SPECIFICATIONS AND CONTRACT DOCUMENTS
FOR

MILE 2 NORTH ROADWAY RECONSTRUCTION PROJECT

FROM LA HOMA RD. TO MOOREFIELD ROAD
BID NO. 2014-153
CSJ 0921-02-323

MAY 2014

PREPARED FOR:
Hidalgo County Precinct No. 3

L&G CONSULTING ENGINEERS, INC.
TBPE REG # F-4105



The seal appearing on this
document was authorized by
ARMANDO J. SANDOVAL, P.E.
MAY 5, 2014

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Hidalgo County would like to invite you to submit a bid on the following:

BID No.:	**Project Name:**
2014-153	**Mile 2 North Roadway Reconstruction Project**
Project scope consists of reconstructing an existing roadway facility to a 54' f-f curb and gutter section with storm drain pipes, signing, delineation, flashing beacons, and pavement markings from La Homa Rd. to Moorefield Rd..	

Interested contractors may obtain bid packets at Project Engineer's office: **L&G Engineering, Mr. Damien Tijerina, P.E. 900 S. Stewart Rd. Suite 5, Mission, Texas (956) 585-1909** for the amount of **$100.00 (non-refundable)**. Proposals will be posted on Hidalgo County's website at: www.co.hidalgo.tx.us.

A **Non-Mandatory** Pre-Bid Conference will be held on **Friday, June 20, 2014 at 3:00 p.m.** at **Hidalgo County Purchasing Department Conference Room located at 2802 S. Business Hwy 281, Edinburg, Texas**.

Sealed bids shall be properly identified as follows: ***Bidders' name and address*** on the upper left hand corner and "***Bid No. 2014-153 Mile 2 North Roadway Reconstruction Project*"** on the lower left hand corner of sealed envelope/and or packet. Overnight mail shall also be properly labeled on the outside of the express envelope or package.

The sealed bid must contain one (1) original and three (3) copies of bid and must be clearly identified and addressed for delivery to:

Martha L. Salazar, CPPB, Hidalgo County Purchasing Agent
Hidalgo County Purchasing Department

US Postal Mail/Courier Address:	**Physical Location:**
Hidalgo County New Administration Building	**Hidalgo County New Administration Building**
2812 S. Business Hwy 281	**2802 S. Business Hwy. 281, Edinburg, TX**
Edinburg, TX 78539	**(Southeast of Canton Rd & Business Hwy 281)**

Sealed bids will be accepted until **4:00p.m. on Tuesday, July 1, 2014. T**hey will be opened and read aloud at 4:01p.m. in the **Hidalgo County Purchasing Department Conference Room located in the Hidalgo County New Administration Building at 2802 S. Business Hwy 281, Edinburg, Texas**. NO FACSIMILES OR LATE ARRIVALS WILL BE ACCEPTED. ANY BID RECEIVED AFTER THAT TIME WILL NOT BE OPENED AND WILL BE RETURNED.

Eligibility of Bidders: Any Contractor intending to bid on this project to be awarded by Hidalgo County must be prequalified by Texas Department of Transportation (TxDOT). If Contractor is not prequalified, the Contractor must submit a satisfactory Confidential Questionnaire Form and an audited financial statement, or a Bidder's Questionnaire Form to the TxDOT Construction Division at least ten (10) days prior to the date that bids are to be opened. Obtain prequalification forms from the TxDOT Construction Division.

A BIDDER'S BOND from a reliable surety company licensed to operate in the State of Texas or certified Cashier's Check, payable without recourse to the County of Hidalgo, for the amount of not less than **5%** of the total bid shall accompany the bid as guaranty that, if awarded the contract, the bidder will enter into a contract with the County of Hidalgo. A Payment Bond is required in the amount of one hundred percent (100%) of the Contract Amount, if the contract exceeds $25,000. A Performance Bond is required in the amount of one hundred percent (100%) of the Contract Amount, if the contract exceeds $100,000.

Davis-Bacon Prevailing Wage Rates
Bidders must adhere to Texas State Prevailing Wage Requirements for Hidalgo County and Davis-Bacon Federal Wage Rates, including Certified Payroll. Be advised applicable wage rates may change. In addition the successful bidder must ensure that employees and applicants for employment are not discriminated against because of race, color, religion, sex, age, disability or national origin.

Disadvantaged Business Enterprise Policy
This project is financed in part by Federal funds. A 6% DBE goal has been established for this project in accordance with 49 CFR Part 26. Notice of Requirement for Affirmative Action to Ensure Equal Opportunity (Executive Order 11246, as amended).

BIDS MAY BE HELD by the County of Hidalgo for a period not to exceed ninety (90) days from the date of the opening of bids for the purpose of reviewing the bids and investigating the qualifications of bidders, prior to awarding of the contract.

Typed-written RFI's shall be sent to Project Engineer. Please follow with a call to confirm receipt of RFI. RFI's will not be answered by phone. NO HAND WRITTEN RFI'S will be answered. All inquiries shall be submitted by **Tuesday, June 24, 2014**. Inquiries beyond this date will not be responded. Contact project engineer for copies of Addenda.

BY ORDER OF THE COMMISSIONERS COURT OF HIDALGO COUNTY, TEXAS on this the **XXTH day** of **MONTH, 2014.**

MARTHA L. SALAZAR, CPPB
HIDALGO COUNTY PURCHASING AGENT

The bidder must complete the following proposal items to be considered **RESPONSIVE**:

- ☐ The Bidder must be pre-qualified by TxDOT per the TxDOT 2004 Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges; Item 2 Instructions to Bidders; Section 2.2 Eligibility of Bidders. Obtain prequalification forms from the Texas Department of Transportation Construction Division.
- ☐ Page C1 - The "Addendum Acknowledgement" must be check marked in the appropriate box(es). The Bidder may contact L&G Consulting Engineers, Inc. at ASandoval@LGEngineers.com to verify the number of Addendums that have been issued for this project.
- ☐ Page D1 - The "Proposal to Hidalgo County" must be signed.
- ☐ Page E1 - The "Bid Bond" must be completed and signed, provided the bidder does not submit a proposal guaranty in the form of a Cashier's Check, Teller's Check, or Bank Money Order. A "Bid Bond" must be issued per the instructions provided and submitted as a part of the Proposal. The "Proposal Guaranty" or Bid Bond must be payable to Hidalgo County.
- ☐ Page F1 - Complete the "Bidder's Bond/Check Return".
- ☐ Page G1 - Complete the "Total Bid Amount" form.
- ☐ Pages H1 thru H8 - Complete the "Bid Proposal Sheets" with Unit Prices and Extensions for every item. Sign the Bid.
- ☐ Page I1 - Complete the Child Support Business Ownership Form and Sign.
- ☐ Page J1 - Complete the "Disclosure of Lobbying Activities" if applicable. If not applicable to the Bidder, then indicate "NOTHING TO REPORT" on the first page of the form.
- ☐ Page K1 – Check the appropriate response, yes or no, under "Certification of Interest".
- ☐ Enclose the complete proposal form with the Guarantee Check or Bid Bond in a plain sealed envelope marked to indicate the contents and submit to the County Official **prior to 4:00 P.M. on July 1, 2014** as follows.

Bidder's Name
Bidder's Address

Martha L. Salazar, CPPB, Hidalgo County Purchasing Department
Hidalgo County New Administration Building
2812 S. Business Hwy 281
Edinburg, TX 78539

Bid No. 2014-153
Mile 2 North Roadway Reconstruction Project

The Bid Opening will be at **4:01 P.M. on July 1, 2014** in **Hidalgo County Purchasing Department Conference Room** located in the Hidalgo County New Administration Building at 2802 S. Business Hwy 281, Edinburg, Texas

A proposal that has one or more of the deficiencies listed in Article 2.7 is **NONRESPONSIVE** and will not be considered.

ADDENDUM ACKNOWLEDGEMENT

FAILURE TO ACKNOWLEDGE RECEIPT OF AN ADDENDUM WILL RESULT IN THE BID NOT BEING READ.

Each Bidder is required to acknowledge receipt of an addendum issued for a specific project. This page is provided for the purpose of acknowledging addendum(s). Any addenda issued amending his proposal and/or plans that have been acknowledged by the bidder, become part of this proposal.

The bidder by affixing their signature to this signature page of this proposal is acknowledging that they have taken the addendum (s) into consideration when preparing their bid and that the information contained in the addendum will be included in the contract, if awarded by the City Council or other designees.

Receipt is hereby acknowledged of the following Addenda to the Contract Documents.

Addendum No. 1 ☐

Addendum No. 2 ☐

Addendum No. 3 ☐

Addendum No. 4 ☐

PROPOSAL TO HIDALGO COUNTY

Mile 2 North Roadway Reconstruction Project

Bid No. 2014-153

The quantities in the proposal are approximate. The quantities of work and materials may be increased or decreased as considered necessary to complete the work as planned and contemplated.

This project is to be completed in **120 Working Days** and will be accepted when fully completed and finished to the satisfaction of the Engineer or designee.

Provide a proposal guaranty in the form of a Cashier's Check, Teller's Check (including an Official Check) or Bank Money Order on a State or National Bank or Savings and Loan Association, or State or Federally chartered Credit union made payable to **Hidalgo County** in the amount of **5% of the Bidder's Total Bid.**

A bid bond may be used as the required proposal guaranty. The bond form included in this bid proposal book may be detached from the proposal for completion. The proposal book may not be disassembled to remove the bond form. The bond must be in accordance with Item 2 of the specifications.

By signing this proposal the bidder certifies:

1. the only persons or parties interested in this proposal are those named and the bidder has not directly or indirectly participated in collusion, entered into an agreement or otherwise taken any action in restraint of free competitive bidding in connection with the above captioned project.
2. in the event of the award of a contract, the organization represented will secure payment and performance bonds for the full amount of the contract.
3. the signatory represents and warrants that they are an authorized signatory for the organization for which the bid is submitted and that they have full and signatory authority to submit this bid on behalf of their firm.
4. that the certifications and representations contained in the proposal are true and accurate and the bidder intends the proposal to be taken as a genuine government record.
5. that the bid prices contained in the proposed have been carefully checked and are submitted as correct and final.
6. See Section ***"CERTIFICATIONS BY PROPOSAL SIGNATURE"*** for additional certifications made by signing this proposal.

Signed:**

(1) _____ **(2)** _____ **(3)** _____

Print Name:

(1) _____ **(2)** _____ **(3)** _____

Title:

(1) _____ **(2)** _____ **(3)** _____

Company:

(1) _____ **(2)** _____ **(3)** _____

Signatures shall comply with Item 2 of the specifications.

**Note: Complete (1) for single venture, through (2) for joint venture and through (3) for triple venture.

***When the working days field contains an asterisk (*) refer to the Special Provisions and General Notes.**

The bidder proposes and agrees to perform all work of whatever nature required, in strict accordance with the drawings and specifications, for the following sum of prices, to which:

It is understood that the work proposed to be done will be accepted when fully completed in accordance with the Contract Drawings.

It is understood that **Hidalgo County** reserves the right to reject any and all bids and to waive any informality received in the bids.

In the event of the award of a Contract to the Company named above, the Company will furnish a Performance Bond and a Payment Bond for the full amount of the Contract and a Certificate of Insurance, secure proper compliance with the terms and provisions of the Contract, to insure and guarantee the work until final completion and acceptance to guarantee payment of all lawful claim for labor performed and materials furnished in the fulfillment of the Contract, and to guarantee the Bidder is covered by insurance as required by the Contract Documents.

KNOWN ALL MEN BY THESE PRESENTS,

that we, the undersigned, *(Contractor Name)* _____

as Principal, and *(Surety Name)* _____

as Surety, are hereby held and firmly bound unto **HIDALGO COUNTY** as Owner in the penal sum of *(5% of the Contractor's total bid)* _____

for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns,.

Signed, this _____ day of _____ 20_____

The condition of the above obligation is such that whereas the Principal has submitted to **Hidalgo County** a certain Bid, attached hereto and hereby made a part hereof to enter a contract in writing, for the **Mile 2 North Roadway Reconstruction Project.**

NOW THEREFORE,

(a) If said Bid shall be rejected, or in the alternate,

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

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

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

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

By: _____

(Contractor/Principal Name)

_____

(Signature and Title of Authorized Signatory for Contractor/Principal)

* By: _____

(Surety Name)

_____

(Signature of Attorney-in-Fact)

*Attach Power of attorney (Surety) for Attorney-in-Fact

Impressed Surety Seal Only

IMPORTANT

The space provided for the return address must be completed to facilitate the return of your bidder's check. Care must be taken to provide a legible, accurate, and complete return address, including zip code. A copy of this sheet should be used for each different return address.

NOTE

Successful bidders will receive their guaranty checks with the executed contract.

RETURN BIDDERS CHECK TO (PLEASE PRINT) (*Complete this section for submission with the Proposal*):

Project No.: **Bid No. 2014-153**

Project Name: **Mile 2 North Roadway Reconstruction Project**

(*Complete this section, below, when the Bid Bond/Check is returned to the Bidder*)

IMPORTANT

PLEASE RETURN THIS SHEET IN ITS ENTIRETY

Please acknowledge receipt of this check(s) at your earliest convenience by signing below in longhand, in ink, and returning this acknowledgement in the enclosed self addressed envelope.

Check Received By: _____ Date: _____

Title: _____

For (Contractor's Name): _____

Project No.: **Bid No. 2014-153**

Project Name: **Mile 2 North Roadway Reconstruction Project**

TOTAL BID AMOUNT

In the space provided below, please enter your total bid amount for this project. Only this figure will be read publicly at the public bid opening.

It is understood and agreed by the bidder in signing this proposal that the total bid amount entered below is not binding on either the bidder or **Hidalgo County**.

The contract will be awarded by competitive bidding and on the basis of unit pricing.

It is further agreed that **the official total bid amount for this proposal will be determined by multiplying the unit bid prices WRITTEN IN WORDS for each pay item by the respective estimated quantities shown in this proposal and then totaling all of the extended amounts.**

Unit prices must be submitted in accordance with Item 2 of the Standard Specifications or Special Provision to Item 2 FOR EACH ITEM LISTED in this proposal and with the following: For each item listed in the Bid Proposal Sheets, write in a unit bid price in words and in figures in the spaces provided. Also, write in the extended amount (Item Cost) in figures for each item listed in the Bid Proposal Sheets by multiplying the unit bid price by its respective estimated quantity.

$_____

Total Bid Amount

Mile 2 North Roadway Construction Project							
Item	Code		UNIT BID PRICE ONLY, WRITTEN IN WORDS	Unit	Approx. Quantities	UNIT BID PRICE ONLY, WRITTEN IN FIGURES	ITEM COST WRITTEN IN FIGURES
100	2002		PREPARING ROW _____ DOLLARS and _____ CENTS	STA	32.61		
104	2009		REMOVING CONC (RIPRAP) _____ DOLLARS and _____ CENTS	SY	12.00		
104	2022		REMOVING CONC (CURB AND GUTTER) _____ DOLLARS and _____ CENTS	LF	126.00		
106	2001		OBLITERATING ABANDONED ROAD _____ DOLLARS and _____ CENTS	STA	6.24		
110	2001		EXCAVATION (ROADWAY) _____ DOLLARS and _____ CENTS	CY	12,437.00		
132	2006		EMBANKMENT (FINAL)(DENS CONT)(TY C) _____ DOLLARS and _____ CENTS	CY	668.00		
160	2005		FURNISHING AND PLACING TOPSOIL _____ DOLLARS and _____ CENTS	CY	25.00		
164	2036		DRILL SEEDING (PERM) (RURAL) (CLAY) _____ DOLLARS and _____ CENTS	AC	0.77		
164	2042		DRILL SEEDING (TEMP) (WARM) _____ DOLLARS and _____ CENTS	AC	0.77		
204	2003		SPRINKLING (DUST CONTROL) _____ DOLLARS and _____ CENTS	MG	130.00		
247	2225		FL BS (RDWY DEL)(TY E GR 4)(FNAL POS) _____ DOLLARS and _____ CENTS	CY	4,742.35		

Mile 2 North Roadway Construction Project							
Item	Code		UNIT BID PRICE ONLY, WRITTEN IN WORDS	Unit	Approx. Quantities	UNIT BID PRICE ONLY, WRITTEN IN FIGURES	ITEM COST WRITTEN IN FIGURES
251	2159		REWORK BS MATL (TY B)(10")(DC)(ORG POS) _____ DOLLARS and _____ CENTS	CY	827.00		
260	2011		LIME TRT (EXST MATL) (12") _____ DOLLARS and _____ CENTS	SY	21,156.11		
260	2016		LIME (HYD, COM, OR QK(SLURRY)) _____ DOLLARS and _____ CENTS	TON	518.83		
260	2054		LIME TRT (NEW BASE)(10") _____ DOLLARS and _____ CENTS	SY	20,079.83		
310	2026		PRIME COAT (EC-30) _____ DOLLARS and _____ CENTS	GAL	3,782.64		
400	2005		CEM STABIL BKFL _____ DOLLARS and _____ CENTS	CY	234.00		
400	2006		CUT & RESTORING PAV _____ DOLLARS and _____ CENTS	SY	54.00		
400	2007		STRUCT EXCAV (SPECIAL) _____ DOLLARS and _____ CENTS	CY	306.00		
400	2011		SAND BACKFILL _____ DOLLARS and _____ CENTS	CY	1,271.00		
402	2001		TRENCH EXCAVATION PROTECTION _____ DOLLARS and _____ CENTS	LF	2,531.00		
416	2032		DRILL SHAFT (TRF SIG POLE) (36 IN) _____ DOLLARS and _____ CENTS	LF	60.80		

Mile 2 North Roadway Construction Project							
Item	Code		UNIT BID PRICE ONLY, WRITTEN IN WORDS	Unit	Approx. Quantities	UNIT BID PRICE ONLY, WRITTEN IN FIGURES	ITEM COST WRITTEN IN FIGURES
432	2001		RIPRAP (CONC)(4 IN) _____ DOLLARS and _____ CENTS	CY	12.00		
464	2089		RC PIPE (CL III)(18 IN)(SPL) _____ DOLLARS and _____ CENTS	LF	606.00		
464	2090		RC PIPE (CL III)(24 IN)(SPL) _____ DOLLARS and _____ CENTS	LF	983.00		
464	2091		RC PIPE (CL III)(30 IN)(SPL) _____ DOLLARS and _____ CENTS	LF	389.00		
464	2092		RC PIPE (CL III)(36 IN)(SPL) _____ DOLLARS and _____ CENTS	LF	697.00		
464	2093		RC PIPE (CL III)(42 IN)(SPL) _____ DOLLARS and _____ CENTS	LF	396.00		
465	2005		MANH (COMPL)(TY M) _____ DOLLARS and _____ CENTS	EA	3.00		
465	2103		INLET (COMPL)(TY F) _____ DOLLARS and _____ CENTS	EA	19.00		
465	2109		INLET EXT (TY F) _____ DOLLARS and _____ CENTS	EA	12.00		
465	2113		INLET (COMPL)(TY CC) _____ DOLLARS and _____ CENTS	EA	2.00		
496	2004		REMOV STR (SET) _____ DOLLARS and _____ CENTS	EA	2.00		

Mile 2 North Roadway Construction Project							
Item	Code		UNIT BID PRICE ONLY, WRITTEN IN WORDS	Unit	Approx. Quantities	UNIT BID PRICE ONLY, WRITTEN IN FIGURES	ITEM COST WRITTEN IN FIGURES
496	2007		REMOV STR (PIPE) _____ DOLLARS and _____ CENTS	LF	174.00		
496	2042		REMOV STR (SMALL) _____ DOLLARS and _____ CENTS	EA	1.00		
500	2001		MOBILIZATION _____ DOLLARS and _____ CENTS	LS	1.00		
502	2001		BARRICADES, SIGNS AND TRAFFIC HANDLING _____ DOLLARS and _____ CENTS	MO	6.00		
508	2002		CONSTRUCTING DETOURS _____ DOLLARS and _____ CENTS	SY	2,868.00		
529	2012		CONC CURB & GUTTER (TY A)(BARRIER) _____ DOLLARS and _____ CENTS	LF	5,868.00		
530	2010		DRIVEWAYS (CONC) _____ DOLLARS and _____ CENTS	SY	153.00		
530	2011		DRIVEWAYS (ACP) _____ DOLLARS and _____ CENTS	SY	462.00		
531	2005		CURB RAMPS (TY 1) _____ DOLLARS and _____ CENTS	EA	14.00		
531	2006		CURB RAMPS (TY 2) _____ DOLLARS and _____ CENTS	EA	4.00		
531	2015		CONC SIDEWALKS (4") _____ DOLLARS and _____ CENTS	SY	1,699.00		

Mile 2 North Roadway Construction Project							
Item	Code		UNIT BID PRICE ONLY, WRITTEN IN WORDS	Unit	Approx. Quantities	UNIT BID PRICE ONLY, WRITTEN IN FIGURES	ITEM COST WRITTEN IN FIGURES
618	2024		CONDT (PVC) (SCHD 40) (4") _____ DOLLARS and _____ CENTS	LF	16.00		
620	2009		ELEC CONDR (NO. 6) BARE _____ DOLLARS and _____ CENTS	LF	140.00		
620	2010		ELEC CONDR (NO. 6) INSULATED _____ DOLLARS and _____ CENTS	LF	70.00		
621	2004		TRAY CABLE (4 CONDR) (12 AWG) _____ DOLLARS and _____ CENTS	LF	390.00		
625	2004		ZINC-COAT STL WIRE STRAND (3/8 IN) _____ DOLLARS and _____ CENTS	LF	255.00		
628	2145		ELC SRV TY T 120/240 000 (NS)GS(L)TS(O) _____ DOLLARS and _____ CENTS	EA	2.00		
644	2022		IN SM RD SN SUP&AM TYS80(1)SA(P) _____ DOLLARS and _____ CENTS	EA	18.00		
644	2077		REMOVE SM RD SN SUP & AM (SIGN ONLY) _____ DOLLARS and _____ CENTS	EA	22.00		
662	2004		WK ZN PAV MRK NON-REMOV (W) 4" (SLD) _____ DOLLARS and _____ CENTS	LF	8,348.00		
662	2016		WK ZN PAV MRK NON-REMOV (W) 24" (SLD) _____ DOLLARS and _____ CENTS	LF	361.00		
662	2032		WK ZN PAV MRK NON-REMOV (Y) 4" (SLD) _____ DOLLARS and _____ CENTS	LF	13,534.00		

Mile 2 North Roadway Construction Project							
Item	Code		UNIT BID PRICE ONLY, WRITTEN IN WORDS	Unit	Approx. Quantities	UNIT BID PRICE ONLY, WRITTEN IN FIGURES	ITEM COST WRITTEN IN FIGURES
666	2003		REFL PAV MRK TY I (W) 4" (BRK)(100MIL) _____ DOLLARS and _____ CENTS	LF	1,270.00		
666	2036		REFL PAV MRK TY I (W) 8" (SLD)(100MIL) _____ DOLLARS and _____ CENTS	LF	625.00		
666	2042		REFL PAV MRK TY I (W) 12"(SLD)(100MIL) _____ DOLLARS and _____ CENTS	LF	926.00		
666	2048		REFL PAV MRK TY I (W) 24"(SLD)(100MIL) _____ DOLLARS and _____ CENTS	LF	261.00		
666	2111		REFL PAV MRK TY I (Y) 4" (SLD)(100MIL) _____ DOLLARS and _____ CENTS	LF	6,720.00		
668	2064		PREFAB PAV MRK TY B (W) (ARROW) _____ DOLLARS and _____ CENTS	EA	8.00		
668	2074		PREFAB PAV MRK TY B (W) (WORD) _____ DOLLARS and _____ CENTS	EA	4.00		
672	2012		REFL PAV MRKR TY I-C _____ DOLLARS and _____ CENTS	EA	105.00		
672	2015		REFL PAV MRKR TY II-A-A _____ DOLLARS and _____ CENTS	EA	342.00		
680	2001		INSTALL HWY TRF SIG (FLASH BEACON) _____ DOLLARS and _____ CENTS	EA	2.00		
682	2027		VEH SIG SEC (12 IN) LED (RED) _____ DOLLARS and _____ CENTS	EA	16.00		

Mile 2 North Roadway Construction Project							
Item	Code		UNIT BID PRICE ONLY, WRITTEN IN WORDS	Unit	Approx. Quantities	UNIT BID PRICE ONLY, WRITTEN IN FIGURES	ITEM COST WRITTEN IN FIGURES
684	2010		TRF SIG CBL (TY A) (12 AWG) (5 CONDR) _____ DOLLARS and _____ CENTS	LF	250.00		
686	2018		INS TRF SIG PL AM(S) STR (TY D) LUM _____ DOLLARS and _____ CENTS	EA	4.00		
1122	2017		CONSTRUCTION EXITS (INSTALL) (TY 2) _____ DOLLARS and _____ CENTS	SY	78.00		
1122	2019		CONSTRUCTION EXITS (REMOVE) _____ DOLLARS and _____ CENTS	SY	78.00		
1122	2037		TEMPORARY SEDIMENT CONTROL FENCE INSTLL _____ DOLLARS and _____ CENTS	LF	180.00		
1122	2048		BIOGRD EROSN CONT LOGS (12" DIA)INSTALL _____ DOLLARS and _____ CENTS	LF	520.00		
3268	2039		D-GR HMA TY-D SAC-B PG64-22 _____ DOLLARS and _____ CENTS	TON	3,228.49		
4035	2005		RC LOW HEAD PRSSR PIPE (CL III)(24") _____ DOLLARS and _____ CENTS	LF	228.00		
4035	2006		RC LOW HEAD PRSSR PIPE (CL III)(30IN) _____ DOLLARS and _____ CENTS	LF	161.00		
4035	2009		RC LOW HEAD PRSSR PIPE (CL III)(36") _____ DOLLARS and _____ CENTS	LF	39.00		
4035	2012		RC LOW HEAD PRSSR PIPE (CL III)(42") _____ DOLLARS and _____ CENTS	LF	48.00		

Mile 2 North Roadway Construction Project							
Item	Code		UNIT BID PRICE ONLY, WRITTEN IN WORDS	Unit	Approx. Quantities	UNIT BID PRICE ONLY, WRITTEN IN FIGURES	ITEM COST WRITTEN IN FIGURES
4061	2014		WELL GATE (24") _____ DOLLARS and _____ CENTS	EA	4.00		
4269	2003		PRESS IRRIG PVC PIPE (24 IN) _____ DOLLARS and _____ CENTS	LF	318.00		
						TOTAL BID	$

TOTAL BID IN WORDS

BIDDER/COMPANY NAME

AUTHORIZED SIGNATURE

PRINTED NAME

TITLE

(Amounts are to be shown in both words and figures.)

The above unit prices shall include all labor, materials, bailing, shoring, removal, overhead, profit, insurance, etc.,

to cover the finished work of the several kinds called for.

Bidder understands that the Owner reserves the right to reject any or all bids to waive any informality in the bidding.

State of Texas Child Support Business Ownership Form

County: **HIDALGO** Project Name: **Mile 2 North Rd.**

TxDOT CSJ: **0921-02-323** LG Project Number: **2014-153**

Business Entity Submitting Bid:_____

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

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

Name	Social Security Number
_____	_____
_____	_____
_____	_____
_____	_____

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

( ) No individual own 25% or more of the business.

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

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

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

_____ _____

Signature Date

_____

Printed Name

IF THIS PROJECT IS A JOINT VENTURE,

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

DISCLOSURE OF LOBBYING ACTIVITIES

Approved by OMB
0348-0046

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure.)

1. Type of Federal Action:	2. Status of Federal Action:	3. Report Type:
☐ a. contract b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	☐ a. bid/offer/application b. initial award c. post-award	☐ a. initial filing b. material change **For Material Change Only:** year _____ quarter _____ date of last report _____

4. Name and Address of Reporting Entity:	5. If Reporting Entity in No. 4 is a Subawardee, Enter Name and Address of Prime:
☐ Prime ☐ Subawardee Tier _____, *if known*: **Congressional District**, *if known*:	**Congressional District**, *if known*:
6. Federal Department/Agency:	**7. Federal Program Name/Description:** CFDA Number, *if applicable*: _____
8. Federal Action Number, *if known*:	**9. Award Amount,** *if known*: $
10. a. Name and Address of Lobbying Entity (*if individual, last name, first name, MI*):	**b. Individuals Performing Services** (*including address if different from No. 10a*) (*last name, first name, MI*):

(attach Continuation Sheet(s) SF-LLLA, if necessary)

11. Amount of Payment (*check all that apply*):	13. Type of Payment (*check all that apply*):
$ _____ ☐ actual ☐ planned	☐ a. retainer ☐ b. one-time fee ☐ c. commission ☐ d. contingent fee ☐ e. deferred ☐ f. other; specify: _____
12. Form of Payment (*check all that apply*): ☐ a. cash ☐ b. in-kind; specify: nature _____ value _____	

14. Brief Description of Services Performed or to be Performed and Date(s) of Service, including officer(s), employee(s), or Member(s) contacted, for Payment Indicated in Item 11:

(attach Continuation Sheet(s) SF-LLLA, if necessary)

15. Continuation Sheet(s) SF-LLLA attached: ☐ Yes ☐ No

16.	
Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less that $10,000 and not more than $100,000 for each such failure.	Signature: _____ Print Name: _____ Title: _____ Telephone No.: _____ Date: _____

Federal Use Only:	Authorized for Local Reproduction Standard Form LLL (Rev. 7-97)

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Use the SF-LLLA Continuation Sheet for additional information if the space on the form is inadequate. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.

2. Identify the status of the covered Federal action.

3. Identify the appropriate classification of this report. If this is a followup report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.

4. Enter the full name, address, city, State and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be, a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.

5. If the organization filing the report in item 4 checks "Subawardee," then enter the full name, address, city, State and zip code of the prime Federal recipient. Include Congressional District, if known.

6. Enter the name of the Federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.

7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.

8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitation for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Include prefixes, e.g., "RFP-DE-90-001."

9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.

10. (a) Enter the full name, address, city, State and zip code of the lobbying entity engaged by the reporting entity identified in item 4 to influence the cover Federal action.

    (b) Enter the full names of the individual(s) performing services, and include full address if different from 10 (a). Enter Last Name, First Name, and Middle Initial (MI).

11. Enter the amount of compensation paid or reasonably expected to be paid by the reporting entity (item 4) to the lobbying entity (item 10). Indicate whether the payment has been made (actual) or will be made (planned). Check all boxes that apply. If this is a material change report, enter the cumulative amount of payment made or planned to be made.

12. Check the appropriate box(es). Check all boxes that apply. If payment is made through an in-kind contribution, specify the nature and value of the in-kind payment.

13. Check the appropriate box(es). Check all boxes that apply. If other, specify nature.

14. Provide a specific and detailed description of the services that the lobbyist has performed, or will be expected to perform, and the date(s) of any services rendered. Include all preparatory and related activity, not just time spent in actual contact with Federal officials. Identify the Federal official(s) or employee(s) contacted or the officer(s), employee(s), or Member(s) of Congress that were contacted.

15. Check whether or not a SF-LLLA Continuation Sheet(s) is attached.

16. The certifying official shall sign and date the form, print his/her name, title, and telephone number.

According to the Paperwork Reduction Act, as amended, no persons are required to respond to a collection of information unless it displays a valid OMB Control Number. The valid OMB control number for this information collection is OMB No. 0348-0046. Public reporting burden for this collection of information is estimated to average 30 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, DC 20503.

Approved by OMB
0348-0046

DISCLOSURE OF LOBBYING ACTIVITIES
CONTINUATION SHEET

Reporting Entity: _____ Page _____ of _____

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Standard Form - LLL-A

CERTIFICATION OF INTEREST IN OTHER BID PROPOSALS FOR THIS WORK

By signing this proposal, **the bidding firm and the signer certify that** the following information, as indicated by checking "Yes" or "No" below, is true, accurate, and complete.

A. Quotation(s) have been issued in this firm's name to other firm(s) interested in this work for consideration for performing a portion of this work.

_____ YES

_____ NO

B. If this proposal is the low bid, **the bidder agrees to** provide the following information prior to award of the contract.
   1. Identify firms which bid as a prime contractor and from which the bidder received quotations for work on this project.
   2. Identify all the firms which bid as a prime contractor to which the bidder gave quotations for work on this project.

NON-COLLUSION CERTIFICATION

By signing this proposal, **the bidder certifies that** the person, firm, association, or corporation has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action, in restraint of free competitive bidding in connection with the submitted bid. Failure to submit this certification as part of the bidding documents will make the bid nonresponsive and not eligible for award consideration.

CHILD SUPPORT

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

CONTRACTOR'S ASSURANCE (Subcontracts-Federal Aid Projects)

By signing this proposal, **the contractor is giving assurances that** all subcontract agreements will incorporate the Standard Specification and Special Provisions to Section 9.6.B. "Payment Provisions for Subcontractors", all subcontract agreements exceeding $2,000 will incorporate the applicable "Wage Determination Decision", and, all subcontract agreements of $10,000 or more will incorporate the following:

Special Provision	"Certification of Nondiscrimination in Employment"
Special Provision	"Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity" (Executive Order 11246)
Special Provision	"Standard Federal Equal Employment Opportunity Construction Contract Specifications" (Executive Order 11246)
Form FHWA 1273	"Required Contract Provisions Federal-aid Construction Contracts" (Form FHWA 1273 must also be physically attached to subcontracts and purchase orders of $10,000 or more)

DISADVANTAGED BUSINESS ENTERPRISES REQUIREMENTS

The following goal for disadvantaged business enterprises is established:

DBE – 6.0%

Certification of DBE Goal Attainment

By signing the proposal, **the Bidder certifies that** the above DBE goal will be met by obtaining commitments equal to or exceeding the DBE percentage or that the Bidder will provide a good faith effort to substantiate the attempt to meet the goal.

Failure to comply commitments to meet the stated goal or provide a satisfactory good faith effort will be considered a breach of the requirements of the proposal. As a result, the Bid Guaranty or Bid Bond of the bidder will become property of the County and the bidder will be excluded for rebidding on the project when it is re-advertised

See Special Provision 000-1966, "Disadvantaged Business Enterprise in Federal Aid Contracts".

CERTIFICATION OF NONDISCRIMINATION IN EMPLOYMENT

See Special Provision 000---009, "Certification of Nondiscrimination in Employment".

NOTICE TO CONTRACTORS

Hidalgo County (County) has entered into an agreement with the State of Texas (TxDOT), to construct Mile 2 North Road from La Homa Road to Moorefield Rd. (CSJ 0921-02-323). The County is responsible for implementation of the project including the planning, design, construction and administration in accordance with TxDOT standards and is subject to the State's oversight. TxDOT has also entered into an agreement with the City of Mission for the construction of Mile 2 North Road from Moorefield Rd. to SH107 (CSJ 0921-02-284). It is anticipated that bids will be opened for both projects within weeks of each other and that both projects will be under construction simultaneously.

The County has adopted the Texas Department of Transportation (TxDOT) 2004 Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges, including Items 1 – 9 General Requirements and Covenants, (Standard Specs) as the governing specifications for this project *(See Section "Governing Specifications")*.

Unless otherwise specified, the County will assume the responsibilities of TxDOT where "TxDOT" or "Department" is referred to in the Standard Specs as stipulated in Special Provision 001-007 *(See Section "Governing Specifications")*.

Eligibility of Bidders: Refer to the Standard Spec Item 2, "Instructions to Bidders", Section 2.2, "Eligibility of Bidders". Any Contractor intending to bid on this project to be awarded by Hidalgo County must be prequalified by TxDOT. If Contractor is not prequalified, the Contractor must submit a satisfactory Confidential Questionnaire Form and an audited financial statement, or a Bidder's Questionnaire Form to the TxDOT Construction Division at least ten (10) days prior to the date that bids are to be opened. Obtain prequalification forms from the Texas Department of Transportation Construction Division.

Buy America: Refer to Standard Spec Item 6, "Control of Materials", Section 6.1.A, "Buy America". The Contractor will comply with the latest provisions of Buy America as listed at 23 CFR 635.410. Use steel or iron materials manufactured in the United States except when:

- the cost of materials, including delivery, does not exceed 0.1% of the total Contractor cost or $2,500, whichever is greater;
- the materials are temporarily installed.

The Contractor will be required to provide a notarized original of the FORM D-9-USA-1 with the proper attachment for verification of compliance.

Equipment Rental Rates: The equipment rental rates method of payment, per Standard Spec Article 9.5.D is incorporated into the Contract by reference.

Time Extensions: Time charges for this project are based on a Five-Day Workweek as defined in Standard Spec Article 8.3.A.1. Time extensions will be considered for reasons outside of the contractor's control which may include inclement weather, unusual market conditions, or other conditions preventing work to progress as described in the referenced section.

Liquidated Damage Rate: Liquidated damages will be assessed in accordance with Standard Spec Section 8.5. The Liquidated Damage Rate for this contract is stipulated in Special Provision 000-2332 *(See Section "Governing Specifications")*.

Termination of Contract: The terms under which the County may terminate the Contract in whole or in part are as indicated in Standard Spec Section 8.7.

Safety & Trench Protection: The contractor shall be responsible to implement a project safety program compliant with OSHA standards and in accordance with FHWA-1273 Section VII (Safety: Accident Prevention) and Health and Safety Code 756.022 and 756.023. Trench Protection, as defined by the Health and Safety Code 756.022, may be required if the following conditions occur due to the Contractor's methods:

- Trenches 5 feet deep or more require a trench protection system.
- Trenches 20 feet deep or more require that the trench protection system be designed by a registered Professional Engineer.
- OSHA standards require daily inspections of trenches and as conditions change by a competent person prior to worker entry to ensure elimination of excavation hazards.

§ 635.106 Use of publicly owned equipment.

(a) Publicly owned equipment should not normally compete with privately owned equipment on a project to be let to contract. There may be exceptional cases, however, in which the use of equipment of the State or local public agency for highway construction purposes may be warranted or justified. A proposal by any STD for the use of publicly owned equipment on such a project must be supported by a showing that it would clearly be cost effective to do so under the conditions peculiar to the individual project or locality.

(b) Where publicly owned equipment is to be made available in connection with construction work to be let to contract, Federal funds may participate in the cost of such work provided the following conditions are met:

(1) The proposed use of such equipment is clearly set forth in the Plans, Specifications and Estimate (PS&E) submitted to the Division Administrator for approval.

(2) The advertised specifications specify the items of publicly owned equipment available for use by the successful bidder, the rates to be charged, and the points of availability or delivery of the equipment; and

(3) The advertised specifications include a notification that the successful bidder has the option either of renting part or all of such equipment from the State or local public agency or otherwise providing the equipment necessary for the performance of the contract work.

(c) In the rental of publicly owned equipment to contractors, the State or local public agency shall not profit at the expense of Federal funds.

(d) Unforeseeable conditions may make it necessary to provide publicly owned equipment to the contractor at rental rates agreed to between the contractor and the State or local public agency after the work has started. Any such arrangement shall not form the basis for any increase in the cost of the project on which Federal funds are to participate.

(e) When publicly owned equipment is used on projects constructed on a force account basis, costs may be determined by agreed unit prices or on an actual cost basis. When agreed unit prices are applied the equipment need not be itemized nor rental rates shown in the estimate. However, if such work is to be performed on an actual cost basis, the STD shall submit to the Division Administrator for approval the scheduie of rates proposed to be charged, exclusive of profit, for the publicly owned equipment made available for use.

§ 635.107 Participation by disadvantaged business enterprises.

(a) The STD shall schedule contract lettings in a balanced program providing contracts of such size and character as to assure an opportunity for all sizes of contracting organizations to compete. In accordance with Title VI of the Civil Rights Act of 1964, subsequent Federal-aid Highway Acts, and 49 CFR part 26, the STD shall ensure equal opportunity for disadvantaged business enterprises (DBEs) participating in the Federal-aid highway program.

(b) In the case of a design-build project funded with title 23 funds, the requirements of 49 CFR part 26 and the State's approved DBE plan apply. If DBE goals are set, DBE commitments above the goal must not be used as a proposal evaluation factor in determining the successful offeror.

[67 FR 75925, Dec. 10, 2002]

§ 635.108 Health and safety.

Contracts for projects shall include provisions designed:

(a) To insure full compliance with all applicable Federal, State, and local laws governing safety, health and sanitation; and

(b) To require that the contractor shall provide all safeguards, safety devices, and protective equipment and shall take any other actions reasonably necessary to protect the life and health of persons working at the site of the project and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

§ 635.109 Standardized changed condition clauses.

(a) Except as provided in paragraph (b) of this section, the following

changed conditions contract clauses shall be made part of, and incorporated in, each highway construction project approved under 23 U.S.C. 106:

(1) *Differing site conditions.* (i) During the progress of the work, if subsurface or latent physical conditions are encountered at the site differing materially from those indicated in the contract or if unknown physical conditions of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the contract, are encountered at the site, the party discovering such conditions shall promptly notify the other party in writing of the specific differing conditions before the site is disturbed and before the affected work is performed.

(ii) Upon written notification, the engineer will investigate the conditions, and if it is determined that the conditions materially differ and cause an increase or decrease in the cost or time required for the performance of any work under the contract, an adjustment, excluding anticipated profits, will be made and the contract modified in writing accordingly. The engineer will notify the contractor of the determination whether or not an adjustment of the contract is warranted.

(iii) No contract adjustment which results in a benefit to the contractor will be allowed unless the contractor has provided the required written notice.

(iv) No contract adjustment will be allowed under this clause for any effects caused on unchanged work. (This provision may be omitted by the STD's at their option.)

(2) *Suspensions of work ordered by the engineer.* (i) If the performance of all or any portion of the work is suspended or delayed by the engineer in writing for an unreasonable period of time (not originally anticipated, customary, or inherent to the construction industry) and the contractor believes that additional compensation and/or contract time is due as a result of such suspension or delay, the contractor shall submit to the engineer in writing a request for adjustment within 7 calendar days of receipt of the notice to resume work. The request shall set forth the reasons and support for such adjustment.

(ii) Upon receipt, the engineer will evaluate the contractor's request. If the engineer agrees that the cost and/or time required for the performance of the contract has increased as a result of such suspension and the suspension was caused by conditions beyond the control of and not the fault of the contractor, its suppliers, or subcontractors at any approved tier, and not caused by weather, the engineer will make an adjustment (excluding profit) and modify the contract in writing accordingly. The contractor will be notified of the engineer's determination whether or not an adjustment of the contract is warranted.

(iii) No contract adjustment will be allowed unless the contractor has submitted the request for adjustment within the time prescribed.

(iv) No contract adjustment will be allowed under this clause to the extent that performance would have been suspended or delayed by any other cause, or for which an adjustment is provided or excluded under any other term or condition of this contract.

(3) *Significant changes in the character of work.* (i) The engineer reserves the right to make, in writing, at any time during the work, such changes in quantities and such alterations in the work as are necessary to satisfactorily complete the project. Such changes in quantities and alterations shall not invalidate the contract nor release the surety, and the contractor agrees to perform the work as altered.

(ii) If the alterations or changes in quantities significantly change the character of the work under the contract, whether such alterations or changes are in themselves significant changes to the character of the work or by affecting other work cause such other work to become significantly different in character, an adjustment, excluding anticipated profit, will be made to the contract. The basis for the adjustment shall be agreed upon prior to the performance of the work. If a basis cannot be agreed upon, then an adjustment will be made either for or against the contractor in such amount as the engineer may determine to be fair and equitable.

(iii) If the alterations or changes in quantities do not significantly change the character of the work to be performed under the contract, the altered work will be paid for as provided elsewhere in the contract.

(iv) The term ''significant change'' shall be construed to apply only to the following circumstances:

(A) When the character of the work as altered differs materially in kind or nature from that involved or included in the original proposed construction; or

(B) When a major item of work, as defined elsewhere in the contract, is increased in excess of 125 percent or decreased below 75 percent of the original contract quantity. Any allowance for an increase in quantity shall apply only to that portion in excess of 125 percent of original contract item quantity, or in case of a decrease below 75 percent, to the actual amount of work performed.

(b) The provisions of this section shall be governed by the following:

(1) Where State statute does not permit one or more of the contract clauses included in paragraph (a) of this section, the State statute shall prevail and such clause or clauses need not be made applicable to Federal-aid highway contracts.

(2) Where the State transportation department has developed and implemented one or more of the contract clauses included in paragraph (a) of this section, such clause or clauses, as developed by the State transportation department may be included in Federal-aid highway contracts in lieu of the corresponding clause or clauses in paragraph (a) of this section. The State's action must be pursuant to a specific State statute requiring differing contract conditions clauses. Such State developed clause or clauses, however, must be in conformance with 23 U.S.C., 23 CFR and other applicable Federal statutes and regulations as appropriate and shall be subject to the Division Administrator's approval as part of the PS&E.

(c) In the case of a design-build project, STDs are strongly encouraged to use ''suspensions of work ordered by the engineer'' clauses, and may consider ''differing site condition'' clauses and ''significant changes in the character of work'' clauses which are appropriate for the risk and responsibilities that are shared with the design-builder.

[56 FR 37004, Aug. 2, 1991; 57 FR 10062, Mar. 23, 1992, as amended at 67 FR 75925, Dec. 10, 2002]

§635.110 Licensing and qualification of contractors.

(a) The procedures and requirements a STD proposes to use for qualifying and licensing contractors, who may bid for, be awarded, or perform Federal-aid highway contracts, shall be submitted to the Division Administrator for advance approval. Only those procedures and requirements so approved shall be effective with respect to Federal-aid highway projects. Any changes in approved procedures and requirements shall likewise be subject to approval by the Division Administrator.

(b) No procedure or requirement for bonding, insurance, prequalification, qualification, or licensing of contractors shall be approved which, in the judgment of the Division Administrator, may operate to restrict competition, to prevent submission of a bid by, or to prohibit the consideration of a bid submitted by, any responsible contractor, whether resident or nonresident of the State wherein the work is to be performed.

(c) No contractor shall be required by law, regulation, or practice to obtain a license before submission of a bid or before the bid may be considered for award of a contract. This, however, is not intended to preclude requirements for the licensing of a contractor upon or subsequent to the award of the contract if such requirements are consistent with competitive bidding. Prequalification of contractors may be required as a condition for submission of a bid or award of contract only if the period between the date of issuing a call for bids and the date of opening of bids affords sufficient time to enable a bidder to obtain the required prequalification rating.

(d) Requirements for the prequalification, qualification or licensing of contractors, that operate to govern the amount of work that may be bid upon by, or may be awarded to, a contractor, shall be approved only if

Convict Produced Material: FHWA Federal-aid projects are subject to 23 CFR 635.417, Convict produced materials. Materials produced after July 1, 1991, by convict labor may only be incorporated in a Federal aid highway construction project if such materials have been: (i) produced by convicts who are on parole, supervised release, or probation from a prison, or (ii) produced in a prison project in which convicts, during the 12 month period ending July 1, 1987, produced materials for use in Federal aid highway construction projects, and the cumulative annual production amount of such materials produced in such project for use in Federal aid highway construction during the 12 month period ending July 1, 1987.

Convict Labor: No construction work shall be performed by convict labor at the site or within the limits of any Federal-aid highway construction project from the time of the ward of the contract or the start of work on force account until final acceptance of the work by the TxDOT unless it is labor performed by convicts who are on parole, supervised release, or probation.

CHANGE ORDERS

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

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

Agree upon the scope of work and the basis of payment for the change order before beginning the work. If there is no agreement, the Engineer may order the work to proceed under the 2004 TxDOT Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges (TXDOT Specification) Article 9.5, “Force Account,” or by making an interim adjustment to the Contract. In the case of an adjustment, the Engineer will consider modifying the compensation after the work is performed.

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

- the character of the work for any Item as altered differs materially in kind or nature from that in the Contract or
- a major item of work varies by more than 25% from the original Contract quantity. (The 25% variance is not applicable to non-site-specific Contracts.)

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

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

If the changes require additional working days to complete the Contract, Contract working days will be adjusted in accordance with TxDOT Specification Item 8, “Prosecution and Progress.”

STATE OF TEXAS

COUNTY OF HIDALGO

This Agreement entered into this _____ day of _____20____ by and between Hidalgo County, hereinafter called "OWNER", and _____ (a corporation, partnership, or individual) of _____ County, State of Texas, hereinafter called "CONTRACTOR",

WITNESSETH: That for and in consideration of the payments and agreements, hereinafter mentioned, to be made and performed by OWNER, the CONTRACTOR hereby agrees with OWNER to commence and complete the construction of certain improvements described as follows:

PROJECT: Mile 2 North Roadway Reconstruction Project

PROJECT No. : 2014-153

hereinafter called "PROJECT", for the sum of $_____ and all extra work in connection therewith, under the terms and stated in the General and Special Conditions of the Contract; and at his (its or their) own proper cost and expense to furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories and services necessary to complete the said project in accordance with the conditions and prices stated in the Proposal, the General Conditions and Special Conditions printed or written explanatory matter thereof, the specifications and contract documents therefore as prepared by L&G Consulting Engineers, Inc., Damien Tijerina, P.E., entitled the Architect/Engineer, and as enumerated in Paragraph l.Ol.A.12 of the General Conditions, all of which are made a part hereof and collectively evidence and constitute the contract.

The CONTRACTOR hereby agrees to commence work under this contract on or after a date to be specified in written "Notice to Proceed" of the OWNER and to fully complete the project within **120 working days** after commencement of work. The CONTRACTOR further agrees to pay, as liquidated damages, the sum stipulated in the Specifications for each consecutive working day thereafter.

The OWNER agrees to pay the CONTRACTOR in current funds for the performance of the contract, subject to additions and deductions, as provided in the General Conditions of the contract, and to make payments on account thereof as provided in Paragraphs 14.02.C and 14.07.C of the General Conditions.

IN WITNESS WHEREOF, the parties to these presents have executed this Contract in four (4) counterparts, each of which shall be deemed and original, in the year and day first above mentioned.

APPROVED BY COMMISSIONER'S COURT ON: _____, 2014

CONTRACTOR _____

Print Name & Title _____

Name of Firm _____

Address _____

_____

Fed I.D. # /SS # _____

STATE OF TEXAS

COUNTY OF HIDALGO

This instrument was acknowledged before me on this the _____ day

of _____ 2014, by *(Title)*_____ of and on

behalf of *(A corporation)* _____.

_____

Notary Public Signature

ATTEST: COUNTY OF HIDALGO

_____ _____

Arturo Guajardo Jr., County Clerk Ramon Garcia, County Judge

THE STATE OF TEXAS
COUNTY OF HIDALGO

KNOW ALL MEN BY THESE PRESENTS:

That we (Name of Contractor) _____, hereinafter called **Principal** and (Name of Surety) _____, hereinafter called **Surety**, are held and firmly bound unto **Hidalgo County**, hereinafter called **Owner,** in the penal sum of _____ ($_____) Dollars in lawful money of the United States to be paid in Hidalgo County, Texas, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION

is such that Whereas, the Principal entered into a certain contract with Owner, dated the _____ day of _____ , 20_____, a copy of which is hereto attached and made a part hereof for the **Mile 2 North Roadway Reconstruction Project**, hereinafter called the "Work".

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

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

IN WITNESS WHEREOF, this instrument is executed in six counterparts, each one of which shall be deemed an original, this ___, day of _____,20____.

ATTEST:

_____
PRINCIPAL

_____ _____
(Principal) Secretary Signature

_____ _____
Witness as to Principal (Print/Type Name)

_____ _____
Address Address

ATTEST:

_____
SURETY **(SEAL)**

_____ _____
(Surety) Secretary Attorney-in-Fact (Signature)

_____ _____
Witness as to Surety (Print/Type Name)

_____ _____
Address Address

NOTE: If Contractor is partnership, all partners should execute bond.

THE STATE OF TEXAS
COUNTY OF HIDALGO

KNOW ALL MEN BY THESE PRESENTS:

That we (Name of Contractor) _____, hereinafter called **Principal** and (Name of Surety) _____, hereinafter called **Surety**, are held and firmly bound unto **Hidalgo County**, hereinafter called **Owner,** and unto all person, firms, and corporations who may furnish materials for, or perform labor upon the building or improvements hereinafter referred to in the penal sum of _____ ($_____) Dollars in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION

is such that Whereas, the Principal entered into a certain contract with Owner, dated the _____ day of _____ , 20_____, a copy of which is hereto attached and made a part hereof for the **Mile 2 North Roadway Reconstruction Project**.

NOW, THEREFORE, the condition of this obligation is such, that if the Principal shall promptly make payment to all claimants as defined in *Article 5160 Revised Civil Statutes of Texas, 1925, as amended by House Bill 344, Acts 56th legislature, Regular Session, 1959, effective April 27, 1959*, supplying labor and materials in the prosecution of the work provided for in said Contract, then this obligation shall be null and void, otherwise it shall remain in full force and effect.

This bond is made and entered into solely for the protection of all claimants supplying labor and material in the prosecution of the work provided for in said Contract, and all such claimants shall have a direct right of action under the bond as provided in *Article 5160, Revised Civil Statutes 1925, as amended by House Bill 344, Acts 56th Legislature, Regular Session, 1959.*

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

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

IN WITNESS WHEREOF, this instrument is executed in six counterparts, each one of which shall be deemed an original, this ____, day of _____,20____.

ATTEST:

_____
PRINCIPAL

_____ _____
(Principal) Secretary Signature

_____ _____
Witness as to Principal (Print/Type Name)

_____ _____
Address Address

ATTEST:

_____
SURETY **(SEAL)**

_____ _____
(Surety) Secretary Attorney-in-Fact (Signature)

_____ _____
Witness as to Surety (Print/Type Name)

_____ _____
Address Address

NOTE: If Contractor is partnership, all partners should execute bond.

I, the undersigned, _____, the duly authorized and acting legal representative of _____, do hereby certify as follows:

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

Signature: _____

Date: _____

SALES TAX AND LOCAL SALES TAX EXEMPTION CERTIFICATE FOR CONTRACTORS

This Contract is to be performed for an exempt organization as defined by Article 20.04 (H) (4) of the Texas Limited Sales, Excise, and Use Tax Act and the undersigned hereby claims an exemption from payment of taxes under Chapter 20, title 122A, revised hereby claims an exemption from payment oftaxes under Chapter 20, title 122A, revised civil statues of Texas, and Article 1066 ©,entitle Local Sales and Use Tax, revised civil statues of Texas.

The Contractor performing this Contract may purchase, rent, or lease all materials, supplies, equipment used for consumed in the performance of this Contract by issuing to his retailer an exemption certificate in lieu of the tax, said exemption certificate complying with State Comptroller's Ruling No 95-9.07. Any such exemption certificate issue by the Contractor in lieu of the tax shall be subject to the provisions of the State Comptroller's Ruling No. 95.0.09 as amended to be effective October 2, 1968.

EXECUTED this the_____day of_____, 20_____.

_____

Contractor

HIDALGO COUNTY
PURCHASING DEPARTMENT
Bidder/Vendor Application

Complete in print or type. Please return this application to the Hidalgo County Purchasing Department thru Facsimile: (956) 318-2629 or (956) 292-7612 in person or regular mail to: 2812 S. Business Hwy. 281 , Edinburg, Texas 78539 or e-mail: purchasing@co.hidalgo.tx.us

Company Name: **Telephone No. ( )**
dba Name:
Legal Name:
Mailing Address : **Fax No. ( )**
Physical Address:
City, State, Zip **Tax I.D. No.**
Remit to Address : **City, State, Zip**
E-Mail Address:
Representative(s) Name(s) & Title(s)
Type of Organization (check one): _____ Individual _____ Partnership _____ Corporation _____Non-Profit _____ LLC _____ Sole Proprietor _____ Other, Specify **State Identification No._____ (Please attached completed W-9 form with this application)** **Federal Identification No. or (if individual) SS No.**
State of Incorporation: _____ Date:_____ Other:
Type of Business (check one): _____ Manufacturer _____ Wholesaler _____ Retailer _____ Broker _____ Distributor _____ Service Organization _____ Other, Specify
Name & Title of Person(s) Authorized to Sign Bids, Proposals, and/or Contracts:
Small and/or Disadvantaged Business Information (check application criteria) **Small Business:** **Disadvantaged Business (At Least 51% Ownership)** ☐ Less than 125,000 annual gross receipt ☐ Black American ☐ Native American ☐ Less than 250,000 annual gross receipt ☐ Hispanic American ☐ Women ☐ Less than 499,000 annual gross receipt ☐ Asian Pacific American ☐ Other ☐ More than 500,000 annual gross receipt **Have you been certified as a HUB or an MBE/WBE source?:** ☐ Yes ☐ No **Indicate Certification No.(s):_____ or are Certificate(s) attached?:** ☐ Yes ☐ No
What type of product(s) is/are solicited by your company?: **Would you like to be provided with specifications for procurements of such products?:** ☐ Yes ☐ No
To Be Completed by the County: Rec'd by (Purchasing):_____ Date Rec'd by (Purchasing): **Date Forwarded Information to Auditor's Office:_____Entry Date: _____ Vendor No.:**

Revised12/14/06

Form **W-9**
(Rev. November 2005)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

Give form to the requester. Do not send to the IRS.

Print or type
See Specific Instructions on page 2.

Name (as shown on your income tax return)

Business name, if different from above

Check appropriate box: ☐ Individual/ Sole proprietor ☐ Corporation ☐ Partnership ☐ Other ► ..... ☐ Exempt from backup withholding

Address (number, street, and apt. or suite no.) | Requester's name and address (optional)

City, state, and ZIP code

List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on Line 1 to avoid backup withholding. For individuals, this is your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Note. If the account is in more than one name, see the chart on page 4 for guidelines on whose number to enter.

Social security number
___ – __ – ____

or

Employer identification number
__ – _____

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding, and
3. I am a U.S. person (including a U.S. resident alien).

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the Certification, but you must provide your correct TIN. (See the instructions on page 4.)

Sign Here Signature of U.S. person ► Date ►

Purpose of Form

A person who is required to file an information return with the IRS, must obtain your correct taxpayer identification number (TIN) to report, for example, income paid to you, real estate transactions, mortgage interest you paid, acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA.

U.S. person. Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN to the person requesting it (the requester) and, when applicable, to:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee.

In 3 above, if applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income.

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

For federal tax purposes, you are considered a person if you are:

- An individual who is a citizen or resident of the United States,
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States, or
- Any estate (other than a foreign estate) or trust. See Regulations sections 301.7701-6(a) and 7(a) for additional information.

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax on any foreign partners' share of income from such business. Further, in certain cases where a Form W-9 has not been received, a partnership is required to presume that a partner is a foreign person, and pay the withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid withholding on your share of partnership income.

The person who gives Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States is in the following cases:

- The U.S. owner of a disregarded entity and not the entity,

Cat. No. 10231X Form **W-9** (Rev. 11-2005)

- The U.S. grantor or other owner of a grantor trust and not the trust, and
- The U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

Foreign person. If you are a foreign person, do not use Form W-9. Instead, use the appropriate Form W-8 (see Publication 515, Withholding of Tax on Nonresident Aliens and Foreign Entities).

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

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

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.
2. The treaty article addressing the income.
3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.
4. The type and amount of income that qualifies for the exemption from tax.
5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

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

If you are a nonresident alien or a foreign entity not subject to backup withholding, give the requester the appropriate completed Form W-8.

What is backup withholding? Persons making certain payments to you must under certain conditions withhold and pay to the IRS 28% of such payments (after December 31, 2002). This is called "backup withholding." Payments that may be subject to backup withholding include interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

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

Payments you receive will be subject to backup withholding if:

1. You do not furnish your TIN to the requester,
2. You do not certify your TIN when required (see the Part II instructions on page 4 for details),
3. The IRS tells the requester that you furnished an incorrect TIN,
4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only), or
5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See the instructions below and the separate Instructions for the Requester of Form W-9.

Also see *Special rules regarding partnerships* on page 1.

Penalties

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

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

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

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

Specific Instructions

Name

If you are an individual, you must generally enter the name shown on your income tax return. However, if you have changed your last name, for instance, due to marriage without informing the Social Security Administration of the name change, enter your first name, the last name shown on your social security card, and your new last name.

If the account is in joint names, list first, and then circle, the name of the person or entity whose number you entered in Part I of the form.

Sole proprietor. Enter your individual name as shown on your income tax return on the "Name" line. You may enter your business, trade, or "doing business as (DBA)" name on the "Business name" line.

Limited liability company (LLC). If you are a single-member LLC (including a foreign LLC with a domestic owner) that is disregarded as an entity separate from its owner under Treasury regulations section 301.7701-3, enter the owner's name on the "Name" line. Enter the LLC's name on the "Business name" line. Check the appropriate box for your filing status (sole proprietor, corporation, etc.), then check the box for "Other" and enter "LLC" in the space provided.

Other entities. Enter your business name as shown on required federal tax documents on the "Name" line. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on the "Business name" line.

Note. You are requested to check the appropriate box for your status (individual/sole proprietor, corporation, etc.).

Exempt From Backup Withholding

If you are exempt, enter your name as described above and check the appropriate box for your status, then check the "Exempt from backup withholding" box in the line following the business name, sign and date the form.

Generally, individuals (including sole proprietors) are not exempt from backup withholding. Corporations are exempt from backup withholding for certain payments, such as interest and dividends.

Note. If you are exempt from backup withholding, you should still complete this form to avoid possible erroneous backup withholding.

Exempt payees. Backup withholding is not required on any payments made to the following payees:

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

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

3. A state, the District of Columbia, a possession of the United States, or any of their political subdivisions or instrumentalities,

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

5. An international organization or any of its agencies or instrumentalities.

Other payees that may be exempt from backup withholding include:

6. A corporation,

7. A foreign central bank of issue,

8. A dealer in securities or commodities required to register in the United States, the District of Columbia, or a possession of the United States,

9. A futures commission merchant registered with the Commodity Futures Trading Commission,

10. A real estate investment trust,

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

12. A common trust fund operated by a bank under section 584(a),

13. A financial institution,

14. A middleman known in the investment community as a nominee or custodian, or

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

The chart below shows types of payments that may be exempt from backup withholding. The chart applies to the exempt recipients listed above, 1 through 15.

IF the payment is for . . .	THEN the payment is exempt for . . .
Interest and dividend payments	All exempt recipients except for 9
Broker transactions	Exempt recipients 1 through 13. Also, a person registered under the Investment Advisers Act of 1940 who regularly acts as a broker
Barter exchange transactions and patronage dividends	Exempt recipients 1 through 5
Payments over $600 required to be reported and direct sales over $5,000 [1]	Generally, exempt recipients 1 through 7 [2]

[1] See Form 1099-MISC, Miscellaneous Income, and its instructions.

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

Part I. Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. If you are a resident alien and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN. However, the IRS prefers that you use your SSN.

If you are a single-owner LLC that is disregarded as an entity separate from its owner (see *Limited liability company (LLC)* on page 2), enter your SSN (or EIN, if you have one). If the LLC is a corporation, partnership, etc., enter the entity's EIN.

Note. See the chart on page 4 for further clarification of name and TIN combinations.

How to get a TIN. If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local Social Security Administration office or get this form online at *www.socialsecurity.gov*. You may also get this form by calling 1-800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at *www.irs.gov/businesses* and clicking on Employer ID Numbers under Related Topics. You can get Forms W-7 and SS-4 from the IRS by visiting *www.irs.gov* or by calling 1-800-TAX-FORM (1-800-829-3676).

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

Note. Writing "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon.

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

Control : 0921-02-323

Project :

Highway : CS (Mile 2 North Rd.)

County : Hidalgo

The enclosed Texas Department of Transportation Specifications, Special Specifications, Special Provisions, General Notes and Specification Data in this document have been selected by me, or under my 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.



The seal appearing on this document was authorized by

ARMANDO J. SANDOVAL, P.E.

MAY 5, 2014

GENERAL NOTES:

2004 SPECS
GENERAL NOTES MASTER

****

GENERAL REQUIREMENTS AND COVENANTS - ITEM 1 THRU 9

For all pits or quarries, comply with the "Texas Aggregate Quarry and Pit Safety Act."

Provide on a weekly basis a list of equipment, including idle equipment, utilized on the project that week.

The 1-800 call services for utility locations do not include TxDOT facilities. Contact the Pharr District Signal Section (956-702-6225) for coordination regarding TxDOT underground lines.

ITEM 5: Control of the Work

Prior to contract letting, bidders may obtain a free computer diskette or a computerized transfer of files (from the Engineer's office) that contains the earthwork information. If copies of the actual cross-sections in additional to, or instead of, the diskette are requested, they will be available at the Engineers office for borrowing by copying companies for the purpose of making copies for the bidder at the bidders expense.

ITEM 8: Prosecution and Progress

Where road closures or detours around structures are necessary to accomplish proposed work, the removal of existing structures and/or cutting of existing pavement will not be permitted until all pre-cast members for the proposed structure have been cast, tested and approved for use.

Working days will be computed and charged in accordance with Article 8.3.A.6 defined as follows:

Upon issuance of written authorization to begin work, all of Item 100, "Preparing Right of Way" will commence. Item 100 work shall be completed before work begins on other items, unless otherwise authorized by the project engineer. Item 100 will be charged in accordance with Article 8.3.A.1, Five-Day Workweek.

Work and time charges will continue until completion of Item 100. Upon completion of Item 100, work and time charges will stop for a maximum period of 120-Working days for utility work to be completed. Time charges in accordance with Article 8.3.A.1 will resume at the end of the 120 working days utility work period or earlier if mutually agreed in writing by the engineer and contractor.

ITEM 100: Preparing Right of Way

Preparation of ROW will be done in accordance with the construction phasing shown on the Traffic Control Plans. Performance of this item will not be allowed outside of the project's current construction phase without prior approval by the Engineer.

ITEM 132: Embankment

Embankment (DENS CONT) shall be Type C with a max. PI of 40. Material used as embankment material in the top two feet below the bottom of Flexible Base shall meet the following requirements based on preliminary tests and such other tests found necessary by the Engineer.

1. The material shall be such as to produce a well-bonded embankment and shall have a minimum PI of 8 and a maximum PI of 30.

It is the Contractor's responsibility to advise the Engineer of the location of the source sufficiently in advance to avoid delay.

ITEM 160: Topsoil

Use topsoil as needed and directed by the project engineer for select problem areas. Unless otherwise approved by the project engineer, use topsoil from approved sources outside the right of way as per standard specifications. Existing topsoil is to be salvaged and retained for re-use on the project as topsoil.

ITEM 164: Seeding for Erosion Control

During drill seeding operations, application methods shall be in accordance with the method shown in the Standard Specification Book.

SS-1 Tacking Agent shall be a ratio of 2:1, two (Emulsion) to one (water) and applied at a rate of 0.05 gallons per square yard. The SS-1 Tacking Agent required for Drill Seed operations, will not be paid for directly, but will be subsidiary to Item 164 “Drill Seeding”. Watering shall not be used with the Drill Seed Method.

Cool Season or Warm Season Grasses shall be included as part of Item 164 (See Table 3 and/or Table 4 in the Standard Specification Manual for dates and seed type).

Seed mixture shall be as specified under Item 164.

ITEM 166: Fertilizer

Fertilizer rate is based on a rate of 100 Lbs. of Nitrogen per acre. The Nitrogen-Phosphorous-Potassium (NPK) ratio shall include a minimum of 5 percent phosphorous and 5 percent Potassium. Fertilizer shall be homogenized.

ITEM 247: Flexible Base

Flexible Base Type E will be composed of caliche (argillaceous Limestone, calcareous or calcareous clay particles) and may contain stone, conglomerate, gravel, sand or granular materials when these materials are in situ with the caliche.

Flexible Base (TY E GR 4) or (TY D GR 4) crushed concrete shall conform to the following requirements:

Retained on Sq. Sieve	Percent Retained
2”	0
½”	20-60
No. 4	40-75
No. 40	70-90
Max. PI:	15
Max. Wet Ball PI:	15
Wet Ball Mill Max Amount:	50
Min. Comp. Strength PSI:	150 at 15 PSI lateral pressure
Triaxial Test	Tex-117-E

The Wet Ball Test (Tex-116-E) shall be run and the Plasticity Index of the material passing the No. 40 sieve shall be determined (Wet Ball PI).

Two (2) percent lime (by weight) will be incorporated into the Flexible Base in the field at the State's expense in accordance with the provisions of Items 260.

The percent of density as determined by Compaction Ratio (Tex-113-E) for the new Flexible Base shall be a minimum of 98%.

The Contractor's attention is called to the fact that certain existing and/or proposed structures may be within the limits of the Flexible Base. It shall be the Contractor's responsibility to perform construction operations without damage to these structures.

For water added under Item 247, the sulfate content will not exceed 3000-ppm and the chloride content will not exceed 3000-ppm.

ITEM 251: Reworking Base Material

Quantities of Flexible Base to be salvaged, shown on the typical sections, are for estimating purposes only. All acceptable base material encountered in existing base is to be salvaged as directed by the Engineer regardless of the quantities involved.

Salvaged base shall be used in the bottom course on any of the proposed roadway and/or turnout sections.

Salvaged base may be used on any of the proposed driveway sections.

ITEM 260: Lime Treatment (Road Mixed)

The Contractor's attention is called to the fact that certain existing and/or proposed structures are within the limits of the lime-treated Subgrade. Unless otherwise directed by the Engineer, these structures shall be installed before the final rolling of this Subgrade. It shall be the Contractor's responsibility to perform the proper lime treating operation without damage to these structures.

The slurry method of applying lime will be required, except when the lime is to be added to naturally wet materials as directed by the Engineer.

For this project, the Engineer will direct a random number of lime trucks to be check weighed.

The percent of density as determined by Tex-121-E for the new and salvage Flexible Base shall be a minimum of 98% for all courses.

ITEM 300: Asphalts, Oils and Emulsions

Temporary ramps/detours and driveways may use performance grade binder 64-22.

ITEM 301: Asphalt Antistripping Agents

Hydrated Lime shall be added as an Antistripping additive between the rates of 1 % minimum 2.0% maximum by weight for item 3268. If the Hamburg wheel test cannot be met within these limits, Liquid Antistripping agents as approved by the Engineer may be used in conjunction with lime for item 3268.

ITEM 310: Prime Coat (Cutback Asphaltic Material)

The Contractor shall exercise diligence in the application of asphalt by the use of flagging and rolling procedures to keep from spraying or splattering the traveling public with asphaltic material.

All existing Flexible Base, which may become exposed by the milling operation, shall be primed at the rate of 0.2 Gal/SY.

Do not apply subsequent courses over the initial prime coat any earlier than the day after the prime coat was applied, unless otherwise authorized or directed by the Engineer.

ITEM 3268: Dense-Graded Hot-Mix Asphalt (QC/QA)

The contractor shall exercise diligence in the application of "Tack Coat" by the use of flagging and rolling procedures to keep from spraying or splattering the traveling public with asphaltic material.

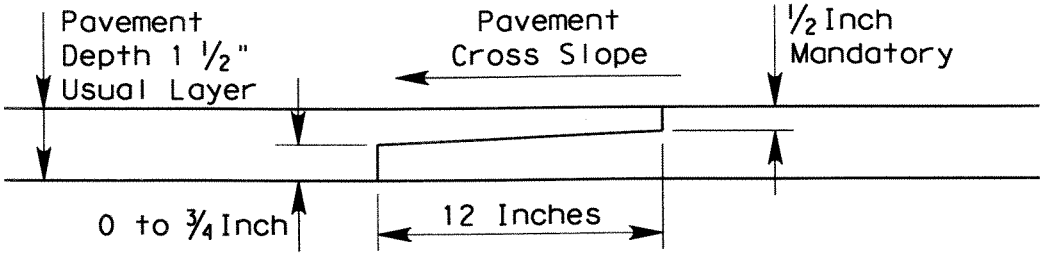
Blading (not to exceed more than 3-ft from the pavement edge) may also be necessary to clean dirt and grass from pavement edges and turnout areas as work under this bid Item. The cost of this blading will not be paid for directly, but shall be considered subsidiary to this bid Item.

This project will require the following minimum surface aggregate Classifications:

County	CSJ	Highway	Classification
Hidalgo	0921-02-323	Mile 2 Rd.	B

Level-up will be placed before the surface course. An asphaltic concrete spreading and finishing machine and/or motor graders; when approved by the Engineer may be used to place the ACP level-up.

All unconfined longitudinal joints shall be constructed with a joint maker providing a maximum ½-inch vertical edge and a minimum 6:1 edge taper or as approved by the Engineer.



NOTCHED WEDGE JOINT

The engineer may allow for variances to the dimensions shown.

The Hamburg wheel Test requirement for PG 64 binder will be 5,000 passes @ 0.5 inch rut depth.

Target Lab Molded Density for this project shall be 97%.

Public and private driveways need to have a smooth vertical transition between the edge of pavement and the existing driveways. The contractor is to add a vertical taper if needed which will be subsidiary to Item 3268.

ITEM 400: Excavation and Backfill for Structures

If the Contractor elects to cut pavement (existing/detour) for structural work beyond that required by the construction phasing shown in the plans and approved by the Engineer, it shall be restored at his expense and backfilled to its original condition or better in accordance with Item 400.

Unless shown otherwise in the plans, use a 1-ft depth for Item 400 Structural Excavation (Special) for gravel bedding needed below drainage structures with unstable material.

ITEM 416: Drilled Shaft Foundations

Payment for furnishing and installing anchor bolts mounted in drill shafts will be included in the unit price bid for the various diameter drill shafts.

The Contractor shall coordinate with the utility companies to verify utility locations before drilling foundations.

The Contractor shall form, or provide a smooth finish, the portions of drilled shaft that project above the ground line. Place a ¾ inch chamfer on the top edge of each pole foundation. This work will not be paid for directly, but will be considered subsidiary to this bid item.

All drilled shaft foundations will be based on the lengths shown on the plans or those established in writing. Adequate calculations for measurements of foundations have been made in accordance with Article 9.1 of the Standard Specifications. Increases or decreases in the quantities required by change in design will be measured as specified and the revised quantities will be the basis for payment.

In the presence of excess ground water and/or unstable conditions in sub-grade soils prevents excavation to the line and depths indicated on the plans for "Drilled Shaft Foundation", other proposed methods of foundation installation such as casing, etc. shall be submitted for review and approved by the Engineer.

ITEM 420: Concrete Structures

Use membrane curing, Type 2, for concrete curb, gutter and combined curb and gutter, concrete medians, directional islands and sidewalks.

ITEM 421: Portland Cement Concrete

Provide equipment at the batch plant for determining the free moisture and/or absorption of aggregates in accordance with applicable TXDOT Test.

Provide the following items for concrete batch inspection in accordance with specifications outlined in DMS-10101, "Computer Equipment":

(1) One Desktop Microcomputer or One Laptop Microcomputer
(2) One Integrated Printer/Scanner/Copier/Fax Unit
(3) Contractor-Furnished Software
(4) Hardware

Air entrain all concrete used in Drilled Shafts.

Submit to the Engineer for approval the project locations for all Portland Cement concrete washout areas prior to starting any concrete work.

ITEM 432: Riprap

Provide Class "A" concrete minimum for riprap aprons placed around all box culvert and pipe safety end treatments. Provide ¼-inch thick dummy joints at least every 15-ft for riprap aprons placed around box and pipe culverts.

ITEM 464: Reinforced Concrete Pipe

Use tongue and groove pipe where the RCP extends into the lime treated subgrade. The 4-foot depth restriction for heavy equipment passage over pipe structures is voided. The Contractor will be responsible for any construction damage to these facilities.

Do not use mortar joints.

All reinforced concrete pipe shall include rubber gaskets unless shown otherwise on the plans or directed by the engineer.

ITEM 465: Manholes & Inlets

For TY C, CC, and TY C(SPL-1&2) inlets, provide Class B concrete riprap with (6"x6" W3xW3 (no. 6 gauge) welded wire fabric) for any side that is touching the natural ground. The riprap will be 4-in thick and 3-ft wide with an 8-in deep by 6-in wide toe unless otherwise shown in the plans. The cost will be subsidiary to Item 465 unless otherwise shown in the plans.

ITEM 467: Safety End Treatment

All Type II SET's shall have riprap, Class "A" minimum, aprons as shown on the plans. The contractor may submit an alternate precast SET design for approval by the Engineer.

ITEM 471: Frames, Grates, Rings and Covers

All grates will be tack welded to the frames in a manner satisfactory to the Engineer.

ITEM 502: Barricades, Signs and Traffic Handling

Shadow vehicles equipped with Truck-Mounted Attenuators are required.

A pilot car and radio equipped flaggers shall be required for all undivided roadway locations as directed by the Engineer. The pilot car with necessary flaggers and/or radio equipped flaggers and all signs, equipment, labor and incidentals required for this method of traffic control will not be paid for directly, but shall be considered subsidiary to Item 502.

Replace/relocate all regulatory signs removed due to construction operations with the same sign on fixed support(s) immediately upon its removal. First obtain project Engineer approval before removing any regulatory roadway sign. Required flaggers are to be available to direct traffic during sign intermediate down time.

Relocate any Directional Sign Assemblies removed during construction operations immediately upon their removal.

These signs shall be relocated to a location in accordance with the Latest Version of the "Texas Manual on Uniform Traffic Control Devices". In no case will a sign be removed without a replacement sign and support(s) being readily available and a location established. Removal and relocation of these signs required for traffic control will not be paid for directly, but shall be considered subsidiary to Item 502.

From the beginning to the end of the project, all traffic control devices need to be in acceptable condition as per the Texas Quality Guidelines for Work Zone Traffic Control Devices.

The Contractor Force Account "Safety Contingency" that has been established for this project is intended to be utilized for work zone enhancements, to improve the effectiveness of the Traffic Control Plan, that could not be foreseen in the project planning and design stage. These enhancements will be mutually agreed upon by the Engineer and the Contractor's Responsible Person based on weekly or more frequent traffic management reviews on the project. The "Safety Contingency" is not intended to be used in lieu of bid items established by the contract.

ITEM 504: Field Office and Laboratory

For this project a field office will not be required at the project site.

The Contractor will furnish a Type D Structure (Asphalt Mix Laboratory) modified by the following.

Laboratory room:

The other room of this building will be used as a laboratory and will include access to a bathroom facility from the interior. The laboratory and bathroom facility will have the walls, ceiling and floor insulated such that the air temperature can be maintained at 76 degrees Fahrenheit at all times.

Furnish for the Department's use in the asphalt laboratory one (1) desktop computer.

ITEM 508: Constructing Detours

Flexible Base, prime coat, and Asphaltic Concrete Pavement used for detours shall meet the requirements of Items 247, 310 and 3268 respectively, except for measurement and payment.

ITEM 529: Concrete Curb, Gutter and Combined Curb and Gutter

Before final acceptance of the project, remove discoloration caused by tire marks, mud, asphalt, paint or other similar material by any method satisfactory to the Engineer to achieve a uniform color and texture of the finished surface exposed to view.

ITEM 530: Intersections, Driveways, and Turnouts

Prime coat shall meet the requirements of Item 310.

Daily testing requirements for Hot Mix Asphaltic Concrete Pavements for drives, commercial entrances and/or turnouts may be waived by the Engineer.

Public and private driveways need to have a smooth vertical transition tie-in between the proposed driveway and the existing driveway. The contractor is to add a vertical taper if needed which will be subsidiary to Item 530.

ITEM 531: Sidewalks

Construct ¼-inch thick score joints at a maximum 6-foot spacing and expansion joints at a maximum 30-foot spacing. Construct a joint in the center of the sidewalk if it is over 15-feet wide. For steel reinforcement, use 6x6-inch spacing with #3 bars or 6x6 – D6 welded wire fabric.

ITEM 585: Ride Quality for Pavement Surfaces

Use Surface Test Type "B" for service roads and ramps.

Quality control results shall be submitted to TxDOT the next working day after each day's paving.

Pavement areas with public turnout intersections that carry major traffic volumes will not be subjected to inertial profiler testing. These areas shall be evaluated using the 10-ft. Straightedge.

Diamond grinding shall be used to remove localized roughness.

ITEM 610: Roadway Illumination Assemblies

Luminaires shown on the proposed Traffic Signal installation layout sheets may be shown at an angle for clarity. All luminaires shown shall be installed perpendicular to the main roadway under construction.

In addition to ED (2)-03, each cable for luminaires shall be identified in each ground box, pole base, or other accessible location with yellow electrical tape wrapped around the cable. The tape marking shall be at least 2 inches.

All luminaires on traffic signal poles shall be rated for 240 vac.

Luminaires installed on traffic signal poles will not be paid for directly, but shall be considered subsidiary to the various bid items of the project.

ITEM 618: Conduit

All conduit ends in pole bases, controllers and ground boxes shall be plugged with 4 to 6 inches of polyurethane sealant or its equivalent after cables are in place.

Conduit shall be placed in a straight line not to exceed 2.0 feet in any direction. The depth of the conduit shall be 1.5 feet except when crossing a roadway where the depth shall not be more than 3.0 feet nor less than 1.0 foot below the bottom of the base material in the roadway when placed by the jacking or boring method. Any evidence of damage to the roadway during the jacking or boring operation shall be sufficient grounds to stop the method being used.

Conduit runs under paved roadways or driveways shall be jacked or bored and then pushed across. At these locations, galvanized rigid metal may be used. All other runs shall be made by trenching. Existing pavement which will be removed, reconstructed or overlaid with new pavement may be trenched across.

Trenches for conduit runs shall be a minimum 2 feet deep and 4 inches wide. The conduit shall be placed on a 2-inch sand cushion and then backfilled with a minimum of 6 inches sand fill. The remainder of the trench shall be backfilled with flexible base, soil or two-sack concrete as required by location of conduit on the project or as directed. The top 3 inches shall match the existing surface material.

All conduit elbows and rigid extensions required to be installed on PVC conduit systems will not be paid for separately, but will be considered subsidiary to the various bid items.

Use materials from prequalified material producers list as shown on the Texas Department of Transportation (TxDOT) - Construction Division's (CST) materials producers list. Category is "Roadway Illumination and Electrical Supplies."

ITEM 621: Tray Cable

Connect luminaires on traffic signal poles using a 4 conductor tray cable with conductor colors of red, black and green #12 AWG (XHHW). The white (neutral) conductor will not be needed and will be capped.

ITEM 628: Electrical Service

Arrange for and cooperate with the utility company to provide electrical power for the service(s) shown and as required by the plans. A meter will be required on all electrical services.

ITEMS 636: Aluminum Signs

Complete sign blanks and panels shall be handled and stored at the job site in such a manner that corners, edges and faces are not damaged. Finished sign blanks shall be stored in either a weather-proof warehouse or outside and off the ground in a vertical position. All paper, cardboard and chemically treated separators and packaging shall be removed prior to outside storage.

ITEM 644: Small Roadside Sign Supports and Assemblies

All signs shall be installed as shown in the plans and in accordance with the current edition of the "Texas Manual on Uniform Traffic Control Devices" and the “Sign Crew Field Book” (SCFB).

All signs shall be erected according to the locations shown on the signing layout sheets except that a sign may be shifted in order to secure a more desirable location. All sign locations will be staked as shown in the plans and as approved. It is the intent of the plans to erect all roadside traffic signs with the sign edge a minimum of 6 feet from the edge of the shoulder, or if none, 12 feet from the edge of the travel lane. In curb and gutter sections the sign edge shall be a minimum of 2 feet from the face of the curb.

For this project, aluminum type sign blanks as provided for under Item 636 will be required for all proposed signing installed under Item 644. Aluminum sign blanks less than 7.5 square feet shall be 0.08 inch thick, sign blanks 7.5 to 15 square feet shall be 0.100 inch thick and sign blanks greater than 15 square feet shall be 0.125 inch thick.

All excess excavation shall be spread uniformly inside the right of way as directed and shall be included in the price of these Items.

Sign types which design details are not shown on the plans shall conform with the latest edition of the Department's "Standard Highway Sign Design for Texas" Manual.

Signs shown to be removed shall include the complete sign installation and separate the sign post at the concrete foundation. The concrete foundation shall be disposed in accordance with this Bid Item. Except for concrete foundations, all removed sign panels, sign posts, and hardware shall remain then property of the Department. All removed sign installations shall be completely disassembled. All salvageable sections of sign panels shall be recycled by TxDOT. The removed sign material will be required to be hauled to the maintenance yard closest to the project. No signs shall be removed without prior approval.

ITEM 656: Foundations for Traffic Control Devices

The dimensions shown on the plans for location of signal pole foundations, conduit and other items may be varied to meet existing conditions as approved.

The work area shall be cleaned up and all loose material resulting from the contract operations shall be removed from the work area each day before work is suspended.

No traffic signal pole shall be placed on the foundations prior to seven (7) days following placement of concrete.

ITEMS 662 and 666: Work Zone Pavement Markings and Reflectorized Pavement Markings

All permanent pavement markings and work zone pavement markings for this project under these Items shall be 0.100 inches (100 mil) thick thermoplastic.
Any permanent pavement markings or non-removal work zone pavement markings lacking reflectivity
in accordance with test method Tex 828-B, will not be paid for, as per district policy. The roadway will be re-striped at no additional compensation.

Pavement surface preparation for markings and markers will not be paid for directly, but shall be considered subsidiary to Item 666.

Prior to any striping operations, an on-site coordination meeting between all the parties involved will be required to review striping details and requirements to ensure quality work.

The beads used on this project shall meet the requirements of Departmental Materials Specification DMS-8290, Glass Traffic Beads Texas Type II & III. Use a 50% Type II/ 50% Type III mix utilizing a double drop system with Type III beads dropped first.

For expressway projects, provide channelizing devices at the ramp connections when temporary pavement marking tabs are placed. These channelizing devices will be subsidiary to item 502.

ITEM 677: Eliminating Existing Pavement Markings and Markers

Asphalt and aggregate types and grades shall be as approved in writing when a surface treatment is used to eliminate existing pavement markings.

ITEM 680: Installation of Highway Traffic Signals

Sequence of work

1. The existing flashing beacon installation(s) shall remain in operation at all times during construction of the proposed flashing beacon installation(s) or modification(s).
2. The complete removal of the specified existing flashing beacon installation or specified Items will be required when the proposed flashing beacon installation(s) are in place and operational.
3. All labor, tools, and materials used to remove the specified existing flashing beacon material shall not be paid for directly, but be considered subsidiary to the various items of work.
4. Final inspection shall be performed in conjunction with the district signal shop.

ITEM 682: Vehicle and Pedestrian Signal Heads

All flashing beacon heads shall be covered with burlap from the time of installation until they are placed in operation. All flashing beacon heads shall be of polycarbonate material and yellow in color. Flashing beacon heads shall have standard detachable visors. LED's shall be furnished for all traffic signal heads.

Flashing beacon heads shall be positioned carefully to provide the best view of head indications to motorists. All beacon heads shall be installed to a neat overall appearance.

Nominal height for flashing beacon heads above pavement surface shall be 18 feet 6 inches, plus/minus 3 inches.

ITEM 684: Traffic Signal Cables

All signal cable shall be #12 AWG;2/c loop.

ITEM 686: Traffic Signal Pole Assemblies (Steel)

The locations for the proposed traffic signal poles are approximate. The exact locations will be determined in the field in coordination with the District Signal Shop.

Erection and/or removal of poles and luminaries located near any overhead electrical power lines shall be accomplished using established industry and utility safety practices. The appropriate utility company shall be consulted with prior to beginning such work.

ITEM 1122: Temporary Erosion, Sedimentation, and Environmental Controls

Due to the nature of this project, it is unlikely a significant amount of soil will be disturbed. However, if erosion control logs are needed; it shall be placed as directed by the Engineer.

ITEM 4061: Irrigation Wells, Gates and Valves

If the Contractor elects, a larger size Item may be furnished and installed at no extra cost to the State.

GOVERNING SPECIFICATIONS AND SPECIAL PROVISIONS

STANDARD SPECIFICATIONS: ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION JUNE 1, 2004. STANDARD SPECIFICATIONS ARE INCORPORATED INTO THE CONTRACT BY REFERENCE.

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

STANDARD SPECIFICATIONS:

ITEMS 1 TO 9 INCL., GENERAL REQUIREMENTS AND COVENANTS
ITEM 100 PREPARING RIGHT OF WAY (103)
ITEM 104 REMOVING CONCRETE
ITEM 106 OBLITERATING ABANDONED ROAD
ITEM 110 EXCAVATION (132)
ITEM 132 EMBANKMENT (100)(204)(210)(216)(400)
ITEM 160 TOPSOIL
ITEM 164 SEEDING FOR EROSION CONTROL (162)(166)(168)
ITEM 168 VEGETATIVE WATERING
ITEM 204 SPRINKLING
ITEM 247 FLEXIBLE BASE (105)(204)(210)(216)(520)
ITEM 251 REWORKING BASE COURSES (210)(216)(247)(520)
ITEM 260 LIME TREATMENT (ROAD-MIXED)
(105)(132)(204)(210)(216)(247)(300)(310)(520)
ITEM 310 PRIME COAT (300)(316)
ITEM 400 EXCAVATION AND BACKFILL FOR STRUCTURES (132)(401)(420)(421)
ITEM 402 TRENCH EXCAVATION PROTECTION
ITEM 416 DRILLED SHAFT FOUNDATIONS (420)(421)(440)(448)
ITEM 432 RIPRAP <247><420><421><427><440><431>
ITEM 464 REINFORCED CONCRETE PIPE (400)<476>
ITEM 465 MANHOLES AND INLETS (400)(420)(421) <440><471>
ITEM 496 REMOVING STRUCTURES <430>
ITEM 500 MOBILIZATION
ITEM 502 BARRICADES, SIGNS AND TRAFFIC HANDLING
ITEM 508 CONSTRUCTING DETOURS
ITEM 529 CONCRETE CURB, GUTTER, AND COMBINED CURB AND GUTTER
(360)(420)(421)(440)
ITEM 530 INTERSECTIONS, DRIVEWAYS AND TURNOUTS
(247)(260)(263)(275)(276)(292)(316)(330)(334)(340)(360)(421)(440)
ITEM 531 SIDEWALKS (104)(360)(420)(421)(440)(530)
ITEM 618 CONDUIT (400)(445)(476)(622)
ITEM 620 ELECTRICAL CONDUCTORS
ITEM 621 TRAY CABLE
ITEM 625 ZINC-COATED STEEL WIRE STRAND
ITEM 628 ELECTRICAL SERVICES (441)(445)(449)(618)(620)(627)(656)
ITEM 636 ALUMINUM SIGNS (643)
ITEM 644 SMALL ROADSIDE SIGN SUPPORTS AND ASSEMBLIES
(421)(440)(441)(442)(445)(634)(636)(643)(656)
ITEM 662 WORK ZONE PAVEMENT MARKINGS (666)(668)(672)(677)
ITEM 666 REFLECTORIZED PAVEMENT MARKINGS (316)(318)(662)(677)(678)
ITEM 668 PREFABRICATED PAVEMENT MARKINGS

ITEM 672 RAISED PAVEMENT MARKERS (677)(678)
ITEM 680 INSTALLATION OF HIGHWAY TRAFFIC SIGNALS
(610)(625)(627)(634)(636)(656)
ITEM 682 VEHICLE AND PEDESTRIAN SIGNAL HEADS
ITEM 684 TRAFFIC SIGNAL CABLES
ITEM 686 TRAFFIC SIGNAL POLE ASSEMBLIES (STEEL)
(416)(421)(441)(442)(445)(449)

SPECIAL PROVISIONS (SEE SECTION T):
SPECIAL PROVISIONS WILL GOVERN AND TAKE PRECEDENCE OVER THE SPECIFICATIONS ENUMERATED HEREON WHEREVER IN CONFLICT THEREWITH.

Required Contract Provisions, Federal-Aid Construction Contracts
(Form FHWA 1273, May, 2012) ***(SEE SECTION U)***

Wage Rates ***(SEE SECTION V)***

Special Provision (000--003) "Notice to All Bidders"
Special Provision (000--004) "Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity Special Provision (Executive Order 11246)"
Special Provision (000--006) "Standard Federal Equal Employment Opportunity Construction Contract Specifications (Executive Order 11246)"
Special Provision (000--009) "Certification of Nondiscrimination in Employment"
Special Provision (000--011) "Department Division Mailing and Physical Address"
Special Provision (000--1483) "Notice of Changes to U.S. Department of Labor Required Payroll Information"
Special Provision (000--1966) "Disadvantaged Business Enterprise in Federal Aid Contracts"
Special Provision (000--2329) "Partnering"
Special Provision (000--2332) "Schedule of Liquidated Damages"
Special Provision (000--2607) "Nondiscrimination"
Special Provision (000--2638) "On the Job Training Program"
Special Provision (000--2839) "IMPORTANT NOTICE TO CONTRACTORS"
Special Provision (000--2859) "IMPORTANT NOTICE TO CONTRACTORS"
Special Provision to Item 1 (001--007)
Special Provision to Item 1 (001--015)
Special Provision to Item 2 (002--017)
Special Provision to Item 3 (003--033)
Special Provision to Item 4 (004--017)
Special Provision to Item 5 (005--004)
Special Provisions to Item 6 (006--030) (006--047)
Special Provision to Item 7 (007--918)
Special Provision to Item 8 (008--119)
Special Provisions to Item 9 (009--009) (009--015)
Special Provision to Item 100 (100--002)
Special Provision to Item 164 (164--002)
Special Provision to Item 247 (247--033)
Special Provision to Item 260 (260--003)
Special Provision to Item 316 (316--016)

Special Provision	to Item	462	(462--015)
Special Provision	to Item	464	(464--006)
Special Provision	to Item	465	(465--002)
Special Provision	to Item	500	(500--011)
Special Provision	to Item	502	(502--033)
Special Provision	to Item	530	(530--006)
Special Provision	to Item	560	(560--001)
Special Provision	to Item	620	(620--001)
Special Provision	to Item	628	(628--003)
Special Provision	to Item	672	(672--034)
Special Provision	to Item	682	(682--003)
Special Provision	to Item	1122	(1122--001)
Special Provision	to Item	6266	(6266--017)

SPECIAL SPECIFICATIONS (SEE SECTION W):

ITEM 1122 Temporary Erosion, Sedimentation, and Environmental Controls
ITEM 3268 Dense-Graded Hot-Mix Asphalt (3214)
ITEM 4035 Reinforced Concrete Low-Head Pressure Pipe
ITEM 4061 Irrigation Wells, Gates and Valves
ITEM 4269 PRESS IRRIG PVC PIPE(24 IN)
ITEM 6266 VIVDS COMMUNICATION CABLE (COAXIAL)

GENERAL:

THE ABOVE-LISTED SPECIFICATION ITEMS ARE THOSE UNDER WHICH PAYMENT IS TO BE MADE. THESE, TOGETHER WITH SUCH OTHER PERTINENT ITEMS, IF ANY, AS MAY BE REFERRED TO IN THE ABOVE- LISTED SPECIFICATION ITEMS, AND INCLUDING THE SPECIAL PROVISIONS LISTED ABOVE, CONSTITUTE THE COMPLETE SPECIFICATIONS FOR THIS PROJECT.

2004 Specifications

SPECIAL PROVISION

000---003

Notice to All Bidders

To report bid rigging activities call:

1-800-424-9071

The U.S. Department of Transportation (DOT) operates the above toll-free "hotline" Monday through Friday, 8:00 a.m. to 5:00 p.m., eastern time. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the "hotline" to report such activities.

The "hotline" is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

2004 Specifications

SPECIAL PROVISION

000---004

Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246)

1. **General.** In addition to the affirmative action requirements of the Special Provision titled "Standard Federal Equal Employment Opportunity Construction Contract Specifications" as set forth elsewhere in this proposal, the Bidder's attention is directed to the specific requirements for utilization of minorities and females as set forth below.

2. **Goals.**

   a. Goals for minority and female participation are hereby established in accordance with 41 CFR 60-4.

   b. The goals for minority and female participation expressed in percentage terms for the Contractor's aggregate work force in each trade on all construction work in the covered area, are as follows:

Goals for minority participation in each trade (percent)	**Goals for female participation in each trade (percent)**
See Table 1	6.9

   c. These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its federally involved and non-federally involved construction. The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Standard Federal Equal Employment Opportunity Construction Contract Specifications Special Provision and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority and female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

d. A contractor or subcontractor will be considered in compliance with these provisions by participation in the Texas Highway-Heavy Branch, AGC, Statewide Training and Affirmative Action Plan. Provided that each contractor or subcontractor participating in this plan must individually comply with the equal opportunity clause set forth in 41 CFR 60-1.4 and must make a good faith effort to achieve the goals set forth for each participating trade in the plan in which it has employees. The overall good performance of other contractors and subcontractors toward a goal in an approved plan does not excuse any covered contractor's or subcontractor's failure to make good faith efforts to achieve the goals contained in these provisions. Contractors or subcontractors participating in the plan must be able to demonstrate their participation and document their compliance with the provisions of this Plan.

3. **Subcontracting.** The Contractor shall provide written notification to the Department within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation pending concurrence of the Department in the award. The notification shall list the names, address and telephone number of the subcontractor; employer identification number; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed.

4. **Covered Area.** As used in this special provision, and in the contract resulting from this solicitation, the geographical area covered by these goals for female participation is the State of Texas. The geographical area covered by these goals for other minorities are the counties in the State of Texas as indicated in Table 1.

5. **Reports.** The Contractor is hereby notified that he may be subject to the Office of Federal Contract Compliance Programs (OFCCP) reporting and record keeping requirements as provided for under Executive Order 11246 as amended. OFCCP will provide direct notice to the Contractor as to the specific reporting requirements that he will be expected to fulfill.

Table 1

County	Goals for Minority Participation	County	Goals for Minority Participation
Anderson	22.5	Concho	20.0
Andrews	18.9	Cooke	17.2
Angelina	22.5	Coryell	16.4
Aransas	44.2	Cottle	11.0
Archer	11.0	Crane	18.9
Armstrong	11.0	Crockett	20.0
Atascosa	49.4	Crosby	19.5
Austin	27.4	Culberson	49.0
Bailey	19.5	Dallam	11.0
Bandera	49.4	Dallas	18.2
Bastrop	24.2	Dawson	19.5
Baylor	11.0	Deaf Smith	11.0
Bee	44.2	Delta	17.2
Bell	16.4	Denton	18.2
Bexar	47.8	DeWitt	27.4
Blanco	24.2	Dickens	19.5
Borden	19.5	Dimmit	49.4
Bosque	18.6	Donley	11.0
Bowie	19.7	Duval	44.2
Brazoria	27.3	Eastland	10.9
Brazos	23.7	Ector	15.1
Brewster	49.0	Edwards	49.4
Briscoe	11.0	Ellis	18.2
Brooks	44.2	El Paso	57.8
Brown	10.9	Erath	17.2
Burleson	27.4	Falls	18.6
Burnet	24.2	Fannin	17.2
Caldwell	24.2	Fayette	27.4
Calhoun	27.4	Fisher	10.9
Callahan	11.6	Floyd	19.5
Cameron	71.0	Foard	11.0
Camp	20.2	Fort Bend	27.3
Carson	11.0	Franklin	17.2
Cass	20.2	Freestone	18.6
Castro	11.0	Frio	49.4
Chambers	27.4	Gaines	19.5
Cherokee	22.5	Galveston	28.9
Childress	11.0	Garza	19.5
Clay	12.4	Gillespie	49.4
Cochran	19.5	Glasscock	18.9
Coke	20.0	Goliad	27.4
Coleman	10.9	Gonzales	49.4
Collin	18.2	Gray	11.0
Collingsworth	11.0	Grayson	9.4
Colorado	27.4	Gregg	22.8
Comal	47.8	Grimes	27.4
Comanche	10.9	Guadalupe	47.8

County	Goals for Minority Participation	County	Goals for Minority Participation
Hale	19.5	Lavaca	27.4
Hall	11.0	Lee	24.2
Hamilton	18.6	Leon	27.4
Hansford	11.0	Liberty	27.3
Hardeman	11.0	Limestone	18.6
Hardin	22.6	Lipscomb	11.0
Harris	27.3	Live Oak	44.2
Harrison	22.8	Llano	24.2
Hartley	11.0	Loving	18.9
Haskell	10.9	Lubbock	19.6
Hays	24.1	Lynn	19.5
Hemphill	11.0	Madison	27.4
Henderson	22.5	Marion	22.5
Hidalgo	72.8	Martin	18.9
Hill	18.6	Mason	20.0
Hockley	19.5	Matagorda	27.4
Hood	18.2	Maverick	49.4
Hopkins	17.2	McCulloch	20.0
Houston	22.5	McLennan	20.7
Howard	18.9	McMullen	49.4
Hudspeth	49.0	Medina	49.4
Hunt	17.2	Menard	20.0
Hutchinson	11.0	Midland	19.1
Irion	20.0	Milam	18.6
Jack	17.2	Mills	18.6
Jackson	27.4	Mitchell	10.9
Jasper	22.6	Montague	17.2
Jeff Davis	49.0	Montgomery	27.3
Jefferson	22.6	Moore	11.0
Jim Hogg	49.4	Morris	20.2
Jim Wells	44.2	Motley	19.5
Johnson	18.2	Nacogdoches	22.5
Jones	11.6	Navarro	17.2
Karnes	49.4	Newton	22.6
Kaufman	18.2	Nolan	10.9
Kendall	49.4	Nueces	41.7
Kenedy	44.2	Ochiltree	11.0
Kent	10.9	Oldham	11.0
Kerr	49.4	Orange	22.6
Kimble	20.0	Palo Pinto	17.2
King	19.5	Panola	22.5
Kinney	49.4	Parker	18.2
Kleberg	44.2	Parmer	11.0
Knox	10.9	Pecos	18.9
Lamar	20.2	Polk	27.4
Lamb	19.5	Potter	9.3
Lampasas	18.6	Presidio	49.0
LaSalle	49.4	Rains	17.2

County	Goals for Minority Participation	County	Goals for Minority Participation
Randall	9.3	Webb	87.3
Reagan	20.0	Wharton	27.4
Real	49.4	Wheeler	11.0
Red River	20.2	Wichita	12.4
Reeves	18.9	Wilbarger	11.0
Refugio	44.2	Willacy	72.9
Roberts	11.0	Williamson	24.1
Robertson	27.4	Wilson	49.4
Rockwall	18.2	Winkler	18.9
Runnels	20.0	Wise	18.2
Rusk	22.5	Wood	22.5
Sabine	22.6	Yoakum	19.5
San Augustine	22.5	Young	11.0
San Jacinto	27.4	Zapata	49.4
San Patricio	41.7	Zavala	49.4
San Saba	20.0		
Schleicher	20.0		
Scurry	10.9		
Shackelford	10.9		
Shelby	22.5		
Sherman	11.0		
Smith	23.5		
Somervell	17.2		
Starr	72.9		
Stephens	10.9		
Sterling	20.0		
Stonewall	10.9		
Sutton	20.0		
Swisher	11.0		
Tarrant	18.2		
Taylor	11.6		
Terrell	20.0		
Terry	19.5		
Throckmorton	10.9		
Titus	20.2		
Tom Green	19.2		
Travis	24.1		
Trinity	27.4		
Tyler	22.6		
Upshur	22.5		
Upton	18.9		
Uvalde	49.4		
Val Verde	49.4		
Van Zandt	17.2		
Victoria	27.4		
Walker	27.4		
Waller	27.3		
Ward	18.9		
Washington	27.4		

2004 Specifications

SPECIAL PROVISION

000---006

Standard Federal Equal Employment Opportunity Construction Contract Specifications (Executive Order 11246)

1. As used in these specifications:

a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;

b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;

c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.

d. "Minority" includes:

(i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);

(ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);

(iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and

(iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North American and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U. S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its

obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered construction contractors performing contracts in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the contract is being performed. Goals are published periodically in the Federal Register in notice form and such notices may be obtained from any Office of Federal Contract Compliance Programs office or any Federal procurement contracting officer. The Contractor is expected to make substantially uniform progress toward its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U. S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral Process has impeded the Contractor's efforts to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.

f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and Collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of

applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's workforce.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are non-segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both

minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10. Nondiscrimination programs require that Federal-aid recipients, subrecipients, and contractors prevent discrimination and ensure nondiscrimination in all of their programs and activities, whether those programs and activities are federally funded or not. The factors prohibited from serving as a basis for action or inaction which discriminates include race, color, national origin, sex, age, and handicap/disability. The efforts to prevent discrimination must address, but not be limited to a program's impacts, access, benefits, participation, treatment, services, contracting opportunities, training opportunities, investigations of complaints, allocations of funds, prioritization of projects, and the functions of right-of-way, research, planning, and design.

11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

16. In addition to the reporting requirements set forth elsewhere in this contract, the Contractor and the subcontractors holding subcontracts, not including material suppliers, of $10,000 or more, shall submit for every month of July during which work is per-formed, employment data as contained under Form PR 1391 (Appendix C to 23 CFR, Part 230), and in accordance with the instructions included thereon.

2004 Specifications

SPECIAL PROVISION

000---009

Certification of Nondiscrimination in Employment

By signing this proposal, the bidder certifies that he has participated in a previous contract or subcontract subject to the equal opportunity clause, as required by Executive Orders 10925, 11114, or 11246, or if he has not participated in a previous contract of this type, or if he has had previous contract or subcontracts and has not filed, he will file with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance, a Federal Government contracting or administering agency, or the former President's Committee on Equal Employment Opportunity, all reports due under the applicable filing requirements.

Note: The above certification is required by the Equal Employment Opportunity Regulations of the Secretary of Labor (41 CFR 60-1.7(b)(1)), and must be submitted by bidders and proposed subcontractors only in connection with contracts and subcontracts which are subject to the equal opportunity clause. Contracts and subcontracts which are exempt from the equal opportunity clause are set forth in 41 CFR 60-1.5. (Generally only contracts or subcontracts of $10,000 or under are exempt.)

Currently, Standard Form 100 (EEO-1) is the only report required by the Executive Orders or their implementing regulations.

Proposed prime contractors and subcontractors who have participated in a previous contract or subcontract subject to the Executive Orders and have not filed the required reports should note that 41 CFR 60-1.7(b)(1) prevents the award of contracts and subcontracts unless such contractor submits a report covering the delinquent period or such other period specified by the Federal Highway Administration or by the Director, Office of Federal Contract Compliance, U. S. Department of Labor.

2004 Specifications

SPECIAL PROVISION

000---011

Department Division Mailing and Physical Addresses

For this project, Item 000, "Department Division Mailing and Physical Addresses," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Use the information in Table 1 to contact the Department Divisions referenced in the Standard Specifications or Special Provisions and Special Specifications in the Contract. This listing is for the purposes of providing addresses for transmission of information in accordance with the specifications. Unless otherwise stated in the specifications, address all correspondence and transmission of information to the Engineer responsible for the oversight of construction. Submit bidding documents to the location shown in the official advertisement. Address changes will be posted on the Department's Internet site at http://www.txdot.gov/.

Table 1
Department Division Mailing and Physical Addresses

Division/Section Name	U.S. Post Office Address	Physical Address
Bridge Division		
	Texas Department of Transportation Bridge Division 125 E 11th Street Austin TX 78701-2483	Bridge Division Fabrication Branch 118 E. Riverside Dr. Austin, Texas 78704 (512) 416-2187
Construction Division		
Construction Section	Texas Department of Transportation Construction Division Construction Section 125 E.11th St. Austin TX 78701-2483	Construction Division 200 E. Riverside Dr. Austin, TX 78704 (512) 416-2500
Materials & Pavements Section	Texas Department of Transportation Construction Division Materials & Pavements Section 125 E 11th Street Austin TX 78701-2483	Construction Division Materials & Pavements Cedar Park Campus, Bldg. 51 9500 Lake Creek Parkway Austin, TX 78717 512-506-5800

Division/Section Name	U.S. Post Office Address	Physical Address
Maintenance Division		
Maintenance Section	Texas Department of Transportation Maintenance Division Maintenance Section 125 E 11th Street Austin, TX 78701	Maintenance Division Maintenance Section 150 East Riverside Drive Austin, TX 78704 (512) 416-3185
Vegetation Management Section	Texas Department of Transportation Maintenance Division Vegetation Management Section 125 E 11th Street Austin, TX 78701	Maintenance Division Vegetation Management Section 150 East Riverside Drive Austin, TX 78704 (512) 416-3093
Traffic Operations Division		
Traffic Operations Division	Texas Department of Transportation Traffic Operations Division 125 E 11th Street Austin TX 78701	Texas Department of Transportation Traffic Operations Division 200 E. Riverside Bldg. 118 Austin, Texas 78704 512-416-3200
Traffic Engineering	Texas Department of Transportation Traffic Operations Division Traffic Engineering Section 125 E 11th Street Austin TX 78701	Texas Department of Transportation Traffic Operations Division Traffic Engineering Section 200 E. Riverside Bldg. 118 Austin, Texas 78704 (512) 416-3118
Traffic Management-ITS Branch	Texas Department of Transportation Traffic Operations Division Traffic Management Section 125 E 11th Street Austin TX 78701	Texas Department of Transportation Traffic Operations Division Traffic Management Section Cedar Park Campus, Bldg. 51 9500 Lake Creek Parkway Austin, TX 78717 512-506-5100
Traffic Management-Signal/Radio Branch	Texas Department of Transportation Traffic Operations Division Traffic Management Section-Signal/Radio Branch 125 E 11th Street Austin TX 78701	Texas Department of Transportation Traffic Operations Division Traffic Management Section-Signal/Radio Branch Cedar Park Campus, Bldg. 51 9500 Lake Creek Parkway Austin, TX 78717 512-506-5100

2004 Specifications Federal-Aid Projects Only

SPECIAL PROVISION

000--1483

Notice of Changes to U.S. Department of Labor Required Payroll Information

Do not include employee addresses and social security numbers on the payroll submissions to the department. In lieu of the social security number, include an individually identifying number for each employee (Example: last four digits of the individual's social security number).

Maintain the full social security number and current address of each covered employee in files for 3 years after project completion and make the information available upon the Department's request.

Form FHWA 1273 and optional form WH-347 will be revised in the future to reflect these changes.

2004 Specifications

SPECIAL PROVISION

000--1966

Disadvantaged Business Enterprise in Federal Aid Contracts

1. **Description.** The purpose of this Special Provision is to carry out the U. S. Department of Transportation's (DOT) policy of ensuring nondiscrimination in the award and administration of DOT assisted contracts and creating a level playing field on which firms owned and controlled by individuals who are determined to be socially and economically disadvantaged can compete fairly for DOT assisted contracts. If the Disadvantaged Business Enterprise (DBE) goal is greater than zero, Article A, "Disadvantaged Business Enterprise in Federal Aid Contracts", of this Special Provision shall apply to this contract. If there is no DBE goal, Article B, "Race-Neutral DBE Participation", of this Special Provision shall apply to this contract. The percentage goal for DBE participation in the work to be performed under this contract will be shown on the proposal.

   A. Article A. Disadvantaged Business Enterprise in Federal Aid Contracts.

   1. **Policy**. It is the policy of the DOT and the Texas Department of Transportation (henceforth the "Department") that DBEs, as defined in 49 CFR Part 26, Subpart A and the Department's DBE Program, shall have the opportunity to participate in the performance of contracts financed in whole or in part with Federal funds. The DBE requirements of 49 CFR Part 26, and the Department's DBE Program, apply to this contract as follows:

      a. The Contractor will solicit DBEs through reasonable and available means, as defined in 49 CFR Part 26, Appendix A and the Department's DBE Program, or show a good faith effort to meet the DBE goal for this contract.

      b. The Contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate.

      c. The requirements of this Special Provision shall be physically included in any subcontract.

      d. By signing the contract proposal, the Bidder is certifying that the DBE goal as stated in the proposal will be met by obtaining commitments from eligible DBEs or that the Bidder will provide acceptable evidence of good faith effort to meet the commitment. The Department will determine the adequacy of a Contractor's efforts to meet the contract goal, within 10 business days,

excluding national holidays, from receipt of the information outlined in this Special Provision under Section 1.A.3, "Contractor's Responsibilities." If the requirements of Section 1.A.3 are met, the conditional situation will be removed and the contract will be forwarded to the Contractor for execution.

2. Definitions.

a. "Broker" is an intermediary or middleman that does not take possession of a commodity or act as a regular dealer selling to the public.

b. "Disadvantaged Business Enterprise" or "DBE" is defined in the standard specifications, Article 1, Definition of Terms.

c. "DBE Joint Venture" means an association of a DBE firm and 1 or more other firm(s) to carry out a single business enterprise for profit for which purpose they combine their property, capital, efforts, skills and knowledge, and in which the DBE is responsible for a distinct, clearly defined portion of the work of the contract and whose share in the capital contribution, control, management, risks, and profits of the joint venture are commensurate with its ownership interest.

d. "DOT" means the U.S. Department of Transportation, including the Office of the Secretary, the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), and the Federal Aviation Administration (FAA).

e. "Federal Aid Contract" is any contract between the Texas Department of Transportation and a Contractor which is paid for in whole or in part with DOT financial assistance.

f. "Good Faith Effort" means efforts to achieve a DBE goal or other requirement of this Special Provision which, by their scope, intensity, and appropriateness to the objective, can reasonably be expected to fulfill the program requirement.

g. "Manufacturer" is a firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment required under the contract and of the general character described by the specifications."

h. "Race-conscious" means a measure or program that is focused specifically on assisting only DBEs, including women-owned businesses.

i. "Race-neutral DBE Participation" means any participation by a DBE through customary competitive procurement procedures.

j. "Regular Dealer" is a firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles or equipment of the general character described by the specifications and required under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business. To be a regular dealer, the firm must be an established, regular business that engages in, as its principal business and under its own name, the purchase and sale or lease of the products in question.

A regular dealer in such bulk items as steel, cement, gravel, stone, and petroleum products need not keep such products in stock if it owns and operates distribution equipment for the products. Any supplementing of regular dealers own distribution equipment shall be by a long-term lease agreement and not on an ad hoc or contract-by-contract basis. Brokers, packagers, manufacturers' representatives, or other persons who arrange or expedite transactions shall not be regarded as a regular dealer.

k. "Texas Unified Certification Program" or "TUCP" provides one-stop shopping to applicants for certification, such that applicants are required to apply only once for a DBE certification that will be honored by all recipients of federal funds in the state. The TUCP by Memorandum of Agreement established six member entities to serve as certifying agents for Texas in specified regions.

3. Contractor's Responsibilities. These requirements must be satisfied by the Contractor.

a. After conditional award of the contract, the Contractor shall submit a completed Form SMS.4901 "DBE Commitment Agreement", From SMS 4901-T "DBE Trucking Commitment Agreement", or Form SMS.4901-MS "DBE Material & Supplier Commitment Agreement" for each DBE he/she intends to use to satisfy the DBE goal or a good faith effort to explain why the goal could not be reached, so as to arrive in the Department's Office of Civil Rights (OCR) in Austin, Texas not later than 5:00 p.m. on the 10th business day, excluding national holidays, after the conditional award of the contract. When requested, additional time, not to exceed 7 business days, excluding national holidays, may be granted based on documentation submitted by the Contractor.

b. DBE prime Contractors may receive credit toward the DBE goal for work performed by his/her own forces and work subcontracted to DBEs. A DBE prime must make a good faith effort to meet the goals. In the event a DBE prime subcontracts to a non-DBE, that information must be reported on Form SMS.4902.

c. A Contractor who cannot meet the contract goal, in whole or in part, shall make adequate good faith efforts to obtain DBE participation as so stated and defined in 49 CFR Part 26, Appendix A. The following is a list of the types of action that may be considered as good faith efforts. It is not intended to be a mandatory checklist, nor is it intended to be exclusive or exhaustive. Other factors or types of efforts may be relevant in appropriate cases.

- Soliciting through all reasonable and available means (e.g. attendance at prebid meetings, advertising, and/or written notices) the interest of all certified DBEs who have the capability to perform the work of the contract. The solicitation must be done within sufficient time to allow the DBEs to respond to it. Appropriate steps must be taken to follow up initial solicitations to determine, with certainty, if the DBEs are interested.

- Selecting portions of the work to be performed by DBEs in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the Contractor might otherwise prefer to perform the work items with its own forces.
- Providing interested DBEs with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation.
- Negotiating in good faith with interested DBEs to make a portion of the work available to DBE subcontractors and suppliers and select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiations includes the names, addresses, and telephone numbers of DBEs that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBEs to perform the work.
- A Bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional cost involved in finding and using DBEs is not in itself sufficient reason for a bidders failure to meet the Contract DBE goal as long as such cost are reasonable. Also, the ability or desire of the Contractor to perform the work of the Contract with its own organization does not relieve the Bidder of the responsibility to make good faith effort. Contractors are not, however, required to accept higher quotes from DBEs if the price difference is excessive or unreasonable.
- Not rejecting DBEs as being unqualified without sound reasons based on a thorough investigation of their capabilities. The Contractor's standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. non-union employee status) are not legitimate cause for the rejection or non-solicitation of bids and the Contractors efforts to meet the project goal.
- Making efforts to assist interested DBEs in obtaining bonding, lines of credit, or insurance as required by the recipient or Contractor.
- Making efforts to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services.
- Effectively using the services of available minority/women community organizations; minority/women Contractors' groups; local, state, and Federal minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBEs.

- If the Program Manager of the OCR determines that the Contractor has failed to meet the good faith effort requirements, the Contractor will be given an opportunity for reconsideration by the Director of the OCR.

d. Should the bidder to whom the contract is conditionally awarded refuse, neglect or fail to meet the DBE goal or comply with good faith effort requirements, the proposal guaranty filed with the bid shall become the property of the state, not as a penalty, but as liquidated damages to the Department.

e. The preceding information shall be submitted directly to the Office of Civil Rights, Texas Department of Transportation, 125 E. 11th Street, Austin, Texas 78701-2483.

f. The Contractor shall not terminate for convenience a DBE subcontractor named in the commitment submitted under Section 1.A.3.a, of this Special Provision. Prior to terminating or removing a DBE subcontractor named in the commitment, the Contractor must have a written consent of the Department.

g. The Contractor shall also make a good faith effort to replace a DBE subcontractor that is unable to perform successfully with another DBE, to the extent needed to meet the contract goal. The Contractor shall submit a completed Form 4901 "DBE Commitment Agreement", From SMS 4901-T "DBE Trucking Commitment Agreement", or Form SMS.4901-MS "DBE Material & Supplier Commitment Agreement" for the substitute DBE firm(s). Any substitution of DBEs shall be subject to approval by the Department. Prior to approving the substitution, the Department will request a statement from the DBE concerning it being replaced.

h. The Contractor shall designate a DBE liaison officer who will administer the Contractor's DBE program and who will be responsible for maintenance of records of efforts and contacts made to subcontract with DBEs.

i. Contractors are encouraged to investigate the services offered by banks owned and controlled by disadvantaged individuals and to make use of these banks where feasible.

4. Eligibility of DBEs.

a. The member entities of the TUCP certify the eligibility of DBEs and DBE joint ventures to perform DBE subcontract work on DOT financially assisted contracts.

b. The Department maintains the Texas Unified Certification Program DBE Directory containing the names of firms that have been certified to be eligible to participate as DBE's on DOT financially assisted contracts. This Directory is available from the Department's OCR. An update of the Directory can be found on the Internet at http://www.dot.state.tx.us/business/tucp/default.htm.

c. Only DBE firms certified at the time commitments are submitted are eligible to be used in the information furnished by the Contractor as required under Section 1.A.3.a. and 3.g. above. For purposes of the DBE goal on this project, DBEs will only be allowed to perform work in the categories of work for which they are certified.

d. Only DBE firms certified at the time of execution of a contract/subcontract/purchase order, are eligible for DBE goal participation.

5. Determination of DBE Participation. When a DBE participates in a contract, only the values of the work actually performed by the DBE, as referenced below, shall be counted by the prime contractor toward DBE goals:

a. The total amount paid to the DBE for work performed with his/her own forces is counted toward the DBE goal. When a DBE subcontracts part of the work of its contract to another firm, the value of the subcontracted work may be counted toward DBE goals only if the subcontractor is itself a DBE. Work that a DBE subcontracts to a non-DBE firm does not count toward DBE goals.

b. A Contractor may count toward its DBE goal a portion of the total value of the contract amount paid to a DBE joint venture equal to the distinct, clearly defined portion of the work of the contract performed by the DBE.

(1) A Contractor may count toward its DBE goal only expenditures to DBEs that perform a commercially useful function (CUF) in the work of a contract or purchase order. A DBE is considered to perform a CUF when it is responsible for execution of the work of the contract and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. To perform a CUF, the DBE must also be responsible, with respect to materials and supplies used on the contract, for negotiating price, determining quality and quantity, ordering the material, and installing (where applicable) and paying for the material itself.

In accordance with 49 CFR Part 26, Appendix A, guidance concerning Good Faith Efforts, contractors may make efforts to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services. Contractors may not however, negotiate the price of materials or supplies used on the contract by the DBE, nor may they determine quality and quantity, order the materials themselves, nor install the materials (where applicable), or pay for the material themselves. Contractors however, may share the quotations they receive from the material supplier with the DBE firm, so that the DBE firm may negotiate a reasonable price with the material supplier.

In all cases, prime or other non-DBE subcontractor assistance will not be credited toward the DBE goal.

(2) A DBE does not perform a CUF if its role is limited to that of an extra participant in a transaction, contract, or project through which funds are passed in order to obtain the appearance of DBE participation.

Consistent with industry practices and the DOT/Department's DBE program, a DBE subcontractor may enter into second-tier subcontracts, amounting up to 70% of their contract. Work subcontracted to a non-DBE does not count towards DBE goals. If a DBE does not perform or exercise responsibility for at least 30% of the total cost of its contract with its own work force, or the DBE subcontracts a greater portion of the work of a contract than would be expected on the basis of normal industry practice for the type of work involved, it will be presumed that the DBE is not performing a CUF

(3) A DBE trucking firm (including an owner operator who is certified as a DBE is considered to be performing a CUF when the DBE is responsible for the management and supervision of the entire trucking operation on a particular contract and the DBE itself owns and operates at least 1 fully licensed, insured, and operational truck used on the contract.

(a) The Contractor receives credit for the total value of the transportation services the DBE provides on a contract using trucks it owns, insures, and operates using drivers it employs.

(b) The DBE may lease trucks from another DBE firm, including an owner operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the Contract.

(c) The DBE may also lease trucks from a non-DBE firm, including from an owner-operator. The DBE who leases trucks from a non-DBE is entitled to credit for the total value of transportation services provided by non-DBE lessees not to exceed the value of transportation services provided by the DBE-owned trucks on the contract. Additional participation by non-DBE lessees receive credit only for the fee or commission it receives as result of the lease arrangement

(d) A lease must indicate that the DBE has exclusive use of and control over the trucks giving the DBE absolute priority for use of the leased trucks. Leased trucks must display the name and identification number of the DBE.

(4) When a DBE is presumed not to be performing a CUF the DBE may present evidence to rebut this presumption.

(5) Project materials or supplies acquired from an affiliate of the prime contractor can not directly or indirectly (2^{nd} or lower tier subcontractor) be used for DBE goal credit.

c. A Contractor may count toward its DBE goals expenditures for materials and supplies obtained from a DBE manufacturer, provided that the DBE assumes the actual and contractual responsibility for the materials and supplies. Count expenditures with DBEs for materials or supplies toward DBE goals as provided in the following:

(1) If the materials or supplies are obtained from a DBE manufacturer, count 100% of the cost of the materials or supplies toward DBE goals. (Definition of a DBE manufacturer found at 1A.c.(1) of this provision.)

For purposes of this Section (1.A.c.(1)), a manufacturer is a firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment required under the contract and of the general character described by the specifications.

(2) If the materials or supplies are purchased from a DBE regular dealer, count 60% of the cost of the materials or supplies toward DBE goals.

For purposes of this Section (1.A.5.c.(2)), a regular dealer is a firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles or equipment of the general character described by the specifications and required under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business:

(A) To be a regular dealer, the firm must be an established, regular business that engages, as its principal business and under its own name, in the purchase and sale or lease of the products in question.

(B) A person may be a regular dealer in such bulk items as petroleum products, steel, cement, gravel, stone or asphalt without owning, operating, or maintaining a place of business as provided in the first paragraph under Section 1.A.5.c.(2), if the person both owns and operates distribution equipment for the products. Any supplementing of regular dealers' own distribution equipment shall be by a long-term lease agreement and not on an ad hoc or contract-by-contract basis.

(C) Packagers, brokers, manufacturers' representatives, or other persons who arrange or expedite transactions are not regular dealers within the meaning of Section 1.A.5.c.(2).

(3) With respect to materials or supplies purchased from DBE which is neither a manufacturer nor a regular dealer, count the entire amount of fees or commissions charged for assistance in the procurement of the materials and supplies, or fees or transportation charges for the delivery of materials or supplies required on a job site, toward DBE goals, provided you determine the fees to be reasonable and not excessive as compared with fees customarily allowed for similar services.

Do not count any portion of the cost of the materials and supplies themselves toward DBE goals.

(4) Count the entire amount of fees or commissions charged by a DBE firm for providing a bona fide service, such as professional, technical, consultant or managerial services, or for providing bonds or insurance specifically required for the performance of a DOT-assisted contract, toward DBE goals, provided you determine the fee to be reasonable and not excessive as compared with fees customarily allowed for similar services.

d. If the Contractor chooses to assist a DBE firm, other than a manufacturing material supplier or regular dealer, and the DBE firm accepts the assistance, the Contractor may act solely as a guarantor by use of a two-party check for payment of materials to be used on the project by the DBE. The material supplier must invoice the DBE who will present the invoice to the Contractor. The Contractor may issue a joint check to the DBE and the material supplier and the DBE firm must issue the remittance to the material supplier. No funds shall go directly from the Contractor to the material supplier. The DBE firm may accept or reject this joint checking arrangement.

The Contractor must obtain approval from the Department prior to implementing the use of joint check arrangements with the DBE. Submit to the Department, Joint Check Approval Form 2178 for requesting approval. Provide copies of cancelled joint checks upon request. No DBE goal credit will be allowed for the cost of DBE materials that are paid by the Contractor directly to the material supplier.

e. No DBE goal credit will be allowed for supplies and equipment the DBE subcontractor leases from the contractor or its affiliates.

f. No DBE goal credit will be allowed for the period of time determined by the Department that the DBE was not performing a CUF. The denial period of time may occur before or after a determination has been made by the department. In case of the denial of credit for non-performance of a CUF of a DBE, the Contractor will be required to provide a substitute DBE to meet the contract goal or provide an adequate good faith effort when applicable.

6. Records and Reports.

a. The Contractor shall submit monthly reports, after work begins, on DBE payments to meet the DBE goal and for DBE or HUB race-neutral participation. Report payments made to non-DBE HUBs. The monthly report is to be sent to the Area Engineer. These reports will be due within 15 days after the end of a calendar month. These reports will be required until all DBE subcontracting or material supply activity is completed. Form SMS.4903, "DBE Progress Report," is to be used for monthly reporting. Form. SMS.4904, "DBE Final Report," is to be used as a final summary of DBE payments submitted upon completion of the project.

The original final report must be submitted to the OCR and a copy must be submitted to the Area Engineer. These forms may be obtained from the Department or may be reproduced by the Contractor. The Department may verify the amounts being reported as paid to DBEs by requesting copies of cancelled checks paid to DBEs on a random basis. Cancelled checks and invoices should reference the Department's project number.

b. DBE subcontractors and/or material suppliers should be identified on the monthly report by Vendor Number, name, and the amount of actual payment made to each during the monthly period. Negative reports are required when no activity has occurred in a monthly period.

c. All such records must be retained for a period of 3 years following completion of the contract work, and shall be available at reasonable times and places for inspection by authorized representatives of the Department or the DOT. Provide copies of subcontracts or agreements and other documentation upon request.

d. Prior to receiving final payment, the Contractor shall submit Form SMS.4904, "DBE Final Report". If the DBE goal requirement is not met, documentation supporting Good Faith Efforts, as outlined in Section 1.A.3.c of this Special Provision, must be submitted with the "DBE Final Report."

e. Provide a certification of prompt payment in accordance with the Department's prompt payment procedure to certify that all subcontractors and suppliers were paid from the previous months payments and retainage was released for those whose work is complete. Submit the completed form each month and the month following the month when final acceptance occurred at the end of the project.

