENT OF BYPASS PIPING AND LOCATION OF TEMPORARY CONNECTIONS MAY BE MODIFIED WITH ENGINEER APPROVAL.
4. STEEL PIPE SHALL BE ASTM 53 GRADE B 1/2" WALL THICKNESS, EXTRA HEAVY STEEL PIPE MANUFACTURED IN ACCORDANCE WITH AWWA C200.
5. ALL STEEL PIPE SHALL BE COATED INTERNALLY IN ACCORDANCE WITH AWWA C210 OR APPROVED EQUAL.
6. ALL EXPOSED STEEL PIPE SHALL BE SHOP BLASTED AND COATED EXTERNALLY. ACCEPTABLE COATINGS INCLUDE TNEMEC SERIES N140 POTA-POX PLUS, SHERWIN WILLIAMS TANK CLAD EPOXY, INTERNATIONAL PAINT, LLC INTERLINE 850 OR INTERSEAL 670HS (NSF COLORS) AND CARBOLINE 891. COATING THICKNESS AND APPLICATION SHALL BE PER MANUFACTURER'S REQUIREMENTS.
7. ALL EXPOSED STEEL PIPE SHALL BE INSULATED. PIPE INSULATION FOR CARRIER PIPE SHALL BE 1 1/2" THICK COMPOSED OF ONE OF THE FOLLOWING:
   a. HEAVY DUTY PREFORMED FIBERGLASS (ASTM C547, TYPE 1, 2 OR 3). ACCEPTABLE MANUFACTURERS: SCHULLER, KNAUF OR CERTAINTEED.
   b. PREFORMED FLEXIBLE ELASTOMERIC INSULATION (ASTM C534). ACCEPTABLE MANUFACTURERS: ARMSTRONG "ARMAFLEX", OR SCHULLER "RUBATEX."
   c. PREFORMED UNICELLULAR POLYOLEFIN FOAM (ASTM C534) TUBULAR PRE-SLIT WITH ADHESIVE. ACCEPTABLE MANUFACTURERS: IMCOA.
8. ALL INSULATION AND COATINGS SHALL BE NSF CERTIFIED.
9. ALL STEEL PIPE JOINTS SHALL BE RESTRAINED.
10. THRUST RESTRAINT SHALL BE ACCOMPLISHED WITH RESTRAINED JOINTS AS INDICATED ON C-19.
11. DISINFECTION OF NEW WATER PIPELINE SHALL COMPLY WITH SPECIFICATION 33 10 13 DISINFECTING OF WATER UTILITY DISTRIBUTION.

LEGEND

- EXISTING GROUND
- PROPOSED GRADE
- PROPOSED GRADE AT WATER LINE
- PROPOSED WATER LINE
- EXISTING WATER LINE



Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144
3/14/18
STATE OF TEXAS
JAMES C. HOSKINS
103447
LICENSED PROFESSIONAL ENGINEER

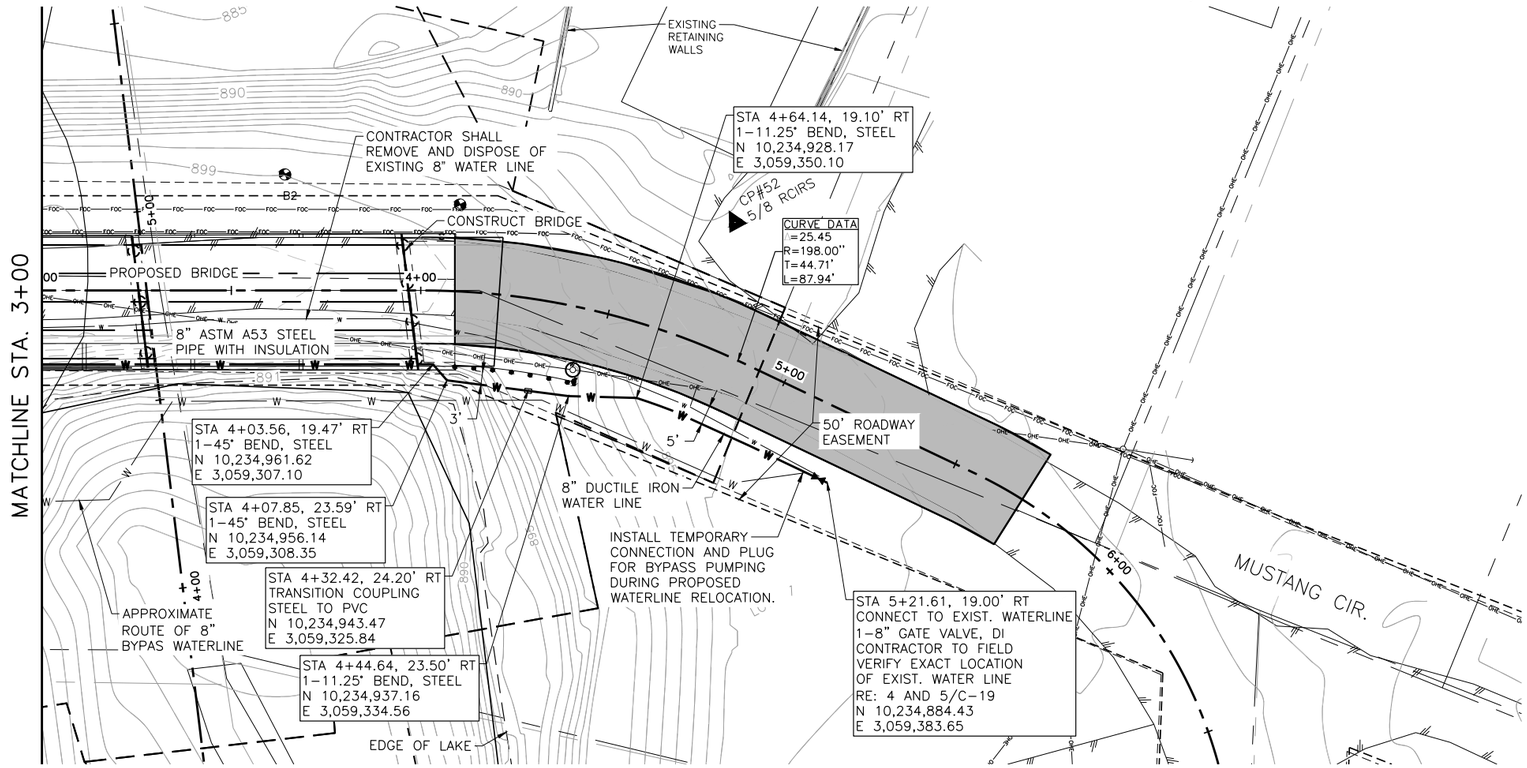
FREESE NICHOLS
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Austin, Texas 78759
Phone - (512) 617-3100
Fax - (512) 617-3101

WILLIAMSON COUNTY, TEXAS
SAN GABRIEL RANCH ROAD BRIDGE
AT LACKEY CREEK
WATER LINE RELOCATION PLAN 1
STA. 0+00 TO STA. 3+00

FAN JOB NO. WIC16278	DATE	BY	NO.	ISSUE
DATE 03/14/18				
DESIGNED: ADH				
DRAWN: ESL				
REVISED:				
CHECKED:				
FILE NAME WTU-WTR-PL.dwg				

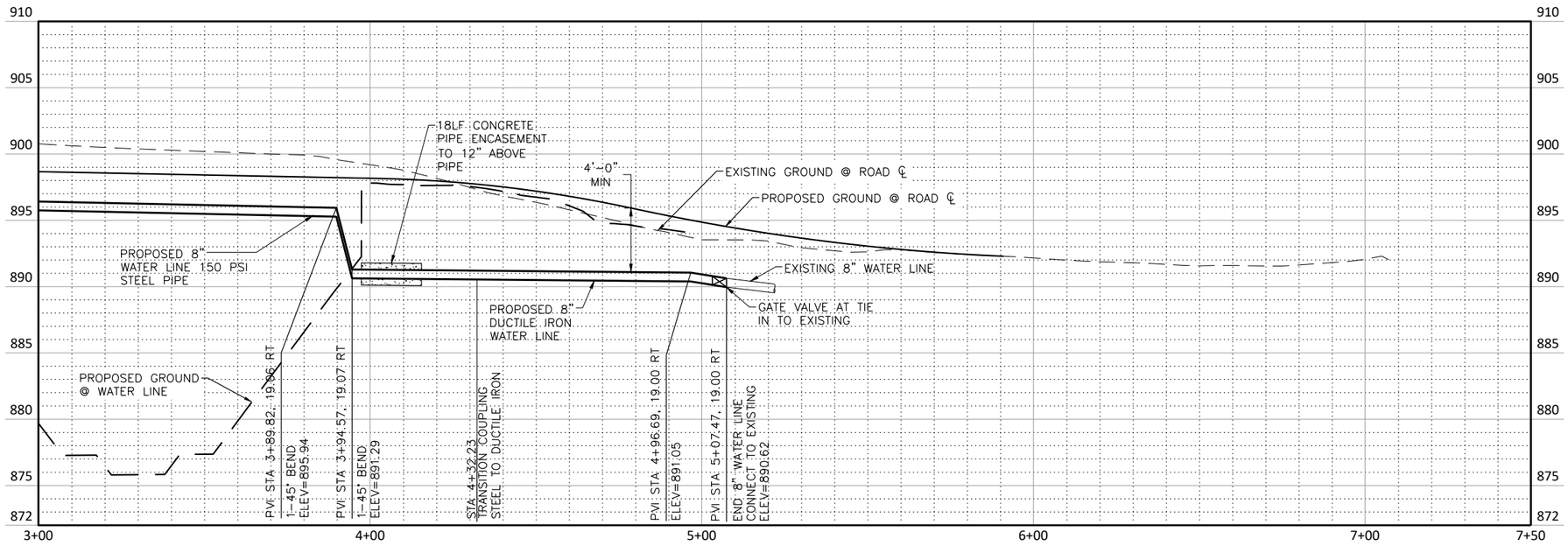
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale. 0 1"

SHEET C-16
SEQ.



NOTES:

1. DEFLECT JOINTS AS REQUIRED TO ACHIEVE GRADES AND BENDS AS SHOWN. ALLOWABLE JOINT DEFLECTION SHALL BE NO GREATER THAN 75% OF PIPE MANUFACTURER'S RECOMMENDED MAXIMUM.
2. VERIFY DEPTH AND LOCATION OF TIE-IN TO EXISTING 8" WATER LINE PRIOR TO ORDERING MATERIAL.
3. PROVIDE REQUIRE TEMPORARY CONNECTION AND BYPASS PIPING TO PROVIDE UNINTERRUPTED SERVICE TO AQUA CUSTOMERS DURING CONSTRUCTION. ALIGNMENT OF BYPASS PIPING AND LOCATION OF TEMPORARY CONNECTIONS MAY BE MODIFIED WITH ENGINEER APPROVAL.
4. STEEL PIPE SHALL BE ASTM A53 GRADE B 1/2" WALL THICKNESS, EXTRA HEAVY STEEL PIPE, MANUFACTURED IN ACCORDANCE WITH AWWA C200.
5. ALL STEEL PIPE SHALL BE COATED INTERNALLY IN ACCORDANCE WITH AWWA C210 OR APPROVED EQUAL.
6. ALL EXPOSED STEEL PIPE SHALL BE SHOP BLASTED AND COATED EXTERNALLY. ACCEPTABLE COATINGS INCLUDE TNEMEC SERIES N140 POTA-POX PLUS, SHERWIN WILLIAMS TANK CLAD EPOXY, INTERNATIONAL PAINT, LLC INTERLINE 850 OR INTERSEAL 670HS (NSF COLORS) AND CARBOLINE 891. COATING THICKNESS AND APPLICATION SHALL BE PER MANUFACTURER'S REQUIREMENTS.
7. ALL EXPOSED STEEL PIPE SHALL BE INSULATED. PIPE INSULATION FOR CARRIER PIPE SHALL BE 1 1/2" THICK COMPOSED OF ONE OF THE FOLLOWING:
   a. HEAVY DUTY PREFORMED FIBERGLASS (ASTM C547, TYPE 1, 2 OR 3). ACCEPTABLE MANUFACTURERS: SCHULLER, KNAUF OR CERTAINTEED.
   b. PREFORMED FLEXIBLE ELASTOMERIC INSULATION (ASTM C534). ACCEPTABLE MANUFACTURERS: ARMSTRONG "ARMAFLEX", OR SCHULLER "RUBATEX."
   c. PREFORMED UNICELLULAR POLYOLEFIN FOAM (ASTM C534) TUBULAR PRE-SLIT WITH ADHESIVE. ACCEPTABLE MANUFACTURERS: IMCOA.
8. ALL INSULATION AND COATINGS SHALL BE NSF CERTIFIED.
9. ALL STEEL PIPE JOINTS SHALL BE RESTRAINED.
10. THRUST RESTRAINT SHALL BE ACCOMPLISHED WITH RESTRAINED JOINTS AS INDICATED ON C-19.
11. DISINFECTION OF NEW WATER PIPELINE SHALL COMPLY WITH SPECIFICATION 33 10 13 DISINFECTING OF WATER UTILITY DISTRIBUTION.



LEGEND

- EXISTING GROUND
- PROPOSED GRADE
- PROPOSED GRADE AT WATER LINE
- W PROPOSED WATER LINE
- w EXISTING WATER LINE

N

0 10' 20' 40'
HORIZONTAL SCALE

0 5' 10'
VERTICAL SCALE

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144
3/14/18
STATE OF TEXAS
ANNE C. HOSKINS
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PROFESSIONAL ENGINEER

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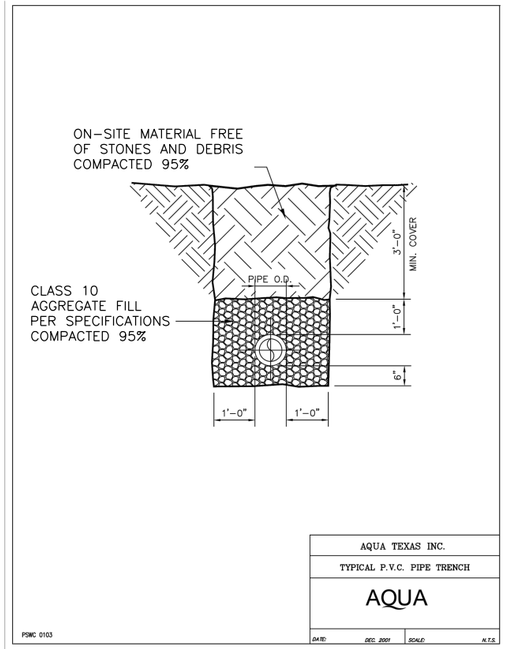
WILLIAMSON COUNTY, TEXAS
SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK
WATER LINE RELOCATION PLAN 2
STA. 3+00 TO END

F&N JOB NO.	WIC16278
DATE	03/14/18
DESIGNED:	ACH
DRAWN:	ESL
REVISED:	
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FILE NAME	WTU-WTR-PL.dwg

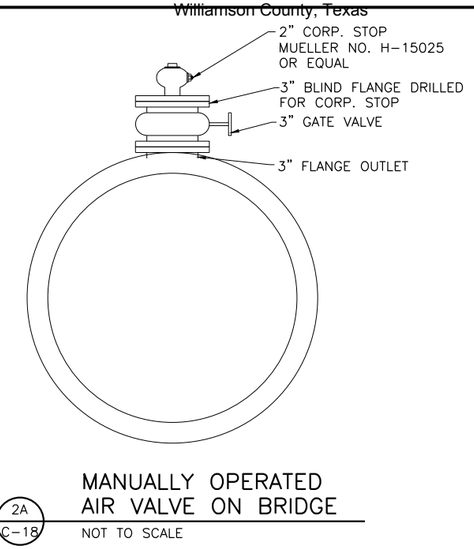
NO.	ISSUE	BY	DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
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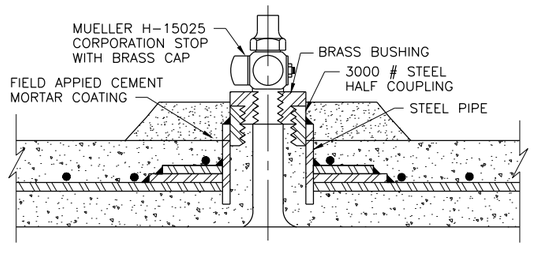
SHEET C-17
SEQ.



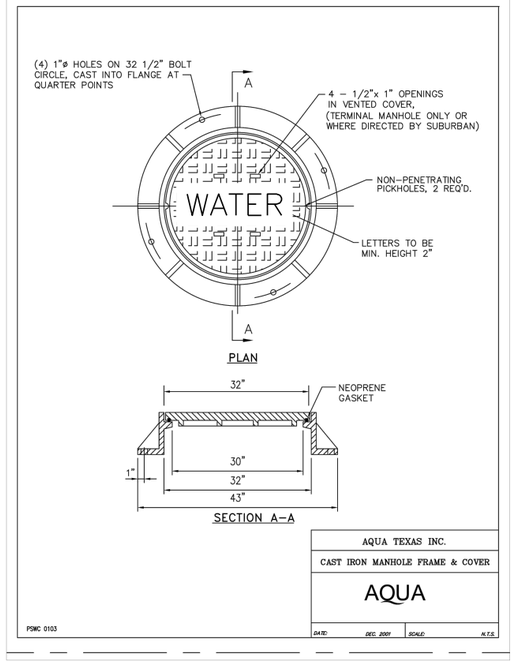
1 C-18 TYPICAL DUCTILE IRON PIPE TRENCH
NOT TO SCALE



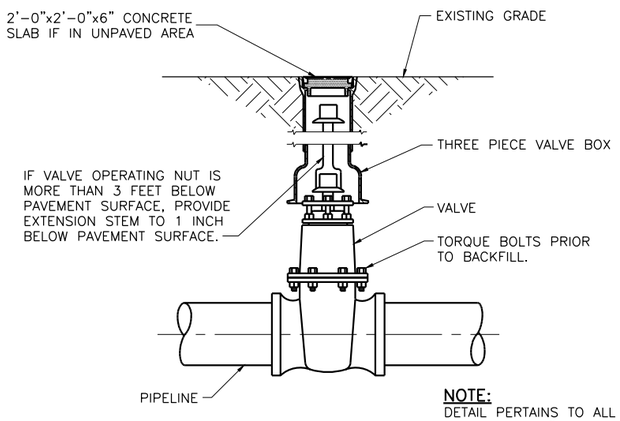
2A C-18 MANUALLY OPERATED AIR VALVE ON BRIDGE
NOT TO SCALE



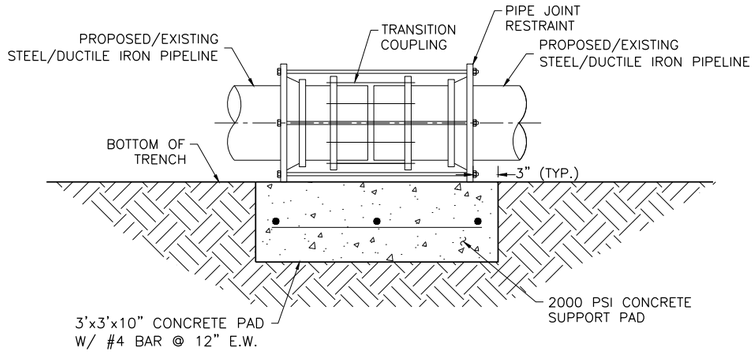
2B C-18 2" INCH CORPORATION STOP
NOT TO SCALE



3 C-18 CAST IRON MANHOLE FRAME & COVER
NOT TO SCALE

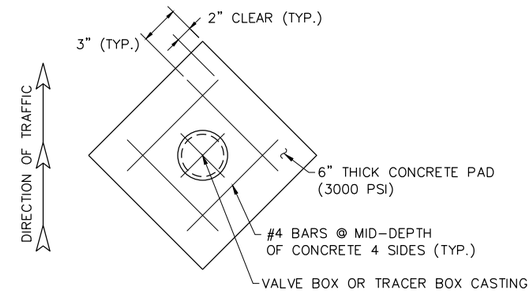


4 C-18 TYPICAL BURIED VALVE AND BOX, EXTENSION STEM DETAIL
NOT TO SCALE



NOTES:
1. ADDITIONAL REDUCERS, BENDS, AND FITTINGS MAY BE REQUIRED. SUBSIDIARY TO WATER PIPELINE.
2. ALL COUPLINGS SHALL BE WRAPPED IN POLYETHYLENE.

5 C-18 COUPLING SUPPORT DETAIL
NOT TO SCALE



NOTES:
1. 2' X 2' X 6" SLAB TO BE INSTALLED AROUND VALVE BOXES OR TracER BOXES
2. ADJUST GRADE TO MATCH FINISH PAVEMENT
3. 3000 PSI CONCRETE

6 C-18 CONCRETE VALVE AND TRACER BOX PAD DETAIL
NOT TO SCALE

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Texas Registered Engineering Firm F-2144
3/14/18
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WILLIAMSON COUNTY, TEXAS
SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK
WATER LINE RELOCATION DETAILS 1

FAN JOB NO.	WIC16278
DATE	03/14/18
DESIGNED:	ACH
DRAWN:	ESL
REVISED:	
CHECKED:	
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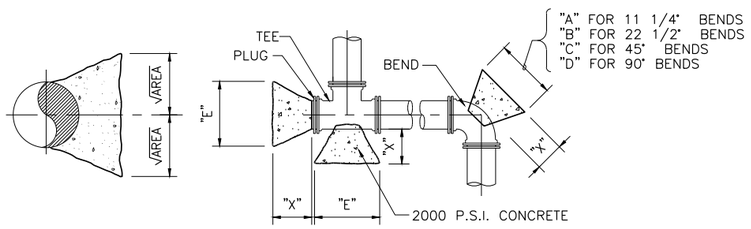
NO.	ISSUE	BY	DATE

Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
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SHEET C-18
SEQ.

Bid 1807-252

Williamson County, Texas



CONCRETE HORIZONTAL THRUST BLOCKING

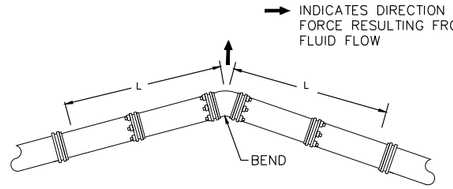
HORIZONTAL BLOCKING TABLE

PIPE SIZE	"X" FT.	11 1/4°		22 1/2°		45°		90°		TEE & PLUG	
		"A" IN.	MIN. AREA FT.²	"B" IN.	MIN. AREA FT.²	"C" IN.	MIN. AREA FT.²	"D" IN.	MIN. AREA FT.²	"E" IN.	MIN. AREA FT.²
6"	1.0	9	1.04	13	2.07	18	4.05	24	7.49	20	10.59
8"	1.0	12	1.85	17	3.67	24	7.20	32	13.31	27	18.82
10"	1.0	15	2.88	21	5.74	29	11.25	40	20.79	34	29.41
12"	1.25	18	4.15	25	8.26	35	16.20	48	29.94	40	42.34
14"	1.5	24	7.38	34	14.68	47	28.81	64	53.23	54	75.28
16"	1.5	24	7.38	34	14.68	47	28.81	64	53.23	54	75.28
20"	2.0	36	16.60	50	33.04	71	64.82	96	119.77	81	169.38
24"	2.0	36	16.60	50	33.04	71	64.82	96	119.77	81	169.38
30"	2.25	–	25.94	–	51.63	–	101.28	–	187.14	–	264.65
36"	2.75	–	37.36	–	74.35	–	145.83	–	269.47	–	381.09
42"	3.0	–	50.84	–	101.20	–	198.50	–	366.78	–	518.71

NOTES:

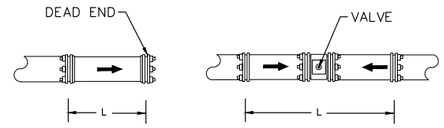
1. THRUST AT BENDS, TEES, PLUGS, OR OTHER FITTINGS SHALL BE RESISTED BY RESTRAINED JOINTS. IF THRUST CANNOT BE ACCOMMODATED USING RESTRAINED JOINTS, THRUST BLOCKING OR CONCRETE ANCHORS TO RESTRAIN THRUST MAY BE USED ON A CASE-BY-CASE BASIS WHEN APPROVED BY THE ENGINEER.
2. CONTRACTOR SHALL VERIFY ALL SOIL BEARING STRENGTHS.
3. BEARING AREAS SHOWN ARE BASED ON 200 P.S.I. TEST AND 2,000 P.S.F. SOIL BEARING VALUE.
4. THE EARTH BEARING SURFACE SHALL BE UNDISTURBED MATERIAL. KEEP ALL FITTINGS FREE FROM CONCRETE. THRUST BLOCKS ARE TO BE CONSTRUCTED OF 2,000 P.S.I. (28 DAY) CONCRETE AND PLACED AS SHOWN ON TYPICAL THRUST BLOCKING DETAIL.
5. ALL VALUES ARE MINIMUM. IF SOIL BEARING VALUE IS LESS THAN 2000 P.S.F., CONTRACTOR SHALL HAVE A TEXAS REGISTERED PROFESSIONAL ENGINEER DESIGN THE NECESSARY THRUST BLOCKING.
6. VERTICAL DIMENSION OF BLOCKING SHALL BE IDENTICAL TO THE APPLICABLE HORIZONTAL (A,B,D,C,E) DIMENSION AS LISTED IN TABLE, OR GREATER.
7. DIMENSION "X" MAY VARY IF NECESSARY TO PROVIDE BEARING AGAINST UNDISTURBED TRENCH WALL.

1 C-19 HORIZONTAL BLOCKING DETAIL
NOT TO SCALE



L = LENGTH TO BE RESTRAINED ON BOTH SIDES OF FITTING.

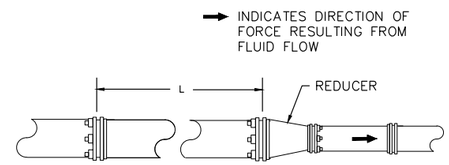
2 C-19 RESTRAINED LENGTH FOR BENDS
NOT TO SCALE



L = LENGTH TO BE RESTRAINED.

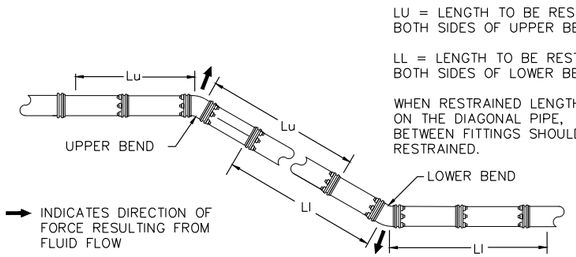
INDICATES DIRECTION OF FORCE RESULTING FROM FLUID FLOW

3 C-19 RESTRAINED LENGTH DEAD ENDS AND VALVES
NOT TO SCALE



L=LENGTH TO BE RESTRAINED

4 C-19 RESTRAINED LENGTH FOR REDUCERS
NOT TO SCALE

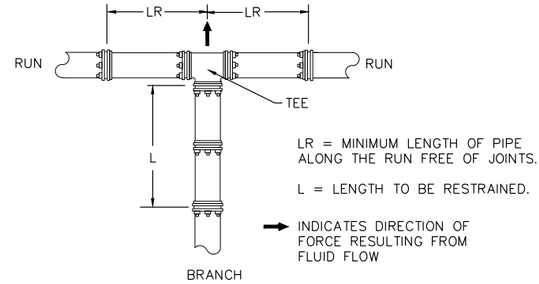


LU = LENGTH TO BE RESTRAINED ON BOTH SIDES OF UPPER BEND.

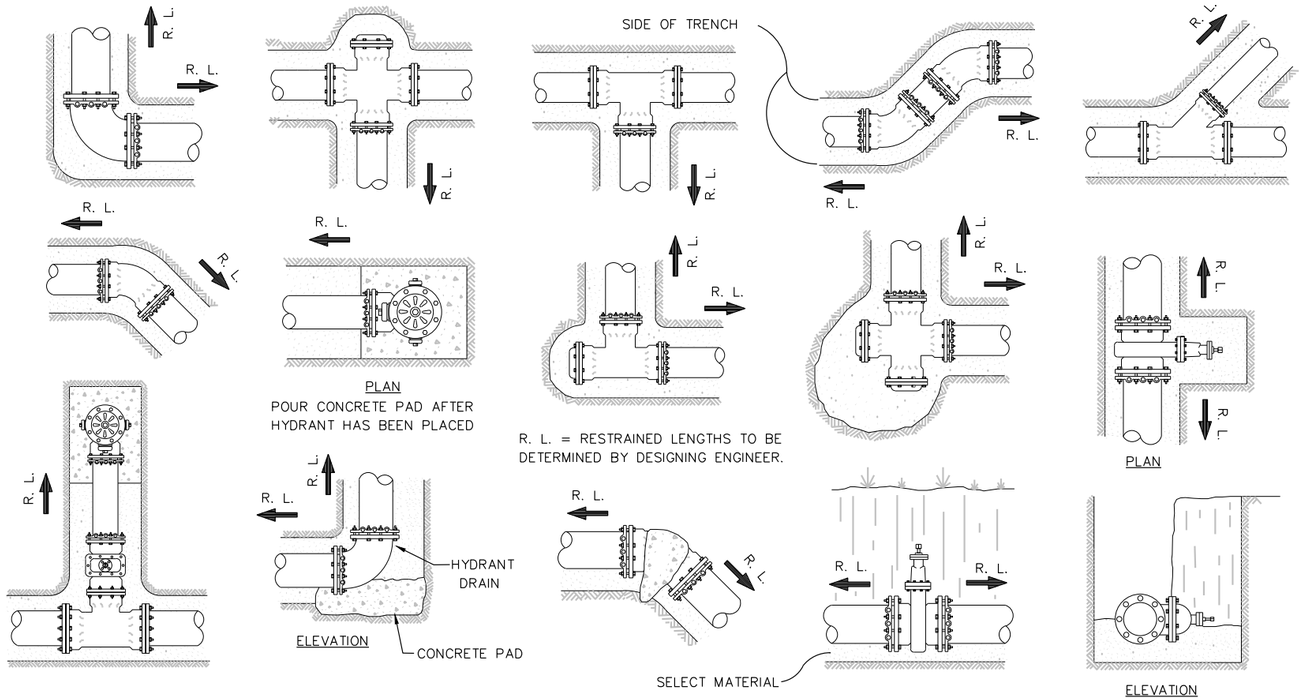
LL = LENGTH TO BE RESTRAINED ON BOTH SIDES OF LOWER BEND.

WHEN RESTRAINED LENGTHS OVERLAP ON THE DIAGONAL PIPE, ALL PIPE BETWEEN FITTINGS SHOULD BE RESTRAINED.

5 C-19 RESTRAINED LENGTH FOR VERTICAL OFFSETS
NOT TO SCALE



6 C-19 RESTRAINED LENGTH FOR TEES
NOT TO SCALE



7 C-19 RESTRAINED JOINTS FOR FITTINGS
NOT TO SCALE

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

3/14/18

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WILLIAMSON COUNTY, TEXAS
SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK
STANDARD DETAILS
WATER LINE RELOCATION DETAILS 2

NO.	ISSUE	BY	DATE

F&N JOB NO. W1C16278
DATE 03/14/18
DESIGNED: SV
DRAWN: MBB
REVISED:
CHECKED: AD
FILE NAME WTU-WTR-BRDG-DT.dwg

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0 1"

SHEET C-19
SEQ.

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JOINT RESTRAINT TABLE FOR VERTICAL OFFSETS

PIPE SIZE (INCHES)	BEND ANGLE (DEG.)	LOW SIDE DEPTH (FEET)	UPPER BEND RESTRAINED DI PIPE LENGTH (LU) (FEET EACH WAY)	LOWER BEND RESTRAINED DI PIPE LENGTH (LI) (FEET EACH WAY)	UPPER BEND RESTRAINED PVC PIPE LENGTH (LU) (FEET EACH WAY)	LOWER BEND RESTRAINED PVC PIPE LENGTH (LI) (FEET EACHWAY)
8	45	5	24	8	37	10
8	22.5	5	12	4	18	5
8	11.25	5	6	2	9	3
8	45	10	24	5	37	5
8	22.5	10	12	2	18	3
8	11.25	10	6	1	9	2
10	45	5	28	10	44	12
10	22.5	5	14	5	21	6
10	11.25	5	7	3	11	3
10	45	10	28	5	44	6
10	22.5	10	14	3	21	3
10	11.25	10	7	2	11	2
12	45	5	33	12	52	14
12	22.5	5	16	6	25	7
12	11.25	5	8	3	13	4
12	45	10	33	6	52	7
12	22.5	10	16	3	25	4
12	11.25	10	8	2	13	2
18	45	5	35	12	55	15
18	22.5	5	17	6	27	7
18	11.25	5	9	3	14	4
18	45	10	35	7	55	8
18	22.5	10	17	4	27	4
18	11.25	10	9	2	14	2
24	45	5	40	16	63	19
24	22.5	5	20	8	31	9
24	11.25	5	10	4	15	5
24	45	10	40	9	63	10
24	22.5	10	20	4	31	5
24	11.25	10	10	2	15	3

JOINT RESTRAINT TABLE FOR TEES

PIPE SIZE (INCHES)	BRANCH SIZE (INCHES)	FITTING TYPE	LENGTH OF RUN (LR) (FEET)	RESTRAINED DI PIPE ON BRANCH (L) (FEET)	RESTRAINED PVC PIPE ON BRANCH (L) (FEET)
8	8	TEE	0	56	88
8	8	TEE	5	40	62
8	8	TEE	10	23	36
10	8	TEE	0	56	88
10	8	TEE	5	35	55
10	8	TEE	10	14	21
10	10	TEE	0	67	105
10	10	TEE	5	50	79
10	10	TEE	10	34	52
12	10	TEE	0	67	105
12	10	TEE	5	47	73
12	10	TEE	10	27	41
12	12	TEE	0	79	124
12	12	TEE	5	62	98
12	12	TEE	10	45	71
18	18	TEE	0	84	133
18	18	TEE	5	67	105
18	18	TEE	10	49	78
24	24	TEE	0	97	151
24	24	TEE	5	79	123
24	24	TEE	10	61	96

JOINT RESTRAINT TABLE FOR HORIZONTAL BENDS

PIPE SIZE (INCHES)	FITTING TYPE	DI PIPE LENGTH TO BE RESTRAINED (L) (FEET EACH WAY)	PVC PIPE LENGTH TO BE RESTRAINED (L) (FEET EACH WAY)
8	90° BEND	27	32
8	45° BEND	11	14
8	22.5° BEND	6	7
8	11.25° BEND	3	4
10	90° BEND	32	38
10	45° BEND	14	16
10	22.5° BEND	7	8
10	11.25° BEND	4	4
12	90° BEND	37	45
12	45° BEND	16	19
12	22.5° BEND	8	9
12	11.25° BEND	4	5
18	90° BEND	39	47
18	45° BEND	17	20
18	22.5° BEND	8	10
18	11.25° BEND	4	5
24	90° BEND	45	53
24	45° BEND	19	22
24	22.5° BEND	9	11
24	11.25° BEND	5	6

JOINT RESTRAINT TABLE FOR DEAD ENDS

PIPE SIZE (INCHES)	FITTING TYPE	DI PIPE LENGTH TO BE RESTRAINED (L) (FEET EACH WAY)	PVC PIPE LENGTH TO BE RESTRAINED (L) (FEET EACH WAY)
8	DEAD END	56	88
10	DEAD END	67	105
12	DEAD END	169	110
18	DEAD END	84	133
24	DEAD END	97	151

JOINT RESTRAINT TABLE FOR VALVES

PIPE SIZE (INCHES)	FITTING TYPE	DI PIPE LENGTH TO BE RESTRAINED (L) (FEET EACH WAY)	PVC PIPE LENGTH TO BE RESTRAINED (L) (FEET EACH WAY)
8	VALVE	56	88
10	VALVE	67	105
12	VALVE	79	124
18	VALVE	84	133
24	VALVE	97	151

JOINT RESTRAINT TABLE FOR REDUCERS

LARGER PIPE SIZE (INCHES)	SMALLER PIPE SIZE (INCHES)	FITTING TYPE (BEND ANGLES)	DI PIPE LENGTH TO BE RESTRAINED (L) (FEET EACH WAY)	PVC PIPE LENGTH TO BE RESTRAINED (L) (FEET EACH WAY)
10	8	REDUCER	23	36
12	8	REDUCER	42	66
12	10	REDUCER	24	37
18	12	REDUCER	46	72
24	18	REDUCER	42	65

JOINT RESTRAINT CALCULATIONS FACTORS

PIPE MATERIAL	SOIL TYPE	SAFETY FACTOR	TRENCH TYPE	DEPTH OF BURY	TEST PRESSURE
DUCTILE IRON WITH POLYWRAP AND PVC	CH– INORGANIC CLAY W/ GRANULAR BACKFILL	1.5 TO 1	5	4'–0"	200 PSI

JOINT RESTRAINT TABLES NOTES:

1. JOINT RESTRAINT LENGTHS WERE CALCULATED USING THE EBAA IRON, INC. RESTRAINT LENGTH CALCULATOR PROGRAM (VERSION 7.1.2.) AND THE FACTORS IN THE JOINT RESTRAINT CALCULATION FACTORS TABLE TO THE RIGHT.
2. CONTRACTOR MUST RECALCULATE RESTRAINT LENGTHS IF THE INSPECTOR OR SITE CONDITIONS REQUIRE DIFFERENT FACTORS.
3. IF RESTRAINT LENGTH SHOWN IN TABLE EXCEEDS PIPE LENGTH SHOWN ON PLANS, THEN ALL FITTINGS AND JOINTS SHALL BE RESTRAINED AND CONCRETE THRUST BLOCKS SHALL BE USED.
4. IF A DISCREPANCY OCCURS BETWEEN A RESTRAINT LENGTH VALUE SHOWN ON THE PLANS AND A RESTRAINT LENGTH VALUE SHOWN IN THE TABLES BELOW, THEN THE RESTRAINT LENGTH VALUE SHOWN IN THE TABLES BELOW WILL GOVERN.
5. WHEN 2 HORIZONTAL 45° BENDS ARE PLACED TOGETHER TO CREATE A 90° BEND, RESTRAIN EACH SIDE OF THE 45° BENDS PER THE 90° BEND RESTRAINT REQUIREMENTS.

1 / C–20 RESTRAINED LENGTH VALUE TABLES

NO SCALE

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

STATE OF TEXAS ANNE C. HOSKINS 103447 LICENSED PROFESSIONAL ENGINEER 3/14/18

FREESE NICHOLS
10431 Morado Circle, Suite 300
Austin, Texas 78759
Phone - (512) 617-3100
Fax - (512) 617-3101

WILLIAMSON COUNTY, TEXAS
SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK
STANDARD DETAILS
THRUST RESTRAINT TABLES

NO.	ISSUE	BY:	DATE

FAN JOB NO. WIC16278
DATE 03/14/18
DESIGNED: SV
DRAWN: MRB
REVISED:
CHECKED: AD
FILE NAME WTU-KER-DT-MISC07.dwg

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET C–20
SEQ.



N

0 50' 100' 200'
SCALE IN FEET

NOTE:

1. COORDINATE USE OF SITE WITH COUNTY ENGINEER.
2. PREVIOUSLY DISTURBED ARAS OF THE SITE ARE AVAILABLE AS SECONDARY STAGING/STOCKPILE AREA.
3. EXCESS SOIL MAY BE STOCKPILED AT THIS SITE. COUNTY WILL ASSUME OWNERSHIP FOR CLEAN FILL.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY.

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

STATE OF TEXAS
DUSTIN G. MORTENSEN
100000
LICENSED PROFESSIONAL ENGINEER
3/14/2018

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WILLIAMSON COUNTY, TEXAS

SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK

SECONDARY STOCKPILE AND STAGING AREA

NO.	ISSUE	BY	DATE

FAN JOB NO. WIC16278
DATE 03/13/18
DESIGNED: SV
DRAWN: MDB
REVISED:
CHECKED: AD
FILE NAME AdditionalStockpilePropertyLine.DWG

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET C-21
SEQ.

GENERAL BRIDGE NOTES:

1. BRIDGE DESIGNED FOR HL-93 LOADING (AND A 25 PSF FUTURE OVERLAY) IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH EDITION (2014) AND 2015 AND 2016 INTERIM REVISIONS.
2. DESIGN SPEED = 15 MPH FUNCTIONAL CLASS = LOCAL.
3. BRIDGE DECK OVERHANGS DESIGNED TO CARRY AN ADDITIONAL MAXIMUM SERVICE DISTRIBUTED LOAD OF 200 LB/FT PER OVERHANG, WHICH INCLUDES THE COMBINED WEIGHT OF ONE OR MORE UTILITY LINES, HANGERS AND APPURTENANCES.
4. "D" DENOTES DOWELS IN OUTSIDE BEAMS, UNLESS SPECIFIED OTHERWISE.
5. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL UTILITIES PRIOR TO CONSTRUCTION.
6. CONTRACTOR SHALL LOCATE ALL UTILITIES AND INFORM ENGINEER IN WRITING OF ANY CONFLICTS PRIOR TO BEGINNING CONSTRUCTION.
7. BROOM FINISH IS REQUIRED FOR SIDEWALK.
8. REFER TO GRADING PLAN SHEETS FOR LIMITS, THICKNESS, SLOPE, AND DETAILS OF PROTECTION ROCK RIPRAP.
9. CONCRETE IN THE ABUTMENTS AND BENT SHALL BE CLASS C (F'C = 3600 PSI) PER TXDOT ITEM 420.
10. SLAB CONCRETE SHALL BE CLASS S (F'C = 4000 PSI) PER TXDOT ITEM 420.
11. ALL REINFORCING SHALL BE GRADE 60 PER TXDOT ITEM 440.
12. PROVIDE REINFORCING STEEL WITH EPOXY COATING MEETING THE REQUIREMENTS OF TXDOT ITEM 440 ONLY FOR THE FOLLOWING BRIDGE COMPONENTS: BRIDGE SLAB, APPROACH SLAB, SIDEWALK, AND RAILS.
13. SUPERSTRUCTURE SHALL BE TREATED PER TXDOT ITEM 428. TREATMENT SHALL BE APPLIED TO THE UPPER SURFACES OF BRIDGE SLABS, SIDEWALKS AND EXPOSED EDGES OF CURBS, AND ALL EXPOSED SURFACES OF CONCRETE RAILS.

GENERAL NOTES FOR BRIDGE FOUNDATION:

14. THE BEARING STRATUM IS GRAY LIMESTONE WITH MARL LOCATED AT AN ELEVATION OF APPROXIMATELY 873 FT. CONTRACTOR SHALL VERIFY THE LOCATION OF THE BEARING STRATUM DURING CONSTRUCTION.
15. THE BOTTOM OF DRILLED SHAFT EXCAVATIONS SHALL BE CLEANED OF LOOSE MATERIAL.
16. TEMPORARY CASING MAY BE USED TO CONTROL CAVING AND SEEPAGE DURING DRILLED SHAFT EXCAVATION.
17. WATER IN THE HOLE AT THE TIME OF CONCRETE CASTING PLUS WATER EXPECTED TO ENTER DURING CASTING SHALL NOT EXCEED THREE INCHES. OTHERWISE, THE HOLE SHOULD BE FILLED WITH WATER AND CONCRETE SHOULD BE PLACED USING A TIGHT TREMIE OR CONCRETE PUMP.

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WILLIAMSON COUNTY, TEXAS

SAN GABRIEL RANCH ROAD BRIDGE
AT LACKEY CREEK

BRIDGE GENERAL NOTES

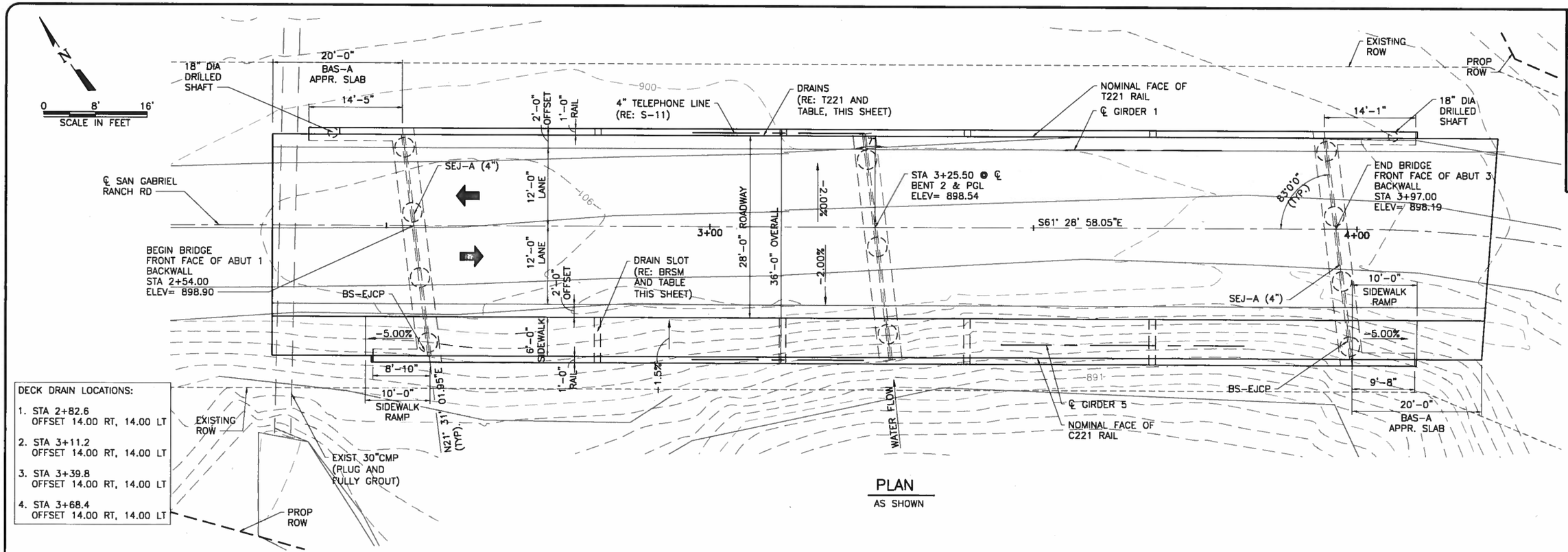
NO.	ISSUE	BY	DATE

FNI JOB NO. WIC16278
DATE 03/13/18
DESIGNED: SV
DRAWN: MDB
REVISED:
CHECKED: AD
FILE NAME ST-FNI-GN-BDG.dwg

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET S-1
SEQ.

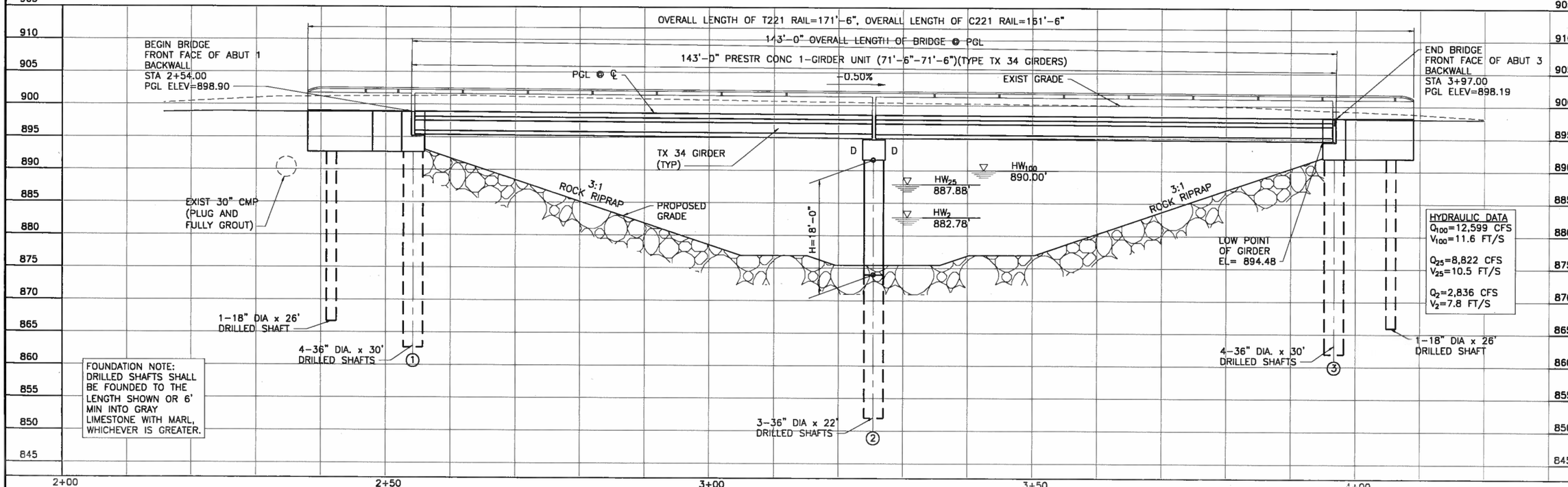
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Mar 13, 2018 - 11:19am LTS: 1 PSLTS: 1 TWST:
REFERENCES: N:\Standard\34BORDER.DWG N:\ST\Logos\ST-FNC-STAMP.dwg



DECK DRAIN LOCATIONS:

1. STA 2+82.6 OFFSET 14.00 RT, 14.00 LT
2. STA 3+11.2 OFFSET 14.00 RT, 14.00 LT
3. STA 3+39.8 OFFSET 14.00 RT, 14.00 LT
4. STA 3+68.4 OFFSET 14.00 RT, 14.00 LT

PLAN
AS SHOWN



FOUNDATION NOTE: DRILLED SHAFTS SHALL BE FOUNDED TO THE LENGTH SHOWN OR 6' MIN INTO GRAY LIMESTONE WITH MARL, WHICHEVER IS GREATER.

ELEVATION
AS SHOWN

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WILLIAMSON COUNTY, TEXAS
SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK
BRIDGE LAYOUT

F&N JOB NO.	WIC16278
DATE	03/13/18
DESIGNED: SV	
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REVISED:	
CHECKED: AD	

NO.	ISSUE	BY	DATE

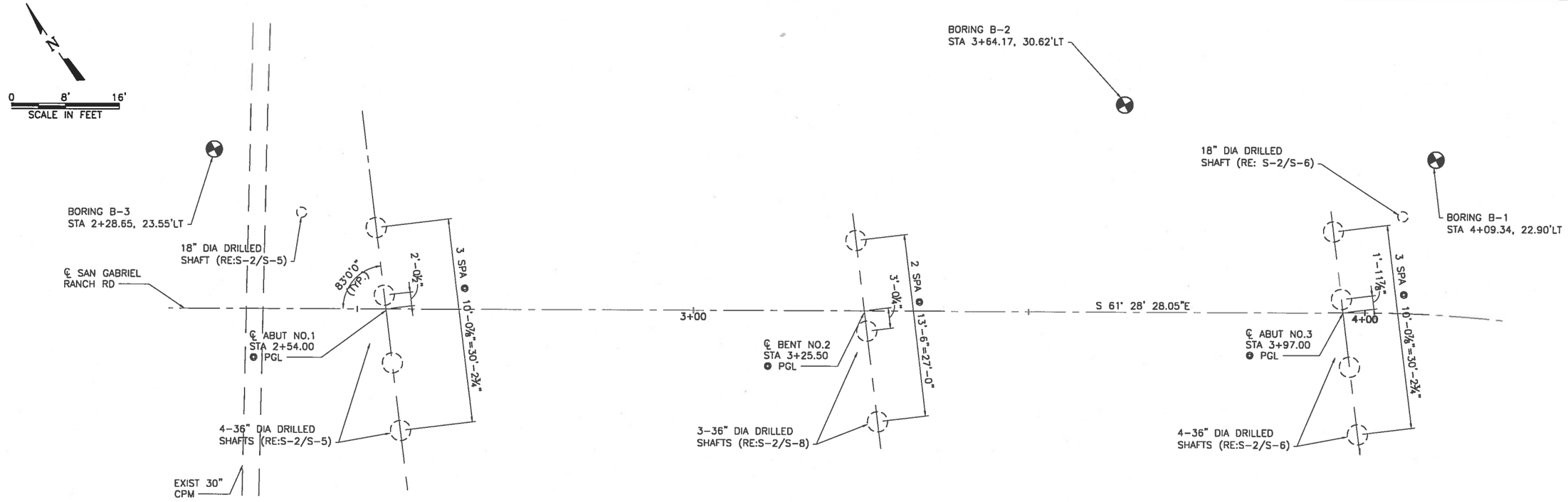
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0 1"

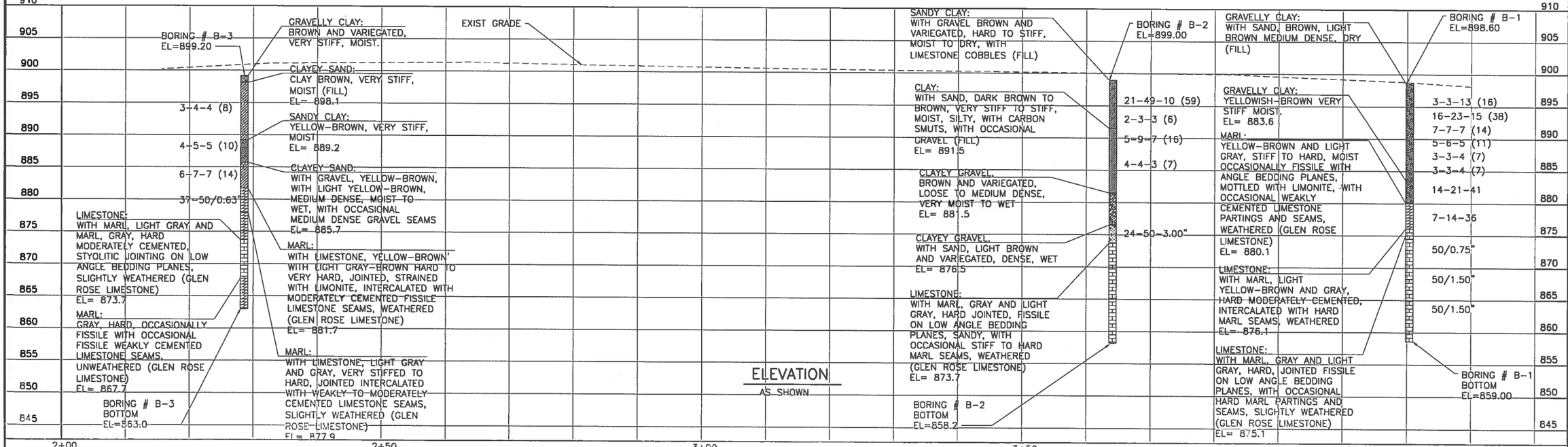
SHEET S-2
SEQ.

Date: Mar 13, 2018 - 11:38am User: 02633 File: N:\ST\ST-FNI-PP-BDG.dwg

8/1/2018 12:58 PM



PLAN
AS SHOWN



ELEVATION
AS SHOWN

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

STATE OF TEXAS
ANTONIO DIAZ
32713
LICENSED PROFESSIONAL ENGINEER
3/13/18

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WILLIAMSON COUNTY, TEXAS

SAN GABRIEL RANCH ROAD BRIDGE
AT LACKEY CREEK

FOUNDATION LAYOUT

PART JOB NO.	WC16278
DATE	03/13/18
DESIGNED: SV	
DRAWN: MDB	
REVISED:	
CHECKED: AD	
FILE NAME	ST-FNI-PL-BLOC01.dwg

NO.	ISSUE	BY	DATE

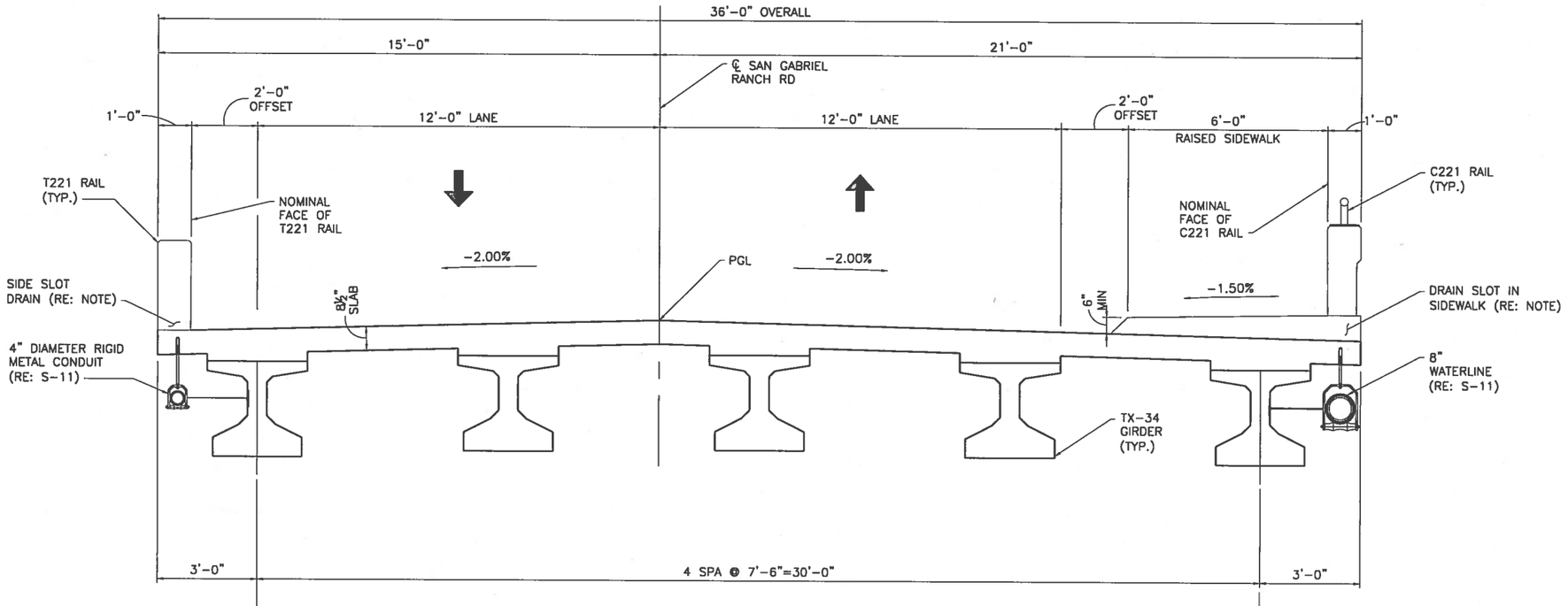
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET S-3
SEQ.

Date: Mar 13, 2018 - 11:22am User: 02633 File: N:\ST\ST-FNI-PL-BLOC01.dwg

GENERAL NOTES:

1. REFER TO BRIDGE LAYOUT AND STANDARD SHEETS T221 AND BRSM FOR LOCATION OF DECK DRAINS.



TYPICAL SECTION

NOT TO SCALE

DESCRIPTION	0416 6004 DRILL SHAFT (36 IN)	0416 6001 DRILL SHAFT (18 IN)	0420 6013 CL "C" CONC (ABUT)	0420 6029 CL "C" CONC (CAP)	0420 6037 CL "C" CONC (COLUMN)	0422 6015 (APPR SLAB)	0422 6001 REINF CONC SLAB	0428 6001 PENETRATING SURFACE TREATMENT	0425 6036 PRESTR CONC GIRDER (TY Tx34)	0442 6008 STR STEEL (1) (MISCELLANEOUS BRIDGE)	0450 6030 RAIL (TY C221)	0450 6004 RAIL (TY T221)	0454 6001 SEALED EXPANSION JOINT (4 IN) (SEJ-A)
UNIT	LF	LF	CY	CY	CY	CY	SF	SY	LF	LB	LF	LF	LF
ABUTMENT NO. 1	120	26	29.3			34.7				77			36.3
ABUTMENT NO. 3	120	26	29.3			34.7				77			36.3
BENT NO. 2	66			15.5	14.1								
BEAM UNIT (TYP.)							5,148	808.4	709.98		161.5	171.5	
TOTALS	306	52	58.6	15.5	14.1	69.4	5,148	808.4	709.98	154	161.5	171.5	72.6

(1) BS-EJCP

SUMMARY OF ESTIMATED QUANTITIES

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144
ANTONIO DIAZ 92713 LICENSED PROFESSIONAL ENGINEER
3/3/18

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WILLIAMSON COUNTY, TEXAS

SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK

BRIDGE CROSS SECTION & SUMMARY OF ESTIMATED QUANTITIES

FAN JOB NO. WIC16278
DATE 03/13/18
DESIGNED: SV
DRAWN: MDB
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FILE NAME ST-FNI-EL-BDG.dwg

NO. | ISSUE | BY | DATE

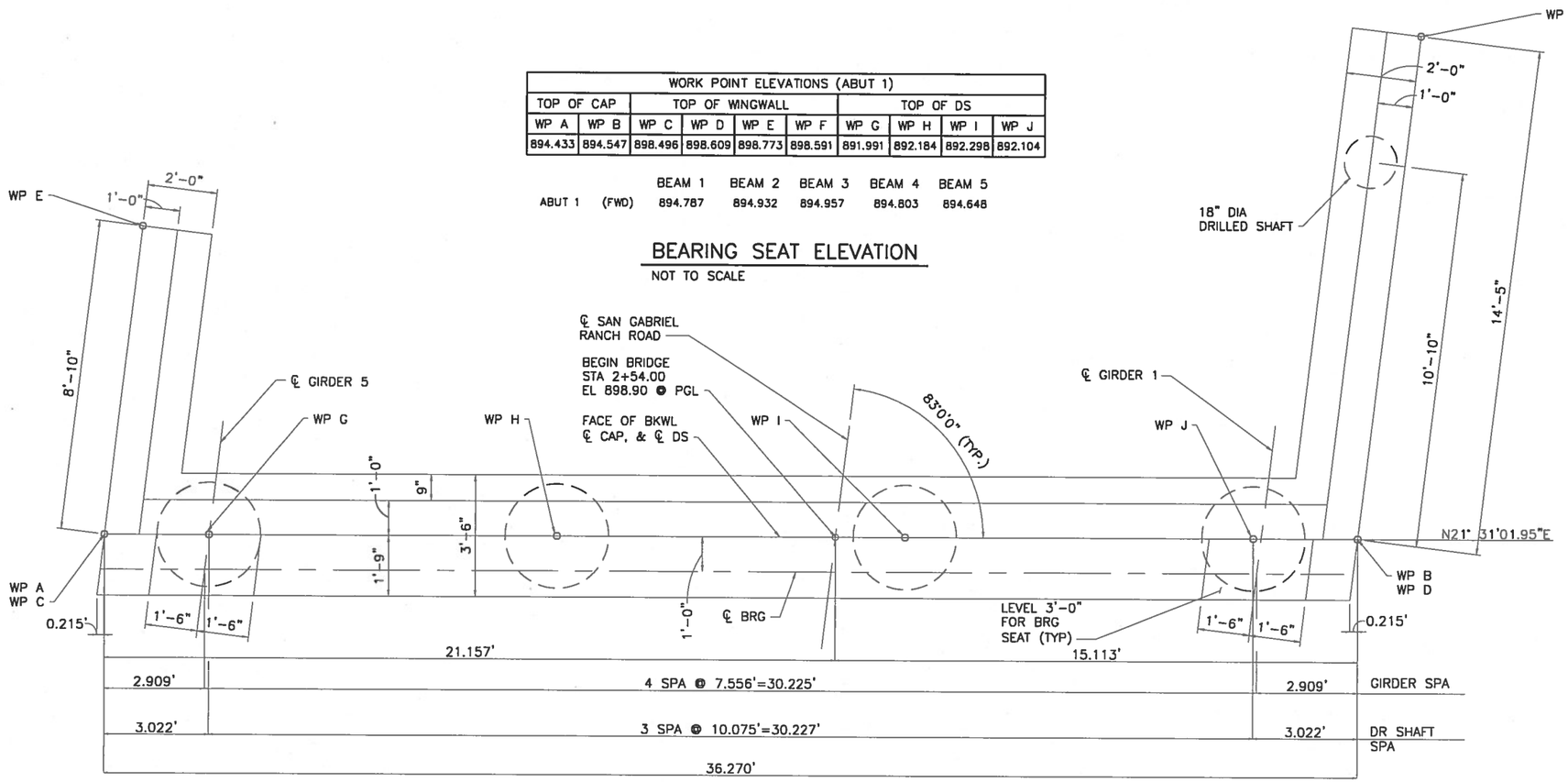
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET S-4
SEQ.

WORK POINT ELEVATIONS (ABUT 1)									
TOP OF CAP		TOP OF WINGWALL				TOP OF DS			
WP A	WP B	WP C	WP D	WP E	WP F	WP G	WP H	WP I	WP J
894.433	894.547	898.496	898.609	898.773	898.591	891.991	892.184	892.298	892.104

		BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5
ABUT 1	(FWD)	894.787	894.932	894.957	894.803	894.648

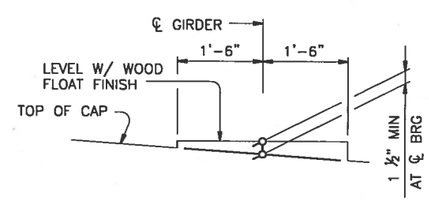
BEARING SEAT ELEVATION
NOT TO SCALE



PLAN
NOT TO SCALE

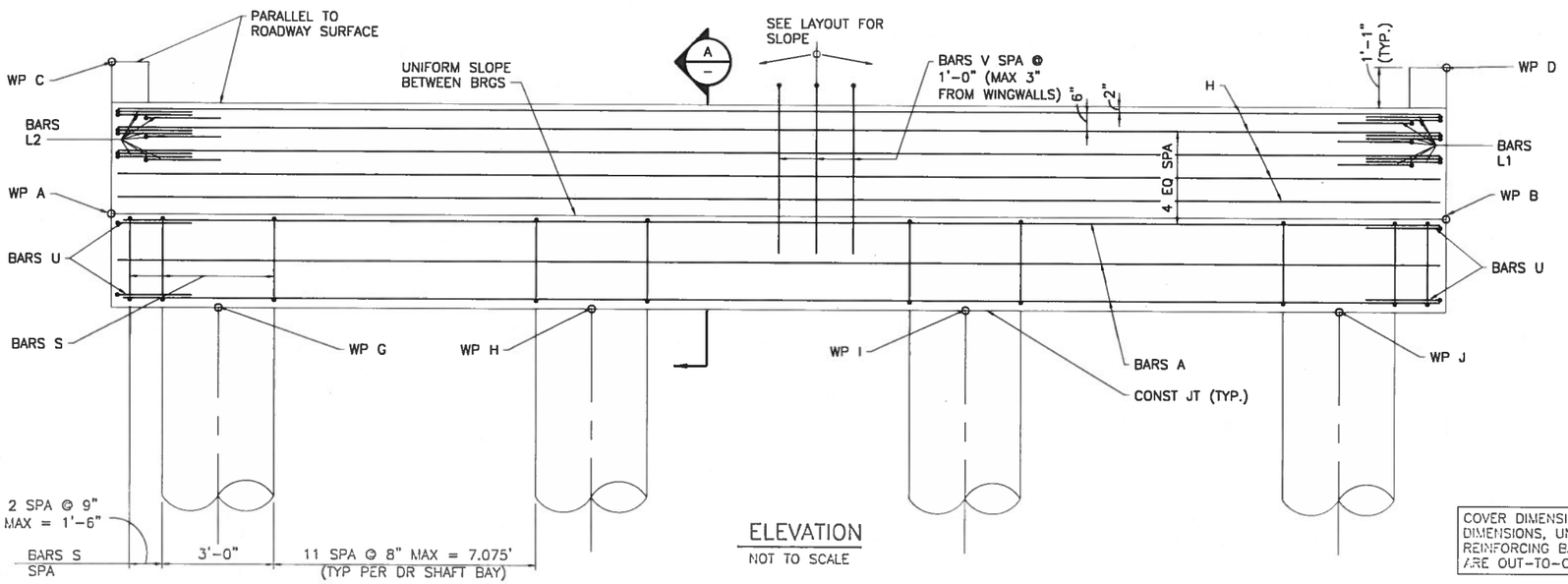
GENERAL NOTES:

1. BRIDGE DESIGNED FOR HL-93 LOADING (AND A 25 PSF FUTURE OVERLAY) IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH EDITION (2014) AND 2015 AND 2016 INTERIM REVISIONS.
2. CONCRETE SHALL BE CLASS C (F'C= 3,600 PSI)
3. ALL REINFORCING SHALL BE GRADE 60.
4. SEE FD STANDARD SHEET FOR FOUNDATION DETAILS AND NOTES.
5. FOUNDATION LOAD IS 100 TON/SHAFT.
6. SEE ISEALED EXPANSION JOINT (SEJ-A) STANDARD SHEET FOR DETAILS.
7. WORK POINT AND BEARING SEAT ELEVATIONS ARE ESTIMATES ONLY. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THEM IN THE FIELD AND INFORMING THE ENGINEER OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.



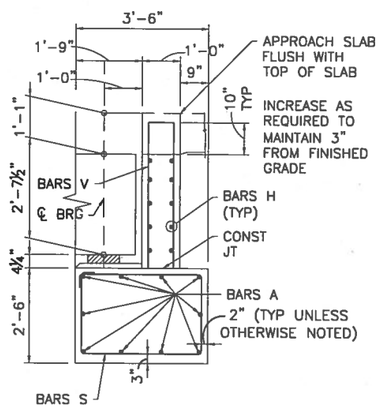
BEARING SEAT DETAIL
NOT TO SCALE

(BEARING SURFACE MUST BE CLEAN AND FREE OF ALL LOOSE MATERIAL BEFORE BEARING PAD.)



ELEVATION
NOT TO SCALE

COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE. REINFORCING BAR DIMENSIONS SHOWN ARE OUT-TO-OUT OF BAR.



SECTION A-A
NOT TO SCALE

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

3/3/18
ANTONIO DIAZ
32713
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

FREESE NICHOLS
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WILLIAMSON COUNTY, TEXAS

SAN GABRIEL RANCH ROAD BRIDGE
AT LACKEY CREEK

ABUTMENT 1 PLAN

NO.	ISSUE	BY	DATE

F&N JOB NO. WIC16278
DATE 03/13/18
DESIGNED: SW
DRAWN: MDB
REVISED:
CHECKED: AD
FILE NAME ST-BRDG-PL-ABUT01.dwg

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

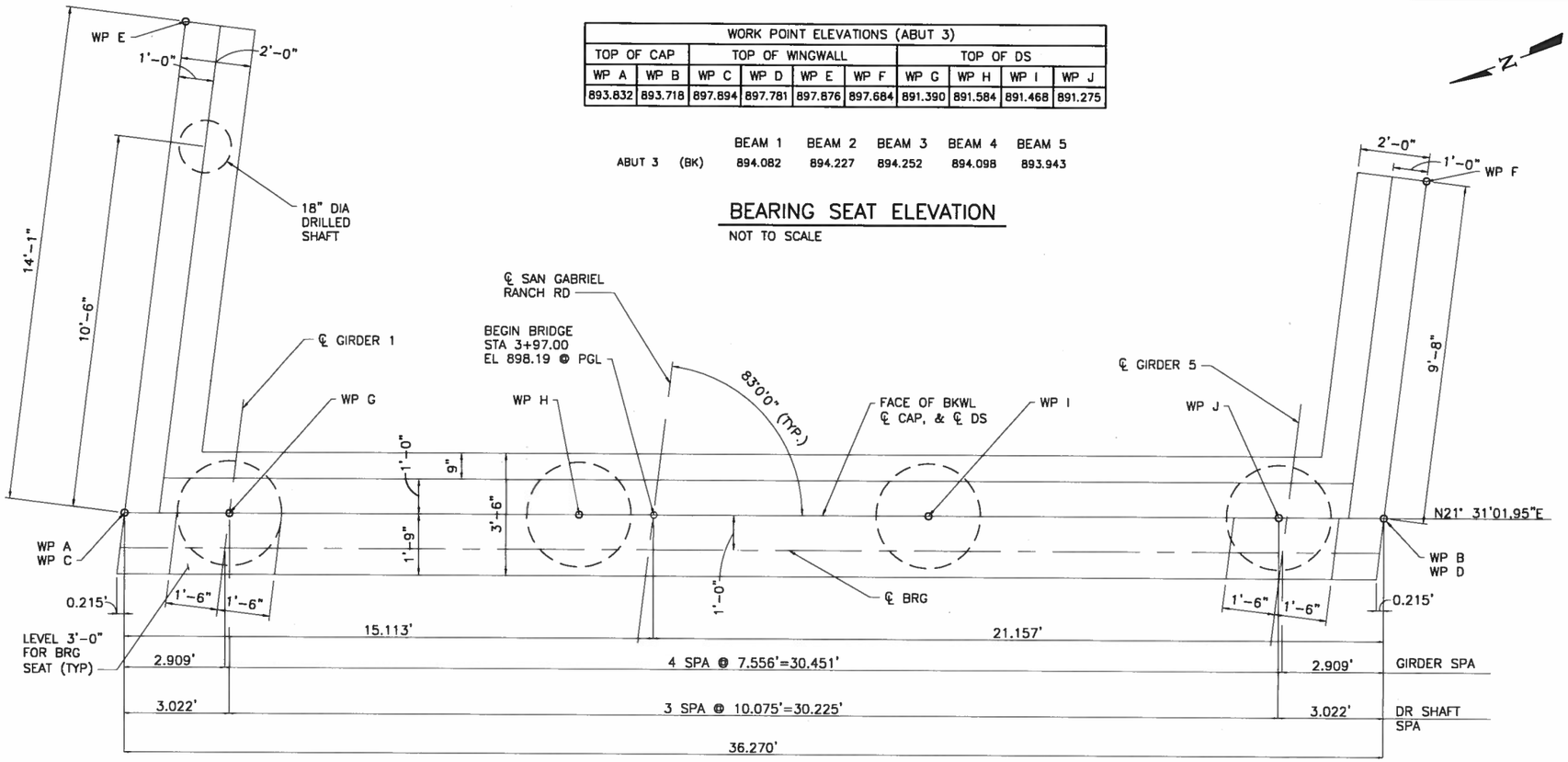
SHEET S-5
SEQ.