7. **Compliance of Contractor**. To ensure that DBE requirements of this DOT assisted contract are complied with, the Department will monitor the Contractor's efforts to involve DBEs during the performance of this contract. This will be accomplished by a review of monthly reports submitted to the Area Engineer by the Contractor indicating his progress in achieving the DBE contract goal, and by compliance reviews conducted on the project site by the Department.

   The Contractor shall receive credit toward the DBE goal based on actual payments to the DBE subcontractor. The Contractor shall notify the Area Engineer if he/she withholds or reduces payment to any DBE subcontractor. The Contractor shall submit an affidavit detailing the DBE subcontract payments prior to receiving final payment for the contract.

   Contractors' requests for substitutions of DBE subcontractors shall be accompanied by a detailed explanation which should substantiate the need for a substitution. The Contractor may not be allowed to count work on those items being substituted toward the DBE goal prior to approval of the substitution from the Department.

The prime Contractor is prohibited from providing work crews and equipment to DBEs. DBE Goal credit for the DBE subcontractors leasing of equipment or purchasing of supplies from the prime contractor or its affiliates is not allowed.

When a DBE subcontractor named in the commitment under Section 1.A.3.a. of this Special Provision, is terminated or fails to complete its work on the contract for any reason, the prime contractor is required to make good faith efforts to find another DBE subcontractor to substitute for the original DBE. These good faith efforts shall be directed at finding another DBE to perform at least the same amount of work under the contract as the DBE that was terminated, to the extent needed to meet the contract goal.

A Contractor's failure to comply with the requirements of this Special Provision shall constitute a material breach of this contract. In such a case, the Department reserves the right to terminate the contract; to deduct the amount of DBE goal not accomplished by DBEs from the money due or to become due the Contractor, or to secure a refund, not as a penalty but as liquidated damages to the Department or such other remedy or remedies as the Department deems appropriate.

Forward Form 2371, "DBE Trucking Credit Worksheet," completed by the DBE trucker every month DBE credit is used.

B. Article B. Race-Neutral Disadvantaged Business Enterprise Participation. It is the policy of the DOT that Disadvantaged Business Enterprises (DBE) as defined in 49 CFR Part 26 Subpart A, be given the opportunity to compete fairly for contracts and subcontracts financed in whole or in part with Federal funds and that a maximum feasible portion of the Department's overall DBE goal be met using race-neutral means. Consequently, if there is no DBE goal, the DBE requirements of 49 CFR Part 26, apply to this contract as follows:

The Contractor will offer DBEs as defined in 49 CFR Part 26, Subpart A, the opportunity to compete fairly for contracts and subcontractors financed in whole or in part with Federal funds. Race-Neutral DBE and non-DBE HUB participation on projects with no DBE goal shall be reported on Form SMS.4903, "DBE or HUB Progress Report" and submitted to the Area Engineer each month and at project completion. Payments to DBEs reported on Form SMS.4903 are subject to the requirements of Section 1.A.5, "Determination of DBE Participation."

The Contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate.

2004 Specifications

SPECIAL PROVISION

000--2329

Partnering

1. General. It is the intent of this provision to promote an environment of trust, mutual respect, integrity, and fair-dealing between the Department and the Contractor.

2. Definitions.

A. Informal Partnering. Partnering that does not make use of a facilitator.

B. Formal Partnering. Partnering where the services of a facilitator (internal or external) are utilized.

3. Procedures for Partnering Meetings and Format. Informal Partnering is required for this project, unless Formal Partnering is mutually agreed to in lieu of the Informal Partnering.

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

(1) Internal Facilitators. A Department or Contractor internal (staff) facilitator may be selected as the facilitator at no additional cost to either party.

(2) External Facilitators. A private firm or individual that is independent of the Contractor and the Department may be selected as the facilitator. Submit the facilitator's name and estimated fees for approval prior to contracting with the facilitator.

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

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

The Department will invite and provide a list of attendees that includes but is not limited to Department, City, County, law enforcement, railroad, and utility representatives.

Participate in additional partnering meetings as mutually agreed.

4. Payment. Expenses for employee time, contractor equipment, or overhead will not be allowed. Markups will not be allowed.

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

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

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

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

2004 Specifications

SPECIAL PROVISION

000--2332

Schedule of Liquidated Damages

For Dollar Amount of Original Contract		Dollar Amount of Daily Contract Administration Liquidated
From More Than	**To and Including**	**Damages per Working Day**
0	100,000	**570**
100,000	500,000	**590**
500,000	1,000,000	**610**
1,000,000	1,500,000	**685**
1,500,000	3,000,000	**785**
3,000,000	5,000,000	**970**
5,000,000	10,000,000	**1125**
10,000,000	20,000,000	**1285**
20,000,000	Over 20,000,000	**2590**

2004 Specifications

SPECIAL PROVISION

000---2607

Nondiscrimination

Description. All recipients of federal financial assistance are required to comply with various nondiscrimination laws including Title VI of the Civil Rights Act of 1964, as amended, (Title VI). Title VI forbids discrimination against anyone in the United States on the grounds of race, color, or national origin by any agency receiving federal funds.

Texas Department of Transportation, as a recipient of Federal financial assistance, and under Title VI and related statutes, ensures that no person shall on the grounds of race, religion (where the primary objective of the financial assistance is to provide employment per 42 U.S.C. § 2000d-3), color, national origin, sex, age or disability be excluded from participation in, be denied the benefits of, or otherwise be subjected to discrimination under any Department programs or activities.

Definition of Terms. Where the term "contractor" appears in the following six nondiscrimination clauses, the term "contractor" is understood to include all parties to contracts or agreements with the Texas Department of Transportation.

Nondiscrimination Provisions. During the performance of this contract, the contractor agrees as follows:

(1) Compliance with Regulations: The Contractor shall comply with the Regulations relative to nondiscrimination in Federally-assisted programs of the Department of Transportation (hereinafter, "DOT") Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.

(2) Nondiscrimination: The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor shall not participate either directly or indirectly in the discrimination prohibited by section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.

(3) Solicitations for Subcontracts, Including Procurements of Materials and Equipment: In all solicitations either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.

(4) Information and Reports: The contractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the Texas Department of Transportation to be pertinent to ascertain compliance with such Regulations, orders and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information the contractor shall so certify to the Recipient, or the Texas Department of Transportation as appropriate, and shall set forth what efforts it has made to obtain the information.

(5) Sanctions for Noncompliance: In the event of the contractor's noncompliance with the nondiscrimination provisions of this contract, the Recipient shall impose such contract sanctions as it or the Texas Department of Transportation may determine to be appropriate, including, but not limited to:

(a) withholding of payments to the contractor under the contract until the contractor complies, and/or

(b) cancellation, termination or suspension of the contract, in whole or in part.

(6) Incorporation of Provisions: The contractor shall include the provisions of paragraphs (1) through (6) in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto. The contractor shall take such action with respect to any subcontract or procurement as the Recipient or the Texas Department of Transportation may direct as a means of enforcing such provisions including sanctions for non-compliance: Provided, however, that, in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the contractor may request the Recipient to enter into such litigation to protect the interests of the Recipient, and, in addition, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

2004 Specifications Federal-Aid Projects Only

SPECIAL PROVISION

000--2638

On-the-Job Training Program

1. **Description.** The primary objective of this Special Provision is the training and advancement of minorities, women and economically disadvantaged persons toward journeyworker status. Accordingly, make every effort to enroll minority, women and economically disadvantaged persons to the extent that such persons are available within a reasonable area of recruitment. This training commitment is not intended, and shall not be used to discriminate against any applicant for training, whether or not he/she is a member of a minority group.

2. **Trainee Assignment.** Training assignments are based on the past volume of state-let highway construction contracts awarded with the Department. Contractors meeting the selection criteria will be notified of their training assignment at the beginning of the reporting year by the Department's Office of Civil Rights.

3. **Program Requirements.** Fulfill all of the requirements of the On-the-Job Training Program including the maintenance of records and submittal of periodic reports documenting program performance. Trainees shall be paid at least 60% of the appropriate minimum journeyworker's rate specified in the contract for the first half of the training period, 75% for the third quarter, and 90% for the last quarter, respectively.

4. **Reimbursement**. If requested, contractors may be reimbursed $0.80 per training hour at no additional cost to the Department. Training may occur on this project, all other Department contracts, or local-administered federal-aid projects with concurrence of the local government entity. However, reimbursement for training is not available on projects to the extent that such projects that do not contain federal funds.

5. **Compliance.** The Contractor will have fulfilled the contractual responsibilities by having provided acceptable training to the number of trainees specified in their goal assignment. Noncompliance may be cause for corrective and appropriate measures pursuant to Article 8.6., "Abandonment of Work or Default of Contract," which may be used to comply with the sanctions for noncompliance pursuant to 23 CFR Part 230.

2004 Specifications

SPECIAL PROVISION

000--2839

Important Notice to Contractors

By the 20th day of each month, report to the Engineer the number of incidents and injuries that occurred on the project the previous month. Report:

- the total number of incidents and injuries for the Contractor and all subcontractors, and
- the number of Contractor and subcontractor-related incidents and injuries that involved a third party.

An "incident" is defined as any work-related occurrence that caused damage only to vehicles, equipment, materials, etc.

An "injury" is defined as an OSHA recordable injury.

Acquire an Electronic Project Records System (EPRS) account to report incidents and injuries. Submit an EPRS User Access Request Form (Form 2451) to request an account. This form can be found at http://www.txdot.gov/business/resources/doing-business/prequalification.html.

Report injuries and incidents using the EPRS website located at https://apps.dot.state.tx.us/apps/eprs/InjuryIncident/InjryIncdt.aspx.

Failure to submit this information to the Engineers by the 20th day of each month will result in the Department taking actions including, but not limited to withholding estimates and suspending the work. This report will not be paid for directly, but will be considered subsidiary to Items of the contract.

SPECIAL PROVISION

000--2859

Important Notice to Contractors

As of April 9, 2014, utilities within the project limits have not been cleared. The City anticipates clearance by the dates listed below. Unless otherwise stated, clearance of these obstructions will be performed by their owners. Estimated clearance dates are not anticipated to interfere with the Contractor's operations. In the event the clearance dates are not met, requests for additional compensation or time will be made in accordance with the standard specifications.

The Contractor is invited to review the mapped information of obstructions on file with the Engineer.

UTILITY				
Utility Owner	**Utility**	**Approximate Location**	**Estimated Clearance Date**	**Effect on Construction**
AEP	Power line (OH)	(Crossings) 11+83,16+29,16+73,24+94, 29+71,31+84,32+32 (Parallel) 27+68-29+61, Lt. (varies) 29+90-38+38 Rt. (varies)	3 months after right of way is acquired	**No**
AGUA	Water line (2",12")	(Crossings) (2") 11+57,24+55,27+84 (12") 24+41 (Parallel) (2") 11+57-13+47, Rt. (varies) (2") 13+47-24+55, Lt. (varies) (2") 24+55-27+84, Rt. (varies) (2") 27+84-28+08, Lt. (varies) (2") 28+08-37+83, Rt. (varies) (12") 10+36-11+57, Lt. (varies) (12") 10+00-24+47, Rt. (varies)	3 months after right of way is acquired	**No**
AT&T	Telephone line (U/G)	Throughout Project	3 months after right of way is acquired	**No**
AT&T	Fiber Optics (U/G)	(Parallel) 32+04-38+08, Rt. 16.5'	3 months after right of way is acquired	
City of Mission	Sewer line (12")	(Parallel) 24+98-38+08, Lt. 13.6'	3 months after right of way is acquired	**No**

It will be the responsibility of the Contractor to prosecute the work in such a manner and sequence that there will be no interference with the work of others in adjusting utilities. The Contractor shall allow free ingress to and egress from these areas over the Right of Way to these workers.

As of April 9, 2014, right of way within the project limits has not been cleared. The City anticipates clearance by the dates listed below. Unless otherwise stated, clearance of these obstructions will be performed by their owners. Estimated clearance dates are not anticipated to interfere with the Contractor's operations. In the event the clearance dates are not met, requests for additional compensation or time will be made in accordance with the standard specifications.

The Contractor is invited to review the mapped information of obstructions on file with the Engineer.

RIGHT-OF-WAY ACQUISITION			
Parcel Number	**Owner**	**Estimated Acquisition Date**	**Affect on Construction**
1	HCID #6	2/2015	y
2	Antonio Uresti	2/2015	y
3	Eleazar Villarreal	2/2015	y
4	HCID #6	2/2015	y
5	Felix Chavez Jr.	2/2015	y
6	Felix Chavez Jr.	2/2015	y
7	Eric Lee & Chelsey Posada	2/2015	y
8	Leticia Sanchez	2/2015	y
9	Luis Sanchez	2/2015	y
10	HCID #6	2/2015	y
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2004 Specifications CCSJ: 0921-02-323

SPECIAL PROVISION

001---007

Definition of Terms

Any reference to the Department, TxDOT or the Texas Department of Transportation shall be replaced by Hidalgo County.

2004 Specifications

SPECIAL PROVISION
001---015
Definition of Terms

For this project, Item 001, "Definition of Terms," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

The following Articles are voided and replaced by the following:

1.50. Disadvantaged Business Enterprise (DBE). A small business certified through the Texas Unified Certification Program in accordance with 49 CFR Part 26, that is at least 51% owned by one or more socially and economically disadvantaged individuals, or in the case of a publicly owned business, in which is at least 51% of the stock is owned by one or more socially and economically disadvantaged individuals, and whose management and daily business operations are controlled by one or more of the individuals who own it.

1.128. Subcontractor. A Subcontractor is defined as an individual, partnership, limited liability company, corporation, or any combination thereof that the Contractor sublets, or proposes to sublet, any portion of a Contract, excluding a material supplier, a hauling firm hauling only from a commercial source to the project, truck owner-operator, wholly owned subsidiary, or specialty-type businesses such as security companies and rental companies.

The following Articles are voided and not replaced.

1.97. Proposal.

1.98. Proposal Form.

1.99. Proposal Guaranty.

This Item is supplemented by the following:

1.148. Additive Alternate. A bid item contained in a proposal that is not a regular item or a designated alternate bid item. The additive alternate item(s) include work that may be added to the base bid work.

1.149. Base Bid. The total bid (includes regular bid items or corresponding alternate bid items if lower) amount without additive alternates.

1.150. Affiliates. Two or more firms are affiliated if:

- they share common officers, directors, or stockholders;

- a family member of an officer, director, or stockholder of one firm serves in a similar capacity in another of the firms;
- an individual who has an interest in, or controls a part of, one firm either directly or indirectly also has an interest in, or controls a part of, another of the firms;
- the firms are so closely connected or associated that one of the firms, either directly or indirectly, controls or has the power to control another firm;
- one firm controls or has the power to control another of the firms; or,
- the firms are closely allied through an established course of dealings, including but not limited to the lending of financial assistance.

1.151. Bid. The offer of the bidder for performing the work described in the plans and specifications including any changes made by addenda.

1.152. Bid Guaranty. The security furnished by the bidder as a guaranty that the bidder will enter into a contract if awarded.

1.153. Electronic Bid Form. The bid form contained in the Department's Electronic Bidding System.

1.154. Electronic Bidding System (EBS). The Department's automated system that allows bidders to enter and submit their bid information electronically.

1.155. Electronic Vault. The secure location where electronic bids are stored prior to bid opening.

1.156. Family Member. A family member of an individual is the individual's parent, parent's spouse, step-parent, step-parent's spouse, sibling, sibling's spouse, spouse, child, child's spouse, spouse's child, spouse's child's spouse, grandchild, grandparent, uncle, uncle's spouse, aunt, aunt's spouse, first cousin, or first cousin's spouse.

1.157. Printed Bid Form. The bidding form printed and sent to the bidder by the department or printed by the bidder from the department's Electronic Bidding System.

1.158. Bid Form. The form provided by the Department used by the bidder to submit a bid. The bid form is a Department mailed bidder's form (traditional proposal submitted manually), a Department EBS printed bid form (submitted manually), or the bid form submitted electronically through the Department's EBS.

2004 Specifications

SPECIAL PROVISION

002---017

Instructions to Bidders

For this project, Item 002, "Instruction to Bidders," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Except for Article 2.1 the remainder of Item 2 is voided and replaced by the following:

2.2. Eligibility of Bidders. Submit for approval a Confidential Questionnaire Form and an audited financial statement or a Bidder's Questionnaire Form at least 10 days before the date that bids are to be opened. Once approved, the eligibility is valid for a period of one year. Bidders prequalified with a Bidder's Questionnaire Form are not eligible to bid on a project that requires the Confidential Questionnaire Form and audited financial statements. Comply with all technical prequalification requirements in the bid form. Obtain prequalification forms from the Construction Division.

2.3. Issuing Bid Forms. The Department will issue a bid form to a prequalified Bidder meeting the requirements of the bid form on request if the estimated cost of the proposed Contract is within that Bidder's available bidding capacity. Request bid forms orally, in writing, or electronically.

In the case of a joint venture, all joint venture participants must be prequalified. An equally divided portion of the Engineer's estimate must be within each participant's available bidding capacity.

The Department will not issue a bid form for a proposed Contract if one or more of the following apply:

- the Bidder is disqualified by an agency of the federal government.
- the Bidder is suspended or debarred by the Commission, or is prohibited from rebidding a specific proposal because of bid error or failure to enter into a Contract of the first awarded bid.
- the Bidder has not fulfilled the requirements for prequalification.
- the Bidder or a subsidiary or affiliate of the Bidder has received compensation from the Department to participate in the preparation of the plans or specifications on which the bid or Contract is based.
- the Bidder did not attend an advertised mandatory pre-bid conference.

2.4. Interpreting Estimated Quantities. The quantities listed in the bid form are approximate and will be used for the comparison of bids. Payments will be made for the work performed in accordance with the Contract.

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

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

Immediately notify the Department of any error, omission, or ambiguity discovered in any part of the bid form, specifications or plans. The Department will issue an addendum when appropriate.

2.6. Preparing the Bid. Prepare the bid on the form furnished by the Department. Bid forms may be printed or electronic. Informational forms will not be accepted.

Specify a unit price in dollars and cents for each Item for which an estimated quantity is given. When "Working Days" is an Item, submit the number of working days to be used to complete the Contract, or phases of the Contract shown on the plans.

An Item left blank will constitute an incomplete bid and will be handled as prescribed in Article 2.14, "Tabulating Bids." Include unit bid prices for each Item in the Item group or alternate Item group, except for instances when alternate Items pertain to foreign steel or iron materials.

If a bid form contains both regular bid Items for domestic and alternate bid Items pertaining to foreign steel or iron materials the bidder must either:

- submit unit bid prices for domestic bid items only, or
- submit unit bid prices for both the alternate foreign bid items and domestic bid items.

Verify whether addenda have been issued on a proposed Contract. Acknowledge all addenda.

A. Printed Bid Forms. Make all entries and execute the bid form in ink. Acknowledge all addenda by checking the appropriate box on the addendum acknowledgement page. Provide the complete and correct name of the Bidder submitting the bid. A person authorized to bind the Bidder must sign the bid form. In the case of a joint venture, provide the complete and correct name of all Bidders submitting the bid. The bid form must be signed by person(s) authorized to bind the Bidder(s).

As an alternative to hand writing the unit prices in the bid form, submit a computer printout signed by the person authorized to bind the Bidder or for a joint venture the persons authorized to bind the Bidders. As a minimum, computer printouts must contain the information in the format shown on the "Example of Bid Prices Submitted by Computer Printout" form in the bid form.

As an additional alternative, the bidder may prepare the bid using EBS and print out the bid form. Execute the bid form. A person authorized to bind the Bidder must sign the bid form. In the case of a joint venture, provide the complete and correct name of all Bidders submitting the bid. The bid form must be signed by persons authorized to bind the Bidders.

B. Electronic Bid Forms. Use the electronic bid form in EBS. Acknowledge an addendum by initialing each addendum listed under the addenda tab in EBS. Digitally sign the bid form using a digital certificate issued by the department. In the case of a joint venture, the person signing the bid form must be authorized to bind all joint venture participants.

2.7. Nonresponsive Bids. A bid that has one or more of the deficiencies listed below is nonresponsive and will not be considered.

A. The person or, in the case of a manually submitted joint venture bid, persons did not sign the bid form.

B. The proposal guaranty did not comply with the requirements contained in Article 2.8, "Bid Guaranty."

C. The bid was in a form other than the official bid form issued to the Bidder or Bidders.

D. The bid was not in the hands of the letting official at the time and location specified in the advertisement. For electronic bids, "in the hands of the letting official" means EBS vault acknowledgement.

E. The bid form submitted had the incorrect number of Items.

F. A computer printout, when used, was not signed in the name of the Bidder (or joint Bidders, in the case of a joint venture), or omitted required Items or included an Item or Items not shown in the bid form.

G. The Bidder was not authorized to receive a bid form under Article 2.3, "Issuing Bid Forms."

H. The Bidder failed to acknowledge receipt of all addenda issued.

I. The Bidder bid more than the maximum or less than the minimum number of allowable working days shown on the plans when working days was an Item.

J. The Bidder modified the bid in a manner that altered the conditions or requirements for work as stated in the bid form.

K. The Bidder did not attend a specified mandatory pre-bid conference.

The department will not accept or read any of the bids submitted on the same project by:

- a joint venture and one or more of its partners, or

- affiliated bidders.

2.8. Bid Guaranty. The bid guaranty amount is fixed at the amount indicated on the bid form on the date the bid form is released to the public. Provide a bid guaranty in the amount indicated on the bid form as follows:

- For printed bids, use either a guaranty check or a bid bond. An electronic bid bond may be used as the guaranty for a bid form printed from EBS. (The bid bond number is printed on the form printed from EBS and the Department verifies the bond through EBS at the letting.)

- For electronic bids, use an electronic bid bond. Do not use guaranty checks or printed bid bonds on electronic bids.

A. Guaranty Check. The guaranty check must be payable to the Texas Transportation Commission and must be a cashier's check, money order, or teller's check drawn by or on a state or national bank, a savings and loan association, or a state or federally chartered credit union (collectively referred to as "bank"). The check must be dated on or before the date of the bid opening. Post dated checks will not be accepted. The type of check or money order must be indicated on the face of the instrument and the instrument must be no more than 90 days old. A check must be made payable at or through the institution issuing the instrument; be drawn by a bank and on a bank; or be payable at or through a bank. The Department will not accept personal checks, certified checks, or other types of money orders as a bid guaranty.

B. Bid Bond. The bid bond must be on the form provided by the Department, with powers of attorney attached, and in the amount specified on the bid bond form. The bond form must be dated on or before the date of the bid opening, bear the impressed seal of the Surety and be signed by the Bidder or Bidders, in the case of a joint venture, and an authorized individual of the Surety. As an alternative for joint venture Bidders, each of the Bidders may submit a separate bid bond, completed as outlined in this Subarticle. Bid bonds will only be accepted from Sureties authorized to execute a bond under and in accordance with state law.

C. Electronic Bid Bond. Use the most current version of the electronic bond issued by the department. For a joint venture, the bond must be in the name of all joint venture participants. Enter the bond authorization code into EBS. Use bond authorization codes issued by the companies listed in most recent version of EBS.

2.9. Submittal of Bid. Bids may be submitted either manually or electronically.

A. Manually Submitted Bids.

Place the completed bid form and the bid guaranty in a sealed envelope marked to indicate the contents.

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

In addition to the requirements above, all pages of a bid form printed from EBS must be submitted.

B. Electronically Submitted Bids. Submit the electronic bid to the electronic vault using EBS. It is the bidder's responsibility to ensure that the bid is received by the electronic vault on or before the time and date set for the opening.

2.10. Revising Bid Forms. Revisions to bids will be handled as follows:

A. Manually Submitted Bids.

1. Before Submission. Make desired changes to the printed bid form in ink and initial the changes.

2. After Submission. Withdraw the bid in accordance with Article 2.11, "Withdrawing Bids." Make desired changes to the printed bid form in ink and initial the changes. Resubmit to the Letting Official in accordance with Article 2.9, "Delivery of Bid." The Department will not make revisions to a bid on behalf of a Bidder.

B. Electronically Submitted Bids. Make desired changes up until the time and date set for the opening of bids using EBS. The electronically submitted bid with the latest time stamp by the electronic vault will be used for tabulation purposes.

C. After Bid Opening. Revisions to bids are not allowed after the time and date set for the opening.

2.11. Withdrawing Bids.

A. Manually Submitted Bids. Submit a signed written request to the Letting Official. The Department will not accept telephone or electronic requests, but will accept a properly signed telefacsimile request. The request must be made by a person authorized to bind the Bidder, and must be in the hands of the Letting Official before the time and date set for the opening. In the case of joint venture, the department will accept a request from any person authorized to bind a party to the joint venture to withdrawal a bid.

B. Electronically Submitted Bids. Submit an electronic or written request to withdraw the bid. The electronic request must be made using EBS. For a written request, submit a signed request to the Letting Official. A request to withdraw an electronic bid must be made by a person authorized to bind the Bidder and must be made prior to the time and date set for the opening. For written request for withdrawals of electronic bids and in the case of joint venture, the department will accept a request from any person authorized to bind a party to the joint venture to withdrawal a bid.

2.12. Opening and Reading of Bids. At the time, date and location specified in the official advertisement, the Letting Official will publicly:

- open and read manually submitted bids; and
- read electronically submitted bids.

2.13. Gratuities. Do not offer Department employees benefits, gifts, or favors. The only exceptions allowed are ordinary business lunches. Failure to honor this policy may result in the termination of the Contract and sanctions under the Texas Administrative Code. Termination of the Contract will be in accordance with Article 8.7, "Termination of Contract."

2.14. Tabulating Bids.

A. Official Total Bid Amount. The Department will sum the products of the quantities and the unit prices bid in the bid form to determine the official total bid amount. Except as provided in Section 2.14.G, "Special Item Considerations," the official total bid amount is the basis for determining the apparent low Bidder. The total bid amounts will be compared and the results made public.

B. Consideration of Bid Format. When a Bidder submits both an electronic bid and a properly completed manual bid, the unit bid prices in the manual bid will be used to determine the total bid amount. If a bidder submits an electronic bid and an incomplete manual bid, the electronic bid will be used in the tabulation of the total bid amount.

If a bidder submits two or more manual bids, all responsive bids will be tabulated. The bid with the lowest tabulation will be used to determine the total bid amount.

C. Rounding of Unit Prices. The Department will round off all unit bids involving fractional parts of a cent to the nearest one-tenth cent ($0.001) in determining the amount of the bid as well as computing the amount due for payment of each Item under the Contract. For rounding purposes, entries of five-hundredths of a cent ($0.0005) or more will be rounded up to the next highest tenth of a cent, while entries less than five-hundredths of a cent will be rounded down to the next lowest tenth of a cent.

D. Interpretation of Unit Prices. The Department will make a documented determination of the unit bid price for tabulation purposes if a unit bid price is illegible. The Department's determination will be final.

E. Consideration of Unit Prices. Unit bid price entries such as no dollars and no cents, zero dollars and zero cents, or numerical entries of $0.00, will be tabulated as one-tenth of a cent ($0.001).

The Department will consider proposals where unit bid prices have been left blank incomplete and nonresponsive. If a proposal has a regular and a corresponding alternate Item or group of Items, the bid will be considered complete if:

- the regular Item or group of regular Items has unit prices entered, or
- the alternate Item or group of alternate Items has unit prices entered.

The bid will be considered incomplete and nonresponsive if:

- a regular Item or group of regular Items is left blank, and
- a corresponding alternate Item or group of alternate Items is left blank.

F. Consideration of Alternate Items. The Department will make two calculations using one-tenth of a cent ($0.001) for each Item if:

- a regular Item or a group of Items have an entry such as no dollars and no cents, zero dollars and zero cents, or numerical entries of $0.00, and
- a corresponding alternate Item or group of Items, have an entry such as no dollars and no cents, zero dollars and zero cents, or numerical entries of $0.00.

The Department will select the regular Item or Items or the alternate Item or Items at the Department's discretion if both the regular and alternate bid results in the same cost to the State.

The Department will use the unit price that is greater than zero for bid tabulation if:

- a unit price greater than zero has been entered for either a regular bid or a corresponding alternate Item or group of Items, and
- an entry of no dollars and no cents, zero dollars and zero cents, or a numerical entry of $0.00 has been entered for the other corresponding Item or group of Items.

If a unit price has been entered for both the regular Item and a corresponding alternate Item, the Department will select the option (regular or alternate) that results in the lowest cost to the State. The Department will select the regular Item or Items or the alternate Item or Items at the Department's discretion if both the regular and alternate bid results in the same cost to the State.

G. Special Item Considerations.

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

2. "Buy America." For proposed Contracts where unit bid prices are submitted for both domestic and foreign steel or iron materials, the total bid amount will be calculated using both the domestic and foreign steel unit bid prices. If the total bid amount using the foreign steel or iron materials is the low bid, and the lowest bid using domestic steel or iron materials exceeds the low bid using foreign steel or iron materials by 25% or more, the apparent low Bidder will be the bid using foreign steel or iron materials. If the difference between the low bid using foreign steel or iron materials and the lowest bid using domestic steel or iron materials is less than 25%, the apparent low Bidder will be the bid using domestic steel or iron materials.

3. Home State Bidding Preference. For the purpose of determining the apparent low Bidder on proposed Contracts without federal funds, the total bid amount will be based upon the reverse application of the non-resident Bidder's home state bidding preference, if any.

2.15. Consideration of Bid Errors. The Department will consider a claim of a bid error by the apparent low Bidder if the following requirements have been met:

- Submit written notification to the Department within 5 business days after the date the bid is opened.
- Identify the Items of work involved and include bidding documentation. The Department may request clarification of submitted documentation.

The Department will evaluate the claim of an error by the apparent low Bidder by considering the following:

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

Acceptance of the bid error claim by the Department will result in the rejection of all bids. The erring Contractor will not be allowed to bid the project when it is relet. Rejection of bids due to the Contractor's bid error may result in the application of sanctions by the Department.

2.17. Electronic Bidding. Take responsibility for correctly installing the EBS software. Secure the digital certificate issued by the department at all times. Promptly report compromised digital certificates to the Department. Select an Internet Service Provider. The Department will not be responsible for Internet unavailability. The Department will not provide a computer for preparing, submitting, revising or withdrawing an electronic bid.

2.18. Bid Form Content. The electronic and the EBS printed bid form do not contain such things as the special provisions, special specifications, and general notes. These documents are included by reference. Manual bid forms (traditional proposals) will include such provisions.

SPECIAL PROVISION

003---033

Award and Execution of Contract

For this project, Item 003, "Award and Execution of Contract," of the Standard Specifications, is amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed.

Article 3.4. Execution of Contract, Section B, Bonds. The first paragraph is supplemented by the following:

Sample versions of the standard performance and payment bonds may be viewed on the department's Internet site at:

http://www.txdot.gov/inside-txdot/forms-publications/consultants-contractors/forms/contractors.html

2004 Specifications

SPECIAL PROVISION

004---017

Scope of Work

For this project, Item 4, "Scope of Work," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 4.2. Changes in the Work. The first paragraph is supplemented by the following:

The Contractor is responsible for notifying the sureties of any changes to the contract.

Article 4.2. Changes in the Work. The sixth paragraph is voided and replaced by the following:

When the quantity of work to be done under any major item of the Contract is less than 75% of the original quantity stated in the Contract, then either party to the Contract may request an adjustment to the unit price. When mutually agreed, the unit price may be adjusted by multiplying the Contract unit price by the factor in Table 1. If an adjusted unit price cannot be agreed upon, the Engineer may determine the unit price by multiplying the Contract unit price by the factor in Table 1.

Table 1
Quantity-Based Price Adjustment Factors

% of Original Quantity	Factor
≥ 50 and < 75	**1.05**
≥ 25 and < 50	**1.15**
< 25	**1.25**

Article 4.4. Requests and Claims for Additional Compensation, Section A., Delay Claims is voided and replaced by the following:

A. Damages. Damages occur when impacts that are the responsibility of the Department result in additional costs to the contractor that could not have been reasonably anticipated at the time of letting. Costs of performing additional work are not considered damages. For contractor damages, the intent is to reimburse the Contractor for actual expenses arising out of a compensable impact. No profit or markups, other than labor burden, will be allowed. For damages, labor burden will be reimbursed at 35% unless the Contractor can justify higher actual cost. Justification for a higher percentage must be in accordance with the methodology provided by the Department, submitted separately for project overhead labor and direct labor, and determined and submitted by a Certified Public Accountant (CPA). Submit CPA-prepared labor burden rates directly to the Contract Letting and Contractor Prequalification Branch of the Construction Division.

1. **Delay Damages.** If the Contractor requests compensation for delay damages and the delay is determined to be compensable, then standby equipment costs and project overhead compensation will be based on the duration of the compensable delay and will be limited as follows:

   a. **Standby Equipment Costs.**

   - Standby costs will not be allowed during periods when the equipment would have otherwise been idle.
   - No more than 8 hr. of standby will be paid during a 24-hr. day, nor more than 40 hr. per week, nor more than 176 hr. per month.
   - For Contractor-owned equipment, standby will be paid at 50% of the rental rates found in the Rental Rate Blue Book for Construction Equipment and calculated by dividing the monthly rate by 176 and multiplying by the regional adjustment factor and the rate adjustment factor. For leased equipment on standby, 100% of the invoice cost of the leased equipment will be paid. Operating costs will not be allowed.

   b. **Project Overhead.** Project overhead is defined as the administrative and supervisory expenses incurred at the work locations. When delay to project completion occurs, reimbursement for project overhead for the prime contractor will be made using the following options:
   - reimbursed at 6% (computed as daily cost by dividing 6% of the original contract amount by the as-let number of working days) or
   - actual documented costs for the impacted period.

   Project overhead for delays impacting sub-contractors will be determined from actual documented costs submitted by the Contractor.

   The granting of time extensions and suspensions alone will not be justification for reimbursement for project overhead.

   c. **Home Office Overhead.** The Department will not compensate the Contractor for home office overhead.

Article 4.4. Requests and Claims for Additional Compensation, Section B., Dispute or Claims Procedure is voided and replaced by the following:

B. Dispute or Claims Procedure. Work with the Engineer to resolve or escalate all issues in accordance with the procedures outlined at the pre-construction conference. Establish with the Engineer an issue escalation ladder and adhere to the following:

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

2. **Issue Resolution Process.** An issue is any aspect of the contract where representatives of the participants in the contract do not agree. The individuals identified at the lowest level of the issue escalation ladder will initiate the issue resolution process by escalating any issue that remains unresolved within the time frame outlined in the issue escalation ladder.

   Use the Department's automated issue tracking system to submit and track issues escalated to the area engineer or above. Do not use the automated issue tracking system for routine issues resolved on the project.

   Once the issue is recorded in the automated issue tracking system, the issue will be escalated to the district engineer within 15 calendar days.

   The district engineer will issue written direction within 7 calendar days.

Work with the district to resolve all issues during the course of the contract. In the event the district and the Contractor cannot resolve an issue, the Contractor may file a contract claim after the completion of the contract to be handled in accordance with the Department's contract claim procedure. Contract claims will not be presented to the Contract Claims Committee for consideration prior to the final payment to the Contractor. It is the Contractor's responsibility to prove or justify all claims and requests in a timely manner.

The deadline for filing a claim in accordance with 43 TAC Section 9.2, is the earlier of 1 year after the date of final acceptance, date of default, or date of termination except that claims for warranty enforcement can be made up to 1 year after expiration of the warranty period.

2004 Specifications

SPECIAL PROVISION

005---004

Control of the Work

For this project, Item 005, "Control of the Work," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 5.2 Plans and Working Drawings, is supplemented with the following:

Submit shop drawings electronically for the fabrication of structural items as documented in the "Guide to Electronic Shop Drawing Submittal" available on the internet at ftp://ftp.dot.state.tx.us/pub/txdot-info/library/pubs/bus/bridge/e_submit_guide.pdf and as directed by the Engineer for other items required by the standard specifications. References to 11 x 17 sheets in individual specifications for structural items imply electronic CAD sheets.

2004 Specifications

SPECIAL PROVISION

006---030

Control of Materials

For this project, Item, Item 006, "Control of Materials," of the Standard Specifications is amended hereby with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 6.9. Recycled Materials is voided and replaced by the following:

The Department will not allow hazardous wastes, as defined in 30 TAC 335, proposed for recycling. Use nonhazardous recyclable materials (NRMs) only if the Specification for the Item does not disallow or restrict use. Determine if NRMs are regulated under 30 TAC 312, 330, 332, 334, or 335, and comply with all general prohibitions and requirements. Use NRMs in accordance with DMS-11000, "Evaluating and Using Nonhazardous Recyclable Materials Guidelines," and furnish all documentation required by that Specification.

Article 6.10. Hazardous Materials is voided and replaced by the following:

Use materials that are free of hazardous materials as defined in Item 1, "Definition of Terms."

Notify the Engineer immediately when a visual observation or odor indicates that materials in required material sources or on sites owned or controlled by the Department may contain hazardous materials. Except in the case of Section 6.10.A.1.a, "Cleaning and Painting Steel" below, the Department is responsible for testing and removing or disposing of hazardous materials not introduced by the Contractor on sites owned or controlled by the Department as indicated below. The plans will indicate locations where paint on steel is suspected to contain hazardous materials and where regulated asbestos containing materials have been found. The Engineer may suspend work wholly or in part during the testing, removal, or disposition of hazardous materials on sites owned or controlled by the Department, except in the case of Section 6.10.A.1.a.

When a visual observation or odor indicates that materials delivered to the work locations by the Contractor may contain hazardous materials, have an approved commercial laboratory test the materials for contamination. Remove, remediate, and dispose of any of these materials found to be contaminated. Testing, removal, and disposition of hazardous materials introduced onto the work locations by the Contractor will be at the Contractor's expense. Working day charges will not be suspended and extensions of working days will not be granted for activities related to handling hazardous material delivered by the Contractor.

A. **Painted Steel Requirements.** As shown on the plans, existing paint on steel may contain hazardous materials. Perform work in accordance with the following:

   1. **Removing Paint from Steel.**

a. **Cleaning and Painting Steel.** For contracts that are primarily for painting existing steel, perform the work in accordance with Item 446, "Cleaning and Painting Steel."

b. **Other Contracts.** For all other projects when an existing paint must be removed to perform other work, perform paint removal work in accordance with Item 446, "Cleaning and Painting Steel" unless the paint is shown or determined to contain hazardous materials. If the paint is shown or determined to contain hazardous materials, the Department will provide for a separate contractor to remove paint prior to or during the Contract to allow dismantling of the steel for the Contractor's salvaging, reuse, or recycling or where paint must be removed to perform other work. For steel that is dismantled by unbolting, no paint stripping will be required. Use care to not damage existing paint. When dismantling is performed using flame or saw-cutting methods to remove steel elements coated with paint containing hazardous materials, the plans will show stripping locations. Coordinate with the separate contractor for stripping work to be performed during the Contract.

2. **Removal and Disposal of Painted Steel.** For Contracts where painted steel is to be removed and disposed of by the Contractor, painted steel may be reused or disposed of at a steel recycling or smelting facility. If the paint is shown or determined to contain hazardous materials, maintain and make available to the Engineer invoices and other records showing the reuse owner or for recycling, records obtained from the recycling or smelting facility showing the received weight of the steel and the facility name. Painted steel to be retained by the Department will be shown on the plans.

B. **Asbestos Requirements.** The plans will indicate locations or elements where asbestos containing materials (ACM) have been found. At these locations or at locations where previously unknown ACM has been found, the Department will arrange for abatement by a separate contractor during the Contract. For work at these locations, notify the Engineer of proposed dates of demolition or removal of structural elements with ACM at least 60 days before work is to begin to allow the Department sufficient time to abate the asbestos.

When the work by a separate contractor for removal of paint or asbestos abatement is to be performed during the Contract, provide traffic control as shown on the plans and coordinate and cooperate with the separate contractor. Continue other work detailed in the plans not directly involved in the paint removal or asbestos abatement work. Coordinate with the Department the timing of the separate contractor's work in advance in order to allow the Department to schedule work with the separate contractor. Work for the traffic control and other work will not be paid for directly but will be subsidiary to pertinent Items.

SPECIAL PROVISION
006---047
Control of Materials

For this project, Item 006, "Control of Materials," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 6.4. Sampling, Testing and Inspection is supplemented by the following:

Meet with the Engineer and choose either the Department or a Department-selected Commercial Lab (CL) for conducting the subset of project-level sampling and testing shown in Table 1, "Select Guide Schedule Sampling and Testing." Selection may be made on a test by test basis. CLs will meet the testing turnaround times shown (includes test time and time for travel/sampling and reporting) and in all cases issue test reports as soon as possible.

If the Contractor chooses a Department-selected CL for any Table 1 sampling and testing:

- notify the Engineer, District Lab, and the CL of project scheduling that may require CL testing;
- provide the Engineer, District Lab, and CL at least 24 hours notice by phone and e-mail;
- reimburse the Department for CL Table 1 testing using the contract fee schedule for the CL (including mileage and travel/standby time) at the minimum guide schedule testing frequencies;
- reimburse the Department for CL Table 1 testing above the minimum guide schedule frequencies for retesting when minimum frequency testing results in failures to meet specification limits;
- agree with the Engineer and CL upon a policy regarding notification for testing services;
- give any cancellation notice to the Engineer, District Lab, and CL by phone and e-mail;
- reimburse the Department a $150 cancellation fee to cover technician time and mileage charges for previously scheduled work cancelled without adequate notice, which resulted in mobilization of technician and/or equipment by the CL; and
- all CL charges will be reimbursed to the Department by a deduction from the Contractor's monthly pay estimate.

If the CL does not meet the Table 1 turnaround times, testing charge to the Contractor will be reduced by 50% for the first late day and an additional 5% for each succeeding late day.

Approved CL project testing above the minimum testing frequencies in the Guide Schedule of Sampling and Testing, and not as the result of failing tests, will be paid by the Department.

Other project-level Guide Schedule sampling and testing not shown on Table 1 will be the responsibility of the Department.

Table 1
Select Guide Schedule Sampling and Testing (Note 1)

TxDOT Test	Test Description	Turn-Around Time (Calendar days)
	SOILS/BASE	
Tex-101-E	Preparation of Soil and Flexible Base Materials for Testing (included in other tests)	
Tex-104-E	Liquid Limit of Soils (included in 106-E)	
Tex-105-E	Plastic Limit of Soils (included in 106-E)	
Tex-106-E	Calculating the Plasticity Index of Soils	7
Tex-110-E	Particle Size Analysis of Soils	6
Tex-113-E	Moisture-Density Relationship of Base Materials	7
Tex-114-E	Moisture-Density Relationship of Subgrade and Embankment Soil	7
Tex-115-E	Field Method for In-Place Density of Soils and Base Materials	2
Tex-116-E	Ball Mill Method for the Disintegration of Flexible Base Material	5
Tex-117-E, Part II	Triaxial Compression Tests For Disturbed Soils and Base Materials (Part II)	6
Tex-113-E **w/** Tex-117-E	Moisture-Density Relationship of Base Materials **with** Triaxial Compression Tests For Disturbed Soils and Base Materials (Part II)	10
Tex-140-E	Measuring Thickness of Pavement Layer	2
Tex-145-E	Determining Sulfate Content in Soils - Colorimetric Method	4
	HOT MIX ASPHALT	
Tex-200-F	Sieve Analysis of Fine and Coarse Aggregate (dry, from ignition oven with known correction factors)	1 (Note 2)
Tex-203-F	Sand Equivalent Test	3
Tex-206-F **w/** Tex-207-F, Part I, **w/** Tex-227-F	**(Lab-Molded Density of Production Mixture – Texas Gyratory)** Method of Compacting Test Specimens of Bituminous Mixtures **with** Density of Compacted Bituminous Mixtures, Part I - Bulk Specific Gravity of Compacted Bituminous Mixtures, **with** Theoretical Maximum Specific Gravity of Bituminous Mixtures	1 (Note 2)
Tex-207-F, Part I **&/or** Part VI	**(In-Place Air Voids of Roadway Cores)** Density of Compacted Bituminous Mixtures, Part I- Bulk Specific Gravity of Compacted Bituminous Mixtures **&/or** Part VI - Bulk Specific Gravity of Compacted Bituminous Mixtures Using the Vacuum Method	1 (Note 2)
Tex-207-F, Part V	Density of Compacted Bituminous Mixtures, Part V- Determining Mat Segregation using a Density-Testing Gauge	3
Tex-207-F, Part VII	Density of Compacted Bituminous Mixtures, Part VII - Determining Longitudinal Joint Density using a Density-Testing Gauge	4
Tex-212-F	Moisture Content of Bituminous Mixtures	3
Tex-217-F	Deleterious Material and Decantation Test for Coarse Aggregate	4
Tex-221-F	Sampling Aggregate for Bituminous Mixtures, Surface Treatments, and LRA (included in other tests)	
Tex-222-F	Sampling Bituminous Mixtures (included in other tests)	
Tex-224-F	Determination of Flakiness Index	3
Tex-226-F	Indirect Tensile Strength Test (production mix)	4
Tex-235-F	Determining Draindown Characteristics in Bituminous Materials	3
Tex-236-F (Correction Factors)	Asphalt Content from Asphalt Paving Mixtures by the Ignition Method (Determining Correction Factors)	4
Tex-236-F	Asphalt Content from Asphalt Paving Mixtures by the Ignition Method (Production Mixture)	1 (Note 2)
Tex-241-F **w/** Tex-207-F, Part I, **w/** Tex-227-F	**(Lab-Molded Density of Production Mixture – Superpave Gyratory)** Superpave Gyratory Compacting of Specimens of Bituminous Mixtures (production mixture) **with** Density of Compacted Bituminous Mixtures, Part I- Part I - Bulk Specific Gravity of Compacted Bituminous Mixtures, **with** Theoretical Maximum Specific Gravity of Bituminous Mixtures	1 (Note 2)

Tex-242-F	Hamburg Wheel-Tracking Test (production mix, molded samples)	3
Tex-244-F	Thermal Profile of Hot Mix Asphalt	1
Tex-246-F	Permeability of Water Flow of Hot Mix Asphalt	3
Tex-280-F	Flat and Elongated Particles	3
Tex-530-C	Effect of Water on Bituminous Paving Mixtures (production mix)	4
AGGREGATES		
Tex-400-A	Sampling Flexible Base, Stone, Gravel, Sand, and Mineral Aggregates	3
Tex-410-A	Abrasion of Coarse Aggregate Using the Los Angeles Machine	5
Tex-411-A	Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate	12
Tex-461-A	Degradation of Coarse Aggregate by Micro-Deval Abrasion	5
CHEMICAL		
Tex-612-J	Acid Insoluble Residue for Fine Aggregate	4
GENERAL		
HMA Production Specialist [TxAPA – Level 1-A] ($/hr)		
HMA Roadway Specialist [TxAPA – Level 1-B] ($/hr)		
Technician Travel/Standby Time ($/hr)		
Per Diem ($/day – meals and lodging)		
Mileage Rate ($/mile from closest CL location)		

Note 1– Turn-Around Time includes test time and time for travel/sampling and reporting.
Note 2 – These tests require turn-around times meeting the governing specifications. Provide test results within the stated turn-around time. CL is allowed one additional day to provide the signed and sealed report.

2004 Specifications

SPECIAL PROVISION

007---918

Legal Relations and Responsibilities

For this project, Item 7, "Legal Relations and Responsibilities" of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 7.4. Insurance and Bonds is voided and replaced by the following:

As specified in Article 3.4, "Execution of Contract," provide the Department with a Certificate of Insurance verifying the types and amounts of coverage shown in Table 1. The Certificate of Insurance must be in a form approved by the Texas Department of Insurance Any Certificate of Insurance provided shall be available for public inspection.

Table 1
Insurance Requirements

Type of Insurance	Amount of Coverage
Commercial General Liability Insurance	Not Less Than: $600,000 each occurrence
Business Automobile Policy	Not Less Than: $600,000 combined single limit
Workers' Compensation	Not Less Than: Statutory
All Risk Builder's Risk Insurance (For building-facilities contracts only)	100% of Contract Price

By signing the Contract, the Contractor certifies compliance with all applicable laws, rules, and regulations pertaining to workers' compensation insurance or legitimate alternates. This certification includes all subcontractors. Pay all deductibles stated in the policy. Subcontractors must meet the requirements of Table 1 either through their own coverage or through the Contractor's coverage.

Insurances must cover the contracted work for the duration of the Contract and must remain in effect until final acceptance. Failure to obtain and maintain insurance for the contracted work may result in suspension of work or default of the Contract. If the insurance expires and coverage lapses for any reason, stop all work until the Department receives an acceptable Certificate of Insurance.

The Workers' Compensation policy must include a waiver of subrogation endorsement in favor of the State.

For building-facilities contracts, provide All Risk Builder's Risk Insurance to protect the Department against loss by storm, fire or extended coverage perils on work and materials intended for use on the project including the adjacent structure. Name the Department under the Lost Payable Clause.

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

Article 7.8. Hauling and Loads on Roadways and Structures is supplemented by the following:

D. Stockpiling of Materials. Do not store or stockpile material on bridge structures without written permission. If required, submit a structural analysis and supporting documentation by a licensed professional engineer for review by the Engineer. Permission may be granted if the Engineer finds that no damage or overstresses in excess of those normally allowed for occasional overweight loads will result to structures that will remain in use after Contract completion. Provide temporary matting or other protective measures as directed.

Article 7.14. Contractor's Responsibility for Work, Section B. Appurtenances is voided and replaced by the following:

B. Appurtenances.

1. **Unreimbursed Repair.** Except for destruction (not reusable) due to hurricanes, reimbursement will not be made for repair of damage to the following temporary appurtenances, regardless of cause:
   - signs,
   - barricades,
   - changeable message signs, and
   - other work zone traffic control devices.

   Crash cushion attenuators and guardrail end treatments are the exception to the above listing and are to be reimbursed in accordance with Section 7.14.B.2, "Reimbursed Repair."

   For the devices listed in this section, reimbursement may be made for damage due to hurricanes. Where the contractor retains replaced appurtenances after completion of the project, the Department will limit the reimbursement to the cost that is above the salvage value at the end of the project.

2. **Reimbursed Repair.** Reimbursement will be made for repair of damage due to the causes listed in Section 7.14.A, "Reimbursable Repair," to appurtenances (including temporary and permanent crash cushion attenuators and guardrail end treatments).

Article 7.15. Electrical Requirements, Section A. Definitions, Section 3. Certified Person is voided and replaced by the following:

> **3. Certified Person.** A certified person is a person who has passed the test from the TxDOT course TRF450, "TxDOT Roadway Illumination and Electrical Installations" or other courses as approved by the Traffic Operations Division. Submit a current and valid TRF certification upon request. On June 1, 2011, Texas Engineering Extension Service (TEEX) certifications for "TxDOT Electrical Systems" course will no longer be accepted. All TRF 450 certifications that have been issued for "TxDOT Roadway Illumination and Electrical Installations" course that expire before June 1, 2011 will be accepted until June 1, 2011.

Article 7.15. Electrical Requirements, Section A. Definitions, Section 4. Licensed Electrician is voided and replaced by the following:

> **4. Licensed Electrician.** A licensed electrician is a person with a current and valid unrestricted master electrical license, or unrestricted journeyman electrical license that is supervised or directed by an unrestricted master electrician. An unrestricted master electrician need not be on the work locations at all times electrical work is being done, but the unrestricted master electrician must approve work performed by the unrestricted journeyman. Licensed electrician requirements by city ordinances do not apply to on state system work.

The unrestricted journeyman and unrestricted master electrical licenses must be issued by the Texas Department of Licensing and Regulation or by a city in Texas with a population of 50,000 or greater that issues licenses based on passing a written test and demonstrating experience.

The Engineer may accept other states' electrical licenses. Submit documentation of the requirements for obtaining that license. Acceptance of the license will be based on sufficient evidence that the license was issued based on:

- passing a test based on the NEC similar to that used by Texas licensing officials, and
- sufficient electrical experience commensurate with general standards for an unrestricted master and unrestricted journeyman electrician in the State of Texas.

Article 7.19. Preservation of Cultural and Natural Resources and the Environment is supplemented by the following:

G. Asbestos Containing Material. In Texas, the Department of State Health Services (DSHS), Asbestos Programs Branch, is responsible for administering the requirements of the National Emissions Standards for Hazardous Air Pollutants, 40 CFR, Subpart M (NESHAP) and the Texas Asbestos Health Protection Rules (TAHPR). Based on EPA guidance and regulatory background information, bridges are considered to be a regulated "facility" under NESHAP. Therefore, federal standards for demolition and renovation apply.

Provide notice to the Department of demolition or renovation to the structures listed in the plans at least 30 calendar days prior to initiating demolition or renovation of each structure or load bearing member. Provide the scheduled start and completion date of structure demolition, renovation, or removal.

When demolition, renovation, or removal of load bearing members is planned for several phases, provide the start and completion dates identified by separate phases.

DSHS requires that notifications be postmarked at least 10 working days prior to initiating demolition or renovation. If the date of actual demolition, renovation, or removal is changed, the Department will be required to notify DSHS at least 10 days in advance of the work. This notification is also required when a previously scheduled (notification sent to DSHS) demolition, renovation or removal is delayed. Therefore, if the date of actual demolition, renovation, or removal is changed, provide the Engineer, in writing, the revised dates in sufficient time to allow for the Department's notification to DSHS to be postmarked at least 10 days in advance of the actual work.

Failure to provide the above information may require the temporary suspension of work under Article 8.4, "Temporary Suspension of Work or Working Day Charges," due to reasons under the control of the Contractor. The Department retains the right to determine the actual advance notice needed for the change in date to address post office business days and staff availability.

Article 7.20, Agricultural Irrigation. This Item is supplemented by the following:

Regulate the sequence of work and make provisions as necessary to provide for agricultural irrigation or drainage during the work. Meet with the Irrigation District or land owner to determine the proper time and sequence when irrigation demands will permit shutting-off water flows to perform work.

Unless otherwise provided on the plans, the work required by these provisions will not be paid for directly but shall be considered as subsidiary work pertaining to the various bid items of this contract.

2004 Specifications

SPECIAL PROVISION

008---119

Prosecution and Progress

For this project, Item 8, "Prosecution and Progress," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 8.8. Subcontracting, is supplemented with the following:

For all DBE subcontracts including all tiered DBE subcontracts, submit a copy of the executed subcontract agreement.

2004 Specifications

SPECIAL PROVISION

009---009

Measurement and Payment

For this project, Item 009, "Measurement and Payment," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 9.6. Progress Payments, Section A, Retainage is voided and replaced by the following:

A. Retainage. Retainage will not be withheld on this project.

Article 9.6. Progress Payments, Section B, Payment Provisions for Subcontractors is voided and replaced by the following:

B. Payment Provisions for Subcontractors. For the purposes of this Article only, the term subcontractor includes suppliers and the term work includes materials provided by suppliers at a location approved by the department. Pay the subcontractors for work performed within 10 days after receiving payment for the work performed by the subcontractor. Also, pay any retainage on a subcontractor's work within 10 days after satisfactory completion of all of the subcontractor's work. Completed subcontractor work includes vegetative establishment, test, maintenance, performance, and other similar periods that are the responsibility of the subcontractor.

For the purpose of this Section, satisfactory completion is accomplished when:

- the subcontractor has fulfilled the Contract requirements of both the Department and the subcontract for the subcontracted work, including the submittal of all information required by the specifications and the Department; and
- the work done by the subcontractor has been inspected, approved, and paid by the Department.

The inspection and approval of a subcontractor's work does not eliminate the Contractor's responsibilities for all the work as defined in Article 7.14, "Contractor's Responsibility for Work."

The Department may pursue actions against the Contractor, including withholding of estimates and suspending the work, for noncompliance with the subcontract requirements of this Section upon receipt of written notice with sufficient details showing the subcontractor has complied with contractual obligations as described in this Article.

These requirements apply to all tiers of subcontractors. Incorporate the provisions of this Article into all subcontract or material purchase agreements.

2004 Specifications

SPECIAL PROVISION

009---015

Measurement and Payment

For this project, Item 9, "Measurement and Payment," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 9.5. Force Account, B. Insurance and Taxes is replaced by the following:

B. Labor Burden. An additional 55% of the labor cost, excluding the 25% compensation provided in Section 9.5.A, "Labor," will be paid as compensation for labor insurance and labor taxes including the cost of premiums on non-project specific liability (excluding vehicular) insurance, workers compensation insurance, Social Security, unemployment insurance taxes, and fringe benefits.

2004 Specifications

SPECIAL PROVISION

100---002

Preparing Right of Way

For this project, Item 100, "Preparing Right of Way," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 100.4. Payment. The second paragraph is voided and replaced by the following:

Total payment of this Item will not exceed 10% of the original contract amount until final acceptance. The remainder will be paid on the estimate after the final acceptance under Article 5.8, "Final Acceptance."

2004 Specifications

SPECIAL PROVISION

164---002

Seeding For Erosion Control

Item 164, "Seeding For Erosion Control," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 164.3. Construction. The following is added after the first sentence:

Use approved equipment to vertically track the seedbed as shown on the plans or as directed by the Engineer.

2004 Specifications

SPECIAL PROVISION
247---033
Flexible Base

For this project, Item 247, "Flexible Base," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 247.2. Materials, Section A. Aggregate, Table 1. Material Requirements is replaced by the following:

Table 1
Material Requirements

Property	Test Method	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Master gradation sieve size (cumulative % retained)	Tex-110-E				As shown on the plans	
2-1/2 in.		–	0	0		0
1-3/4 in.		0	0–10	0–10		0-5
7/8 in.		10–35	–	–		10–35
3/8 in.		30–50	–	–		35–65
No. 4		45–65	45–75	45–75		45–75
No. 40		70–85	60–85	50–85		70–90
Liquid Limit, % max.[1]	Tex-104-E	35	40	40	As shown on the plans	35
Plasticity Index, max.[1]	Tex-106-E	10	12	12	As shown on the plans	10
Plasticity index, min.[1]		As shown on the plans				
Wet ball mill, % max.[2]	Tex-116-E	40	45	–	As shown on the plans	40
Wet ball mill, % max. increase passing the No. 40 sieve		20	20	–	As shown on the plans	20
Classification, max. [3]	Tex-117-E	When shown on the plans	When shown on the plans	–	As shown on the plans	-
Min. compressive strength, psi	Tex-117-E				As shown on the plans	
lateral pressure 0 psi		45	35	–		–
lateral pressure 3 psi		–	–	–		90
lateral pressure 15 psi		175	175	–		175

1. Determine the plastic index in accordance with Tex-107-E (linear shrinkage) when liquid limit is unattainable as defined in Tex-104-E.
2. When a soundness value is required by the plans, test material in accordance with Tex-411-A.
3. When Classification is required by the plans, a triaxial Classification of 1.0 or less for Grades 1 and 2.3 or less for Grade 2 is required. The Classification requirement for Grade 4 will be as shown on the plans.

Article 247.2. Materials, Section A. Aggregate, Section 3. Recycled Material, Section b. Recycled Material (Including Crushed Concrete) Requirements, Section (1), Contractor Furnished Recycled Materials is supplemented by the following:

Provide recycled materials that have a maximum sulfate content of 3000 ppm when tested in accordance with Tex-145-E.

Article 247.4. Construction, Section C. Compaction is supplemented by the following:

Before final acceptance, the Engineer will select the locations of tests and measure the flexible base depth in accordance with Tex-140-E when Complete in Place measurement is specified. Correct areas deficient by more than 1/2 in. in thickness by scarifying, adding material as required, reshaping, recompacting, and refinishing at the Contractor's expense.

Article 247.4. Construction, Section C. Compaction, Section 2. Density Control first paragraph is replaced by the following:

Compact to at least 100% of the maximum dry density determined by Tex-113-E, unless otherwise shown on the plans. Maintain moisture during compaction at not less than 1 percentage point below the optimum moisture content determined by Tex-113-E. Determine the moisture content of the material in accordance with Tex-115-E or Tex-103-E during compaction daily and report the results the same day to the Engineer, unless otherwise shown on the plans or directed.

2004 Specifications

SPECIAL PROVISION

260---003

Lime Treatment (Road-Mixed)

For this project, Item 260, "Lime Treatment (Road-Mixed)," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 260.2. Materials, Section A. Lime. The first two sentences are voided and replaced by the following:

Furnish lime that meets the requirements of DMS-6350 "Lime and Lime Slurry," and DMS-6330, "Prequalification of Lime Sources." Use hydrated lime, commercial lime slurry, quicklime, or carbide lime slurry as shown on the plans.

Article 260.3. Equipment, Section B. Slurry Equipment. The last sentence of the second paragraph is voided and replaced by the following:

Equip the distributor truck with a sampling device in accordance with Tex-600-J, Part I, when using commercial lime slurry or carbide lime slurry.

Article 260.4. Construction, Section C. Application of Lime, Section 2. Slurry Placement. The first paragraph is voided and replaced with the following:

Provide slurry free of objectionable materials, at or above the minimum dry solids content, and with a uniform consistency that will allow ease of handling and uniform application. Deliver commercial lime slurry or carbide lime slurry to the jobsite, or use hydrated lime or quicklime to prepare lime slurry at the jobsite or other approved location, as specified. When dry quicklime is applied as a slurry, use 80 percent of the amount shown on the plans.

Article 260.4. Construction, Section D. Mixing. The third paragraph is voided and replaced with the following:

After mixing, the Engineer may sample the mixture at roadway moisture and test in accordance with Tex-101-E, Part III, to determine compliance with the gradation requirements in Table 1.

Article 260.5. Measurement, Section A. Lime is supplemented by the following:

4. Carbide Lime Slurry. Lime slurry will be measured by the ton (dry weight) as calculated from the minimum percent dry solids content of the slurry, multiplied by the weight of the slurry in tons delivered.

Article 260.6. Payment. The first paragraph is voided and replaced by the following:

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid in accordance with Section 260.6.A, "Lime," and Section 260.6.B, "Lime Treatment."

Article 260.6. Payment, Section A. Lime. The first sentence is voided and replaced by the following:

A. Lime. Lime will be paid for at the unit price bid for "Lime" of one of the following types:

- Hydrated Lime (Dry),
- Hydrated Lime (Slurry),
- Commercial Lime Slurry,
- Quicklime (Dry),
- Quicklime (Slurry), or
- Carbide Lime Slurry.

Article 260.6. Payment, Section B. Lime Treatment is voided and replaced by the following:

B. Lime Treatment. Lime treatment will be paid for at the unit price bid for "Lime Treatment (Existing Material)," "Lime Treatment (New Base)," or "Lime Treatment (Mixing Existing Material and New Base)," for the depth specified. No payment will be made for thickness or width exceeding that shown on the plans. This price is full compensation for shaping existing material, loosening, mixing, pulverizing, spreading, applying lime, compacting, finishing, curing, curing materials, blading, shaping and maintaining shape, replacing mixture, disposing of loosened materials, processing, hauling, preparing secondary subgrade, water, equipment, labor, tools, and incidentals.

2004 Specifications

SPECIAL PROVISION

316---016

Surface Treatments

For this project, Item 316, "Surface Treatments", of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 316.3.A.3. Computerized Distributor. This section is voided and not replaced.

Article 316.4.D.3. Asphalt Material Designed for Winter Use. This section is voided and replaced by the following:

A. **Cold Weather Surface Treatments.** When asphalt application is allowed outside of the above temperature restrictions, the Engineer will approve the binder grade and the air and surface temperatures for asphalt material application. Apply surface treatment at air and surface temperatures as directed.

Article 316.5.A. Asphalt Material. This section is voided and replaced by the following:

B. **Asphalt Material.** Asphalt material will be measured at the applied temperature by strapping the tank just before and just after road application and determining the net volume in gallons from the distributor's calibrated strap stick. The quantity to be measured for payment will be the number of gallons used, as directed, in the accepted surface treatment.

2004 Specifications

SPECIAL PROVISION

462---015

Concrete Box Culverts and Storm Drains

For this project, Item, 462, "Concrete Box Culverts and Storm Drains," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 462.2. Materials, Section A. General. The last two paragraphs are voided and replaced by the following:

Furnish material for machine-made precast boxes in accordance with DMS-7310, "Reinforced Concrete Pipe and Machine-Made Precast Box Culvert Fabrication and Plant Qualification."

Article 462.2. Materials, Section B. Fabrication, 3. Machine-Made Precast is voided and replaced by the following:

Machine-made precast box culvert fabrication plants must be approved in accordance with DMS-7310, "Reinforced Concrete Pipe and Machine-Made Precast Box Culvert Fabrication and Plant Qualification." The Construction Division maintains a list of approved machine-made precast box culvert plants.

Fabricate machine-made precast boxes in accordance with DMS-7310.

Article 462.2. Materials, Section C. Testing, 2. Formed Precast is voided and replaced by the following:

Make, cure, and test compressive test specimens in accordance with Tex-704-I.

Article 462.2 Materials, Section C. Testing, 3. Machine-Made Precast is voided and replaced by the following:

Make, cure, and test compressive test specimens in accordance with DMS-7310.

Article 462.2. Materials, Section D. Lifting Holes. The first paragraph is voided and replaced by the following:

For precast boxes, provide no more than 4 lifting holes in each section. Lifting holes may be cast, cut into fresh concrete after form removal, or drilled. Provide lifting holes of sufficient size for adequate lifting devices based on the size and weight of the box section. Do not use lifting holes larger than 3 in. in diameter. Do not cut more than 5 in. in any direction of reinforcement per layer for lifting holes.

Article 462.2. Materials, Section E. Marking. The first paragraph is voided and replaced by the following:

Mark precast boxes with the following:

- name or trademark of fabricator and plant location;
- ASTM designation;
- date of manufacture;
- box size;
- minimum and maximum fill heights;
- designated fabricator's approval stamp;
- boxes to be used for jacking and boring (when applicable);
- designation "SR" for boxes meeting sulfate-resistant concrete plan requirements (when applicable); and
- match marks for proper installation, when required under Section 462.2.F, "Tolerances."

Article 462.2. Materials, Section F. Tolerances. is voided and replaced by the following:

Ensure that precast sections meet the permissible variations listed in ASTM C 1577 and the following requirement:

- The sides of a section at each end do not vary from being perpendicular to the top and bottom by more than 1/2 in. when measured diagonally between opposite interior corners.

Ensure that wall and slab thicknesses are not less than shown on the plans except for occasional deficiencies not greater than 3/16 in. or 5%, whichever is greater. If proper jointing is not affected, thicknesses in excess of plan requirements are acceptable.

Deviations from the above tolerances will be acceptable if the sections can be fitted at the plant or job site and the joint opening at any point does not exceed 1 in. Use match marks for proper installation on sections that have been accepted in this manner.

1. **Boxes for Jacking Operations.** For boxes to be used for jacking operations (as defined in Item 476, "Jacking, Boring, or Tunneling Pipe or Box,") meet the following additional requirements:
    - The box ends must be square such that no point deviates more than 3/8 in. from a plane placed on the end of the box that is perpendicular to the box sides, and
    - The slab and wall thicknesses must not be less than specified on the plans and must not exceed the specified thickness by more than 1/2 in.

Article 462.2. Materials, Section G. Defects and Repair. The following paragraph is added:

Repair machine-made precast boxes in accordance with DMS-7310, "Reinforced Concrete Pipe and Machine-Made Precast Box Culvert Fabrication and Plant Qualification."

Article 462.2. Materials, Section H. Storage and Shipment. The following paragraph is added:

Store and ship machine-made precast boxes in accordance with DMS-7310, "Reinforced Concrete Pipe and Machine-Made Precast Box Culvert Fabrication and Plant Qualification."

Article 462.3 Construction, Section C. Jointing. The first paragraph is voided and replaced by the following:

Unless otherwise shown on the plans, use any of the jointing materials in accordance with the joint requirements specified in Item 464, "Reinforced Concrete Pipe." Rubber gasketed joints may be substituted for tongue and groove joints, provided they meet the requirements of ASTM C 1677 for design of the joints and permissible variations in dimensions.

2004 Specifications

SPECIAL PROVISION

464---006

Reinforced Concrete Pipe

For this project, Item 464, "Reinforced Concrete Pipe," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 464.2. Materials, Section A. Fabrication is voided and replaced by the following:

Fabrication plants must be approved by the Construction Division in accordance with DMS-7310, "Reinforced Concrete Pipe and Machine-Made Precast Concrete Box Culvert Fabrication and Plant Qualification," before furnishing precast reinforced concrete pipe for Department projects. The Construction Division maintains a list of approved reinforced concrete pipe plants.

Furnish material and fabricate reinforced concrete pipe in accordance with DMS-7310, "Reinforced Concrete Pipe and Machine-Made Precast Concrete Box Culvert Fabrication and Plant Qualification."

Article 464.2. Materials, Section B. Design, 1. General. Table 2 is voided and replaced by the following:

Table 2
Arch Pipe

Design Size	Equivalent Diameter (in.)	Rise (in.)	Span (in.)
1	18	13-1/2	22
2	21	15-1/2	26
3	24	18	28-1/2
4	30	22-1/2	36-1/4
5	36	26-5/8	43-3/4
6	42	31-5/16	51-1/8
7	48	36	58-1/2
8	54	40	65
9	60	45	73
10	72	54	88

Article 464.2 Materials, Section C. Physical Test Requirements is voided and not replaced.

Article 464.2. Materials, Section D. Markings. The first paragraph is voided and replaced by the following:

Furnish each section of reinforced concrete pipe marked with the following information specified in DMS-7310, "Reinforced Concrete Pipe and Machine-Made Precast Concrete Box Culvert Fabrication and Plant Qualification":

- class or D-Load of pipe,
- ASTM designation,
- date of manufacture,
- pipe size,
- name or trademark of fabricator and plant location,
- designated fabricator's approval stamp,
- pipe to be used for jacking and boring (when applicable), and
- designation "SR" for pipe meeting sulfate-resistant concrete plan requirements (when applicable).

Article 464.2. Materials, Section E. Inspection is voided and replaced by the following:

Provide access for inspection of the finished pipe at the project site before and during installation.

Article 464.2. Materials, Section F. Causes for Rejection is voided and replaced by the following:

Individual section of pipe may be rejected for any of the conditions stated in the Annex of DMS-7310, "Reinforced Concrete Pipe and Machine-Made Precast Concrete Box Culvert Fabrication and Plant Qualification."

Article 464.2. Materials, Section G. Repairs is voided and replaced by the following:

Make repairs if necessary as stated in the Annex of DMS-7310, "Reinforced Concrete Pipe and Machine-Made Precast Concrete Box Culvert Fabrication and Plant Qualification."

Article 464.2. Materials, Section H. Rejections is voided and not replaced.

SPECIAL PROVISION

465---002

Manholes and Inlets

For this project, Item 465, "Manholes and Inlets," of the Standard Specifications, is hereby voided and replaced with the articles below.

465.1 Description. Construct manholes and inlets, complete in place or to the stage detailed, including furnishing and installing frames, grates, rings and covers. Drainage junction boxes are classified as manholes.

465.2 Materials. Furnish materials in accordance with the followings:

- Item 420, "Concrete Structures"
- Item 421, "Hydraulic Cement Concrete"
- Item 440, "Reinforcing Steel"
- Item 471, "Frames, Grates, Rings, and Covers"

Cast-in-place manholes, inlets, risers, and appurtenances are acceptable unless otherwise shown. Alternate designs for cast-in-place items must be acceptable to the Engineer and must conform to functional dimensions and design loading. Alternate designs must be designed and sealed by a licensed professional engineer.

A. Concrete. Furnish Class H concrete for formed precast manholes and inlets. Furnish concrete per DMS-7310 for machine-made precast manholes and inlets. Air-entrained concrete will not be required in precast concrete members. Furnish Class C concrete for cast-in-place manholes and inlets unless otherwise shown on the plans.

B. Mortar. Furnish Type S mortar in accordance with ASTM C270.

C. Timber. Provide sound timber for temporary covers when used with Stage I construction (see Section 465.3, "Construction") that is a minimum of 3 in. nominal thickness and reasonably free of knots and warps.

D. Other Materials. Commercial-type hardware of other materials may be used with prior approval.

465.3 Construction. All types of manholes and inlets may be built either complete or in 2 stages, described as Stage I and Stage II. Build manholes and inlets designed to match the final roadway surface.

Construct the Stage I portion of manholes and inlets as shown on the plans or as specified in this Item. Furnish and install a temporary cover as approved by the Engineer.

For Stage I construction of cast iron or steel inlet units, furnish and install the storm drain pipe and a temporary plug for the exposed end of the storm drain pipe from the storm drain to a point below the top of curb indicated on the plans.

Construct Stage II after the pavement structure is substantially complete unless otherwise approved by the Engineer.

For Stage II, construct the remaining wall height and top of manhole or inlet and furnish and install any frames, grates, rings and covers, manhole steps, curb beams, or collecting basins required.

Construct cast-in-place manholes and inlets in accordance with Item 420, "Concrete Structures." Forms will be required for all concrete walls. Outside wall forms for cast-in-place concrete may be omitted with the approval of the Engineer if the surrounding material can be trimmed to a smooth vertical face.

A. Precast Manholes and Inlets. Construct formed precast manholes and inlets in accordance with Item 420, except as otherwise noted in this Item. Construct machine-made precast manholes and inlets in accordance with ASTM C 478, except as otherwise noted in this Item. Mix and place concrete for machine-made manholes and inlets per the requirements of DMS-7310. Conform to the product permissible variations and rejection criteria stated in ASTM C 478 for machine-made precast manholes and inlets. Cure all precast units in accordance with Item 424, "Precast Concrete Structures (Fabrication)."

Multi-project fabrication plants (as defined in Item 424, "Precast Concrete Structures (Fabrication)") that produce manholes and inlets will be approved by the Construction Division in accordance with DMS-7340, "Qualification Procedure for Multi-Project Fabrication Plants of Precast Concrete Manholes and Inlets." The Construction Division maintains a list of approved multi-project plants.

1. **Lifting Holes.** For precast units, provide no more than 4 lifting holes in each section. Lifting holes may be cast, cut into fresh concrete after form removal, or drilled. Provide lifting holes large enough for adequate lifting devices based on the size and weight of the section. The maximum hole diameter is 3 in. at the inside surface of the wall and 4 in. at the outside surface. Do not cut more than 5 in. in any direction of reinforcement per layer for lifting holes. Repair spalled areas around lifting holes.

2. **Marking.** Clearly mark each precast manhole and inlet unit with the following information:
   - name or trademark of fabricator and plant location;
   - product designation;
   - ASTM designation (if applicable);
   - date of manufacture;
   - designated fabricator's approval stamp; and
   - designation "SR" for product meeting sulfate-resistant concrete plan requirements (when applicable).

3. **Storage and Shipment.** Store precast units on a level surface. Do not ship units until design strength requirements have been met.

B. Excavation, Shaping, Bedding, and Backfill. Excavate, shape, bed, and backfill in accordance with Item 400, "Excavation and Backfill for Structures." For all manhole and inlet structures where joints consist of rubber boots, rubber gaskets, bulk or preformed joint sealant, immediate backfilling is permitted. Take precautions in placing and compacting the backfill to avoid any movement of manholes and inlets. Remove and replace manholes and inlets damaged by the Contractor at no expense to the Department.

C. Manholes and Inlets for Precast Concrete Pipe Storm Drains. Construct manholes and inlets for precast concrete pipe storm drains as soon as is practicable after storm drain lines into or through the manhole or inlet locations are completed. Neatly cut all storm drains at the inside face of the walls of the manhole or inlet and point up with mortar.

D. Manholes and Inlets for Monolithic Pipe Storm Drains. Construct bases for manholes and inlets on monolithic pipe storm drains either monolithically with the storm drain or after the storm drain is constructed.

E. Manholes for Box Storm Drains. Cast bases for manholes for box storm drains as an integral part of the storm drain. Construct manholes before backfilling, or cover the manhole opening temporarily and backfill the storm drain as a whole.

F. Inverts. Shape and route floor inverts passing out or through the manhole or inlet as shown on the plans. Shape by adding and shaping mortar or concrete after the base is cast or by placing the required additional material with the base.

G. Finishing Complete Manholes and Inlets. Complete manholes and inlets in accordance with the plans. Backfill to original ground elevation in accordance with Item 400, "Excavation and Backfill for Structures."

H. Finishing Stage I Construction. Complete Stage I construction by constructing the walls to the elevations shown on the plans and backfilling to required elevations in accordance with Item 400, "Excavation and Backfill for Structures."

I. Stage II Construction. Construct subgrade and base course or concrete pavement construction over Stage I manhole or inlet construction, unless otherwise approved by the Engineer. Excavate to expose the top of Stage I construction and complete the manhole or inlet in accordance with the plans and these Specifications, including backfill and cleaning of all debris from the bottom of the manhole or inlet.

J. Inlet Units. Install cast iron or steel inlet units in conjunction with the construction of concrete curb and gutter. Set the inlet units securely in position before placing concrete for curb and gutter. Form openings for the inlets and recesses in curb and gutter as shown on the plans. Place and thoroughly consolidate concrete for curb and gutter adjacent to inlets and around the inlet castings and formed openings and recesses without displacing the inlet units.

465.4 Measurement. All manholes and inlets satisfactorily completed in accordance with the plans and specifications will be measured by each manhole or inlet, complete, or by each manhole or inlet completed to the stage of construction required by the plans.

465.5 Payment. The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for as follows:

A. Complete Manholes. Payment for complete manholes will be made at the unit price bid for "Manhole (Complete)" of the type specified.

B. Complete Inlets. Payment for inlets will be made at the unit price bid for "Inlet (Complete)," of the type specified.

C. Manholes Stage I. Payment for Manholes, Stage I, will be made at the unit price bid for each "Manhole (Stage I)" of the type specified.

D. Manholes Stage II. Payment for Manholes, Stage II, will be made at the unit price bid for each "Manhole (Stage II)" of the type specified.

E. Inlets Stage I. Payment for Inlets, Stage I, will be made at the unit price bid for each "Inlet (Stage I)" of the type specified.

F. Inlets Stage II. Payment for Inlets, Stage II, will be made at the unit price bid for each "Inlet (Stage II)" of the type specified.

These price are full compensation for concrete, reinforcing steel, mortar, frames, grates, rings and covers, excavation, and backfill and for all other materials, tools, equipment, labor, and incidentals

2004 Specifications

SPECIAL PROVISION

500---011

Mobilization

For this project, Item 500, "Mobilization," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 500.1. Description is supplemented by the following:

Work for this Item includes submissions required by the Contract.

Article 500.3. Payment, Section A is voided and replaced by the following:

A. Payment will be made upon presentation of a paid invoice for the payment or performance bonds and required insurance. The combined payment for bonds and insurance will be no more than 10% of the mobilization lump sum or 1% of the total Contract amount, whichever is less. However, payment will be made for the actual cost of the paid invoice when the combined payment for bonds and insurance exceeds 10% of the mobilization lump sum or 1% of the total Contract amount, whichever is less.

Article 500.3. Payment, Section F is voided and replaced by the following:

F. Upon final acceptance, 97% of the mobilization lump sum bid will be paid. Previous payments under this Item will be deducted from this amount.

Article 500.3. Payment is supplemented by the following:

G. Payment for the remainder of the lump sum bid for "Mobilization" will be made after all submittals are received, final quantities have been determined and when any separate vegetative establishment and maintenance, test and performance periods provided for in the Contract have been successfully completed.

2004 Specifications

SPECIAL PROVISION

502---033

Barricades, Signs, and Traffic Handling

For this project, Item 502, "Barricades, Signs, and Traffic Handling," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 502.4. Payment, Section C. Maximum Total Payment Prior to Acceptance is voided and replaced by the following:

C. Maximum Total Payment Prior to Acceptance. The total payment for this Item will not exceed 10% of the total Contract amount before final acceptance in accordance with Article 5.8, "Final Acceptance." The remaining balance will be paid in accordance with Section 502.4.E, "Balance Due."

2004 Specifications

SPECIAL PROVISION

530---006

Intersections, Driveways, and Turnouts

For this project, Item 530, "Intersections, Driveways, and Turnouts," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 530.5. Payment. The first paragraph is voided and replaced by the following:

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Intersections," "Driveways," "Turnouts," "Intersections, Driveways, and Turnouts," or "Driveways and Turnouts" of the surface specified.

2004 Specifications

SPECIAL PROVISION

560---001

Mailbox Assemblies

For this project, Item 560, "Mailbox Assemblies," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 560.5. Payment is voided and replaced by the following:

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Mailbox Installation (Single)," of the type specified, "Mailbox Installation (Double)," of the type specified, or "Mailbox Installation (Multiple)," of the type specified. This price is full compensation for installing mailboxes and reflectors in permanent locations, materials, equipment, labor, tools, and incidentals. Removing existing and temporary mailbox assemblies and installing and moving temporary mailbox assemblies will not be paid for directly, but will be subsidiary to pertinent Items.

2004 Specifications

SPECIAL PROVISION

620---001

Electrical Conductors

For this project, Item 620, "Electrical Conductors," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 620.2 Materials. The fourth and fifth paragraphs are void and replaced by the following:

Use white insulation for grounded (neutral) conductors, except that grounded conductors AWG No. 4 and larger may be black with white tape marking at every accessible location. Do not use white insulation or marking for any other conductor except control wiring specifically shown on the plans.

Ensure that insulated grounding conductors are green except that insulated grounding conductors AWG No. 4 and larger may be black with green tape marking at every accessible location. Do not use green insulation or marking for any other conductor except control wiring specifically shown on the plans.

2004 Specifications

SPECIAL PROVISION
628---003
Electrical Services

For this project, Item 628, "Electrical Services," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 628.5. Payment, **A. Installation** is voided and replaced by the following:

A. Installation. Except as provided for in the following paragraph, this price is full compensation for paying all fees, permits, and other costs; making arrangements with the utility company for all work and materials provided by the utility company; furnishing, installing, and connecting all components including poles, service supports, foundations, anchor bolts, riprap, enclosures, switches, breakers, conduit (from the service equipment including the elbow below ground), fittings, conductors (from the service equipment including the elbow below ground), brackets, bolts, hangers, and hardware; and equipment, labor, tools, and incidentals.

Costs for utility-owned power line extensions, connection charges, meter charges, and other charges will be paid for by the Department. The Department will reimburse the contractor the amount billed by the utility plus an additional 5% of the invoice cost will be paid for labor, equipment, administrative costs, superintendence, and profit.

2004 Specifications

SPECIAL PROVISION

672---034

Raised Pavement Markers

For this project, Item 672, "Raised Pavement Markers," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 672.2. Materials, Section B. Adhesives is supplemented by the following:

- The Contractor may propose alternate adhesive materials for consideration and approval by the Engineer.

Article 672.3. Construction. The sixth paragraph is voided and replaced by the following:

Use the following adhesive materials for placement jiggle bar tile, reflectorized pavement markers, and traffic buttons unless otherwise shown on the plans:

- standard or flexible bituminous adhesive for applications on bituminous pavements.
- epoxy adhesive or flexible bituminous adhesive for applications on hydraulic cement concrete pavements.

Use epoxy adhesive for plowable reflectorized pavement markers.

Article 672.3. Construction is supplemented by the following:

Provide a 30-day performance period that begins the day following written acceptance for each separate location. The date of written acceptance will be the last calendar day of each month for the RPMs installed that month for the completed separate project locations. This written acceptance does not constitute final acceptance.

Replace all missing, broken or non-reflective RPMs. Visual evaluations will be used for these determinations. Upon request, the Engineer will allow a Contractor representative to accompany the Engineer on these evaluations.

The Engineer may exclude RPMs from the replacement provisions of the performance, provided the Engineer determines that the failure is a result of causes other than defective material or inadequate installation procedures. Examples of outside causes are extreme wear at intersections, damage by snow or ice removal, and pavement failure.

Replace all missing or non-reflective RPMs identified during the performance period within 30 days after notification. The end of the performance period does not relieve the Contractor from the performance deficiencies requiring corrective action identified during the performance period.

Article 672.5. Payment is supplemented by the following:

No additional payment will be made for replacement of RPMs failing to meet the performance requirements.

RPMs INSTALLATION RECORD

The 30 day performance period begins the day after written acceptance for each separate location. The date of written acceptance will be the last calendar day of each month for the RPMs installed that month for the completed separate project locations.

COUNTY HIGHWAY	CONTROL PROJECT	LIMITS FROM LIMITS TO	MONTH/YR OF INSTALLATION

Contractor signature _____ _____
Date

Department signature _____ _____
Date

2004 Specifications

SPECIAL PROVISION

682---003

Vehicle and Pedestrian Signal Heads

For this project, Item 682, "Vehicle and Pedestrian Signal Heads," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 682.2. Materials, Section B. General. The first and second paragraphs are voided and replaced by the following:

Provide vehicle signal heads in accordance with DMS-11120, "Vehicle Signal Heads" and DMS-11121, "12 Inch LED Traffic Signal Lamp Unit." Provide vehicle signal heads from manufacturers prequalified by the Department. The Traffic Operations Division maintains a list of prequalified vehicle signal head manufacturers.

Provide pedestrian signal heads in accordance with DMS-11130, "Pedestrian Signal Heads," and DMS-11131, "Pedestrian LED Countdown Signal Modules." Provide pedestrian signal heads from manufacturers pre-qualified by the Department. The Traffic Operations Division maintains a list of pre-qualified pedestrian signal head manufacturers.

2004 Specifications

SPECIAL PROVISION
TO
SPECIAL SPECIFICATION
1122--001
Temporary Erosion, Sedimentation, and Environmental Controls

For this project, Special Specification Item 1122, "Temporary Erosion, Sedimentation, and Environmental Controls" is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 3.C. Training is supplemented by the following:

The Environmental Management System (EMS) eLearning Courses and Department's EMS Policy Statement can be found at http://txdot.gov/business/ems_courses.htm. The following training has been developed in compliance with the Department's EMS program.

All Contractor and subcontractor employee's involved in the earthwork activities, small or large structures, storm water control measures, and seeding activities must complete the following training located at to https://www.txdot.gov/inside-txdot/division/environmental/programs/ems-courses.html. Training is provided by the Department at no cost to the Contractor and is valid for 3 years from the date of completion. The Engineer may require training at a frequency less than 3 years based on environmental needs.

- "Environmental Management System: Awareness Training for the Contractor (English and Spanish) (Approximate running time 20 minutes)," and
- "Storm Water: Environmental Requirements During Construction (English and Spanish) (Approximate running time 20 minutes)."

The CRPe, alternate CRPe designated for emergencies, Contractor's superintendent, and Contractor and subcontractor lead personnel involved in SWP3 activities must enroll and complete the training located at http://www.dedtraining.com/. Training is provided by a third party and is valid for 3 years from the date shown on the Certificate of Completion. Coordinate enrollment through the third party and pay associated fees for the following training:

- "Revegetation During Construction,"
- "Construction General Permit Compliance," and
- "Construction Stage Gate Checklist (CSGC)."

Training and associated fees will not be measured or paid for directly but are considered subsidiary to this Item.

2004 Specifications

SPECIAL PROVISION
TO
SPECIAL SPECIFICATION
6266--017
Video Imaging Vehicle Detection System

For this project, Special Specification Item 6266, "Video Imaging Vehicle Detection System," is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 1. Description. The second paragraph is voided and replaced by the following:

A VIVDS configuration for a single intersection will consist of variable focal length cameras, VIVDS card rack processor system, and all associated equipment required to setup and operate in a field environment including a video monitor and/or laptop (if required), connectors and camera mounting hardware.

Article 6. Camera Assembly, Section B. Camera and Lens Assembly. Section 2 is voided and replaced by the following:

2. The enclosure must allow the camera to operate satisfactorily over an ambient temperature range from -30°F to +140°F while exposed to precipitation as well as direct sunlight.

FHWA-1273 -- Revised May 1, 2012

REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS

I. General
II. Nondiscrimination
III. Nonsegregated Facilities
IV. Davis-Bacon and Related Act Provisions
V. Contract Work Hours and Safety Standards Act Provisions
VI. Subletting or Assigning the Contract
VII. Safety: Accident Prevention
VIII. False Statements Concerning Highway Projects
IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
X. Compliance with Governmentwide Suspension and Debarment Requirements
XI. Certification Regarding Use of Contract Funds for Lobbying

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding $10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under

this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are

applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor

will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding $2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 “Contract provisions and related matters” with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH–1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b.(1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or

will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b.(1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g. , the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

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

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.

3. Withholding for unpaid wages and liquidated damages. The FHWA or the contacting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.

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

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term "perform work with its own organization" refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
(2) the prime contractor remains responsible for the quality of the work of the leased employees;
(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.
2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost $25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1**. Instructions for Certification – First Tier Participants:**

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. “First Tier Covered Transactions” refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. **Instructions for Certification - Lower Tier Participants:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost $25,000 or more - 2 CFR Parts 180 and 1200)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the

department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

ATTACHMENT A - EMPLOYMENT AND MATERIALS PREFERENCE FOR APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS ROAD CONTRACTS

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

The wage rates listed are those predetermined by the Secretary of Labor and State Statue to be the minimum wages paid. To determine the applicable wage rate zone, a list entitled "TEXAS COUNTIES IDENTIFIED BY WAGE RATE ZONES" is provided in the contract. Any wage rate that is not listed must be submitted to the Engineer for approval. IMPORTANT NOTICE FOR STATE PROJECTS; only the controlling wage rate zone applies to the contract. Effective 1-6-2012

CLASS. #	CLASSIFICATION DESCRIPTION	ZONE TX07 1/6/12	ZONE TX08 1/6/12	ZONE TX11 1/6/12	ZONE TX12 1/6/12	ZONE TX14 1/6/12	ZONE TX16 1/6/12	ZONE TX18 1/6/12	ZONE TX34 1/6/12	ZONE TX35 1/6/12	ZONE TX37 1/6/12	ZONE TX38 1/6/12	ZONE TX40 1/6/12	ZONE TX41 1/6/12	ZONE TX54 1/6/12	ZONE TX56 1/6/12	ZONE TX63 1/6/12
1428	Agricultural Tractor Operator						$12.69					$12.35			$11.75		
1300	Asphalt Distributor Operator	$14.87	$13.48	$13.88			$15.55	$15.72	$13.28	$15.32	$15.62	$14.36	$14.25	$14.03	$13.75	$14.06	$14.40
1303	Asphalt Paving Machine Operator	$13.40	$12.25	$12.35	$13.87		$14.36	$14.20	$13.26	$13.99	$14.68	$12.92	$13.44	$12.53	$14.00	$14.32	$12.99
1106	Asphalt Raker	$12.28	$10.61	$12.02	$14.21		$12.12	$11.64	$11.44	$12.69	$12.05	$11.34	$11.67	$11.40	$12.59	$12.36	
1112	Batching Plant Operator, Asphalt																
1115	Batching Plant Operator, Concrete																
1214	Blaster																
1615	Boom Truck Operator						$18.36										
1444	Boring Machine Operator																
1305	Broom or Sweeper Operator	$11.21	$10.33	$10.08			$11.04	$11.62		$11.74	$11.41	$10.30		$10.23	$10.60	$12.68	$11.05
1144	Communications Cable Installer																
1124	Concrete Finisher, Paving and Structures	$13.55	$12.46	$13.16	$12.85		$12.56	$12.77	$12.44	$14.12	$13.04	$13.38		$12.80	$12.79	$12.98	$13.32
1318	Concrete Pavement Finishing Machine Operator						$15.48			$16.05		$19.31				$13.07	
1315	Concrete Paving, Curing, Float, Texturing Machine Operator											$16.34				$11.71	
1333	Concrete Saw Operator									$14.48	$17.33					$13.99	
1399	Concrete/Gunite Pump Operator																
1344	Crane Operator, Hydraulic 80 tons or less						$18.36			$18.12	$18.04	$20.21			$18.63	$13.86	
1345	Crane Operator, Hydraulic Over 80 Tons																
1342	Crane Operator, Lattice Boom 80 Tons or Less	$16.82	$14.39	$13.85			$15.87			$17.27		$14.67			$16.42	$14.97	
1343	Crane Operator, Lattice Boom Over 80 Tons						$19.38			$20.52		$17.49			$25.13	$15.80	
1306	Crawler Tractor Operator	$13.96	$16.63	$13.62			$15.67			$14.07	$13.15	$13.38			$14.60	$13.68	$13.50
1351	Crusher or Screen Plant Operator																
1446	Directional Drilling Locator						$11.67										
1445	Directional Drilling Operator						$17.24										
1139	Electrician	$20.96		$19.87			$26.35		$20.27	$19.80		$20.92				$27.11	
1347	Excavator Operator, 50,000 pounds or less	$13.46	$12.56	$13.67			$12.88	$14.38	$13.49	$17.19		$13.88			$14.09	$12.71	$14.42
1348	Excavator Operator, Over 50,000 pounds		$15.23	$13.52			$17.71			$16.99	$18.80	$16.22				$14.53	
1150	Flagger	$9.30	$9.10	$8.50		$8.81	$9.45	$8.70		$10.06	$9.71	$9.03		$9.08	$9.90	$10.33	$8.10
1151	Form Builder/Setter, Structures	$13.52	$12.30	$13.38	$12.91	$12.71	$12.87	$12.38	$12.26	$13.84	$12.98	$13.07	$13.61	$12.82	$14.73	$12.23	$12.25
1160	Form Setter, Paving & Curb	$12.36	$12.16	$13.93	$11.83	$10.71	$12.94			$13.16	$12.54	$11.33	$10.69		$13.33	$12.34	
1360	Foundation Drill Operator, Crawler Mounted									$17.99						$17.43	
1363	Foundation Drill Operator, Truck Mounted		$16.86	$22.05			$16.93			$21.07	$20.20	$20.76		$17.54	$21.39	$15.89	
1369	Front End Loader Operator, 3 CY or Less	$12.28	$13.49	$13.40			$13.04	$13.15	$13.29	$13.69	$12.64	$12.89			$13.51	$13.32	$12.17
1372	Front End Loader Operator, Over 3 CY	$12.77	$13.69	$12.33			$13.21	$12.86	$13.57	$14.72	$13.75	$12.32			$13.19	$13.17	
1329	Joint Sealer																
1172	Laborer, Common	$10.30	$9.86	$10.08	$10.51	$10.71	$10.50	$10.24	$10.58	$10.72	$10.45	$10.30	$10.25	$10.03	$10.54	$11.02	$10.15
1175	Laborer, Utility	$11.80	$11.53	$12.70	$12.17	$11.81	$12.27	$12.11	$11.33	$12.32	$11.80	$11.53	$11.23	$11.50	$11.95	$11.73	$12.37
1346	Loader/Backhoe Operator	$14.18	$12.77	$12.97	$15.68		$14.12			$15.18	$13.58	$12.87		$13.21	$14.13	$14.29	

CLASS. #	CLASSIFICATION DESCRIPTION	ZONE TX07 1/6/12	ZONE TX08 1/6/12	ZONE TX11 1/6/12	ZONE TX12 1/6/12	ZONE TX14 1/6/12	ZONE TX16 1/6/12	ZONE TX18 1/6/12	ZONE TX34 1/6/12	ZONE TX35 1/6/12	ZONE TX37 1/6/12	ZONE TX38 1/6/12	ZONE TX40 1/6/12	ZONE TX41 1/6/12	ZONE TX54 1/6/12	ZONE TX56 1/6/12	ZONE TX63 1/6/12
1187	Mechanic	$20.14	$15.47	$17.47			$17.10			$17.68	$18.94	$18.58		$16.61	$18.46	$16.96	
1380	Milling Machine Operator	$15.54	$14.64	$12.22			$14.18			$14.32	$14.35	$12.86			$14.75	$13.53	
1390	Motor Grader Operator, Fine Grade	$17.49	$16.52	$16.88			$18.51	$16.69	$16.13	$17.19	$18.35	$17.07	$17.74	$17.47	$17.08	$15.69	$20.01
1393	Motor Grader Operator, Rough	$16.15	$14.62	$15.83		$17.07	$14.63	$18.50		$16.02	$16.44	$15.12		$14.47	$17.39	$14.23	$15.53
1413	Off Road Hauler			$10.08			$11.88			$12.25		$12.23			$13.00	$14.60	
1196	Painter, Structures						$18.34						$21.29			$18.62	
1396	Pavement Marking Machine Operator	$16.42		$13.10			$19.17	$12.01		$13.63	$14.60	$13.17		$16.65	$10.54	$11.18	
1443	Percussion or Rotary Drill Operator																
1202	Piledriver															$14.95	
1205	Pipelayer		$11.87	$14.64			$12.79		$11.37	$13.24	$12.66	$13.24	$11.17	$11.67		$12.12	
1384	Reclaimer/Pulverizer Operator	$12.85					$12.88			$11.01		$10.46					
1500	Reinforcing Steel Worker	$13.50	$14.07	$17.53			$14.00			$16.18	$12.74	$15.83		$17.10		$15.15	
1402	Roller Operator, Asphalt	$10.95		$11.96			$12.78	$11.61		$13.08	$12.36	$11.68			$11.71	$11.95	$11.50
1405	Roller Operator, Other	$10.36		$10.44			$10.50	$11.64		$11.51	$10.59	$10.30		$12.04	$12.85	$11.57	
1411	Scraper Operator	$10.61	$11.07	$10.85			$12.27		$11.12	$12.96	$11.88	$12.43		$11.22	$13.95	$13.47	
1417	Self-Propelled Hammer Operator																
1194	Servicer	$13.98	$12.34	$14.11			$14.51	$15.56	$13.44	$14.58	$14.31	$13.83		$12.43	$13.72	$13.97	
1513	Sign Erector																
1708	Slurry Seal or Micro-Surfacing Machine Operator																
1341	Small Slipform Machine Operator									$15.96							
1515	Spreader Box Operator	$12.60		$13.12			$14.04			$14.73	$13.84	$13.68		$13.45	$11.83	$13.58	
1705	Structural Steel Welder															$12.85	
1509	Structural Steel Worker						$19.29									$14.39	
1339	Subgrade Trimmer																
1143	Telecommunication Technician																
1145	Traffic Signal/Light Pole Worker						$16.00										
1440	Trenching Machine Operator, Heavy						$18.48										
1437	Trenching Machine Operator, Light																
1609	Truck Driver Lowboy-Float	$14.46	$13.63	$13.41	$15.00	$15.93	$15.66			$16.24	$16.39	$14.30	$16.62	$15.63	$14.28	$16.03	
1612	Truck Driver Transit-Mix									$14.14							
1600	Truck Driver, Single Axle	$12.74	$10.82	$10.75			$11.79	$13.53	$13.16	$12.31	$13.40	$10.30	$11.61		$11.97	$11.46	
1606	Truck Driver, Single or Tandem Axle Dump Truck	$11.33	$14.53	$11.95			$11.68		$14.06	$12.62	$11.45	$12.28		$13.08	$11.68	$11.48	$11.10
1607	Truck Driver, Tandem Axle Tractor with Semi Trailer	$12.49	$12.12	$12.50			$12.81	$13.16		$12.86	$16.22	$12.50			$13.80	$12.27	
1441	Tunneling Machine Operator, Heavy																
1442	Tunneling Machine Operator, Light																
1706	Welder		$14.02				$15.97		$13.74	$14.84					$13.78		
1520	Work Zone Barricade Servicer	$10.30	$12.88	$11.46	$11.70		$11.85	$10.77		$11.68	$12.20	$11.22	$11.51	$12.96	$10.54	$11.67	

Notes:

Any worker employed on this project shall be paid at the rate of one and one half (1-1/2) times the regular rate for every hour worked in excess of forty (40) hours per week.

The titles and descriptions for the classifications listed here are further detailed in the AGC of Texas' *Standard Job Classifications and Descriptions for Highway, Heavy, Utilities, and Industrial Construction in Texas* . AGC will make it available on its Web site for any contractor.

TEXAS COUNTIES IDENTIFIED BY
WAGE RATE ZONES: 7, 8, 11, 12, 14, 16, 18, 34, 35, 37, 38, 40, 41, 54, 56, 63

County Name	Zone	County Name	Zone	County Name	Zone	County Name	Zone
Anderson	38	Donley	54	Karnes	37	Reagan	54
Andrews	54	Duval	41	Kaufman	35	Real	54
Angelina	38	Eastland	54	Kendall	16	Red River	38
Aransas	40	Ector	7	Kenedy	41	Reeves	18
Archer	35	Edwards	18	Kent	54	Refugio	37
Armstrong	7	El Paso	34	Kerr	37	Roberts	54
Atascosa	16	Ellis	35	Kimble	54	Robertson	16
Austin	56	Erath	38	King	54	Rockwall	35
Bailey	54	Falls	38	Kinney	18	Runnels	54
Bandera	16	Fannin	38	Kleberg	37	Rusk	11
Bastrop	16	Fayette	37	Knox	54	Sabine	38
Baylor	54	Fisher	54	Lamar	38	San Augustine	38
Bee	37	Floyd	54	Lamb	54	San Jacinto	56
Bell	16	Foard	54	Lampasas	16	San Patricio	40
Bexar	16	Fort Bend	56	LaSalle	41	San Saba	54
Blanco	37	Franklin	38	Lavaca	37	Schleicher	54
Borden	54	Freestone	38	Lee	37	Scurry	54
Bosque	38	Frio	37	Leon	38	Shackelford	54
Bowie	11	Gaines	54	Liberty	56	Shelby	38
Brazoria	56	Galveston	56	Limestone	38	Sherman	54
Brazos	16	Garza	54	Lipscomb	54	Smith	11
Brewster	18	Gillespie	37	Live Oak	37	Somervell	38
Briscoe	54	Glasscock	54	Llano	37	Starr	41
Brooks	41	Goliad	40	Loving	54	Stephens	54
Brown	54	Gonzales	37	Lubbock	7	Sterling	54
Burleson	16	Gray	54	Lynn	54	Stonewall	54
Burnet	37	Grayson	35	Madison	38	Sutton	18
Caldwell	16	Gregg	11	Marion	38	Swisher	54
Calhoun	40	Grimes	38	Martin	54	Tarrant	35
Callahan	35	Guadalupe	16	Mason	37	Taylor	7
Cameron	8	Hale	54	Matagorda	37	Terrell	18
Camp	38	Hall	54	Maverick	41	Terry	54
Carson	7	Hamilton	38	McCulloch	54	Throckmorton	54
Cass	38	Hansford	54	McLennan	16	Titus	38
Castro	54	Hardeman	54	McMullen	41	Tom Green	7
Chambers	56	Hardin	56	Medina	16	Travis	16
Cherokee	38	Harris	56	Menard	54	Trinity	38
Childress	54	Harrison	63	Midland	7	Tyler	38
Clay	35	Hartley	54	Milam	38	Upshur	11
Cochran	54	Haskell	54	Mills	54	Upton	54
Coke	54	Hays	16	Mitchell	54	Uvalde	41
Coleman	54	Hemphill	54	Montague	54	Val Verde	18
Collin	35	Henderson	38	Montgomery	56	Van Zandt	38
Collingsworth	54	Hidalgo	8	Moore	54	Victoria	14
Colorado	37	Hill	38	Morris	38	Walker	38
Comal	16	Hockley	54	Motley	54	Waller	56
Comanche	54	Hood	38	Nacogdoches	38	Ward	54
Concho	54	Hopkins	38	Navarro	38	Washington	38
Cooke	54	Houston	38	Newton	38	Webb	8
Coryell	16	Howard	54	Nolan	54	Wharton	37
Cottle	54	Hudspeth	18	Nueces	40	Wheeler	54
Crane	54	Hunt	35	Ochiltree	54	Wichita	12
Crockett	18	Hutchinson	54	Oldham	54	Wilbarger	54
Crosby	7	Irion	7	Orange	56	Willacy	41
Culberson	18	Jack	38	Palo Pinto	38	Williamson	16
Dallam	54	Jackson	37	Panola	38	Wilson	16
Dallas	35	Jasper	38	Parker	35	Winkler	54
Dawson	54	Jeff Davis	18	Parmer	54	Wise	35
Deaf Smith	54	Jefferson	56	Pecos	18	Wood	38
Delta	35	Jim Hogg	41	Polk	38	Yoakum	54
Denton	35	Jim Wells	37	Potter	7	Young	54
DeWitt	37	Johnson	35	Presidio	18	Zapata	41
Dickens	54	Jones	35	Rains	38	Zavala	41
Dimmit	41			Randall	7		

Revised 1-6-12

2004 Specifications

SPECIAL SPECIFICATION
1122
Temporary Erosion, Sedimentation, and Environmental Controls

1. **Description.** Install, maintain, and remove erosion, sedimentation, and environmental control measures to prevent or reduce the discharge of pollutants in accordance with the Storm Water Pollution Prevention Plan (SWP3) as provided in the plans and the Texas Pollutant Discharge Elimination System (TPDES) General Permit TXR150000. Control measures are defined as Best Management Practices used to prevent or reduce the discharge of pollutants. Control measures include but are not limited to rock filter dams, temporary pipe slope drains, temporary paved flumes, construction exits, earthwork for erosion control, pipe, construction perimeter fence, sandbags, temporary sediment control fence, biodegradable erosion control logs, vertical tracking, temporary or permanent seeding, and other measures. Perform work in a manner to prevent degradation of receiving waters, facilitate project construction, and comply with applicable federal, state, and local regulations. Ensure the installation and maintenance of control measures is performed in accordance with the manufacturer's or designer's specifications.

   By signing the Contractor Certification of Compliance, the Contractor certifies they have read and understand the requirements applicable to this project pertaining to the SWP3, the plans, and the TPDES General Permit TXR150000. The Contractor is responsible for any penalties associated with non-performance of installation or maintenance activities required for compliance. Provide the Contractor Certification of Compliance to the Engineer prior to performing earthwork operations. The most current version of the Contractor Certification of Compliance can be found at:
   http://www.txdot.gov/inside-txdot/division/environmental/programs/ems-courses.html.
   A sample of the language has been attached to this specification. Ensure the most current version of the certificate is executed for this project.

2. **Materials.** Furnish materials in accordance with the following:
   - Item 161, "Compost"
   - Item 432, "Riprap"
   - Item 556, "Pipe Underdrains"

A. Rock Filter Dams.

1. **Aggregate.** Furnish aggregate with hardness, durability, cleanliness, and resistance to crumbling, flaking, and eroding acceptable to the Engineer. Provide the following:
   - **Types 1, 2, and 4 Rock Filter Dams.** Use 3 to 6 in. aggregate.
   - **Type 3 Rock Filter Dams.** Use 4 to 8 in. aggregate.

2. **Wire.** Provide minimum 20 gauge galvanized wire for the steel wire mesh and tie wires for Types 2 and 3 rock filter dams. Type 4 dams require:

- A double-twisted, hexagonal weave with a nominal mesh opening of 2-1/2 in. x 3-1/4 in.;
- Minimum 0.0866 in. steel wire for netting;
- Minimum 0.1063 in. steel wire for selvages and corners; and minimum 0.0866 in. for binding or tie wire.

3. **Sandbag Material.** Furnish sandbags meeting "Sandbags for Erosion Control," except that any gradation of aggregate may be used to fill the sandbags.

B. Temporary Pipe Slope Drains. Provide corrugated metal pipe, polyvinyl chloride (PVC) pipe, flexible tubing, watertight connection bands, grommet materials, prefabricated fittings, and flared entrance sections that conform to the plans. Recycled and other materials meeting these requirements are allowed if approved.

Furnish concrete in accordance with Item 432, "Riprap."

C. Temporary Paved Flumes. Furnish asphalt concrete, hydraulic cement concrete, or other comparable non-erodible material that conforms to the plans. Provide rock or rubble with a minimum diameter of 6 in. and a maximum volume of 1/2 cu. ft. for the construction of energy dissipaters.

D. Construction Exits. Provide materials that meet the details shown on the plans and this Section.

1. **Rock Construction Exit.** Provide crushed aggregate for long and short-term construction exits. Furnish aggregates that are clean, hard, durable, and free from adherent coatings such as salt, alkali, dirt, clay, loam, shale, soft or flaky materials and organic and injurious matter. Use 4- to 8-in. aggregate for Type 1 and 2- to 4-in. aggregate for Type 3.

2. **Timber Construction Exit.** Furnish No. 2 quality or better railroad ties and timbers for long-term construction exits, free of large and loose knots and treated to control rot. Fasten timbers with nuts and bolts or lag bolts, of at least 1/2 in. diameter, unless otherwise shown on the plans or allowed. For short-term exits, provide plywood or pressed wafer board at least 1/2 in. thick.

3. **Foundation Course.** Provide a foundation course consisting of flexible base, bituminous concrete, hydraulic cement concrete, or other materials as shown on the plans or directed.

E. Embankment for Erosion Control. Provide rock, loam, clay, topsoil, or other earth materials that will form a stable embankment to meet the intended use.

F. Pipe. Provide pipe outlet material in accordance with Item 556, "Pipe Underdrains," and details shown on the plans.

G. Construction Perimeter Fence.

1. **Posts.** Provide essentially straight wood or steel posts that are at least 60 in. long. Furnish soft wood posts with a minimum diameter of 3 in. or use 2 x 4 boards. Furnish hardwood posts with a minimum cross-section of 1-1/2 x 1-1/5 in. Furnish T- or L-shaped steel posts with a minimum weight of 1.3 lb. per foot.

2. **Fence.** Provide orange construction fencing as approved by the Engineer.

3. **Fence Wire.** Provide 12-1/2 gauge or larger galvanized smooth or twisted wire. Provide 16 gauge or larger tie wire.

4. **Flagging.** Provide brightly-colored flagging that is fade-resistant and at least 3/4 in. wide to provide maximum visibility both day and night.

5. **Staples.** Provide staples with a crown at least 1/2 in. wide and legs at least 1/2 in. long.

6. **Used Materials.** Previously used materials meeting the applicable requirements may be used if accepted by the Engineer.

H. Sandbags. Provide sandbag material of polypropylene, polyethylene, or polyamide woven fabric with a minimum unit weight of 4 oz. per square yard, a Mullen burst-strength exceeding 300 psi, and an ultraviolet stability exceeding 70%.

Use natural coarse sand or manufactured sand meeting the gradation given in Table 1 to fill sandbags. Filled sandbags must be 24 to 30 in. long, 16 to 18 in. wide, and 6 to 8 in. thick.

Table 1
Sand Gradation

Sieve #	Retained (% by Weight)
4	MAXIMUM 3%
100	MINIMUM 80%
200	MINIMUM 95%

Aggregate may be used in lieu of sand for situations where sandbags are not adjacent to traffic. The aggregate size shall not exceed 3/8 in.

I. Temporary Sediment Control Fence. Provide a net-reinforced fence using woven geo-textile fabric. Logos visible to the traveling public will not be allowed.

1. **Fabric.** Provide fabric materials in accordance with DMS-6230, "Temporary Sediment Control Fence Fabric."

2. **Posts.** Provide essentially straight wood or steel posts with a minimum length of 48 in., unless otherwise shown on the plans. Soft wood posts must be at least 3 in. in diameter or nominal 2 x 4in. Hardwood posts must have a minimum cross-section of 1-1/2 x 1-1/2 in. T- or L-shaped steel posts must have a minimum weight of 1.3 lb. per foot.

3. **Net Reinforcement.** Provide net reinforcement of at least 12-1/2 gauge galvanized welded wire mesh, with a maximum opening size of 2 x 4 in., at least 24 in. wide, unless otherwise shown on the plans.

4. **Staples.** Provide staples with a crown at least 3/4 in. wide and legs 1/2 in. long.

5. **Used Materials.** Use recycled material meeting the applicable requirements if accepted by the Engineer.

J. Biodegradable Erosion Control Logs.

1. **Core Material.** Furnish core material that is biodegradable or recyclable. Except where specifically called out in plans, material may be compost, mulch, aspen excelsior wood fibers, chipped site vegetation, agricultural rice or wheat straw, coconut fiber, 100% recyclable fibers, or any other acceptable material. No more than 5% of the material is permitted to escape from the containment mesh. Furnish compost meeting the requirements of Item 161, "Compost."

2. **Containment Mesh.** Furnish containment mesh that is 100% biodegradable, photodegradable or recyclable such as burlap, twine, UV photodegradable plastic, polyester, or any other acceptable material.

   a. Furnish biodegradable or photodegradable containment mesh when log will remain in place as part of a vegetative system.

   b. Furnish recyclable containment mesh for temporary installations.

3. **Size.** Furnish biodegradable erosion control logs with diameters shown on the plans or as directed. Stuff containment mesh densely so logs do not deform.

3. Qualifications, Training, and Employee Requirements.

A. Contractor Responsible Person Environmental (CRPe) Qualifications and Responsibilities. Provide and designate in writing at the preconstruction conference a CRPe who has overall responsibility for the storm water management program. The CRPe will identify and implement storm water and erosion control practices; will oversee and observe storm water control measure monitoring and management; will monitor the project site daily to ensure compliance with the SWP3 and TPDES General Permit TXR150000; and will document daily monitoring reports and provide the reports to the Department within 48 hours. The CRPe will provide recommendations to the Engineer on how to improve the effectiveness of control measures. Attend the Department's preconstruction conference for the project. Administer the training identified in Article 3.C. *Training.* Document and submit a list to the Engineer of employees who have completed the training. The list should include the employee's name, the training course name, and date the employee completed the training. Provide the most current list to the Engineer at the preconstruction conference or prior to earth disturbing activities. Maintain the list as needed and make available for inspection.

B. Contractor Superintendent Qualifications and Responsibilities. Provide a superintendent that is competent and has experience with and knowledge of storm water management and is knowledgeable of the requirements and the conditions of the TPDES General Permit TXR150000. The superintendent is responsible for managing and overseeing the day to day operations and activities at the project site; working with the CRPe to provide effective storm water management at the project site; representing and acting on-behalf of the Contractor; and attending the Department's preconstruction conference for the project.

C. Training. All Contractor and subcontractor employees directly involved in the earthwork activities, small or large structures, storm water control measures, and seeding activities are required to complete the training identified by the Department prior to working in the right of way. Training may take place at a location at the discretion of the Contractor.

4. Construction.

A. Contractor Responsibilities. Implement the SWP3 for the project site in accordance with in accordance with the plans and specifications, TPDES General Permit TXR150000, and as directed by the Engineer. Coordinate storm water management with all other work on the project. Develop and implement an SWP3 for project-specific material supply plants within and outside of the Department's right of way in accordance with the specific or general storm water permit requirements. Prevent water pollution from storm water associated with construction activity from entering any surface water or private property on or adjacent to the project site.

B. Implementation. The CRPe, or an alternate, must be accessible by phone and able to respond to storm water management emergencies 24 hours per day.

1. Commencement. Implement the SWP3 as shown and as directed. Contractor proposed recommendations for changes will be allowed as approved. Conform to the established guidelines in the TPDES General Permit TXR150000 to make changes. Do not implement changes until approval has been received and changes have been incorporated into the plans by the Engineer. Minor adjustments to meet field conditions are allowed and will be recorded by the Engineer in the SWP3.

2. Phasing. Implement control measures prior to the commencement of activities that result in soil disturbance. Phase and minimize the soil disturbance to the areas shown on the plans. Coordinate temporary control measures with permanent control measures and all other work activities on the project to assure economical, effective, safe, continuous water pollution prevention. Provide control measures that are appropriate to the construction means, methods, and sequencing allowed by the Contract. Exercise precaution throughout the life of the project to prevent pollution of ground waters and surface waters. Schedule and perform clearing and grubbing operations so that stabilization measures will follow immediately thereafter if project conditions permit. Bring all grading sections to final grade as soon as possible and implement temporary and permanent control measures at the earliest time possible. Implement temporary control measures when required by the TPDES General Permit TXR150000 or otherwise necessitated by project conditions.

Do not prolong final grading and shaping. Preserve vegetation where possible throughout the project and minimize clearing, grubbing, and excavation within stream banks, bed, and approach sections.

C. General.

1. **Temporary Alterations or Control Measure Removal.** Altering or removal of control measures is allowed when control measures are restored within the same working day.

2. **Stabilization.** Initiate stabilization for disturbed areas no more than 14 days after the construction activities in that portion of the site has temporarily or permanently ceased. Establish a uniform vegetative cover or utilize another stabilization practice in accordance with the TPDES General Permit TXR150000.

3. **Finished Work.** Upon the Engineer's acceptance of vegetative cover or other stabilization practice, remove and dispose of all temporary control measures unless otherwise directed. Complete soil disturbing activities and establish a uniform perennial vegetative cover. A project will not be considered for acceptance until a vegetative cover of 70% density of existing adjacent undisturbed areas is obtained or equivalent permanent stabilization is obtained in accordance with the TPDES General Permit TXR150000. An exception will be allowed in arid areas as defined in the TPDES General Permit TXR150000.

4. **Restricted Activities and Required Precautions.** Do not discharge onto the ground or surface waters any pollutants such as chemicals, raw sewage, fuels, lubricants, coolants, hydraulic fluids, bitumens, or any other petroleum product. Operate and maintain equipment on site in a manner as to prevent actual or potential water pollution. Manage, control, and dispose of litter on site such that no adverse impacts to water quality occur. Prevent dust from creating a potential or actual unsafe condition, public nuisance, or condition endangering the value, utility, or appearance of any property. Wash out concrete trucks only as described in the TPDES General Permit TXR150000. Utilize appropriate controls to minimize the offsite transport of suspended sediments and other pollutants if it is necessary to pump or channel standing water (i.e. dewatering). Prevent discharges that would contribute to a violation of Edwards Aquifer Rules, water quality standards, the impairment of a listed water body, or other state or federal law.

D. Installation, Maintenance, and Removal Work. Perform work in accordance with the SWP3, according to manufacturers' guidelines, and in accordance with the TPDES General Permit TXR150000. Install and maintain the integrity of temporary erosion and sedimentation control devices to accumulate silt and debris until earthwork construction and permanent erosion control features are in place or the disturbed area has been adequately stabilized as determined by the Engineer.

The Department will inspect and document the condition of the control measures at the frequency shown on the plans and will provide the Construction SWP3 Field Inspection and Maintenance Reports to the Contractor. Make corrections as soon as possible before the next anticipated rain event or within 7 calendar days after being able to enter the work site for each control measure.

The only acceptable reason for not accomplishing the corrections with the time frame specified is when site conditions are "Too Wet to Work". If a correction is deemed critical by the Engineer, immediate action is required. When corrections are not made within the established time frame, all work will cease on the project and time charges will continue while the control measures are brought into compliance. Once the Engineer reviews and documents the project is in compliance, work may commence. Commencing work does not release the contractor of the liability for noncompliance of the SWP3, plans, or TPDES General Permit TXR150000.

The Engineer may limit the disturbed area if in the opinion of the Engineer the Contractor cannot control soil erosion and sedimentation resulting from the Contractor's operations. Implement additional controls as directed.

Remove devices upon approval or as directed. Upon removal, finish-grade and dress the area. Stabilize disturbed areas in accordance with the permit, and as shown on the plans or directed. The Contractor retains ownership of stockpiled material and must remove it from the project when new installations or replacements are no longer required.

1. **Rock Filter Dams for Erosion Control.** Remove trees, brush, stumps, and other objectionable material that may interfere with the construction of rock filter dams. Place sandbags as a foundation when required or at the Contractor's option.

   For Types 1, 2, 3, and 5, place the aggregate to the lines, height, and slopes specified, without undue voids. For Types 2 and 3, place the aggregate on the mesh and then fold the mesh at the upstream side over the aggregate and secure it to itself on the downstream side with wire ties, or hog rings, or as directed. Place rock filter dams perpendicular to the flow of the stream or channel unless otherwise directed. Construct filter dams according to the following criteria, unless otherwise shown on the plans:

   a. Type 1 (Non-reinforced).

   (1) Height. At least 18 in. measured vertically from existing ground to top of filter dam.

   (2) Top Width. At least 2 ft.

   (3) Slopes. At most 2:1.

   b. Type 2 (Reinforced).

   (1) Height. At least 18 in. measured vertically from existing ground to top of filter dam.

   (2) Top Width. At least 2 ft.

   (3) Slopes. At most 2:1.

c. Type 3 (Reinforced).

(1) Height. At least 36 in. measured vertically from existing ground to top of filter dam.

(2) Top Width. At least 2 ft.

(3) Slopes. At most 2:1.

d. Type 4 (Sack Gabions). Unfold sack gabions and smooth out kinks and bends. For vertical filling, connect the sides by lacing in a single loop–double loop pattern on 4- to 5-in. spacing. At one end, pull the end lacing rod until tight, wrap around the end, and twist 4 times. At the filling end, fill with stone, pull the rod tight, cut the wire with approximately 6 in. remaining, and twist wires 4 times.

For horizontal filling, place sack flat in a filling trough, fill with stone, and connect sides and secure ends as described above.

Lift and place without damaging the gabion. Shape sack gabions to existing contours.

e. Type 5. Provide rock filter dams as shown on the plans.

2. **Temporary Pipe Slope Drains.** Install pipe with a slope as shown on the plans or as directed. Construct embankment for the drainage system in 8-in. lifts to the required elevations. Hand-tamp the soil around and under the entrance section to the top of the embankment as shown on the plans or as directed. Form the top of the embankment or earth dike over the pipe slope drain at least 1 ft. higher than the top of the inlet pipe at all points. Secure the pipe with hold-downs or hold-down grommets spaced a maximum of 10 ft. on center. Construct the energy dissipaters or sediment traps as shown on the plans or as directed. Construct the sediment trap using concrete or rubble riprap in accordance with Item 432, "Riprap," when designated on the plans.

3. **Temporary Paved Flumes.** Construct paved flumes as shown on the plans or as directed. Provide excavation and embankment (including compaction of the subgrade) of material to the dimensions shown on the plans, unless otherwise indicated. Install a rock or rubble riprap energy dissipater, constructed from the materials specified above to a minimum depth of 9 in. at the flume outlet to the limits shown on the plans or as directed.

4. **Construction Exits.** When tracking conditions exist, prevent traffic from crossing or exiting the construction site or moving directly onto a public roadway, alley, sidewalk, parking area, or other right of way areas other than at the location of construction exits. Construct exits for either long or short-term use.

   a. **Long-Term.** Place the exit over a foundation course, if necessary. Grade the foundation course or compacted subgrade to direct runoff from the construction exits to a sediment trap as shown on the plans or as directed. Construct exits with a

width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed.

(1) Type 1. Construct to a depth of at least 8 in. using crushed aggregate as shown on the plans or as directed.

(2) Type 2. Construct using railroad ties and timbers as shown on the plans or as directed.

b. Short-Term.

(1) Type 3. Construct using crushed aggregate, plywood, or wafer board. This type of exit may be used for daily operations where long-term exits are not practical.

(2) Type 4. Construct as shown on the plans or as directed.

5. **Earthwork for Erosion Control.** Perform excavation and embankment operations to minimize erosion and to remove collected sediments from other erosion control devices.

   a. Excavation and Embankment for Erosion Control Features. Place earth dikes, swales, or combinations of both along the low crown of daily lift placement, or as directed, to prevent runoff spillover. Place swales and dikes at other locations as shown on the plans or as directed to prevent runoff spillover or to divert runoff. Construct cuts with the low end blocked with undisturbed earth to prevent erosion of hillsides. Construct sediment traps at drainage structures in conjunction with other erosion control measures as shown on the plans or as directed.

   Where required, create a sediment basin providing 3,600 cu. ft. of storage per acre drained, or equivalent control measures for drainage locations that serve an area with 10 or more disturbed acres at one time, not including offsite areas.

   b. Excavation of Sediment and Debris. Remove sediment and debris when accumulation affects the performance of the devices, after a rain, and when directed.

6. **Construction Perimeter Fence.** Construct, align, and locate fencing as shown on the plans or as directed.

   a. Installation of Posts. Embed posts 18 in. deep or adequately anchor in rock, with a spacing of 8 to 10 ft.

   b. Wire Attachment. Attach the top wire to the posts at least 3 ft. from the ground. Attach the lower wire midway between the ground and the top wire.

   c. Flag Attachment. Attach flagging to both wire strands midway between each post. Use flagging at least 18 in. long. Tie flagging to the wire using a square knot.

7. **Sandbags for Erosion Control.** Construct a berm or dam of sandbags that will intercept sediment-laden storm water runoff from disturbed areas, create a retention pond, detain

sediment, and release water in sheet flow. Fill each bag with sand so that at least the top 6 in. of the bag is unfilled to allow for proper tying of the open end. Place the sandbags with their tied ends in the same direction. Offset subsequent rows of sandbags 1/2 the length of the preceding row. Place a single layer of sandbags downstream as a secondary debris trap. Place additional sandbags as necessary or as directed for supplementary support to berms or dams of sandbags or earth.

8. **Temporary Sediment-Control Fence.** Provide temporary sediment-control fence near the downstream perimeter of a disturbed area to intercept sediment from sheet flow. Incorporate the fence into erosion-control measures used to control sediment in areas of higher flow. Install the fence as shown on the plans, as specified in this Section, or as directed.

   a. **Installation of Posts.** Embed posts at least 18 in. deep, or adequately anchor, if in rock, with a spacing of 6 to 8 ft. and install on a slight angle toward the run-off source.

   b. **Fabric Anchoring.** Dig trenches along the uphill side of the fence to anchor 6 to 8 in. of fabric. Provide a minimum trench cross-section of 6 x 6 in. Place the fabric against the side of the trench and align approximately 2 in of fabric along the bottom in the upstream direction. Backfill the trench, then hand-tamp.

   c. **Fabric and Net Reinforcement Attachment.** Unless otherwise shown under the plans, attach the reinforcement to wooden posts with staples, or to steel posts with T-clips, in at least 4 places equally spaced. Sewn vertical pockets may be used to attach reinforcement to end posts. Fasten the fabric to the top strand of reinforcement by hog rings or cord every 15 in. or less.

   d. **Fabric and Net Splices**. Locate splices at a fence post with a minimum lap of 6 in. attached in at least 6 places equally spaced, unless otherwise shown under the plans. Do not locate splices in concentrated flow areas.

      Requirements for installation of used temporary sediment-control fence include the following:

      - fabric with minimal or no visible signs of biodegradation (weak fibers),
      - fabric without excessive patching (more than 1 patch every 15 to 20 ft.),
      - posts without bends, and
      - backing without holes.

9. **Biodegradable Erosion Control Logs.** Install biodegradable erosion control logs near the downstream perimeter of a disturbed area to intercept sediment from sheet flow. Incorporate the biodegradable erosion control logs into the erosion measures used to control sediment in areas of higher flow. Install, align and locate the biodegradable erosion control logs as specified below, as shown in plans or as directed.

Secure biodegradable erosion control logs in a method adequate to prevent displacement as a result of normal rain events, prevent damage to the logs, and to the satisfaction of the Engineer such that flow is not allowed under the logs. Temporarily removing and replacing biodegradable erosion logs as to facilitate daily work is allowed at the Contractor's expense.

10. **Vertical Tracking.** Perform vertical tracking on slopes to temporarily stabilize soil. Provide equipment with a track undercarriage capable of producing a linear soil impression measuring a minimum of 12 inches in length by 2 to 4 inches in width by 1/2 to 2 inches in depth. Do not exceed 12 inches between track impressions. Install continuous linear track impressions where the 12 inch length impressions are perpendicular to the slope.