WORK POINT ELEVATIONS (ABUT 3)									
TOP OF CAP		TOP OF WINGWALL				TOP OF DS			
WP A	WP B	WP C	WP D	WP E	WP F	WP G	WP H	WP I	WP J
893.832	893.718	897.894	897.781	897.876	897.684	891.390	891.584	891.468	891.275

		BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5
ABUT 3	(BK)	894.082	894.227	894.252	894.098	893.943

BEARING SEAT ELEVATION

NOT TO SCALE

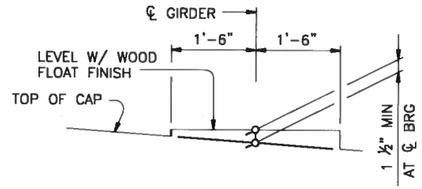


PLAN

NOT TO SCALE

GENERAL NOTES:

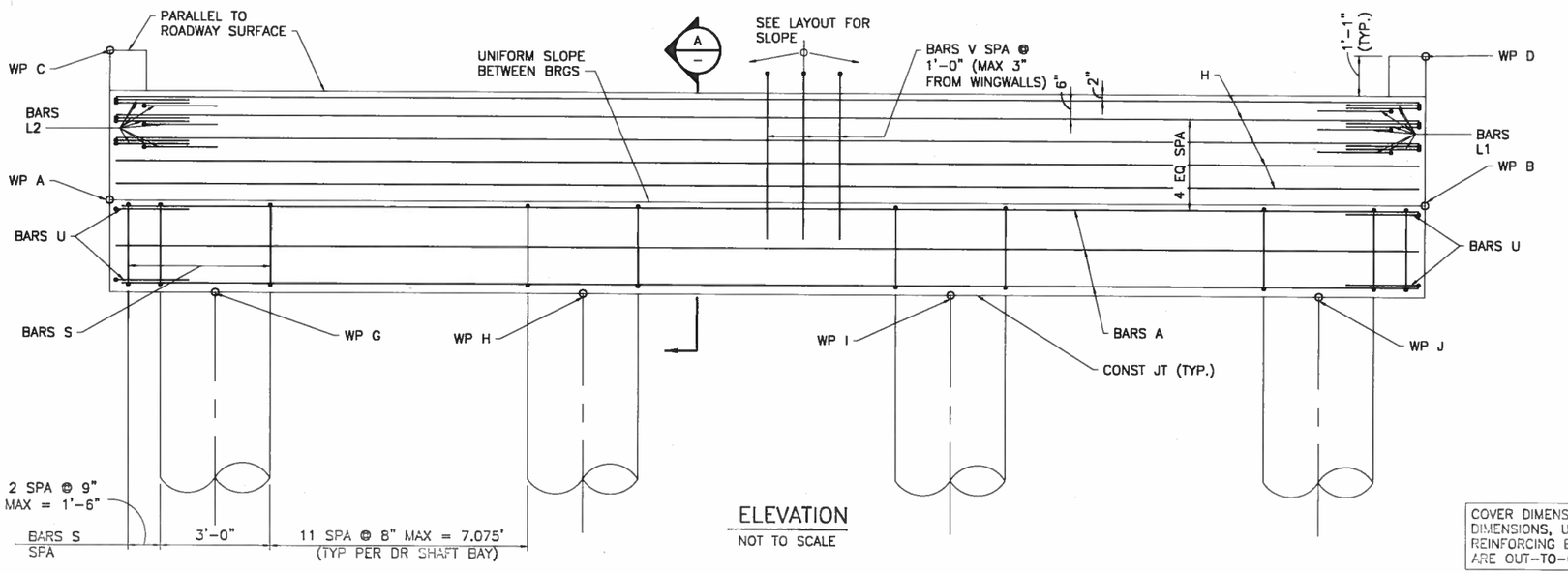
1. BRIDGE DESIGNED FOR HL-93 LOADING (AND A 25 PSF FUTURE OVERLAY) IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH EDITION (2014) AND 2015 AND 2016 INTERIM REVISIONS.
2. CONCRETE SHALL BE CLASS C (F'C= 3,600 PSI)
3. ALL REINFORCING SHALL BE GRADE 60.
4. SEE FD STANDARD SHEET FOR FOUNDATION DETAILS AND NOTES.
5. FOUNDATION LOAD IS 100 TON/SHAFT.
6. SEE ISEALED EXPANSION JOINT (SEJ-A) STANDARD SHEET FOR DETAILS.
7. WORK POINT AND BEARING SEAT ELEVATIONS ARE ESTIMATES ONLY. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THEM IN THE FIELD AND INFORMING THE ENGINEER OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.



BEARING SEAT DETAIL

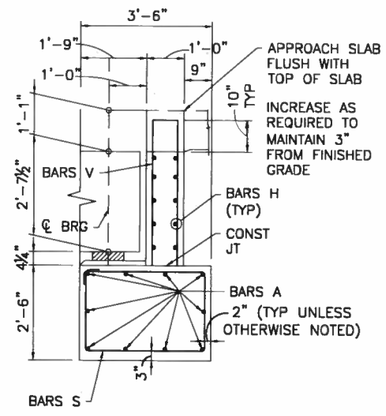
NOT TO SCALE

(BEARING SURFACE MUST BE CLEAN AND FREE OF ALL LOOSE MATERIAL BEFORE BEARING PAD.)



ELEVATION

NOT TO SCALE



SECTION A-A

NOT TO SCALE

COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE. REINFORCING BAR DIMENSIONS SHOWN ARE OUT-TO-OUT OF BAR.

Freese and Nichols, Inc. Texas Registered Engineering Firm F-2144

3/13/18

ANTONIO DIAZ 92713 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS

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WILLIAMSON COUNTY, TEXAS

SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK

ABUTMENT 3 PLAN

F&N JOB NO.	WIC16278
DATE	03/13/18
DESIGNED:	SV
DRAWN:	WDB
REVISED:	
CHECKED:	AD
FILE NAME	ST-BRDG-PL-ABUT03.dwg

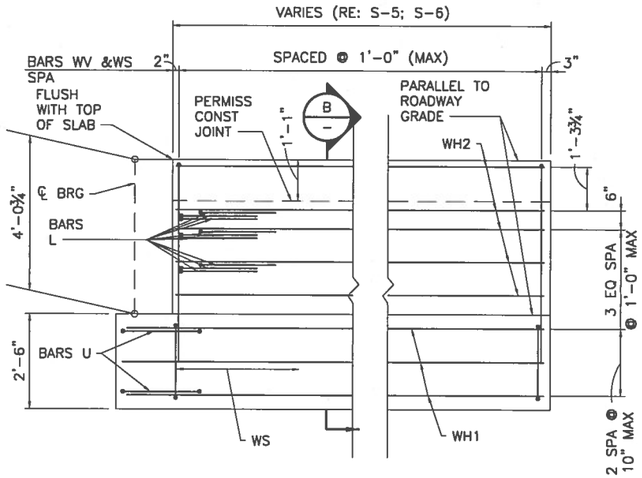
NO.	ISSUE	BY	DATE

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SHEET S-6

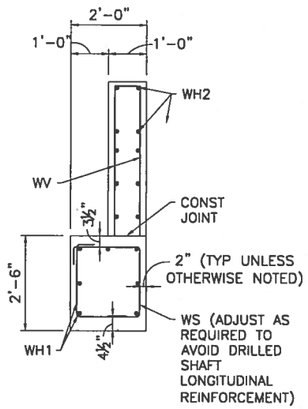
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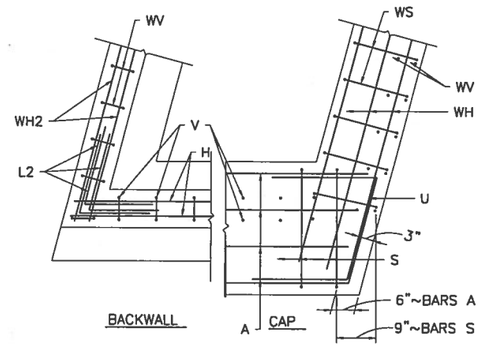
WINGWALL ELEVATION

NOT TO SCALE



SECTION B-B

NOT TO SCALE

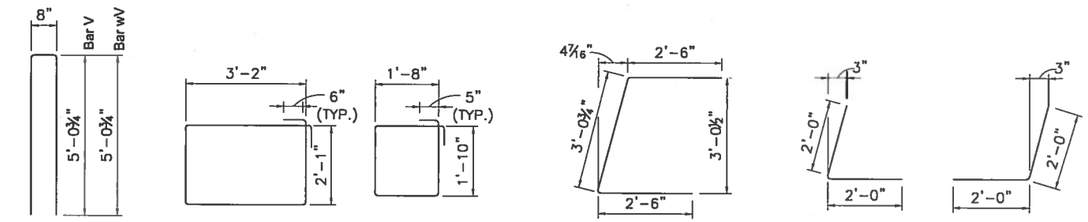


CORNER DETAILS

NOT TO SCALE

GENERAL NOTES:

1. BRIDGE DESIGNED FOR HL-93 LOADING (AND A 25 PSF FUTURE OVERLAY) IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH EDITION (2014) AND 2015 AND 2016 INTERIM REVISIONS.
2. SEE COMMON FOUNDATION DETAILS (FD) STANDARD SHEET AND FOUNDATION LAYOUT FOR ALL FOUNDATION DETAILS AND NOTES.
3. FOUNDATION LOAD IS 100 TON/SHAFT.
4. PROVIDE CLASS C CONCRETE (F'C= 3,600 PSI)
5. PROVIDE GRADE 60 REINFORCING STEEL.
6. SEE SEALED EXPANSION JOINT (SEJ-A) STANDARD SHEET FOR DETAILS.



BARS V & wV | BARS S | BARS wS | BARS U | BARS L2 | BARS L1

ABUTMENT BAR DETAILS

NOT TO SCALE

COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE. REINFORCING BAR DIMENSIONS SHOWN ARE OUT-TO OUT OF BAR.

TABLE OF ESTIMATED QUANTITIES - ABUT 1 & 3 (1)

BAR	NO.	SIZE	LENGTH	WEIGHT
A	10	#11	35'-11"	1908
H	10	#6	36'-7"	550
L1	9	#6	4'-0"	54
L2	9	#6	4'-0"	54
S	40	#5	11'-6"	480
U	4	#6	8'-1"	49
V	37	#5	10'-10"	418
WH1 (3)	14	#6	16'-10"	354
WH2 (3)	24	#6	14'-0"	505
WS (3)	30	#4	7'-10"	157
WV (3)	30	#5	10'-10"	340
Reinforcing Steel (2)			Lb	4,869
Class "C" Concrete			CY	29.3

NOTES:

(1) QUANTITIES SHOWN ARE FOR ONE ABUTMENT ONLY.

(2) FOR CONTRACTOR INFORMATION ONLY.

(3) QUANTITIES AND LENGTHS BASED ON THE LONGEST WINGWALL. THE CONTRACTOR SHALL ADJUST THEM AS NEEDED IN THE FIELD FOR VARYING WINGWALL LENGTHS.

Freese and Nichols, Inc.
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3/3/18
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WILLIAMSON COUNTY, TEXAS

SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK

ABUTMENT DETAILS

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CHECKED: AD
FILE NAME ST-BRDG-DT-ABUT.dwg

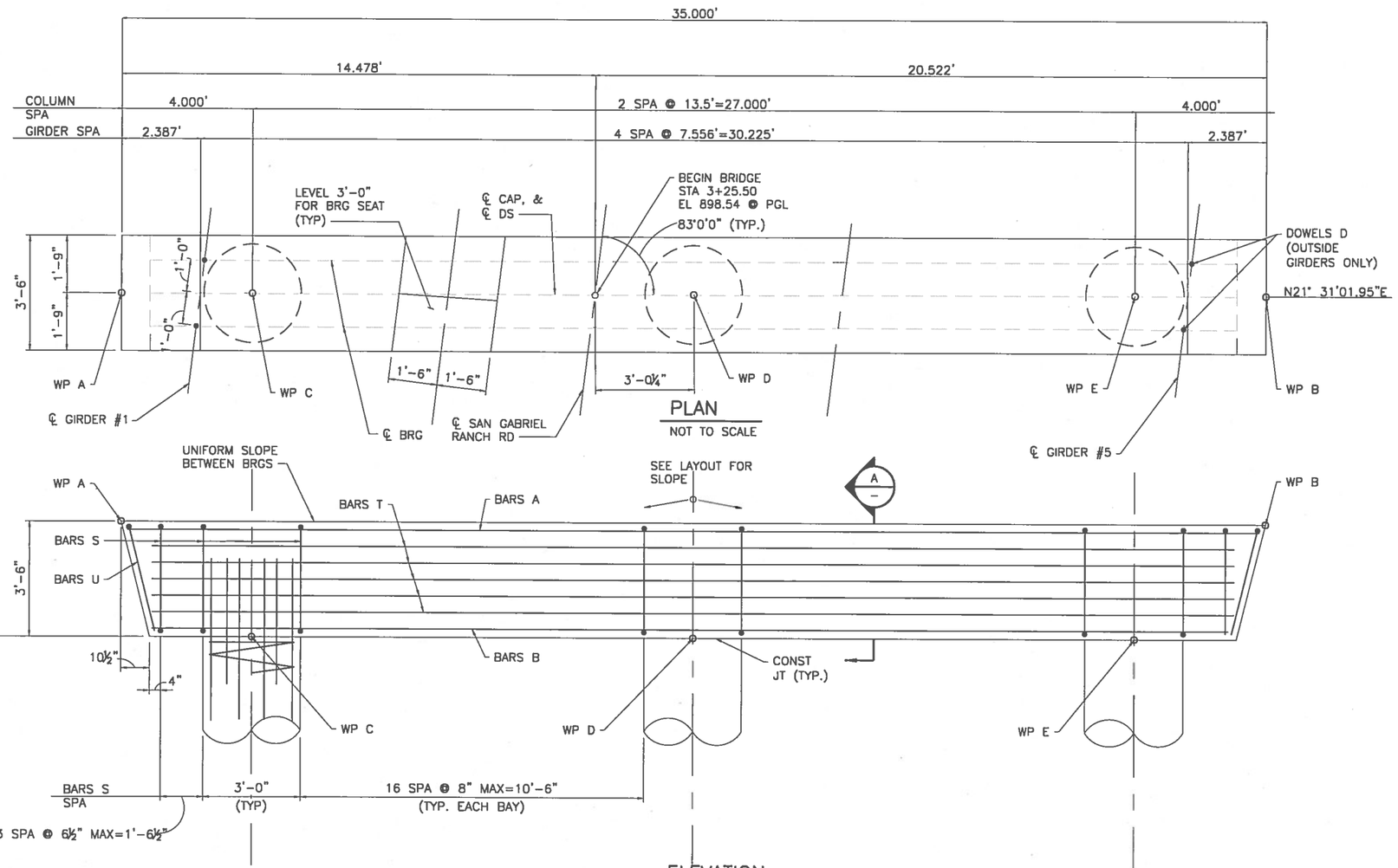
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SHEET S-7

SEQ.

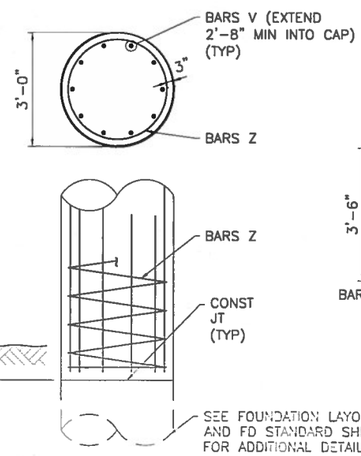
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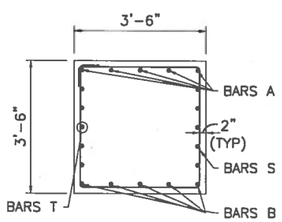
Williamson County, Texas



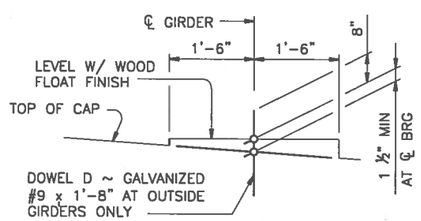
PLAN
NOT TO SCALE

ELEVATION
NOT TO SCALE

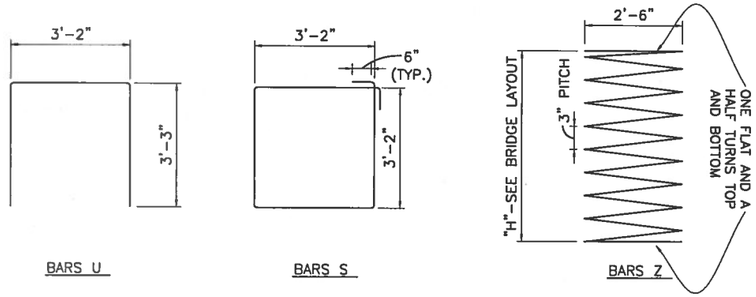




SECTION A–A
NOT TO SCALE



BEARING SEAT DETAIL
NOT TO SCALE
(BEARING SURFACE MUST BE CLEAN AND FREE OF ALL LOOSE MATERIAL BEFORE BEARING PAD.)



BENT BAR DETAILS
NOT TO SCALE

COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE. REINFORCING BAR DIMENSIONS SHOWN ARE OUT-TO OUT OF BAR.

GENERAL NOTES:

1. BRIDGE DESIGNED FOR HL-93 LOADING (AND A 25 PSF FUTURE OVERLAY) IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH EDITION (2014) AND 2015 AND 2016 INTERIM REVISIONS.
2. CONCRETE SHALL BE CLASS C (F'C= 3,600 PSI)
3. ALL REINFORCING SHALL BE GRADE 60. GALVANIZE DOWEL BARS D.
4. SEE FD SHEET FOR FOUNDATION DETAILS AND NOTES.
5. FOUNDATION LOAD IS 220 TON/SHAFT.
6. SEE IGEB SHEETS FOR BEARING CENTERLINE OFFSETS.

		BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5
BENT 2	(BK)	894.439	894.585	894.610	894.455	894.301
	(FWD)	894.429	894.575	894.600	894.445	894.291

BEARING SEAT ELEVATION
NOT TO SCALE

WORK POINT ELEVATIONS (BENT 2)				
TOP OF CAP		TOP OF DRILLED SHAFT		
WP A	WP B	WP C	WP D	WP E
894.201	894.088	890.778	890.922	890.664

TABLE OF ESTIMATED QUANTITIES – BENT 2

BAR	NO.	SIZE	LENGTH	WEIGHT
A	5	#11	34'-8"	921
B	5	#11	33'-0"	877
D	4	#9	1'-8"	28
S	42	#5	13'-8"	599
T	10	#5	33'-0"	344
U	2	#5	9'-8"	20
V	30	#9	20'-8"	2108
Z	3	#4	589'-1"	1181
Reinforcing Steel			Lb	6,074
Class "C" Concrete (CAP)			CY	15.5
Class "C" Concrete (COL)			CY	14.1

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144
3/13/18
ANTONIO DIAZ
92713
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

FREESE NICHOLS
10431 Morado Circle, Suite 300
Austin, Texas 78759
Phone – (512) 617-3100
Fax – (512) 617-3101

WILLIAMSON COUNTY, TEXAS
SAN GABRIEL RANCH ROAD BRIDGE
AT LACKEY CREEK
BENT 2 PLAN

NO.	ISSUE	BY	DATE

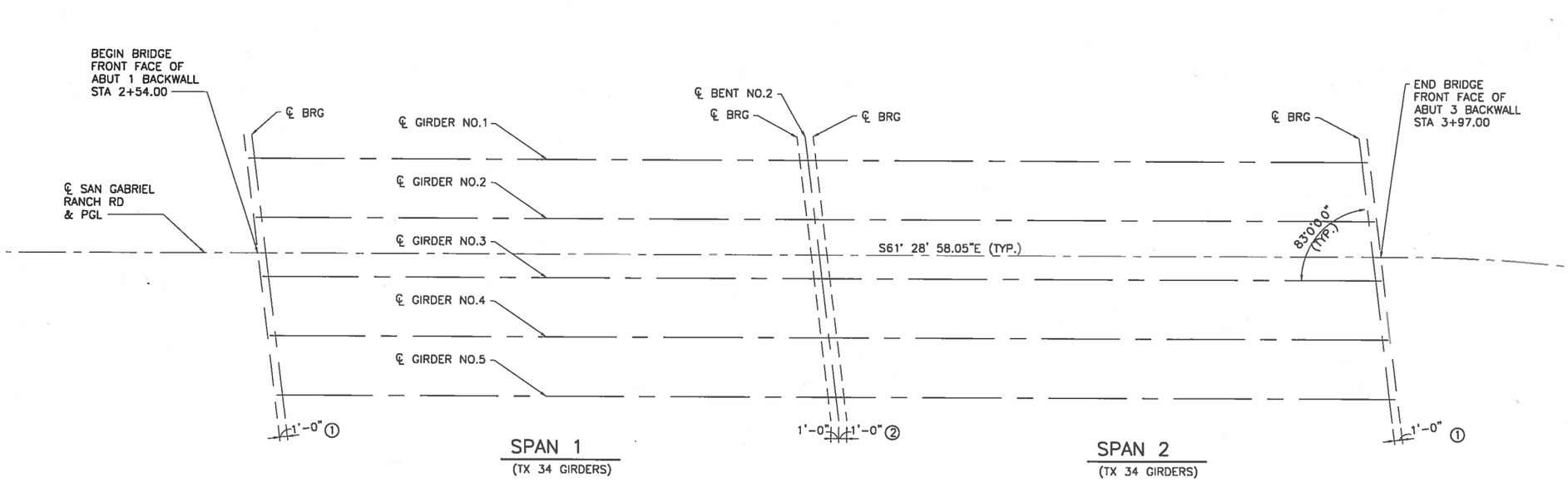
PAN JOB NO. WIC16278
DATE 03/13/18
DESIGNED: SY
DRAWN: MDB
REVISED:
CHECKED: AD
FILE NAME ST-BRDG-PL-BENT02.dwg

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SHEET S-8
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8/1/2018 12:58 PM

Date: Mar 13, 2018 - 11:26am User: 02833 File: N:\ST\ST-BRDG-PL-BENT02.dwg



GENERAL NOTES:

1. SEE IGEB STANDARD FOR ADDTIONAL DETAILS.

NOTES:

① MEASURED PERPENDICULAR TO FACE OF ABUTMENT BACKWALL.

② MEASURED PARALLEL TO ℄ OF GIRDERS.

ABUT NO. 1 (N 21 31 1.95 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1, 12.0901 L

		BEAM SPA (CL BENT)	BEAM ANGLE D	M	S
SPAN 1	BEAM 1	0.0000	97	0	0
	BEAM 2	7.5563	97	0	0
	BEAM 3	7.5563	97	0	0
	BEAM 4	7.5563	97	0	0
	BEAM 5	7.5563	97	0	0
	TOTAL	30.2253			

BENT NO. 2 (N 21 31 1.95 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1, 12.0901 L

		BEAM SPA (CL BENT)	BEAM ANGLE D	M	S
SPAN 1	BEAM 1	0.0000	97	0	0
	BEAM 2	7.5563	97	0	0
	BEAM 3	7.5563	97	0	0
	BEAM 4	7.5563	97	0	0
	BEAM 5	7.5563	97	0	0
	TOTAL	30.2253			

BENT REPORT
NOT TO SCALE

BENT NO. 2 (N 21 31 1.95 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1, 12.0901 L

		BEAM SPA (CL BENT)	BEAM ANGLE D	M	S
SPAN 2	BEAM 1	0.0000	97	0	0
	BEAM 2	7.5563	97	0	0
	BEAM 3	7.5563	97	0	0
	BEAM 4	7.5563	97	0	0
	BEAM 5	7.5563	97	0	0
	TOTAL	30.2253			

ABUT NO. 3 (N 21 31 1.95 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1, 12.0901 L

		BEAM SPA (CL BENT)	BEAM ANGLE D	M	S
SPAN 2	BEAM 1	0.0000	97	0	0
	BEAM 2	7.5563	97	0	0
	BEAM 3	7.5563	97	0	0
	BEAM 4	7.5563	97	0	0
	BEAM 5	7.5563	97	0	0
	TOTAL	30.2253			

BEAM REPORT, SPAN 1

	HORIZONTAL DISTANCE C-C BENT	C-C BRG.	TRUE DISTANCE BOT. BM. FLG.	BEAM SLOPE
BEAM 1	71.5000	69.4925	70.9981	-0.0050
BEAM 2	71.5000	69.4925	70.9981	-0.0050
BEAM 3	71.5000	69.4925	70.9981	-0.0050
BEAM 4	71.5000	69.4925	70.9981	-0.0050
BEAM 5	71.5000	69.4925	70.9981	-0.0050

BEAM REPORT, SPAN 2

	HORIZONTAL DISTANCE C-C BENT	C-C BRG.	TRUE DISTANCE BOT. BM. FLG.	BEAM SLOPE
BEAM 1	71.5000	69.4925	70.9981	-0.0050
BEAM 2	71.5000	69.4925	70.9981	-0.0050
BEAM 3	71.5000	69.4925	70.9981	-0.0050
BEAM 4	71.5000	69.4925	70.9981	-0.0050
BEAM 5	71.5000	69.4925	70.9981	-0.0050

NOTE:
TRUE GIRDER LENGTHS HAVE BEEN ADJUSTED FOR GIRDER SLOPE.

GIRDER REPORT
NOT TO SCALE

		BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5
ABUT 1	(FWD)	894.787	894.932	894.957	894.803	894.648
BENT 2	(BK)	894.439	894.585	894.610	894.455	894.301
	(FWD)	894.429	894.575	894.600	894.445	894.291
ABUT 3	(BK)	894.082	894.227	894.252	894.098	893.943

BEARING SEAT REPORT
NOT TO SCALE

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

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3/13/18

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Phone - (512) 617-3100
Fax - (512) 617-3101

WILLIAMSON COUNTY, TEXAS
SAN GABRIEL RANCH ROAD BRIDGE
AT LACKEY CREEK

FRAMING

F&N JOB NO. WIC16278
DATE 03/13/18
DESIGNED: SY
DRAWN: MDB
REVISED:
CHECKED: AD
FILE NAME ST-BRDG-PL-FRMG.dwg

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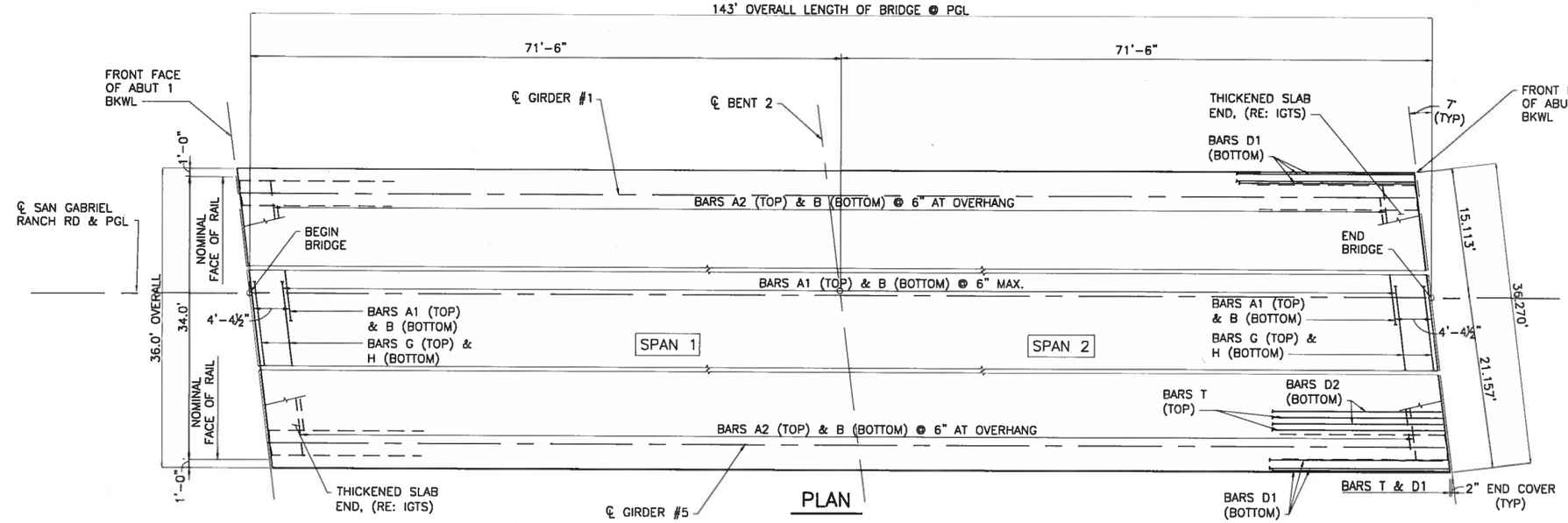
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0 1"

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Williamson County, Texas

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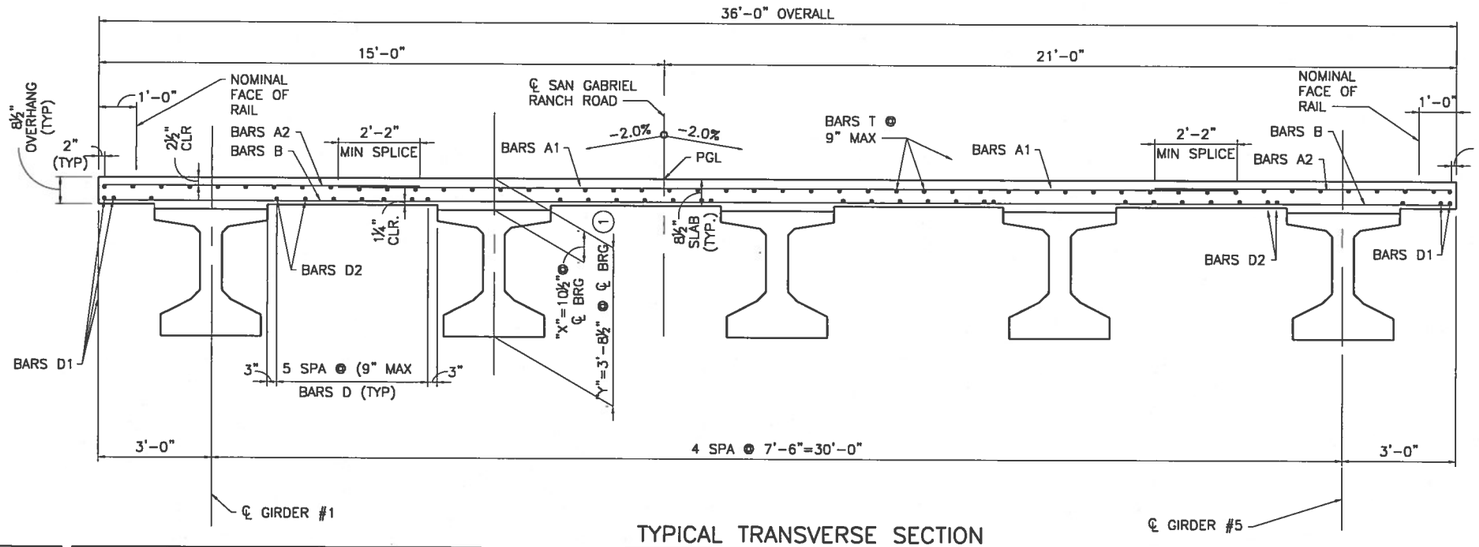


GENERAL NOTES:

1. DESIGNED FOR HL-93 LOADING ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
2. SEE IGTS STANDARD FOR THICKENED SLAB AND DETAILS AND QUANTITY ADJUSTMENTS.
3. SEE T221,C221, AND BRSM STANDARDS FOR RAIL ANCHORAGE IN SLAB.
4. COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE.
5. CONCRETE SHALL BE CLASS S (F'C= 4,000 PSI)
6. ALL REINFORCING SHALL BE GRADE 60.
7. SEE BRIDGE LAYOUT FOR EXPANSION JOINT TYPE AND LOCATION.
8. PROVIDE BAR LAPS, WHERE REQUIRED AS FOLLOWS:

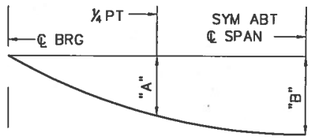
   UNCOATED ~ #4= 1'-7"

   #5= 2'-0"



TYPICAL TRANSVERSE SECTION

NOTES:
1. SIDEWALKS AND RAILINGS NOT SHOWN FOR CLARITY.



DEAD LOAD DEFLECTION DIAGRAM

NOT TO SCALE

CALCULATED DEFLECTIONS SHOWN ARE DUE TO THE CONCRETE SLAB ON INTERIOR BEAMS ONLY (EC = 5000 KSI), AND SHALL BE VERIFIED BY THE CONTRACTOR IN THE FIELD.

SPAN NO.	GIRDER NO.	"A" FT	"B" FT
ALL	1&5	0.050	0.071
ALL	2-4	0.055	0.079

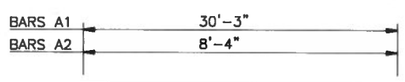
BAR TABLE	
BAR	SIZE
A1	#5
A2	#7
B	#5
D	#5
G	#4
H	#5
J	#5
K	#4
M	#5
T	#4

TABLE OF ESTIMATED QUANTITIES			
SPAN	REINF CONC SLAB	PRESTRESSED CONCRETE GIRDERS (TX 34)	TOTAL REINF STEEL ②
		GIRDER LENGTH ③	
NO.	SF	LF	LB
1	2,574	354.99	16,731
2	2,574	354.99	16,731

① "Y" VALUE IS BASED ON THEORETICAL BEAM CAMBER, DEAD LOAD DEFLECTION FORM AN 8.5" CAST-IN-PLACE CONCRETE SLAB AND THE ACTUAL ROADWAY GRADE. THE CONTRACTOR SHALL ADJUST THIS VALUE AS NECESSARY BASED ON ACTUAL CONDITIONS IN THE FIELD.

② REINFORCING STEEL WEIGHT IS CALCULATED USING AN APPROXIMATE FACTOR OF 6.5 LBS/SF.

③ LENGTHS SHOWN ARE TRUE GIRDERS LENGTHS ADJUSTED FOR GIRDER SLOPE. SEE FRAMING PLAN FOR DETAILS.



BARS A1 & A2

BAR DETAIL

Freese and Nichols, Inc.
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WILLIAMSON COUNTY, TEXAS
SAN GABRIEL RANCH ROAD BRIDGE
AT LACKEY CREEK

SLAB PLAN AND DETAIL

NO.	ISSUE	BY	DATE

PLAN JOB NO. WIC16278
DATE 03/13/18
DESIGNED: SV
DRAWN: MDB
REVISED:
CHECKED: AD
FILE NAME ST-BDG-PL-SLAB01.dwg

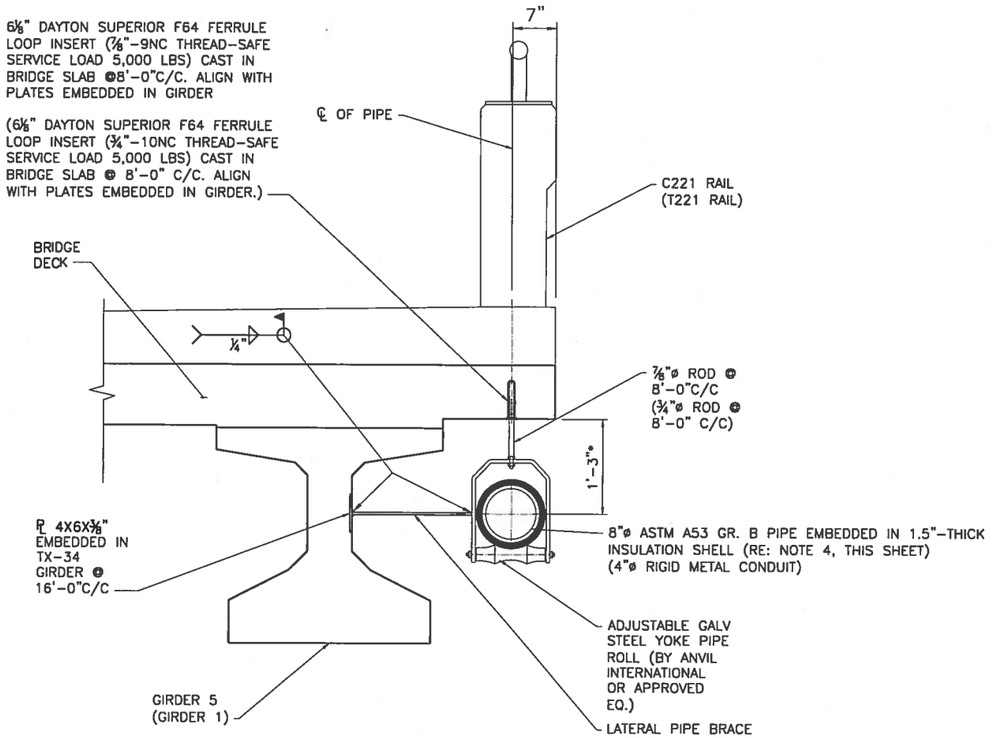
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SHEET S-10
SEQ.

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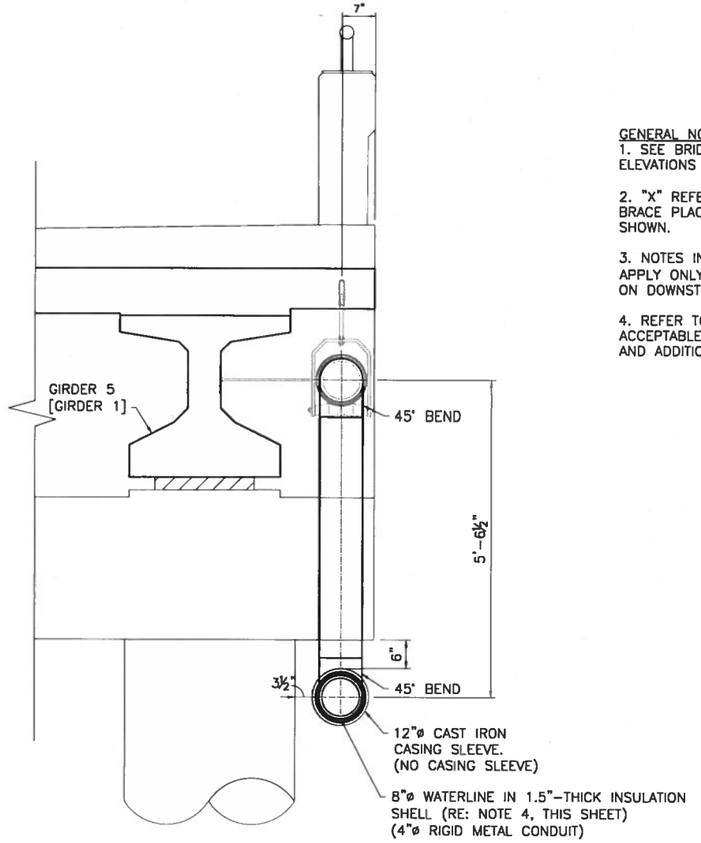
Bid 1807-252

Williamson County, Texas



TYPICAL HANGER & PIPE SUPPORT DETAIL

NOT TO SCALE
* THIS DIMENSION MUST BE EQUAL FOR ALL SUPPORTS.



GENERAL NOTES:
1. SEE BRIDGE LAYOUT FOR BRIDGE ELEVATIONS AND STATIONING.

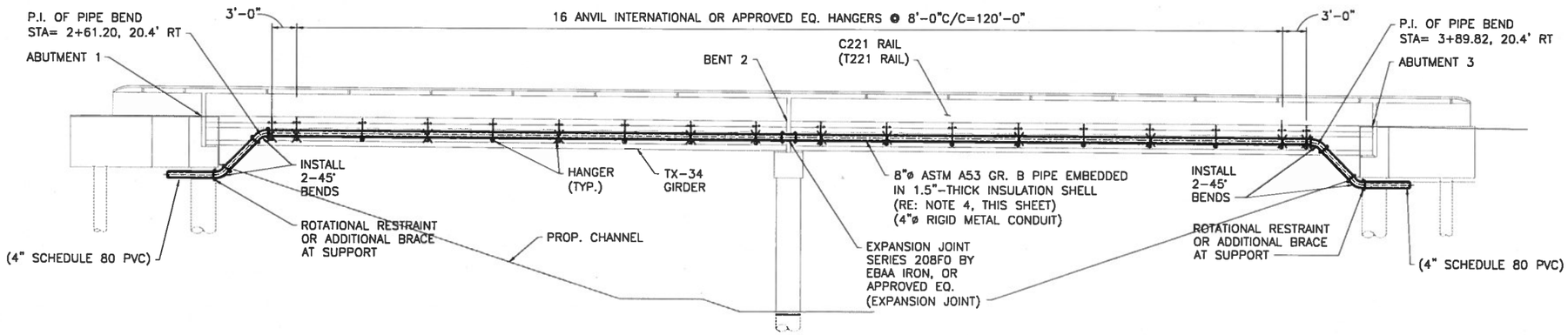
2. "X" REFERS TO LATERAL PIPE BRACE PLACED AT THE LOCATIONS SHOWN.

3. NOTES IN SQUARE PARENTHESIS APPLY ONLY TO 4" TELEPHONE LINE ON DOWNSTREAM SIDE OF BRIDGE.

4. REFER TO SHEET C–16 FOR ACCEPTABLE INSULATION MATERIALS AND ADDITIONAL REQUIREMENTS.

PIPE POSITION AND PENETRATION NEAR ABUTMENTS

NOT TO SCALE
NOTE:
ABUT 3 SHOWN, ABUT 1 SIMILAR



HANGER PROFILE FOR WATERLINE (UPSTREAM SIDE OF BRIDGE) [TELEPHONE LINE ON DOWNSTREAM SIDE]

NOT TO SCALE

Freese and Nichols, Inc.
Texas Registered Engineering Firm F–2144

3/1/18
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STATE OF TEXAS

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WILLIAMSON COUNTY, TEXAS

SAN GABRIEL RANCH ROAD BRIDGE AT LACKEY CREEK

HANGER DETAILS & PROFILE FOR 8" WATERLINE RELOCATION AND 4" TELEPHONE LINE

NO.	ISSUE	BY	DATE

F&N JOB NO. WIC16278
DATE 03/13/18
DESIGNED: SV
DRAWN: MDB
REVISED:
CHECKED: AD
FILE NAME ST-BDG-DT-PIPE.dwg

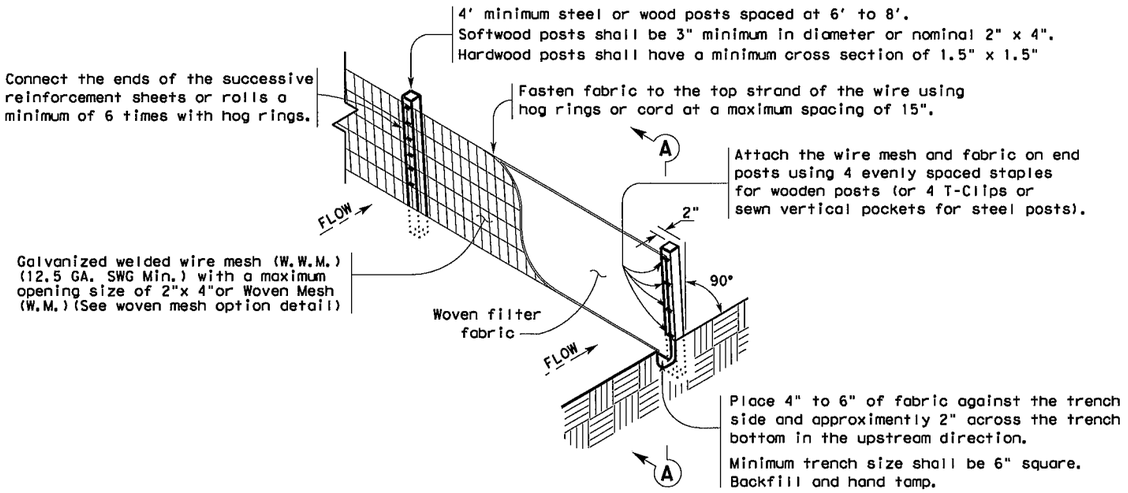
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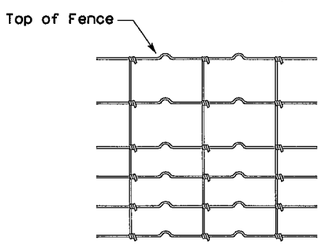
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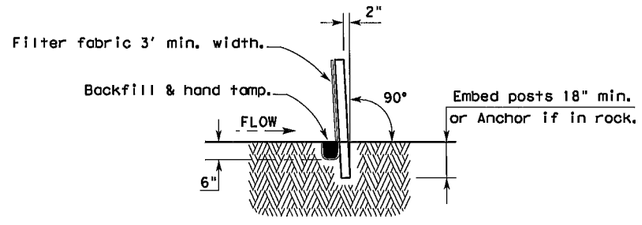
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TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA.SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a maximum flow through rate of 100 GPM/FT^2. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

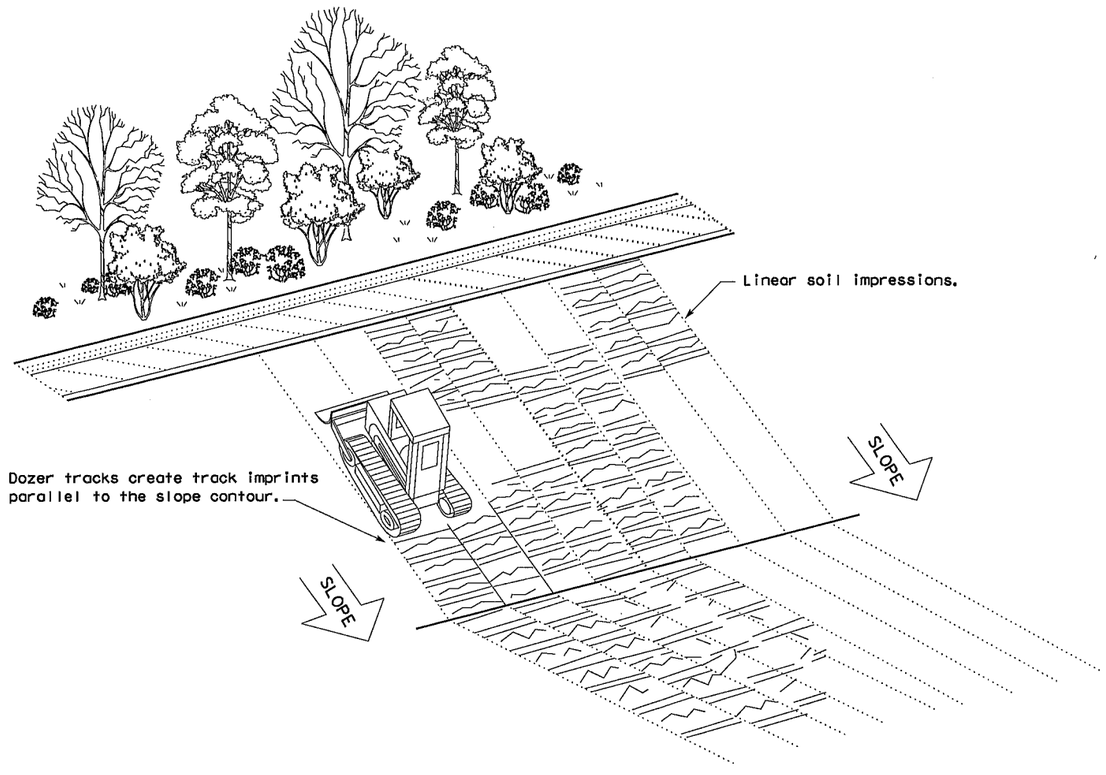
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
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.
4. Do not exceed 12" between track impressions.
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 of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

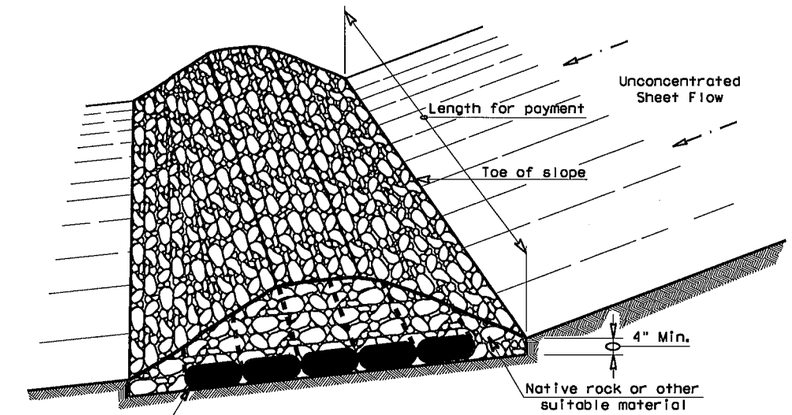
FENCE & VERTICAL TRACKING

EC(1)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DW/CK: LS		
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY		
REVISIONS						
	DIST	COUNTY		SHEET NO.		

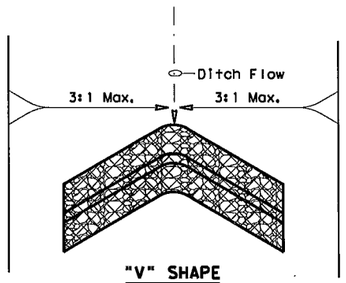
DATE
FILE

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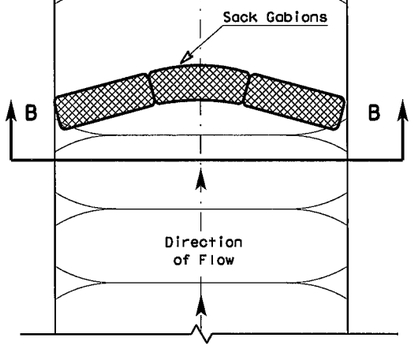


FILTER DAM AT TOE OF SLOPE

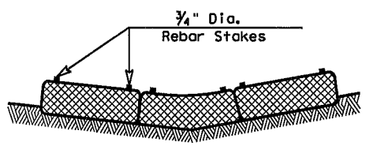
RFD1



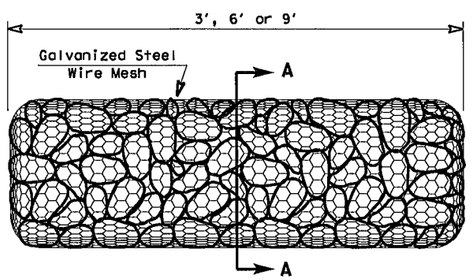
"V" SHAPE PLAN VIEW



PLAN VIEW

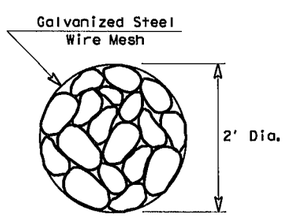


SECTION B-B

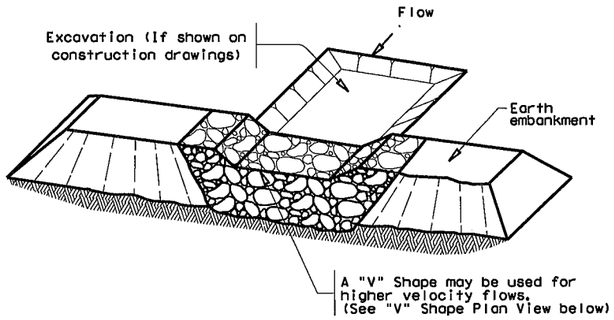


TYPE 4 (SACK GABIONS)

RFD4

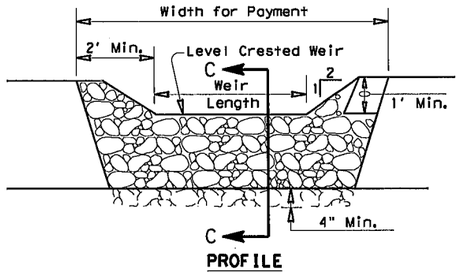


SECTION A-A

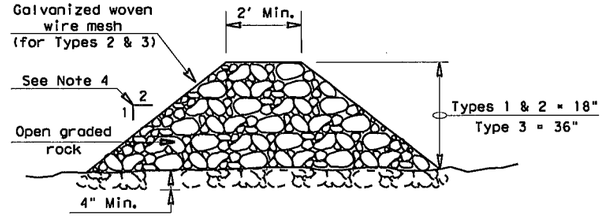


FILTER DAM AT SEDIMENT TRAP

RFD1 — OR — RFD2



PROFILE



SECTION C-C

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT^2 of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

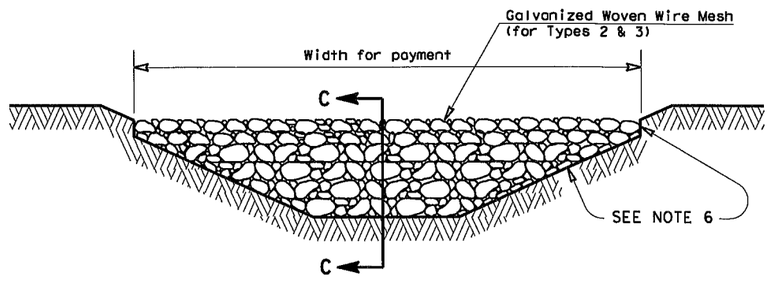
Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approximently 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

Type 2 (18" high with wire mesh) (3" to 6" aggregate): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh) (4" to 8" aggregate): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions) (3" to 6" aggregate): Type 4 May be used in ditches and smaller channels to form an erosion control dam.

Type 5: Provide rock filter dams as shown on plans.



FILTER DAM AT CHANNEL SECTIONS

RFD1 — OR — RFD2 — OR — RFD3

GENERAL NOTES

1. If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
2. Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
3. The rock filter dam dimensions shall be as indicated on the SW3P plans.
4. Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes of 6:1 or flatter.
5. Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
6. Filter dams should be embedded a minimum of 4" into existing ground.
7. The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
8. Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & slopes specified. The mesh shall be folded at the upstream side over the aggregate and tightly secured to itself on the downstream side using wire ties or hog rings. For in stream use, the mesh should be secured or staked to the stream bed prior to aggregate placement.
9. Sack Gabions should be staked down with 3/4" dia. rebar stakes, and have a double-twisted hexagonal weave with a nominal mesh opening of 2 1/2" x 3 1/4"
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
11. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PLAN SHEET LEGEND

Type 1 Rock Filter Dam — RFD1
Type 2 Rock Filter Dam — RFD2
Type 3 Rock Filter Dam — RFD3
Type 4 Rock Filter Dam — RFD4

Texas Department of Transportation | Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

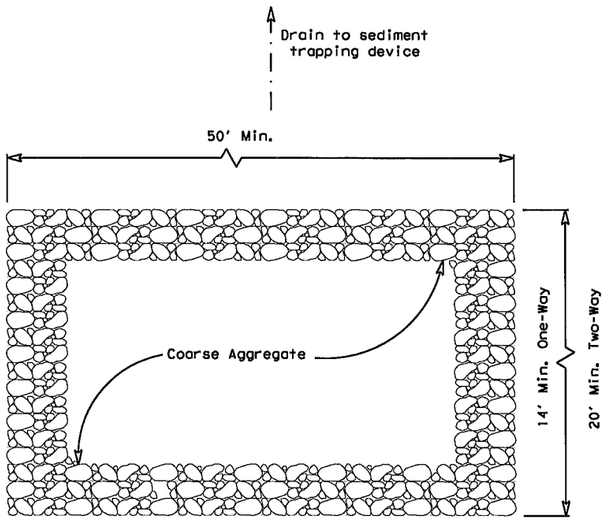
ROCK FILTER DAMS

EC(2)-16

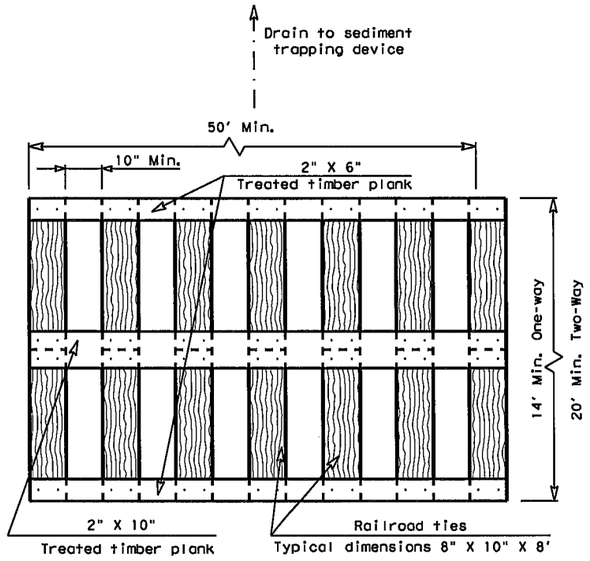
FILE: ec216	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS	
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY	
REVISIONS					
	DIST	COUNTY		SHEET NO.	

DATE:
FILE:

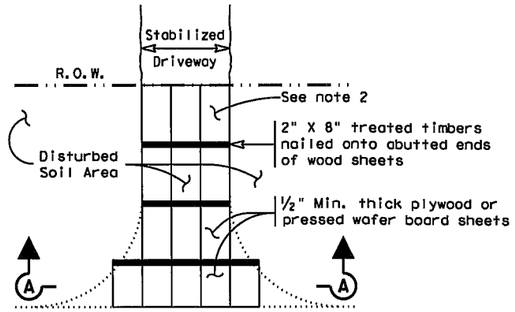
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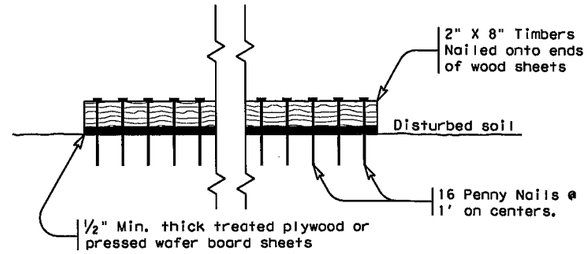
PLAN VIEW



PLAN VIEW



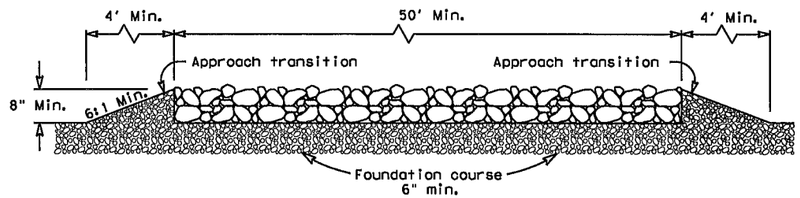
PLAN VIEW



SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

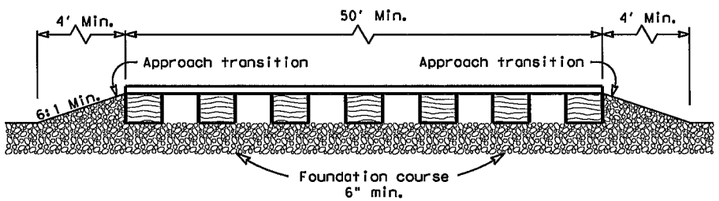
SHORT TERM



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

ROCK CONSTRUCTION (LONG TERM)



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)

TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materialas approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
7. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 2)

1. The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
2. The treated timber planks shall be attached to the railroad ties with ½"x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
5. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
6. The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
8. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 3)

1. The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
2. The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

Texas Department of Transportation | Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

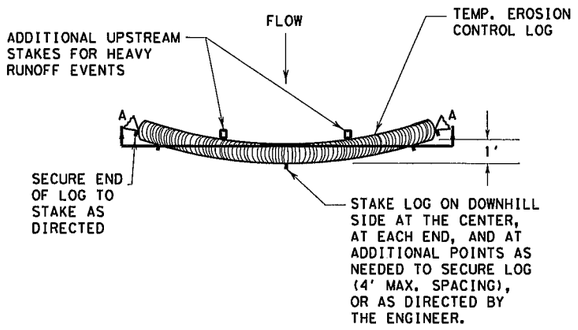
CONSTRUCTION EXITS

EC(3)-16

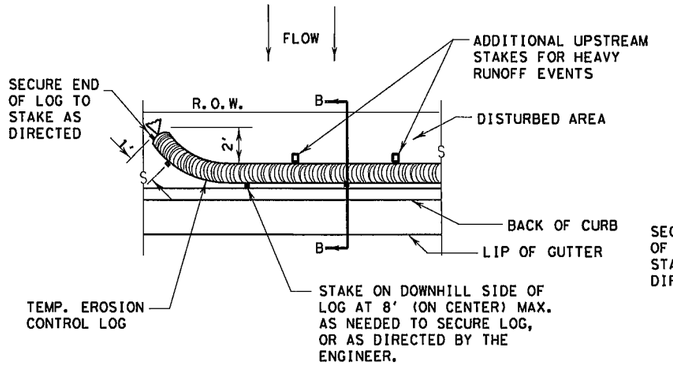
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©TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY	
REVISIONS	C	S	J	HWY	
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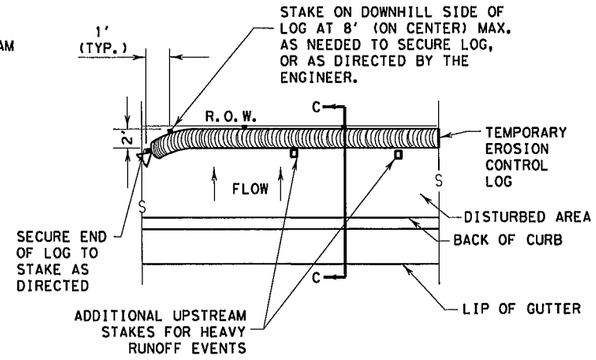
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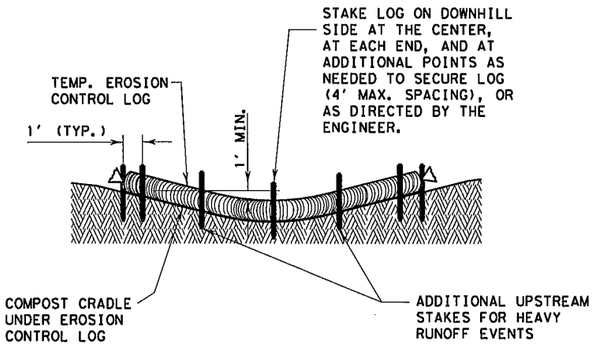
PLAN VIEW



PLAN VIEW



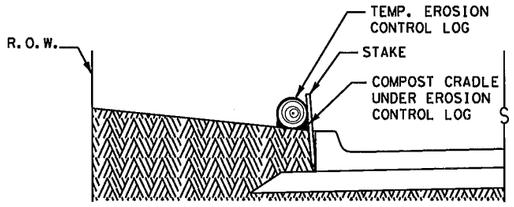
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

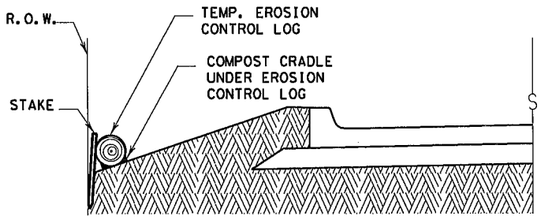
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

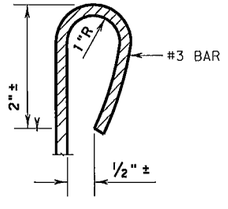
CL-BOC



SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



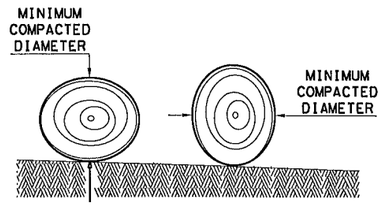
REBAR STAKE DETAIL

GENERAL NOTES:

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2" X 2" WOOD OR #3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER.
6. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
7. COMPOST CRADLE MATERIAL IS INCIDENTAL & WILL NOT BE PAID FOR SEPARATELY.
8. SANDBAGS USED AS ANCHORS SHALL BE PLACED ON TOP OF LOGS & SHALL BE OF SUFFICIENT SIZE TO HOLD LOGS IN PLACE.
9. TURN THE ENDS OF EACH ROW OF LOGS UPSLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
10. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.

LEGEND

- CL-D — EROSION CONTROL LOG DAM
- CL-BOC — EROSION CONTROL LOG AT BACK OF CURB
- CL-ROW — EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
- CL-SST — EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
- CL-SSL — EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
- CL-DI — EROSION CONTROL LOG AT DROP INLET
- CL-CI — EROSION CONTROL LOG AT CURB INLET
- CL-GI — EROSION CONTROL LOG AT CURB & GRATE INLET



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

SEDIMENT BASIN & TRAP USAGE GUIDELINES

An erosion control log sediment trap may be used to filter sediment out of runoff draining from an unstabilized area.

Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Control logs should be placed in the following locations:

1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets or drain inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way
5. Just before the drainage leaves the construction limits where drainage flows away from the project.

The logs should be cleaned when the sediment has accumulated to a depth of 1/2 the log diameter.

Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for separately.

SHEET 1 OF 3

Texas Department of Transportation | Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

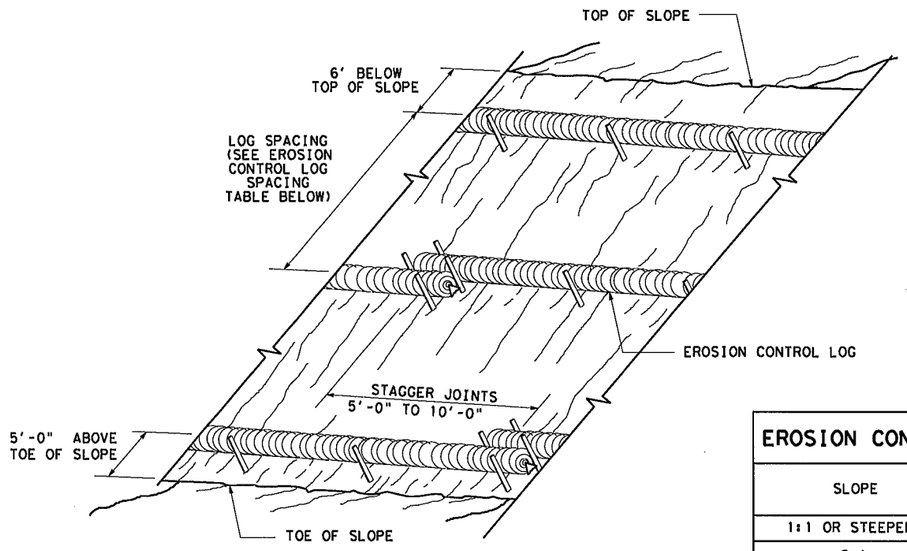
EROSION CONTROL LOG

EC(9)-16

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© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS				
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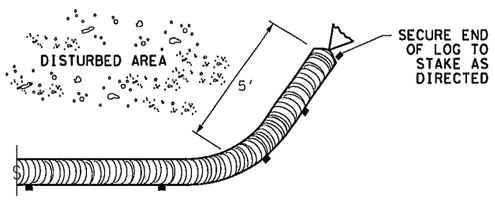
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EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

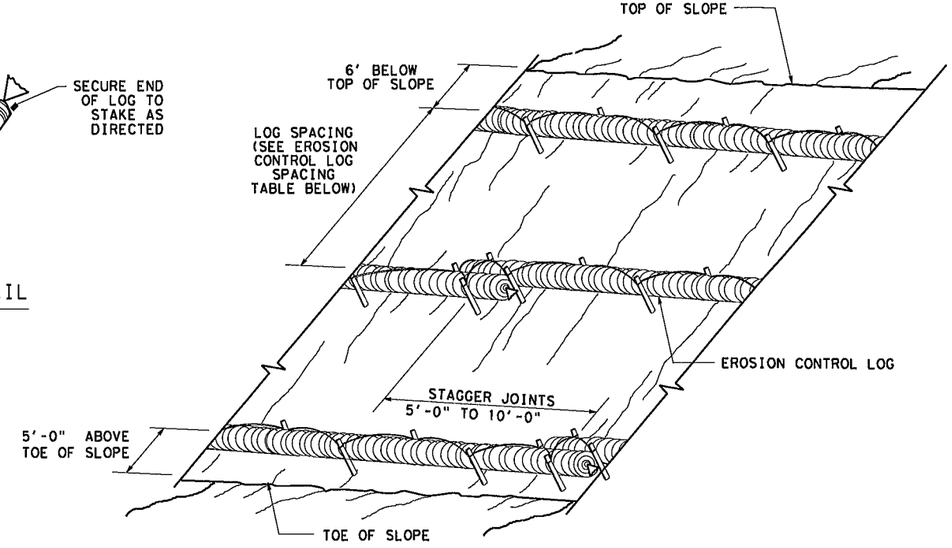
CL-SST



END SECTION RAP DETAIL

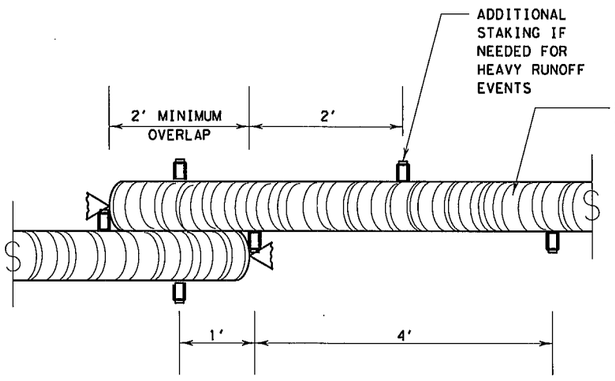
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

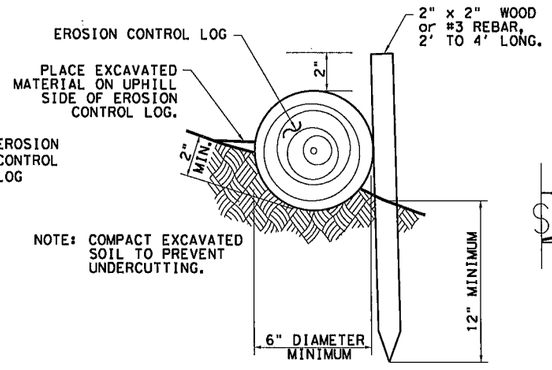
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

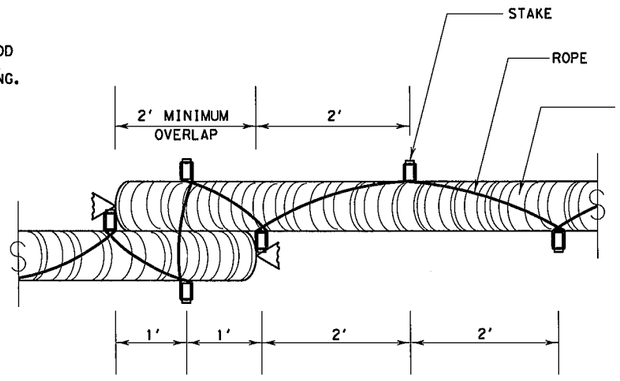


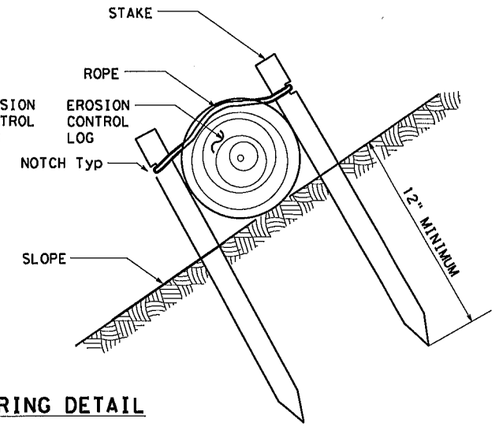


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

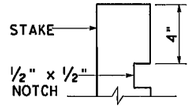
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

Texas Department of Transportation — Design Division Standard

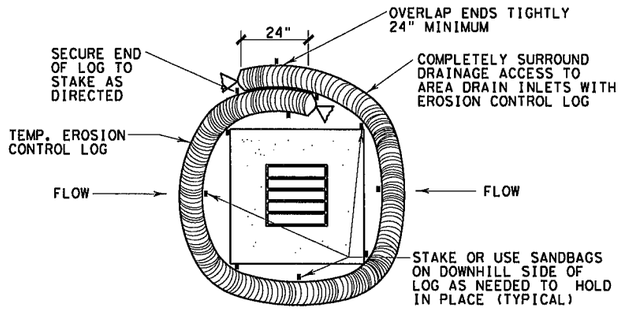
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES
EROSION CONTROL LOG
EC(9)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS	
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REVISIONS	DIST	COUNTY		SHEET NO.	