E. Monitoring and Documentation. Monitor the control measures on a daily basis. Monitoring will consist of, but is not limited to, observing, inspecting, and documenting site locations with control measures and discharge points to provide maintenance and inspection of controls as described in the SWP3. Keep written records of daily monitoring. Document in the daily monitoring report the control measure condition, the date of inspection, required corrective actions, responsible person for making the corrections, and the date corrective actions were completed. Maintain records of all monitoring reports at the project site or at a place approved by the Engineer. Provide copies to the Engineer. Together, the CRPe and an Engineer's representative will complete the Construction Stage Gate Checklist on a periodic basis as determined by the Engineer.

5. Measurement.

A. Rock Filter Dams. Installation or removal of rock filter dams will be measured by the foot or by the cubic yard. The measured volume will include sandbags, when used.

1. **Linear Measurement.** When rock filter dams are measured by the foot, measurement will be along the centerline of the top of the dam.

2. **Volume Measurement.** When rock filter dams are measured by the cubic yard, measurement will be based on the volume of rock computed by the method of average end areas.

   a. Installation. Measurement will be made in final position.

   b. Removal. Measurement will be made at the point of removal.

B. Temporary Pipe Slope Drains. Temporary pipe slope drains will be measured by the foot.

C. Temporary Paved Flumes. Temporary paved flumes will be measured by the square yard of surface area. The measured area will include the energy dissipater at the flume outlet.

D. Construction Exits. Construction exits will be measured by the square yard of surface area.

E. Earthwork for Erosion and Sediment Control.

1. Equipment and Labor Measurement. Equipment and labor used will be measured by the actual number of hours the equipment is operated and the labor is engaged in the work.

2. Volume Measurement.

a. In Place.

(1) Excavation. Excavation will be measured by the cubic yard in its original position and the volume computed by the method of average end areas.

(2) Embankment. Embankment will be measured by the cubic yard in its final position by the method of average end areas. The volume of embankment will be determined between:

- the original ground surfaces or the surface upon that the embankment is to be constructed for the feature and
- the lines, grades and slopes of the accepted embankment for the feature.

b. In Vehicles. Excavation and embankment quantities will be combined and paid for under "Earthwork (Erosion and Sediment Control, In Vehicle)." Excavation will be measured by the cubic yard in vehicles at the point of removal. Embankment will be measured by the cubic yard in vehicles measured at the point of delivery. Shrinkage or swelling factors will not be considered in determining the calculated quantities.

F. Construction Perimeter Fence. Construction perimeter fence will be measured by the foot.

G. Sandbags for Erosion Control. Sandbags will be measured as each sandbag or by the foot along the top of sandbag berms or dams.

H. Temporary Sediment-Control Fence. Installation or removal of temporary sediment-control fence will be measured by the foot.

I. Biodegradable Erosion Control Logs. Installation or removal of biodegradable erosion control logs will be measured by the linear foot along the centerline of the top of the control logs.

J. Vertical Tracking. Vertical tracking will not be measured or paid for directly but is considered subsidiary to this Item.

6. Payment. The following will not be paid for directly but are subsidiary to pertinent Items:

- erosion-control measures for Contractor project-specific locations (PSLs) inside and outside the right of way (such as construction and haul roads, field offices, equipment and supply areas, plants, and material sources);

- removal of litter; unless a separate pay item is shown in the plans.
- repair to devices and features damaged by Contractor operations;
- added measures and maintenance needed due to negligence, carelessness, lack of maintenance, and failure to install permanent controls;
- removal and reinstallation of devices and features needed for the convenience of the Contractor;
- finish grading and dressing upon removal of the device; and
- minor adjustments including but not limited to plumbing posts, reattaching fabric, minor grading to maintain slopes on an erosion embankment feature, or moving small numbers of sandbags.

Stabilization of disturbed areas will be paid for under pertinent Items.

Furnishing and installing pipe for outfalls associated with sediment traps and ponds will not be paid for directly but is subsidiary to the excavation and embankment under this Item.

A. Rock Filter Dams. The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid as follows:

1. **Installation.** Installation will be paid for as "Rock Filter Dams (Install)" of the type specified. This price is full compensation for furnishing and operating equipment, finish backfill and grading, lacing, proper disposal, labor, materials, tools, and incidentals.

2. **Removal.** Removal will be paid for as "Rock Filter Dams (Remove)." This price is full compensation for furnishing and operating equipment, proper disposal, labor, materials, tools, and incidentals.

When the Engineer directs that the rock filter dam installation or portions thereof be replaced, payment will be made at the unit price bid for "Rock Filter Dams (Remove)" and for "Rock Filter Dams (Install)" of the type specified. This price is full compensation for furnishing and operating equipment, finish backfill and grading, lacing, proper disposal, labor, materials, tools, and incidentals.

B. Temporary Pipe Slope Drains. The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Temporary Pipe Slope Drains" of the size specified. This price is full compensation for furnishing materials, removal and disposal, furnishing and operating equipment, labor, tools, and incidentals.

Removal of temporary pipe slope drains will not be paid for directly but is subsidiary to the installation Item. When the Engineer directs that the pipe slope drain installation or portions thereof be replaced, payment will be made at the unit price bid for "Temporary Pipe Slope Drains" of the size specified, which is full compensation for the removal and reinstallation of the pipe drain.

Earthwork required for the pipe slope drain installation, including construction of the sediment trap, will be measured and paid for under "Earthwork for Erosion and Sediment Control."

Riprap concrete or stone, when used as an energy dissipater or as a stabilized sediment trap, will be measured and paid for in accordance with Item 432, "Riprap."

C. Temporary Paved Flumes. The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Temporary Paved Flume (Install)" or "Temporary Paved Flume (Remove)." This price is full compensation for furnishing and placing materials, removal and disposal, equipment, labor, tools, and incidentals.

When the Engineer directs that the paved flume installation or portions thereof be replaced, payment will be made at the unit prices bid for "Temporary Paved Flume (Remove)" and "Temporary Paved Flume (Install)." These prices are full compensation for the removal and replacement of the paved flume and for equipment, labor, tools, and incidentals.

Earthwork required for the paved flume installation, including construction of a sediment trap, will be measured and paid for under "Earthwork for Erosion and Sediment Control."

D. Construction Exits. Contractor-required construction exits from off right of way locations or on-right of way PSLs will not be paid for directly but are subsidiary to pertinent Items.

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" for construction exits needed on right of way access to work areas required by the Department will be paid for at the unit price bid for "Construction Exits (Install)" of the type specified or "Construction Exits (Remove)." This price is full compensation for furnishing and placing materials, excavating, removal and disposal, cleaning vehicles, labor, tools, and incidentals.

When the Engineer directs that a construction exit or portion thereof be removed and replaced, payment will be made at the unit prices bid for "Construction Exit (Remove)" and "Construction Exit (Install)" of the type specified. These prices are full compensation for the removal and replacement of the construction exit and for equipment, labor, tools, and incidentals.

Construction of sediment traps used in conjunction with the construction exit will be measured and paid for under "Earthwork for Erosion and Sediment Control."

E. Earthwork for Erosion and Sediment Control.

1. Initial Earthwork for Erosion and Sediment Control. The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Excavation (Erosion and Sediment Control, In Place)", "Embankment (Erosion and Sediment Control, In Place)", "Excavation (Erosion and Sediment Control, In Vehicle)", "Embankment (Erosion and

Sediment Control, In Vehicle)", or "Earthwork (Erosion and Sediment Control, In Vehicle)".

This price is full compensation for excavation and embankment including hauling, disposal of material not used elsewhere on the project; embankments including furnishing material from approved sources and construction of erosion-control features; equipment, labor; tools, and incidentals.

Sprinkling and rolling required by this Item will not be paid for directly, but will be subsidiary to this Item.

2. **Maintenance Earthwork for Erosion and Sediment Control for Cleaning and/or Restoring Control Measures.** The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for by a Contractor Force Account Item.

   This price is full compensation for excavation, embankment, and re-grading including removal of accumulated sediment in various erosion control installations as directed, hauling, and disposal of material not used elsewhere on the project; excavation for construction of erosion-control features; embankments including furnishing material from approved sources and construction of erosion-control features; and equipment, labor; tools, and incidentals.

   Earthwork needed to remove and obliterate of erosion-control features will not be paid for directly but is subsidiary to pertinent Items unless otherwise shown on the plans.

   Sprinkling and rolling required by this Item will not be paid for directly, but will be subsidiary to this Item.

F. Construction Perimeter Fence. The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Construction Perimeter Fence." This price is full compensation for furnishing and placing the fence; digging, fence posts, wire, and flagging; removal and disposal; and materials, equipment, labor, tools, and incidentals.

Removal of construction perimeter fence will be not be paid for directly but is subsidiary to the installation Item. When the Engineer directs that the perimeter fence installation or portions thereof be removed and replaced, payment will be made at the unit price bid for "Construction Perimeter Fence," which is full compensation for the removal and reinstallation of the construction perimeter fence.

G. Sandbags for Erosion Control. Sandbags will be paid for at the unit price bid for "Sandbags for Erosion Control" (of the height specified when measurement is by the foot). This price is full compensation for materials, placing sandbags, removal and disposal, equipment, labor, tools, and incidentals.

Removal of sandbags will not be paid for directly but is subsidiary to the installation Item. When the Engineer directs that the sandbag installation or portions thereof be replaced,

payment will be made at the unit price bid for "Sandbags for Erosion Control," which is full compensation for the reinstallation of the sandbags.

H. **Temporary Sediment-Control Fence.** The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid as follows:

1. **Installation.** Installation will be paid for as "Temporary Sediment-Control Fence (Install)." This price is full compensation for furnishing and operating equipment finish backfill and grading, lacing, proper disposal, labor, materials, tools, and incidentals.

2. **Removal.** Removal will be paid for as "Temporary Sediment-Control Fence (Remove)." This price is full compensation for furnishing and operating equipment, proper disposal, labor, materials, tools, and incidentals.

I. **Biodegradable Erosion Control Logs.** The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid as follows:

1. **Installation.** Installation will be paid for as "Biodegradable Erosion Control Logs (Install)" of the size specified. This price is full compensation for furnishing and operating equipment finish backfill and grading, staking, proper disposal, labor, materials, tools, and incidentals.

2. **Removal.** Removal will be paid for as "Biodegradable Erosion Control Logs (Remove)." This price is full compensation for furnishing and operating equipment, proper disposal, labor, materials, tools, and incidentals.

J. **Vertical Tracking.** Vertical tracking will not be measured or paid for directly but is considered subsidiary to this Item.

CONTRACTOR CERTIFICATION OF COMPLIANCE WITH STORM WATER REQUIREMENTS

I, _____ certify that I am the duly appointed representative of the Contractor with authority to make this Contractor certification. I have read and understand the requirements applicable to this project pertaining to storm water discharge authorization under Texas Pollutant Discharge Elimination System (TPDES) General Permit (GP) TXR150000. The Contractor agrees to comply with the terms of the permit that are expressly stated in the contract documents as being the responsibility of the Contractor. I have read and understand the Storm Water Pollution Prevention Plan (SWP3) developed by the Department for this project. The Contractor agrees it will be implemented prior to construction according to permit requirements and the contract documents. I understand that failure to comply with the terms of the permit that are expressly stated in the contract documents, plans, and specifications as being the responsibility of the Contractor may result in civil penalties.

The Contractor acknowledges its responsibility to satisfy the following requirements:

- Implement the SWP3 for the project in accordance with the plans and specifications and the TPDES GP TXR150000.
- Install and maintain control measures on the project in accordance with the manufacturer's or designer's specifications.
- Collaborate with the Department for joint monitoring of best management practices (BMPs) on a regular basis to verify that BMPs are performing as intended in accordance with the plans and specifications and with TPDES GP TXR150000.
- Collaborate with the Department for joint identification of BMP maintenance needs and carry out such maintenance in accordance with the plans and specifications, TPDES GP TXR150000 and as directed by the Engineer.
- Repair the integrity of any BMP as directed by the Engineer as soon as reasonably possible.
- If appropriate, recommend changes needed in the SWP3 to the Engineer in order to prevent, to the extent practicable, water pollution associated with construction activities from entering any surface water or private property on or adjacent to the project site by storm water discharges.
- Stabilize disturbed areas, as soon as practicable, in accordance with the TPDES GP TXR150000 and as directed by the Engineer.
- If applicable, obtain appropriate authorizations for activities associated with any Project Specific Location under the authority of the Contractor and provide appropriate documentation of compliance to the Engineer.
- Satisfy any other responsibility indicated in the contract documents that are expressly stated as the responsibility of the Contractor.

Signature and Title: _____

Date: _____

SAMPLE

2004 Specifications

SPECIAL SPECIFICATION
3268
Dense-Graded Hot-Mix Asphalt

1. **Description.** Construct a hot-mix asphalt (HMA) pavement layer composed of a compacted, dense-graded mixture of aggregate and asphalt binder mixed hot in a mixing plant. Pay adjustments will apply to HMA placed under this specification unless the HMA is deemed exempt in accordance with Section 3268.4.I.4, "Exempt Production."

2. **Materials.** Furnish uncontaminated materials of uniform quality that meet the requirements of the plans and specifications.

   Notify the Engineer of all material sources. Notify the Engineer before changing any material source or formulation. When the Contractor makes a source or formulation change, the Engineer will verify that the specification requirements are met and may require a new laboratory mixture design, trial batch, or both. The Engineer may sample and test project materials at any time during the project to verify specification compliance in accordance with Item 6, "Control of Materials."

   A. **Aggregate.** Furnish aggregates from sources that conform to the requirements shown in Table 1 and as specified in this Section. Aggregate requirements in this Section, including those shown in Table 1, may be modified or eliminated when shown on the plans. Additional aggregate requirements may be specified when shown on the plans. Provide aggregate stockpiles that meet the definitions in this Section for coarse, intermediate, or fine aggregate. Aggregate from reclaimed asphalt pavement (RAP) is not required to meet Table 1 requirements unless otherwise shown on the plans. Supply aggregates that meet the definitions in Tex-100-E for crushed gravel or crushed stone. The Engineer will designate the plant or the quarry as the sampling location. Samples must be from materials produced for the project. The Engineer will establish the surface aggregate classification (SAC) and perform Los Angeles abrasion, magnesium sulfate soundness, and Micro-Deval tests. Perform all other aggregate quality tests listed in Table 1. Document all test results on the mixture design report. The Engineer may perform tests on independent or split samples to verify Contractor test results. Stockpile aggregates for each source and type separately. Determine aggregate gradations for mixture design and production testing based on the washed sieve analysis given in Tex-200-F, Part II.

      1. **Coarse Aggregate.** Coarse aggregate stockpiles must have no more than 20% material passing the No. 8 sieve. Aggregate from sources listed in the Department's *Bituminous Rated Source Quality Catalog* (BRSQC) located at http://www.txdot.gov/business/resources/producer-list.html are preapproved for use.

For sources not listed on the Department's BRSQC:

- build an individual stockpile for each material;
- request the Department test the stockpile for specification compliance; and
- once approved, do not add material to the stockpile unless otherwise approved.

Use only the rated values for hot mix listed in the BRSQC. Rated values for surface treatment (ST) do not apply to coarse aggregate sources used in hot mix. Provide aggregate from non-listed sources only when tested by the Engineer and approved before use. Allow 30 calendar days for the Engineer to sample, test, and report results for non-listed sources.

Provide coarse aggregate with at least the minimum SAC as shown on the plans. SAC requirements apply only to aggregates used on the surface of travel lanes. SAC requirements apply to aggregates used on surfaces other than travel lanes when shown on the plans. The SAC for sources on the Department's Aggregate Quality Monitoring Program (AQMP) is listed in the BRSQC.

a. Blending Class A and Class B Aggregates. Class B aggregate meeting all other requirements in Table 1 may be blended with a Class A aggregate in order to meet requirements for Class A materials. When blending Class A and B aggregates to meet a Class A requirement, ensure that at least 50% by weight of the material retained on the No. 4 sieve comes from the Class A aggregate source. Blend by volume if the bulk specific gravities of the Class A and B aggregates differ by more than 0.300. For blending purposes, coarse aggregate from RAP and Recycled Asphalt Shingles (RAS) will be considered as Class B aggregate.

When the Contractor blends Class A and B aggregates to meet a Class A requirement, the Engineer may perform tests at any time during production to ensure that at least 50% by weight of the material retained on the No. 4 sieve comes from the Class A aggregate source. In such cases where the Engineer elects to verify conformance, the Engineer will use the Department's mix design Excel template to calculate the percent of Class A aggregate retained on the No. 4 sieve by inputting the bin percentages shown from readouts in the control room at the time of production and stockpile gradations measured at the time of production. The Engineer may determine the gradations based on either washed or dry sieve analysis from samples obtained from individual aggregate cold feed bins or aggregate stockpiles. The Engineer may perform spot checks using the gradations supplied by the Contractor on the mixture design report as an input for the Excel template; however, a failing spot check will require confirmation with a stockpile gradation determined by the Engineer.

b. Micro-Deval Abrasion. The Engineer will perform a minimum of one Micro-Deval abrasion test in accordance with Tex-461-A for each coarse aggregate source used in the mixture design that has a Rated Source Soundness

Magnesium (RSSM) loss value greater than 15 as listed in the BRSQC. The Engineer will perform testing prior to the start of production and may perform additional testing at any time during production. The Engineer may obtain the coarse aggregate samples from each coarse aggregate source or may require the Contractor to obtain the samples. The Engineer may elect to waive all Micro-Deval testing based on a satisfactory test history of the same aggregate source.

When tested, the Engineer will estimate the magnesium sulfate soundness loss for each coarse aggregate source using the following formula:

$Mg_{est.} = (RSSM)(MD_{act.}/RSMD)$

where:

Mg_{est} = magnesium sulfate soundness loss

MD_{act} = actual Micro-Deval percent loss

RSMD = Rated Source Micro-Deval

When the estimated magnesium sulfate soundness loss is greater than the maximum magnesium sulfate soundness loss specified, the coarse aggregate source will not be allowed for use unless otherwise approved by the Engineer. The Engineer will consult the Geotechnical, Soils, and Aggregates Branch of the Construction Division, and additional testing may be required prior to granting approval.

2. **Intermediate Aggregate.** Aggregates not meeting the definition of coarse or fine aggregate will be defined as intermediate aggregate. When used, supply intermediate aggregates that are free from organic impurities. The Engineer may test the intermediate aggregate in accordance with Tex-408-A to verify the material is free from organic impurities. When used, supply intermediate aggregate from coarse aggregate sources that meet the requirements shown in Table 1 unless otherwise approved.

   If 10% or more of the stockpile is retained on the No. 4 sieve, test the stockpile and verify that it meets the requirements in Table 1 for coarse aggregate angularity (Tex-460-A) and flat and elongated particles (Tex-280-F).

3. **Fine Aggregate.** Fine aggregates consist of manufactured sands, screenings, and field sands. Fine aggregate stockpiles must meet the gradation requirements in Table 2. Supply fine aggregates that are free from organic impurities. The Engineer may test the fine aggregate in accordance with Tex-408-A to verify the material is free from organic impurities. At most 15% of the total aggregate may be field sand or other uncrushed fine aggregate. With the exception of field sand, use fine aggregate from coarse aggregate sources that meet the requirements shown in Table 1 unless otherwise approved.

If 10% or more of the stockpile is retained on the No. 4 sieve, test the stockpile and verify that it meets the requirements in Table 1 for coarse aggregate angularity (Tex-460-A) and flat and elongated particles (Tex-280-F).

Table 1
Aggregate Quality Requirements

Property	Test Method	Requirement
Coarse Aggregate		
SAC	AQMP	As shown on plans
Deleterious material, %, max	Tex-217-F, Part I	1.5
Decantation, %, max	Tex-217-F, Part II	1.5
Micro-Deval abrasion, %, max	Tex-461-A	Note 1
Los Angeles abrasion, %, max	Tex-410-A	40
Magnesium sulfate soundness, 5 cycles, %, max	Tex-411-A	30
Coarse aggregate angularity, 2 crushed faces, %, min	Tex-460-A, Part I	85[2]
Flat and elongated particles @ 5:1, %, max	Tex-280-F	10
Fine Aggregate		
Linear shrinkage, %, max	Tex-107-E	3
Combined Aggregate[3]		
Sand equivalent, %, min	Tex-203-F	45

1. Used to estimate the magnesium sulfate soundness loss in accordance with Section 3268.2.A.1, "Coarse Aggregate."
2. Only applies to crushed gravel.
3. Aggregates, without mineral filler, RAP, RAS, or additives, combined as used in the job-mix formula (JMF).

Table 2
Gradation Requirements for Fine Aggregate

Sieve Size	% Passing by Weight or Volume
3/8"	100
#8	70–100
#200	0–30

B. Mineral Filler. Mineral filler consists of finely divided mineral matter, such as agricultural lime, crusher fines, hydrated lime, or fly ash. Mineral filler is allowed unless otherwise shown on the plans. Do not use more than 2% mineral hydrated lime unless otherwise shown on the plans. If a substitute binder is used, do not use more than 1% hydrated lime unless otherwise shown on the plans or allowed by the Engineer. Test all mineral fillers except hydrated lime and fly ash in accordance with Tex-107-E to ensure specification compliance. The plans may require or disallow specific mineral fillers. When used, provide mineral filler that:

- is sufficiently dry, free-flowing, and free from clumps and foreign matter;
- does not exceed 3% linear shrinkage when tested in accordance with Tex-107-E; and
- meets the gradation requirements in Table 3.

Table 3
Gradation Requirements for Mineral Filler

Sieve Size	% Passing by Weight or Volume
#8	100
#200	55–100

C. Baghouse Fines. Fines collected by the baghouse or other dust-collecting equipment may be reintroduced into the mixing drum.

D. Asphalt Binder. Furnish the type and grade of performance-graded (PG) asphalt specified on the plans.

E. Tack Coat. Furnish CSS-1H, SS-1H, or a PG binder with a minimum high-temperature grade of PG 58 for tack coat binder in accordance with Item 300, "Asphalts, Oils, and Emulsions." Specialized or preferred tack coat materials may be allowed by the Engineer or required when shown on the plans. Do not dilute emulsified asphalts at the terminal, in the field, or at any other location before use.

The Engineer will obtain at least one sample of the tack coat binder per project in accordance with Tex-500-C, Part III, and test it to verify compliance with Item 300. The Engineer will obtain the sample from the asphalt distributor immediately before use.

F. Additives. Use the type and rate of additive specified when shown on the plans. Other additives that facilitate mixing, compaction, or improve the quality of the mixture may be allowed when approved. Provide the Engineer with documentation such as the bill of lading showing the quantity of additives used in the project unless otherwise directed.

1. **Lime and Liquid Antistripping Agent.** When lime or a liquid antistripping agent is used, add in accordance with Item 301, "Asphalt Antistripping Agents." Do not add lime directly into the mixing drum of any plant where lime is removed through the exhaust stream unless the plant has a baghouse or dust collection system that reintroduces the lime into the drum.

2. **Warm Mix Asphalt (WMA).** Warm Mix Asphalt (WMA) is defined as HMA that is produced within a target temperature discharge range of 215°F and 275°F using Department-approved WMA additives or processes. The Department's Material Producer List of WMA additives and processes is located at http://www.txdot.gov/business/resources/producer-list.html.

   WMA is allowed for use on all projects and is required when shown on plans. The maximum placement or target discharge temperature for WMA may be set at a value less than 275°F when shown on the plans.

   Department-approved WMA additives or processes may be used to facilitate mixing and compaction of HMA produced at target discharge temperatures greater than 275°F; however, such mixtures will not be defined as WMA.

G. Recycled Materials. Use of RAP and RAS is permitted unless otherwise shown on the plans. Do not exceed the maximum allowable percentages of RAP and RAS shown in Table 4. The allowable percentages shown in Table 4 may be decreased or increased when shown on the plans. Determine asphalt content and gradation of the RAP and RAS stockpiles for mixture design purposes in accordance with Tex-236-F. The Engineer may verify the asphalt content of the stockpiles at any time during production. Perform other tests on RAP and RAS when shown on the plans. Asphalt binder from RAP and RAS is designated as recycled asphalt binder. When RAP or RAS is used, calculate and ensure that the ratio of the recycled asphalt binder to total binder does not

exceed the percentages shown in Table 5 during mixture design and HMA production. During HMA production, use a separate cold feed bin for each stockpile of RAP and RAS.

Surface, intermediate, and base mixes referenced in Tables 4 and 5 are defined as follows:

- "Surface" mixes are the final lift or riding surface of the pavement structure;
- "Intermediate" mixes are non-surface mixtures placed less than or equal to 8 inches from the riding surface; and
- "Base" mixes are non-surface mixtures placed greater than 8 inches from the riding surface.

1. **RAP.** RAP is salvaged, milled, pulverized, broken, or crushed asphalt pavement. Crush or break RAP so that 100% of the particles pass the 2 in. sieve.

   Use of Contractor-owned RAP including HMA plant waste is permitted unless otherwise shown on the plans. Department-owned RAP stockpiles are available for the Contractor's use when the stockpile locations are shown on the plans. If Department-owned RAP is available for the Contractor's use, the Contractor may use Contractor-owned fractionated RAP and replace it with an equal quantity of Department-owned RAP. This allowance does not apply to a Contractor using unfractionated RAP. Department-owned RAP generated through required work on the Contract is available for the Contractor's use when shown on the plans. Perform any necessary tests to ensure Contractor- or Department-owned RAP is appropriate for use. The Department will not perform any tests or assume any liability for the quality of the Department-owned RAP unless otherwise shown on the plans. The Contractor will retain ownership of RAP generated on the project when shown on the plans.

   Fractionated RAP is defined as having two or more RAP stockpiles, divided into coarse and fine fractions. The coarse RAP stockpile will contain only material retained by processing over a 3/8 in. screen or 1/2 in. screen unless otherwise approved. The fine RAP stockpile will contain only material passing the 3/8 in. screen or 1/2 in. screen unless otherwise approved. The Engineer may allow the Contractor to use an alternate to the 3/8 in. screen or 1/2 in. screen to fractionate the RAP. The maximum percentages of fractionated RAP may be comprised of coarse or fine fractionated RAP or the combination of both coarse and fine fractionated RAP.

   Do not use Department- or Contractor-owned RAP contaminated with dirt or other objectionable materials. Do not use Department- or Contractor-owned RAP if the decantation value exceeds 5% and the plasticity index is greater than 8. Test the stockpiled RAP for decantation in accordance with Tex-406-A, Part I. Determine the plasticity index in accordance with Tex-106-E if the decantation value exceeds 5%. The decantation and plasticity index requirements do not apply to RAP samples with asphalt removed by extraction or ignition.

Do not intermingle Contractor-owned RAP stockpiles with Department-owned RAP stockpiles. Remove unused Contractor-owned RAP material from the project site upon completion of the project. Return unused Department-owned RAP to the designated stockpile location.

Table 4
Maximum Allowable Amounts of RAP[1]

Maximum Allowable Fractionated RAP[2] (%)			Maximum Allowable Unfractionated RAP[3] (%)		
Surface	**Intermediate**	**Base**	**Surface**	**Intermediate**	**Base**
20.0	30.0	40.0	10.0	10.0	10.0

1. Must also meet the recycled binder to total binder ratio shown in Table 5.
2. Up to 5% RAS may be used separately or as a replacement for fractionated RAP.
3. Unfractionated RAP may not be combined with fractionated RAP or RAS.

2. RAS. Use of post-manufactured RAS or post-consumer RAS (tear-offs) is permitted unless otherwise shown on the plans. Up to 5% RAS may be used separately or as a replacement for fractionated RAP in accordance with Table 4 and Table 5. RAS is defined as processed asphalt shingle material from manufacturing of asphalt roofing shingles or from re-roofing residential structures. Post-manufactured RAS is processed manufacturer's shingle scrap by-product. Post-consumer RAS is processed shingle scrap removed from residential structures. Comply with all regulatory requirements stipulated for RAS by the Texas Commission on Environmental Quality (TCEQ). RAS may be used separately or in conjunction with RAP.

Process the RAS by ambient grinding or granulating such that 100% of the particles pass the 3/8 in. sieve when tested in accordance with Tex-200-F, Part I. Perform a sieve analysis on processed RAS material prior to extraction (or ignition) of the asphalt.

Add sand meeting the requirements of Table 1 and Table 2 or fine RAP to RAS stockpiles if needed to keep the processed material workable. For any stockpile that contains RAS, the entire stockpile will be considered a RAS stockpile and be limited to no more than 5.0% of the HMA mixture in accordance with Table 4.

Certify compliance of the RAS with DMS-11000, "Evaluating and Using Nonhazardous Recyclable Materials (NRM) Guidelines." If the RAS has not come into contact with any hazardous materials, treat it as an established NRM. Use RAS from shingle sources on the Department's Material Producer List of NRM located at http://www.txdot.gov/business/resources/producer-list.html. Prior to use, remove substantially all materials that are not part of the shingle, such as wood, paper, metal, plastic, and felt paper. Determine the deleterious content of RAS material for mixture design purposes in accordance with Tex-217-F, Part III. Do not use RAS if deleterious materials are more than 0.5% of the stockpiled RAS unless otherwise approved. Submit a sample for approval to the Engineer prior to submitting the mixture design. The Department will perform the testing for deleterious material of RAS to determine specification compliance.

H. Substitute Binders. Unless otherwise shown on the plans, the Contractor may use a substitute PG binder listed in Table 5 in lieu of the PG binder originally specified, if the substitute PG binder and mixture made with the substitute PG binder meet the following:

- the substitute binder meets the specification requirements for the substitute binder grade in accordance with Section 300.2.J, "Performance-Graded Binders";
- the substitute binder has an un-aged dynamic shear value less than or equal to 2.00 kPa and an RTFO aged dynamic shear value less than or equal to 5.00 kPa at the PG test temperature; and
- the mixture has less than 10.0 mm of rutting on the Hamburg Wheel test (Tex-242-F) after the number of passes required for the originally specified binder. Use of substitute PG binders may only be allowed at the discretion of the Engineer if the Hamburg Wheel test results are between 10.0 mm and 12.5 mm.

Table 5
Allowable Substitute PG Binders and Maximum Recycled Binder Ratios

Originally Specified PG Binder	Allowable Substitute PG Binder	Maximum Ratio of Recycled Binder[1] to Total Binder (%)		
		Surface	Intermediate	Base
HMA				
76-22[2]	70-22 or 64-22	20.0	20.0	20.0
	70-28 or 64-28	30.0	35.0	40.0
70-22[2]	64-22	20.0	20.0	20.0
	64-28 or 58-28	30.0	35.0	40.0
64-22[2]	58-28	30.0	35.0	40.0
76-28[2]	70-28 or 64-28	20.0	20.0	20.0
	64-34	30.0	35.0	40.0
70-28[2]	64-28 or 58-28	20.0	20.0	20.0
	64-34 or 58-34	30.0	35.0	40.0
64-28[2]	58-28	20.0	20.0	20.0
	58-34	30.0	35.0	40.0
WMA[3]				
76-22[2]	70-22 or 64-22	30.0	35.0	40.0
70-22[2]	64-22 or 58-28	30.0	35.0	40.0
64-22[4]	58-28	30.0	35.0	40.0
76-28[2]	70-28 or 64-28	30.0	35.0	40.0
70-28[2]	64-28 or 58-28	30.0	35.0	40.0
64-28[4]	58-28	30.0	35.0	40.0

1. Combined recycled binder from RAP and RAS.
2. Use no more than 20.0% recycled binder when using this originally specified PG binder.
3. WMA as defined in Section 3268.2.F.2, "Warm Mix Asphalt (WMA)."
4. When used with WMA, this originally specified PG binder is allowed for use at the maximum recycled binder ratios shown in this table.

3. **Equipment.** Provide required or necessary equipment in accordance with Item 320, "Equipment for Asphalt Concrete Pavement."

4. **Construction.** Produce, haul, place, and compact the specified paving mixture. In addition to tests required by the specification, Contractors may perform other QC tests as deemed necessary. At any time during the project, the Engineer may perform production and placement tests as deemed necessary in accordance with Item 5, "Control of the Work." On or before the first day of paving, it is mandatory to schedule and participate in a pre-paving meeting with the Engineer unless otherwise shown on the plans.

   A. **Certification.** Personnel certified by the Hot Mix Asphalt Center Certification Program must conduct all mixture designs, sampling, and testing in accordance with Table 6. Supply the Engineer with a list of certified personnel and copies of their current certificates before beginning production and when personnel changes are made. Provide a mixture design that is developed and signed by a Level 2 certified specialist. Provide a Level 1A certified specialist at the plant during production operations. Provide a Level 1B certified specialist to conduct placement tests.

Table 6
Test Methods, Test Responsibility, and Minimum Certification Levels

Test Description	Test Method	Contractor	Engineer	Level
1. Aggregate and Recycled Material Testing				
Sampling	Tex-400-A	✓	✓	1A
Dry sieve	Tex-200-F, Part I	✓	✓	1A
Washed sieve	Tex-200-F, Part II	✓	✓	1A
Deleterious material	Tex-217-F, Parts I & III	✓	✓	1A
Decantation	Tex-217-F, Part II	✓	✓	1A
Los Angeles abrasion	Tex-410-A		✓	
Magnesium sulfate soundness	Tex-411-A		✓	
Micro-Deval abrasion	Tex-461-A		✓	
Coarse aggregate angularity	Tex-460-A	✓	✓	2
Flat and elongated particles	Tex-280-F	✓	✓	2
Linear shrinkage	Tex-107-E	✓	✓	2
Sand equivalent	Tex-203-F	✓	✓	2
Organic impurities	Tex-408-A	✓	✓	2
2. Asphalt Binder & Tack Coat Sampling				
Asphalt binder sampling	Tex-500-C, Part II	✓	✓	1A/1B
Tack coat sampling	Tex-500-C, Part III	✓	✓	1A/1B
3. Mix Design & Verification				
Design and JMF changes	Tex-204-F	✓	✓	2
Mixing	Tex-205-F	✓	✓	2
Molding (TGC)	Tex-206-F	✓	✓	1A
Molding (SGC)	Tex-241-F	✓	✓	1A
Laboratory-molded density	Tex-207-F	✓	✓	1A
VMA[1] (calculation only)	Tex-204-F	✓	✓	2
Rice gravity	Tex-227-F	✓	✓	1A
Ignition oven correction factors[2]	Tex-236-F	✓	✓	2
Indirect tensile strength	Tex-226-F	✓	✓	2
Hamburg wheel test	Tex-242-F	✓	✓	2
Boil test	Tex-530-C	✓	✓	1A
4. Production Testing				
Selecting random numbers	Tex-225-F, Part I		✓	1A
Mixture sampling	Tex-222-F	✓	✓	1A
Molding (TGC)	Tex-206-F	✓	✓	1A
Molding (SGC)	Tex-241-F	✓	✓	1A
Laboratory-molded density	Tex-207-F	✓	✓	1A
VMA[1] (calculation only)	Tex-204-F	✓	✓	1A
Rice gravity	Tex-227-F	✓	✓	1A
Gradation & asphalt content[2]	Tex-236-F	✓	✓	1A
Control charts	Tex-233-F	✓	✓	1A
Moisture content	Tex-212-F	✓	✓	1A
Hamburg Wheel test	Tex-242-F	✓	✓	2
Micro-Deval abrasion	Tex-461-A		✓	
Boil test	Tex-530-C	✓	✓	1A
Aging ratio	Tex-211-F		✓	
Overlay test	Tex-248-F		✓	
Cantabro loss	Tex-245-F		✓	
5. Placement Testing				
Selecting random numbers	Tex-225-F, Part II		✓	1A/1B
Trimming roadway cores	Tex-207-F	✓	✓	1A/1B
In-place air voids	Tex-207-F	✓	✓	1A/1B
Establish rolling pattern	Tex-207-F	✓		1B
Control charts	Tex-233-F	✓	✓	1A
Ride quality measurement	Tex-1001-S	✓	✓	Note 3
Segregation (density profile)	Tex-207-F, Part V	✓	✓	1B
Longitudinal joint density	Tex-207-F, Part VII	✓	✓	1B
Thermal profile	Tex-244-F	✓	✓	1B

1. Voids in mineral aggregates.
2. Refer to Section 3268.4.I.2.c for exceptions to using an ignition oven.
3. Profiler and operator are required to be certified at the Texas Transportation Institute facility when Surface Test Type B is specified.

B. Reporting and Responsibilities. Use Department-provided Excel templates to record and calculate all test data including but not limited to mixture design, production and placement QC/QA, control charts, thermal profiles, segregation density profiles, and longitudinal joint density. Obtain the latest version of the Excel templates at http://www.txdot.gov/inside-txdot/forms-publications/consultants-contractors/forms/site-manager.html or from the Engineer. The Engineer and the Contractor will provide any available test results to the other party when requested. The maximum allowable time for the Contractor and Engineer to exchange test data is as given in Table 7 unless otherwise approved. The Engineer and the Contractor will immediately report to the other party any test result that requires suspension of production or placement, a payment penalty, or that fails to meet the specification requirements. Record and submit all test results and pertinent information on Department-provided Excel templates to the Engineer electronically by means of a portable USB flash drive, compact disc, or via email.

Subsequent sublots placed after test results are available to the Contractor, which require suspension of operations, may be considered unauthorized work. Unauthorized work will be accepted or rejected at the discretion of the Engineer in accordance with Section 5.3, "Conformity with Plans, Specifications, and Special Provisions."

Table 7
Reporting Schedule

Description	Reported By	Reported To	To Be Reported Within
Production Quality Control			
Gradation[1] Asphalt content[1] Laboratory-molded density[2] Moisture content[3] Boil test[3]	Contractor	Engineer	1 working day of completion of the sublot
Production Quality Assurance			
Gradation[3] Asphalt content[3] Laboratory-molded density[1] Hamburg wheel test[2] Boil test[3] Binder tests[2]	Engineer	Contractor	1 working day of completion of the sublot
Placement Quality Control			
In-place air voids[2] Segregation[1] Longitudinal joint density[1] Thermal profile[1]	Contractor	Engineer	1 working day of completion of the lot
Placement Quality Assurance			
In-place air voids[1] Segregation[2] Longitudinal joint density[2] Thermal profile[2] Aging ratio[2]	Engineer	Contractor	1 working day of receipt of the trimmed cores for in-place air voids[4]
Pay adjustment summary	Engineer	Contractor	2 working days of performing all required tests and receiving Contractor test data

1. These tests are required on every sublot.
2. Optional test. To be reported as soon as results become available.
3. To be performed at the frequency specified on the plans.
4. 2 days are allowed if cores cannot be dried to constant weight within 1 day.

The Engineer will use the Department-provided Excel template to calculate all pay adjustment factors for the lot. Sublot samples may be discarded after the Engineer and Contractor sign off on the pay adjustment summary documentation for the lot.

Use the procedures described in Tex-233-F to plot the results of all quality control (QC) and quality assurance (QA) testing. Update the control charts as soon as test results for each sublot become available. Make the control charts readily accessible at the field laboratory. The Engineer may suspend production for failure to update control charts.

C. **Quality Control Plan (QCP).** Develop and follow the QCP in detail. Obtain approval from the Engineer for changes to the QCP made during the project. The Engineer may suspend operations if the Contractor fails to comply with the QCP.

Submit a written QCP to the Engineer before the mandatory pre-paving meeting. Receive the Engineer's approval of the QCP before beginning production. Include the following items in the QCP:

1. **Project Personnel.** For project personnel, include:
   - a list of individuals responsible for QC with authority to take corrective action;
   - contact information for each individual listed; and
   - copies of certification documents for individuals performing specified QC functions.

2. **Material Delivery and Storage.** For material delivery and storage, include:
   - the sequence of material processing, delivery, and minimum quantities to assure continuous plant operations;
   - aggregate stockpiling procedures to avoid contamination and segregation;
   - frequency, type, and timing of aggregate stockpile testing to assure conformance of material requirements before mixture production; and
   - procedure for monitoring the quality and variability of asphalt binder.

3. **Production.** For production, include:
   - loader operation procedures to avoid contamination in cold bins;
   - procedures for calibrating and controlling cold feeds;
   - procedures to eliminate debris or oversized material;
   - procedures for adding and verifying rates of each applicable mixture component (e.g., aggregate, asphalt binder, RAP, RAS, lime, liquid antistrip);
   - procedures for reporting job control test results; and
   - procedures to avoid segregation and drain-down in the silo.

4. **Loading and Transporting.** For loading and transporting, include:
   - type and application method for release agents; and
   - truck loading procedures to avoid segregation.

5. **Placement and Compaction.** For placement and compaction, include:
   - proposed agenda for mandatory pre-paving meeting, including date and location;
   - proposed paving plan (e.g., paving widths and lift thicknesses);
   - type and application method for release agents in the paver and on rollers, shovels, lutes, and other utensils;
   - procedures for the transfer of mixture into the paver, while avoiding segregation and preventing material spillage;
   - process to balance production, delivery, paving, and compaction to achieve continuous placement operations and good ride quality;
   - paver operations (e.g., operation of wings, height of mixture in auger chamber) to avoid physical and thermal segregation and other surface irregularities; and
   - procedures to construct quality longitudinal and transverse joints.

D. Mixture Design.

1. **Design Requirements**. The Contractor may elect to design the mixture using a Texas Gyratory Compactor (TGC) or a Superpave Gyratory Compactor (SGC) unless otherwise shown on the plans. Use the typical weight design example given in Tex-204-F, Part I, when using a TGC. Use the Superpave mixture design procedure given in Tex-204-F, Part IV, when using a SGC. Design the mixture to meet the requirements listed in Tables 1, 2, 3, 4, 5, 8, 9, and 10.

   a. **Target Laboratory Molded Density When The TGC Is Used.** Design the mixture at a 96.5% target laboratory-molded density or as noted in Table 9. The target laboratory-molded density may be increased in 0.5% increments, not to exceed 97.0%, at the Contractor's discretion.

   b. **Design Number of Gyrations (Ndesign) When The SGC Is Used.** Design the mixture at 50 gyrations (Ndesign). Use a target laboratory-molded density of 96.0% to design the mixture; however, adjustments can be made to the Ndesign value as noted in Table 9. The Ndesign level may be reduced to no less than 35 gyrations at the Contractor's discretion.

   Use an approved laboratory to perform the Hamburg Wheel test and provide results with the mixture design, or provide the laboratory mixture and request that the Department perform the Hamburg Wheel test. The Department maintains the Material Producer List of approved laboratories located at http://www.txdot.gov/business/resources/producer-list.html. The Engineer will be allowed 10 working days to provide the Contractor with Hamburg Wheel test results on the laboratory mixture design.

   The Engineer will provide the mixture design when shown on the plans. The Contractor may submit a new mixture design at any time during the project. The Engineer will verify and approve all mixture designs (JMF1) before the Contractor can begin production.

Provide the Engineer with a mixture design report using the Department-provided Excel template. Include the following items in the report:

- the combined aggregate gradation, source, specific gravity, and percent of each material used;
- asphalt content and aggregate gradation of RAP and RAS stockpiles;
- the target laboratory-molded density (or Ndesign level when using the SGC);
- results of all applicable tests;
- the mixing and molding temperatures;
- the signature of the Level 2 person or persons that performed the design;
- the date the mixture design was performed; and
- a unique identification number for the mixture design.

Table 8
Master Gradation Limits (% Passing by Weight or Volume)
and VMA Requirements

Sieve Size	A Coarse Base	B Fine Base	C Coarse Surface	D Fine Surface	F Fine Mixture
2"	100.0[1]	–	–	–	–
1-1/2"	98.0–100.0	100.0[1]	–	–	–
1"	78.0–94.0	98.0–100.0	100.0[1]	–	–
3/4"	64.0–85.0	84.0–98.0	95.0–100.0	100.0[1]	–
1/2"	50.0–70.0	–	–	98.0–100.0	100.0[1]
3/8"	–	60.0–80.0	70.0–85.0	85.0–100.0	98.0–100.0
#4	30.0–50.0	40.0–60.0	43.0–63.0	50.0–70.0	70.0–90.0
#8	22.0–36.0	29.0–43.0	32.0–44.0	35.0–46.0	38.0–48.0
#30	8.0–23.0	13.0–28.0	14.0–28.0	15.0–29.0	12.0–27.0
#50	3.0–19.0	6.0–20.0	7.0–21.0	7.0–20.0	6.0–19.0
#200	2.0–7.0	2.0–7.0	2.0–7.0	2.0–7.0	2.0–7.0
Design VMA, % Minimum					
–	12.0	13.0	14.0	15.0	16.0
Production (Plant-Produced) VMA, % Minimum					
–	11.0	12.0	13.0	14.0	15.0

1. Defined as maximum sieve size. No tolerance allowed.

Table 9
Laboratory Mixture Design Properties

Mixture Property	Test Method	Requirement
Target laboratory-molded density, % (TGC)	Tex-207-F	96.5[1]
Design gyrations (Ndesign for SGC)	Tex-241-F	50[2]
Indirect tensile strength (dry), psi	Tex-226-F	85–200[3]
Boil test[4]	Tex-530-C	–

1. May be adjusted in 0.5% increments within a range of 96.0% to 97.5% when shown on the plans or specification or when mutually agreed between the Engineer and Contractor.
2. May be adjusted within a range of 35–100 gyrations when shown on the plans or specification or when mutually agreed between the Engineer and Contractor.
3. The Engineer may allow the IDT strength to exceed 200 psi if the corresponding Hamburg Wheel rut depth is greater than 3.0 mm and less than 12.5 mm.
4. Used to establish baseline for comparison to production results. May be waived when approved.

Table 10
Hamburg Wheel Test Requirements

High-Temperature Binder Grade	Test Method	Minimum # of Passes[1] @ 12.5 mm[2] Rut Depth, Tested @ 50°C
PG 64 or lower	Tex-242-F	10,000
PG 70		15,000
PG 76 or higher		20,000

1. May be decreased or waived when shown on the plans.
2. When the rut depth at the required minimum number of passes is less than 3 mm, the Engineer may require the Contractor to increase the target laboratory-molded density (TGC) by 0.5% to no more than 97.5% or lower the Ndesign level (SGC) to no less than 35 gyrations.

2. **Job-Mix Formula Approval.** The job-mix formula (JMF) is the combined aggregate gradation, target laboratory molded density (or Ndesign level), and target asphalt percentage used to establish target values for hot mix production. JMF1 is the original laboratory mixture design used to produce the trial batch. When WMA is used, JMF1 may be designed and submitted to the Engineer without including the WMA additive. When WMA is used, document the additive or process used and recommend rate on the JMF1 submittal. The Engineer and the Contractor will verify JMF1 based on plant-produced mixture from the trial batch unless otherwise approved. The Engineer may accept an existing mixture design previously used on a Department project and may waive the trial batch to verify JMF1. The Department may require the Contractor to reimburse the Department for verification tests if more than two trial batches per design are required.

   a. **Contractor's Responsibilities.**

      (1) **Providing Gyratory Compactor.** Use a TGC calibrated in accordance with Tex-914-K when electing or required to design the mixture in accordance with Tex-204-F, Part I, for molding production samples. Furnish an SGC calibrated in accordance with Tex-241-F when electing or required to design the mixture in accordance with Tex-204-F, Part IV, for molding production samples. If the SGC is used, locate the SGC at the Engineer's field laboratory and make the SGC available to the Engineer for use in molding production samples.

      (2) **Gyratory Compactor Correlation Factors.** Use Tex-206-F, Part II, to perform a gyratory compactor correlation when the Engineer uses a different gyratory compactor. Apply the correlation factor to all subsequent production test results.

      (3) **Submitting JMF1.** Furnish the Engineer a mix design report (JMF1) with representative samples of all component materials and request approval to produce the trial batch. If opting to have the Department perform the Hamburg Wheel test on the laboratory mixture, provide the Engineer with approximately 10,000 g of the design mixture and request that the Department perform the Hamburg Wheel test.

(4) Supplying Aggregate. Provide the Engineer with approximately 40 lb. of each aggregate stockpile unless otherwise directed.

(5) Supplying Asphalt. Provide the Engineer at least 1 gal. of the asphalt material and sufficient quantities of any additives proposed for use.

(6) Ignition Oven Correction Factors. Determine the aggregate and asphalt correction factors from the ignition oven in accordance with Tex-236-F. Prior to the trial batch production, provide the Engineer with split samples of the mixtures, including all additives (except water), and blank samples used to determine the correction factors for the ignition oven used for quality assurance testing during production. Correction factors established from a previously approved mixture design may be used for the current mixture design, if the mixture design and ignition oven are the same as previously used unless otherwise directed.

(7) Boil Test. Perform the test and retain the tested sample from Tex-530-C until completion of the project or as directed by the Engineer. Use this sample for comparison purposes during production. The Engineer may waive the requirement for the boil test.

(8) Trial Batch Production. Upon receiving conditional approval of JMF1 and authorization from the Engineer to produce a trial batch, provide a plant-produced trial batch, including the WMA additive or process, if applicable, for verification testing of JMF1 and development of JMF2. Produce a trial batch mixture that meets the requirements in Table 4, Table 5, and Table 11. In lieu of a new trial batch, the Engineer may accept test results from recent production of the same mixture.

(9) Trial Batch Production Equipment. To produce the trial batch, use only equipment and materials proposed for use on the project.

(10) Trial Batch Quantity. Produce enough quantity of the trial batch to ensure that the mixture meets the specification requirements.

(11) Number of Trial Batches. Produce trial batches as necessary to obtain a mixture that meets the specification requirements.

(12) Trial Batch Sampling. Obtain a representative sample of the trial batch and split it into three equal portions, in accordance with Tex-222-F. Label these portions as "Contractor," "Engineer," and "Referee." Deliver samples to the appropriate laboratory as directed.

(13) Trial Batch Testing. Test the trial batch to ensure that the mixture produced using the proposed JMF1 meets the mixture requirements in Table 11. The trial batch mixture must also be in compliance with the Hamburg Wheel requirement in Table 10. Use an approved laboratory to perform the Hamburg Wheel test on the trial batch mixture or request that the Department perform the Hamburg Wheel test. The Engineer will be allowed 10 working days to provide the Contractor with Hamburg Wheel

test results on the trial batch. Provide the Engineer with a copy of the trial batch test results.

(14) Development of JMF2. After the Engineer grants full approval of JMF1 based on results from the trial batch, evaluate the trial batch test results, determine the optimum mixture proportions, and submit as JMF2. Adjust the asphalt content or gradation to achieve the specified target laboratory-molded density. The asphalt content established for JMF2 is not required to be within any tolerance of the optimum asphalt content established for JMF1; however, mixture produced using JMF2 must meet the voids in mineral aggregates (VMA) requirements for production shown in Table 8. If the optimum asphalt content for JMF2 is more than 0.5% lower than the optimum asphalt content for JMF1, the Engineer may perform or require the Contractor to perform Tex-226-F on Lot 1 production to confirm the indirect tensile strength does not exceed 200 psi. Verify that JMF2 meets the mixture requirements in Table 5.

(15) Mixture Production. After receiving approval for JMF2 and receiving a passing result from the Department's or a Department-approved laboratory's Hamburg Wheel test on the trial batch, use JMF2 to produce Lot 1 as described in Section 3268.4.I.3.a.(1), "Lot 1 Placement." As an option, once JMF2 is approved, proceed to Lot 1 production at the Contractor's risk without receiving the results from the Department's Hamburg Wheel test on the trial batch.

If electing to proceed without Hamburg Wheel test results from the trial batch, notify the Engineer. Note that the Engineer may require up to the entire sublot of any mixture failing the Hamburg Wheel test to be removed and replaced at the Contractor's expense.

(16) Development of JMF3. Evaluate the test results from Lot 1, determine the optimum mixture proportions, and submit as JMF3 for use in Lot 2.

(17) JMF Adjustments. If necessary, adjust the JMF before beginning a new lot. The adjusted JMF must:

- be provided to the Engineer in writing before the start on a new lot;
- be numbered in sequence to the previous JMF;
- meet the mixture requirements in Table 4 and Table 5;
- meet the master gradation limits shown in Table 8; and
- be within the operational tolerances of JMF2 listed in Table 11.

(18) Requesting Referee Testing. If needed, use referee testing in accordance with Section 3268.4.I.1, "Referee Testing," to resolve testing differences with the Engineer.

Table 11
Operational Tolerances

Description	Test Method	Allowable Difference Between Trial Batch and JMF1 Target	Allowable Difference from Current JMF Target	Allowable Difference between Contractor and Engineer[1]
Individual % retained for #8 sieve and larger	Tex-200-F or Tex-236-F	Must be Within Master Grading Limits in Table 8	±5.0[2,3]	±5.0
Individual % retained for sieves smaller than #8 and larger than #200			±3.0[2,3]	±3.0
% passing the #200 sieve			±2.0[2,3]	±1.6
Asphalt content, %	Tex-236-F	±0.5	±0.3[3]	±0.3
Laboratory-molded density, %	Tex-207-F	±1.0	±1.0	±1.0
In-place air voids, %		N/A	N/A	±1.0
Laboratory-molded bulk specific gravity		N/A	N/A	±0.020
VMA, %, min	Tex-204-F	Note 4	Note 4	N/A
Theoretical maximum specific (Rice) gravity	Tex-227-F	N/A	N/A	±0.020

1. Contractor may request referee testing only when values exceed these tolerances.
2. When within these tolerances, mixture production gradations may fall outside the master grading limits; however, the % passing the #200 will be considered out of tolerance when outside the master grading limits.
3. Only applies to mixture produced for Lot 1 and higher.
4. Test and verify that Table 8 requirements are met.

b. Engineer's Responsibilities.

(1) Gyratory Compactor. For mixtures designed in accordance with Tex-204-F, Part I, the Engineer will use a Department TGC, calibrated in accordance with Tex-914-K, to mold samples for trial batch and production testing. The Engineer will make the Department TGC and the Department field laboratory available to the Contractor for molding verification samples, if requested by the Contractor.

For mixtures designed in accordance with Tex-204-F, Part IV, the Engineer will use a Department SGC, calibrated in accordance with Tex-241-F, to mold samples for laboratory mixture design verification. For molding trial batch and production specimens, the Engineer will use the Contractor-provided SGC at the field laboratory or provide and use a Department SGC at an alternate location. The Engineer will make the Contractor-provided SGC in the Department field laboratory available to the Contractor for molding verification samples.

(2) Conditional Approval of JMF1 and Authorizing Trial Batch. Within 2 working days of receiving the mixture design report (JMF1) and all required materials and Contractor-provided Hamburg Wheel test results, the Engineer will review the Contractor's mix design report and verify conformance with all aggregates, asphalt, additives, recycled materials, and mixture specifications. The Engineer will grant the Contractor conditional approval of JMF1, if the information provided on the paper copy of JMF1 indicates that the Contractor's mixture design meets the specifications. When the Contractor does not provide Hamburg Wheel test results with laboratory mixture design, 10 working days is allowed for

conditional approval of JMF 1. The Engineer will base full approval of JMF1 on test results on mixture from the trial batch.

Unless waived, the Engineer will determine the Micro-Deval abrasion loss in accordance with Section 3268.2.A.1.b, "Micro-Deval Abrasion." If the Engineer's test results are pending after 2 working days, conditional approval of JMF1 will still be granted within 2 working days of receiving JMF1. When the Engineer's test results become available, they will be used for specification compliance.

After conditionally approving JMF1, including either Contractor- or Department-supplied Hamburg Wheel test results, the Contractor is authorized to produce a trial batch.

(3) **Hamburg Wheel Testing of JMF1.** If the Contractor requests the option to have the Department perform the Hamburg Wheel test on the laboratory mixture, the Engineer will mold samples in accordance with Tex-242-F to verify compliance with the Hamburg Wheel test requirement in Table 10.

(4) **Ignition Oven Correction Factors.** The Engineer will use the split samples provided by the Contractor to determine the aggregate and asphalt correction factors for the ignition oven used for quality assurance testing during production in accordance with Tex-236-F.

(5) **Testing the Trial Batch.** Within 1 full working day, the Engineer will sample and test the trial batch to ensure that the mixture meets the requirements in Table 11. If the Contractor requests the option to have the Department perform the Hamburg Wheel test on the trial batch mixture, the Engineer will mold samples in accordance with Tex-242-F to verify compliance with the Hamburg Wheel test requirement in Table 10.

The Engineer will have the option to perform the following tests on the trial batch:

- Tex-226-F, to verify that the indirect tensile strength meets the requirement shown in Table 9; and
- Tex-530-C, to retain and use for comparison purposes during production.

(6) **Full Approval of JMF1.** The Engineer will grant full approval of JMF1 and authorize the Contractor to proceed with developing JMF2 if the Engineer's results for the trial batch meet the requirements in Table 11. The Engineer will notify the Contractor that an additional trial batch is required if the trial batch does not meet these requirements.

(7) **Approval of JMF2.** The Engineer will approve JMF2 within 1 working day if the mixture meets the requirements in Table 5 and the gradation meets the master grading limits shown in Table 8. The asphalt content established for JMF2 is not required to be within any tolerance of the optimum asphalt content established for JMF1; however, mixture

produced using JMF2 must meet the VMA requirements shown in Table 8. If the optimum asphalt content for JMF2 is more than 0.5% lower than the optimum asphalt content for JMF1, the Engineer may perform or require the Contractor to perform Tex-226-F on Lot 1 production to confirm the indirect tensile strength does not exceed 200 psi.

(8) Approval of Lot 1 Production. The Engineer will authorize the Contractor to proceed with Lot 1 production (using JMF2) as soon as a passing result is achieved from the Department's or a Department-approved laboratory's Hamburg Wheel test on the trial batch. The Contractor may proceed at its own risk with Lot 1 production without the results from the Hamburg Wheel test on the trial batch.

If the Department's or Department-approved laboratory's sample from the trial batch fails the Hamburg Wheel test, the Engineer will suspend production until further Hamburg Wheel tests meet the specified values. The Engineer may require up to the entire sublot of any mixture failing the Hamburg Wheel test be removed and replaced at the Contractor's expense.

(9) Approval of JMF3 and Subsequent JMF Changes. JMF3 and subsequent JMF changes are approved if they meet the mixture requirements shown in Table 4, Table 5, the master grading limits shown in Table 8, and are within the operational tolerances of JMF2 shown in Table 11.

E. Production Operations. Perform a new trial batch when the plant or plant location is changed. Take corrective action and receive approval to proceed after any production suspension for noncompliance to the specification. Submit a new mix design and perform a new trial batch when the asphalt content of:

- either RAP stockpile used in the mix is more than 0.5% higher than the value shown on the mixture design report; or
- RAS stockpile used in the mix is more than 2.0% higher than the value shown on the mixture design report.

1. Storage and Heating of Materials. Do not heat the asphalt binder above the temperatures specified in Item 300, "Asphalts, Oils, and Emulsions," or outside the manufacturer's recommended values. On a daily basis, provide the Engineer with the records of asphalt binder and hot-mix asphalt discharge temperatures (in legible and discernible increments) in accordance with Item 320, "Equipment for Asphalt Concrete Pavement." Do not store mixture for a period long enough to affect the quality of the mixture, nor in any case longer than 12 hr unless otherwise approved.

2. Mixing and Discharge of Materials. Notify the Engineer of the target discharge temperature and produce the mixture within 25°F of the target. Monitor the temperature of the material in the truck before shipping to ensure that it does not exceed 350°F (or 275°F for WMA) and is not lower than 215°F. The Department will not pay for or allow placement of any mixture produced at more than 350°F.

When WMA is required, produce the WMA within the target temperature discharge range of 215°F and 275°F. Take corrective action any time the discharge temperature of the WMA exceeds the target discharge range. The Engineer may suspend production operations if the Contractor's corrective action is not successful at controlling the production temperature within the target discharge range. Note that when WMA is produced, it may be necessary to adjust burners to ensure complete combustion such that no burner fuel residue remains in the mixture.

Control the mixing time and temperature so that substantially all moisture is removed from the mixture before discharging from the plant. If requested, determine the moisture content by oven-drying in accordance with Tex-212-F, Part II, and verify that the mixture contains no more than 0.2% of moisture by weight. Obtain the sample immediately after discharging the mixture into the truck, and perform the test promptly.

F. Hauling Operations. Before use, clean all truck beds to ensure that mixture is not contaminated. When a release agent is necessary, use a release agent on the Department's Material Producer List to coat the inside bed of the truck.

Use only equipment for hauling as defined in Section 3268.4.G.3.c, "Hauling Equipment." Other hauling equipment may be used when allowed by the Engineer.

G. Placement Operations. Collect haul tickets from each load of mixture delivered to the project and provide the Department's copy to the Engineer approximately every hour, or as directed by the Engineer. When the Pave-IR system is not used for specification compliance, use a non-contact infrared thermometer to measure and record the internal temperature of the mixture as discharged from the truck or material transfer device prior to or as the mix enters the paver and an approximate station number or GPS coordinates on each ticket. Calculate the daily yield and cumulative yield for the specified lift and provide to the Engineer at the end of paving operations for each day unless otherwise directed. The Engineer may suspend production if the Contractor fails to produce and provide haul tickets and yield calculations by the end of paving operations for each day.

Prepare the surface by removing raised pavement markers and objectionable material such as moisture, dirt, sand, leaves, and other loose impediments from the surface before placing mixture. Remove vegetation from pavement edges. Place the mixture to meet the typical section requirements and produce a smooth, finished surface with a uniform appearance and texture. Offset longitudinal joints of successive courses of hot mix by at least 6 in. Place mixture so that longitudinal joints on the surface course coincide with lane lines, or as directed. Ensure that all finished surfaces will drain properly. Place the mixture at the rate or thickness shown on the plans. The Engineer will use the guidelines in Table 12 to determine the compacted lift thickness of each layer when multiple lifts are required. The thickness determined is based on the rate of 110 lb./sq. yd. for each inch of pavement unless otherwise shown on the plans.

Table 12
Compacted Lift Thickness and Required Core Height

Mixture Type	Compacted Lift Thickness Guidelines		Minimum Untrimmed Core Height (in.) Eligible for Testing
	Minimum (in.)	Maximum (in.)	
A	3.00	6.00	2.00
B	2.50	5.00	1.75
C	2.00	4.00	1.50
D	1.50	3.00	1.25
F	1.25	2.50	1.25

1. Weather Conditions.

a. When Using a Pave-IR System for Specification Compliance. The Contractor may pave any time the roadway is dry and the roadway surface temperature is at least 32°F; however, the Engineer may restrict the Contractor from paving surface mixtures if the ambient temperature is likely to drop below 32°F within 12 hours of paving. Operate the Pave-IR system in accordance with Tex-244-F and demonstrate to the Engineer that no recurring severe thermal segregation exists. Provide the Engineer with the automated report described in Tex-244-F on a daily basis unless otherwise directed.

b. When Not Using a Pave-IR System for Specification Compliance. Place mixture when the roadway surface temperature is equal to or higher than the temperatures listed in Table 13 unless otherwise approved or as shown on the plans. Measure the roadway surface temperature with a handheld infrared thermometer. The Engineer may allow mixture placement to begin prior to the roadway surface reaching the required temperature requirements, if conditions are such that the roadway surface will reach the required temperature within 2 hours of beginning placement operations. Place mixtures only when weather conditions and moisture conditions of the roadway surface are suitable in the opinion of the Engineer. The Engineer may restrict the Contractor from paving if the ambient temperature is likely to drop below 32°F within 12 hours of paving.

Table 13
Minimum Pavement Surface Temperatures

	Minimum Pavement Surface Temperatures in Degrees Fahrenheit	
Originally Specified High Temperature Binder Grade	Subsurface Layers or Night Paving Operations	Surface Layers Placed in Daylight Operations
PG 64 or lower	45	50
PG 70	55[1]	60[1]
PG 76 or higher	60[1]	60[1]

1. Contractors may pave at temperatures 10°F lower than these values when utilizing a paving process including WMA or equipment that eliminates thermal segregation. In such cases, the Contractor must use either a hand held thermal camera or a hand held infrared thermometer operated in accordance with Tex-244-F to demonstrate to the satisfaction of the Engineer that the uncompacted mat has no more than 10°F of thermal segregation.

2. **Tack Coat.** Clean the surface before placing the tack coat. Unless otherwise approved, apply tack coat uniformly at the rate directed by the Engineer. The Engineer will set the rate between 0.04 and 0.10 gal. of residual asphalt per square yard of surface area. Apply the tack coat in a uniform manner to avoid streaks and other irregular patterns. Apply a thin, uniform tack coat to all contact surfaces of curbs, structures, and all joints. Allow adequate time for emulsion to break completely prior to placing any material. Prevent splattering of tack coat when placed adjacent to curb, gutter, and structures. Roll the tack coat with a pneumatic-tire roller to remove streaks and other irregular patterns when directed.

3. **Lay-Down Operations.**

   a. **Thermal Profile.** Use a thermal camera or an infrared thermometer to obtain thermal profiles on each sublot in accordance with Tex-244-F. When the Pave-IR system is not used for specification compliance, the Engineer will obtain a thermal profile at least once per project. Thermal profiles are not applicable in areas described in Section 3268.4.I.3.a(4), "Miscellaneous Areas."

   Within 1 working day of the completion of each lot, provide the Engineer with the thermal profile of every sublot within the lot. Report the results of each thermal profile in accordance with Section 3268.4.B, "Reporting and Responsibilities."

   (1) Moderate Thermal Segregation. Any areas that have a temperature differential greater than 25°F but not exceeding 50°F are deemed as having moderate thermal segregation. Take immediate corrective action to eliminate the moderate thermal segregation. Evaluate areas with moderate thermal segregation by performing density profiles in accordance with Section 3268.4.I.3.c(2), "Segregation (Density Profile)."

   (2) Severe Thermal Segregation. Any areas that have a temperature differential greater than 50°F are deemed as having severe thermal segregation. When the Pave-IR system is not used for specification compliance, no production or placement bonus will be paid for any sublot that contains severe thermal segregation. Suspend operations and take immediate corrective action to eliminate severe thermal segregation unless otherwise directed. Resume operations when the Engineer determines that subsequent production will meet the requirements of this Section. Evaluate areas with severe thermal segregation by performing density profiles in accordance with Section 3268.4.I.3.c(2), "Segregation (Density Profile)." Remove and replace the material in any areas that have both severe thermal segregation and a failing result for Segregation (Density Profile) unless otherwise directed. The sublot in question may receive a production and placement bonus if applicable when the defective material is successfully removed and replaced.

   (3) Use of the Pave-IR System. In lieu of obtaining thermal profiles on each sublot using a thermal camera or an infrared thermometer, the Contractor

may use the Pave-IR system (paver mounted infrared bar) to obtain a continuous thermal profile in accordance with Tex-244-F. When electing to use the Pave-IR system, notify the Engineer prior to beginning placement operations and specify if using the Pave-IR system for specification compliance or for information only. When electing to use the Pave-IR system for information only, use a thermal camera or an infrared thermometer to obtain thermal profiles in accordance with Tex-244-F. When electing to use the Pave-IR system for information only, segregation density profiles are applicable.

When using the Pave-IR system for specification compliance, review the output results on a daily basis. Unless otherwise directed, provide the automated report described in Tex-244-F to the Engineer for review. Modify the paving process as necessary to eliminate any recurring (moderate or severe) thermal segregation identified by the Pave-IR system. The Engineer may suspend paving operations if the Contractor cannot successfully modify the paving process to eliminate recurring severe thermal segregation. Density profiles are not required and are not applicable when using the Pave-IR system for specification compliance. Upon completion of use of the Pave-IR system for specification compliance or as requested by the Engineer, provide the Engineer with electronic copies of all daily data files that can be used with the Pave-IR system software to generate temperature profile plots.

b. Windrow Operations. When hot mix is placed in windrows, operate windrow pickup equipment so that substantially all the mixture deposited on the roadbed is picked up and loaded into the paver.

c. Hauling Equipment. The Contractor may elect to use belly dumps, live bottom, or end dump trucks to haul and transfer mixture; however, with exception of paving miscellaneous areas, end dump trucks are only allowed when used in conjunction with an MTD with remixing capability or when a Pave-IR system is used for specification compliance unless otherwise allowed by the Engineer.

d. Screed Heaters. If the paver stops for more than 5 minutes, turn off screed heaters to prevent overheating of the mat. If the screed heater remains on for more than 5 minutes while the paver is stopped, the Engineer may evaluate the suspect area in accordance with Section 3268.4.I.3.c(4),"Recovered Asphalt Dynamic Shear Rheometer (DSR)."

H. Compaction. Uniformly compact the pavement to contain between 3.8% and 8.5% in-place air voids. When the in-place air voids exceed the range of 3.8% and 8.5%, take immediate corrective action to bring the operation within these tolerances. Areas defined in Section 3268.4.I.3.a(4), "Miscellaneous Areas," are not subject to in-place air void determination. In all other areas, the Engineer may obtain and test cores and may suspend operations or require removal and replacement if the in-place air voids are less than 2.7% or greater than 9.9%. The Engineer will allow paving to resume when the proposed corrective action is likely to yield between 3.8% and 8.5% in-place air voids.

Furnish the type, size, and number of rollers required for compaction as approved. Use a pneumatic-tire roller to seal the surface unless excessive pickup of fines occurs. Use additional rollers as required to remove any roller marks. Use only water or an approved release agent on rollers, tamps, and other compaction equipment unless otherwise directed.

On the first day of production, use the control strip method given in Tex-207-F, Part IV, to establish the rolling pattern that will produce the desired in-place air voids unless otherwise directed.

Use tamps to thoroughly compact the edges of the pavement along curbs, headers, and similar structures and in locations that will not allow thorough compaction with rollers. The Engineer may require rolling with a trench roller on widened areas, in trenches, and in other limited areas.

Complete all compaction operations before the pavement temperature drops below 160°F unless otherwise allowed. The Engineer may allow compaction with a light finish roller operated in static mode for pavement temperatures below 160°F.

Allow the compacted pavement to cool to 160°F or lower before opening to traffic unless otherwise directed. When directed, sprinkle the finished mat with water or limewater to expedite opening the roadway to traffic.

I. Acceptance Plan. Pay adjustments for the material will be in accordance with Article 3268.6, "Payment."

Sample and test the hot mix on a lot and sublot basis. If the production pay factor given in Section 3268.6.A, "Production Pay Adjustment Factors," for two consecutive lots or the placement pay factor given in Section 3268.6.B, "Placement Pay Adjustment Factors," for two consecutive lots is below 1.000, suspend production until test results or other information indicates to the satisfaction of the Engineer that the next material produced or placed will result in pay factors of at least 1.000.

1. Referee Testing. The Construction Division is the referee laboratory. The Contractor may request referee testing if a "remove and replace" condition is determined based on the Engineer's test results, or if the differences between Contractor and Engineer test results exceed the maximum allowable difference shown in Table 11 and the differences cannot be resolved. The Contractor may also request referee testing if the Engineer's test results require suspension of production and the Contractor's test results are within specification limits. Make the request within 5 working days after receiving test results and cores from the Engineer. Referee tests will be performed only on the sublot in question and only for the particular tests in question. Allow 10 working days from the time the samples are received at the referee laboratory for test results to be reported. The Department may require the Contractor to reimburse the Department for referee tests if more than three referee tests per project are required and the Engineer's test results are closer than the Contractor's test results to the referee test results.

The Construction Division will determine the laboratory-molded density based on the molded specific gravity and the maximum theoretical specific gravity of the

referee sample. The in-place air voids will be determined based on the bulk specific gravity of the cores, as determined by the referee laboratory and the Engineer's average maximum theoretical specific gravity for the lot. With the exception of "remove and replace" conditions, referee test results are final and will establish pay adjustment factors for the sublot in question. The Contractor may decline referee testing and accept the Engineer's test results when the placement pay adjustment factor for any sublot results in a "remove and replace" condition. Placement sublots subject to be removed and replaced will be further evaluated in accordance with Section 3268.6.B.2, "Placement Sublots Subject to Removal and Replacement."

2. Production Acceptance.

a. Production Lot. A production lot consists of four equal sublots. The default quantity for Lot 1 is 1,000 tons; however, when requested by the Contractor, the Engineer may increase the quantity for Lot 1 to no more than 4,000 tons. The Engineer will select subsequent lot sizes based on the anticipated daily production such that approximately three to four sublots are produced each day. The lot size will be between 1,000 tons and 4,000 tons. The Engineer may change the lot size before the Contractor begins any lot.

If the optimum asphalt content for JMF2 is more than 0.5% lower than the optimum asphalt content for JMF1, the Engineer may perform or require the Contractor to perform Tex-226-F on Lot 1 to confirm the indirect tensile strength does not exceed 200 psi. If the indirect tensile strength exceeds 200 psi, take corrective action to bring the mixture within specification compliance unless otherwise directed.

(1) Incomplete Production Lots. If a lot is begun but cannot be completed, such as on the last day of production or in other circumstances deemed appropriate, the Engineer may close the lot. Adjust the payment for the incomplete lot in accordance with Section 3268.6.A, "Production Pay Adjustment Factors." Close all lots within 5 working days unless otherwise allowed by the Engineer.

b. Production Sampling.

(1) Mixture Sampling. Obtain hot mix samples from trucks at the plant in accordance with Tex-222-F. The sampler will split each sample into three equal portions in accordance with Tex-200-F and label these portions as "Contractor," "Engineer," and "Referee." The Engineer will perform or witness the sample splitting and take immediate possession of the samples labeled "Engineer" and "Referee." The Engineer will maintain the custody of the samples labeled "Engineer" and "Referee" until the Department's testing is completed.

(a) Random Sample. At the beginning of the project, the Engineer will select random numbers for all production sublots. Determine sample locations in accordance with Tex-225-F. For each sublot, take one

sample at the location randomly selected. The Engineer will perform or witness the sampling of production sublots.

(b) Blind Sample. For one sublot per lot, the Engineer will obtain and test a "blind" sample in lieu of the random sample collected by the Contractor. The Contractor may test either the "blind" or the random sample; however, referee testing (if applicable) will be based on a comparison of results from the "blind" sample. The location of the Engineer's "blind" sample will not be disclosed to the Contractor. The Engineer's "blind" sample may be randomly selected in accordance with Tex-225-F for any sublot or selected at the discretion of the Engineer. The Engineer will use the Contractor's split sample for sublots not sampled by the Engineer.

(2) Informational Cantabro and Overlay Testing. During the first week of production, randomly select one sublot from Lot 2 or higher for Cantabro and Overlay testing. Obtain and provide the Engineer with approximately 150 lb. (70 kg) of mixture in sealed containers, boxes, or bags labeled with CSJ, mixture type, lot, and sublot number. The Engineer will ship the mixture to the Construction Division for Cantabro and Overlay testing. Results from these tests will not be used for specification compliance.

(3) Asphalt Binder Sampling. Obtain a 1 qt. sample of the asphalt binder for each lot of mixture produced. Obtain the sample at approximately the same time the mixture random sample is obtained. Sample from a port located immediately upstream from the mixing drum or pug mill in accordance with Tex-500-C, Part II. Label the can with the corresponding lot and sublot numbers and deliver the sample to the Engineer. The Engineer may also obtain independent samples. If obtaining an independent asphalt binder sample, the Engineer will split a sample of the asphalt binder with the Contractor. The Engineer will test at least one asphalt binder sample per project to verify compliance with Item 300, "Asphalts, Oils, and Emulsions."

c. Production Testing. The Contractor and Engineer must perform production tests in accordance with Table 14. The Contractor has the option to verify the Engineer's test results on split samples provided by the Engineer. Determine compliance with operational tolerances listed in Table 11 for all sublots.

If the Engineer's laboratory-molded density on any sublot is less than 95.0% or greater than 98.0%, take immediate corrective action to bring the mixture within these tolerances. The Engineer may suspend operations if the Contractor's corrective actions do not produce acceptable results. The Engineer will allow production to resume when the proposed corrective action is likely to yield acceptable results.

If the aggregate mineralogy is such that Tex-236-F does not yield reliable results, the Engineer may allow alternate methods for determining the asphalt content and aggregate gradation. Provide evidence that results from Tex-236-F

are not reliable before requesting permission to use an alternate method unless otherwise directed. If an alternate test method is allowed, use the applicable test procedure as directed.

Table 14
Production and Placement Testing Frequency

Description	Test Method	Minimum Contractor Testing Frequency	Minimum Engineer Testing Frequency[1]
Individual % retained for #8 sieve and larger	Tex-200-F or Tex-236-F	1 per sublot	1 per 12 sublots
Individual % retained for sieves smaller than #8 and larger than #200			
% passing the #200 sieve			
Laboratory-molded density	Tex-207-F	N/A	1 per sublot
Laboratory-molded bulk specific gravity			
In-place air voids			
VMA	Tex-204-F		
Segregation (density profile)[5]	Tex-207-F, Part V	1 per sublot	1 per project
Longitudinal joint density	Tex-207-F, Part VII		
Moisture content	Tex-212-F, Part II	When directed	
Theoretical maximum specific (Rice) gravity	Tex-227-F	N/A	1 per sublot
Asphalt content	Tex-236-F	1 per sublot	1 per lot
Hamburg Wheel test	Tex-242-F	N/A	1 per project
Recycled Asphalt Shingles (RAS)[2]	Tex-217-F, Part III	N/A	
Thermal profile[5]	Tex-244-F	1 per sublot	
Asphalt binder sampling and testing	Tex-500-C	1 per lot (sample only)	
Tack coat sampling and testing	Tex-500-C, Part III	N/A	
Boil test[3]	Tex-530-C	1 per lot	
Cantabro loss[4]	Tex-245-F	1 per project (sample only)	
Overlay test[4]	Tex-248-F		

1. For production defined in Section 3268.I.4, "Exempt Production," the Engineer will test at the frequency listed in the Department's *Guide Schedule of Sampling and Testing* and this specification.
2. Testing performed by the Construction Division or designated laboratory.
3. The Engineer may reduce or waive the sampling and testing requirements based on a satisfactory test history.
4. Testing performed by the Construction Division and for informational purposes only.
5. Not required when the Pave-IR system is used for specification compliance.

d. Operational Tolerances. Control the production process within the operational tolerances listed in Table 11. When production is suspended, the Engineer will allow production to resume when test results or other information indicates that the next mixture produced will be within the operational tolerances.

(1) Gradation. Suspend operation and take corrective action if any aggregate is retained on the maximum sieve size shown in Table 8. A sublot is defined as out of tolerance if either the Engineer's or the Contractor's test results are out of operational tolerance. Unless otherwise directed, suspend production when test results for gradation exceed the operational tolerances for three consecutive sublots on the same sieve or four consecutive sublots on any sieve. The consecutive sublots may be from more than one lot.

(2) Asphalt Content. A sublot is defined as out of operational tolerance if either the Engineer's or the Contractor's test results exceed the values listed in Table 11. No production or placement bonus will be paid for any sublot that is out of operational tolerance for asphalt content. Suspend production and shipment of the mixture if the Engineer's or the Contractor's asphalt content deviates from the current JMF by more than 0.5% for any sublot.

(3) Voids in Mineral Aggregates (VMA). The Engineer will determine the VMA for every sublot. For sublots when the Engineer does not determine asphalt content, the Engineer will use the asphalt content results from quality control testing performed by the Contractor to determine VMA.

Take immediate corrective action if the VMA value for any sublot is less than the minimum VMA requirement for production listed in Table 8. Suspend production and shipment of the mixture if the Engineer's VMA results on two consecutive sublots are below the minimum VMA requirement for production listed in Table 8. No production or placement bonus will be paid for any sublot that does not meet the minimum VMA requirement for production listed in Table 8 based on the Engineer's VMA determination.

Suspend production and shipment of the mixture if the Engineer's VMA result is more than 0.5% below the minimum VMA requirement for production listed in Table 8. In addition to suspending production, the Engineer may require removal and replacement or may allow the sublot to be left in place without payment.

(4) Hamburg Wheel Test. The Engineer may perform a Hamburg Wheel test at any time during production, including when the boil test indicates a change in quality from the materials submitted for JMF1. In addition to testing production samples, the Engineer may obtain cores and perform Hamburg Wheel tests on any areas of the roadway where rutting is observed. When the production or core samples fail the Hamburg Wheel test criteria in Table 10, suspend production until further Hamburg Wheel tests meet the specified values. Core samples, if taken, will be obtained from the center of the finished mat or other areas excluding the vehicle wheel paths. The Engineer may require up to the entire sublot of any mixture failing the Hamburg Wheel test to be removed and replaced at the Contractor's expense.

If the Department's or approved laboratory's Hamburg Wheel test results in a "remove and replace" condition, the Contractor may request that the Department confirm the results by retesting the failing material. The Construction Division will perform the Hamburg Wheel tests and determine the final disposition of the material in question based on the Department's test results.

e. Individual Loads of Hot Mix. The Engineer can reject individual truckloads of hot mix. When a load of hot mix is rejected for reasons other than temperature, contamination, or excessive uncoated particles, the Contractor may request that the rejected load be tested. Make this request within 4 hr. of rejection. The Engineer will sample and test the mixture. If test results are within the operational tolerances shown in Table 11, payment will be made for the load. If test results are not within operational tolerances, no payment will be made for the load and the Engineer may require removal.

3. Placement Acceptance.

a. Placement Lot. A placement lot consists of four placement sublots. A placement sublot consists of the area placed during a production sublot.

(1) Lot 1 Placement. Placement bonuses for Lot 1 will be in accordance with Section 3268.6.B, "Placement Pay Adjustment Factors;" however, no placement penalty will be assessed for any sublot placed in Lot 1 when the in-place air voids are greater than or equal to 2.7% and less than or equal to 9.9%. Remove and replace any sublot with in-place air voids less than 2.7% or greater than 9.9%.

(2) Incomplete Placement Lots. An incomplete placement lot consists of the area placed as described in Section 3268.4.I.2.a(1), "Incomplete Production Lots," excluding areas defined in Section 3268.4.I.3.a(4), "Miscellaneous Areas." Placement sampling is required if the random sample plan for production resulted in a sample being obtained from an incomplete production sublot.

(3) Shoulders, Ramps, Etc. Shoulders, ramps, intersections, acceleration lanes, deceleration lanes, and turn lanes are subject to in-place air void determination unless designated on the plans as not eligible for in-place air void determination. Intersections may be considered miscellaneous areas when determined by the Engineer.

(4) Miscellaneous Areas. Miscellaneous areas include areas that typically involve significant handwork or discontinuous paving operations, such as temporary detours, driveways, mailbox turnouts, crossovers, gores, spot level-up areas, and other similar areas. Temporary detours are subject to in-place air void determination when shown on the plans. Miscellaneous areas also include level-ups and thin overlays when the layer thickness specified on the plans is less than the minimum untrimmed core height eligible for testing shown in Table 12. The specified layer thickness is based on the rate of 110 lb./sq. yd. for each inch of pavement unless another rate is shown on the plans. Miscellaneous areas are not eligible for random placement sampling locations. Compact miscellaneous areas in accordance with Section 3268.4.H, "Compaction." Miscellaneous areas are not subject to in-place air void determination, thermal profiles testing, segregation (density profiles), or longitudinal joint density evaluations.

b. Placement Sampling. At the beginning of the project, the Engineer will select random numbers for all placement sublots. The Engineer will provide the Contractor with the placement random numbers immediately after the sublot is completed. Mark the roadway location at the completion of each sublot and record the station number. Determine one random sample location for each placement sublot in accordance with Tex-225-F. If the randomly generated sample location is within 2 ft. of a joint or pavement edge, adjust the location by no more than necessary to achieve a 2-ft. clearance.

Shoulders, ramps, intersections, acceleration lanes, deceleration lanes, and turn lanes are always eligible for selection as a random sample location; however, if a random sample location falls on one of these areas and the area is designated on the plans as not subject to in-place air void determination, cores will not be taken for the sublot and a 1.000 pay factor will be assigned to that sublot.

Provide the equipment and means to obtain and trim roadway cores on site. On site is defined as in close proximity to where the cores are taken. Obtain the cores within 1 working day of the time the placement sublot is completed unless otherwise approved. Obtain two 6-in. diameter cores side-by-side from within 1 ft. of the random location provided for the placement sublot. For Type D and Type F mixtures, 4-in. diameter cores are allowed. Mark the cores for identification, measure and record the untrimmed core height, and provide the information to the Engineer. The Engineer will witness the coring operation and measurement of the core thickness. Visually inspect each core and verify that the current paving layer is bonded to the underlying layer. If an adequate bond does not exist between the current and underlying layer, take corrective action to ensure that an adequate bond will be achieved during subsequent placement operations.

Immediately after obtaining the cores from the roadway, trim the cores in accordance with Tex-207-F if the core heights meet the minimum untrimmed values listed in Table 12. Trim the cores on site in the presence of the Engineer. Use a permanent marker or paint pen to record the lot and sublot numbers on each core as well as the designation as Core A or B. The Engineer may require additional information to be marked on the core and may choose to sign or initial the core. The Engineer will take custody of the cores immediately after they are trimmed and will retain custody of the cores until the Department's testing is completed. Prior to turning the trimmed cores over to the Engineer, the Contractor may elect to wrap the trimmed cores or secure them in a manner that will reduce the risk of possible damage occurring during transport by the Engineer. After testing, the Engineer will return the cores to the Contractor.

The Engineer may elect to have the cores transported back to the Department's laboratory at the HMA plant via the Contractor's haul truck or other designated vehicle. In such cases where the cores will be out of the Engineer's possession during transport, the Engineer will use the Construction Division's protocol to provide a secure means and process that protects the integrity of the cores during transport.

If the core height before trimming is less than the minimum untrimmed value shown in Table 12, decide whether to include the pair of cores in the air void determination for that sublot. If electing to have the cores included in air void determination, trim the cores as described above before delivering to the Engineer. If electing to not have the cores included in air void determination, deliver untrimmed cores to the Engineer and inform the Engineer of the decision to not have the cores included in air void determination. The placement pay factor for the sublot will be 1.000 if cores will not be included in air void determination.

In lieu of the Contractor trimming the cores on site immediately after coring, the Engineer and the Contractor may mutually agree to have the trimming operations performed at an alternate location such as a field laboratory or other similar location. In such cases, the Engineer will take possession of the cores immediately after they are obtained from the roadway and will retain custody of the cores until testing is completed. Either the Department or Contractor representative may perform trimming of the cores. The Engineer will witness all trimming operations in cases where the Contractor representative performs the trimming operation.

Immediately after obtaining the cores, dry the core holes and tack the sides and bottom. Fill the hole with the same type of mixture and properly compact the mixture. Repair core holes with other methods when approved.

c. **Placement Testing.** Perform placement tests in accordance with Table 14. After the Engineer returns the cores, the Contractor has the option to test the cores to verify the Engineer's test results for in-place air voids. The allowable differences between the Contractor's and Engineer's test results are listed in Table 11.

(1) **In-Place Air Voids.** The Engineer will measure in-place air voids in accordance with Tex-207-F and Tex-227-F. Before drying to a constant weight, cores may be pre-dried using a Corelok or similar vacuum device to remove excess moisture. The Engineer will average the values obtained for all sublots in the production lot to determine the theoretical maximum specific gravity. The Engineer will use the average air void content for in-place air voids.

The Engineer will use the vacuum method to seal the core if required by Tex-207-F. The Engineer will use the test results from the unsealed core to determine the placement pay adjustment factor if the sealed core yields a higher specific gravity than the unsealed core. After determining the in-place air void content, the Engineer will return the cores and provide test results to the Contractor.

(2) **Segregation (Density Profile).** Test for segregation using density profiles in accordance with Tex-207-F, Part V. Density profiles are not required and are not applicable when using the Pave-IR system for specification

compliance. Density profiles are not applicable in areas described in Section 3268.4.I.3.a(4), "Miscellaneous Areas."

Unless otherwise approved, perform a density profile every time the paver stops for more than 60 seconds, on areas that are identified by either the Contractor or the Engineer as having thermal segregation, and on any visibly segregated areas. If the paver does not stop for more than 60 seconds, and there are no visibly segregated areas or areas that are identified as having thermal segregation, perform a minimum of one profile per sublot.

Within 1 working day of the completion of each lot, provide the Engineer with the density profile of every sublot within the lot. Report the results of each density profile in accordance with Section 3268.4.B, "Reporting and Responsibilities."

The density profile is considered failing if it exceeds the tolerances in Table 15. No production or placement bonus will be paid for any sublot that contains a failing density profile. When the Pave-IR system is not used for specification compliance, the Engineer will measure the density profile at least once per project. The Engineer's density profile results will be used when available. The Engineer may require the Contractor to remove and replace the area in question if the area fails the density profile and has surface irregularities as defined in Section 3268.4.I.3.c(5), "Irregularities." The sublot in question may receive a production and placement bonus if applicable when the defective material is successfully removed and replaced.

Investigate density profile failures and take corrective actions during production and placement to eliminate the segregation. Suspend production if two consecutive density profiles fail unless otherwise approved. Resume production after the Engineer approves changes to production or placement methods.

Table 15
Segregation (Density Profile) Acceptance Criteria

Mixture Type	Maximum Allowable Density Range (Highest to Lowest)	Maximum Allowable Density Range (Average to Lowest)
Type A & Type B	8.0 pcf	5.0 pcf
Type C, Type D & Type F	6.0 pcf	3.0 pcf

(3) Longitudinal Joint Density.

(a) Informational Tests. While establishing the rolling pattern, perform joint density evaluations, and verify that the joint density is no more than 3.0 pcf below the density taken at or near the center of the mat. Adjust the rolling pattern, if needed, to achieve the desired joint density. Perform additional joint density evaluations at least once per sublot unless otherwise directed.

(b) Record Tests. For each sublot, perform a joint density evaluation at each pavement edge that is or will become a longitudinal joint. Joint density evaluations are not applicable in areas described in Section 3268.4.I.3.a(4), "Miscellaneous Areas." Determine the joint density in accordance with Tex-207-F, Part VII. Record the joint density information and submit results on Department forms to the Engineer. The evaluation is considered failing if the joint density is more than 3.0 pcf below the density taken at the core random sample location and the correlated joint density is less than 90.0%. The Engineer will make an independent joint density verification at least once per project and may make independent joint density verifications at the random sample locations. The Engineer's joint density test results will be used when available.

Within 1 working day of the completion of each lot, provide the Engineer with the joint density of every sublot within the lot. Report the results of each joint density in accordance with Section 3268.4.B, "Reporting and Responsibilities."

Investigate joint density failures and take corrective actions during production and placement to improve the joint density. Suspend production if the evaluations on two consecutive sublots fail unless otherwise approved. Resume production after the Engineer approves changes to production or placement methods.

(4) Recovered Asphalt Dynamic Shear Rheometer (DSR). When the Pave-IR system is not used for specification compliance, the Engineer may take production samples or cores from suspect areas of the project to determine recovered asphalt properties. Asphalt binders with an aging ratio greater than 3.5 do not meet the requirements for recovered asphalt properties and may be deemed defective when tested and evaluated by the Construction Division. The aging ratio is the DSR value of the extracted binder divided by the DSR value of the original unaged binder. Obtain DSR values in accordance with AASHTO T 315 at the specified high temperature performance grade of the asphalt. The Engineer may require removal and replacement of the defective material at the Contractor's expense. The asphalt binder will be recovered for testing from production samples or cores in accordance with Tex-211-F.

(5) Irregularities. Identify and correct irregularities including but not limited to segregation, rutting, raveling, flushing, fat spots, mat slippage, irregular color, irregular texture, roller marks, tears, gouges, streaks, uncoated aggregate particles, or broken aggregate particles. The Engineer may also identify irregularities, and in such cases, the Engineer will promptly notify the Contractor. If the Engineer determines that the irregularity will adversely affect pavement performance, the Engineer may require the Contractor to remove and replace (at the Contractor's expense) areas of the pavement that contain irregularities and areas where the mixture does not bond to the existing pavement.

If irregularities are detected, the Engineer may require the Contractor to immediately suspend operations or may allow the Contractor to continue operations for no more than 1 day while the Contractor is taking appropriate corrective action.

4. **Exempt Production.** When the anticipated daily production is less than 1,000 tons, the total production for the project is less than 5,000 tons, or when mutually agreed between the Engineer and the Contractor, the Engineer may deem the mixture as exempt production. Production may also be exempt when shown on the plans.

   For exempt production, the Contractor is relieved of all production and placement sampling and testing requirements, and the production and placement pay factors are 1.000. All other specification requirements apply, and the Engineer will perform acceptance tests for production and placement listed in Table 14 at the frequency listed in the Department's *Guide Schedule of Sampling and Testing*.

   For exempt production:

   - produce, haul, place, and compact the mixture in compliance with the specification and as directed by the Engineer;
   - control mixture production to yield a laboratory-molded density that is within ± 1.0% of the target laboratory-molded density as tested by the Engineer;
   - compact the mixture in accordance with Section 3268.4.H, "Compaction"; and
   - when the Contractor elects not to use the Pave-IR system for specification compliance, the Engineer may perform segregation (density profiles) and thermal profiles in accordance with the specification.

5. **Ride Quality.** Measure ride quality in accordance with Item 585, "Ride Quality for Pavement Surfaces," unless otherwise shown on the plans.

5. **Measurement.** Hot mix will be measured by the ton of composite hot mix, which includes asphalt, aggregate, and additives. Measure the weight on scales in accordance with Item 520, "Weighing and Measuring Equipment."

6. **Payment.** The work performed and materials furnished in accordance with this Item and measured as provided under Article 3268.5, "Measurement," will be paid for at the unit price bid for "Dense Graded Hot-Mix Asphalt" of the type, surface aggregate classification, and binder specified. These prices are full compensation for surface preparation; materials including tack coat; placement; equipment; labor; tools; and incidentals.

   Pay adjustments for bonuses and penalties will be applied as determined in this Item; however, a pay adjustment factor of 1.000 will be assigned for all placement sublots for "level ups" only when "level up" is listed as part of the item bid description code. A pay adjustment factor of 1.000 will be assigned to all production and placement sublots when "exempt" is listed as part of the item bid description code.

Applicable pay adjustment bonuses will only be paid for sublots when the Contractor supplies the Engineer with the required documentation for production and placement QC/QA, thermal profiles, segregation density profiles, and longitudinal joint density in accordance with Section 3268.4.B, "Reporting and Responsibilities." If the Contractor uses the Pave-IR system for specification compliance, documentation is not required for thermal profiles or segregation density profiles on individual sublots; however, the Pave-IR system automated reports described in Tex-244-F are required.

Trial batches will not be paid for unless they are included in pavement work approved by the Department.

Pay adjustment for ride quality will be determined in accordance with Item 585, "Ride Quality for Pavement Surfaces."

A. Production Pay Adjustment Factors. The production pay adjustment factor is based on the laboratory-molded density using the Engineer's test results. A pay adjustment factor will be determined from Table 16 for each sublot using the deviation from the target laboratory-molded density defined in Table 9. The production pay adjustment factor for completed lots will be the average of the pay adjustment factors for the four sublots sampled within that lot.

Table 16
Production Pay Adjustment Factors for Laboratory-Molded Density[1]

Absolute Deviation from Target Laboratory-Molded Density	Production Pay Adjustment Factor (Target Laboratory-Molded Density)
0.0	1.050
0.1	1.050
0.2	1.050
0.3	1.044
0.4	1.038
0.5	1.031
0.6	1.025
0.7	1.019
0.8	1.013
0.9	1.006
1.0	1.000
1.1	0.965
1.2	0.930
1.3	0.895
1.4	0.860
1.5	0.825
1.6	0.790
1.7	0.755
1.8	0.720
> 1.8	Remove and replace

1. If the Engineer's laboratory-molded density on any sublot is less than 95.0% or greater than 98.0%, take immediate corrective action to bring the mixture within these tolerances. The Engineer may suspend operations if the Contractor's corrective actions do not produce acceptable results. The Engineer will allow production to resume when the proposed corrective action is likely to yield acceptable results.

1. Payment for Incomplete Production Lots. Production pay adjustments for incomplete lots, described under Section 3268.4.I.2.a(1), "Incomplete Production Lots," will be calculated using the average production pay factors from all sublots

sampled. A production pay factor of 1.000 will be assigned to any lot when the random sampling plan did not result in collection of any samples.

2. **Production Sublots Subject to Removal and Replacement.** If after referee testing, the laboratory-molded density for any sublot results in a "remove and replace" condition as listed in Table 16, the Engineer may require removal and replacement, or may allow the sublot to be left in place without payment. The Engineer may also elect to accept the sublot in accordance with Item 5, "Control of the Work," Section 5.3.A, "Acceptance of Defective or Unauthorized Work." Replacement material meeting the requirements of this Item will be paid for in accordance with this Section.

B. Placement Pay Adjustment Factors. The placement pay adjustment factor is based on in-place air voids using the Engineer's test results. A pay adjustment factor will be determined from Table 17 for each sublot that requires in-place air void measurement. A placement pay adjustment factor of 1.000 will be assigned to the entire sublot when the random sample location falls in an area designated on the plans as not subject to in-place air void determination. A placement pay adjustment factor of 1.000 will be assigned to quantities placed in areas described in Section 3268.4.I.3.a(4), "Miscellaneous Areas." The placement pay adjustment factor for completed lots will be the average of the placement pay adjustment factors for up to four sublots within that lot.

Table 17
Placement Pay Adjustment Factors for In-place Air Voids

In-place Air Voids	Placement Pay Adjustment Factor	In-place Air Voids	Placement Pay Adjustment Factor
< 2.7	Remove and Replace	6.4	1.042
2.7	0.710	6.5	1.040
2.8	0.740	6.6	1.038
2.9	0.770	6.7	1.036
3.0	0.800	6.8	1.034
3.1	0.830	6.9	1.032
3.2	0.860	7.0	1.030
3.3	0.890	7.1	1.028
3.4	0.920	7.2	1.026
3.5	0.950	7.3	1.024
3.6	0.980	7.4	1.022
3.7	0.998	7.5	1.020
3.8	1.002	7.6	1.018
3.9	1.006	7.7	1.016
4.0	1.010	7.8	1.014
4.1	1.014	7.9	1.012
4.2	1.018	8.0	1.010
4.3	1.022	8.1	1.008
4.4	1.026	8.2	1.006
4.5	1.030	8.3	1.004
4.6	1.034	8.4	1.002
4.7	1.038	8.5	1.000
4.8	1.042	8.6	0.998
4.9	1.046	8.7	0.996
5.0	1.050	8.8	0.994
5.1	1.050	8.9	0.992
5.2	1.050	9.0	0.990
5.3	1.050	9.1	0.960
5.4	1.050	9.2	0.930
5.5	1.050	9.3	0.900
5.6	1.050	9.4	0.870
5.7	1.050	9.5	0.840
5.8	1.050	9.6	0.810
5.9	1.050	9.7	0.780
6.0	1.050	9.8	0.750
6.1	1.048	9.9	0.720
6.2	1.046	> 9.9	Remove and Replace
6.3	1.044		

1. **Payment for Incomplete Placement Lots.** Pay adjustments for incomplete placement lots described under Section 3268.4.I.3.a(2), "Incomplete Placement Lots," will be calculated using the average of the placement pay factors from all sublots sampled and sublots where the random location falls in an area designated on the plans as not eligible for in-place air void determination. A placement pay adjustment factor of 1.000 will be assigned to any lot when the random sampling plan did not result in collection of any samples.

2. **Placement Sublots Subject to Removal and Replacement.** If after referee testing, the placement pay adjustment factor for any sublot results in a "remove and replace" condition as listed in Table 17, the Engineer will choose the location of

two cores to be taken within 3 ft. of the original failing core location. The Contractor will obtain the cores in the presence of the Engineer. The Engineer will take immediate possession of the untrimmed cores and submit the untrimmed cores to the Construction Division, where they will be trimmed if necessary and tested for bulk specific gravity within 10 working days of receipt. The average bulk specific gravity of the cores will be divided by the Engineer's average maximum theoretical specific gravity for that lot to determine the new pay adjustment factor of the sublot in question. If the new pay adjustment factor is 0.700 or greater, the new pay adjustment factor will apply to that sublot. If the new pay adjustment factor is less than 0.700, no payment will be made for the sublot. Remove and replace the failing sublot, or the Engineer may allow the sublot to be left in place without payment. The Engineer may also elect to accept the sublot in accordance with Item 5, "Control of the Work," Section 5.3.A "Acceptance of Defective or Unauthorized Work." Replacement material meeting the requirements of this Item will be paid for in accordance with this Section.

C. Total Adjusted Pay Calculation. Total adjusted pay (TAP) will be based on the applicable pay adjustment factors for production and placement for each lot.

$TAP = (A+B)/2$

where:

A = Bid price × production lot quantity × average pay adjustment factor for the production lot

B = Bid price × placement lot quantity × average pay adjustment factor for the placement lot + (bid price × quantity placed in miscellaneous areas × 1.000)

Production lot quantity = Quantity actually placed - quantity left in place without payment

Placement lot quantity = Quantity actually placed - quantity left in place without payment - quantity placed in miscellaneous areas

SPECIAL SPECIFICATION

4035

Reinforced Concrete Low-Head Pressure Pipe

1. Description. Furnish and install reinforced concrete low-head pressure pipe 12 to 108-in. inclusive, internal diameter. Install the pipe in accordance with the requirements of these specifications, to the lines and grades shown on the plans, and the classes, sizes and dimensions shown thereon. The installation of pipe includes all joints or connections to new or existing pipe, wells, vents, inlets, headwalls, etc., as may be required to complete the work.

2. Materials.

Provide reinforced concrete low-head pressure pipe that conforms to the requirements of ASTM C 361 except for the following modifications:

A. The article entitled "Classification" is hereby voided and replaced by the correspondingly named article of ASTM C 76 for Class II, III, IV and V Pipe.

B. The article entitled "Bases of Acceptance" is hereby voided and replaced by the correspondingly named article of ASTM C 76.

C. The following section of the article entitled "Materials" is supplemented by the following:

1. Cement: Type II Cement will be required unless otherwise noted on the plans.

D. All reference to methods pertaining to testing the strength of the concrete contained in articles entitled "Materials" and "Physical Test Requirements" are voided and replaced by the following:

The strength requirements for the concrete must meet the design requirements of ASTM C 76 for Class II, III, IV and V Pipe.

Perform Three-Edge Bearing tests for Classes II, III, IV and V Pipe on one pipe for each 100 pipe or fraction thereof of each size and class for the load to produce a 0.01 in. crack and, at the discretion of the Engineer, the ultimate load. Plainly mark "TEST" with durable paint on both top and bottom and do not use the pipe sections tested only to the 0.01 in. crack.

E. The article entitled "Design" is hereby voided and replaced by the correspondingly named article of ASTM C 76 with the exception of the following:

1. Circumferential Reinforcement: Use circumferential reinforcement at each end of the pipe unit that consists of 2 complete coils or rings in which the end is lapped or welded. Unless otherwise shown on the plans, the clear distance of the end coil

or ring must not be less than 1/2 in. nor more than 1 in. from the end of the pipe unit.

2. **Longitudinal Reinforcement**: Extend the longitudinals the full length of the pipe. The longitudinal bars provided in the bell may be continuous bars or spliced to the main longitudinal bars.

3. **Joints**: Construct all joints to the requirements of ASTM C 361.

F. In addition to the requirements included under the Section "Joints" of ASTM C 361, the joints must meet the following requirements (see attached typical joint drawing for illustration of joint details for pipe having an internal diameter or 12 in. to 60 in. inclusive; for pipes with internal diameters larger than 60", joint design details will be submitted to the Engineer for approval).

1. Construct a joint of all concrete design with gasket retained in a groove, using an endless gasket of round cross-section.

2. Construct the thickness of spigot shell at end of spigot that is not less than 80% of thickness of pipe shell.

3. Use a finish of the inner surface of the bell or groove and surfaces of the spigot or tongue that is in accordance to the requirements of ASTM C 443.

G. The article entitled "Physical Test Requirements" is hereby supplemented by the following:

Use a method and equipment to manufacture the pipe that produces a uniformly dense concrete free from porous areas. When tested for absorption as provided in ASTM C 76 "Absorption Test Requirement of Concrete", the absorption shall not exceed 5%.

H. The article "Hydrostatic Tests" is hereby voided and replaced with the following:

For Classes II, III, IV and V Pipe, hydrostatic tests on pipe will not be required.

I. The article entitled "Hydrostatic Test on Rubber Gasket Joints" is hereby voided and replaced with the following:

For Classes II, III, IV and V Pipe, hydrostatic tests on rubber gasket joints will not be required provided the manufacturer provides adequate gauging devices and properly checks the pipe with same to assure that all dimensions of pipe affecting water tightness of the joints are within the required tolerances. Gauge tests of pipe sections selected for other tests in the presence of the inspector.

3. Construction. The construction methods are to be in accordance with Item 464, "Reinforced Concrete Pipe", except for the following modifications.

A. References to jointing are hereby voided.

B. Install rubber gasket joints by forcing the spigot or tongue of each pipe section (with the gasket in place) into the bell or groove of the previously laid joint with approved device that will smoothly force the sections together and so that the gasket is properly seated

and compressed. Adequately lubricate the bell and spigot or groove and tongue with soft soap or other approved lubricant before the sections are forced together.

C. Construct angles or bends in pipe lines by using either prefabricated angle joints or a reinforced concrete collar. Unless otherwise shown on the plans, use collars of such width that each pipe section will be imbedded in the collar a minimum of 6 in. Construct the thickness of the collar outside the pipe that is a minimum of 6 in. Furnish reinforcement in the collar that consists of at least one layer of 6 in. x 6 in., No. 6 gage x 6 gage steel wire fabric or heavier, supplemented by additional circumferential reinforcing steel as required to provide reinforcing at least equal to that in the pipe. Lap the fabric at least 6 in. Furnish Class A or C concrete and form and place monolithically.

D. Where pipe connects to headwalls or wells at the bell end of pipe lines, cut off the bell and lay the pipe so that the normal pipe section extends into the headwall or well.

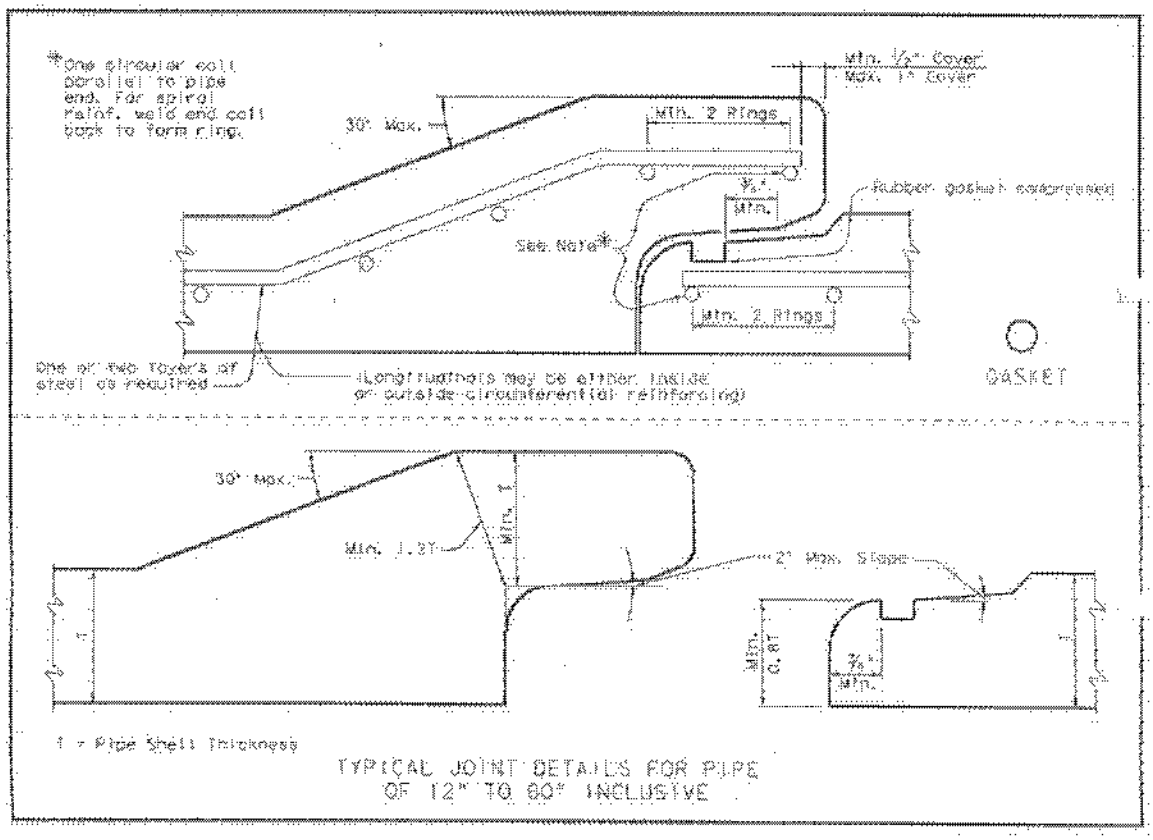
4. Measurement. This Item will be measured by the foot of pipe complete in place in accordance with these specifications. Such measurement will be made between the ends of the pipe barrel along the central axis as installed. Where spurs or branches, or connections to existing pipe lines are involved, measurement of the spur or new connecting pipe will be made from the intersection of its central axis with the outside surface of the pipe into which it connects. Where inlets, manholes, junction chambers or other structures are included in lines of pipe, that length of pipe provided for tying into the structure wall will be included for measurement but no other portion of the structure length or width will be included.

Excavation in natural ground for installing concrete pipe will be measured as prescribed in Item 400, "Excavation and Backfill for Structures".

Unless otherwise shown on the plans, structural excavation for pipe headwalls will not be measured but will be considered subsidiary to the various bid items.

5. Payment. The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Reinforced Concrete Low-Head Pressure Pipe" of the class and size specified. This price is full compensation for constructing, furnishing, transporting, placing, and jointing the pipe; the excavation, hauling and placing of earth cushion material where required for bedding pipe in rock excavation; the preparation and shaping of beds; hauling, placing and jointing of pipes; for end finish; for all connections to existing structures and for all other items of materials, labor, equipment, tools, and incidentals necessary to complete the pipe line in accordance with the plans and this Item, except excavation and backfill; which will be paid for in accordance with Item 400, "Excavation and Backfill for Structures". The excavation of rock or other incompressible materials, as may be required in providing proper bedding, will be paid for in accordance with Item 400, "Excavation and Backfill for Structures". Where pipes are laid on a skew, full compensation for cutting the ends parallel with the centerline of the highway will be considered as included in the price paid for linear foot for the designated item of pipe and no additional allowance will be made therefore.

Protection methods for excavations greater than 5 ft. in depth will be measured and paid for as required under Item 402, “Trench Excavation Protection,” or Item 403, “Temporary Special Shoring.”



TYPICAL JOINT DETAILS FOR PIPE OF 12" TO 60" INCLUSIVE

SPECIAL SPECIFICATION

4061

Irrigation Wells, Gates and Valves

1. **Description.** Furnish and install irrigation wells, well gates, and irrigation valves complete in place in accordance with the plans and specifications.

2. **Materials.**

   A. **Brick.** Use brick for irrigation wells that conforms to the requirements of "Sewer and Manhole Brick (Made from clay or shale), Grade SM" in accordance with ASTM Designation: C32.

   B. **Cement.** Use cement Type I hydraulic cement conforming to ASTM Designation: C150.

   C. **Lime.** Use Hydrated Lime that is an established brand or manufacturer acceptable to the Engineer.

   D. **Sand.** Use sand that is composed of clean, hard, durable, uncoated grains, free from lumps, soft or flaky particles, loam, organic matter or other injurious substances, meeting the approval of the Engineer.

   E. **Water.** Use water which is suitable for drinking or for ordinary household use will be acceptable for use with cement without being treated.

   F. **Concrete.** Use Class A concrete conforming to the requirements of Item 421, "Hydraulic Cement Concrete".

   G. **Reinforcing Steel.** Use Reinforcing Steel that conforms to the requirements of Item 440, "Reinforcing Steel".

   H. **Reinforced Concrete Pipe.** Use Reinforced Concrete Pipe that conforms to the requirements of Item 464, "Reinforced Concrete Pipe".

   I. **Well Gates.** Use Gates manufactured by "Snow Apex", "Fresno", "Waterman" or acceptable equal.

   J. **Irrigation Valves.** Use Valves manufactured by "Snow Delta", "Fresno", Waterman" or acceptable equal.

3. **General.** Construct Irrigation Wells either with Brick or with Reinforced Concrete Pipe. If brick is used, then construct the inlet square with inside dimensions as specified for the size of the inlet and construct the walls a minimum of 8 in. thick. If Reinforced Concrete Pipe is used, then construct the inside diameter of the pipe as specified for the size of the inlet and Class III Pipe required.

4. Construction Methods.

A. Brick Masonry. Use brick masonry that consists of whole, sound, straight, hard bricks, laid in freshly mixed mortar to the forms and section required. Wet and lay bricks true to line in parallel courses, properly bonded with face joints flush. Lay each brick in full, close joints of mortar on its bed, end and side at one operation. Plaster all exposed surfaces of brick irrigation wells with ½ in. of mortar.

Mix mortar in the proportions, by volume, of 1 part cement, 1 part lime, and 4 parts of sand. First mix the sand, cement, and lime dry in a tight box until the mixture assumes a uniform color, after which add water as the mixing continues until the mortar attains a consistency such that it can be easily handled and spread with a trowel. Use mechanical mixing lieu of hand mixing if desired.

B. Irrigation Wells. Construct Irrigation Wells as outlined on the plans for Miscellaneous Structural Detail.

C. Concrete Foundation. Construct Concrete Foundations on the plans for Miscellaneous Structural Detail.

D. Gates and Valves. Install gates and valves at locations indicated on the plans. Install gates and valves in such a manner as to completely seal the ends of the concrete pipe and be securely anchored. Furnish drive extensions for gates that extend to the hand wheel above the top of wells, headwalls, or concrete canal lining to facilitate operation.

5. Measurement. These Items will be measured by each, of the various sizes designated, complete in place and in satisfactory operation.

6. Payment. The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Irrigation Well", "Well Gate", or "Irrigation Valve", of the sizes. This price shall be full compensation for furnishing, transporting and installing all materials, for all labor, tools, equipment, and incidentals.

Unless otherwise shown on the plans, structural excavation for irrigation wells, well gates and irrigation valves will not be measured but will be considered subsidiary to the various bid items.

SPECIAL SPECIFICATION

4269

Pressure Irrigation PVC Pipe

1. **Description.** This Item shall govern for the furnishing and installing of polyvinyl chloride (PVC) pipe for a pressure irrigation pipe system. The pipes shall be the sizes, types, design and dimensions shown on the plans and shall include all connections and joints to new or existing pipes and other appurtenances as may be required to complete the work.

2. **Materials.** Unless otherwise specified on the plans or herein, Pressure Irrigation PVC pipe and joint fittings shall conform to the following:

   PVC pipe shall be manufactured from virgin compounds in accordance with ASTM D2241, and shall meet or exceed the requirements of ASTM D1784 for the cell class 12454B.

   The Contractor shall furnish the Engineer with manufacturer documentation certifying that the Pressure Irrigation PVC pipe and joint fittings comply with the requirements of this specification. All pipe shall be marked with the ASTM resin cell classification and the date of manufacture.

3. **Inspection.** The quality of materials, the process of manufacture, and the finished pipe shall be subject to inspection and approval by the Engineer at the manufacturing plant. In addition, the finished pipe shall be subject to further inspection by the Engineer at the project site prior to and during installation.

4. **Section Properties.** The Contractor shall provide polyvinyl chloride pipe that meets the following minimum values of pipe wall thickness for 100 psi.

Polyvinyl Chloride Pipe (PVC)

Nominal Pipe Diameter	Min. Wall Thickness	Weight (lbs/ft)
6”	0.150	1.9
8”	0.199	3.3
10”	0.249	5.2
12”	0.299	7.5
15”	0.373	11.7
18”	0.496	17.6
21”	0.538	24.6
24”	0.605	32.4

5. **Joints.** Joints shall maintain pipe alignment and prevent infiltration of material during the life of the installation. Joints shall consist of an external sleeve and gasket system or an

integral gasketed system, and shall conform to ASTM D3139. Gasket material shall conform to either ASTM D1056 or ASTM F477.

6. **Construction.** Only trench installation of Pressure Irrigation PVC pipe will be permitted, except where Pressure Irrigation PVC pipe is placed in casing pipe meeting the requirements of Item 464, "Reinforced Concrete Pipe"or Item 4035, "Reinforced Concrete Low-Head Pressure Pipe".

A. **Excavation.** All excavation shall be in accordance with the requirements of Item 400, "Excavation and Backfill for Structures".

B. **Shaping and Bedding.** The pipe shall be bedded in a foundation of compacted cohesionless material, such as sand, crushed stone, or pea gravel, with maximum size not exceeding 3/8". This material shall extend a minimal of 6 in. below the outermost corrugations or ribs, and shall be carefully and accurately shaped to fit the lowest part of the pipe exterior for at least 10% of the overall height. When requested by the Engineer, the Contractor shall furnish a template for each size and shape of pipe to be placed for use in checking the shaping of the bedding. The template shall consist of a thin plate or board cut to match the lower half of the cross section of the pipe.

C. **Laying Pipe.** Unless otherwise authorized by the Engineer, the laying of pipes on the bedding shall be started at the outlet end with the separate sections firmly joined together. Proper facilities shall be provided for hoisting and lowering the section of the pipe into the trench without damaging the pipe or disturbing the bedding and side of the trench. Any pipe which is not in alignment or which shows any undue settlement after laying shall be removed and relayed at the Contractor's expense.

Multiple installation of Pressure Irrigation PVC pipe shall be laid with the center lines of individual barrels parallel. Unless otherwise indicated on the plans, the following clear distances between outer surfaces of adjacent pipes shall be maintained:

Nominal Pipe Diameter	**Clear Distance Between Pipes**
18"	1'-2"
24"	1'-5"
30"	1'-8"
36"	1'-11"

D. **Reuse of Existing Appurtenances.** When existing appurtenances are specified on the plans for reuse, the portion to be reused shall be severed and moved to the new position previously prepared, by approved methods.

Connections shall conform to the requirements for joining sections of pipes as indicated herein or as shown on the plans. Any existing appurtenances damaged during moving operations shall be restored to their original condition at the Contractor's expense. The Contractor, if he so desires, may remove and dispose of the existing headwalls and aprons and construct new headwalls at his own expense, in accordance with the pertinent specifications and design indicated on the plans or as furnished by the Engineer.

E. **Connections and Stub Ends.** Connections of irrigation pipe to existing irrigation or appurtenance shall be as shown on the plans or as directed by the Engineer. The bottom of the existing structure shall be mortared or concreted if necessary, to eliminate any drainage

pockets created by the new connection. Where the sewer is connected into existing structures which are to remain in service, any damage to the existing structure resulting from making the connection shall be restored by the Contractor to the satisfactions of the Engineer. Stub ends, for connections to future work not shown on the plans, shall be sealed by installing watertight plugs into the free end of the pipe.

F. Backfilling. Particular attention is necessary when backfilling PVC pipe. After the pipe structure has been installed as required by the plan details it shall be backfilled according to the following, except where it is placed in steel casing:

Type I. Backfill consists of Item 401, "Flowable Backfill". The flowable backfill shall be placed across the entire width of the trench and shall maintain a minimum depth of 12 in. above the pipe.

Type II. Backfill consists of a cohesionless material, such as sand, crushed stone, or pea gravel, and having a maximum size not to exceed 3/8". The backfill material shall be placed along both sides of the completed structure(s) to a depth of 12 in. above the pipe. The backfill shall be placed in uniform layers not exceeding 6 in. in depth (loose measurement), wetted if required, and thoroughly compacted between adjacent structures and between the structure and the sides of the trench. Until a minimum cover of 12 in. is obtained, only hand operated tamping equipment will be allowed within vertical planes 2 ft. beyond the horizontal projection of the outside surfaces of the structure.

All pipe, excluding private driveway and side road culvert pipe, shall be backfilled with Type I backfill. For private driveway and side road culvert pipe the Contractor shall have the option of using either Type I or Type II backfill.*(This spec is for irrigation pipe. Is it also intended for culverts?)*

Any backfill above Type I or Type II backfill material shall be placed in accordance with Item 400, "Excavation and Backfill for Structures". If Type I backfill is used a minimum of 24 hours shall elapse prior to backfilling the remaining portion of the trench with backfill material in accordance with Item 400, "Excavation and Backfill for Structures".

During the backfilling operations, special emphasis is placed upon the need for obtaining uniform backfill material and uniform compacted density throughout the length of the structure so that unequal pressure will be avoided. Extreme care is to be taken to insure proper backfill under the structure (haunch zone).

G. Protection of Pipe. Unless otherwise shown on the plans or permitted in writing by the Engineer, no heavy earth moving equipment will be permitted to be hauled over the structure until a minimum of 4 ft. of compacted fill (permanent or temporary) has been placed over the top of the structure.

Prior to adding each new layer of loose backfill material, until a minimum of 12 in. of cover is obtained, an inspection will be made of the inside periphery of the structure for local or unequal deformation caused by improper construction methods. Evidence of such will require corrective measures as directed by the Engineer.

Pipe damaged by the Contractor shall be removed and replaced by the Contractor at no additional cost to the State.

H. Treatment of Exposed Ends of Pipe. All exposed ends of the pipe shall be treated with concrete safety end treatment or metal end treatment as shown on the plans and conforming to the Item 467, "Safety End Treatment".

7. Measurement. This Item will be measured by the foot. Such measurements will be made between the ends of the barrel along its flow line, exclusive of safety end treatments. Safety end treatments shall be measured in accordance with Item 467, "Safety End Treatment ". Where spurs, branches or connections to existing pipe lines are involved, measurement of the spur or new connecting pipe will be made from the intersection of its flow line with the outside surface of the pipe into which it connects. Where inlets, headwalls, catch basins, manholes, junction chambers, or other structures are included in lines of pipe, that length of pipe tying into the structure wall will be included for measurement but no other portion of the structure length or width will be so included.

For multiple pipes, the measured length will be the sum of the lengths of the barrels, measured as prescribed above.

This is a plans quantity measurement Item and the quantity to be paid for will be that quantity shown in the proposal and on the "Estimate and Quantity" sheet of the contract plans, except as may be modified by Article 9.2. If no adjustment of quantities is required additional measurements or calculations will not be required.

Flowable backfill will not be measured, but considered subsidiary to this Item.

8. Payment. The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Pressure Irrigation PVC Pipe (Type I backfill)", of the size specified or "Pressure Irrigation PVC Pipe (Type I or II backfill)", of the size specified or "Pressure Irrigation PVC Pipe", of the size specified. This price shall be full compensation for furnishing, hauling, placing and joining of pipes; for all connections to new or existing structures, for moving and reusing headwalls where required; for removing and disposing of portions of existing structures as required; for the bedding and Type I or II backfill material as required; for cutting of pipe ends on skew; and for all labor, tools, equipment and incidentals necessary to complete the work.

Excavation and backfill above the Type I or II backfill will be paid for in accordance with Item 400, "Excavation and Backfill for Structures".

Safety end treatment will be paid for in accordance with Item 467, "Safety End Treatment".

Casing pipe will be paid for in accordance with Item 464, "Reinforced Concrete Pipe" or Item 4035, "Reinforced Concrete Low-Head Pressure Pipe".

2004 Specifications

SPECIAL SPECIFICATION

6266

Video Imaging Vehicle Detection System

1. Description. Install a Video Imaging Vehicle Detection System (VIVDS) that monitors vehicles on a roadway via processing of video images and provides detector outputs to a traffic controller or similar device.

A VIVDS configuration for a single intersection will consist of 4 variable focal length cameras, VIVDS card rack processor system, and all associated equipment required to setup and operate in a field environment including a video monitor and/or laptop (if required), connectors and camera mounting hardware.

The system is composed of these principal items: the camera(s), the field communications link between the camera and the VIVDS processor unit, and the VIVDS processor unit along with a PC, video monitor or associated equipment required to setup the VIVDS and central control software to communicate to the VIVDS processor.

The VIVDS Card Rack Processor must be either NEMA TS 2 TYPE 1 or TYPE 2. TYPE 2 must have RS 485 SDLC.

2. Definitions.

A. VIVDS Processor Unit. The electronic unit that converts the video image provided by the cameras, generates vehicle detections for defined zones and collects vehicular data as specified.

B. VIVDS Processor System. One or more VIVDS processor modular units required to handle the number of camera inputs.

C. Central Control. A remotely located control center, which communicates with the VIVDS. The VIVDS operator at the central control has the ability to monitor the operation and modify detector placement and configuration parameters. The equipment that constitutes central control is comprised of a workstation microcomputer along with the associated peripherals as described in this special specification.

D. Field Setup Computer. A portable microcomputer used to set up and monitor the operation of the VIVDS processor unit. If required to interface with the VIVDS processor unit, the field setup computer with the associated peripherals described in this special specification and a video monitor, also described in this special specification, must be supplied as part of the VIVDS.

E. Field Communications Link. The communications connection between the camera and the VIVDS processor unit. The primary communications link media may be coaxial cable or fiber optic cable.

F. Remote Communications Link. The communications connection between the VIVDS processor unit and the central control.

G. Camera Assembly. The complete camera or optical device assembly used to collect the visual image. The camera assembly consists of a charged coupled device (CCD) camera, environmental enclosure, sun shield, temperature control mechanism, and all necessary mounting hardware.

H. Occlusion. The phenomenon when a vehicle passes through the detection zone but the view from the sensor is obstructed by another vehicle. This type of occlusion results in the vehicle not being detected by the sensor.

Or

When a vehicle in one lane passes through the detection zone of an adjacent lane. This type of occlusion can result in the same vehicle being counted in more than one lane.

I. Detection Zone. The detection zone is a line or area selected through the VIVDS processor unit that when occupied by a vehicle, sends a vehicle detection to the traffic controller or freeway management system.

J. Detection Accuracy. The measure of the basic operation of a detection system (shows detection when a vehicle is in the detection zone and shows no detection when there is not a vehicle in the detection zone).

K. Live Video. Video being viewed or processed at 30 frames per second.

L. Lux. The measure of light intensity at which a camera may operate. A unit of illumination equal to one lumen per square meter or to the illumination of a surface uniformly one meter distant from a point source of one candle.

M. Video Monitor. As a minimum must be a 9-in. black and white monitor with BNC connectors for video in and out.

3. Functional Capabilities.

The system software must be able to detect either approaching or departing vehicles in multiple traffic lanes. A minimum of 4 detector outputs per video processor module card and each card must have a minimum of 24 detection zones. Each zone and output must be user definable through interactive graphics by placing lines and/or boxes in an image on a video or VGA monitor. The user must be able to redefine previously defined detection zones.

The VIVDS must provide real time vehicle detection (within 112 milliseconds (ms) of vehicle arrival).

The VIVDS processor unit must be capable of simultaneously processing information from various video sources, including CCTV video image sensors and video tape players. The video sources may be, but are not required to be, synchronized or line-locked. The video must be processed at a rate of 30 times per second by the VIVDS processor unit.

The system must be able to detect the presence of vehicles in a minimum of 12 detection zones within the combined field of view of all cameras (a minimum of 12 detection zones per camera input to the VIVDS processor unit).

Detection zones must be provided that are sensitive to the direction of vehicle travel. The direction to be detected by each detection zone must be user programmable.

The VIVDS processor unit must compensate for minor camera movement (up to 2% of the field of view at 400 ft.) without falsely detecting vehicles. The camera movement must be measured on the unprocessed video input to the VIVDS processor unit.

The camera must operate while directly connected to VIVDS Processor Unit.

Once the detector configuration has been downloaded or saved into the VIVDS processor unit, the video detection system must operate with the monitoring equipment (monitor and/or laptop) disconnected or on-line.

When the monitoring equipment is directly connected to the VIVDS processor unit, it must be possible to view vehicle detections in real time as they occur on the field setup computer's color VGA display or the video monitor.