DATE:
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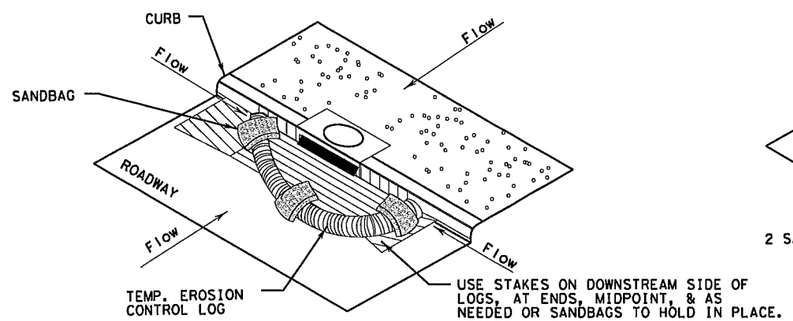
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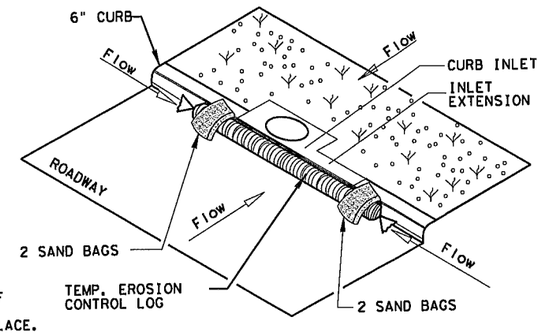
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

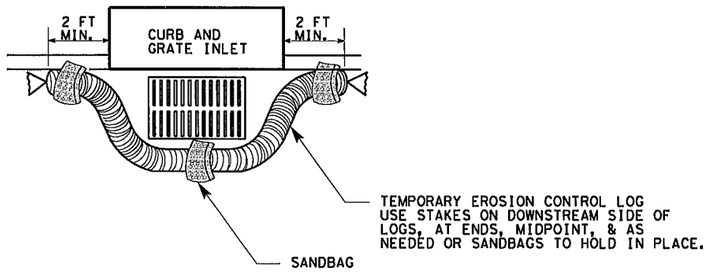
CL-CI



EROSION CONTROL LOG AT CURB INLET

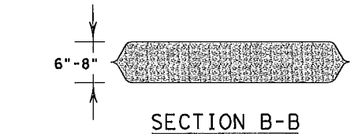
CL-CI

NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.

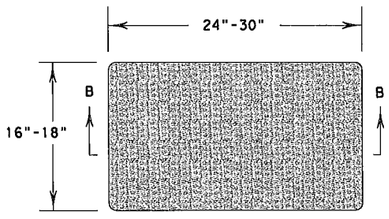


EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI



SECTION B-B



SANDBAG DETAIL

SHEET 3 OF 3

Texas Department of Transportation | Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

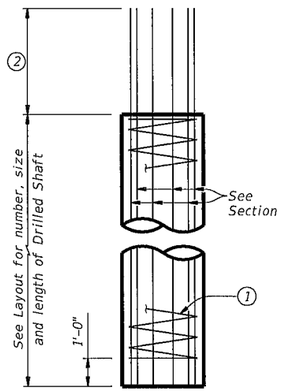
EROSION CONTROL LOG

EC(9)-16

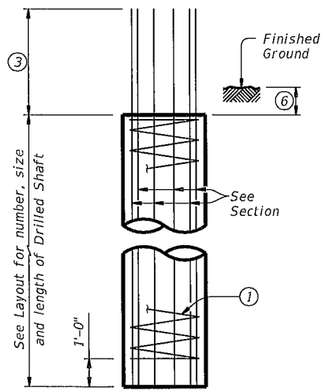
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© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY		
REVISIONS						
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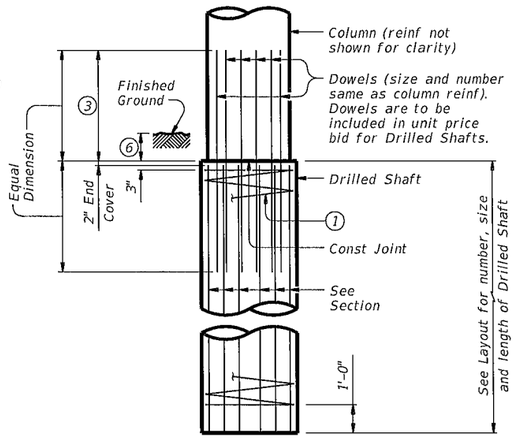
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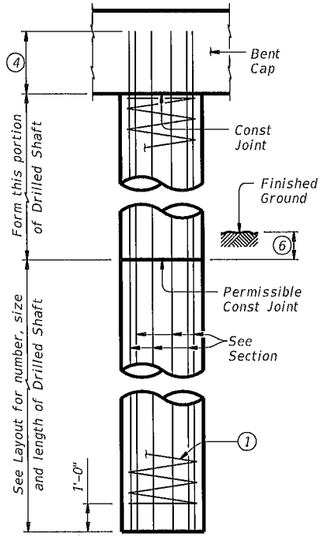
ABUTMENTS, WINGWALLS AND MULTI-DRILLED SHAFT FOOTINGS



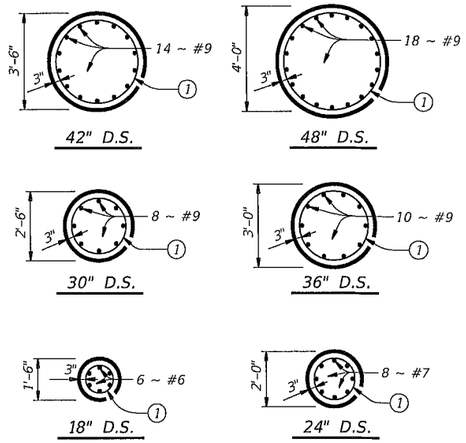
INTERIOR BENTS DRILLED SHAFT DIA EQUAL TO COLUMN DIA



INTERIOR BENTS DRILLED SHAFT DIA GREATER THAN COLUMN DIA



OPTIONAL INTERIOR BENT DRILLED SHAFT DETAIL (5)

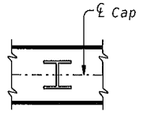


DRILLED SHAFT SECTIONS

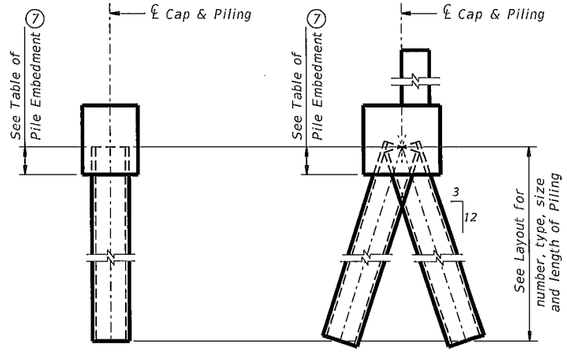
DRILLED SHAFT DETAILS

TABLE OF PILE EMBEDMENT	
Pile Type	Embedment Depth (Ft)
16" Sq Concrete 18" Sq Concrete HP14 Steel HP16 Steel	1'-0"
20" Sq Concrete 24" Sq Concrete HP18 Steel	1'-6"

See standard CP for additional details on concrete pile embedment.

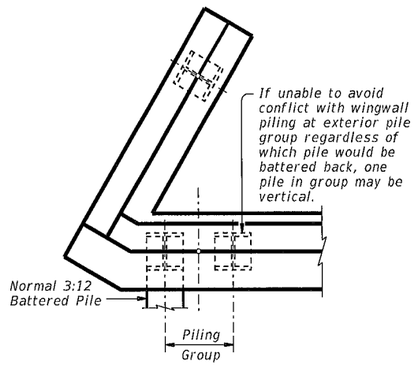


ORIENTATION OF STEEL H-PILING

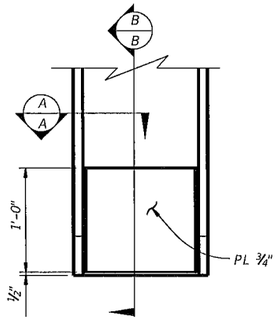


VERTICAL PILE BATTERED PILE

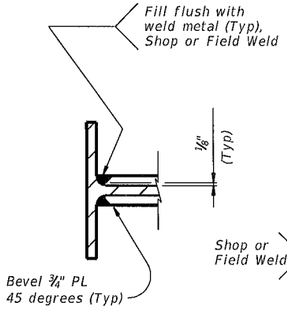
PILING DETAILS
(Concrete or Steel H)



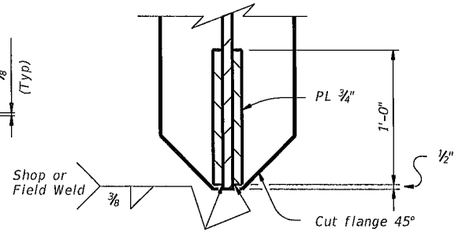
DETAIL "A"
(Showing Plan View of a 30° Skewed Abutment)



ELEVATION



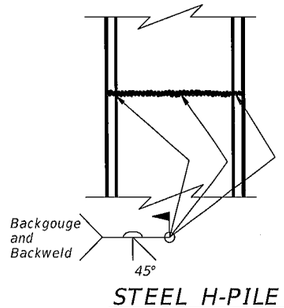
SECTION A-A



SECTION B-B

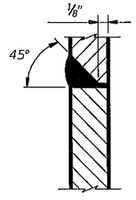
STEEL H-PILE TIP REINFORCEMENT

See Item 407 "Steel Piling" to determine when tip reinforcement is required and for options to the details shown.



STEEL H-PILE SPLICE DETAIL

Use when required.



SECTION THRU FLANGE OR WEB

(1) #3 Spiral at 6" pitch (One and a half flat turns top & bottom).

(2) Min extension into supported element:
#6 Bars = 1'-6"
#7 Bars = 1'-8"
#9 Bars = 2'-3"

(3) Min lap with Column reinf:
#7 Bars = 2'-9"
#9 Bars = 4'-6"

(4) Min extension into supported element:
#6 Bars = 1'-6"
#7 Bars = 1'-8"
#9 Bars = 2'-8"

(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

(7) Or as shown on plans.

SHEET 1 OF 2

Texas Department of Transportation | Bridge Division Standard

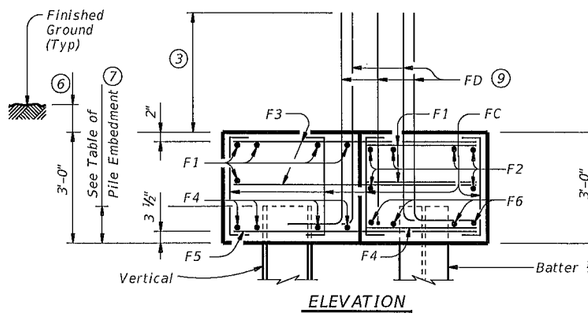
COMMON FOUNDATION DETAILS

FD

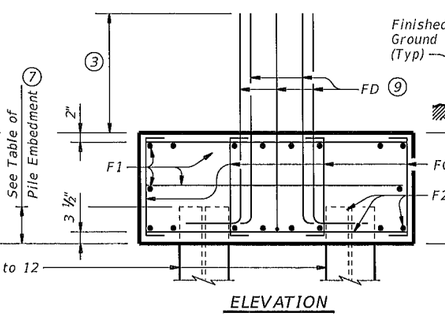
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©TxDOT January 2015	CONT	SECT	JOB	HIGHWAY
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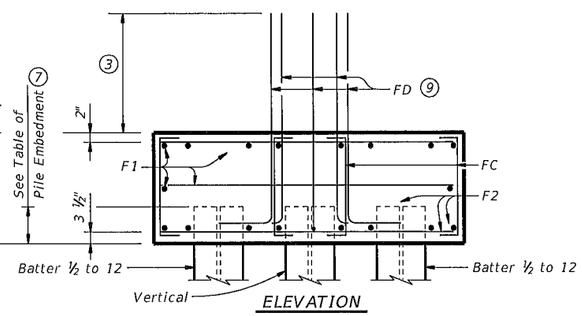
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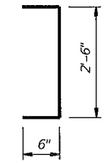
ELEVATION



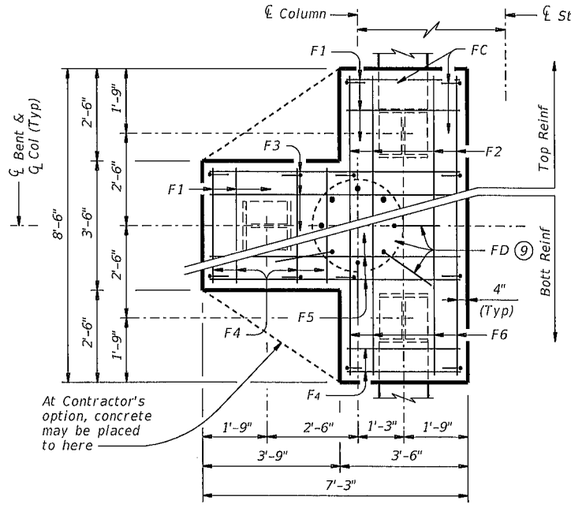
ELEVATION



ELEVATION



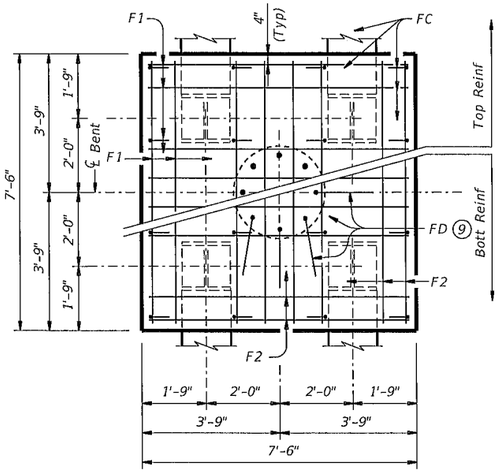
BARS FC



PLAN

THREE PILE FOOTING ⑧

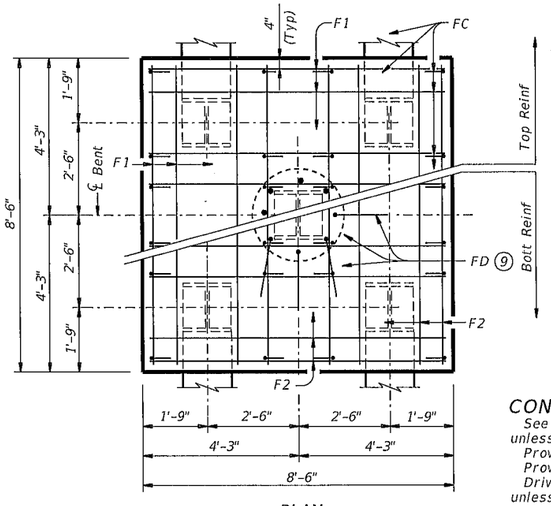
For 36" Dia and smaller columns.



PLAN

FOUR PILE FOOTING ⑧

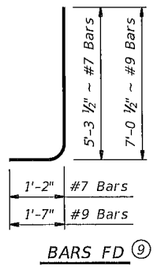
For 42" Dia and smaller columns.



PLAN

FIVE PILE FOOTING ⑧

For 42" Dia and smaller columns.



BARS FD ⑨

TABLE OF FOOTING QUANTITIES FOR 30" COLUMNS

ONE 3 PILE FOOTING				
Bar	No.	Size	Length	Weight
F1	11	#4	3'- 2"	23
F2	6	#4	8'- 2"	33
F3	6	#4	6'- 11"	28
F4	8	#9	3'- 2"	86
F5	4	#9	6'- 11"	94
F6	4	#9	8'- 2"	111
FC	12	#4	3'- 6"	28
FD ⑩	8	#9	8'- 8"	236
Reinforcing Steel			Lb	639
Class "C" Concrete			CY	4.8

ONE 4 PILE FOOTING				
Bar	No.	Size	Length	Weight
F1	20	#4	7'- 2"	96
F2	16	#8	7'- 2"	306
FC	16	#4	3'- 6"	37
FD ⑪	8	#9	8'- 8"	236
Reinforcing Steel			Lb	675
Class "C" Concrete			CY	6.3

ONE 5 PILE FOOTING				
Bar	No.	Size	Length	Weight
F1	20	#4	8'- 2"	109
F2	16	#9	8'- 2"	444
FC	24	#4	3'- 6"	56
FD ⑪	8	#9	8'- 8"	236
Reinforcing Steel			Lb	845
Class "C" Concrete			CY	8.0

CONSTRUCTION NOTES:

See Bridge Layout for foundation type required. Use these foundation details unless shown otherwise.

Provide Class C Concrete (f'c = 3600 psi), unless shown otherwise.

Provide Grade 60 reinforcing steel.

Drive piling under abutment wingwalls to a minimum resistance of 10 Tons/Pile unless shown otherwise.

GENERAL NOTES:

Designed according to AASHTO LRFD 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

③ Min lap with Column reinf:
#7 Bars = 2'-9"
#9 Bars = 4'-6"

⑥ 1'-0" Min

⑦ Or as shown on plans.

⑧ See Layout for Type, Size and length of Piling.

⑨ Number and size of FD bars must match Column reinforcing. Tie FD bars to the top of the bottom reinforcing mat.

⑩ For 24" Columns, use #7 FD bars (6'-6") in place of #9 bars and deduct 130 lbs.
For 36" Columns, add 2 FD bars (59 lbs).

⑪ For 24" Columns, use #7 FD bars (6'-6") in place of #9 bars and deduct 130 lbs.
For 36" Columns, add 2 FD bars (59 lbs).
For 42" Columns, add 6 FD bars (177 lbs)
(42" Columns disallowed on 3 Pile Footings)

Texas Department of Transportation

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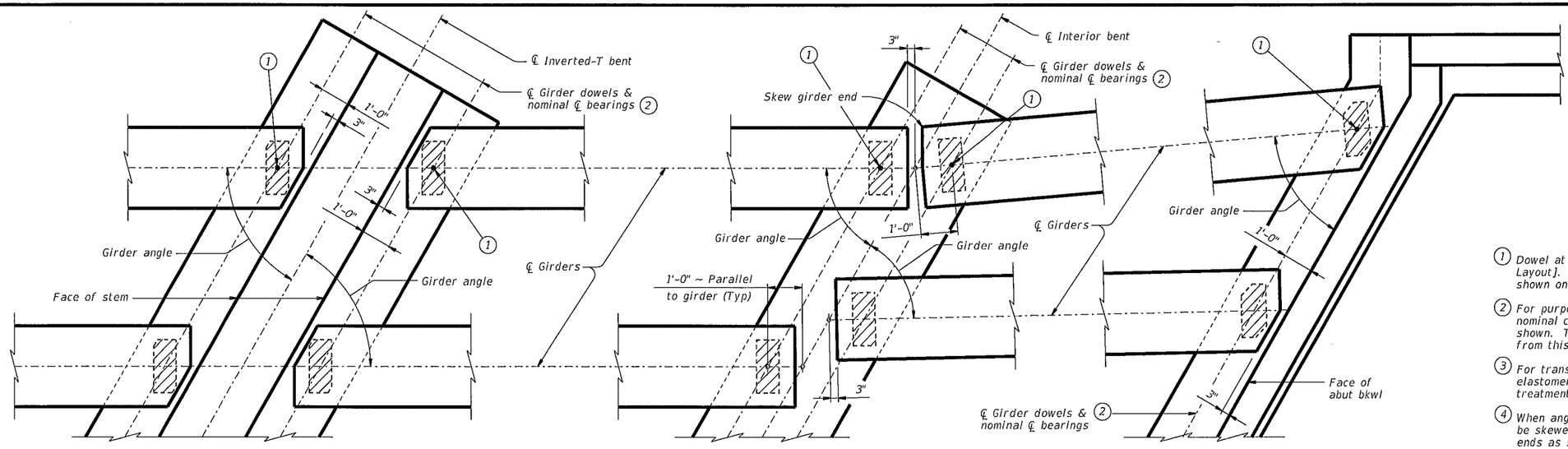
COMMON FOUNDATION DETAILS

FD

FILE: fdstde01.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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AT INVERTED-T BENT W/SKEW

AT CONVENTIONAL INTERIOR BENT W/SKEW

AT ABUTMENT (3) W/SKEW

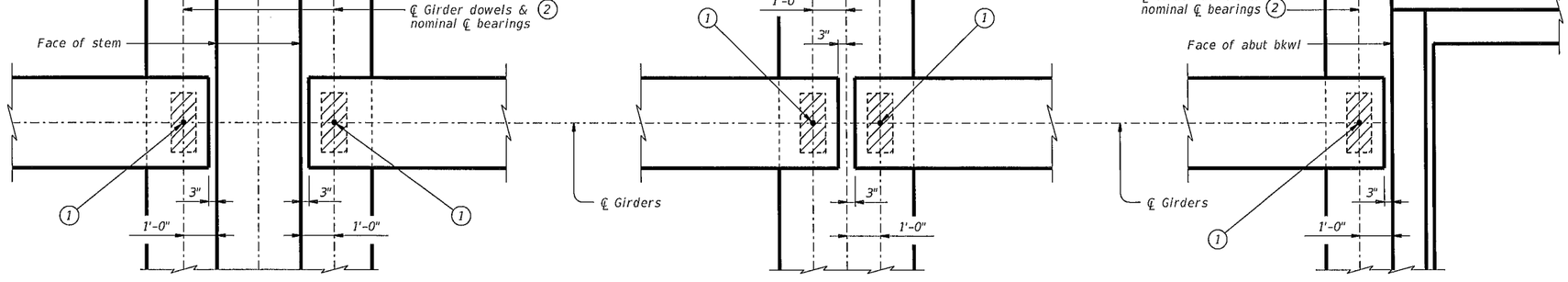
(1) Dowel at doweled girder end [labeled (D) on Bridge Layout]. Required for outside girder only or as shown on substructure details.

(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.



AT INVERTED-T BENT

AT CONVENTIONAL INTERIOR BENT

AT ABUTMENT (3)

GIRDER END DETAILS

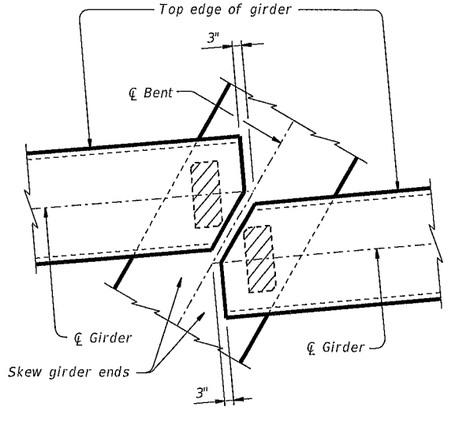
GENERAL NOTES:

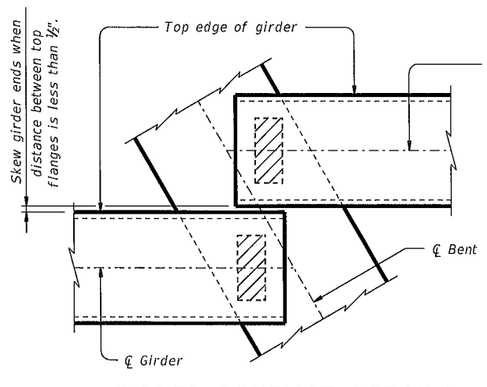
These details accommodate skew angles up to 60°.

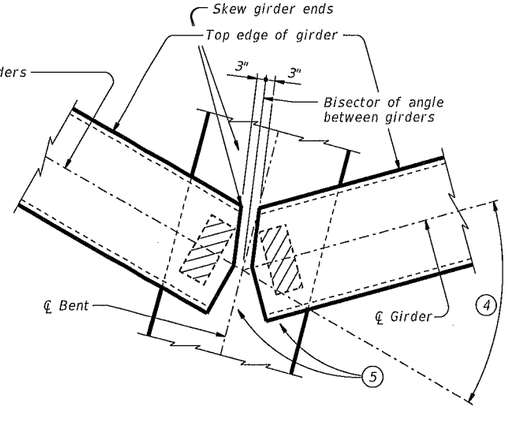
Shop drawings for approval are required.

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 Engineer.

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







GIRDER CONFLICT DETAILS

HL93 LOADING SHEET 1 OF 3

Texas Department of Transportation

Bridge Division Standard

ELASTOMERIC BEARING AND GIRDER END DETAILS

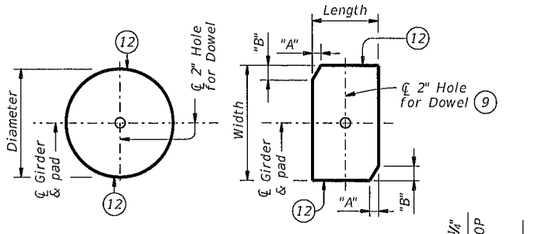
PRESTR CONCRETE I-GIRDERS

IGEB

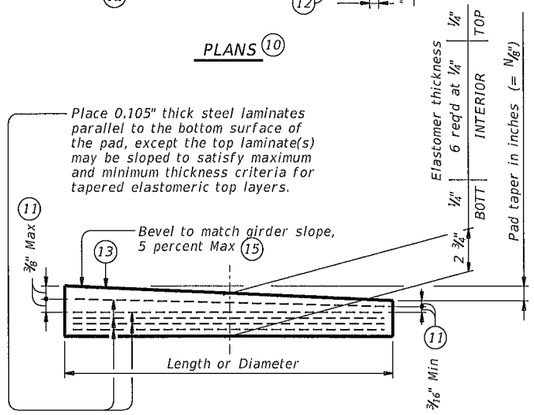
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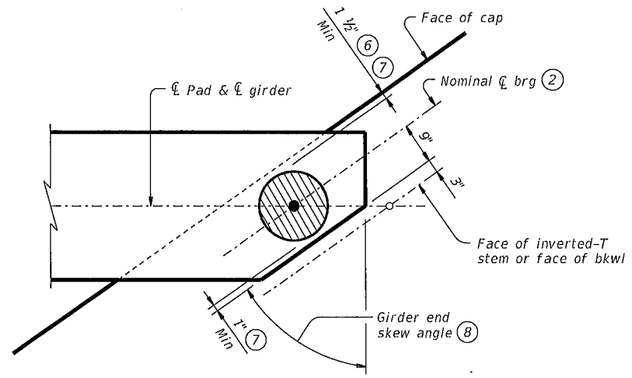
PLANS (10)



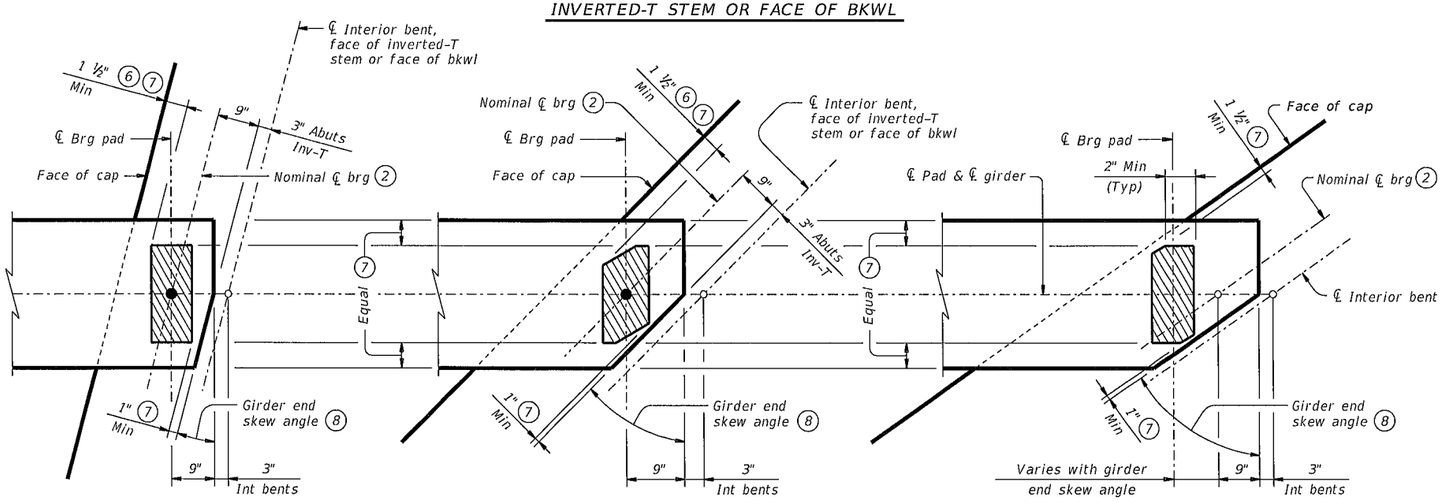
ELEVATION

LAMINATED ELASTOMERIC BEARING PAD

(50 DUROMETER)



ROUND BEARINGS FOR SKEWED GIRDER ENDS AT FACE OF INVERTED-T STEM OR FACE OF BKWL



SKEWED GIRDER ENDS AT INT BENTS, FACE OF INVERTED-T STEM OR FACE OF BKWL

SKEWED GIRDER ENDS AT CONVENTIONAL INTERIOR BENTS (16)
(NO GIRDER DOWELS)

BEARING PAD PLACEMENT DIAGRAMS

TABLE OF MINIMUM SUBSTRUCTURE DIMENSIONS (14)

Girder Type	Abutments: Face of Bkwl to Face of Cap	Int Bents: Overall Cap Width	Inv-T Bents: Corbel Width
Tx28 thru Tx54	1'-9"	3'-6"	1'-10 1/2"
Tx62 & Tx70	2'-0"	4'-0"	2'-1 1/2"

TABLE OF BEARING PAD DIMENSIONS

Bent Type	Girder Type	Bearing Type (13)	Girder End Skew Angle Range	Pad Size Lgth x Wdth	Pad Clip Dimensions "A"	Pad Clip Dimensions "B"
ABUTMENTS, INVERTED-T AND TRANSITION BENTS WITH BACKWALLS	Tx28,Tx34, Tx40,Tx46 & Tx54	G-1-"N"	0° thru 21°	8" x 21"	---	---
		G-2-"N"	21°+ thru 30°	8" x 21"	1 1/2"	2 1/2"
		G-3-"N"	30°+ thru 45°	9" x 21"	4 1/2"	4 1/2"
		G-4-"N"	45°+ thru 60°	15" Dia	---	---
	Tx62 & Tx70	G-5-"N"	0° thru 21°	9" x 21"	---	---
		G-6-"N"	21°+ thru 30°	9" x 21"	1 1/2"	2 1/2"
		G-7-"N"	30°+ thru 45°	10" x 21"	4 1/2"	4 1/2"
		G-8-"N"	45°+ thru 60°	10" x 21"	7 1/4"	4 1/4"
CONVENTIONAL INTERIOR BENTS	Tx28,Tx34, Tx40,Tx46 & Tx54	---	---	---	---	---
		---	---	---	---	---
		G-1-"N"	0° thru 60°	8" x 21"	---	---
	Tx62 & Tx70	G-5-"N"	0° thru 60°	9" x 21"	---	---
CONVENTIONAL INTERIOR BENTS WITH SKEWED GIRDER ENDS (GIRDER CONFLICTS) (16)	Tx28,Tx34, Tx40,Tx46 & Tx54	G-1-"N"	0° thru 18°	8" x 21"	---	---
		G-2-"N"	18°+ thru 30°	8" x 21"	1 1/2"	2 1/2"
		G-9-"N"	30°+ thru 45°	8" x 21"	3"	3"
		G-10-"N"	45°+ thru 60°	9" x 21"	6"	3 1/2"
	Tx62 & Tx70	G-5-"N"	0° thru 18°	9" x 21"	---	---
		G-5-"N"	18°+ thru 30°	9" x 21"	---	---
		G-11-"N"	30°+ thru 45°	9" x 21"	1 1/2"	1 1/2"
		G-12-"N"	45°+ thru 60°	9" x 21"	3"	1 3/4"

(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 1/8" increments) in this mark.
Examples: N=0, (for 0" taper)
N=1, (for 1/8" taper)
N=2, (for 1/4" taper)
(etc.)
Fabricated pad top surface slope must not vary from plan girder slope by more than $\left(\frac{0.0625"}{\text{Length or Dia}}\right)$ 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.

HL93 LOADING SHEET 2 OF 3

Texas Department of Transportation — Bridge Division Standard

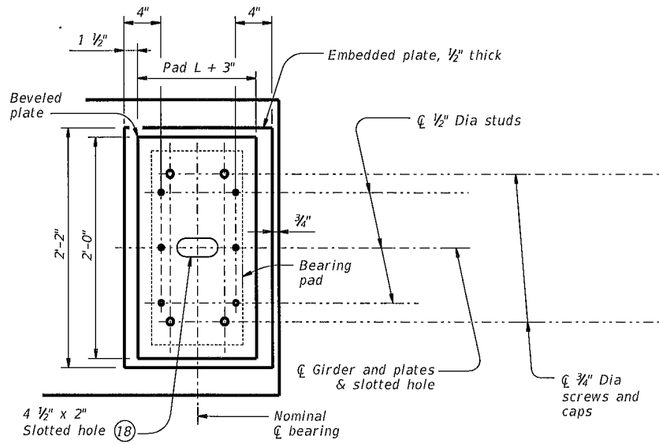
ELASTOMERIC BEARING AND GIRDER END DETAILS
PRESTR CONCRETE I-GIRDERS

IGEB

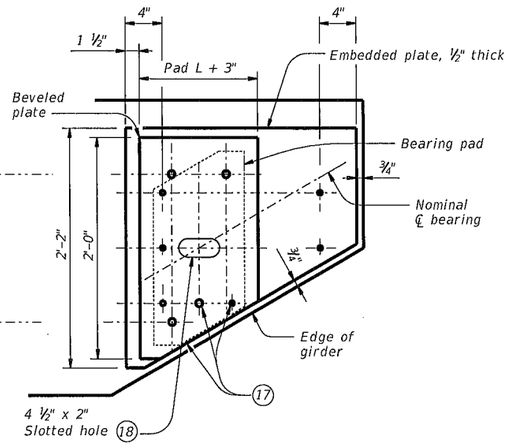
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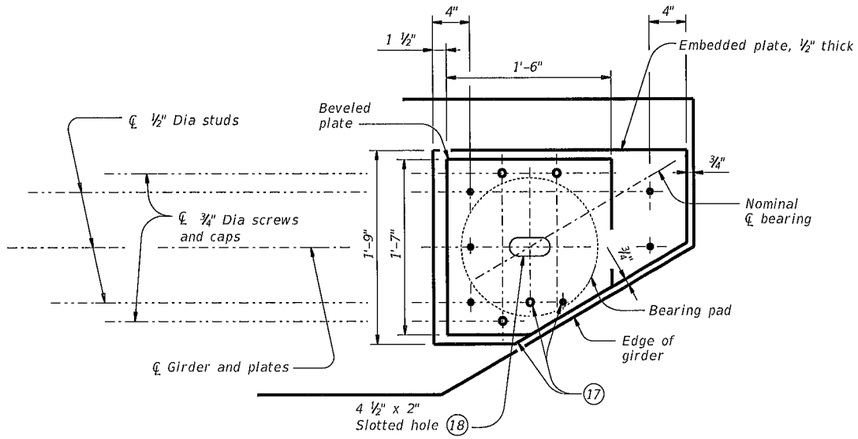
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NORMAL GIRDER END
RECTANGULAR BEARING PAD

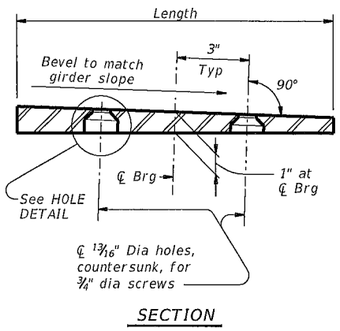


SKEWED GIRDER END
CLIPPED RECTANGULAR BEARING PAD

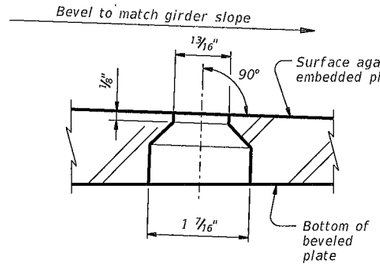


SKEWED GIRDER END
15" DIA BEARING PAD

PLAN VIEW OF SOLE PLATE DETAILS



SECTION



HOLE DETAIL

(17) Cut beveled and embedded plates to match girder end skew. Adjust location of screw and stud as shown when necessary.

(18) Slotted hole is required at doweled girder end locations.

SOLE PLATE NOTES:

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 plans. Provide for all girders in the span.

On the shop drawings, dimension sole plates to the nearest 1⁄16" based on required thickness at centerline of bearing and slope of girder. Thickness tolerance variation from the approved shop drawings is 1⁄16"+/-, except variation from a plane parallel to the theoretical top surface can not exceed 1⁄16" total. Bearing surface tolerances listed in Item 424 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 before galvanizing.

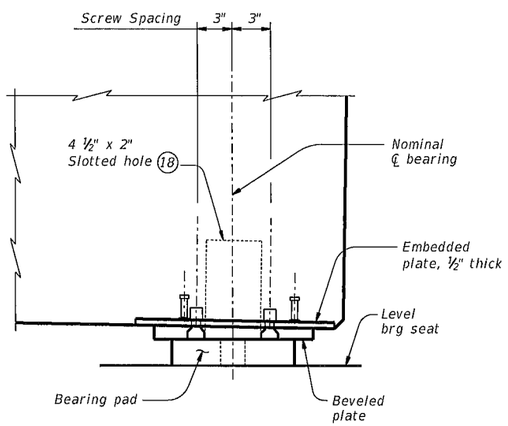
When determining if relocation of screw holes and studs are necessary for skewed girder ends, minimum clearance from screw or stud centerline to plate edge is 1.25".

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

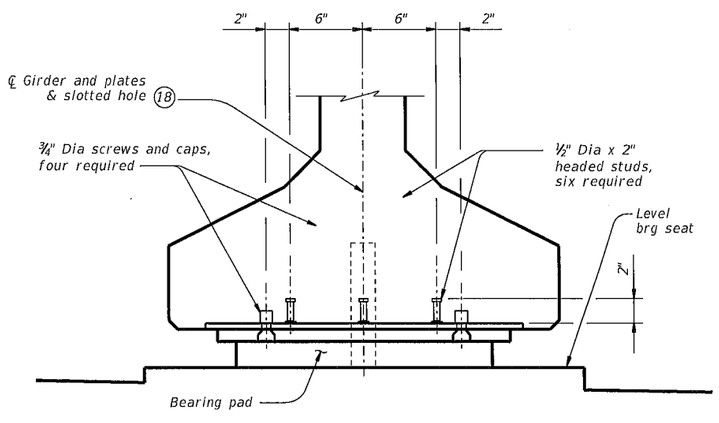
¾" Dia screws must be electroplated, socket flat head countersunk cap screws conforming to ASTM F835. Electroplating must conform to ASTM B633, SC 2, Type I. Provide screws long enough to maintain a ¾" minimum embedment into the embedded plate and galvanized cap. Provide galvanized steel caps (16 ga Min) with a nominal 1" inside diameter and deep enough to accommodate the screws, but not less than ½" deep or deeper than 1".

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

BEVELED PLATE DETAILS



SIDE ELEVATION



END ELEVATION

GIRDER DETAILS

HL93 LOADING SHEET 3 OF 3

Texas Department of Transportation
Bridge Division Standard

ELASTOMERIC BEARING AND GIRDER END DETAILS

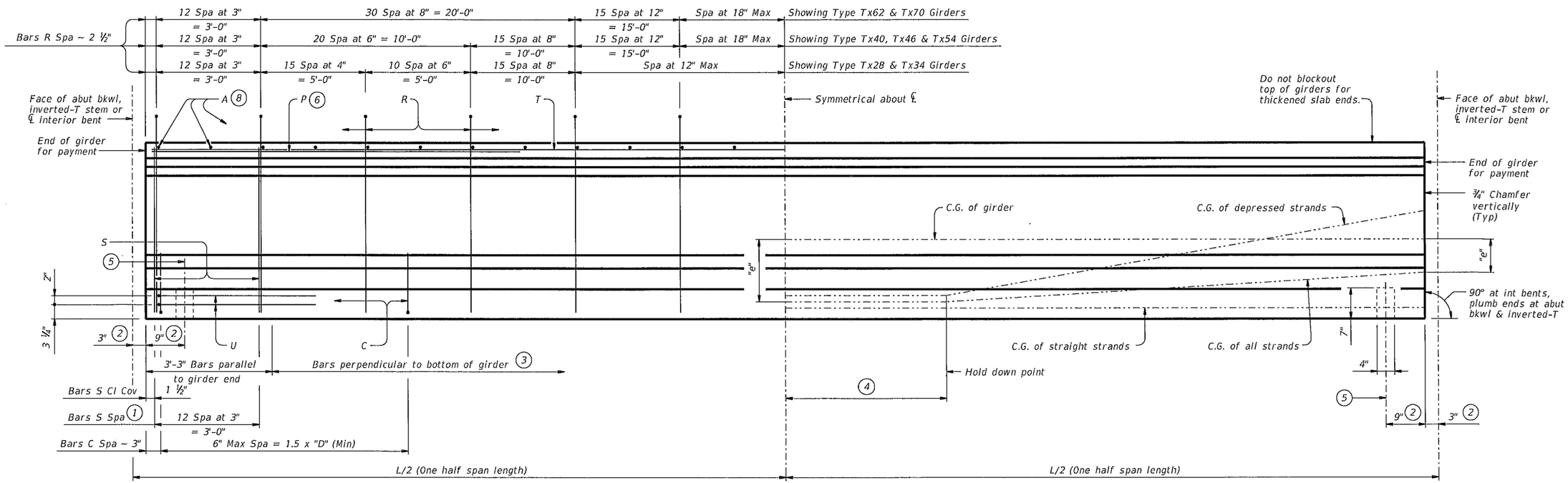
PRESTR CONCRETE I-GIRDERS

IGEB

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GIRDER ELEVATION

(1) Bundle with Bars R.

(2) Measured along ℄ Girder at interior bents; perpendicular to abutment bkwl or inverted-T stem.

(3) The average of the top and bottom spacing of Bars R cannot exceed the required spacing.

(4) L/20, but not less than 5'-0" (-0,+2').

(5) ℄ 4" x 1 ½" Vertical Slotted Hole at doweled girder end [labeled (D) on Bridge Layout]. Required for outside girder only or as shown on substructure details. Anchorage holes may be tapered (4 ¾" x 1 ⅝") at base. If holes are formed with sheet metal, forms may be left in place.

(6) Bars P (#6 x 15'-0") are only required when "e" at girder ends exceeds 0.25 x "D". At the fabricator's option bars larger than #6 may be used. When L is less than 50 ft, Bars P are to be the same length as Bars T.

(7) 1 ⅜" Clear Cover to Bars S.

(8) Space Bars A at 6" Max for girders requiring overhang bracket hangers. Space at 12" Max for all other girders. Tie to Bars R as necessary. See standard IGMS for "Deck Forming Notes".

(9) Based on 155 pcf total weight of concrete and reinforcing steel.

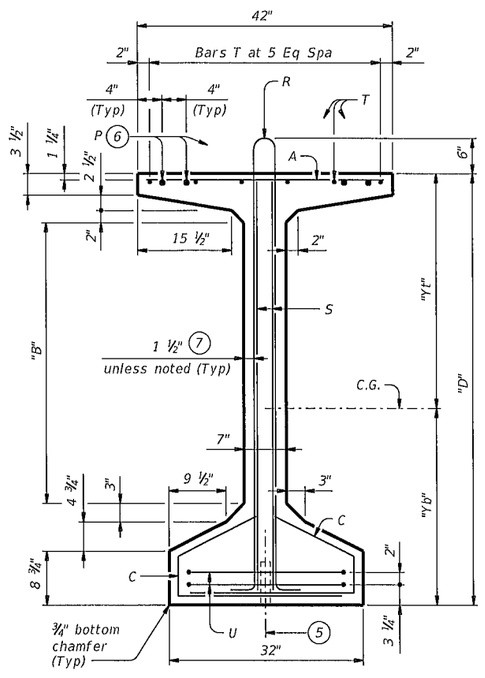
GIRDER DIMENSIONS AND SECTION PROPERTIES

Girder Type	"D" (in.)	"B" (in.)	"Yt" (in.)	"Yb" (in.)	Area (in.²)	"Ix" (in.⁴)	"Iy" (in.⁴)	Weight (9) (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

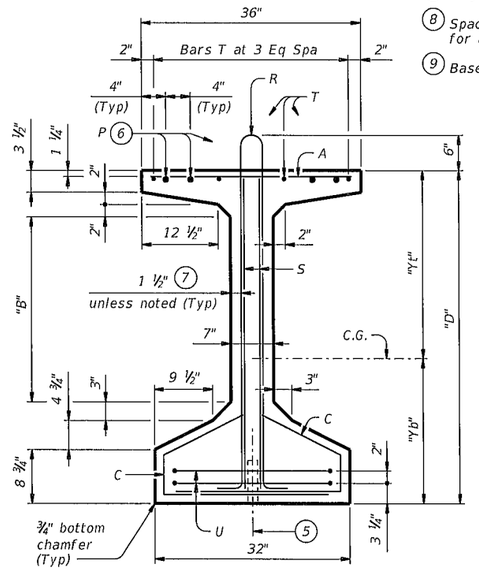
GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
Provide Class H concrete.
Provide Grade 60 reinforcing steel.
An equal area of deformed Welded Wire Reinforcement (WWR) (ASTM A1064) may be substituted for Bars A, C, R or T unless otherwise noted.
It is permissible for bars or strands to come in contact with materials used in forming anchor holes.

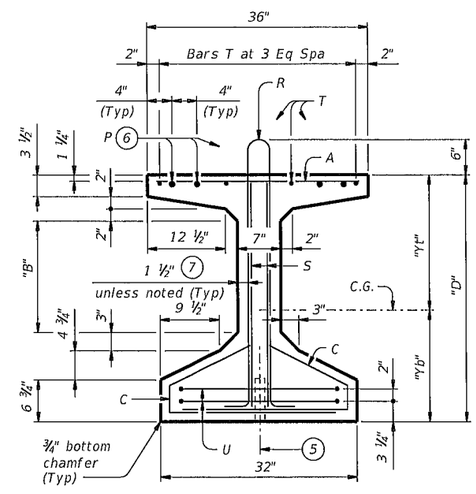
Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.



TYPE Tx62 & Tx70



TYPE Tx46 & Tx54



TYPE Tx28, Tx34 & Tx40

HL93 LOADING

Texas Department of Transportation

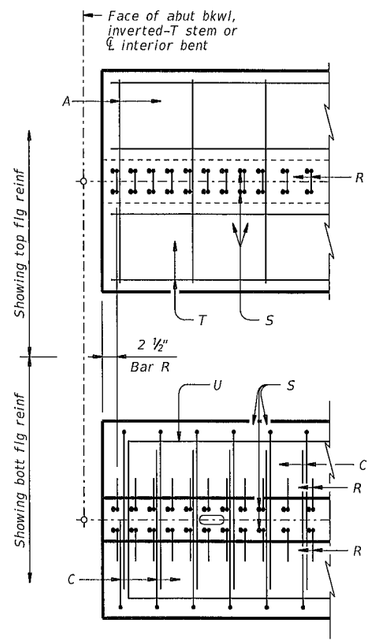
Bridge Division Standard

PRESTRESSED CONCRETE I-GIRDER DETAILS

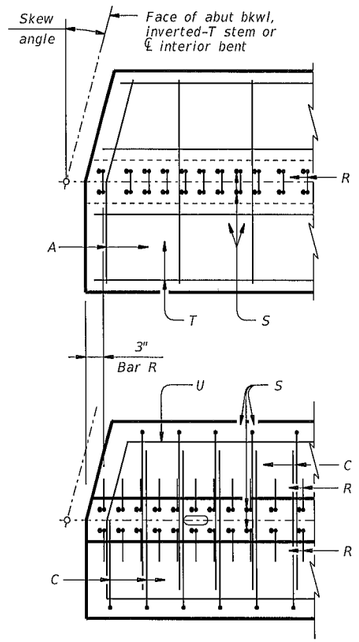
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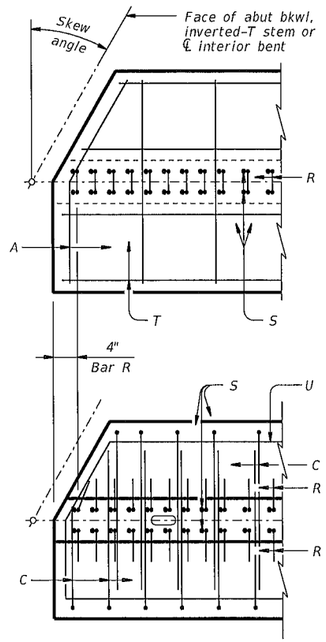
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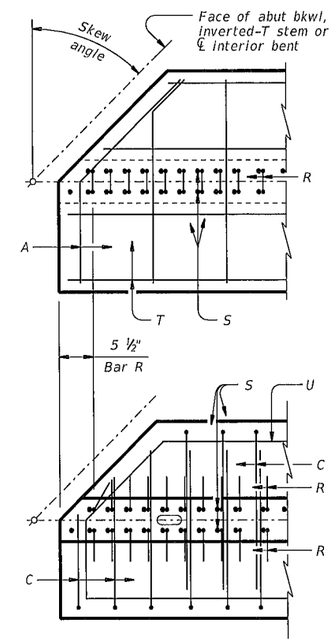
0° SKEW



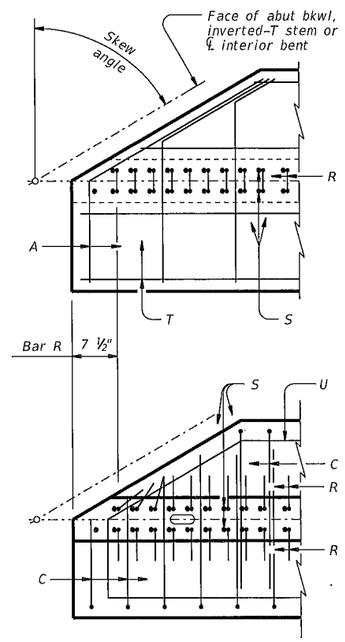
15° SKEW



30° SKEW



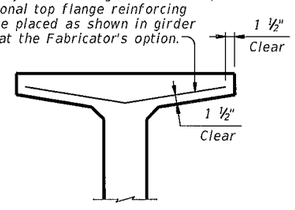
45° SKEW



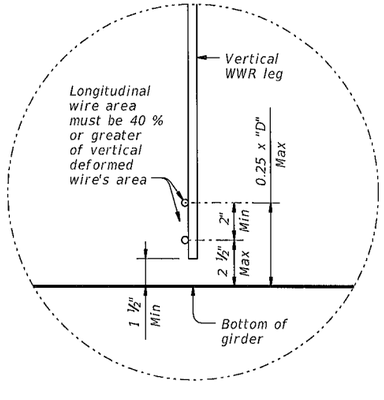
60° SKEW

PLAN OF GIRDER ENDS (10)

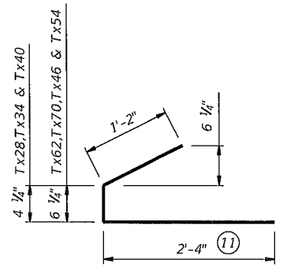
To control top flange cracking that may occur during form removal, additional top flange reinforcing may be placed as shown in girder ends at the Fabricator's option.



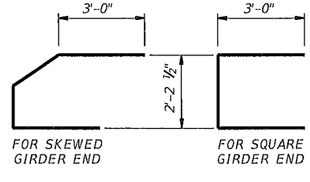
OPTIONAL TOP FLANGE REINFORCING DETAIL



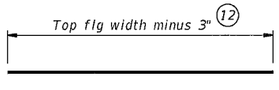
OPTIONAL WELDED WIRE REINFORCEMENT (WWR) DETAIL



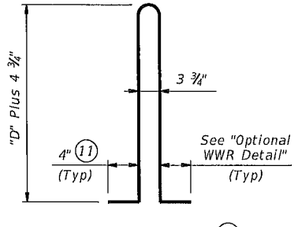
BARS C (#4)



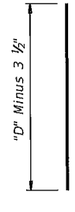
BARS U (#5)



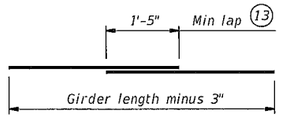
BARS A (#3)



BARS R (#4) (14)



BARS S (#6)



BARS T (#4)

(10) Reinforcing patterns shown are provided as guides to determine reinforcement placement in skewed ends. Place Bars S as close to girder end as cover requirements permit, which may prevent them to be bundled with Bars R.

(11) Bars may be cut or bent at skewed end as required.

(12) Increase as necessary for bars at skewed end.

(13) No portion of bar less than 10 ft.

(14) For Welded Wire Reinforcement (WWR) option, area of Bars R may be reduced in proportion to the increase in reinforcement yield strength over 60 ksi. Yield strength of WWR is limited to 75 ksi.

HL93 LOADING SHEET 2 OF 2

Texas Department of Transportation — Bridge Division Standard

PRESTRESSED CONCRETE I-GIRDER DETAILS

IGD

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STRUCTURE	DESIGNED GIRDERS									STRAIGHT STRAND PATTERN								DEPRESSED STRAND PATTERN (1)			CONCRETE		OPTIONAL DESIGN				
	SPAN NO.	GIRDER NO.	GIRDER TYPE	PRESTRESSING STRANDS						TOT NO. DEB	DEBONDED STRANDS PER ROW																
				NON-STD STRAND PATTERN	TOTAL NO.	SIZE (in)	STRGTH fpu (ksi)	"e" ℄ (in)	"e" END (in)		DIST FROM BOTTOM (in)	NO. OF STRANDS		NUMBER OF STRANDS DEBONDED TO (ft from end)					NO.	TO END (in)	TO ℄ (in)	RELEASE STRGTH (2) f'ci (ksi)	MINIMUM 28 DAY COMP STRGTH f'c (ksi)	DESIGN LOAD COMP STRESS (TOP ℄) (SERVICE I) fct(ksi)	DESIGN LOAD TENSILE STRESS (BOTT ℄) (SERVICE III) fcb(ksi)	REQUIRED MINIMUM ULTIMATE MOMENT CAPACITY (STRENGTH I) (ft-kips)	LIVE LOAD DISTRIBUTION FACTOR (3)	
												TOTAL	DE-BONDED	3	6	9	12	15								Moment	Shear
San Gabriel Ranch Rd. Bridge	1	1	Tx34		24	0.6	270	10.011	10.011										2	30.5	30.5	5.0	6.5	2.514	-3.066	3130	0.619	0.799
		2																						2.598	-3.185	3230	0.619	0.799
		3																						2.629	-3.330	3376	0.619	0.779
		4																						2.628	-3.325	3370	0.619	0.799
		5																						2.523	-3.104	3146	0.619	0.799
	2	1	Tx34		24	0.6	270	10.011	10.011										2	30.5	30.5	5.0	6.5	2.514	-3.066	3130	0.619	0.799
		2																						2.598	-3.185	3230	0.619	0.799
		3																						2.629	-3.330	3376	0.619	0.779
		4																						2.628	-3.325	3370	0.619	0.799
		5																						2.523	-3.104	3146	0.619	0.799

NON-STANDARD STRAND PATTERNS

PATTERN	STRAND ARRANGEMENT AT ℄ OF GIRDER

(1) When TO END (in) equals TO ℄ (in), place these straight strands at the defined TO values. Fill the lower rows with the remainder of the total number of strands in accordance with the Debonded Strand Designs notes.

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

Compression = 0.65 f'ci

Tension = $0.24\sqrt{f'ci}$

Optional designs must likewise conform.

(3) Portion of full HL93.

DESIGN NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

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 65 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 △. 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.

DEBONDED STRAND DESIGNS:

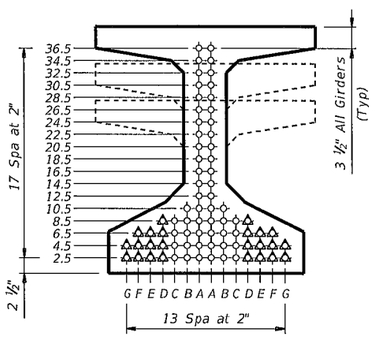
Locate strands for the designed girder as low as possible on the 2" grid system unless a non-standard strand pattern is indicated. Fill row "2.5", then row "4.5", then row "6.5", etc. Place strands within a row as follows:

1) Locate a strand in each "A" and "G" positions.
2) Place strand symmetrically about vertical centerline of girder.
3) Space strands as equally as possible across the entire width.

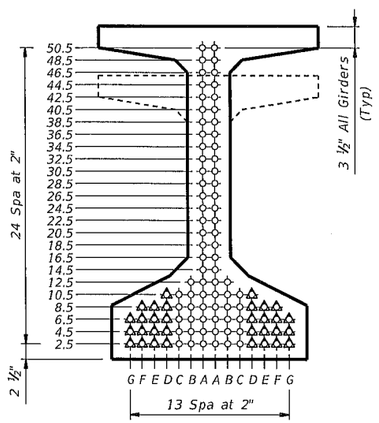
Do not debond strands in position "G". Distribute debonded strands symmetrically about the vertical centerline. Increase debonded lengths working outward, with debonding staggered in each row.

DEPRESSED STRAND DESIGNS:

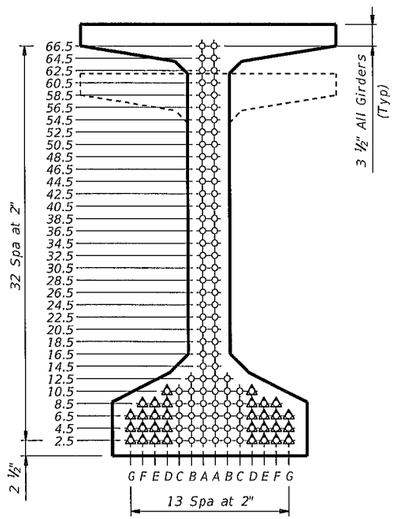
Locate strands for the designed girder as low as possible on the 2" grid system unless a non-standard strand pattern is indicated. Fill row "2.5", then row "4.5", then row "6.5", etc., beginning each row in the "A" position and working outward until the required number of strands is reached. All strands 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.



TYPE Tx28, Tx34 & Tx40



TYPE Tx46 & Tx54



TYPE Tx62 & Tx70

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HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

PRESTRESSED CONCRETE I-GIRDER DESIGNS (NON-STANDARD SPANS)

IGND

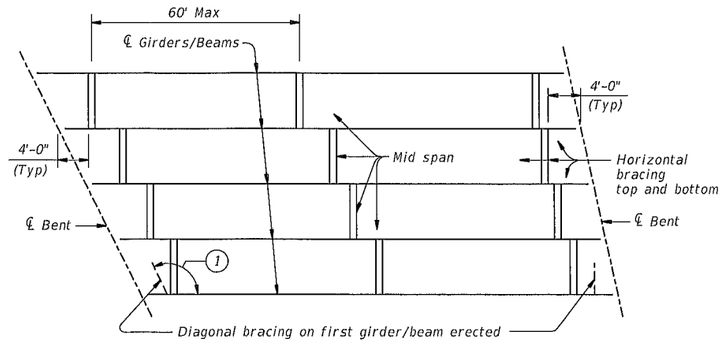
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REVISIONS 01-16: Notes. 05-16: Additioa of debonded straight strand designs.	DIST	COUNTY		SHEET NO.

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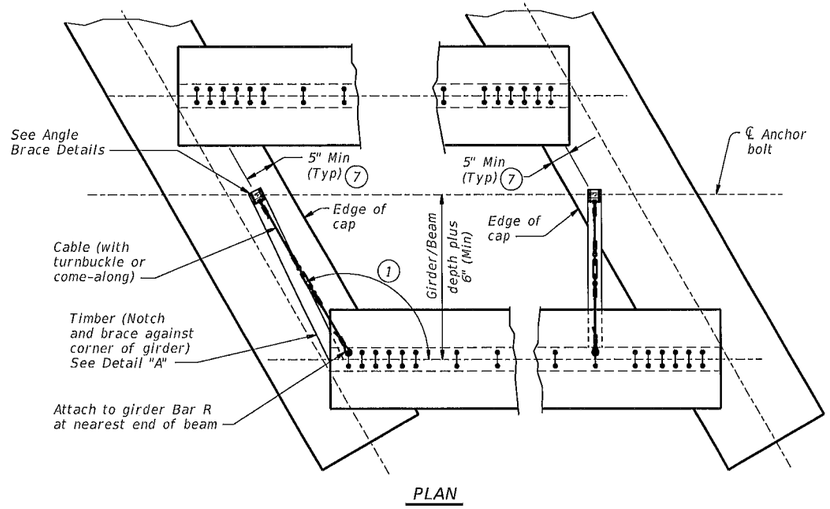
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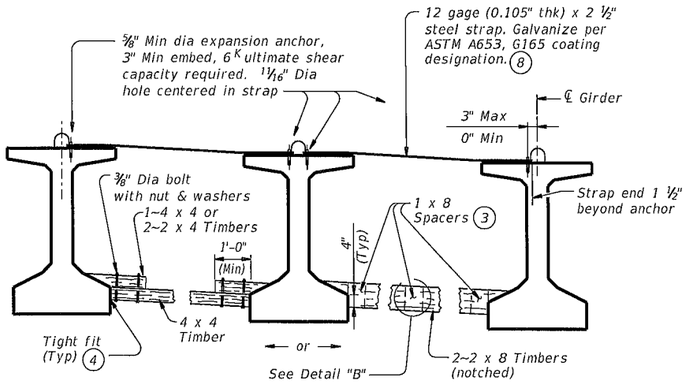
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ERECTION BRACING

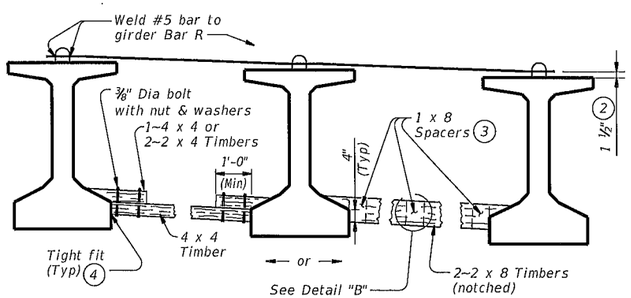


PLAN



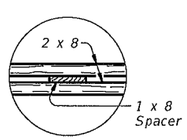
FOR ERECTION BRACING, OPTION 1

(This option is not allowed when slab is formed with PMDF or plywood.)



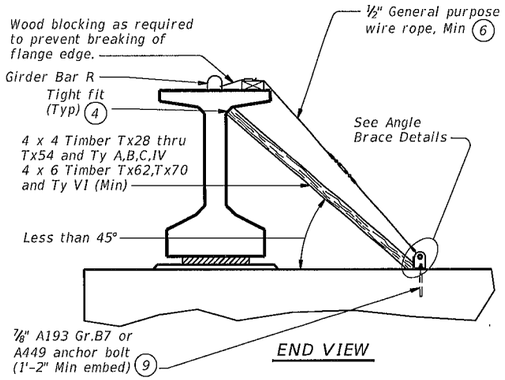
FOR ERECTION BRACING, OPTION 2

HORIZONTAL BRACING DETAILS 5



PLAN

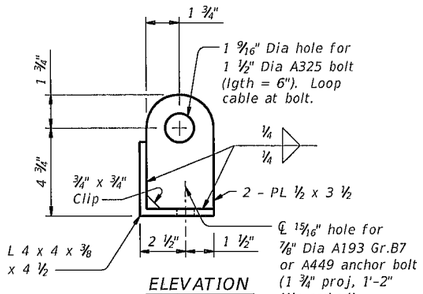
DETAIL "B"



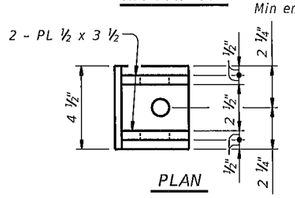
END VIEW

DIAGONAL BRACING DETAILS 5

(To be used on both ends of the first girder/beam erected in the span in each phase.)



ELEVATION



PLAN

ANGLE BRACE DETAILS

HAULING & ERECTION:

The Contractor's attention is directed to the possible lateral instability of prestressed concrete girders and beams over 130' long, especially during hauling and erection. The use of the following methods to improve stability is encouraged: Locate lifting devices at the maximum practical distance from girder ends; use external lateral stiffening devices during hauling and erection; lift with vertical lines using two machines; and take care in handling to minimize inertial and impact forces.

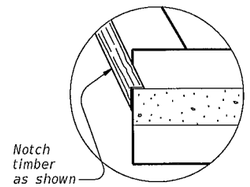
ERECTION BRACING:

Erection bracing details shown are considered the minimum for fulfilling the bracing requirements of Item 425.

Required erection bracing must be placed immediately after erection of each girder and remain in place until additional bracing as required for slab placement is in place. This standard is needed in all cases to meet requirements for Slab Placement Bracing.

PHASED CONSTRUCTION:

Place erection and slab placement bracing for all girders in a phase as shown in these details. For phases after first, also place erection and slab placement bracing between outer girder of completed phase and adjacent girder of current phase. When the phase construction joint is between girders, top bracing can be omitted.



DETAIL "A"

(1) If angle shown exceeds 120 degrees, move diagonal brace to other side of girder/beam and place square to girder/beam. This may prevent exterior girder from being erected first.

(2) Place and weld #5 bars as shown during erection. If forming deck with prestressed panels, bars can be temporarily removed, one at a time, during panel erection. Re-install bar prior to additional panel erection. Bars can rest on panels and be bent down and welded to girder Bars R (See Sheet 2 of 2).

(3) Clear distance between spacers must not exceed 3'. Nail together with 16d nails.

(4) Use wedges as necessary to obtain tight fit. Nail wedges to timbers.

(5) Pressure treated landscape timbers can not be used.

(6) All hardware used with cable must be able to develop a minimum 25 kips breaking strength. Use thimbles at all loops in cable. Install cable clamps with saddles bearing against the live end and U-bolts bearing aginst the dead end.

(7) It is acceptable to tie anchor bolts to cap reinforcement.

(8) Prior to installing, field bend strap to lay flush on both girders' top flange and slope between flange tips.

(9) Anchor bolt may be drilled and epoxied in place. Provide 25k minimum pullout. Core drill hole.

Texas Department of Transportation

Bridge Division Standard

MINIMUM ERECTION AND BRACING REQUIREMENTS

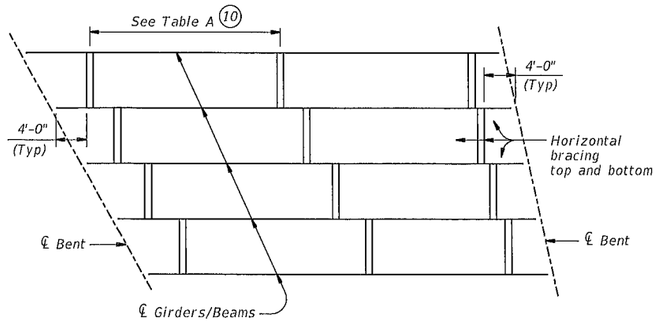
PRESTRESSED CONCRETE I-GIRDERS AND I-BEAMS

MEBR(C)

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SLAB PLACEMENT BRACING

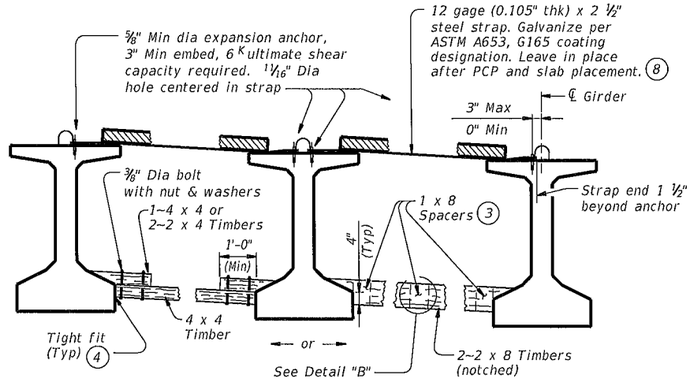
TABLE A

OPTION 1-RIGID BRACING (STEEL STRAP)

Girder or Beam Type	Maximum Bracing Spacing	
	Slab Overhang less than 4'-0" (11)	Slab Overhang 4'-0" and greater (11)
Tx28	¼ points	¼ points
Tx34	¼ points	¼ points
Tx40	¼ points	⅛ points
Tx46	¼ points	⅛ points
Tx54	¼ points	⅛ points
Tx62	¼ points	⅛ points
Tx70	¼ points	⅛ points
A	⅛ points	⅛ points
B	⅛ points	⅛ points
C	⅛ points	⅛ points
IV	¼ points	⅛ points
VI	¼ points	⅛ points

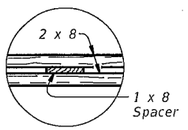
OPTION 2-FLEXIBLE BRACING (NO. 5 OVER PCP)

Girder or Beam Type	Maximum Bracing Spacing	
	Slab Overhang less than 4'-0" (11)	Slab Overhang 4'-0" and greater (11)
Tx28	¼ points	⅛ points
Tx34	¼ points	⅛ points
Tx40	¼ points	⅛ points
Tx46	¼ points	⅛ points
Tx54	¼ points	⅛ points
Tx62	¼ points	⅛ points
Tx70	¼ points	⅛ points
A	2.0 ft	1.5 ft
B	3.0 ft	2.0 ft
C	4.5 ft	2.0 ft
IV	¼ points	4.0 ft
VI	¼ points	4.0 ft



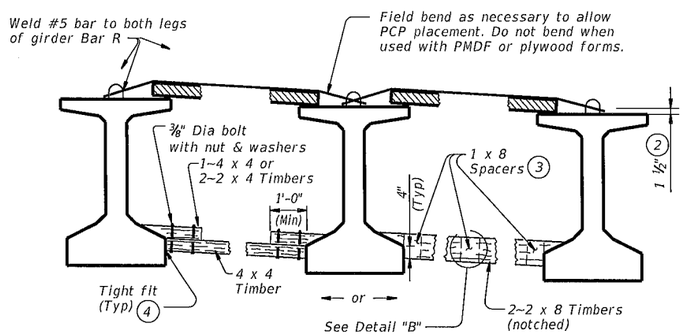
FOR SLAB PLACEMENT BRACING, OPTION 1 - RIGID

(Showing slab formed with PCP. This option is not allowed when slab is formed with PMDF or plywood.)



PLAN

DETAIL "B"



FOR SLAB PLACEMENT BRACING, OPTION 2 - FLEXIBLE

(Showing slab formed with PCP.)

HORIZONTAL BRACING DETAILS (5)

(2) Place and weld #5 bars as shown during erection. If forming deck with prestressed panels, bars can be temporarily removed, one at a time, during panel erection. Re-install bar prior to additional panel erection. Bars can rest on panels and be bent down and welded to girder Bars R.

(3) Clear distance between spacers must not exceed 3'. Nail together with 16d nails.

(4) Use wedges as necessary to obtain tight fit. Nail wedges to timbers.

(5) Pressure treated landscape timbers can not be used.

(8) Prior to installing, field bend strap to lay flush on both girders' top flange and slope between flange tips.

(10) Bracing spacing (¼ and ⅛ points) measured between first and last typical brace location.

(11) Measure slab overhang from centerline of girder or beam. When overhang varies in span, determine bracing spacing based on largest overhang.

SLAB PLACEMENT BRACING:

The details for slab placement bracing are considered minimum for fulfilling the requirements of Specification Items 422 and 425.

Required slab placement bracing must remain in place until slab concrete has attained a compressive strength of 3000 psi.

GENERAL NOTES:

Bracing details for spans longer than 150' are not provided. The Contractor must submit proposed bracing details for such conditions to the Engineer for approval prior to erection.

Systems equal to or better than those shown may be used provided details of such systems are submitted to and approved by the Engineer prior to erection.

Use of these systems or details does not relieve the Contractor of the responsibility for the adequacy of the bracing and the safety of the structure.

Removal of bracing for short periods of time to align girders and beams is permissible.

All turn-buckles, come-alongs, anchors and other connections must be capable of developing the full strength of the cable shown.

Furnish anchor bolts and nuts in accordance with Item 449, "Anchor Bolts".

Texas Department of Transportation

Bridge Division Standard

MINIMUM ERECTION AND BRACING REQUIREMENTS

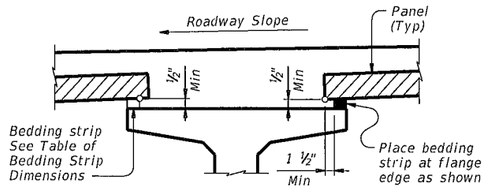
PRESTRESSED CONCRETE I-GIRDERS AND I-BEAMS

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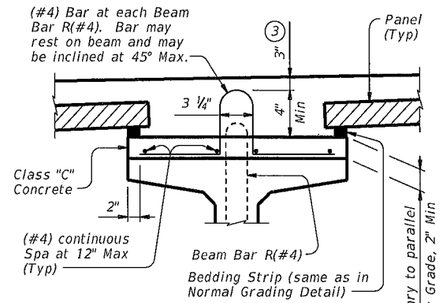
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NORMAL GRADING DETAIL (1)

Showing Prestressed Concrete I-Girders. (Other Beam Types Similar)



SPECIAL GRADING DETAIL FOR CONCRETE BEAMS

Showing Prestressed Concrete I-Girders. (Other Beam Types Similar)

TABLE OF BEDDING STRIP DIMENSIONS		
WIDTH	HEIGHT (2)	
	Min	Max
1" (Min)	½"	2"
1 ¼"	½"	2 ½"
1 ½"	½"	3"
1 ¾"	½"	3 ½"
2" (Max)	½"	4"

(1) To reduce the quantity of cast-in-place concrete, bedding strip thickness may be increased in ¼" increments. Bedding strips must be comprised of one layer. Bond 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 ¼". 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 4" high, use Special Grading Detail for Concrete Beams or submit an alternate method to the Bridge Division for approval.

(2) Height must not exceed twice the width.