4. Vehicle Detection.

A. Detection Zone Placement. The video detection system must provide flexible detection zone placement anywhere within the combined field of view of the image sensors. Preferred presence detector configurations must be lines or boxes placed across lanes of traffic or lines placed in line with lanes of traffic. A single detector must be able to replace one or more conventional detector loops. Detection zones must be able to be fully overlapped. In addition, detection zones must have the capability of implementing "AND" and "OR" logical functions including presence, extension and delay timing. These logical functions may be excluded if provisions are made to bring each detector separately into the controller and the controller can provide these functions.

B. Detection Zone Programming. Placement of detection zones must be by means of a graphical interface using the video image of the roadway. The monitor must show images of the detection zones superimposed on the video image of traffic while the VIVDS processor is running.

The detection zones must be created by using the mouse or keypad to draw detection zones on the monitor. The detection zones must be capable of being sized, shaped and overlapped to provide optimal road coverage and detection. It must be possible to upload detector configurations to the VIVDS processor unit and to retrieve the detector configuration that is currently running in the VIVDS processor unit.

The mouse or keypad must be used to edit previously defined detector configurations so as to fine tune the detection zone placement size and shape. Once a detection configuration has been created, the system must provide a graphic display of the new configuration on its monitor. While this fine-tuning is being done, the detection must continue to operate from the detector configuration that is currently called.

When a vehicle occupies a detection zone, the detection zone on the live video must indicate the presence of a vehicle, thereby verifying proper operation of the detection system. With the absence of video, the card must have an LED that will indicate proper operation of the detection zones.

Detection zones must be provided that is sensitive to the direction of vehicle travel. The direction to be detected by each detection zone must be user programmable. The vehicle detection zone should not activate if a vehicle traveling any direction other than the one specified for detection occupies the detection zone. Cross-street and wrong way traffic should not cause a detection.

C. Design Field of View. The video detection system must reliably detect vehicle presence in the design field of view. The design field of view must be defined as the sensor view when the image sensor is mounted 24 ft. or higher above the roadway, when the camera is adjacent (within 15 ft.) to the edge of the nearest vehicle travel lane, and when the length of the detection area is not greater than 10 times the mounting height of the image sensor. Within this design field of view, the VIVDS processor unit must be capable of setting up a single detection zone for point detection (equivalent to the operation of a 6 ft. by 6 ft. inductive loop). A single camera, placed at the proper mounting height with the proper lens, must be able to monitor up to and including 5 traffic lanes simultaneously.

D. Detection Performance. Detection accuracy of the video detection system must be comparable to properly operating inductive loops. Detection accuracy must include the presence of any vehicle in the defined detection zone regardless of the lane, which the vehicle is occupying. Occlusion produced by vehicles in the same or adjacent lanes must not be considered a failure of the VIVDS processor unit, but a limitation of the camera placement. Detection accuracy (a minimum of 95%) must be enforced for the entire design field of view on a lane by lane and on a time period basis. When specified in the plans, furnish up to 24 continuous hours of recorded video of all installed intersection cameras within the 30 day test period for verification of proper camera placement, field of view, focus, detection zone placement, processor setup and operation. The video from each camera must show vehicle detections for all zones.

E. Equipment failure, either camera or VIVDS processor unit, must result in constant vehicle detection on affected detection zones.

5. VIVDS Processor Unit.

A. Cabinet Mounting- The VIVDS processor unit must be rack mountable.

B. Environmental Requirements - The VIVDS processor unit must be designed to operate reliably in the adverse environment found in the typical roadside traffic cabinet. It must meet the environmental requirements set forth by the latest NEMA (National Electrical Manufacturers Association) TS1 and TS2 standards as well as the environmental requirements for Type 170, Type 179 and 2070 controllers. Operating temperature must be from -30°F to +165°F at 0% to 95% relative humidity, non condensing.

C. Electrical - The VIVDS must have a modular electrical design.

The VIVDS must operate within a range of 89 to 135 VAC, 60 Hz single phase. Power to the VIVDS must be from the transient protected side of the AC power distribution system in the traffic control cabinet in which the VIVDS is installed.

Serial communications to the field setup computer must be through an RS 232, USB or Ethernet port. This port must be able to download the real time detection information needed to show detector actuations. A connector on the front of the VIVDS processor unit must be used for serial communications.

The unit must be equipped with RS 170 (monochrome) or RS170A (color) composite video inputs video inputs, so that signals from image sensors or other synchronous or asynchronous video sources can be processed in real time. BNC connectors on the front of the VIVDS processor unit or video patch panel must be used for all video inputs.

The unit must be equipped with a single RS 170 composite video output. This output must be capable of corresponding to any one of the video inputs, as selected remotely via the field setup computer or front panel switch. Multiple video outputs requiring external cable connections to create a combined single video output must not be acceptable. A BNC or RCA connector must be used for video output on the front of the processor unit. Any other video formats used must prior approval by TxDOT TRF Signal Operation Engineer.

Software upgrades and/or changes MUST be presented to and approved by TXDOT TRF-TM division, before being used. Failure to do so will be grounds for termination of contract and probation for responsible party(s).

The unit software and the supervisor software must include diagnostic software to allow testing the VIVDS functions. This must include the capability to set and clear individual detector outputs and display the status of inputs to enable setup and troubleshooting in the field.

6. Camera Assembly.

A. Camera. The video detection system must use medium resolution, monochrome image sensors as the video source for real time vehicle detection. The cameras must be approved for use with the VIVDS processor unit by the supplier of the VIVDS. As a minimum, each camera must provide the following capabilities:

1. Images must be produced with a Charge Coupled Device (CCD) sensing element with horizontal resolution of at least 480 lines for black and white or 470 lines for color and vertical resolution of at least 350 lines for black and white or color. Images must be output as a video signal conforming to RS170.

2. Useable video and resolvable features in the video image must be produced when those features have luminance levels as low as 0.1 lux for black and white, and as low as 1.0 lux for color, for night use.

3. Useable video and resolvable features in the video image must be produced when those features have luminance levels as high as 10,000 lux during the day.

4. The camera must include an electronic shutter or auto-iris control based upon average scene luminance and must be equipped with an electronic shutter or auto-iris lens with variable focal length and variable focus that can be adjusted without opening up the camera housing to suit the site geometry. The variable focal length must be adjustable from 6 mm to 34 mm.

B. Camera and Lens Assembly. The camera and lens assembly must be housed in an environmental enclosure that provides the following capabilities:

1. The enclosure must be waterproof and dust tight to the latest NEMA 4 specifications.

2. The enclosure must allow the camera to operate satisfactorily over an ambient temperature range from -30°F to +165°F while exposed to precipitation as well as direct sunlight.

3. The enclosure must allow the camera horizon to be rotated in the field during installation.

4. The enclosure must include a provision at the rear of the enclosure for connection of power and video signal cables fabricated at the factory. Input power to the environmental enclosure must be nominally 115 VAC 60 Hz.

5. A thermostatically controlled heater must be at the front of the enclosure to prevent the formation of ice and condensation, as well as to assure proper operation of the lens's iris mechanism. The heater must not interfere with the operation of the camera electronics, and it must not cause interference with the video signal.

6. The enclosure must be light colored or unfinished and must include a sun shield to minimize solar heating. The front edge of the sunshield must protrude beyond the front edge of the environmental enclosure and must include provision to divert water flow to the sides of the sunshield. The amount of overhang of the sun shield must be adjustable to block the view of the horizon to prevent direct sunlight from entering the lens. Any plastics used in the enclosure must include ultra violet inhibitors.

7. The total weight of the image sensor in the environmental enclosure with sunshield must be less than 10 lb.

8. When operating in the environmental enclosure with power and video signal cables connected, the image sensor must meet FCC class B requirements for electromagnetic interference emissions.

The video output of the cameras must be isolated from earth ground. All video connections for the cameras to the video interface panel must also be isolated from earth ground.

Use waterproof, quick disconnect connectors to the image sensor for both video and power.

A camera interface panel capable of being mounted to sidewalls of a controller cabinet must be provided for protection of the VIVDS processor unit, camera video and power inputs/outputs. The panel must consist of, as a minimum, 4 Edco CX06 coax protectors, a

Edco ACP-340 for the cameras and VIVDS processor unit power, a 10 amp breaker, a convenience outlet protected the ACP-340 and a terminal strip with a minimum of sixteen 8-32 binder head screws. The terminal strip must be protected by a piece of 1/8 in. Plexiglas.

When the connection between the image sensor and the VIVDS processor unit is coaxial cable, the coaxial cable used must be a low loss, 75 ohm, precision video cable suited for outdoor installation, such as Belden 8281 or TxDOT approved equal.

Camera mounting hardware must allow for vertical or horizontal mounting to the camera enclosure. Pelco AS-0166-4-62 or equivalent is acceptable.

7. **Field Communication Link.** The field communications link must be a one way communications connection from the camera to the equipment cabinet. The primary communications link media may be coaxial cable or fiber optic cable accompanied by a 3 conductor minimum 18 AWG, 24 VDC or 115 VAC camera power cable, or appropriate cable as approved.

   The following requirements must govern for the various types of field communications link media described on the plans:

   A. Coaxial Cable. In locations where the plans indicate coaxial cable is required as the primary communications link, this cable must be of the RG 59 type with a nominal impedance of 75 ohms. All cable must have a polyethylene dielectric with copper braid shield having a minimum of 98 percent shield coverage and not greater than 0.78 dB attenuation per 100 ft. at 10 MHz with a minimum 18 AWG external 3 conductor power cable or approved equivalent as directed by the Engineer.

   B. Fiber Optic Cable. If specified by the plans, furnish fiber optic cable in accordance with the special specification for fiber optic cable.

   C. Twisted Wire Pairs. Must be Belden 9556 or equivalent 18 AWG TWP control cable.

   All connection cables must be continuous from the equipment cabinet to the camera. No splices of any type will be permitted.

   Install lightning and transient surge suppression devices on the processor side of the field communications link to protect the peripheral devices. The suppression devices must be all solid state. Lightning protection is not required for fiber optic communication lines. The devices must present high impedance to, and must not interfere with, the communications lines during normal operation. The suppression devices must not allow the peak voltage on any line to exceed 300% of the normal operating peak voltage at any time. The response time of the devices must not exceed 5 nanoseconds.

8. **VIVDS Set-Up System.** The minimum VIVDS set-up system, as needed for detector setup and viewing of vehicle detections, must consist of a field setup computer and Windows based interface software (if required) or a video monitor with interface software built-in to the VIVDS processor unit. Live video (30 frames per second) must be available on the field setup computer to determine proper operation of detectors. The field set-up computer as a minimum, must have an NTSC video input port or equivalent.

If a field setup computer is required for system set-up, it must be supplied by the supplier of the VIVDS.

The field setup computer must include all necessary cabling and a Windows based program to interface with the VIVDS processor unit. This software must provide an easy to use graphical user interface and support all models/versions of the supplied VIVDS.

Live video with the detection overlaid is required for field verification of the system.

9. Temporary Use and Retesting.

A. Temporary Use. When shown on the plans, the VIVDS equipment must be used to provide vehicle detection on a temporary basis. When the permanent vehicle detection system and related equipment are installed and made operational, the VIVDS equipment must be carefully removed and delivered to the location shown on the plans.

B. State Retesting and Acceptance. Prior to acceptance, all VIVDS equipment may be retested by the State, even if the system was operating properly before removal. Repair or replace any equipment damaged during removal or transport and any equipment that does not meet the various test requirements.

10. Operation from Central Control. The central control must transmit and receive all information needed for detector setup, monitor the vehicle detection, view the vehicle traffic flow at a rate of 2 frames per second or greater for telephone, or 5 frames a second or greater for ISDN lines (as specified by the plans), and interrogate all required stored data. The remote communications link between the VIVDS processor unit and central control may be dial-up (telephone or ISDN lines) or dedicated twisted wire pair communications cable which may be accompanied with coaxial cable or fiber-optic cable, as shown on the plans. Communications with the central control must not interfere with the on-street detection of the VIVDS processor. Quality of the video at 2 frames per second rate must be such that the view with the traffic flow is clear and in focus.

11. Installation and Training. The supplier of the video detection system must supervise the installation and testing of the video and computer equipment. A factory certified representative from the supplier must be on site during installation.

In the event that the field setup computer is furnished by TxDOT, such installation and testing must be done at the time that training is conducted.

Provide up to 2 days of training to personnel of TxDOT in the operation, setup and maintenance of the video detection system. Provide instruction and materials for a maximum of 20 persons and conduct at a location selected by TxDOT. TxDOT will be responsible for any travel and room and board expenses for its own personnel.

Instruction personnel are required to be certified by the equipment manufacturer. The User's Guide is not an adequate substitute for practical, classroom training and formal certification by an approved agency.

Formal levels of factory authorized training are required for installers, contractors and system operators. All training must be certified by the manufacturer.

12. **Warranty, Maintenance and Support.** The video detection system must be warranted to be free of defects in material and workmanship for a period of 5 years from date of shipment from the supplier's facility. During the warranty period, the supplier must repair with new or refurbished materials, or replace at no charge, any product containing a warranty defect provided the product is returned FOB to the supplier's factory or authorized repair site. Return product repair or replaced under warranty by the supplier with transportation prepaid. This warranty does not apply to products damaged by accident, improperly operated, abused, serviced by unauthorized personnel or unauthorized modification.

    During the warranty period, technical support must be available from the supplier via telephone within 4 hours of the time a call is made by a user, and this support must be available from factory certified personnel or factory certified installers.

    Ongoing software support by the supplier must include updates of the VIVDS processor unit and supervisor software (if a field setup computer is required for set up). Provide these updates free of charge during the warranty period. The update of the VIVDS software to be NTCIP compliant must be included.

    The supplier must maintain a program for technical support and software updates following expiration of the warranty period. Make this program available to TxDOT in the form of a separate agreement for continuing support.

    The supplier must maintain an ongoing program of technical support for the wireless camera system. This technical support must be available via telephone or personnel sent to the installation site.

    The supplier must maintain an adequate inventory of parts to support maintenance and repair of the camera system.

13. **Measurement.** The VIVDS will be measured as each major system component furnished, installed, made fully operational, and tested in accordance with this special specification or as directed by the Engineer.

    The VIVDS communication cable will be measured by the linear foot of the appropriate media type furnished, installed, made fully operational, and tested in accordance with this specification, other referenced Special Specifications or as directed by the Engineer.

    When the VIVDS is used on a temporary basis, the VIVDS must be measured as each system furnished, installed, made fully operational, including reconfiguration and removal if required by the plans, and tested in accordance with this special specification or as directed by the Engineer.

    This is a plans quantity measurement Item. The quantity to be paid is the quantity shown in the proposal unless modified by Article 9.2, "Plans Quantity Measurement." Additional measurements or calculations will be made if adjustments of quantities are required.

    When recorded video is required by the plans it will be paid for by each camera recorded.

14. **Payment**. The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "VIVDS Processor System", "VIVDS Camera Assembly", "VIVDS Central Control",

"VIVDS Set-up System", "VIVDS Temporary", "VIVDS Communication Cable (Coaxial)," "VIVDS Communication Cable (Fiber Optic)", "VIVDS Video Recording", and all accompanying software. These prices are full compensation for furnishing, placing, and testing all materials and equipment, and for all tools, labor, equipment, hardware, operational software package(s), supplies, support, personnel training, shop drawings, documentation, and incidentals. A 3-conductor power cable must be included with the communication cable.

These prices also include any and all interfaces required for the field and remote communications links along with any associated peripheral equipment, including cables; all associated mounting hardware and associated field equipment; required for a complete and fully functional visual image vehicle detection system component.

CITY OF MISSION

PLANS OF PROPOSED ROADWAY IMPROVEMENT

HIDALGO COUNTY

"MILE 2 NORTH" ROAD

FEDERAL AID PROJECT:

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6			1
STATE	STATE DIST.NO.	COUNTY	
TEXAS	PHR	HIDALGO	
CONT.	SECT.	JOB	HIGHWAY NO.
0921	02	323	MILE 2

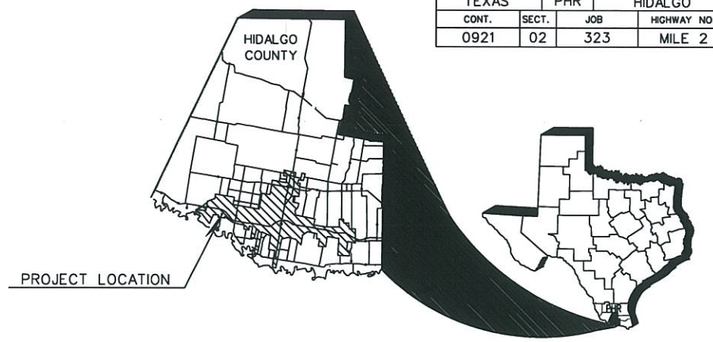
LIMITS:
FROM: LA HOMA RD.
TO: MOOREFIELD RD.

PROJECT LENGTH:

ROADWAY:
CSJ: 0921-02-323

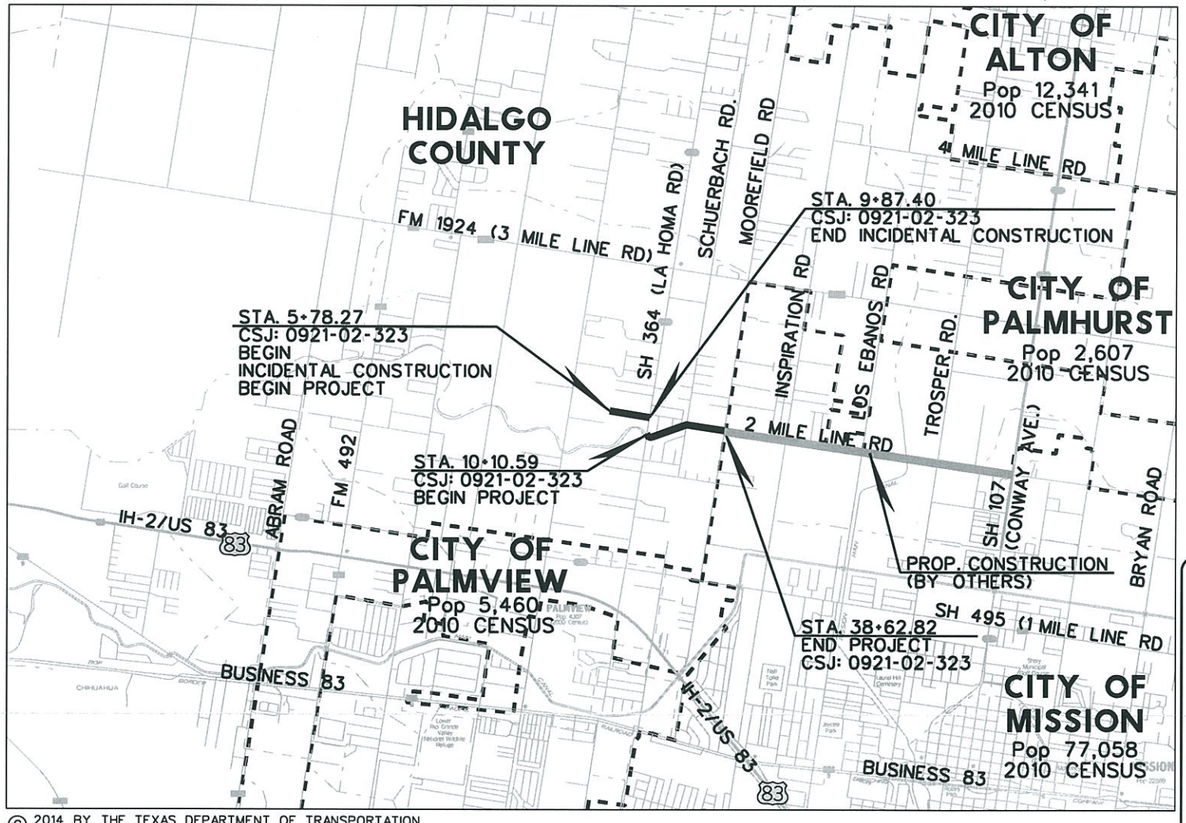
LENGTH OF PROJECT: 2,852.23 FT. = 0.54 Mi.
INCIDENTAL CONSTRUCTION: 409.13 FT. = 0.08 Mi.

TOTAL PROJECT LENGTH: 3261.36 FT. = 0.62 Mi.



CONSTRUCTION OF MILE 2 NORTH ROAD

CONSISTING OF GRADING, ASPHALTIC CONCRETE PAVEMENT, LIME TREATED SUBGRADE, FLEXIBLE BASE, INLETS, STORM DRAIN PIPES, RIPRAP, SIGNING, DELINEATION, FLASHING BEACONS AND PAVEMENT MARKINGS



SCALE: 1"=1 MI.

LOCAL ENTITIES

HIDALGO COUNTY
CONCURRENCE : DATE :
NAME TITLE

HIDALGO COUNTY DRAINAGE DISTRICT NO. 1
CONCURRENCE : DATE :
NAME TITLE

HIDALGO COUNTY IRRIGATION DISTRICT No. 6
CONCURRENCE :
NAME TITLE

LEGEND
---- CITY LIMITS

THE COUNTY OF HIDALGO TEXAS

INDEX DATA
SHEET ON PAGE 2

FINAL PLAN DATA :

FINAL CONTRACT PRICE: _____
CONTRACTORS NAME: _____
CONTRACTORS ADDRESS: _____
LETTING DATE: _____
DATE WORK BEGAN: _____
DATE WORK COMPLETED: _____
DATE OF ACCEPTANCE: _____

CHANGE ORDERS & SUPP. AGREEMENTS :

ALL CONSTRUCTION WORK WAS PERFORMED IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS AND CONTRACT. ALL PROPOSED CONSTRUCTION WAS COMPLETED UNLESS OTHERWISE NOTED.

CITY OF MISSION | DATE:

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SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION ON JUNE 1, 2004 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS SHALL GOVERN ON THIS PROJECT. REQUIRED CONTRACT PROVISIONS FOR FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, MAY 2012).

PROJECT DATA

DESIGN SPEED:
35 mph
ADT: (2014) - 7,300
(2034) - 10,800

EXCEPTIONS:
NONE

RAILROAD CROSSINGS:
NONE PRESENT

EQUATIONS:
NONE

FUNCTION CLASS:
MAJOR COLLECTOR

BRIDGE
NONE

REGISTERED ACCESSIBILITY SPECIALIST (RAS) INSPECTION REQUIRED
TDLR. NO. EABPRJ_____

L&G Engineering
Highway / Civil
Structural / Bridge
Environmental
Construction Material Testing
2100 W. Expressway 83
Mercedes, TX. 78570
Phone : (956) 565-9813
Fax : (956) 565-9018
Firm No. : F-4105
Exp. Date : 8/31/2014

RECOMMENDED FOR LETTING : | APPROVED FOR LETTING :
MISSION CITY ENGINEER | MISSION CITY MANAGER

SUBMITTED FOR LETTING : | APPROVED FOR LETTING :
L&G PROJECT MANAGER | MAYOR - CITY OF MISSION

Texas Department of Transportation

RECOMMENDED FOR LETTING : | APPROVED FOR LETTING :
DISTRICT ENGINEER | DIRECTOR, TRAFFIC OPERATION DIVISION

SUBMITTED FOR LETTING : | APPROVED FOR LETTING :
ADVANCED PLANNING & PROJECT MANAGEMENT SUPERVISOR | DIRECTOR, DESIGN DIVISION

COUNTY HIDALGO PROJ. NO.
HWY. NO. MILE 2 N LETTING DATE
DATE ACCEPTED

MILE 2 NORTH (0921-02-323)

r:\mile2northph2_hm\dgn\plansheets\01_MI2N_TitleSheet.dgn

5/2/2014

SHEET NO.	DESCRIPTION
GENERAL	
1	TITLE SHEET
2	INDEX OF SHEETS
3	PROJECT LAYOUT
4-9	SURVEY DATA SHEETS
10-14	TYPICAL SECTIONS
15-19	GENERAL NOTES
20-24	ESTIMATE & QUANTITY SHEETS
25	EARTH WORK QUANTITIES
26-30	SUMMARY TABLES OF ESTIMATED QUANTITIES
TRAFFIC CONTROL PLAN	
31	TCP ~ GENERAL NOTES
32	TCP ~ SEQUENCE OF CONSTRUCTION
33-35	TCP ~ TYPICAL SECTIONS
36-39	PHASE 1 LAYOUTS
40-42	PHASE 2 LAYOUTS
43-45	PHASE 3 LAYOUTS
TRAFFIC CONTROL STANDARDS	
46-57	[S] BC(1-12)-13 (**)
58-60	[S] TCP (1-2)(1-3)(1-4)-12 (**)
61-63	[S] TCP (2-2)(2-3)(2-4)-12 (**)
64-65	[S] TCP(3-1)(3-3)-13 (**)
66	[S] WZ(TD)-13 (**)
67	[S] WZ(STPM)-13 (**)
68	[S] WZ(UL)-13 (**)
69	[S] WZ(RCD)-13 (**)
70	[S] WZ(BTS-1)-13 (**)
71	[S] WZ(BTS-2)-13 (**)
72	[S] WZ(BRK)-13 (**)
73	[D] TREATMENT FOR VARIOUS EDGE CONDITIONS (**)
ROADWAY DETAILS	
74	MILE 2 NORTH ROADWAY DATA
75-81	PLAN AND PROFILE SHEETS
82-83	LA HOMA RD. INTERSECTION LAYOUT
84	SCHUERBACH RD. INTERSECTION LAYOUT
85	MOOREFIELD RD. INTERSECTION LAYOUT
86	PRIVATE DRIVEWAY TABLE
87	CUT AND RESTORE DETAILS
ROADWAY STANDARDS	
88	[D] SIDEWALK & WHEELCHAIR RAMP DETAILS (**)
89	[D] CURB & GUTTER DETAILS (MOD)(**)
90	[D] OMIT
91	[D] DRIVEWAY PROFILE DETAILS (**)
92	[D] DRIVEWAY DETAILS (PRIVATE) (**)
93	[D] MAILBOX DETAIL (**)
94-97	[S] MB-11(1) (**)
98	[S] GF(31)-11 (**)
99	[S] GF(31)DAT-11 (**)
100	[S] GF(31)MS-11 (**)
101	[S] SGT(7)31-11 (**)
102	[S] SGT(8)31-11 (**)
103-106	[S] PED-12A (**)
107-112	[S] D&OM(1)-10, D&OM(2-5)-04, D&OM(VIA)-04 (**)
113	[S] TE(HMAC)-11 (**)

[D] - DENOTES DISTRICT STANDARD
[S] - DENOTES STATE STANDARD

SHEET NO.	DESCRIPTION
DRAINAGE & IRRIGATION DETAILS	
114-116	DRAINAGE AREA MAPS
117-121	HYDRAULIC DATA SHEETS
122-127	UTILITY & DRAINAGE SHEETS
128-130	IRRIGATION LAYOUTS
131	CURB TRANSITION DETAIL
DRAINAGE STANDARDS	
132	[D] INLET & MANHOLE CAPPING DETAIL (**)
133	[D] MISCELLANEOUS PIPE DETAILS (**)
134	[D] TY "A" INLET DETAILS (**)
135	[D] TY "C" INLET DETAILS (**)
136	[D] TY "CC" GRATED INLET DETAILS (**)
137	[D] TY "F" INLET DETAILS (**)
138	[D] TY "M" MANHOLE DETAILS (**)
139	[D] IRRIGATION CROSSING DETAIL (**)
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140-141	MILE 2 NORTH SIGNING LAYOUTS
142	US 83 SUMMARY OF SMALL SIGNS
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149	MILE NORTH BASIS OF ESTIMATE PAVEMENT MARKINGS
150-151	MILE 2 NORTH PAVEMENT MARKING LAYOUT SHEETS
PAVEMENT MARKINGS STANDARDS	
152-154	[S] PM (1),(2),(3)-12 (**)
TRAFFIC SIGNALS	
155	SUMMARY OF TRAFFIC SIGNAL QUANTITIES
156-157	EXISTING CONDITIONS LAYOUTS
158-159	PROPOSED FLASHING BEACON LAYOUTS
TRAFFIC SIGNAL STANDARDS	
160-163	[S] ED(1),(2),(4),(5)-03 (***)
164	[D] ED(3)-03 (PHR) (***)
165	[D] ED(7)-03 (PHR) (***)
166-167	[S] SP-100(1),(2)-12 (***)
168	[S] LUM-A-12 (***)
169	[S] TS-FD-12 (***)
170	[S] CFA-12 (***)
171	ELECTRICAL SERVICE DESIGN WITH FLASHER CONTROLLER
172	[D] TRAFFIC SIGNAL CONSTRUCTION DETAILS (***)
173-174	[S] RID (LUM)(1),(2)-07 (***)

SHEET NO.	DESCRIPTION
ENVIRONMENTAL	
175	EPIC - ENVIRONMENTAL PERMITS, ISSUES & COMMITMENTS
176	STORM WATER POLLUTION PREVENTION PLAN
177-179	SW3P LAYOUTS
ENVIRONMENTAL STANDARDS	
180	[S] EC(1)-09 (**)
181-182	[S] EC(2)-(3)-93 (**)
183	[D] TECL-06 (**)

STANDARD SHEETS IDENTIFIED WITH (**)
HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT

5/2/2014
DATE

STATE OF TEXAS
DAMIEN B. TIJERINA
104828
LICENSED PROFESSIONAL ENGINEER

DAMIEN B. TIJERINA, P.E.

STANDARD SHEETS IDENTIFIED WITH (***)
HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT

DATE

STATE OF TEXAS
H. C. SIMEONIDIS
60919
REGISTERED PROFESSIONAL ENGINEER

H.C. SIMEONIDIS, P.E.

THE COUNTY OF HIDALGO TEXAS

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Texas Department of Transportation

L&G Engineering
Texas Registered Engineering Firm F-4105
Highway / Civil
Structural / Bridge
Environmental
Constr. Material Testing

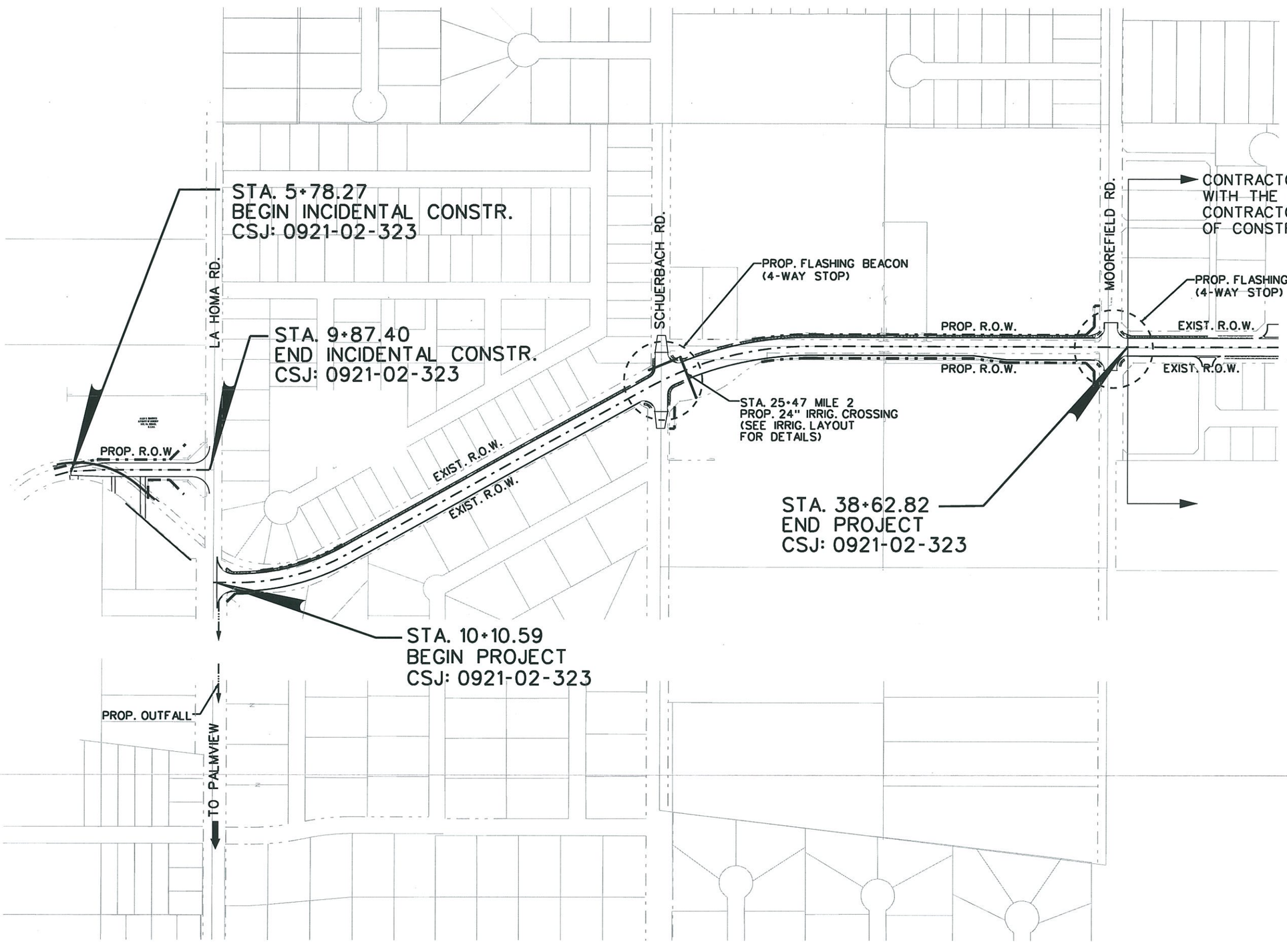
MILE 2 NORTH
INDEX OF SHEETS

SCALE:
HOR. = N.T.S.
VER. =

SHEET 1 OF 1

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.				SHEET NO.
CK DN: D.B.T.	6	TX					2
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		HIGHWAY NO.
CK DW: D.B.T.	21	HIDALGO	0921	02	323		MILE 2
TR:							
CK TR:							

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STATE OF TEXAS
DAMIEN B. TIJERINA
104828
LICENSED
PROFESSIONAL ENGINEER

5/2/2014

THE COUNTY OF HIDALGO TEXAS

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Texas Department of Transportation

L&G Engineering
Texas Registered
Engineering Firm F-4105

Highway / Civil
Structural / Bridge
Environmental
Constr. Material Testing

MILE 2 NORTH
PROJECT LAYOUT

SCALE:
HOR. = 1"=300'

SHEET 1 OF 1

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.				SHEET NO.
CK DN: D.B.T.	6	TX					3
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		HIGHWAY NO.
CK DW: D.B.T.	21	HIDALGO	0921	02	323		MILE 2
TR:							
CK TR:							

r:\mile2north2_hm\dgn\plansheets\01 PROJECT LAYOUT.dgn 5/2/2014 2:09:27 PM

B.M. No. 1
STA: 17+20.51
OFFSET: 28.66' RT

B.M. No. 2
STA: 26+01.52
OFFSET: 74.56' LT

B.M. No. 3
STA: 32+19.67
OFFSET: 19.76' RT

B.M. No. 4
STA: 38+61.36
OFFSET: 50.59' RT

B.M. No. 5
STA: 45+95.99
OFFSET: 38.43' RT

B.M. No. 6
STA: 9+49.19
OFFSET: 36.37' LT

B.M. No. 7
STA: 18+34.68
OFFSET: 33.17' LT

B.M. No. 8
STA: 22+89.79
OFFSET: 12.90' RT

B.M. No. 9
STA: 26+62.27
OFFSET: 56.08' RT

B.M. No. 10
STA: 53+31.07
OFFSET: 22.20' LT

B.M. No. 11
STA: 59+32.85
OFFSET: 61.69' RT

MILE 2 NORTH ROAD

POT 10+00.00
10+00
15+00
20+00
25+00
30+00
35+00
40+00
45+00
50+00
55+00
60+00
65+00

LA HOMA ROAD (R.O.W. VARIES)

SCHUERBACH ROAD (R.O.W. VARIES)

MOOREFIELD ROAD (R.O.W. VARIES)

INSPIRATION ROAD (R.O.W. VARIES)

EL ARROYO

CHURCHILL ESTATES

INSPI

MATCHLINE STA. 65+00

N

SCALE: 1" = 400'

STATE OF TEXAS
REGISTERED
ALFONSO QUINTANILLA
4856
PROFESSIONAL
LAND SURVEYOR

3-25-14

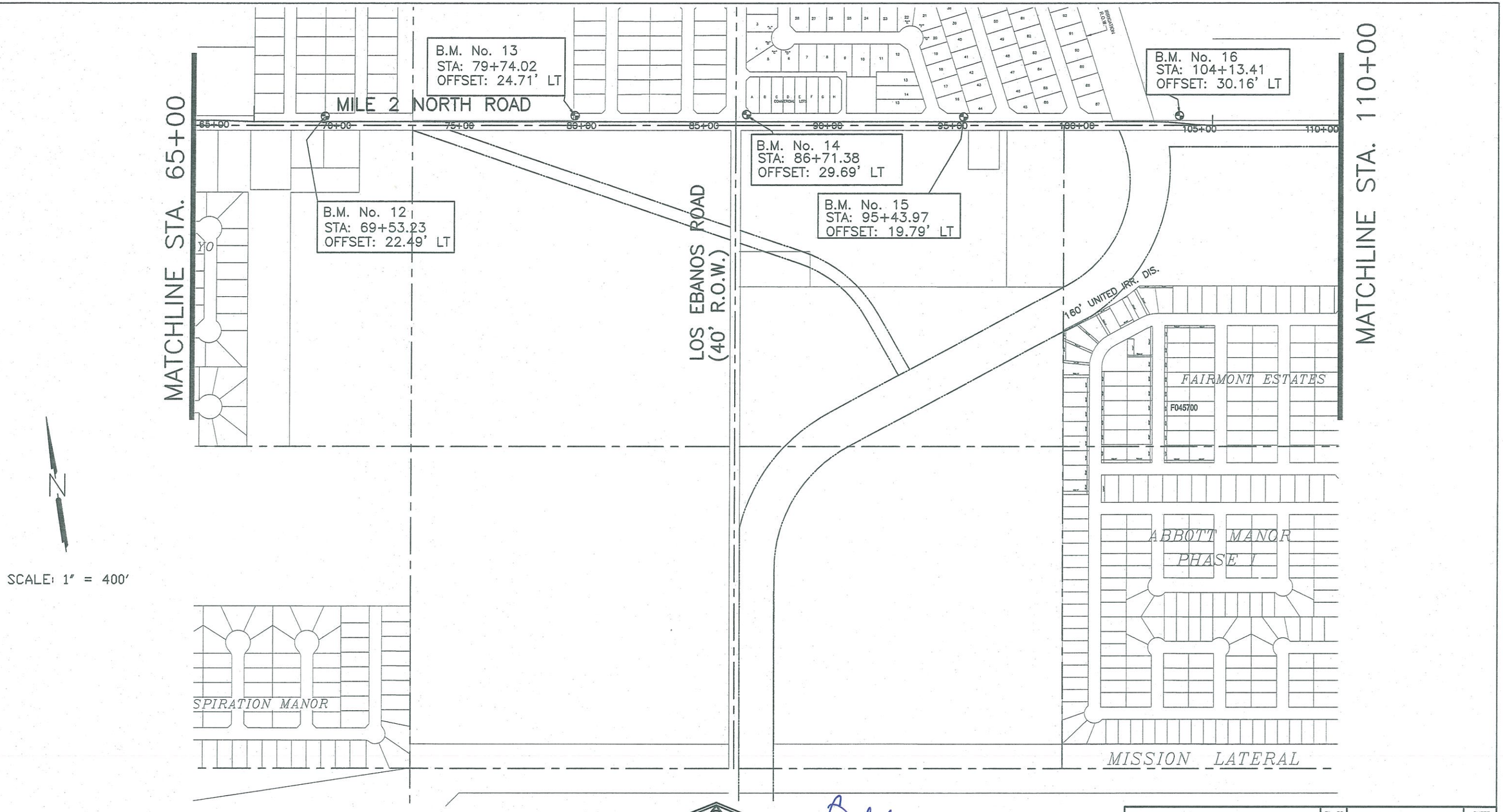
ALFONSO QUINTANILLA
R.P.L.S. No. 4856

TEXAS DEPARTMENT OF TRANSPORTATION

FIL. RD. DIV. NO.	FEDERAL AND PROJECT NO.		SHEET NO.
	TEXAS		4
STATE	STATE DIST	COUNTY	
TEXAS	21	HIDALGO	
CONT.	SECT.	JOB	HIGHWAY NO.
0921	02	284 etc	MILE 2 N. RD.

MILE 2 NORTH
SURVEY CONTROL
INDEX SHEET

QUINTANILLA, HEADLEY AND ASSOCIATES, INC.
CONSULTING ENGINEERS
124 E. STUBBS ST.
EDINBURG, TEXAS 78539
ENGINEERING REGISTRATION NUMBER F-1513
SURVEYING REGISTRATION NUMBER 100411-00
LAND SURVEYORS
PHONE 956-381-6480
FAX 956-381-0527
OFFICE@QHAENGINEERING.COM



SCALE: 1" = 400'

STATE OF TEXAS
REGISTERED
ALFONSO QUINTANILLA
4856
PROFESSIONAL
LAND SURVEYOR

3-25-14

ALFONSO QUINTANILLA
R.P.L.S. No. 4856

TEXAS DEPARTMENT OF TRANSPORTATION

FIL. RD. DIV. NO.	FEDERAL AND PROJECT NO.		SHEET NO.
	TEXAS		5
STATE	STATE DIST	COUNTY	
TEXAS	21	HIDALGO	
CONT.	SECT.	JOB	HIGHWAY NO.
0921	02	284, etc	MILE 2 N. RD.

MILE 2 NORTH
SURVEY CONTROL
INDEX SHEET

QUINTANILLA, HEADLEY AND ASSOCIATES, INC.
CONSULTING ENGINEERS
124 E. STUBBS ST.
EDINBURG, TEXAS 78539
ENGINEERING REGISTRATION NUMBER F-1513
SURVEYING REGISTRATION NUMBER 100411-00
LAND SURVEYORS
PHONE 956-381-6480
FAX 956-381-0527
OFFICE@QHAENGINEERING.COM

MATCHLINE STA. 110+00

HOLLAND AVE. (40' R.O.W.)

MILE 2 NORTH ROAD

110+00 115+00 118+00 120+00 125+00 130+00 135+00 139+00

B.M. No. 18
STA: 121+11.59
OFFSET: 4.87' LT

B.M. No. 20
STA: 137+91.00
OFFSET: 47.51' LT

B.M. No. 17
STA: 113+17.04
OFFSET: 22.28' RT

B.M. No. 19
STA: 129+9.76
OFFSET: 34.97' RT

MISSION NORTH SUBDIVISION

B.M. No. 21
STA: 08+85.78
OFFSET: 37.86' RT

B.M. No. 24
STA: 08+67.10
OFFSET: 78.11' RT

CONWAY AVENUE (S.H. 107) (R.O.W. VARIES)

N

SCALE: 1" = 400'

B.M. No. 22
STA: 17+63.49
OFFSET: 35.47' LT

B.M. No. 25
STA: 17+44.83
OFFSET: 82.06' RT

WAGON CITY SBD.

B.M. No. 23
STA: 26+21.87
OFFSET: 33.08' RT

WAGON CITY SUBD. UNIT 2

ABBOTT MANOR PHASE 1

B.M. No. 26
STA: 26+48.38
OFFSET: 44.38' RT

STATE OF TEXAS
REGISTERED
ALFONSO QUINTANILLA
4856
PROFESSIONAL
LAND SURVEYOR

3-25-14

ALFONSO QUINTANILLA
R.P.L.S. No. 4856

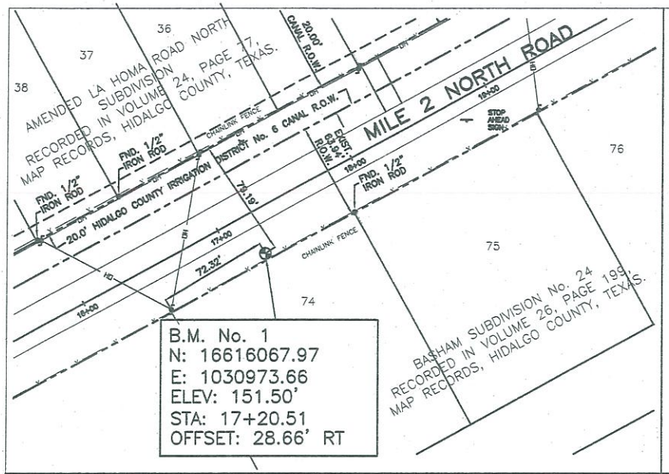
TEXAS DEPARTMENT OF TRANSPORTATION

MILE 2 NORTH
SURVEY CONTROL
INDEX SHEET

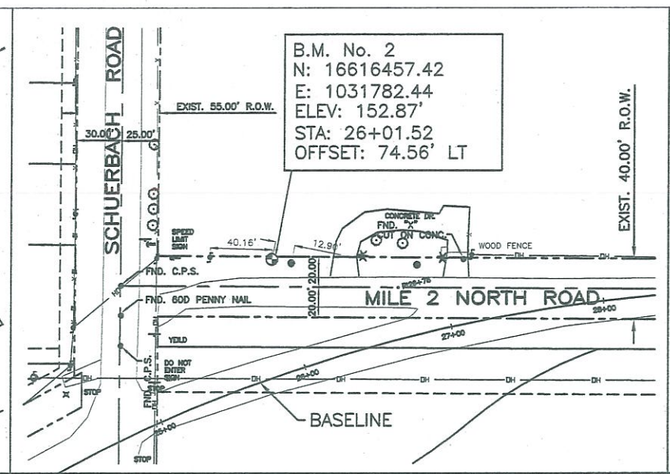
FIL. RD. DIV. NO.	FEDERAL AND PROJECT NO.		SHEET NO.
	TEXAS		6

STATE	STATE DIST.	COUNTY	
TEXAS	21	HIDALGO	
CONT.	SECT.	JOB	HIGHWAY NO.
0921	02	284	MILE 2 N. RD.

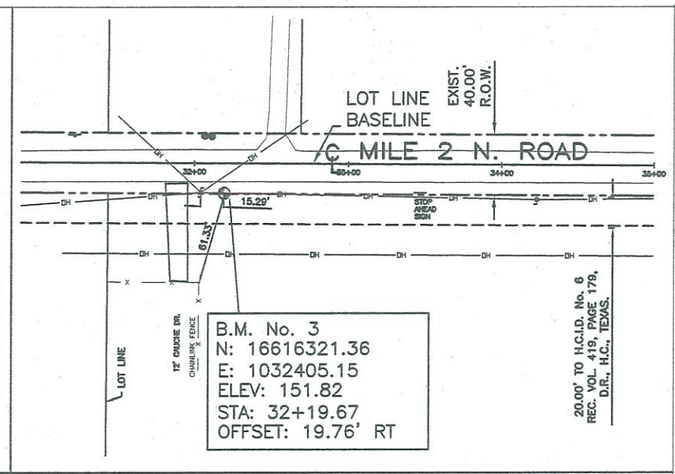
QUINTANILLA, HEADLEY AND ASSOCIATES, INC.
CONSULTING ENGINEERS
124 E. STUBBS ST.
EDINBURG, TEXAS 78539
ENGINEERING REGISTRATION NUMBER F-1513
SURVEYING REGISTRATION NUMBER 100411-00
LAND SURVEYORS
PHONE 956-381-6480
FAX 956-381-0527
OFFICE@QHAENGINEERING.COM



SET 5/8" IRON ROD W/ALUM. 3 1/4" DISK IN CONCRETE 639.5' WEST AND 383.5' SOUTH FROM INTERSECTION OF MILE 2 NORTH ROAD AND SCHUERBACH ROAD.



SET 5/8" IRON ROD W/ALUM. 3 1/4" DISK IN CONCRETE 99.9' EAST AND 121.7' NORTH FROM INTERSECTION OF MILE 2 NORTH ROAD AND SCHUERBACH ROAD

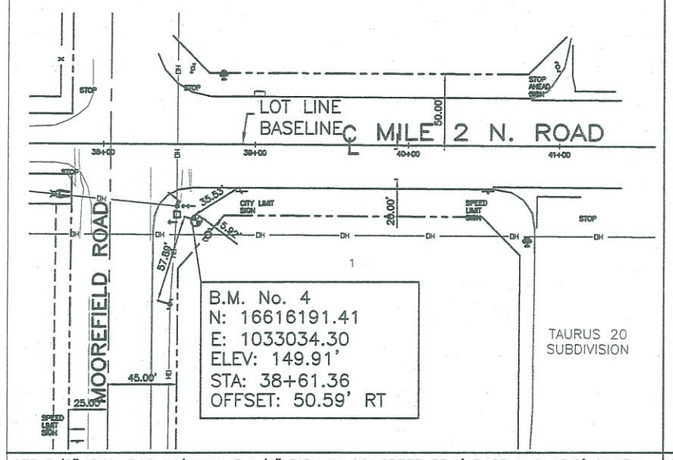


SET 5/8" IRON ROD W/ALUM. 3 1/4" DISK IN CONCRETE 585.2' WEST AND 19.8' SOUTH FROM INTERSECTION OF MILE 2 NORTH ROAD AND MOOREFIELD ROAD

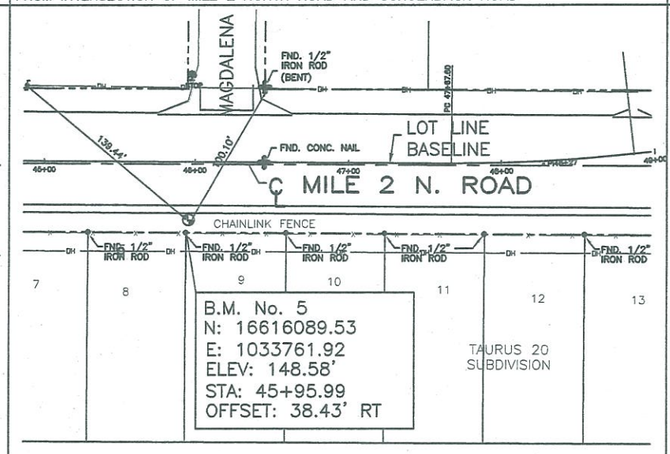
NOTES:

1. ALL BEARINGS AND DISTANCES ARE BASED ON THE STATE PLANE COORDINATE SYSTEM NAD83. TEXAS SOUTH ZONE (4205)
2. COORDINATES AND DISTANCES ARE US SURVEY FEET. DISPLAY IN SURFACE VALUES AND MAY BE CONVERTED TO GRID BY DIVIDING BY TxDOT SURFACE ADJUSTMENT FACTOR OF 1.00004
3. VERTICAL DATUM: NAVD88
4. ALL HORIZONTAL CONTROL ON THIS PROJECT WAS ESTABLISHED BY STATIC GPS METHODS.
5. ALL VERTICAL CONTROL ON THIS PROJECT WAS ESTABLISHED BY 3-WIRE LEVEL.

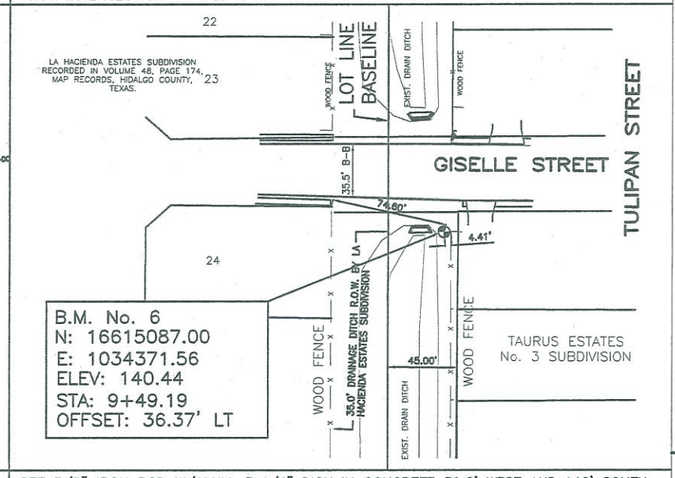
SCALE: 1" = 100'



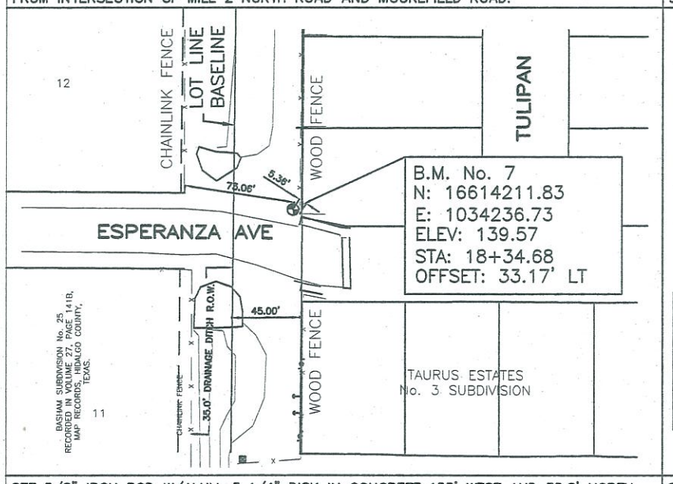
SET 5/8" IRON ROD W/ALUM. 3 1/4" DISK IN CONCRETE 57.0' EAST AND 47.8' SOUTH FROM INTERSECTION OF MILE 2 NORTH ROAD AND MOOREFIELD ROAD.



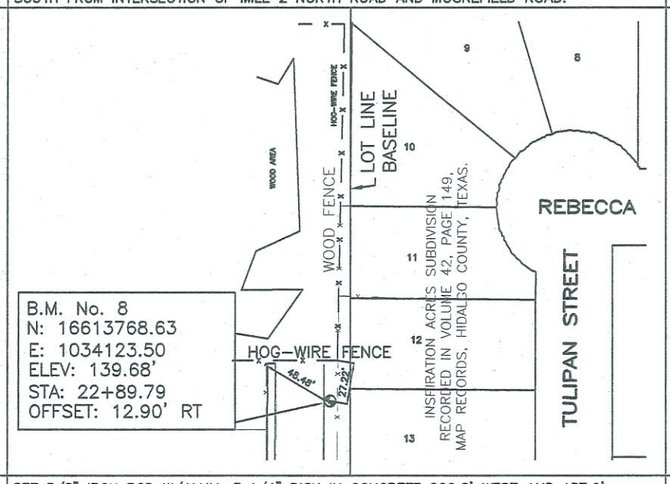
SET 5/8" IRON ROD W/ALUM. 3 1/4" DISK IN CONCRETE 791.2' EAST AND 36.89' SOUTH FROM INTERSECTION OF MILE 2 NORTH ROAD AND MOOREFIELD ROAD.



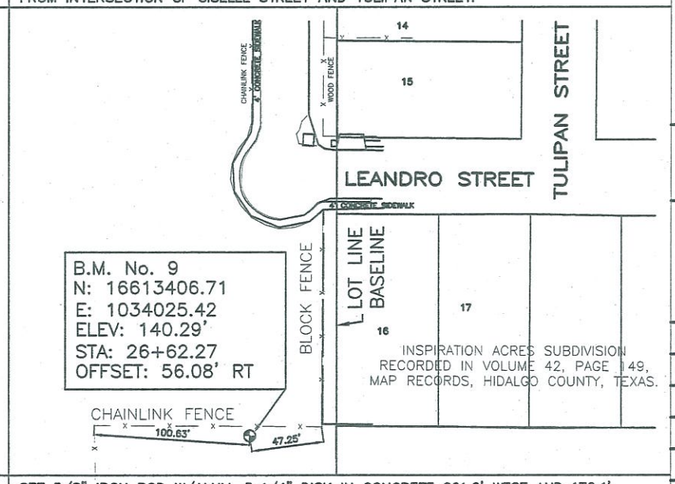
SET 5/8" IRON ROD W/ALUM. 3 1/4" DISK IN CONCRETE 39.8' WEST AND 142' SOUTH FROM INTERSECTION OF GISELLE STREET AND TULIPAN STREET.



SET 5/8" IRON ROD W/ALUM. 3 1/4" DISK IN CONCRETE 155' WEST AND 35.8' NORTH FROM INTERSECTION OF ESPERANZA AVE AND TULIPAN STREET.



SET 5/8" IRON ROD W/ALUM. 3 1/4" DISK IN CONCRETE 200.8' WEST AND 157.9' NORTH FROM INTERSECTION OF TULIPAN STREET AND REBECCA



SET 5/8" IRON ROD W/ALUM. 3 1/4" DISK IN CONCRETE 201.2' WEST AND 172.1' SOUTH FROM INTERSECTION OF LEANDRO STREET AND TULIPAN STREET

STATE OF TEXAS
REGISTERED
ALFONSO QUINTANILLA
4856
PROFESSIONAL
LAND SURVEYOR

ALFONSO QUINTANILLA
R.P.L.S. No. 4856

3-25-14

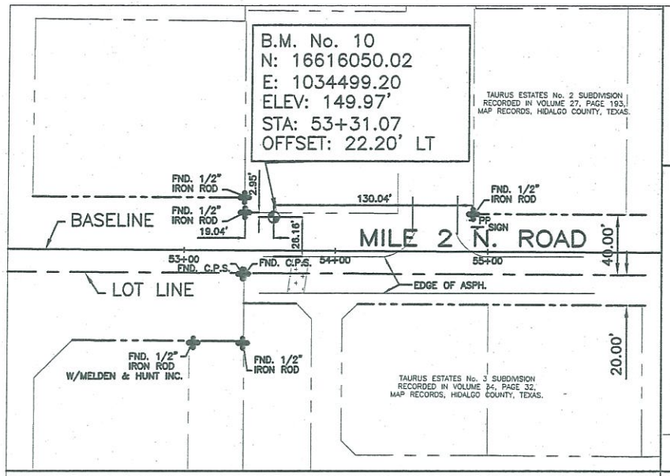
Survey Date: 6-29-2011

QUINTANILLA, HEADLEY AND ASSOCIATES, INC.
CONSULTING ENGINEERS
LAND SURVEYORS
124 E. STUBBS ST. PHONE 956-381-6480
EDINBURG, TEXAS 78539 FAX 956-381-0527
ENGINEERING REGISTRATION NUMBER F-1513
SURVEYING REGISTRATION NUMBER 100411-00
OFFICE@QHAENGINEERING.COM

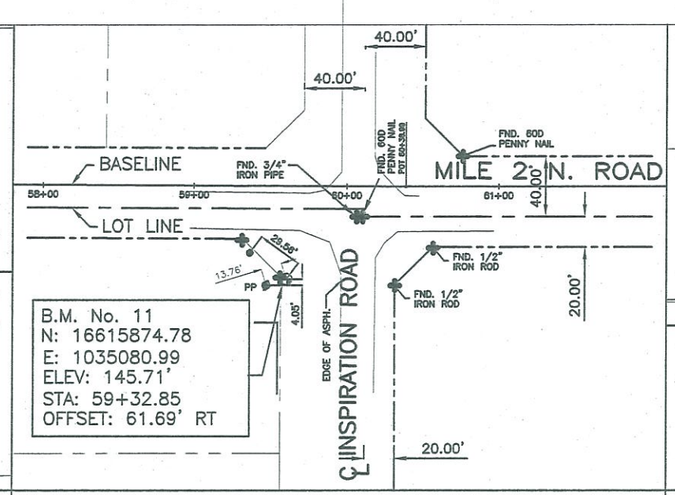
TEXAS DEPARTMENT OF TRANSPORTATION

MILE 2 NORTH ROAD HORIZONTAL & VERTICAL CONTROL

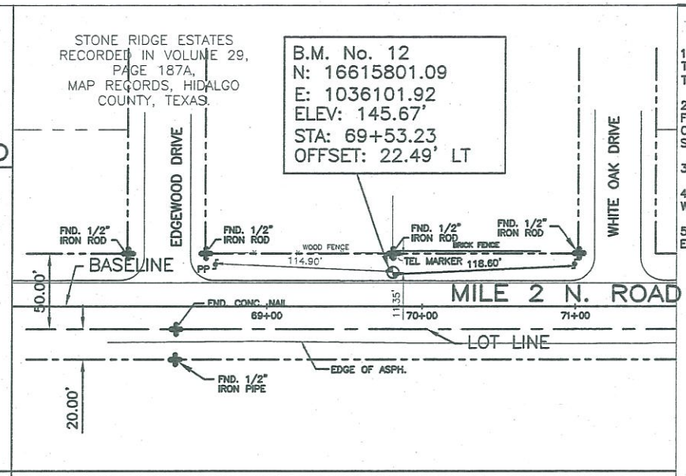
FIL. RD. DIV. NO.	FEDERAL AND PROJECT NO.		SHEET NO.
			7
STATE	STATE DIST	COUNTY	
TEXAS	PHARR	HIDALGO	
CONT.	SECT.	JOB	HIGHWAY NO.
0921	02	284	MILE 2 N. RD.



SET 5/8" IRON ROD W/ALUM. 3 1/4" DISK IN CONCRETE 652.66' WEST AND 37.20' NORTH FROM INTERSECTION OF MILE 2 NORTH ROAD AND INSPIRATION ROAD.



SET 5/8" IRON ROD W/ALUM. 3 1/4" DISK IN CONCRETE 51.30' WEST AND 46.69 SOUTH FROM INTERSECTION OF MILE 2 NORTH ROAD AND INSPIRATION ROAD.

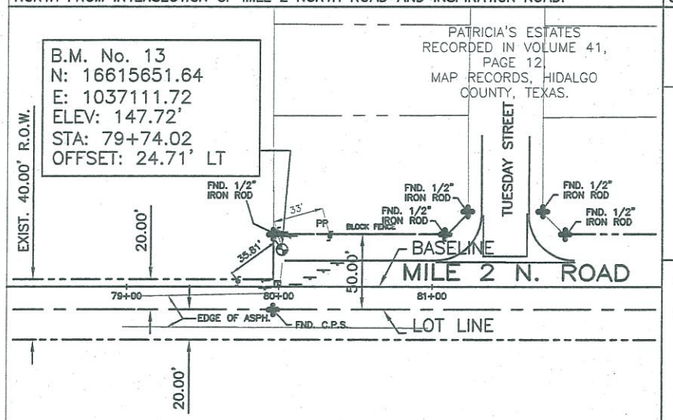


SET 5/8" IRON ROD W/ALUM. 3 1/4" DISK IN CONCRETE 969.25' EAST AND 37.49' NORTH FROM INTERSECTION OF MILE 2 NORTH ROAD AND INSPIRATION ROAD.

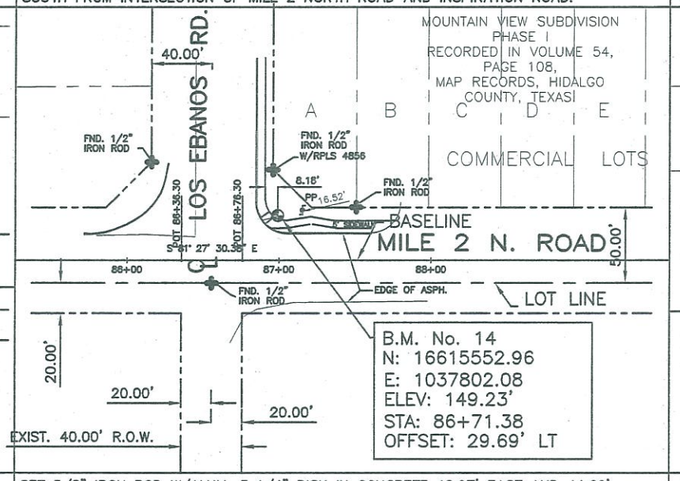
NOTES:

1. ALL BEARINGS AND DISTANCES ARE BASED ON THE STATE PLANE COORDINATE SYSTEM NAD83. TEXAS SOUTH ZONE (4205)
2. COORDINATES AND DISTANCES ARE US SURVEY FEET. DISPLAY IN SURFACE VALUES AND MAY BE CONVERTED TO GRID BY DIVIDING BY TxDOT SURFACE ADJUSTMENT FACTOR OF 1.00004
3. VERTICAL DATUM: NAVD88
4. ALL HORIZONTAL CONTROL ON THIS PROJECT WAS ESTABLISHED BY STATIC GPS METHODS.
5. ALL VERTICAL CONTROL ON THIS PROJECT WAS ESTABLISHED BY 3-WIRE LEVEL.

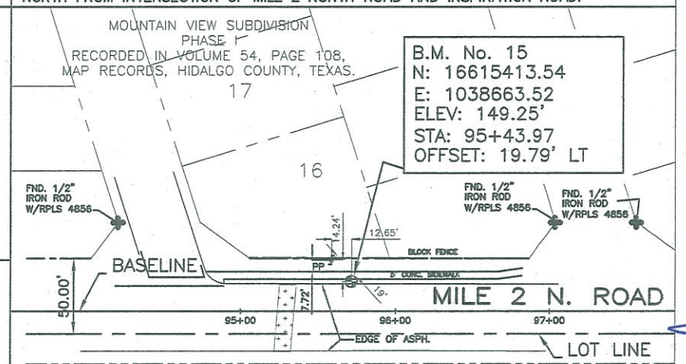
SCALE: 1" = 100'



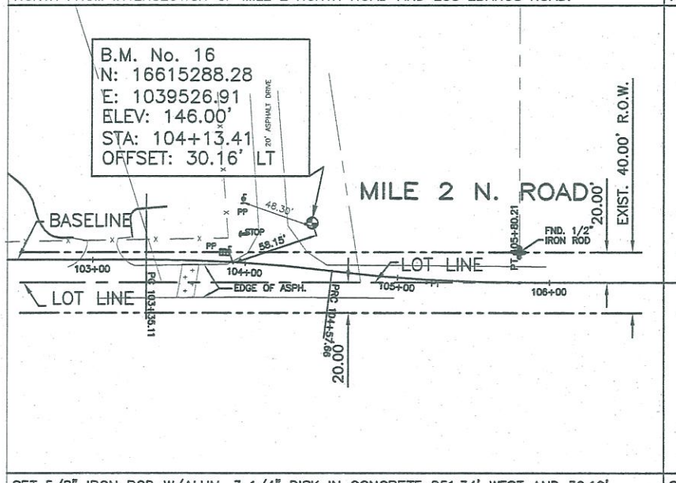
SET 5/8" IRON ROD W/ALUM. 3 1/4" DISK IN CONCRETE 645.39' WEST AND 39.71' NORTH FROM INTERSECTION OF MILE 2 NORTH ROAD AND LOS EBANOS ROAD.



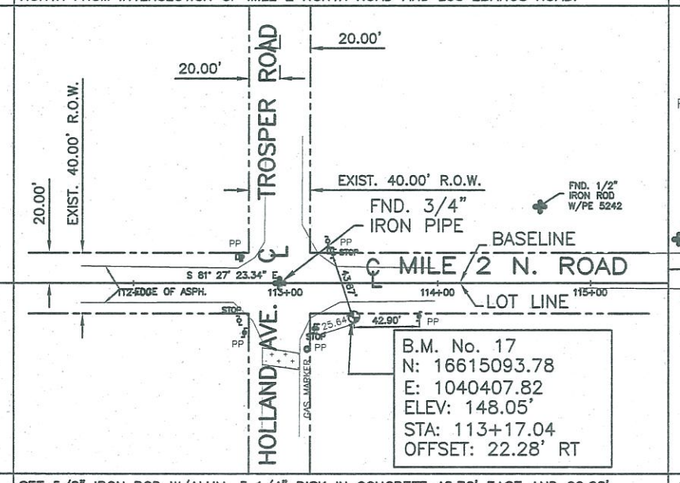
SET 5/8" IRON ROD W/ALUM. 3 1/4" DISK IN CONCRETE 42.97' EAST AND 44.69' NORTH FROM INTERSECTION OF MILE 2 NORTH ROAD AND LOS EBANOS ROAD.



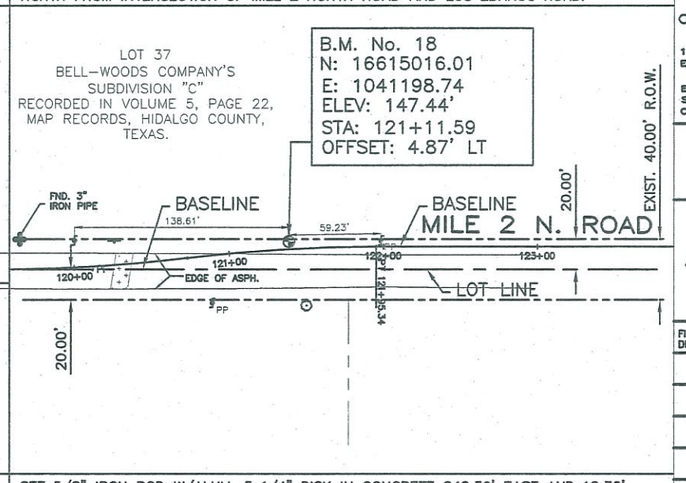
SET 5/8" IRON ROD W/ALUM. 3 1/4" DISK IN CONCRETE 915.56' EAST AND 34.79' NORTH FROM INTERSECTION OF MILE 2 NORTH ROAD AND LOS EBANOS ROAD.



SET 5/8" IRON ROD W/ALUM. 3 1/4" DISK IN CONCRETE 851.34' WEST AND 39.19' NORTH FROM INTERSECTION OF MILE 2 NORTH ROAD AND TROSPER ROAD.



SET 5/8" IRON ROD W/ALUM. 3 1/4" DISK IN CONCRETE 48.70' EAST AND 22.28' SOUTH FROM INTERSECTION OF MILE 2 NORTH ROAD AND TROSPER ROAD.



SET 5/8" IRON ROD W/ALUM. 3 1/4" DISK IN CONCRETE 842.39' EAST AND 18.30' NORTH FROM INTERSECTION OF MILE 2 NORTH ROAD AND TROSPER ROAD.

STATE OF TEXAS REGISTERED
ALFONSO QUINTANILLA
4856
PROFESSIONAL LAND SURVEYOR

ALFONSO QUINTANILLA
R.P.L.S. No. 4856
3-25-14
Survey Date: 6-29-2011

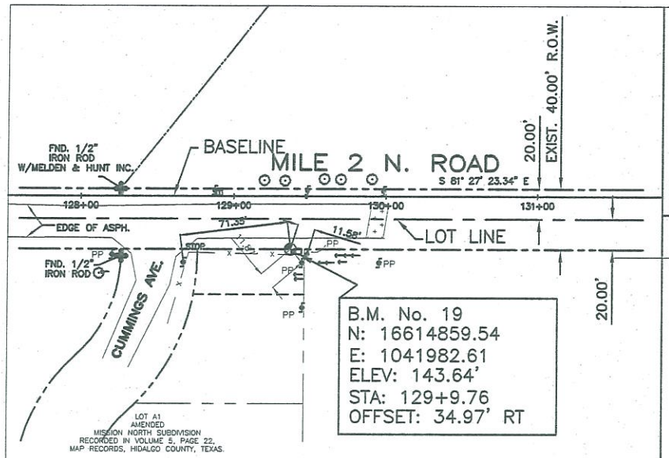
QUINTANILLA, HEADLEY AND ASSOCIATES, INC.
CONSULTING ENGINEERS
LAND SURVEYORS
124 E. STUBBS ST. PHONE 956-381-6480
EDINBURG, TEXAS 78539 FAX 956-381-0527
ENGINEERING REGISTRATION NUMBER F-1513
SURVEYING REGISTRATION NUMBER 100411-00
OFFICE@QHAENGINEERING.COM

TEXAS DEPARTMENT OF TRANSPORTATION

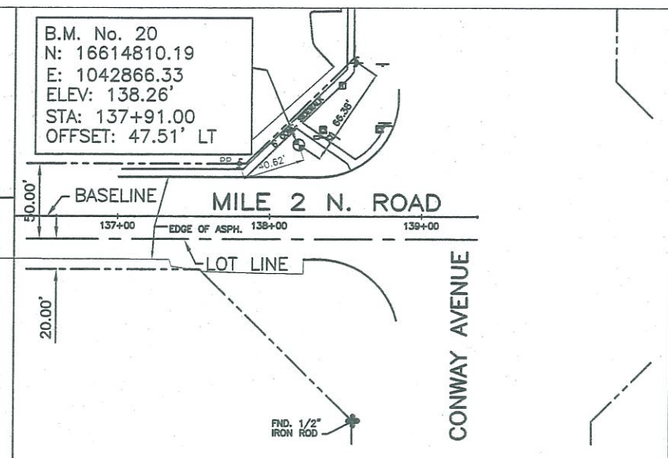
MILE 2 NORTH ROAD HORIZONTAL & VERTICAL CONTROL

FIL. RD. DIV. NO.	FEDERAL AND PROJECT NO.		SHEET NO.
			8

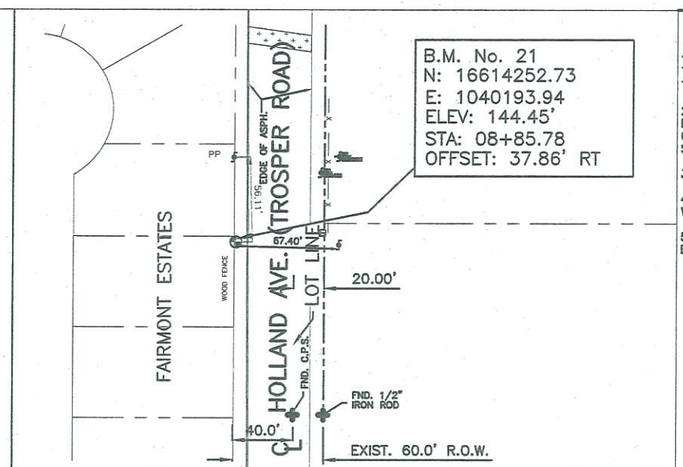
STATE	STATE DIST	COUNTY	
TEXAS	PHARR	HIDALGO	
CONT.	SECT.	JOB	HIGHWAY NO.
0921	02	284	MILE 2 N. RD.



SET 5/8" IRON ROD W/ALUM. 3 1/4" DISK IN CONCRETE 1640.80' EAST AND 19.97' SOUTH FROM INTERSECTION OF MILE 2 NORTH ROAD AND TROSPER ROAD.



SET 5/8" IRON ROD W/ALUM. 3 1/4" DISK IN CONCRETE 36.31' WEST AND 62.51' NORTH FROM INTERSECTION OF MILE 2 NORTH ROAD AND WEST R.O.W. LINE OF CONWAY AVE.

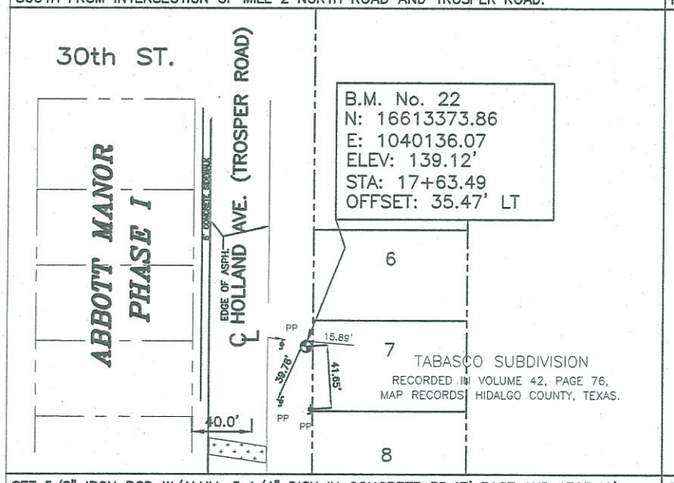


SET 5/8" IRON ROD W/ALUM. 3 1/4" DISK IN CONCRETE 37.86' WEST AND 885.78' SOUTH FROM INTERSECTION OF MILE 2 NORTH ROAD AND TROSPER ROAD.

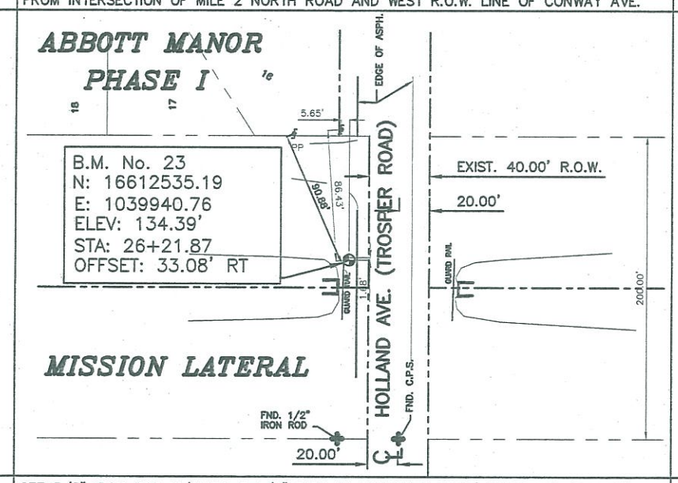
NOTES:

1. ALL BEARINGS AND DISTANCES ARE BASED ON THE STATE PLANE COORDINATE SYSTEM NAD83. TEXAS SOUTH ZONE (4205)
2. COORDINATES AND DISTANCES ARE US SURVEY FEET. DISPLAY IN SURFACE VALUES AND MAY BE CONVERTED TO GRID BY DIVIDING BY TxDOT SURFACE ADJUSTMENT FACTOR OF 1.00004
3. VERTICAL DATUM: NAVD88
4. ALL HORIZONTAL CONTROL ON THIS PROJECT WAS ESTABLISHED BY STATIC GPS METHODS.
5. ALL VERTICAL CONTROL ON THIS PROJECT WAS ESTABLISHED BY 3-WIRE LEVEL.

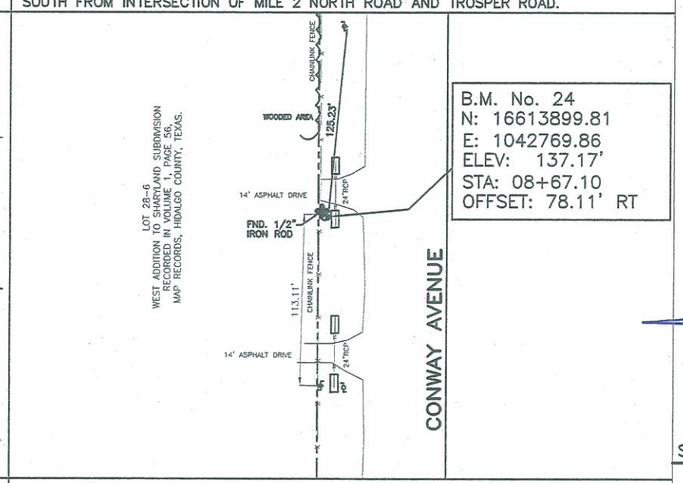
SCALE: 1" = 100'



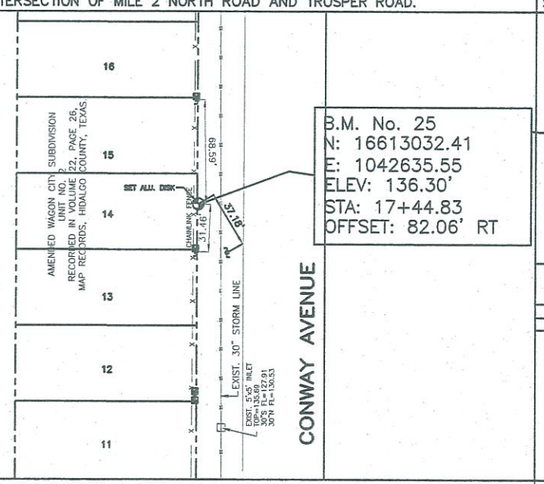
SET 5/8" IRON ROD W/ALUM. 3 1/4" DISK IN CONCRETE 35.47' EAST AND 1763.49' SOUTH FROM INTERSECTION OF MILE 2 NORTH ROAD AND TROSPER ROAD.



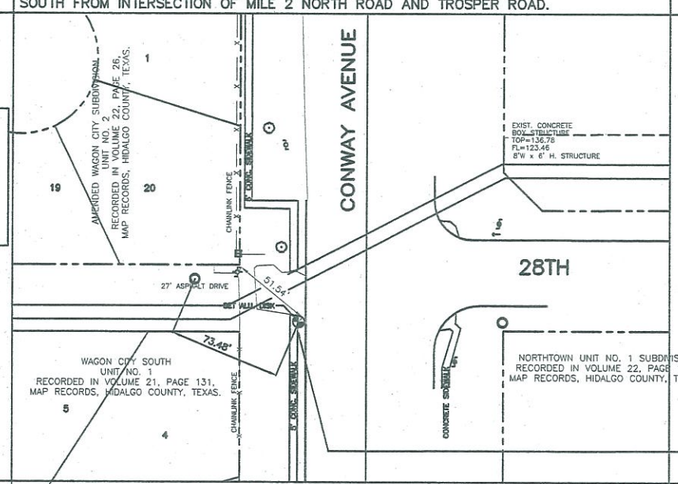
SET 5/8" IRON ROD W/ALUM. 3 1/4" DISK IN CONCRETE 33.08' WEST AND 2621.87' SOUTH FROM INTERSECTION OF MILE 2 NORTH ROAD AND TROSPER ROAD.



SET 5/8" IRON ROD W/ALUM. 3 1/4" DISK IN CONCRETE 78.11' WEST AND 852.10' SOUTH FROM INTERSECTION OF MILE 2 NORTH ROAD AND CONWAY AVENUE.



SET 5/8" IRON ROD W/ALUM. 3 1/4" DISK IN CONCRETE 82.06' WEST AND 1729.83' SOUTH FROM INTERSECTION OF MILE 2 NORTH ROAD AND CONWAY AVENUE.



SET 5/8" IRON ROD W/ALUM. 3 1/4" DISK IN CONCRETE 44.38' WEST AND 2633.38' SOUTH FROM INTERSECTION OF MILE 2 NORTH ROAD AND CONWAY AVENUE.

STATE OF TEXAS
REGISTERED
ALFONSO QUINTANILLA
4856
PROFESSIONAL
LAND SURVEYOR

ALFONSO QUINTANILLA
R.P.L.S. No. 4856
3-25-14

Survey Date: 6-29-2011

QUINTANILLA, HEADLEY AND ASSOCIATES, INC.
CONSULTING ENGINEERS
LAND SURVEYORS
124 E. STUBBS ST. PHONE 956-381-6480
EDINBURG, TEXAS 78539 FAX 956-381-0527
ENGINEERING REGISTRATION NUMBER F-1513
SURVEYING REGISTRATION NUMBER 100411-00
OFFICE@QHAENGINEERING.COM

TEXAS DEPARTMENT OF TRANSPORTATION

MILE 2 NORTH ROAD HORIZONTAL & VERTICAL CONTROL

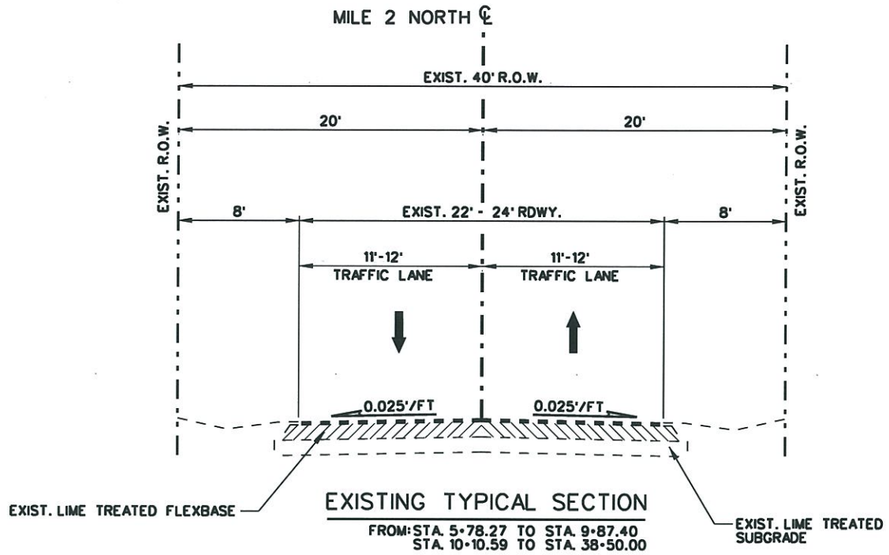
FIL. RD. DIV. NO.	FEDERAL AND PROJECT NO.		SHEET NO.
			9

STATE	STATE DIST	COUNTY	
TEXAS	PHARR	HIDALGO	
CONT.	SECT.	JOB	HIGHWAY NO.
0921	02	284	MILE 2 N. RD.

GENERAL NOTES:

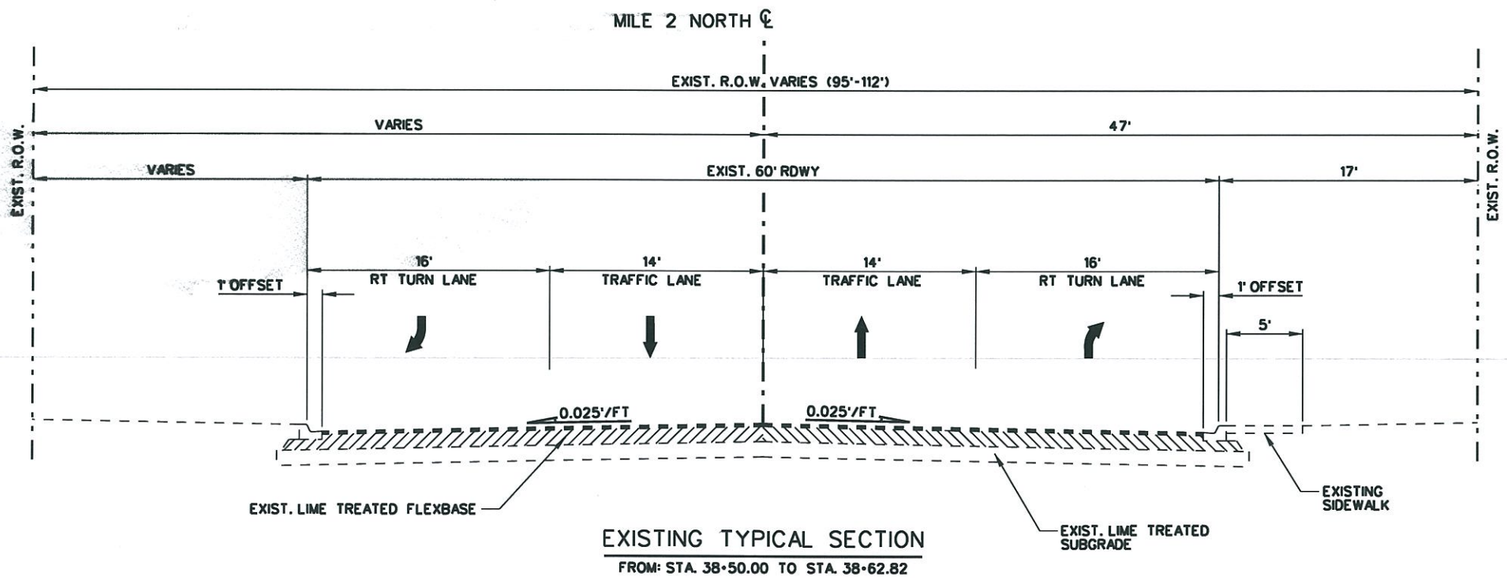
ALL EXIST. ACP AND BASE MATERIAL FROM MILE 2 NORTH ROADWAY THAT IS IN THE CUT PLANE OF THE PROPOSED TYPICAL SECTIONS WILL BE REMOVED UNER ITEM 110, "EXCAVATION" AND SHALL NOT BE USED.

REMOVAL OF EXIST. CURBS, GUTTERS, AND SIDEWALKS SHALL BE PAID UNDER ITEM 104.



EXISTING TYPICAL SECTION

FROM: STA. 5+78.27 TO STA. 9+87.40
STA. 10+10.59 TO STA. 38+50.00



EXISTING TYPICAL SECTION

FROM: STA. 38+50.00 TO STA. 38+62.82

STATE OF TEXAS
DAMIEN B. TIJERINA
104828
LICENSED
PROFESSIONAL ENGINEER

5/2/2014

THE COUNTY OF HIDALGO TEXAS

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Texas Department of Transportation

L&G Engineering
Texas Registered
Engineering Firm F-4105

Highway / Civil
Structural / Bridge
Environmental
Constr. Material Testing

MILE 2 NORTH
EXIST. TYPICAL SECTIONS

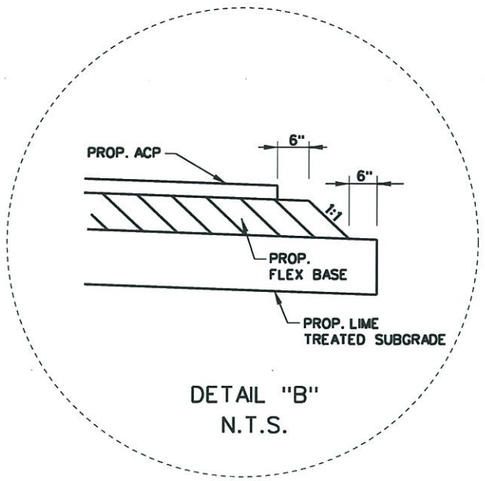
SCALE:
HOR. = 1"=10'
VER. =

SHEET 1 OF 1

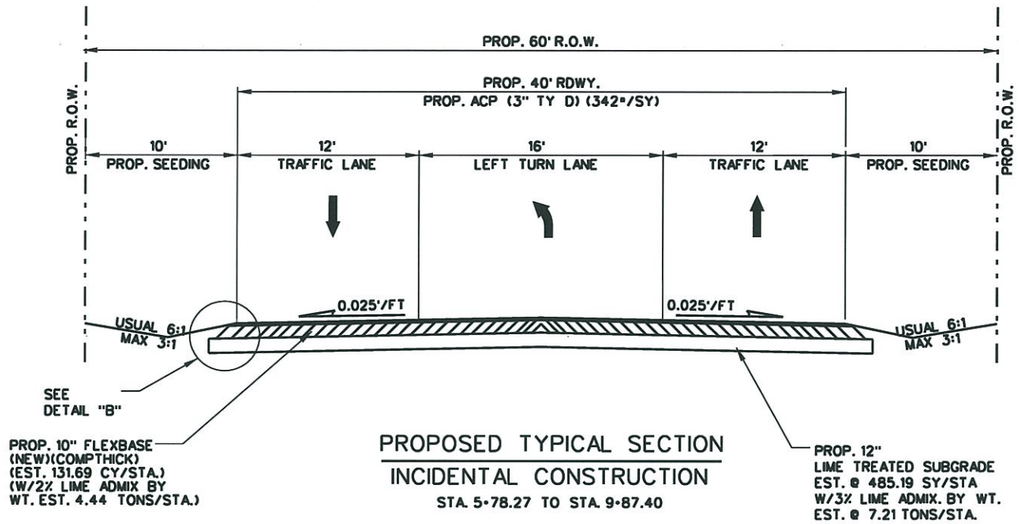
DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN: D.B.T.	6	TX				10
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: D.B.T.						
TR:	21	HIDALGO	0921	02	323	MILE 2
CK TR:						

r:\mile2northph2_hm\dgn\plonsheets\01_M2N_50-typ.dgn

5/2/2014



DETAIL "B"
N.T.S.



PROPOSED TYPICAL SECTION
INCIDENTAL CONSTRUCTION
STA. 5+78.27 TO STA. 9+87.40

GENERAL NOTES:

WHERE REQUIRED BY FIXTURES OR UNUSUAL CONDITIONS, THE GOVERNING SLOPES MAY BE VARIED WHEN SPECIFICALLY DIRECTED BY THE ENGINEER.

THE TOP 4 in. (MIN.) OF THE PROPOSED FLEX. BASE LAYER SHALL BE NEW MATERIAL.

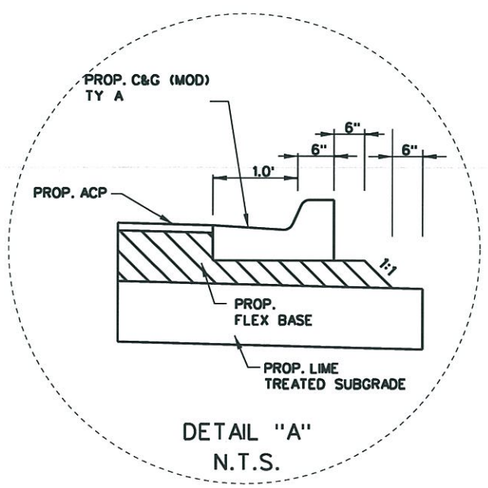
PGL - DENOTES PROFILE GRADE LINE.
PCJ - DENOTES PERMISSIBLE CONSTRUCTION JOINT.

WHERE POSSIBLE AND UNLESS OTHERWISE DIRECTED BY THE ENGINEER, PERMISSIBLE CONSTRUCTION JOINTS SHALL FALL ON STRIPING LINES AS SHOWN ON STRIPING DETAILS.

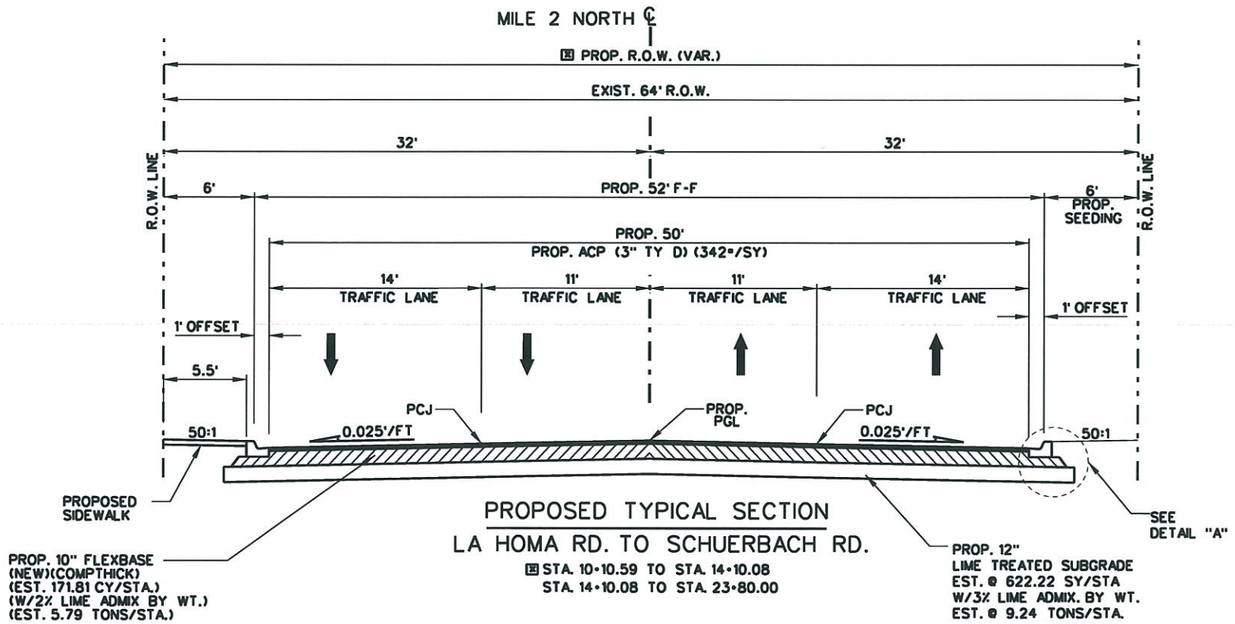
ALL GRADING SHALL BE WITHIN THE R.O.W. LIMITS.

114#/SY OF ACP IS EQUIVALENT TO 1" DEPTH OF ACP.

THE SUBGRADE & FLEXBASE SHALL BE SHAPED AS PER DETAILS "A" & "B". THE % LIME SHOWN ON TYPICAL SECTIONS FOR ITEMS 247 "FLEX BASE" IS SEPARATE LIME WHICH MAY BE REQUIRED TO MEET P.I. AND TRIAXIAL REQUIREMENTS ADDED AT CONTRACTOR'S EXPENSE.



DETAIL "A"
N.T.S.



PROPOSED TYPICAL SECTION
LA HOMA RD. TO SCHUERBACH RD.
STA. 10+10.59 TO STA. 14+10.08
STA. 14+10.08 TO STA. 23+80.00

STATE OF TEXAS
DAMIEN B. TIJERINA
104828
LICENSED
PROFESSIONAL ENGINEER
5/2/2014

THE COUNTY OF HIDALGO TEXAS

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Texas Department of Transportation

L&G Engineering
Texas Registered
Engineering Firm F-4105

Highway / Civil
Structural / Bridge
Environmental
Constr. Material Testing

MILE 2 NORTH
PROP. TYPICAL SECTIONS

SCALE:
HOR. - 1"=10'
VER. -

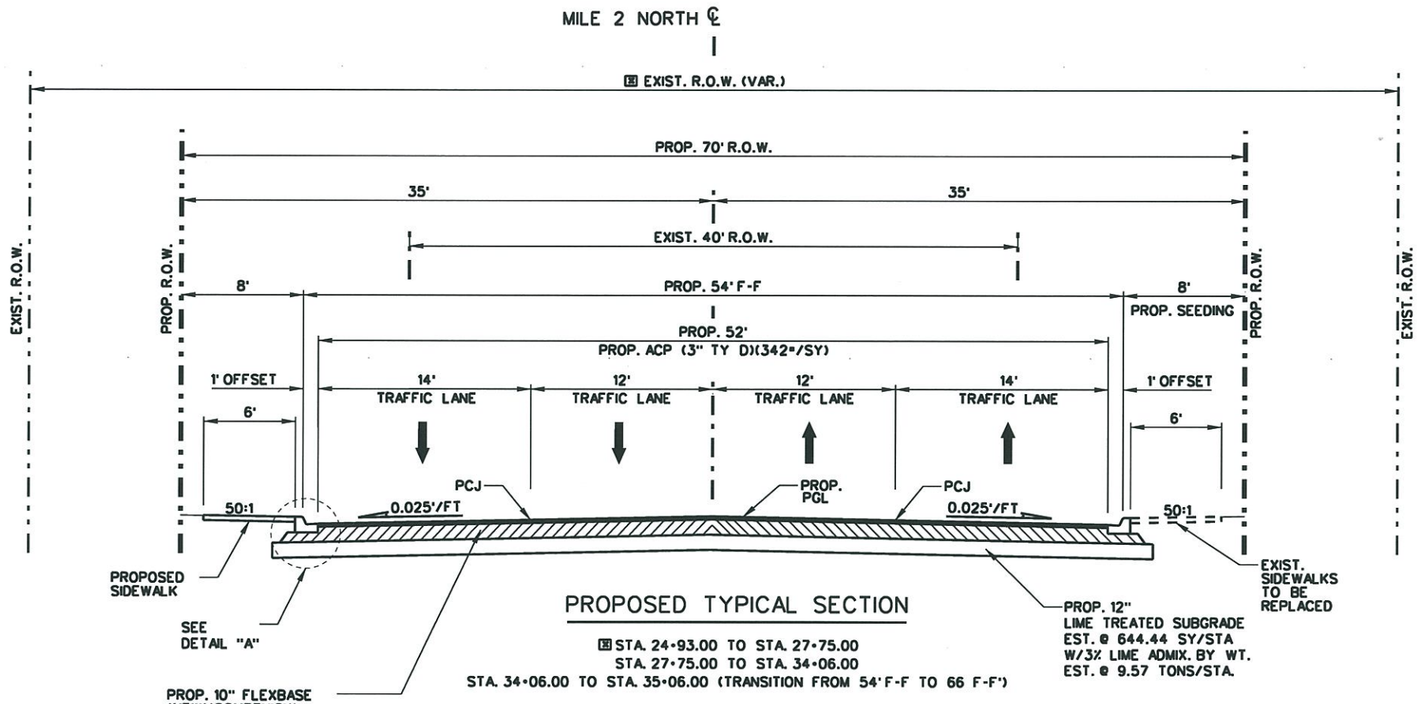
SHEET 1 OF 4

DN: L.S.	CK DN: D.B.T.	DW: L.S.	CK DW: D.B.T.	TR:	CK TR:

FED. RD. DIV. NO.	STATE	PROJECT NO.	SHEET NO.
6	TX		11

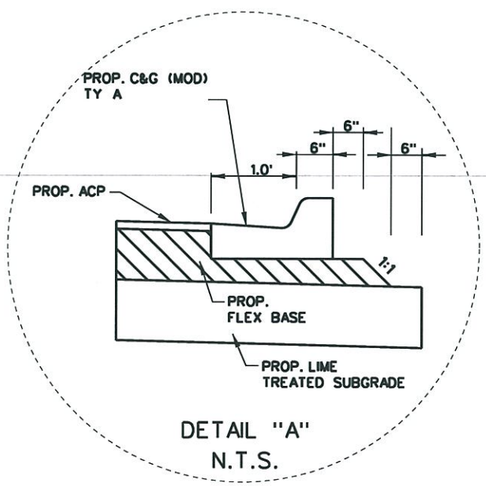
STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
21	HIDALGO	0921	02	323	MILE 2

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5/2/2014

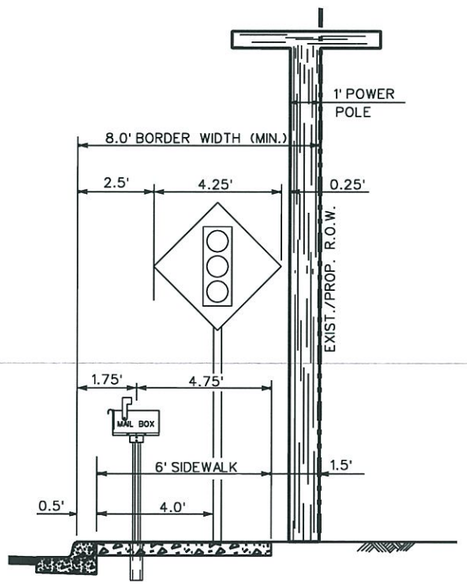


PROPOSED TYPICAL SECTION

⊞ STA. 24+93.00 TO STA. 27+75.00
STA. 27+75.00 TO STA. 34+06.00
STA. 34+06.00 TO STA. 35+06.00 (TRANSITION FROM 54' F-F TO 66 F-F')



DETAIL "A"
N.T.S.



TYPICAL 6' SIDEWALK DETAIL (8' CLEAR BORDER WIDTH MIN.)
(SHOWING MAILBOX & SIGN LOCATIONS)
N.T.S.

GENERAL NOTES:

WHERE REQUIRED BY FIXTURES OR UNUSUAL CONDITIONS, THE GOVERNING SLOPES MAY BE VARIED WHEN SPECIFICALLY DIRECTED BY THE ENGINEER.

THE TOP 4 in. (MIN.) OF THE PROPOSED FLEX. BASE LAYER SHALL BE NEW MATERIAL.

PGL - DENOTES PROFILE GRADE LINE.
PCJ - DENOTES PERMISSIBLE CONSTRUCTION JOINT.

WHERE POSSIBLE AND UNLESS OTHERWISE DIRECTED BY THE ENGINEER, PERMISSIBLE CONSTRUCTION JOINTS SHALL FALL ON STRIPING LINES AS SHOWN ON STRIPING DETAILS.

ALL GRADING SHALL BE WITHIN THE R.O.W. LIMITS.

114#/SY OF ACP IS EQUIVALENT TO 1" DEPTH OF ACP.

THE SUBGRADE & FLEXBASE SHALL BE SHAPED AS PER DETAILS "A" & "B". THE % LIME SHOWN ON TYPICAL SECTIONS FOR ITEMS 247 "FLEX BASE" IS SEPARATE LIME WHICH MAY BE REQUIRED TO MEET P.I. AND TRIAXIAL REQUIREMENTS ADDED AT CONTRACTOR'S EXPENSE.

STATE OF TEXAS
DAMIEN B. TIJERINA
104828
LICENSED PROFESSIONAL ENGINEER
5/2/2014

THE COUNTY OF HIDALGO TEXAS

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Texas Department of Transportation

L&G Engineering
Texas Registered Engineering Firm F-4105
Highway / Civil
Structural / Bridge
Environmental
Constr. Material Testing

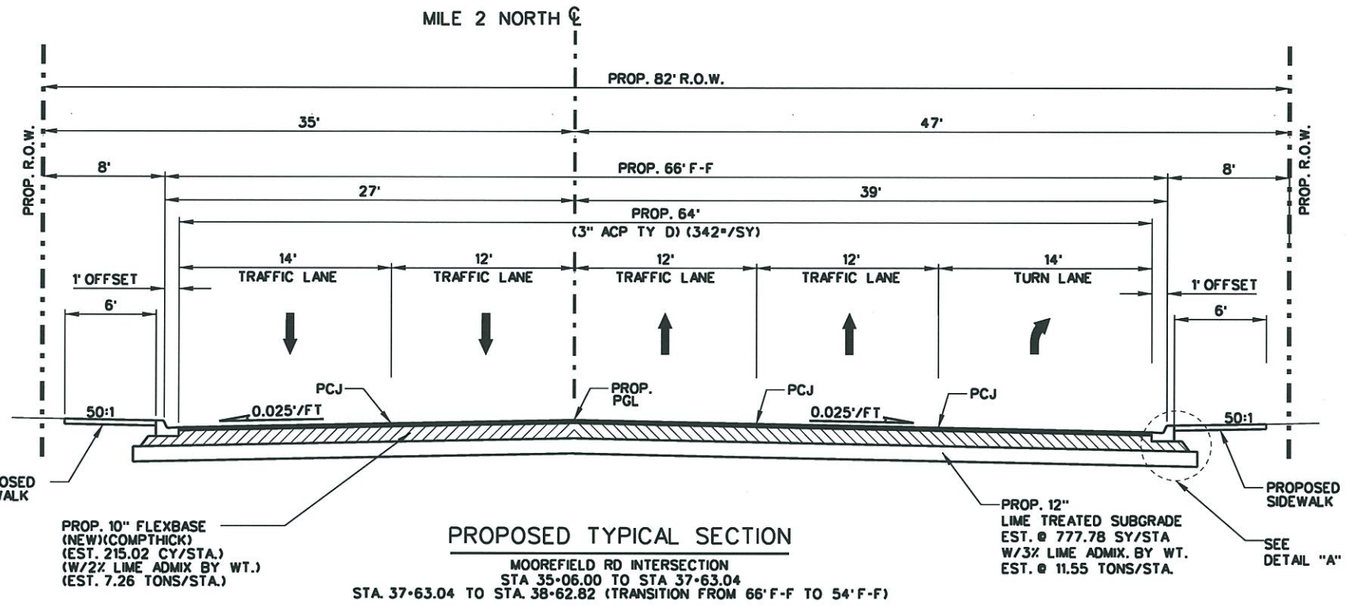
MILE 2 NORTH
PROP. TYPICAL SECTIONS

SCALE:
HOR. - 1"=10'
VER. -

SHEET 2 OF 4

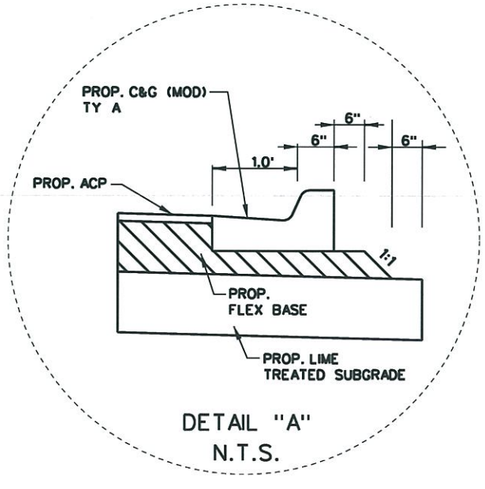
DN: L.S.		FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN: D.B.T.		6	TX				12
DW: L.S.		STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: D.B.T.		21	HIDALGO	0921	02	323	MILE 2
TR:	
CK TR:	

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5/2/2014



PROPOSED TYPICAL SECTION

MOOREFIELD RD INTERSECTION
STA 35+06.00 TO STA 37+63.04
STA. 37+63.04 TO STA. 38+62.82 (TRANSITION FROM 66'F-F TO 54'F-F)



DETAIL "A"
N.T.S.

GENERAL NOTES:

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THE TOP 4 in. (MIN.) OF THE PROPOSED FLEX. BASE LAYER SHALL BE NEW MATERIAL.

PGL - DENOTES PROFILE GRADE LINE.
PCJ - DENOTES PERMISSIBLE CONSTRUCTION JOINT.

WHERE POSSIBLE AND UNLESS OTHERWISE DIRECTED BY THE ENGINEER, PERMISSIBLE CONSTRUCTION JOINTS SHALL FALL ON STRIPING LINES AS SHOWN ON STRIPING DETAILS.

ALL GRADING SHALL BE WITHIN THE R.O.W. LIMITS.

114#/SY OF ACP IS EQUIVALENT TO 1" DEPTH OF ACP.

THE SUBGRADE & FLEXBASE SHALL BE SHAPED AS PER DETAILS "A" & "B". THE % LIME SHOWN ON TYPICAL SECTIONS FOR ITEMS 247 "FLEX BASE" IS SEPARATE LIME WHICH MAY BE REQUIRED TO MEET P.I. AND TRIAXIAL REQUIREMENTS ADDED AT CONTRACTOR'S EXPENSE.

STATE OF TEXAS
DAMIEN B. TIJERINA
104828
LICENSED PROFESSIONAL ENGINEER
5/2/2014

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MILE 2 NORTH
PROP. TYPICAL SECTIONS

SCALE:
HOR. - 1"=10'
VER. -

SHEET 3 OF 4

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN: D.B.T.	6	TX				13
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: D.B.T.	21	HIDALGO	0921	02	323	MILE 2
TR:						
CK TR:						

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5/2/2014

GENERAL NOTES:

WHERE REQUIRED BY FIXTURES OR UNUSUAL CONDITIONS, THE GOVERNING SLOPES MAY BE VARIED WHEN SPECIFICALLY DIRECTED BY THE ENGINEER.

THE TOP 4 in. (MIN.) OF THE PROPOSED FLEX. BASE LAYER SHALL BE NEW MATERIAL.

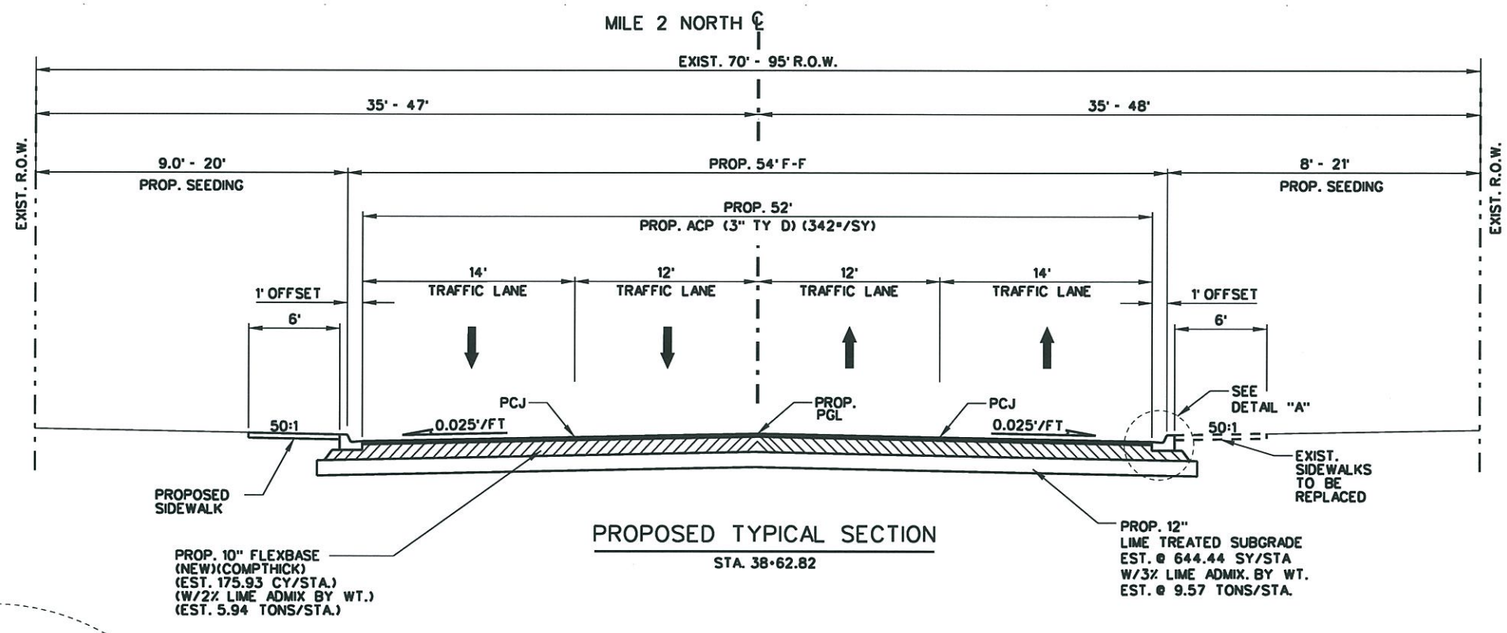
PGL - DENOTES PROFILE GRADE LINE.
PCJ - DENOTES PERMISSIBLE CONSTRUCTION JOINT.

WHERE POSSIBLE AND UNLESS OTHERWISE DIRECTED BY THE ENGINEER, PERMISSIBLE CONSTRUCTION JOINTS SHALL FALL ON STRIPING LINES AS SHOWN ON STRIPING DETAILS.

ALL GRADING SHALL BE WITHIN THE R.O.W. LIMITS.

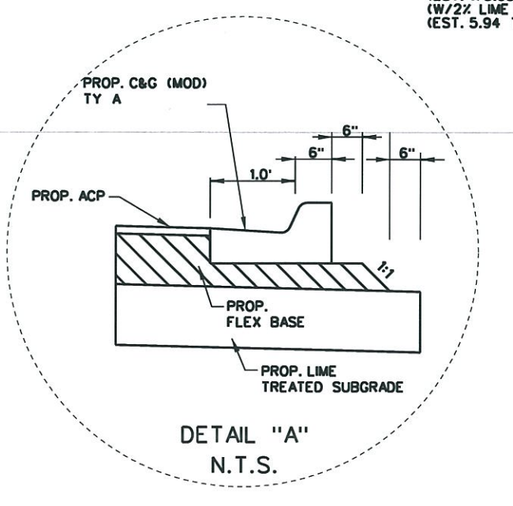
114#/SY OF ACP IS EQUIVALENT TO 1" DEPTH OF ACP.

THE SUBGRADE & FLEXBASE SHALL BE SHAPED AS PER DETAILS "A" & "B". THE % LIME SHOWN ON TYPICAL SECTIONS FOR ITEMS 247 "FLEX BASE" IS SEPARATE LIME WHICH MAY BE REQUIRED TO MEET P.I. AND TRIAXIAL REQUIREMENTS ADDED AT CONTRACTOR'S EXPENSE.



PROPOSED TYPICAL SECTION

STA. 38+62.82



DETAIL "A"
N.T.S.

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MILE 2 NORTH
PROP. TYPICAL SECTIONS

SCALE:
HOR. - 1"=10'
VER. -

SHEET 4 OF 4

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.				SHEET NO.
CK DN: D.B.T.	6	TX					14
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		HIGHWAY NO.
CK DW: D.B.T.	21	HIDALGO	0921	02	323		MILE 2
TR:							
CK TR:							

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5/2/2014

MILE 2 NORTH

COMPUTING EARTHWORKS FOR BASELINE = CHN03
COMPUTING EARTHWORKS FOR JOB = 210
FORMING LIST OF XSCELLS
BEGINNING EARTHWORKS COMPUTATION
CSJ: 0921-02-323

Station	Material Name	End Areas (sq. ft.)	Unadjusted Volumes (cu. yd.)	Adjusted Volumes (cu. yd.)	Mult Factor	Mass Ordinate	Accum Adj Vol (cu. yd.)
6+00.00 DIRT							
	Excavation	69.6	0	0	1.00		0
	Fill	10.0	0	0	1.00	0	0
6+50.00 DIRT							
	Excavation	93.0	151	151	1.00		151
	Fill	1.9	11	11	1.00	140	11
7+00.00 DIRT							
	Excavation	88.5	168	168	1.00		319
	Fill	2.4	4	4	1.00	304	15
7+50.00 DIRT							
	Excavation	76.9	153	153	1.00		472
	Fill	7.1	9	9	1.00	448	24
8+00.00 DIRT							
	Excavation	60.0	127	127	1.00		599
	Fill	2.8	9	9	1.00	566	33
8+50.00 DIRT							
	Excavation	63.2	114	114	1.00		713
	Fill	3.7	6	6	1.00	674	39
9+00.00 DIRT							
	Excavation	67.2	121	121	1.00		834
	Fill	11.8	14	14	1.00	781	53
9+50.00 DIRT							
	Excavation	71.6	129	129	1.00		963
	Fill	9.3	20	20	1.00	890	73
10+00.00 DIRT							
	Common Exc	NA	963	963	1.00		
10+00.00 DIRT							
	Fill	NA	73	73	1.00	890	
10+61.49 DIRT							
	Excavation	50.6	0	0	1.00		963
	Fill	9.7	0	0	1.00	890	73
11+00.00 DIRT							
	Excavation	60.3	79	79	1.00		1042
	Fill	2.6	9	9	1.00	960	82
12+00.00 DIRT							
	Excavation	199.1	480	480	1.00		1522
	Fill	2.7	10	10	1.00	1430	92
13+00.00 DIRT							
	Excavation	68.9	496	496	1.00		2018
	Fill	5.6	15	15	1.00	1911	107
14+00.00 DIRT							
	Excavation	56.6	232	232	1.00		2250
	Fill	7.9	25	25	1.00	2118	132
15+00.00 DIRT							
	Excavation	63.6	223	223	1.00		2473
	Fill	8.3	30	30	1.00	2311	162
16+00.00 DIRT							
	Excavation	67.5	243	243	1.00		2716
	Fill	6.8	28	28	1.00	2526	190
17+00.00 DIRT							
	Excavation	81.3	276	276	1.00		2992
	Fill	4.1	20	20	1.00	2782	210
18+00.00 DIRT							
	Excavation	95.5	327	327	1.00		3319
	Fill	3.1	13	13	1.00	3096	223
19+00.00 DIRT							
	Excavation	99.7	361	361	1.00		3680
	Fill	2.7	11	11	1.00	3446	234
20+00.00 DIRT							
	Excavation	91.8	355	355	1.00		4035
	Fill	2.7	10	10	1.00	3791	244
21+00.00 DIRT							
	Excavation	81.0	320	320	1.00		4355
	Fill	2.9	10	10	1.00	4101	254
22+00.00 DIRT							
	Excavation	79.8	298	298	1.00		4653
	Fill	4.2	13	13	1.00	4386	267
23+00.00 DIRT							
	Excavation	75.7	288	288	1.00		4941
	Fill	2.0	11	11	1.00	4663	278
23+81.18 DIRT							
	Excavation	59.4	203	203	1.00		5144
	Fill	3.5	8	8	1.00	4858	286

MILE 2 NORTH (CONT.)

24+00.00 DIRT						
Excavation	55.9	40	40	1.00		5184
Fill	5.7	3	3	1.00	4895	289
25+00.00 DIRT						
Excavation	49.6	195	195	1.00		5379
Fill	22.3	52	52	1.00	5038	341
25+47.04 DIRT						
Excavation	47.9	85	85	1.00		5464
Fill	12.7	30	30	1.00	5093	371
26+00.00 DIRT						
Excavation	49.2	95	95	1.00		5559
Fill	10.6	23	23	1.00	5165	394
27+00.00 DIRT						
Excavation	75.6	231	231	1.00		5790
Fill	3.8	27	27	1.00	5369	421
28+00.00 DIRT						
Excavation	112.7	349	349	1.00		6139
Fill	0.0	7	7	1.00	5711	428
29+00.00 DIRT						
Excavation	136.4	461	461	1.00		6600
Fill	0.0	0	0	1.00	6172	428
30+00.00 DIRT						
Excavation	173.4	574	574	1.00		7174
Fill	0.0	0	0	1.00	6746	428
31+00.00 DIRT						
Excavation	199.1	690	690	1.00		7864
Fill	0.0	0	0	1.00	7436	428
32+00.00 DIRT						
Excavation	182.3	706	706	1.00		8570
Fill	0.0	0	0	1.00	8142	428
33+00.00 DIRT						
Excavation	200.0	708	708	1.00		9278
Fill	0.0	0	0	1.00	8850	428
34+00.00 DIRT						
Excavation	184.2	711	711	1.00		9989
Fill	0.2	0	0	1.00	9561	428
34+05.90 DIRT						
Excavation	181.3	40	40	1.00		10029
Fill	0.4	0	0	1.00	9601	428
35+00.00 DIRT						
Excavation	164.3	602	602	1.00		10631
Fill	1.6	3	3	1.00	10200	431
35+05.90 DIRT						
Excavation	164.2	36	36	1.00		10667
Fill	1.5	0	0	1.00	10236	431
36+00.00 DIRT						
Excavation	140.5	531	531	1.00		11198
Fill	1.7	6	6	1.00	10761	437
37+00.00 DIRT						
Excavation	138.0	516	516	1.00		11714
Fill	1.9	7	7	1.00	11270	444
37+63.05 DIRT						
Excavation	150.0	336	336	1.00		12050
Fill	0.0	2	2	1.00	11604	446
38+00.00 DIRT						
Excavation	99.1	170	170	1.00		12220
Fill	2.4	2	2	1.00	11772	448
38+63.05 DIRT						
Excavation	86.5	217	217	1.00		12437
Fill	8.5	13	13	1.00	11976	461

CSJ: 0921-02-323 TOTALS: Common Exc = 12437
Fill = 461

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MILE 2 NORTH EARTHWORK

SHEET 1 OF 1

DN: L.S.		FED. RD. DIV. NO.	STATE	PROJECT NO.				SHEET NO.
CK DN: D.B.T.		6	TX					25
DW: L.S.		STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		HIGHWAY NO.
CK DW: D.B.T.		21	HIDALGO	0921	02	323		MILE 2
TR:								
CK TR:								

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5/2/2014

BASIS OF ESTIMATE

	ITEM 204	ITEM 260		ITEM 310	ITEM 3268	ITEM 247	ITEM 260	
	2003	2011	2016	2026	2039	2225	2054	2016
LOCATION MILE 2 NORTH	SPRINKLING (DUST CONTROL) (EST. 4 MG/STA)	LIME TREAT. SUBGR. (12 IN)	HYDRATED LIME (SLURRY) 3% BY WT.	ASPH MATERIAL PRIME COAT (EC 30) (0.2 GAL/SY)	DENSE-GRADED HOT MIX ASPHALT (QC/QA) (TY D) (PG. 64-22) SAC - B	FLEX BASE (RDWY DEL) TY E GR 4 (FINAL POS)	LIME TREAT. FOR BASE COURSE (10 IN) (NEW BASE)	● HYDRATED LIME (SLURRY) 2% BY WT. NEW 3% BY WT. (SALVAGE)
	(MG)	(SY)	(TON)	(GAL)	(TON)	(CY)	(SY)	(TON)
CSJ: 0921-02-323								
STA. 5+78.27-STA. 38+07.67								
STA. 5+78.27-STA. 9+87.40		1,997.78	29.67	377.44	315.69	542.01	1,951.24	18.29
STA. 10+10.59 - 23+82.59		8,132.55	120.77	1,427.16	1,220.24	2,120.24	7,644.70	71.56
STA. 23+82.59 - 24+50.88		395.96	5.88	69.81	59.70	103.43	372.35	3.49
SCHUERBACH ROAD		1,045.47	15.53	192.67	168.04	277.44	1,017.09	9.36
STA. 24+50.88 - 25+47.69		572.51	8.50	104.44	86.45	150.09	540.32	5.07
STA. 25+47.69 - 34+06.00		5,179.95	92.99	916.40	783.34	1,359.92	4,895.71	45.90
STA. 34+06.00 - 35+06.00		668.11	9.92	120.00	102.54	176.38	635.00	5.95
STA. 35+06.00 - 38+07.67		2,214.48	33.51	401.48	343.27	586.20	2110.32	19.78
MOOREFIELD ROAD		949.30	14.10	173.24	149.22	253.64	913.10	8.56
						✖ -827		
GRAND TOTAL:	130	21,156.11	330.87	3,782.64	3,228.49	4,742.35	20,079.83	187.96

EST. WT. OF FLEXIBLE BASE NEW AND/OR SALVAGE = 125#/CF((3375#/CY.)(COMPACTED DRY WT.)

EST. WT. OF SUBGRADE = 110#/CF(2970#/CY)(COMPACTED)

● THIS LIME IS SEPARATE FROM LIME WHICH MAY BE REQUIRED TO MEET PI AND TRIAXIAL REQUIREMENTS ADDED AT CONTRACTORS EXPENSE.

✖ ITEM 251 REWORKING BASE MATERIAL SUBTRACTED FROM PROPOSED FLEXBASE NEEDED FOR PROJECT.

SUMMARY OF ITEM 100

	2002	STATION
CSJ: 0921-02-323	STA. 5+78.27-STA. 9+87.40	4.09
	STA. 10+10.59-STA. 38+62.82	28.52
GRAND TOTAL		32.61

SUMMARY OF EXCAVATION AND EMBANKMENT

SHEET NO. LOCATION	ITEM 110		ITEM 132
	2001	2002	2006
	EXCAVATION (ROADWAY)	EXCAVATION (CHANNEL)	EMBANKMENT (FINAL) (DENS CONT) (TY C)
	(CY)	(CY)	(CY)
CSJ: 0921-02-323			
STA. 5+78.27-STA. 38+62.82	12,437		461
IRRG. STA. 5+00-10+00			207
GRAND TOTAL	12,437		668

SUMMARY OF ITEM 251 (REWORKING BASE MATERIAL)

CONST. PHASE	STATION LIMITS	AVG. WIDTH	AVG. THICKNESS ⊛	AREA ⊛	ITEM 251 2159 ⊕ REWRK BS MTL (VEH)
		(FT)	(IN.)	(SY)	(CY)
PHASE III	CSJ: 0921-02-323				
LT	STA. 11+86.91 TO STA. 24+57.37		9 1/2	889	234
RT	STA. 24+37.45 TO STA. 37+92.67		9 1/2	2250	593
	GRAND TOTAL				827

⊕ PAYMENT IS BASED ON 100% RECOVERY RATE. QUANTITY TO BE USED AS SALVAGE IS BASED ON 100% OF THE RECOVERED MATERIAL.

⊛ FOR CONTRACTORS INFORMATION ONLY (NON-PAY)

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MILE 2 NORTH ESTIMATED QUANTITIES

DN: L.S.		FED. RD. DIV. NO.	STATE	PROJECT NO.				SHEET NO.
CK DN: D.B.T.		6	TX					26
DW: L.S.		STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		HIGHWAY NO.
CK DW: D.B.T.		21	HIDALGO	0921	02	323		MILE 2
TR:								
CK TR:								

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SUMMARY OF REMOVAL OF CONC. ITEMS

SHEET NO.	ITEM 104				ITEM 496						
	2015	2009	2022	2026	2008	2002	2003	2004	2006	2007	2042
	REMOVE CONC. SIDEWALK	REMOVE CONC. RIP-RAP	REMOVE CONC. C & G	REMOVE CONC. GUTTER	REMOVE STRUCT. (BOX CULVERT)	REMOVE STRUCT. (INLET)	REMOVE STRUCT. (MANHOLE)	REMOVE STRUCT. (S.E.T.)	REMOVE STRUCT. (HEADWALL)	REMOVE STRUCT. (PIPE)	REMOVE STRUCT. (SMALL)
	(SY)	(SY)	(LF)	(LF)	(LF)	(EA)	(EA)	(EA)	(EA)	(LF)	(EA)
CSJ: 0921-02-323											
P&P SHEET 2 OF 7								2		74	
P&P SHEET 7 OF 7			126								
IRRG. STA. 5+00-10+00		12									1
IRRG. STA. 24+51-25+47										100	
GRAND TOTAL:		12	126					2		174	1

SUMMARY OF SHEET ITEMS

SHEET NO.	ITEM 529		ITEM 531				
	2017	2012	2005	2006	2040	2041	2015
	CONC. VALLEY GUTTER (LF)	CONC. CURB & GUTTER (TY A)(MOD) (LF)	CURB RAMP TY "1" (EA)	CURB RAMP TY "2" (EA)	CURB RAMP TY "5" (EA)	CURB RAMP TY "10" (EA)	CONC. SIDEWALK (4") (SY)
CSJ: 0921-02-323							
P&P SHEET 2 OF 7		734	2				179
P&P SHEET 3 OF 7		1000					272
P&P SHEET 4 OF 7		1000					296
P&P SHEET 5 OF 7		1070	4	4			336
P&P SHEET 6 OF 7		1000					297
P&P SHEET 7 OF 7		1064	8				319
GRAND TOTAL:		5,868	14	4			1,699

ITEM 106-2001

REMOVAL SHEET NO.	OBLITERATING ABANDONED RD. (STA.)
CSJ: 0921-02-323	
P&P SHEET 1 OF 7	2.40
P&P SHEET 2 OF 7	2.36
P&P SHEET 5 OF 7	1.48
CSJ: 323 TOTAL:	6.24

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MILE 2 NORTH ESTIMATED QUANTITIES

DN: L.S.	CK DN: D.B.T.	DW: L.S.	CK DW: D.B.T.	TR:	CK TR:

FED. RD. DIV. NO.	STATE	PROJECT NO.				SHEET NO.
6	TX					27
STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		HIGHWAY NO.
21	HIDALGO	0921	02	323		MILE 2

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ITEMS FOR TRAFFIC SIGNALS, ILLUMINATION, & LARGE GUIDE SIGNS

ITEM	DESCR CODE	DESCRIPTION	UNIT	QUANTITY
CSJ: 0921-02-323				
416	2032	DRILL SHAFT (TRF SIG POLE)(36 IN)	LF	60.8
618	2024	CONDT (PVC)(SCHD 40)(4")	LF	16
620	2009	ELEC CONDR (NO. 6) BARE	LF	140
620	2010	ELEC CONDR (NO. 6) INSULATED	LF	70
621	2004	TRAY CABLE (4 CONDR) (12 AWG)	LF	390
625	2004	ZINC-COAT STL WIRE STRAND (3/8 IN)	LF	255
628	2145	ELEC SRV TY T 120/240 000 (NS)GS(L)TS(O)	EA	2
680	2001	INSTALL HWY TRF SIG (FLASH BEACON)	EA	2
682	2027	VEH SIG SEC (12 IN) LED (RED)	EA	16
684	2010	TRF SIG CBL (TY A)(12 AWG)(5 CONDR)	LF	250
686	2018	INS TRF SIG PL AM(S) STR (TY D) LUM	EA	4
*		CONTROLLER, FLASHING BEACON	EA	2

* QUANTITIES SHOWN ARE FOR CONTRACTORS' INFORMATION ONLY. THESE ITEMS ARE SUBSIDIARY TO VARIOUS OTHER ITEMS.

(ITEM 668) SUMMARY OF PREFABRICATED PAVEMENT MARKINGS

SHEET No.	TY B (WHITE)				
	2074	2065	2073	2064	2070
	WORD (ONLY) EA	DBL. ARROW EA	ARROW (U-TURN) EA	SGL. ARROW EA	RR XING SYMBOL EA
	EST.	EST.	EST.	EST.	EST.
CSJ: 0921-02-323					
SHEET 1 OF 2	3	-	-	6	-
SHEET 2 OF 2	1	-	-	2	-
GRAND TOTAL:	4	-	-	8	-

(ITEM 644) SUMMARY OF SMALL SIGNS (TO BE INSTALLED)

SHEET No.	TYPE OF MOUNT				
	2022	2025	2027	2028	2063
	TY S80(1)SA (P) EA	TY S80(1)SA (T) EA	TY S80(1)SA (U) EA	TY S80(1)SA (U) (1 EXT) EA	SUP & AM RAIL MOUNT EA
	EST.	EST.	EST.	EST.	EST.
CSJ: 0921-02-323					
SHEET 1 OF 2	6	-	-	-	-
SHEET 2 OF 2	12	-	-	-	-
GRAND TOTAL:	18	-	-	-	-

(ITEM 666) SUMMARY OF REFLECTORIZED PAVEMENT MARKINGS

SHEET No.	TY I-THERMOPLASTIC, (100 MIL)									
	2003	2012	2036	2048	2111	2105	2123	2132		2042
	4" BROKEN WHITE (LF)	4" SOLID WHITE (LF)	8" SOLID WHITE (LF)	24" SOLID WHITE (LF)	4" SOLID YELLOW (DBL) (LF)	4" BROKEN YELLOW (LF)	8"SOLID YELLOW (LF)	24"SOLID YELLOW (LF)	12" LANE DROP WHITE (LF)	12"SOLID WHITE (LF)
	EST	EST	EST	EST	EST	EST	EST	EST	EST	EST
CSJ: 0921-02-323										
SHEET 1 OF 2	630		370	70	3760					143
SHEET 2 OF 2	640		255	191	2960					783
GRAND TOTAL:	1,270	-	625	261	6,720	-	-	-	-	926

(ITEM 672) SUMMARY OF RAISED PAVEMENT MARKERS

SHEET No.	CL B (REFL)		
	2012	2015	2017
	TY I-C (SGL REFL) EA	TY II-AA (DBL REFL) EA	TY II-CR EA
	EST.	EST.	
CSJ: 0921-02-323			
SHEET 1 OF 2	55	192	
SHEET 2 OF 2	50	150	
GRAND TOTAL:	105	342	

(ITEM 644) SUMMARY OF SMALL SIGNS (TO BE REMOVED OR RELOCATED)

SHEET No.	2077	2085
	REMOVE SMALL SIGN ASSM (EA)	RELOC SMALL SIGN ASSM (EA)
	EST.	EST.
CSJ: 0921-02-323		
SUMMARY OF SIGNS TO BE REMOVED	22	
GRAND TOTAL:	22	

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MILE 2 NORTH ESTIMATED QUANTITIES

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.				SHEET NO.
CK DN: D.B.T.	6	TX					28
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		HIGHWAY NO.
CK DW: D.B.T.	21	HIDALGO	0921	02	323		MILE 2
TR:							
CK TR:							

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SUMMARY OF PROP. DRAINAGE & IRRIGATION STRUCTURES

SHEET	ITEM 400					ITEM 402	ITEM 432	ITEM 462	ITEM 464							
	2001	2005	2006	2007	2011	2001	2001	2023	2089	2090	2091	2092	2093	2094	2096	2111
	STRUCT. EXCAV. ✱ EST.	CEMENT STABILIZE FILL EST.	CUT & RESTORE PAVEMENT EST.	STRUCT EXCAV. (SPL) EST.	SAND BACKFILL EST.	TRENCH PROTECTION EST.	RIPRAP (CONC) (4 IN) EST.	CONC. BOX. CULV. (8'x8') EST.	PROP.18" RCP (SPL) (CL-III) EST.	PROP.24" RCP (SPL) (CL-III) EST.	PROP.30" RCP (SPL) (CL-III) EST.	PROP.36" RCP (SPL) (CL-III) EST.	PROP.42" RCP (SPL) (CL-III) EST.	PROP.48" RCP (SPL) (CL-III) EST.	PROP.60" RCP (SPL) (CL-III) EST.	PROP.72" RCP (SPL) (CL-III) EST.
	(CY)	(CY)	(SY)	(CY)	(CY)	(LF)	(CY)	(LF)	(LF)	(LF)	(LF)	(LF)	(LF)	(LF)	(LF)	(LF)
CSJ: 0921-02-323																
HYDRAULIC DATA SHT																
NET A SHT 2 OF 2	1711	128		124	470	667			390	911	203					
NET B SHT 3 OF 3	2530	72		157	801	1318			216	116	142	697	396			
IRRG. STA. 5+00-10+00	416			12		318	12									
IRRG. STA. 24+51-25+47	127	16	44	3		100										
IRRG. STA. 25+47	200	18	10	10		128										
GRAND TOTAL	4,984	234	54	306	1,271	2,531	12	-	606	1027	345	697	396	-	-	-

✱ FOR CONTRACTOR'S INFORMATION ONLY (NON-PAY)

★ TO BE USED IN CASE OF UNSTABLE SOIL.

SUMMARY OF ITEM 530, "DRIVEWAYS"

SHEET NO.	2011	2010
	DRIVEWAYS (ACP)	DRIVEWAYS (CONC.)
	(SY)	(SY)
DRIVEWAY (PRVT.)	462	153
GRAND TOTAL	462	153

SUMMARY OF PROP. DRAINAGE & IRRIGATION STRUCTURES

SHEET	ITEM 465						ITEM 474		ITEM 4035						ITEM 4061			ITEM 4269
	2005	2012	2103	2109	2113	2298	2005	2006	2004	2005	2006	2009	2012	2017	2001	2014	2006	2003
	MANH (COMPL) (TY M) EST.	INLET (COMPL) (TY A) EST.	INLET (COMPL) (TY F) EST.	INLET EXT. EST.	INLET (COMPL) (TY CC) EST.	MANH (COMPL) (TY J) (JCT BOX) EST.	SLOT DRAIN (GAL STL) (18 IN) EST.	SLOT DRAIN OUTFALL (GAL STL) (18 IN) EST.	RCLHPP (18") CL III EST.	RCLHPP (24") CL III EST.	RCLHPP (30") CL III EST.	RCLHPP (36") CL III EST.	RCLHPP (42") CL III EST.	RCLHPP (48") CL III EST.	WELL GATE (18") EST.	WELL GATE (24") EST.	IRRIG. VALVE (18") EST.	IRRIG. (24") PVC EST.
	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(LF)	(LF)	(LF)	(LF)	(LF)	(LF)	(LF)	(LF)	(EA)	(EA)	(EA)	(LF)
CSJ: 0921-02-323																		
HYDRAULIC DATA SHT																		
NET A SHT 2 OF 2	2		10	6														
NET B SHT 3 OF 3	1		9	6	2													
IRRG. STA. 5+00-10+00											161	22						318
IRRG. STA. 24+51-25+47										100		17	17			2		
IRRG. STA. 25+47										128			31			2		
GRAND TOTAL	3	-	19	12	2	-	-	-	-	228	161	39	48	-	-	4	-	318

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Highway / Civil
Structural / Bridge
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Constr. Material Testing

MILE 2 NORTH ESTIMATED QUANTITIES

SHEET 4 OF 5

DN: L.S.		FED. RD. DIV. NO.	STATE	PROJECT NO.				SHEET NO.
CK DN: D.B.T.		6	TX					29
DW: L.S.		STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		HIGHWAY NO.
CK DW: D.B.T.		21	HIDALGO	0921	02	323		MILE 2
TR:								
CK TR:								

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SUMMARY OF WORK ZONE PAVEMENT MARKINGS

	ITEM 662 NON-REMOVABLE (THERMOPLASTIC)							ITEM 672 RAIS PAV MRK		ITEM 672 GUIDE MARKS		ITEM 677 ELIM PAV MRK	
	2004	2032	2001	2031	2010	2030	2016	2017	2015	2060	-	2001	2007
	4" (W) (SLD)	4" (Y) (SLD)	4" (W) (BRK)	4" (Y) (DOT)	8" (W) (SLD)	4" (Y) (BRK)	24" (W) (SLD)	TY II-CR	TY II-AA	TABS TY W	TABS TY Y-2	4"	24"
	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	LF	
CSJ: 0921-02-323													
PHASE I													
SHT 2 OF 4	571	1176					26						
SHT 3 OF 4	1265	1650					65						
SHT 4 OF 4	887	-					77						
PHASE II													
SHT 1 OF 3	587	1164											
SHT 2 OF 3	1215	2422					24						
SHT 3 OF 3	1130	1728					46						
PHASE IIII													
SHT 1 OF 3	596	1192											
SHT 2 OF 3	1224	2456					53						
SHT 3 OF 3	873	1746					70						
GRAND TOTAL	8,348	13,534					361						

SUMMARY OF ITEM 508
CONSTRUCT DETOURS (CL 3) (SY)

CONSTRUCTION PHASE	STATION LIMITS	AVG. WIDTH (FT)	AREA (SY)
PHASE I			
CSJ: 0921-02-323			
SHT 2 OF 4	10+00-16+00		367
SHT 3 OF 4	16+00-29+00		1074
SHT 4 OF 4	29+00-38+64		1427
GRAND TOTAL:			2,868

(TO BE SALVAGED UNDER PHASE III CONSTRUCTION)

SUMMARY OF TEMP EROSION CONTROL

SHEET	ITEM 1122 ROCK FILT DAM		CONST EXITS			
	2002	2009	2017	2019	2037	2048
	INST TY 2	REMOVE	INST TY 2	REMOVE	TEMP.SED. CONT.FNC.	BIO ERSN LOGS 12"
	LF	LF	SY	SY	LF	LF
CSJ: 0921-02-323						
SW3P SHT 1 OF 3			78	78	60	80
SW3P SHT 2 OF 3					60	280
SW3P SHT 3 OF 3					60	160
GRAND TOTAL:			78	78	180	520

SHEET	ITEM 160	ITEM 164 DRILL SEED		ITEM 166
	2005	2036	2042	2002
	FURNISH & PLACING TOPSOIL	(PERM) (RURAL) (CLAY)	(TEMP) (WARM)	FERTILIZER ✱
		AC	AC	TON
CSJ: 0921-02-323				
STA. 5+78.67-STA. 38+62.82	25	0.77	0.77	0.04
GRAND TOTAL	25	0.77	0.77	0.04

✱ FOR CONTRACTORS INFORMATION ONLY (NON-PAY). FERTILIZER QUANTITIES ARE BASED ON A RATE OF 100 LBS OF NITROGEN PER ACRE. TONNAGE SHOWN IS BASED ON NPK OF 10-5-5.

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Structural / Bridge
Environmental
Constr. Material Testing

MILE 2 NORTH
ESTIMATED QUANTITIES

SHEET 5 OF 5

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN: D.B.T.	6	TX				30
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: D.B.T.	21	HIDALGO	0921	02	232	MILE 2
TR:						
CK TR:						

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GENERAL NOTES AND SPECIFICATIONS DATA:

USE A POWER-BROOM WHEN CLEANING THE ROADWAY AS NEEDED.

REMOVE & DISPOSE ALL MATERIAL NOT DEEMED SALVAGEABLE BY THE ENGINEER, UNLESS OTHERWISE SHOWN ON THE PLANS.

ON EXISTING PAVEMENT THAT WILL REMAIN IN PLACE, SAND BLAST OR SURFACE TREAT IN ORDER TO REMOVE EXISTING STRIPING.

DO NOT BLOCK DRAINAGE WHEN HANDLING & STOCKPILING EXCAVATED MATERIAL.

MAINTAIN ACCESS TO DRIVEWAYS AND INTERSECTIONS THROUGH ALL PHASES OF CONSTRUCTION.

TRAFFIC CONTROL DEVICES:

AT THE COMMENCEMENT OF THE PROJECT, ALL TRAFFIC CONTROL DEVICES SHALL BE IN ACCEPTABLE CONDITION, AND MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT, AS PER GUIDELINES FOR TEMPORARY TRAFFIC CONTROL DEVICES AND FEATURES.

NOTIFY THE AREA ENGINEER(AE) IN WRITING (E-MAIL IS ACCEPTABLE) ONCE THE TRAFFIC CONTROL PLAN (TCP) AND ALL TRAFFIC CONTROL DEVICES HAVE BEEN INSTALLED AS PER PLANS ON THE PROJECT SO THAT THE DEPARTMENT'S RESPONSIBLE PERSON ACCOMPANIED BY THE CONTRACTOR'S RESPONSIBLE PERSON CAN CONDUCT A NIGHT INSPECTION ON THE SAID TCP AND TRAFFIC CONTROL DEVICES. COMMENCEMENT OF WORK WILL NOT BE AUTHORIZED NOR ALLOWED UNTIL THE AE NOTIFIES THE CONTRACTOR IN WRITING (E-MAIL IS ACCEPTABLE) TO PROCEED WITH THE WORK.

CONTRACTOR SHALL HAVE A SUFFICIENT AMOUNT OF TRAFFIC CONTROL DEVICES IN ACCEPTABLE CONDITION TO REPLACE ANY DAMAGED TRAFFIC CONTROL DEVICE WITHIN 24 HOURS OF NOTIFICATION.

PROVIDE ADDITIONAL SIGNS AND BARRICADES AS NECESSARY TO ADDRESS FIELD CONSTRUCTIBILITY & VISIBILITY. THESE ADDITIONAL SIGNS WILL BE CONSIDERED SUBSIDIARY TO ITEM 502.

REMOVE OR COMPLETELY COVER ALL EXISTING SIGNS WHICH ARE IN CONFLICT WITH THE TRAFFIC CONTROL PLAN.

ADJUST STOP SIGNS AS NEEDED ON INTERSECTING STREETS DURING THE VARIOUS CONSTRUCTION PHASES. DO NOT REMOVE ANY EXISTING STOP SIGNS UNTIL TEMPORARY SIGNS ARE IN PLACE.

COORDINATE THE TRAFFIC CONTROL PLAN AND THE VARIOUS SEQUENCES OF CONSTRUCTION WITH ADJACENT CONSTRUCTION PROJECTS IF APPLICABLE, TO ENSURE THE UNINTERRUPTED AND SAFE FLOW OF TRAFFIC.

NOTIFY THE ENGINEER IN WRITING WHEN MAJOR TRAFFIC CHANGES ARE TO BE MADE. NOTIFICATIONS MUST BE GIVEN A MINIMUM OF THREE WORKING DAYS PRIOR TO THE CHANGE.

ALL WORK ZONE PAVEMENT MARKINGS FOR THIS PROJECT SHALL BE 0.100 INCHES (100 MIL) THICK THERMOPLASTIC.

SAFETY:

PROTECT EXPOSED PITS THAT MUST REMAIN OPEN DURING NON-WORKING HOURS AS PER OSHA REQUIREMENTS.

PROJECT SPECIFIC NOTES:

THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE REQUIREMETNS OF ITEM 7, "LEGAL RELATIONS AND RESPONSIBILITIES" OF THE STANDARD SPECIFICATIONS.

WHEN CONNECTING PROPOSED ROADWAY AND/OR DETOURS TO SECTIONS OF EXISTING PAVEMENT BEING USED BY TRAFFIC AND SUCH OPERATIONS RESULT IN A DROP-OFF OF MORE THAN TWO (2) INCHES, A FOUR (4) FOOT BUFFER ZONE OR 3:1 SLOPE WILL BE REQUIRED. THE SLOPE MUST BE CONSTRUCTED WITH A COMPACTED MATERIAL CAPABLE OF SUPPORTING VEHICLES, AS APPROVED BY THE ENGINEER. THIS WORK SHALL BE DONE EXPEDITIOUSLY DURING DAYLIGHT HOURS.

ALL STORM DRAIN LATERALS SHALL BE PLUGGED TEMPORARILY DURING CONSTRUCTION WHEN CONSTRUCTED HALF AT A TIME.

CONSTRUCT INTERSECTION HALF AT A TIME.

USE TCP SHEET 2-2 FOR TRAFFIC CONTROL DURING CONSTRUCTION OF THE INSPIRATION RD. AND TROSPER RD. TRUNKLINE. DURING INSPIRATION RD. AND TROSPER RD. CONSTRUCTION THE CONTRACTOR IS TO PROVIDE A TEMPORARY COMPACTED DRIVING SURFACE FOR RESIDENTAL ACCESS OVER THE TRUNKLINE BACKFILL UNTIL THAT TIME WHICH THE CONTRACTOR CAN COMPLETE THE PROPOSED CUT & RESTORE PAVEMENT OPERATIONS FROM END TO END IN ONE PASS. THIS WORK IS TO BE DONE IN A TIMELY MANNER AS THE TRUNKLINE CONSTRUCTION PROCEEDS ALONG INSPIRATION RD. AND TROSPER RD. THE CONTRACTOR SHALL NOT LEAVE ANY OPEN PITS OVER NIGHT ALONG INSPIRATION RD. AND TROSPER RD. ALL VERTICAL PANELS AND TRAFFIC CONTROL DEVICES SHALL BE REMOVED AT THE END OF THE WORK DAY AND THE ROADWAY SHALL BE FULLY OPENED TO THROUGH TRAFFIC AT NIGHT. THE CONTRACTOR SHALL PROTECT ANY PIPES THAT ARE ALONG THE ROADWAY WITH TY 3 BARRICADES.

THE CONTRACTOR SHALL USE FLAGGERS EQUIPPED WITH RADIOS DURING ANY CONSTRUCTION THAT RESULTS IN ONE LANE FOR TWO-WAY TRAFFIC.

STATE OF TEXAS
DAMIEN B. TIJERINA
104828
LICENSED
PROFESSIONAL ENGINEER

5/2/2014

PHARR DISTRICT STANDARD

TRAFFIC CONTROL PLAN NOTES

SHEET 1 OF 1 SHEETS

Texas Department of Transportation

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Rev 11/27/2013

STATE	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.			SHEET NO.
TEXAS	6				31
DIST.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
PHR	HIDALGO	0921	02	323	MILE 2

PHASE I

INSTALL PROJECT LIMIT AND ADVANCE WARNING SIGNS AND INSTALL CROSSROAD BARRICADES/SIGNS, AS SHOWN ON THE TRAFFIC CONTROL PLANS (TCP), IN ACCORDANCE WITH THE LATEST (TMUTCD) AND/OR AS DIRECTED BY THE ENGINEER. THESE SIGNS SHALL BE ERECTED AND PLACED PRIOR TO COMMENCING ANY PROPOSED ROADWAY CONSTRUCTION AND SHALL REMAIN IN PLACE FOR THE DURATION OF THE PROJECT AND UNTIL COMPLETION AND ACCEPTANCE OF THE PROJECT BY TxDOT.

INSTALL SILT FENCES AND ANY OTHER REQUIRED EROSION/SEDIMENTATION CONTROL DEVICES AS SHOWN ON THE TCP SHEETS AND/OR THE SW3P LAYOUTS AND STANDARDS.

THE CONTRACTOR SHALL CONSTRUCT ALL INCIDENTAL CONSTRUCTION FROM STA. 5+78.27 TO STA. 9+87.40 UP TO THE FIRST TYPE D ACP COURSE OF 1 1/2".

AFTER EXISTING UTILITIES HAVE BEEN RELOCATED, CONSTRUCT THE PROPOSED STORM DRAINAGE TRUNK MAINS, LATERAL CROSSINGS, IRRIGATION CROSSINGS (SEE TCP LAYOUTS PHASE IA), PARALLEL LINES, AND STORM DRAINAGE OUTFALLS, PRIOR TO AND/OR DURING EACH APPROPRIATE PHASE OF CONSTRUCTION. PROVIDE APPROPRIATE TRAFFIC CONTROL DEVICES AND SIGNING AS REQUIRED. THE RESTORATION OF THE ALL-WEATHER SURFACE ROADWAY CROSSINGS WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS.

THE CONTRACTOR SHALL CONSTRUCT A 4' MIN. - 24' MAX. TEMPORARY DETOUR FROM STA. 11+86.74 TO STA. 38+07.67 AS SHOWN ON TYPICAL SECTIONS, AND TCP LAYOUTS. THE CONTRACTOR SHALL USE FLAGGERS EQUIPPED WITH TWO WAY RADIOS FOR THE ONE LANE TWO WAY TRAFFIC FROM: SHUERBACH RD. TO: MOOREFIELD RD. AS SHOWN ON THE TCP LAYOUTS.

INSTALL TEMPORARY DRIVEWAY PIPES AS NECESSARY TO FACILITATE DRAINAGE. THIS WORK SHALL BE SUBSIDIARY TO ITEM 508 "CONSTRUCTING DETOURS". ALL CUT & RESTORE ASSOCIATED WITH THIS WORK SHALL BE SUBSIDIARY TO ITEM 508 "CONSTRUCTING DETOURS".

PHASE II

INSTALL PROPOSED FLASHING BEACON SIGNAL POLES AT INTERSECTIONS. ADJUST TRAFFIC SIGNAL HEADS AND ALL APPURTENANCES TO PHASE II TCP, USING A FIXED TIME SEQUENCE.

ELIMINATE EXISTING ROADWAY STRIPING, AS REQUIRED, AND STRIPE THE NORTH-HALF OF MILE 2 ROAD, ALONG WITH THE TEMPORARY DETOUR FOR TWO 10' LANES OF EAST AND WEST BOUND BI-DIRECTIONAL TRAFFIC FROM: STA.10+10.59 TO: 24+67.72 AND TWO 11' LANES FROM: STA. 38+07.67 TO: STA. 38+62.82 AND STRIPE THE EXISTING SOUTH-HALF OF MILE 2 ROAD, ALONG WITH THE TEMPORARY DETOUR FOR TWO 10' LANES OF EAST AND WEST BOUND BI-DIERCTIONAL TRAFFIC FROM: STA. 24+67.72 TO: STA. 38+07.67 AS SHOWN ON THE TCP LAYOUTS AND TYPICAL SECTIONS.

SHIFT EAST AND WEST BOUND TRAFFIC UNTO THE NEWLY STRIPED SECTIONS OF THE ROADWAY. INSTALL APPROPRIATE TRAFFIC CONTROL DEVICES AND SIGNING AS SHOWN ON THE TCP LAYOUTS AND TYPICAL SECTIONS.

CONSTRUCT THE SOUTH-HALF AND THE NORTH-HALF, AS SHOWN ON THE TCP LAYOUTS, OF THE PROPOSED MILE 2 ROADWAY, INCLUDING ALL APPROPRIATE DRAINAGE APPURTENANCES, UP TO THE TYPE D ACP COURSE OF 1 1/2" FROM LA HOMA RD. EAST TO MOOREFIELD RD. AS SHOWN ON THE TCP LAYOUTS AND TYPICAL SECTIONS AND AS PER THE CONSTRUCTION DESIGN PLANS, INCLUDING ALL APPROPRIATE TEMPORARY EROSION CONTROL PROTECTION SHOWN ON THE SW3P LAYOUTS.

THE CONTRACTOR WILL TEMPORARILY CLOSE HALF AN INTERSECTION IN ORDER TO EXPEDITE THE WORK IN THAT AREA. THE CONTRACTOR WILL BE RESPONSIBLE FOR SUBMITTING AN APPROVED TCP ALONG WITH PERTINENT BARRICADES AND WARNING SIGNS. THE CONTRACTOR WILL ONLY BE ALLOWED TO WORK AT HALF AN INTERSECTION AT A TIME.

THE CONTRACTOR MUST COMPLETE THE HALF INTERSECTION UP TO THE FIRST ACP LIFT AND OPEN HALF OF THE INTERSECTION TO TWO WAY TRAFFIC BEFORE PROCEEDING TO THE NEXT HALF INTERSECTION. AT NO TIME WILL THE CONTRACTOR BE ALLOWED TO CLOSE MORE THAN ONE HALF INTERSECTION AT A TIME.

ROADWAY ACCESS TO ALL INTERSECTING ROADWAYS AND DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING POSITIVE DRAINAGE AT ALL TIMES DURING CONSTRUCTION, INSTALLING SILT FENCES AND ANY OTHER REQUIRED STORM WATER POLLUTION PREVENTION (SW3P) STRUCTURES AS SHOWN ON THE TCP SHEETS AND/OR THE SW3P LAYOUTS AND STANDARDS.

PHASE III

STRIPE THE NEWLY CONSTRUCTED ROADWAY SECTIONS OF MILE 2 ROAD, FOR TWO 11' LANES OF EAST AND WEST BOUND BIDIRECTIONAL TRAFFIC FROM LA HOMA RD. TO MOOREFIELD RD. AS SHOWN ON THE TCP LAYOUTS AND TYPICAL SECTIONS.

SWITCH, INSTALL, AND REMOVE ANY NECESSARY SIGNS, BARRICADES, CHANNELIZING DEVICES AND WORK ZONE PAVEMENT MARKINGS AS SHOWN FOR THIS PHASE OF THE TCP.

ADJUST TRAFFIC SIGNAL HEADS AND ALL APPURTENANCES AT ALL INTERSECTIONS TO ACCOMMODATE THE PHASE III TRAFFIC CONTROL PLAN (TCP).

SHIFT EXISTING EAST AND WEST BOUND TRAFFIC UNTO THE NEWLY CONSTRUCTED SECTIONS OF MILE 2 ROADWAY BETWEEN LA HOMA RD. AND MOOREFIELD RD.

SALVAGE THE TEMPORARY DETOUR CONSTRUCTED DURING PHASE I (STA. 11+86.74 - STA. 38+07.67, CONSTRUCT THE NORTH-HALF OF THE PROPOSED MILE 2 ROADWAY FROM: STA. 10+10.59 TO: STA. 24+67.72, AND THE SOUTH-HALF OF THE PROPOSED MILE 2 ROADWAY FROM: STA. 24+67.72 TO: STA. 38+07.67, INCLUDING ALL REMAINING DRAINAGE SYSTEMS AND APPURTENANCES, UP TO THE TYPE D ACP COURSE OF 1 1/2", FROM LA HOMA RD EAST TO MOOREFIELD RD. IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

THE CONTRACTOR WILL TEMPORARILY CLOSE HALF AN INTERSECTION IN ORDER TO EXPEDITE THE WORK IN THAT AREA. THE CONTRACTOR WILL BE RESPONSIBLE FOR SUBMITTING AN APPROVED TCP ALONG WITH PERTINENT BARRICADES AND WARNING SIGNS. THE CONTRACTOR WILL ONLY BE ALLOWED TO WORK AT HALF AN INTERSECTION AT A TIME.

THE CONTRACTOR MUST COMPLETE THE HALF INTERSECTION UP TO THE FIRST ACP LIFT AND OPEN HALF OF THE INTERSECTION TO TWO WAY TRAFFIC BEFORE PROCEEDING TO THE NEXT HALF INTERSECTION. AT NO TIME WILL THE CONTRACTOR BE ALLOWED TO CLOSE MORE THAN ONE HALF INTERSECTION AT A TIME.

ROADWAY ACCESS TO ALL INTERSECTING ROADWAYS AND DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING POSITIVE DRAINAGE DURING CONSTRUCTION. THE CONTRACTOR WILL INSTALL SILT FENCES AND ANY OTHER REQUIRED EROSION/ SEDIMENTATION CONTROL DEVICES AS SHOWN ON TCP SHEETS AND/OR THE SW3P LAYOUTS AND STANDARDS.

PHASE IV

PLACE FINAL 1 1/2" ACP COURSE (OVERLAY) ON THE PROPOSED PROJECT ROADWAY SECTIONS IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

SWITCH, INSTALL, AND REMOVE ANY NECESSARY SIGNS, BARRICADES, CHANNELIZING DEVICES AND WORK ZONE PAVEMENT MARKINGS AS SHOWN FOR THIS PHASE OF THE TCP.

COMPLETE AND INSTALL INTO SERVICE ALL TRAFFIC SIGNALS, AND APPURTENANCES IN FINAL POSITION BASED ON TRAFFIC SIGNAL LAYOUT. PRIOR TO OPENING ROAD-WAYS TO FULL TRAFFIC.

NOTE: ADJUSTMENTS OF TRAFFIC SIGNALS AND APPURTENANCES WILL BE PAID UNDER ITEM 681 "TEMPORARY TRAFFIC SIGNALS"

INSTALL GUIDE MARKS AND SHORT TERM MARKINGS.

INSTALL FINAL STRIPING AND SIGNING.

OPEN ROADWAYS TO FULL TRAFFIC AND REMOVE ALL TCP BARRICADES, SIGNS, CHANNELIZING DEVICES, PAVEMENT MARKINGS AND EROSION/SEDIMENTATION CONTROL DEVICES AFTER APPROVAL AND ACCEPTANCE OF THE PROJECT BY TXDOT.

STATE OF TEXAS
DAMIEN B. TIJERINA
104828
LICENSED PROFESSIONAL ENGINEER
5/2/2014

COUNTY OF HIDALGO TEXAS

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Highway / Civil
Structural / Bridge
Environmental
Constr. Material Testing

MILE 2 NORTH
SEQUENCE OF CONSTRUCTION

SCALE:
HOR. = N.T.S.
VER. = -

SHEET 1 OF 1

DN: L.S.	CK DN: D.B.T.	DW: L.S.	CK DW: D.B.T.	TR:	CK TR:

FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
6	TX				32
STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
21	HIDALGO	0921	02	323	MILE 2

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A WORK ZONE PAV'MT. MARK BROKEN WHITE

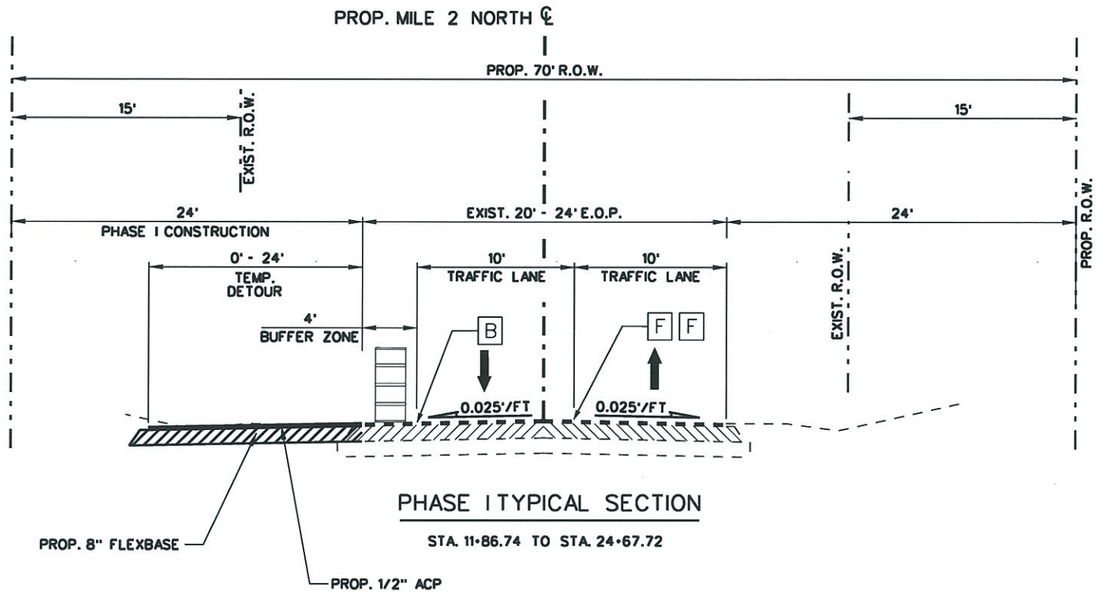
B WORK ZONE PAV'MT. MARK SOLID WHITE

F F WORK ZONE PAV'MT. MARK DOUBLE YELLOW

GENERAL NOTES:

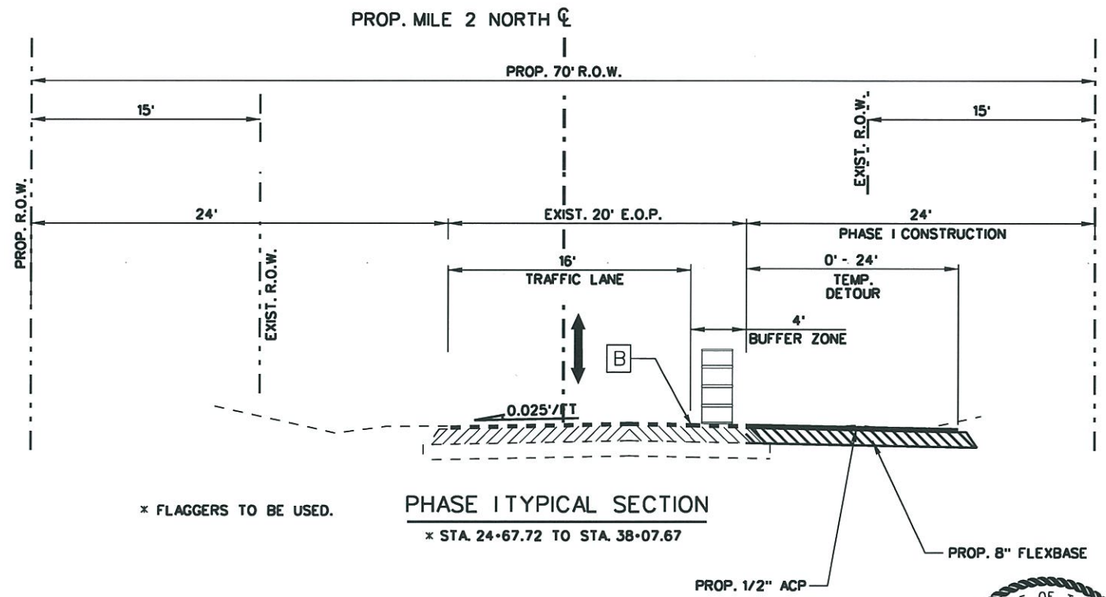
WHERE REQUIRED BY FIXTURES OR UNUSUAL CONDITIONS, THE GOVERNING SLOPES MAY BE VARIED WHEN SPECIFICALLY DIRECTED BY THE ENGINEER.

ALL GRADING SHALL BE WITHIN THE R.O.W. LIMITS.



PHASE I TYPICAL SECTION

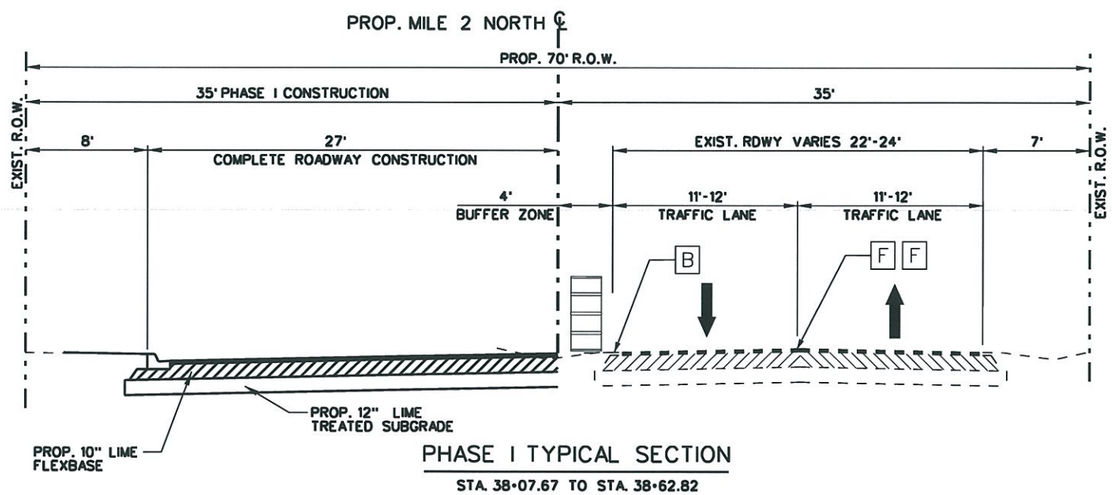
STA. 11+86.74 TO STA. 24+67.72



* FLAGGERS TO BE USED.

PHASE I TYPICAL SECTION

* STA. 24+67.72 TO STA. 38+07.67



PHASE I TYPICAL SECTION

STA. 38+07.67 TO STA. 38+62.82

STATE OF TEXAS
DAMIEN B. TIJERINA
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MILE 2 NORTH
PHASE I TCP TYPICAL SECTIONS

SCALE:
HOR. - 1"=10'
VER. -

SHEET 1 OF 3

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.				SHEET NO.
CK DN: D.B.T.	6	TX					33
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		HIGHWAY NO.
CK DW: D.B.T.	21	HIDALGO	0921	02	323		MILE 2
TR:							
CK TR:							

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5/2/2014

A WORK ZONE PAV'MT. MARK BROKEN WHITE

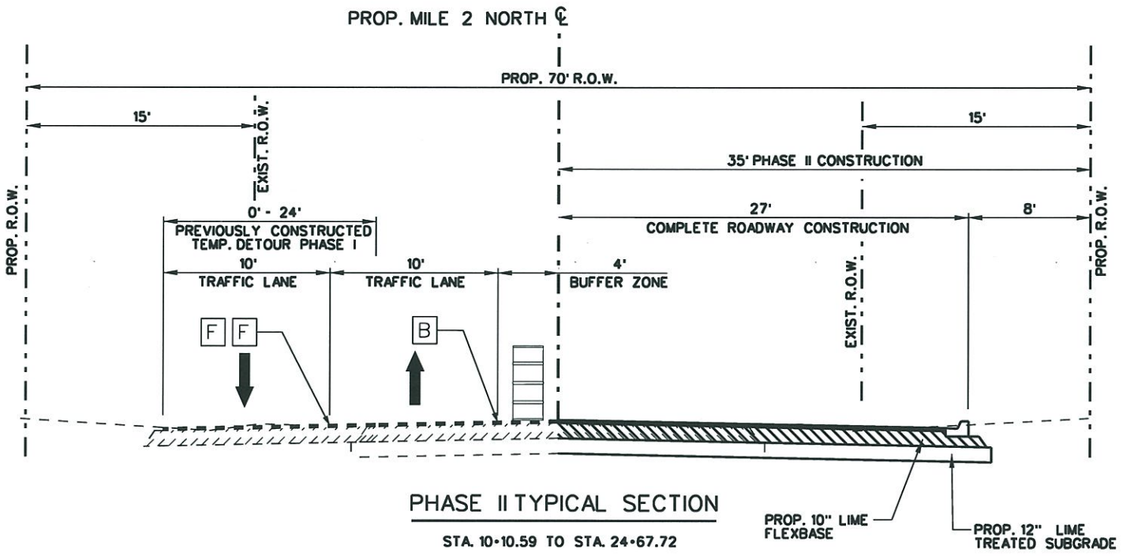
B WORK ZONE PAV'MT. MARK SOLID WHITE

F F WORK ZONE PAV'MT. MARK DOUBLE YELLOW

GENERAL NOTES:

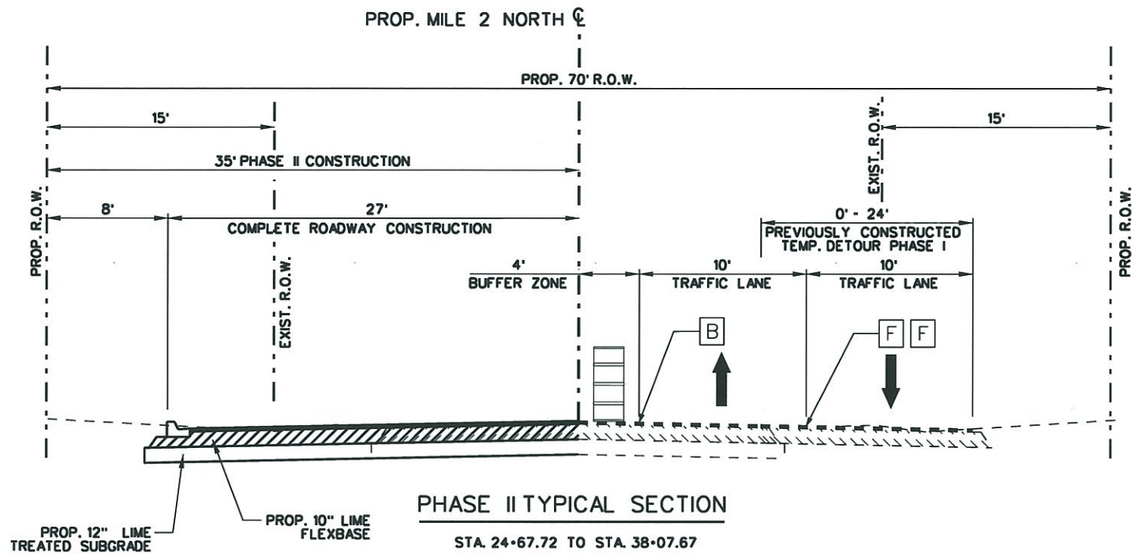
WHERE REQUIRED BY FIXTURES OR UNUSUAL CONDITIONS, THE GOVERNING SLOPES MAY BE VARIED WHEN SPECIFICALLY DIRECTED BY THE ENGINEER.

ALL GRADING SHALL BE WITHIN THE R.O.W. LIMITS.



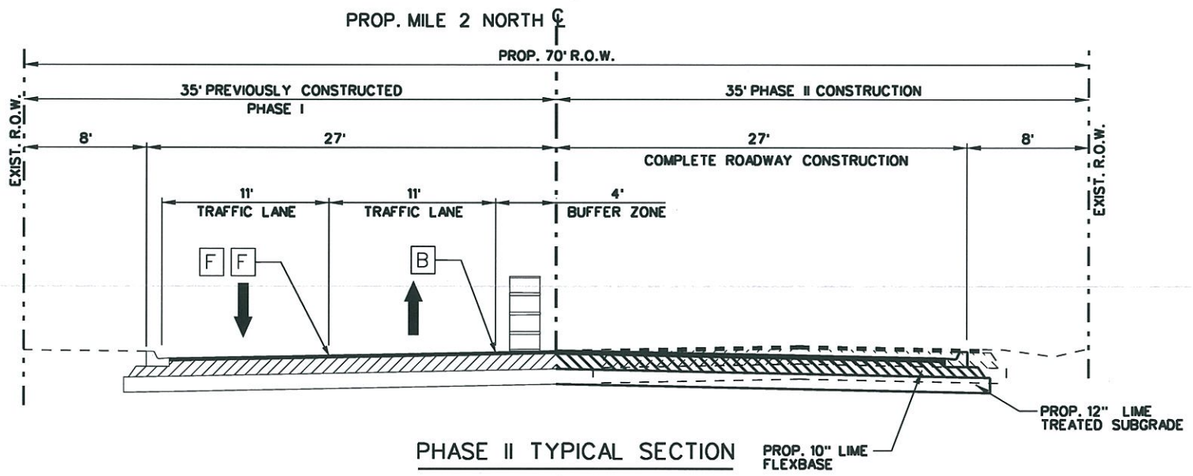
PHASE II TYPICAL SECTION

STA. 10+10.59 TO STA. 24+67.72



PHASE II TYPICAL SECTION

STA. 24+67.72 TO STA. 38+07.67



PHASE II TYPICAL SECTION

STA. 38+07.67 TO STA. 38+62.82

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MILE 2 NORTH
PHASE II TCP TYPICAL SECTIONS

SCALE:
HOR. - 1"=10'
VER. -

SHEET 2 OF 3

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN: D.B.T.	6	TX				34
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: D.B.T.	21	HIDALGO	0921	02	323	MILE 2
TR:						
CK TR:						

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5/2/2014

A WORK ZONE PAV'MT. MARK BROKEN WHITE

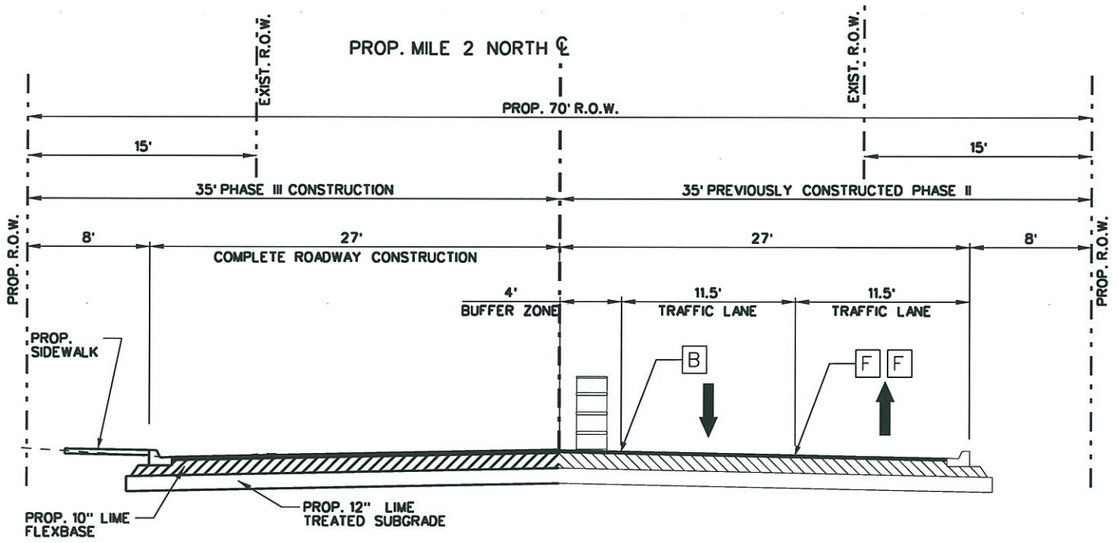
B WORK ZONE PAV'MT. MARK SOLID WHITE

F F WORK ZONE PAV'MT. MARK DOUBLE YELLOW

GENERAL NOTES:

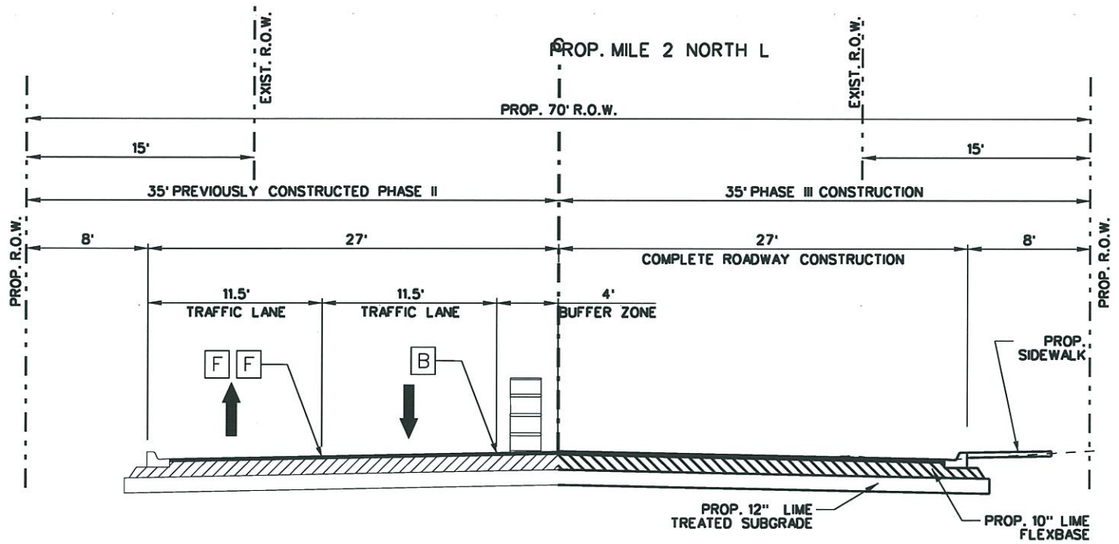
WHERE REQUIRED BY FIXTURES OR UNUSUAL CONDITIONS, THE GOVERNING SLOPES MAY BE VARIED WHEN SPECIFICALLY DIRECTED BY THE ENGINEER.

ALL GRADING SHALL BE WITHIN THE R.O.W. LIMITS.



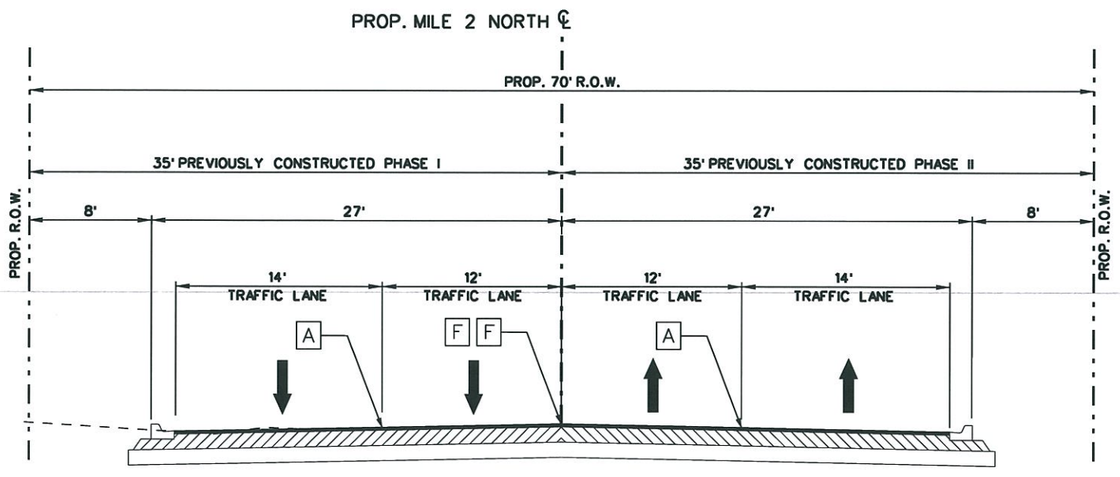
PHASE III TYPICAL SECTION

STA. 10+10.59 TO STA. 24+67.72



PHASE III TYPICAL SECTION

STA. 24+67.72 TO STA. 38+07.67



PHASE III TYPICAL SECTION

STA. 38+07.67 TO STA. 38+62.82

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Environmental
Constr. Material Testing

MILE 2 NORTH
PHASE III TCP TYPICAL SECTIONS

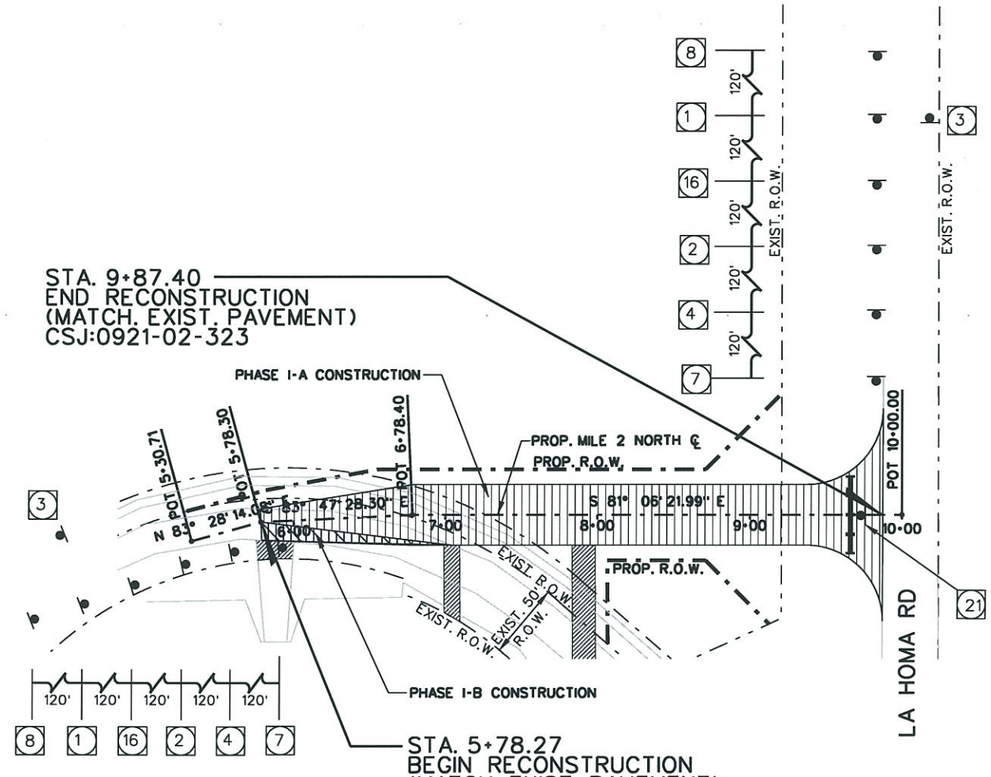
SCALE:
HOR. - 1"=10'
VER. -

SHEET 3 OF 3

DN: L.S.						
CK DN: D.B.T.	FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
DW: L.S.	6	TX				35
CK DW: D.B.T.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
TR:	21	HIDALGO	0921	02	323	MILE 2
CK TR:						

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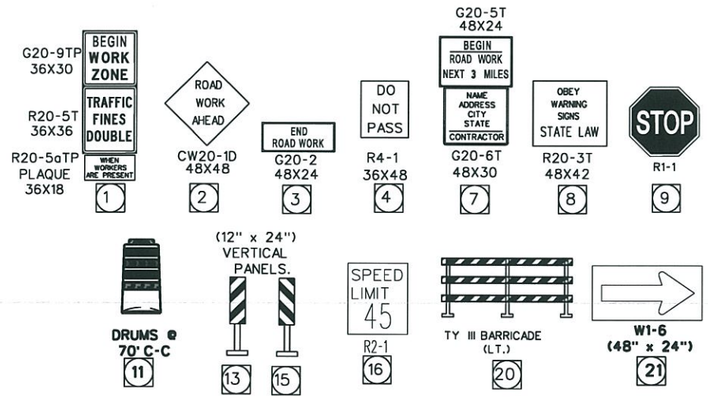
5/2/2014



LEGEND

- CONSTRUCTION EXIT TY 2 (78 SY PER EXIT)
- TEMP SED CONT FENCE (32 LF @ EACH INLET)
- NEW CONSTRUCTION
- RECONSTRUCTION OR EXIST. SALVAGE/REMOVAL
- EXISTING PAVEMENT OR PREVIOUS CONSTRUCTION
- TEMP CONSTR. DETOUR
- DIRECTION OF TRAFFIC FLOW
- TYPE III BARRICADE
- CHANNELIZING DEVICE
- CONSTRUCTION SIGN
- PHASE I-A CONSTRUCTION
- PHASE I-B CONSTRUCYION

NOTE: FLAGGERS TO BE USED FOR TWO WAY TRAFFIC ON ONE LANE



- A — WORK ZONE PAV'MT. MARK BROKEN 4" WHITE
- B — WORK ZONE PAV'MT. MARK SOLID 4" WHITE
- C — WORK ZONE PAV'MT. MARK SOLID 8" WHITE
- D — WORK ZONE PAV'MT. MARK SOLID 24" WHITE
- F F — WORK ZONE PAV'MT. MARK DOUBLE YELLOW
- DRUMS @ 70' C-C
- CONSTRUCTION SIGN
- CONSTRUCTION EXIT

					EST.
A	0662-2001	WZPM NON-REMOV (W)	4" (BRK)	LF	
B	0662-2004	WZPM NON-REMOV (W)	4" (SLD)	LF	
C	0662-2010	WZPM NON-REMOV (W)	8" (DOT)	LF	
D	0662-2016	WZPM NON-REMOV (W)	24" (SLD)	LF	
E	0662-2030	WZPM NON-REMOV (Y)	4" (BRK)	LF	
F	0662-2032	WZPM NON-REMOV (Y)	4" (SLD)	LF	

					EST.
G	0662-2064	WZPM REMOV (W)	4" (BRK)	LF	
H	0662-2067	WZPM REMOV (W)	4" (SLD)	LF	
I	0662-2075	WZPM REMOV (W)	8" (SLD)	LF	
J	0662-2079	WZPM REMOV (W)	24" (SLD)	LF	
K	0662-2097	WZPM REMOV (Y)	4" (BRK)	LF	
L	0662-2099	WZPM REMOV (Y)	4" (SLD)	LF	

					EST.
M	0672-2015	REFL PAV MRKR TY II A-A		EA	
N	0672-2012	REFL PAV MRKR TY I-C		EA	
O	0677-2001	ELIM EXT PAV MRK&MRKRS	(4")	LF	
P	0677-2003	ELIM EXT PAV MRK&MRKRS	(8")	LF	
Q	0677-2007	ELIM EXT PAV MRK&MRKRS	(24")	LF	

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MILE 2 NORTH
TCP PLAN PHASE 1
STA. 5+78.27 TO STA. 9+87.40

SCALE: 1"=100'

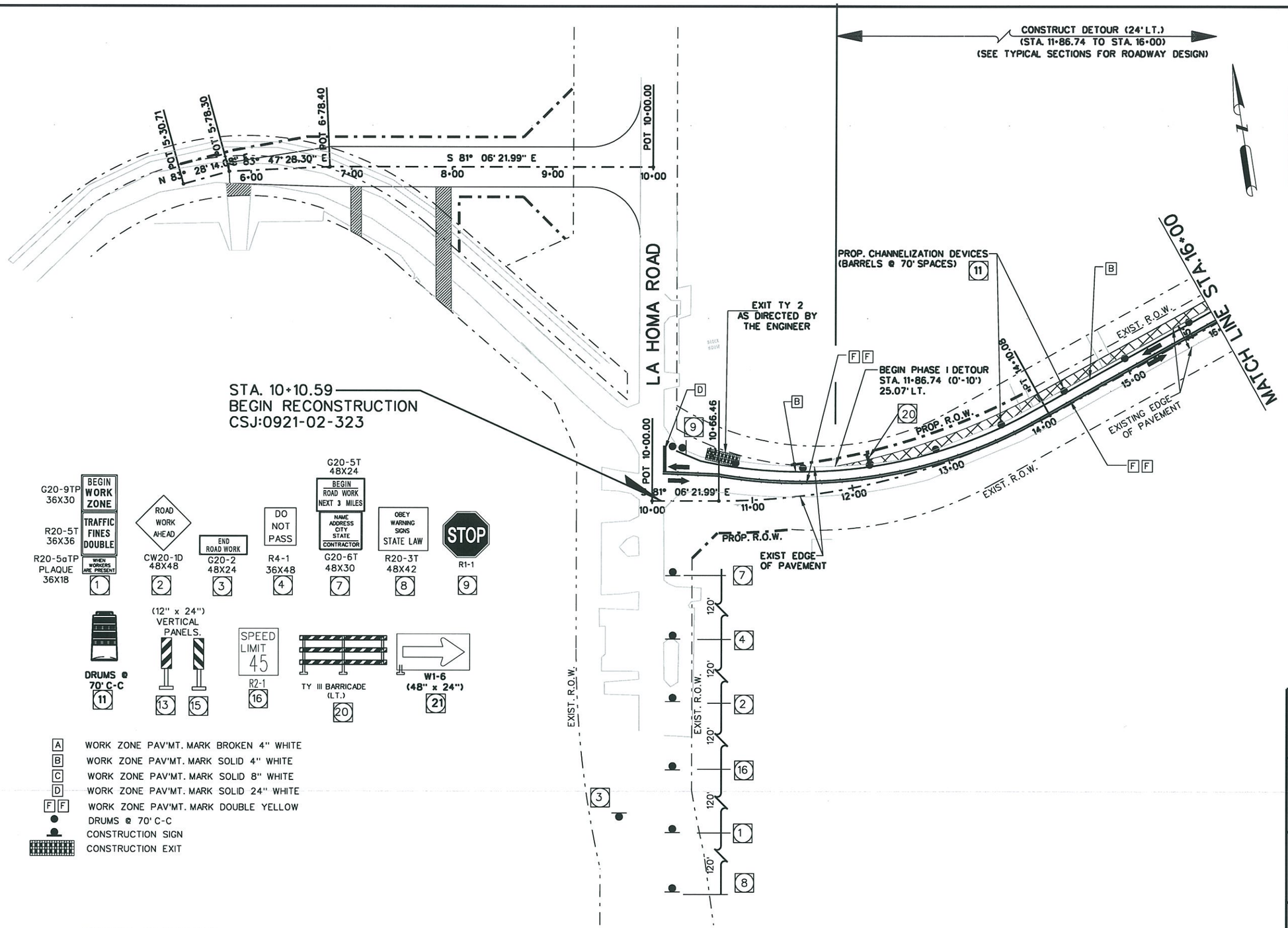
SHEET 1 OF 4

DN: L.S.	CK DN: A.J.S.	DW: L.S.	CK DW: A.J.S.	TR:	CK TR:

FED. RD. DIV. NO.	STATE	PROJECT NO.	SHEET NO.
6	TX		36

STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
21	HIDALGO	0921	02	323	MILE 2

5/2/2014 2:09:39 PM
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- A WORK ZONE PAV'MT. MARK BROKEN 4" WHITE
- B WORK ZONE PAV'MT. MARK SOLID 4" WHITE
- C WORK ZONE PAV'MT. MARK SOLID 8" WHITE
- D WORK ZONE PAV'MT. MARK SOLID 24" WHITE
- F F WORK ZONE PAV'MT. MARK DOUBLE YELLOW
- DRUMS @ 70' C-C
- CONSTRUCTION SIGN
- CONSTRUCTION EXIT

SUMMARY OF ITEM 508
CONSTRUCT DETOURS (CL 3) (SY)

CONSTRUCTION PHASE	STATION LIMITS	AREA (SY)
PHASE I		
CSJ: 0921-02-323	10+10.59 - 16+00.00	367

				EST.
A	0662-2001	WZPM NON-REMOV (W) 4" (BRK)	LF	
B	0662-2004	WZPM NON-REMOV (W) 4" (SLD)	LF	571
C	0662-2010	WZPM NON-REMOV (W) 8" (DOT)	LF	
D	0662-2016	WZPM NON-REMOV (W) 24" (SLD)	LF	26
E	0662-2030	WZPM NON-REMOV (Y) 4" (BRK)	LF	
F	0662-2032	WZPM NON-REMOV (Y) 4" (SLD)	LF	1176

				EST.
G	0662-2064	WZPM REMOV (W) 4" (BRK)	LF	
H	0662-2067	WZPM REMOV (W) 4" (SLD)	LF	
I	0662-2075	WZPM REMOV (W) 8" (SLD)	LF	
J	0662-2079	WZPM REMOV (W) 24" (SLD)	LF	
K	0662-2097	WZPM REMOV (Y) 4" (BRK)	LF	
L	0662-2099	WZPM REMOV (Y) 4" (SLD)	LF	

				EST.
M	0672-2015	REFL PAV MRKR TY II A-A	EA	
N	0672-2012	REFL PAV MRKR TY I-C	EA	
O	0677-2001	ELIM EXT PAV MRK&MRKRS (4")	LF	
P	0677-2003	ELIM EXT PAV MRK&MRKRS (8")	LF	
Q	0677-2007	ELIM EXT PAV MRK&MRKRS (24")	LF	

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Environmental
Constr. Material Testing

MILE 2 NORTH
TCP PLAN PHASE I
STA. 10+10.59 TO STA. 16+00

SCALE:
HOR. - 1"=100'
VER. -

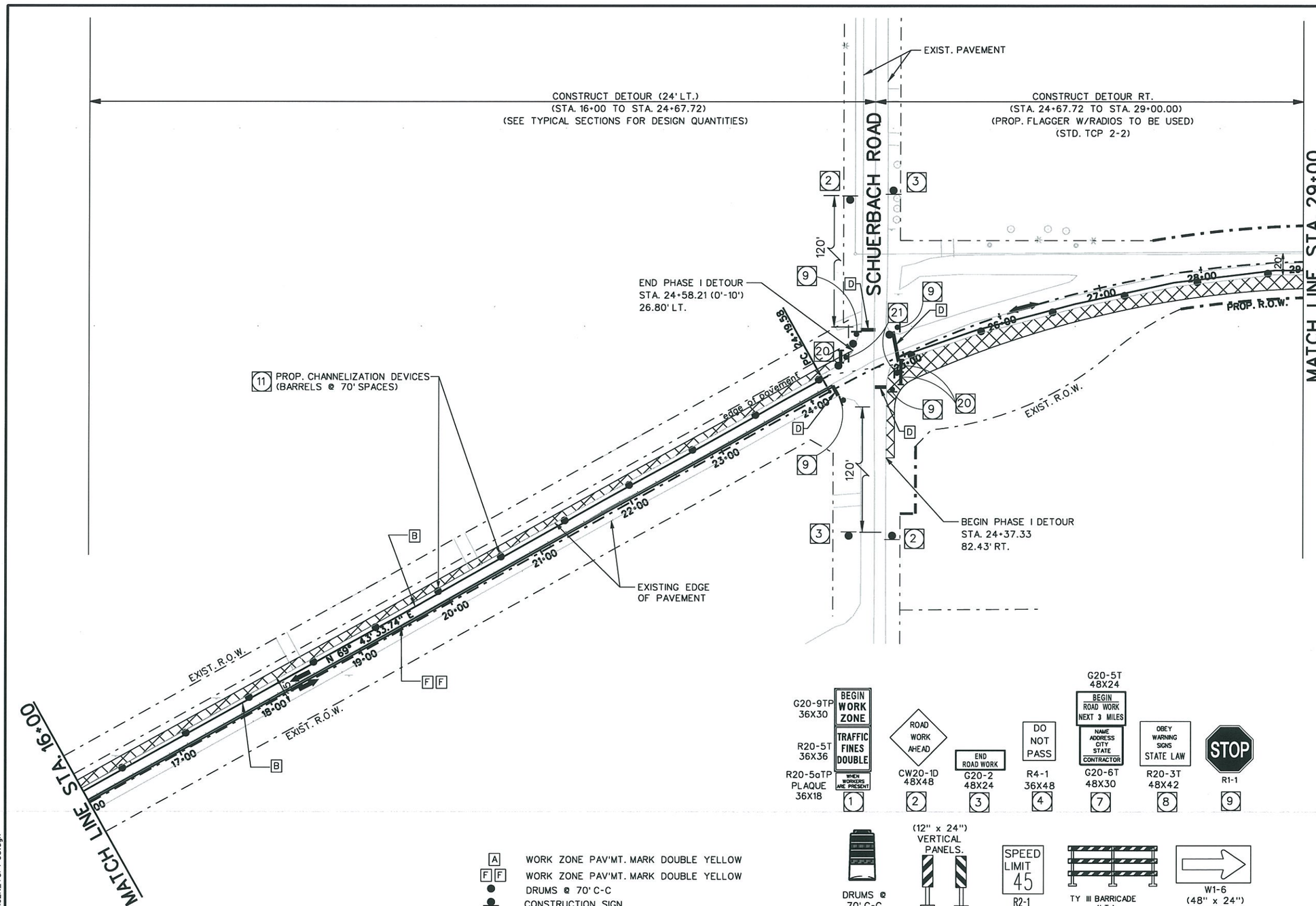
SHEET 2 OF 4

DN: L.S.	CK DN: D.B.T.	DW: L.S.	CK DW: D.B.T.	TR:	CK TR:

FED. RD. DIV. NO.	STATE	PROJECT NO.	SHEET NO.
6	TX		37

STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
21	HIDALGO	0921	02	323	MILE 2

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A WORK ZONE PAV'MT. MARK DOUBLE YELLOW
F F WORK ZONE PAV'MT. MARK DOUBLE YELLOW
DRUMS @ 70' C-C
CONSTRUCTION SIGN
CONSTRUCTION EXIT

SUMMARY OF ITEM 508
CONSTRUCT DETOURS (CL 3) (SY)

CONSTRUCTION PHASE	STATION LIMITS	AREA (SY)
PHASE I		
CSJ: 0921-02-323	16+00-29+00	1074

					EST.
A	0662-2001	WZPM NON-REMOV (W) 4" (BRK)	LF		
B	0662-2004	WZPM NON-REMOV (W) 4" (SLD)	LF	1265	
C	0662-2010	WZPM NON-REMOV (W) 8" (DOT)	LF		
D	0662-2016	WZPM NON-REMOV (W) 24" (SLD)	LF	65	
E	0662-2030	WZPM NON-REMOV (Y) 4" (BRK)	LF		
F	0662-2032	WZPM NON-REMOV (Y) 4" (SLD)	LF	1650	

					EST.
G	0662-2064	WZPM REMOV (W) 4" (BRK)	LF		
H	0662-2067	WZPM REMOV (W) 4" (SLD)	LF		
I	0662-2075	WZPM REMOV (W) 8" (SLD)	LF		
J	0662-2079	WZPM REMOV (W) 24" (SLD)	LF		
K	0662-2097	WZPM REMOV (Y) 4" (BRK)	LF		
L	0662-2099	WZPM REMOV (Y) 4" (SLD)	LF		

					EST.
M	0672-2015	REFL PAV MRKR TY II A-A	EA		
N	0672-2012	REFL PAV MRKR TY I-C	EA		
O	0677-2001	ELIM EXT PAV MRK&MRKRS (4")	LF		
P	0677-2003	ELIM EXT PAV MRK&MRKRS (8")	LF		
Q	0677-2007	ELIM EXT PAV MRK&MRKRS (24")	LF		

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Constr. Material Testing

MILE 2 NORTH
TCP PLAN PHASE I
STA. 16+00 TO STA. 29+00

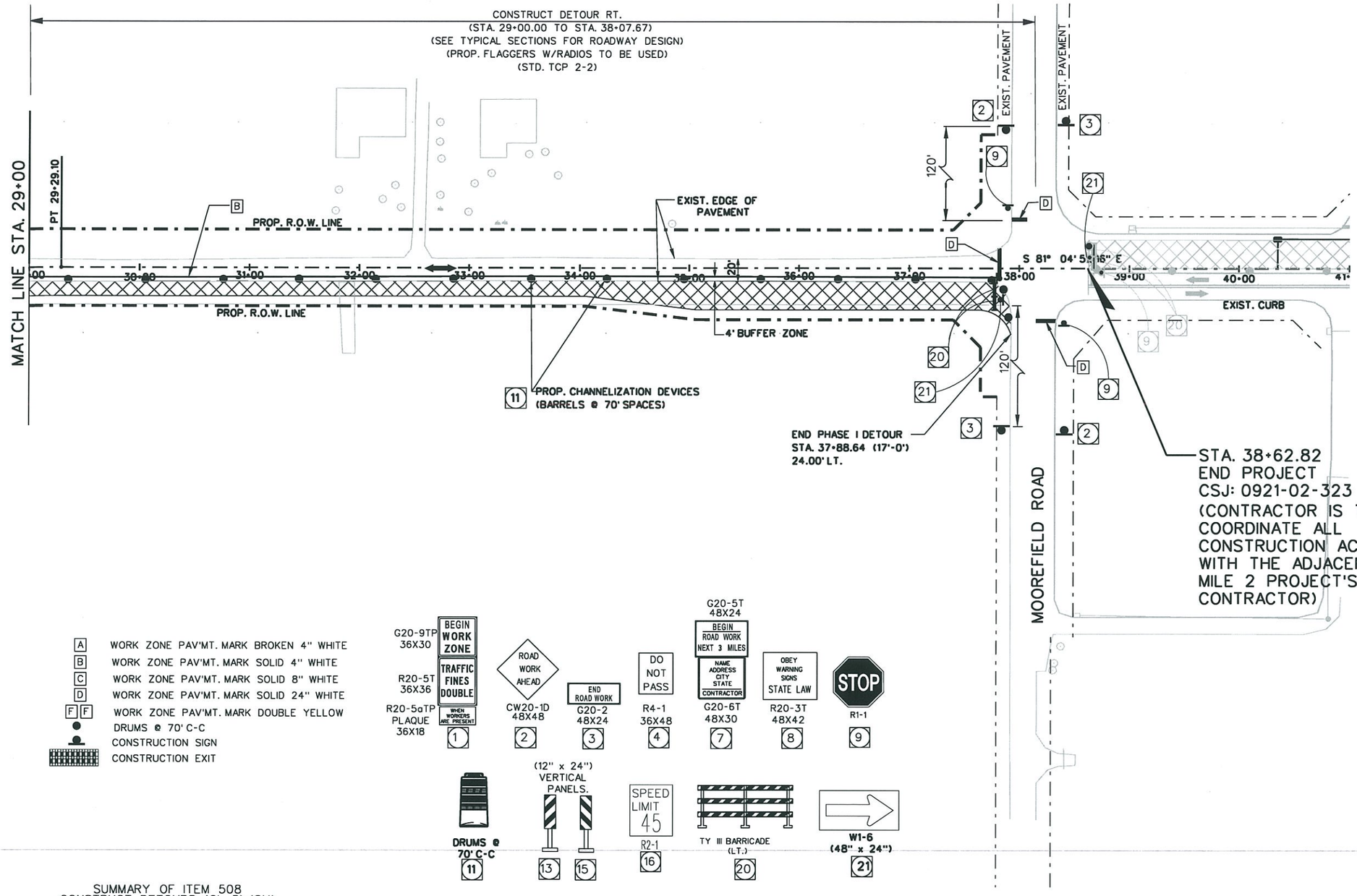
SCALE:
HOR. - 1"=100'
VER. -

SHEET 3 OF 4

DN: L.S.	CK DN: D.B.T.	DW: L.S.	CK DW: D.B.T.	TR:	CK TR:

FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
6	TX				38
STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
21	HIDALGO	0921	02	323	MILE 2

5/2/2014 2:09:43 PM
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- A WORK ZONE PAV'MT. MARK BROKEN 4" WHITE
- B WORK ZONE PAV'MT. MARK SOLID 4" WHITE
- C WORK ZONE PAV'MT. MARK SOLID 8" WHITE
- D WORK ZONE PAV'MT. MARK SOLID 24" WHITE
- F F WORK ZONE PAV'MT. MARK DOUBLE YELLOW
- DRUMS @ 70' C-C
- CONSTRUCTION SIGN
- CONSTRUCTION EXIT

SUMMARY OF ITEM 508
CONSTRUCT DETOURS (CL 3) (SY)

CONSTRUCTION PHASE	STATION LIMITS	AREA (SY)
PHASE I		
CSJ: 0921-02-323	29+00-38+62.40	1427

CSJ: 0921-02-323

					EST.
A	0662-2001	WZPM NON-REMOV (W) 4" (BRK)	LF		
B	0662-2004	WZPM NON-REMOV (W) 4" (SLD)	LF		887
C	0662-2012	WZPM NON-REMOV (W) 8" (SLD)	LF		
D	0662-2016	WZPM NON-REMOV (W) 24" (SLD)	LF		77
E	0662-2030	WZPM NON-REMOV (Y) 4" (BRK)	LF		
F	0662-2032	WZPM NON-REMOV (Y) 4" (SLD)	LF		

					EST.
A	0662-2001	WZPM NON-REMOV (W) 4" (BRK)	LF		
B	0662-2004	WZPM NON-REMOV (W) 4" (SLD)	LF		
C	0662-2010	WZPM NON-REMOV (W) 8" (DOT)	LF		
D	0662-2016	WZPM NON-REMOV (W) 24" (SLD)	LF		
E	0662-2030	WZPM NON-REMOV (Y) 4" (BRK)	LF		
F	0662-2032	WZPM NON-REMOV (Y) 4" (SLD)	LF		

					EST.
G	0662-2064	WZPM REMOV (W) 4" (BRK)	LF		
H	0662-2067	WZPM REMOV (W) 4" (SLD)	LF		
I	0662-2075	WZPM REMOV (W) 8" (SLD)	LF		
J	0662-2079	WZPM REMOV (W) 24" (SLD)	LF		
K	0662-2097	WZPM REMOV (Y) 4" (BRK)	LF		
L	0662-2099	WZPM REMOV (Y) 4" (SLD)	LF		

					EST.
M	0672-2015	REFL PAV MRKR TY II A-A	EA		
N	0672-2012	REFL PAV MRKR TY I-C	EA		
O	0677-2001	ELIM EXT PAV MRK&MRKRS (4")	LF		
P	0677-2003	ELIM EXT PAV MRK&MRKRS (8")	LF		
Q	0677-2007	ELIM EXT PAV MRK&MRKRS (24")	LF		

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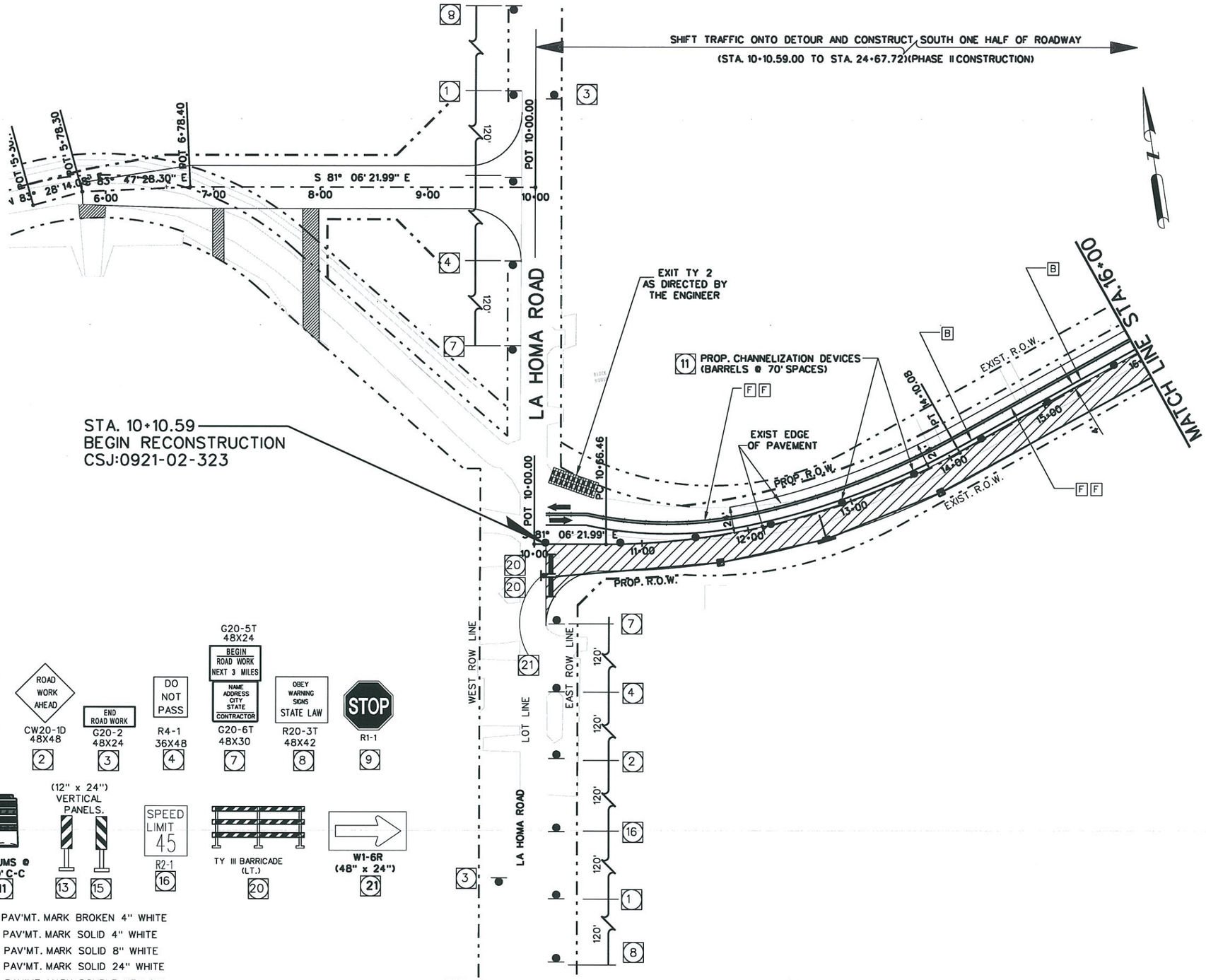
MILE 2 NORTH
TCP PLAN PHASE I
STA. 29+00 TO STA. 38+62.82

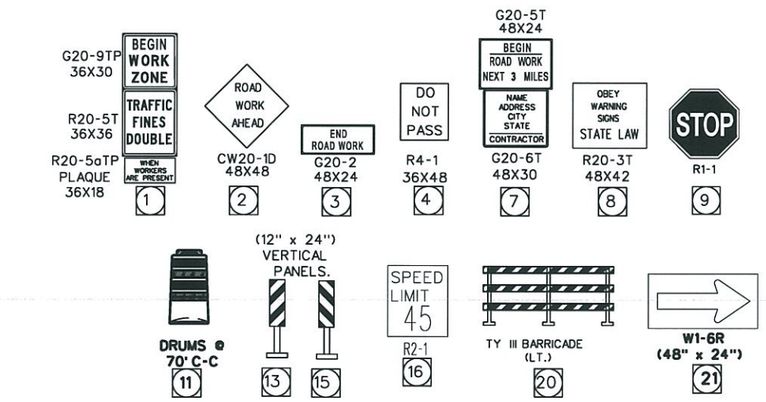
SCALE:
HOR. - 1"=100'

SHEET 4 OF 4

DN: L.S.		FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN: D.B.T.		6	TX				39
DW: L.S.		STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: D.B.T.		21	HIDALGO	0921	02	323	MILE 2
TR:	
CK TR:	

5/2/2014 2:09:45 PM
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LEGEND

- CONSTRUCTION EXIT TY 2 (78 SY PER EXIT)
- TEMP SED CONT FENCE (32 LF @ EACH INLET)
- NEW CONSTRUCTION
- RECONSTRUCTION OR EXIST. SALVAGE/REMOVAL
- EXISTING PAVEMENT OR PREVIOUS CONSTRUCTION
- TEMP CONSTR. DETOUR
- DIRECTION OF TRAFFIC FLOW
- TYPE III BARRICADE
- CHANNELIZING DEVICE
- CONSTRUCTION SIGN

- A WORK ZONE PAV'MT. MARK BROKEN 4" WHITE
- B WORK ZONE PAV'MT. MARK SOLID 4" WHITE
- C WORK ZONE PAV'MT. MARK SOLID 8" WHITE
- D WORK ZONE PAV'MT. MARK SOLID 24" WHITE
- F F WORK ZONE PAV'MT. MARK DOUBLE YELLOW
- DRUMS @ 70' C-C
- CONSTRUCTION SIGN
- CONSTRUCTION EXIT

					EST.
A	0662-2001	WZPM NON-REMOV (W) 4" (BRK)	LF		
B	0662-2004	WZPM NON-REMOV (W) 4" (SLD)	LF	587	
C	0662-2010	WZPM NON-REMOV (W) 8" (DOT)	LF		
D	0662-2016	WZPM NON-REMOV (W) 24" (SLD)	LF		
E	0662-2030	WZPM NON-REMOV (Y) 4" (BRK)	LF		
F	0662-2032	WZPM NON-REMOV (Y) 4" (SLD)	LF	1,164	

					EST.
G	0662-2064	WZPM REMOV (W) 4" (BRK)	LF		
H	0662-2067	WZPM REMOV (W) 4" (SLD)	LF		
I	0662-2075	WZPM REMOV (W) 8" (SLD)	LF		
J	0662-2079	WZPM REMOV (W) 24" (SLD)	LF		
K	0662-2097	WZPM REMOV (Y) 4" (BRK)	LF		
L	0662-2099	WZPM REMOV (Y) 4" (SLD)	LF		

					EST.
M	0672-2015	REFL PAV MRKR TY II A-A	EA		
N	0672-2012	REFL PAV MRKR TY I-C	EA		
O	0677-2001	ELIM EXT PAV MRK&MRKRS (4")	LF		
P	0677-2003	ELIM EXT PAV MRK&MRKRS (8")	LF		
Q	0677-2007	ELIM EXT PAV MRK&MRKRS (24")	LF		

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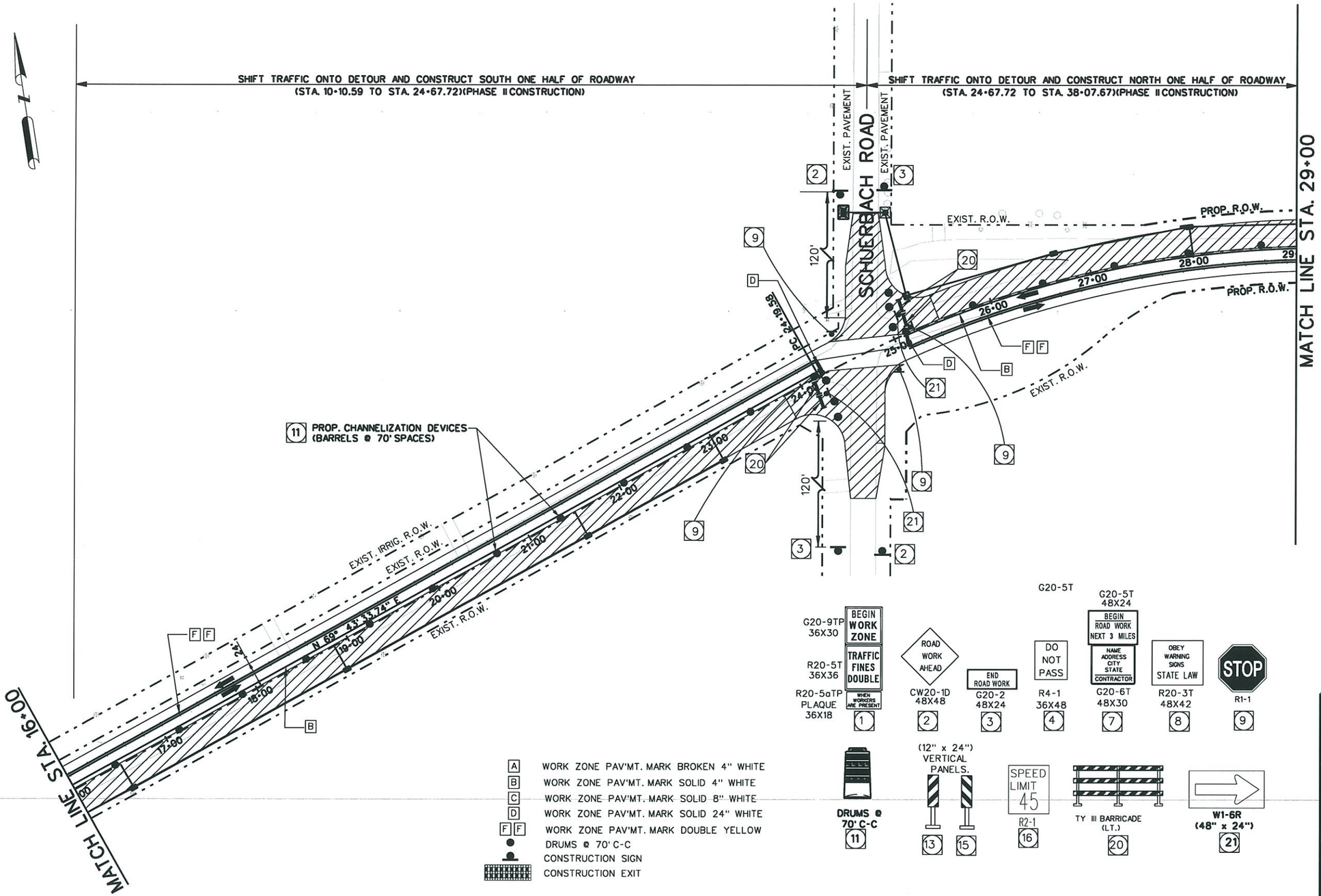
MILE 2 NORTH
TCP PLAN PHASE II
STA. 10+00 TO STA. 16+00

SCALE:
HOR. - 1"=100'
VER. -

SHEET 1 OF 3

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN: D.B.T.	6	TX				40
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: D.B.T.	21	HIDALGO	0921	02	323	MILE 2
TR:						
CK TR:						

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LEGEND

- CONSTRUCTION EXIT TY 2 (78 SY PER EXIT)
- TEMP SED CONT FENCE (32 LF @ EACH INLET)
- NEW CONSTRUCTION
- RECONSTRUCTION OR EXIST. SALVAGE/REMOVAL
- EXISTING PAVEMENT OR PREVIOUS CONSTRUCTION
- TEMP CONSTR. DETOUR
- DIRECTION OF TRAFFIC FLOW
- TYPE III BARRICADE
- CHANNELIZING DEVICE
- CONSTRUCTION SIGN

- A WORK ZONE PAV'MT. MARK BROKEN 4" WHITE
- B WORK ZONE PAV'MT. MARK SOLID 4" WHITE
- C WORK ZONE PAV'MT. MARK SOLID 8" WHITE
- D WORK ZONE PAV'MT. MARK SOLID 24" WHITE
- F F WORK ZONE PAV'MT. MARK DOUBLE YELLOW
- DRUMS @ 70' C-C
- CONSTRUCTION SIGN
- CONSTRUCTION EXIT

					EST.
A	0662-2001	WZPM NON-REMOV (W) 4" (BRK)	LF		
B	0662-2004	WZPM NON-REMOV (W) 4" (SLD)	LF	1,215	
C	0662-2010	WZPM NON-REMOV (W) 8" (DOT)	LF		
D	0662-2016	WZPM NON-REMOV (W) 24" (SLD)	LF	24	
E	0662-2030	WZPM NON-REMOV (Y) 4" (BRK)	LF		
F	0662-2032	WZPM NON-REMOV (Y) 4" (SLD)	LF	2,422	

					EST.
G	0662-2064	WZPM REMOV (W) 4" (BRK)	LF		
H	0662-2067	WZPM REMOV (W) 4" (SLD)	LF		
I	0662-2075	WZPM REMOV (W) 8" (SLD)	LF		
J	0662-2079	WZPM REMOV (W) 24" (SLD)	LF		
K	0662-2097	WZPM REMOV (Y) 4" (BRK)	LF		
L	0662-2099	WZPM REMOV (Y) 4" (SLD)	LF		

					EST.
M	0672-2015	REFL PAV MRKR TY II A-A	EA		
N	0672-2012	REFL PAV MRKR TY I-C	EA		
O	0677-2001	ELIM EXT PAV MRK&MRKRS (4")	LF		
P	0677-2003	ELIM EXT PAV MRK&MRKRS (8")	LF		
Q	0677-2007	ELIM EXT PAV MRK&MRKRS (24")	LF		

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5/2/2014

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MILE 2 NORTH
TCP PLAN PHASE II
STA. 16+00 TO STA. 29+00

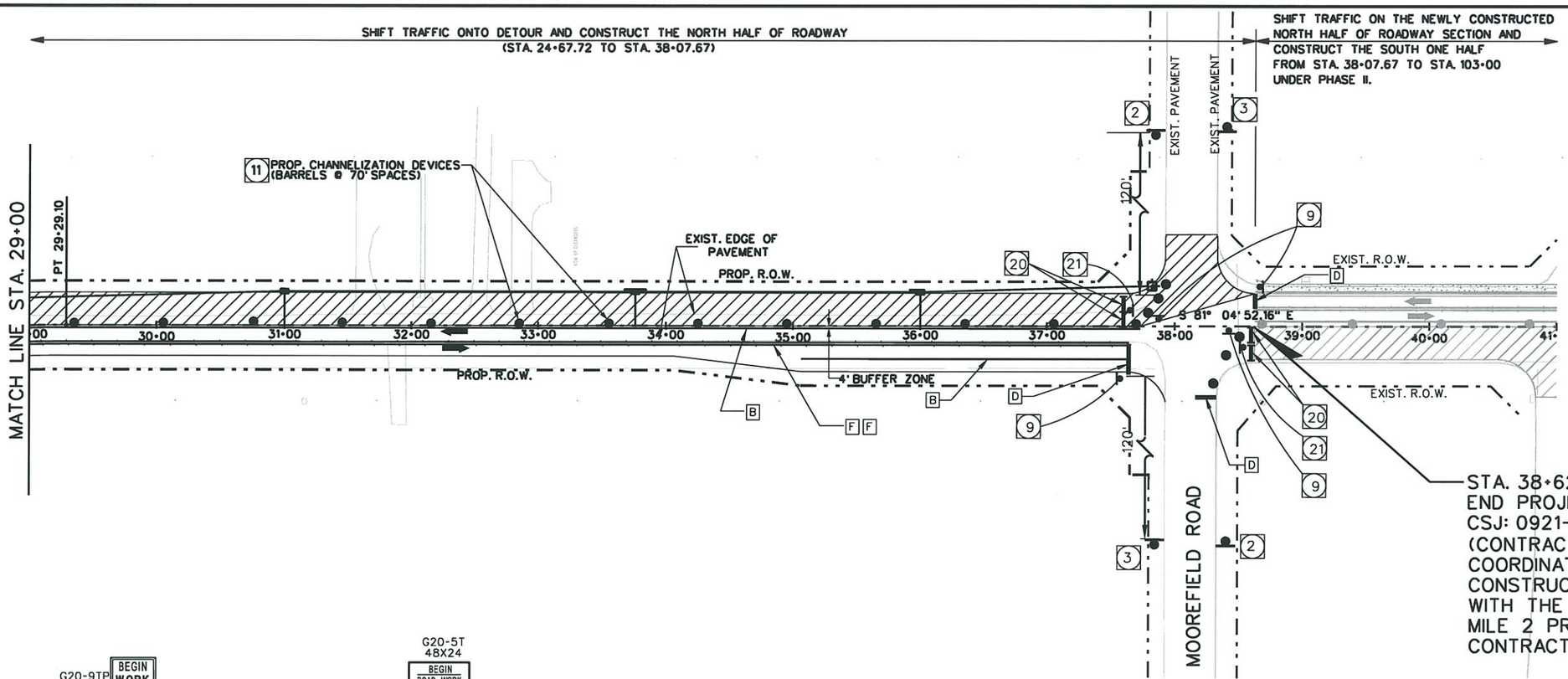
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VER. -

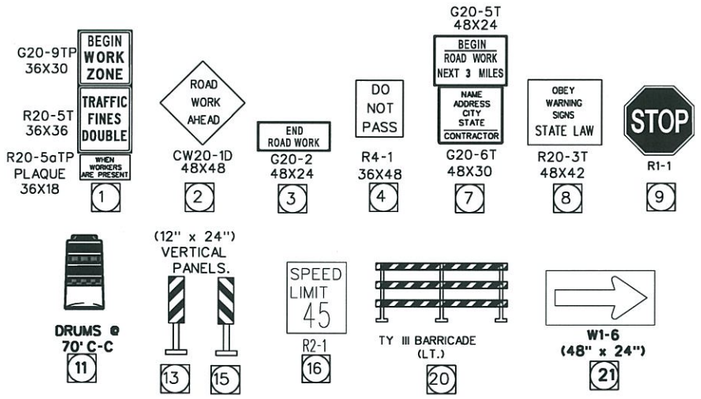
SHEET 2 OF 3

DN: L.S.	CK DN: D.B.T.	DW: L.S.	CK DW: D.B.T.	TR:	CK TR:

FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
6	TX				41
STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
21	HIDALGO	0921	02	323	MILE 2

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- A — WORK ZONE PAV'MT. MARK BROKEN 4" WHITE
- B — WORK ZONE PAV'MT. MARK SOLID 4" WHITE
- C — WORK ZONE PAV'MT. MARK SOLID 8" WHITE
- D — WORK ZONE PAV'MT. MARK SOLID 24" WHITE
- F F — WORK ZONE PAV'MT. MARK DOUBLE YELLOW
- DRUMS @ 70' C-C
- CONSTRUCTION SIGN
- CONSTRUCTION EXIT

CSJ: 0921-02-323

					EST.
A	0662-2001	WZPM NON-REMOV (W) 4" (BRK)	LF		
B	0662-2004	WZPM NON-REMOV (W) 4" (SLD)	LF		1,130
C	0662-2012	WZPM NON-REMOV (W) 8" (SLD)	LF		
D	0662-2016	WZPM NON-REMOV (W) 24" (SLD)	LF		46
E	0662-2030	WZPM NON-REMOV (Y) 4" (BRK)	LF		
F	0662-2032	WZPM NON-REMOV (Y) 4" (SLD)	LF		1,728

					EST.
A	0662-2001	WZPM NON-REMOV (W) 4" (BRK)	LF		
B	0662-2004	WZPM NON-REMOV (W) 4" (SLD)	LF		
C	0662-2010	WZPM NON-REMOV (W) 8" (DOT)	LF		
D	0662-2016	WZPM NON-REMOV (W) 24" (SLD)	LF		
E	0662-2030	WZPM NON-REMOV (Y) 4" (BRK)	LF		
F	0662-2032	WZPM NON-REMOV (Y) 4" (SLD)	LF		

					EST.
G	0662-2064	WZPM REMOV (W) 4" (BRK)	LF		
H	0662-2067	WZPM REMOV (W) 4" (SLD)	LF		
I	0662-2075	WZPM REMOV (W) 8" (SLD)	LF		
J	0662-2079	WZPM REMOV (W) 24" (SLD)	LF		
K	0662-2097	WZPM REMOV (Y) 4" (BRK)	LF		
L	0662-2099	WZPM REMOV (Y) 4" (SLD)	LF		

					EST.
M	0672-2015	REFL PAV MRKR TY II A-A	EA		
N	0672-2012	REFL PAV MRKR TY I-C	EA		
O	0677-2001	ELIM EXT PAV MRK&MRKRS (4")	LF		
P	0677-2003	ELIM EXT PAV MRK&MRKRS (8")	LF		
Q	0677-2007	ELIM EXT PAV MRK&MRKRS (24")	LF		

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Constr. Material Testing

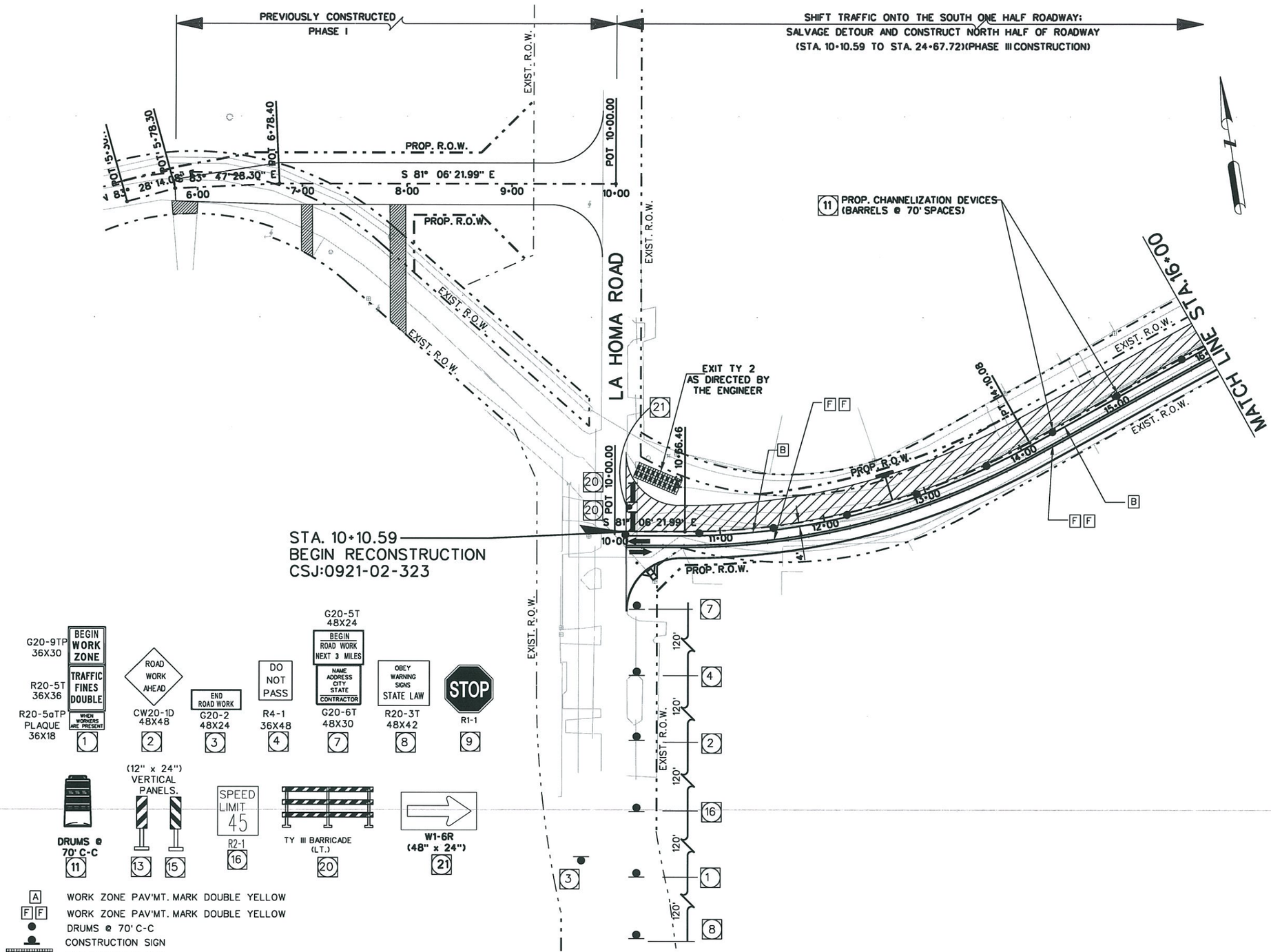
MILE 2 NORTH
TCP PLAN PHASE II
STA. 29+00 TO STA. 38+62.82

SCALE:
HOR. = 1"=100'
VER. =

SHEET 3 OF 3

DN: L.S.		FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN: D.B.T.		6	TX				42
DW: L.S.		STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: D.B.T.		21	HIDALGO	0921	02	323	MILE 2
TR:	
CK TR:	

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					EST.
A	0662-2001	WZPM NON-REMOV (W) 4" (BRK)	LF		
B	0662-2004	WZPM NON-REMOV (W) 4" (SLD)	LF	**596**	
C	0662-2010	WZPM NON-REMOV (W) 8" (DOT)	LF		
D	0662-2016	WZPM NON-REMOV (W) 24" (SLD)	LF		
E	0662-2030	WZPM NON-REMOV (Y) 4" (BRK)	LF		
F	0662-2032	WZPM NON-REMOV (Y) 4" (SLD)	LF	**1,192**	

					EST.
G	0662-2064	WZPM REMOV (W) 4" (BRK)	LF		
H	0662-2067	WZPM REMOV (W) 4" (SLD)	LF		
I	0662-2075	WZPM REMOV (W) 8" (SLD)	LF		
J	0662-2079	WZPM REMOV (W) 24" (SLD)	LF		
K	0662-2097	WZPM REMOV (Y) 4" (BRK)	LF		
L	0662-2099	WZPM REMOV (Y) 4" (SLD)	LF		

					EST.
M	0672-2015	REFL PAV MRKR TY II A-A	EA		
N	0672-2012	REFL PAV MRKR TY I-C	EA		
O	0677-2001	ELIM EXT PAV MRK&MRKRS (4")	LF		
P	0677-2003	ELIM EXT PAV MRK&MRKRS (8")	LF		
Q	0677-2007	ELIM EXT PAV MRK&MRKRS (24")	LF		

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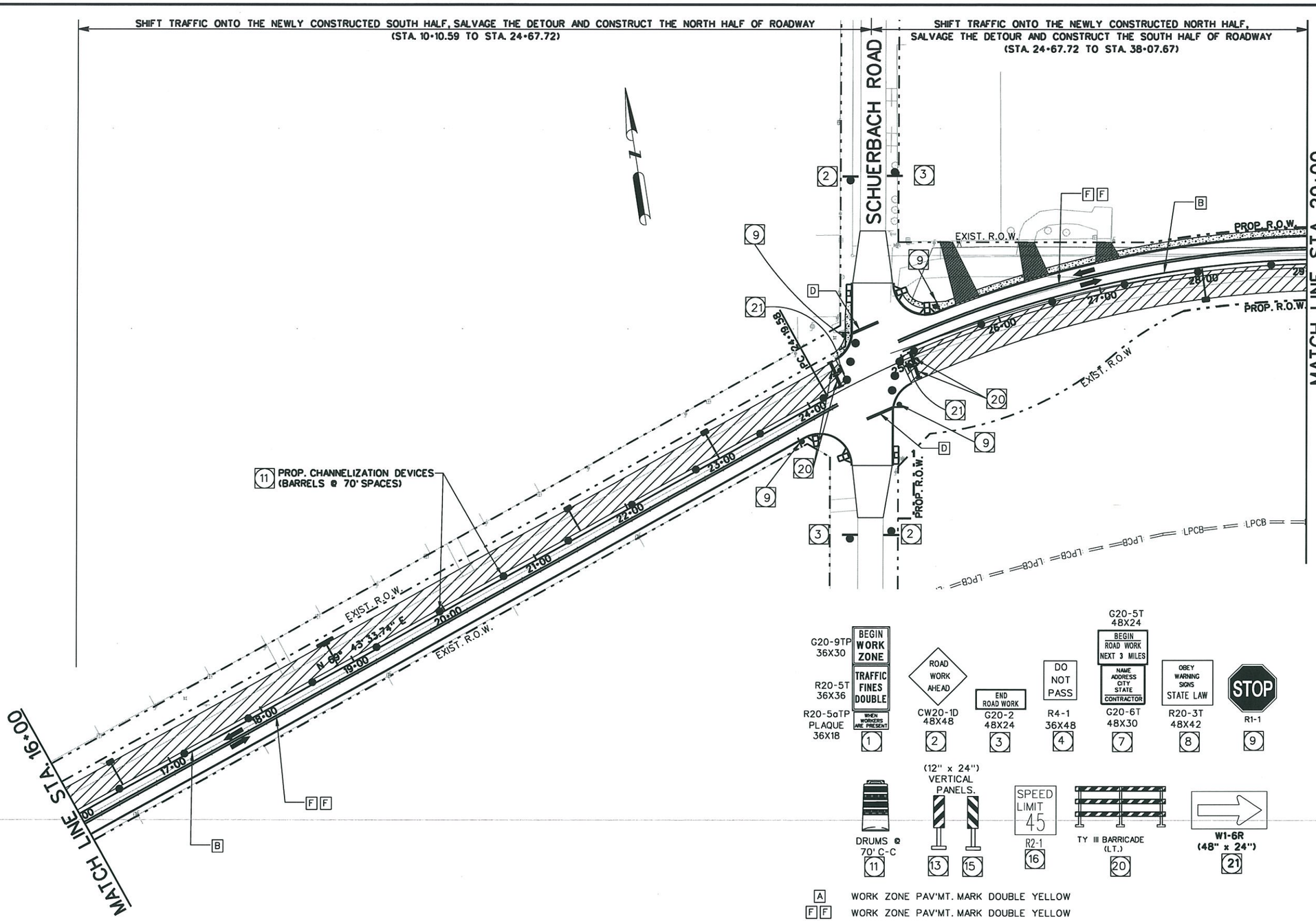
MILE 2 NORTH
TCP PLAN PHASE III
STA. 10·00 TO STA. 16·00

SCALE:
HOR. - 1"=100'
VER. -

SHEET 1 OF 3

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN: D.B.T.	6	TX				43
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: D.B.T.	21	HIDALGO	0921	02	323	MILE 2
TR:						
CK TR:						

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LEGEND

- CONSTRUCTION EXIT TY 2 (78 SY PER EXIT)
- TEMP SED CONT FENCE (32 LF @ EACH INLET)
- NEW CONSTRUCTION
- RECONSTRUCTION OR EXIST. SALVAGE/REMOVAL
- EXISTING PAVEMENT OR PREVIOUS CONSTRUCTION
- TEMP CONSTR. DETOUR
- DIRECTION OF TRAFFIC FLOW
- TYPE III BARRICADE
- CHANNELIZING DEVICE
- CONSTRUCTION SIGN

A WORK ZONE PAV'MT. MARK DOUBLE YELLOW

F F WORK ZONE PAV'MT. MARK DOUBLE YELLOW

DRUMS @ 70' C-C

CONSTRUCTION SIGN

CONSTRUCTION EXIT

					EST.
A	0662-2001	WZPM NON-REMOV (W) 4" (BRK)	LF		
B	0662-2004	WZPM NON-REMOV (W) 4" (SLD)	LF	1,224	
C	0662-2010	WZPM NON-REMOV (W) 8" (DOT)	LF		
D	0662-2016	WZPM NON-REMOV (W) 24" (SLD)	LF	53	
E	0662-2030	WZPM NON-REMOV (Y) 4" (BRK)	LF		
F	0662-2032	WZPM NON-REMOV (Y) 4" (SLD)	LF	2,456	

					EST.
G	0662-2064	WZPM REMOV (W) 4" (BRK)	LF		
H	0662-2067	WZPM REMOV (W) 4" (SLD)	LF		
I	0662-2075	WZPM REMOV (W) 8" (SLD)	LF		
J	0662-2079	WZPM REMOV (W) 24" (SLD)	LF		
K	0662-2097	WZPM REMOV (Y) 4" (BRK)	LF		
L	0662-2099	WZPM REMOV (Y) 4" (SLD)	LF		

					EST.
M	0672-2015	REFL PAV MRKR TY II A-A	EA		
N	0672-2012	REFL PAV MRKR TY I-C	EA		
O	0677-2001	ELIM EXT PAV MRK&MRKRS (4")	LF		
P	0677-2003	ELIM EXT PAV MRK&MRKRS (8")	LF		
Q	0677-2007	ELIM EXT PAV MRK&MRKRS (24")	LF		

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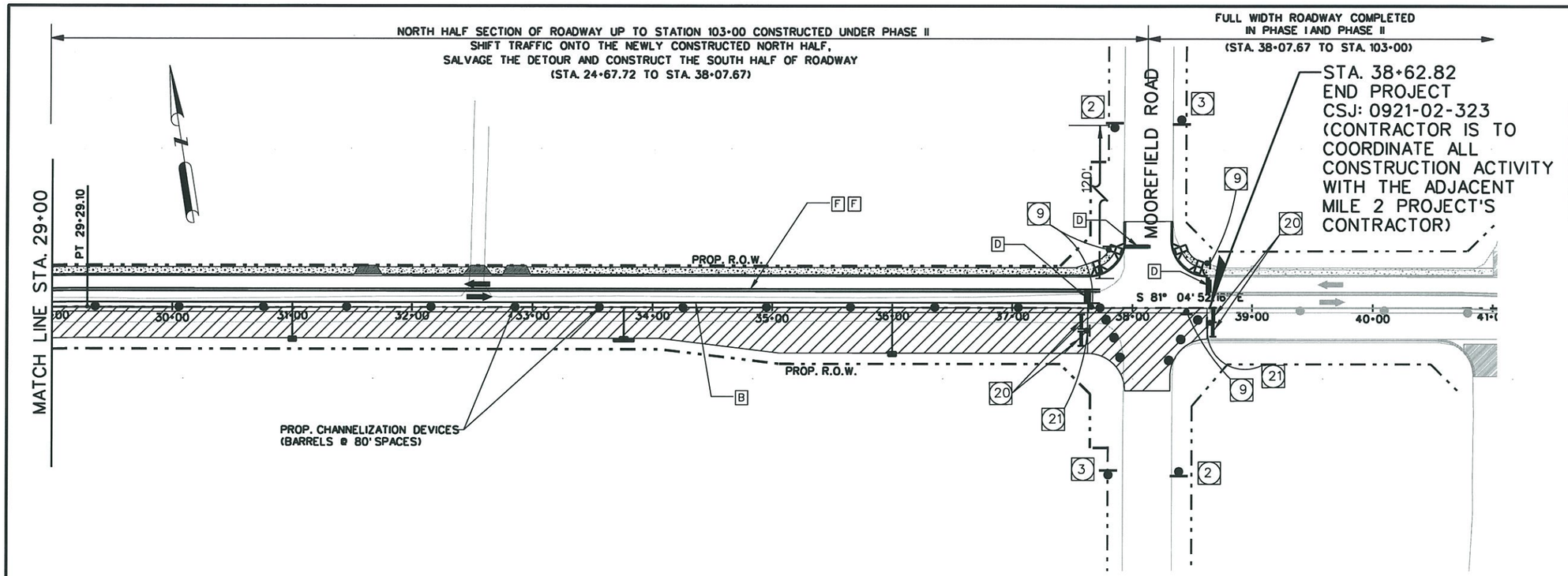
MILE 2 NORTH
TCP PLAN PHASE III
STA. 16+00 TO STA. 29+00

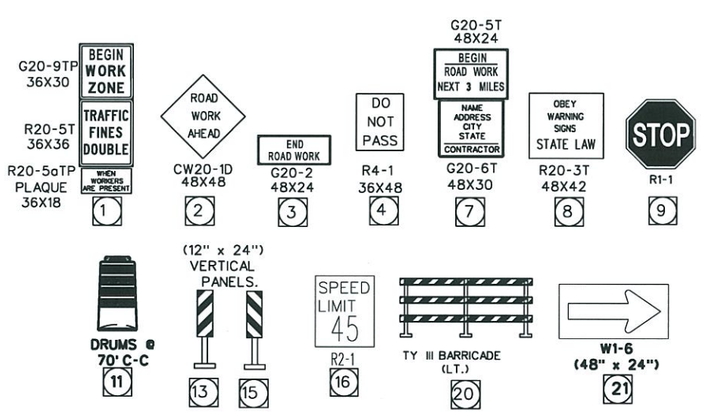
SCALE:
HOR. - 1"=100'
VER. -

SHEET 2 OF 3

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN: D.B.T.	6	TX				44
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: D.B.T.	21	HIDALGO	0921	02	323	MILE 2
TR:						
CK TR:						

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A WORK ZONE PAV'MT. MARK DOUBLE YELLOW
F F WORK ZONE PAV'MT. MARK DOUBLE YELLOW
DRUMS @ 70' C-C
CONSTRUCTION SIGN
CONSTRUCTION EXIT

CSJ: 0921-02-323

					EST.
A	0662-2001	WZPM NON-REMOV (W) 4" (BRK)	LF		
B	0662-2004	WZPM NON-REMOV (W) 4" (SLD)	LF	873	
C	0662-2012	WZPM NON-REMOV (W) 8" (SLD)	LF		
D	0662-2016	WZPM NON-REMOV (W) 24" (SLD)	LF	70	
E	0662-2030	WZPM NON-REMOV (Y) 4" (BRK)	LF		
F	0662-2032	WZPM NON-REMOV (Y) 4" (SLD)	LF	1,746	

					EST.
A	0662-2001	WZPM NON-REMOV (W) 4" (BRK)	LF		
B	0662-2004	WZPM NON-REMOV (W) 4" (SLD)	LF		
C	0662-2010	WZPM NON-REMOV (W) 8" (DOT)	LF		
D	0662-2016	WZPM NON-REMOV (W) 24" (SLD)	LF		
E	0662-2030	WZPM NON-REMOV (Y) 4" (BRK)	LF		
F	0662-2032	WZPM NON-REMOV (Y) 4" (SLD)	LF		

					EST.
G	0662-2064	WZPM REMOV (W) 4" (BRK)	LF		
H	0662-2067	WZPM REMOV (W) 4" (SLD)	LF		
I	0662-2075	WZPM REMOV (W) 8" (SLD)	LF		
J	0662-2079	WZPM REMOV (W) 24" (SLD)	LF		
K	0662-2097	WZPM REMOV (Y) 4" (BRK)	LF		
L	0662-2099	WZPM REMOV (Y) 4" (SLD)	LF		

					EST.
M	0672-2015	REFL PAV MRKR TY II A-A	EA		
N	0672-2012	REFL PAV MRKR TY I-C	EA		
O	0677-2001	ELIM EXT PAV MRK&MRKRS (4")	LF		
P	0677-2003	ELIM EXT PAV MRK&MRKRS (8")	LF		
Q	0677-2007	ELIM EXT PAV MRK&MRKRS (24")	LF		

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MILE 2 NORTH
TCP PLAN PHASE III
STA. 29+00 TO STA. 38+62.82

SCALE:
HOR. - 1"=100'
VER. -

SHEET 3 OF 3

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN: D.B.T.	6	TX				45
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: D.B.T.	21	HIDALGO	0921	02	323	MILE 2
TR:						
CK TR:						

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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

1. The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).

2. The development and design of the Traffic Control Plan (TCP) is the responsibility of the Engineer.

3. The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.

4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.

5. Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets", the TxDOT "Roadway Design Manual" or engineering judgment.

6. When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.

7. The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.

8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.

9. The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.

10. As shown on BC(2), the OBEY WARNING SIGNS STATE LAW sign and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. However, the TRAFFIC FINES DOUBLE sign will not be required on projects consisting solely of mobile operation work, such as striping or milling edgeline rumble strips. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits.

11. Except for devices required by Note 10, traffic control devices should be in place only while work is actually in progress or a definite need exists.

12. The Engineer has the final decision on the location of all traffic control devices.

13. Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

WORKER SAFETY APPAREL NOTES:

1. Workers on foot who are exposed to traffic or to construction equipment within the right-of-way shall wear high-visibility safety apparel meeting the requirements of ISEA "American National Standard for High-Visibility Apparel" labeled as ANSI 107-2004 standard performance for Class 2 or 3 risk exposure. Class 3 garments should be considered for high traffic volume work areas or night time work.

Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found on-line at the web address given below or by contacting:

Texas Department of Transportation
Traffic Operations Division - TE
Phone (512) 416-3118

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

Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

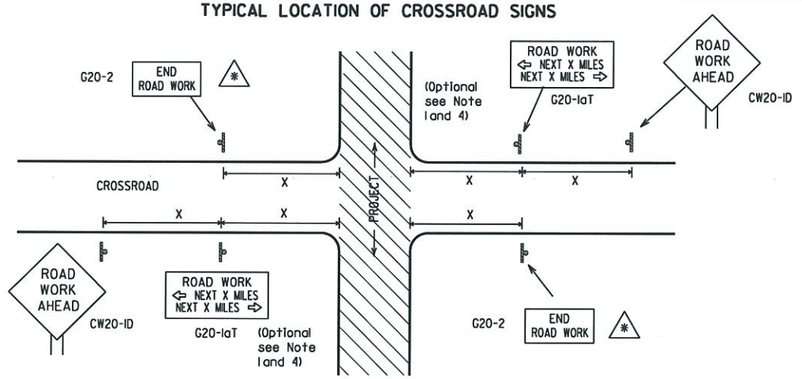
BC(1)-13

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©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	02	323	MILE 2
4-03 5-10	DIST	COUNTY		SHEET NO.
9-07 7-13	PHR	HIDALGO		46

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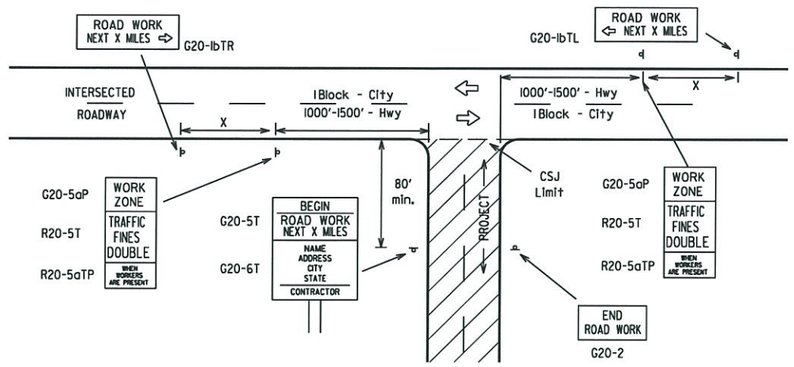
TYPICAL LOCATION OF CROSSROAD SIGNS



⚠ * May be mounted on back of "ROAD WORK AHEAD"(CW20-1D) sign with approval of engineer. (See note 2 below)

1. The typical minimum signing on a crossroad approach should be a "ROAD WORK AHEAD" (CW20-1D)sign and a (G20-2) "END ROAD WORK" sign, unless noted otherwise in plans.
2. The Engineer may use the reduced size 36" x 36" ROAD WORK AHEAD (CW20-1D) sign mounted back to back with the reduced size 36" x 18" "END ROAD WORK"(G20-2) sign on low volume crossroads (see Note 4 under "Typical Construction Warning Sign Size and Spacing"). See the "Standard Highway Sign Designs for Texas" manual for sign details. The Engineer may omit the advance warning signs on low volume crossroads. The Engineer will determine whether a road is low volume. This information shall be shown in the plans.
3. Based on existing field conditions, the Engineer/Inspector may require additional signs such as FLAGGER AHEAD, LOOSE GRAVEL, or other appropriate signs. When additional signs are required, these signs will be considered part of the minimum requirements. The Engineer/Inspector will determine the proper location and spacing of any sign not shown on the BC sheets, Traffic Control Plan sheets or the Work Zone Standard Sheets.
4. The "ROAD WORK NEXT X MILES"(G20-1aT)sign shall be required at high volume crossroads to advise motorists of the length of construction in either direction from the intersection. The Engineer will determine whether a roadway is considered high volume.
5. Additional traffic control devices may be shown elsewhere in the plans for higher volume crossroads.
6. When work occurs in the intersection area, appropriate traffic control devices, as shown elsewhere in the plans or as determined by the Engineer/Inspector, shall be in place.

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

1. The Engineer will determine the types and location of any additional traffic control devices, such as a flagger and accompanying signs, or other signs, that should be used when work is being performed at or near an intersection.
2. If construction closes the road at a T-intersection the Contractor shall place the "CONTRACTOR NAME"(G20-6T) sign behind the Type 3 Barricades for the road closure (see BC(10) also). The "ROAD WORK NEXT X MILES" left arrow(G20-1bTL) and "ROAD WORK NEXT X MILES" right arrow (G20-1bTR)" signs shall be replaced by the detour signing called for in the plans.

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

SIZE

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

SPACING

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

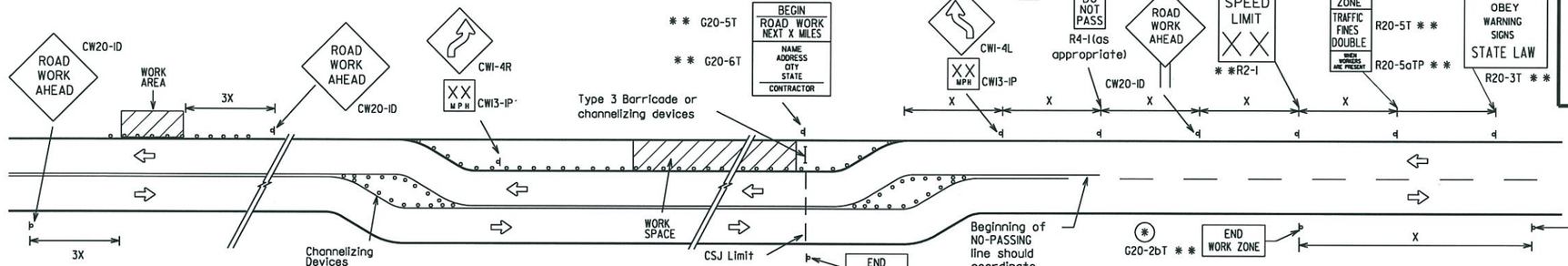
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may be used on low volume crossroads at the discretion of the Engineer. See Note 2 under "Typical Location of Crossroad Signs".
5. Only diamond shaped warning sign sizes are indicated.
6. See sign size listing in "TMUTCD", Sign Appendix or the "Standard Highway Sign Designs for Texas" manual for complete list of available sign design sizes.

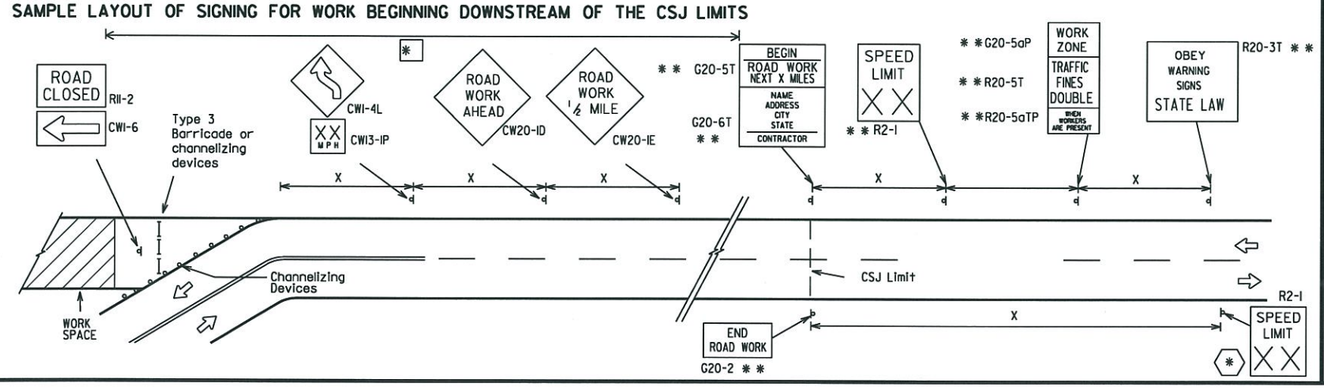
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD"(CW20-1D)signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing of signs and channelizing devices.