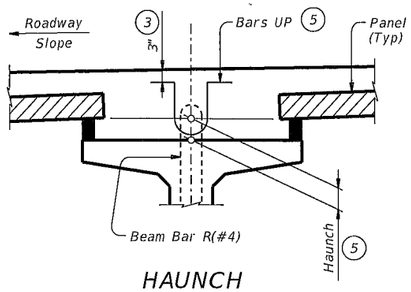
(3) Provide clear cover as indicated unless otherwise shown on Span Details.

(4) See Span Details and Thickened Slab End Details for top slab reinforcement and clear cover. Transverse top slab reinforcement may rest on top of prestressed concrete panels if necessary to maintain clear cover.

(5) Space Bars UP(#4) with Beam Bars R(#4) in all areas where measured haunch exceeds 3" or 3 ½" with Prestressed Concrete I-Girders. Epoxy coating for Bars UP is not required.

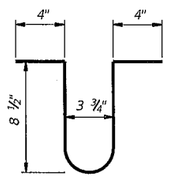
(6) Do not locate construction Joints on top of a panel.

(7) Butt adjacent bedding strips together with adhesive. Cut v-notches, approx ¼" deep, in the top of the bedding strips at 8' o.c..

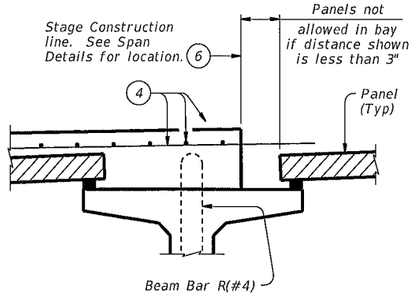


HAUNCH REINFORCING DETAIL

Showing Prestressed Concrete I-Girders. (Other Beam Types Similar)



BARS UP (#4) (5)

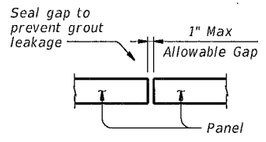


PRESTR CONC I-GIRDERS

PRESTR CONC I-BEAMS

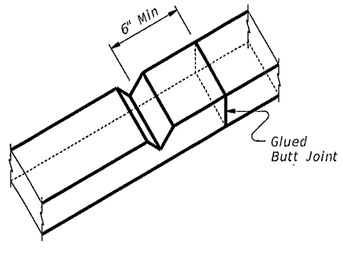
STAGE CONSTRUCTION LIMITATIONS

(Other Beam Types Similar)



TYPICAL SECTION AT PANEL JOINT

(Panel reinforcing not shown for clarity.) The gap cannot be considered as a panel fabrication tolerance.



BEDDING STRIP DETAIL (7)

CONSTRUCTION NOTES:

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

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 mortar 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 ½" 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 ½". 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 sheets, UBMS.

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'-5"
Epoxy Coated ~ #4 = 2'-1"

GENERAL NOTES:

Designed according to AASHTO LRFD 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, PCP-FAB and other applicable Standard drawings.

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.

HL93 LOADING SHEET 1 OF 4

Texas Department of Transportation — Bridge Division Standard

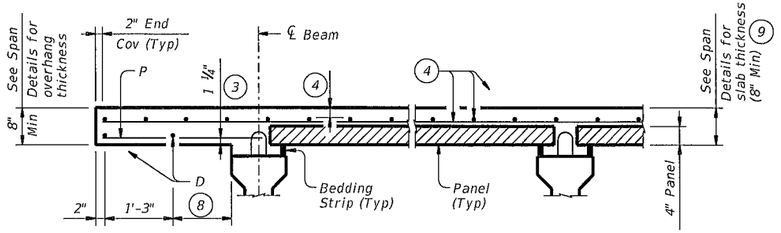
PRESTRESSED CONCRETE PANELS DECK DETAILS

PCP

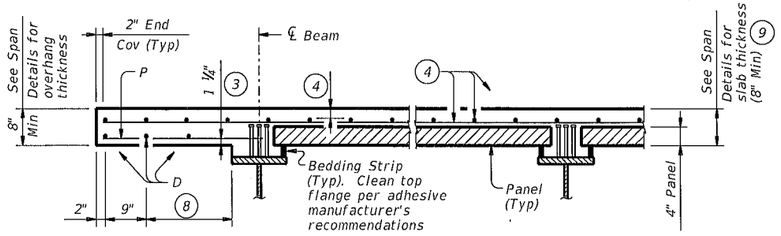
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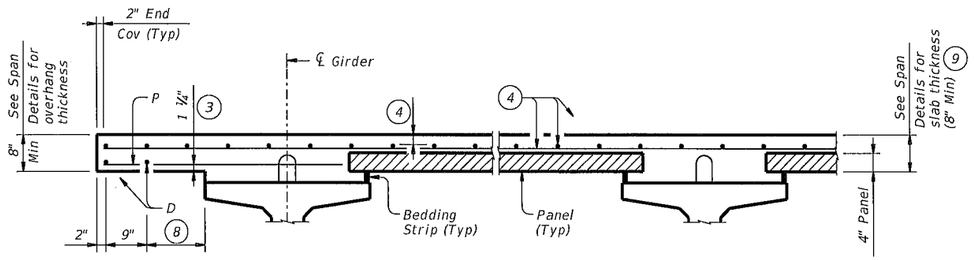
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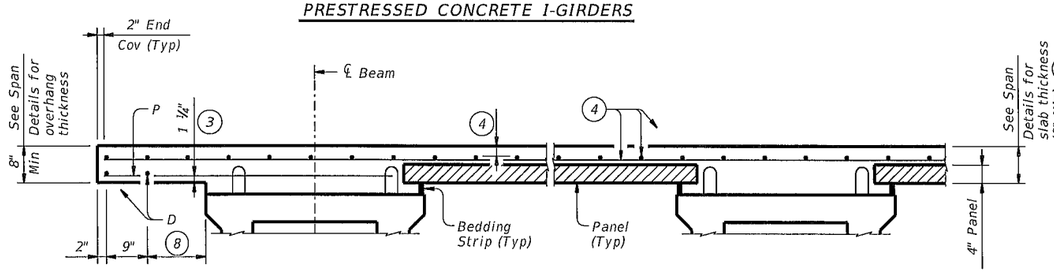
PRESTRESSED CONCRETE I-BEAMS



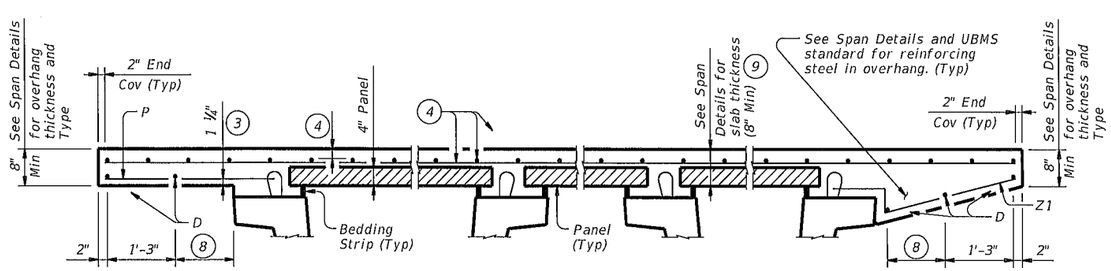
STEEL BEAMS



PRESTRESSED CONCRETE I-GIRDERS



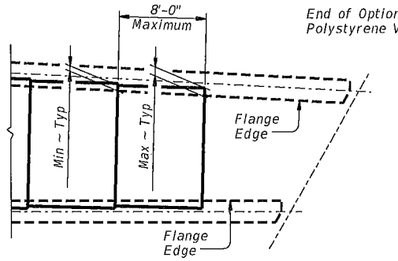
PRESTRESSED CONCRETE X-BEAMS



NORMAL OVERHANG WITH PRESTR CONC U-BEAMS

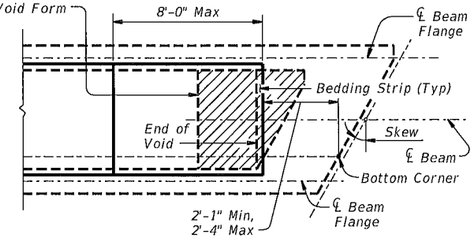
SLOPED OVERHANG WITH PRESTR CONC U-BEAMS

TYPICAL PART TRANSVERSE SECTIONS

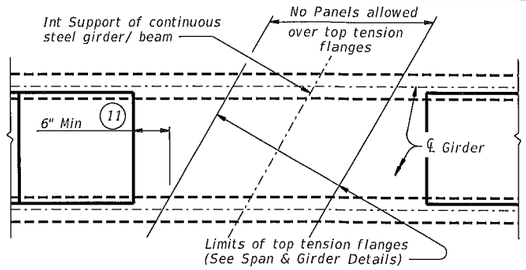


AT FLARED BEAMS OR GIRDERS

See PCP-FAB standard for Min and Max dimensions based on Bm/Girder type.



OVER CONC U-BEAMS



AT INT SUPPORTS OF CONTINUOUS STEEL GIRDERS

PART PLANS OF PANEL PLACEMENT

(3) *Provide clear cover as indicated unless otherwise shown on Span Details.*

(4) *See Span Details and Thickened Slab End Details for top slab reinforcement and clear cover. Transverse top slab reinforcement may rest on top of prestressed concrete panels if necessary to maintain clear cover.*

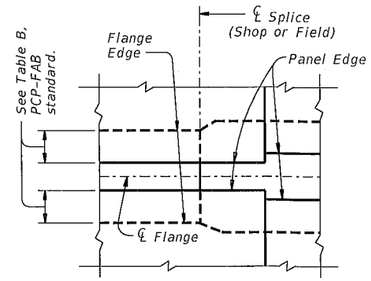
(7) *Butt adjacent bedding strips together with adhesive. Cut v-notches, approx ¼" deep, in the top of the bedding strips at 8' o.c..*

(8) *Equally space additional bar if more than 1'-3" Max.*

(9) *The actual thickness constructed may exceed the slab thickness shown on the Span Details but the extra thickness may be no more than 2" (1" for Prestressed Concrete U-Beams and Steel Beams). Bearing Seat Elevations or finished grade may be adjusted.*

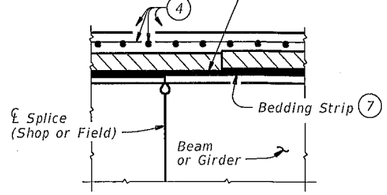
(10) *Field adjust Bars Z1(#4) to match actual slope of slab overhangs. Width of slab overhang will vary along span with curved slab edges. Adjust Bar Z1(#4) dimensions to maintain proper cover. Bars Z2(#4) are located at Inv-T stems only.*

(11) *Location of concrete placement sequence boundaries and bolted field splices should be considered by the contractor in determining panel limits.*



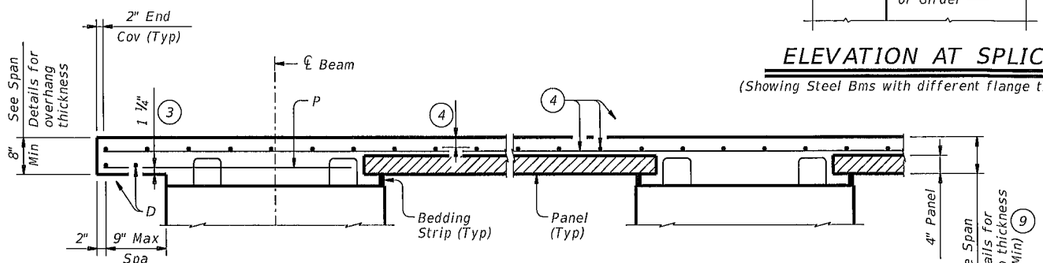
PLAN AT SPLICE

(Showing Steel Bms with flange width transition)



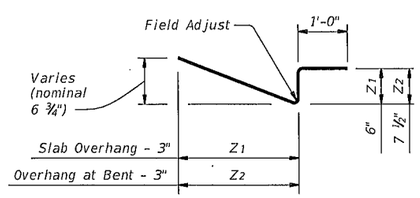
ELEVATION AT SPLICE

(Showing Steel Bms with different flange thickness)



PRESTRESSED CONCRETE SPREAD SLAB BEAMS

Bars P over exterior beams are still required when no overhang is used. In this case, only one Bar D, 2" from slab edge, is required.



BARS Z (#4) (10)

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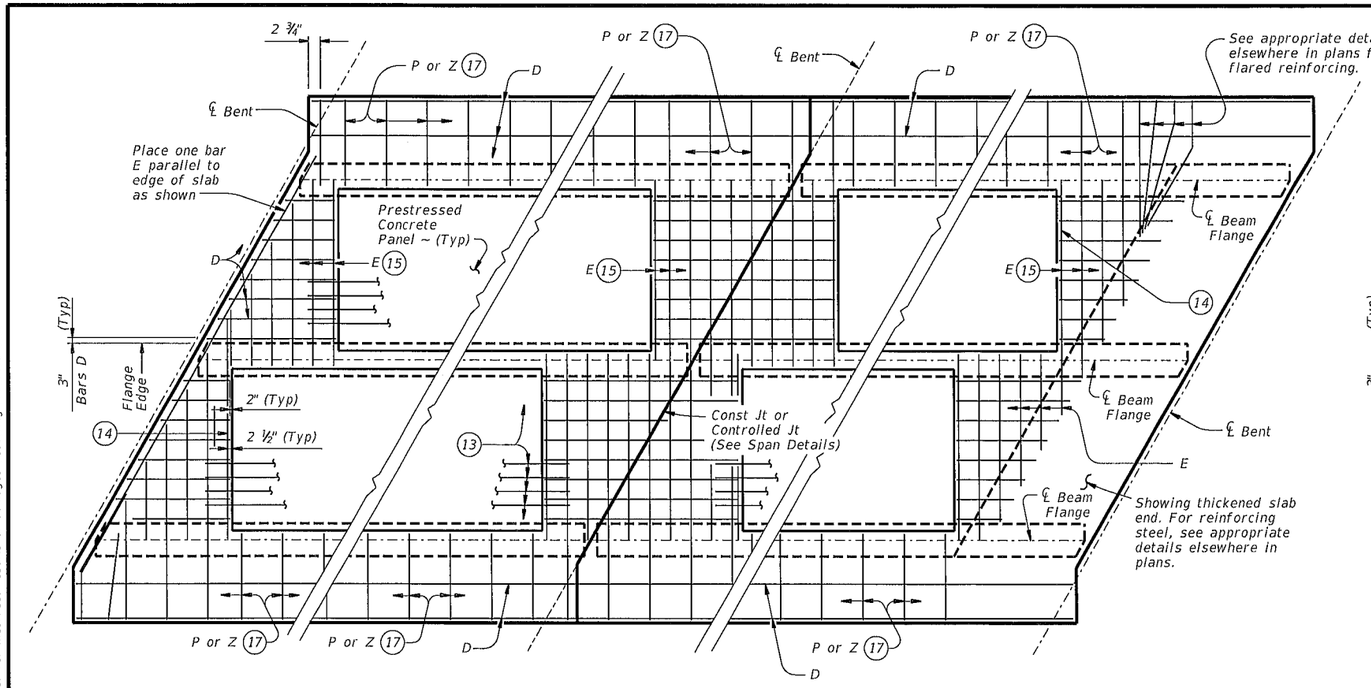
PRESTRESSED CONCRETE PANELS DECK DETAILS

PCP

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REVISIONS	DIST	COUNTY		SHEET NO.

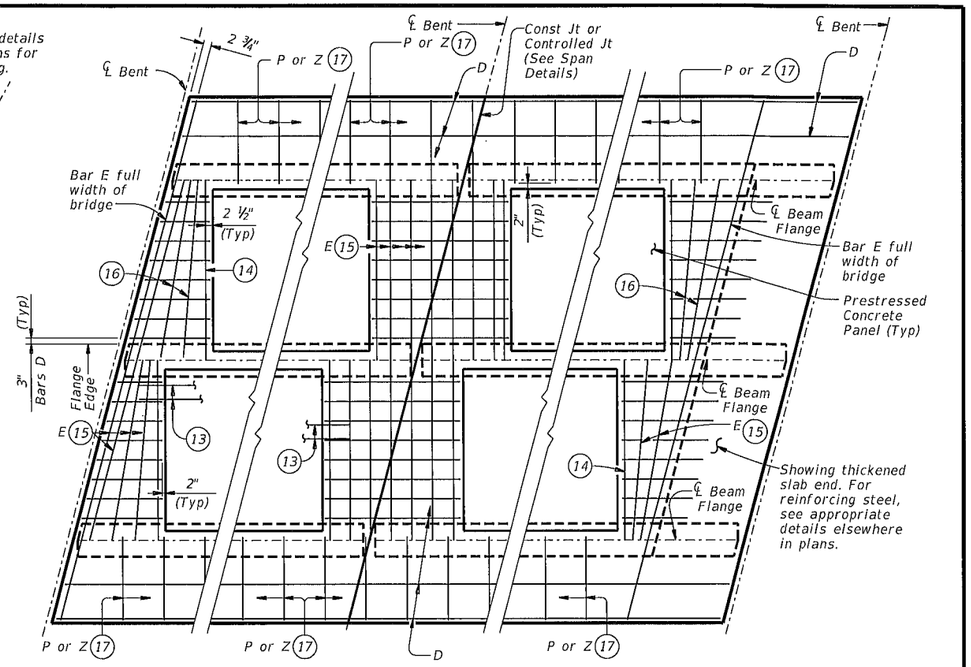
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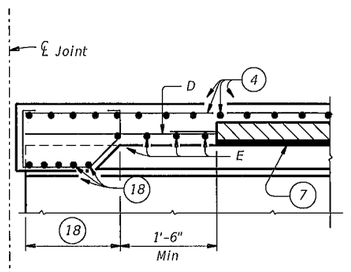
AT ALL SPAN ENDS UNLESS NOTED OTHERWISE | AT INTERIOR BENTS | AT THICKENED END SLABS

OPTION 1 ~ PLAN OF SLABS WITH NORMAL REINFORCEMENT

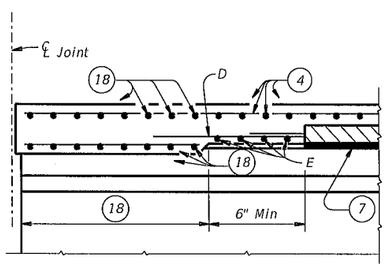


AT ALL SPAN ENDS UNLESS NOTED OTHERWISE | AT INTERIOR BENTS | AT THICKENED END SLABS

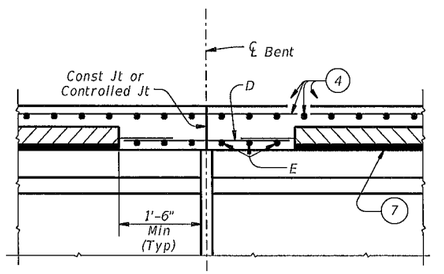
OPTION 1 ~ PLAN OF SLABS WITH SKEWED REINFORCEMENT



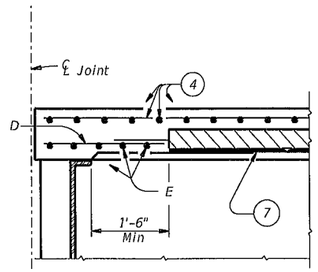
AT THICKENED SLAB ENDS FOR PRESTR CONC U-BMS



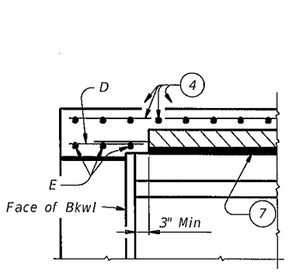
AT THICKENED SLAB ENDS FOR PRESTR CONC I-BMS AND STEEL BMS



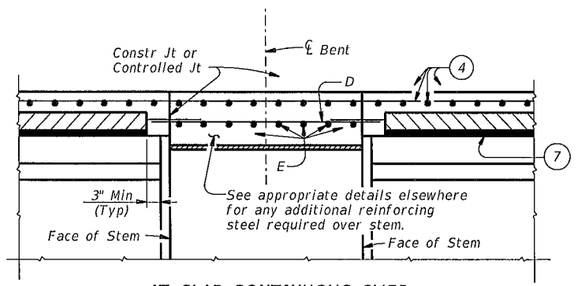
AT SLAB CONTINUOUS OVER CONVENTIONAL INTERIOR BENTS FOR ALL SIMPLE SPAN BMS



AT CONVENTIONAL END DIAPHRAGMS FOR STEEL BMS



AT SLAB OVER ABUTMENT BACKWALL FOR ALL BMS



AT SLAB CONTINUOUS OVER INVERTED-T BENTS FOR ALL BMS

OPTION 1 ~ ELEVATIONS AT BEAM ENDS

(4) See Span Details and Thickened Slab End Details for top slab reinforcement and clear cover. Transverse top slab reinforcement may rest on top of prestressed concrete panels if necessary to maintain clear cover.

(7) Butt adjacent bedding strips together with adhesive. Cut v-notches, approx ¼" deep, in the top of the bedding strips at 8' o.c.

(12) Max Spacing as listed unless otherwise shown.

(13) At connection with cast-in-place slab, extend longitudinal panel reinforcement. See PCP-FAB for details.

(14) Maintain one Bar E(#4) parallel to panel ends (Typ).

(15) Bars E(#4) not continuous over beam flanges must overlap beam flange 6" Min.

(16) Add flared Bars E(#4) (Min Spa = 6", Max Spa = 12") as required at panel ends.

(17) Where possible, Bars E(#4) may be extended into overhangs to replace Bars P(#4). Bars Z(#4) are required for sloped overhangs with U-Beams.

(18) See appropriate thickened slab end details for reinforcing and limits of thickened slab end.

TABLE OF REINFORCING STEEL (12)

BAR	SIZE	Max Spa (in.)
D	#4	9
E	#4	9
P	#4	18
UP	#4	~
Z	#4	18

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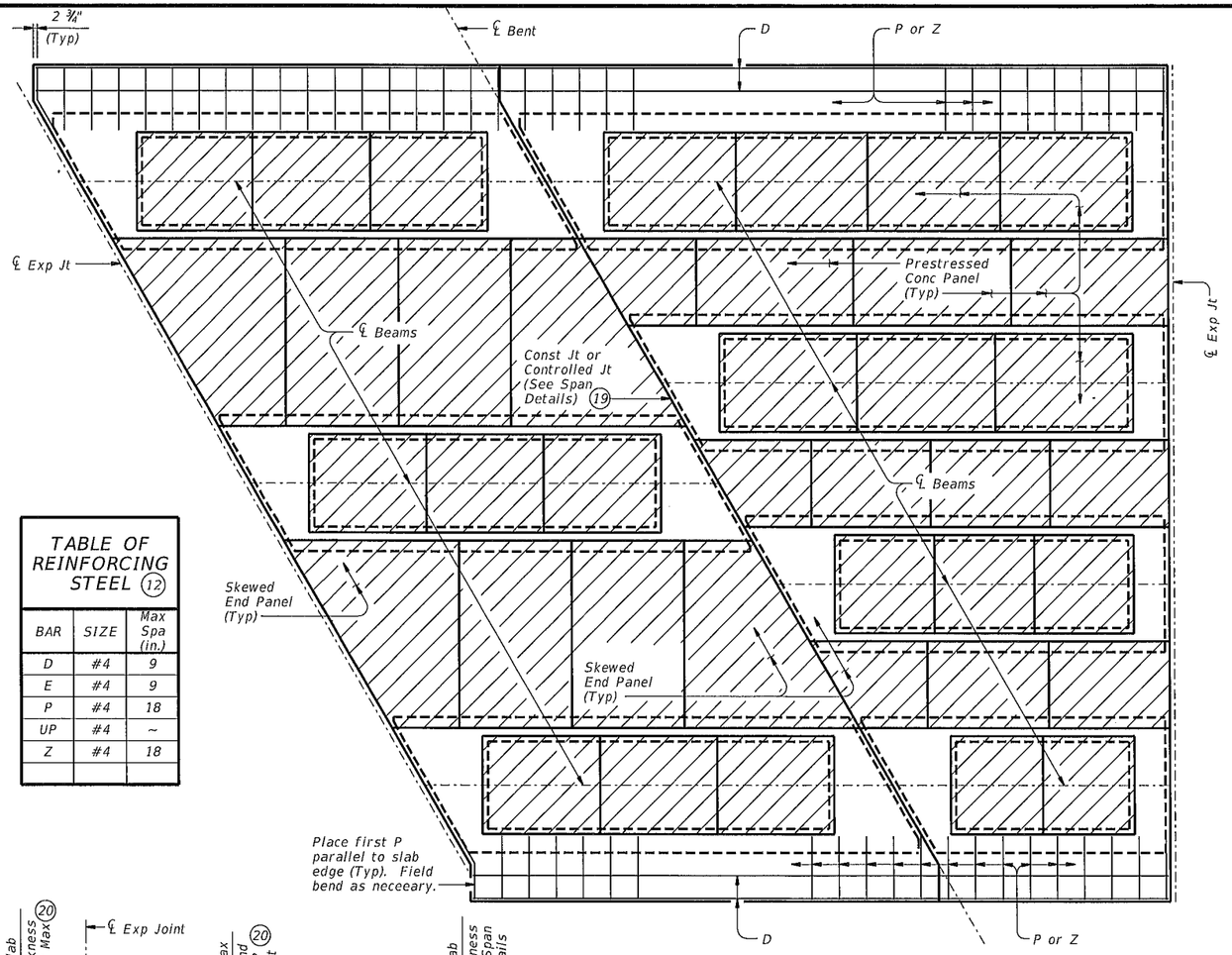
PRESTRESSED CONCRETE PANELS
DECK DETAILS

PCP

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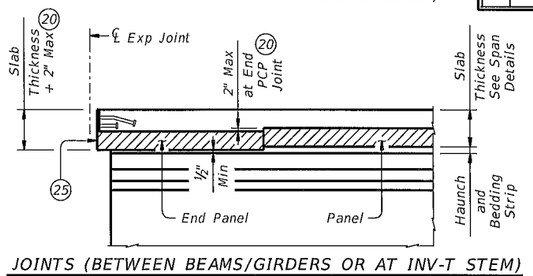
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OPTION 2 ~ PLAN OF SLAB

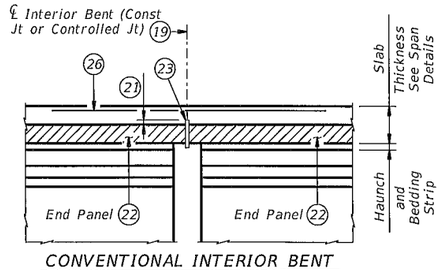
(Showing U-Beams; other beams similar)

TABLE OF REINFORCING STEEL (12)		
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D	#4	9
E	#4	9
P	#4	18
UP	#4	~
Z	#4	18



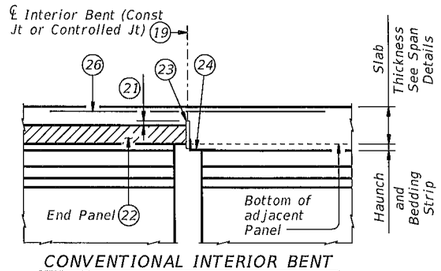
JOINTS (BETWEEN BEAMS/GIRDERS OR AT INV-T STEM)

For SEJ-A, SEJ-S(0), AJ and Type A Expansion Joints only.



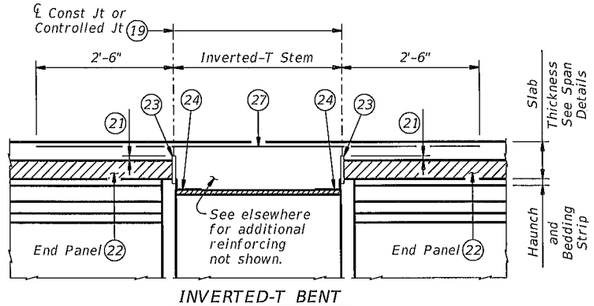
CONVENTIONAL INTERIOR BENT

Panel against Panel between Bms/Girders.



CONVENTIONAL INTERIOR BENT

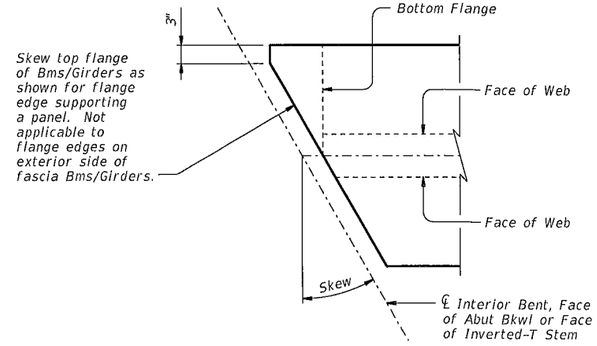
Panel against Bm/Girder End in Adacent Span.



INVERTED-T BENT

Panels against Inverted-T Stem

OPTION 2 ~ ELEVATIONS AT BEAM ENDS (4)



OPTION 2 ~ SHOWING MODIFICATION TO BEAM/GIRDER TOP FLANGE FOR SKEWS OVER 5°

Showing I-Bm/I-Girder, U-Bms and Steel Bms similar.

(4) See Span Details and Thickened Slab End Details for top slab reinforcement and clear cover. Transverse top slab reinforcement may rest on top of prestressed concrete panels if necessary to maintain clear cover.

(12) Max Spacing as listed unless otherwise shown.

(19) Top Plastic Joint Former at Controlled Joints (Stress Cap, Zip Strip, Stress Lock, etc.) is not required with these Details.

(20) End panel may be set up to 2" lower to accommodate expansion joint hardware, provided bedding strip is not less than ½" thick.

(21) 1" Min, 1 ½" Max, support as necessary.

(22) Place panel within ½" of ¾" thick board.

(23) ¾" thick timber board, leave in place. Place straight, within ¼" of Centerline of Bent or face of Invt-T, across bridge width and end board at exterior flange edge of fascia beams/girders. Do not extend into overhang.

(24) Permanent galvanized steel sheet form. Removable formwork is acceptable.

(25) Place end panel within ½" of expansion joint opening. End panel cannot encroach on required expansion joint opening.

(26) Place additional (#4) bar 5'-0" in length between every slab bars T. Center (#4) bar on Joint.

(27) Place additional (#4) bar continuous 2'-6" beyond each side of Inverted-T Stem between every slab bars T.

SPECIAL OPTION 2 CONSTRUCTION NOTES:

Placing panels adjacent to expansion joints and bent centerlines 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 ½".

Do not extend the longitudinal panel reinforcement into the cast-in-place slab.

Top flanges of beams and girders on skewed bridges must be modified as shown on this drawing. The Contractor is responsible for coordinating this modification with the beam fabricator prior to submitting shop drawings for approval.

Fabricator may optionally skew the whole end. When electing to skew whole end, girder end details and bearing type at conventional interior bent must be changed to use condition at abutment. Fabricator must coordinate change in bearing type, bearing centerline location, and dowel location with Engineer and Contractor. Show appropriate changes on girder and bearing shop drawings.

Bending of anchor studs of expansion joints shown on standards AJ, SEJ-A and SEJ-S(0) is permissible if necessary to clear top of end panels. The Contractor is responsible for coordinating modifications with the joint fabricator. Submit shop drawings for approval when modifications to expansion joint hardware are made.

Bedding strips under skewed end panels must conform to the requirements of Item 425 except their minimum compressive strength must be 60 psi.

Provide Bars AA, G, K and OA from standard IGTS(MOD) in the slab.

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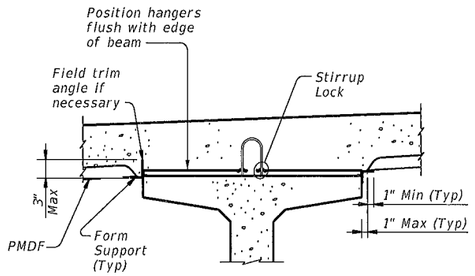
PRESTRESSED CONCRETE PANELS
DECK DETAILS

PCP

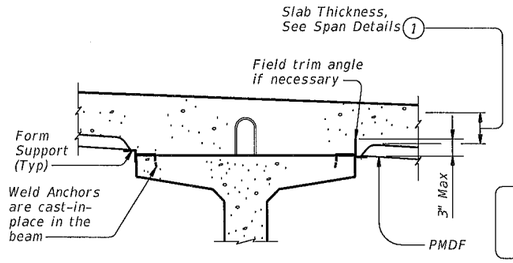
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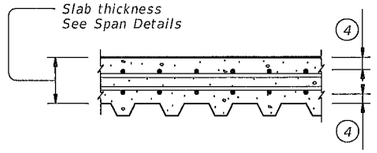
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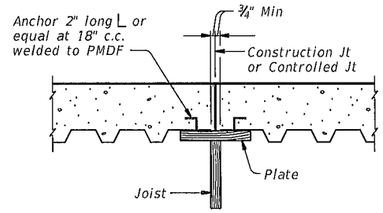
PRESTR CONC I-BEAMS AND I-GIRDERS WITH STIRRUP LOCKS



PRESTR CONC I-BEAMS AND I-GIRDERS WITH WELD ANCHORS

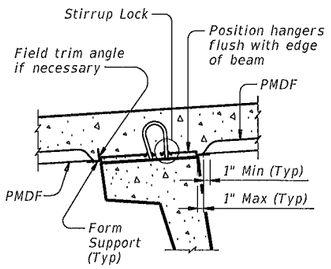


TYP LONGITUDINAL SLAB SECTION

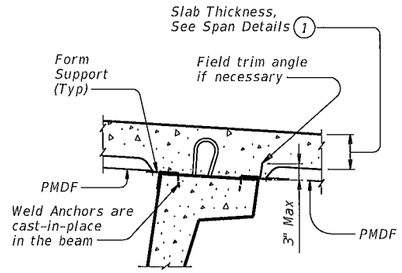


Note: In spans where PMD forms are used, timber forms must be used at construction joints. Adequate provision must be made to support edge of metal form and to provide anchorage of metal form to slab concrete where joined to wood forms.

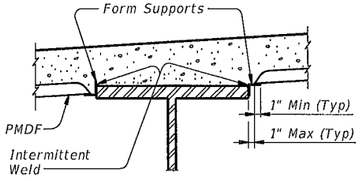
SECTION THRU CONSTRUCTION JOINT



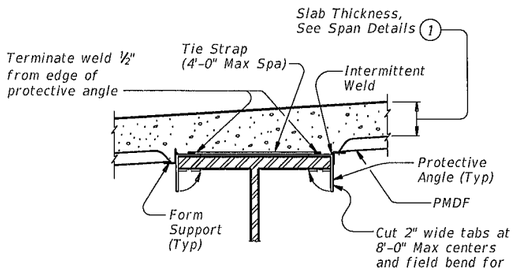
U-BEAMS WITH STIRRUP LOCKS



U-BEAMS WITH WELD ANCHORS

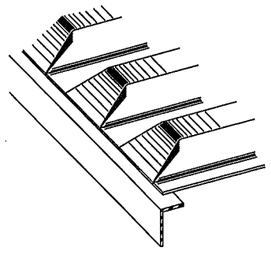


STEEL BEAMS AT COMPRESSION FLANGES

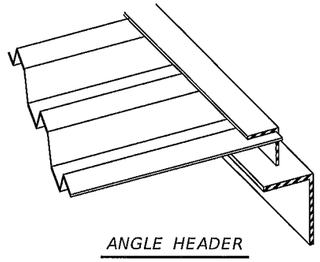


STEEL BEAMS AT TENSION FLANGES (2)

TYPICAL TRANSVERSE SECTIONS



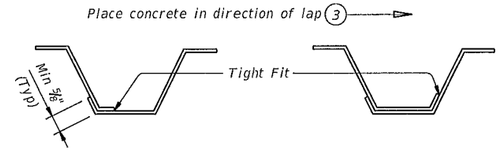
PRECLOSED



ANGLE HEADER

NOTE: This type is to be used for skewed ends only.

TYPES OF END CLOSURES



SIDE LAP DETAILS

(1) Slab thickness minus ¾" if corrugations match reinforcing bars.

(2) Welding of form supports to tension flanges will not be permitted. Other methods of providing wind hold down resistance for PMDF in tension flange zones will be considered. At least one layer of sheet metal must be provided between the flange and the weld joint.

(3) The direction of concrete placement will be such that the upper layer of the form overlap is loaded first.

(4) See Span details for cover requirements.

GENERAL NOTES:

Steel for Permanent Metal Deck Forms (PMDF) and support angles shall conform to ASTM A653, Structural Steel (SS), with coating designation G165. Steel must have a minimum yield strength of 33 ksi. Minimum thickness of PMDF is 20 gage and that of support angles and protective angles is 12 gage.

Submit two copies of forming plans for PMDF to the Engineer. These plans must show all essential details of proposed form sheets, closures, fasteners, supports, connectors, special conditions and size and location of welds. These plans must clearly show areas of tension flanges for steel beams and provisions for protecting the tension flanges from welding notch effects by inclusion of separating sheet metal or other positive method. These plans must be designed, signed, and sealed by a licensed professional engineer. Department approval of these plans is not required, but the Department reserves the right to require modifications to the plans. The Contractor is responsible for the adequacy of these plans.

The details and notes shown on this standard are to be used as a guide in preparation of the forming plans.

All material, labor, tools and incidentals necessary to form a bridge deck with Permanent Metal Deck Forms is considered subsidiary to Item 422, "Concrete Superstructures".

FOR PRESTR CONC U-BEAM BRIDGES:

Size, spacing, and orientation of bottom mat of slab reinforcement must match the top mat of reinforcing shown on the span details except all bottom mat bars are to be #5.

DESIGN NOTES:

As a minimum, PMDF and support angles must be designed for the dead load of the form, reinforcement and concrete plus 50 psf for construction loads. Flexural stresses due to these design loads must not exceed 75 percent of the yield strength of the steel. Allowable stress for weld metal must be 12,400 psi.

Maximum deflection under the weight of forms, reinforcement and concrete or 120 psf, whichever is greater, shall not exceed the following:

1/180 of the form design span, but not more than 0.50", for design spans of 10' or less.

1/240 of the form design span, but not more than 0.75", for design spans greater than 10'.

The form design span must not be less than the clear distance between beam flanges, measured parallel to the form flutes, minus 2".

CONSTRUCTION NOTES:

Form sheets must not be permitted to rest directly on the top of beam flanges. Form sheets must be securely fastened to form supports and must have a minimum bearing length of one inch at each end. Form supports must be placed in direct contact with beam flanges.

All attachments must be made by permissible welds, screws, bolts, clips or other means shown on the the forming plans. All sheet metal assembly screws must be installed with torque-limiting devices to prevent stripping. Only welds or bolts must be used to support vertical loads.

Welding and welds must be in accordance with the provisions of Item 448, "Structural Field Welding", pertaining to fillet welds. All welds must be made by a qualified welder in accordance with Item 448.

All permanently exposed form metal, where the galvanized coating has been damaged, must be thoroughly cleaned and repaired in accordance with Item 445, "Galvanizing". Minor heat discoloration in areas of welds need not be touched up.

Flutes must line up uniformly across the entire width of the structure where main reinforcing steel is located in the flute.

Construction joints will not be permitted unless shown on the plans. The location of and forming details for any construction joint used must be shown on the forming plans. Forms below a construction joint must be removed after curing of the slab.

A sequence for uniform vibration of concrete must be approved by the Engineer prior to concrete placement. Attention must be given to prevent damage to the forms, yet provide proper vibration to prevent voids or honeycomb in the flutes and at headers and/or construction joints.

SHEET 1 OF 2

Texas Department of Transportation

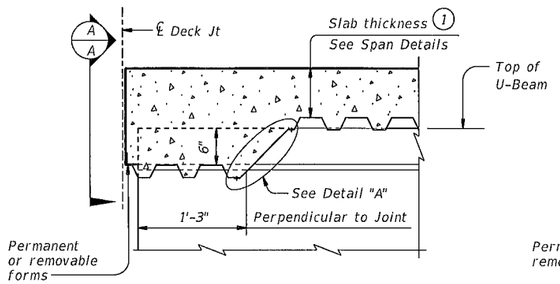
Bridge Division Standard

PERMANENT METAL DECK FORMS

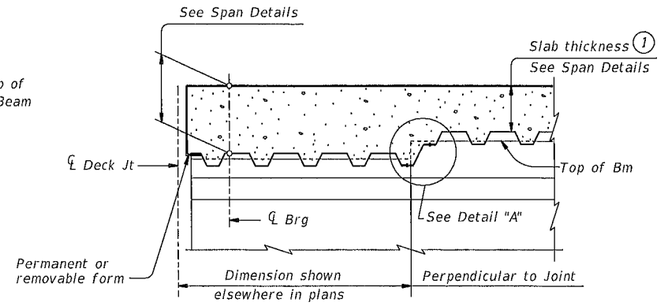
PMDF

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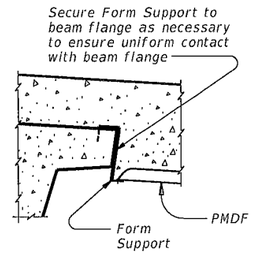


AT THICKENED SLAB END FOR U-BEAMS

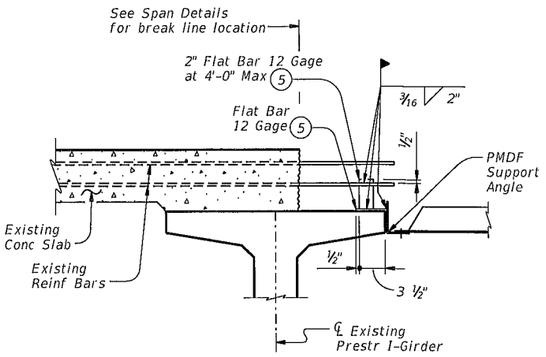


AT THICKENED SLAB END FOR PRESTRESSED I-BEAMS, I-GIRDERS AND STEEL BEAMS

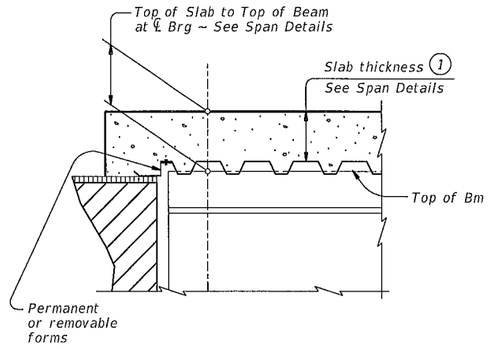
Showing I-Beam block-out. No block-out for I-Girders or Steel Beams.



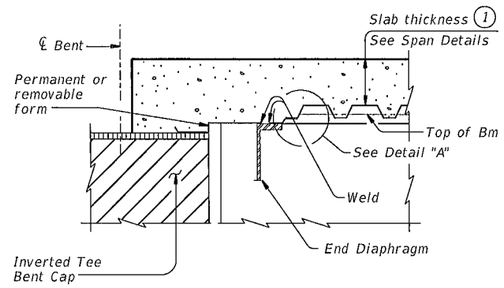
SECTION A-A



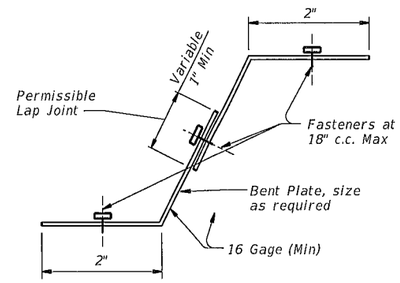
SHOWING PRESTRESSED CONCRETE I-BEAMS, I-GIRDERS AND U-BEAMS



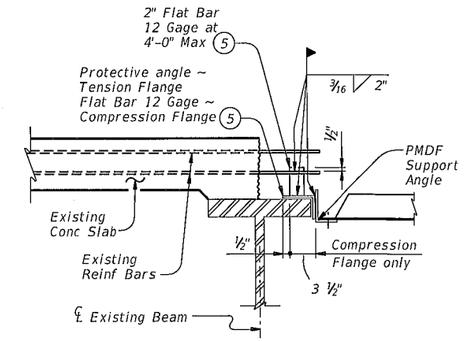
AT SLAB OVER ABUT BKWL OR INV TEE STEM FOR CONC BEAMS WITHOUT THICKENED SLAB END



AT SLAB OVER INV TEE STEM FOR STEEL BEAMS WITHOUT THICKENED SLAB END

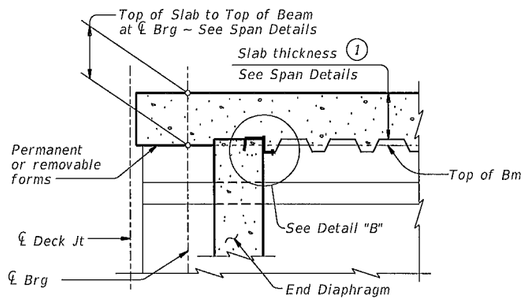


DETAIL "A"

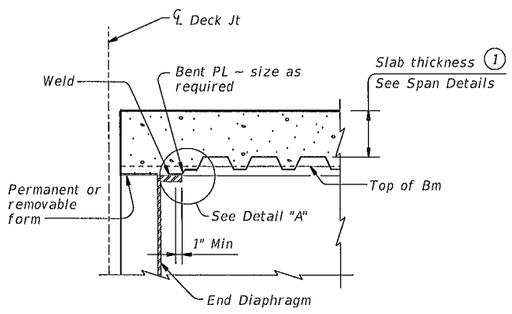


SHOWING STEEL BEAMS

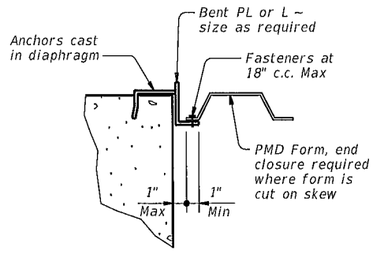
WIDENING DETAILS



AT CONC END DIAPHRAGM FOR PRESTRESSED I-BEAMS AND STEEL BEAMS



AT END DIAPHRAGM FOR STEEL BEAMS WITHOUT THICKENED SLAB END



DETAIL "B"

(1) Slab thickness minus 5/8" if corrugations match reinforcing bars

(5) Minimum yield stress of 12 Gage bars shall be 40 ksi

DETAILS AT ENDS OF BEAMS

SHEET 2 OF 2

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PERMANENT METAL DECK FORMS

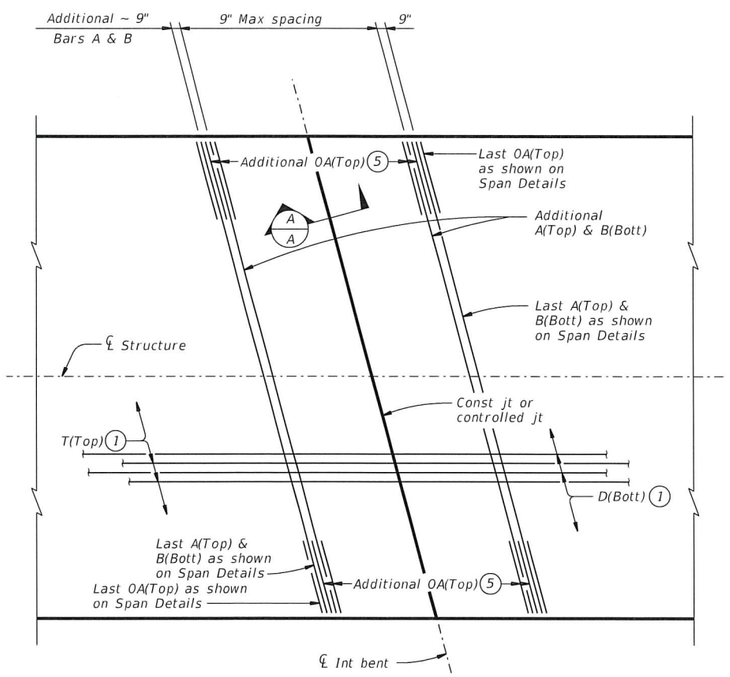
PMDF

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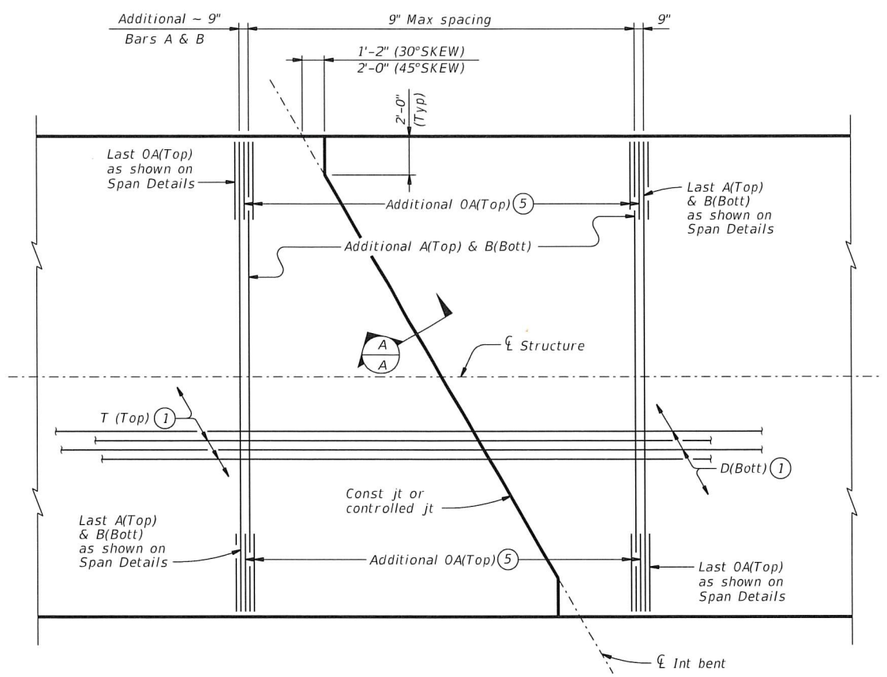
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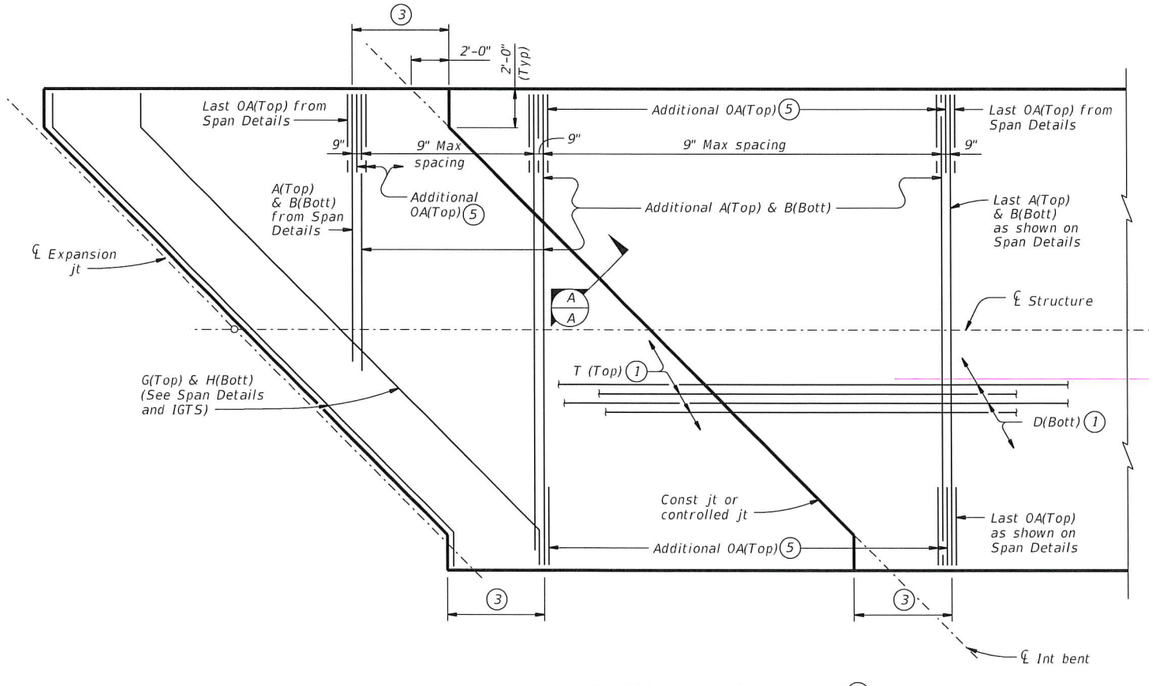
PLAN FOR 0° OR 15° SKEW

(Showing 15°skew)



PLAN FOR 30° OR 45° SKEW

(Showing 30°skew)

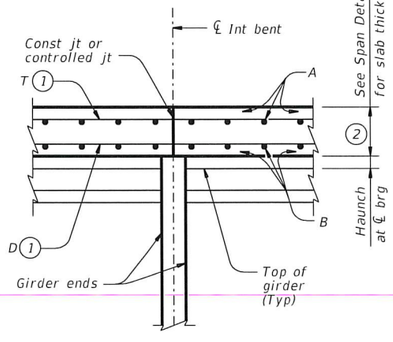


PLAN FOR 45° SKEW (4)

(Showing short Span condition)



BARS OA(#5)



SECTION A-A

Bars 0A(Top) not shown for clarity.

(1) Top and bottom mats must be continuous through joint.

(2) Maintain a constant slab thickness over the bent.

(3) 5'-4" as shown on Span Details.

(4) Use these details when no full slab width bars A and B are shown on Span Details.

(5) Bars 0A(Top) at 9" Max spacing between Bars A(Top).

TABLE OF ALLOWABLE UNIT LENGTH	
Max Rdwy Grade, Percent	Unit Length Factor
0.00	4.1
1.00	3.9
2.00	3.7
3.00	3.5
4.00	3.3
5.00	3.1

Unit length must not exceed the length of the shortest end span times the Unit Length Factor shown in table or 400', whichever is less.

BAR TABLE	
BAR	SIZE
A	#4
B	#4
D	#4
T	#4
0A	#5

The details shown on this sheet are applicable for two and three span units comprised of the same girder type.
Units may be comprised of different span lengths. See "Table of Allowable Unit Length".

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
This standard is drawn showing right forward skew. See Bridge Layout for actual skew direction.

CONSTRUCTION NOTES:

Where multi-span units are indicated on the Bridge Layout, the thickened slab end details and reinforcement shown on IGTS standard (Bars AA, G, H, J, K, and M) and on the Span Details will be omitted where slabs are continuous over interior bents. At these locations, the slab details and reinforcement will be as shown on this sheet or on PCP standard (if using this option).
Thickened slab end reinforcement and details still apply at expansion joint locations (ends of units).
See Span Details for remainder of slab reinforcement and details.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.
Provide Class "S" concrete (f'c = 4,000 psi). Provide Class "S" (HPC) if shown elsewhere on the plans.
Provide bar laps, where required, as follows:
Uncoated ~ #4 = 1'-7"
Epoxy Coated ~ #4 = 2'-5"

The details shown on this sheet are applicable for use only with the Prestressed Concrete I-Girder Standard Designs shown on standards IGSD-24, IGSD-28, IGSD-30, IGSD-32, IGSD-38, IGSD-40 and IGSD-44.

HL93 LOADING

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CONTINUOUS SLAB DETAILS

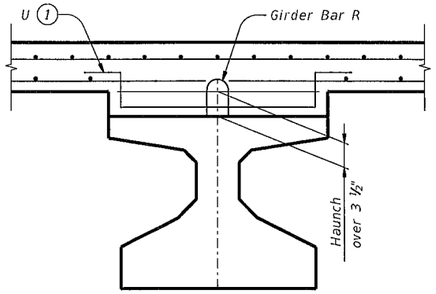
PRESTR CONC I-GIRDER SPANS

IGCS

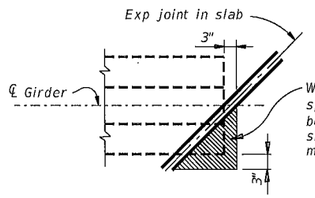
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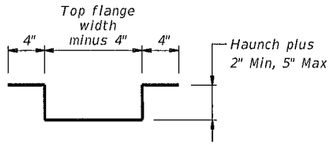


HAUNCH REINFORCING DETAIL

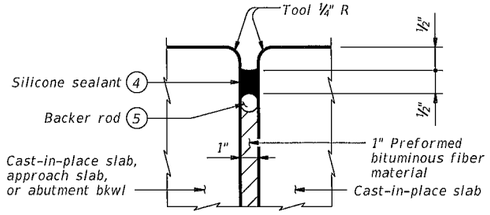


Where flanges project under slab of adjacent span, provide a minimum of ½" clearance between top of girder and bottom of adjacent slab. Polystyrene or other suitable compressible material may be used as a filler.

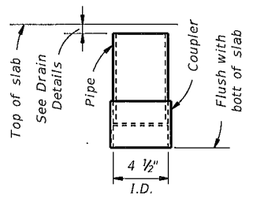
TREATMENT AT GIRDER END FOR SKEWED SPANS



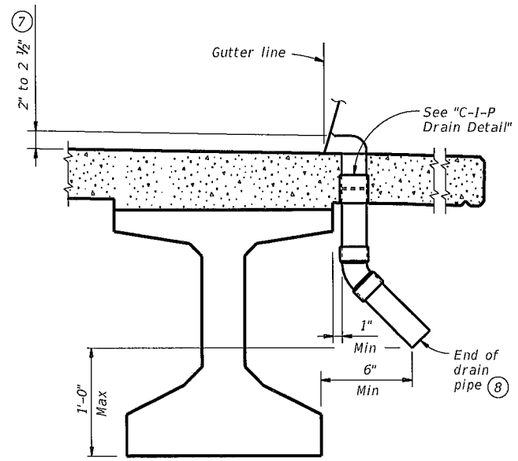
BARS U (#4)



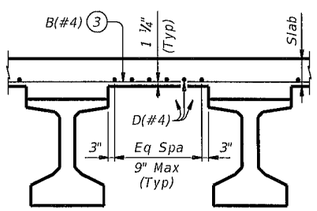
TYPE A JOINT DETAIL (6)



C-I-P DRAIN DETAIL (2)



DRAIN DETAIL (9)



TYPICAL PART TRANSVERSE SLAB SECTION WITHOUT PCP

Top reinforcing steel not shown for clarity.

(1) Space Bars U with girder Bars R in all areas where measured haunch exceeds 3 ½".

(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's may end alternating bars B(#4) at centerline outside girder.

(4) 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.

(5) 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.

(6) The maximum distance between Type A expansion joints is 100'. See Bridge Layout for location of joints. Type A joints are subsidiary to Item 422, "Concrete Superstructures".

(7) Drain entrance formed in rail or sidewalk.

(8) Water may not be discharged onto girders.

(9) 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.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
All items (reinforcing steel, drains, joint formers, etc.) shown on this sheet are subsidiary to other bid items.

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

DECK FORMWORK NOTES:
Overhang bracket hangers are limited to a safe working load of 3,600 lbs, applied to and along the axis of a coil rod at 45 degrees from vertical, regardless of higher loads permitted by hanger manufacturers. Do not place a hanger less than 12" from girder end. Space hangers accordingly.

SHEET 1 OF 2

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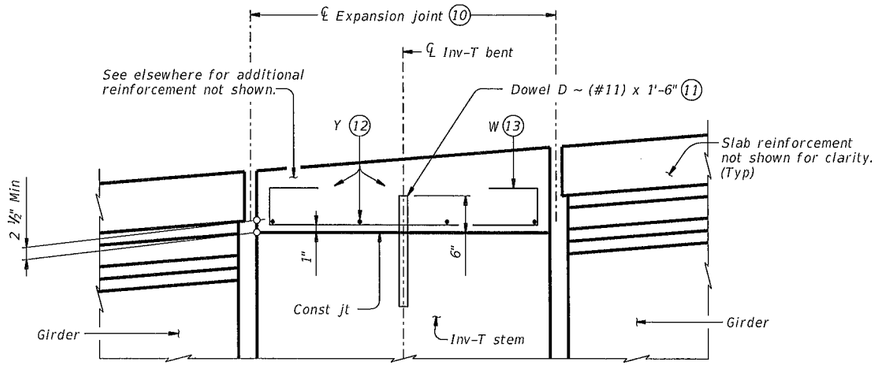
MISCELLANEOUS SLAB DETAILS
PRESTR CONCRETE I-GIRDERS

IGMS

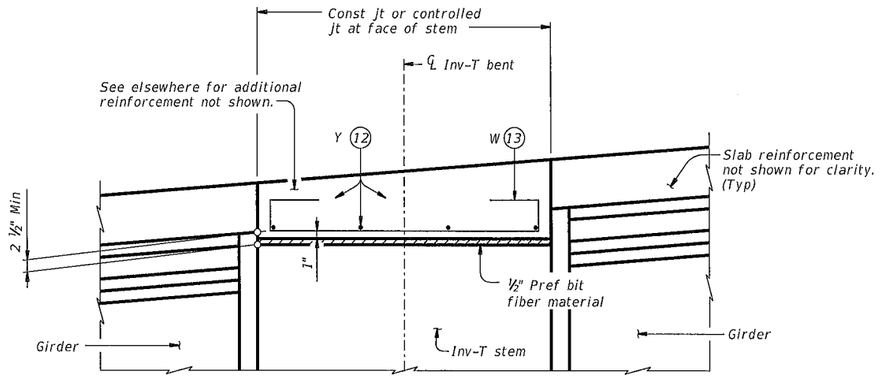
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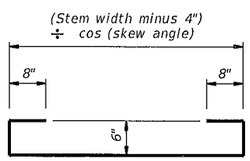


SHOWING EXPANSION JOINTS

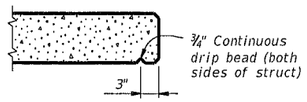


SHOWING CONST JTS OR CONTROLLED JTS

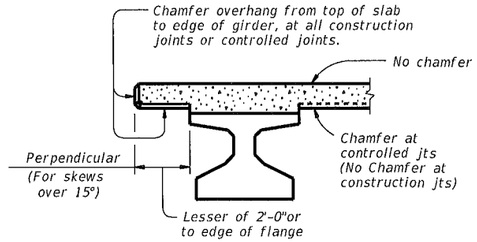
REINFORCEMENT OVER INV-T BENTS



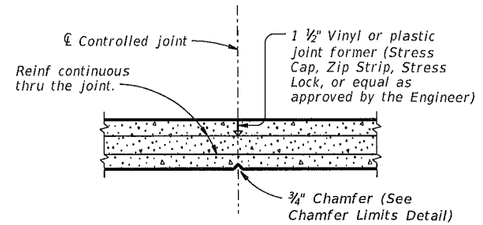
BARS W (#4)



DRIP BEAD DETAIL



CHAMFER LIMITS DETAIL (14)



CONTROLLED JOINT DETAIL

(Saw-cutting is not allowed)

(10) See Layout for joint type.

(11) Dowels D (#11) spaced at 5 Ft Max. See Inv-T bents for quantity and location.

(12) Space Bars Y (#4) at 12" Max. Use 2" end cover. Number of Bars Y must satisfy spacing limit. Place parallel to bent.

(13) Space Bars W at 12" Max (3" from end of cap). Tilt if necessary to maintain cover requirements. Place parallel to longitudinal slab reinforcement.

(14) See Span details for type of joint and joint locations.

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MISCELLANEOUS SLAB DETAILS

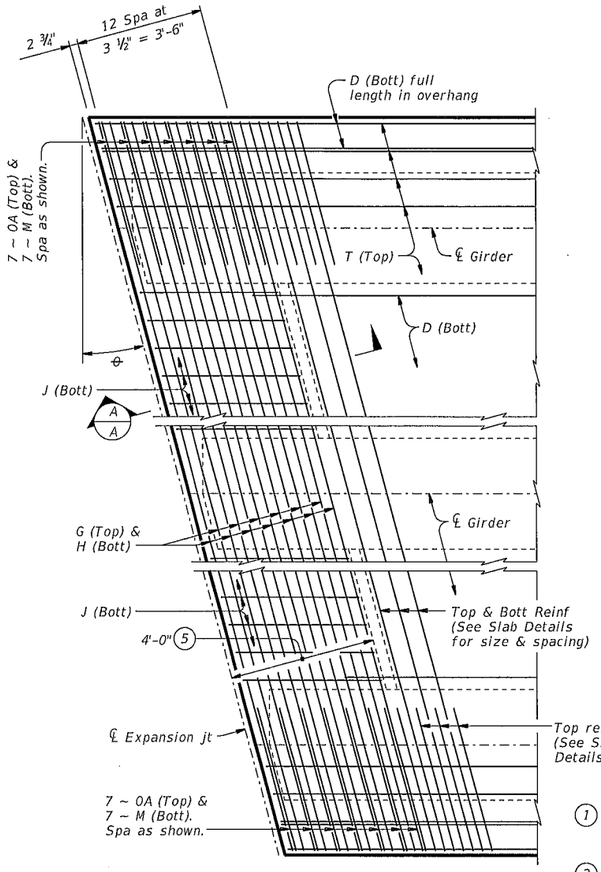
PRESTR CONCRETE I-GIRDERS

IGMS

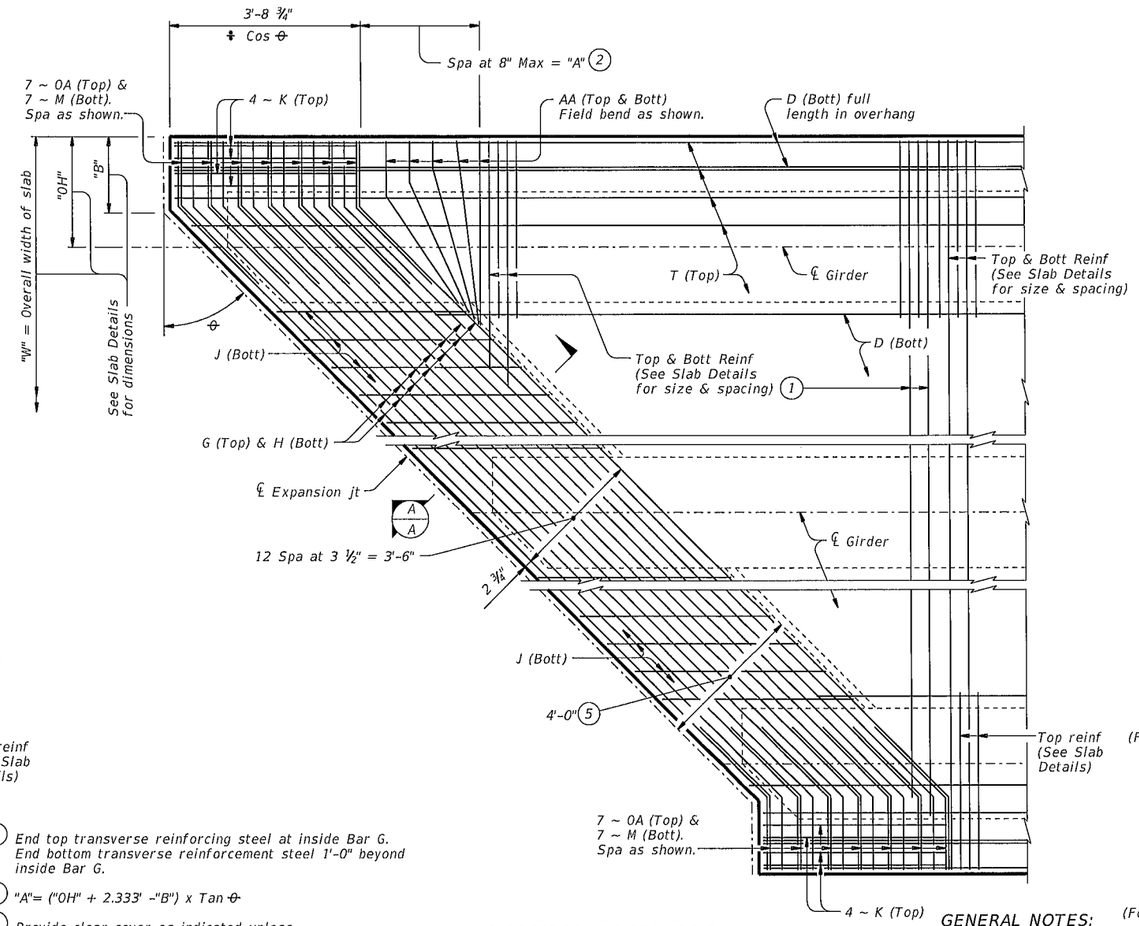
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PARTIAL PLAN FOR SLABS WITHOUT BREAKBACK



PARTIAL PLAN FOR SLABS WITH BREAKBACK

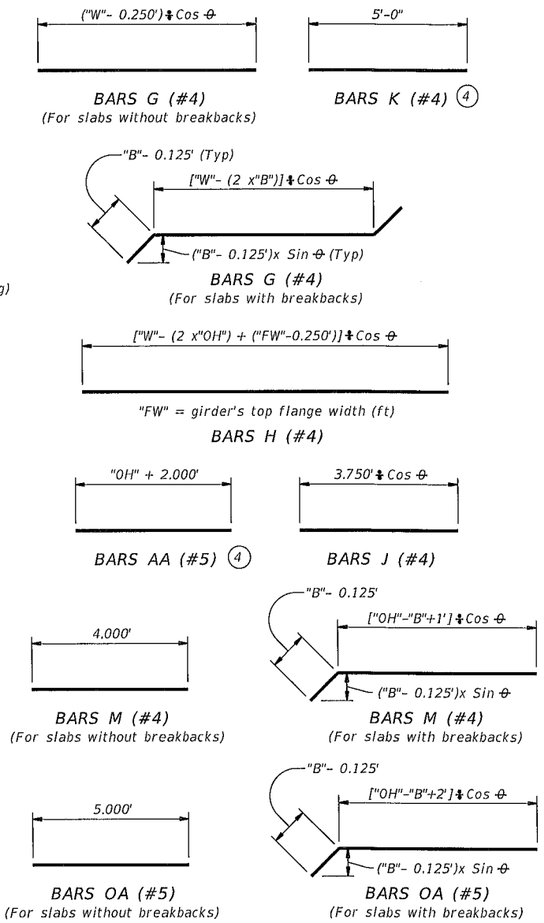
(1) End top transverse reinforcing steel at inside Bar G. End bottom transverse reinforcement steel 1'-0" beyond inside Bar G.

(2) "A"= ("OH" + 2.333' -"B") x Tan Θ

(3) Provide clear cover as indicated unless otherwise shown on Span Details.

(4) Only required on slabs with breakbacks.

(5) Thickened slab end dimensioned perpendicular to face of bkwl, centerline interior bent or face of inverted-T stem.



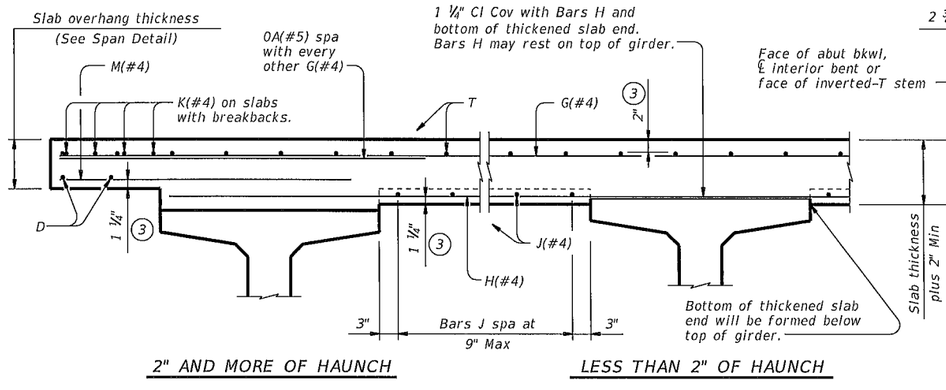
GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
These details are restricted to Prestressed Concrete I-Girder Spans.
These details are to be used in conjunction with the Span Details and PCP standard (if prestressed concrete panels are used).
When Option 2 from PCP standard is used, provide Bars AA, G, K and 0A in the slab.

MATERIAL NOTES:

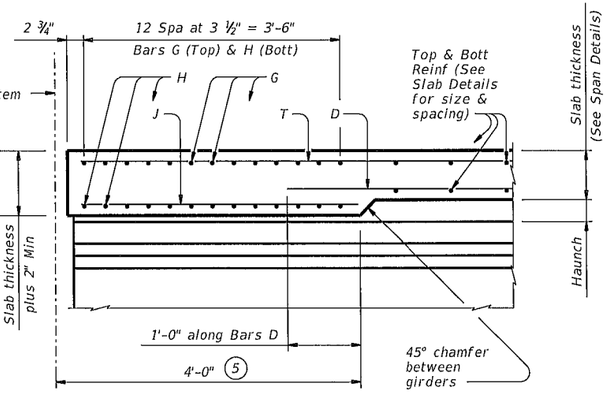
Provide Grade 60 reinforcing steel.
If slab reinforcing steel is shown on the Slab Details to be epoxy coated, then Bars AA, G, K, H, J, M and 0A must be epoxy coated.
Provide bar laps, where required, as follows:
Uncoated ~ #4 = 1'-5"
Epoxy Coated ~ #4 = 2'-1"

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



TYPICAL TRANSVERSE SECTION

(Showing Prestressed Conc I-Girders at ℄ Brg)



SECTION A-A

(Showing with 2" and more of haunch)

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THICKENED SLAB END DETAILS

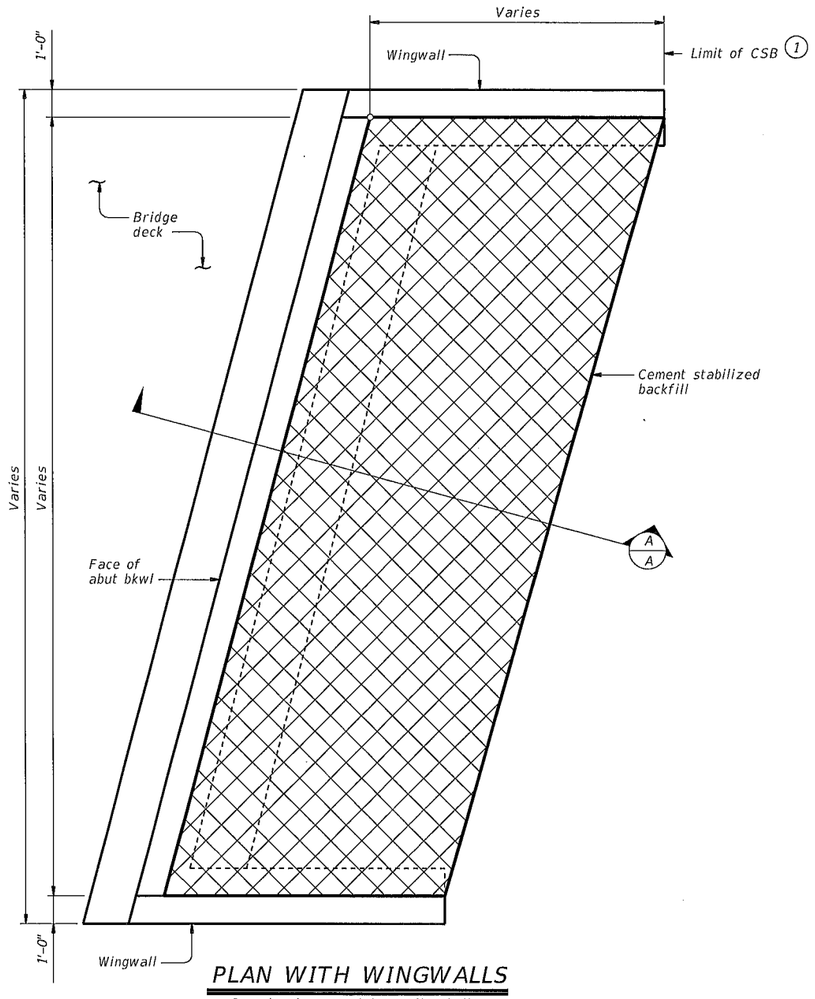
PRESTRESSED CONCRETE I-GIRDER SPANS

IGTS

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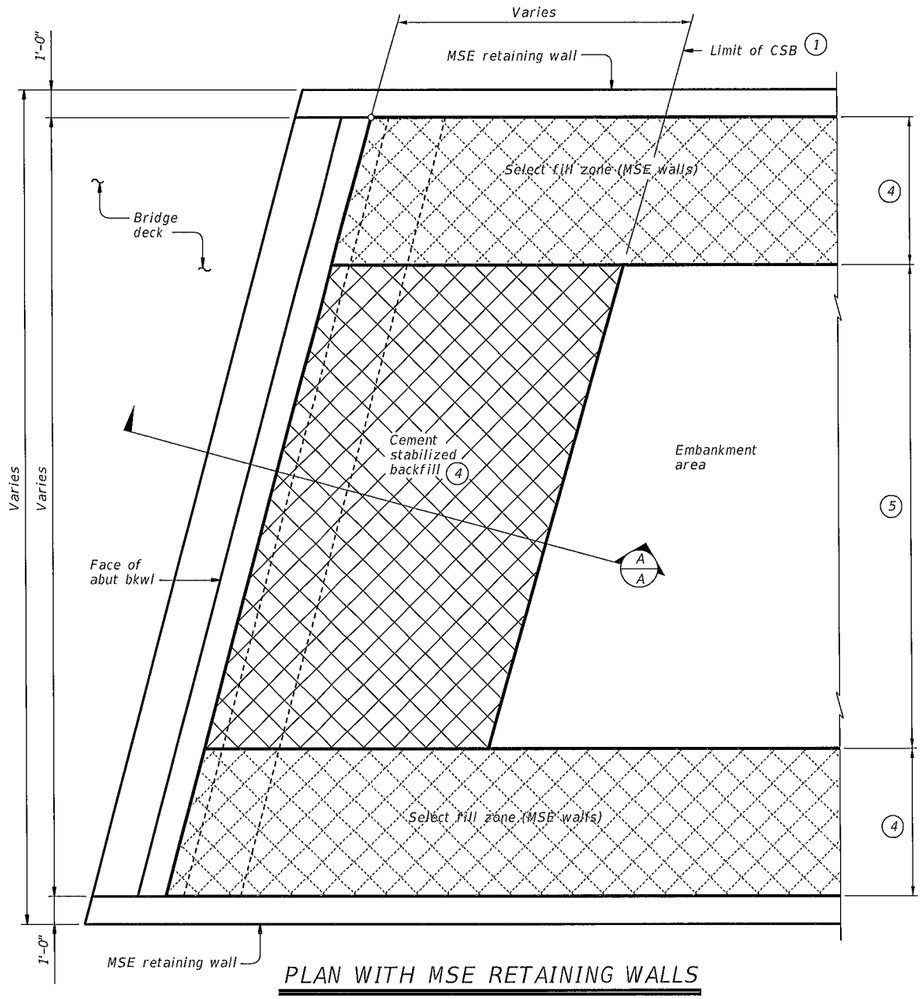
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PLAN WITH WINGWALLS

Cast-in-place retaining walls similar.



PLAN WITH MSE RETAINING WALLS

(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) Other materials can be used as a bond breaker if permitted by the Engineer. 2 layers of 30 Lb roofing felt or 2 layers of heavy mil polyethylene sheeting are examples.

(4) Where MSE retaining walls are present, adjust CSB limits to accommodate the select fill zone. See retaining wall details for additional information.

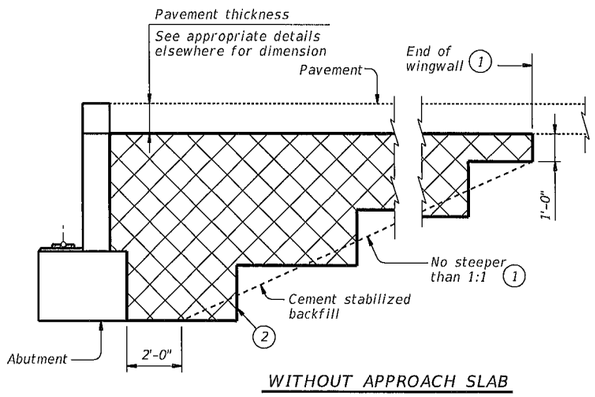
(5) When distance between select fill zones is less than 5'-0", MSE select fill may be substituted for cement stabilized backfill with approval from the Engineer.

GENERAL NOTES:

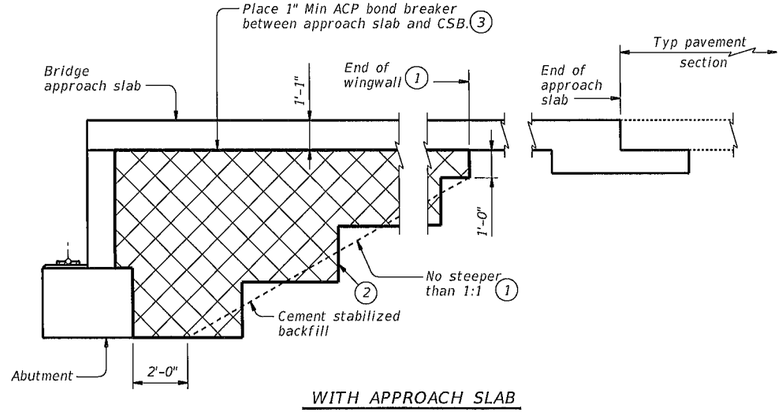
Provide Cement Stabilized Backfill (CSB) meeting the requirements of Item 400, "Excavation and Backfill for Structures", to the limits shown at bridge abutments.

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.



WITHOUT APPROACH SLAB



WITH APPROACH SLAB

SECTION A-A

Texas Department of Transportation

Bridge Division Standard

CEMENT STABILIZED ABUTMENT BACKFILL

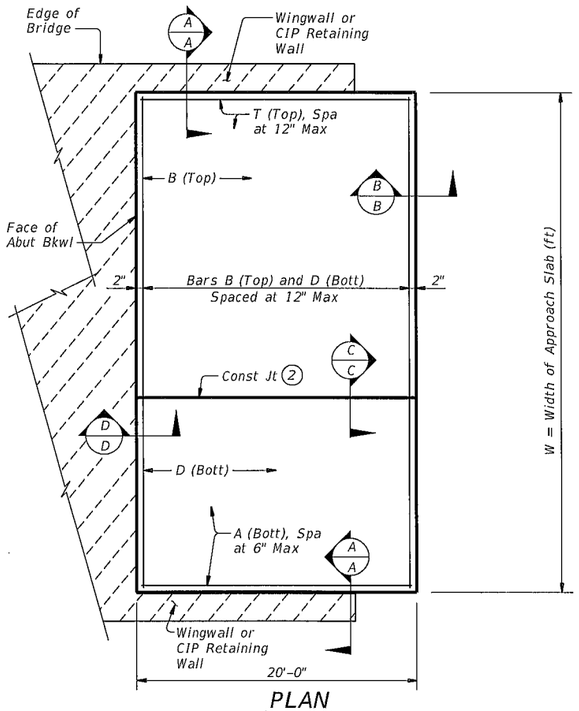
BRIDGE ABUTMENT

CSAB

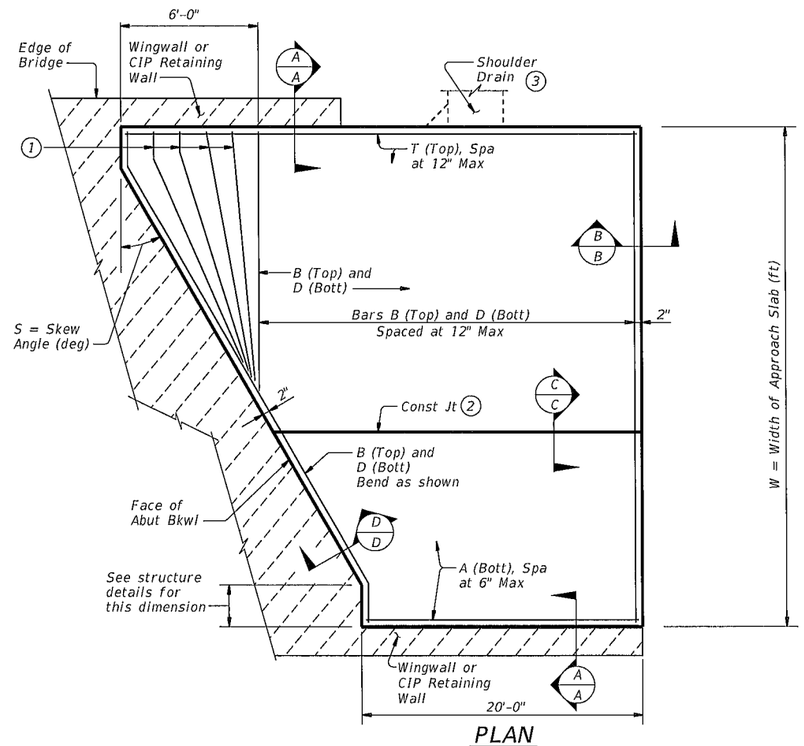
FILE: csabste1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT January 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS 01-16: Add MSE wall details.				
	DIST	COUNTY		SHEET NO.

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DATE:
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PLAN
(Showing Non-Skewed Approach Slab)



PLAN
(Showing Skewed Approach Slab)

BAR TABLE	
BAR	SIZE
A	#8
B	#5
D	#5
T	#5

APPROXIMATE QUANTITIES (4)

Reinf steel weight = 8.5 Lbs/SF of Approach Slab

Volume of Appr Slab Conc (CY) = 0.802W + 0.02W² Tan S

W = Width of Approach Slab (ft)

S = Skew Angle (deg)

(1) Flare Bars B and D in this region (1'-6" Max Spa, 3" Min Spa). Minimum flared bar length = 2'-6". Bend bars as necessary.

(2) Provide longitudinal construction joints that align with longitudinal construction joints in the bridge slab with bridges built in stages. Other longitudinal construction joints must receive approval of the Engineer.

(3) See details elsewhere in plans for shoulder drain location and details.

(4) For Contractor's information only.

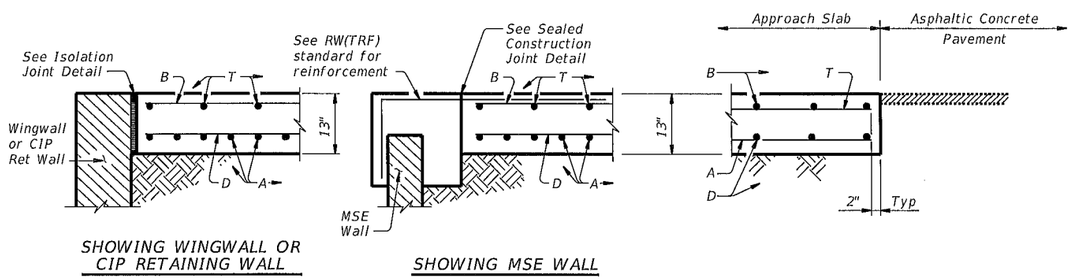
(5) Multiple piece tie bars are acceptable at longitudinal construction joints provided minimum laps shown are achieved.

(6) See details elsewhere in plans for required cross-slope.

(7) Place in accordance with Item 438.

(8) Backer rod shall be 25% larger than joint opening and shall be compatible with the sealant.

(9) Place ½" Preformed Bituminous Fiber Material between concrete railing and top of approach slab as shown when concrete railing projects over the approach slab.

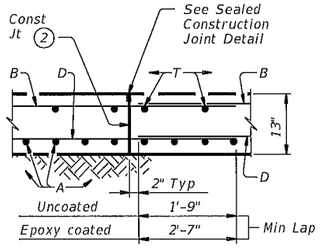


SHOWING WINGWALL OR CIP RETAINING WALL

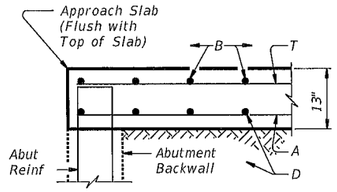
SHOWING MSE WALL

SECTION A-A

SECTION B-B



SECTION C-C (5)



SECTION D-D

GENERAL NOTES:

Construct approach slab in accordance with Item 422.

Provide Class "S" concrete with a minimum compressive strength of 4,000 psi.

Provide Grade 60 reinforcing steel.

Construct the subgrade or subbase from the bridge for a minimum distance of 100 feet prior to the approach slab, unless otherwise indicated on the plans.

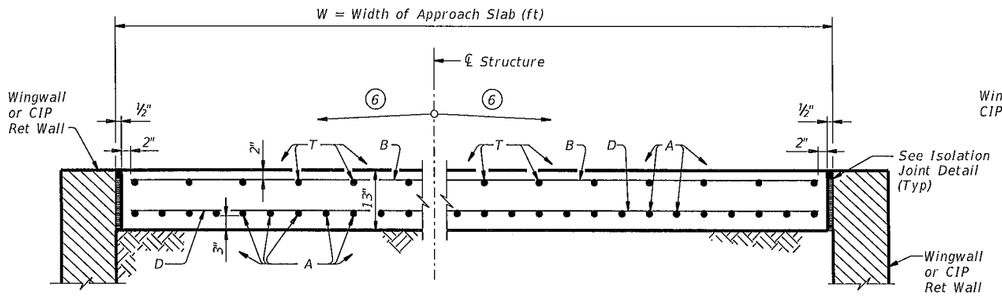
Compact and finish the subgrade or foundation for the approach slab to the typical cross-section and to the lines and grades shown on the plans.

Cure for 4 days using water or membrane curing per Item 422.

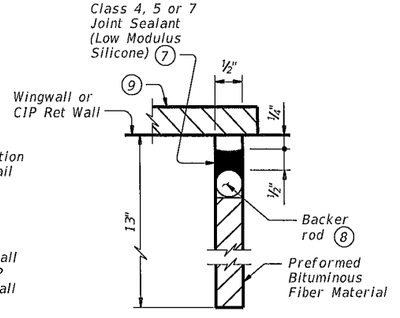
Sealant, backer rod and preformed bituminous fiber material are subsidiary to approach slab concrete.

Provide a 1" bondbreaker (asphaltic concrete pavement or asphalt stabilized base) between the approach slab and cement stabilized backfill or cement treated base. Other bondbreakers may be used if approved by the Engineer.

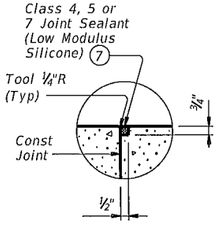
Cover dimensions are clear dimensions, unless noted otherwise.



TYPICAL TRANSVERSE SECTION



ISOLATION JOINT DETAIL



SEALED CONSTRUCTION JOINT DETAIL

Texas Department of Transportation

Bridge Division Standard

BRIDGE APPROACH SLAB

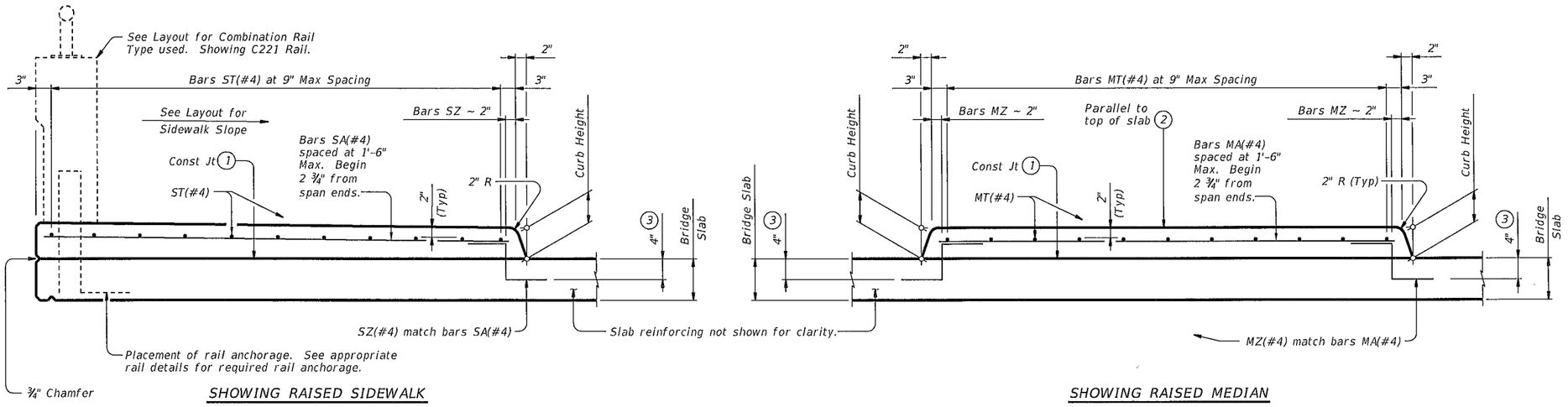
ASPHALTIC CONCRETE PAVEMENT

BAS-A

FILE: basaste1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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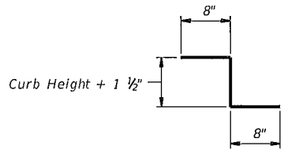
TYPICAL TRANSVERSE SECTIONS

See Span Details for dimensions not shown.

(1) Provide broom finish to top of bridge slab where raised sidewalk or raised median area is defined.

(2) Unless noted otherwise on the span details.

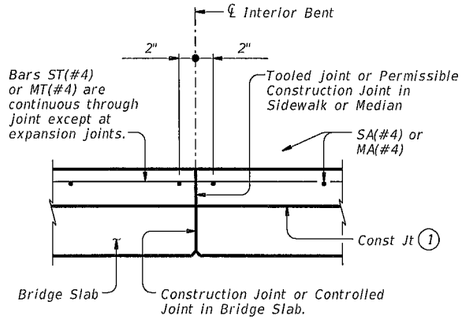
(3) Bars may rest on top of PCPs.



BARS SZ(#4) AND MZ(#4)

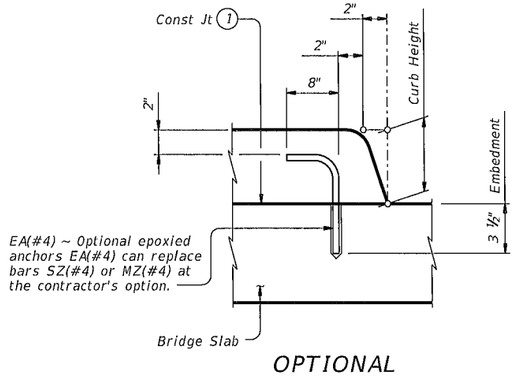
APPROVED SLIP RESISTANT PLATE	
Product	Manufacturer Website
Mebac® #3, Steel	www.harscoikg.com
Algrip™, Steel	www.algrip.com
SlipNOT® Grade 2, Steel	www.slipnot.com

Drain cover plates must be fabricated with a product from this list. No exceptions are permitted.



LONGITUDINAL SECTION AT INTERIOR BENT

At Bents with expansion joints, provide an open joint in the sidewalk/median matching the deck's joint width.



OPTIONAL EPOXY ANCHORS

Embed EA(#4) bar into concrete with a Type III (Class C) epoxy meeting the requirements of DMS-6100, "Epoxies and Adhesives". Follow manufacturer's directions for installing the epoxied anchor bars.

MATERIAL NOTES:

Provide the same concrete required for the bridge deck, Class S or Class S (HPC).

Provide Grade 60 reinforcement. Welded wire reinforcement (WWR) meeting ASTM A1064 of equivalent size and spacing may be substituted for bars SA, ST, MA, and MT.

Epoxy coat reinforcement if bridge deck reinforcement is required to be epoxy coated.

Hot-dip galvanize slip resistant steel plate after fabrication in accordance with Item 445, "Galvanizing". Chamfer or round edges approximately 1/16" prior to galvanizing.

GENERAL NOTES:

Designed according to AASHTO LRFD Specifications.

Provide the following bar or wire lap lengths when required:
- Uncoated, 1'-5" Min
- Coated, 2'-1" Min

Submittal and approval of drain cover plate shop drawings is not required if fabrication is accordance with these details.

Raised sidewalks will be paid under Item 422 by the SF of Bridge Sidewalk or Bridge Sidewalk (HPC). Raised medians will be paid under Item 422 by the SF of Bridge Median or Bridge Median (HPC).

Payment for drain cover plates will be by the pound of "Structural Steel (Misc Non-Bridge)" as per Item 442, "Metal for Structures". Weight of one drain cover plate is 48 plf.

DESIGNER NOTES:

These details do not apply for longitudinal grades exceeding 5 percent.

Cover dimensions are clear dimensions, unless noted otherwise.

Reinforcing bar dimensions shown are out-to-out of bar.

Texas Department of Transportation

Bridge Division Standard

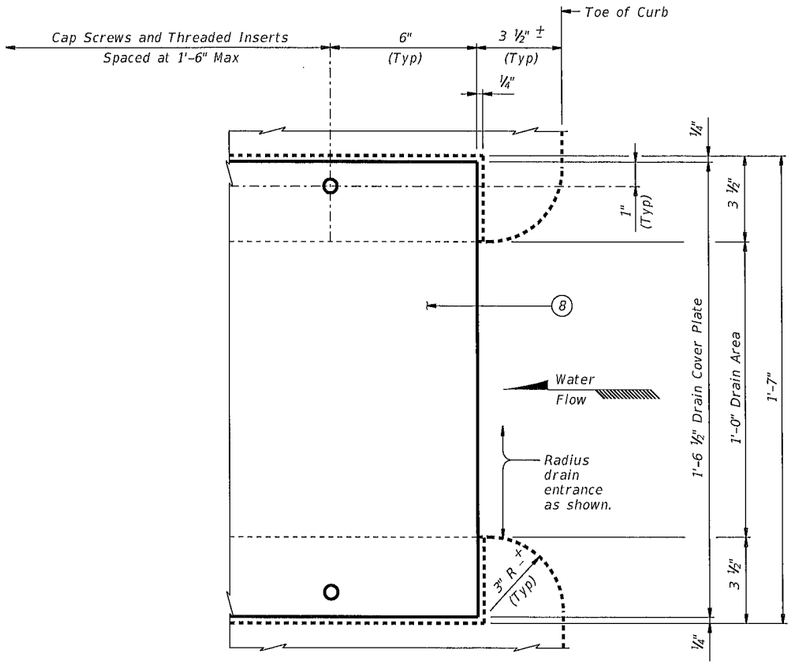
BRIDGE RAISED SIDEWALK AND MEDIAN DETAILS

BRSM

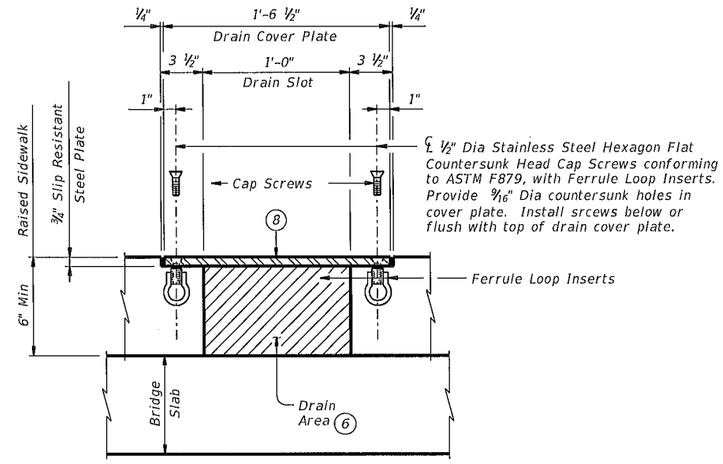
FILE: brsmstel.dgn	DN: JMH	CK: TxDOT	DW: JTR	CK: TxDOT
©TxDOT January 2015	CONT	SECT	JOB	HIGHWAY
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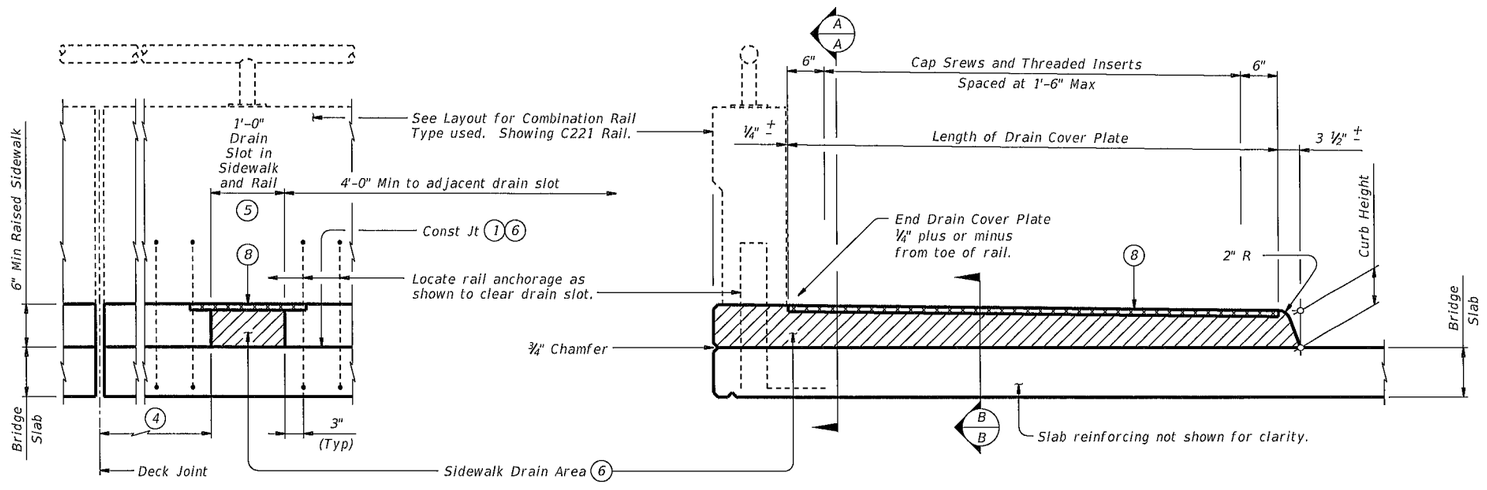


PARTIAL PLAN CURB DRAIN



SECTION B-B

Reinforcing not shown for clarity.



SECTION A-A

SHOWING RAISED SIDEWALK WITH DRAIN SLOT

OPTIONAL DRAIN DETAILS 7

(1) Provide broom finish to top of bridge slab where raised sidewalk or raised median area is defined.

(4) 3'-0" Min at Deck Expansion Joints, Deck Construction Joints or Controlled Joints, Rail Intermediate Wall Joints or from face of substructure.

(5) For rail Type C1W, center drain slots between posts.

(6) Steel trowel top surface of bridge deck in drain locations.

(7) Provide sidewalk drains where shown elsewhere on the plans or as directed by the Engineer. Do not place drains over railroad tracks, lower roadways, or sidewalks. Place Drain and Cover Plate perpendicular to toe of rail.

(8) Drain Cover Plate (PL ¾ x 18 ½ Slip Resistant Steel Plate). Install flush with top of sidewalk.

SHEET 2 OF 2

Texas Department of Transportation | Bridge Division Standard

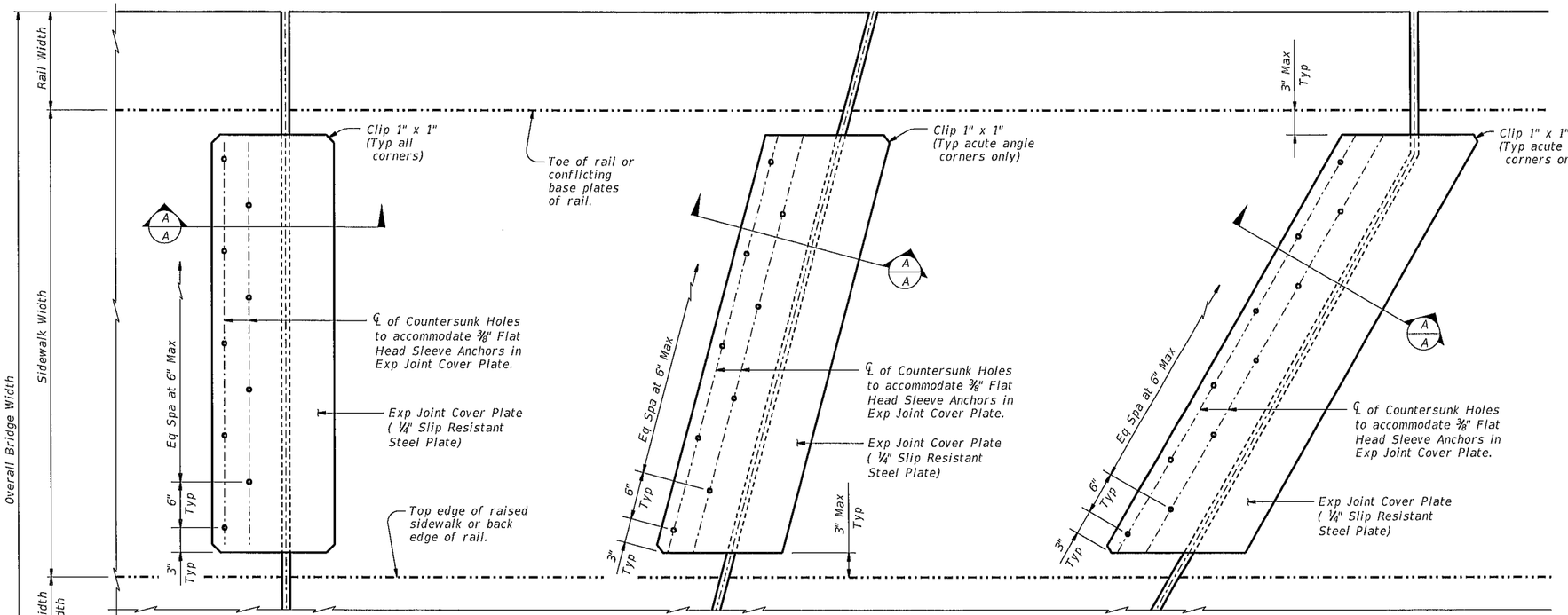
BRIDGE RAISED SIDEWALK AND MEDIAN DETAILS

BRSM

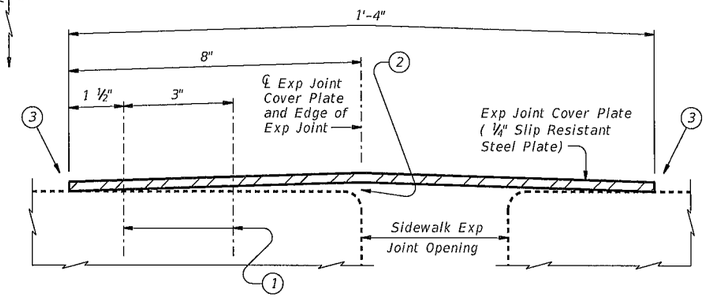
FILE: brsmstel.dgn	DN: JMH	CK: TxDOT	DW: JTR	CK: TxDOT		
©TxDOT January 2015	CONT	SECT	JOB	HIGHWAY		
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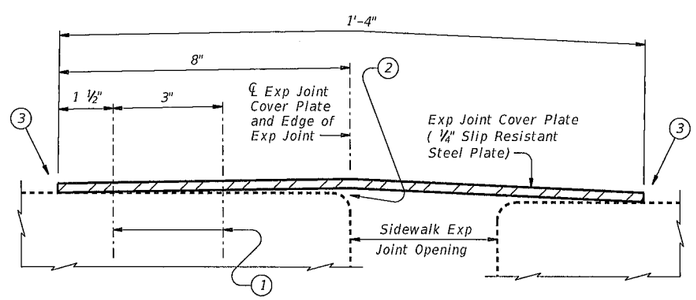
DATE:
FILE:



PLAN



SHOWING LEVEL EXP JOINT



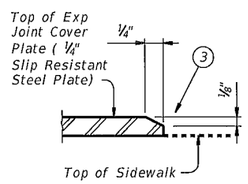
SHOWING UNLEVEL EXP JOINT
(Install Sleeve Anchors on high side of Exp Joint)

SECTION A-A

1 ℄ ⅜" x 2 ½" Min, Flat Head Sleeve Anchors, Stainless Steel. Countersink Flat Head Sleeve Anchors in ¼" Slip Resistant Steel Plate.

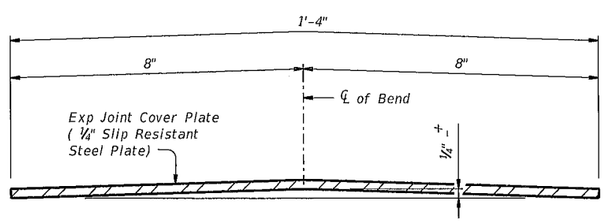
2 It is not necessary to remove plate crown provided the plate is firmly secured to the sidewalk.

3 Transverse edges must be in contact with sidewalk surface after installation.



EXP JOINT COVER PLATE BEVEL DETAIL

Bevel all plate edges as shown.



BENDING DIAGRAM OF EXP JOINT COVER PLATE

APPROVED SLIP RESISTANT PLATE	
Product	Manufacturer Website
Mebac® #3, Steel	www.harscoikg.com
Algrip™, Steel	www.algrip.com
SlipNOT®Grade 2, Steel	www.slipnot.com

FABRICATION NOTES:

Shop drawings for the fabrication of Sidewalk Expansion Joint Cover Plate will not require the Engineer's approval if fabrication is in accordance with the details shown on this standard.

A Bridge Sidewalk Expansion Joint Cover Plate Layout which identifies location side of sleeve anchors and orientation of all cover plate sections must be developed by the fabricator. Mark each steel section in accordance with the Bridge Sidewalk Expansion Joint Cover Plate Layout. A copy of the Bridge Sidewalk Expansion Joint Cover Plate Layout is to be provided to the Engineer.

Sidewalk expansion joint cover plates must be hot-dipped galvanized ¼" slip resistant steel plate. Checker plate or diamond plate is not allowed nor are slip resistant tapes, films and non-metallic coatings.

Minimum required yield strength of steel plate is 36 ksi.

Hot-dip galvanize slip resistant steel plate after fabrication in accordance with Item 445, "Galvanizing".

Provide stainless steel flat head sleeve anchors meeting the requirements of ASTM F 593, Group 1, Alloy 304. Countersink holes in slip-resistant plate for sleeve anchors. Drill holes in sidewalk as per sleeve anchor manufacturer's recommendations. Install sleeve anchors flush with, or slightly recessed below, top surface of sidewalk expansion joint cover plate.

GENERAL NOTES:

Sidewalk expansion joint cover plates can only accommodate up to a 7" maximum expansion joint.

Details provided are applicable to concrete walkway surfaces only.

Payment for sidewalk expansion joint cover plates must be by the pound of "Structural Steel (Misc Non-Bridge)" as per Item 442, "Metal for Structures".

Estimated weight of one sidewalk expansion joint cover plate is 14 plf.

Texas Department of Transportation

Bridge Division Standard

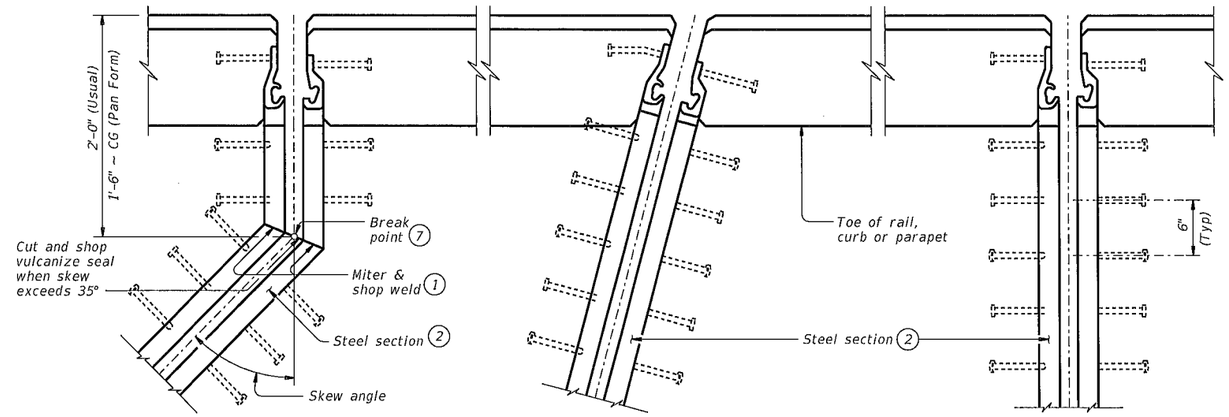
BRIDGE SIDEWALK EXPANSION JOINT COVER PLATE (ALL SKEWS)

BS-EJCP

FILE: bsejste1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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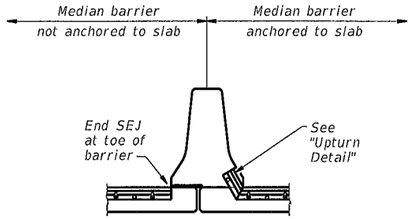
SHOWING SKEWS WITH SLAB BREAKBACKS

SHOWING SKEWS WITHOUT SLAB BREAKBACKS

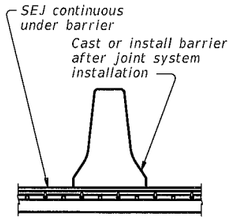
SHOWING WITHOUT SKEWS AND SLAB BREAKBACKS

PLANS OF END CONDITIONS

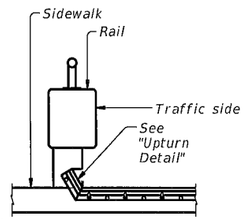
Used for Watson Bowman Acme (SE-400 or SE-500) and D.S. Brown (A2R-400 or A2R-XTRA) joint systems.
Shown with upturns



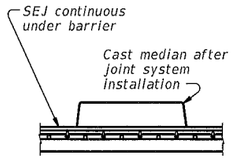
WITH OPEN DECK JOINT BELOW MEDIAN BARRIER



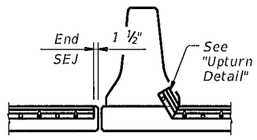
AT MEDIAN BARRIER



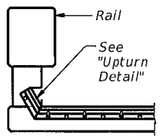
AT SIDEWALK BEHIND BRIDGE RAIL



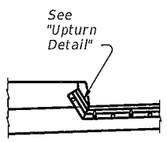
AT RAISED MEDIAN



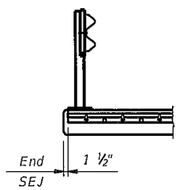
WITH OPEN DECK JOINT ADJACENT TO MEDIAN BARRIER



AT CONCRETE BRIDGE RAIL



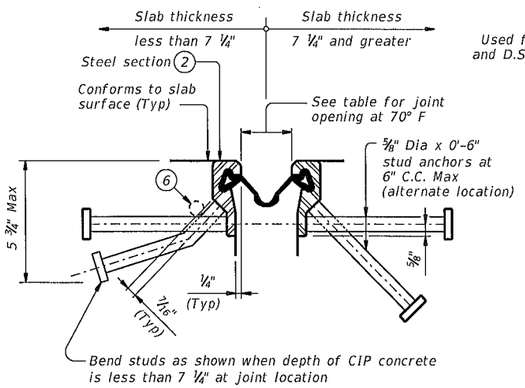
AT SIDEWALK



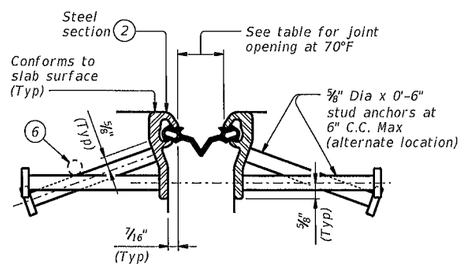
AT STEEL POST BRIDGE RAIL

TYPICAL SECTIONS (5)

Used for Watson Bowman Acme (SE-400 or SE-500) and D.S. Brown (A2R-400 or A2R-XTRA) joint systems.



SECTION THRU WATSON BOWMAN ACME (SE-400 OR SE-500) JOINTS



SECTION THRU D.S. BROWN (A2R-400 OR A2R-XTRA) JOINTS

TABLE OF SEALED EXPANSION JOINT INFORMATION

MANUFACTURER	STEEL SECTION (2)	STRIP SEAL			
		4" JOINT		5" JOINT	
		Seal Type	Joint Opening (3)	Seal Type	Joint Opening (3)
D.S. Brown	Type SSCM2	A2R-400	1 ¾"	A2R-XTRA	2"
Watson Bowman Acme	Type R	SE-400	1 ¾"	SE-500	2"
Watson Bowman Acme	As Shown	SPS-400	2"	N/A	N/A
R.J. Watson	As Shown	SF-400	2 ½"	N/A	N/A

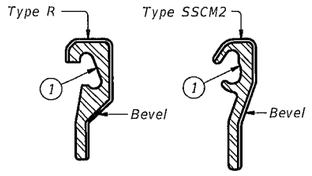
REDUCED LONGITUDINAL MOVEMENT RANGE

SKEW (deg)	JOINT SIZE	
	4"	5"
0	4.0"	5.0"
15	4.0"	5.0"
30	3.5"	4.3"
45	2.8"	3.5"

DESIGN NOTES:

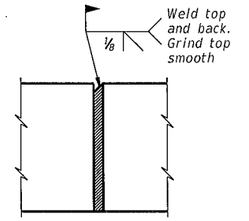
Joints installed on a skew have reduced ability to accommodate longitudinal movement. Use table values to determine the correct joint size for skewed installations.

For other skews over 25 degrees, calculate reduced movement range by multiplying joint size by cosine (skew).



WELD LIMITS

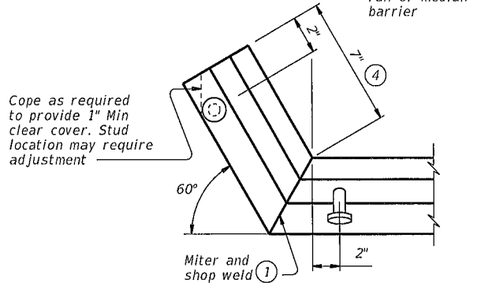
WELD LIMITS



REAR VIEW

FIELD SPLICE DETAIL

Used for Watson Bowman Acme (SE-400 or SE-500) and D.S. Brown (A2R-400 or A2R-XTRA) joint systems.



UPTURN DETAIL

Used for Watson Bowman Acme (SE-400 or SE-500) and D.S. Brown (A2R-400 or A2R-XTRA) joint systems.

FABRICATION NOTES:

Temporarily shop assemble corresponding sections of Sealed Expansion Joints, check for fit, and match mark for shipment. Secure corresponding sections together for shipment with shipping angle. Do not use erection bolts.

The seal must be continuous and included in the price bid for Sealed Expansion Joint.

Ship steel sections in convenient lengths of 10'-0" Min and 24'-0" Max unless necessary for staged construction or widenings. One shop splice is permitted in each shipping length provided no piece is less than 2'-0" long and sufficient studs are added to limit the stud to shop splice distance to 2" Min and 4" Max.

Weld studs in accordance with AWS D1.1.

Butt weld all shop and field splices and grind smooth areas in contact with seal. Make all necessary field splice joint preparations in the shop.

Paint portions of steel sections not in contact with concrete with the primer specified for System II paint.

Shop drawings for the fabrication of Sealed Expansion Joints will not require the Engineer's approval if fabrication is in accordance with the details shown on this standard.

CONSTRUCTION NOTES:

Secure the Sealed Expansion Joint in position and place to the proper grade and alignment by welding braces to adjacent reinforcing steel, to prestressed beam stirrups, or to anchors cast in concrete diaphragms. Include cost of temporary bracing in the price bid for Sealed Expansion Joint.

Remove shipping angle immediately after each joint half is secured in place. Grind smooth, and touch up with organic zinc-rich paint.

Clean and prepare seal cavity for seal installation as per the Manufacturer's installation procedures.

GENERAL NOTES:

Provide Sealed Expansion Joints in the size and at locations shown on the plans.

Minimum slab and overhang thickness required for the use of SEJ-A is 6 ½".

(1) Remove all burrs which will be in contact with seal prior to making splice.

(2) Shape of steel section shown is typical. Variations in sections must be approved by the Engineer.

(3) These openings are also the recommended minimum installation openings.

(4) Reduce for sidewalk or parapet heights less than 6".

(5) Other conditions affecting the joint profile should be noted elsewhere.

(6) Move transverse bars that are in conflict with SEJ studs, in either the bridge slab or approach slab, to rest at the junction of the studs.

(7) See span details for location of break point.

Texas Department of Transportation

Bridge Division Standard

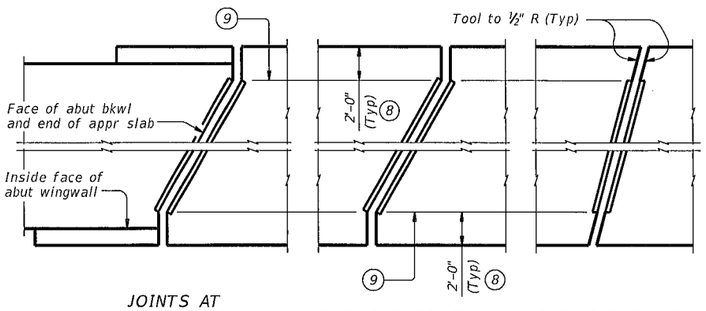
SEALED EXPANSION JOINT TYPE A WITHOUT OVERLAY

SEJ-A

FILE: sejaste1.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: JMH
©TxDOT January 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS				
01-16: Addition of strip seal type, dimension armor plate. Joint Seal splice note.	DIST	COUNTY		SHEET NO.

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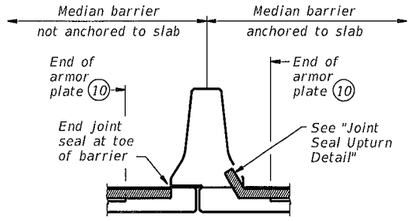
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FILE:



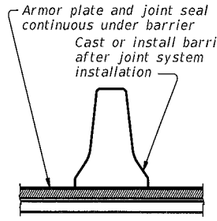
JOINTS AT ABUTMENTS | SKEWS OVER 15° | SKEWS THRU 15°

PLANS OF ARMOR PLATES

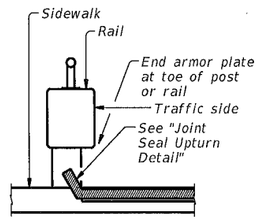
Used for R.J. Watson (SF-400) and Watson Bowman Acme (SPS-400) joint systems



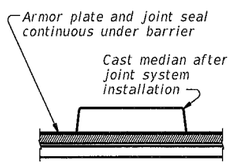
WITH OPEN DECK JOINT BELOW MEDIAN BARRIER



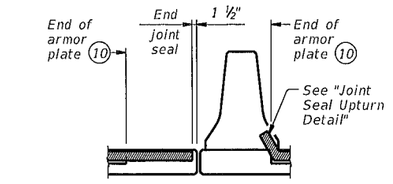
AT MEDIAN BARRIER



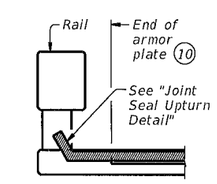
AT SIDEWALK BEHIND BRIDGE RAIL



AT RAISED MEDIAN

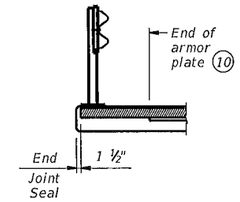


WITH OPEN DECK JOINT ADJACENT TO MEDIAN BARRIER



AT CONCRETE BRIDGE RAIL

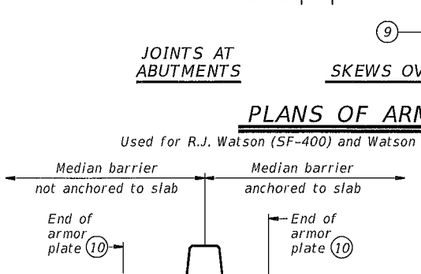
AT SIDEWALK



AT STEEL POST BRIDGE RAIL

TYPICAL SECTIONS OF ARMOR PLATES & SEALS (5)

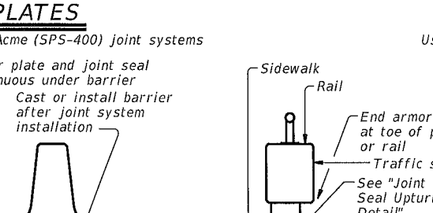
Used for R.J. Watson (SF-400) and Watson Bowman Acme (SPS-400) joint systems



SHOWING D.S. BROWN (Ty SSCM2)
All joints similar

SHIPPING ANGLE

An alternate method of securing joint sections may be used if approved by the Bridge Division. Erection bolts are not allowed.

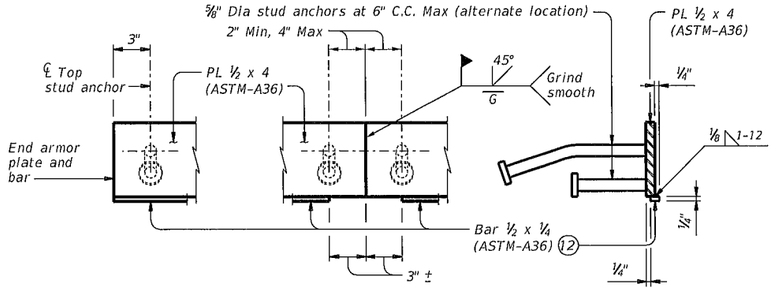


JOINT SEAL UPTURN DETAIL

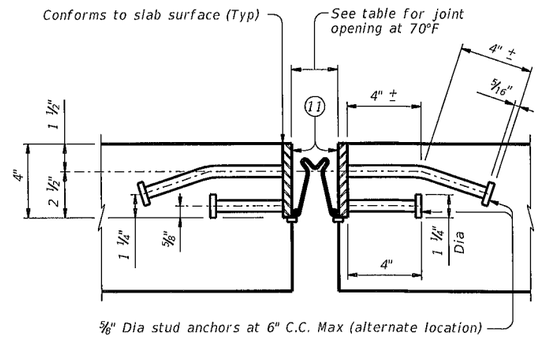
Used for R.J. Watson (SF-400) and Watson Bowman Acme (SPS-400) joint systems. Upturn seal only. Terminate armor plates as shown in "Plans of Armor Plates" and "Typical Sections of Armor Plates & Seals."

ELEVATION OF ARMOR PLATE

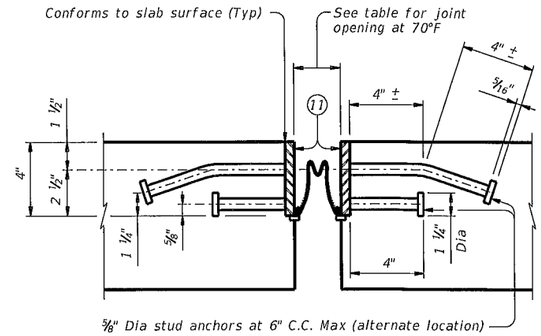
Used for R.J. Watson (SF-400) and Watson Bowman Acme (SPS-400) joint systems



END VIEW | FIELD SPLICE (Studs not shown for clarity) | SECTION



SECTION THRU R J WATSON (SF-400) JOINT



SECTION THRU WATSON BOWMAN ACME (SPS-400) JOINT

CONSTRUCTION NOTE FOR R.J. WATSON (SF-400) AND WATSON BOWMAN ACME (SPS-400) JOINTS:
Splice and install seal in accordance with the Manufacturer's directions and with the adhesive provided by the Manufacturer. Splice in joint seal may be performed in the field.

(5) Other conditions affecting the joint profile should be noted elsewhere.

(8) Unless shown otherwise, terminate armor plate at slab break point if break is more than 2'-0" from slab edge.

(9) At Fabricator's option, armor plate may extend up to 6" beyond this point for skews through 15°.

(10) See "Plans of Armor Plates".

(11) Coat with Manufacturer's supplied epoxy primer above bar before installing sealant.

(12) In lieu of bar, use ¾", 16 gauge, stainless steel strap. Attach to armor plate with a fastener for attaching steel to steel base material, such as Hilti X-EGN or X-S13.

(13) Align shipping angle perpendicular to joint.

Texas Department of Transportation | Bridge Division Standard

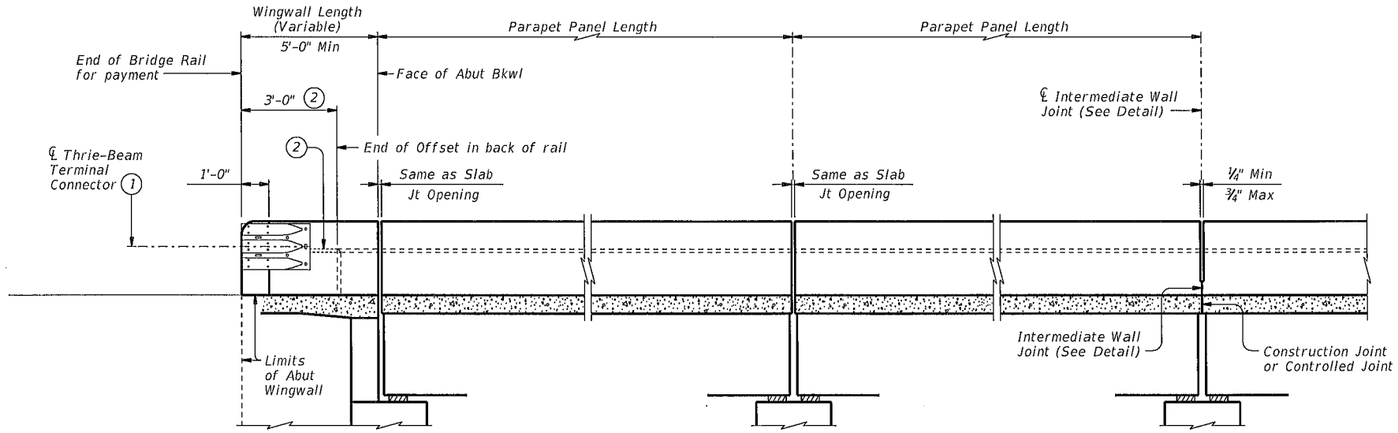
SEALED EXPANSION JOINT TYPE A WITHOUT OVERLAY

SEJ-A

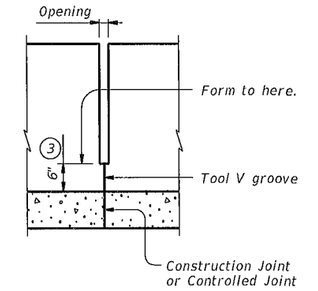
FILE: sejaste1.dgn	DN: TxDOT	CK: TxDOT	DN: JTR	CK: JMH	
©TxDOT January 2015	CONT	SECT	JOB	HIGHWAY	
REVISIONS					
01-16: Addition of strip seal type, dimension armor plate. Joint Seal splice note.	DIST	COUNTY		SHEET NO.	

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DATE:
FILE:

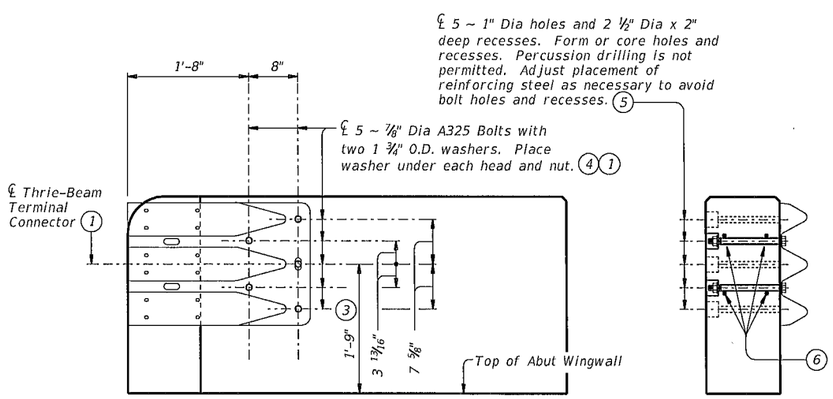


ROADWAY ELEVATION OF RAIL

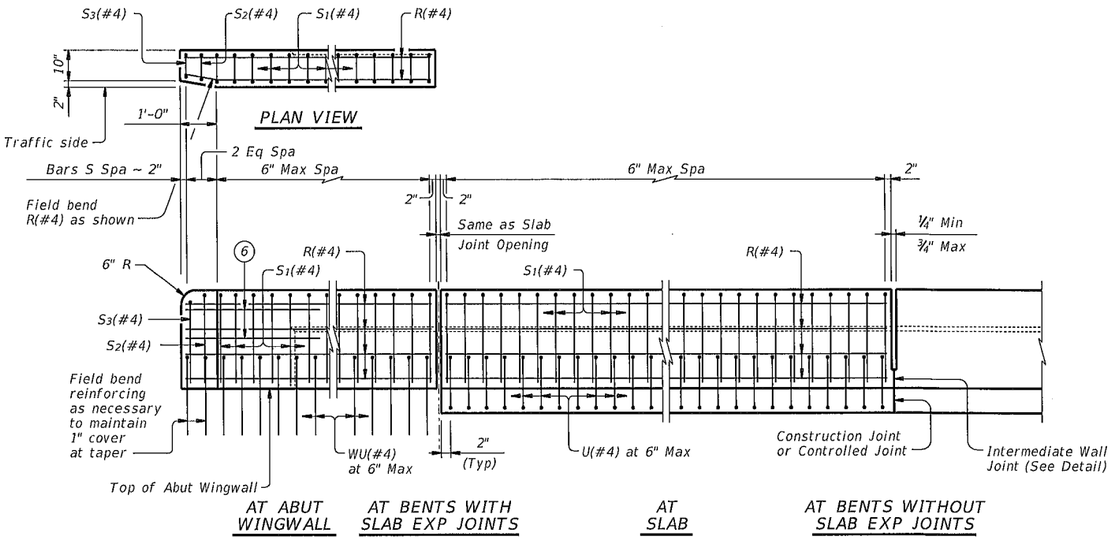


INTERMEDIATE WALL JOINT DETAIL

Provide at all interior bents without slab expansion joints.



TERMINAL CONNECTION DETAILS



ELEVATION SHOWING TYPICAL REINFORCING PLACEMENT

(1) Terminal Connectors and associated hardware are to be paid for under the Item "Metal Beam Guard Fence". Attach Metal Beam Guard Fence Transitions to the bridge rail and extend along the embankment unless otherwise shown in the plans.

(2) Back of rail offset may, with Engineer's approval, be continued to the end of the railing.

(3) Increase 2" for structures with overlay.

(4) Provide bolts of sufficient length to extend 1/2" to 3/4" beyond nut.

(5) Bolt recesses are only required when pedestrian sidewalks are adjacent to back of rail.

(6) Place 4 additional Bars R(#4) 3'-8" in length inside Bars S(#4) and centered 2'-0" from end of rail when Terminal Connections are required. Field bend as needed.

SHEET 1 OF 2

Texas Department of Transportation | Bridge Division Standard

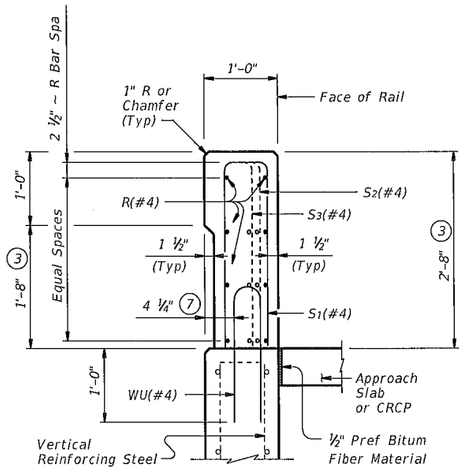
TRAFFIC RAIL

TYPE T221

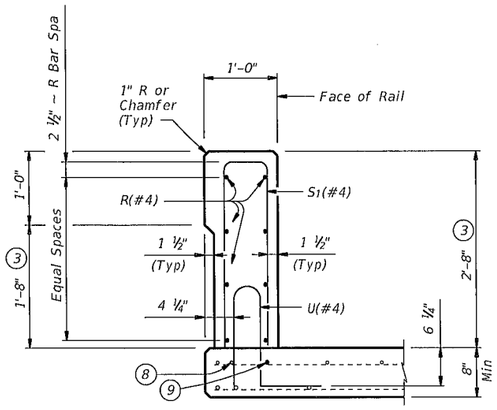
FILE: rlstd004.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: TxDOT
©TxDOT July 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS				
03-16: Added NASH TL-3 to General Notes.	DIST	COUNTY		SHEET NO.

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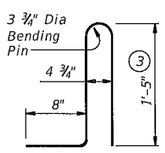


ON ABUTMENT WINGWALLS OR CIP RETAINING WALLS

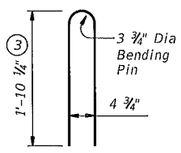


ON BRIDGE SLAB

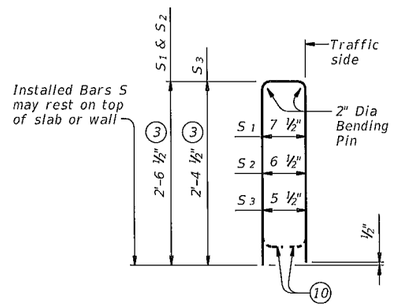
SECTIONS THRU RAIL



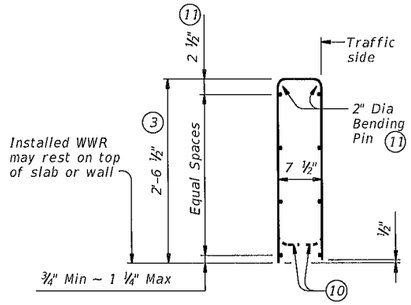
BARS U (#4)



BARS WU (#4)

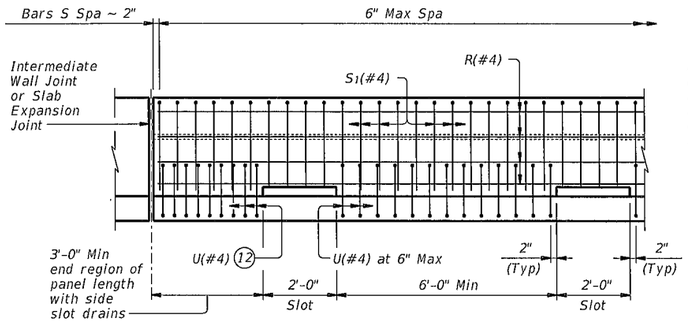


BARS S (#4)



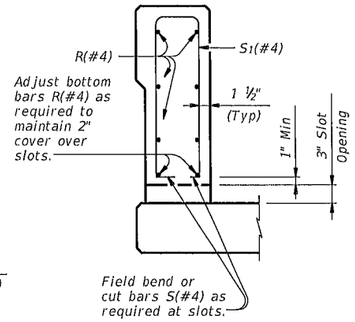
OPTIONAL WELDED WIRE REINFORCEMENT (WWR)

DESCRIPTION	LONGITUDINAL WIRES	VERTICAL WIRES
Minimum (Cumulative Total) Wire Area	1.067 Sq In.	0.267 Sq In. per Ft
	No. of Wires	Spacing
Minimum	8	4"
Maximum	10	8"
Maximum Wire Size Differential	The smaller wire must have an area of 40% or more of the larger wire.	



OPTIONAL SIDE SLOT DRAIN DETAIL

Note: Side Slot Drains may be used where shown elsewhere on the plans or as directed by the Engineer. Drains should not be placed over railroad tracks, lower roadways, or sidewalks. When this rail is used as a separator between a roadway surface and a sidewalk surface, side drain slots will not be permitted.



SECTION THRU OPTIONAL SIDE SLOT DRAIN

(3) Increase 2" for structures with overlay.

(7) 5 ¼" when vertical reinforcing has closer clear cover over horizontal reinforcing in abutment wingwalls or retaining walls on traffic side of wall.

(8) As an aid in supporting reinforcement, additional longitudinal bars may be used in the slab with the approval of the Engineer. Such bars will be furnished at the Contractors expense.

(9) Top longitudinal slab bar may be adjusted laterally 3" plus or minus to tie reinforcing.

(10) Bend or cut as required to clear drain slots.

(11) No longitudinal wires may be in top center of cage.

(12) Space U(#4) bars at 4" Max when end region of panel length is less than 6'-0" to side slot drain. Space U(#4) bars at 6" Max when end region of panel length is 6'-0" and greater to side slot drain.

CONSTRUCTION NOTES:

This railing may be constructed with slip-forms when approved by the Engineer, with equipment approved by the Engineer. Sensor control for both line and grade must be provided. Tack welding to provide bracing for slip-form operations is acceptable. Welding can be performed at a minimum spacing of 3 ft between the cage and the anchorage. It is permissible to weld to U, WU and S bars at any location on the cage. If increased bracing is needed, additional anchorage devices must be added and welding must be performed in the upper two thirds of the cage.

Face of rail and parapet must be vertical transversely unless otherwise shown in the plans or approved by the Engineer.

Chamfer all exposed concrete corners.

MATERIAL NOTES:

Galvanize all steel components except reinforcing steel unless otherwise shown on plans.

Provide Class "C" concrete. Provide Class "C" (HPC) if required elsewhere.

Provide Grade 60 reinforcing steel.

Epoxy coat all rail reinforcement if slab bars are epoxy coated.

Deformed Welded Wire Reinforcement (WWR) (ASTM A1064) of equal size and spacing may be substituted for Bars U and WU unless noted otherwise. Deformed WWR (ASTM 1064) may be substituted for Bars R and S, as shown. Combinations of reinforcing steel and WWR or configurations of WWR other that shown are permitted if conditions in the table are satisfied. Provide the same laps as required for reinforcing bars.

Provide bar laps, where required, as follows:

Uncoated ~ #4 = 1'-5"
Epoxy coated ~ #4 = 2'-1"

GENERAL NOTES:

This rail has been evaluated and accepted to be of equal strength to railings with like geometry, which have been crash tested to meet MASH TL-3 criteria. This rail can be used for speeds of 50 mph and greater when a TL-3 rated guard fence transition is used. When a TL-2 rated guard fence transition is used, this rail can only be used for speeds of 45 mph and less.

Do not use this railing on bridges with expansion joints providing more than 5" movement.

Rail anchorage details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.

Shop drawings are not required for this rail.

Average weight of railing with no overlay is 370 plf.

Cover dimensions are clear dimensions, unless noted otherwise.

Reinforcing bar dimensions shown are out-to-out of bar.

Texas Department of Transportation

Bridge Division Standard

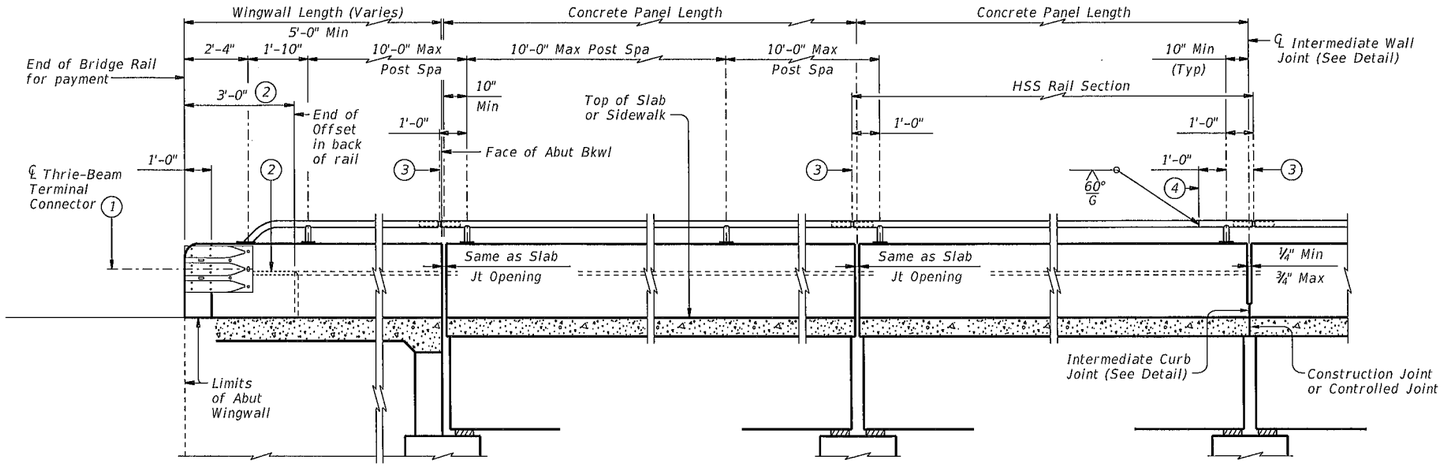
TRAFFIC RAIL

TYPE T221

FILE: rlstd004.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: TxDOT
©TxDOT July 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS				
03-16: Added MASH TL-3 to General Notes.	DIST	COUNTY		SHEET NO.

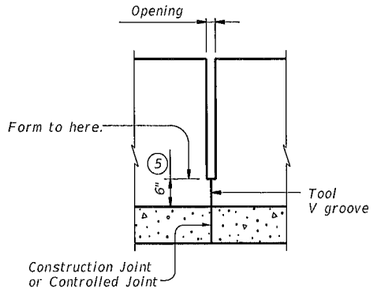
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DATE:
FILE:



AT ABUTMENTS | AT BENTS WITH SLAB EXP JOINTS | AT BENTS WITHOUT SLAB EXP JOINTS

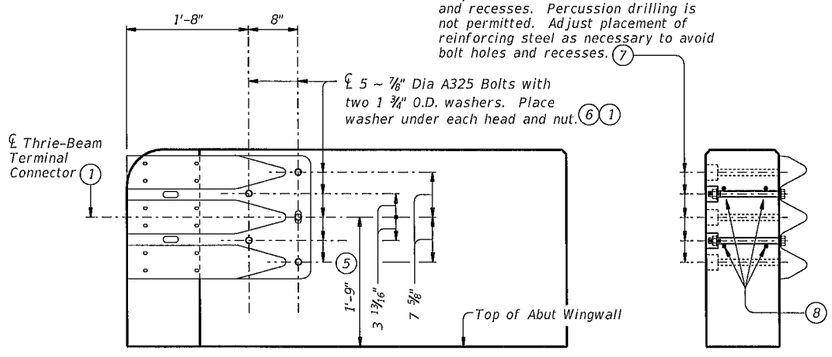
ROADWAY ELEVATION OF RAIL



INTERMEDIATE WALL JOINT DETAIL

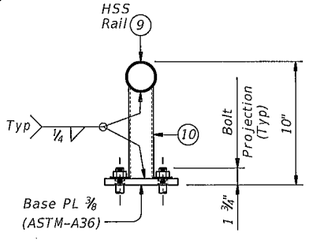
Provide at all interior bents without slab expansion joints. Location independent of HSS rail splices.