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING DOWNSTREAM OF THE CSJ LIMITS



NOTES

The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES"(G20-5T)sign for each specific project. This distance shall replace the "X" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.

* The "BEGIN WORK ZONE"(G20-9TP) and "END WORK ZONE" (G20-2bT) shall be used as shown on the sample layout when advance signs are required outside the CSJ Limits. They inform the motorist of entering or leaving a part of the work zone lying outside the CSJ Limits where traffic fines may double if workers are present.

* * Required CSJ Limit signing. See Note 10 on BC(1). TRAFFIC FINES DOUBLE signs will not be required on projects consisting solely of mobile operations work.

* Area for placement of "ROAD WORK AHEAD" (CW20-1D)sign and other signs or devices as called for on the Traffic Control Plan.

* Contractor will install a regulatory speed limit sign at the end of the work zone.

LEGEND

⊢⊣	Type 3 Barricade
○ ○ ○	Channelizing Devices
▬	Sign
X	See Typical Construction Warning Sign Size and Spacing chart or the TMUTCD for sign spacing requirements.

Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-13

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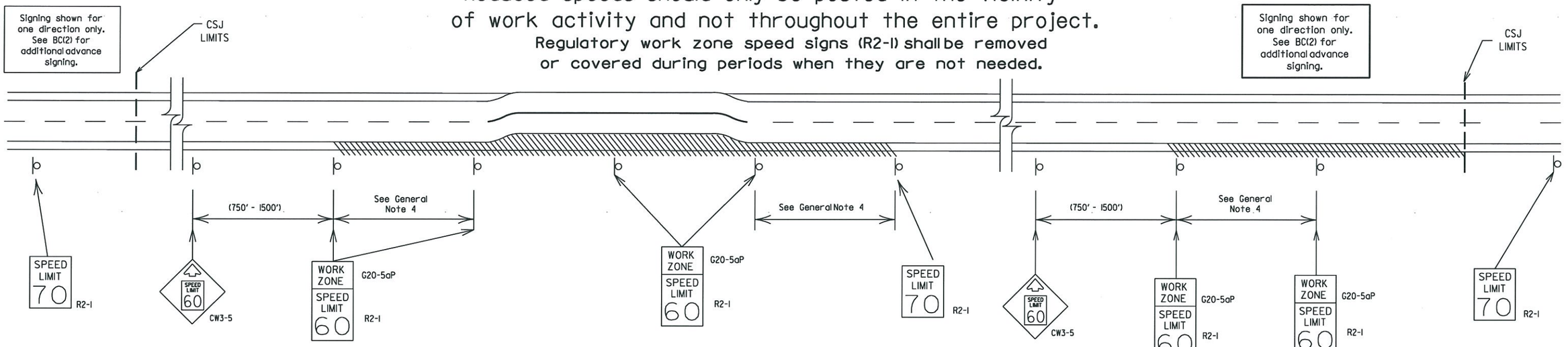
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TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

Work zone speed limits shall be regulatory, established in accordance with the "Procedures for Establishing Speed Zones," and approved by the Texas Transportation Commission, or by City Ordinance when within incorporated City Limits.

Reduced speeds should only be posted in the vicinity of work activity and not throughout the entire project.

Regulatory work zone speed signs (R2-1) shall be removed or covered during periods when they are not needed.



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

a) rough road or damaged pavement surface
b) substantial alteration of roadway geometrics (diversions)
c) construction detours
d) grade
e) width
f) other conditions readily apparent to the driver

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

1. Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
2. Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
3. Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
4. Frequency of work zone speed limit signs should be:
   40 mph and greater 0.2 to 2 miles
   35 mph and less 0.2 to 1 mile
5. Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
6. Fabrication, erection and maintenance of the "ADVANCE SPEED LIMIT" (CW3-5) sign, "WORK ZONE" (G20-5aP) plaque and the "SPEED LIMIT" (R2-1) signs shall not be paid for directly, but shall be considered subsidiary to Item 502.
7. Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
8. Techniques that may help reduce traffic speeds include but are not limited to:
   A. Law enforcement.
   B. Flagger stationed next to sign.
   C. Portable changeable message sign (PCMS).
   D. Low-power (drone) radar transmitter.
   E. Speed monitor trailers or signs.
9. Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.
10. For more specific guidance concerning the type of work, work zone conditions and factors impacting allowable regulatory construction speed zone reduction see TxDOT form #1204 in the TxDOT e-form system.

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Texas Department of Transportation | Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

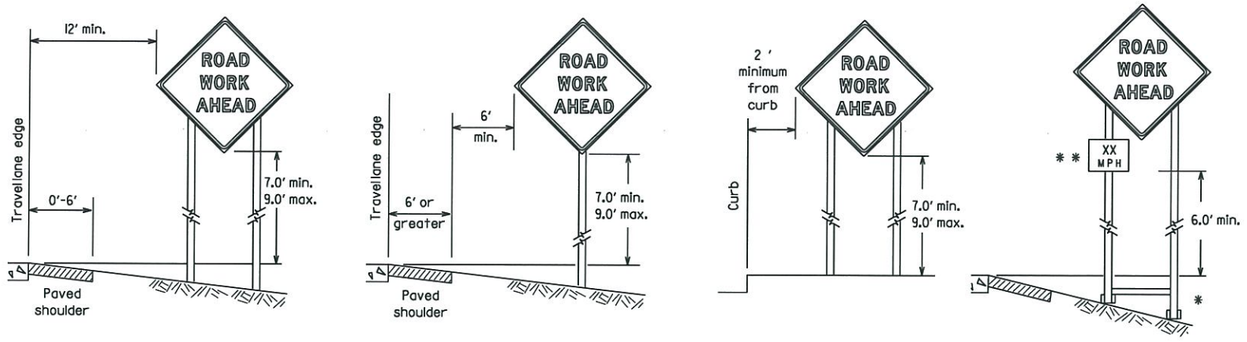
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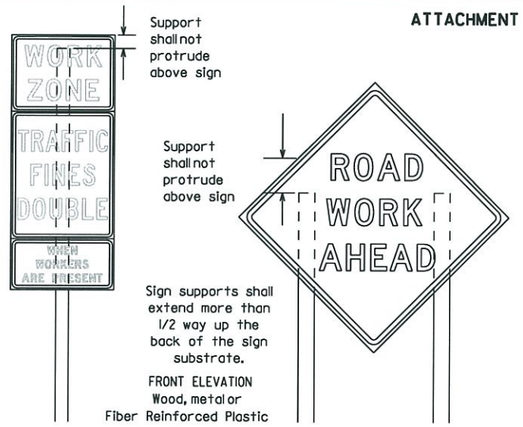
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



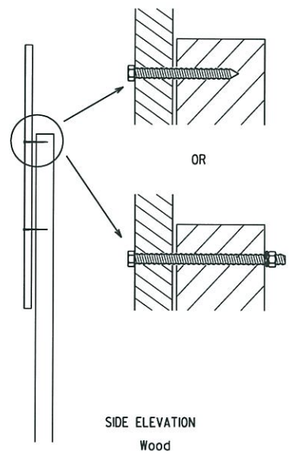
* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

* * When plaques are placed on dual-leg supports, they should be attached to the upright nearest the travellane. Supplemental plaques (advisory or distance) should not cover the surface of the parent sign.

ATTACHMENT FOR SIGN SUPPORTS



Splicing embedded perforated square metal tubing in order to extend post height will only be allowed when the splice is made using four bolts, two above and two below the spice point. Splice must be located entirely behind the sign substrate, not near the base of the support. Splice insert lengths should be at least 5 times nominal post size, centered on the splice and of at least the same gauge material.

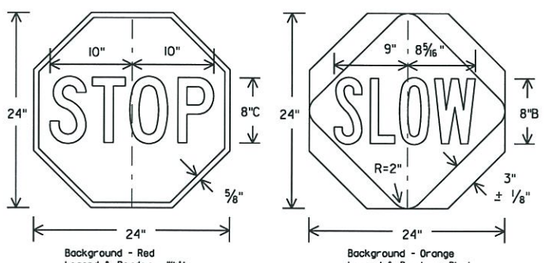


Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

Nails shall NOT be allowed. Each sign shall be attached directly to the sign support. Multiple signs shall not be joined or spliced by any means. Wood supports shall not be extended or repaired by splicing or other means.

STOP/SLOW PADDLES

1. STOP/SLOW paddles are the primary method to control traffic by flaggers. The STOP/SLOW paddle size should be 24" x 24" as detailed below.
2. When used at night, the STOP/SLOW paddle shall be retroreflectorized.
3. STOP/SLOW paddles may be attached to a staff with a minimum length of 6' to the bottom of the sign.
4. Any lights incorporated into the STOP or SLOW paddle faces shall only be as specifically described in Section 6E.03 Hand Signaling Devices in the TMUTCD.



CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

1. Permanent signs are used to give notice of traffic laws or regulations, call attention to conditions that are potentially hazardous to traffic operations, show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, or cultural information. Drivers proceeding through a work zone need the same, if not better route guidance as normally installed on a roadway without construction.
2. When permanent regulatory or warning signs conflict with work zone conditions, remove or cover the permanent signs until the permanent sign message matches the roadway condition.
3. When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
4. If existing signs are to be relocated on their original supports, they shall be installed on crashworthy bases as shown on the SMD Standard sheets. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards. This work should be paid for under the appropriate pay item for relocating existing signs.
5. If permanent signs are to be removed and relocated using temporary supports, the Contractor shall use crashworthy supports as shown on the BC sheets or the CWZTCD. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards during construction. This work should be paid for under the appropriate pay item for relocating existing signs.
6. Any sign or traffic control device that is struck or damaged by the Contractor or his/her construction equipment shall be replaced as soon as possible by the Contractor to ensure proper guidance for the motorists. This will be subsidiary to Item 502.

GENERAL NOTES FOR WORK ZONE SIGNS

1. Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. All signs shall be installed in accordance with the plans or as directed by the Engineer. Signs shall be used to regulate, warn, and guide the traveling public safely through the work zone.
5. The Contractor may furnish either the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD). The Engineer/Inspector may require the Contractor to furnish other work zone signs that are shown in the TMUTCD but may have been omitted from the plans. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary and having both the Inspector and Contractor initial and date the agreed upon changes.
6. The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD). The Contractor shall install the sign support in accordance with the manufacturer's recommendations. If there is a question regarding installation procedures, the Contractor shall furnish the Engineer a copy of the manufacturer's installation recommendations so the Engineer can verify the correct procedures are being followed.
7. The Contractor is responsible for installing signs on approved supports and replacing signs with damaged or cracked substrates and/or damaged or marred reflective sheeting as directed by the Engineer/Inspector.
8. Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1 inch.
9. The Contractor shall replace damaged wood posts. New or damaged wood sign posts shall not be spliced.

DURATION OF WORK (as defined by the "Texas Manual on Uniform Traffic Control Devices" Part 6)

1. The types of sign supports, sign mounting height, the size of signs, and the type of sign substrates can vary based on the type of work being performed. The Engineer is responsible for selecting the appropriate size sign for the type of work being performed. The Contractor is responsible for ensuring the sign support, sign mounting height and substrate meets manufacturer's recommendations in regard to crashworthiness and duration of work requirements.
   a. Long-term stationary - work that occupies a location more than 3 days.
   b. Intermediate-term stationary - work that occupies a location more than one daylight period up to 3 days, or nighttime work lasting more than one hour.
   c. Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
   d. Short, duration - work that occupies a location up to 1 hour.
   e. Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

SIGN MOUNTING HEIGHT

1. The bottom of Long-term/Intermediate-term signs shall be at least 7 feet, but not more than 9 feet, above the paved surface, except as shown for supplemental plaques mounted below other signs.
2. The bottom of Short-term/Short Duration signs shall be a minimum of 1 foot above the pavement surface but no more than 2 feet above the ground.
3. Long-term/Intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
4. Short-term/Short Duration signs shall be used only during daylight and shall be removed at the end of the workday or raised to appropriate Long-term/Intermediate sign height.
5. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the color and retro-reflectivity requirements of DMS-8300 for rigid signs or DMS-8310 for roll-up signs. The web address for DMS specifications is shown on BC(1).
2. White sheeting, meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background.
3. Orange sheeting, meeting the requirements of DMS-8300 Type B or $_{FL}$Type C , shall be used for rigid signs with orange backgrounds.

SIGN LETTERS

1. All sign letters and numbers shall be clear, and open rounded type uppercase alphabet letters as approved by the Federal Highway Administration (FHWA) and as published in the "Standard Highway Sign Design for Texas" manual. Signs, letters and numbers shall be of first class workmanship in accordance with Department Standards and Specifications.

REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
2. Long-term stationary or intermediate stationary signs installed on square metal tubing may be turned away from traffic 90 degrees when the sign message is not applicable. This technique may not be used for signs installed in the median of divided highways or near any intersections where the sign may be seen from approaching traffic.
3. Signs installed on wooden skids shall not be turned at 90 degree angles to the roadway. These signs should be removed or completely covered when not required.
4. When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night, without damaging the sign sheeting.
5. Burlap shall NOT be used to cover signs.
6. Duct tape or other adhesive material shall NOT be affixed to a sign face.
7. Signs and anchor stubs shall be removed and holes backfilled upon completion of work.

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation — Traffic Operations Division Standard

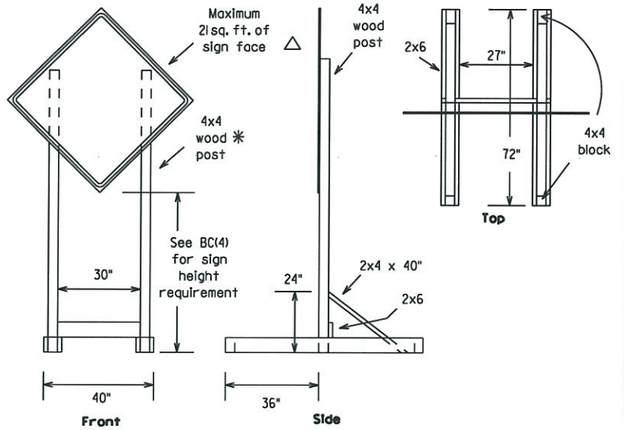
BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

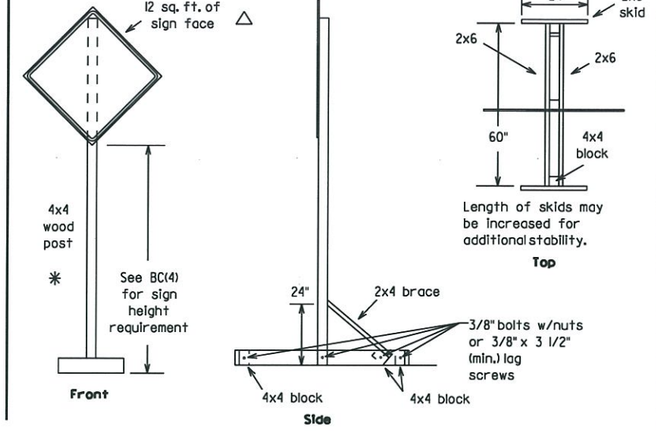
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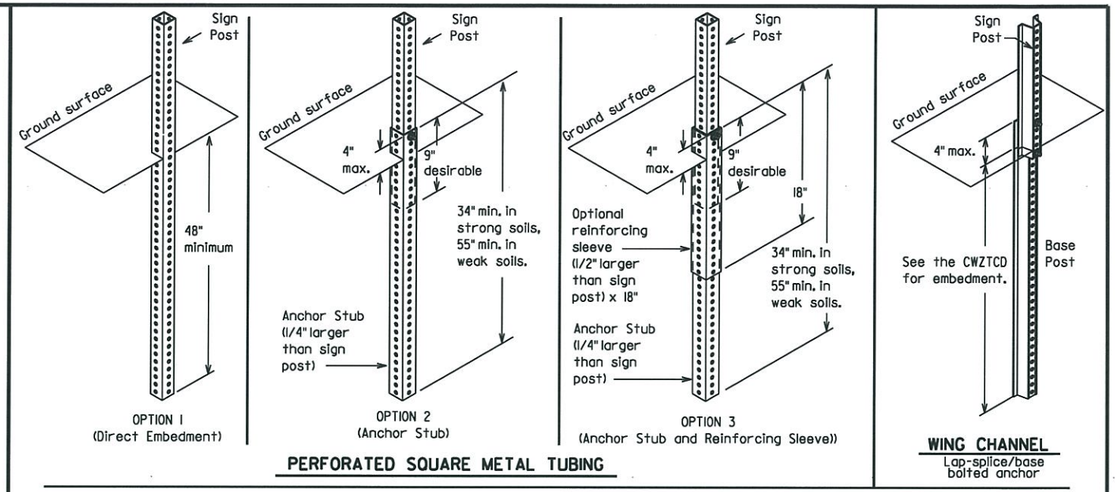
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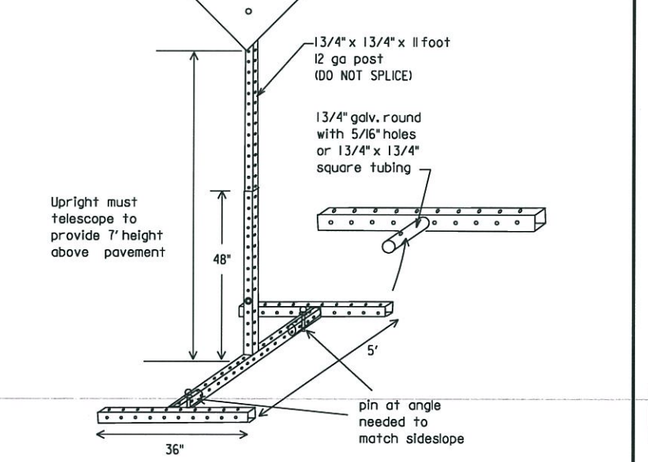
SKID MOUNTED WOOD SIGN SUPPORTS

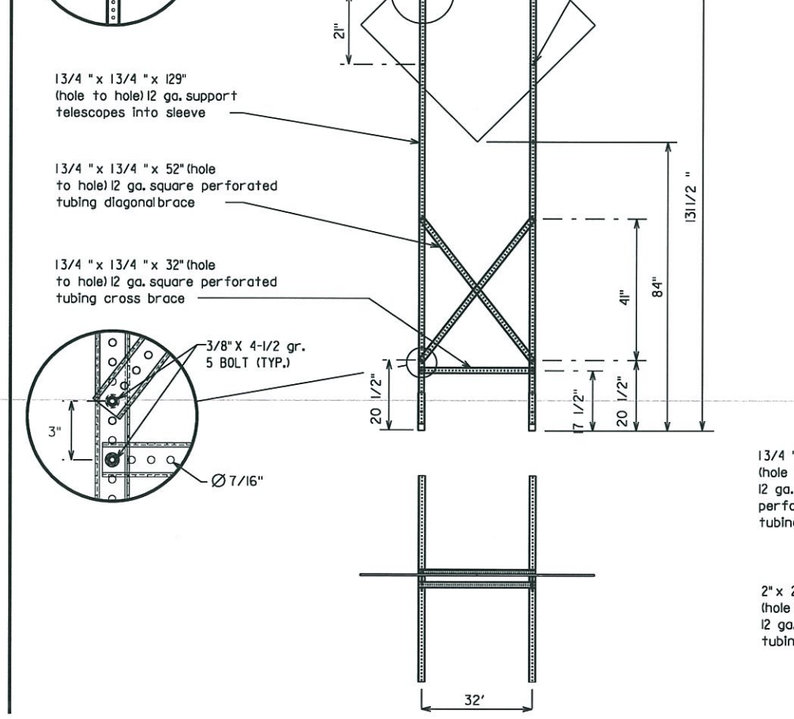
LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS □

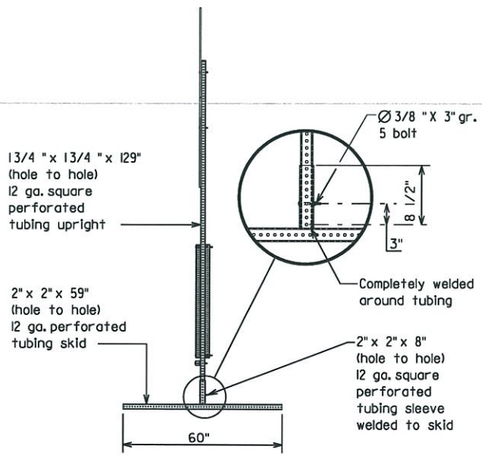


GROUND MOUNTED SIGN SUPPORTS

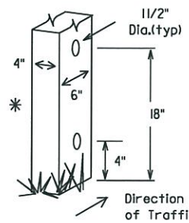
Refer to the CWZTCD and the manufacturer's installation procedure for each type sign support.
The maximum sign square footage shall adhere to the manufacturer's recommendation.
Two post installations can be used for larger signs.







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS



Nominal Post Size	Number of Posts	Maximum Sq. feet of Sign Face	Minimum Soil Embedment	Drilled Hole(s) Required
4 x 4	1	12	36"	NO
4 x 4	2	21	36"	NO
4 x 6	1	21	36"	YES
4 x 6	2	36	36"	YES

WOOD POST SYSTEM FOR GROUND MOUNTED SIGN SUPPORTS

WEDGE ANCHORS

Both steel and plastic Wedge Anchor Systems as shown on the SMD Standard Sheets may be used as temporary sign supports for signs up to 10 square feet of sign face. They may be set in concrete or in sturdy soils if approved by the Engineer. (See web address for "Traffic Engineering Standard Sheets" on BC(1)).

OTHER DESIGNS

MORE DETAILS OF APPROVED LONG/INTERMEDIATE AND SHORT TERM SUPPORTS CAN BE FOUND ON THE CWZTCD LIST. SEE BC(1) FOR WEBSITE LOCATION.

GENERAL NOTES

1. Nails may be used in the assembly of wooden sign supports, but 3/8" bolts with nuts or 3/8" x 3 1/2" lag screws must be used on every joint for final connection.
2. No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
3. When project is completed, all sign supports and foundations shall be removed from the project site. This will be considered subsidiary to Item 502.

□ See BC(4) for definition of "Work Duration."

✱ Wood sign posts MUST be one piece. Splicing will NOT be allowed. Posts shall be painted white.

△ See the CWZTCD for the type of sign substrate that can be used for each approved sign support.

Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-13

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9-07	DIST	COUNTY		SHEET NO.
7-13	PHR	HIDALGO		50

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

PORTABLE CHANGEABLE MESSAGE SIGNS

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

WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD
Alternate	ALT
Avenue	AVE
Best Route	BEST RTE
Boulevard	BLVD
Bridge	BRDG
Cannot	CANT
Center	CTR
Construction Ahead	CONST AHD
CROSSING	XING
Detour Route	DETOUR RTE
Do Not	DONT
East	E
Eastbound	(route) E
Emergency	EMER
Emergency Vehicle	EMER VEH
Entrance, Enter	ENT
Express Lane	EXP LN
Expressway	EXPWY
XXXX Feet	XXXX FT
Fog Ahead	FOG AHD
Freeway	FRWY, FWY
Freeway Blocked	FWY BLKD
Friday	FRI
Hazardous Driving	HAZ DRIVING
Hazardous Material	HAZMAT
High-Occupancy	HOV
Vehicle Highway	HWY
Hour(s)	HR, HRS
Information	INFO
It Is	ITS
Junction	JCT
Left	LFT
Left Lane	LFT LN
Lane Closed	LN CLOSED
Lower Level	LWR LEVEL
Maintenance	MAINT

WORD OR PHRASE	ABBREVIATION
Major	MAJ
Miles	MI
Miles Per Hour	MPH
Minor	MNR
Monday	MON
Normal	NORM
North	N
Northbound	(route) N
Parking	PKING
Road	RD
Right Lane	RT LN
Saturday	SAT
Service Road	SERV RD
Shoulder	SHLDR
Slippery	SLIP
South	S
Southbound	(route) S
Speed	SPD
Street	ST
Sunday	SUN
Telephone	PHONE
Temporary	TEMP
Thursday	THURS
To Downtown	TO DWNTN
Traffic	TRAF
Travelers	TRVLRS
Tuesday	TUES
Time Minutes	TIME MIN
Upper Level	UPR LEVEL
Vehicles (s)	VEH, VEHS
Warning	WARN
Wednesday	WED
Weight Limit	WT LIMIT
West	W
Westbound	(route) W
Wet Pavement	WET PVMT
Will Not	WONT

Roadway designation * IH-number, US-number, SH-number, FM-number

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

- FREEWAY CLOSED X MILE
- FRONTAGE ROAD CLOSED
- ROAD CLOSED AT SH XXX
- SHOULDER CLOSED XXX FT
- ROAD CLSD AT FM XXXX
- RIGHT LN CLOSED XXX FT
- RIGHT X LANES CLOSED
- RIGHT X LANES OPEN
- CENTER LANE CLOSED
- DAYTIME LANE CLOSURES
- NIGHT LANE CLOSURES
- I-XX SOUTH EXIT CLOSED
- VARIOUS LANES CLOSED
- EXIT XXX CLOSED X MILE
- EXIT CLOSED
- RIGHT LN TO BE CLOSED
- MALL DRIVEWAY CLOSED
- X LANES CLOSED TUE - FRI
- XXXXXXXX BLVD CLOSED

Other Condition List

- ROADWORK XXX FT
- ROAD REPAIRS XXXX FT
- FLAGGER XXXX FT
- LANE NARROWS XXXX FT
- RIGHT LN NARROWS XXXX FT
- TWO-WAY TRAFFIC XX MILE
- MERGING TRAFFIC XXXX FT
- CONST TRAFFIC XXX FT
- LOOSE GRAVEL XXXX FT
- UNEVEN LANES XXXX FT
- DETOUR X MILE
- ROUGH ROAD XXXX FT
- ROADWORK PAST SH XXXX
- ROADWORK NEXT FRI-SUN
- BUMP XXXX FT
- US XXX EXIT X MILES
- TRAFFIC SIGNAL XXXX FT
- LANES SHIFT *

* LANES SHIFT in Phase 1 must be used with STAY IN LANE in Phase 2.

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

- MERGE RIGHT
- FORM X LINES RIGHT
- DETOUR NEXT X EXITS
- USE XXXXX RD EXIT
- USE EXIT XXX
- USE EXIT I-XX NORTH
- STAY ON US XXX SOUTH
- USE I-XX E TO I-XX N
- TRUCKS USE US XXX N
- WATCH FOR TRUCKS
- WATCH FOR TRUCKS
- EXPECT DELAYS
- EXPECT DELAYS
- PREPARE TO STOP
- REDUCE SPEED XXX FT
- END SHOULDER USE
- USE OTHER ROUTES
- WATCH FOR WORKERS
- STAY IN LANE *

Location List

- AT FM XXXX
- BEFORE RAILROAD CROSSING
- NEXT X MILES
- PAST US XXX EXIT
- XXXXXXX TO XXXXXXX
- US XXX TO FM XXXX

Warning List

- SPEED LIMIT XX MPH
- MAXIMUM SPEED XX MPH
- MINIMUM SPEED XX MPH
- ADVISORY SPEED XX MPH
- RIGHT LANE EXIT
- USE CAUTION
- DRIVE SAFELY
- DRIVE WITH CARE

** Advance Notice List

- TUE-FRI XX AM- X PM
- APR XX-XX X PM-X AM
- BEGINS MONDAY
- BEGINS MAY XX
- MAY X-X XX PM - XX AM
- NEXT FRI-SUN
- XX AM TO XX PM
- NEXT TUE AUG XX
- TONIGHT XX PM- XX AM

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

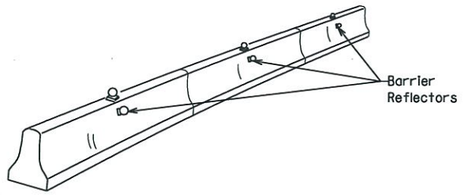
BC(6)-13

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©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	02	323	MILE 2
9-07	DIST	COUNTY		SHEET NO.
7-13	PHR	HIDALGO		51

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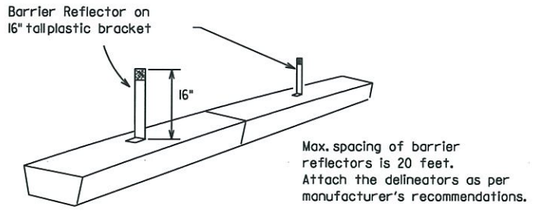
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1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 512.

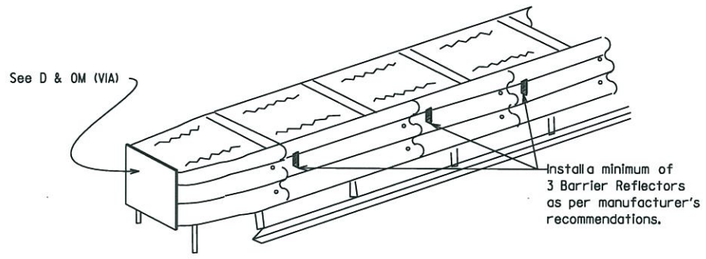


CONCRETE TRAFFIC BARRIER (CTB)

3. Where traffic is on one side of the CTB, two (2) Barrier Reflectors shall be mounted in approximately the midsection of each section of CTB. An alternate mounting location is uniformly spaced at one end of each CTB. This will allow for attachment of a barrier grapple without damaging the reflector. The Barrier Reflector mounted on the side of the CTB shall be located directly below the reflector mounted on top of the barrier, as shown in the detail above.
4. Where CTB separates two-way traffic, three barrier reflectors shall be mounted on each section of CTB. The reflector unit on top shall have two yellow reflective faces (Bi-Directional)while the reflectors on each side of the barrier shall have one yellow reflective face, as shown in the detail above.
5. When CTB separates traffic traveling in the same direction, no barrier reflectors will be required on top of the CTB.
6. Barrier Reflector units shall be yellow or white in color to match the edgeline being supplemented.
7. Maximum spacing of Barrier Reflectors is forty (40) feet.
8. Pavement markers or temporary flexible-reflective roadway marker tabs shall NOT be used as CTB delineation.
9. Attachment of Barrier Reflectors to CTB shall be per manufacturer's recommendations.
10. Missing or damaged Barrier Reflectors shall be replaced as directed by the Engineer.
11. Single slope barriers shall be delineated as shown on the above detail.



LOW PROFILE CONCRETE BARRIER (LPCB)

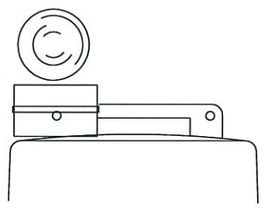


DELINEATION OF END TREATMENTS

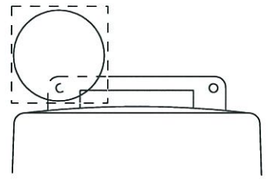
END TREATMENTS FOR CTB'S USED IN WORK ZONES

End treatments used on CTB's in work zones shall meet crashworthy standards as defined in the National Cooperative Highway Research Report 350. Refer to the CWZTCD List for approved end treatments and manufacturers.

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.



Warning reflector may be round or square. Must have a yellow reflective surface area of at least 30 square inches

WARNING LIGHTS

1. Warning lights shall meet the requirements of the TMUTCD.
2. Warning lights shall NOT be installed on barricades.
3. Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "FL". The Type A Warning Lights shall not be used with signs manufactured with Type B or C sheeting meeting the requirements of Departmental Material Specification DMS-8300.
4. Type-C and Type D 360 degree Steady Burn Lights are intended to be used in a series for delineation to supplement other traffic control devices. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "SB".
5. The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
6. When required by the Engineer, the Contractor shall furnish a copy of the warning lights certification. The warning light manufacturer will certify the warning lights meet the requirements of the latest ITE Purchase Specifications for Flashing and Steady-Burn Warning Lights.
7. When used to delineate curves, Type-C and Type D Steady Burn Lights should only be placed on the outside of the curve, not the inside.
8. The location of warning lights and warning reflectors on drums shall be as shown elsewhere in the plans.

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

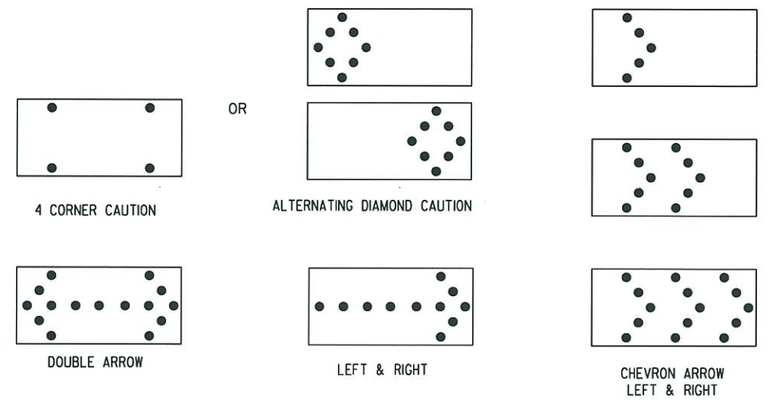
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing devices to form a merging taper may be used for delineation. If used, the successive flashing of the sequential warning lights should occur from the beginning of the taper to the end of the merging taper in order to identify the desired vehicle path. The rate of flashing for each light shall be 65 flashes per minute, plus or minus 10 flashes.
4. Type C and D steady-burn warning lights are intended to be used in a series to delineate the edge of the travel lane on detours, on lane changes, on lane closures, and on other similar conditions.
5. Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
6. Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
7. The maximum spacing for warning lights on drums should be identical to the channelizing device spacing.

WARNING REFLECTORS MOUNTED ON PLASTIC DRUMS AS A SUBSTITUTE FOR TYPE C (STEADY BURN) WARNING LIGHTS

1. A warning reflector or approved substitute may be mounted on a plastic drum as a substitute for a Type C, steady burn warning light at the discretion of the Contractor unless otherwise noted in the plans.
2. The warning reflector shall be yellow in color and shall be manufactured using a sign substrate approved for use with plastic drums listed on the CWZTCD.
3. The warning reflector shall have a minimum retroreflective surface area (one-side) of 30 square inches.
4. Round reflectors shall be fully reflectorized, including the area where attached to the drum.
5. Square substrates must have a minimum of 30 square inches of reflectorized sheeting. They do not have to be reflectorized where it attaches to the drum.
6. The side of the warning reflector facing approaching traffic shall have sheeting meeting the color and retroreflectivity requirements for DMS 8300-Type B or Type C.
7. When used near two-way traffic, both sides of the warning reflector shall be reflectorized.
8. The warning reflector should be mounted on the side of the handle nearest approaching traffic.
9. The maximum spacing for warning reflectors should be identical to the channelizing device spacing requirements.

Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

1. The Flashing Arrow Board should be used for all lane closures on multi-lane roadways, or slow moving maintenance or construction activities on the travel lanes.
2. Flashing Arrow Boards should not be used on two-lane, two-way roadways, detours, diversions or work on shoulders unless the "CAUTION" display (see detail below) is used.
3. The Engineer/Inspector shall choose all appropriate signs, barricades and/or other traffic control devices that should be used in conjunction with the Flashing Arrow Board.
4. The Flashing Arrow Board should be able to display the following symbols:



5. The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
6. The straight line caution display is NOT ALLOWED.
7. The Flashing Arrow Board shall be capable of minimum 50 percent dimming from rated lamp voltage. The flashing rate of the lamps shall not be less than 25 nor more than 40 flashes per minute.
8. Minimum lamp "on time" shall be approximately 50 percent for the flashing arrow and equal intervals of 25 percent for each sequential phase of the flashing chevron.
9. The sequential arrow display is NOT ALLOWED.
10. The flashing arrow display is the TxDOT standard; however, the sequential Chevron display may be used during daylight operations.
11. The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
12. A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
13. A full matrix PCMS may be used to simulate a Flashing Arrow Board provided it meets visibility, flash rate and dimming requirements on this sheet for the same size arrow.
14. Minimum mounting height of trailer mounted Arrow Boards should be 7 feet from roadway to bottom of panel.

REQUIREMENTS			
TYPE	MINIMUM SIZE	MINIMUM NUMBER OF PANEL LAMPS	MINIMUM VISIBILITY DISTANCE
B	30 x 60	13	3/4 mile
C	48 x 96	15	1 mile

ATTENTION
Flashing Arrow Boards shall be equipped with automatic dimming devices.

WHEN NOT IN USE, REMOVE THE ARROW BOARD FROM THE RIGHT-OF-WAY OR PLACE THE ARROW BOARD BEHIND CONCRETE TRAFFIC BARRIER OR GUARDRAIL.

FLASHING ARROW BOARDS

SHEET 7 OF 12

TRUCK-MOUNTED ATTENUATORS

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the National Cooperative Highway Research Report No. 350 (NCHRP 350) or the Manual for Assessing Safety Hardware (MASH).
2. Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
3. Refer to the CWZTCD for a list of approved TMAs.
4. TMAs are required on freeways unless otherwise noted in the plans.
5. A TMA should be used anytime that it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work performance.
6. The only reason a TMA should not be required is when a work area is spread down the roadway and the work crew is an extended distance from the TMA.

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION ARROW PANEL, REFLECTORS, WARNING LIGHTS & ATTENUATOR

BC(7)-13

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©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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9-07	DIST	COUNTY		SHEET NO.
7-13	PHR	HIDALGO		52

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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

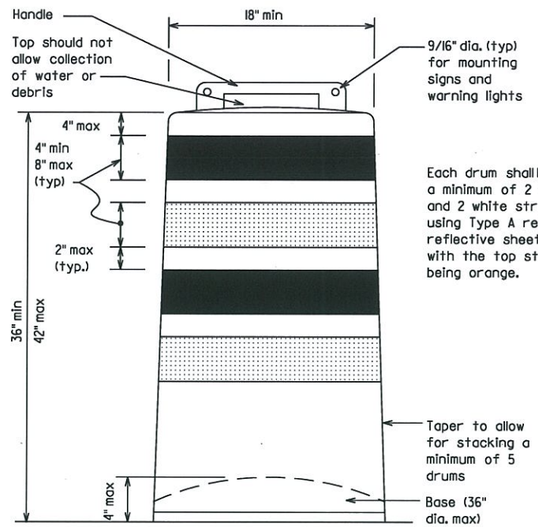
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

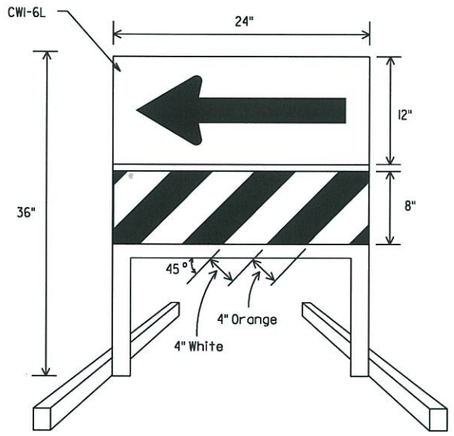
RETROREFLECTIVE SHEETING

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

BALLAST

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

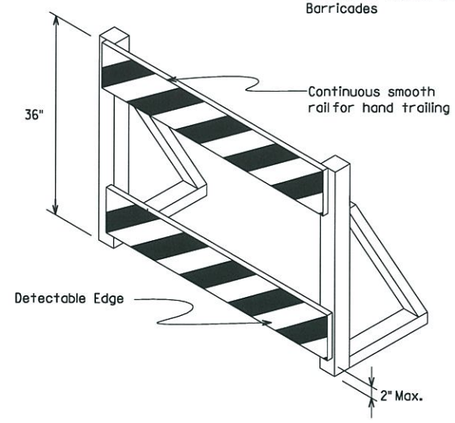




DIRECTION INDICATOR BARRICADE

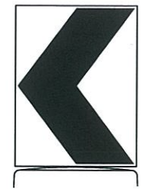
1. The Direction Indicator Barricade may be used in tapers, transitions, and other areas where specific directional guidance to drivers is necessary.
2. If used, the Direction Indicator Barricade should be used in series to direct the driver through the transition and into the intended travel lane.
3. The Direction Indicator Barricade shall consist of One-Direction Large Arrow (CWI-6) sign in the size shown with a black arrow on a background of Type B_{FL} or Type C_{FL} Orange retroreflective sheeting above a rail with Type A retroreflective sheeting in alternating 4" white and orange stripes sloping downward at an angle of 45 degrees in the direction road users are to pass. Sheeting types shall be as per DMS 8300.
4. Double arrows on the Direction Indicator Barricade will not be allowed.
5. Approved manufacturers are shown on the CWZTCD List. Ballast shall be as approved by the manufacturers instructions.

This detail is not intended for fabrication. See note 3 and the CWZTCD list for providers of approved Detectable Pedestrian Barricades



DETECTABLE PEDESTRIAN BARRICADES

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



18" x 24" Sign
(Maximum Sign Dimension)
Chevron CWI-8, Opposing Traffic Lane Divider, Driveway sign D70a, Keep Right R4 series or other signs as approved by Engineer



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

Texas Department of Transportation | Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

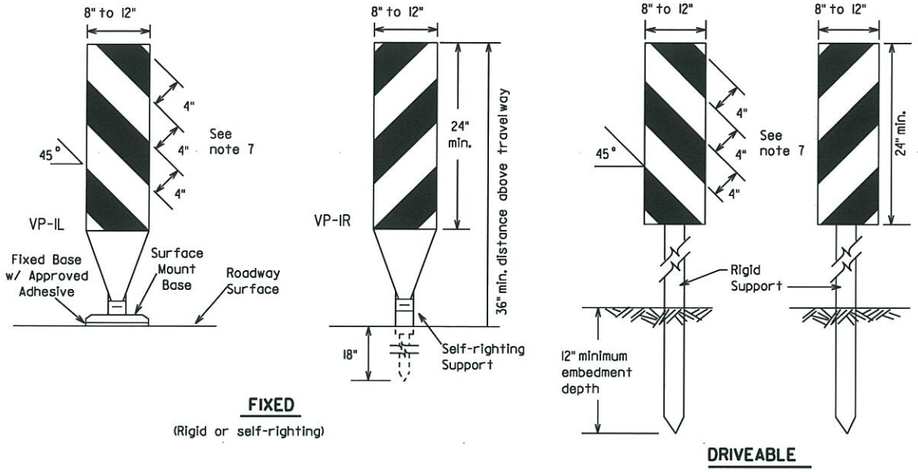
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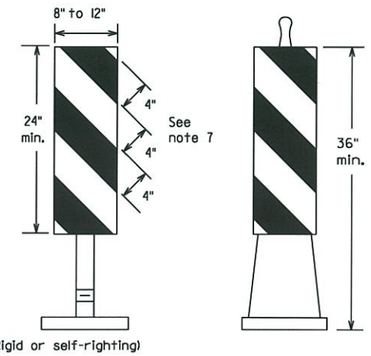
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FIXED

(Rigid or self-righting)

DRIVEABLE

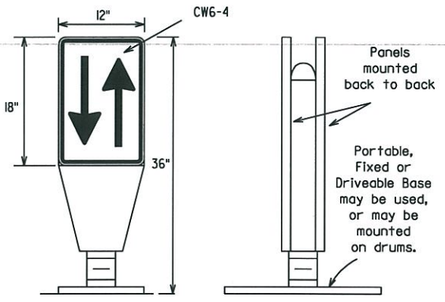


(Rigid or self-righting)

PORTABLE

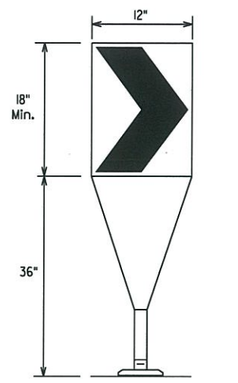
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual Appendix B "Treatment of Pavement Drop-offs in Work Zones" for additional guidelines on the use of VP's for drop-offs.
3. VP's should be mounted back to back if used at the edge of cuts adjacent to two-way two lane roadways. Stripes are to be reflective orange and reflective white and should always slope downward toward the travellane.
4. VP's used on expressways and freeways or other high speed roadways, may have more than 270 square inches of retroreflective area facing traffic.
5. Self-righting supports are available with portable base. See "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
6. Sheeting for the VP's shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300, unless noted otherwise.
7. Where the height of reflective material on the vertical panel is 36 inches or greater, a panel stripe of 6 inches shall be used.

VERTICAL PANELS (VPs)



1. Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base is secured to the pavement with an adhesive or rubber weight to minimize movement caused by a vehicle impact or wind gust.
2. The OTLD may be used in combination with 42" cones or VPs.
3. Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs placed between the OTLD's should not exceed 100 foot spacing.
4. The OTLD shall be orange with a black non-reflective legend. Sheeting for the OTLD shall be retroreflective Type B or Type C conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



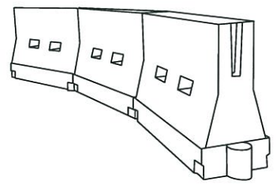
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

CHEVRONS

GENERAL NOTES

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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

1. Water ballasted systems used as barriers shall not be used solely to channelize road users, but also to protect the work space per the appropriate NCHRP 350 crashworthiness requirements based on roadway speed and barrier application.
2. Water ballasted systems used to channelize vehicular traffic shall be supplemented with retroreflective delineation or channelizing devices to improve daytime/nighttime visibility. They may also be supplemented with pavement markings.
3. Water ballasted systems used as barriers shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. Water ballasted systems used as barriers should not be used for a merging taper except in low speed (less than 45 MPH) urban areas. When used on a taper in a low speed urban area, the taper shall be delineated and the taper length should be designed to optimize road user operations considering the available geometric conditions.
5. When water ballasted systems used as barriers have blunt ends exposed to traffic, they should be attenuated as per manufacturer recommendations or flared to a point outside the clear zone.

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

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'
35		205'	225'	245'	35'	70'
40		265'	295'	320'	40'	80'
45	L=WS	450'	495'	540'	45'	90'
50		500'	550'	600'	50'	100'
55		550'	605'	660'	55'	110'
60		600'	660'	720'	60'	120'
65		650'	715'	780'	65'	130'
70		700'	770'	840'	70'	140'
75		750'	825'	900'	75'	150'
80		800'	880'	960'	80'	160'

** Taper lengths have been rounded off.
L=Length of Taper (FT.) W=Width of Offset (FT.)
S=Posted Speed (MPH)

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-13

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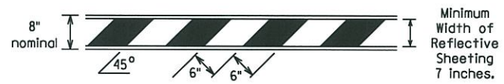
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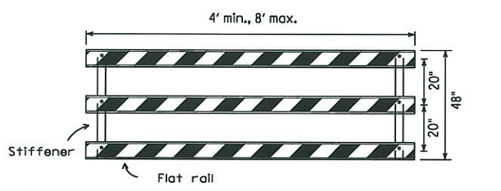
TYPE 3 BARRICADES

1. Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) for details of the Type 3 Barricades and a list of all materials used in the construction of Type 3 Barricades.
2. Type 3 Barricades shall be used at each end of construction projects closed to all traffic.
3. Barricades extending across a roadway should have stripes that slope downward in the direction toward which traffic must turn in detouring. When both right and left turns are provided, the chevron striping may slope downward in both directions from the center of the barricade. Where no turns are provided at a closed road striping should slope downward in both directions toward the center of roadway.
4. Striping of rails, for the right side of the roadway, should slope downward to the left. For the left side of the roadway, striping should slope downward to the right.
5. Identification markings may be shown only on the back of the barricade rails. The maximum height of letters and/or company logos used for identification shall be 1".
6. Barricades shall not be placed parallel to traffic unless an adequate clear zone is provided.
7. Warning lights shall NOT be installed on barricades.
8. Where barricades require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand is recommended. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight. Sand bags shall not be stacked in a manner that covers any portion of a barricade rails reflective sheeting. Rock, concrete, iron, steel or other solid objects will NOT be permitted. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall not be used for sandbags. Sandbags shall only be placed along or upon the base supports of the device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners.
9. Sheeting for barricades shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.



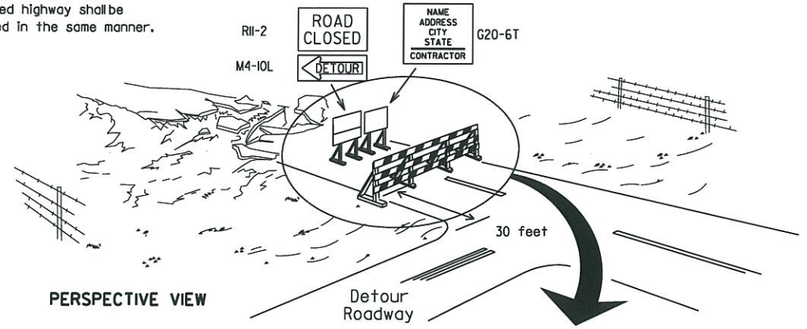
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



Stiffener may be inside or outside of support, but no more than 2 stiffeners shall be allowed on one barricade.

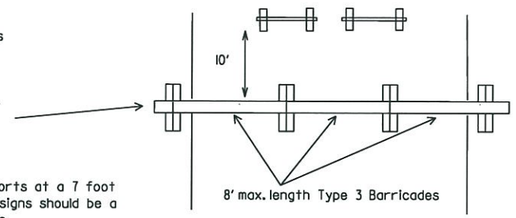
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

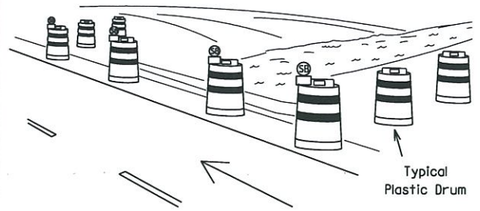
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

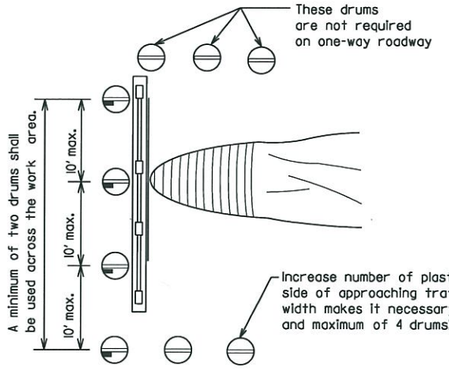
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

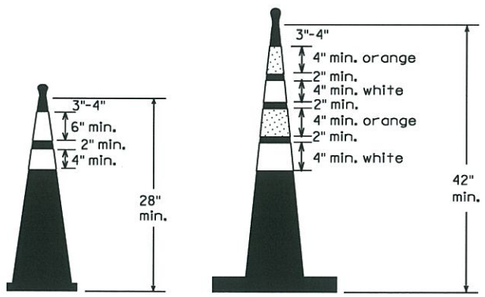
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder width is greater than 12 feet, steady-burn lights may be omitted if drums are used.
5. Drums must extend the length of the culvert widening.



PLAN VIEW

LEGEND	
	Plastic drum
	Plastic drum with steady burn light or yellow warning reflector
SB	Steady burn warning light or yellow warning reflector

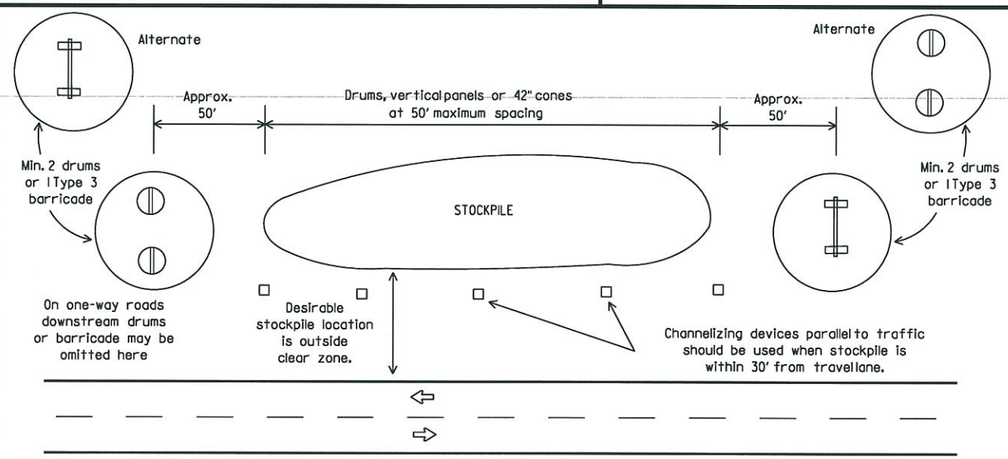
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



28" Cones shall have a minimum weight of 9 1/2 lbs.

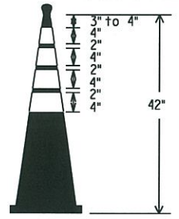
42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

1. Traffic cones and tubular markers shall be predominantly orange, and meet the height and weight requirements shown above.
2. One-piece cones have the body and base of the cone molded in one consolidated unit. Two-piece cones have a cone shaped body and a separate rubber base, or ballast, that is added to keep the device upright and in place.
3. Two-piece cones may have a handle or loop extending up to 8" above the minimum height shown, in order to aid in retrieving the device.
4. Cones or tubular markers used at night shall have white or white and orange reflective bands as shown above. The reflective bands shall have a smooth, sealed outer surface and meet the requirements of Departmental Material Specification DMS-8300 Type A.
5. 28" cones and tubular markers are generally suitable for short duration and short-term stationary work as defined on BC(4). These should not be used for intermediate-term or long-term stationary work unless personnel is on-site to maintain them in their proper upright position.
6. 42" two-piece cones, vertical panels or drums are suitable for all work zone durations.
7. Cones or tubular markers used on each project should be of the same size and shape.



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

THIS DEVICE SHALL NOT BE USED ON PROJECTS LET AFTER MARCH 2014.



EDGELINE CHANNELIZER

1. This device is intended only for use in place of a vertical panel to channelize traffic by indicating the edge of the travel lane. It is not intended to be used in transitions or tapers.
2. This device shall not be used to separate lanes of traffic (opposing or otherwise) or warn of objects.
3. This device is based on a 42 inch, two-piece cone with an alternate striping pattern: four 4 inch retroreflective bands, with an approximate 2 inch gap between bands. The color of the band should correspond to the color of the edgeline (yellow for left edgeline, white for right edgeline) for which the device is substituted or for which it supplements. The reflectorized bands shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300, unless otherwise noted.
4. The base must weigh a minimum of 30 lbs.

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-13

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WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

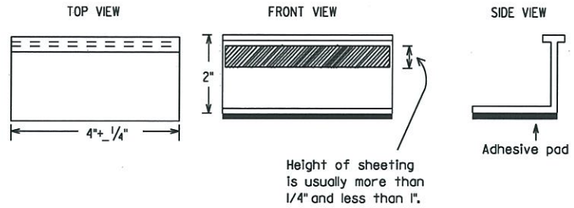
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

1. Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of DMS-8242.
2. Tabs detailed on this sheet are to be inspected and accepted by the Engineer or designated representative. Sampling and testing is not normally required, however at the option of the Engineer, either "A" or "B" below may be imposed to assure quality before placement on the roadway.
   A. Select five (5) or more tabs at random from each lot or shipment and submit to the Construction Division, Materials and Pavement Section to determine specification compliance.
   B. Select five (5) tabs and perform the following test. Affix five (5) tabs at 24 inch intervals on an asphaltic pavement in a straight line. Using a medium size passenger vehicle or pickup, run over the markers with the front and rear tires at a speed of 35 to 40 miles per hour, four (4) times in each direction. No more than one (1) out of the five (5) reflective surfaces shall be lost or displaced as a result of this test.
3. Small design variances may be noted between tab manufacturers.
4. See Standard Sheet WZ(STPM) for tab placement on new pavements. See Standard Sheet TCP(7-1) for tab placement on seal coat work.

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

1. Raised pavement markers used as guidemarks shall be from the approved product list, and meet the requirements of DMS-4200.
2. All temporary construction raised pavement markers provided on a project shall be of the same manufacturer.
3. Adhesive for guidemarks shall be bituminous material hot applied or butyl rubber pad for all surfaces, or thermoplastic for concrete surfaces.

Guidemarks shall be designated as:
YELLOW - (two amber reflective surfaces with yellow body).
WHITE - (one silver reflective surface with white body).

DEPARTMENTAL MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
TRAFFIC BUTTONS	DMS-4300
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY REMOVABLE, PREFABRICATED PAVEMENT MARKINGS	DMS-8241
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS	DMS-8242

A list of prequalified reflective raised pavement markers, non-reflective traffic buttons, roadway marker tabs and other pavement markings can be found at the Material Producer List web address shown on BC(1).

Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

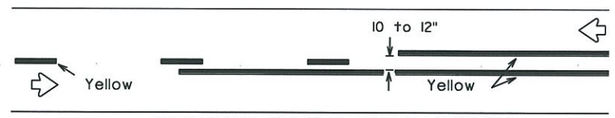
BC(11)-13

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1-02 9-07	PHR	HIDALGO		56

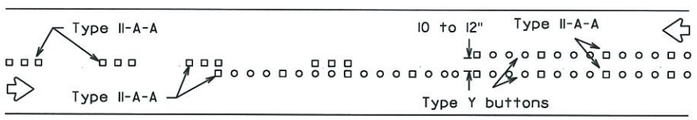
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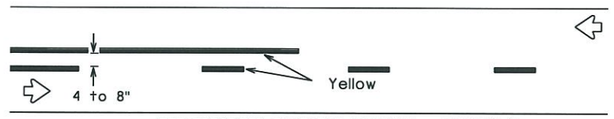
PAVEMENT MARKING PATTERNS



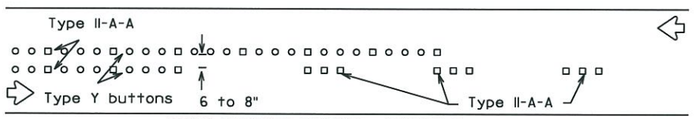
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



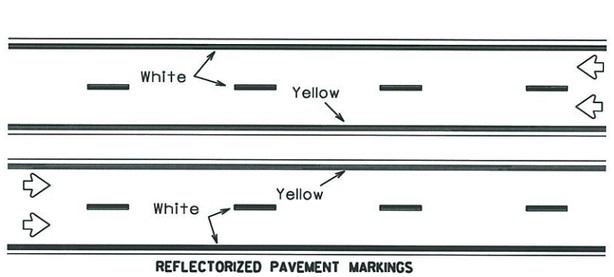
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



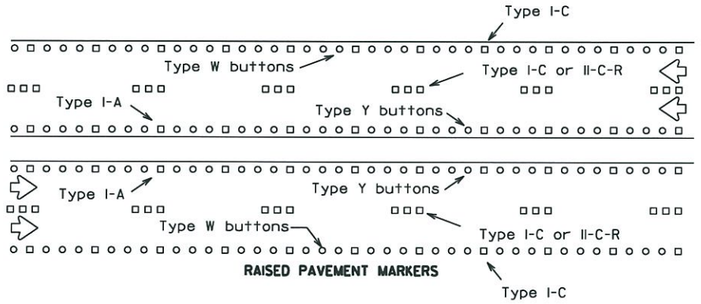
RAISED PAVEMENT MARKERS - PATTERN B

Pattern A is the TXDOT Standard, however Pattern B may be used if approved by the Engineer.
Prefabricated markings may be substituted for reflectorized pavement markings.

CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO-LANE, TWO-WAY HIGHWAYS



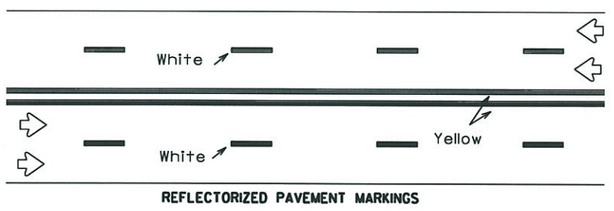
REFLECTORIZED PAVEMENT MARKINGS



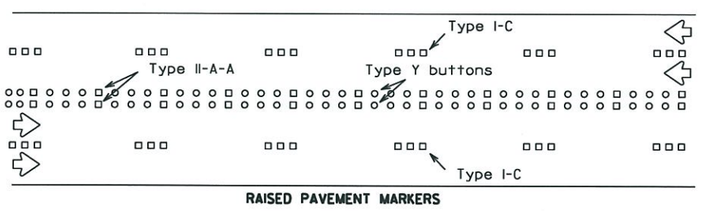
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



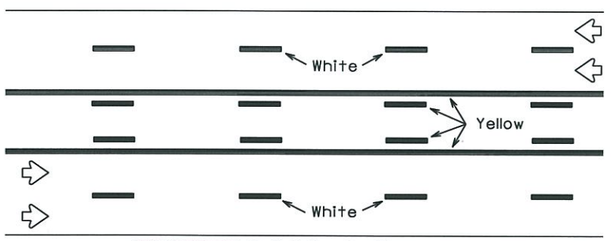
REFLECTORIZED PAVEMENT MARKINGS



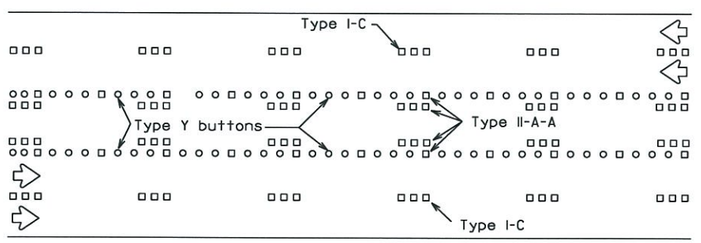
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS

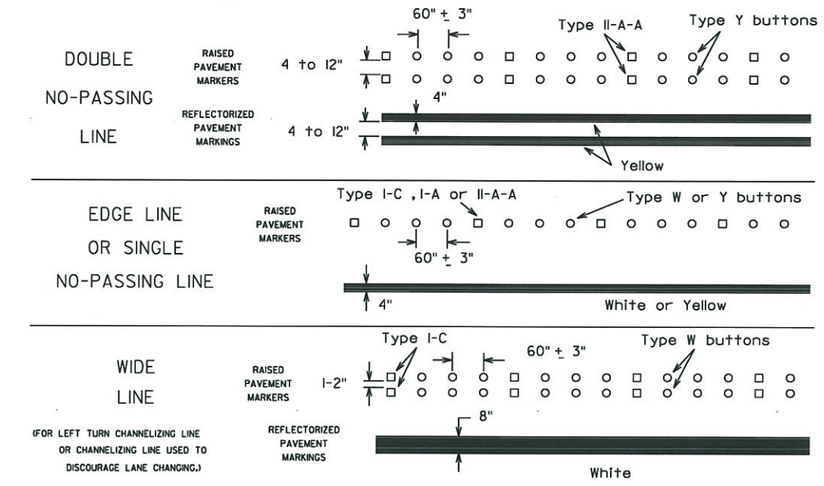


RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

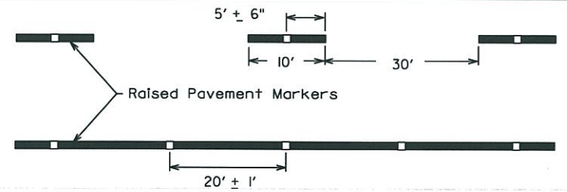
TWO-WAY LEFT TURN LANE

STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

If raised pavement markers are used to supplement REMOVABLE markings, the markers shall be applied to the top of the tape at the approximate mid length of tape used for broken lines or at 20 foot spacing for solid lines. This allows an easier removal of raised pavement markers and tape.



Centerline only - not to be used on edge lines

Raised pavement markers used as standard pavement markings shall be from the approved products list and meet the requirements of Item 672 "RAISED PAVEMENT MARKERS."

Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

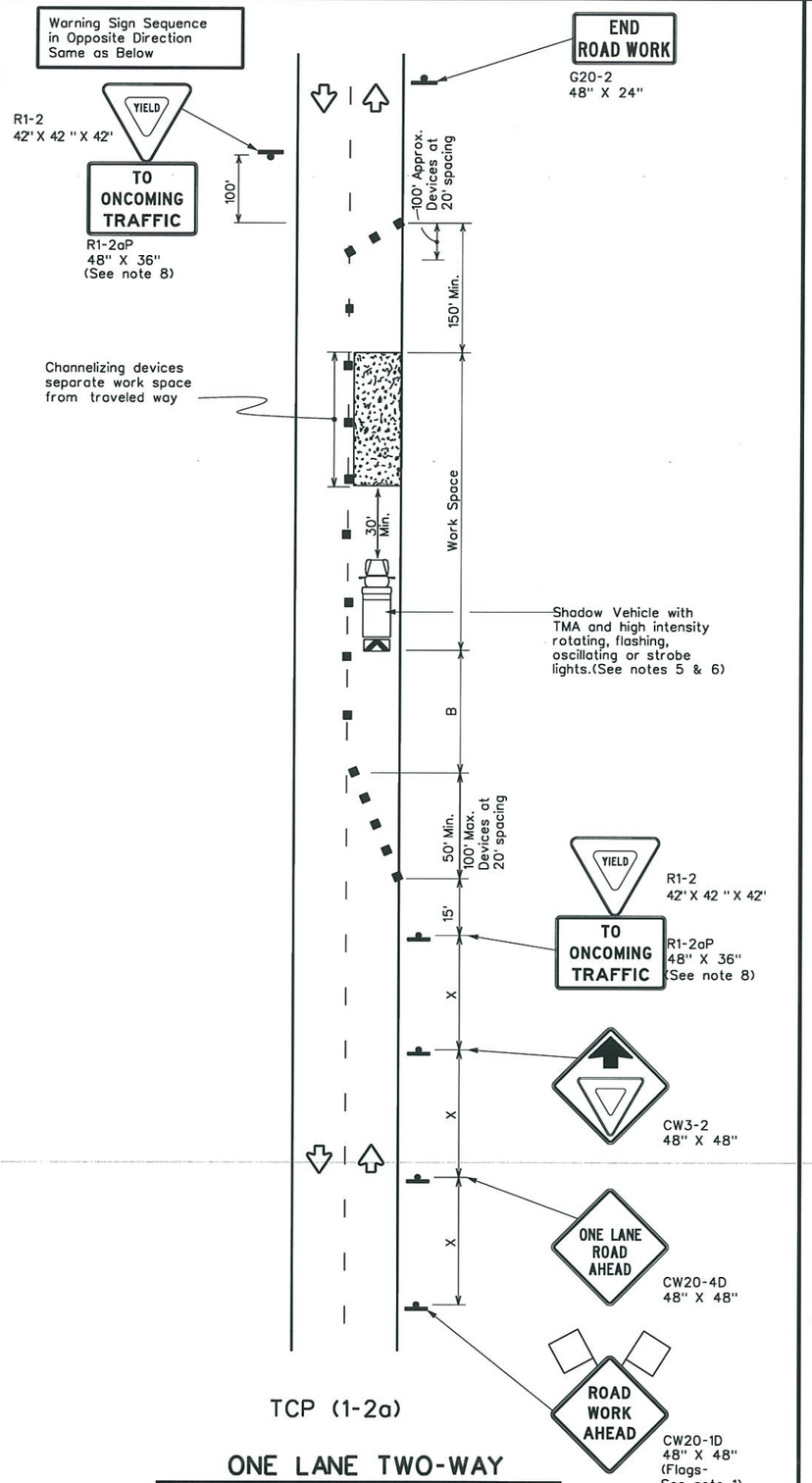
BC(12)-13

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REVISIONS	0921	02	323	MILE 2
1-97 II-02 7-13	DIST	COUNTY		SHEET NO.
2-98 9-07	PHR	HIDALGO		57

106

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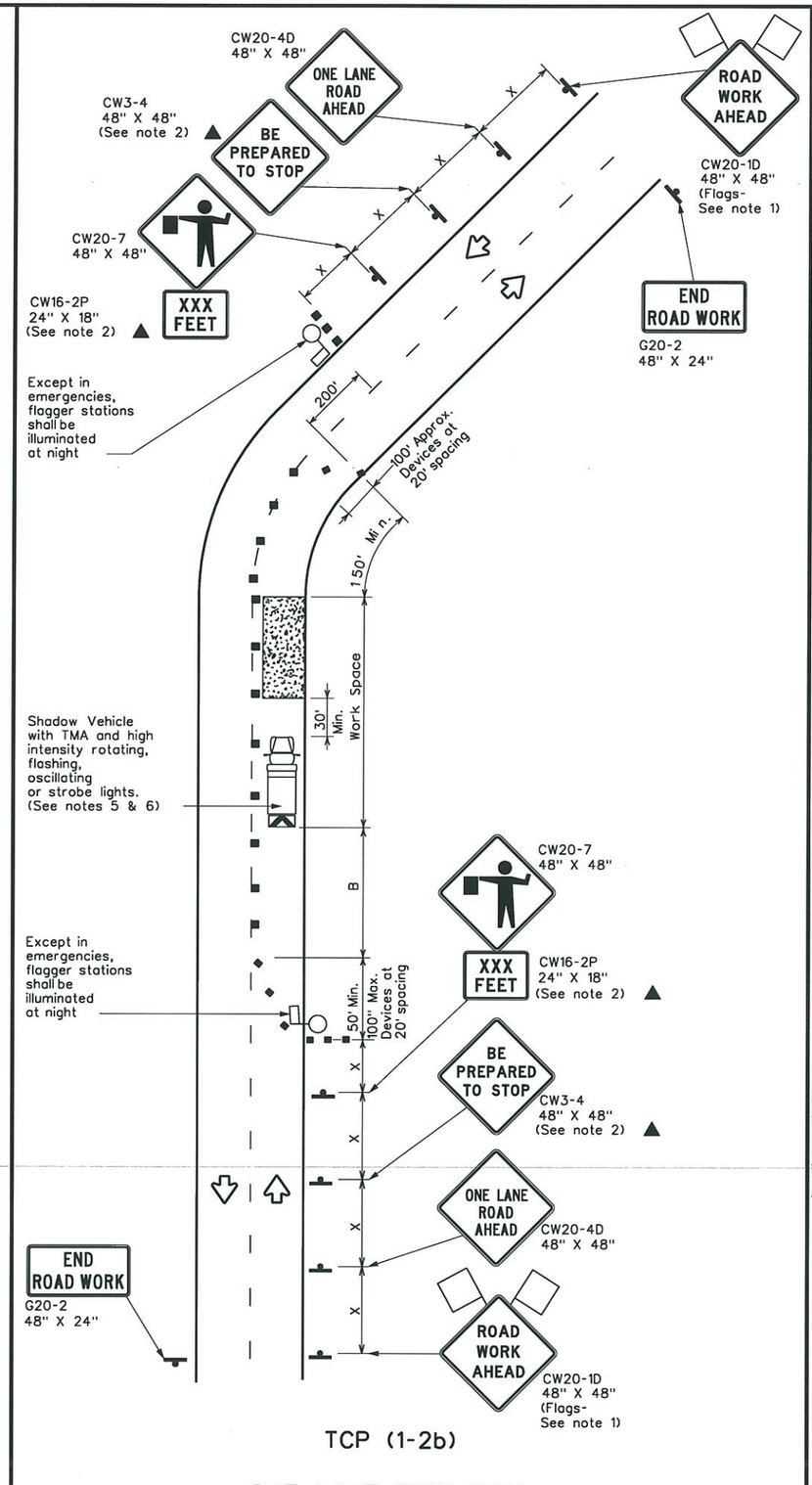
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TCP (1-2a)

ONE LANE TWO-WAY CONTROL WITH YIELD SIGNS

(Less than 2000 ADT - See note 7)



TCP (1-2b)

ONE LANE TWO-WAY CONTROL WITH FLAGGERS

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L=WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

* Conventional Roads Only

** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓		

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4D "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.
4. Sign spacing may be increased or an additional CW20-1D "ROAD WORK AHEAD" sign may be used if advance warning ahead of the flagger or R1-2 "YIELD" sign is less than 1500 feet.
5. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
6. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.

TCP (1-2a)

7. R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work spaces should be no longer than one half city block. In rural areas on roadways with less than 2000 ADT, work spaces should be no longer than 400 feet.
8. R1-2 "YIELD" sign with R1-2aP "TO ONCOMING TRAFFIC" plaque shall be placed on a support at a 7 foot minimum mounting height.

TCP (1-2b)

9. Flaggers should use two-way radios or other methods of communication to control traffic.
10. Length of work space should be based on the ability of flaggers to communicate.
11. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).
12. Channelizing devices on the center-line may be omitted when a pilot car is leading traffic and approved by the Engineer.
13. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

For construction or maintenance contract work, specific project requirements for shadow vehicles can be found in the project GENERAL NOTES for Item 502, Barricades, Signs and Traffic Handling.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC CONTROL PLAN ONE-LANE TWO-WAY TRAFFIC CONTROL

TCP(1-2)-12

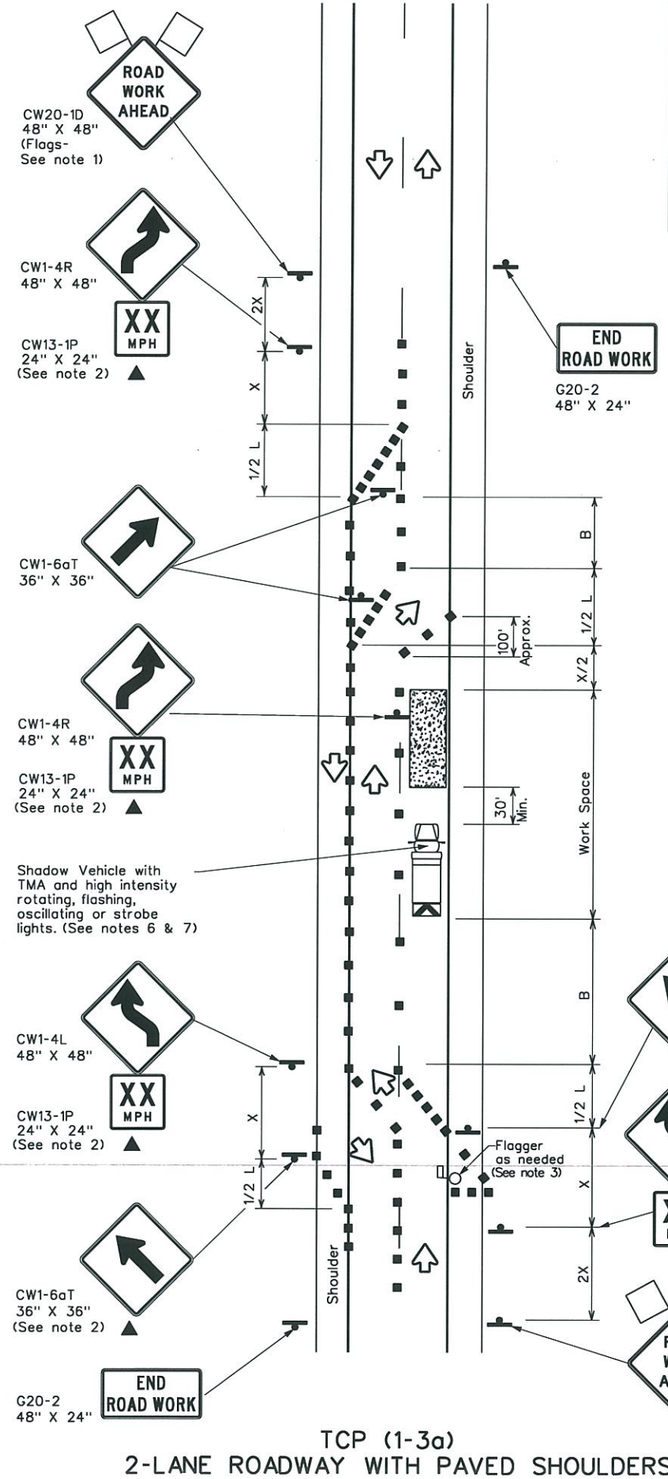
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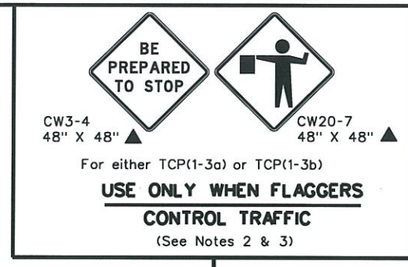
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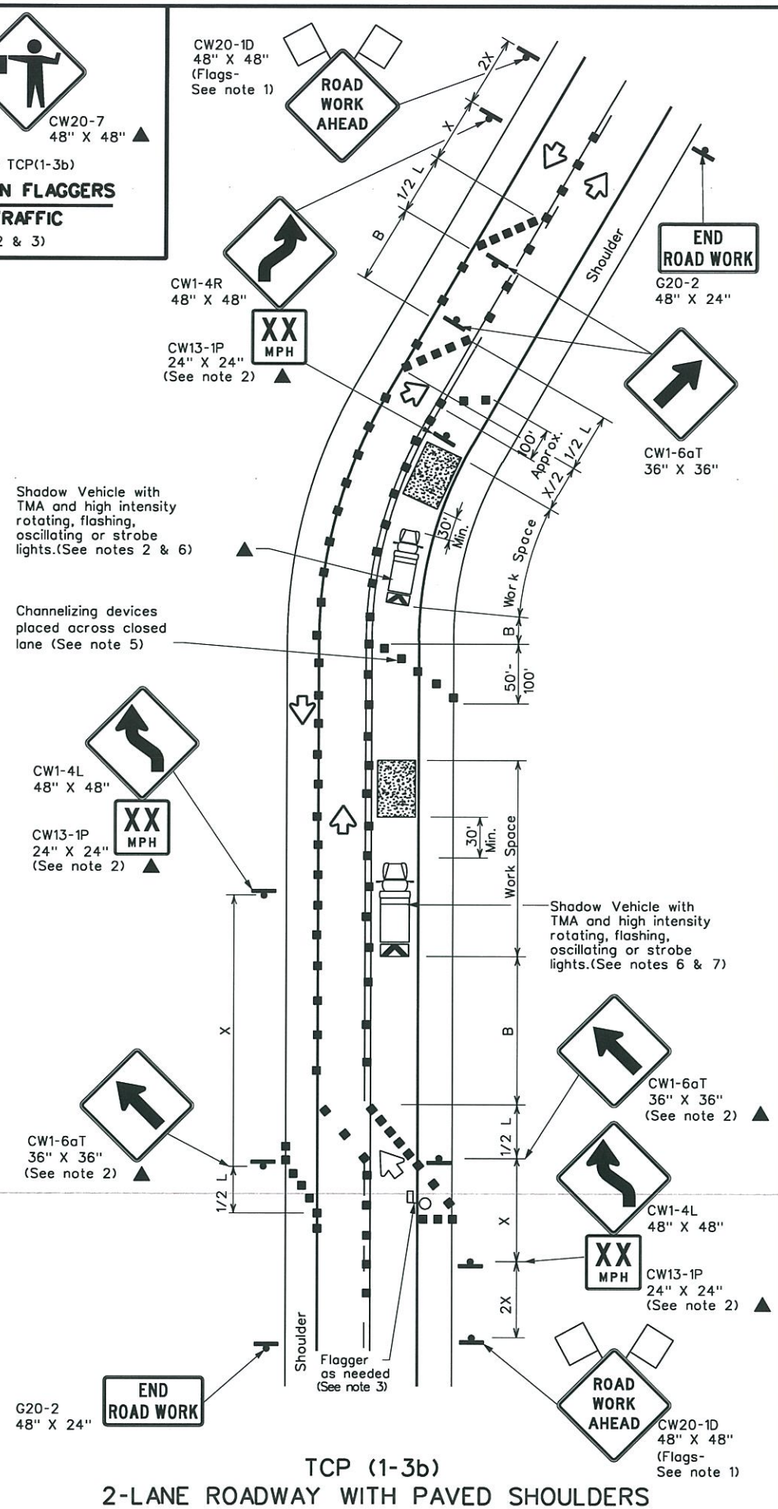
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TCP (1-3a)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
ADEQUATE FIELD OF VIEW





TCP (1-3b)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
INADEQUATE FIELD OF VIEW

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L=WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only

** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓		

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Additional flaggers may be positioned in advance of traffic queues to alert traffic to reduce speed.
4. DO NOT PASS, PASS WITH CARE and construction regulatory speed zone signs may be installed downstream of the ROAD WORK AHEAD signs.
5. When the work zone is made up of several work spaces, channelizing devices should be placed laterally across the closed lane to re-emphasize closure. Laterally placed channelizing devices should be repeated every 500 to 1000 feet in urban areas and every 1/4 to 1/2 mile in rural areas.
6. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
7. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
8. Where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20', or 15' if posted speed are 35 mph or slower, and for tangent sections, at 1/2S where S is the speed in mph. This tighter device spacing is intended for the area of conflicting markings not the entire work zone.

For construction or maintenance contract work, specific project requirements for shadow vehicles can be found in the project GENERAL NOTES for Item 502, Barricades, Signs and Traffic Handling.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC CONTROL PLAN
TRAFFIC SHIFTS ON TWO LANE ROADS

TCP(1-3)-12

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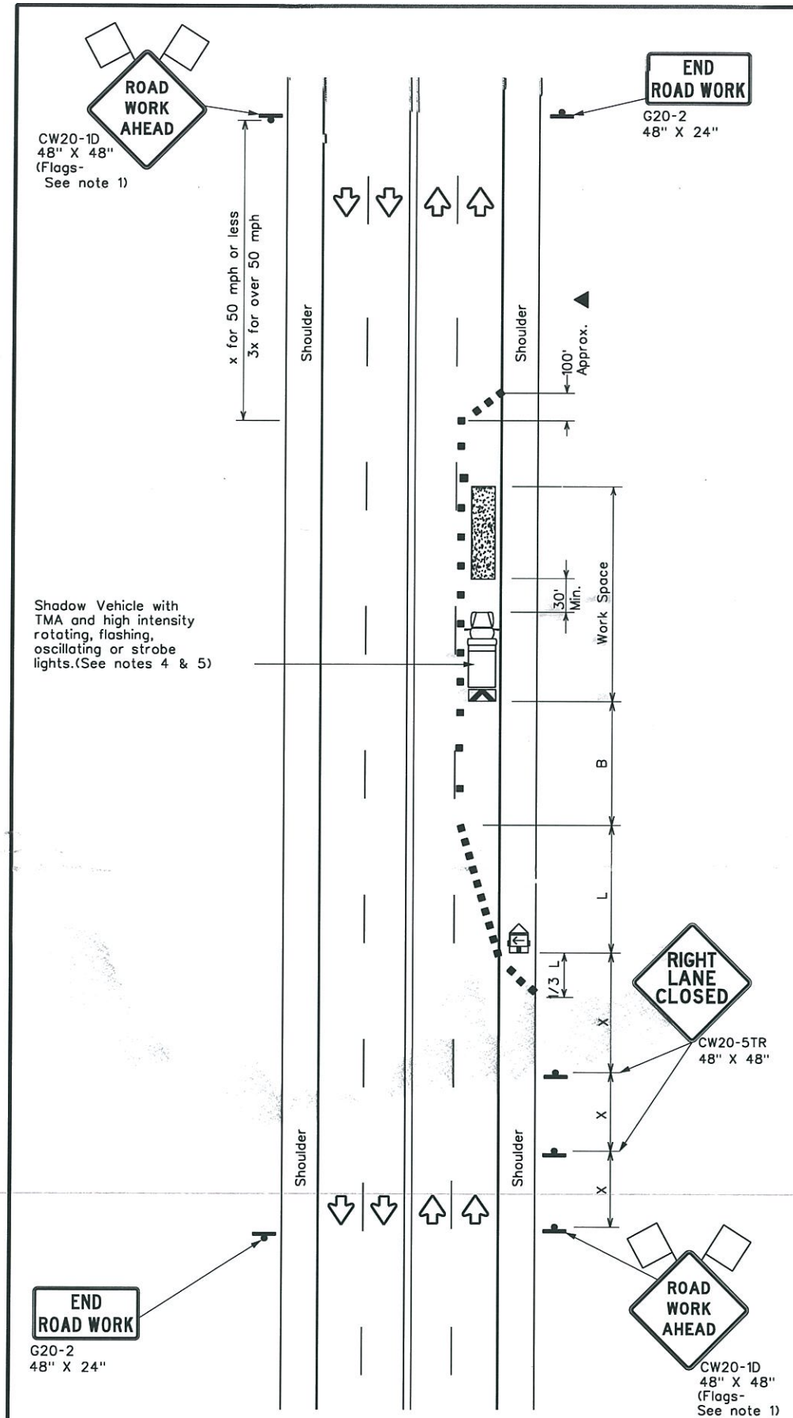
REVISIONS
2-94 2-12
8-95
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21	HIDALGO		59

153

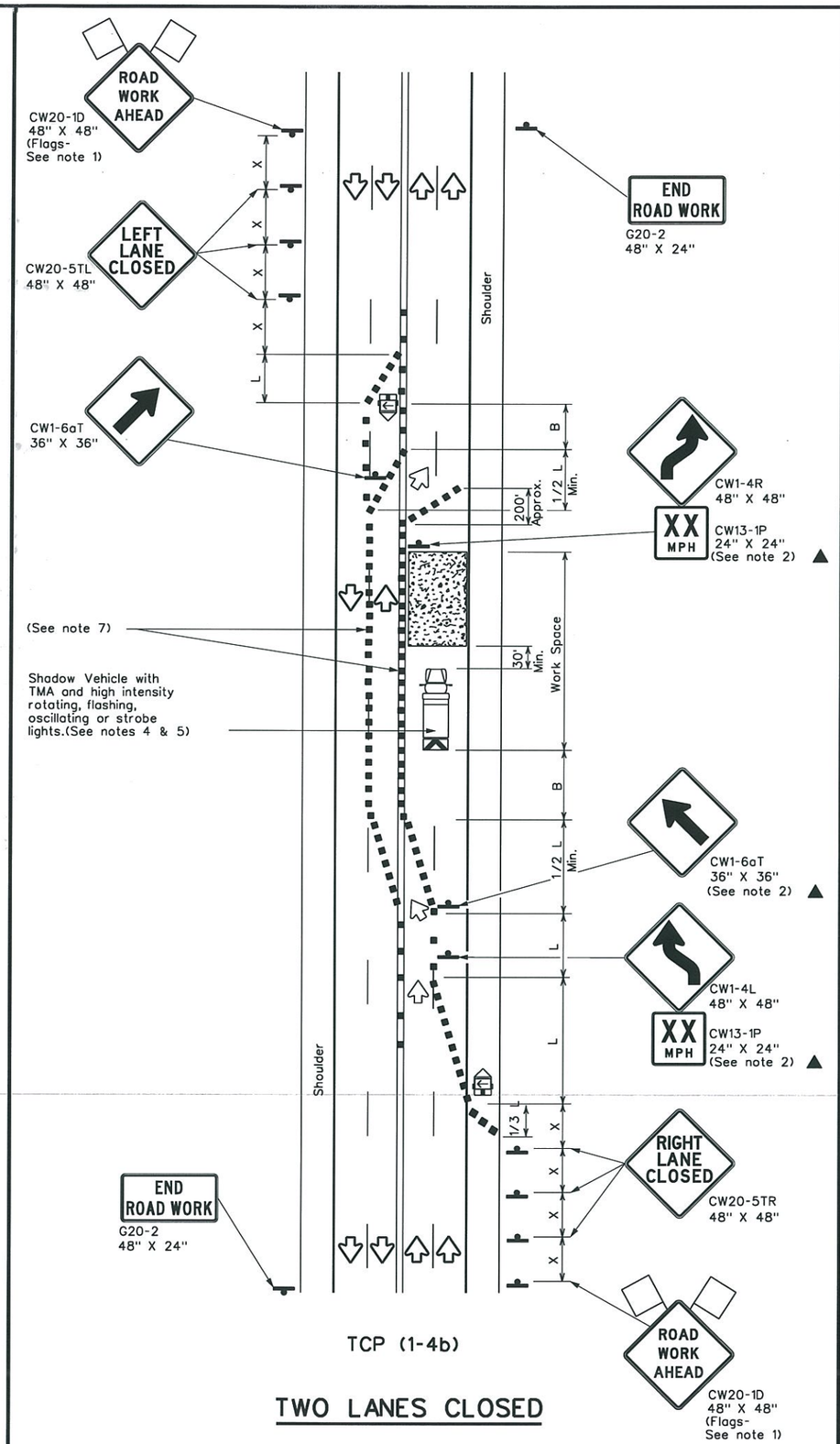
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TCP (1-4a)

ONE LANE CLOSED



TCP (1-4b)

TWO LANES CLOSED

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L = WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only
** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓		

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW20-1D "ROAD WORK AHEAD" sign may be repeated if the visibility of the work zone is less than 1500 feet.
4. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
5. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.

TCP (1-4a)

6. If this TCP is used for a left lane closure , CW20-5TL "LEFT LANE CLOSED" signs shall be used and channelizing devices shall be placed on the centerline where needed to protect the work space from opposing traffic with the arrow panel placed in the closed lane near the end of the merging taper.

TCP (1-4b)

7. Where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2S where S is the speed in mph. This tighter device spacing is intended for the areas of conflicting markings, not the entire work zone.

For construction or maintenance contract work, specific project requirements for shadow vehicles can be found in the project GENERAL NOTES for Item 502, Barricades, Signs and Traffic Handling.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC CONTROL PLAN
LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

TCP(1-4)-12

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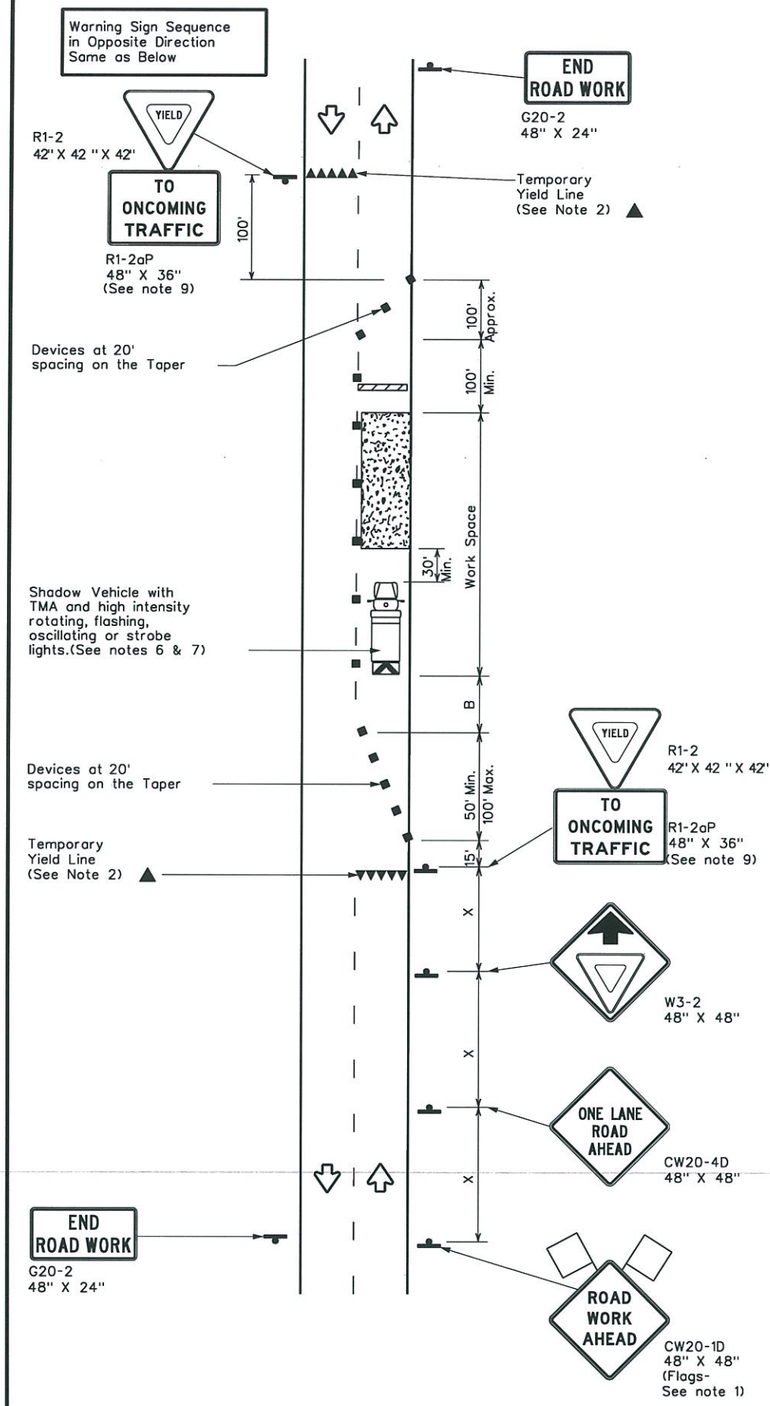
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REVISIONS
2-94 2-12
8-95
1-97
4-98

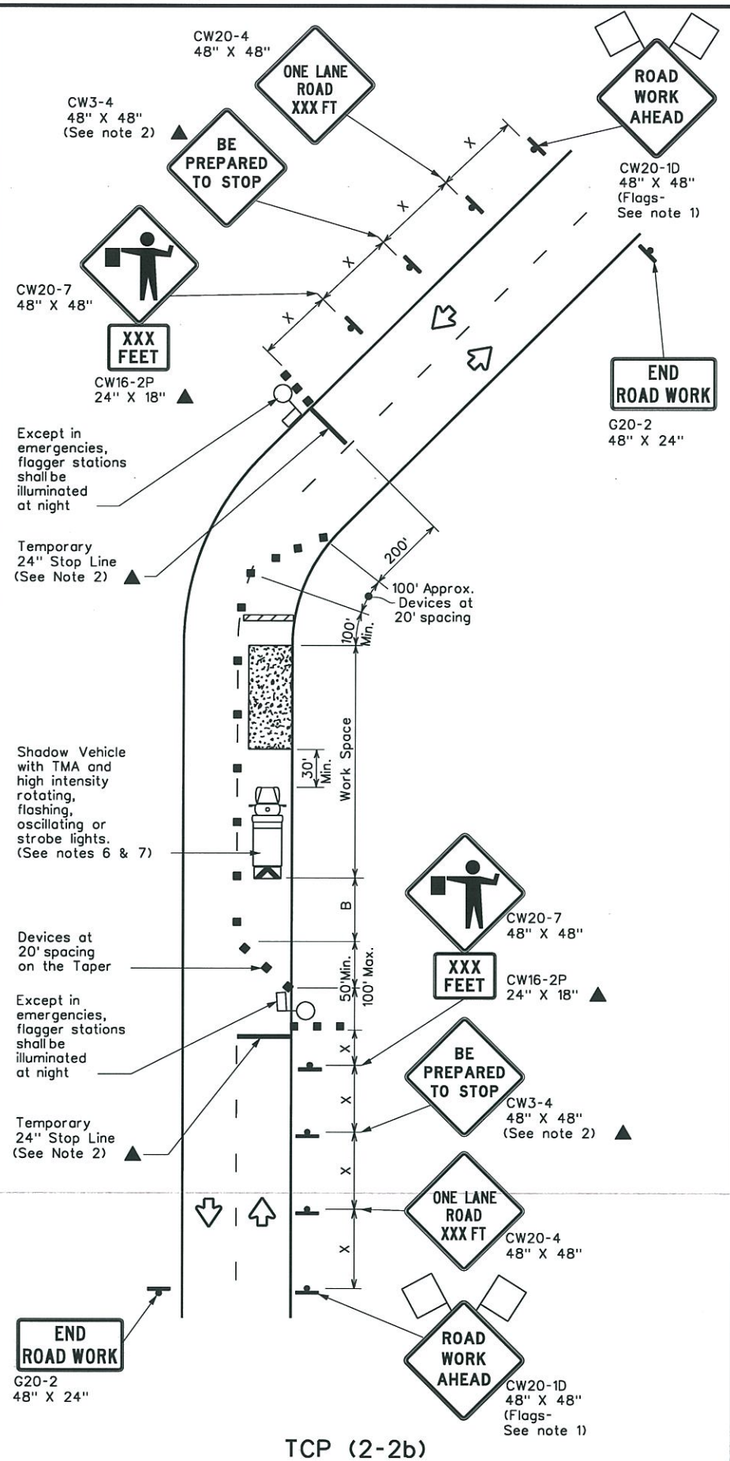
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0921	02	323	MILE 2
DIST	COUNTY		SHEET NO.
21	HIDALGO		60

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DATE:
FILE:



TCP (2-2a)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS
ONE LANE TWO-WAY
CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See Note 9)



TCP (2-2b)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS
ONE LANE TWO-WAY
CONTROL WITH FLAGGERS

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L=WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

* Conventional Roads Only
** Taper lengths have been rounded off.
L-Length of Taper(FT) W-Width of Offset(FT) S-Posted Speed(MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓	✓	

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4 "ONE LANE ROAD XXX FT" sign, but proper sign spacing shall be maintained.
4. Flaggers should use two-way radios or other methods of communication to control traffic.
5. Length of work space should be based on the ability of flaggers to communicate.
6. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
7. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-2a)

8. The R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work space should be no longer than one half city block. In rural areas, roadways with less than 2000 ADT, work space should be no longer than 400 feet.
9. The R1-2aP "YIELD TO ONCOMING TRAFFIC" sign shall be placed on a support at a 7 foot minimum mounting height.

TCP (2-2b)

10. Channelizing devices on the center line may be omitted when a pilot car is leading traffic and approved by the Engineer.
11. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain stopping sight distance to the flagger and a queue of stopped vehicles. (See table above).
12. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situtations.

For construction or maintenance contract work, specific project requirements for shadow vehicles can be found in the project GENERAL NOTES for Item 502, Barricades, Signs and Traffic Handling.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY
TRAFFIC CONTROL

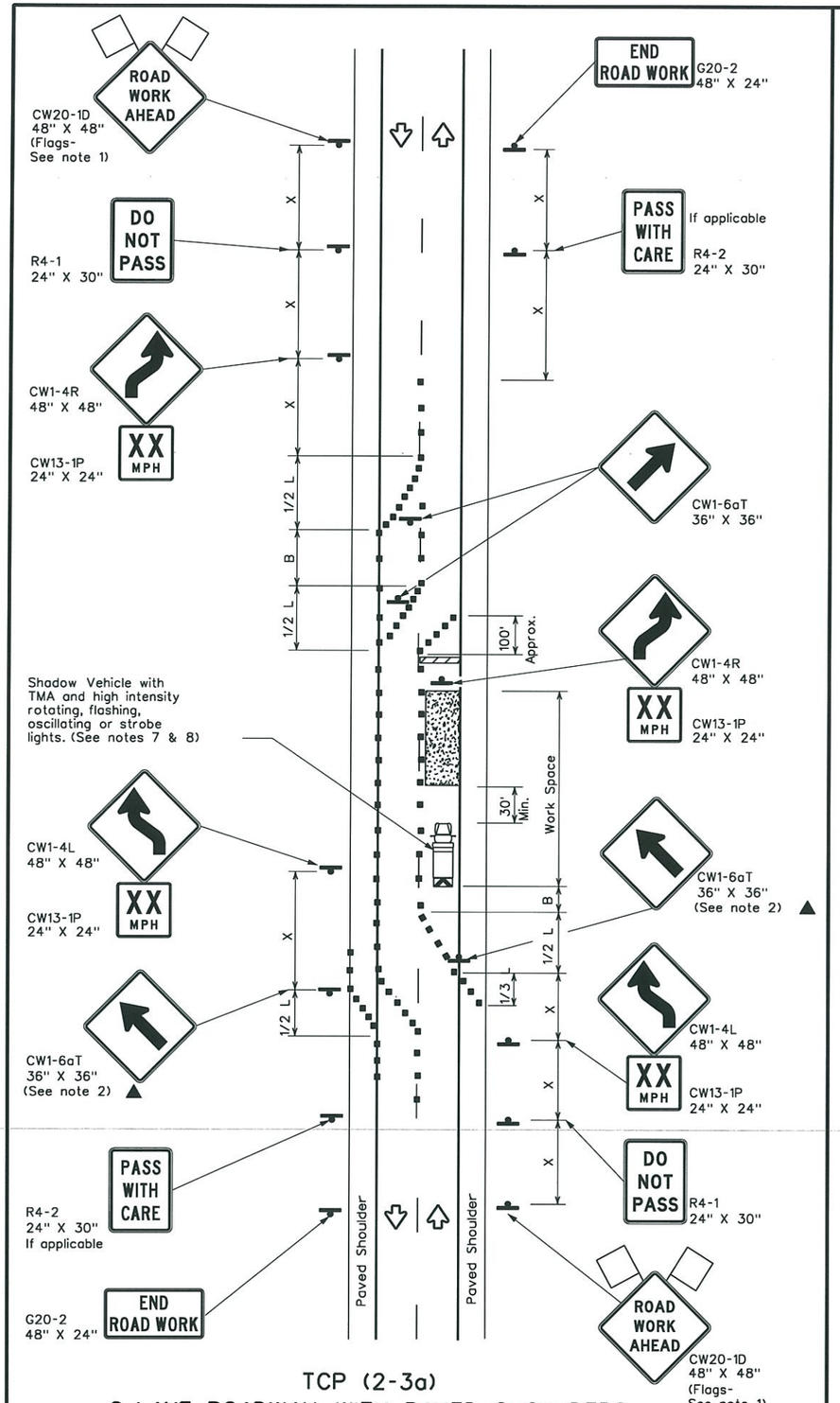
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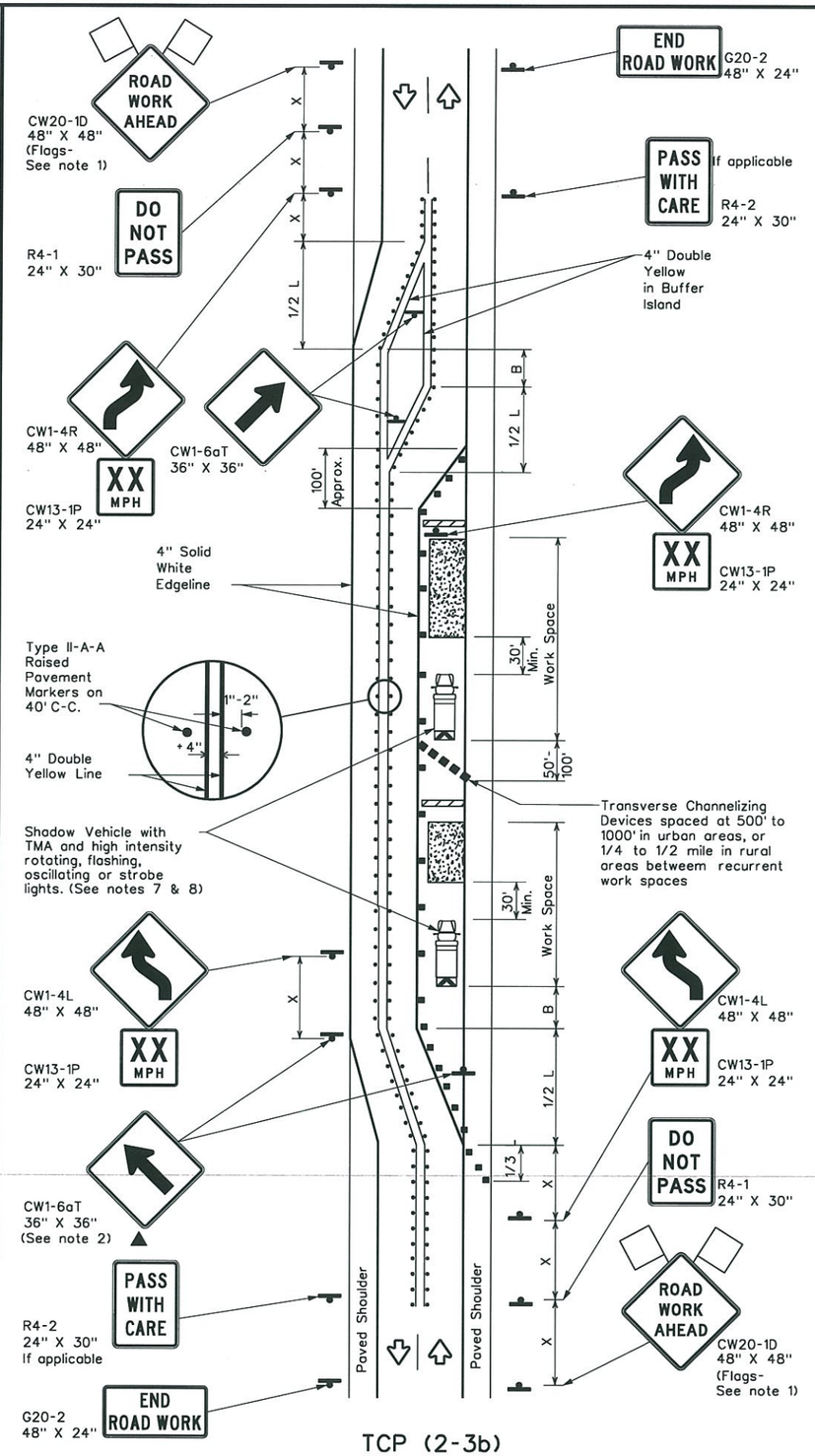
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8-95 2-12	0921	02	323	MILE 2
1-97	DIST	COUNTY		SHEET NO.
4-98	21	HIDALGO		61
3-03				

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TCP (2-3a)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
ADEQUATE FIELD OF VIEW



TCP (2-3b)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
INADEQUATE FIELD OF VIEW

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Raised Pavement Markers Ty II-AA
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths * * 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L=WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only

* * Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
				TCP(2-3b)ONLY
			✓	✓

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. When work space will be in place less than three days existing pavement markings may remain in place. Channelizing devices shall be used to separate traffic.
4. Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Flagger should be positioned at end of traffic queue.
5. The R4-1 "DO NOT PASS," R4-2 " PASS WITH CARE" and construction regulatory speed zone signs may be installed within CW20-1D "ROAD WORK AHEAD" signs. Proper spacing of signs shall be maintained.
6. Conflicting pavement marking shall be removed for long term projects.
7. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted.
8. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-3a)

9. Conflicting pavement markings shall be removed for long-term projects. For shorter durations where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2(S) where S is the speed in mph. This tighter device spacing is intended for the area of the conflicting markings, not the entire work zone.

For construction or maintenance contract work, specific project requirements for shadow vehicles can be found in the project GENERAL NOTES for Item 502, Barricades, Signs and Traffic Handling.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC CONTROL PLAN
TRAFFIC SHIFTS ON TWO-LANE ROADS

TCP(2-3)-12

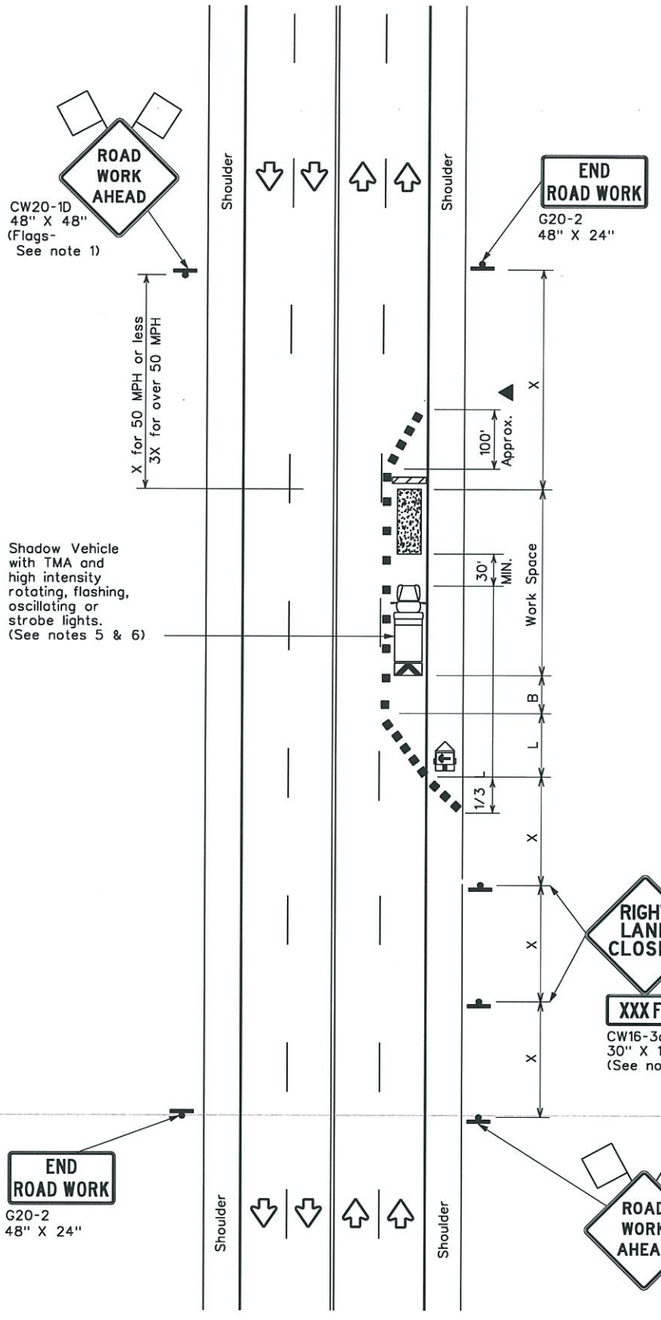
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REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
8-95 2-12	CONT	SECT	JOB	HIGHWAY
1-97	0921	02	323	MILE 2
4-98	DIST	COUNTY		SHEET NO.
3-03	21	HIDALGO		62

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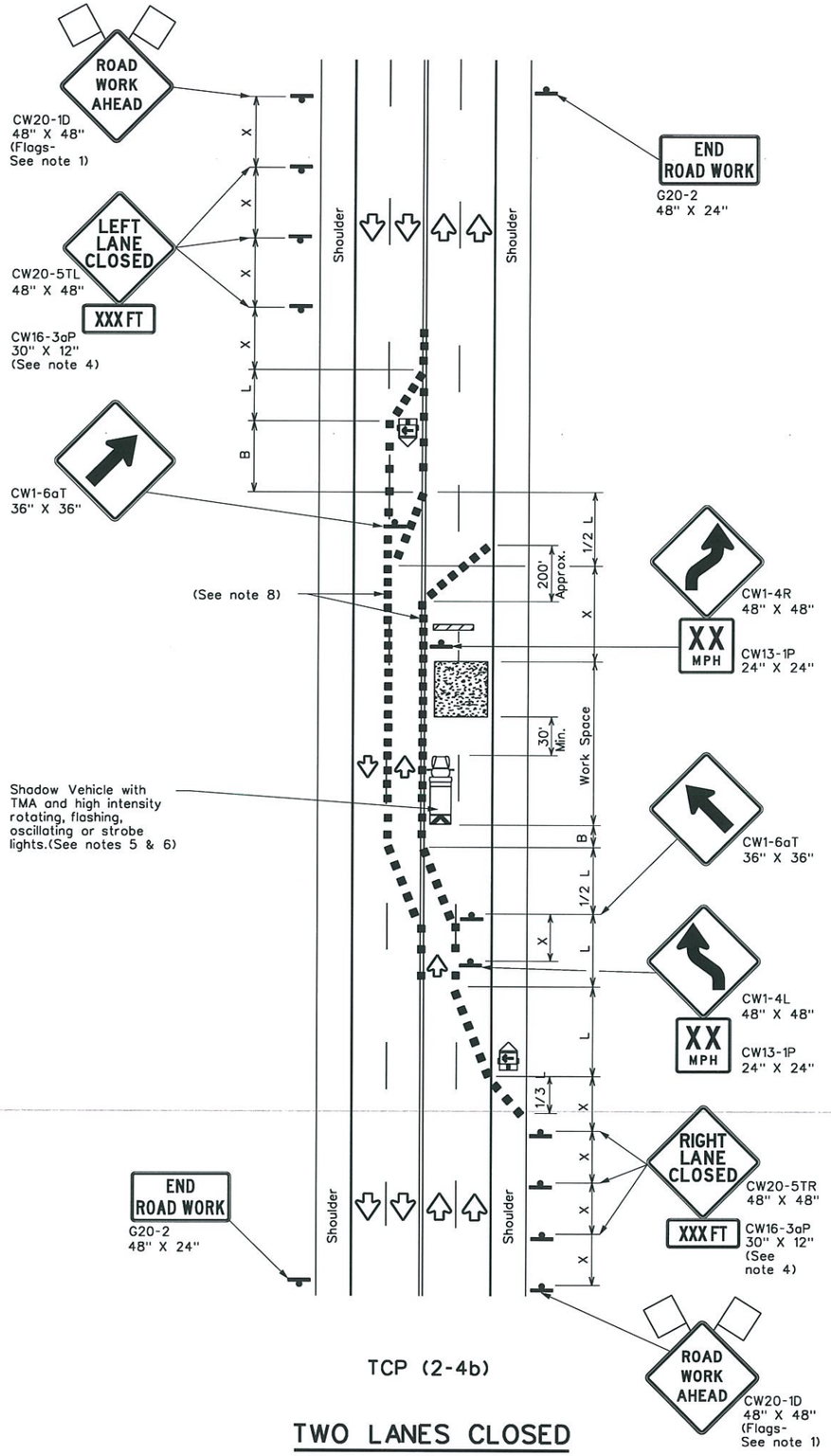
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DATE:
FILE:



TCP (2-4a)

ONE LANE CLOSED



TCP (2-4b)

TWO LANES CLOSED

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L=WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only

** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
		✓	✓	

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The downstream taper is optional. When used, it should be 100 feet minimum length per lane.
4. For short term applications, when post mounted signs are not used, the distance legend may be shown on the sign face rather than on a CW16-3aP supplemental plaque.
5. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
6. Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-4a)

7. If this TCP is used for a left lane closure, CW20-5TL "LEFT LANE CLOSED"signs shall be used and channelizing devices shall be placed on the centerline to protect the work space from opposing traffic with the arrow board placed in the closed lane near the end of the merging taper.

TCP (2-4b)

8. For shorter durations where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2(S) where S is the speed in mph. This tighter devices spacing is intended for the area of conflicting markings, not the entire work zone.

For construction or maintenance contract work, specific project requirements for shadow vehicles can be found in the project GENERAL NOTES for Item 502, Barricades, Signs and Traffic Handling.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

TCP(2-4)-12

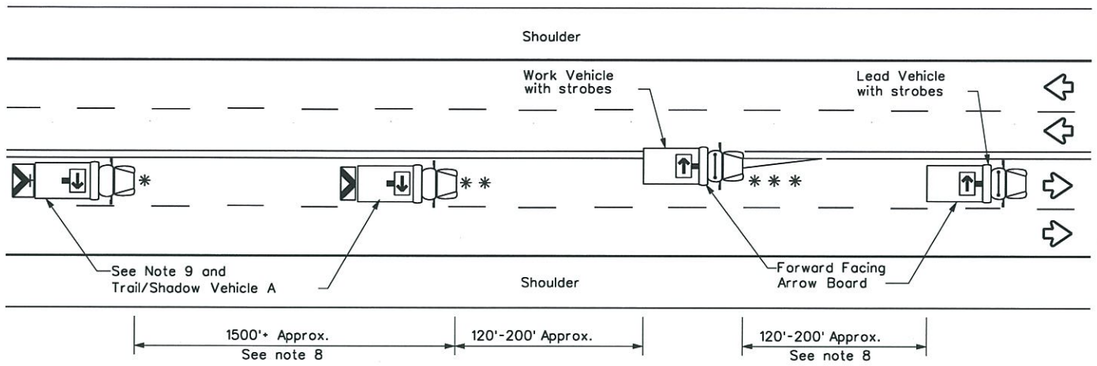
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REVISIONS	CONT	SECT	JOB	HIGHWAY
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1-97	DIST	COUNTY		SHEET NO.
4-98	21	HIDALGO		63
3-03				

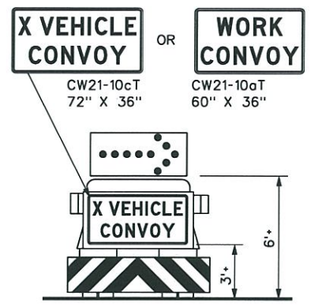
164

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TCP (3-1a)

UNDIVIDED MULTILANE ROADWAY



TRAIL/SHADOW VEHICLE A

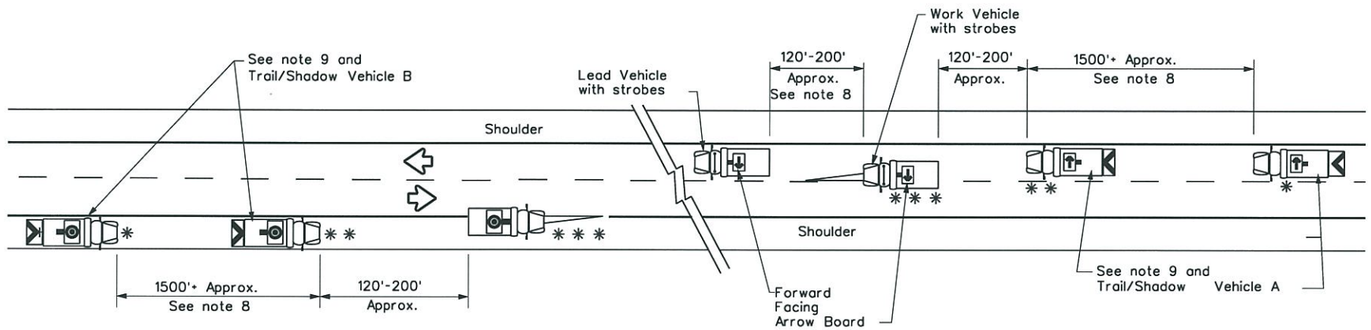
with RIGHT Directional display Flashing Arrow Board

LEGEND			
*	Trail Vehicle	ARROW BOARD DISPLAY	
* *	Shadow Vehicle		
* * *	Work Vehicle		RIGHT Directional
	Heavy Work Vehicle		LEFT Directional
	Truck Mounted Attenuator (TMA)		Double Arrow
	Traffic Flow		CAUTION (Alternating Diamond or 4 Corner Flash)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
✓				

GENERAL NOTES

1. TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used the WORK vehicle must be equipped with an arrow board. The Engineer will determine if the LEAD VEHICLE and/or TRAIL VEHICLE are required based on prevailing roadway conditions, traffic volume, and sight distance restrictions.
2. The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
3. The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE and TRAIL VEHICLE are required.
4. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL MATERIAL SPECIFICATION DMS 8300, Type A.
5. Flashing arrow boards shall be Type B or Type C as per the Barricade and Construction (BC) standards. The board shall be controlled from inside the vehicle.
6. Each vehicle shall have two-way radio communication capability.
7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the work convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE and vehicle spacing between WORK VEHICLE and LEAD VEHICLE may vary according to terrain, work activity and other factors.
9. "X VEHICLE CONVOY" (CW21-10cT) or "WORK CONVOY" (CW21-10aT) signs shall be used on TRAIL VEHICLES and SHADOW VEHICLES as shown. As an option 48" X 48" diamond shaped "WORK CONVOY"(CW21-10T) or "X VEHICLE CONVOY" (CW21-10bT) signs may be used where adequate mounting space exists. When used, the X VEHICLE CONVOY sign shall have the number of the convoy vehicles displayed on the sign in the number designation "X" location. The "X VEHICLE CONVOY" sign shall not be used on the SHADOW VEHICLE if a TRAIL VEHICLE is used.
10. On two-lane two-way roadways, the work and protection vehicles should pull over periodically to allow motor vehicle traffic to pass. If motorists are not allowed to pass the work convoy, a "DO NOT PASS" (R4-1) sign should be placed on the back of the rearmost protection vehicle.

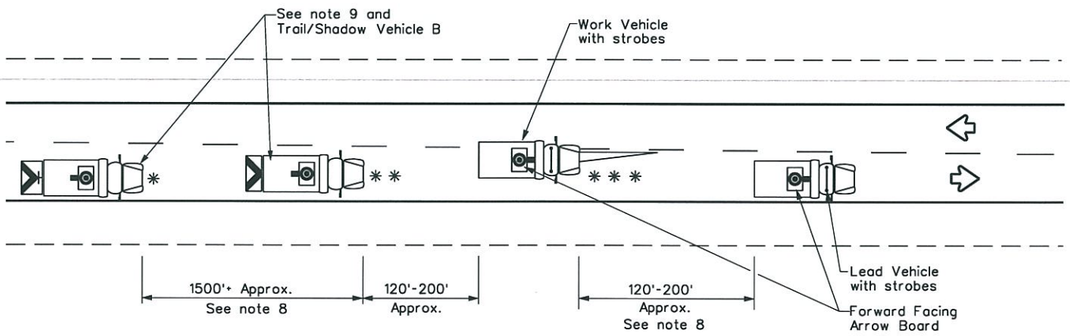


WORK ON SHOULDER

WORK ON TRAVEL LANE

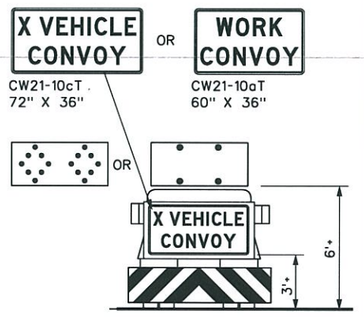
TCP (3-1b)

TWO-WAY ROADWAY WITH PAVED SHOULDERS



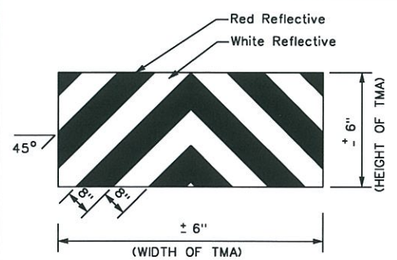
TCP (3-1c)

TWO-WAY ROADWAY WITHOUT PAVED SHOULDERS



TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board in CAUTION display



STRIPING FOR TMA

Texas Department of Transportation

Traffic Operations Division Standard

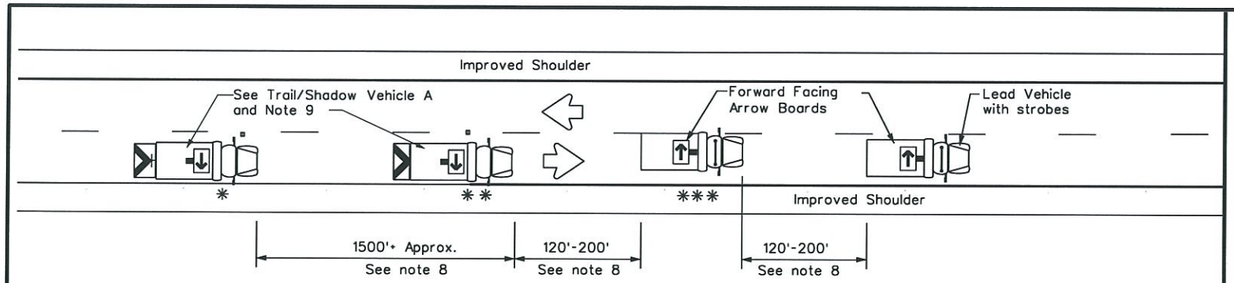
TRAFFIC CONTROL PLAN MOBILE OPERATIONS UNDIVIDED HIGHWAYS

TCP(3-1)-13

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© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
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	DIST	COUNTY		SHEET NO.
	21	HIDALGO		64

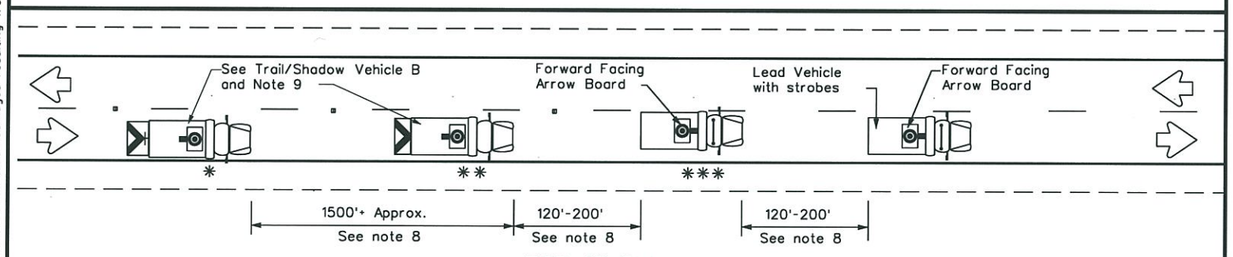
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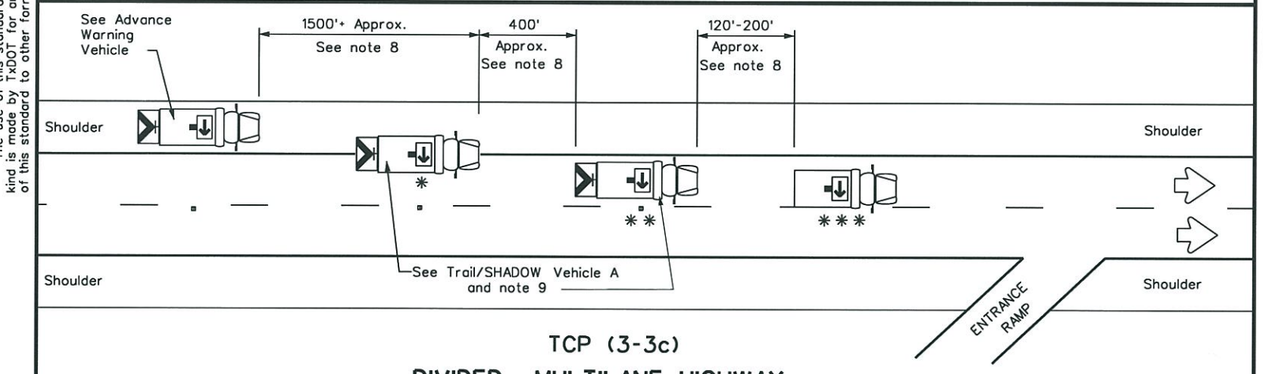
TCP (3-3a)

TWO LANE HIGHWAY WITH PAVED SHOULDERS (WORK ON TRAVEL LANE)



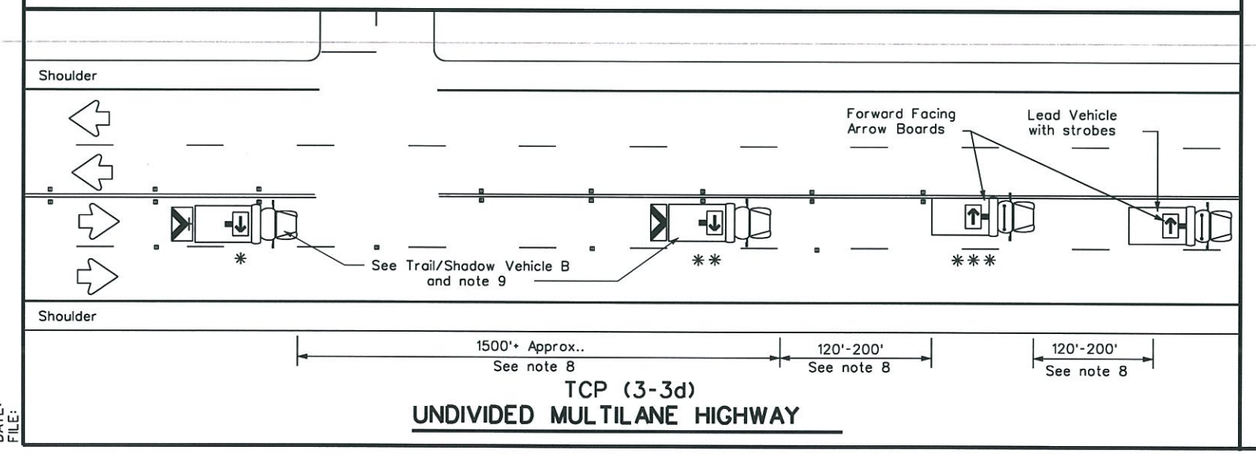
TCP (3-3b)

TWO LANE HIGHWAY WITHOUT PAVED SHOULDERS (WORK ON TRAVEL LANE)



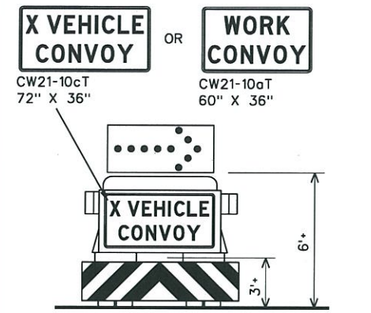
TCP (3-3c)

DIVIDED MULTILANE HIGHWAY



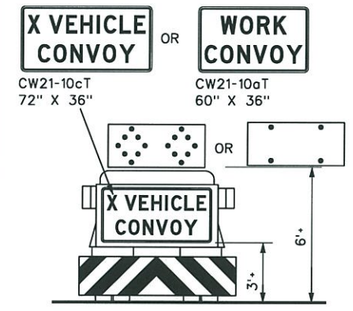
TCP (3-3d)

UNDIVIDED MULTILANE HIGHWAY



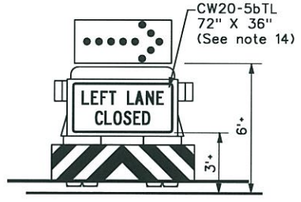
TRAIL/SHADOW VEHICLE A

with RIGHT Directional display
Flashing Arrow Board

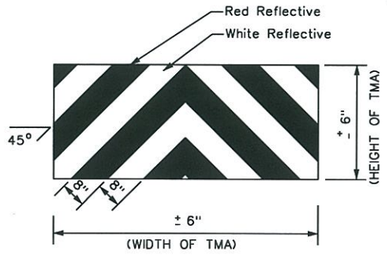


TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board
in Caution Mode



ADVANCE WARNING VEHICLE



STRIPING FOR TMA

LEGEND			
*	Trail Vehicle	ARROW BOARD DISPLAY	
**	Shadow Vehicle		
***	Work Vehicle		RIGHT Directional
	Heavy Work Vehicle		LEFT Directional
	Truck Mounted Attenuator (TMA)		Double Arrow
	Traffic Flow		CAUTION (Alternating Diamond or 4 Corner Flash)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
✓				

GENERAL NOTES

1. TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used on two way roads the WORK vehicle must have an arrow board. For divided roadways, the arrow board on the WORK vehicle is optional based on the type of work being performed. The Engineer will determine if the LEAD vehicle and/or TRAIL vehicle are required based on prevailing roadway conditions, traffic volume, and sight distance restrictions.
2. The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating, or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
3. The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE, ADVANCE WARNING and TRAIL VEHICLE are required.
4. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL MATERIAL SPECIFICATION DMS 8300, Type A.
5. Flashing arrow boards shall be Type B or Type C as per the Barricade and Construction (BC) standards. The board shall be controlled from inside the vehicle.
6. Each vehicle shall have two-way radio communication capability.
7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE and vehicle spacing between WORK VEHICLE and LEAD VEHICLE may vary according to terrain, work activity and other factors.
9. X VEHICLE CONVOY (CW21-10cT) or WORK CONVOY (CW21-10aT) signs shall be used on TRAIL VEHICLES and SHADOW VEHICLES as shown. As an option 48" x 48" diamond shaped WORK CONVOY (CW21-10T) or X VEHICLE CONVOY (CW21-10bT) signs may be used where adequate mounting space exists. When used, the X VEHICLE CONVOY sign shall have the number of the convoy vehicles displayed on the sign in the number designation "X" location. The X VEHICLE CONVOY sign shall not be used on the SHADOW VEHICLE if a TRAIL VEHICLE is used.
10. For divided highways with two or three lanes in one direction, the appropriate LEFT LANE CLOSED (CW20-5bTL), RIGHT LANE CLOSED (CW20-5bTR), or CENTER LANE CLOSED (CW20-5dT) sign should be used on the Advance Warning Vehicle. As an option, a portable changeable message sign (PCMS) or truck mounted changeable message sign (TMCMS) with a minimum character height of 12", and displaying the same legend may be substituted for these signs. An appropriate directional arrow display, simulating the size and legibility of the flashing arrow board may be used in the second phase of the PCMS/TMCMS message. When this is done, the arrow board will not be required on the Advance Warning Vehicle.
11. A double arrow shall not be displayed on the arrow board on the Advance Warning Vehicle.
12. For divided highways with three or four lanes in each direction, use TCP(3-2).
13. Standard diamond shape versions of the CW20-5 series signs may be used as an option if the rectangular signs shown are not available.
14. The Advance Warning Vehicle may straddle the edgeline when Shoulder width makes it necessary.
15. On two-lane two-way roadways, the work and protection vehicles should pull over periodically to allow motor vehicle traffic to pass. If motorists are not allowed to pass the work convoy, a DO NOT PASS (R4-1) sign should be placed on the back of the rearmost protection vehicle.