1. Terminal Connectors and associated hardware are to be paid for under the Item "Metal Beam Guard Fence". Attach Metal Beam Guard Fence Transitions to the bridge rail and extend along the embankment unless otherwise shown in the plans.
2. Back of rail offset may, with Engineer's approval, be continued to the end of the railing.
3. ℄ Exp Joint or Splice Joint as required.
4. One shop splice per HSS rail section is permitted with minimum 85 percent penetration. The weld may be square groove, or single vee groove. Grind smooth.
5. Increase 2" for structures with overlay.
6. Provide bolts of sufficient length to extend ½" to ¾" beyond nut.
7. Bolt recesses are only required when pedestrian sidewalks are adjacent to back of rail.
8. Place 4 additional Bars R(#4) 3'-8" in length inside Bars S(#4) and centered 2'-0" from end of rail when Terminal Connections are required. Field bend as needed.
9. HSS 2.875 x 0.203
10. HSS 2.375 x 0.154
11. ⅜" Dia Hole in bottom of HSS rail (Minimum 1 hole between posts ~ Typ)

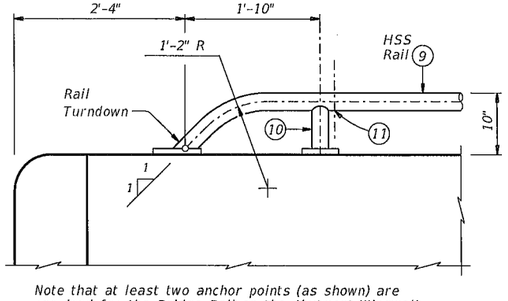


ELEVATION | SECTION

TERMINAL CONNECTION DETAILS

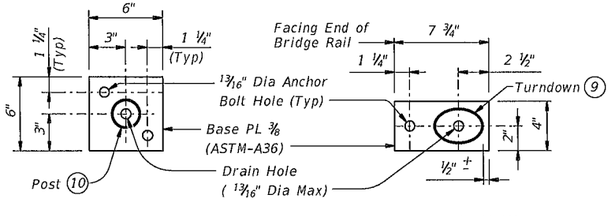


TRANSVERSE SECTION



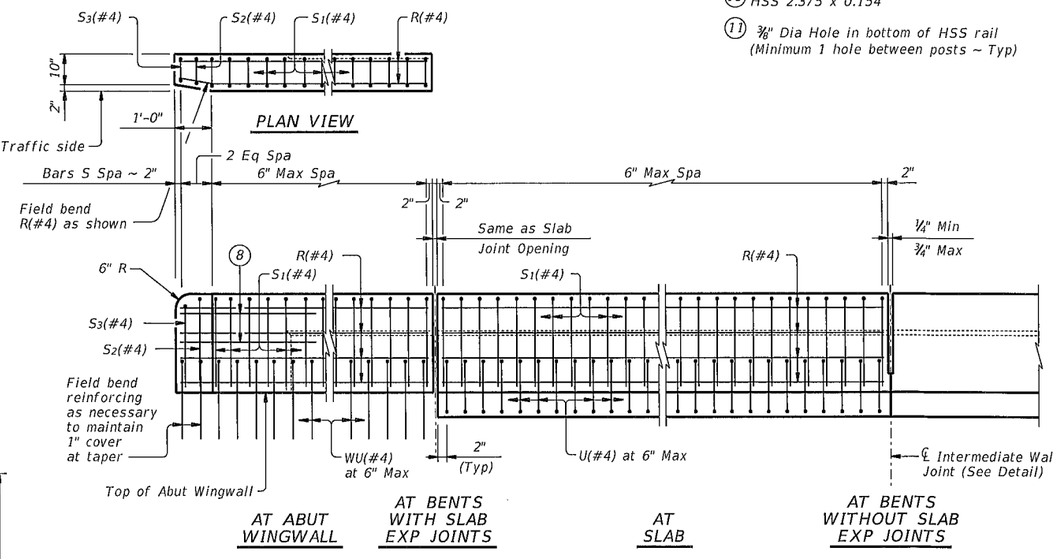
Note that at least two anchor points (as shown) are required for the Bridge Rail on the Abutment Wingwall. Longer Wingwalls may require more than two Rail anchorages.

HSS RAIL TERMINAL DETAIL



POST BASE PLATE PLAN | RAIL TURNDOWN BASE PLATE PLAN

HSS RAIL DETAILS



AT ABUT WINGWALL | AT BENTS WITH SLAB EXP JOINTS | AT SLAB | AT BENTS WITHOUT SLAB EXP JOINTS

ELEVATION SHOWING TYPICAL REINFORCING PLACEMENT

(Showing without raised sidewalk)

SHEET 1 OF 3

Texas Department of Transportation

Bridge Division Standard

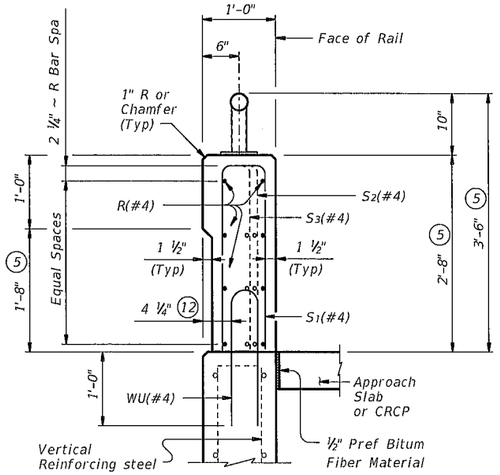
COMBINATION RAIL

TYPE C221

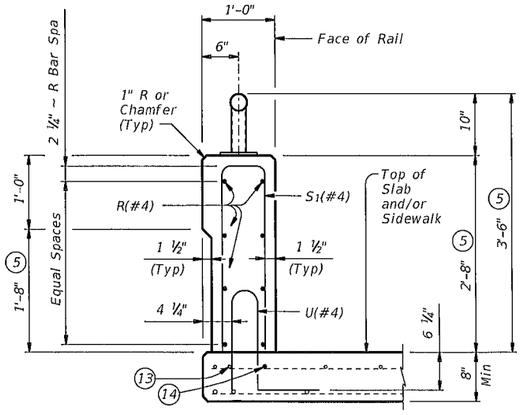
FILE: rlstd018.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: JMH
©TxDOT July 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS 03-16: Removed shop drawing note. Added MASH TL-3 in General Notes. Added additional epoxy classes.	DIST	COUNTY		SHEET NO.

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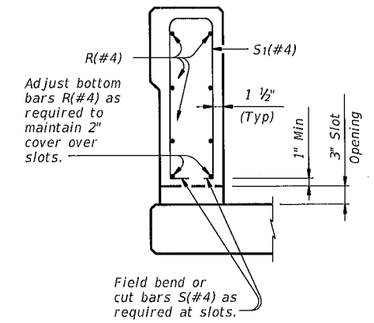


ON ABUTMENT WINGWALLS OR CIP RETAINING WALLS

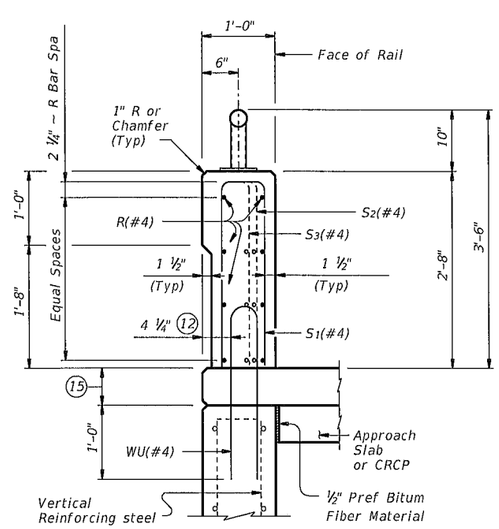


ON BRIDGE SLAB

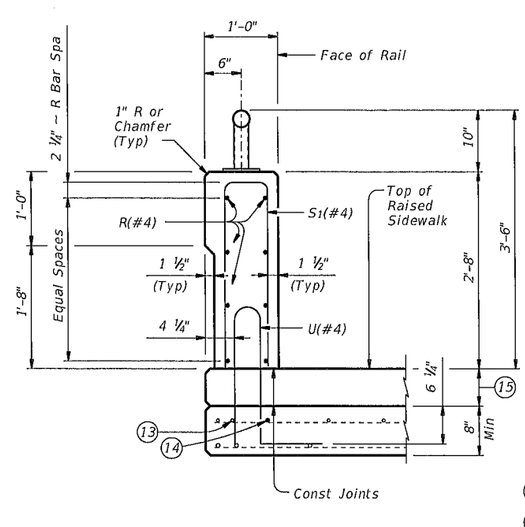
SECTIONS THRU RAIL WITHOUT RAISED SIDEWALK



SECTION THRU OPTIONAL SIDE SLOT DRAIN

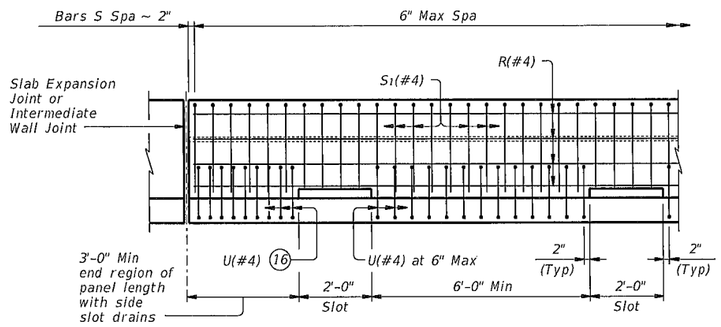


ON ABUTMENT WINGWALLS OR CIP RETAINING WALLS



ON BRIDGE SLAB

SECTIONS THRU RAIL WITH RAISED SIDEWALK



OPTIONAL SIDE SLOT DRAIN DETAIL

Note: Side Slot Drains may be used where shown elsewhere on the plans or as directed by the Engineer. Drains should not be placed over railroad tracks, lower roadways, or sidewalks. When this rail is used as a separator between a roadway surface and a sidewalk surface, side drain slots will not be permitted.

(5) Increase 2" for structures with overlay.

(12) 5 ¼" when vertical reinforcing has closer clear cover over horizontal reinforcing in abutment wingwalls or retaining walls on traffic side of wall.

(13) As an aid in supporting reinforcement, additional longitudinal bars may be used in the slab with the approval of the Engineer. Such bars must be furnished at the Contractors expense.

(14) Top longitudinal slab bar may be adjusted laterally 3" plus or minus to tie reinforcing.

(15) Raised Sidewalk

(16) Space U(#4) bars at 4" Max when end region of panel length is less than 6'-0" to side slot drain. Space U(#4) bars at 6" Max when end region of panel length is 6'-0" and greater to side slot drain.

Texas Department of Transportation

Bridge Division Standard

COMBINATION RAIL

TYPE C221

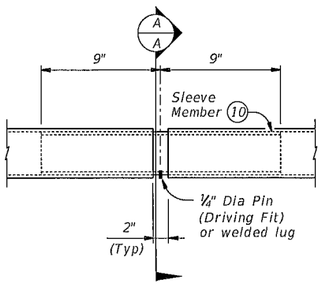
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©TxDOT July 2014	CONT	SECT	JOB	HIGHWAY	
REVISIONS 03-16: Removed shop drawing note. Added MASH TL-3 in General Notes. Added additional epoxy classes.	DIST	COUNTY		SHEET NO.	

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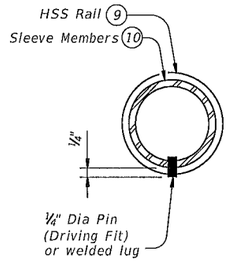
DATE:
FILE:

RAIL DATA FOR HORIZONTAL CURVES

	RADIUS TO FACE OF RAIL	MAX CHORD LENGTH	CONSTRUCT OR FABRICATE
HSS Rail	Over 2800'	29'-0"	Straight rail panels
	Over 1400' thru 2800'	14'-6"	To required radius or to chords shown
	Over 700' thru 1400'	7'-3"	
	Thru 700'	Zero	To required radius

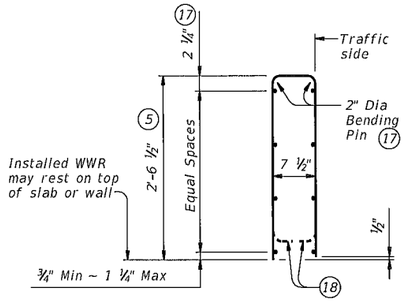


AT SPLICE OR EXP JTS



SECTION A-A

PIPE SPLICE DETAILS



OPTIONAL WELDED WIRE REINFORCEMENT (WWR)

DESCRIPTION	LONGITUDINAL WIRES	VERTICAL WIRES
Minimum (Cumulative Total) Wire Area	1.067 Sq In.	0.267 Sq In. per Ft
	No. of Wires	Spacing
Minimum	8	4"
Maximum	10	8"
Maximum Wire Size Differential	The smaller wire must have an area of 40% or more of the larger wire.	

CONSTRUCTION NOTES:

This railing may be constructed with slip-forms when approved by the Engineer, with equipment approved by the Engineer and when epoxy adhesive anchor bolts are used. Slip-forming parapet is not allowed if anchor bolts are cast with parapet wall. Provide sensor control for both line and grade. Tack welding to provide bracing for slip-form operations is acceptable. Welding can be performed at a minimum spacing of 3 ft between the cage and the anchorage. It is permissible to weld to U, WU and S bars at any location on the cage. If increased bracing is needed, additional anchorage devices must be added and welding must be performed in the upper two thirds of the cage.

Face of rail, parapet must be plumb unless otherwise approved by the Engineer. HSS rail posts must be square to the top of parapet. Use epoxy mortar under post base plates if gaps larger than $\frac{1}{16}$" exist.

Round or chamfer exposed edges of HSS rail and HSS rail posts to approximately $\frac{1}{16}$" by grinding.

At the contractor's option anchor bolts may be cast with the parapet (See Cast-in-Place Anchor Bolt Options).

HSS rail sections must not include less than two posts, and no more than four (except at Abutments).

Chamfer all parapet exposed corners.

MATERIAL NOTES:

Galvanize all steel components except reinforcing steel unless otherwise shown on plans.

Provide Class "C" concrete. Povide Class "C" (HPC) if required elsewhere.

Provide Grade 60 reinforcing steel.

Epoxy coat all rail reinforcement if slab bars are epoxy coated.

Deformed Welded Wire Reinforcement (WWR) (ASTM A1064) of equal size and spacing may be substituted for Bars U and WU unless noted otherwise. Deformed WWR (ASTM 1064) may be substituted for Bars R and S, as shown. Combinations of reinforcing steel and WWR or configurations of WWR other that shown are permitted if conditions in the table are satisfied. Provide the same laps as required for reinforcing bars.

Provide ASTM-A1085 or A500 Grade B or A53 Grade B for all HSS.

Anchor bolts must be $\frac{5}{8}$" Dia ASTM A36 fully threaded rods with one hex nut and one hardened steel washer at each bolt. Embed threaded rods into parapet wall with a Type III, Class C, D, E, or F epoxy anchorage system. Minimum embedment depth is 3". Anchorage system chosen must be able to achieve an ultimate tensile resistance of 8.4 kips per bolt. The Contractor must provide evidence to the Engineer that this can be achieved. Evidence of adequate tensile resistance can be based on the manufacturer's published values of ultimate tensile strength (anchor spacing and edge distance must be accounted for). Anchor installation, including hole size, drilling, and clean-out, must be in accordance with the manufacturer's instructions.

Optional cast-in-place anchor bolts must be $\frac{5}{8}$" Dia ASTM A307 Grade A bolts (or A36 threaded rods with one tack welded hex nut each) with one hex nut and one hardened steel washer at each bolt.

Provide bar laps, where required, as follows:

Uncoated ~ #4 = 1'-5"
Epoxy coated ~ #4 = 2'-1"

GENERAL NOTES:

This rail has been evaluated and accepted to be of equal strength to railings with like geometry, which have been crash tested to meet MASH TL-3 criteria. This rail can be used for speeds of 50 mph and greater when a TL-3 rated guard fence transition is used. When a TL-2 rated guard fence transition is used, this rail can only be used for speeds of 45 mph and less.

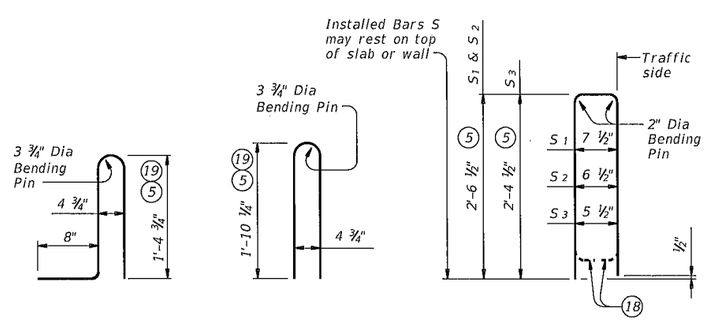
Do not use this railing on bridges with expansion joints providing more than 5" movement.

Rail anchorage details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.

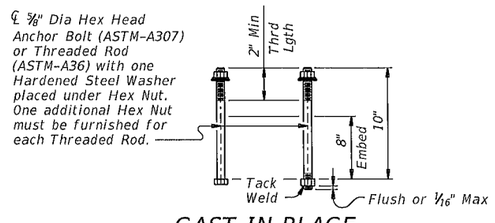
Submit erection drawings showing panel lengths, rail post spacing, and anchor bolt setting to the Engineer for approval.

Average weight of railing with no overlay: 380 plf (total)
370 plf (Conc)
10 plf (Steel)

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



BARS U (#4) BARS WU (#4) BARS S (#4)



CAST-IN-PLACE ANCHOR BOLT OPTIONS (20)

(5) Increase 2" for structures with overlay.

(9) HSS 2.875 x 0.203

(10) HSS 2.375 x 0.154

(17) No longitudinal wires may be in top center of cage.

(18) Bend or cut as required to clear drain slots.

(19) For raised sidewalks, add sidewalk height to total bar height. Use sidewalk height at rail's location.

(20) See "Material Notes" for anchor bolt information.

SHEET 3 OF 3

Texas Department of Transportation | Bridge Division Standard

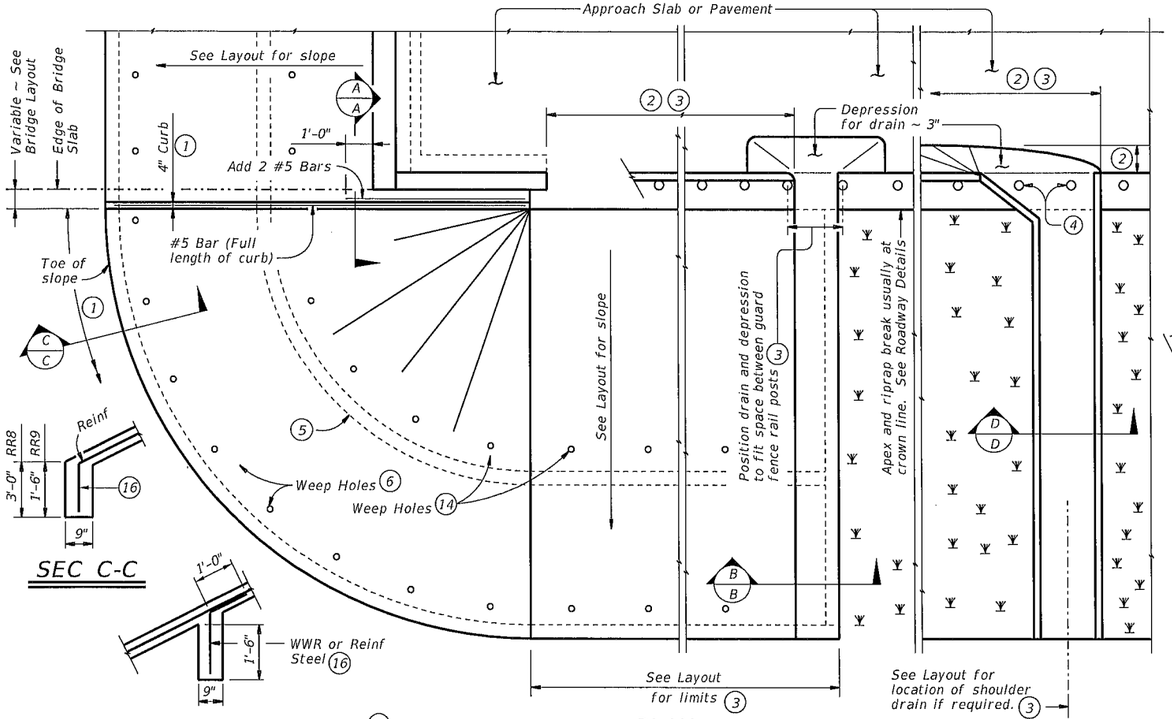
COMBINATION RAIL

TYPE C221

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REVISIONS				
03-16: Removed shop drawing note. Added MASH TL-3 in General Notes. Added additional epoxy classes.	DIST	COUNTY		SHEET NO.

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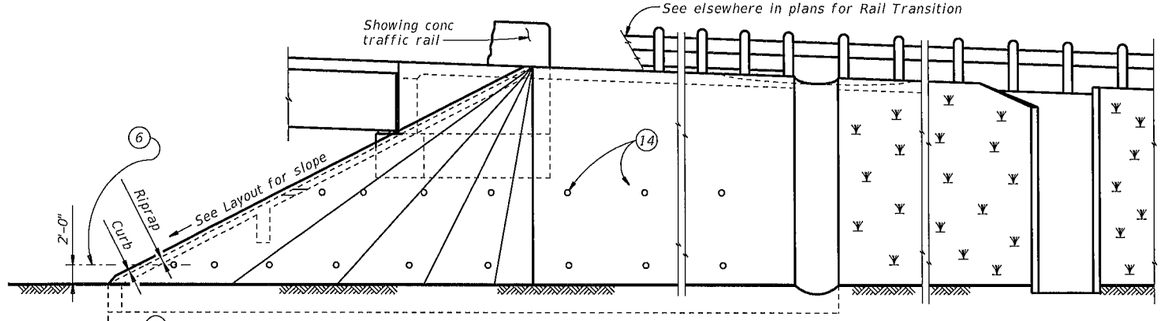
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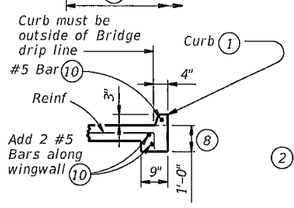
PLAN

SEC C-C

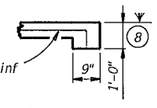
INTERMEDIATE TOEWALL (5)



ELEVATION

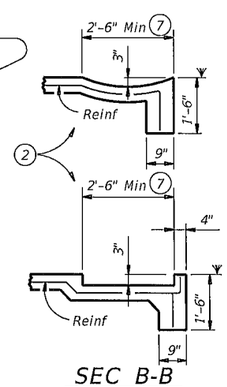


SEC A-A



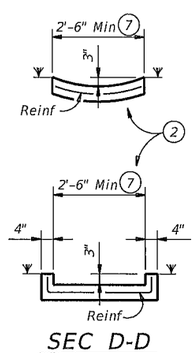
SEC B-B

(No Drain)



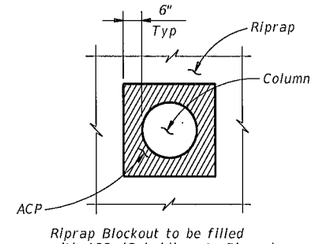
SEC B-B

(Shoulder Drain integral with riprap)



SEC D-D

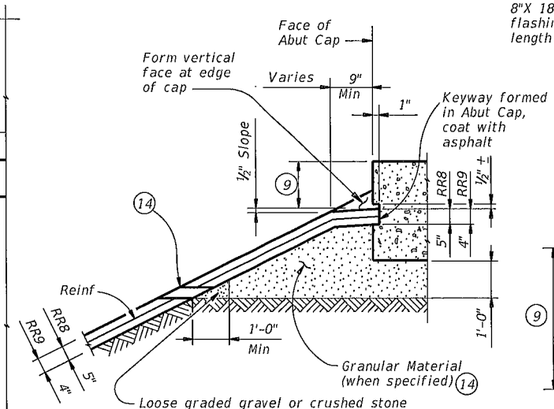
(Shoulder Drain)



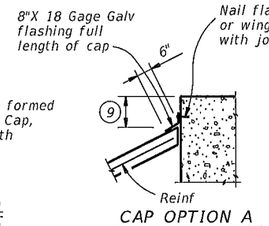
Riprap Blockout to be filled with ACP. (Subsidiary to Riprap)

RIPRAP DETAIL AT COLUMNS

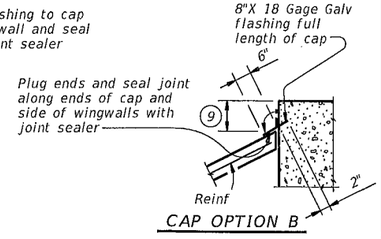
(As directed by the Engineer)



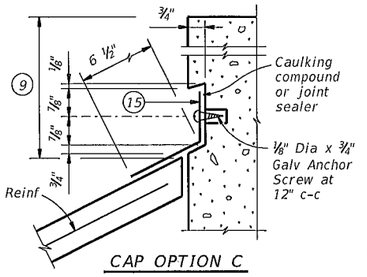
SHOWING KEYWAY OPTION



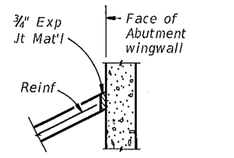
CAP OPTION A



CAP OPTION B

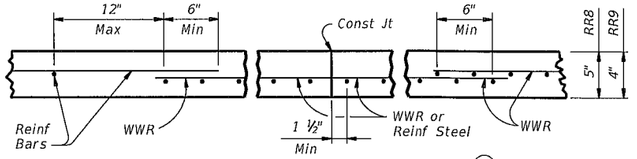


CAP OPTION C



SECT THRU RIPRAP AT WINGWALL (12)

SECTIONS THRU RIPRAP AT CAP (11)



REINFORCEMENT DETAILS (13)

See General Notes for optional sythetic fiber reinforcement.

(1) When riprap is shown extended around header on layout, extend slab and toewall as shown and eliminate 4" curb.

(2) Limits and configuration of drains and depressions are as shown elsewhere in plans or as directed by the Engineer.

(3) Location of shoulder drain must consider limitations imposed by rail transition. Do not locate shoulder drains at expansion joints between approach slab and concrete pavement.

(4) See details elsewhere in plans for installation of guard fence posts through concrete riprap.

(5) Provide intermediate toewall only when designated elsewhere in the plans or included in the specifications.

(6) Provide lower level of 2" Dia weep holes at 10' c-c backed by 1 CF packet of gravel and galvanized hardware cloth at all locations unless directed by the Engineer to eliminate.

(7) Use wider or other drain configurations if shown elsewhere in plans or if directed by the Engineer.

(8) Wall extension may be reduced or modified if approved by the Engineer. Increase wall extension to 1'-6" whenever the optional intermediate toewall is called for in the plans.

(9) Top of cap to top of riprap dimension varies as directed by the Engineer. Should be 9" Min for beam/slab type bridges and 1'-6" for slab span, box beam, or slab beam bridges.

(10) #5 bars shown are required even when synthetic fiber reinforcing option is selected.

(11) Provide sealing option for joint between the face of cap and riprap as designated by the Engineer or as shown elsewhere on plans.

(12) Flashing (shown in Cap Option A) may be used at wingwall in addition to Exp Jt Mat'l if shown on plans or directed by the Engineer.

(13) Provide #3 reinforcing bars at 18" Spa c-c. Provide Welded Wire Reinforcement (WWR) as 6x6-D3xD3. Combinations of WWR and reinforcing bars may be used if both are permitted. Use lap splices of a minimum 6 inches, measured from the transverse wire of WWR, and the ends of reinforcing bars.

(14) If granular material is specified, provide upper level of 2" Dia weep holes at 10' c-c backed by galvanized hardware cloth.

(15) 8" x 18 Gage Galv Sheet Metal

(16) Provide WWR or #3 bars, with 1'-0" extension into slope.

GENERAL NOTES:

Provide Class "B" concrete with a minimum compressive strength of 2,000 psi unless noted elsewhere in plans.

Provide Grade 60 reinforcing steel.

Provide synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Install construction joints or grooved joints extending the full slant slope height at intervals of approximately 20 feet unless otherwise directed by the Engineer.

Hardware cloth, loose grade stone behind weep holes, flashing, or other sealing material are subsidiary to the bid item "Riprap".

Use reinforcing bars, deformed Welded Wire Reinforcing (WWR), or any suitable combination of both types for riprap reinforcing, unless specified elsewhere in the plans.

See Layout for limits of riprap.

RR8 is to be used on stream crossings.

RR9 is to be used on other embankments.

FOR CONTRACTOR'S INFORMATION ONLY:
5" of RR8 = 0.015 CY/SF
4" of RR9 = 0.012 CY/SF
#3 Reinf at 18" c-c = 0.501 Lbs/SF
6x6-D3xD3 = 0.408 Lbs/SF

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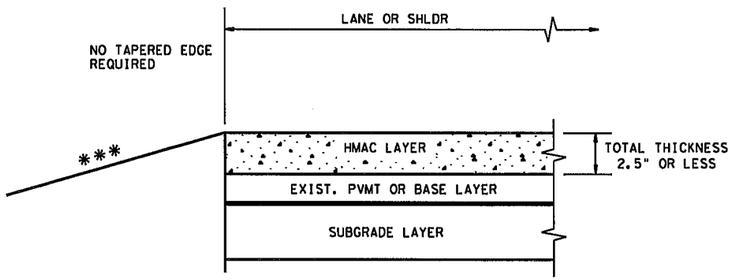
Bridge Division Standard

CONCRETE RIPRAP AND SHOULDER DRAINS EMBANKMENTS AT BRIDGE ENDS (TYPES RR8 & RR9)

CRR

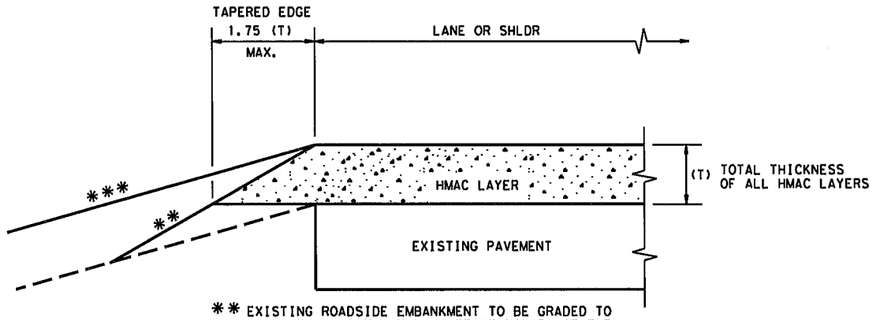
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REVISIONS	DIST	COUNTY		SHEET NO.

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*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

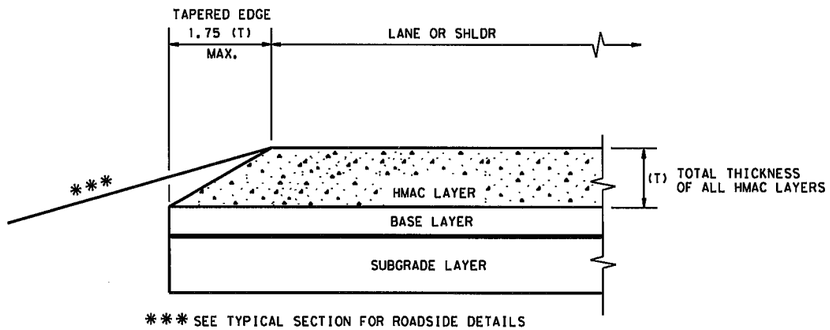
CONDITION - 1
THIN HMAC SURFACES OR HMAC OVERLAY WITH THICKNESS OF 2.5" OR LESS



** EXISTING ROADSIDE EMBANKMENT TO BE GRADED TO PRODUCE A SMOOTH LEVEL SURFACE FOR PLACEMENT OF TAPERED EDGE. THIS WORK IS SUBSIDIARY TO THE VARIOUS BID ITEMS.

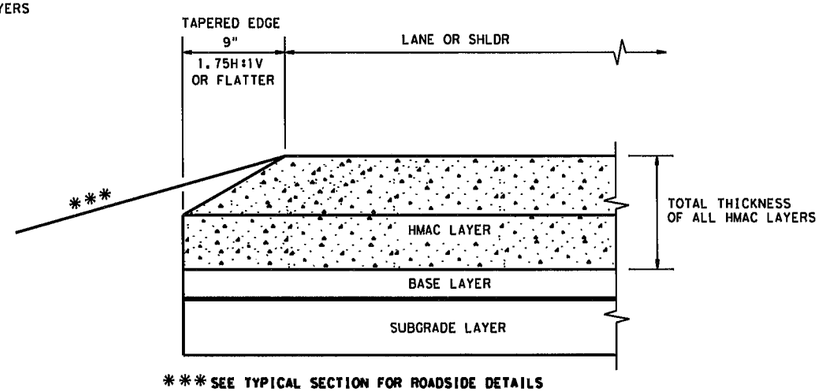
*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 2
OVERLAY OF EXISTING PAVEMENT HMAC THICKNESS 2.5" TO 5"



*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 3
NEW OR RECONSTRUCTED PAVEMENT HMAC THICKNESS 2.5" TO 5"



*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 4
NEW OR RECONSTRUCTED PAVEMENT HMAC THICKNESS 5" OR GREATER

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.

(NOT TO SCALE)

Texas Department of Transportation — Design Division Standard

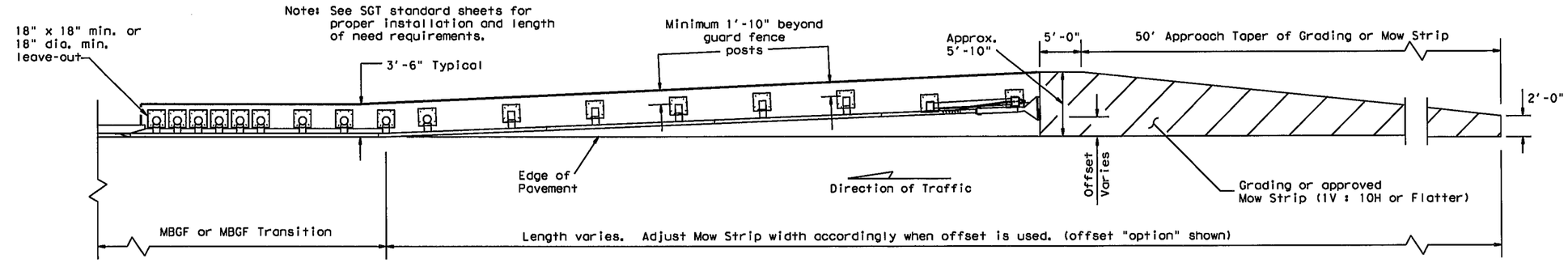
TAPERED EDGE DETAILS HMAC PAVEMENT

TE(HMAC)-11

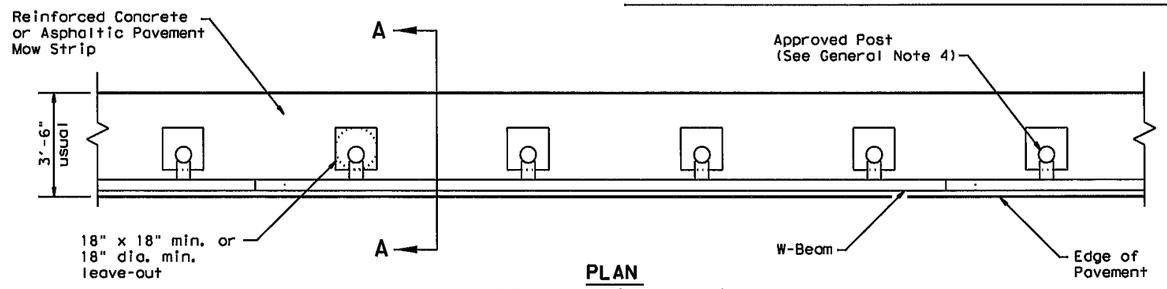
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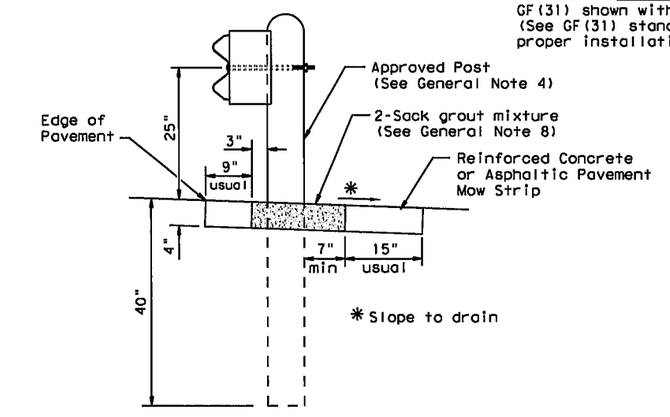


GRADING AND MOW STRIP AT GUARDRAIL END TREATMENTS



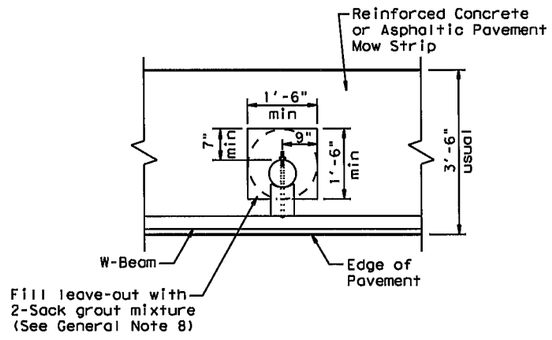
PLAN

GF(31) shown with Mow Strip (See GF(31) standard sheet for proper installation)



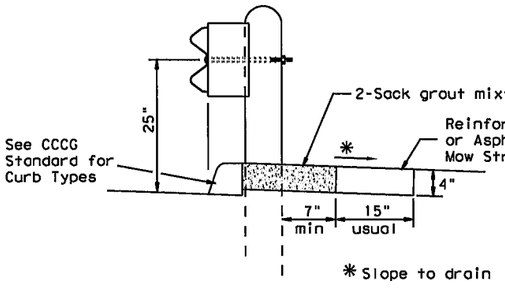
SECTION A-A

Typical



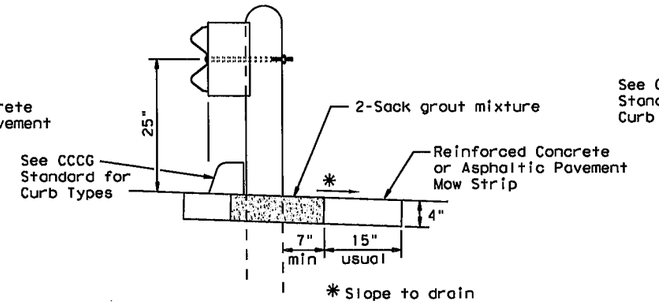
MOW STRIP DETAIL

Reinforced Concrete or Asphaltic Pavement Mow Strip with 18" x 18" or 18" dia. minimum leave-out.



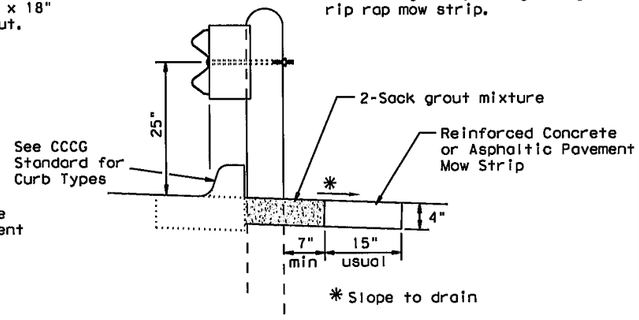
CURB OPTION (1)

This option will increase the post embedment through out the system.



CURB OPTION (2)

Curb shown on top of mow strip



CURB OPTION (3)

Note: Site Condition(s)

Site conditions may exist where grading is required for the proper installation of metal guard fence and end treatments.

Approach grading or mow strip may be decreased or eliminated, as directed by the Engineer.

GENERAL NOTES

1. This mow strip design is for use with metal beam guard fence, guard fence transitions, and guard fence end treatments (See SGT standards for proper SGT installation).
2. Mow strips shall be asphaltic pavement or reinforced concrete (wire mesh or synthetic fiber), as shown on the plans and will be paid for under the pertinent bid item. Asphaltic pavement shall meet the requirements of the item, and be placed in accordance with the pertinent bid item as shown in the plans. Reinforced concrete shall be placed in accordance with Item 432, "Riprap." The use of the synthetic fiber in lieu of steel reinforcing is acceptable, provided the fiber producer is on the Department Material Producer List (MPL), maintained by TxDOT, Construction Division.
3. The leave-out behind the post shall be a minimum of 7".
4. The type of approved post will be as shown in the plans. See the applicable standard sheets for additional details and information.
5. Other curb placement options may be used. Curbs are not considered part of the mow strip and will be paid for under other pertinent bid item.
6. Thickness of the mow strip will be 4".
7. The limits of payment for asphaltic pavement or reinforced concrete will include leave-outs for the posts.
8. The leave-outs shall be filled with no more than a 2-sack grout mixture (1 part cement, 5 parts water, and 14 parts sand by volume) with a 28-day compressive strength of approximately 120 psi or less. Provide grout of a consistency that will flow into and completly fill all voids. Due to auger size, larger leave-out dimensions are acceptable from both an impact performance and maintenance repair standpoint (Suggested Maximum leave-out of 20"). Payment for furnishing and placing the grout mixture will be subsidiary to the pay item of rip rap mow strip.

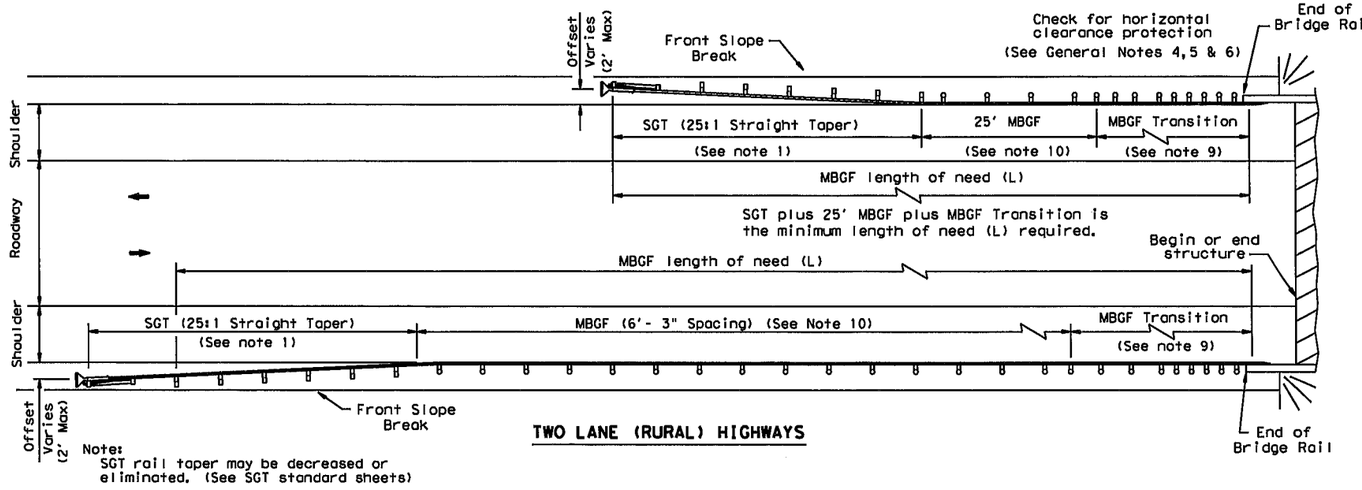
Texas Department of Transportation — Design Division Standard

METAL BEAM GUARD FENCE
(MOW STRIP)
GF(31)MS-17

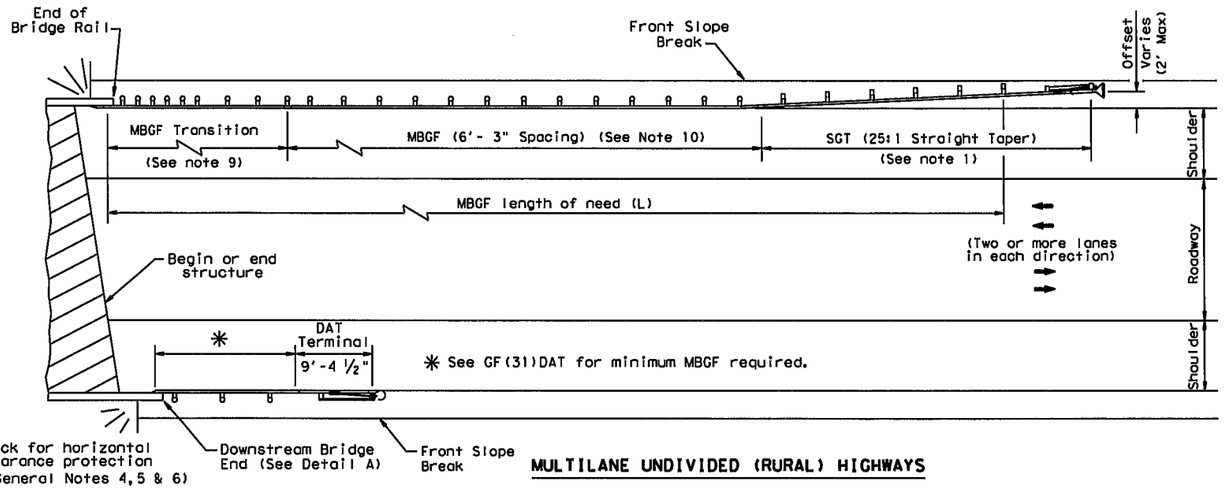
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Revised 12, 2017 KM	DIST	COUNTY		SHEET NO.

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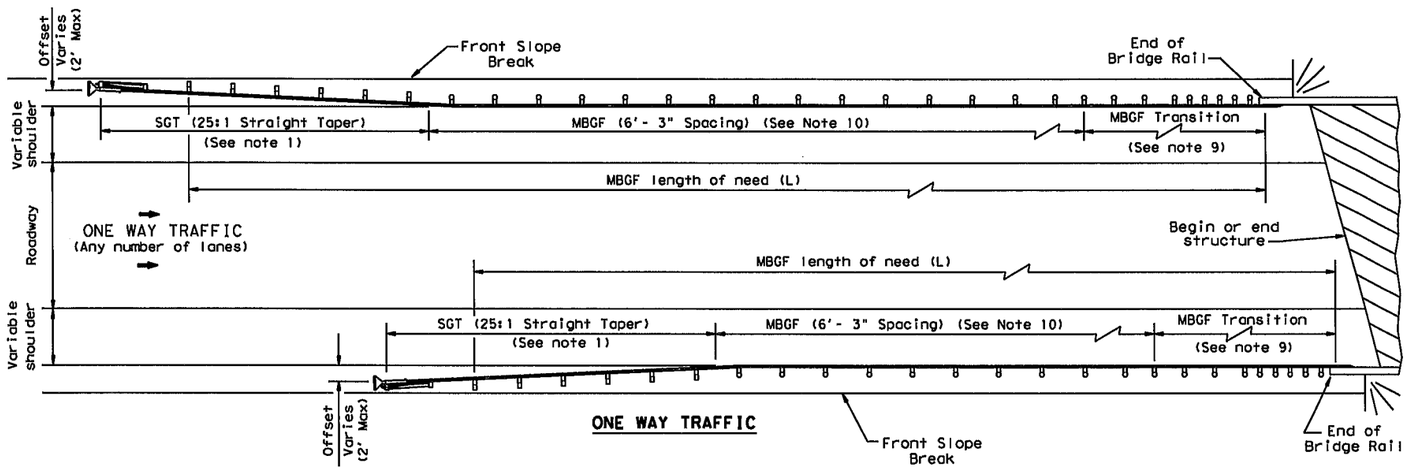
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TWO LANE (RURAL) HIGHWAYS



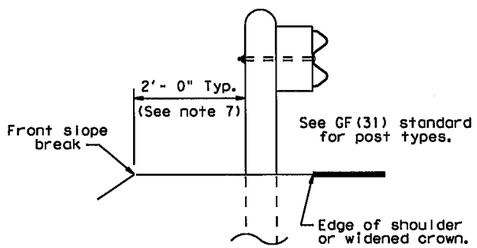
MULTILANE UNDIVIDED (RURAL) HIGHWAYS



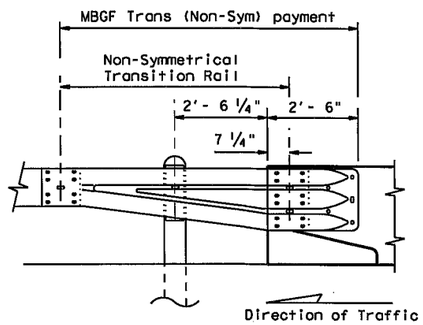
ONE WAY TRAFFIC

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 are as shown in the plans.
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 category.
4. MBGF may not be required to shield departure end of bridge unless other obstacles within the horizontal clearance limits or opposing traffic indicate a MBGF consideration.
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, See Detail A)
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 rehabilitation 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 in the approach direction.
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.



TYPICAL CROSS SECTION AT MBGF



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

DETAIL A

Showing Downstream Rail Attachment

Texas Department of Transportation — Design Division Standard

BRIDGE END DETAILS

(METAL BEAM GUARD FENCE APPLICATIONS TO RIGID RAILS)

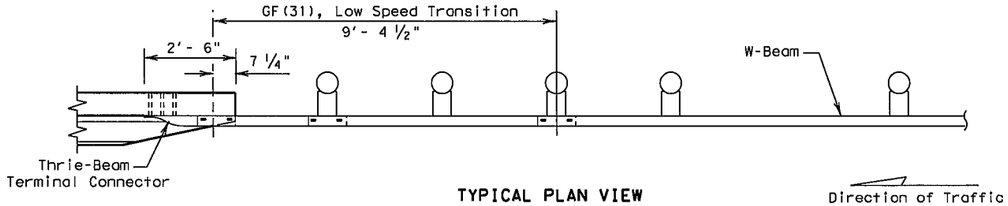
BED-14

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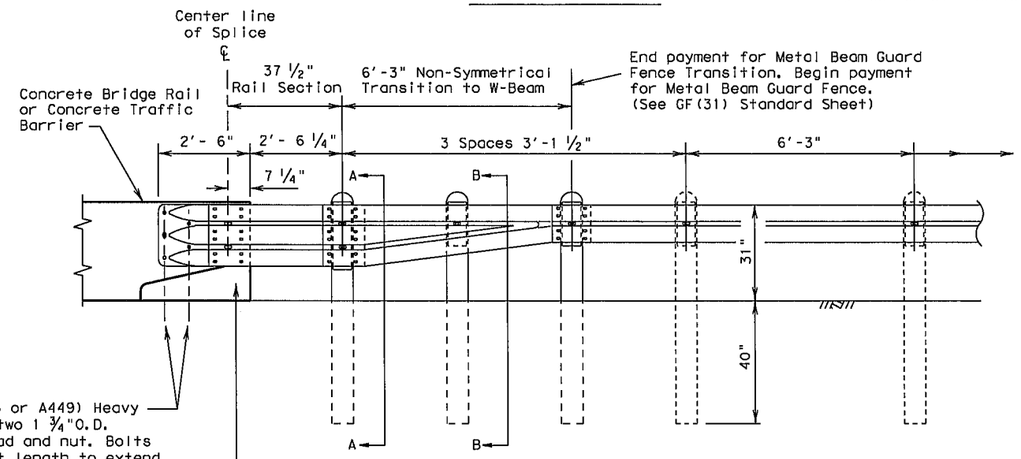
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TYPICAL PLAN VIEW



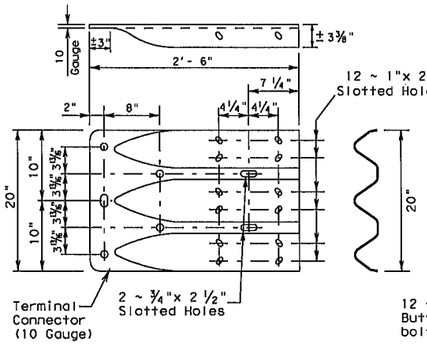
TYPICAL ELEVATION VIEW

GENERAL NOTES

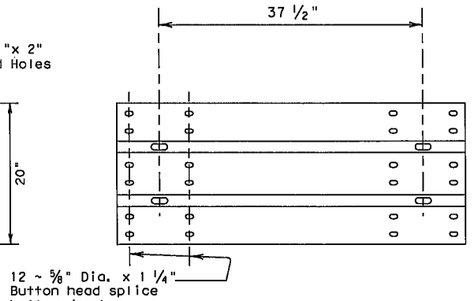
1. The type of post (round wood post, rectangular wood post, or steel post) will be as shown in the plans. The exact position of transitions shall be as shown in the plans or as directed by the Engineer.
2. Rail element shall meet the requirements of Item 540, "Metal Beam Guard Fence" except as modified in the plans.
3. Button head "post" bolts (ASTM A307) shall be of sufficient length to extend through the full thickness of the nut and Type A 1 ¾" O.D. washer and not more than 1" beyond it. Button head "splice" bolts (ASTM A307) are ⅝" x 1 ¼" with ⅝" double recessed nuts (ASTM A563).
4. Fittings (bolts, nuts, and washers) shall be galvanized in accordance with Item 445, "Galvanizing." Fittings shall be subsidiary to the bid item requiring construction of the transition.
5. Crown will be widened to accommodate transitions.
6. If solid rock is encountered. See the GF(31) standard sheet for the proper installation guidance.
7. Posts shall not be set in concrete, of any depth.
8. Unless otherwise shown in the plans, a composite material post and/or block that meets the requirements of DMS-7210, "Composite Material Posts and Blocks for Metal Beam Guard Fence" may be substituted for posts and/or blocks of similar dimensions. The Construction Division, TxDOT, maintains a Material Producer List (MPL) for producers of materials conforming to DMS-7210. Only producers on the MPL can furnish composite material posts and/or blocks.
9. Refer to GF(31) standard sheet for additional details.

TERMINAL CONNECTION NOTE

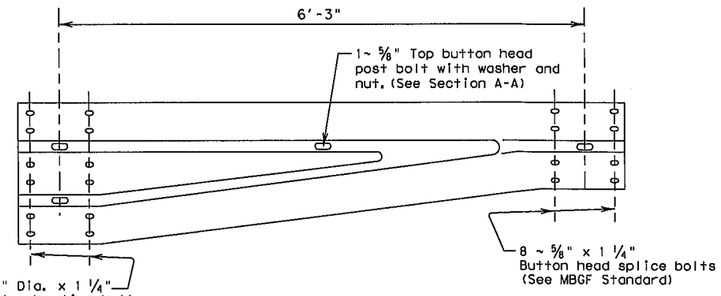
To ensure a stable connection. (12) Rectangular Washers (FWR03) are required under the recessed nuts at the Terminal Connection splice.



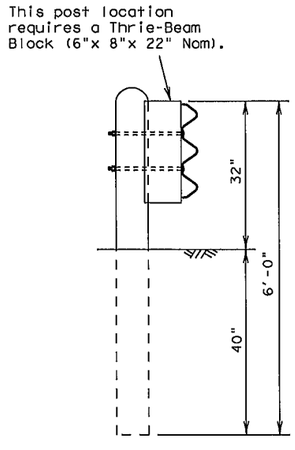
THRIE-BEAM TERMINAL CONNECTION
(See Terminal Connection Note)



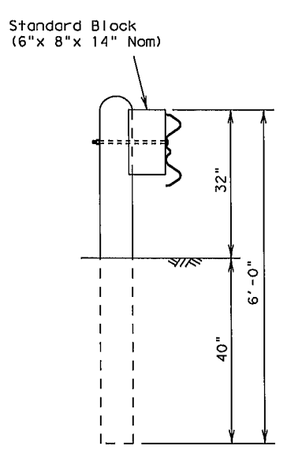
THRIE-BEAM (3'- 1 ½") (10 GA.) ELEMENT SECTION



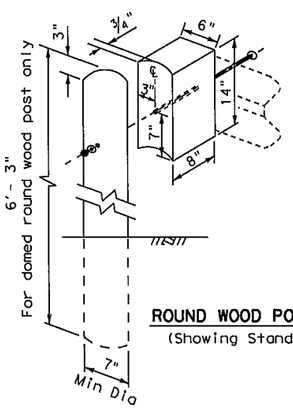
NON-SYMMETRICAL (10 GA.) TRANSITION SECTION



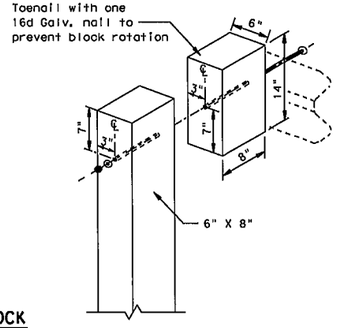
SECTION A-A



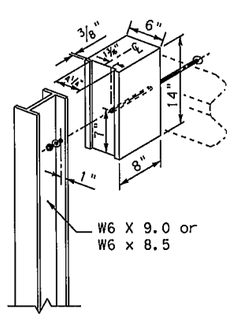
SECTION B-B



ROUND WOOD POST & BLOCK
(Showing Standard Block)



WOOD BLOCK TO RECTANGULAR WOOD POST



STEEL POST & BLOCK
(Showing Standard Block)

Texas Department of Transportation — Design Division Standard

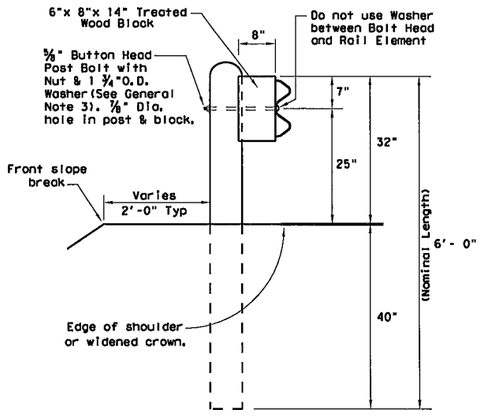
METAL BEAM GUARD FENCE TRANSITION (TL-2)
(Low Speed Transition)

GF(31)TL2-11

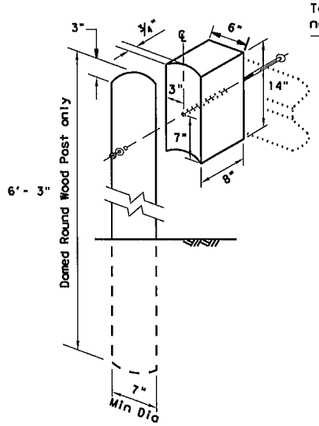
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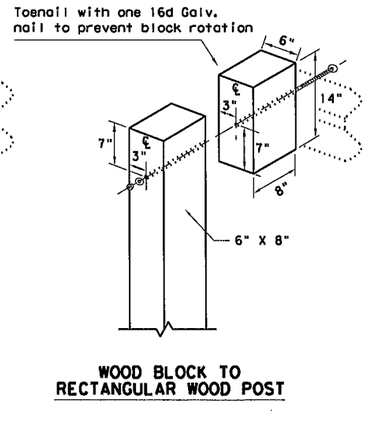
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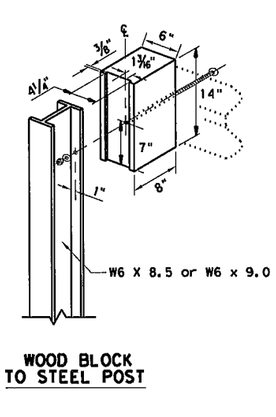
TYPICAL POST



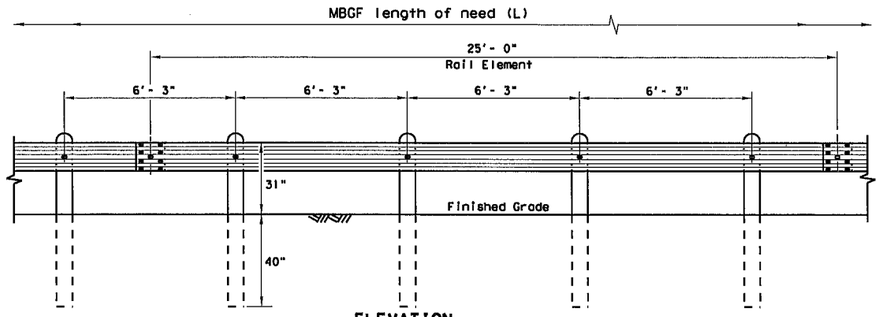
WOOD BLOCK TO ROUND WOOD POST



WOOD BLOCK TO RECTANGULAR WOOD POST



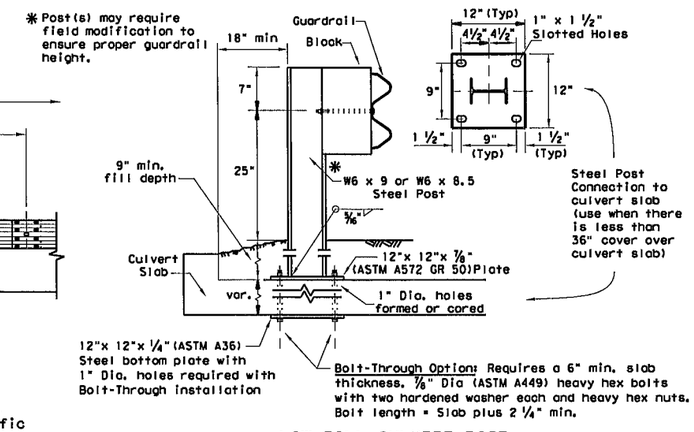
WOOD BLOCK TO STEEL POST



ELEVATION
MID-SPAN RAIL SPLICE

Showing a 25'- 0" section of W-Beam rail, 12'- 6" rail sections may also be supplied (See General Note 2)

Direction of Traffic



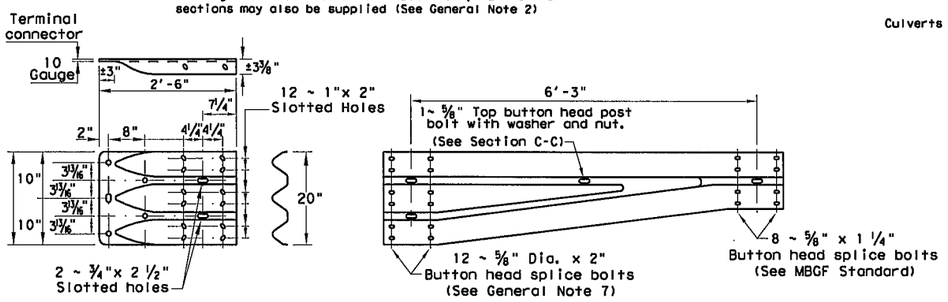
LOW FILL CULVERT POST

Culverts of 25 ft. or less, see GF(31)LS standard for "Long Span" option.

Epoxy Note:
Epoxy Anchor Option: This option may only be used if the culvert slab is 8" min. thick. Threaded anchor rods must be ⅞" Dia. ASTM A449 or A193 Grade B7 with heavy hex nut, and one hardened washer each. Embed anchor rods 6" with Hilti HIT RE 500 epoxy adhesive. Other Type III Class C epoxy adhesives meeting the requirements of DMS-6100, "Epoxies and Adhesives", may be used if it can be demonstrated that they meet or exceed the strength of Hilti HIT RE 500 with the same embedment depth and threaded rod dia. Follow the manufacturer's requirements for installing epoxied threaded rods. Extend rods ¼" min. beyond nut.

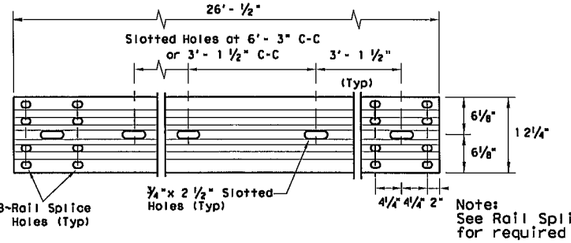
GENERAL NOTES

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."
2. Rail element 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'-1½" C-C or 6'-3" C-C. A special length of rail may be manufactured to accommodate the downstream anchor terminal (DAT) and the transition sections of guardrail.
3. Button head "post" bolts (ASTM A307) shall be of sufficient length to extend through the full thickness of the nut (ASTM A563) and Type A (1 ¾" O.D.)washer and not more than 1" beyond it. Button head "splice" bolts (ASTM A307) are ⅝" x 1 ¼" (or 2" long at triple rail splices) with a ⅝" double recessed nut (ASTM A563). Thrie beam "connection" ⅞" dia. (ASTM A325) hex bolts shall be of sufficient length to extend through the full thickness of the rail, washers, and nuts.
4. Fittings (bolts, nuts, and washers) shall be galvanized in accordance with Item 445, "Galvanizing." Fittings shall be subsidiary to the bid item.
5. Crown shall be widened to accommodate the Metal Beam Guard Fence.
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 at a rate of 25:1 or flatter.
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 inches above the gutter pan or edge of shoulder.
9. If solid rock is encountered within 0 to 18" of the finished grade, drill a 22" dia. hole, or drill two 12" dia. front to back overlapping holes, 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 a cohesionless material.
10. Posts shall not be set in concrete, of any depth.
11. Special fabrication will be required at installations having a curvature of less than 150 ft. radius.
12. Unless otherwise shown in the plans, a composite material post and/or block that meets the requirements of DMS-7210, "Composite Material Posts and Blocks for Metal Beam Guard Fence" may be substituted for posts and/or blocks of similar dimensions. The Construction Division, TxDOT maintains a Material Producer List (MPL) for producers of materials conforming to DMS-7210. Only producers on the MPL may furnish composite material posts and/or blocks.
13. For posts located partially or wholly between precast box culvert units, the use of a cast-in-place concrete closure between boxes is required. See Detail "A" on Bridge Standard SCP-MD.

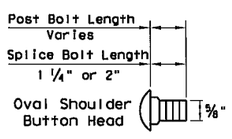


THRIE-BEAM TERMINAL CONNECTION
(SEE GENERAL NOTES 6 & 7 FOR REQUIRED HARDWARE)

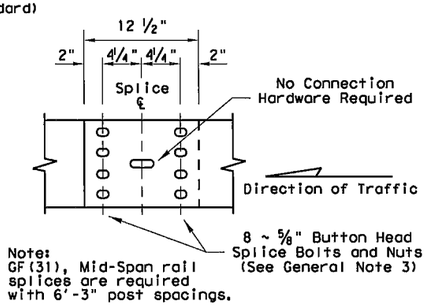
NON-SYMMETRICAL TRANSITION TO W-BEAM (10 Gauge)



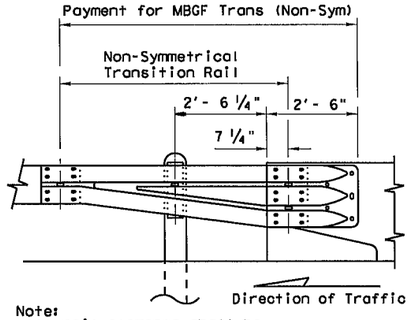
ELEVATION 25'- 0" (NOM.) W-BEAM SECTION
12'- 6" RAIL SECTIONS MAY ALSO BE SUPPLIED (SEE GENERAL NOTE 2)



BUTTON HEAD BOLT
Post and Splice Bolts (See General Note 3)



MID-SPAN
RAIL SPLICE DETAIL



DOWNSTREAM RAIL ATTACHMENT

Texas Department of Transportation | Design Division Standard

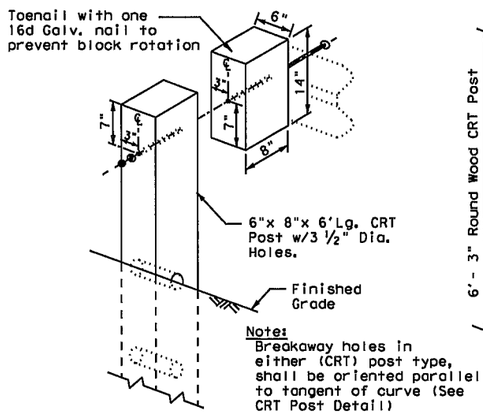
METAL BEAM GUARD FENCE

GF(31)-14

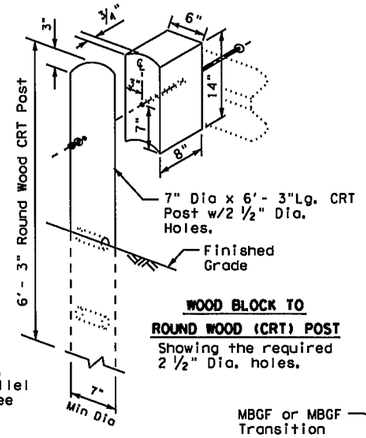
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©TxDOT: December 2011	CONT	SECT	JOB	HIGHWAY
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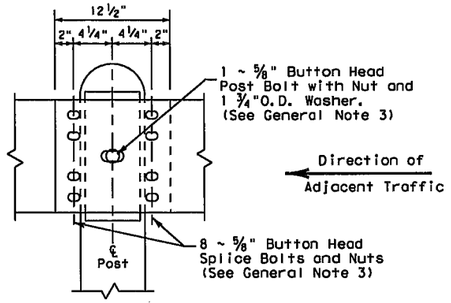
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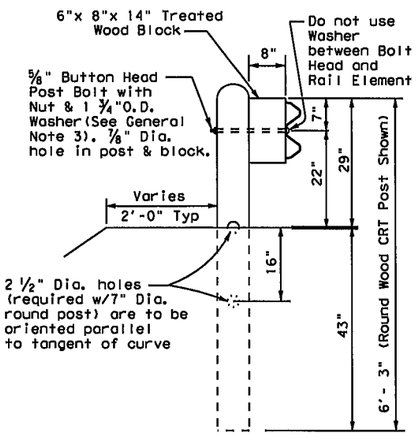
WOOD BLOCK TO RECTANGULAR WOOD (CRT) POST
Showing the required 3 ½" Dia. holes.



WOOD BLOCK TO ROUND WOOD (CRT) POST
Showing the required 2 ½" Dia. holes.

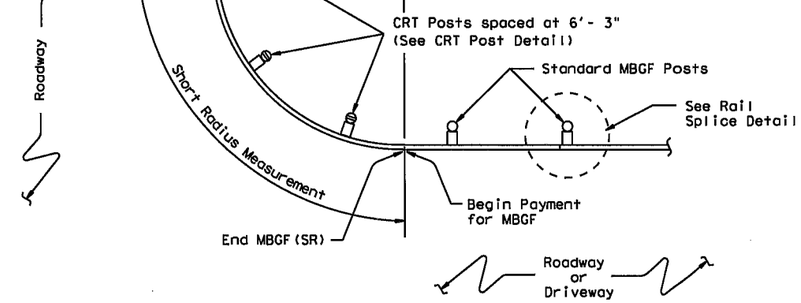


RAIL SPLICE DETAIL



(CRT) POST DETAIL
CONTROLLED RELEASE TERMINAL POST

Two or more wood CRT post(s) are required at any radius installation located at intersecting roadways or driveways.



PLAN VIEW
SHOWING TYPICAL RADIUS

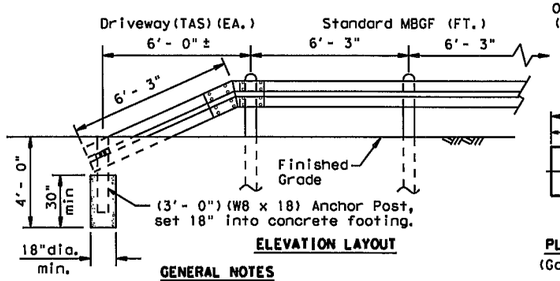
The required radius is shown elsewhere on the plans.

GENERAL NOTES

1. The type of (CRT) post (round wood post, or rectangular wood post) will be shown elsewhere in the plans. The exact position of MBGF shall be shown elsewhere in the plans or as directed by the Engineer.
2. Steel posts are not permitted at CRT post positions.
3. Rail element shall meet the requirements of Item 540, "Metal Beam Guard Fence" except as modified on the plans. The Contractor may furnish rail elements of 12 ½ or 25 foot nominal lengths.
4. Button head "post" bolts (ASTM A307) shall be of sufficient length to extend through the full thickness of the nut (ASTM A563) and Type A (1 ¾" O.D.) washer and not more than 1" beyond it. Button head "splice" bolts (ASTM A307) are ⅝" x 1 ¼" (or 2" long at triple rail splices) with a ⅝" double recessed nut (ASTM A563).
5. Fittings (bolts, nuts, and washers) shall be galvanized in accordance with Item 445, "Galvanizing." Fittings shall be subsidiary to the bid item.
6. Crown shall be widened to accommodate the Metal Beam Guard Fence.
7. The lateral approach to the guard fence, shall have a slope rate of not more than 1V:10H.
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 block. Rail placed over curbs shall be installed so that the post bolt is located approximately 21 inches above the gutter pan or roadway surface.
9. If solid rock is encountered within 0 to 18" of the finished grade, drill a 22" dia. hole, 24" into the rock, or drill two 12" dia. front to back overlapping holes, 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 is less. Any excess post length, after meeting these depths, may be field cut to ensure proper guardrail mounting height. Backfill with a cohesionless material.
10. Guardrail posts shall not be set in concrete, of any depth.
11. Special rail fabrication will be required at installations having a curvature of less than 150 ft. radius. The required radius shall be shown on the plans.
12. The terminal anchor section (TAS) post shall be set in Class A concrete (unless otherwise shown in the plans) in accordance with Item 421, "Hydraulic Cement Concrete." Concrete shall be subsidiary to the bid item requiring construction of the terminal anchor section (TAS). Terminal anchor post to be galvanized in accordance with Item 445, "Galvanizing."
13. Unless otherwise shown in the plans, a composite material post and/or block that meets the requirements of DMS-7210, "Composite Material Posts and Blocks for Metal Beam Guard Fence" may be substituted for posts and/or blocks of similar dimensions. The Construction Division, TxDOT maintains a Material Producer List (MPL) for producers of materials conforming to DMS-7210. Only producers on the MPL can furnish composite material posts and/or blocks.

"DRIVEWAY" TERMINAL ANCHOR SECTION

Only for use within driveway locations, where a standard (TAS) Terminal Anchor Section can not be installed.