Texas Department of Transportation

Traffic Operations Division Standard

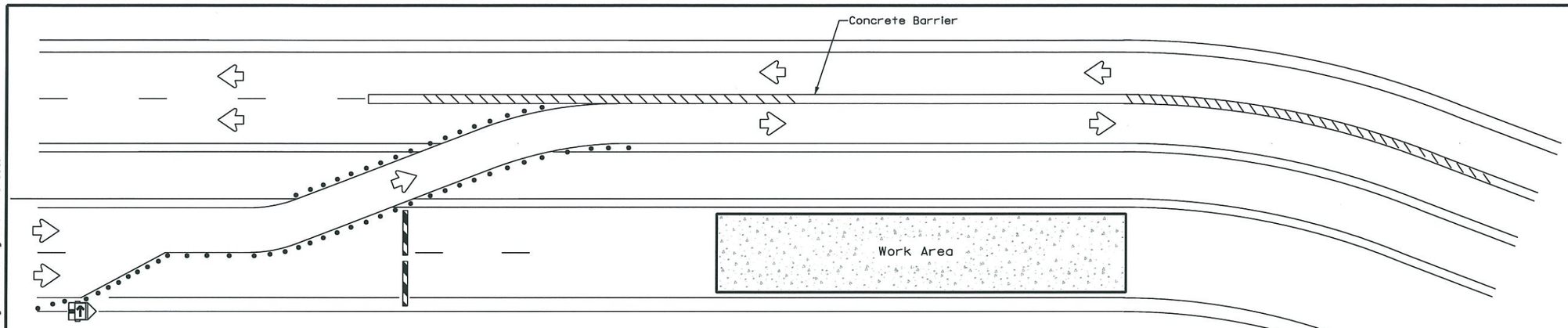
TRAFFIC CONTROL PLAN MOBILE OPERATIONS RAISED PAVEMENT MARKER INSTALLATION

TCP(3-3)-13

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©TxDOT September 1987	CONT	SECT	JOB	HIGHWAY
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2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 7-13	21	HIDALGO		65
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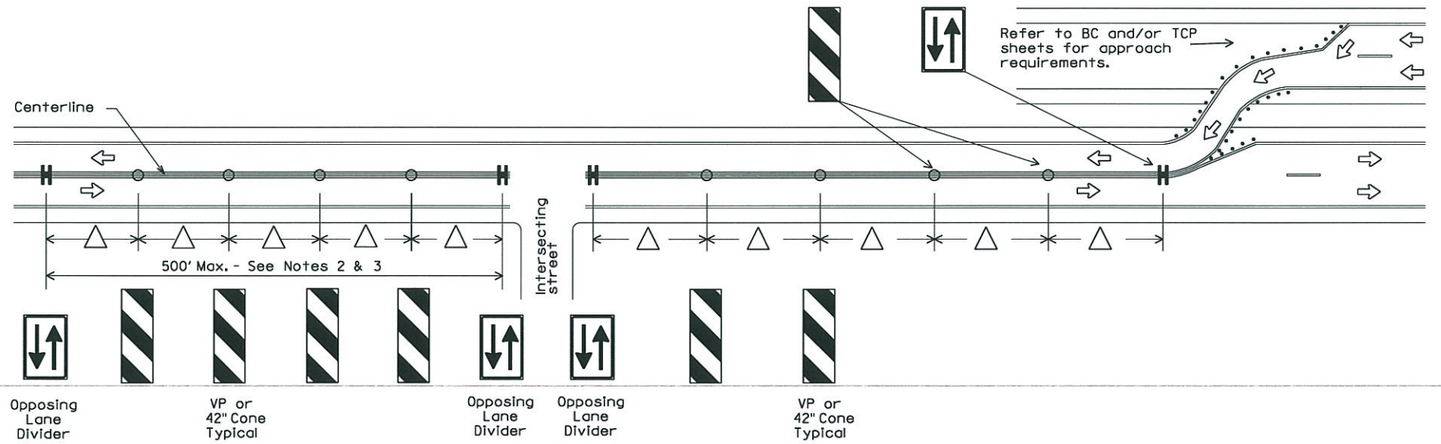


LEGEND	
	Type 3 Barricade
• • •	Channelizing Devices
	Trailer Mounted Flashing Arrow Board
	Sign
\ \ \ \	Safety glare fence

NOTES:

1. Length of Safety Glare Fence will be specified elsewhere in the plans.
2. The cumulative nominal length of the modular units shall equal the length of the individual sections of temporary concrete traffic barrier on which they are installed so the joint between barrier sections will not be spanned by any one unit.
3. Panel/blades will be designed such that reflective sheeting conforming with Departmental Material Specification DMS-8300, Sign Face Materials, Type B or C Yellow, minimum size of 2 inches by 12 inches can be attached to the edge of the panel/blade. The sheeting shall be attached to one panel/blade per section of concrete barrier not to exceed a spacing of 30 feet. Barrier reflectors are not necessary when panel/blades are installed with reflective sheeting as described.
4. Payment for these devices will be under statewide Special Specification "Modular Glare Screens for Headlight Barrier."
5. This detail is only intended to show types of locations where Glare Screens would be appropriate. Required signing and other devices shall be as shown elsewhere in the plans.

BARRIER DELINEATION WITH MODULAR GLARE SCREENS



VERTICAL PANELS & OPPOSING TRAFFIC LANE DIVIDERS (OTLD) SEPARATING TWO-WAY TRAFFIC ON NORMALLY DIVIDED HIGHWAYS

NOTES:

1. When two-lane, two way traffic control must be maintained on one roadway of a normally divided highway, opposing traffic shall be separated with either temporary traffic barriers, channelizing devices, or a temporary raised island throughout the length of the two way operation. The above Typical Application is intended to show the appropriate application of channelizing devices when they are used for this purpose. This is not a traffic control plan. If this detail is to be used for other types of roads or applications, those locations should be stated elsewhere in the plans.

△ 2. Space devices according to the Tangent Spacing shown on the Device Spacing table on BC(9) but not exceeding 100'.

3. Every fifth device should be an OTLD except when spaced closer to accommodate an intersection. An OTLD should be the first device on each side of intersecting streets or roads.

4. Locations where surface mount bases with adhesives or self-righting devices will be required in order to maintain them in their proper position should be noted elsewhere in the plans.

DEPARTMENTAL MATERIAL SPECIFICATIONS

SIGN FACE MATERIALS	DMS-8300
DELINEATORS AND OBJECT MARKERS	DMS-8600
MODULAR GLARE SCREENS FOR HEADLIGHT BARRIER	DMS-8610

Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found at the following web address:
http://www.txdot.gov/txdot_library/publications/construction.htm

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN TYPICAL DETAILS

WZ(TD)-13

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WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

TABS: 4" to 12" | 20'±6" | Type Y-2

TAPE: 4" to 12" | 20'±6" | 4" | Yellow | 4.5'±6"

SINGLE NO-PASSING LINE or CHANNELIZATION LINE

TABS: 20'±6" | Type Y-2 or W

TAPE: 20'±6" | 4" | 4.5'±6" | Yellow or White

BROKEN LINES

(FOR CENTER LINE OR LANE LINE)

TABS: 40'±1' | Type Y-2 or W | 1'±3"

TAPE: 40'±1' | 4" | 4.5'±6" | Yellow or White

WIDE DOTTED LINES

(FOR LANE DROP LINES)

TABS: 12'±6" | 4"±1" | 3'±3" | Type W

TAPE: 12" | 12'±6" | 3'±3" | White

WIDE GORE MARKINGS

TABS: 20'±6" | 4"±1" | Type W

TAPE: 12" | 20'±6" | 4.5'±6" | White

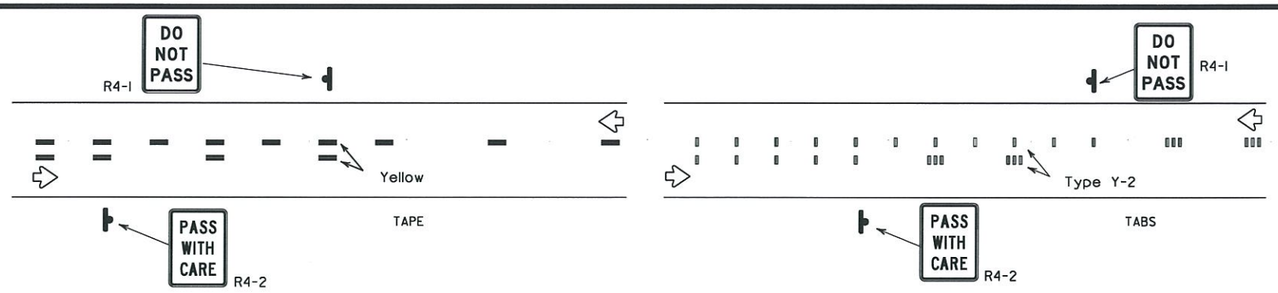
NOTES:

1. Short term pavement markings may be prefabricated markings (stick down tape) or temporary flexible-reflective roadway marker tabs unless otherwise specified elsewhere in plans.
2. Short term pavement markings shall NOT be used to simulate edge lines.
3. Dimensions indicated on this sheet are typical and approximate. Variations in size and height may occur between markers or devices made by manufacturers, by as much as 1/4 inch, unless otherwise noted.
4. Temporary flexible-reflective roadway marker tabs will require normal maintenance replacement when used on roadways with an ADT per lane of up to 7500 vehicles with no more than 10% truck mix. When roadways exceed these values, additional maintenance replacement of devices should be planned.
5. No segment of roadway open to traffic shall remain without permanent pavement markings for a period greater than 14 calendar days. The Contractor will be responsible for maintaining short term pavement markings until permanent pavement markings are in place. When the Contractor is responsible for placement of permanent pavement markings, no segment of roadway shall remain without permanent pavement markings for a period greater than 14 calendar days unless weather conditions prohibit placement. Permanent pavement markings shall be placed as soon as weather permits.
6. For two lane, two-way roadways, DO NOT PASS signs shall be erected to mark the beginning of sections where passing is prohibited and PASS WITH CARE signs shall be erected to mark the beginning of sections where passing is permitted. Signs shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and may be used to indicate the limits of no-passing zones for up to 14 calendar days. Permanent pavement markings should then be placed.
7. For low volume two lane, two-way roadways of 4000 ADT or less, no-passing lines may be omitted when approved by the Engineer. DO NOT PASS and PASS WITH CARE signs shall be erected (see note 6).
8. For exit gores where a lane is being dropped place wide gore markings or retroreflective channelizing devices to guide motorist through the exit. If channelizing devices are to be used it should be noted elsewhere in the plans. One piece cones are not allowed for this purpose.

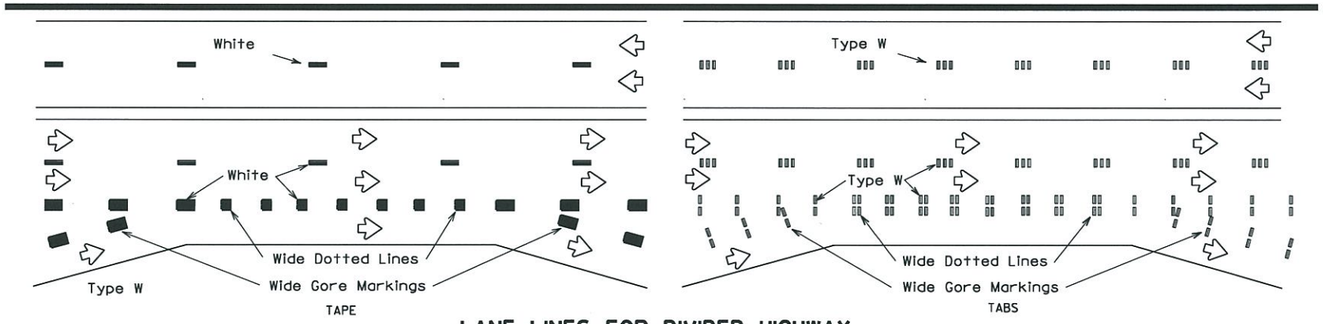
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS (TABS)

1. Temporary flexible-reflective roadway marker tabs detailed on this sheet will be designated Type Y-2 (two amber reflective surfaces with yellow body); Type Y (one amber reflective surface with yellow body); and Type W (one white or silver reflective surface with white body). Additional details may be found on BC(II).
2. Tabs shall meet requirements of Departmental Material Specification DMS-8242.
3. When dry, tabs shall be visible for a minimum distance of 200 feet during normal daylight hours and when illuminated by automobile low-beam head light at night, unless sight distance is restricted by roadway geometrics.
4. No two consecutive tabs nor four tabs per 1000 feet of line shall be missing or fail to meet the visual performance requirements of Note 3.

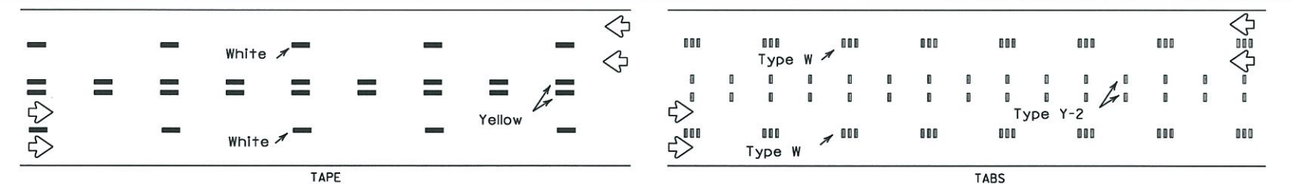
WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



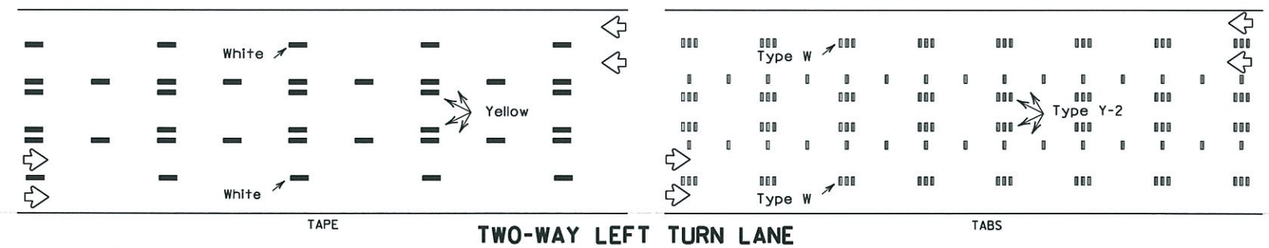
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO LANE TWO-WAY HIGHWAYS



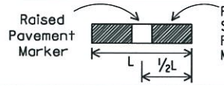
LANE LINES FOR DIVIDED HIGHWAY



LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



TWO-WAY LEFT TURN LANE



If raised pavement markers are used to supplement REMOVABLE short term markings, the markers shall be applied to the top of the tape at the approximate mid length of the tape. This allows an easier removal of raised markers and tape.

PREFABRICATED PAVEMENT MARKINGS

1. Temporary Removable Prefabricated Pavement Markings shall meet the requirements of DMS-8241.
2. Non-removable Prefabricated Pavement Markings shall meet the requirements of either DMS-8240 "Permanent Prefabricated Pavement Markings" or DMS-8243 "Temporary Costruction-Grade Prefabricated Pavement Markings."

RAISED PAVEMENT MARKERS

1. All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and DMS-4200.

DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS) & MATERIAL PRODUCER LISTS (MPL)

1. DMSs referenced above can be found along with embedded links to their respective MPLs at the following website:

http://www.txdot.gov/business/contractors_consultants/material_specifications/default.htm

Texas Department of Transportation

Traffic Operations Division Standard

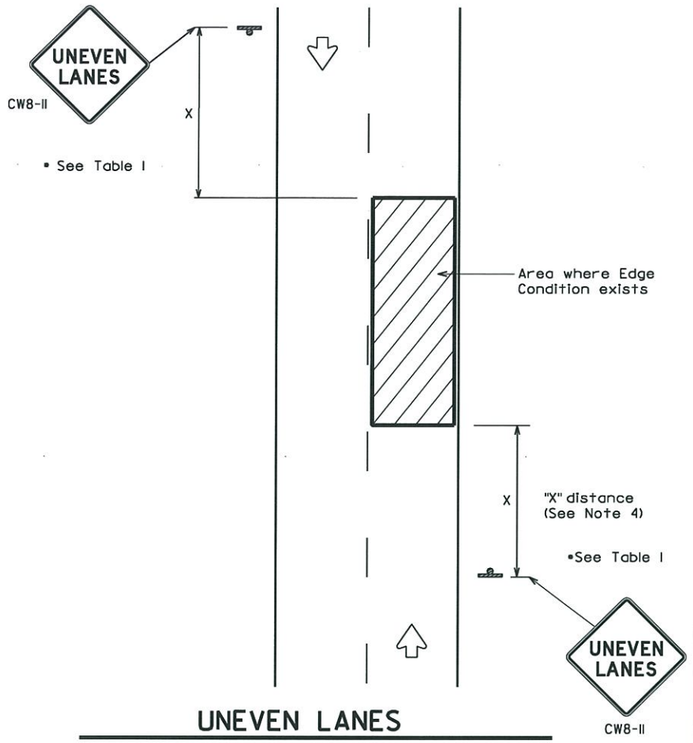
WORK ZONE SHORT TERM PAVEMENT MARKINGS

WZ(STPM)-13

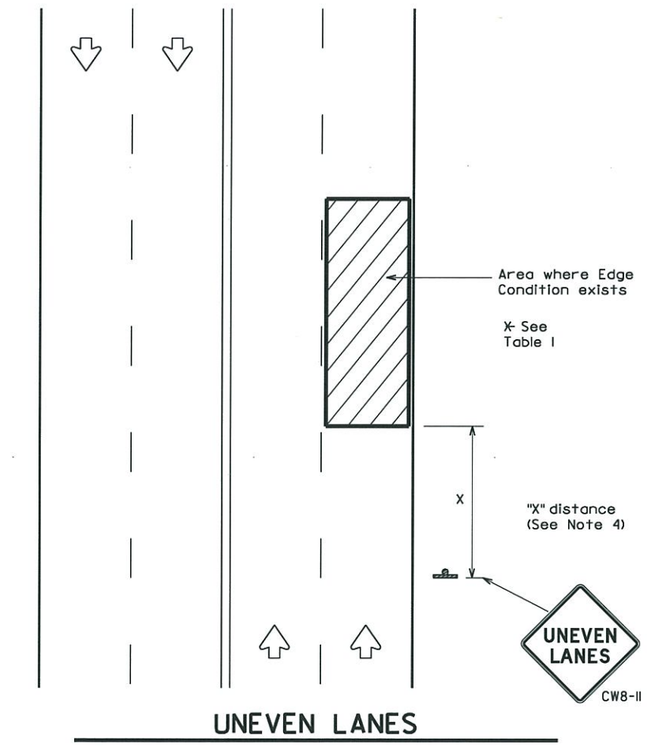
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3-03	PHR	HIDALGO		67
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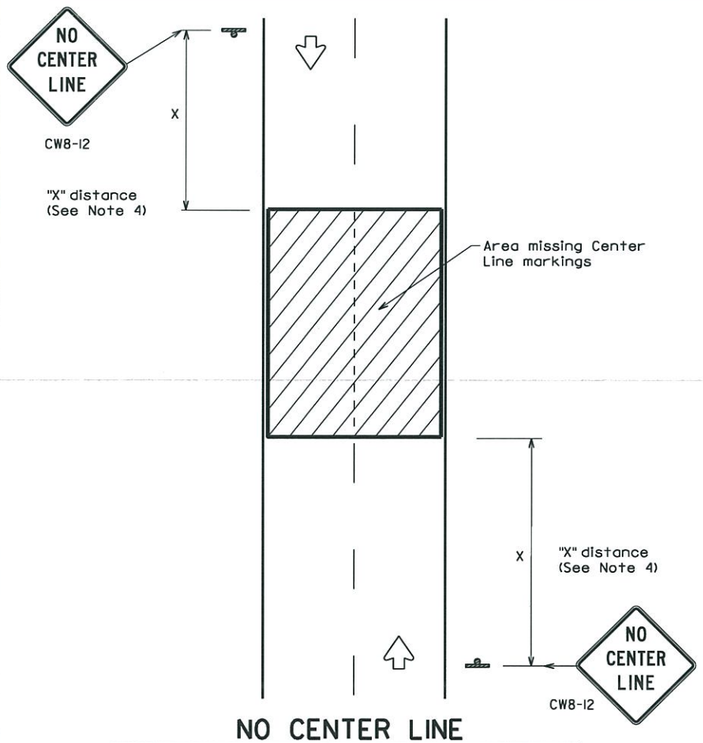
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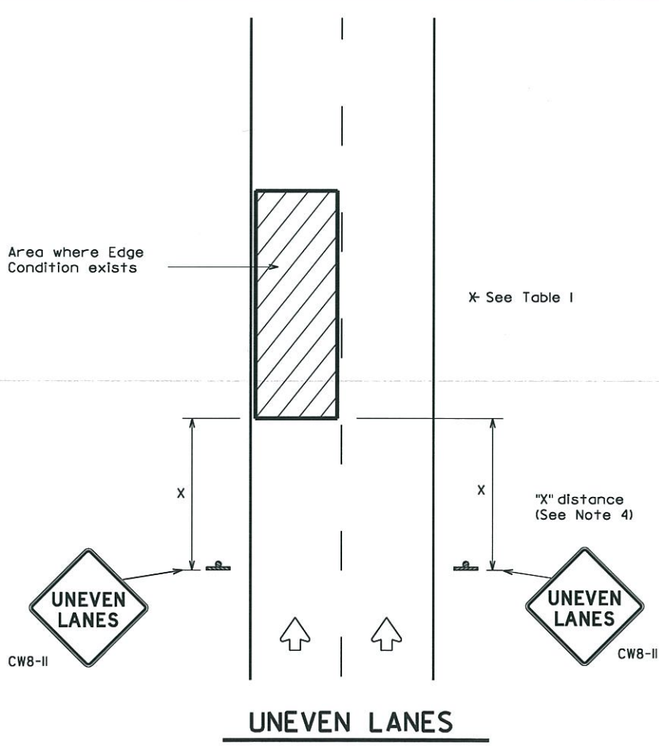
UNEVEN LANES
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
FOUR LANE CONVENTIONAL ROAD



NO CENTER LINE
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
DIVIDED ROADWAY

DEPARTMENTAL MATERIAL SPECIFICATIONS

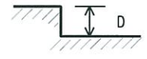
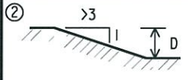
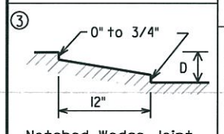
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY (REMOVABLE) PREFABRICATED PAVEMENT MARKINGS	DMS-8241
SIGN FACE MATERIALS	DMS-8300

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE B_{FL} OR TYPE C_{FL} SHEETING
BLACK	LEGEND & BORDERS	ACRYLIC NON-REFLECTIVE SHEETING

GENERAL NOTES

1. If spalling or holes occur, ROUGH ROAD (CW8-8) signs should be placed in advance of the condition and be repeated every two miles where the condition persists.
2. UNEVEN LANES (CW8-11) signs shall be installed in advance of the condition and repeated every mile. Signs installed along the uneven lane condition may be supplemented with the NEXT XX MILES (CW7-3aP) plaque or Advisory Speed (CW13-1P) plaque.
3. NO CENTER LINE (CW8-12) signs and temporary pavement markings as per the WZ(STPM) standard shall be installed if yellow centerlines separating two way traffic are obscured or obliterated. Repeat NO CENTER LINE signs every two miles where the center line markings are not in place. The signs and markings shall remain in place until permanent pavement markings are installed.
4. Signs shall be spaced at the distances recommended as per BC standards.
5. Additional signs may be required as directed by the Engineer. Signs shall remain in place until final surface is applied. Signs shall be considered subsidiary to Item 502 "BARRICADES, SIGNS AND TRAFFIC HANDLING."
6. Signs shall be fabricated and mounted on supports as shown on the BC standards and/or listed on the "Compliant Work Zone Traffic Control Devices" list.
7. Short term markings shall not be used to simulate edge lines.
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition.

TABLE 1

Edge Condition	Edge Height (D)	* Warning Devices
① 	Less than or equal to: 1¼" (maximum-planing) 1½" (typical-overlay)	Sign: CW8-11
	Distance "D" may be a maximum of 1 1/4 " for planing operations and 2" for overlay operations if uneven lanes with edge condition 1 are open to traffic after work operations cease.	
② 	Less than or equal to 3"	Sign: CW8-11
③  Notched Wedge Joint	Distance "D" may be a maximum of 3" if uneven lanes with edge condition 2 or 3 are open to traffic after work operations cease. Uneven lanes should not be open to traffic when "D" is greater than 3".	

TRAFFIC CONTROL DURING PLANING, OVERLAY AND LEVELING OPERATIONS ARE SHOWN ELSEWHERE IN THE PLANS.

MINIMUM WARNING SIGN SIZE

Conventional roads	36" x 36"
Freeways/expressways, divided roadways	48" x 48"

Texas Department of Transportation — Traffic Operations Division Standard

SIGNING FOR UNEVEN LANES

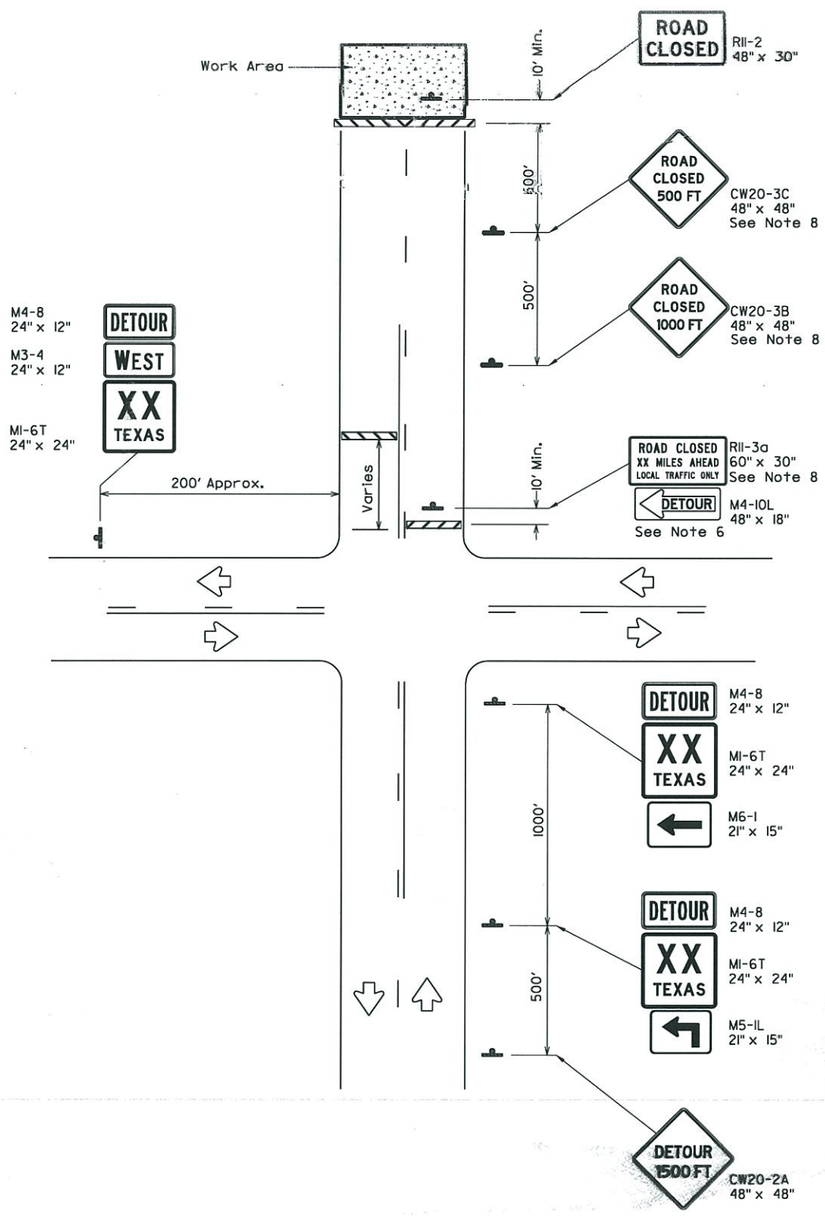
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1-97 3-03		PHR	HIDALGO		68

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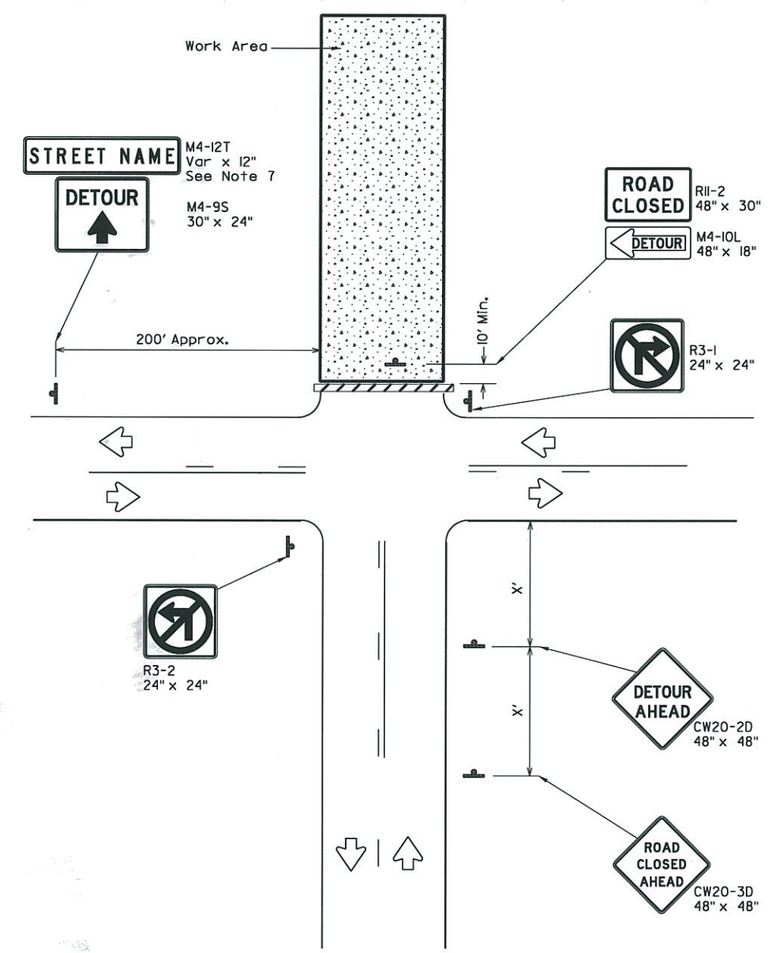
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ROAD CLOSURE BEYOND THE INTERSECTION

Signing for a Numbered Route with an Off-Site Detour



ROAD CLOSURE AT THE INTERSECTION

Signing for an Un-numbered Route with an Off-Site Detour

LEGEND	
	Type 3 Barricade
	Sign

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

* Conventional Roads Only

GENERAL NOTES

1. This sheet is intended to provide details for temporary work zone road closures. For permanent road closure details see the D&OM standards.
2. Barricades used shall meet the requirements shown on Barricade and Construction Standard BC(10) and listed on the Compliant Work Zone Traffic Control Devices list (CWZTCD).
3. Stockpiled materials shall not be placed on the traffic side of barricades.
4. Barricades at the road closure should extend from pavement edge to pavement edge.
5. Detour signing shown is intended to illustrate the type of signing that is appropriate for numbered routes or un-numbered routes as labeled. It does not indicate the full extent of detour signing required. Detour routes should be signed as shown elsewhere in the plans.
6. If the road is open for a significant distance beyond the intersection or there are significant origin/destination points beyond the intersection, the signs and barricades at this location should be located at the edge of the traveled way.
7. The Street Name (M4-12T) sign is to be placed above the DETOUR (M4-9S) sign.
8. For urban areas where there is a shorter distance between the intersection and the actual closure location, the ROAD CLOSED XX MILES AHEAD (RII-3a) sign may be replaced with a ROAD CLOSED TO THRU TRAFFIC (RII-4) sign. If adequate space does not exist between the intersection and the closure a single ROAD CLOSED AHEAD (CW20-3D) sign spaced as per the table above may replace the ROAD CLOSED 1000 FT (CW20-3B) and ROAD CLOSED 500 FT (CW20-3C) signs.
9. Signs and barricades shown shall be subsidiary to Item 502. Locations where these details will be required shall be as shown elsewhere in the plans.

Texas Department of Transportation

Traffic Operations Division Standard

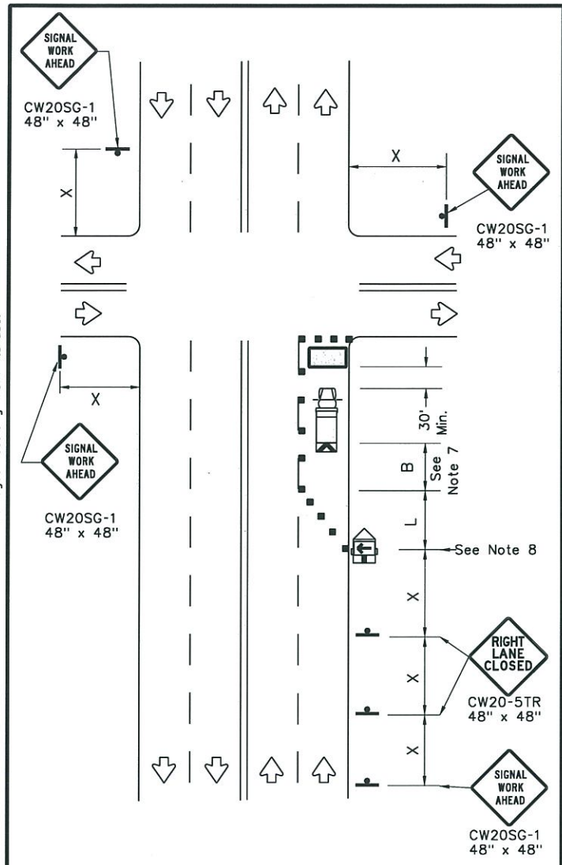
WORK ZONE ROAD CLOSURE DETAILS

WZ(RCD)-13

FILE: wzrcd-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 1995	CONT	SECT	JOB	HIGHWAY
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2-98 3-03	PHR	HIDALGO		69

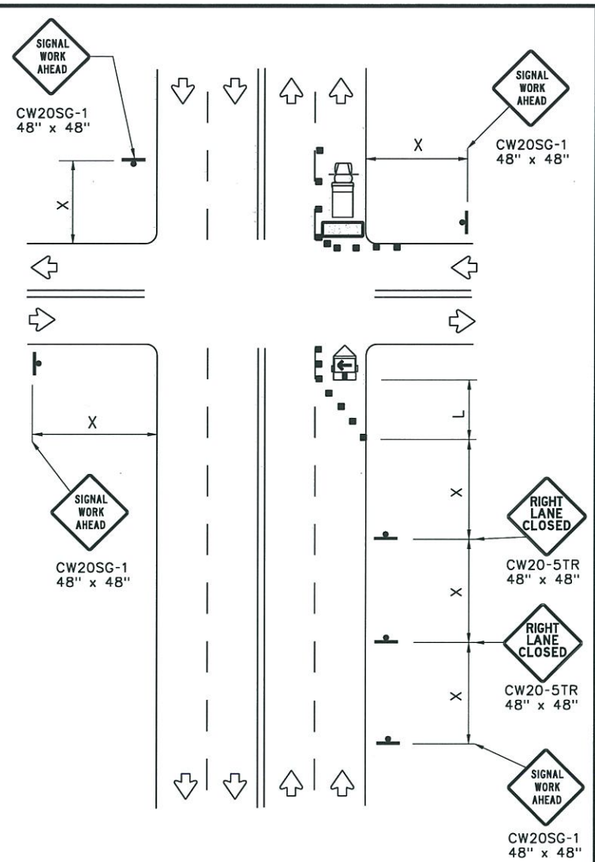
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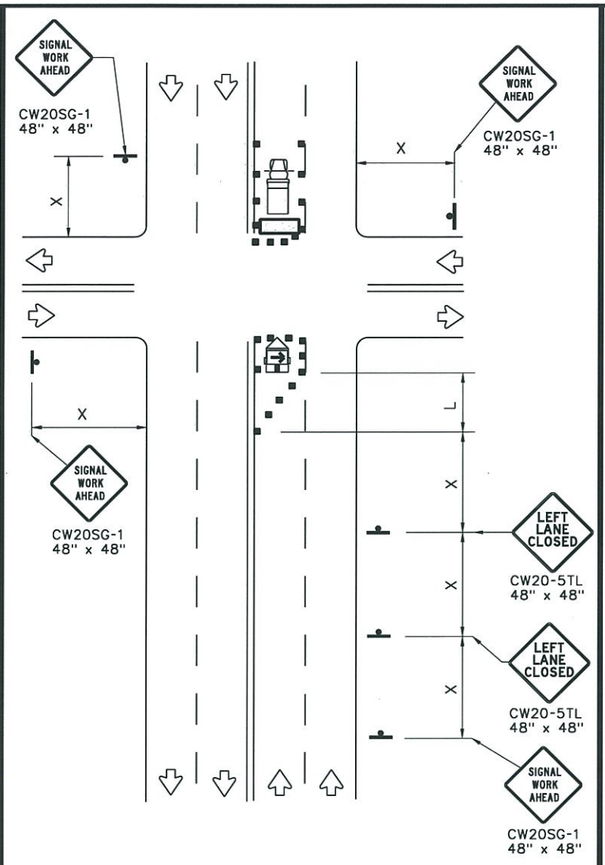
NEAR SIDE LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY



FAR SIDE RIGHT LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY



FAR SIDE LEFT LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY

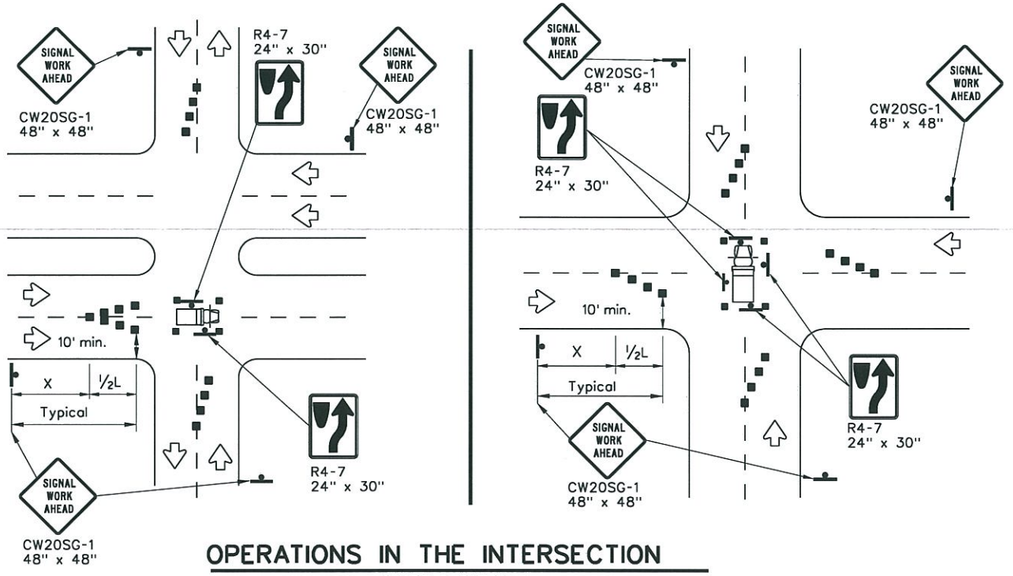
LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L=WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only

** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

WORKERS IN BUCKET TRUCKS SHALL NOT WORK ABOVE OPEN LANES OF TRAFFIC.



OPERATIONS IN THE INTERSECTION

SHORT DURATION

GENERAL NOTES

1. The minimum size channelizing device is the 28" cone. 42" Two-piece cones, drums, vertical panels or barricades will be required when the device must be left unattended at night.
2. Obstructions or hazards at the work area shall be clearly marked and delineated at all times.
3. Flaggers and Flagger Symbol (CW20-7) signs may be required according to field conditions.
4. Vehicles parked in roadway shall be equipped with at least two high intensity rotating, flashing, oscillating or strobe type lights.
5. High level warning devices (flag trees) may be used at corners of the vehicle.
6. When work operations are performed on existing signals, the signals may be placed in flashing red mode when approved by the engineer. If existing signals do not have power, All-Way Stop (R1-1 and R1-3P) signs may be implemented when approved by the engineer.
7. For Short-Term Stationary work the buffer space "B" from the above table should be used if field conditions permit. For Short Duration (less than 1 hour) any buffer space provided will enhance the safety of the setup.
8. The arrow board at this location may be omitted for Short Duration work if the work vehicle has an arrow board in operation. As an option, the arrow board may be placed at the end of the taper in the closed lane if space is not available at the beginning of the taper.
9. Signs and devices for the NEAR SIDE LANE CLOSURE may be altered for a left lane closure by using a LEFT LANE CLOSED (CW20-5TL) and adding channelizing devices on the centerline to protect the work space from opposing traffic.

SHEET 1 OF 2

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC SIGNAL WORK TYPICAL DETAILS

WZ(BTS-1)-13

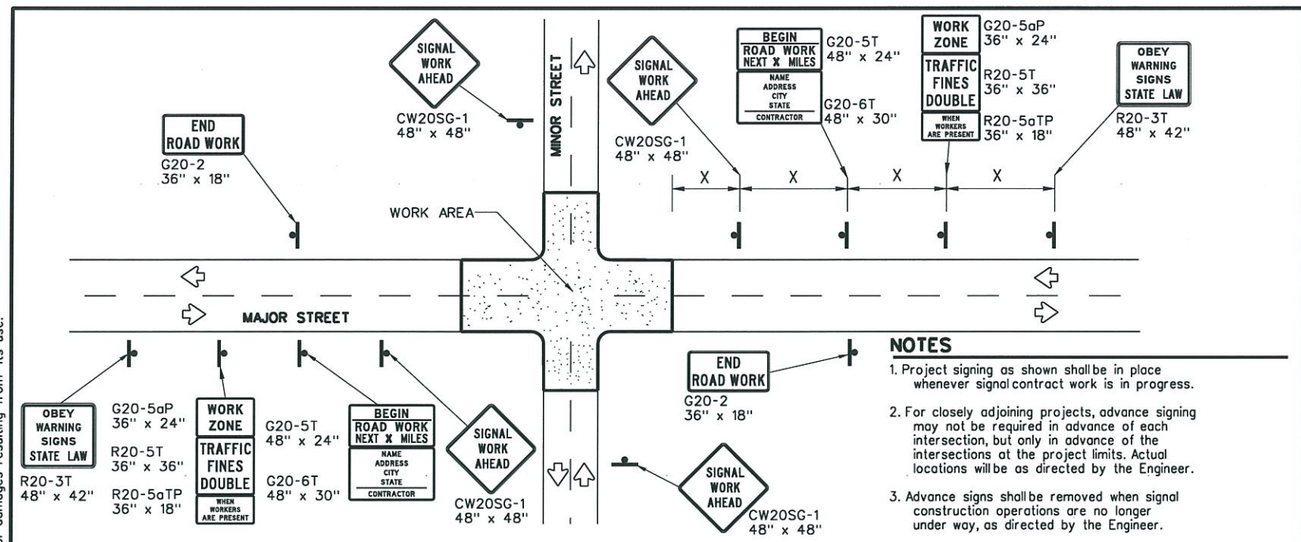
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©TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	02	323	MILE 2
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4-98 3-03	PHR	HIDALGO		70

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TYPICAL ADVANCE SIGNAL PROJECT SIGNING

FOR LONG TERM and INTERMEDIATE-TERM STATIONARY WORK OPERATIONS

NOTES

1. Project signing as shown shall be in place whenever signal contract work is in progress.
2. For closely adjoining projects, advance signing may not be required in advance of each intersection, but only in advance of the intersections at the project limits. Actual locations will be as directed by the Engineer.
3. Advance signs shall be removed when signal construction operations are no longer under way, as directed by the Engineer.
4. Warning sign spacing shown is typical for both directions.
5. See the Table on sheet 1 of 2 for Typical warning sign spacing.

GENERAL NOTES FOR WORK ZONE SIGNS

1. Signs shall be installed and maintained in a straight and plumb condition.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. Nails shall NOT be used to attach signs to any support.
5. All signs shall be installed in accordance with the plans or as directed by the Engineer.
6. The Contractor shall furnish the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD).
7. The Contractor shall furnish sign supports and substrates listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD), installed as per the manufacturer's recommendations.
8. Temporary signs that have damaged or cracked substrates and/or damaged or marred reflective sheeting shall be replaced as directed by the Engineer.
9. Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1".
10. Damaged wood posts shall be replaced. Splicing wood posts will not be allowed.

DURATION OF WORK

1. Work zone durations are defined in Part 6, Section 6G.02 of the Texas Manual on Uniform Traffic Control Devices (TMUTCD).

SIGN MOUNTING HEIGHT

1. Sign height of Long-term/Intermediate-term warning signs shall be as shown on Figure 6F-1 of the TMUTCD.
2. Sign height of Short-term/Short Duration warning signs shall be as shown on Figure 6F-2 of the TMUTCD.
3. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered, unless otherwise approved by the Engineer.
2. When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night without damaging the sign sheeting. Burlap, or heavy materials such as plywood or aluminum shall not be used to cover signs.
3. Duct tape or other adhesive material shall NOT be affixed to a sign face.
4. Signs and anchor stubs shall be removed and holes back filled upon completion of the work.

REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the requirements of the DMS and color usage table shown on this sheet.

SIGN SUPPORT WEIGHTS

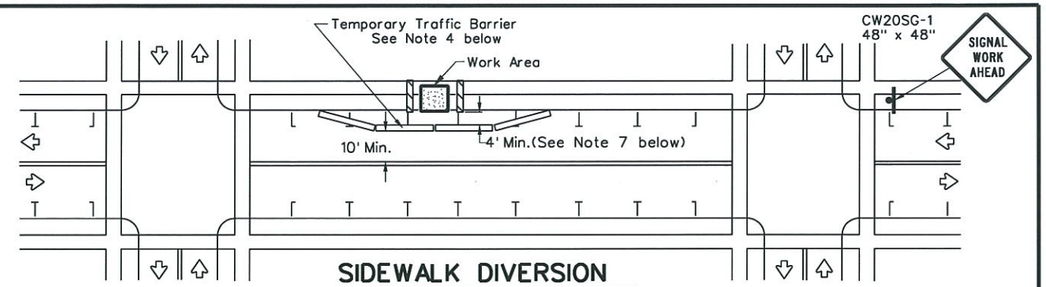
1. Weights used to keep signs from turning over should be sandbags filled with dry, cohesionless material.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects will not be permitted for use as sign support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

LEGEND	
	Sign
	Channelizing Devices
	Type 3 Barricade

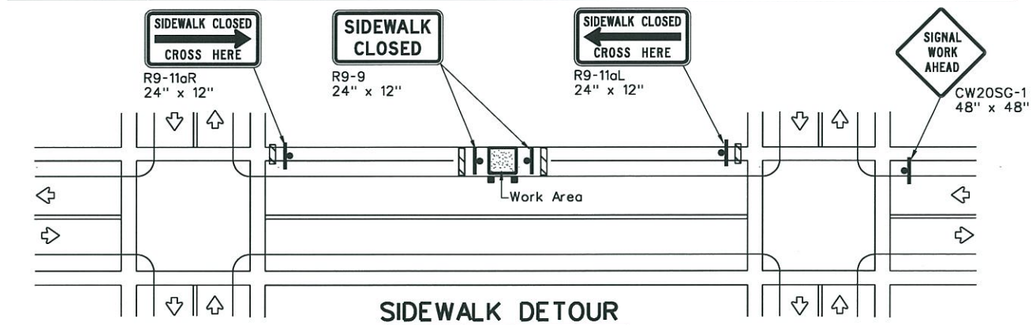
DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN FACE MATERIALS	DMS-8300
FLEXIBLE ROLL-UP REFLECTIVE SIGNS	DMS-8310

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE B_{FL} OR TYPE C_{FL} SHEETING
WHITE	BACKGROUND	TYPE A SHEETING
BLACK	LEGEND & BORDERS	ACRYLIC NON-REFLECTIVE SHEETING

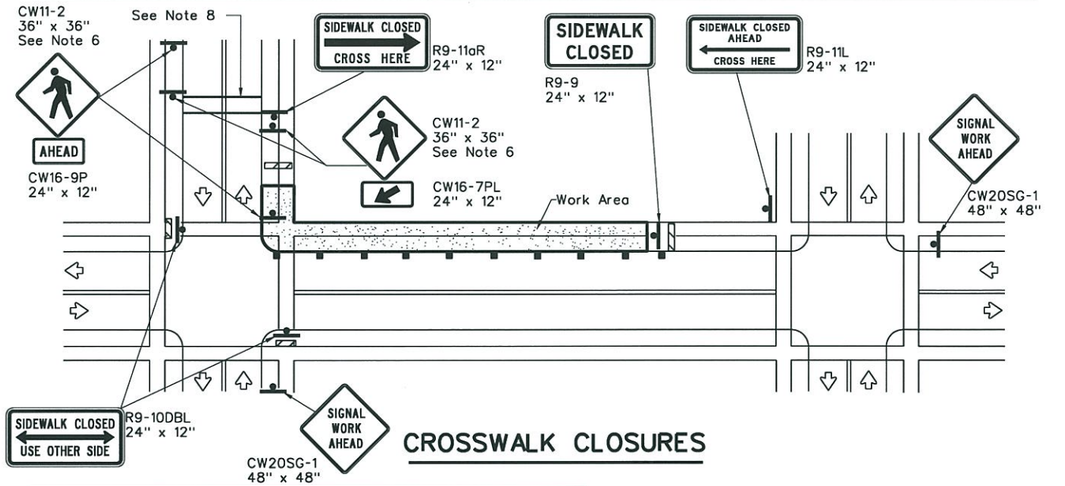
Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found at the following web address:
http://www.txdot.gov/txdot_library/publications/construction.htm



SIDEWALK DIVERSION



SIDEWALK DETOUR



CROSSWALK CLOSURES

PEDESTRIAN CONTROL

1. Holes, trenches or other hazards shall be adequately protected by covering, delineating or surrounding the hazard with orange plastic pedestrian fencing or longitudinal channelizing devices, or as directed by the Engineer.
2. "CROSSWALK CLOSURES" as detailed above will require the Engineer's approval prior to installation.
3. R9 series signs shown may be placed on supports detailed on the BC standards or CWZTCD list, or when fabricated from approved lightweight plastic substrates, they may be mounted on top of a plastic drum at or near the location shown.
4. For speeds less than 45 mph longitudinal channelizing devices may be used instead of traffic barriers when approved by the Engineer. Attenuation of blunt ends and installation of water filled devices shall be as per BC(9) and manufacturer's recommendations.
5. Location of devices are for general guidance. Actual device spacing and location must be field adjusted to meet actual conditions.
6. Where pedestrians with visual disabilities normally use the closed sidewalk Detectable Pedestrian Barricades should be used instead of the Type 3 Barricades shown.
7. The width of existing sidewalk should be maintained if practical.
8. Pavement markings for mid-block crosswalks shall be paid for under the appropriate bid items.
9. When crosswalks or other pedestrian facilities are closed or relocated, temporary facilities shall be detectable and shall include accessibility features consistent with the features present in the existing pedestrian facility.

Texas Department of Transportation

Traffic Operations Division Standard

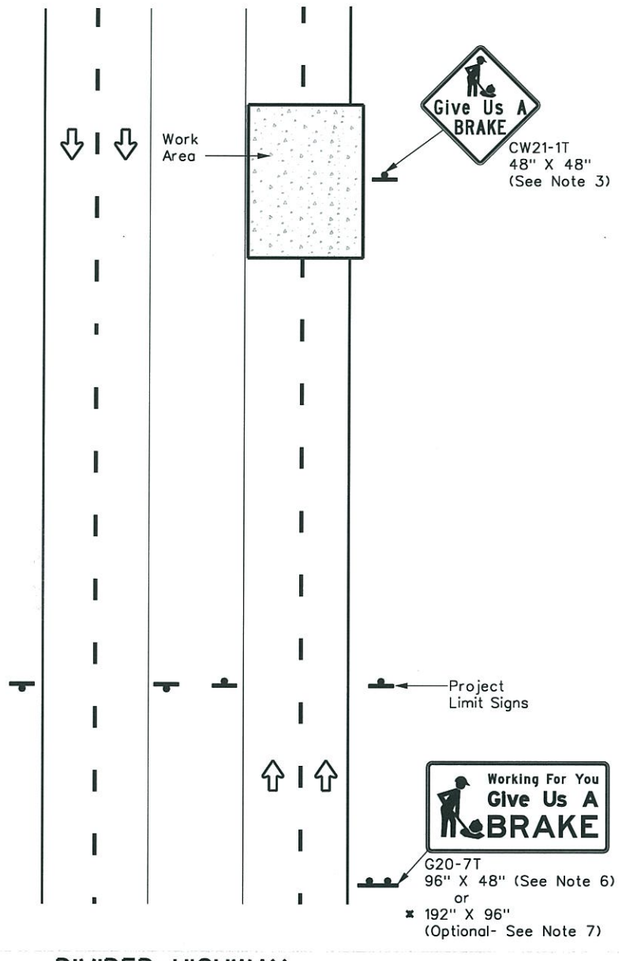
TRAFFIC SIGNAL WORK BARRICADES AND SIGNS

WZ(BTS-2)-13

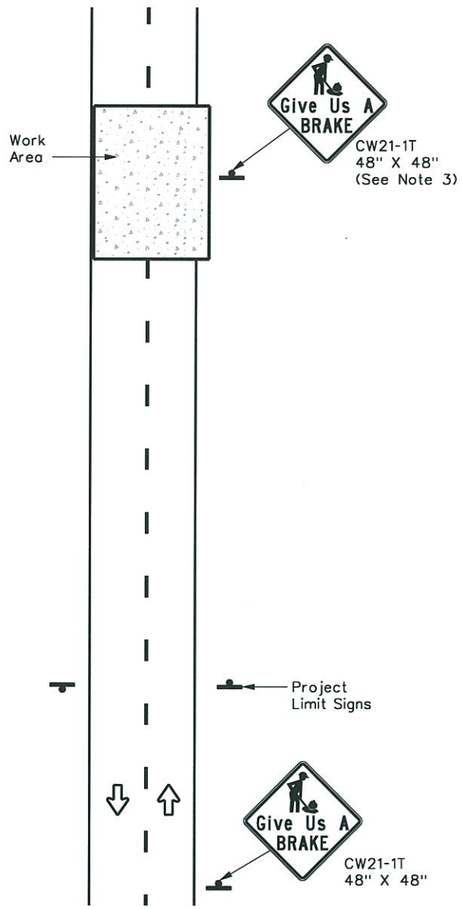
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©TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
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DIVIDED HIGHWAY



UNDIVIDED HIGHWAY

SIGNS ARE SHOWN FOR ONE DIRECTION OF TRAVEL

* When the optional larger WORKING FOR YOU GIVE US A BRAKE (G20-7T) 192" x 96" sign is required, the locations shall be noted elsewhere in the plans.

SUMMARY OF LARGE SIGNS

BACKGROUND COLOR	SIGN DESIGNATION	SIGN	SIGN DIMENSIONS	REFLECTIVE SHEETING	SQ FT	GALVANIZED STRUCTURAL STEEL			DRILLED SHAFT 24" DIA. (LF)
						Size	(LF) ①	(LF) ②	
Orange	G20-7T	Working For You Give Us A BRAKE	96" X 48"	Type B_{FL} or C_{FL}	32	▲	▲	▲	▲
Orange	G20-7T	Working For You Give Us A BRAKE	192" X 96"	Type B_{FL} or C_{FL}	128	W8x18	16	17	12

▲ See Note 6 Below

LEGEND	
	Sign
	Large Sign
	Traffic Flow

DEPARTMENTAL MATERIAL SPECIFICATIONS	
PLYWOOD SIGN BLANKS	DMS-7100
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE B_{FL} OR TYPE C_{FL}
BLACK	LEGEND & BORDERS	NON-REFLECTIVE ACRYLIC FILM

GENERAL NOTES

1. See BC and SMD sheets for additional sign support details.
2. Sign locations shall be approved by the Engineer.
3. For projects more than two miles in length, Give Us a BRAKE signs should be repeated halfway through the project. The Give Us a Brake (CW21-1T) may be used for this purpose.
4. Work zone speed limits are sometimes used in conjunction with GIVE US A BRAKE signing. See BC(3) for location and spacing of construction speed zone signing when required.
5. Give Us a Brake (CW21-1T) signs and supports shall be considered subsidiary to Item 502, "Barricades, Signs and Traffic Handling."
6. The 96" X 48" Working For You Give Us A BRAKE (G20-7T) may use a 1/2" or 5/8" plywood substrate or 0.125" aluminum sheeting substrate and may be supported by two 4" x 6" wood posts with drilled holes for breakaway as per BC(5) and will be subsidiary to Item 502.
7. The Working For You Give Us A BRAKE (G20-7T) 192" X 96" sign shall be paid for under the following specification items:
   Item 636 - Aluminum Signs
   Item 647 - Large Roadside Sign Supports and Assemblies.
   Item 416 - Drilled Shaft Foundations
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.

Texas Department of Transportation

Traffic Operations Division Standard

WORK ZONE "GIVE US A BRAKE" SIGNS

WZ(BRK)-13

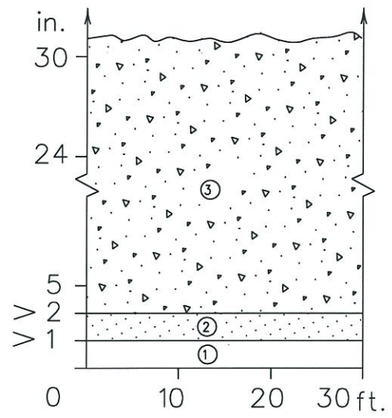
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6-96 5-98 7-13	DIST	COUNTY		SHEET NO.
8-96 3-03	PHR	HIDALGO		72

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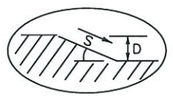
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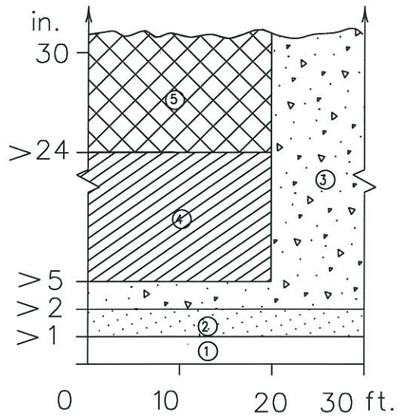
DEFINITION OF TREATMENT ZONES FOR VARIOUS EDGE CONDITIONS

Edge Height (D) in Inches versus Lateral Clearance (Y) in Feet



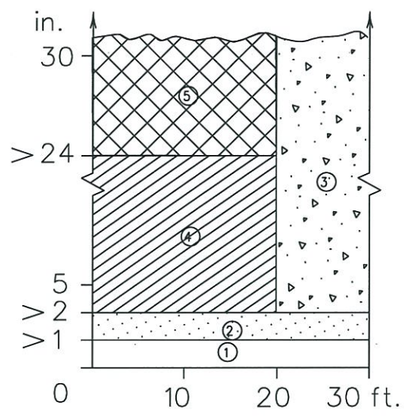
Edge Condition I
S = (3:1) (or flatter)



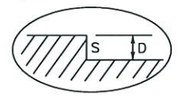


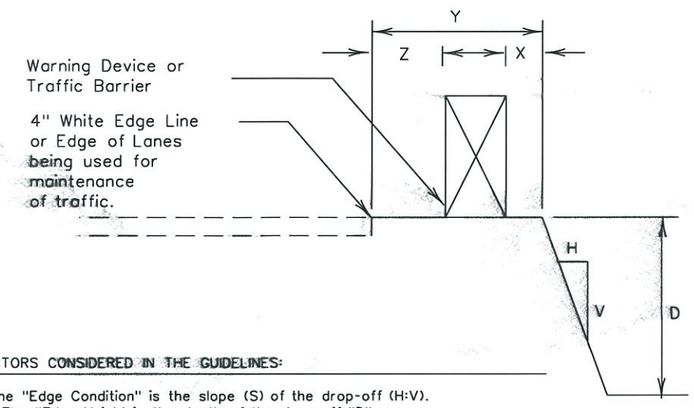
Edge Condition II
S = ((2.99):1) to (1:1)





Edge Condition III
S is steeper than (1:1)





FACTORS CONSIDERED IN THE GUIDELINES:

1. The "Edge Condition" is the slope (S) of the drop-off (H:V). The "Edge Height is the depth of the drop-off "D".

2. Distance "X" is to be the maximum practical under job conditions. Two feet minimum for high speed conditions. Distance "Y" is the lateral clearance from edge of travel lane to edge of dropoff. Distance "Z" does not have a minimum.

3. In addition to the factors considered in the guidelines, each construction zone drop-off situation should be analyzed individually, taking into account other variables, such as: traffic mix, posted speed in the construction zone, horizontal curvature, and the practicality of the treatment options.

4. The conditions for indicating the use of positive or protective barriers are given by Zone-5 and Figure-1. Traffic barriers are primarily applicable for high speed conditions. Urban areas with speeds of 30 mph or less may have a lesser need for signing, delineation, and barriers. Right-angled edges, however, with "D" greater than 2 inches and located within a lateral offset of 6 feet, may indicate a higher level of treatment.

5. If the distance "Y" must be less than 3 feet, the use of a positive barrier may not be feasible. In such a case, consider either: 1) narrowing the lanes to a desired 11 to 12 feet or 10 foot minimum (see CW20-8 sign), or 2) provide an edge slope such as Edge Condition I.

Zone	Treatment Types Guidelines:
①	No treatment.
②	CW 8-11 "Uneven Lanes" signs.
③	CW 8-9a "Shoulder Drop-Off" or CW 8-11 signs plus vertical panels.
④	CW 8-9a or CW 8-11, signs plus drums. Where restricted space precludes the use of drums, use vertical panels. An edge fill may be provided to change the edge slope to that of the preferable Edge Condition I.
⑤	Check indications (Figure-1) for positive barrier. Where positive barrier is not indicated, the treatment shown above for Zone- 4 may be used after consideration of other applicable factors.

Edge Condition Notes:

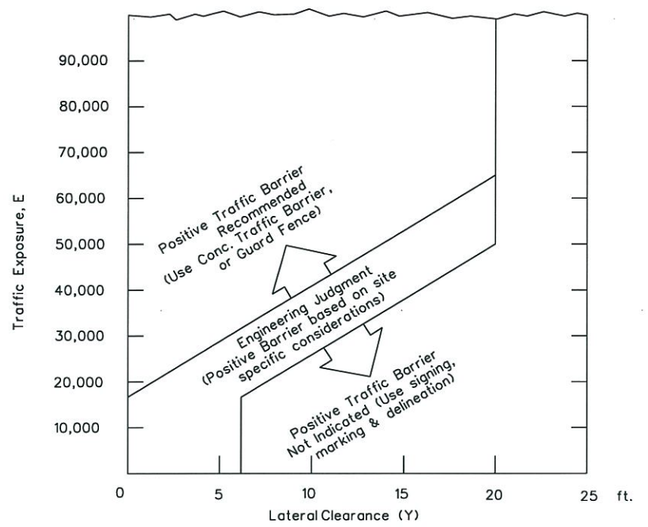
1. Edge Condition I: Most vehicles are able to traverse an edge condition with a slope rate of (3 to 1) or flatter. The slope must be constructed with a compacted material capable of supporting vehicles.

2. Edge Condition II: Most vehicles are able to traverse an edge condition with a slope between (2.99 to 1) and (1to 1) so long as "D" does not exceed 5 inches. Under-carriage drag on most automobiles will occur when "D" exceeds 6 inches. As "D" exeeds 24 inches, the possibility for rollover is greater in most vehicles.

3. Edge Condition III: When slopes are greater than (1 to 1) and where "D" is greater than 2 inches, a more difficult control factor may exist for some vehicles, if not properly treated. For example, where "D" is greater than 2 inches and up to 24 inches different types of vehicles may experience different steering control at different edge heights. Automobiles might experience more steering control differential when "D" is greater than 2 inches and up to 5 inches. Trucks, particularly those with high loads, have more steering control differential when "D" is greater than 5 inches and up to 24 inches. When "D" exceeds 24 inches, the possibility of rollover is greater for most vehicles.

4. Milling or overlay operations that result in Edge Condition III should not be in place without appropriate warning treatments, and these conditions should not be left in place for extended periods of time.

FIGURE-1: CONDITIONS INDICATING USE OF POSITIVE BARRIER FOR ZONE 5 (▨)



1 E = ADT x T
Where ADT is that portion of the average daily traffic volume traveling within 20 feet (generally two adjacent lanes) of the edge dropoff condition; and, T is the duration time in years of the dropoff condition.

2 Figure-1 provides a practical approach to the use of positive barriers for the protection of vehicles from pavement drop-offs. Other factors, such as the presence of heavy machinery, construction workers, or the mix and volume of traffic may make the use of positive barriers appropriate, even when the edge condition alone may not justify the use of a barrier.

3 An approved end treatment should be provided for any positive barrier end located within a lateral offset of 20 feet from the edge of the travel lane.

These guidelines apply to temporary traffic control areas or work zones where continuous pavement edges or drop-offs exists parallel and adjacent to a lane used by traffic. The edge conditions may be present between shoulders and travel lanes, between adjacent or opposing travel lanes, or at intermediate points across the width of the paved surface. Due to the variability in construction operations, tolerances in the variables may be allowed by the engineer. These guidelines do not apply to short term operations. These guidelines do not constitute a rigid standard or policy; rather, they are guidance to be used in conjunction with engineering judgement. These guidelines may be updated on the Design Division's on-line manuals.

Engineer's Seal

Date _____

Texas Department of Transportation
Traffic Operations Division

TREATMENT FOR VARIOUS EDGE CONDITIONS

©TxDOT August 2000

REVISIONS
03-01
08-01 correct typos

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

CONT	SECT	JOB	HIGHWAY
0921	02	323	MILE 2
DIST	COUNTY		SHEET NO.
21	HIDALGO		73

MILE 2 NORTH CENTERLINE (WEST LA HOMA RD.)(CHN01_ROW)

Beginning chain CHN01_ROW description

Point CHN01	N	16,616,347.039	E	1,029,855.699	Sta 5+30.71
Course from CHN01 to CHN02 N 83° 28' 14.08" E Dist 47.595					
Point CHN02	N	16,616,352.451	E	1,029,902.985	Sta 5+78.30
Course from CHN02 to CHN03 S 83° 47' 28.30" E Dist 100.095					
Point CHN03	N	16,616,341.625	E	1,030,002.493	Sta 6+78.40
Course from CHN03 to CHN04 S 81° 06' 21.99" E Dist 321.600					
Point CHN04	N	16,616,291.904	E	1,030,320.227	Sta 10+00.00

Ending chain CHN01_ROW description

MILE 2 NORTH CENTERLINE (EAST LA HOMA RD.)(CHN03)

Beginning chain CHN03 description

Point 300	N	16,615,962.831	E	1,030,268.731	Sta 10+00.00
Course from 300 to PC CHN03-1 S 81° 06' 21.99" E Dist 66.456					

Curve Data

Curve CHN03-1					
P.I. Station	12+42.08	N	16,615,925.404	E	1,030,507.899
Delta =	29° 10' 04.27" (LT)				
Degree =	8° 29' 17.75"				
Tangent =	175.622				
Length =	343.626				
Radius =	675.000				
External =	22.473				
Long Chord =	339.927				
Mid. Ord. =	21.749				
P.C. Station	10+66.46	N	16,615,952.556	E	1,030,334.388
P.T. Station	14+10.08	N	16,615,986.259	E	1,030,672.640
C.C.		N	16,616,619.440	E	1,030,438.746
Back = S	81° 06' 21.99" E				
Ahead = N	69° 43' 33.74" E				
Chord Bear = N	84° 18' 35.88" E				

Course from PT CHN03-1 to PC CHN03-2 N 69° 43' 33.74" E Dist 1,009.503

Curve Data

Curve CHN03-2					
P.I. Station	26+80.00	N	16,616,426.297	E	1,031,863.881
Delta =	29° 11' 34.10" (RT)				
Degree =	5° 43' 46.48"				
Tangent =	260.413				
Length =	509.511				
Radius =	1,000.000				
External =	33.351				
Long Chord =	504.017				
Mid. Ord. =	32.275				
P.C. Station	24+19.58	N	16,616,336.061	E	1,031,619.601
P.T. Station	29+29.10	N	16,615,398.015	E	1,031,966.111
C.C.					
Back = N	69° 43' 33.74" E				
Ahead = S	81° 04' 52.16" E				
Chord Bear = N	84° 19' 20.79" E				

Course from PT CHN03-2 to PC CHN03-3 S 81° 04' 52.16" E Dist 1,838.506

Curve Data

Curve CHN03-3					
P.I. Station	48+27.11	N	16,616,091.665	E	1,033,996.210
Delta =	6° 48' 39.51" (LT)				
Degree =	5° 43' 46.48"				
Tangent =	59.507				
Length =	118.874				
Radius =	1,000.000				
External =	1.769				
Long Chord =	118.804				
Mid. Ord. =	1.766				
P.C. Station	47+67.60	N	16,616,100.890	E	1,033,937.423
P.T. Station	48+86.48	N	16,616,089.476	E	1,034,055.677
C.C.		N	16,617,088.799	E	1,034,092.458
Back = S	81° 04' 52.16" E				
Ahead = S	87° 53' 31.67" E				
Chord Bear = S	84° 29' 11.92" E				

Curve Data

Curve CHN03-4					
P.I. Station	49+45.17	N	16,616,087.317	E	1,034,114.335
Delta =	6° 43' 06.83" (RT)				
Degree =	5° 43' 46.48"				
Tangent =	58.698				
Length =	117.261				
Radius =	1,000.000				
External =	1.721				
Long Chord =	117.194				
Mid. Ord. =	1.718				
P.C. Station	48+86.48	N	16,616,089.476	E	1,034,055.677
P.T. Station	50+03.74	N	16,616,078.310	E	1,034,172.338
C.C.		N	16,615,090.153	E	1,034,018.896
Back = S	87° 53' 31.67" E				
Ahead = S	81° 10' 24.84" E				
Chord Bear = S	84° 31' 58.26" E				

Course from PT CHN03-4 to 301 S 81° 10' 24.84" E Dist 980.188

Point 301	N	16,615,927.909	E	1,035,140.918	Sta 59+83.92
Course from 301 to PC CHN03-5 S 81° 27' 23.38" E Dist 533.667					

Curve Data

Curve CHN03-5					
P.I. Station	65+53.44	N	16,615,843.301	E	1,035,704.115
Delta =	4° 06' 22.69" (RT)				
Degree =	5° 43' 46.48"				
Tangent =	35.850				
Length =	71.668				
Radius =	1,000.000				
External =	0.642				
Long Chord =	71.653				
Mid. Ord. =	0.642				
P.C. Station	65+17.59	N	16,615,848.627	E	1,035,668.663
P.T. Station	65+89.26	N	16,615,835.450	E	1,035,739.095
C.C.		N	16,614,859.723	E	1,035,520.103
Back = S	81° 27' 23.38" E				
Ahead = S	77° 21' 00.70" E				
Chord Bear = S	79° 24' 12.04" E				

MILE 2 NORTH CENTERLINE (EAST LA HOMA RD.)(CHN03)(CONT.)

Curve Data

Curve CHN03-6					
P.I. Station	66+25.11	N	16,615,827.599	E	1,035,774.074
Delta =	4° 06' 22.69" (LT)				
Degree =	5° 43' 46.48"				
Tangent =	35.850				
Length =	71.668				
Radius =	1,000.000				
External =	0.642				
Long Chord =	71.653				
Mid. Ord. =	0.642				
P.C. Station	65+89.26	N	16,615,835.450	E	1,035,739.095
P.T. Station	66+60.93	N	16,615,822.274	E	1,035,809.526
C.C.		N	16,616,811.177	E	1,035,958.086
Back = S	77° 21' 00.70" E				
Ahead = S	81° 27' 23.38" E				
Chord Bear = S	79° 24' 12.04" E				

Course from PT CHN03-6 to 302 S 81° 27' 23.38" E Dist 1,967.480

Point 302	N	16,615,529.984	E	1,037,755.174	Sta 86+28.41
Course from 302 to PC CHN03-7 S 81° 27' 23.44" E Dist 1,678.779					

Curve Data

Curve CHN03-7					
P.I. Station	103+68.54	N	16,615,271.470	E	1,039,475.995
Delta =	7° 01' 17.99" (RT)				
Degree =	5° 43' 46.48"				
Tangent =	61.352				
Length =	122.551				
Radius =	1,000.000				
External =	1.880				
Long Chord =	122.474				
Mid. Ord. =	1.877				
P.C. Station	103+07.19	N	16,615,280.585	E	1,039,415.324
P.T. Station	104+29.74	N	16,615,255.007	E	1,039,535.098
C.C.		N	16,614,291.681	E	1,039,266.764
Back = S	81° 27' 23.44" E				
Ahead = S	74° 26' 05.45" E				
Chord Bear = S	77° 56' 44.45" E				

Curve Data

Curve CHN03-8					
P.I. Station	104+91.09	N	16,615,238.544	E	1,039,594.200
Delta =	7° 01' 17.99" (LT)				
Degree =	5° 43' 46.48"				
Tangent =	61.352				
Length =	122.551				
Radius =	1,000.000				
External =	1.880				
Long Chord =	122.474				
Mid. Ord. =	1.877				
P.C. Station	104+29.74	N	16,615,255.007	E	1,039,535.098
P.T. Station	105+52.29	N	16,615,229.430	E	1,039,654.872
C.C.		N	16,616,218.333	E	1,039,803.432
Back = S	74° 26' 05.45" E				
Ahead = S	81° 27' 23.44" E				
Chord Bear = S	77° 56' 44.45" E				

Course from PT CHN03-8 to 303 S 81° 27' 23.44" E Dist 716.052

Point 303	N	16,615,123.053	E	1,040,362.978	Sta 112+68.34
Course from 303 to PC CHN03-9 S 81° 27' 23.34" E Dist 654.000					

Curve Data

Curve CHN03-9					
P.I. Station	119+83.70	N	16,615,016.780	E	1,041,070.393
Delta =	7° 01' 17.99" (LT)				
Degree =	5° 43' 46.48"				
Tangent =	61.352				
Length =	122.551				
Radius =	1,000.000				
External =	1.880				
Long Chord =	122.474				
Mid. Ord. =	1.877				
P.C. Station	119+22.34	N	16,615,025.894	E	1,041,009.721
P.T. Station	120+44.89	N	16,615,015.150	E	1,041,131.723
C.C.		N	16,616,014.798	E	1,041,158.282
Back = S	81° 27' 23.34" E				
Ahead = S	88° 28' 41.33" E				
Chord Bear = S	84° 58' 02.33" E				

Curve Data

Curve CHN03-10					
P.I. Station	121+06.25	N	16,615,013.521	E	1,041,193.054
Delta =	7° 01' 17.99" (RT)				
Degree =	5° 43' 46.48"				
Tangent =	61.352				
Length =	122.551				
Radius =	1,000.000				
External =	1.880				
Long Chord =	122.474				
Mid. Ord. =	1.877				
P.C. Station	120+44.89	N	16,615,015.150	E	1,041,131.723
P.T. Station	121+67.45	N	16,615,004.406	E	1,041,253.726
C.C.		N	16,614,015.503	E	1,041,105.165
Back = S	88° 28' 41.33" E				
Ahead = S	81° 27' 23.34" E				
Chord Bear = S	84° 58' 02.33" E				

Course from PT CHN03-10 to PC CHN03-11 S 81° 27' 23.34" E Dist 1,271.334

Curve Data

Curve CHN03-11					
P.I. Station	134+66.19	N	16,614,811.464	E	1,042,538.057
Delta =	3° 08' 23.98" (LT)				
Degree =	5° 43' 46.48"				
Tangent =	27.408				
Length =	54.803				
Radius =	1,000.000				
External =	0.376				
Long Chord =	54.796				
Mid. Ord. =	0.375				
P.C. Station	134+38.78	N	16,614,815.536	E	1,042,510.952
P.T. Station	134+93.58	N	16,614,808.883	E	1,042,565.343
C.C.		N	16,615,804.440	E	1,042,659.513
Back = S	81° 27' 23.34" E				
Ahead = S	84° 35' 47.31" E				
Chord Bear = S	83° 01' 35.32" E				

MILE 2 NORTH CENTERLINE (EAST LA HOMA RD.)(CHN03)(CONT.)

Curve Data

Curve CHN03-12					
P.I. Station	135+20.99	N	16,614,806.302	E	1,042,592.630
Delta =	3° 08' 23.98" (RT)				
Degree =	5° 43' 46.48"				
Tangent =	27.408				
Length =	54.803				
Radius =	1,000.000				
External =	0.376				
Long Chord =	54.796				
Mid. Ord. =	0.375				
P.C. Station	134+93.58	N	16,614,808.883	E	1,042,565.343
P.T. Station	135+48.39	N	16,614,802.231	E	1,042,619.734
C.C.		N	16,613,813.327	E	1,042,471.174
Back = S	84° 35' 47.31" E				
Ahead = S	81° 27' 23.34" E				
Chord Bear = S	83° 01' 35.32" E				

Course from PT CHN03-12 to 304 S 81° 27' 23.34" E Dist 360.625

Point 304	N	16,614,748.656	E	1,042,976.358	Sta 139+09.01

Ending chain CHN03 description

STATE OF TEXAS
DAMIEN B. TIJERINA
104828
LICENSED
PROFESSIONAL ENGINEER
5/2/2014

HIDALGO COUNTY TEXAS

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Texas Department of Transportation

L&G Engineering
Texas Registered Engineering Firm F-4105

Highway / Civil
Structural / Bridge
Environmental
Constr. Material Testing

MILE 2 NORTH ROADWAY DATA

SCALE:
HOR. = N.T.S.
VER. =

SHEET 1 OF 1

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.					SHEET NO.
CK DN: D.B.T.	6	TX						74
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.			HIGHWAY NO.
CK DW: D.B.T.	21	HIDALGO	0921	02	323			MILE 2
TR:								
CK TR:								

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STA. 5+78.27
BEGIN INCIDENTAL CONSTR.
(MATCH. EXIST. PAVEMENT)
CSJ:0921-02-323

STA. 5+78.30, 9' LT
BEGIN TRANSITION
(MATCH EXIST. RDWY.)

SEE IRRIGATION LAYOUT

STA. 6+78.40, 20' LT
END TRANSITION

STA. 9+87.40
END INCIDENTAL CONSTR.
(MATCH. EXIST. PAVEMENT)
CSJ:0921-02-323

EXIST. 103' R.O.W.

PROP. 50' CORNER CLIP

PROP. R.O.W.

PROP. 50' R

POT 10+00.00

POT 5+30.71

POT 5+78.30

POT 6+78.40

PROP. MILE 2 NORTH ℄
S 81° 06' 21.99" E

S 83° 47' 28.30" E

N 83° 28' 14.08" E

6+00 7+00 8+00 9+00 10+00

20' PROP. 40' RDWY.

30' PROP. 60' R.O.W.

2.5%

EXIST. 40' R.O.W.

STA. 6+78.40, 20' RT
END TRANSITION

STA. 5+78.30, 12' RT
BEGIN TRANSITION
(MATCH EXIST. RDWY.)

EXIST. R.O.W.

EXIST. 50' R.O.W.

EXIST. ROADWAY TO BE OBLITERATED

PROP. R.O.W.

PROP. 50' CORNER CLIP

PROP. 50' R

EXIST. R.O.W.

EXIST. 20' HCID #6 R.O.W.

LA HOMA RD

EXIST. R.O.W.

NOTE: ALL TREES WITHIN R.O.W. ARE TO BE REMOVED UNDER ITEM 100 "PREP. R.O.W."

SHEET SUMMARY

ITEM	DESCRIPTION	UNIT	QUANTITY
106	OBLITERATING ABANDONED ROAD	STA	2.4

LEGEND:

- PROPOSED DRIVEWAY OR TURNOUT (SEE DRIVEWAY/TURN TABLE FOR QUANTITIES & PIPE QUANTITIES)
- PROPOSED SIDEWALK
- ROADWAY TO BE OBLITERATED
- PROPOSED CURB RAMP. INCLUDES ALL SIDEWALKS, CONCRETE & APPURTENANCES NECESSARY FOR THE COMPLETION OF THE CURB RAMP
- TO BE REMOVED UNDER ITEM 496 INCLUDES PAYMENT FOR REMOVAL OF ALL APPURTENANCES (SEE DRIVEWAY TABLE FOR PAYMENT)
- REMOVAL, RELOCATION AND INSTALLATION OF MAILBOXES ITEM 560
- TO BE REMOVED UNDER ITEM 100 "PREP. ROW"
- OBJ. MRKR. (OM-2SR) (B)
- DELINEATORS TY (A) D-SW FLEX 6') PLACED EVERY 100' ALONG MBGF
- PROPOSED DELINEATOR ASM TY "B" D-SW
- CARE IS TO BE TAKEN WHEN PLACING PIPE AND TRAFFIC SIGNAL/PEDESTRIAN POLES

NOTE:

XXXX SEE ALIGNMENT DATA SHEET FOR PROP. CENTERLINE DATA.

SEE SURVEY DATA SHEET FOR BM STATIONS, OFFSET, ELEV. ETC.

PROP. PGL & EXIST. NG

STA. 5+78.27
BEGIN INCIDENTAL CONSTRUCTION
EL= 154.41'
(MATCH. EXIST. PAVEMENT)
CSJ:0921-02-323

STA = 7+16.00
EL = 155.95'

EXIST. MILE 2 NORTH ℄ PROFILE

(+)0.7015 %

STA = 8+50.00
EL = 156.89'

PROP. PGL

(+)0.0143 %

STA = 9+20.00
EL = 156.90'

(-)0.5426 %

STA. 9+87.40
END INCIDENTAL CONSTR.
EL= 156.68'
(MATCH. EXIST. PAVEMENT)
CSJ:0921-02-323

	6+00	7+00	8+00	9+00	10+00
PROP. PGL	154.65	155.77	156.54	156.90	156.74
EXIST. NG	154.48	154.74	155.43	156.07	

EXIST. NG. LT. & RT. R.O.W.

EXIST. NG @ LT. R.O.W.

EXIST. NG @ RT. R.O.W.

	6+00	7+00	8+00	9+00	10+00
EXIST. NG @ LT. R.O.W.	152.97	154.72	155.56	155.83	156.40
EXIST. NG @ RT. R.O.W.	153.78	155.51	155.96	156.22	157.05

STATE OF TEXAS
DAMIEN B. TIJERINA
104828
LICENSED PROFESSIONAL ENGINEER
5/2/2014

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Highway / Civil
Structural / Bridge
Environmental
Constr. Material Testing

MILE 2 NORTH
PLAN & PROFILE
STA. 5+78.27 TO STA. 9+87.40

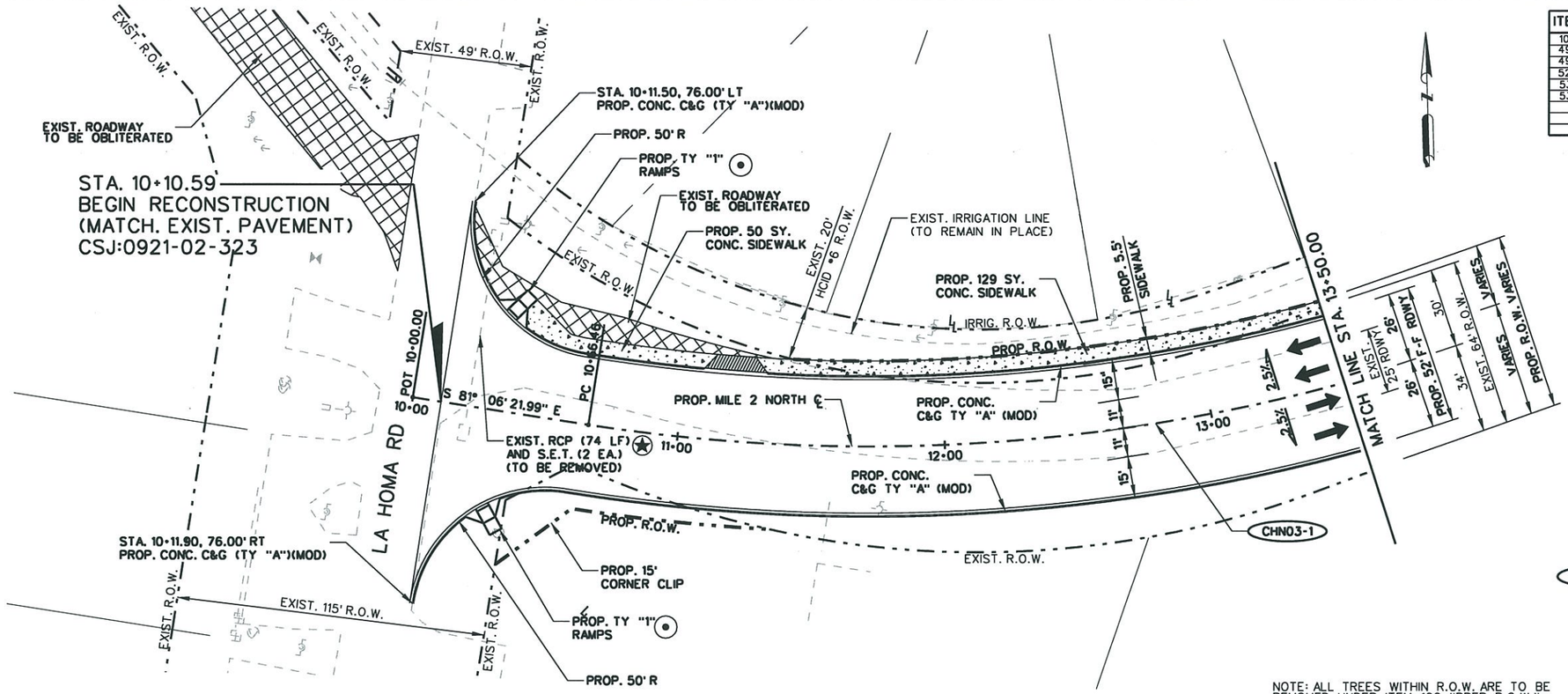
SCALE:
HOR. = 1"=50'
VER. = 1"=10'

SHEET 1 OF 7

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN: A.J.S.	6	TX				75
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: A.J.S.	21	HIDALGO	0921	02	323	MILE 2
TR:						
CK TR:						

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5/2/2014



NOTE: ALL TREES WITHIN R.O.W. ARE TO BE REMOVED UNDER ITEM 100 "PREP. R.O.W."

SHEET SUMMARY

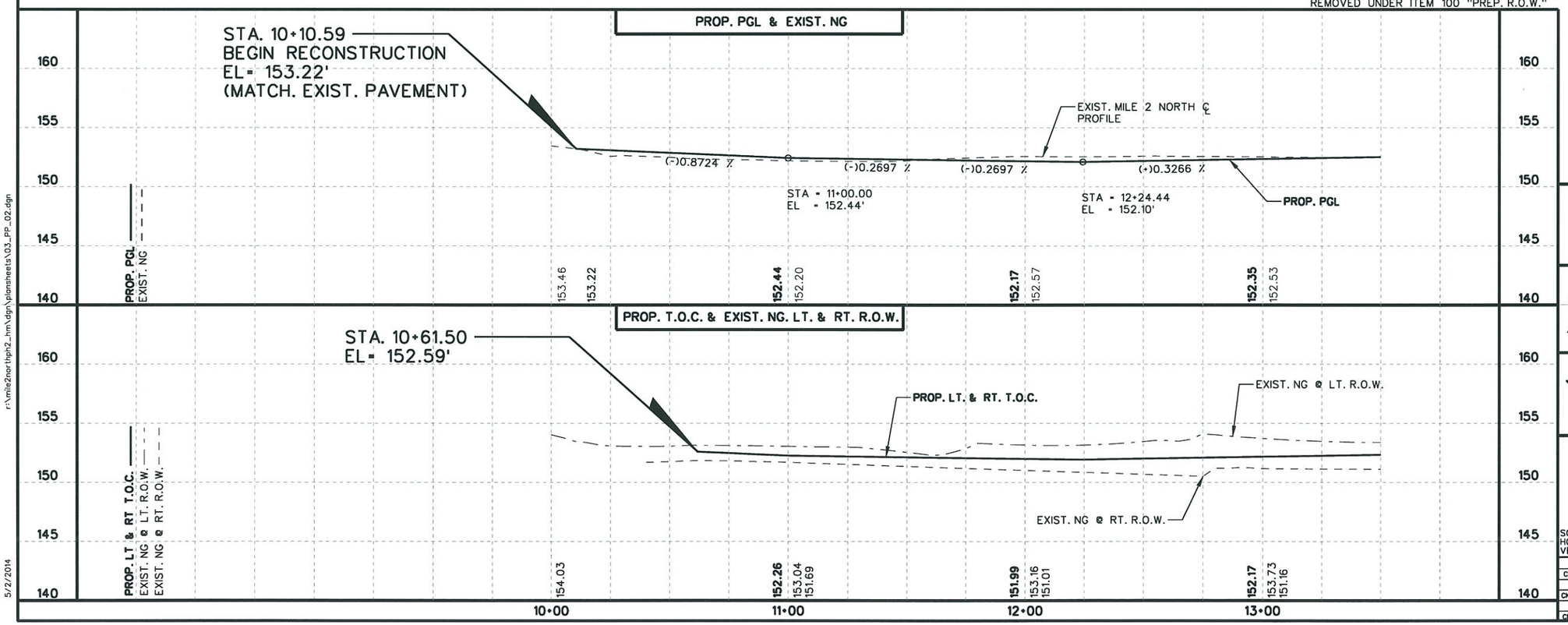
ITEM	DESCRIPTION	UNIT	QUANTITY
106	OBLITERATING ABANDONED ROAD	STA	2.36
496	REMOVE OLD STRUCTURE (PIPE)	LF	74
496	REMOVE OLD STRUCTURE (S.E.T.)	EA	2
529	CONC. CURB & GUTTER (TY "A")(MOD)	LF	734
531	CONC. SIDEWALK	SY	179
531	CURB RAMPS (TY "1")	EA	2

LEGEND:

- PROPOSED DRIVEWAY OR TURNOUT (SEE DRIVEWAY/TURN TABLE FOR QUANTITIES & PIPE QUANTITIES)
- PROPOSED SIDEWALK
- ROADWAY TO BE OBLITERATED
- PROPOSED CURB RAMP. INCLUDES ALL SIDEWALKS, CONCRETE & APPURTENANCES NECESSARY FOR THE COMPLETION OF THE CURB RAMP
- TO BE REMOVED UNDER ITEM 496 INCLUDES PAYMENT FOR REMOVAL OF ALL APPURTENANCES (SEE DRIVEWAY TABLE FOR PAYMENT)
- REMOVAL, RELOCATION AND INSTALLATION OF MAILBOXES ITEM 560
- TO BE REMOVED UNDER ITEM 100 "PREP. ROW"
- OBJ. MRKR. (OM-2SR) (B)
- DELINEATORS TY (A) D-SW FLEX 6') PLACED EVERY 100' ALONG MBGF
- PROPOSED DELINEATOR ASM TY "B" D-SW
- CARE IS TO BE TAKEN WHEN PLACING PIPE AND TRAFFIC SIGNAL/PEDESTRIAN POLES

XXXX — NOTE: SEE ALIGNMENT DATA SHEET FOR PROP. CENTERLINE DATA.

SEE SURVEY DATA SHEET FOR BM STATIONS, OFFSET, ELEV. ETC.



STATE OF TEXAS
DAMIEN B. TIJERINA
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LICENSED
PROFESSIONAL ENGINEER
5/2/2014

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L&G Engineering
Texas Registered Engineering Firm F-4105
Highway / Civil
Structural / Bridge
Environmental
Constr. Material Testing

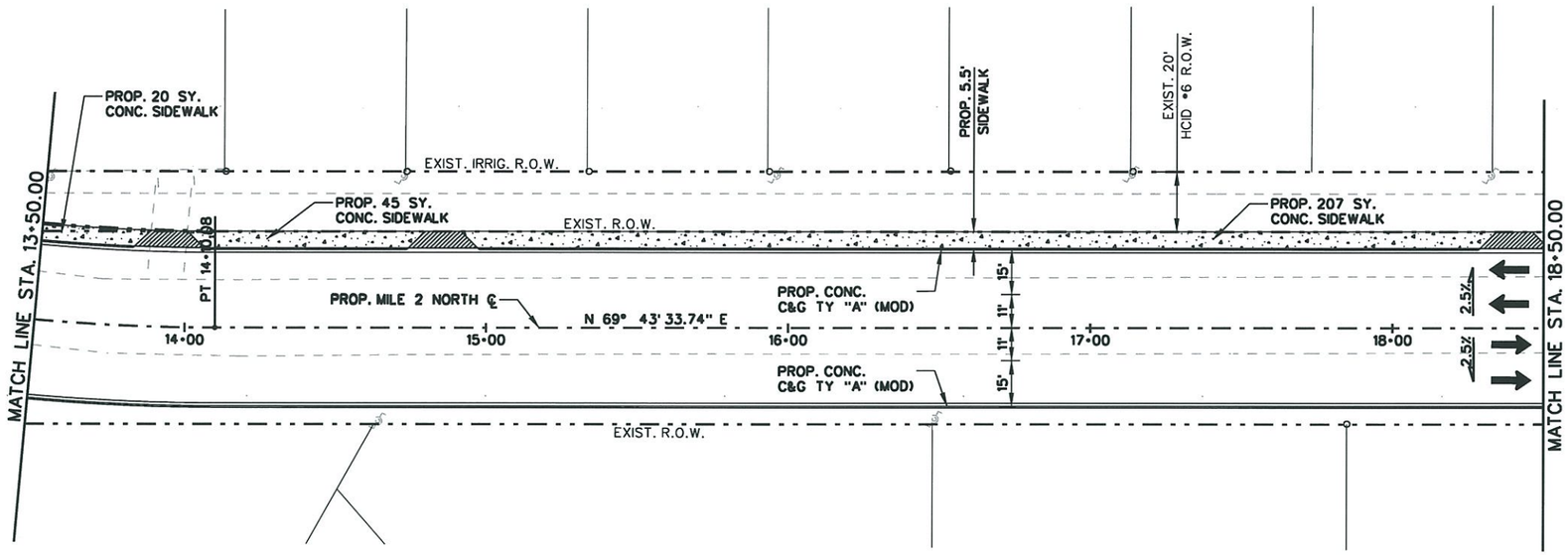
MILE 2 NORTH
PLAN & PROFILE
STA. 10+10.59 TO STA. 13+50

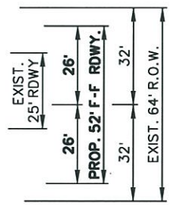
SCALE:
HOR. = 1"=50'
VER. = 1"=10'

SHEET 2 OF 7

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN: A.J.S.	6	TX				76
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: A.J.S.	21	HIDALGO	0921	02	323	MILE 2
TR:						
CK TR:						

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5/2/2014





SHEET SUMMARY

ITEM	DESCRIPTION	UNIT	QUANTITY
529	CONC. CURB & GUTTER (TY "A")(MOD)	LF	1000
531	CONC. SIDEWALK	SY	272

LEGEND:

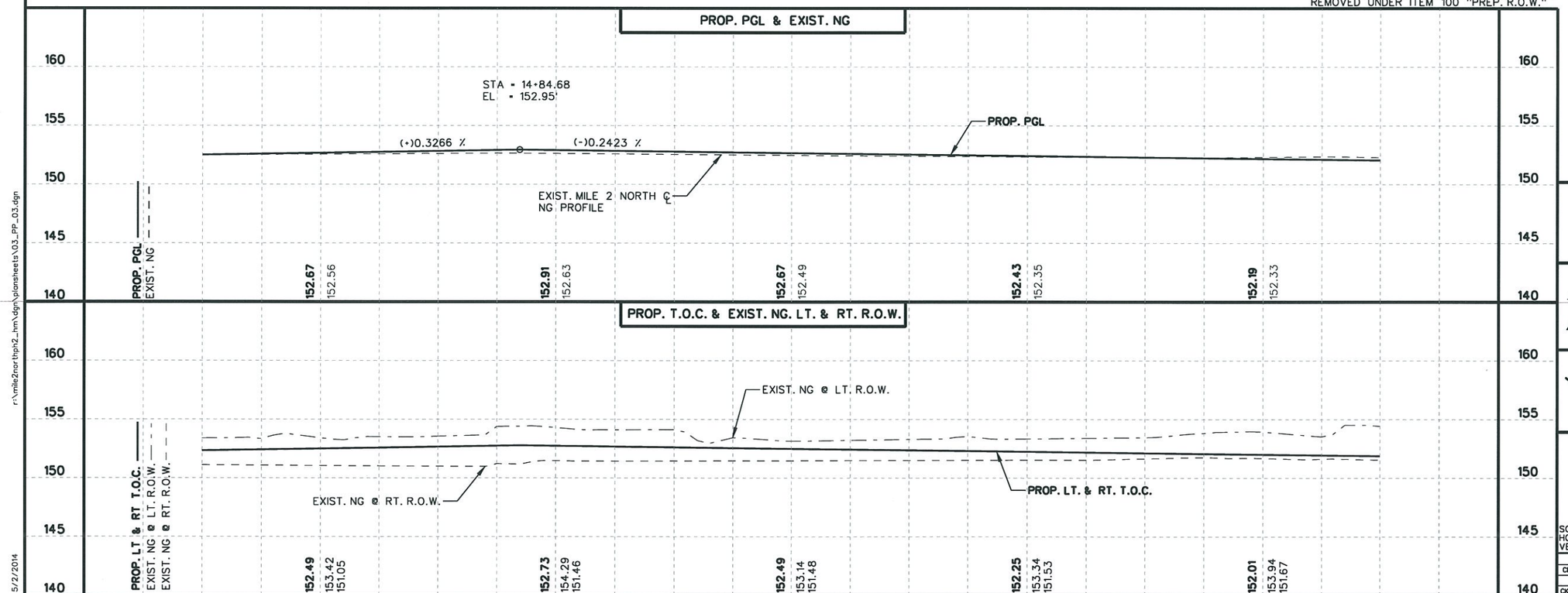
- PROPOSED DRIVEWAY OR TURNOUT (SEE DRIVEWAY/TURN TABLE FOR QUANTITIES & PIPE QUANTITIES)
- PROPOSED SIDEWALK
- ROADWAY TO BE OBLITERATED
- PROPOSED CURB RAMP. INCLUDES ALL SIDEWALKS, CONCRETE & APPURTENANCES NECESSARY FOR THE COMPLETION OF THE CURB RAMP
- TO BE REMOVED UNDER ITEM 496 INCLUDES PAYMENT FOR REMOVAL OF ALL APPURTENANCES (SEE DRIVEWAY TABLE FOR PAYMENT)
- REMOVAL, RELOCATION AND INSTALLATION OF MAILBOXES ITEM 560
- TO BE REMOVED UNDER ITEM 100 "PREP. ROW"
- OBJ. MRKR. (OM-2SR) (B)
- DELINEATORS TY (A) D-SW FLEX 6') PLACED EVERY 100' ALONG MBGF
- PROPOSED DELINEATOR ASM TY "B" D-SW
- CARE IS TO BE TAKEN WHEN PLACING PIPE AND TRAFFIC SIGNAL/PEDESTRIAN POLES

NOTE:

XXXX — SEE ALIGNMENT DATA SHEET FOR PROP. CENTERLINE DATA.

SEE SURVEY DATA SHEET FOR BM STATIONS, OFFSET, ELEV. ETC.

NOTE: ALL TREES WITHIN R.O.W. ARE TO BE REMOVED UNDER ITEM 100 "PREP. R.O.W."



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5/2/2014

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MILE 2 NORTH
PLAN & PROFILE
STA. 13+50 TO STA. 18+50

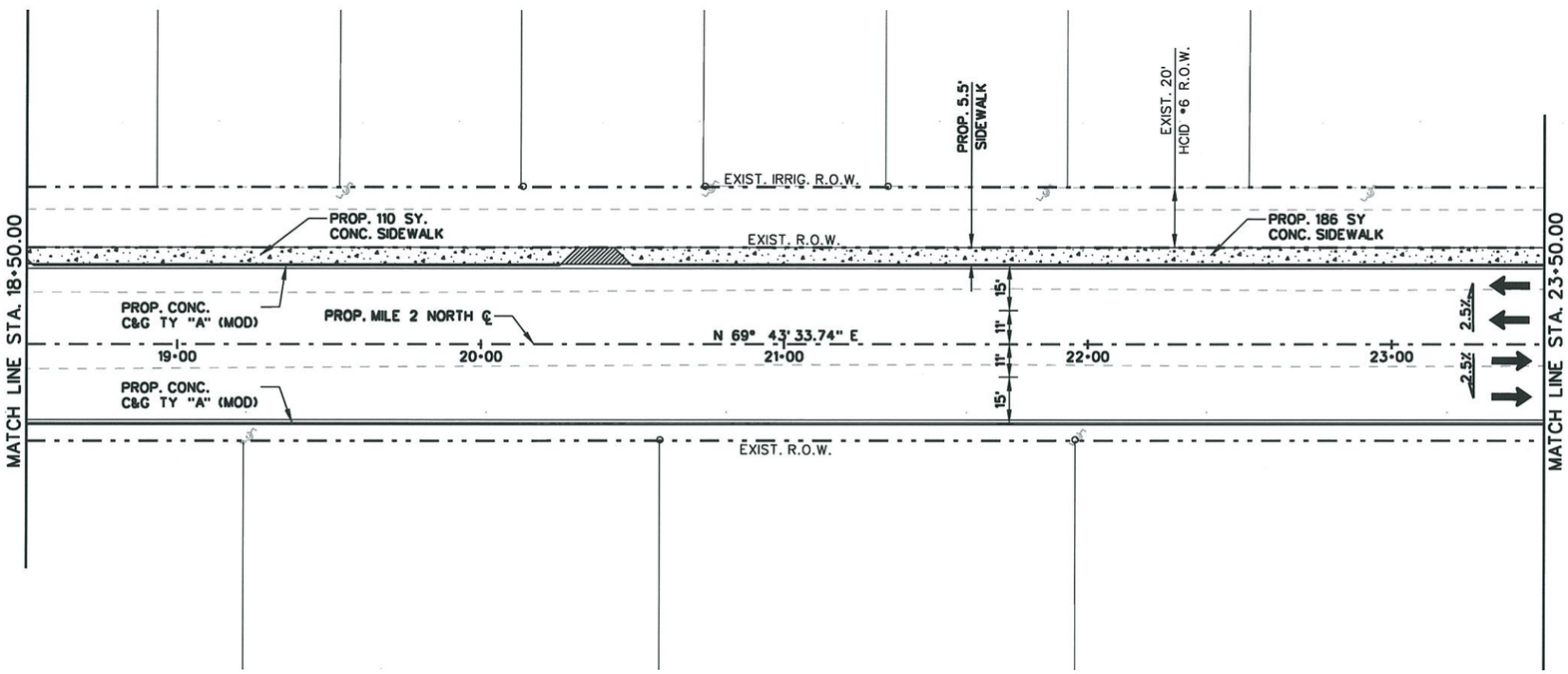
SCALE:
HOR. = 1"=50'
VER. = 1"=10'

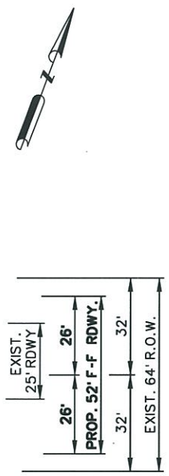
SHEET 3 OF 7

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN: D.B.T.	6	TX				77
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: D.B.T.	21	HIDALGO	0921	02	323	MILE 2
TR:						
CK TR:						

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5/2/2014





SHEET SUMMARY

ITEM	DESCRIPTION	UNIT	QUANTITY
529	CONC. CURB & GUTTER (TY "A")(MOD)	LF	1000
531	CONC. SIDEWALK	SY	296

LEGEND:

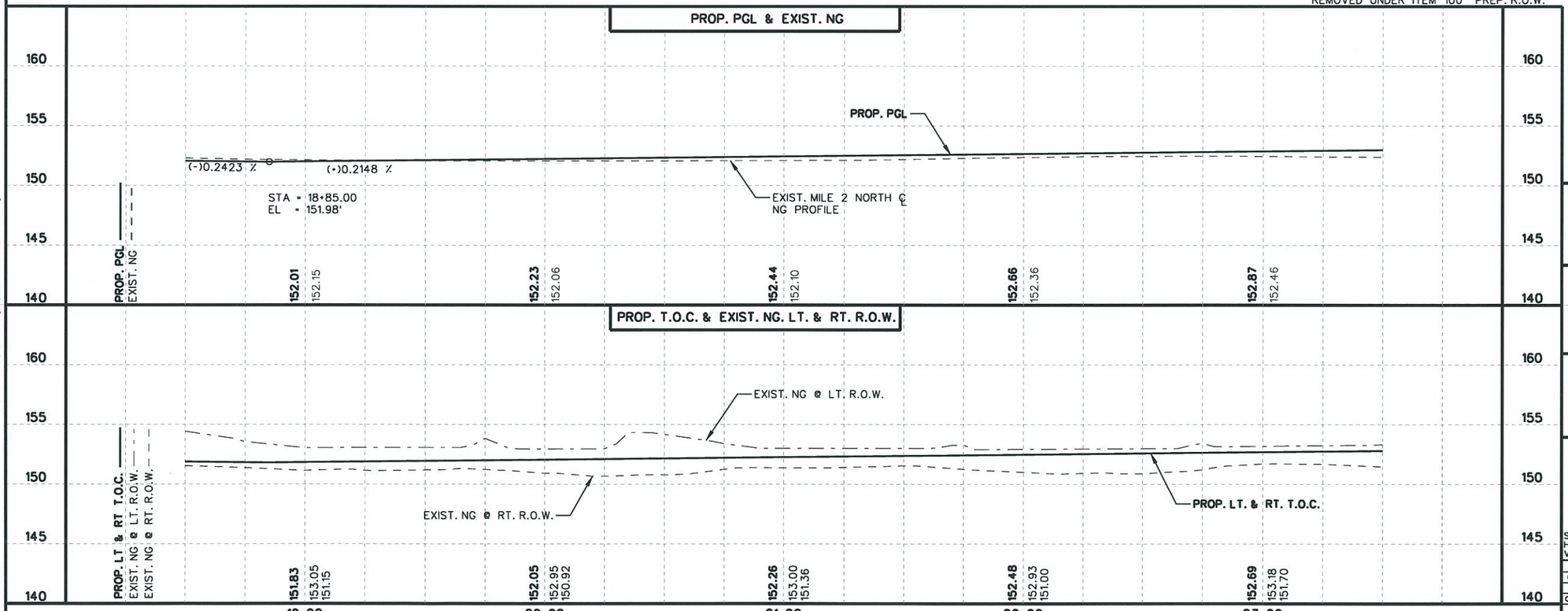
- PROPOSED DRIVEWAY OR TURNOUT (SEE DRIVEWAY/TURN TABLE FOR QUANTITIES & PIPE QUANTITIES)
- PROPOSED SIDEWALK
- ROADWAY TO BE OBLITERATED
- PROPOSED CURB RAMP. INCLUDES ALL SIDEWALKS, CONCRETE & APPURTENANCES NECESSARY FOR THE COMPLETION OF THE CURB RAMP
- TO BE REMOVED UNDER ITEM 496 INCLUDES PAYMENT FOR REMOVAL OF ALL APPURTENANCES (SEE DRIVEWAY TABLE FOR PAYMENT)
- REMOVAL, RELOCATION AND INSTALLATION OF MAILBOXES ITEM 560
- TO BE REMOVED UNDER ITEM 100 "PREP. ROW"
- OBJ. MRKR. (OM-2SR) (B)
- DELINEATORS TY (A) D-SW FLEX 6') PLACED EVERY 100' ALONG MBGF
- PROPOSED DELINEATOR ASM TY "B" D-SW
- CARE IS TO BE TAKEN WHEN PLACING PIPE AND TRAFFIC SIGNAL/PEDESTRIAN POLES

XXXX

NOTE:
SEE ALIGNMENT DATA SHEET FOR PROP. CENTERLINE DATA.

SEE SURVEY DATA SHEET FOR BM STATIONS, OFFSET, ELEV. ETC.

NOTE: ALL TREES WITHIN R.O.W. ARE TO BE REMOVED UNDER ITEM 100 "PREP. R.O.W."



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MILE 2 NORTH
PLAN & PROFILE
STA. 18+50 TO STA. 23+50

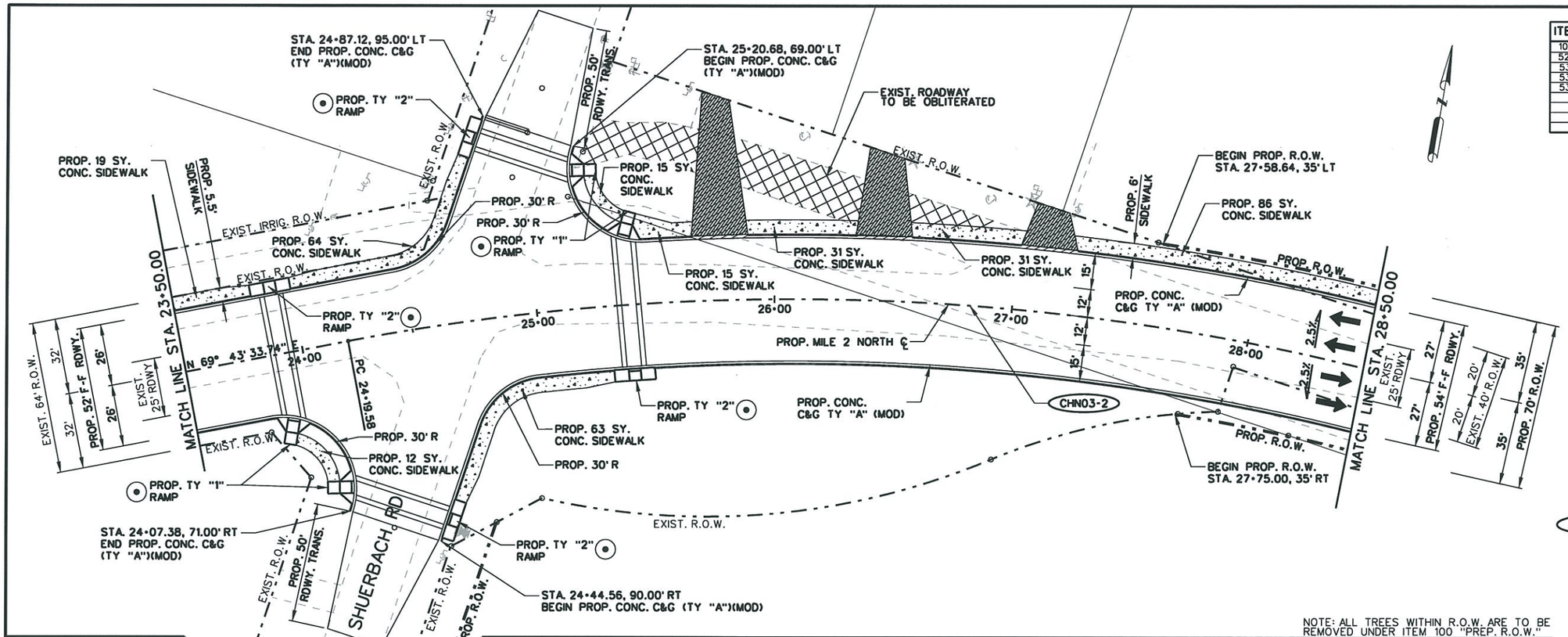
SCALE:
HOR. = 1"=50'
VER. = 1"=10'

SHEET 4 OF 7

DN: L.S.	CK DN: D.B.T.	DW: L.S.	CK DW: D.B.T.	TR:	CK TR:

FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
6	TX				78
STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
21	HIDALGO	0921	02	323	MILE 2

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5/2/2014



NOTE: ALL TREES WITHIN R.O.W. ARE TO BE REMOVED UNDER ITEM 100 "PREP. R.O.W."

SHEET SUMMARY

ITEM	DESCRIPTION	UNIT	QUANTITY
106	OBLITERATING ABANDONED ROAD	STA	1.48
529	CONC. CURB & GUTTER (TY "A")(MOD)	LF	1070
531	CONC. SIDEWALK	SY	336
531	CURB RAMPS (TY "1")	EA	4
531	CURB RAMPS (TY "2")	EA	4

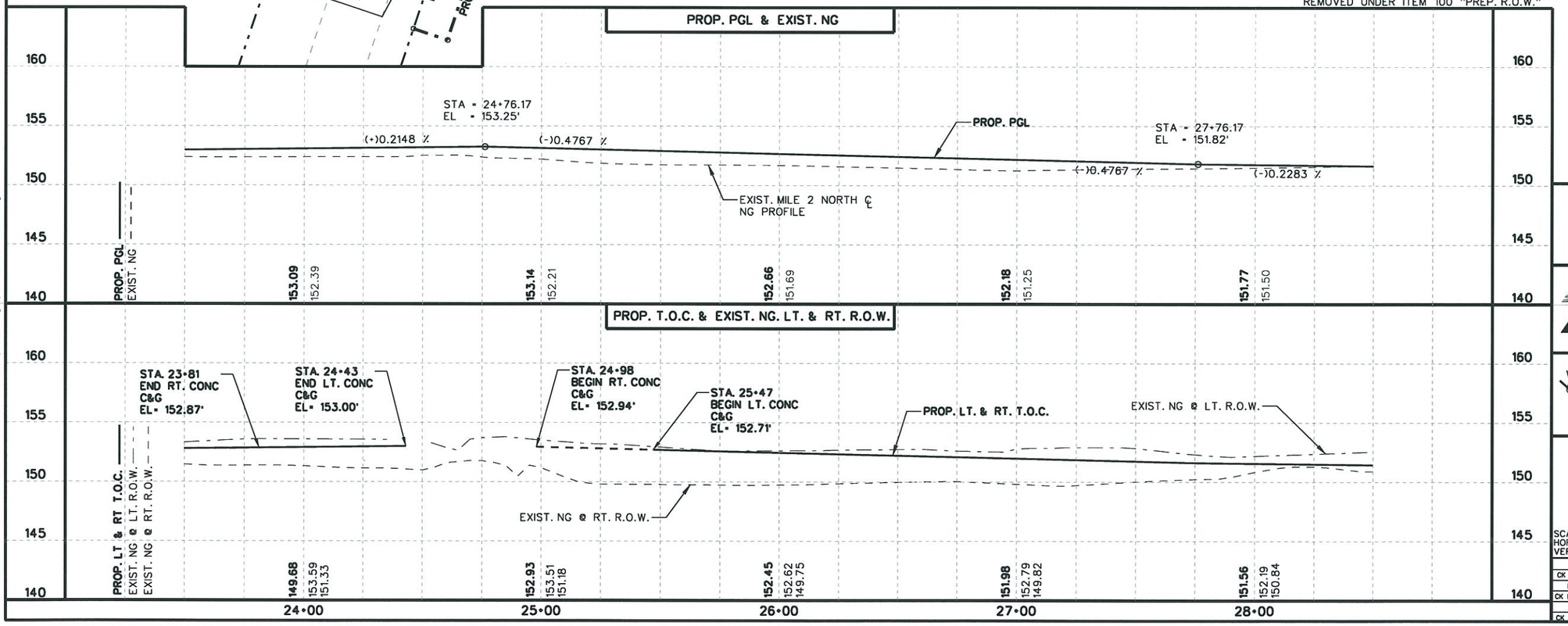
LEGEND:

- PROPOSED DRIVEWAY OR TURNOUT (SEE DRIVEWAY/TURN TABLE FOR QUANTITIES & PIPE QUANTITIES)
- PROPOSED SIDEWALK
- ROADWAY TO BE OBLITERATED
- PROPOSED CURB RAMP. INCLUDES ALL SIDEWALKS, CONCRETE & APPURTENANCES NECESSARY FOR THE COMPLETION OF THE CURB RAMP
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- PROPOSED DELINEATOR ASM TY "B" D-SW
- CARE IS TO BE TAKEN WHEN PLACING PIPE AND TRAFFIC SIGNAL/PEDESTRIAN POLES

NOTE:

XXXX SEE ALIGNMENT DATA SHEET FOR PROP. CENTERLINE DATA.

SEE SURVEY DATA SHEET FOR BM STATIONS, OFFSET, ELEV. ETC.



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MILE 2 NORTH PLAN & PROFILE STA. 23+50 TO STA. 28+50

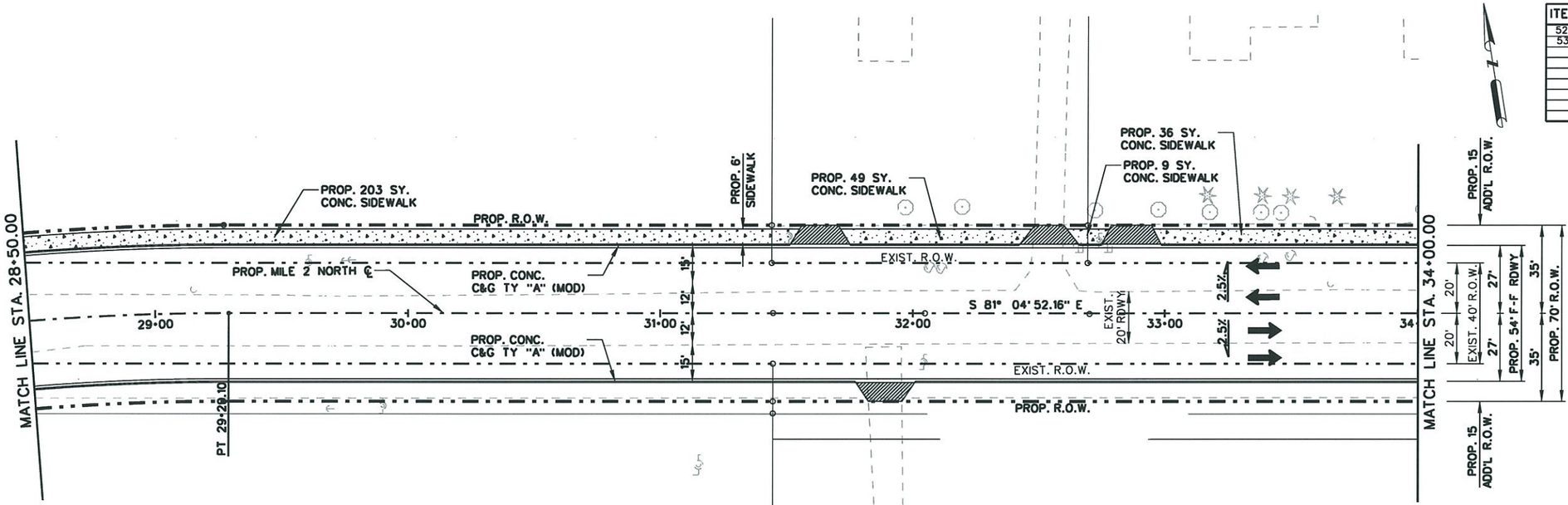
SCALE:
HOR. - 1"=50'
VER. - 1"=10'

SHEET 5 OF 7

DN: L.S.	CK DN: D.B.T.	DW: L.S.	CK DW: D.B.T.	TR:	CK TR:

FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
6	TX				79
STATE DIST. NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
21	HIDALGO	0921	02	323	MILE 2

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5/2/2014



SHEET SUMMARY

ITEM	DESCRIPTION	UNIT	QUANTITY
529	CONC. CURB & GUTTER (TY "A")	LF	1000
531	CONC. SIDEWALK	SY	297

LEGEND:

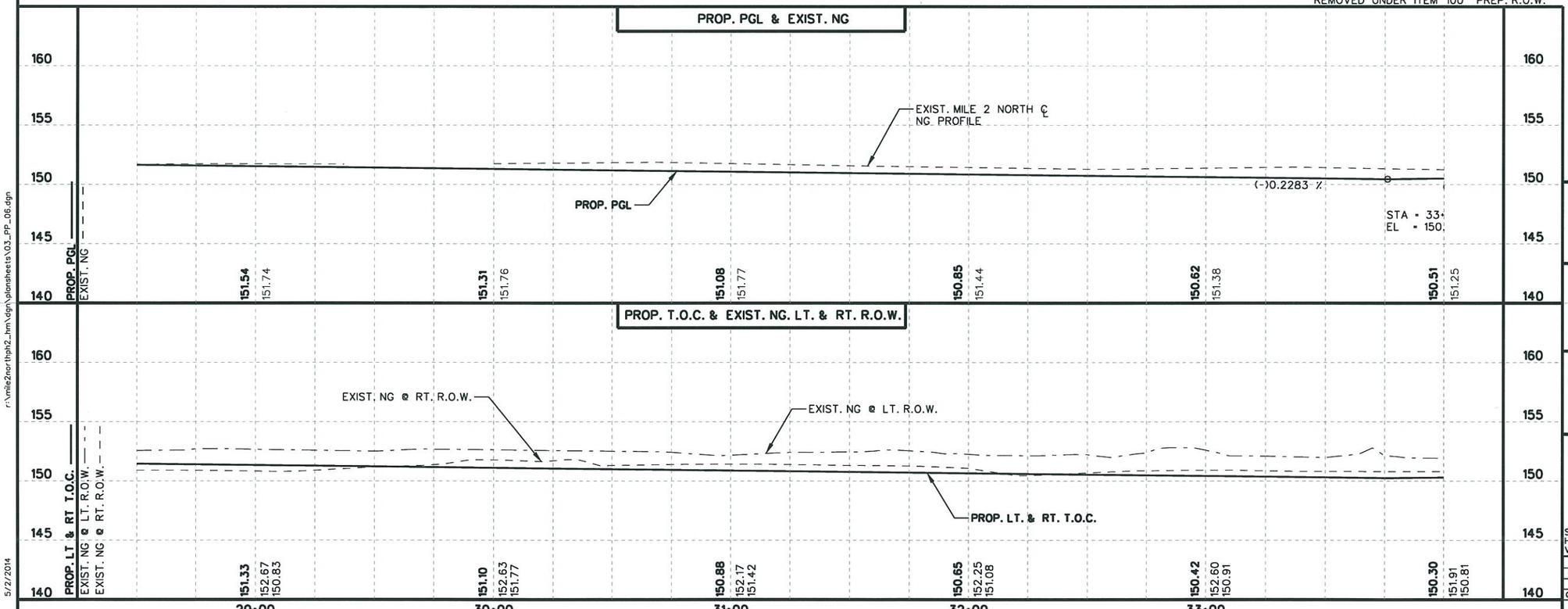
- PROPOSED DRIVEWAY OR TURNOUT (SEE DRIVEWAY/TURN TABLE FOR QUANTITIES & PIPE QUANTITIES)
- PROPOSED SIDEWALK
- ROADWAY TO BE OBLITERATED
- PROPOSED CURB RAMP. INCLUDES ALL SIDEWALKS, CONCRETE & APPURTENANCES NECESSARY FOR THE COMPLETION OF THE CURB RAMP
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- REMOVAL, RELOCATION AND INSTALLATION OF MAILBOXES ITEM 560
- TO BE REMOVED UNDER ITEM 100 "PREP. ROW"
- OBJ. MRKR. (OM-2SR) (B)
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- PROPOSED DELINEATOR ASM TY "B" D-SW
- CARE IS TO BE TAKEN WHEN PLACING PIPE AND TRAFFIC SIGNAL/PEDESTRIAN POLES

NOTE:
SEE ALIGNMENT DATA SHEET FOR PROP. CENTERLINE DATA.