ELEVATION LAYOUT

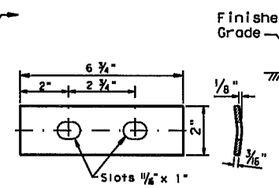
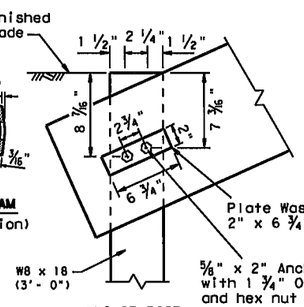
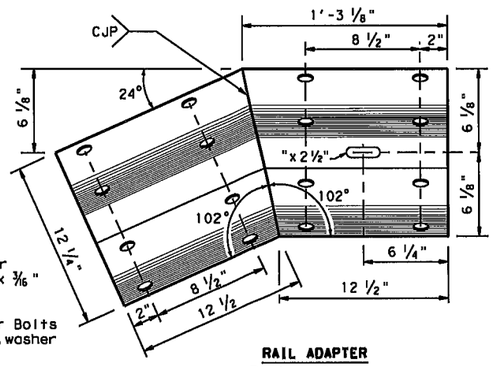


PLATE WASHER FOR METAL BEAM
(Galvanized after fabrication)



ANCHOR POST



RAIL ADAPTER
Rail - 10 gauge
(Galvanized after fabrication)

GENERAL NOTES

1. The "Driveway" Terminal Anchor Section is ONLY to be used within driveway locations, where the ROW is limited and a standard 25 ft. (TAS) Terminal Anchor Section, is too long.
2. Terminal anchor post shall be set in Class A concrete.
3. All steel shall be galvanized after fabrication in accordance with Item 445, "Galvanizing."

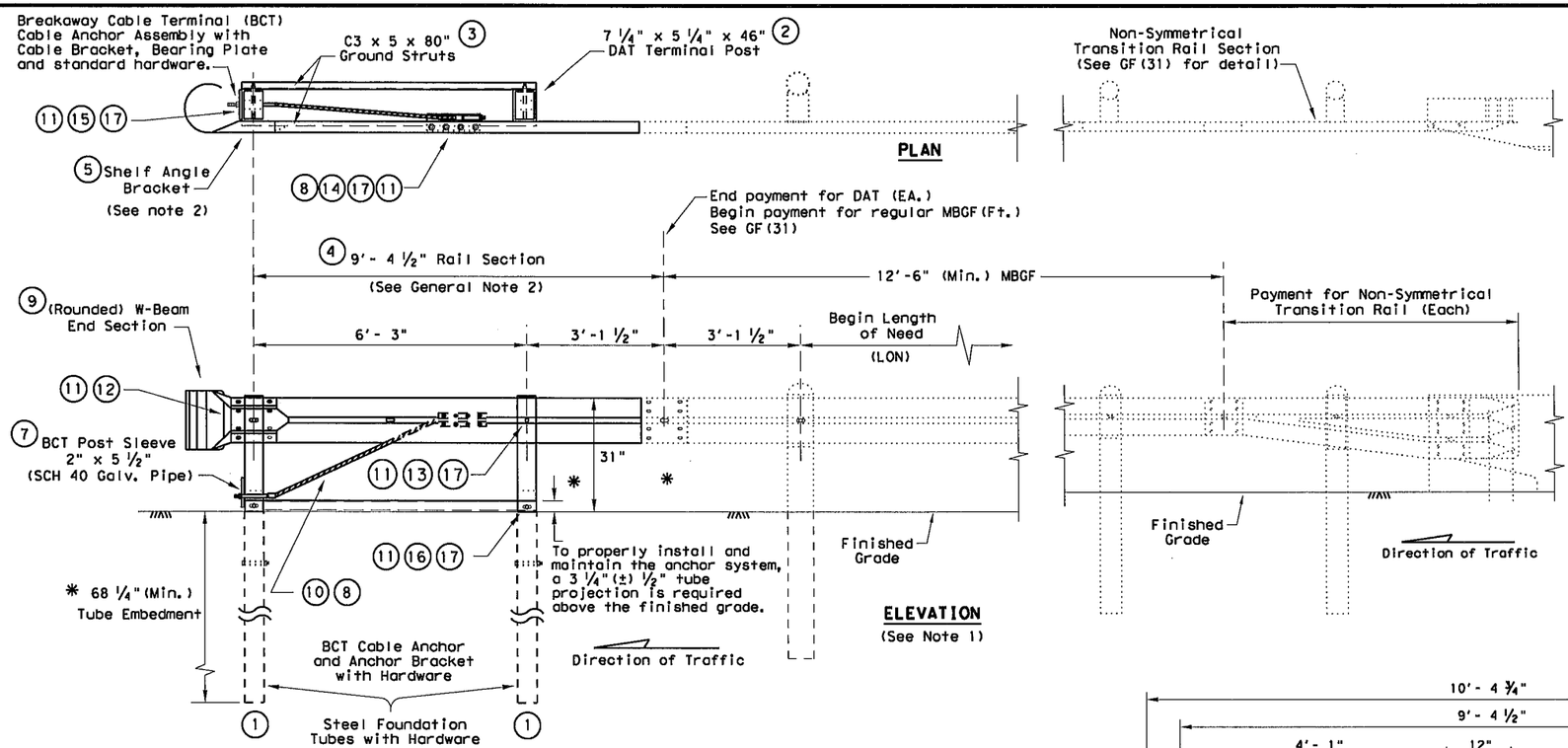
Texas Department of Transportation — Design Division Standard

METAL BEAM GUARD FENCE
(SHORT RADIUS)
MBGF (SR) - 11

FILE: mbgfsr11.dgn	DN: TxDOT	CK: AM	DW: BD	CK: VP
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REVISIONS 12-2011	DIST	COUNTY		SHEET NO.

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DOWNSTREAM ANCHOR TERMINAL (DAT)

Only for downstream use, when located outside the horizontal clearance area of opposing traffic.

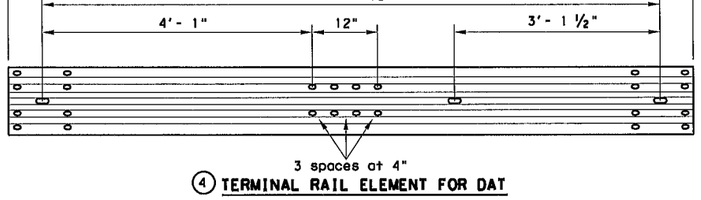
GENERAL NOTES

1. The detail shown is the minimum Length of Need (LON) for a DAT connected to a concrete rail.
2. The rail section at the end post is supported by the Shelf Angle Bracket. The rail element is not attached to the end post.
3. The foundation tubes shall not project more than 3 3/4" above the finished grade.
4. All hardware for DAT shall be ASTM A307 unless otherwise shown.
5. Refer to GF(31) sheet for terminal connection details.

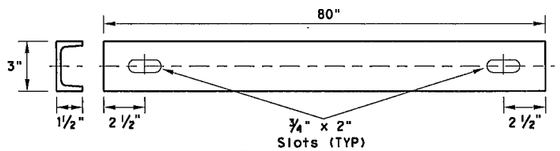
MOW STRIP INSTALLATION

If a mow strip is required with the DAT installation the leave-out area around the steel foundation tubes and the two channel struts may be omitted. This will require a full pour at the foundation tubes.

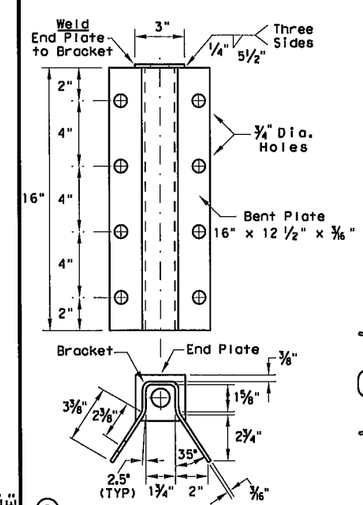
#	(DAT) PARTS LIST	QTY
(1)	Steel Foundation Tube	2
(2)	DAT Terminal Post	2
(3)	Channel Strut	2
(4)	Terminal Rail Element	1
(5)	Shelf Angle Bracket	1
(6)	BCT Bearing Plate	1
(7)	BCT Post Sleeve	1
(8)	Guardrail Anchor Bracket	1
(9)	(Rounded)W-Beam End Section	1
(10)	BCT Cable Anchor	1
(11)	Recessed Nut, Guardrail	20
(12)	1 1/4" Button Head Bolt	4
(13)	10" Button Head Bolt	2
(14)	5/8" x 2" Hex Head Bolt	8
(15)	5/8" x 8" Hex Head Bolt	4
(16)	5/8" x 10" Hex Head Bolt	2
(17)	5/8" Flat Washer	18



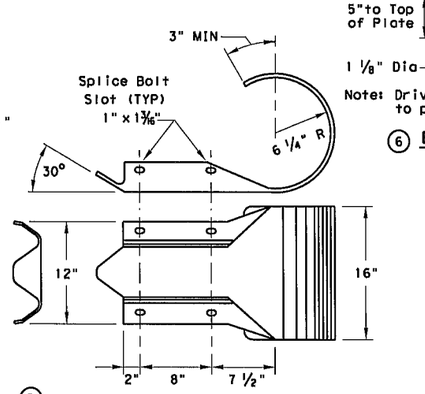
(4) TERMINAL RAIL ELEMENT FOR DAT



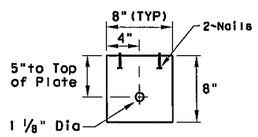
(3) CHANNEL STRUT
C3 x 5 x 80", Grade A36



(8) GUARDRAIL ANCHOR BRACKET

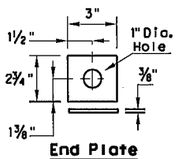


(9) W-BEAM END SECTION (ROUNDED) (12 GA.)

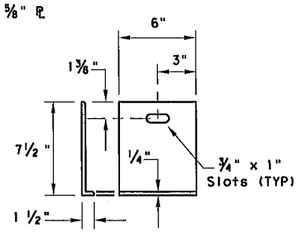


Note: Drive nails and bend over to prevent plate rotation

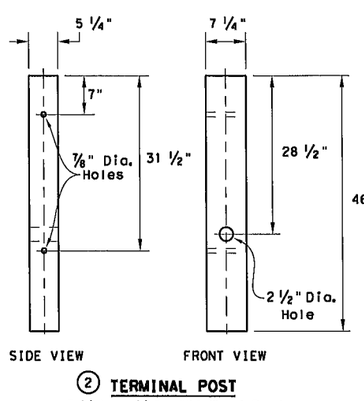
(6) BEARING PLATE
8"x 8"x 5/8" PL



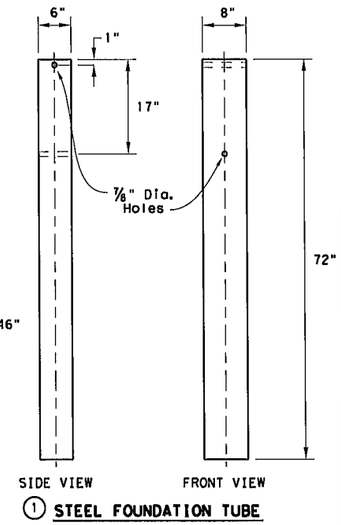
End Plate



(5) SHELF ANGLE BRACKET



(2) TERMINAL POST
7 1/4"x 5 1/4"x 46" Wood Post



(1) STEEL FOUNDATION TUBE
6"x 8"x 1/8" x 72" Steel Tube

Texas Department of Transportation

Design Division Standard

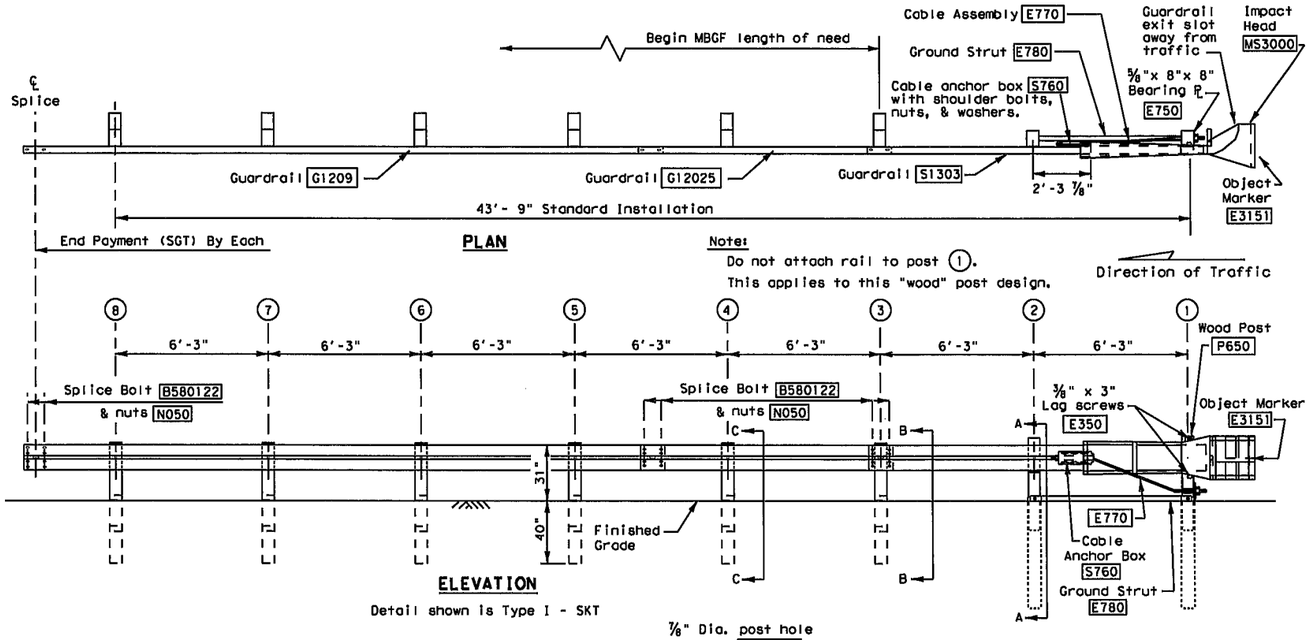
METAL BEAM GUARD FENCE
(Downstream Anchor Terminal)

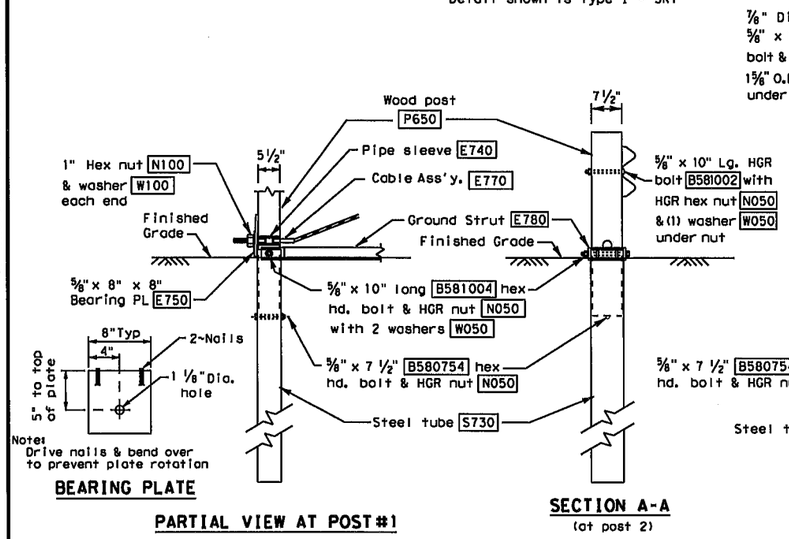
GF(31)DAT-14

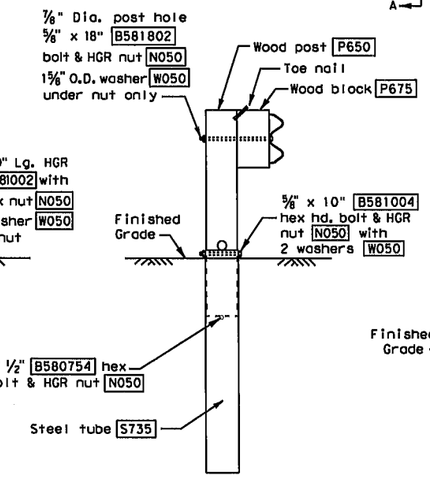
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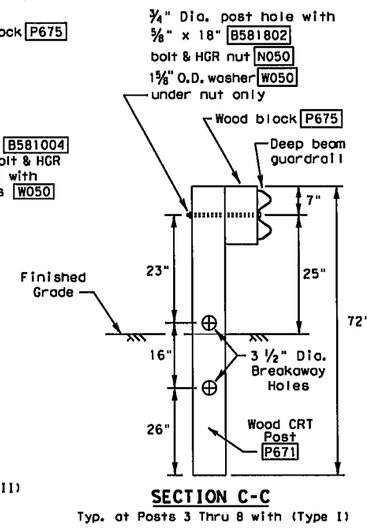
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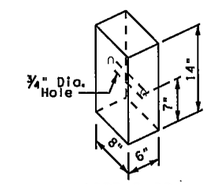
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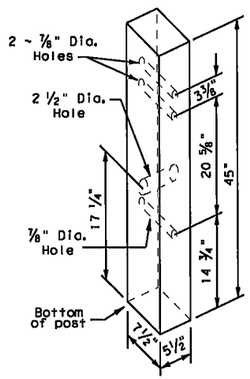


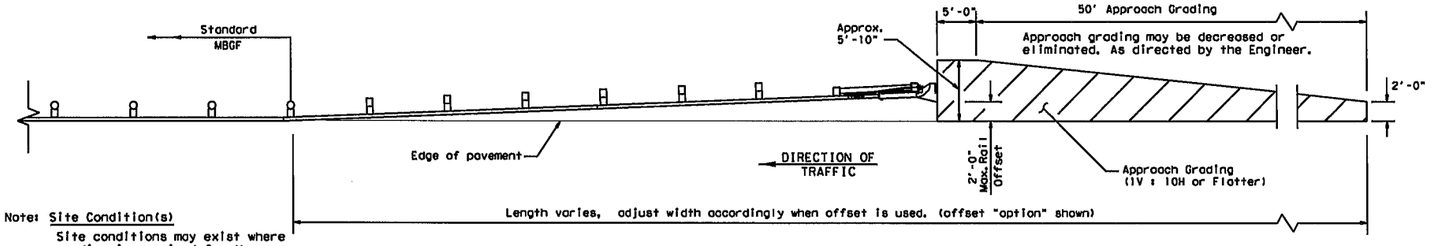












GENERAL NOTES

1. For additional information contact: Interstate Steel Inc. (432) 263-3725
2. The Type of SGT unit will be specified elsewhere in the plans. The numbers in the circles indicate post position. The Type of SGT unit chosen is a maintenance consideration and does not affect the systems performance.

Post & Tube Options		Post Only	
Type I	Posts (1) thru (2)	Posts (3) thru (8)	
Type II	Posts (1) thru (4)	Posts (5) thru (8)	
Type III	Posts (1) thru (8)	None	

3. SGT's placed within the "minimum" 150 ft. radius, shall be installed straight. Standard rail elements may be installed within the radius, without special fabrication.
4. All bolts, nuts cable assemblies, cable anchors, steel tubes & bearing plates shall be galvanized.
5. A flare rate of 25:1 may be used over the first 50 ft. of the system to prevent the terminal head from encroaching the shoulder. The flare may be decreased or eliminated for specific installations, if directed by the Engineer.
6. The steel tubes shall not protrude more than 4 inches above ground. Site grading may be necessary to meet this requirement.
7. The steel tubes may be driven with an approved driving head. They shall not be driven with the wood post in the tube. If the steel tubes are placed in drilled holes, the backfill material must be satisfactorily compacted to prevent tube settlement.
8. If solid rock is encountered. See the Manufacturer's installation manual for the proper installation guidance.
9. The breakaway cable assembly must be taut. A locking device, (vice grips or channel lock pliers) should be used to prevent the cable from twisting when tightening the nuts.
10. The wood blocks shall be "toe nailed" to the rectangular wood posts to prevent them from turning when the wood shrinks. The bearing plate on the front post shall also be "toe nailed" to prevent rotation.
11. For curb installations, the soil tubes and posts shall be installed at the proper ground elevation behind the curb. The posts will then require field drilling new holes to accommodate the rail to post connection bolt to maintain the proper height of the rail above the gutter pan. The excess post length above the rail will be removed if directed by the Engineer.
12. An object marker shall be installed on the front of the impact head as detailed on D&OM(VIA).

BILL OF MATERIAL

Item #	POST & TUBE OPTIONS Type I	Type II	Type III	DESCRIPTION
S1303	1	1	1	Guardrail (12 Ga.) 12'- 6" SKT
G12025	1	1	1	Guardrail (12 Ga.) 9'- 4 ½"
G1209	1	1	1	Guardrail (12 Ga.) 25'- 0"
S730	2	2	2	Steel Tube - 6" x 8" x 72" x ⅛" min. or ⅜"
S735	0	2	6	Steel Tube - 6" x 8" x 54" x ⅛" min. or ⅜"
P650	2	4	8	Wood Posts - 5 ½" x 7 ½" x 45"
P671	6	4	0	Wood CRT Posts - 6" x 8" x 72"
P675	6	6	6	Wood Block - 6" x 8" x 14"
E740	1	1	1	Pipe Sleeve - 2" Std. Pipe x 5 ½"
E750	1	1	1	Bearing Plate - ⅝" x 8" x 8"
S760	1	1	1	Cable Anchor Box
E770	1	1	1	Cable Assembly
E780	1	1	1	Ground Strut
MS3000	1	1	1	Impact Head
				HARDWARE
B580754	2	4	8	⅝" x 7 ½" Hex Hd. Bolt
B581004	2	4	8	⅝" x 10" Hex Hd. Bolt (Top of Tubes)
W050	11	15	23	⅝" Washers
B581002	1	1	1	⅝" x 10" HGR Post Bolt (Post 2)
B580122	16	16	16	⅝" x 1 ¼" HGR Splice Bolt
B581802	6	6	6	⅝" x 18" HGR Post Bolt (Posts (3) thru (8))
N050	35	39	47	⅝" HGR Nut (24-Spl, Varies-Posts, 2-Strut)
E350	2	2	2	⅜" x 3" Lag Screw
N100	2	2	2	1" Hex Nut (Anchor Cable)
W100	2	2	2	1" Washer (Anchor Cable)
SB12A	8	8	8	Cable Anchor Box Shoulder Bolts
N012A	8	8	8	½" Structural Nut
W012A	8	8	8	½" Structural Washer
E3151	1	1	1	Object Marker - (18" x 18")

POST & TUBE OPTIONS	
Type I	post (1) thru (2)
Type II	post (1) thru (4)
Type III	post (1) thru (8)

Texas Department of Transportation — Design Division Standard

SINGLE GUARDRAIL TERMINAL (SKT-31) (WOOD POST)

SGT(8)31-17

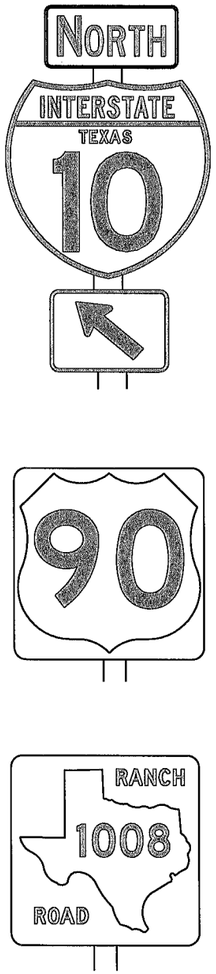
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REQUIREMENTS FOR INDEPENDENT MOUNTED ROUTE SIGNS

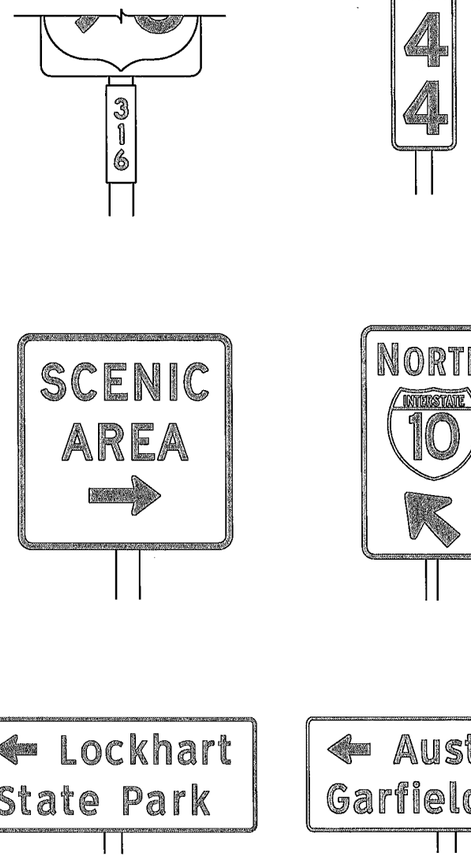
SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE A SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B or C SHEETING



TYPICAL EXAMPLES

REQUIREMENTS FOR BLUE, BROWN & GREEN D AND I SERIES GUIDE SIGNS

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	ALL	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE D SHEETING
LEGEND, SYMBOLS & BORDERS	ALL OTHERS	TYPE B OR C SHEETING



TYPICAL EXAMPLES

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
2. White legend shall use the Clearview Alphabet. The following Clearview fonts shall be used to replace the existing white Federal Highway Administration (FHWA) Standard Highway Alphabets, when not specified in the SHSD, or in the plans.

B	CV-1W
C	CV-2W
D	CV-3W
E	CV-4W
Emod	CV-5WR
F	CV-6W

3. Route sign legend (ie. IH, US, SH and FM shields) shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets B, C, D, E, Emod or F).
4. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
5. Independent mounted route sign with white or colored legend and borders shall be applied by screening process with transparent color ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof. White legend, symbols and borders on all other signs shall be cut-out white sheeting applied to colored background sheeting.
6. Information regarding borders and radii for signs is found in the "Standard Highway Sign Designs for Texas". Dimensions shown and described for borders and corner radii on parent sign are nominal. Borders may vary in width as much as 1/2 inch. Corner radii above 3 inches may vary in width as much as 1 inch. Borders and corner radii within a parent sign must be of matching widths. The sign area outside the corner radius should be trimmed or rounded.
7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
8. Mounting details of roadside signs are shown in the "SMD series" Standard Plan Sheets.

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080
7.5 to 15	0.100
Greater than 15	0.125

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(3)-13

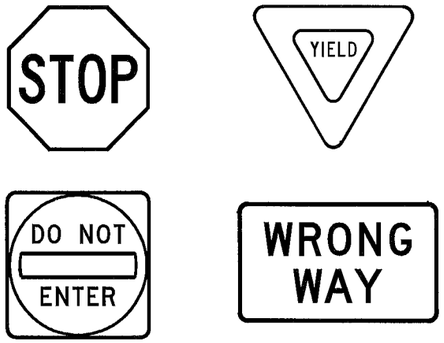
FILE: tsr3-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-03 7-13 9-08	DIST	COUNTY		SHEET NO.

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DATE:
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REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS
(STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	WHITE	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE B OR C SHEETING
LEGEND	RED	TYPE B OR C SHEETING

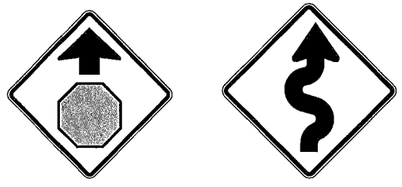
REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS
(EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND, BORDERS AND SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR WARNING SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	FLOURESCENT YELLOW	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR SCHOOL SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	FLOURESCENT YELLOW GREEN	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
SYMBOLS	RED	TYPE B OR C SHEETING

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
2. Sign legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod or F).
3. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
4. Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
5. White legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof.
6. Colored legend shall be applied by screening process with transparent colored ink, transparent colored overlay film or colored sheeting to background sheeting, or combination thereof.
7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
8. Mounting details for roadside mounted signs are shown in the "SMD series" Standard Plan Sheets.

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080
7.5 to 15	0.100
Greater than 15	0.125

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(4)-13

FILE: tsr4-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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12-03 7-13	DIST	COUNTY		SHEET NO.
9-08				

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SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)

Post Type

FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
TWT = Thin-Walled Tubing (see SMD(TWT))
10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

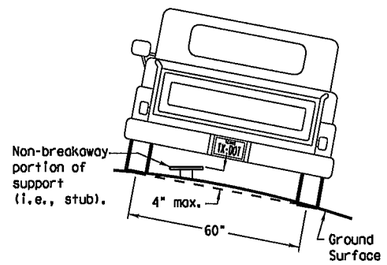
Anchor Type

UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
WS = Wedge Anchor Steel - (see SMD(TWT))
WP = Wedge Anchor Plastic (see SMD(TWT))
SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

Sign Mounting Designation

P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
IF REQUIRED
1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
WC = 1.12 #/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-3))

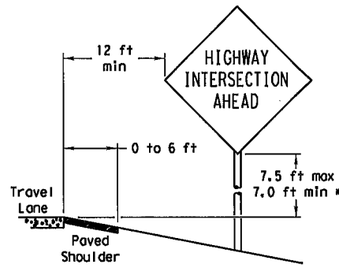
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

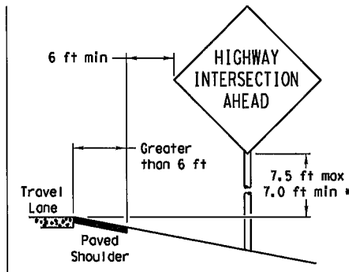
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

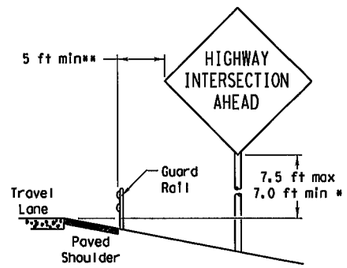
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



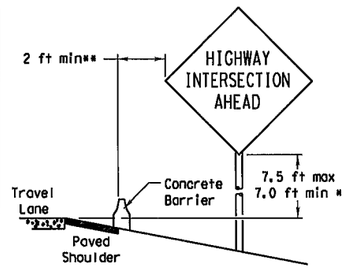
GREATER THAN 6 FT. WIDE

When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

BEHIND BARRIER



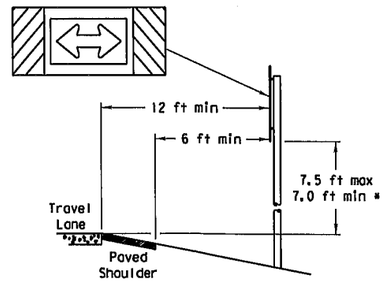
BEHIND GUARDRAIL



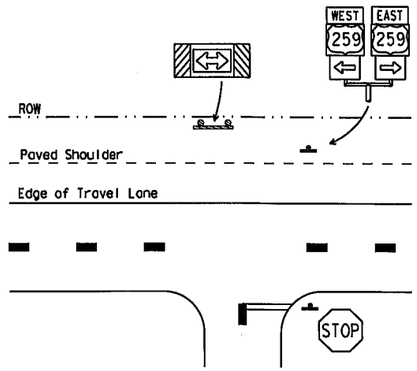
BEHIND CONCRETE BARRIER

**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

T-INTERSECTION



When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



* Signs shall be mounted using the following condition that results in the greatest sign elevation:

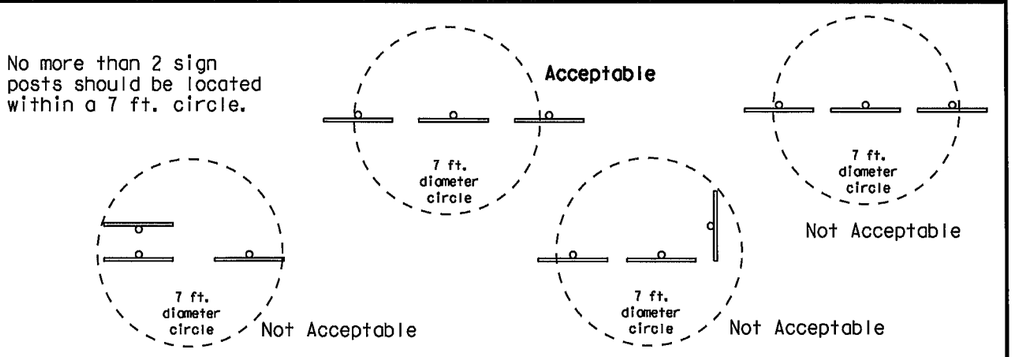
(1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or

(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

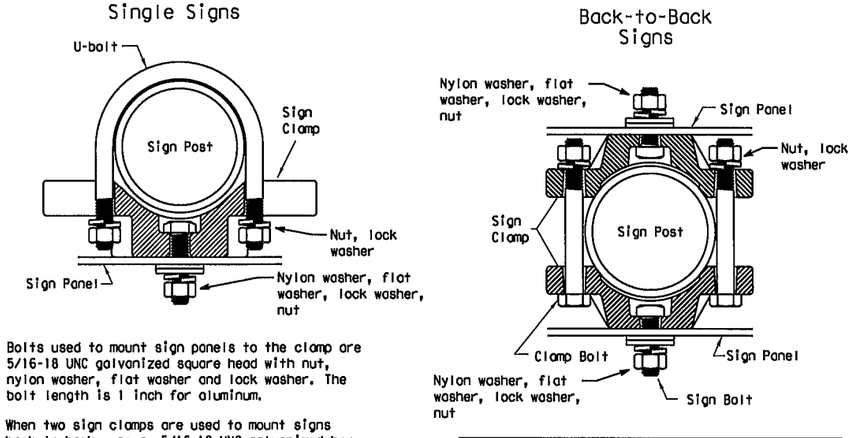
The maximum values may be increased when directed by the Engineer.

See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

The website address is:
http://www.txdot.gov/publications/traffic.htm



TYPICAL SIGN ATTACHMENT DETAIL



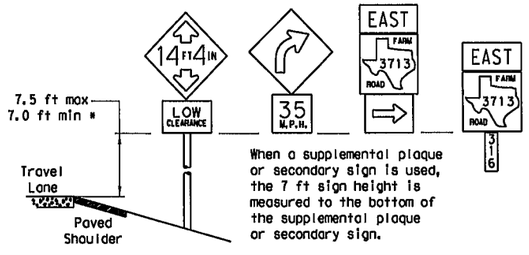
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

Sign clamps may be either the specific size clamp or the universal clamp.

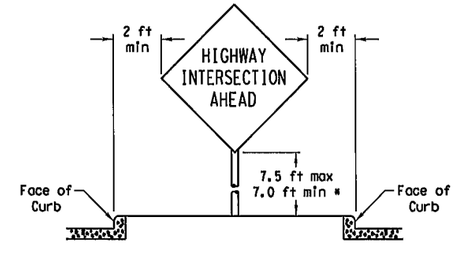
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



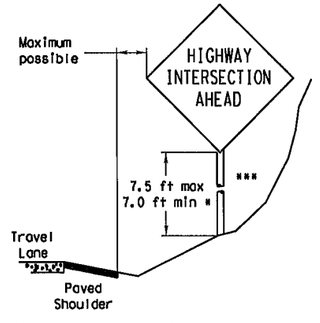
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

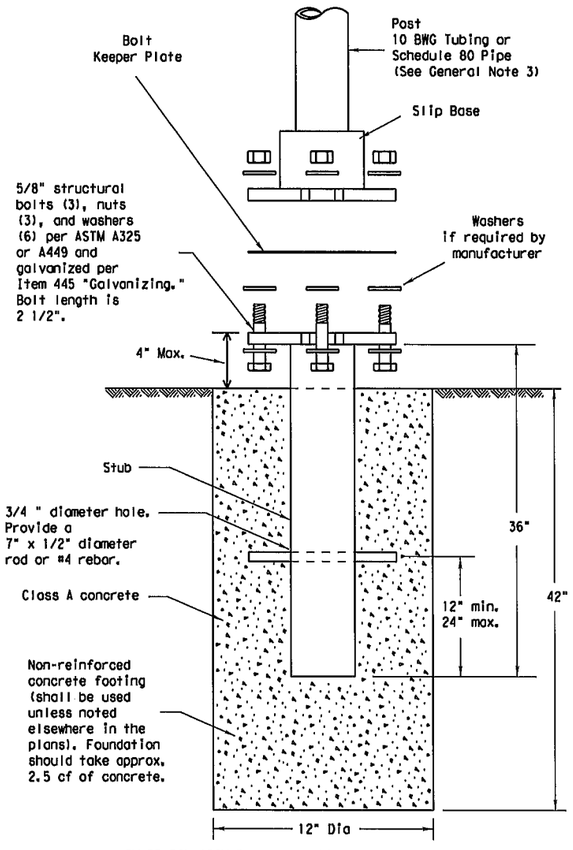
SMD(GEN)-08

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TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



SM RD SGN ASSM TY XXXXX(X)SA(X-XXXX)

NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   - 0.134" nominal wall thickness
   - Seamless or electric-resistance welded steel tubing or pipe
   - Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   - Other steels may be used if they meet the following:
     - 55,000 PSI minimum yield strength
     - 70,000 PSI minimum tensile strength
     - 20% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
   - Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
   - Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.

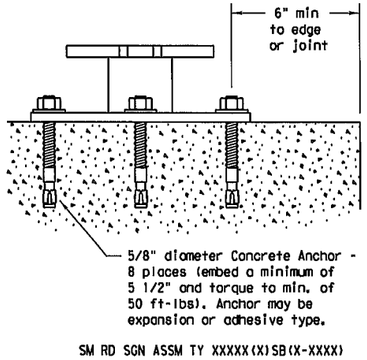
   Schedule 80 Pipe (2.875" outside diameter)
   - 0.276" nominal wall thickness
   - Steel tubing per ASTM A500 Gr C
   - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
     - 46,000 PSI minimum yield strength
     - 62,000 PSI minimum tensile strength
     - 21% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
   - Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   - Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

Foundation
1. Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support
1. Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the travelway (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the travelway. The cut shall be plumb and straight.
2. Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

CONCRETE ANCHOR



SM RD SGN ASSM TY XXXXX(X)SB(X-XXXX)

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

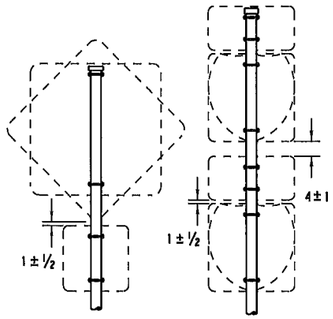
SMD(SLIP-1)-08

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9-08 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

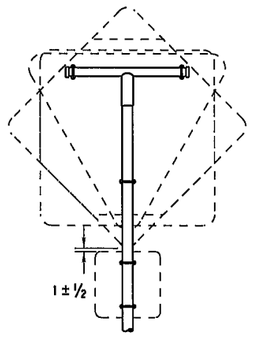
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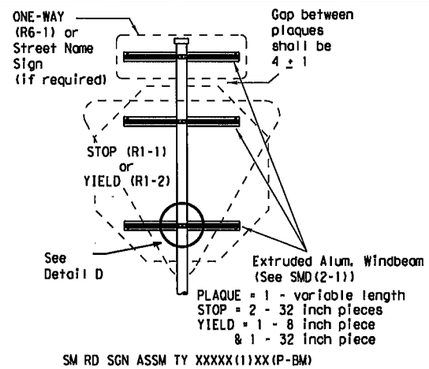
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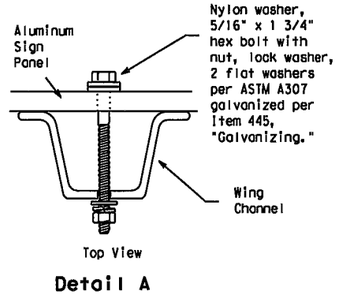
SM RD SGN ASSM TY XXXXX(1)XX(P)



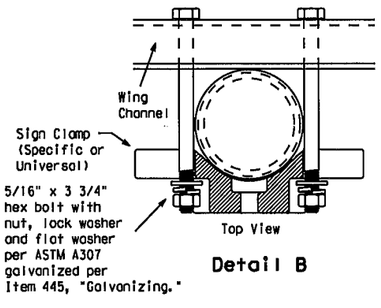
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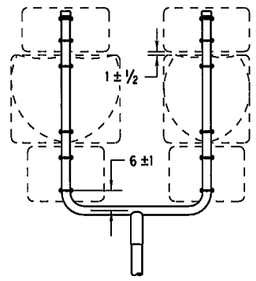
SM RD SGN ASSM TY XXXXX(1)XX(P-BM)



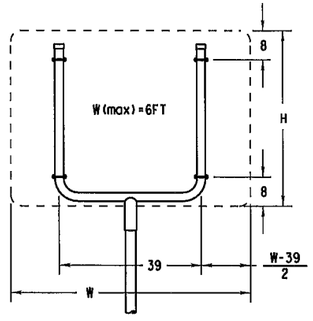
Detail A



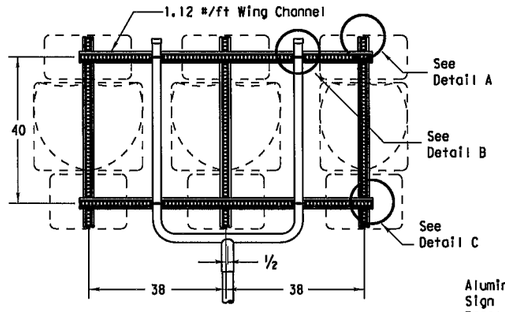
Detail B



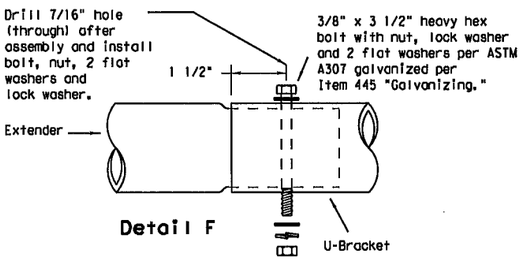
SM RD SGN ASSM TY XXXXX(1)XX(U)



SM RD SGN ASSM TY XXXXX(1)XX(U)

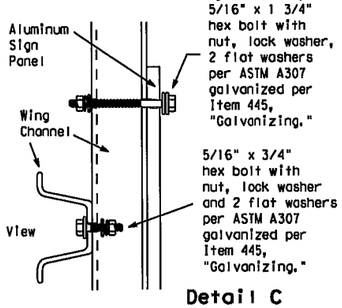


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)

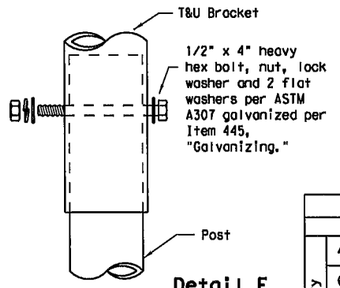


Detail F

Splices shall only be allowed behind the sign substrate.



Detail C

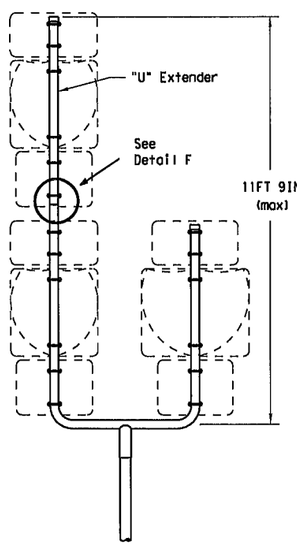


Detail E

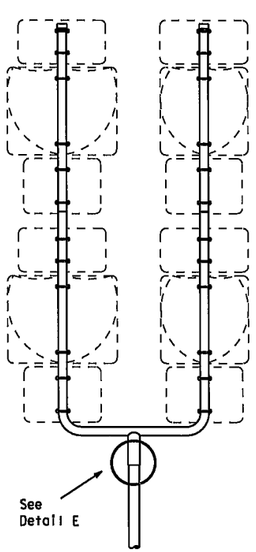
GENERAL NOTES:

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

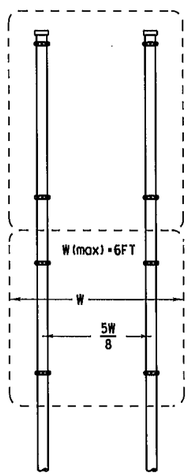
1. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
2. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
3. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
4. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
5. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
6. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
7. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
8. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
9. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
10. Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
11. Post open ends shall be fitted with Friction Caps.
12. Sign blanks shall be the sizes and shapes shown on the plans.



SM RD SGN ASSM TY S80(1)XX(U-1EXT)

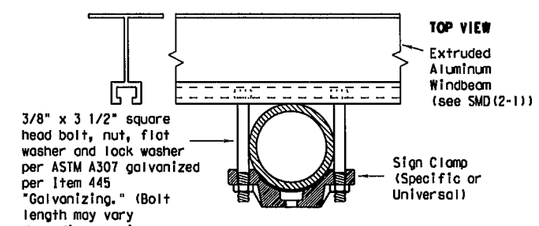


SM RD SGN ASSM TY S80(1)XX(U-2EXT)

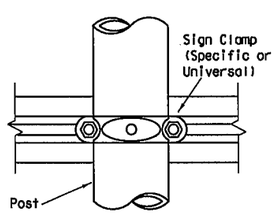


SM RD SGN ASSYM TY XXXXX(2)XX(P)

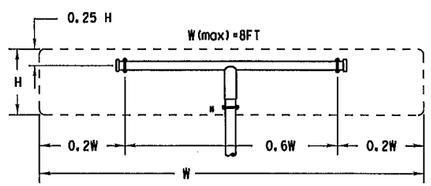
SIDE VIEW



Detail D



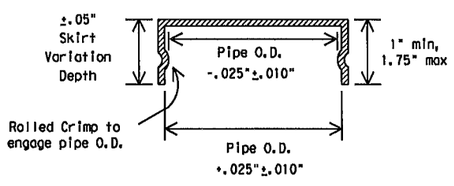
REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)



All dimensions are in english unless detailed otherwise.

SM RD SGN ASSM TY XXXXX(1)XX(T)
(* - See Note 12)

FRICTION CAP DETAIL



Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes.

The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture.

Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.

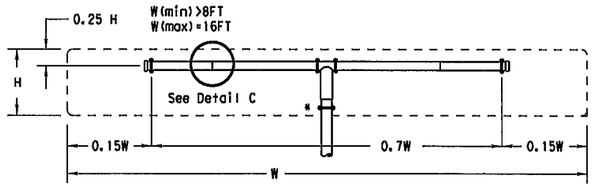
Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

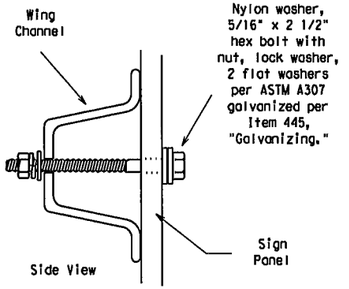
SMD(SLIP-2)-08

©TxDOT July 2002	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
REVISIONS 9-08	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

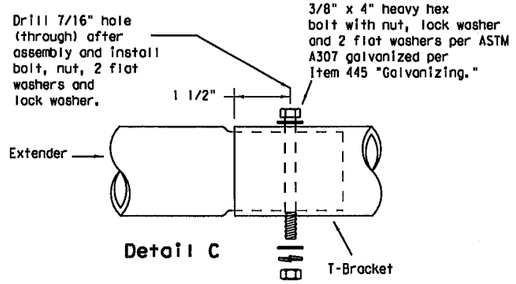
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)
(* - See Note 12)

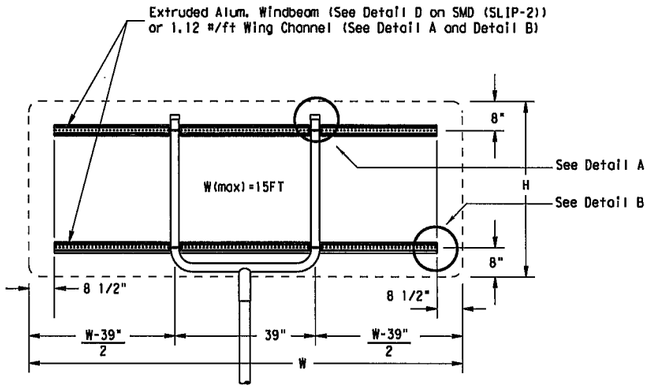


Detail B

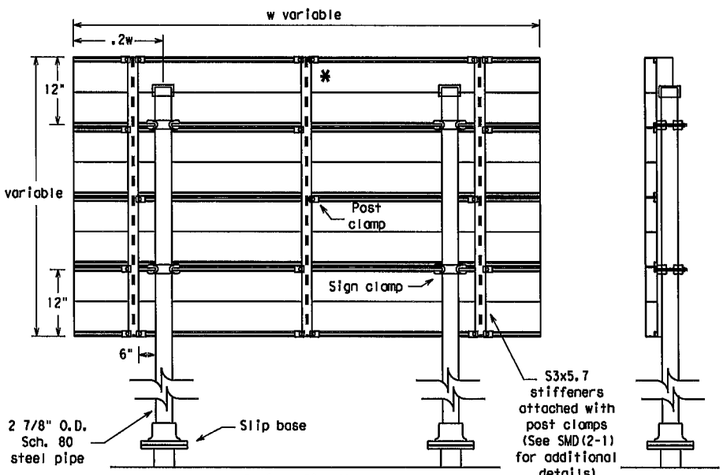


Detail C

Splices shall only be allowed behind the sign substrate.



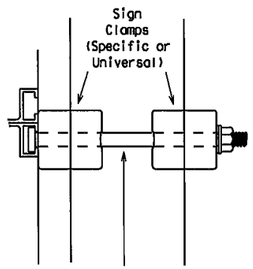
SM RD SGN ASSM TY XXXXX(1)XX(U-XX)



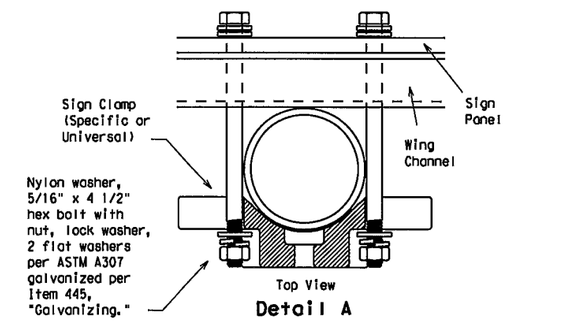
Typical Sign Mount

SM RD SGN ASSM TY S80(2)XX(P-EXAL)

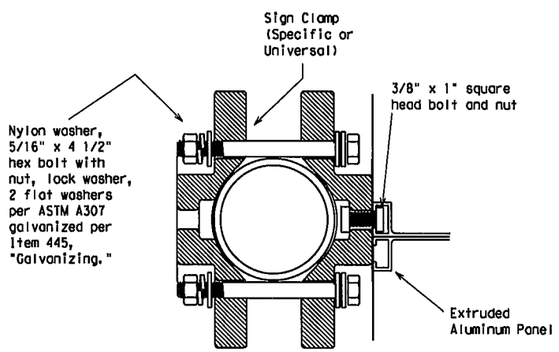
* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.



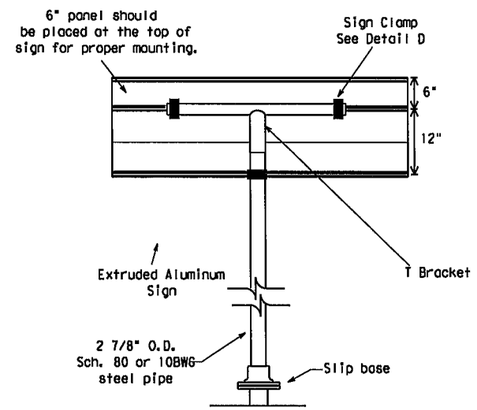
Detail E



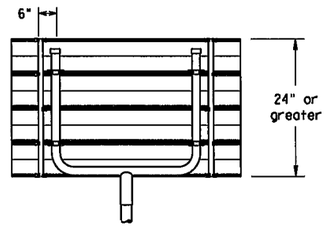
Detail A



Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET



Extruded Aluminum Sign
With T Bracket



Use Extruded Alum. Windbeam as stiffeners
See SMD (2-1) for additional details

See Detail E
for clamp installation

GENERAL NOTES:

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

1. See table above.
2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Sign blanks shall be the sizes and shapes shown on the plans.
11. Additional sign clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.

REQUIRED SUPPORT

	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
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	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-3)-08

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DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
CONT	SECT	JOB	HIGHWAY
DIST	COUNTY		SHEET NO.

9-08 REVISIONS

DATE:
FILE:

Additional Stipulations

1 Additional Stipulations

1.1 Introduction

The Bid evaluation and selection process is detailed in this section, as are other factors, and the format in which the Price Bid of each Bid should be submitted.

1.2 Contract Administrator

J. Terron Evertson, P.E. (or successor), County Engineer, Williamson County 3151 South East Inner Loop, Suite B, Georgetown, Texas shall serve as the County's Technical Contact with designated responsibility to ensure compliance with the requirements of the Contract and any Ensuing Agreement, such as, but not limited to, acceptance, inspection and delivery. The Technical Contact together with the Purchasing Department will serve as a liaison between the Williamson County Commissioners Court and the Successful Bidder.

1.3 Time for Performance

A time frame of one hundred and fifty (150) days, one hundred and twenty-five (125) to substantial completion / twenty-five (25) to final completion) is given for completion of plans on this bid. This may begin at the time specified by the County within the three hundred sixty-five (365) days of the pricing quoted on this bid, starting on the day of award. The Contractor will be given written notice to begin work on this project. The Work on this project shall begin within five (5) calendar days after such notification.

Liquidated damages for failure to substantially complete the work within the allotted time will be applied. Liquidated damages are $200 per working day.

The Contractor will be given written notice to begin work on this project. Work on this project shall begin within five (5) working days after such notification. Failure to begin work within the allotted time will result in liquidated damages being incurred at the rate of $200 per working day.

1.4 Performance and Payment Bonds

To the extent, this IFB is for the procurement of a public work contract, and the following shall apply:

Texas Local Government Code, Chapter 262.032, governs the requirements for performance bonds for government entities making public work contracts. A performance bond is required if the contract is in excess of $50,000 and is to be made for the full amount of the contract.

Texas Government Code, Chapter 2253.021, governs the requirements for payment bonds for government entities making public work contracts. A payment bond is required if the contract is in excess of $25,000 and is to be made for the full amount of the contract.

The bonds are to be executed and delivered to the County **prior to issuing Notice to Proceed**. The bonds must be executed by a corporate surety or sureties in accordance with the Texas Insurance Code. For unit price contracts, the total contract price shall be estimated and calculated by multiplying the estimated quantities to the Bidder's unit bid price.

If the public works contract is less than $50,000, the performance bond will not be required as long as the contract provides that payment is not due until the work is completed and accepted by the County.

1.5 Bidder's Bonds

All Bids requiring a Bid Bond shall be accompanied by a certified cashier's check upon a National or State bank in an amount not less than five (5) percent of the total maximum bid price, payable without recourse to the County, or a bid bond in the same amount from a reliable surety company, as a guarantee that the Bidder will enter into a contract and **execute and deliver to the County performance and payment bonds prior to being recommended for award of the Contract**. **Bid guarantees must be submitted in the same sealed envelope with the Bid**. Bids submitted without check or bid bonds will not be considered. For unit price contracts, the total maximum bid price shall be estimated and calculated by multiplying the estimated quantities to the unit bid price.

1.6 Warranty Bonds

When a Warranty Bond is required it shall be submitted by the Successful Bidder prior to issuing Notice to Proceed, and shall be in the amount of **twenty (20) percent of the total project construction cost.** This Warranty Bond shall be security for the true and faithful performance of all warranties for two (2) years from the date of final payment. For unit price contracts, the total project construction cost shall be estimated and calculated by multiplying the estimated quantities to the bidder's unit bid price.

1.7 Insurance Requirements

By signing its Bid, the Bidder agrees to maintain at all times during any term of the Contract and any ensuing Agreement at Bidder's cost, insurance in accordance with this provision.

Bidder will be required to submit Certificates of Insurance **prior to contract award and any renewals.**

All certificates of insurance coverage as specified below must be provided to the following location:

Williamson County Purchasing Department
901 S Austin Ave
Georgetown, Texas 78626

Failure to comply with these Insurance Requirements may result in the termination of the Contract and any ensuing Agreement(s) between the Successful Bidder and County.

The following coverage limits shall be required at a minimum:

A. Worker's Compensation — Statutory – Texas Law

B. Employer's Liability:

Bodily Injury by Accident	$500,000 Ea. Accident
Bodily Injury by Disease	$500,000 Ea. Employee
Bodily Injury by Disease	$500,000 Policy Limit

C. Comprehensive general liability including completed operations and contractual liability insurance for bodily injury, death, or property damages in the following amounts:

COVERAGE	PER PERSON	PER OCCURRENCE
Comprehensive General Liability	$1,000,000	$1,000,000
Aggregate policy limits:	$2,000,000	

Successful Bidder's property will not be covered by any insurance that may be carried by the County. Successful Bidder assumes the risk of loss on its contents and property that are situated on/in/around the County property. The Successful Bidder is strongly encouraged to obtain insurance on its property to the extent deemed necessary by the Successful Bidder.

The deductible for an insurance policy required hereunder shall not exceed $100,000. **The County shall be named as an additional insured under any policy of insurance required hereunder.**

Successful Bidder shall not commence any work until it has obtained all required insurance and such insurance has been approved by County. Successful Bidder shall not allow any subcontractor(s) to commence work to be performed until all required insurance has been obtained by such subcontractor(s) and approved by County. Approval of the insurance by County shall not relieve or decrease the liability of Successful Bidder or its subcontractor(s) hereunder.

The required insurance must be written by a company approved to do business in the State of Texas with a financial standing of at least an A- rating, as reflected in Best's insurance ratings or by a similar rating system recognized within the insurance industry at the time the policy is issued. Successful Bidder shall furnish County with a certificate of coverage issued by the insurer. Successful Bidder shall not cause any insurance to be canceled nor permit any insurance to lapse. ALL INSURANCE CERTIFICATES SHALL INCLUDE A CLAUSE TO THE EFFECT THAT THE POLICY SHALL NOT BE CANCELED OR REDUCED, RESTRICTED OR LIMITED UNTIL TEN (10) CALENDAR DAYS AFTER COUNTY HAS RECEIVED WRITTEN NOTICE AS EVIDENCED BY RETURN RECEIPT OF REGISTERED OR CERTIFIED LETTER.

It is the intention of the County, and agreed to and hereby acknowledged by the Successful Bidder, that no provision of this Contract or any ensuing Agreement shall be construed to require the County to submit to mandatory arbitration or mediation in the settlement of any claim, cause of action or dispute, except as specifically required in direct connection with an insurance claim or threat of claim under an insurance policy required hereunder which absolutely requires arbitration or mediation of such claim, or as otherwise required by law or a court of law with jurisdiction over the provisions of this Contract or any ensuing Agreement.

Workers' Compensation Coverage Requirements

The Texas Labor Code, Section 406.096, requires workers' compensation insurance coverage for all persons providing services on a building or construction project for a governmental entity such as the County. The rule requires the County to timely obtain certificates of coverage and retain them for the duration of the project. The rule also sets out the language to be included in the Bid specifications and in contracts awarded by a governmental entity and the information required to be in the posted notice to employees. The rule is adopted under the Texas Labor Code, Section 402.061.

The information provided below is a result of this rule. By submitting your Bid to the County, you are acknowledging that this rule is a part of these Bid specifications, and that you will observe and abide by all of the requirements outlined in the rule. You are further agreeing that should your Bid be accepted by the Williamson County Commissioners Court, the necessary certificates of coverage showing workers' compensation coverage, will be provided to the following name and address prior to beginning work:

Williamson County Purchasing Department
901 S. Austin Ave.
Georgetown, TX 78626

Failure to comply with this request may result in termination of the Contract and any ensuing Agreement. If you have any questions related to this ruling and/or requirement, you are encouraged to contact either the Williamson County Purchasing Department at (512) 943-1546, or you may call the Texas Workers' Compensation Commission at (800) 372-7713.

A. The following words and terms, when used in this provision, shall have the following meanings. Terms not defined in this rule shall have the meaning defined in the Texas Labor Code, if so defined.

1. Certificate of coverage (certificate) – A copy of a certificate of insurance, a certificate of authority to self-insure issued by the commission, or a workers' compensation coverage agreement (TWCC-81, TWCC-82, TWCC-83, or TWCC-84), showing statutory workers' compensation insurance coverage for the person's or entity's employees (including those subject to a coverage agreement) providing services on a project, for the duration of the project.

2. Building or Construction – Has the meaning defined in the Texas Labor Code, Section 406.096(e)(1).

3. Contractor – A person bidding for or awarded a building or construction project by Williamson County.

4. Coverage – Workers' compensation insurance meeting the statutory requirements of the Texas Labor Code, Section 401.011(44).

5. Coverage agreement – A written agreement on form TWCC-81, form TWCC-82, form TWCC-83, or form TWCC-84, filed with the Texas Workers' Compensation Commission which establishes a relationship between the parties for purposes of the Texas Workers' Compensation Act, pursuant to the Texas Labor Code, Chapter 406, Subchapters F and G, as one of employer/employee and establishes who will be responsible for providing workers' compensation coverage for persons providing services on the project.

6. Duration of the project--Includes the time from the beginning of work on the project until the work on the project has been completed and accepted by the County.

7. Persons providing services on the project ("subcontractor" in the Texas Labor Code, Section 406.096) – includes all persons or entities performing all or part of the services the contractor has undertaken to perform on the project, regardless of whether that person contracted directly with the contractor and regardless of whether that person has employees. This includes, without limitation, independent contractors, subcontractors, leasing companies, motor carriers, owner-operators, employees of any such entity, or employees of any entity which furnishes persons to provide services on the project. "Services" include, without limitation, providing, hauling, or delivering equipment or materials, or providing labor, transportation, or other service related to a project. "Services" does not include activities unrelated to the project, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.

8. Project – Includes the provision of all services related to a building or construction contract for the County.

B. The contractor shall provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of the Texas Labor Code, Section 401.011(44), for all employees of the contractor providing services on the project, for the duration of the project.

C. The Contractor must provide a certificate of workers compensation coverage to Williamson County prior to being awarded the Contract.

D. If the coverage period shown on the contractor's current certificate of coverage ends during the duration of the project, the contractor must, prior to the end of the coverage period, file a new certificate of coverage with Williamson County showing that coverage has been extended.

E. The contractor shall obtain from each person providing services on a project, and provide to the County:

1. A certificate of coverage, prior to that person beginning work on the project, so Williamson County will have on file certificates of coverage showing coverage for all persons providing services on the project; and

2. No later than seven days after receipt by the contractor, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project.

F. The contractor shall retain all required certificates of coverage for the duration of the project and for one year thereafter.

G. The contractor shall notify the County in writing by certified mail or personal delivery, within ten (10) days after the contractor knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project.

H. The contractor shall post on each project site a notice, in the text, form and manner prescribed by the Texas Workers' Compensation Commission, informing all persons providing services on the project that they are required to be covered, and stating how a person may verify coverage and report lack of coverage.

I. The contractor shall contractually require each person with whom it contracts to provide services on a project, to:

1. Provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, Section 401.011(44), for all of its employees providing services on the project, for the duration of the project;

2. Provide to the contractor, prior to that person beginning work on the project, a certificate of coverage showing that coverage is being provided for all employees of the person providing services on the project, for the duration of the project;

3. Provide the contractor, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project;

4. Obtain from each other person with whom it contracts, and provide to the contractor:

    i. (a) a certificate of coverage, prior to the other person beginning work on the project; and
    ii. (b) a new certificate of coverage showing extension of coverage, prior to the end of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the project;

5. Retain all required certificates of coverage on file for the duration of the project and for one year thereafter;

6. Notify the County in writing by certified mail or personal delivery, within ten (10) days after the person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project; and

7. Contractually require each person with whom it contracts, to perform as required by paragraphs 1 – 7, with the certificates of coverage to be provided to the person for whom they are providing services

J. By signing this Contract or providing or causing to be provided a certificate of coverage, the contractor is representing to Williamson County that all employees of the contractor who will provide services on the project will be covered by workers' compensation coverage for the duration of the project, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with the appropriate insurance carrier or, in the case of a self-insured, with the commission's Division of Self-Insurance Regulation. Providing false or misleading information may subject the contractor to administrative penalties, criminal penalties, civil penalties, or other civil actions.

K. The contractor's failure to comply with any of these provisions is a breach of Contract by the contractor which entitles the County to declare the contract void if the contractor does not remedy the breach within ten (10) days after receipt of notice of breach from the County.

AGREEMENT
BETWEEN OWNER AND CONTRACTOR

The **Owner**: Williamson County
710 Main Street, Ste. 101
Georgetown, Texas 78626

and **Contractor** _____
_____
_____ _____

for the **Project**: _____
_____
_____ _____

Architect: _____
_____
_____ _____

AGREEMENT, this Agreement Between Owner and Contractor (hereinafter called "Agreement") is entered into effective as of the date indicated herein below and all attachments (the "Effective Date"), by and between Williamson County a political subdivision of the State of Texas (hereinafter called the "Owner") and _____ (hereinafter called "Contractor").

WHEREAS, the Owner desires to retain a Contractor for the _____ (hereinafter called the "Project"),

WHEREAS, the Owner desires a Contractor who will render, diligently and competently in accordance with the highest standards used in the profession, all Contractor services which shall be necessary or advisable for the expeditious, economical and satisfactory completion of the Project, and

NOW, THEREFORE, in consideration of the mutual undertakings herein contained, the parties hereto agree as follows:

ARTICLE 1 SCOPE OF WORK

The Contractor has overall responsibility for and shall provide complete construction services and furnish all materials, equipment, tools and labor as necessary or reasonably inferable to complete the Work, or any phase of the Work, in accordance with the Specifications and Drawings for the Project and the Owner's requirements. The Specifications and Drawings were prepared for Williamson County by the Architect. The Contractor shall do everything required by the Contract Documents.

ARTICLE 2 CONTRACT DOCUMENTS

2.1 The Contract Documents consist of the following, which are incorporated by reference for all purposes:

a. This Agreement and all exhibits and attachments listed, contained or referenced in this Agreement;
b. The Uniform General Conditions for Williamson County ("General Conditions");
c. The Supplementary or Special Conditions, if any;
d. All Addenda issued prior to the Effective Date of this Agreement;
e. The Bid/Proposal Documents as defined by the Invitation for Bidders/Request for Proposals;
f. All Change Orders issued after the Effective Date of this Agreement;
g. Minimum Insurance Coverages and Minimum Coverage Amounts, which is attached here to as **Exhibit 1**; and
h. The Drawings, Specifications, details and other documents developed by Architect to describe the Project and accepted by Owner, which are attached hereto **Exhibit 2**.

2.2 The Contract Documents form the entire and integrated Contract and Agreement between Owner and Contractor and supersede all prior negotiations, representations or agreements, written or oral. Contractor acknowledges receipt of all Contract Documents as of the date of its execution hereof.

2.3 The term "Contractor" shall be interchangeable with the terms "Proposer," "Bidder," Respondent" and "General Contractor" or other similar terms as appropriate in the Contract Documents.

ARTICLE 3 CONTRACT TIME

The Owner shall provide a Notice to Proceed in which a date for commencement of the work shall be started. The Contractor shall achieve Substantial Completion of the Work within _____ (_____) calendar days after such commencement date, as such completion date may be extended by approved Change

Orders. Unless otherwise specified in writing, Contractor shall achieve Final Completion within _____ (_____) calendar days of Substantial Completion. The time set forth for completion of the work is an essential element of the Contract.

ARTICLE 4 CONTRACTOR REPRESENTATIONS

4.1 In order to induce Owner to enter into this Agreement, Contractor makes the following representations:

A. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bid/Proposal Documents.

B. Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Contractor is familiar with and is satisfied as to all federal, state, and local laws and regulations that may affect cost, progress, and performance of the Work.

D. Contractor has considered the information known to Contractor; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Contract Documents; and (3) Contractor's safety precautions and programs.

E. Based on the information and observations referred to in Paragraph 4.1.D above, Contractor does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.

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

G. Contractor has given Architect written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Architect is acceptable to Contractor.

H. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

ARTICLE 5 THE CONTRACT PRICE; OWNER'S CONSTRUCTION CONTINGENCY

5.1 Contract Price. Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents the amount of **$**_____

5.2 Contract Payments. Method and terms of payment of the Contract Price shall be in accordance with the Contract Documents.

5.3 Owner's Construction Contingency. The following lump sum amount shall serve as the Owner's Construction Contingency from which changes in the Work are to be paid in accordance with the General Conditions:

$_____

The Owner's Construction Contingency is controlled solely by the Owner and such amount is not included in the Contract Price set out in 5.1 above. Expenditures from the Owner's Construction Contingency must be made by Change Order issued by the Architect and approved by the Owner in accordance with the General Conditions. Contractor shall not be entitled to any compensation from the any unused amounts of the Owner's Construction Contingency.

5.4 Allowable Overhead and Profit Markup on Changes in the Work. In case of an increase in the Contract Price due to a change in the Work and in accordance with § 7.3.7 of the General Conditions, the amounts Contractor may add to the pricing of a change for overhead and profit are as follows:

a. For Work performed directly by Contractor with its Own Employees: Contractor may add up to 15% for Work performed directly by Contractor for any specific change.

b. For Managing Subcontracted Work: Contractor may add up to 10% for managing subcontracted Work for any specific change.

Only one percentage, referenced above, shall be used for the purpose of calculating the markup for a specific change amount. On changes involving both additions and deletions,

the allowed markup will be allowed only on the net addition. The allowed markup shall cover all overhead expenses and profit of any kind relating to the specific change.

ARTICLE 6 TIME

6.1 TIME LIMITS STATED IN THE CONTRACT DOCUMENTS ARE OF THE ESSENCE OF THIS AGREEMENT.

6.2 Unless otherwise approved in writing, the Owner and the Contractor shall perform their respective obligations under the Contract Documents as expeditiously as is consistent with reasonable skill and care and the orderly progress of the Work.

6.3 Liquidated Damages. Contractor and Owner recognize that time is of the essence and that Owner will suffer financial loss if the Work is not completed within the times specified in Article 3 above, plus any extensions thereof allowed in accordance with the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, for each consecutive calendar day after the date of Substantial Completion that the Work is not substantially completed, the Owner may deduct the amount of:

Five Hundred Dollars per calendar day ($500.00/calendar day)

from any money due or that becomes due the Contractor, not as a penalty but as liquidated damages representing the parties' estimate at the time of contract execution of the damages that the Owner will sustain for late completion. The parties stipulate and agree that calculating Owner's actual damages for late completion of the Project would be impractical, unduly burdensome, and cause unnecessary delay and that the amounts of daily liquidated damages set forth are reasonable. Contractor expressly agrees that the amounts of daily liquidated damages are a reasonable forecast of the actual damages Owner will incur due to any such delay.

ARTICLE 7 NOTICES

Notices of claims, disputes or other legal notices shall be in writing and shall be deemed to have been given when delivered in person to the representative of the Contractor or Owner for whom it is intended, as set out below or sent by U. S. Mail to the representative of the Contractor or Owner for whom it is intended, as set out below. Mail notices are deemed effective upon receipt or on the third business day after the date of mailing, whichever is sooner.

If to Owner: Williamson County Judge
710 Main Street, Ste. 101
Georgetown, Texas 78626

with copy to: Hal C. Hawes
General Counsel to the
Williamson County Commissioners Court
710 Main Street, Suite 102
Georgetown, Texas 78626

If to Contractor: _____
_____
_____ _____

The parties may make reasonable changes in the person or place designated for receipt of notices upon advance written notice to the other party.

ARTICLE 8 PARTY REPRESENTATIVES

The Owner's Designated Representative (sometimes referred to as the "ODR") authorized to act in the Owner's behalf with respect to the Project is:

_____
_____
_____ _____
Phone (512) _____
Fax (512) _____

The Contractor's designated representative authorized to act on the Contractor's behalf and bind the Contractor with respect to the Project is:

_____
_____
_____ _____
Phone (512) _____
Fax (512) _____

The parties may make reasonable changes in their designated representatives upon advance written notice to the other party.

ARTICLE 9 ENTIRE AGREEMENT

This Agreement supersedes all prior agreements, written or oral, between Contractor and Owner and shall constitute the entire agreement and understanding between the parties with respect to the Project. This Agreement and the terms of the Contact Documents shall

be binding upon the parties and may not be waived, modified, amended or altered except by a writing signed by Contractor and Owner.

BY SIGNING BELOW, the Parties have executed and bound themselves to this Agreement to be effective as of the date of the last party's execution below (the "Effective Date").

WILLIAMSON COUNTY Williamson County, Texas,	_____, a Texas _____,
By: _____	By: _____
Printed Name: _____	Printed Name: _____
Title: _____	Title: _____
Date: _____ ____, 20____	Date: _____ ____, 20____

EXHIBIT 1

Minimum Insurance Coverages
and
Minimum Coverage Amounts

A. All policies of insurance provided by the Contractor must comply with the requirements of this Exhibit, the Contract Documents and the laws of the State of Texas.

B. The Contractor shall provide and maintain, until the Work covered in the Agreement Between Owner and Contractor is completed and accepted by the Owner, the minimum insurance coverages in the minimum amounts as described below. Coverage shall be written on an occurrence basis by companies authorized and admitted to do business in the State of Texas and rated A- or better by A.M. Best Company, or otherwise acceptable to Owner.

	Type of Coverage	Limits of Liability
1.	Worker's Compensation	Statutory
2.	Employer's Liability	
	Bodily Injury by Accident	$500,000 Ea. Accident
	Bodily Injury by Disease	$500,000 Ea. Employee
	Bodily Injury by Disease	$500,000 Policy Limit

3. Comprehensive general liability including completed operations and contractual liability insurance for bodily injury, death, or property damages in the following amounts:

COVERAGE	PER OCCURRENCE
Comprehensive General Liability (including premises, completed operations and contractual)	$1,000,000
Aggregate policy limits:	$2,000,000

4. Comprehensive automobile and auto liability insurance (covering owned, hired, leased and non-owned vehicles):

COVERAGE	PER PERSON	PER OCCURRENCE
Bodily injury (including death)	$1,000,000	$1,000,000

Property damage	$1,000,000	$1,000,000
Aggregate policy limits	No aggregate limit	

5. Builder's Risk Insurance (all risks)
An all risk policy, in the amount equal at all times to 100% of the Contract Price or Contract Sum. The policy shall be issued in the name of the Contractor and shall name its Subcontractors as additional insureds. The Owner shall be named as a loss payee on the policy. The builders risk policy shall have endorsements as follow:

a. This insurance shall be specific as to coverage and not considered as contributing insurance with any permanent insurance maintained on the present premises. If off-site storage is permitted, coverage shall include transit and storage in an amount sufficient to protect property being transported or stored.

b. This insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, caused by certified acts of terrorism as defined in the Terrorism Risk Insurance Act, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss as well as coverage for building materials while in transit or building materials suitably stored at a temporary location. Property insurance provided by the Contractor shall not cover any tools, apparatus, machinery, scaffolding, hoists, forms, staging, shoring, and other similar items commonly referred to as construction equipment that may be on the site and the capital value of which is not included in the Work. The Contractor shall make its own arrangements for any insurance it may require on such construction equipment. Any such policy obtained by the Contractor under this section shall include a waiver of subrogation in accordance with the requirements of Section 11.3.4 of the General Conditions.

C. For renovation projects and or portions of work contained within an existing structure, the Owner waives subrogation for damage by fire to existing building structure(s), if the Builder's Risk Policy has been endorsed to include coverage for existing building structure(s) in the amount described in the Special Conditions. However, Contractor shall not be required to obtain such an endorsement unless specifically required by the

Special Conditions in the Contract Documents. The aforementioned waiver of subrogation shall not be effective unless such endorsement is obtained.

6. Flood insurance when specified in Supplementary General Conditions or Special Conditions.

7. Umbrella coverage in the amount of not less than $5,000,000.

C. Workers' Compensation Insurance Coverage:

a. Definitions:

(1) Certificate of coverage ("certificate") - A copy of a certificate of insurance, a certificate of authority to self-insure issued by the Texas Workers' Compensation Commission, or a coverage agreement (TWCC-81, TWCC-82, TWCC-83, or TWCC-84), showing statutory workers' compensation insurance coverage for the person's or entity's employees providing services on a project, for the duration of the Project.
(2) Duration of the Project - includes the time from the beginning of the work on the Project until the Contractor's/person's work on the Project has been completed and accepted by the Owner.
(3) Coverage – Workers' compensation insurance meeting the statutory requirements of the Texas Labor Code, §401.011(44).
(4) Persons providing services on the Project ("subcontractor") - includes all persons or entities performing all or part of the services the Contractor has undertaken to perform on the Project, regardless of whether that person contracted directly with the Contractor and regardless of whether that person has employees. This includes, without limitation, independent contractors, subcontractors, leasing companies, motor carriers, owner-operators, employees of any such entity, or employees of any entity which furnishes persons to provide services on the Project. "Services" include, without limitation, providing, hauling, or delivering equipment or materials, or providing labor, transportation, or other service related to a project. "Services" does not include activities unrelated to the Project, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.

b. The Contractor shall provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, §401.011(44) for all employees of the Contractor providing services on the Project, for the duration of the Project.
c. The Contractor must provide a certificate of coverage prior to execution of the Agreement Between Owner and Contractor, and in no event later than ten (10)

days from Notice of Award. Failure to provide the insurance in a timely fashion may result in loss of Contractor's bid bond.

d. If the coverage period shown on the Contractor's current certificate of coverage ends during the duration of the Project, the Contractor must, prior to the end of the coverage period, file a new certificate of coverage with the Owner showing that coverage has been extended.
e. The Contractor shall obtain from each person providing services on a project, and provide to the Owner:

    (1) a certificate of coverage, prior to that person beginning work on the Project, so the Owner will have on file certificates of coverage showing coverage for all persons providing services on the Project; and
    (2) no later than seven days after receipt by the Contractor, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the Project.

f. The Contractor shall retain all required certificates of coverage for the duration of the Project and for one year thereafter.
g. The Contractor shall notify the Owner in writing by certified mail or personal delivery, within 10 days after the Contractor knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the Project.
h. The Contractor shall post on each project site a notice, in the text, form and manner prescribed by the Texas Workers' Compensation Commission, informing all persons providing services on the Project that they are required to be covered, and stating how a person may verify coverage and report lack of coverage.

i. The Contractor shall contractually require each person with who it contracts to provide services on a project, to:

    (1) provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas labor Code, Section 401.011(44) for all of its employees providing services on the Project, for the duration of the Project;
    (2) provide to the Contractor, prior to that person beginning work on the Project, a certificate of coverage showing that coverage is being provided for all employees of the person providing services on the Project, for the duration of the Project;
    (3) provide the Contractor, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the Project;

(4) obtain from each other person with whom it contracts, and provide to the Contractor:

a. a certificate of coverage, prior to the other person beginning work on the Project; and

b. a new certificate of coverage showing extension of coverage, prior to the end of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the Project;

(5) retain all required certificate of coverage on file for the duration of the Project and for one year thereafter;

(6) notify the Owner in writing by certified mail or personal delivery, within 10 days after the person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the Project; and

(7) contractually require each person with whom it contracts, to perform as required by paragraphs (1)-(7), with the certificates of coverage to be provided to the person for whom they are providing services.

j. By signing the Agreement Between Owner and Contractor or providing or causing to be provided a certificate of coverage, the Contractor is representing to the Owner that all employees of the Contractor who will provide services on the Project will be covered by workers' compensation coverage for the duration of the Project, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with the appropriate insurance carrier or, in the case of a self-insured, with the commission's Division of Self-Insurance Regulation. Providing false or misleading information may subject the Contractor to administrative penalties, criminal penalties, civil penalties, or other civil actions.

k. The Contractor's failure to comply with any of these provisions is a breach of contract by the Contractor which entitles the Owner to declare the Agreement Between Owner and Contractor void if the Contractor does not remedy the breach within ten days after receipt of notice of breach from the Owner.

D. If insurance policies are not written for the amounts specified in this Exhibit, Contractor shall carry Umbrella or Excess Liability Insurance for any differences in amounts specified. If Excess Liability Insurance is provided, it shall follow the form of primary coverage.

E. The furnishing of the above listed insurance coverage, as may be modified by the Contract Documents, must be tendered prior to execution of the Agreement Between Owner and Contractor, and in no event later than ten (10) days from Notice of Award. Failure to provide the insurance in a timely fashion may result in loss of Contractor’s bid bond.

F. Owner shall be entitled, upon request and without expense, to receive copies of the policies and all endorsements as they apply to the limits set out in this Exhibit.

G. Contractor shall be responsible for payment of premiums for all of the insurance coverages required under this Exhibit. Contractor further agrees that for each claim, suit or action made against insurance provided hereunder, with respect to all matters for which the Contractor is responsible hereunder, Contractor shall be solely responsible for all deductibles and self-insured retentions. Any deductibles or self-insured retentions over **$75,000** in the Contractor's insurance must be declared and approved in writing by Owner in advance.

EXHIBIT 2 –DRAWINGS AND SPECIFICATIONS

FOR

_____

LIST OF DRAWINGS

DWG	DRAWING TITLE	ISSUE DATE

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For
TECHNICAL SPECIFICATION SECTIONS

DIVISION 1

END OF TECHNICAL SPECIFICATIONS

UNIFORM GENERAL CONDITIONS
FOR WILLIAMSON COUNTY

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 BASIC DEFINITIONS

§ 1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract as revised, Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Owner or the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding requirements.

§ 1.1.2 THE CONTRACT

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants or (4) between any persons or entities other than the Owner and the Contractor.

§ 1.1.3 THE WORK
The term “Work” means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor’s obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 THE PROJECT
The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by separate contractors.

§ 1.1.5 THE DRAWINGS
The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

§ 1.1.6 THE SPECIFICATIONS
The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 INSTRUMENTS OF SERVICE
Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect’s consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 KNOWLEDGE: The terms "knowledge," "recognize," and "discover," their respective derivatives, and similar terms in the Contract Documents, as used in reference to the Contractor, shall be interpreted to mean that which the Contractor knows (or should know), recognizes (or should recognize), and discovers (or should discover) in exercising the care, skill, and diligence required by the Contract Documents. Analogously, the expression "reasonably inferable" and similar terms in the Contract Documents shall be interpreted to mean reasonably inferable by a contractor familiar with the Project and exercising the care, skill, and diligence required of the Contractor by the Contract Documents.§1.1.10 PRODUCT: Materials, systems, and equipment incorporated or to be incorporated in the Work.

§1.1.9 PROVIDE: Furnish and install and shall include, without limitation, labor, materials, equipment, transportation, services and other items required to complete the referenced tasks.

§1.1.02 FURNISH: Pay for, deliver (or receive), unload, inspect, and store products, materials, equipment, and accessories as specified while retaining care, custody and control until received for installation based on a signed receipt.

§ 1.1.11 INSTALL: Receive, unload, inspect, and store as specified while retaining care, custody and control; set or place in position, make required connections; and adjust and test as specified in the Contract Documents for satisfactory performance and operation.

§ 1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS
§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the intended results. In the event of inconsistencies within or between parts of the Contract Documents, or between the Contract Documents and applicable standards, codes, and ordinances, the Contractor shall (i) provide the better quality or greater quantity of Work or (ii) comply with the more stringent requirement; either or both in accordance with the Owner or the Architect’s

interpretation. The terms and conditions of this Section 1.2.1, however, shall not relieve the Contractor of any of the obligations set forth in the Contract Documents.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.2.3.1 Whenever a product is specified in accordance with a Federal Specification, an ASTM Standard, an American National Standards Institute Specification, or other Association Standard, the Contractor, if required by the Specifications or if requested by the Owner, shall present evidence from the manufacture, certifying the product complies with the particular Standard or Specification. When required by the Contract Documents, supporting data shall be submitted to substantiate compliance.

§ 1.2.3.2 Whenever a product is specified or shown by describing proprietary items, model numbers, catalog numbers, manufacturer, trade names, or similar reference, no substitutions may be made unless accepted in strict accordance with the Substitution requirements stated in the Specifications or, if no Substitution requirements are stated in the Specifications, in accordance with the requirements stated elsewhere in the Contract Documents. Where two or more products are shown or specified, the Contractor has the option to use either of those shown or specified.

§ 1.3 CAPITALIZATION
Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 INTERPRETATION
In the interest of brevity the Contract Documents frequently omit modifying words such as “all” and “any” and articles such as “the” and “an,” but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 USE OF DRAWINGS AND OTHER INSTRUMENTS OF SERVICE
§ 1.5.1 The Architect and the Architect’s consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and will retain all common law, statutory and other reserved rights, including copyrights, except as provided in the Owner-Architect Agreement. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect’s or Architect’s consultants’ reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce the Instruments of Service provided to them solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect’s consultants.

§ 1.6 TRANSMISSION OF DATA IN DIGITAL FORM
If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall establish the necessary protocols governing such transmissions in writing, unless otherwise already provided in the Agreement or the Contract Documents.

ARTICLE 2 OWNER

§ 2.1 GENERAL

The Owner means Williamson County acting through any duly authorized representative as provided in the Agreement, and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization ("Owner's Designated Representative"). The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.2 OWNER

§ 2.2.1 Appropriation of Funds by Owner. Owner believes it has sufficient funds currently available and authorized for expenditure to finance the costs of the Agreement between Owner and Contractor. Contractor understands and agrees that the Owner's payment of amounts under the Agreement between Owner and Contractor is contingent on the Owner receiving appropriations or other expenditure authority sufficient to allow the Owner, in the exercise of reasonable administrative discretion, to continue to make payments under the Agreement.

§ 2.2.2 Unless specifically stated otherwise in the Contract Documents, Contractor shall secure and pay for necessary permits, approvals, assessments, and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.2.3 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. Except for surveys or grade information, the Contractor shall compare the information furnished by the Owner, including, but not limited to, soil tests, with visibly observable physical conditions and the Contract Documents and, on the basis of such review, promptly report to the Owner and the Architect any known conflicts, errors or omissions. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.2.4 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.2.5 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions.

§ 2.3 OWNER'S RIGHT TO STOP THE WORK

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity.

§ 2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

§2.5 EXTENT OF OWNER RIGHTS

§ 2.5.1 The rights stated in this Article 2 and elsewhere in the Contract Documents are cumulative and not in limitation of any rights of the Owner (i) granted in the Contract Documents, (ii) at law, or (iii) in equity.

§ 2.5.2 In no event shall the Owner have control over, charge of, or any responsibility for construction means, methods, techniques, sequences, or procedures or for safety precautions and programs in connection with the Work, notwithstanding any of the rights and authority granted the Owner in the Contract Documents.

§ 2.6 OWNER'S RIGHT TO RECORDS

§ 2.6.1 The Contractor's records, which shall include but not be limited to accounting records, written policies and procedures, subcontractor files (including proposals of successful bidders), original estimates, estimating work sheets, correspondence, schedules, change order files (including documentation covering negotiated settlements), and any other supporting evidence necessary to substantiate charges related to this contract (all foregoing hereinafter referred to as "records") and shall be open to inspection and subject to audit and/or reproduction, during normal working hours, by Owner's agent or its authorized representative to the extent necessary to adequately permit evaluation and verification of any invoices, payments or claims submitted by the Contractor or any of his payees. Such records subject to examination shall also include, but not be limited to, those records necessary to evaluate and verify direct and indirect costs (including overhead allocations) as they may apply to costs associated with this Contract.

§ 2.6.2 For the purpose of such audits, inspections, examinations and evaluations, the Owner's agent, or authorized representatives shall have access to said records from the effective date of this Contract for the duration of Work and until three (3) years (or longer if required by law) after the date of final payment by Owner to Contractor.

§ 2.6.3 Owner's agent or its authorized representative shall have access during normal business hours to the Contractor's facilities, shall have access to all necessary records and shall be provided adequate and appropriate work space, in order to conduct audits in compliance with this Article 2.6. Owner's agent or authorized representative shall give auditees reasonable advance notice of intended audits.

§ 2.6.4 Contractor shall require all subcontractors, insurance agents, and material suppliers (payees) with cost plus contracts, if permitted, and not fixed price contracts to comply with the provisions of this Article by insertion of the requirements hereof in a written contract agreement between Contractor and payee. Failure to obtain such written contracts which include such provisions shall be reason to exclude some or all of the related payee's costs from amounts payable to the Contractor pursuant to this contract.

ARTICLE 3 CONTRACTOR

§ 3.1 GENERAL

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative, and if these General Conditions are used in conjunction with the Agreement between Owner and Construction Manager-At-Risk, the term "Contractor" shall mean the Construction Manager.

§ 3.1.2 The Contractor shall perform the Work in strict accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents. Prior to execution of the Agreement, the Contractor and each Subcontractor shall have evaluated and satisfied themselves as to the observable conditions and limitations under which the Work is to be performed, including, without limitation, (i) the location, condition, layout, and nature of the Project site and surrounding areas, (ii) generally prevailing climatic conditions, (iii) anticipated labor supply and costs, (iv) availability and cost of materials, tools, and equipment, and (v) other similar issues. The Owner assumes no responsibility or liability for the physical condition or safety of the Project site or any improvements located on the Project site. Except as set forth in Section 10.3, the Contractor shall be solely responsible for providing a safe place for the performance of the Work. The Owner shall not be required to make any adjustment in either the Contract Sum or the Contract Time in connection with any failure by the Contractor or any Subcontractor to have complied with the requirements of this Section 3.2.1.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.2.3, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Owner and Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner. The Contractor shall verify the accuracy of elevations, dimensions, locations, and field measurements. In all cases of the interconnection of its Work with existing or other Work, the Contractor shall verify at the site all dimensions relating to such existing or other Work.

.1 All of Contractor's work shall conform to the Contract Documents. Contractor shall be responsible for the details of the Work necessary to carry out the intent of the drawings and specifications, or which are customarily performed. When more detailed information is required for performance of the Work or when an interpretation of the Contract Documents is requested, the Contractor shall submit a written request for information to the Architect or Owner (as required), and the Owner or Architect shall furnish such information or interpretation. Where only part of the Work is indicated, similar parts shall be considered repetitive. Where any detail is shown and components thereof are fully described, similar details not fully described shall be considered to incorporate the fully described details and components.

.2 The Contractor has had an opportunity to examine, and has carefully examined, all of the Contract Documents and Project site, and has fully acquainted itself with the scope of work, design, availability of materials, existing facilities, access, general topography, soil structure, subsurface conditions, obstructions, and all other conditions pertaining to the Work, the site of the Work, and its surrounding; that it has made necessary investigations to a full understanding of the difficulties which may be encountered in performing the Work; and that anything in any Contract Documents, or in any representations, statements, or information made or furnished by Owner or its representatives notwithstanding, Contractor will complete the Work for the compensation stated in the Agreement. In addition thereto, Contractor represents that it is fully qualified to do the Work in accordance with the terms of this Agreement in the time specified.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Owner and the Architect any nonconformity discovered by or made known to the Contractor as a request for information.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall make Claims as provided in Article 15.

§ 3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Architect and shall not proceed with that portion of the Work without further written instructions from the Architect. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any loss or damage arising solely from those Owner-required means, methods, techniques, sequences or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.3.4 Inspection of the progress, quantity, or quality of the Work done by the Owner, any Owner's representative, any governmental agency, or the Architect, or any inspector, shall not relieve the Contractor of any responsibility for the compliance of the Work with the Contract Documents. The Owner or its approved representative (heretofore referred to as Owner's representative) shall have access to the worksite and all Work. No supervision or inspection by the Owner's representative, nor the authority to act nor any other actions taken by the Owner's representative shall relieve the Contractor of any of its obligations under the Contract Documents nor give rise to any duty on the part of the Owner.

§ 3.4 LABOR AND MATERIALS

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.1.1 Duty to Pay Prevailing Wage Rates. The Contractor shall pay not less than the wage scale of the various classes of labor as shown on the "Prevailing Wage Schedule" provided by the Owner. The specified wage rates are minimum rates only, and are not representations that qualified labor adequate to perform the Work is available locally at the prevailing wage rates. The Owner is not bound to pay—and will not consider—any claims for additional compensation made by any Contractor because the Contractor pays wages in excess of the applicable minimum rate contained in the Contract Documents. The "Prevailing Wage Schedule" is not a representation that quantities of qualified labor adequate to perform the Work may be found locally at the specified wage rates.

.1 For classifications not shown, workers shall not be paid less than the wage indicated for Laborers. The Contractor shall notify each worker commencing work on the Project the worker's job classification and the established minimum wage rate required to be paid, as well as the actual amount being paid. The notice must be delivered to and signed in acknowledgement of receipt by the employee and must list both the monetary wages and fringe benefits to be paid or furnished for each classification in which the worker is assigned duties. When requested by Owner, competent evidence of compliance with the Texas Prevailing Wage Law shall be furnished by Contractor.

.2 A copy of each worker wage rate notification shall be submitted to the Owner with the Application for Payment for the period during which the worker began on-site activities.

§ 3.4.1.2 Prevailing Wage Schedule. The "Prevailing Wage Schedule" shall be determined by the Owner in compliance with Chapter 2258, Texas Government Code. Should the Contractor at any time become aware that a particular skill or trade not reflected on the Owner's Prevailing Wage Schedule will be or is being employed in the Work, whether by the Contractor or by a subcontractor, the Contractor shall promptly inform the Owner and shall specify a wage rate for that skill or trade, which shall bind the Contractor.

§ 3.4.1.3 Penalty for Violation. The Contractor and any Subcontractor shall pay to the Owner a penalty of sixty dollars ($60.00) for each worker employed for each calendar day, or portion thereof, that the worker is paid less than the wage rates stipulated in the Prevailing Wage Schedule or any supplement thereto pursuant to §3.4.1.2. The Contractor and each Subcontractor shall keep, or cause to be kept, an accurate record showing the names and occupations of all workers employed in connection with the Work, and showing the actual per diem wages paid to each worker, which records shall be open at all reasonable hours for the inspection by the Owner.

§ 3.4.1.4 Complaints of Violations of Prevailing Wage Rates. Within 31 days of receipt of information concerning a violation of Chapter 2258 of the Texas Government Code, the Owner shall make an initial determination as to whether good cause exists to believe a violation occurred. The Owner's decision on the initial determination shall be reduced to writing and sent to the Contractor or Subcontractor against whom the violation was alleged, and to the affected worker. When a good cause finding is made, the Owner shall retain the full amounts claimed by the claimant or claimants as the difference between wages paid and wages due under the Prevailing Wage Schedule and any supplements thereto, together with the applicable penalties, such amounts being subtracted from successive progress payments pending a final decision on the violation.

§ 3.4.1.5 Arbitration Required if Violation not Resolved. After the Owner makes its initial determination, the affected Contractor or Subcontractor and worker have 14 days in which to resolve the issue of whether a violation occurred, including the amount that should be retained by Owner or paid to the affected worker. If the Contractor or Subcontractor and affected worker reach an agreement concerning the worker's claim, the Contractor shall promptly notify the Owner in a written document signed by the worker. It the Contractor or Subcontractor and affected worker do not agree before the 15th day after the Owner's determination, the Contractor or Subcontractor and affected worker must participate in binding arbitration in accordance with the Texas General Arbitration Act, Chapter 171, Tex. Civ. Prac. & Rem. Code. The parties to the arbitration have 10 days after the expiration of the 15 days referred to above, to agree on an arbitrator; if by the 11th day there is no agreement to an arbitrator, a district court shall appoint an arbitrator on the petition of any of the parties to the arbitration.

§ 3.4.1.6 Arbitration Award. If an arbitrator determines that a violation has occurred, the arbitrator shall assess and award against the Contractor or Subcontractor the amount of penalty as provided in this Article 3.4 and the amount owed the worker. The Owner may use any amounts retained hereunder to pay the worker the amount as designated in the arbitration award. If the Owner has not retained enough from the Contractor or Subcontractor to pay the worker in accordance with the arbitration award, the worker has a right of action against the Contractor and Subcontractor as appropriate, and the surety of

either to receive the amount owed, attorneys' fees and court costs. The Contractor shall promptly furnish a copy of the arbitration award to the Owner.

§ 3.4.1.7 Prevailing Wage Retainage. Money retained pursuant to this Article 3.4 shall be used to pay the claimant or claimants the difference between the amount the worker received in wages for labor on the Project at the rate paid by the Contractor or Subcontractor and the amount the worker would have received at the general prevailing wage rate as provided by the agreement of the claimant and the Contractor or Subcontractor affected, or in the arbitrator's award. The full statutory penalty of $60.00 per day of violation per worker shall be retained by the Owner to offset its administrative costs, pursuant to Texas Government Code §2258.023. Any retained funds in excess of these amounts shall be paid to the Contractor on the earlier of the next progress payment or final payment. Provided, however, that the Owner shall have no duty to release any funds to either the claimant or the Contractor until it has received the notices of agreement or the arbitration award as provided under §§3.4.2 and 3.4.3.

§ 3.4.1.8 No Extension of Time. If the Owner determines that good cause exists to believe a violation has occurred, the Contractor shall not be entitled to an extension of time for any delay arising directly or indirectly from of the procedures set forth in this Article 3.4.

§ 3.4.2 Except in the case of minor changes in the Work authorized by the Owner or Architect in accordance with Sections 3.12.8 or 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive. If the Contractor desires to submit an alternate product or method in lieu of what has been specified or shown in the Contract Documents, the Contractor shall comply with the Substitution requirements listed in the Specifications, or if there are no Substitution requirements listed in the Specifications, then the following provisions apply:

§ 3.4.2.1 The Contractor must submit to the Architect and the Owner (i) a full explanation of the proposed substitution and submittal of all supporting data, including technical information, catalog cuts, warranties, test results, installation instructions, operating procedures, and other like information necessary for a complete evaluation of the substitution; (ii) the adjustment, if any, in the Contract Sum, in the event the substitution is acceptable; (iii) the adjustment, if any, in the time of completion of the Contract and the construction schedule in the event the substitution is acceptable; and (v) a statement indicating Contractor accepts the warranty and correction obligations in connection with the proposed substitution as if originally specified by the Architect. Proposals for substitutions shall be to the Architect in sufficient time to allow the Architect no less than ten (10) working days for review. No substitutions will be considered or allowed without the Contractor's submittal of complete substantiating data and information as stated hereinbefore.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.4.4 The Contractor shall only employ or use labor in connection with the Work capable of working harmoniously with all trades, crafts, and any other individuals associated with the Project.

§ 3.4.5. In case the progress of the Work is affected by any undue delay in furnishing or installing any items or materials or equipment required under the Contract Documents because of such conflict involving any such labor agreement or regulation, the Owner may require that other material or equipment of equal kind and quality be provided pursuant to a Change Order or Construction Change Directive.

§ 3.5 WARRANTY

§ 3.5.1 The Contractor warrants to the Owner: (1) that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise; (2) that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit; (3) that the Work will be done strictly in accordance with the Contract Documents; (4) that all products are installed

per the manufacturer's instructions, and in such a way that the manufacturer's warranties are preserved, including the use of a manufacturer-certified installer, if required by the manufacturer; (5) and that the Work, when finally completed, will provide a complete Project that meets the intent of the Contract Documents. The Contractor represents and warrants to the Owner that its materials and workmanship, including without limitation, construction means, methods, procedures and techniques necessary to perform the Work, use of materials, selection of equipment and requirements of product manufacturers are and shall be consistent with: (1) good and sound practices within the construction industry; (2) generally prevailing and accepted industry standards applicable to the Work; (3) requirements of any warranties applicable to the Work subject to Paragraph 3.2.3. Work, materials, or equipment not conforming to these requirements shall be considered defective, and promptly after written notification of non-conformance shall be repaired or replaced by Contractor with Work conforming to this warranty. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Owner or Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.1.1 Contractor further warrants that all materials or equipment of a category or classification will be a product of the same manufacturer and such materials or equipment shall be of the same lot, batch or type and that such materials and equipment will be as specified.

§ 3.5.2 The Contractor agrees to assign to the Owner at the time of final completion of the Work any and all manufacturer's warranties relating to materials and labor used in the Work and further agrees to perform the Work in such manner so as to preserve any and all such manufacturer's warranties.

§ 3.6 TAXES

State Sales and Use Taxes. Sales, use or similar taxes imposed by a governmental authority that are related to the Work and for which the Contractor is liable; provided, however, Owner is a body corporate and politic under the laws of the State of Texas and claims exemption from sales and use taxes under Texas Tax Code Ann. § 151.309, as amended, and the services and materials subject of the Agreement are being secured for use by Owner. Exemption certificates will be provided to Contractor upon request. As a precondition to the Owner reimbursing Contractor for allowable sales and use taxes, Contractor must, on its own, first attempt to use such tax exemption certificates in order to assert the exemption. In the event Contractor's efforts to use the tax exemption certificate is unsuccessful and provided that under the laws of the State of Texas an exemption from sales and use taxes is allowed, Owner will reimburse Contractor for such sales and use taxes upon Contractor providing sufficient and satisfactory documentation to the Williamson County Auditor.

§ 3.7 PERMITS, FEES, NOTICES, AND COMPLIANCE WITH LAWS

§ 3.7.1 Unless otherwise provided, the Contractor shall secure, pay for, and, as soon as practicable, furnish the Owner with copies or certificates of all permits and fees, licenses, and inspections necessary for the proper execution and completion of the Work, including, without limitation, all building permits. All connection charges, assessments, or inspection fees as may be imposed by any municipal agency or utility company are included in the Contract Sum and shall be the Contractor's responsibility.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction and damages resulting therefrom.

§ 3.7.4 Concealed or Unknown Conditions. If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, that differ materially from

those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Owner will promptly investigate such conditions and, if the Owner determines that they 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, will authorize an equitable adjustment in the Contract Sum or Contract Time, or both. If the Owner determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Owner shall promptly notify the Contractor in writing, stating the reasons. If the Contractor disputes the Owner's determination, the Contractor party may assert a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 ALLOWANCES

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

.1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

.2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and

.3 whenever costs are more than or less than allowances, the Contractor shall, prior to purchasing any such materials, notify the Owner in writing of the cost and whether such cost will exceed the amount of the allowance. If Owner authorizes Contractor to proceed, after receiving the Contractor's estimate of the total cost, then the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.9 SUPERINTENDENT

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent or Contractor's project manager shall be as binding as if given to the Contractor. Important oral communications shall be immediately confirmed in writing.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the name and qualifications of a proposed superintendent. The Owner or Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to the proposed superintendent or (2) that the Owner and Architect require additional time to review. Failure of the Owner or Architect to reply within the 14 day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

§ 3.10.1 The Contractor, as provided in the Agreement, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Architect's approval. The Architect's approval shall not unreasonably be delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.10.4 The construction schedule shall be a detailed precedence-style critical path management ("CPM") schedule in a format satisfactory to the Owner that shall (i) provide a graphic representation of all activities and events that will occur during performance of the Work; (ii) identify each phase of construction and occupancy; and (iii) set forth dates that are critical in ensuring the timely and orderly completion of the Work in accordance with the requirements of the Contract Documents (hereinafter referred to as the "Milestone Date"). Upon review and acceptance by the Owner of the Milestone Dates, the construction schedule shall be deemed part of the Contract Documents. If not accepted, the construction schedule shall be promptly revised by the Contractor in accordance with the recommendations of the Owner and resubmitted for acceptance. The Contractor shall monitor the progress of the Work for conformance with the requirements of the construction schedule and shall promptly advise the Owner of any delays or potential delays. The accepted construction schedule shall be updated to reflect actual conditions as set forth in section 3.10.1 or if requested by the Owner. In the event any progress report indicates any delays, the Contractor shall propose an affirmative plan to correct the delay, including overtime and/or additional labor, if necessary. In no event shall any progress report constitute an adjustment in the Contract Time, any Milestone date, or the Contract Sum unless any such adjustment is agreed to by the Owner and authorize pursuant to a Change Order.

§ 3.10.5 In the event the Owner determines that the performance of the Work, as of a Milestone Date, has not progressed or reach the level of completion required by the Contract Documents, the Owner shall have the right to order the Contractor to take corrective measures necessary to expedite the progress of construction, including without limitation, (i) working additional shifts or overtime, (ii) supplying additional manpower, equipment, and facilities, and (iii) other similar measures. Such measures so continue until the progress of the Work complies with the stage of completion required by the Contract Documents. The Owner's right to require such measures is solely for the purpose of ensuring the Contractors compliance with the construction schedule.

§ 3.11 DOCUMENTS AT THE SITE

The Contractor shall maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and shall be delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. Their purpose is to demonstrate the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such written notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or

equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

§ 3.13 USE OF SITE

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 CUTTING AND PATCHING

§ 3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly as required by the Contract Documents. All areas requiring cutting, fitting and patching shall be restored to the condition existing prior to the cutting, fitting and patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

§ 3.15 CLEANING UP

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 ACCESS TO WORK

The Owner and Architect shall, at all times, have access to the Work in preparation and progress wherever located.

§ 3.17 ROYALTIES, PATENTS AND COPYRIGHTS

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner or Architect. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect.

§ 3.18 INDEMNIFICATION

§ 3.18.1 INDEMNITY – OTHER THAN EMPLOYEE PERSONAL INJURY CLAIMS. TO THE FULLEST EXTENT PERMITTED BY LAW, CONTRACTOR SHALL INDEMNIFY, DEFEND, AND HOLD HARMLESS OWNER, ITS EMPLOYEES, AND ASSIGNS (THE "INDEMNIFIED PARTIES" OR "INDEMNITEES") FROM AND AGAINST CLAIMS, DAMAGES, LOSSES AND EXPENSES, INCLUDING BUT NOT LIMITED TO ATTORNEYS' FEES, ARISING OUT OF OR ALLEGED TO BE RESULTING FROM THE PERFORMANCE OF THIS AGREEMENT, TO THE EXTENT CAUSED BY THE NEGLIGENT OR WILLFUL ACTS OR OMISSIONS OF THE CONTRACTOR, SUBCONTRACTORS, SUB-SUBCONTRACTORS, OR ANYONE DIRECTLY OR INDIRECTLY EMPLOYED BY THEM OR ANYONE FOR WHOSE ACTS THEY MAY BE LIABLE. CONTRACTOR SHALL NOT BE REQUIRED TO INDEMNIFY, HOLD HARMLESS OR DEFEND THE INDEMNIFIED PARTIES AGAINST A CLAIM CAUSED BY THE NEGLIGENCE OR FAULT, OR THE BREACH OR VIOLATION OF A STATUTE, ORDINANCE, GOVERNMENTAL REGULATION, STANDARD, OR RULE OF THE INDEMNITEE, OR OTHER PARTY OTHER THAN CONTRACTOR OR ITS AGENT, EMPLOYEE, OR SUBCONTRACTOR OF ANY TIER, EXCEPT THAT CONTRACTOR SHALL INDEMNIFY, HOLD HARMLESS AND DEFEND THE INDEMNIFIED PARTIES AGAINST ANY CLAIMS FOR THE BODILY INJURY OR DEATH OF AN EMPLOYEE OF CONTRACTOR, ITS AGENTS, OR IT SUBCONTRACTORS OF ANY TIER.

§3.18.2 INDEMNITY – EMPLOYEE <u>PERSONAL INJURY CLAIMS</u>. TO THE FULLEST EXTENT PERMITTED BY LAW, CONTRACTOR SHALL INDEMNIFY, DEFEND, AND HOLD HARMLESS THE INDEMNIFIED PARTIES AND SHALL ASSUME ENTIRE RESPONSIBILITY AND LIABILITY (OTHER THAN AS A RESULT OF AN INDEMNIFIED PARTY'S GROSS NEGLIGENCE) FOR ANY CLAIM OR ACTION BASED ON OR ARISING OUT OF THE PERSONAL INJURY, INCLUDING THE DEATH, OF ANY EMPLOYEE OF THE CONTRACTOR, SUBCONTRACTORS, OR ANY SUB-SUBCONTRACTOR, OR OF ANY OTHER ENTITY FOR WHOSE ACTS THEY MAY BE LIABLE, WHICH OCCURRED OR WAS ALLEGED TO HAVE OCCURRED ON THE PROJECT SITE OR IN CONNECTION WITH THE PERFORMANCE OF THE WORK OF THIS AGREEMENT. CONTRACTOR HEREBY INDEMNIFIES THE INDEMNIFIED PARTIES EVEN TO THE EXTENT THAT SUCH PERSONAL INJURY WAS CAUSED OR ALLEGED TO HAVE BEEN CAUSED BY THE COMPARATIVE OR CONCURRENT NEGLIGENCE OF THE STRICT LIABILITY OF ANY INDEMNIFIED PARTY. THIS INDEMNIFICATION SHALL NOT BE LIMITED TO DAMAGES, COMPENSATION, OR BENEFITS PAYABLE UNDER INSURANCE POLICIES, WORKERS COMPENSATION ACTS, DISABILITY BENEFITS ACTS, OR OTHER EMPLOYEES BENEFIT ACTS.

§3.18.3 THE CONTRACTOR'S INDEMNITY OBLIGATIONS UNDER THIS SECTION 3.18 SHALL ALSO SPECIFICALLY INCLUDE, WITHOUT LIMITATION, ALL FINES, PENALTIES, DAMAGES, LIABILITY, COSTS, EXPENSES (INCLUDING, WITHOUT LIMITATION, REASONABLE ATTORNEYS' FEES) ARISING OUT OF, OR IN CONNECTION WITH, ANY (I) VIOLATION OF OR FAILURE TO COMPLY WITH ANY LAW, STATUTE, ORDINANCE, RULE, REGULATION, CODE OR REQUIREMENT OF A PUBLIC AUTHORITY THAT BEARS UPON THE PERFORMANCE OF THE WORK BY THE CONTRACTOR, A SUBCONTRACTOR, OR ANY PERSON OR ENTITY FOR WHOM EITHER IS RESPONSIBLE, (II) MEANS, METHODS, PROCEDURES, TECHNIQUES, OR SEQUENCES OF EXECUTION OR PERFORMANCE OF THE WORK, AND (III) FAILURE TO SECURE AND PAY FOR PERMITS, FEES, APPROVALS, LICENSES, AND INSPECTIONS AS REQUIRED UNDER THE CONTRACT DOCUMENTS, OR ANY VIOLATION OF ANY PERMIT OR OTHER APPROVAL OF A PUBLIC AUTHORITY APPLICABLE TO THE WORK, BY THE CONTRACTOR, A SUBCONTRACTOR, OR ANY PERSON OR ENTITY FOR WHOM EITHER IS RESPONSIBLE.

ARTICLE 4 ARCHITECT

§ 4.1 GENERAL

§ 4.1.1 The Owner shall retain an architect lawfully licensed to practice architecture or an entity lawfully practicing architecture in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 4.1.2 Duties, responsibilities and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Contractor and Architect. Consent shall not be unreasonably withheld.

§ 4.2 ADMINISTRATION OF THE CONTRACT
§ 4.2.1 The Architect will provide administration of the Contract as described in the Owner-Architect Agreement. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Section 3.3.1.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and report to the Owner (1) known deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 COMMUNICATIONS AND CONTRACT ADMINISTRATION
Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to relate relevant communications between Owner and Architect to the Architect. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

§ 4.2.5 If included in Architect's scope of work, the agreement between Owner and Architect, or if requested by the Owner, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts based on the Architect's evaluations of the Contractor's Applications for Payment.

§ 4.2.6 To the extent permitted by the agreement between Owner and Architect, the Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect, in consultation with the Owner, will have authority to require inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect or the Owner to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 To the extent provided in the agreement between Owner and Architect, the Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Owner and Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the

purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5 and 3.12. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 If requested by Owner, the Architect will prepare Change Orders and Construction Change Directives with the Owner's prior written consent, but the Architect may authorize minor changes in the Work as provided in the agreement between Owner and Architect, or in Section 7.4 of these General Conditions. If requested by Owner, the Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 If requested by Owner, the Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

§ 4.2.11 If requested by Owner, the Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents, and if approved by Owner.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 DEFINITIONS

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 AWARD OF SUBCONTRACTS

§ 5.2.1 For Construction Manager-At-Risk Agreements. The Construction Manager shall publicly advertise for bids or proposals and receive bids or proposals from trade contractors or Subcontractors for the performance of all major elements of the work other than the minor work that may be included in the general conditions. The Construction Manager may seek to perform portions of the work itself if:

(A) the Construction Manager submits its bid or proposal for those portions of the Work in the same manner as all other trade contractors or Subcontractors; and

(B) the Owner determines that the Construction Manager's bid or proposal provides the best value for the Owner.

§ 5.2.1.1 REVIEW OF BIDS OR PROPOSALS. Construction Manager shall review all trade contractor or Subcontractor bids or proposals in a manner that does not disclose the contents of the bid or proposal during the selection process to a person not employed by the Construction Manger, Architect, Engineer, or Owner. All bids or proposals shall be made available to the Owner on request and to the public after the later of the award of the contract or the seventh day after the date of final selection of bids or proposals. If the Construction Manager reviews, evaluates, and recommends to the Owner a bid or proposal from a trade contractor or subcontractor but the Owner requires another bid or proposal to be accepted, the Owner shall compensate the Construction Manager by a change in the Contract Sum, Contract Time, or Cost of the Work for any additional cost and risk that the Construction manager incurs because of the Owner's requirement that another bid or proposal be accepted.

§ 5.2.2 The Contractor shall not contract with a proposed Subcontractor, person, or entity to whom the Owner has made reasonable objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made a reasonable objection.

§ 5.2.3 If the Owner has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time may be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity previously selected if the Owner makes reasonable objection to such substitution.

§ 5.3 SUBCONTRACTUAL RELATIONS

§ 5.3.1 By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.3.2 All subcontracts shall be in writing and, if requested, Contractor shall provide Owner with copies of executed subcontracts.

§ 5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS
§ 5.4.1 This Contract is for Owner's benefit, its successors and assigns who, as well as Contractor, may directly enforce all rights and warranties, express or implied herein, but Subcontractors shall have recourse only against Contractor and not against Owner. Owner may rely solely upon Contractor for enforcement of all Subcontracts. To effect such purpose, Contractor assigns to Owner all right to bring any actions against subcontractors and material vendors without waiver by Owner of his right against Contractor because of defaults, delays and effects for which a subcontractor or material vendor may also be liable, said assignment being effective only if:

.1 Contractor is in default under the Contract Documents; or

.2 Owner has terminated the Contract in accordance with the Contract Documents; and

.3 Only for those subcontract agreements which the Owner accepts by notifying the Subcontractor and Contractor in writing; and

.4 The assignment is subject to the prior rights of the surety, if any, obligated under any bond relating to the Contract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation may be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon such assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

§5.4.4 The Architect and the Owner shall have the right to request from any Subcontractor at any time during the course of construction, a notarized affidavit stating the amount of monies which have been paid to the Subcontractor as of any certain stipulated date.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS
§ 6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS
§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.

§ 6.2 MUTUAL RESPONSIBILITY
§ 6.2.1 The Contractor shall afford the Owner and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall

connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Architect and the Owner apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner's or separate contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a separate contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a separate contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner, separate contractors as provided in Section 10.2.5.

§ 6.2.5 The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 OWNER'S RIGHT TO CLEAN UP
If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK
§ 7.1 GENERAL
§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor and Architect; a Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Owner or Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work. Except as permitted in Section 7.3 and Section 9.7.2, a change in the Contract Sum or the Contract Time shall be accomplished only by Change Order. Accordingly, no course of conduct or dealings between the parties, nor express or implied acceptance of alterations or additions to the Work, and no claim that Owner has been unjustly enriched by any alteration of or addition to the Work, whether or not there is, in fact, any unjust enrichment to the Work, shall be the basis of any Claim to an increase in any amounts due under the Contract Documents or a change in any time period provided for in the Contract Documents.

§ 7.2 CHANGE ORDERS
§ 7.2.1 A Change Order is a written instrument signed by the Owner, Contractor and Architect stating their agreement upon all of the following:

.1 The change in the Work;
.2 The amount of the adjustment, if any, in the Contract Sum; and
.3 The extent of the adjustment, if any, in the Contract Time.

§ 7.2.2 Contractor's Change Order shall set forth in clear and precise detail breakdowns of labor and materials for all trades involved and the estimated impact on the dates of Substantial Completion. Contractor shall furnish supporting data as reasonably requested by Owner.

§ 7.2.3 Agreement on any Change Order shall constitute a final settlement of all matters relating to the change in the Work that is the subject of the Change Order, including, but not limited to, all direct and indirect costs associated with such change and any and all adjustments to the Contract Sum and the construction schedule.

§ 7.3 CONSTRUCTION CHANGE DIRECTIVES

§ 7.3.1 A Construction Change Directive is a written order signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

.1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;

.2 Unit prices stated in the Contract Documents or subsequently agreed upon;

.3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or

.4 As provided in Section 7.3.7.

§ 7.3.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 7.3.5 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.6 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Owner shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Owner or Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.7 shall be limited to the following:

.1 Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;

.2 Costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;

.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;

.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and

.5 Additional costs of supervision and field office personnel directly attributable to the change.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Owner or the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Owner will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Owner determines to be reasonably justified. The Owner's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of Contractor to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 MINOR CHANGES IN THE WORK

If permitted in the agreement between Owner and Architect, the Architect has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents.

ARTICLE 8 TIME

§ 8.1 DEFINITIONS

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 PROGRESS AND COMPLETION

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract and are a material element of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 DELAYS AND EXTENSIONS OF TIME

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner; or by changes ordered in the Work; or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control; or by delay authorized by the Owner pending mediation and arbitration; or by other causes that the Architect and Owner determines may justify delay, then the Contract Time shall be extended by Change Order to the extent such delay will prevent the Contractor from achieving Substantial Completion within the Contract Time and if the performance of the Work is not, was not, or would not have been delayed by any other cause for which the Contractor is not entitled to an extension in the Contract Time under the Contract Documents. The Contractor further acknowledges and agrees that adjustments in the Contract Time will be permitted for a delay only to the extent such delay (i) is not caused, or could not have been anticipated, by the Contractor, and (ii) could not be limited or avoided by the Contractor's timely notice to the Owner of the delay or reasonable likelihood that a delay will occur.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 Notwithstanding anything contained in the Contract Documents to the contrary, the Contractor's sole remedy for any (1) delay in the commencement, prosecution or completion of the Work, (2) hindrance or obstruction in the performance of the Work, (3) loss of productivity, or (4) other similar claims (collectively referred in this Subparagraph 8.3.3 as "Delay or Delays"), whether or not such Delays are foreseeable, shall be an extension of time in which to complete the Work. In no event shall the Contractor be entitled to any other compensation or recovery of any damages, costs, or attorneys' fees, caused by any Delays, unknown site conditions, errors, inconsistencies, or omissions in the Drawings and Specifications, or concealed or unknown conditions, including, without limitation, consequential damages, lost opportunity costs, impact damages or other similar damages; provided however that Contractor may be entitled to additional time as provided under Section 8.3.1.

§ 8.3.4 If the Contractor submits a progress report indicating, or otherwise expresses an intention to achieve, completion of the Work prior to any completion date required by the Contract Documents or expiration of the Contract Time, no liability of the Owner to the Contractor for any failure of the Contractor to so complete the Work shall be created or implied.

§ 8.3.5 Owner shall have the right to occupy, without prejudice to rights of either party, any completed or substantially completed portions of the Work, notwithstanding the fact that time for completion of entire Work, or portions thereof, may not be expired. Occupancy and use by Owner shall not constitute, in itself, acceptance of the Work.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 CONTRACT SUM

The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.2 SCHEDULE OF VALUES

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit to the Owner and Architect, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Owner may require. This schedule, unless objected to by the Owner, shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 9.3 APPLICATIONS FOR PAYMENT

§ 9.3.1 As provided in the Agreement and in the Contract Documents, the Contractor shall submit to the Owner and Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2., for completed portions of the Work. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the

Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Owner or the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or material supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.1.3 If requested by Owner or required elsewhere in the Contract Documents, Each Application for Payment shall be accompanied by the following, all in a form and substance satisfactory to the Owner:

(i) With each Application for Payment: a current Sworn Statement from the Contractor setting forth all Subcontractors and all material suppliers with whom the Contractor has subcontracted, the amount of each such subcontract, the amount requested for any Subcontractor or material supplier in the Application for Payment, and the amount to be paid to the Contractor from such progress payment;

(ii) With each Application for Payment: a duly executed Conditional Waiver and Release on Progress Payment from the Contractor and Subcontractors establishing receipt of payment or satisfaction of the payment requested by the Contractor in the current Application for Payment;

(iii) Commencing with the second Application for Payment submitted by the Contractor, a duly executed Unconditional Waiver and Release on Progress Payment from Contractor and all Subcontractors, material suppliers and, where appropriate, lower tier subcontractors that have billed more than $5,000 on a single application of payment, establishing receipt of payment or satisfaction of payment of all amounts requested on behalf of such entities and disbursed prior to submittal by the Contractor of the current Application for Payment;

(iv) With the Final Application for Payment: Contractor shall submit a Conditional Waiver and Release on Final Payment as required by Texas Property Code 53.284. Upon receipt of final payment, Contractor shall submit an Unconditional Waiver and Release on Final Payment as required by Texas Property Code 53.284; and

(v) Such other information, documentation, and materials as the Owner, or the title insurer may require in order to ensure that Owner's property is free of lien claims. Such other documents may include, without limitation, original copies of lien or bond claim releases suitable for filing with the County Clerk in Williamson County, Texas.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, bond claims, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

§ 9.3.3.1 The Contractor further expressly undertakes to defend Owner, at the Contractor's sole expense, against any actions, lawsuits, or proceedings brought against Owner as a result of liens filed against the Work, the site of any of the Work, the Project site and any improvements thereon, or any portion of the property of any of Owner (referred to collectively as "liens" in this Section 9.3.3), provide the Owner has paid Contractor pursuant to the requirements of the Contract Documents. The Contractor hereby agrees to indemnify and hold Owner harmless against any such liens or claims of lien and agrees to pay any judgment or lien resulting from any such actions, lawsuits, or proceedings.

§ 9.3.3.2 The Owner shall release any payments withheld due to a lien or bond claims if the Contractor obtains security acceptable to the Owner, however, the Contractor shall not be relieved of any responsibilities or obligations under this Section 9.3.3, including, without limitation, the duty to defend and indemnify Owner.

§ 9.3.3.3 Retainage. The Owner shall withhold from each progress payment, as retainage, five percent (5%) of the total earned amount. Retainage so withheld shall be managed in conformance with Subchapter B, Chapter 2252 of the Texas Government Code. Any request for reduction or release of retainage shall be accompanied by written consent of the Contractor's Surety. No such request shall be made until the Contractor has earned at least sixty-five percent (65%) of the total Contract Price.

§ 9.3.3.4 For purposes of Texas Government Code § 2251.021 (a)(2), the date the performance of service is completed is the date when the Owner's representative approves the Application for Payment.

§ 9.4 CERTIFICATES FOR PAYMENT

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data comprising the Application for Payment, that, to the best of the Architect's knowledge, information and belief, the Work has progressed to the point indicated and that the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 DECISIONS TO WITHHOLD CERTIFICATION

§ 9.5.1 The Owner or Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Owner or Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Owner or Architect is unable to certify payment in the amount of the Application, the Owner or Architect will notify the Contractor. If the Contractor and Architect, or Contractor and Owner, as the case may be, cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount that can be certified. The Owner or Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Owner or Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

.1 defective Work not remedied;
.2 third party claims filed or reasonable evidence indicating probable filing of such claims;
.3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
.5 damage to the Owner or a separate contractor;
.6 failure to maintain the scheduled progress, or reasonable evidence that the Work will not be completed within the Contract Time;
.7 failure to comply with the requirements of Texas Government Code Chapter 2258 (Prevailing Wage Law);
.8 failure to include sufficient documentation to support the amount of payment requested for the Project;
.9 failure to obtain, maintain, or renew insurance coverage, payment/performance bonds or warranty bond required by the Contract Documents; or
.10 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.6 PROGRESS PAYMENTS
§ 9.6.1 The Owner shall make payment in the manner and within the time provided in the Contract Documents and in accordance with Chapter 2251 of the Texas Government Code.

§ 9.6.2 The Contractor shall pay each Subcontractor no later than 10 days after receipt of payment from the Owner the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and material and equipment suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor, except as may otherwise be required by law.

§ 9.6.4 Contractor payments to material and equipment suppliers shall be treated in a manner similar to that provided in Sections 9.6.2.

§ 9.6.5 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.7 FAILURE OF PAYMENT
§ 9.7.1 If the Architect is required to issue Certificates for Payment and, through no fault of the Contractor, the Architect fails to timely issue Certificates for Payment in the time permitted in the Contract Documents, or if the Owner does not pay the Contractor by the date established in the Contract Documents, then the Contractor may, upon twenty-one days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received.

§ 9.7.2 If the Owner is entitled to reimbursement or payment from the Contractor under or pursuant to the Contract Documents, such payment shall be made promptly upon demand by the Owner. Notwithstanding anything contained in the Contract Documents to the contrary, if the Contractor fails to promptly make any payment due the Owner, or if the Owner incurs any costs and expenses to cure any default of the Contractor or to correct defective work, the Owner shall have an absolute right to offset such amount against the Contract Sum and may, in the Owner's sole discretion, elect either to (i) deduct

an amount equal to that which the Owner is entitled from any payment then or thereafter due the Contractor from the Owner, or (ii) issue a written notice to the Contractor reducing the Contract Sum by an amount equal to that which the Owner is entitled.

§ 9.8 SUBSTANTIAL COMPLETION

§ 9.8.1 Substantial Completion is 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 Owner can occupy or utilize the Work for its intended use; provided, however, that as a condition precedent to Substantial Completion, the Owner has received all certificates of occupancy and any other permits, approvals, licenses, and other documents from any governmental authority having jurisdiction thereof necessary for the beneficial occupancy of the Project.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Owner and Architect a comprehensive list of items to be completed or corrected prior to final payment (punch list). Failure to include an item on the punch list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's punch list, the Owner and Architect will examine the Work to determine whether the Work or designated portion thereof is substantially complete. If the Owner and/or Architect's examination discloses any item, whether or not included on the Contractor's punch list, that is not sufficiently complete in accordance with the Contract Documents, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Owner or Architect. In such case, the Contractor shall then submit a request for another examination by the Owner or Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect, if required by the Contract Documents, or Owner will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Unless otherwise provided, Contractor shall complete all items on the punch list within 30 days of Substantial Completion. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage.

§ 9.9 PARTIAL OCCUPANCY OR USE

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Section 11.3.1.5, the surety, and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld.

§ 9.9.2 Immediately prior to partial occupancy or use, the Owner, Contractor and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 FINAL COMPLETION AND FINAL PAYMENT

§ 9.10.1 Upon receipt of the Contractor's written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Owner and Architect will make such inspection and, when the Owner and Architect find the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled. All warranties and guarantees required under or pursuant to the Contract Documents shall be assembled and delivered by the Contractor to the Architect as part of the final Application for Payment. The final Certificate for Payment will not be issued by the Architect until all warranties and guarantees have been received and accepted by the Owner.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Owner and Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work have been paid or otherwise satisfied, within the period of time required by Chapter 2251 of the Texas Government Code, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety to final payment, (5) a warranty bond in a form acceptable to Owner, and (6) other data establishing payment or satisfaction of obligations, such as receipts, unconditional full and final releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner.

§ 9.10.3 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

.1 Claims, security interests or encumbrances arising out of the Contract and unsettled;
.2 failure of the Work to comply with the requirements of the Contract Documents; or
.3 terms of warranties required by the Contract Documents.

§ 9.10.4 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 SAFETY PRECAUTIONS AND PROGRAMS

The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 SAFETY OF PERSONS AND PROPERTY

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to

.1 employees on the Work and other persons who may be affected thereby;
.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and

.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss. Notwithstanding any language to the contrary, the Owner shall not have any responsibility for job site inspections or safety recommendations. Any inspections or observations by the Owner or the Architect are solely for the benefit of the Owner and shall not create any duties or obligations to anyone else.

§ 10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3, except damage or loss attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 INJURY OR DAMAGE TO PERSON OR PROPERTY
If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.2.9 When all or a portion of the Work is suspended for any reason, the Contractor shall securely fasten down all covering and fully protect the Work, as necessary, from injury or damage by any cause.

§ 10.2.10 The Contractor shall promptly report in writing to the Owner and Architect all accidents arising out of or in connection with the Work that cause death, personal injury, or property damage.

§ 10.3 HAZARDOUS MATERIALS
§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the

Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect in writing.

§ 10.3.2 Upon receipt of the Contractor's written notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written notice from the Owner.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for materials or substances the Contractor brings to the site unless such materials or substances are expressly required by the Contract Documents. The Owner shall be responsible for materials or substances expressly required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance the Contractor brings to the site or negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.4 EMERGENCIES
In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time, if any, claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS
§ 11.1 CONTRACTOR'S LIABILITY INSURANCE
§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

.1 Claims under workers' compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed;
.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
.4 Claims for damages insured by usual personal injury liability coverage;
.5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
.6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;
.7 Claims for bodily injury or property damage arising out of completed operations, which coverage shall be maintained for no less than four (4) years following final payment; and
.8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18.

§ 11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Agreement or the Contract Documents. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until the expiration of the

period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

§ 11.1.3 Unless otherwise provided, copies of the insurance policies, in form acceptable to the Owner, shall provided to Owner within 30 days of Owner's request. Except as otherwise provided, all of the policies provided shall name Owner as an additional insured, and such policies shall immediately deliver to Owner copies of all such insurance policies, together with certificates by the insurer evidencing Owner's coverage there under. Each policy of insurance obtained by Contractor pursuant to the Contract Documents shall provide, by endorsement or otherwise (i) that such policy shall not be canceled, endorsed, altered or reissued to effect a change in coverage for any reason or to any extent whatsoever unless the insurer shall have first given Owner and Lender at least thirty (30) days prior written notice thereof, and (ii) that Owner may, but shall not be obligated to, make premium payments to prevent the cancellation, endorsement, alteration or reissuance of such policy and such payments shall be accepted by the insurer to prevent the same. Such policies shall provide, by endorsement or otherwise, that Contractor shall be solely responsible for the payment of all premiums under the policies, and that Owner shall have no obligation for the payment thereof, notwithstanding that Owner is named as additional insured under the policy. Any insured loss or claim of loss shall be adjusted to the Owner, and any settlement payments shall be made payable to the Owner as a trustee for the insureds, as their interests may appear. Upon the occurrence of an insured loss or claim of loss, monies received will be held by Owner who shall make distribution in accordance with an agreement to be reached in such event between Owner and Contractor. If the parties are unable to agree between themselves on the settlement of the loss, such dispute shall be resolved in accordance with section 15, below, but the Work of the Project shall nevertheless progress during any such period of dispute without prejudice to the rights of any party to the dispute. The Contractor shall be responsible for any loss within the deductible area of the policy. If Owner is damaged by the failure of Contractor to purchase or maintain such insurance, then Contractor shall bear all costs properly attributable thereto. The Contractor shall affect and maintain similar property insurance on portions of the Work stored off the site or in transit when such portions of the Work are to be included. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until Final Completion of the Project.

§ 11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Owner as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations.

§ 11.2 OWNER'S LIABILITY INSURANCE
The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

§ 11.3 PROPERTY INSURANCE
§ 11.3.1 Unless otherwise provided in the Contract Documents, the Contractor shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

§ 11.3.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake,

flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss as well as coverage for building materials while in transit or building materials suitably stored at a temporary location. Property insurance provided by the Contractor shall not cover any tools, apparatus, machinery, scaffolding, hoists, forms, staging, shoring, and other similar items commonly referred to as construction equipment that may be on the site and the capital value of which is not included in the Work. The Contractor shall make its own arrangements for any insurance it may require on such construction equipment. Any such policy obtained by the Contractor under this Section 11.3.1 shall include a waiver of subrogation in accordance with the requirements of Section 11.3.4.

§ 11.3.1.2 If the Contractor does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Contractor shall so inform the Owner in writing prior to commencement of the Work. If the Owner is damaged by the failure or neglect of the Contractor to purchase or maintain insurance as described above, without so notifying the Owner in writing, then the Contractor shall bear all reasonable costs properly attributable thereto.

§ 11.3.1.3 Contractor shall be responsible for any deductibles to the extent that the loss arose out of or was cause by Contractor's negligence or breach of the Agreement.

§ 11.3.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

§ 11.3.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

§ 11.3.4 WAIVERS OF SUBROGATION
The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent of actual recovery of any insurance proceeds under any property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance. However, this waiver shall not apply to property insurance purchased by Owner after completion of the Work or Final Payment, whichever comes first. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 11.3.5 A loss insured under the property insurance shall be adjusted in good faith and made payable to the Owner in good faith for the insureds, as their interests may appear. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.4 BONDS
§ 11.4.1 The Contractor is required to tender to Owner, prior to commencing the Work, performance and payment bonds, as required by law. In the event Contractor fails to provide such bonds within the time

provided by the Agreement, Owner may immediately, upon notice of such failure, or within a reasonable time thereafter, at its sole option and discretion: (1) void this Agreement in its entirety; or (2) procure such bonds on behalf of the Contractor, deducting such amounts from the Contract Price. In the event Owner voids the Agreement under this section, Contractor may forfeit its bid bond.

§ 11.4.2 A Performance Bond is required if the Contract Price is in excess of $50,000. The performance bond is solely for the protection of the Owner, in the full amount of the Contract Price and conditioned on the faithful performance of the Work in accordance with the Contract Documents. The form of the bond shall be approved by the Owner.

§ 11.4.3 A Payment Bond is required if the Contract Price is in excess of $25,000. A payment bond is payable to the Owner, in the full amount of the Contract Price and solely for the protection and use of payment bond beneficiaries who have a direct contractual relationship with the Contractor or a supplier of required materials or labor. The form of bond shall be approved by the Owner.

§ 11.4.4 Warranty Bond. Upon Substantial Completion and prior to final completion and final payment, Contractor shall provide Owner with a Warranty Bond in the sum of 10% of the Contact Price or 10% of the Guaranteed Maximum Price for Construction Manager-At-Risk Agreements for the entire warranty period set out in the Contract Documents. The form of bond shall be approved by the Owner.

§ 11.4.5 Corporate sureties authorized to issue bonds shall be qualified and comply with relevant provisions of the Texas Insurance Code.

§ 11.4.6 Each bond shall be executed by a corporate surety or sureties authorized to do business in the State of Texas and acceptable to the Owner. If any bond is for more than 10 percent of the surety's capital and surplus, the Owner may require certification that the company has reinsured the excess portion with one or more reinsurers authorized, accredited, or trusteed to do business in the State. A reinsurer may not reinsure for more than 10 percent of its capital and surplus. If a surety upon a bond loses its authority to do business in the State, the Contractor shall within thirty (30) days after such loss furnish a replacement bond at no added cost to the Owner.

§ 11.4.7 Each bond shall be accompanied by a valid Power-of-Attorney (issued by the surety company and attached, signed and sealed with the corporate embosses seal, to the bond) authorizing the attorney in fact who signs the bond to commit the company to the terms of the bond, and stating any limit in the amount for which the attorney can issue a single bond.

§ 11.4.8 The process of requiring and accepting bonds and making claims thereunder shall be conducted in compliance with Chapter 2253, Texas Government Code. If for any reason a statutory payment or performance bond is not honored by the surety, the Contractor shall fully indemnify and hold the Owner harmless of and from any costs, losses, obligations or liabilities it incurs as a result.

§ 11.4.9 Owner shall furnish certified copies of a payment bond and the related Agreement between Owner and Contractor to any qualified person seeking copies who complies with §2253.026, Texas Government Code.

§ 11.4.10 Claims on Payment Bonds. Claims on payment bonds must be sent directly to the Contractor and its surety in accordance with § 2253.041, Texas Government Code. All Payment Bond claimants are cautioned that no lien exists on the funds unpaid to the Contractor on such contract, and that reliance on notices sent to the Owner may result in loss of their rights against the Contractor and/or its surety. The Owner is not responsible in any manner to a claimant for collection of unpaid bills, and accepts no such responsibility because of any representation by any agent or employee.

§ 11.4.11 Payment Claims when Payment Bond not Required. When the value of the Agreement between Owner and the Contractor is less than $25,000.00, claimants and their rights are governed by Texas Property Code, §§ 53.231 – 53.239. These provisions set out the requirements for filing a valid

lien on funds unpaid to the Contractor as of the time of filing the claim, actions necessary to release the lien and satisfaction of such claims.

§11.4.12 Sureties shall be listed on the Department of the Treasury's Listing of Approved Sureties stating companies holding Certificates of Authority as acceptable sureties on Federal Bonds and acceptable reinsuring companies (Department Circular 570).

§ 11.5 GENERAL REQUIREMENTS
§ 11.5.1 Unless otherwise provided in the Contract Documents, all insurance coverage procured by the Contractor shall be provided by insurance companies having policy holder ratings no lower than "A" and financial ratings not lower than "XII" in the Best's Insurance Guide, the latest edition in effect as of the date of the Contract, and subsequently in effect at the time of renewal of any policies required by the Contract Documents.

§ 11.5.2 If the Owner is damaged by failure of the Contractor to purchase or maintain insurance required under Article 11, then the Contractor shall bear all reasonable costs (including attorneys' fees and court and settlement expenses) properly attributable thereto.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK
§ 12.1 UNCOVERING OF WORK
§ 12.1.1 If a portion of the Work is covered contrary to the Owner or Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Owner or Architect, be uncovered for examination and be replaced at the Contractor's expense without change in the Contract Time. If prior to the date of Substantial Completion the Contractor, a Subcontractor, or anyone for whom either is responsible uses or damages any portion of the Work (other than start-up), including, without limitation, mechanical, electrical, plumbing, and other building systems, machinery, equipment, or other mechanical device, the Contractor shall cause such item to be restored to "like new" condition at no expense to the Owner.

§ 12.1.2 If a portion of the Work has been covered that the Owner or Architect has not specifically requested to examine prior to its being covered, the Owner or Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

§ 12.2 CORRECTION OF WORK
§ 12.2.1 The Contractor shall promptly correct Work rejected by the Owner or Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 AFTER SUBSTANTIAL COMPLETION
§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so. The Owner shall give such notice promptly after discovery of the condition. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may, without prejudice to any other remedies, correct it in accordance with Section 2.4 or file a claim with the surety of any applicable warranty bond.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 ACCEPTANCE OF NONCONFORMING WORK
If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS
§ 13.1 GOVERNING LAW
The Contract shall be governed by the law of Williamson County, Texas.

§ 13.2 SUCCESSORS AND ASSIGNS
§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to covenants, agreements and obligations contained in the Contract Documents. Except as provided in the Contract Documents or by law, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.3 WRITTEN NOTICE
Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity, or to an officer of the corporation for which it was intended; or if delivered at, or sent by registered or certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice.

§ 13.4 RIGHTS AND REMEDIES
§ 13.4.1 Except as expressly provided in the Contract Documents, duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

§ 13.4.2 No action or failure to act by the Owner, Architect or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach there under, except as may be specifically agreed in writing.

§ 13.5 TESTS AND INSPECTIONS
§ 13.5.1 Tests, inspections and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules and regulations or lawful

orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority. The Contractor shall give the Owner and Architect timely notice of when and where tests and inspections are to be made so that the Owner and Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.

§ 13.5.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Section 13.5.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Owner and Architect of when and where tests and inspections are to be made so that the Owner and Architect may be present for such procedures.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Architect's services and expenses shall be at the Contractor's expense. The Contractor also agrees the cost of testing services related to remedial operations performed to correct deficiencies in the Work, shall be borne by the Contractor.

§ 13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Owner and Architect.

§ 13.5.5 If the Architect is to observe tests, inspections or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.6 INTEREST
The rate of interest that accrues on an overdue payment is the rate in effect on September 1 of the fiscal year in which the payment becomes overdue. The rate in effect on September 1 is equal to the sum of:
(1) one percent; and
(2) the prime rate as published in the Wall Street Journal on the first day of July of the preceding fiscal year that does not fall on a Saturday or Sunday pursuant to §2251.025 of the Texas Government Code.

§ 13.7 TIME LIMITS ON CLAIMS
The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the time limits provided by law. Nothing herein shall be construed as shortening the period of time Owner has for commencing claims to less than what is required by law.

§ 13.8 Application To Subcontracts
Any specific requirement in this Contract that the responsibilities or obligations of Contractor also apply to a Subcontractor is added for emphasis and are also hereby deemed to include a Subcontractor of any tier. The omission of a reference to a Subcontractor in connection with any of Contractor's responsibilities or obligations shall not be construed to diminish, abrogate or limit any responsibilities or obligations of a Subcontractor of any tier under the Contract Documents or the applicable subcontract.

§ 13.10 GENERAL PROVISIONS
§ 13.10.1 All personal pronouns used in this Contract, whether used in the masculine, feminine, or neuter gender, shall include all other genders; and the singular shall included the plural and vice versa. Titles of articles, sections, and subsections are for convenience only and neither limit nor amplify the provisions of this Contract. The use herein of the word "including," when following any general statement, term, or matter, shall not be construed to limit such statement, term, or matter to the specific items or matters set

forth immediately following such word or to similar items or matters, whether or not non-limiting language (such words as "without limitation," or "but not limited to," or words of similar import) is used with reference thereto, but rather shall be deemed to refer to all other items or matters that could reasonably fall within the broadest possible scope of such general statement, term, or matter.

§ 13.10.2 Wherever possible, each provision of this Agreement shall be interpreted in a manner as to be effective and valid under applicable law. If, however, any provision of this Agreement, or portion thereof, is prohibited by law or found invalid under any law, only such provision or portion thereof shall be ineffective, without in any manner invalidating or affecting the remaining provisions of this Agreement or valid portions of such provision, which are hereby deemed servable.

§ 13.11 NO ORAL WAIVER
The Provisions of the Contract Documents shall not be changed, amended, waived, or otherwise modified in any respect except by a writing signed by Owner. No person is authorized on behalf of Owner to orally change, amend, waive, or otherwise modify the terms of the Contract Documents or any of the Contractor's duties or obligations under or arising out of the Contract Documents. Any change, waiver, approval, or consent granted to the Contractor shall be limited to the specific matters stated in the writing signed by Owner, and shall not relieve Contractor of any other of the duties and obligations under the Contract Documents. No "constructive" changes shall be allowed.

§ 13.12 Texas Public Information Act. To the extent, if any, that any provision in the Contract Documents is in conflict with Tex. Gov't Code 552.001 et seq., as amended (the "Public Information Act"), the same shall be of no force or effect. Furthermore, it is expressly understood and agreed that Owner, its officers and employees may request advice, decisions and opinions of the Attorney General of the State of Texas in regard to the application of the Public Information Act to any information or data furnished to Owner whether or not the same are available to the public. It is further understood that Owner, its officers and employees shall have the right to rely on the advice, decisions and opinions of the Attorney General, and that Owner, its officers and employees shall have no liability or obligation to Contractor for the disclosure to the public, or to any person or persons, of any software or a part thereof, or other items or data furnished to Owner by Contractor in reliance of any advice, decision or opinion of the Attorney General of the State of Texas.

§ 13.13 Equal Opportunity in Employment. The Contractor agrees that during the performance of the Agreement it will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Parties will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; termination; rates of pay or other forms of compensation, and selection for training, including apprenticeship.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT
§ 14.1 TERMINATION BY THE CONTRACTOR
§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 90 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:

.1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;

.2 An act of government, such as a declaration of national emergency that requires all Work to be stopped; or

.3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on an undisputed Certificate for Payment within the time stated in the Contract Documents.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Section 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon 30 days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, including reasonable overhead and profit, costs incurred by reason of such termination, and damages.

§ 14.2 TERMINATION BY THE OWNER FOR CAUSE

§ 14.2.1 The Owner may terminate the Contract if the Contractor

.1 fails to commence the Work in accordance with the provisions of this Contract,

.2 fails to prosecute the Work to completion thereof in a diligent, efficient, timely, workmanlike, skillful and careful manner and in strict accordance with the provisions of the Contract,

.3 fails to use an adequate amount or quality of personnel or equipment to complete the Work without undue delay,

.4 fails to perform any of its obligations under the Contract,

.5 fails to make prompt payments when due to its Subcontractors and Suppliers, or as required by Texas Government Code 2251,

.6 files any petition or other pleading seeking any relief under any provisions of the Federal Bankruptcy Act, as amended, or any other federal or state statute or law providing for reorganization of debts or other relief from creditors, permits a receiver or other person to be appointed on account of its insolvency or financial condition, or becomes insolvent,

.7 creates any situation or state of facts which would authorize or permit an involuntary petition in bankruptcy to be filed against Contractor, or

.8 has not met or in Owner's opinion will not meet the dates of Substantial Completion set forth in the Contract Documents.

§ 14.2.2 When any of the above reasons exist, the Owner, in its sole and absolute discretion, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, 30 days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

.1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

.2 Accept assignment of subcontracts pursuant to Section 5.4; and

.3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished. In the event that a final decision under section 15, below, is rendered that sufficient cause did not exist for termination under this section 14.2, then the termination shall be considered a termination for convenience, under section 14.4, below.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages and costs incurred by the Owner in finishing the Work and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner.

§ 14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

.1 that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or

.2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall

.1 cease operations as directed by the Owner in the notice;

.2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and

.3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 Upon such termination, the Contractor shall recover the amounts provided in Section 10.1.3 of the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 CLAIMS

§ 15.1.1 DEFINITION

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim.

§ 15.1.2 NOTICE OF CLAIMS

Claims for events arising during the performance of the Work by Contractor must be initiated by written notice to the other party with a copy sent to the Architect; provided, however, that the claimant shall use its best efforts to furnish the other party, as expeditiously as possible, with notice of any Claim including, without limitation, those in connection with concealed or unknown conditions, once such claim is recognized, and shall take steps to mitigate the alleged or potential damages, delay, or other adverse consequences arising out of the condition that is the cause of such a Claim. Claims by Contractor must be initiated within 10 business days after occurrence of the event giving rise to such Claim or within 10 business days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. Claims may also be reserved in writing within the time limits set forth in this Section 15.1.2. Any notice of Claim or reservation of Claim must clearly identify the alleged cause and the nature of the Claim and include data and information available to the claimant that will facilitate prompt verification and evaluation of the Claim.

§ 15.1.3 CONTINUING CONTRACT PERFORMANCE

Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents. The Architect will prepare Change Orders and issue Certificates for Payment in accordance with the Contract Documents.

§ 15.1.4 CLAIMS FOR ADDITIONAL COST
If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.5 CLAIMS FOR ADDITIONAL TIME
§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.5.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

§ 15.3 MEDIATION
§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract except those waived shall be subject to mediation as a condition precedent to seeking redress in a court of competent jurisdiction.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation, which shall consist of a single mediator who is knowledgeable about the subject matter of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract.

§ 15.3.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in Williamson County, Texas. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§15.3.4 All disputes not resolved through mediation shall be decided in litigation in Williamson County, Texas.

§ 15.3.5 No waiver of Immunity. Nothing in the Contract Documents shall be deemed to waive, modify or amend any legal defense available at law or in equity to Owner, its past or present officers, employees, or agents, nor to create any legal rights or claim on behalf of any third party. Owner does not waive, modify, or alter to any extent whatsoever the availability of the defense of governmental immunity under the laws of the State of Texas and of the United States.

Question and Answers for Bid #1807-252 - San Gabriel Ranch Road Bridge

Overall Bid Questions
There are no questions associated with this bid.