SEE SURVEY DATA SHEET FOR BM STATIONS, OFFSET, ELEV. ETC.

XXXX

NOTE: ALL TREES WITHIN R.O.W. ARE TO BE REMOVED UNDER ITEM 100 "PREP. R.O.W."



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5/2/2014

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MILE 2 NORTH
PLAN & PROFILE
STA. 28+50 TO STA. 33+50

SCALE:
HOR. - 1"=50'
VER. - 1"=10'

SHEET 6 OF 7

DN: L.S.	CK DN: D.B.T.	DW: L.S.	CK DW: D.B.T.	TR:	CK TR:

FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
6	TX				80
STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
21	HIDALGO	0921	02	323	MILE 2

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5/2/2014

SHEET SUMMARY

ITEM	DESCRIPTION	UNIT	QUANTITY
	CSJ 0921-02-323		
104	REMOVE CONC. (CURB & GUTTER)	LF	126
529	CONC. CURB & GUTTER (TY "A")(MOD)	LF	1064
531	CONC. SIDEWALK	SY	319
531	CURB RAMPS (TY "1")	EA	8

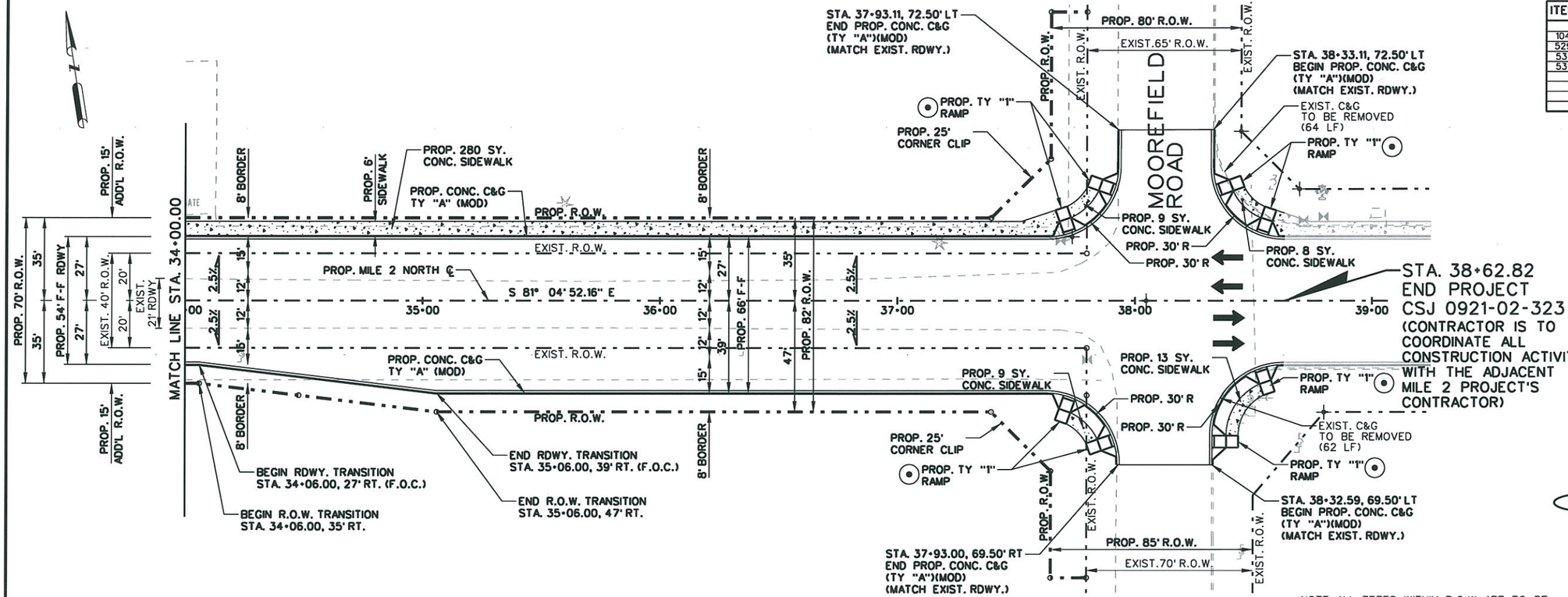
LEGEND:

- PROPOSED DRIVEWAY OR TURNOUT (SEE DRIVEWAY/TURN TABLE FOR QUANTITIES & PIPE QUANTITIES)
- PROPOSED SIDEWALK
- ROADWAY TO BE OBLITERATED
- PROPOSED CURB RAMP. INCLUDES ALL SIDEWALKS, CONCRETE & APPURTENANCES NECESSARY FOR THE COMPLETION OF THE CURB RAMP
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- REMOVAL, RELOCATION AND INSTALLATION OF MAILBOXES ITEM 560
- TO BE REMOVED UNDER ITEM 100 "PREP. ROW"
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- PROPOSED DELINEATOR ASM TY "B" D-SW
- CARE IS TO BE TAKEN WHEN PLACING PIPE AND TRAFFIC SIGNAL/PEDESTRIAN POLES

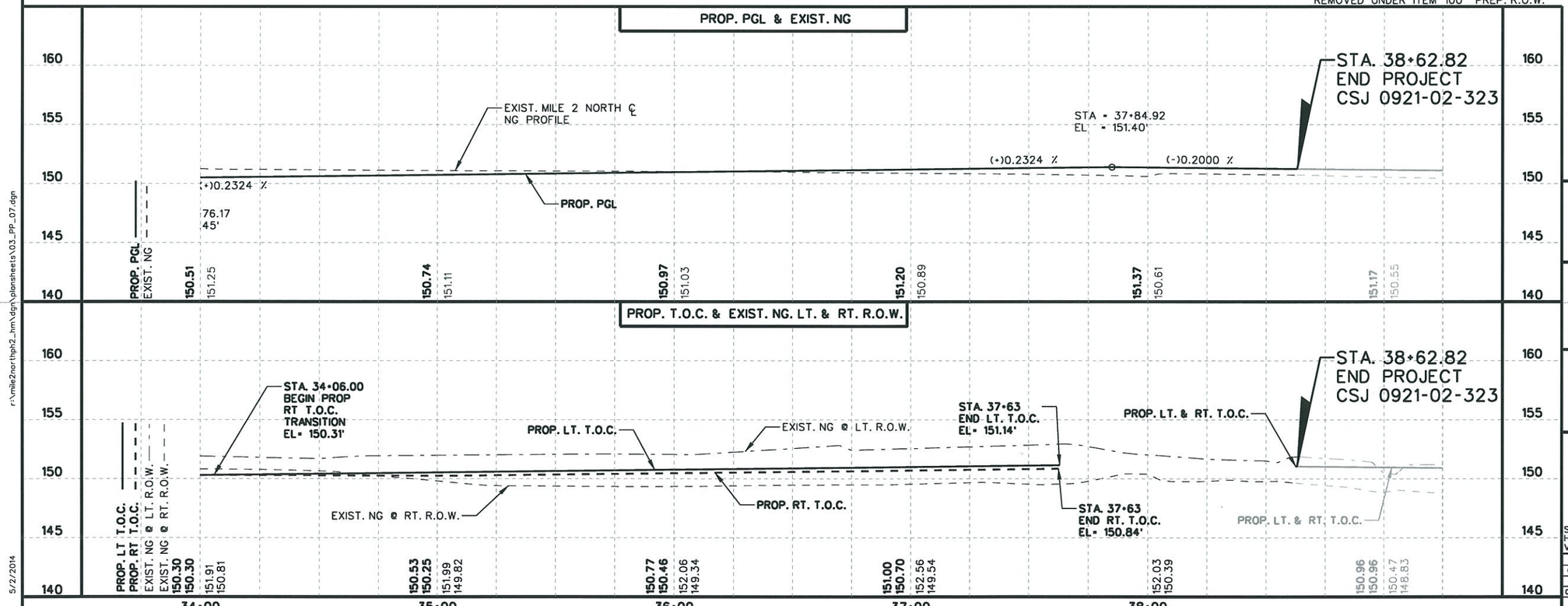
NOTE:

XXXX — SEE ALIGNMENT DATA SHEET FOR PROP. CENTERLINE DATA.

SEE SURVEY DATA SHEET FOR BM STATIONS, OFFSET, ELEV. ETC.



NOTE: ALL TREES WITHIN R.O.W. ARE TO BE REMOVED UNDER ITEM 100 "PREP. R.O.W."



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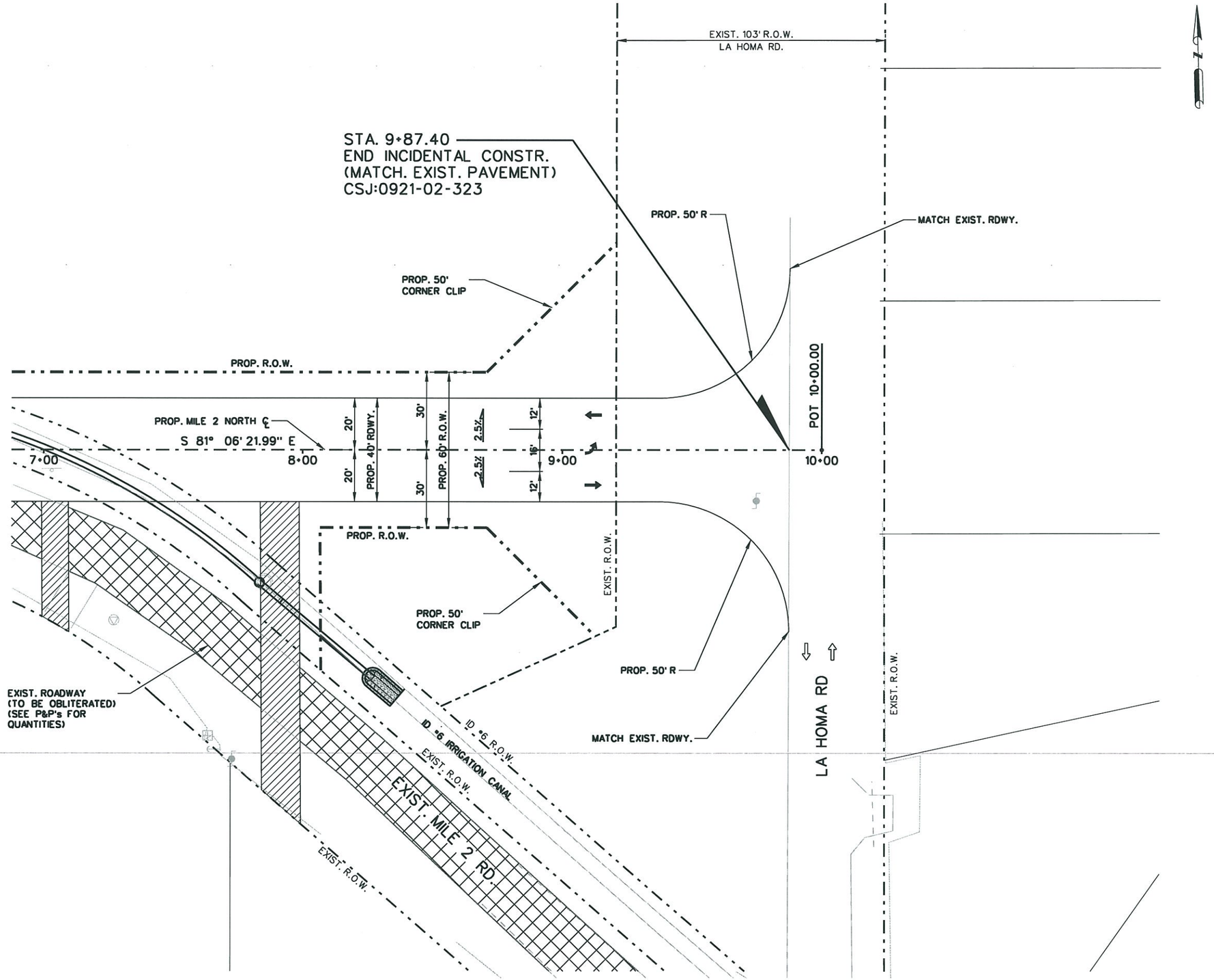
MILE 2 NORTH PLAN & PROFILE STA. 33+50 TO STA. 38+50

SCALE:
HOR. - 1"=50'
VER. - 1"=10'

SHEET 7 OF 7

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN: D.B.T.	6	TX				81
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: D.B.T.	21	HIDALGO	0921	02	323	MILE 2
TR:						
CK TR:						

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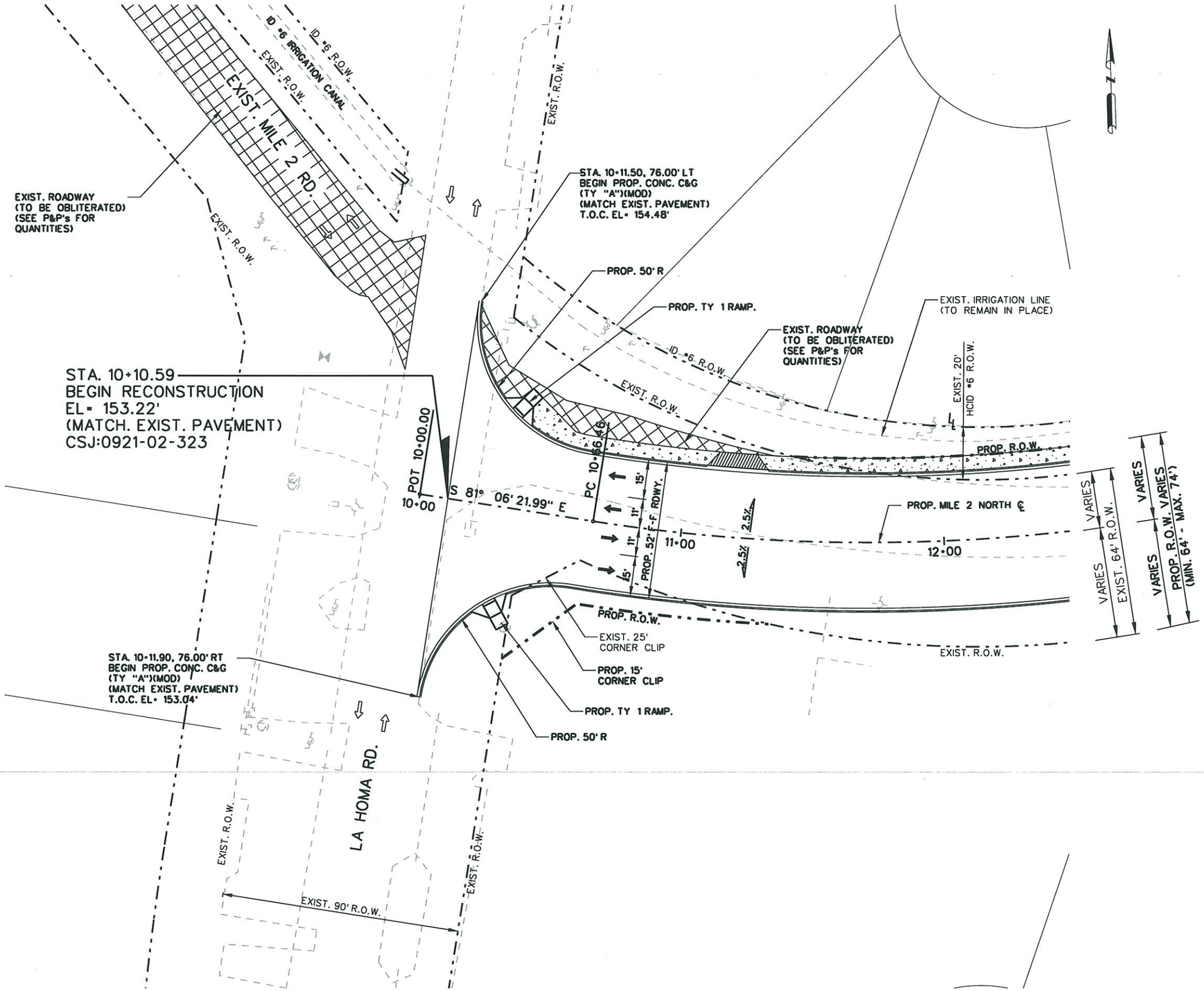
MILE 2 NORTH
INTERSECTION LAYOUT
LA HOMA RD.

SCALE:
HOR. - 1"=40'
VER. -

SHEET 1 OF 4

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN: A.J.S.	6	TX				82
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: A.J.S.	21	HIDALGO	0921	02	323	MILE 2
TR:						
CK TR:						

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MILE 2 NORTH
INTERSECTION LAYOUT
LA HOMA RD.

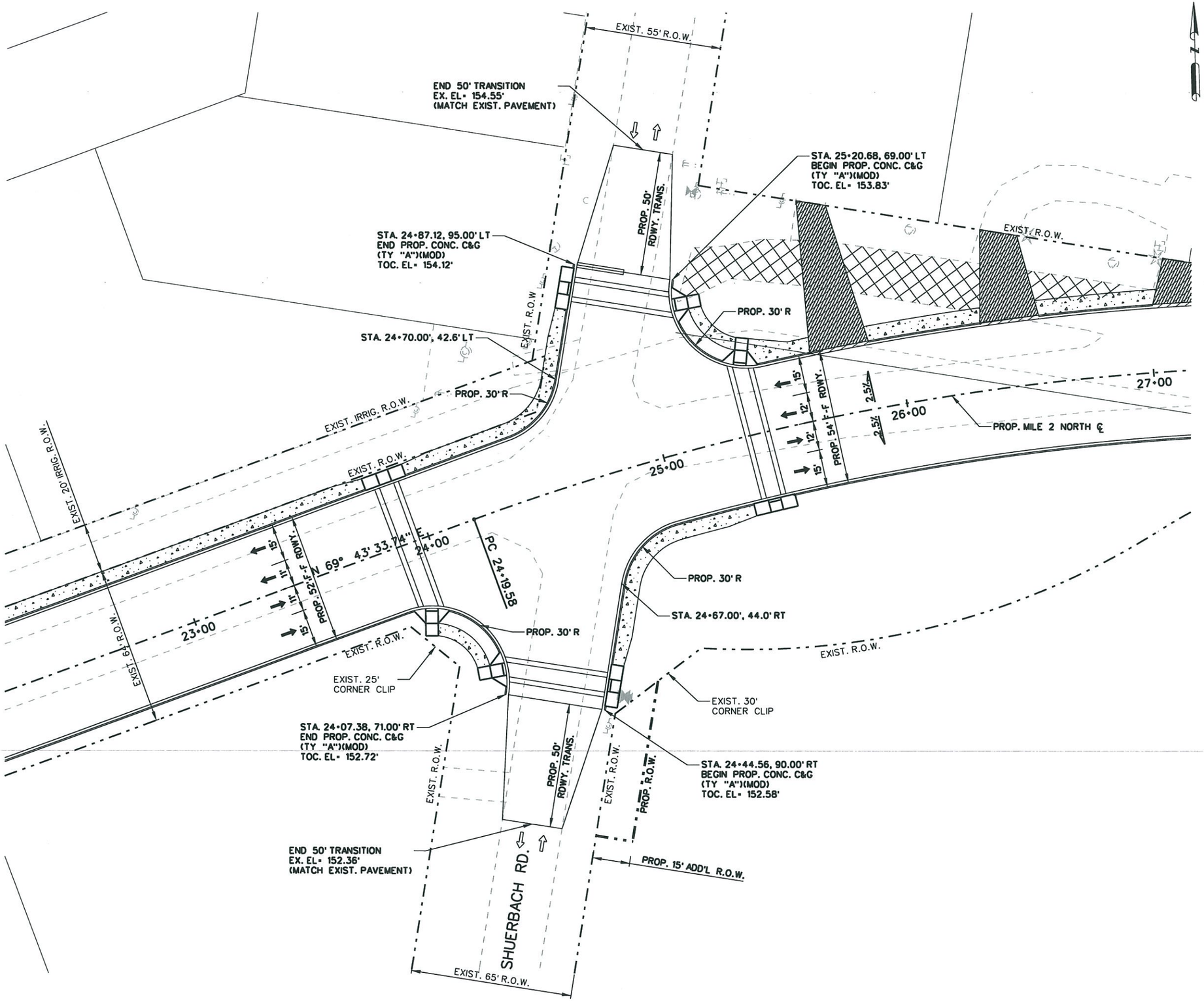
SCALE:
HOR. = 1"=40'
VER. =

SHEET 2 OF 4

DN: L.S.		FED. RD. DIV. NO.	STATE	PROJECT NO.				SHEET NO.
CK DN: A.J.S.		6	TX					83
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.		
CK DW: A.J.S.	21	HIDALGO	0921	02	323	MILE 2		
TR:								
CK TR:								

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MILE 2 NORTH
INTERSECTION LAYOUT
SHUERBACH RD.

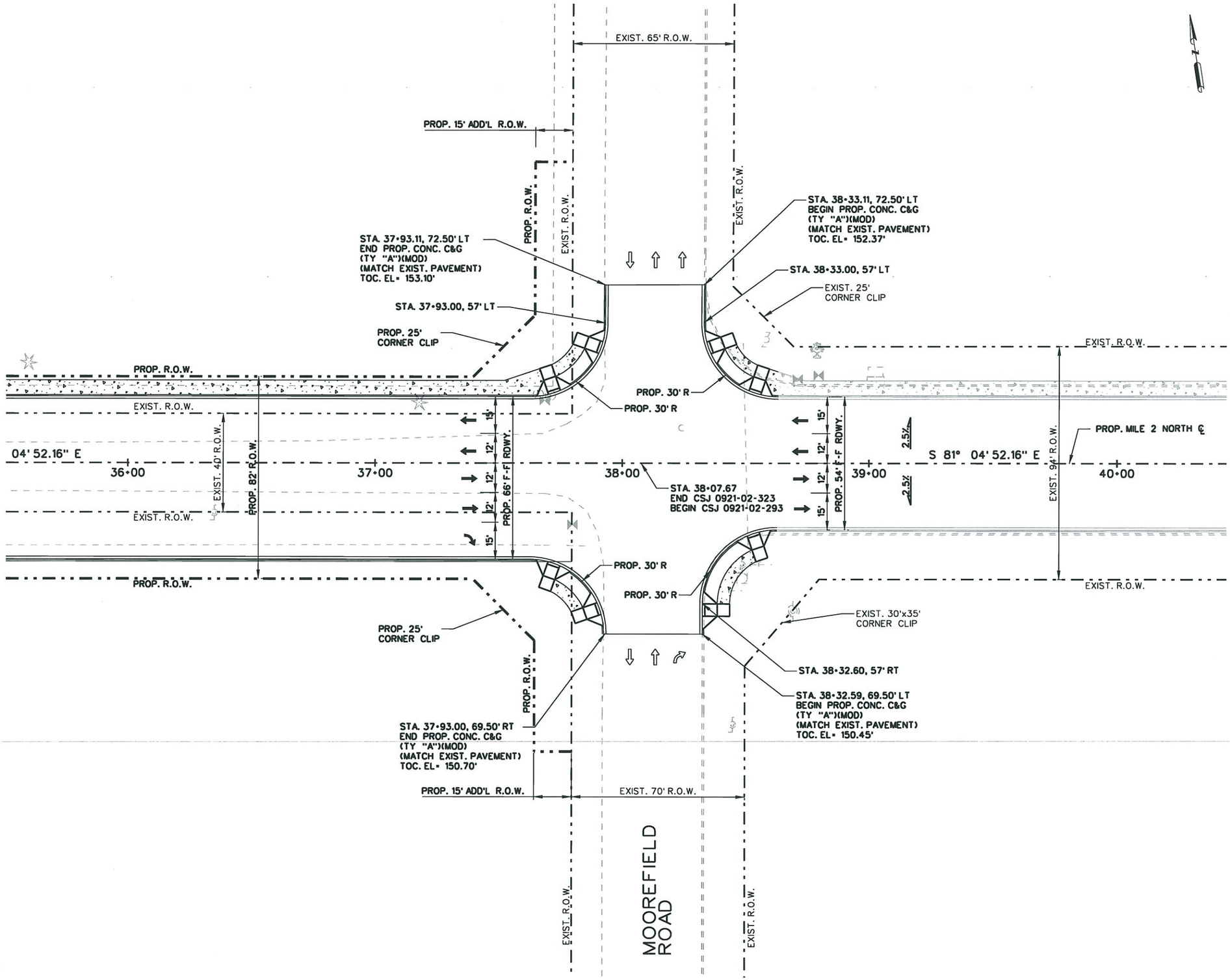
SCALE:
HOR. - 1"=40'
VER. -

SHEET 3 OF 4

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN: A.J.S.	6	TX				84
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: A.J.S.	21	HIDALGO	0921	02	323	MILE 2
TR:						
CK TR:						

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MILE 2 NORTH
INTERSECTION LAYOUT
MOOREFIELD RD.

SCALE:
HOR. - 1"=40'
VER. -

SHEET 4 OF 4

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN: A.J.S.	6	TX				85
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: A.J.S.	21	HIDALGO	0921	02	323	MILE 2
TR:						
CK TR:						

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5/2/2014

ITEM 530 DRIVEWAYS (PRIVATE)								ITEM 496
STATION CSJ: 0921-02-323	EXIST. DRWY WIDTH @ R.O.W. (FT)	PROP. WIDTH @ ROADWAY (FT)	PROP. WIDTH @ R.O.W. LINE (FT)	ACP DRWY AREA (SQ. YDS.)	4" CONC. DRYWYS (SY)	6" CONC. DRYWYS (SY)	PROP. RAD. (FT)	REMOVE STRUCTURE (PIPE) (LF)
5+86.89 (RT.)	24	25	24	32				
7+04.42 (RT.)	12	10	12	55				
7+91.21 (RT.)	20	15	20	197				
11+19.15 (LT.)	14	24	14	11				
13+94.13 (LT.)	12	23	12		11			
14+85.71 (LT.)	12	23	12	11				
20+37.83 (LT.)	12	23	12	11				
25+77.53 (LT.)	12	24	12	115				
26+45.05 (LT.)	15	24	15		75			
27+12.99 (LT.)	14	24	14		35			
31+63.25 (LT.)	14	24	14		16			
31+89.14 (RT.)	13	23	13	15				
32+59.13 (LT.)	12	23	12	15				
32+86.69 (LT.)	16	24	16		16			
GRAND TOTAL:				462	153			

NOTE: STATIONING SHOWN ABOVE IS APPROXIMATE. EXACT LOCATIONS TO BE DETERMINED BY THE ENGINEER DURING CONSTRUCTION.

EXIST. CONC DRIVEWAYS TO BE REMOVED UNDER ITEM 104.
INCLUDES REMOVAL OF ALL GUTTER, RIPRAP, AND APPURTENANCES.

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Environmental
Constr. Material Testing

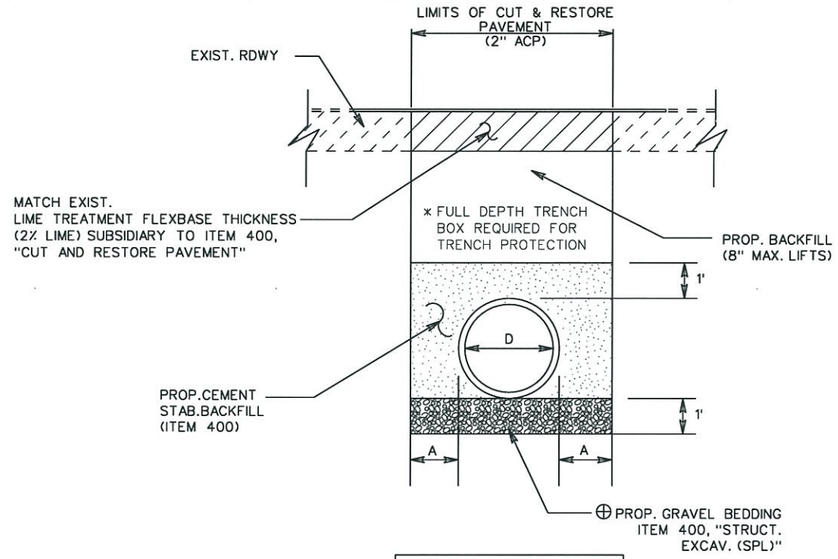
MILE 2 NORTH DRIVEWAY TABLE (PRIVATE)

SHEET 1 OF 1

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN: A.J.S.	6	TX				86
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: A.J.S.	21	HIDALGO	0921	02	323	MILE 2
TR:						
CK TR:						

5/2/2014 2:10:01 PM

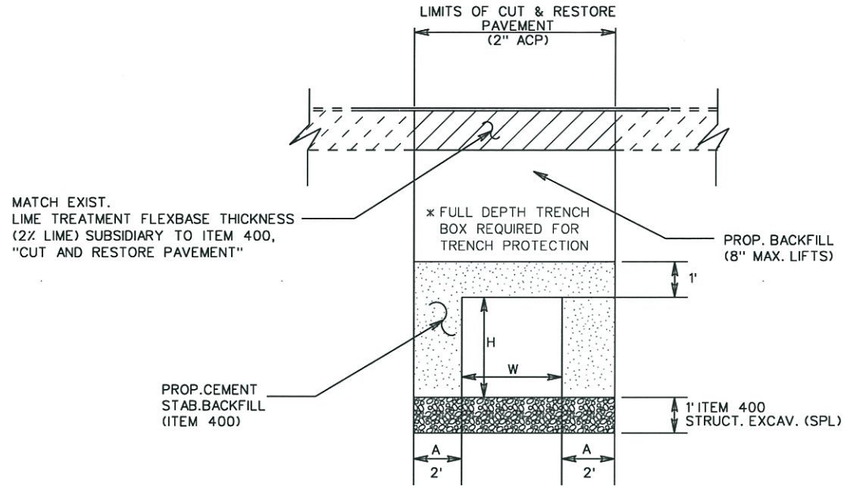
r:\mile2northph2_hm\dgn\plansheets\03_DWTBLPRVT.dgn



PIPE		
D (IN)	A (FT)	WALL THICKNESS
18"	1'	2 1/2"
24"	1'	3"
30"	1'	3 1/2"
36"	2'	4"
42"	2'	4 1/2"
48"	2'	5"
54"	2'	5 1/2"
60"	2'	6"
72"	2'	7"

⊕ NOTE: WHEN UNSTABLE SOIL IS ENCOUNTERED PROP. GRAVEL BEDDING SHALL BE INSTALLED TO STABILIZE THE FOUNDATION OF THE STRUCTURE AND PAID UNDER ITEM 400, "STRUCT. EXCAV. (SPL)"

NOTE: CEMENT STABILIZED BACKFILL SHALL EXTEND A MINIMUM OF 2' BEYOND THE PROPOSED EDGE OF PAVEMENT.



FOR LESS THAN 5' IN DEPTH

STATE OF TEXAS
DAMIEN B. TIJERINA
104828
LICENSED PROFESSIONAL ENGINEER
5/2/2014

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Texas Department of Transportation

L&G Engineering
Texas Registered Engineering Firm F-4105

Highway / Civil
Structural / Bridge
Environmental
Constr. Material Testing

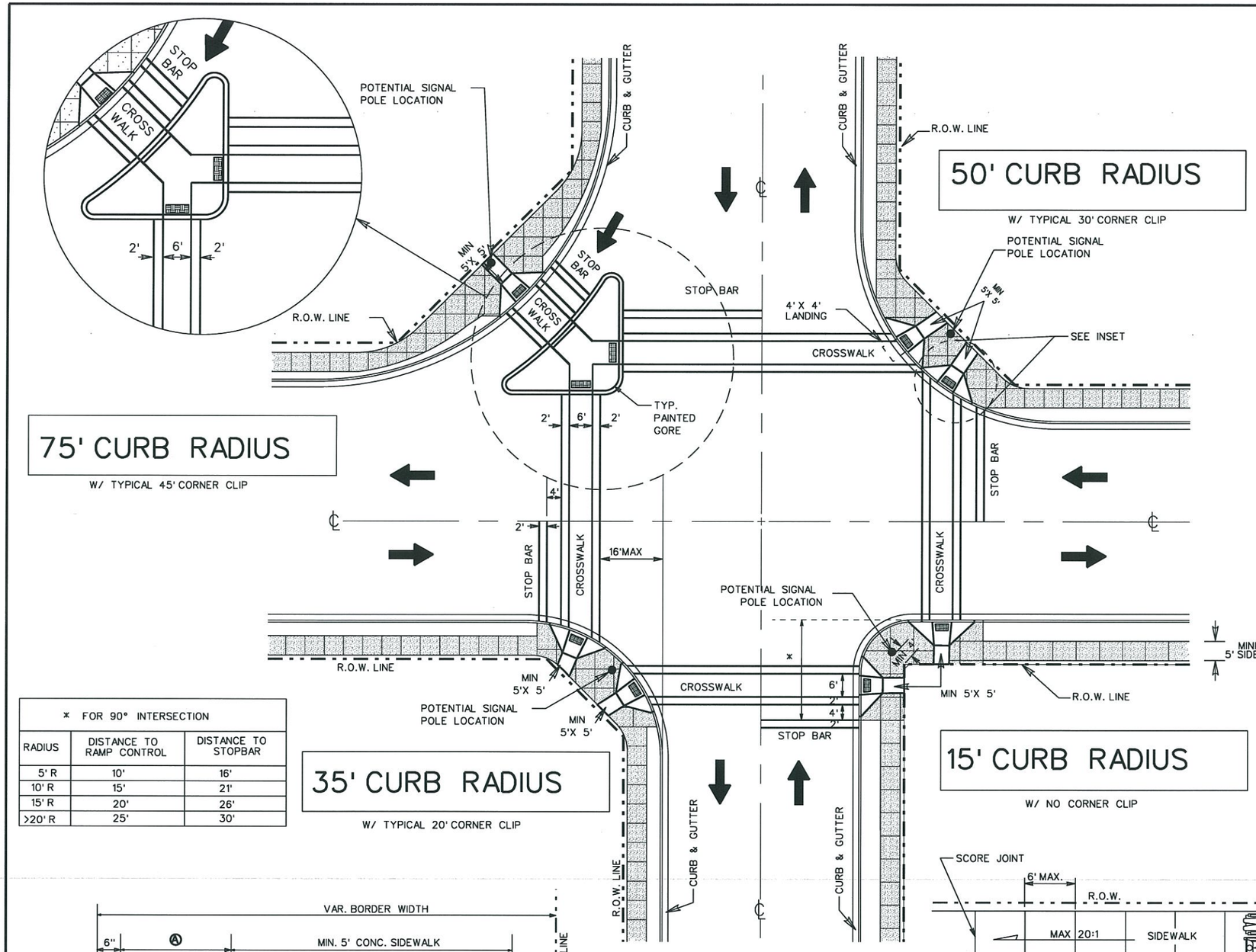
MILE 2 NORTH CUT & RESTORE DETAILS

SCALE:
HOR. - N.T.S.
VER. -

SHEET 1 OF 1

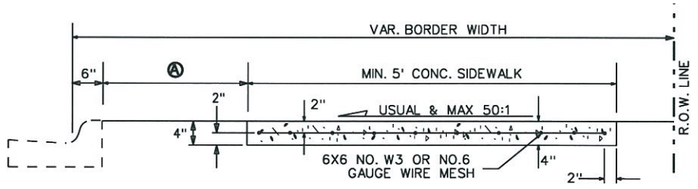
DN: L.S.		FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN: D.B.T.		6	TX				87
DW: L.S.		STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: D.B.T.		21	HIDALGO	0921	02	323	MILE 2
TR:	
CK TR:	

r:\mile2northph2_hm\dgn\plansheets\04_CUT&RESTORE_DET.dgn 5/2/2014 2:10:27 PM

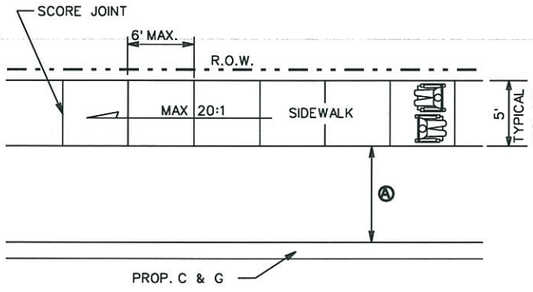


TYPICAL WHEEL CHAIR RAMP LOCATION

* FOR 90° INTERSECTION		
RADIUS	DISTANCE TO RAMP CONTROL	DISTANCE TO STOPBAR
5' R	10'	16'
10' R	15'	21'
15' R	20'	26'
>20' R	25'	30'

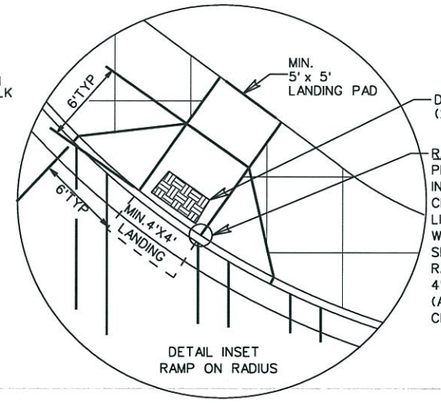


TYPICAL CONC. SIDEWALK



SCORE JOINTS 1/4" THICKNESS
EXPANSION JOINT EVERY 30'
JOINT IN CENTER OF SIDEWALK IF OVER 15' WIDE.

PLAN VIEW



GENERAL NOTES

- ALL RAMPS SHALL HAVE A 5' x 5' LANDING PAD.
- RAMP CENTER TO BE PERPENDICULAR TO FACE OF CURB. A PERPENDICULAR RAMP MAY BE LOCATED WITHIN THE RADIUS OF A CURBLINE.
- SIDEWALK GRADE TO BE PARALLEL TO TOP OF CURB AND GUTTER UNLESS OTHERWISE SHOWN ON PLANS OR DIRECTED BY THE ENGINEER.
- SIDEWALK WIDTH AS SHOWN ELSEWHERE IN PLANS. MIN WIDTH 5'. PROVIDE DROPPED CURBS AT INTERSECTIONS. ALL CONCRETE SHALL BE CLASS "A" PROPOSED SIDEWALKS TO MATCH EXIST. SIDEWALK.
- NO VERTICAL CHANGES SHALL EXCEED 1/4" IN ELEVATION AT ADJOINING SURFACES.
- TO PROVIDE ACCESS TO PEDESTRIAN BUTTON, SIDEWALK / LANDING PAD SHALL EXTEND AND/ OR ABUT TO SIGNAL POLE CONC. FOUNDATION.
- COLOR TEXTURIZED CONCRETE SHALL BE USED TO COLOR AREAS AT RAMPS. COLOR SHALL BE " BRICK RED " AS PER L.M. SCOFIELD COMPANY STANDARDS COLOR A-26 OR EQUAL. COLOR TEXTURIZED CONCRETE SHALL BE SUBSIDIARY TO CURB RAMP ITEM

Ⓐ DESIRABLE 3' OR GREATER FOR HIGH SPEED TRAFFIC. FOR BORDER WIDTHS OF 8' OR LESS, PLACE SIDEWALK ADJACENT TO CURB.

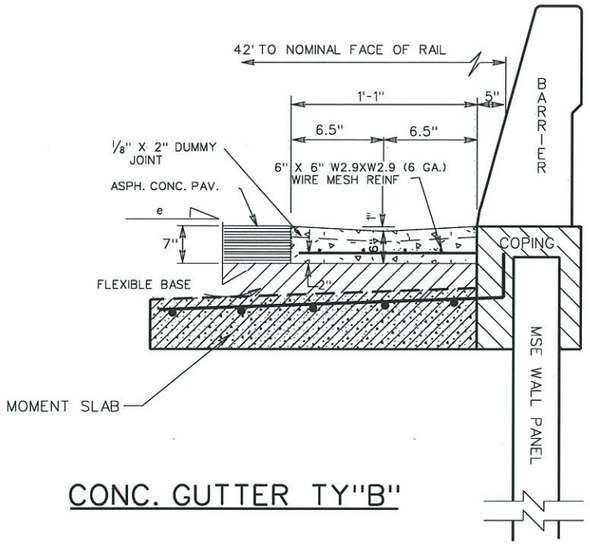
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Texas Department of Transportation

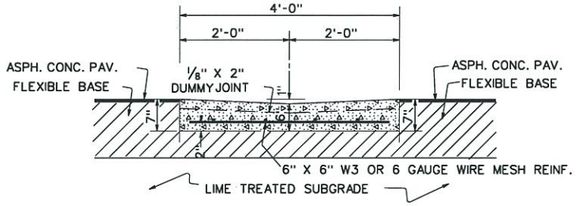
SIDEWALK & WHEELCHAIR RAMP DESIGN GUIDE

REV. 3/06 SIDEWALK.DGN

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6						88
STATE	STATE DIST.NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	HIDALGO	0921	02	323	MILE 2

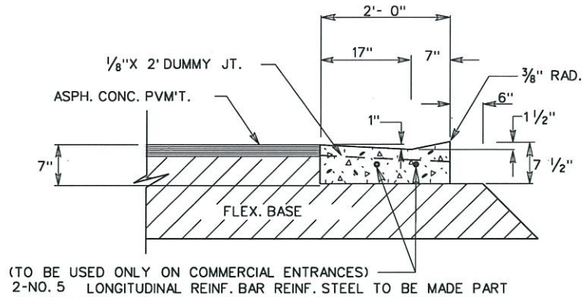


CONC. GUTTER TY"B"



4' CONC. VALLEY GUTTER (TY"A")

TO BE USED WHERE REQUIRED TO CARRY DRAINAGE WATER ACROSS SIDE STREETS



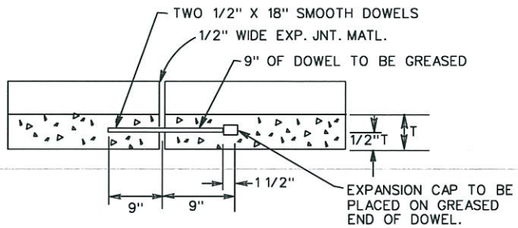
(TO BE USED ONLY ON COMMERCIAL ENTRANCES)
2-NO. 5 LONGITUDINAL REINF. BAR REINF. STEEL TO BE MADE PART OF ITEM "CONC. CURB & GUTTER." THE LENGTH OF REINFORCING STEEL WILL BE THE WIDTH OF THE PROP. COMMERCIAL ENTRANCE PLUS FOUR FEET.

CONC. GUTTER

NOTE:

CONCRETE GUTTER TO BE USED ONLY WHERE PERMITTED BY TEXAS DEPARTMENT OF TRANSPORTATION REGULATIONS FOR ACCESS DRIVEWAYS.

2' VALLEY GUTTER SHALL BE PAID FOR AS CONC. CURB AND GUTTER . CONCRETE CURB & GUTTER & CONCRETE CURB SHALL BE MEASURED FOR PAYMENT ALONG FACE OF CURB AT FLOW LINE.

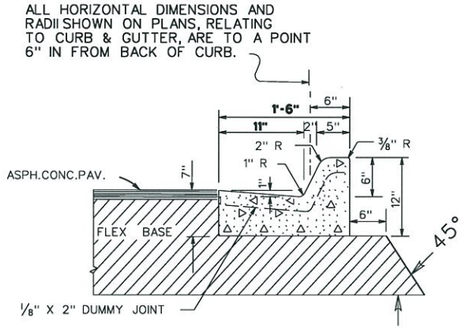


DETAIL EXPANSION JOINT

LONGITUDINAL SECTION THRU CURB AND/OR C&G. REINFORCING STEEL (WHEN USED) SHALL NOT CROSS EXPANSION JOINTS. STEEL SHALL BE TERMINATED 3" ± ½" FROM FACE OF THE JOINT.

1/2" PREMOLDED EXPANSION JOINT MATERIAL SHALL BE INSTALLED WHERE CONC. CURB & GUTTER ABUTS CONC. CURB, OR WHERE CONC. CURB & GUTTER OR CONC. CURB ABUT INLETS, BRIDGE WINGWALLS, BRIDGE ABUT-MENTS AND/OR ANY OTHER LOCATIONS SPECIFIED BY THE ENGINEER. MAX. SPACING = 105'

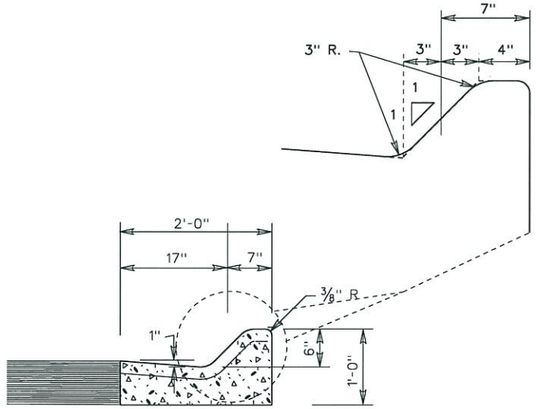
ALL HORIZONTAL DIMENSIONS AND RADII SHOWN ON PLANS, RELATING TO CURB & GUTTER, ARE TO A POINT 6" IN FROM BACK OF CURB.



CONC. CURB & GUTTER TY "A" (BARRIER)

NOTE:
EXPANSION JOINTS

1/2" PREMOLDED EXPANSION JOINT MATERIAL SHALL BE INSTALLED WHERE CONC. CURB & GUTTER ABUTS CONC. CURB, OR WHERE CONC. CURB & GUTTER OR CONC. CURB ABUT INLETS, BRIDGE WINGWALLS, BRIDGE ABUT-MENTS AND/OR ANY OTHER LOCATIONS SPECIFIED BY THE ENGINEER. MAX. SPACING = 105'

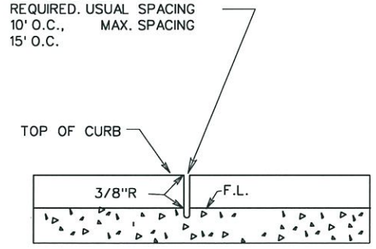


CONC. CURB & GUTTER TY. "B" (MOUNTABLE)

NOTE:
WHERE PROPOSED CURB & GUTTER IS TO BE CONNECTED TO EXIST. CURB & GUTTER IT SHOULD BE DONE AT THE EXIST. GUTTER FLOW LINE ELEVATION.

1/2" PREMOLDED EXPANSION JOINT MATERIAL SHALL BE INSTALLED WHERE CONC. CURB & GUTTER ABUTS CONC. CURB, OR WHERE CONC. CURB & GUTTER OR CONC. CURB ABUT INLETS, BRIDGE WINGWALLS, BRIDGE ABUT-MENTS AND/OR ANY OTHER LOCATIONS SPECIFIED BY THE ENGINEER. MAX. SPACING = 105'

JOINTS MAY BE FORMED WITH 1/8" METAL PLATES NO FILLER REQUIRED. USUAL SPACING 10' O.C., MAX. SPACING 15' O.C.



DETAIL DUMMY JOINT

NOTE:
DUMMY JOINTS TO BE USED ON CURB & CUTTER, CONC. MEDIAN AND ALL TYPE OF VALLEY GUTTERS JOINTS TO BE LOCATED BY THE ENGINEER.

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PHARR DISTRICT STANDARD

STATE OF TEXAS
DAMIEN B. TIJERINA
104828
LICENSED PROFESSIONAL ENGINEER

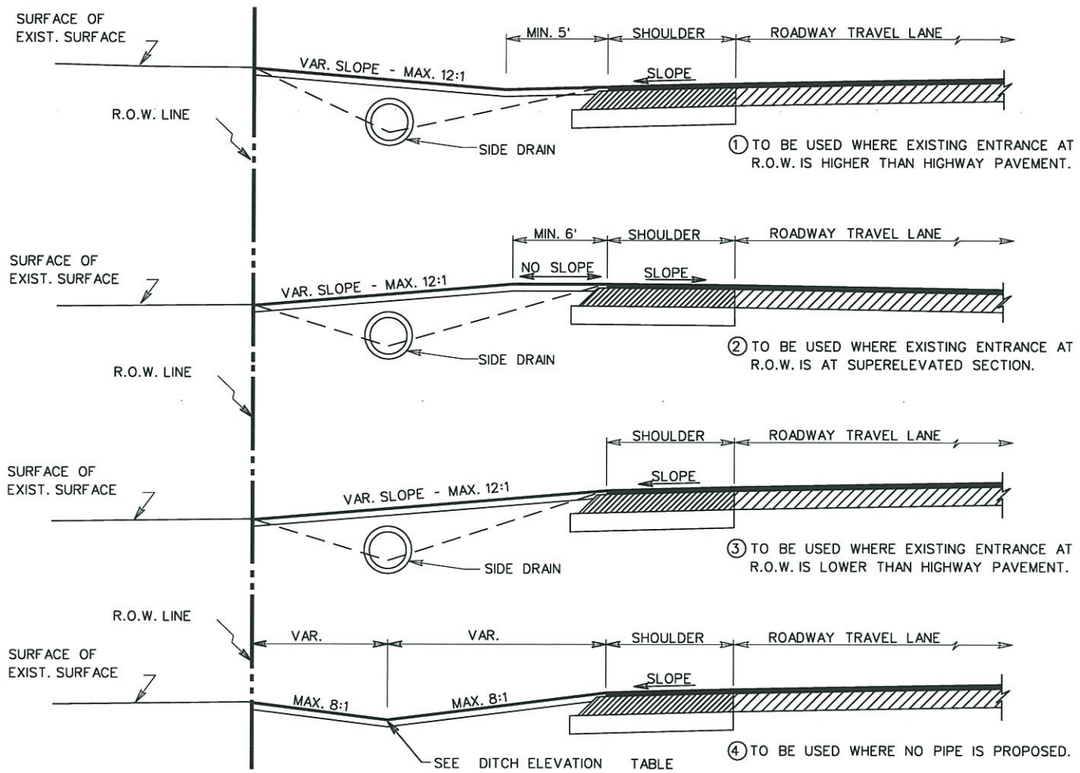
TEXAS DEPARTMENT OF TRANSPORTATION

CURB & GUTTER DETAILS (MOD.)

REV. 4/02

C&G.DGN

FED.RD. DIV.NO.	STATE AID PROJECT NO.		FILE NO.			SHEET NO.
6						89
STATE	STATE DIST.NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	HIDALGO	0921	02	323	MILE 2



NOTES:

ALL ENTRANCES CONSTRUCTED ON THIS PROJECT ARE SUBJECT TO CONCURRENCE WITH EXISTING GOVERNING REGULATIONS AS SET OUT BY THE STATE HIGHWAY COMMISSION.

ENTRANCE'S BASE AND SURFACING MAY BE EXTENDED BEYOND R.O.W. LINE AS REQUIRED TO MEET EXISTING GRADE IN A SATISFACTORY MANNER OF WHICH NO STEEPER THAN 12:1 SLOPE WILL BE CONSTRUCTED.

ALL FLEXIBLE BASE USED FOR PRIVATE DRIVES & COMMERCIAL DRIVES WILL NOT REQUIRE LIME TREATMENT.

EXACT LOCATIONS, DIMENSIONS, AND TYPE TO BE ESTABLISHED DURING CONSTRUCTION BY THE ENGINEER.

PROP. WIDTH OF DRIVEWAYS TO MATCH EXISTING WIDTH AT R.O.W. LINE.

114 •/SY ACP (COMPACTED) IS EQUAL TO 1 IN. DEPTH
171 •/SY ACP (COMPACTED) IS EQUAL TO 1½IN. DEPTH.

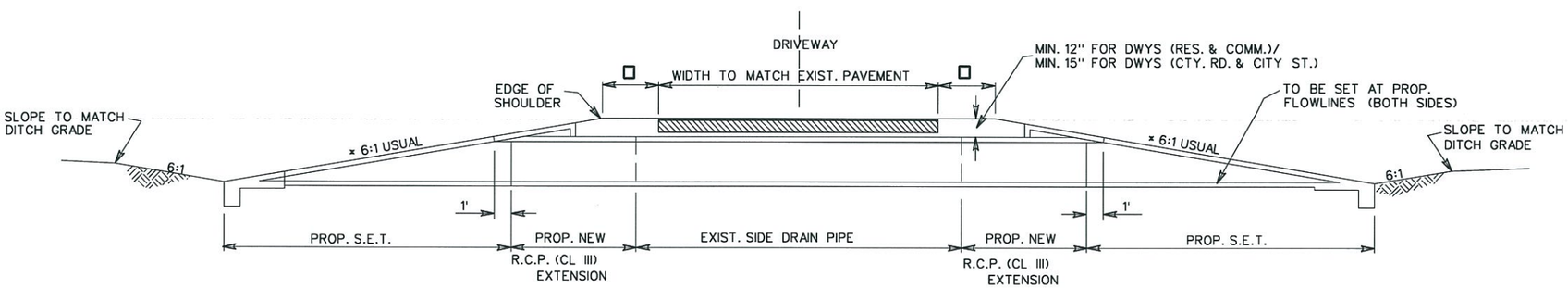
SIDE DRAINS TO BE INSTALLED WHERE ROADWAY DITCH DRAINAGE IS NECESSARY, AS INDICATED ON PLANS AND/OR AS DIRECTED BY THE ENGINEER.

SIDE DRAINS TO BE INSTALLED WITH A MINIMUM OF 12" COVER BY PROPOSED RESIDENTIAL & COMMERCIAL MATERIAL OR 15" COVER OF PROPOSED COUNTY RD. & CITY STREET ROADWAY MATERIAL.

AVERAGE DIMENSIONS SHOWN ON TABLE OF DRIVEWAYS ARE FOR ESTIMATING PURPOSES ONLY.

THE RATE OF PRIME SHALL BE 0.10 GAL/SY FOR PRIVATE AND/OR COMMERCIAL DRIVEWAYS AND 0.20 GAL/SY FOR PUBLIC DRIVEWAYS.

TYPICAL ENTRANCE PROFILE FOR DRIVEWAYS W/OUT C&G



□ - 1' MIN. ON DRIVEWAYS (RES. & COMM.)
2' MIN. ON DRIVEWAYS (COUNTY RD. & CITY ST.)

× - 6:1 SLOPE USUAL
UNLESS OTHERWISE NOTED ON PLANS

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PHARR DISTRICT STANDARD

TEXAS DEPARTMENT OF TRANSPORTATION

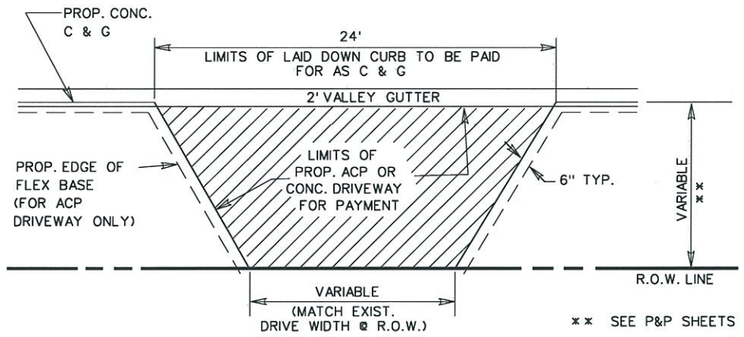
DRIVEWAY PROFILE DETAILS

REV. 7/13

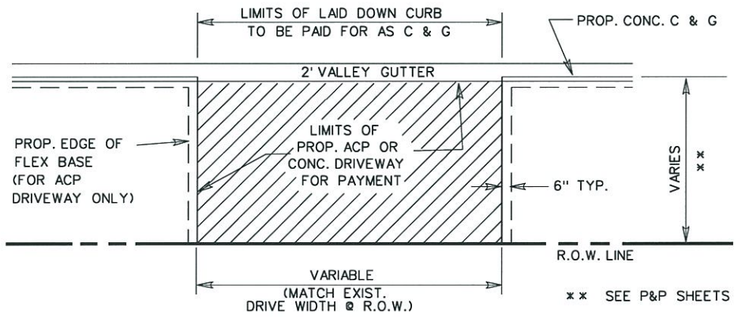
DRIVEWAY1.DGN

FED.RD. DIV.NO.	STATE AID PROJECT NO.		FILE NO.			SHEET NO.
6						91
STATE	STATE DIST.NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	HIDALGO	0921	02	323	MILE 2

PRIVATE AND COMMERCIAL DRIVES WITH CURB & GUTTER



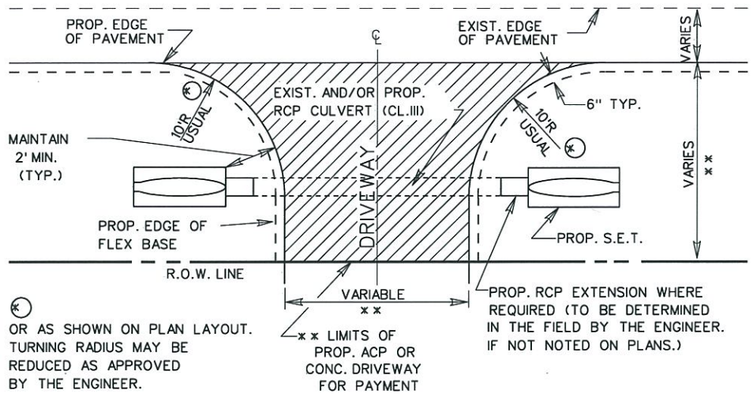
PLAN OF PRIVATE AND COMMERCIAL DRIVES
(W/DRIVEWAY WIDTH LESS THAN 24')



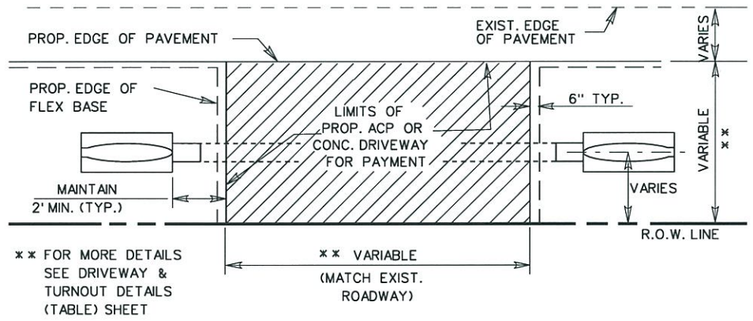
PLAN OF PRIVATE AND COMMERCIAL DRIVES
(W/DRIVEWAY WIDTH EQUAL TO OR GREATER THAN 24' @ R.O.W. LINE)

N.T.S.

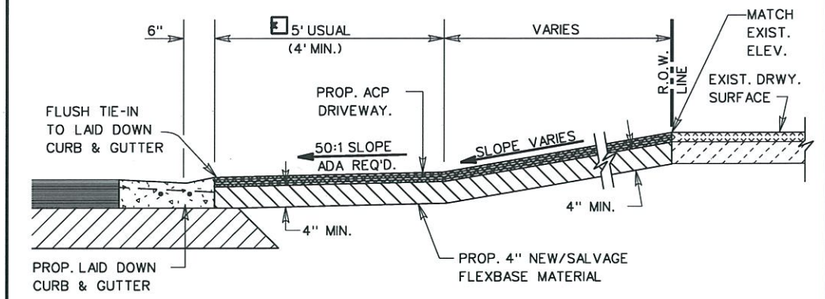
PRIVATE AND COMMERCIAL DRIVES WITHOUT CURB & GUTTER



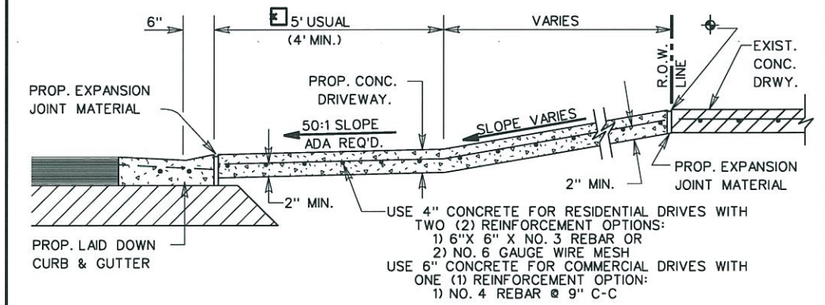
PLAN OF PRIVATE AND COMMERCIAL DRIVES
(W/DRIVEWAY WIDTH LESS THAN 24')



PLAN OF PRIVATE AND COMMERCIAL DRIVES
(W/DRIVEWAY WIDTH EQUAL TO OR GREATER THAN 24' @ R.O.W. LINE)



TYPICAL ASPH. CONC. PVM'T. DRIVEWAY SECTION
N.T.S.

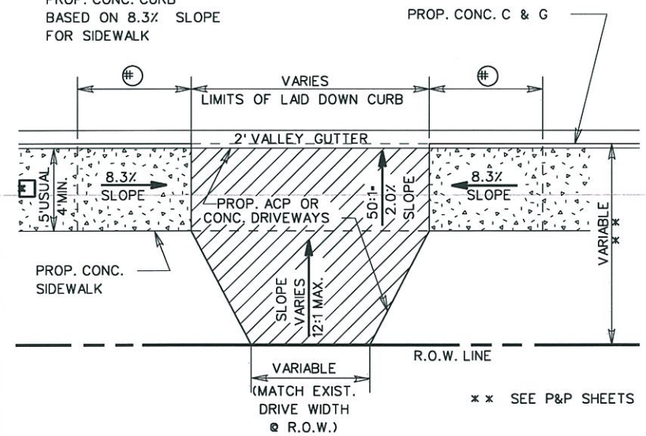


TYPICAL CONCRETE DRIVEWAY SECTION
N.T.S.

⊕ CONC. SHALL BE SAW CUT TO THE LIMITS OF REMOVAL WHERE APPLICABLE.

℄ PROP./FUTURE SIDEWALK CROSSING LOCATION UNLESS SHOWN ELSEWHERE ON P&P SHEETS. SEE P&P SHEETS FOR PROP. SIDEWALK LOCATION IF SIDEWALKS ARE INCLUDED AS PART OF PROJECT. REFER TO STATE STANDARDS - PEDESTRIAN FACILITIES - FOR ADDITIONAL REQUIREMENTS.

(#) LIMITS OF SLOPE FOR PROP. CONC. CURB BASED ON 8.3% SLOPE FOR SIDEWALK

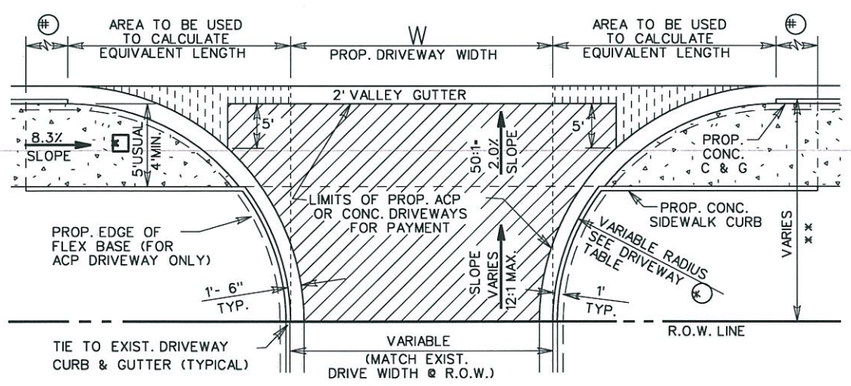


PLAN OF PRIVATE AND COMMERCIAL DRIVES WITH ADA REQ'D CROSS SLOPE FOR SIDEWALK

℄ PROP./FUTURE CONC. SIDEWALK LOCATION UNLESS SHOWN ELSEWHERE ON P&P SHEETS. REFER TO STATE STANDARDS - PEDESTRIAN FACILITIES - FOR ADDITIONAL REQUIREMENTS.

N.T.S.

PRIVATE AND COMMERCIAL DRIVES WITH CURB & GUTTER



PLAN OF PRIVATE AND COMMERCIAL DRIVES
SEE P&P SHEETS FOR LOCATIONS OF DRIVES
N.T.S.

℄ PROP./FUTURE CONC. SIDEWALK LOCATION UNLESS SHOWN ELSEWHERE ON P&P SHEETS. REFER TO STATE STANDARDS - PEDESTRIAN FACILITIES - FOR ADDITIONAL REQUIREMENTS.

(#) LIMITS OF SLOPE FOR PROP. CONC. CURB BASED ON 8.3% SLOPE FOR SIDEWALK

LF EQUIVALENT TABLE FOR PAYMENT LIMITS OF 2' VALLEY GUTTER

LF OF VALLEY GUTTER= W + X1 + X2

WHERE X1 AND X2 MAY VARY DEPENDING ON RADIUS

Prop. Driveway Radius	X1 or X2 (Sq Ft Area / 2') Equivalent LF Length
5'	1
8'	2
10'	4
12'	6
15'	9
18'	12
20'	15
22'	18
25'	24
28'	30
30'	34

SEE DRIVEWAY TABLE FOR LIMITS OF LAID DOWN CURB TO BE PAID FOR AS CURB AND GUTTER

DRIVEWAY TYPES

TY PB-1
EXIST. PRIVATE OR COMMERCIAL DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 4" NEW AND/OR SALVAGE FLEX. BASE, PRIMED AND SURFACED WITH \ 114*/SY ACP.

CONCRETE (RESIDENTIAL)
EXIST. PRIVATE DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 4" CONCRETE. TO BE PAID FOR BY THE SQ.YD.

CONCRETE (COMMERCIAL)
EXIST. BUSINESS DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 6" CONCRETE. TO BE PAID FOR BY THE SQ.YD.

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PHARR DISTRICT STANDARD

TEXAS DEPARTMENT OF TRANSPORTATION

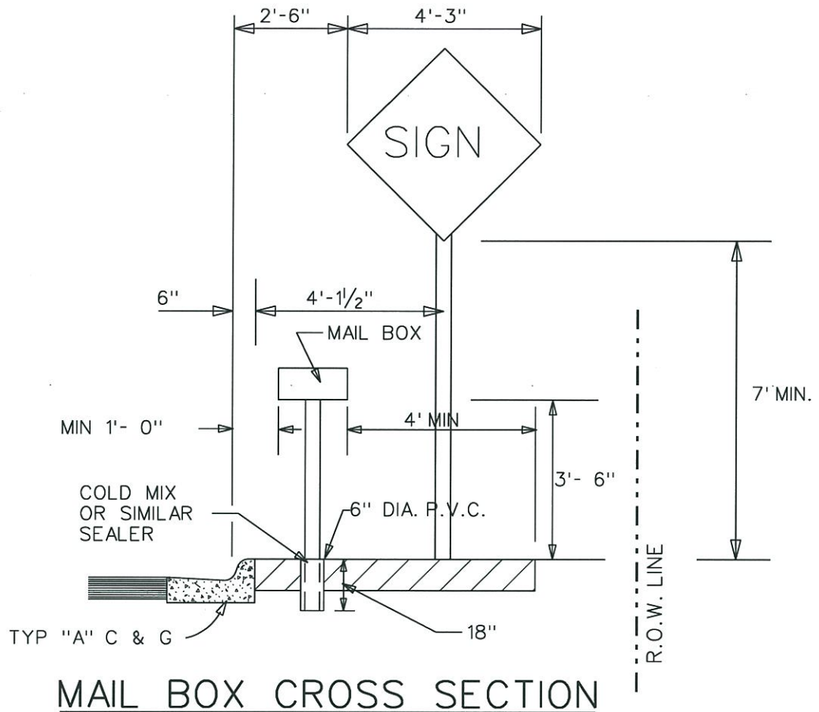
DRIVEWAY DETAILS PRIVATE (RESIDENTIAL-COMMERCIAL)

REV. 11/10

DRIVEWAY2.DGN

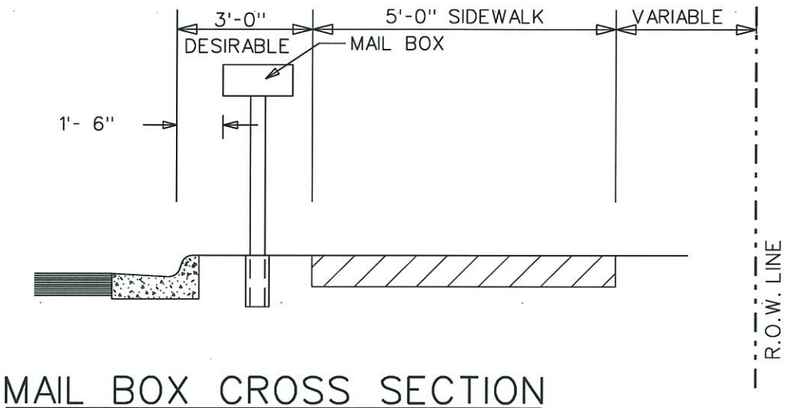
FED.RD. DIV.NO.	PROJECT NO.		FILE NO.			SHEET NO.
6						92
STATE	STATE DIST.NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	HIDALGO	0921	02	323	MILE 2

AD-76-0



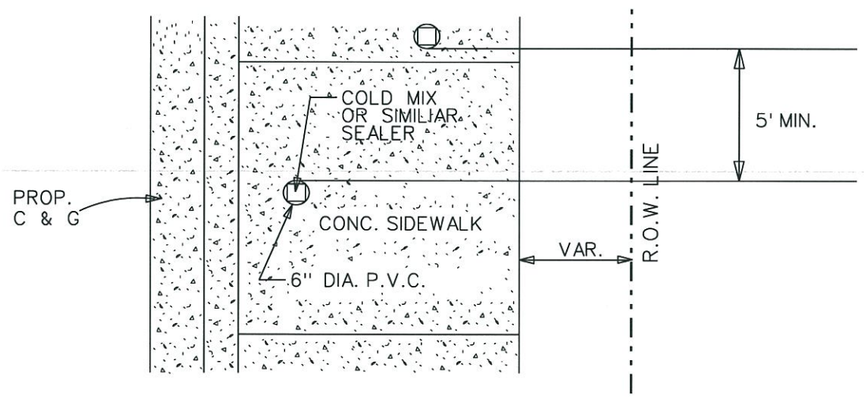
MAIL BOX CROSS SECTION

(MINIMUM BORDER DISTANCE)

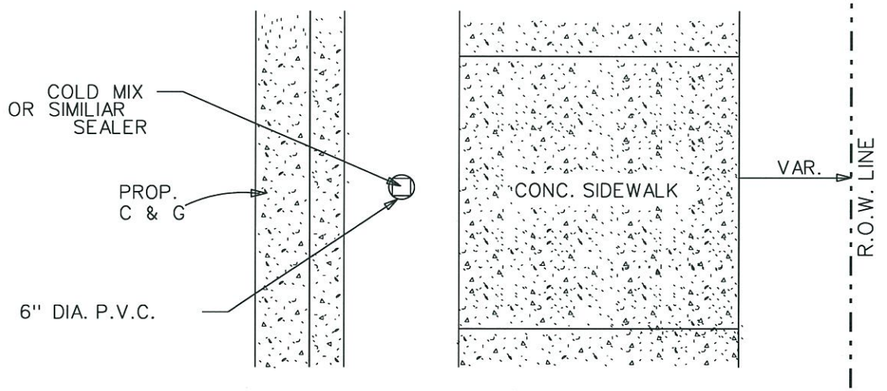


MAIL BOX CROSS SECTION

(DESIRABLE BORDER DISTANCE)



PLAN VIEW



PLAN VIEW

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PHARR DISTRICT STANDARDS

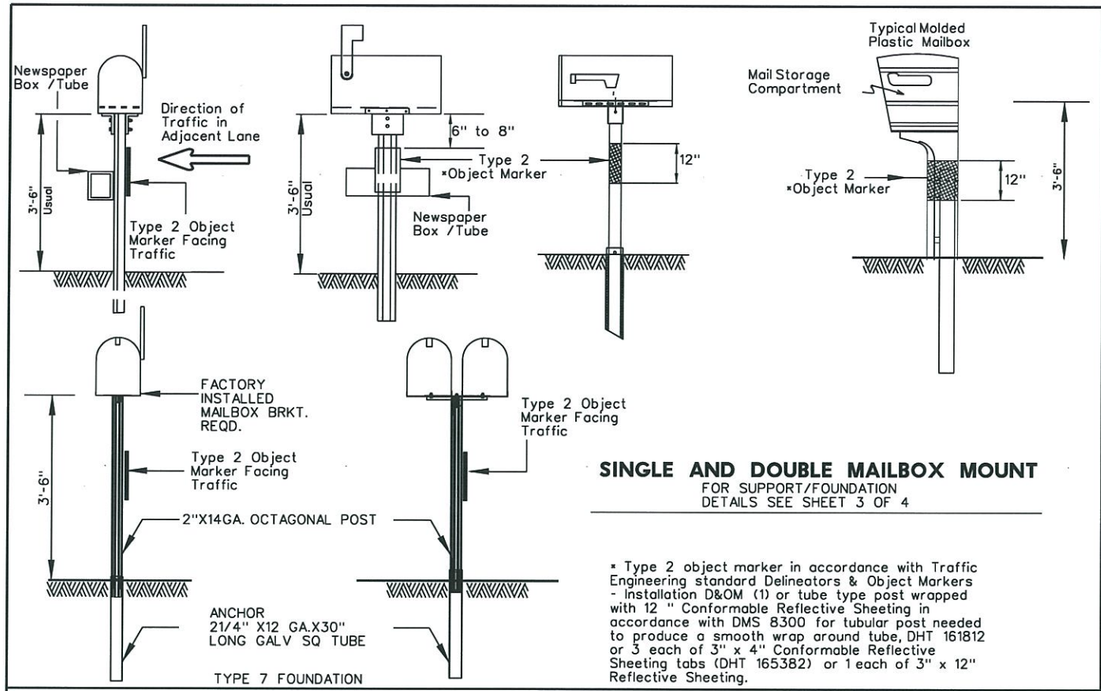
TEXAS DEPARTMENT OF TRANSPORTATION

MAILBOX DETAIL

REV. 5/03

MAILBOX.DGN

FED.RD. DIV.NO.	STATE AID PROJECT NO.		FILE NO.			SHEET NO.
6						93
STATE	STATE DIST.NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	HIDALGO	0921	02	323	MILE 2

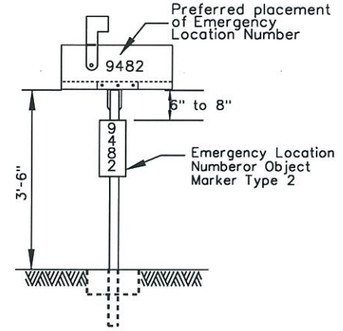


SINGLE AND DOUBLE MAILBOX MOUNT

FOR SUPPORT/FOUNDATION DETAILS SEE SHEET 3 OF 4

* Type 2 object marker in accordance with Traffic Engineering standard Delineators & Object Markers - Installation D&OM (1) or tube type post wrapped with 12 " Conformable Reflective Sheeting in accordance with DMS 8300 for tubular post needed to produce a smooth wrap around tube, DHT 161812 or 3 each of 3" x 4" Conformable Reflective Sheeting tabs (DHT 165382) or 1 each of 3" x 12" Reflective Sheeting.

Note: Mailbox installations in sidewalk areas shall be in accordance with the Design Division standard PED-05 for pedestrian facilities.



PLACEMENT OF EMERGENCY LOCATION NUMBER

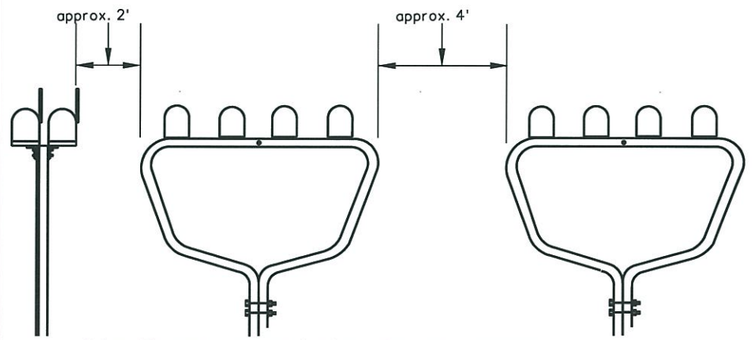
Location Number shall be placed on: 1. A yellow, type A plate with class 1 flat surface reflective sheeting in accordance with DMS 8600. The color of numbers shall be black. or 2: A green or blue plate with white numbers attached to post beside the object marker. Other contrasting color configuration, as approved , may be used. (Use Same type plate as used for the type 2 Object Marker. Recommended sign size is 6" by 15")

Mailboxes shall be made of light weight sheet metal or light weight plastic. Heavy steel, cast iron or decorative mailboxes shall not be used on the state highway system.

TYPICAL MAILBOX SIZE				LIGHT WEIGHT MATERIAL	
				SHEET METAL	**PLASTIC
	LENGTH	WIDTH	HEIGHT	MAXIMUM WEIGHT	
SIZE	INCHES			POUNDS	
SMALL	19 1/2	6	7	5	5
MEDIUM	22 1/2	8	11 1/2	7	7
LARGE	23 1/2*	11 1/2*	13 1/2*	10	10

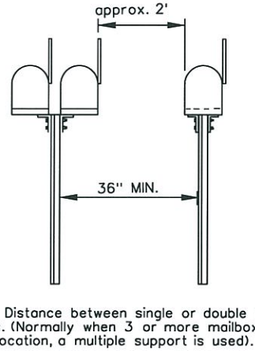
* Maximum allowed dimensions for mailbox
** Excluding Molded Plastic on 4 X 4 Post

MAILBOX SIZES



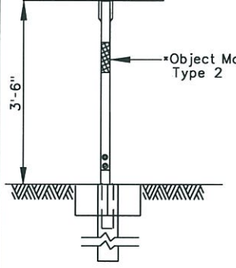
4' Clear Distance between multiple installations and 2' clearance between double or single installations and the multiple installation. DHT #'s 164116 or 149339.

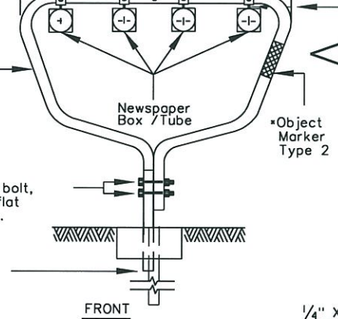
MULTIPLE MAILBOX PLACEMENT

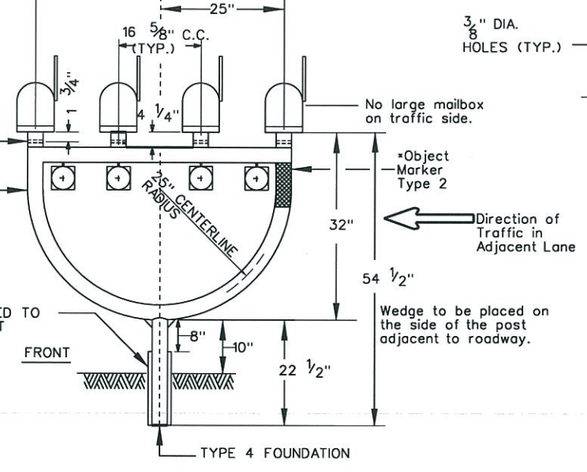


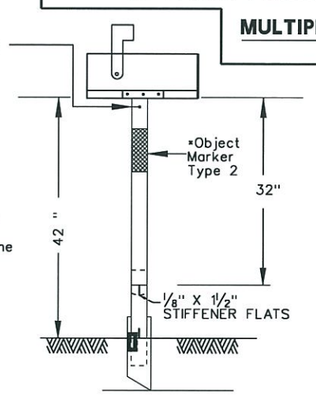
Clear Distance between single or double mounted posts. (Normally when 3 or more mailboxes are in one location, a multiple support is used).

SINGLE & DOUBLE MAILBOX PLACEMENT



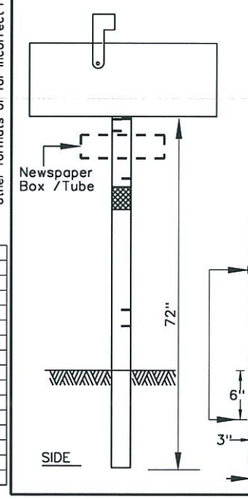


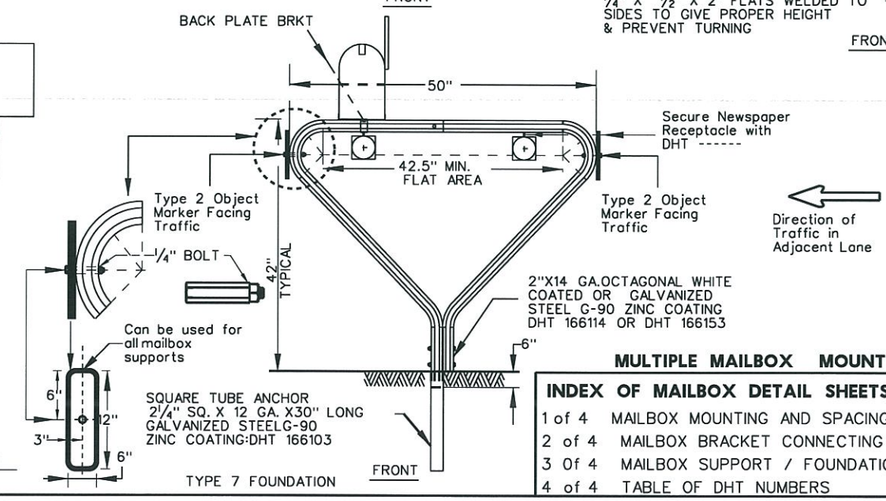




DOUBLE AND MULTIPLE MAILBOX MOUNT

FOR SUPPORT/FOUNDATION DETAILS SEE SHEET 3 OF 4





NEWSPAPER RECEPTACLE

A light weight receptacle for newspaper delivery can be attached to mailbox posts as shown on this page if the receptacle:

- Does not touch the mailbox.
- Does not present a hazard to traffic or delivery of the mail.
- Does not extend beyond the front of the mailbox.
- Does not display advertising, except the publication title.
- Newspaper receptacles on separate supports are prohibited.

FOR SUPPORT/FOUNDATION DETAILS SEE SHEET 3 OF 4

Note on DHT Number

See Table of Applicable DHT Numbers on sheet 4 of 4 for DHT description.

MULTIPLE MAILBOX MOUNT

INDEX OF MAILBOX DETAIL SHEETS

1 of 4 MAILBOX MOUNTING AND SPACING
2 of 4 MAILBOX BRACKET CONNECTING DETAILS
3 Of 4 MAILBOX SUPPORT / FOUNDATION
4 of 4 TABLE OF DHT NUMBERS

REVISIONS
04/03/06: Added New Multiply Mount, DHT: 164116.
04/03/06: Added general note numbers 6 & 7. Sheet & title block renumbered.
08/02/06: Added Maximum weight for typical mailbox sizes.
10/9/2009 Added new mailbox post
10/19/2009 Added sheet 4 of 4
01/07/2011 Added note disallowing newspaper receptacle separate support
01/07/2009:Added pedestrian facilities stds note.
07/07/2011: Revised note to allow more color options for emergency location number. Included type 2 object marker attachment details for the wrap around and tube type.

Standard Plans

Texas Department of Transportation

Maintenance Division

MAILBOX MOUNTING AND SPACING

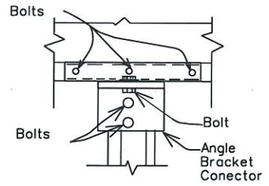
MB-11(1)

Sheet 1 of 4

FILE: MB10(1).DGN	DN: JEO	CK: LJB	DW: JEO	CK: RDB	MEG:	
©TxDOT JANUARY 2011	DIST	FED REG	FEDERAL AID PROJECT			SHEET
	21	6				94
	COUNTY		CONTROL	SECT	JOB	HIGHWAY
	HIDALGO		0921	02	323	MILE 2

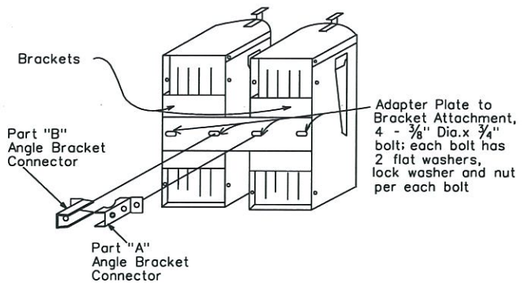
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LEVELS DISPLAYED
1 2



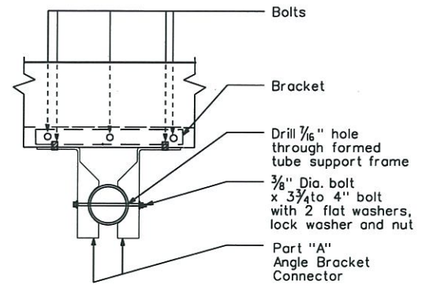
For bolt sizes see details below for "SMALL MAILBOX" and "MEDIUM AND LARGE MAILBOXES"

SINGLE MAILBOX CONNECTION

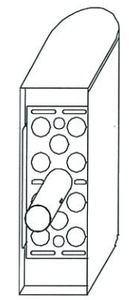


DOUBLE MAILBOX CONNECTION

(Not permitted for Large Mailboxes)

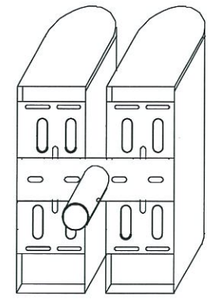


MULTIPLE MAILBOX CONNECTION



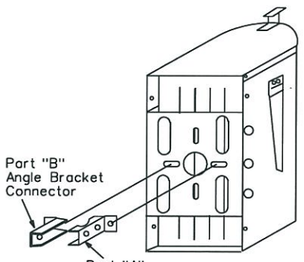
WELDED SINGLE MAILBOX BRACKET CONNECTION

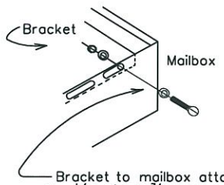
To be used with 2 3/8" OD RR or thinwall Steel posts.



WELDED DOUBLE MAILBOX BRACKET CONNECTION WITH ADAPTER PLATE

To be used with thinwall Steel posts. Not to be used with RR posts.



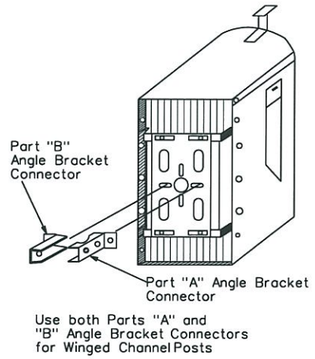


Bracket to mailbox attachment: 6 - 1/4" Dia. x 3/4" bolt w/ 2 flat washers and nut per each bolt.

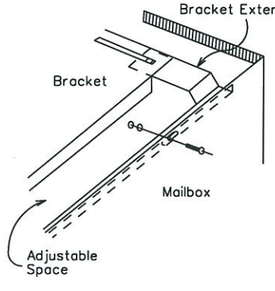
Angle to bracket attachment: 2 - 3/8" Dia. x 3/4" bolt with 2 flat washers, lock washer and nut per each bolt.

Angle to 2 - 3/8" Dia. x 2 1/2" bolt with 2 flat washers, lock washer and nut per each bolt.

SMALL MAILBOX



Use both Parts "A" and "B" Angle Bracket Connectors for Winged Channel Posts



Bracket to mailbox attachment: 6 - 1/4" Dia. x 3/4" bolt w/2 flat washers and nut per each bolt.

Bracket to bracket extension attachment: 2 - 1/4" Dia. x 3/4" carriage bolt w/ flat washer, lock washer and nut per bolt (4 bolts required if 2 bracket extensions are used).

Angle to bracket attachment: 2 - 3/8" Dia. x 3/4" bolt w/2 flat washers, lock washer and nut per each bolt.

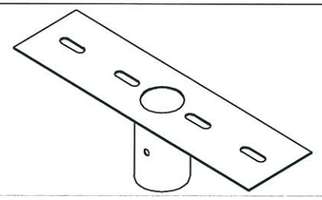
Angle to mailbox support attachment: 2 - 3/8" Dia. x 2 1/2" bolt w/2 flat washers, lock washer, and nut per each bolt.

Medium size mailboxes - one extension bracket
Large size mailboxes - two extension brackets

MEDIUM AND LARGE MAILBOXES

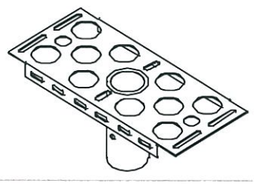
GENERAL NOTES

1. Connecting hardware detailed on this sheet is for the hardware that the Department stocks at the Regional Warehouses. This hardware is available to the contractor only when so stated elsewhere in the plans or specification.
2. Hardware for mounting mailboxes to the support/foundation furnished by industry should be used when shown on the Maintenance Divisions "Approved Products List." Only mailbox hardware that have been crash tested in accordance with NCHRP Report 350, will be on the approved list.
3. Hardware furnished by industry shall be erected in accordance with the manufacturer's recommendation.
4. Bracket and bracket extension shall be constructed of 14 gauge galvanized steel sheet metal.
5. The angles, brackets and adapter plates shall be constructed of 12 gauge galvanized steel sheet metal.
6. Items with evidence of damage to the galvanized coating or wet storage stains (white rust) will not be accepted.



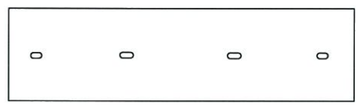
DHT 162323

For use with galvanized thinwall steel posts DHT • 143426 or powder-coated thinwall steel post DHT • 162911.



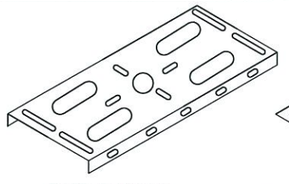
DHT 161443

For use with RCR post DHT • 161442 or galvanized thinwall steel post DHT • 143426 or powder-coated thinwall steel post. DHT • 162911.



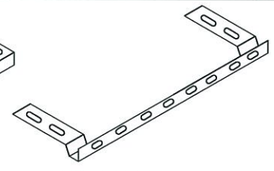
DHT #3789

Used for mounting two Mailboxes on the same post.



DHT 148939

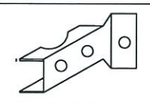
Mailbox Bracket



DHT 148938

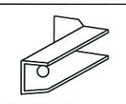
Used for extending 6" wide bracket to attach larger mailboxes.

Bracket Extension



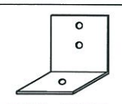
DHT 159489

Part "A" Angle Bracket Connector



DHT 159490

Part "B" Angle Bracket Connector

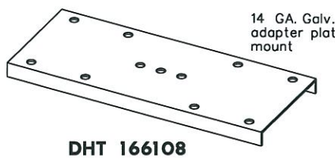


DHT 2917

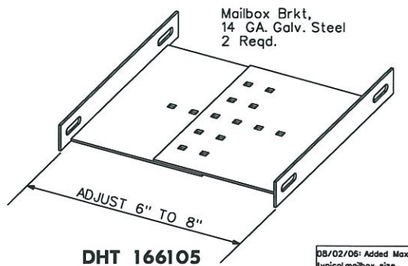
Angle Bracket For Temporary Mailbox

Note on DHT Number

See Table of Applicable DHT Numbers on sheet 4 of 4 for DHT description and unit of measure.



DHT 166108



DHT 166105

HARDWARE AT TXDOT REGIONAL WAREHOUSES

Brackets and adapter plate shown in this section should be available to the Contractor when stated elsewhere in plans or specifications.

08/02/05: Added Maximum weight for typical mailbox size.
10/08/2009: Added Accessibility stds note
10/9/2009 Added new mailboxpost

Standard Plans

Texas Department of Transportation
Maintenance Division

MAILBOX BRACKET CONNECTING DETAILS

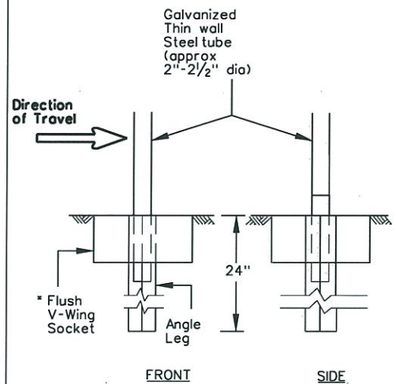
MB-11(1)

Sheet 2 of 4

FILE: MB10(1).DGN	DN: JEO	CK: LJB	DW:	CK: RDB	HEC:	
©TxDOT JANUARY 2011	DIST	FED REG	FEDERAL AID PROJECT			SHEET
REVISIONS 02/02/05 06/08/05: Added general note numbers 5 & 7. Sheet & title block renumbered.)1)16/05:Deleted sheet4. 10/28/2009 added sheet 4	21	6				95
	COUNTY		CONTROL	SECT	JOB	HIGHWAY
	HIDALGO		0921	02	323	MILE 2

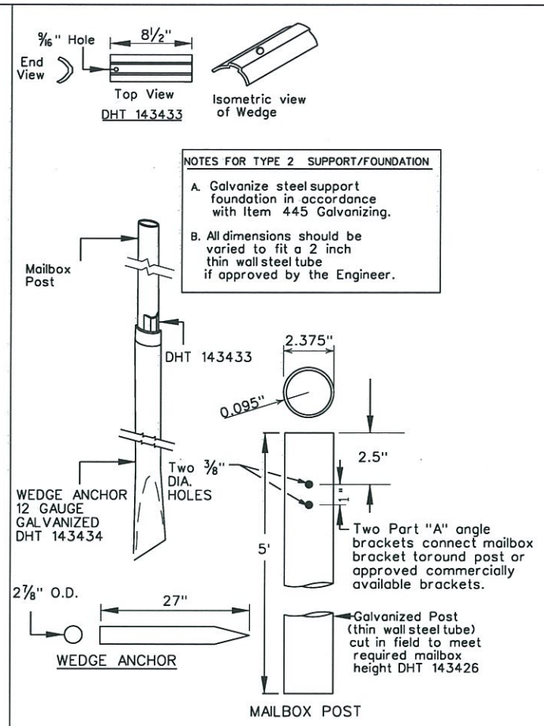
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LEVELS DISPLAYED
1 2



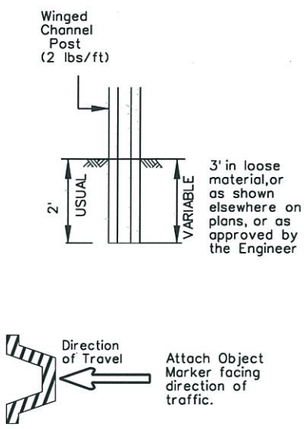
TYPE 1 SUPPORT/FOUNDATION

THIN WALL STEEL TUBE w/ V-LOC ANCHORAGE



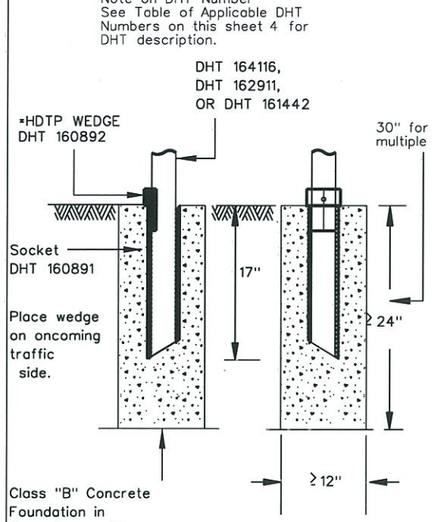
TYPE 2 SUPPORT/FOUNDATION

THIN WALL STEEL TUBE w/ WEDGE ANCHOR SYSTEM



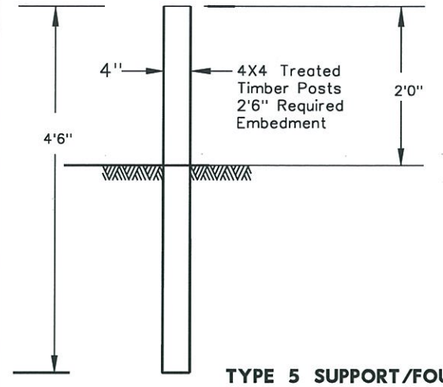
TYPE 3 SUPPORT/FOUNDATION

WINGED CHANNEL POST



TYPE 4 SUPPORT/FOUNDATION

FOR WHITECOATED STEEL POST, MULTIPLE POST, AND RECYCLED RUBBER.

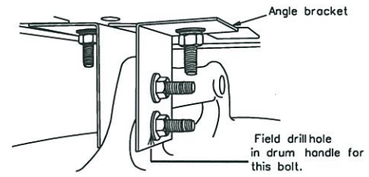


TYPE 5 SUPPORT/FOUNDATION

FOR ONE PIECE MOLDED PLASTIC MAILBOX

ONE PIECE MOLDED PLASTIC MAILBOXES

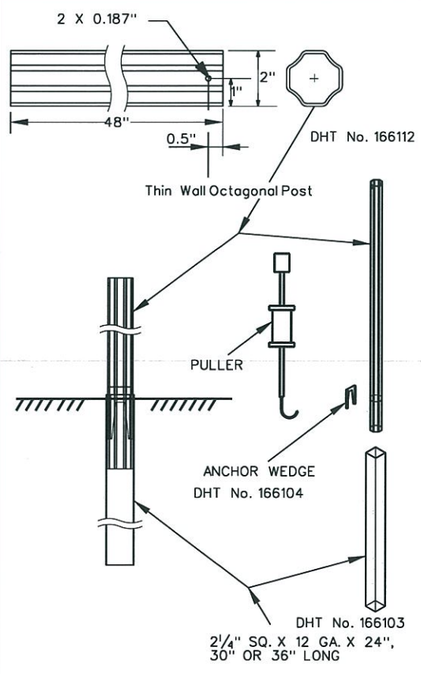
Molded Plastic Mailboxes shall be installed on 4"x4" treated timber posts only. The use of steel pipe or structural tubing in place of timber post is prohibited.



Placed on approved plastic drum as shown in the Compliant Work Zone Traffic Control Devices (CWZTCD).
Existing attachment hardware shall be used unless damaged. Damaged hardware shall be replaced.

TYPE 6 TEMPORARY MAILBOX SUPPORT

CONNECTION DETAIL



TYPE 7 MAILBOX SUPPORT/FOUNDATION

CONNECTION DETAIL

MB-(X) ASSM TY (XXX) (X) (XX) (OPTIONAL)

Type of Mailbox
- S = Single
- D = Double
- M = Multiple
- SP = Single Plastic

Type of Post
- WC = Winged Channel Post
- RR = Recycled Rubber
- TWW = Thin Walled White Tubing
- TWG = Thin Walled Galvanized Tubing
- TIM = Timber

Type of Foundation
- Ty 1 = V-Loc
- Ty 2 = Wedge Anchor Steel System
- Ty 3 = Winged Channel post
- Ty 4 = Wedge Anchor Plastic System
- Ty 5 = 4 X 4 Post
- Ty 7 = Wedge Anchor

Type of Bracket
- AB = Angle Bracket.
- TB = 2.375" Tube Bracket

GENERAL NOTES
1. Erect post plumb or vertical.
2. When galvanized part is required galvanize in accordance with Item 445.
3. type 1, 2, 3, 4 or 7 supports or foundation can be used for single or double mailbox installations. The RCR post should be used only for a single installation with a small mailbox. The Type 5 support/foundation is used for the single molded plastic mailbox. The Type 4 support/foundation is used for the 2.375" O.D. RR post, thin wall steel post, and white multiple mailbox post.
4. The Type 1 or type 7 support/foundation can be used for a multiple mailbox mount.
5. The Type 4 support should be used with thin wall steel pipe for the medium, large and double mailbox installations.
6. Use a concrete footing as shown or when directed. Concrete footing will be required when soils do not hold the support/foundations in a stable condition.

DOUBLE AND LARGE MAILBOXES MUST BE ON STEEL POST.

*HDTP: High density thermoplastic polyesters

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LEVELS DISPLAYED
1 2

REVISIONS
08/08/05: Added general note numbers 6 & 7. Sheet & title block renumbered. 11/16/05: Deleted sheet4.
08/03/06: Added DHT table, Mailbox descriptive codes and bid items.
10/9/2009 Added new mailbox post
10/28/2009: Moved DHT table to sheet 4 deleted general notes 7 & 8

Standard Plans

Texas Department of Transportation
Maintenance Division

MAILBOX SUPPORT/ FOUNDATION

Sheet 3 of 4

MB-11(1)

FILE: MB10(1).DGN	DN: JEO	CK: LJB	DW: JEO	CK: RDB	NEG:	
©TxDOT JANUARY 2011	DIST	FED REG	FEDERAL AID PROJECT			SHEET
REVISIONS 01/07/2011: Added note 7 for mailboxes installed in areas with sidewalks.	21	6				96
	COUNTY		CONTROL	SECT	JOB	HIGHWAY
	HIDALGO		0921	02	323	MILE 2

TABLE OF APPLICABLE DHT NUMBERS	
DHT NUMBER	DESCRIPTION
	FOUNDATIONS
46625	WEDGE FOR V-WING SOCKET FOR TYPE 1 FOUNDATION
149340	V-WING SOCKET FOR TYPE 1 FOUNDATION
143433	WEDGE FOR TYPE 2 FOUNDATION
143434	ANCHOR FOR TYPE 2 FOUNDATION
166103	ANCHOR FOR TYPE 7 FOUNDATION
160891	SOCKET FOR TYPE 4 FOUNDATION
160892	WEDGE FOR TYPE 4 FOUNDATION
166104	WEDGE FOR TYPE 7 FOUNDATION
	POSTS
4289	WINGED CHANNEL MAILBOX POST
149339	MULTIPLE MAILBOX POST (GALVANIZED TUBING)
164116	MULTIPLE MAILBOX POST (WHITE COATED)
166114	MULTIPLE MAILBOX POST (WHITE COATED OCTAGONAL)
166153	MULTIPLE MAILBOX POST (GALVANIZED OCTAGONAL)
161442	RECYCLED RUBBER POST. FOR SMALL MAILBOX ONLY
143426	THIN-WALL GALVANIZED STEEL TUBE 2.375" OUTER DIAMETER
162911	THINWALL WHITE STEEL TUBE 2.375" OUTER DIAMETER
166152	SINGLE OR DOUBLE THIN-WALL MAILBOX POST GALVANIZED 2" OCTAGONAL
166112	SINGLE OR DOUBLE THIN-WALL MAILBOX POST WHITECOATED 2" OCTAGONAL
	REFLECTIVE SHEETING
161812	REFLECTIVE SHEETING FOR EMERGENCY LOCATION NUMBER PANEL
	CONNECTING HARDWARE
2917	ANGLE BRACKET USED FOR TEMPORARY MAILBOX SUPPORT
166105	BRACKET FOR SINGLE MOUNTING OF MAILBOXES (MOUNTING KIT)
3789	PLATE FOR DOUBLE MOUNTING OF MAILBOXES
166108	BRACKET FOR DOUBLE MOUNTING OF MAILBOXES (MOUNTING KIT)
166111	BRACKET FOR MULTIPLE MOUNTING OF MAILBOXES (MOUNTING KIT)
148939	BRACKET FOR ATTACHING SMALL OR MEDIUM SIZE MAIL BOX
148938	EXTENDER TO BRACKET FOR ATTACHING LARGE MAILBOX
159489	ANGLE BRACKET PART A
159490	ANGLE BRACKET PART B
162323	BRACKET FOR DOUBLE MOUNTING OF MAILBOXES ON THINWALL STEEL POST, GALVANIZED OR POWDERCOATED.
161443	BRACKET FOR ATTACHING MAILBOX TO RECYCLED RUBBER POST AND TO MULTIPLE WHITE MAILBOX POST
158358	CASTING (NEWSPAPER RECEPTACLE BRACKET)
163731	U-BOLT (NEWSPAPER RECEPTACLE BRACKET)

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LEVELS DISPLAYED
1 2

Standard Plans

Texas Department of Transportation
Maintenance Division

TABLE OF DHT NUMBERS

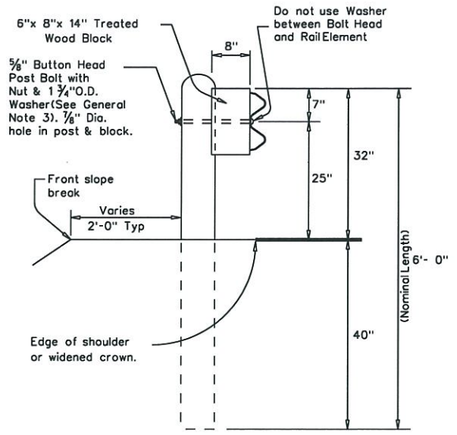
Sheet 4 of 4

MB-11(1)

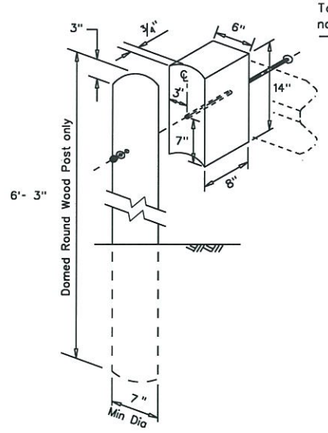
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©TxDOT JANUARY 2011	DIST	FED REG	FEDERAL AID PROJECT			SHEET
10/28/09 REVISIONS	21	6				97
	COUNTY		CONTROL	SECT	JOB	HIGHWAY
	HIDALGO		0921	02	323	MILE 2

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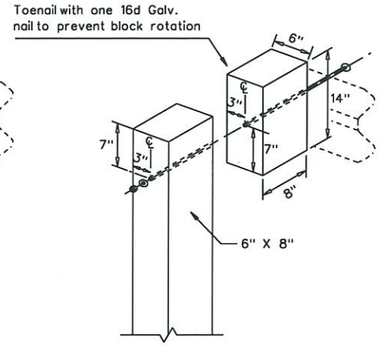
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FILE:



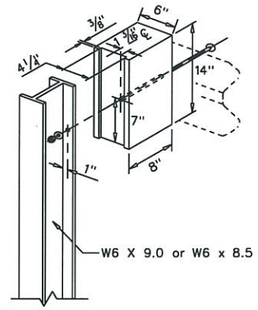
TYPICAL POST



WOOD BLOCK TO ROUND WOOD POST



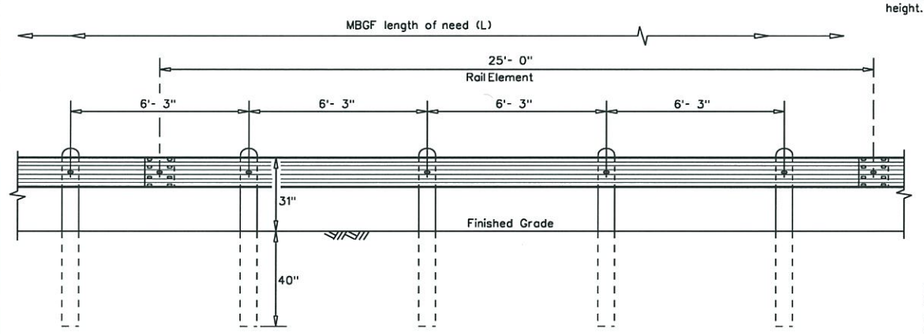
WOOD BLOCK TO RECTANGULAR WOOD POST



WOOD BLOCK TO STEEL POST

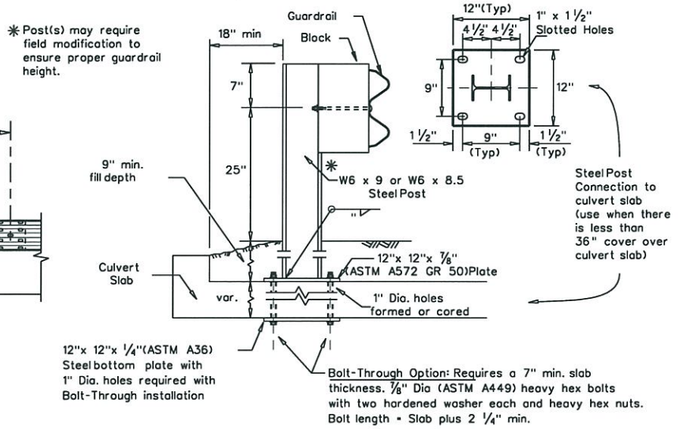
GENERAL NOTES

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 5/8" x 1 ¼" (or 2" long at triple rail splices) with a 5/8" double recessed nut (ASTM A563). Thrie beam "connection" 7/8" 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.



ELEVATION
MID-SPAN RAIL SPLICE

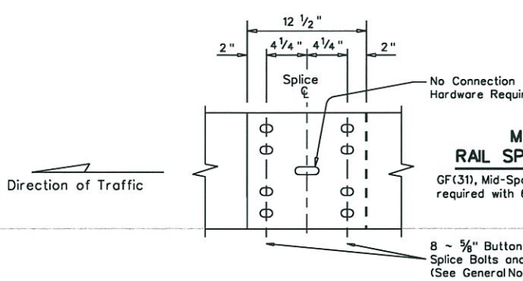
Showing a 25'- 0" section of W-Beam rail, 12'- 6" rail sections may also be supplied (See General Note 2)



LOW FILL CULVERT POST

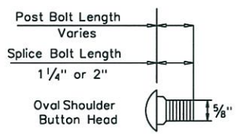
For use on culverts up to 50 ft. in length. Culverts of 25 ft. or less, See GF(31)LS standard for "Long Span" option.

Epoxy Note:
Epoxy Anchor Option: This option may only be used if the culvert slab is 8" min. thick. Threaded anchor rods must be 7/8" 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 1/4" min. beyond nut.



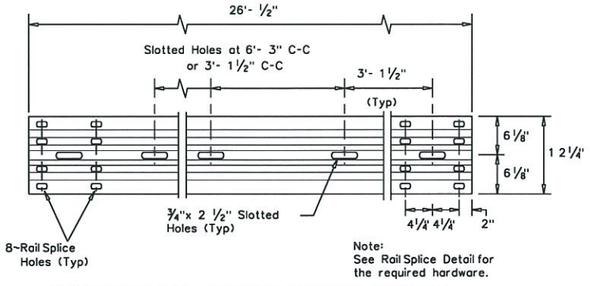
MID-SPAN
RAIL SPLICE DETAIL

GF(31), Mid-Span rail splices are required with 6'-3" post spacings.



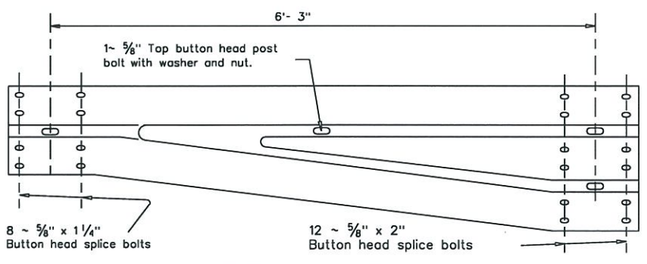
BUTTON HEAD BOLT

Post and Splice Bolts (See General Note 3)



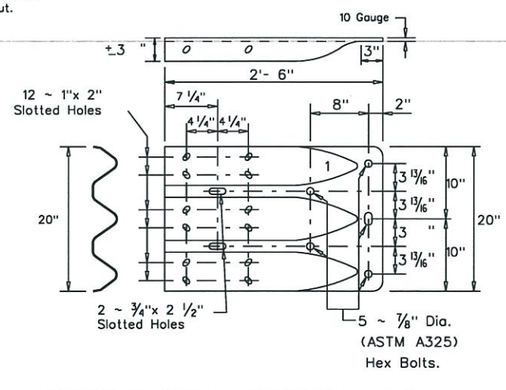
ELEVATION 25'- 0"(NOM.) W-BEAM SECTION

12'- 6" rail sections may also be supplied (See General Note 2)



NON-SYMMETRICAL TRANSITION
FROM W-BEAM TO CONCRETE RAIL (10 GA.)

(See GF(31)DAT for Downstream Connection to Concrete Rail)



THRIE-BEAM TERMINAL CONNECTION (10 GA.)

(See General Note 3 for required hardware)

Texas Department of Transportation

Design Division Standard

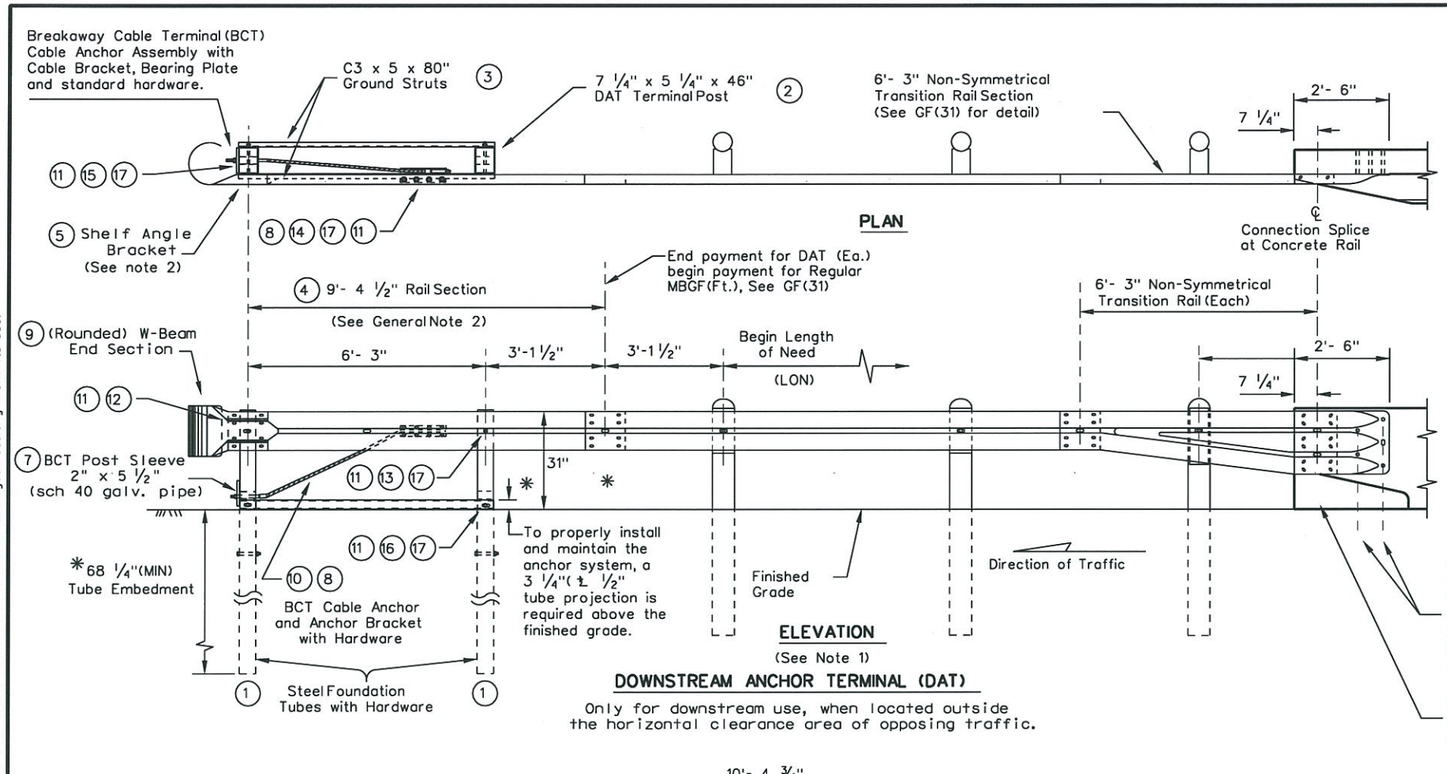
METAL BEAM GUARD FENCE

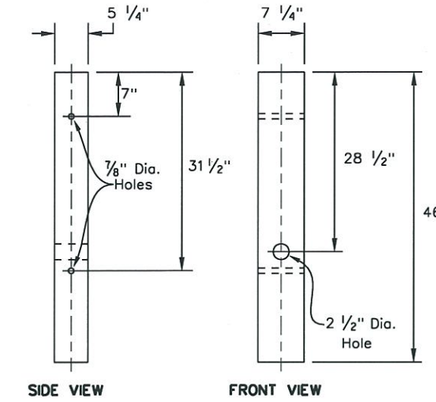
GF(31)-11

FILE: gf3111.dgn	DN: TxDOT	CK: AM	DW: VP	CK:
© TxDOT December 2011	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	02	323	MILE 2
	DIST	COUNTY		SHEET NO.
	21	HIDALGO		98

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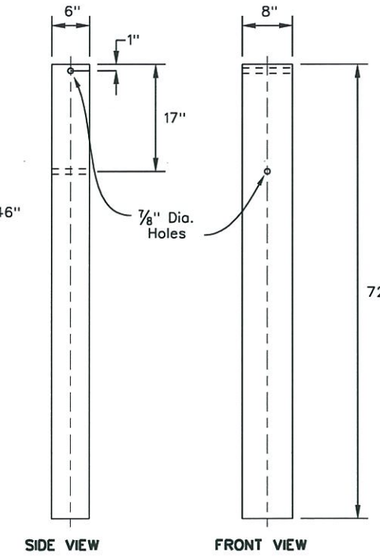
DATE:
FILE:





TERMINAL POST

2 7 1/4"x 5 1/4"x 46" Wood Post



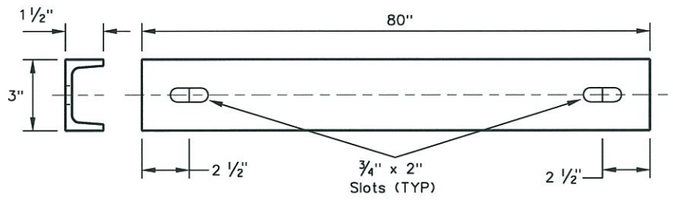
STEEL FOUNDATION TUBE

1 6"x 8"x 1/8" x 72" Steel Tube

#	(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

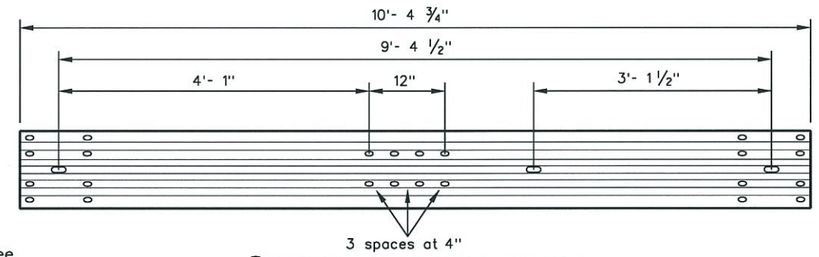
Terminal Connection Note

To ensure a stable connection. (12) Rectangular Washers (FWR03) are required under the recessed nuts at the Terminal Connection splice.

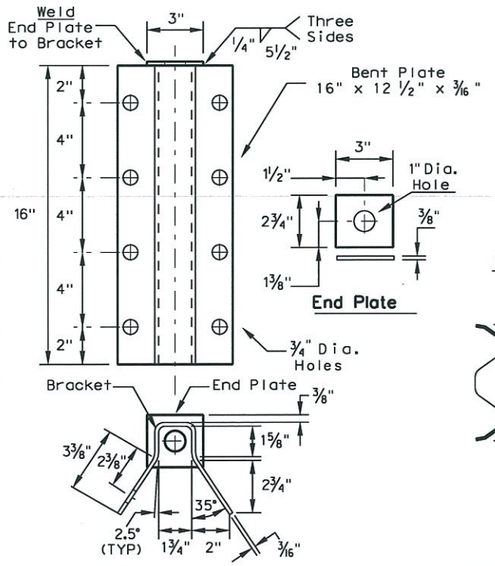


3 CHANNEL STRUT

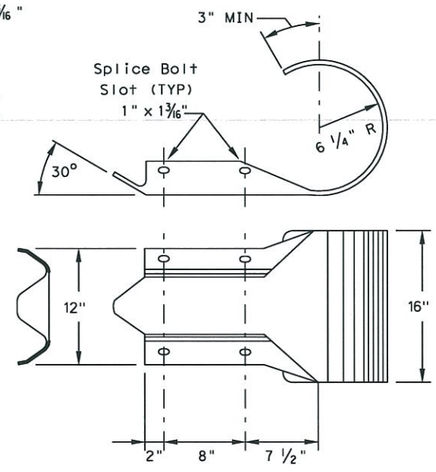
C3 x 5 x 80",Grade A36



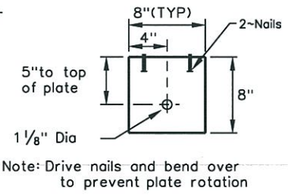
4 TERMINAL RAIL ELEMENT FOR DAT



8 GUARDRAIL ANCHOR BRACKET



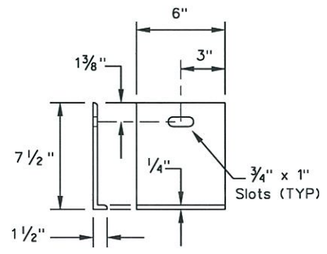
9 W-BEAM END SECTION (ROUNDED) (12 GA.)



Note: Drive nails and bend over to prevent plate rotation

6 BEARING PLATE

8"x 8"x 5/8" P L



5 SHELF ANGLE BRACKET

GENERAL NOTES

1. The DAT 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.

Texas Department of Transportation

Design Division Standard

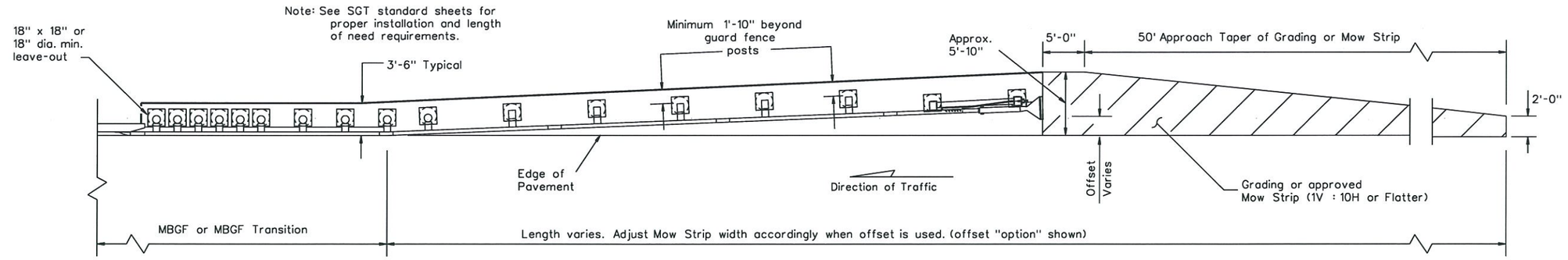
METAL BEAM GUARD FENCE

(Downstream Anchor Terminal)

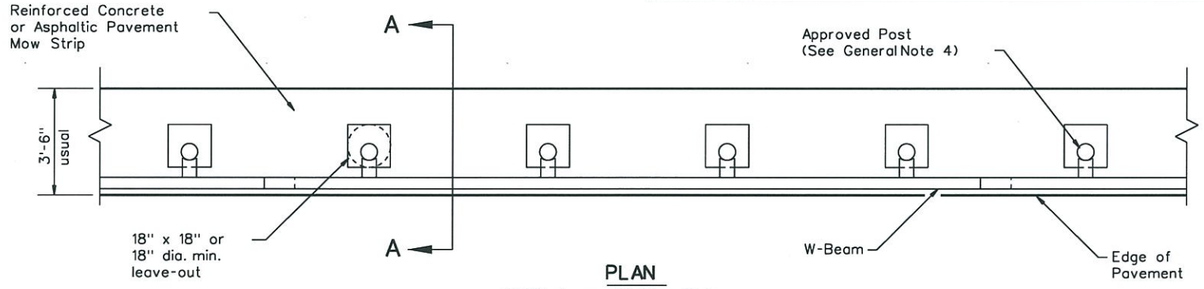
GF(31)DAT-11

FILE: gf31da11.dgn	DN: TxDOT	CK: AM	DW: VP	CK:
©TxDOT December 2011	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	02	323	MILE 2
	DIST	COUNTY		SHEET NO.
	21	HIDALGO		99

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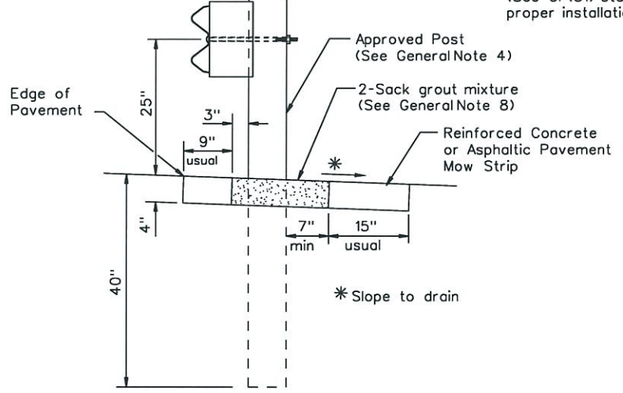


GRADING AND MOW STRIP AT GUARDRAIL END TREATMENTS



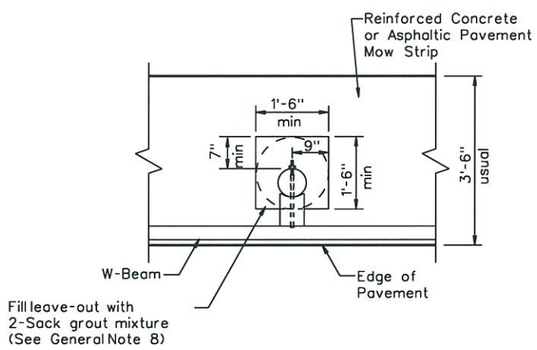
PLAN

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.

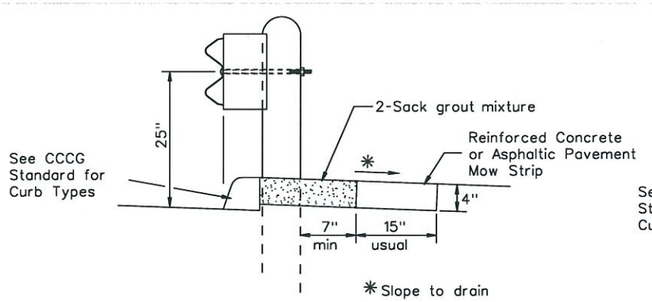
Note: Site Condition(s)

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.

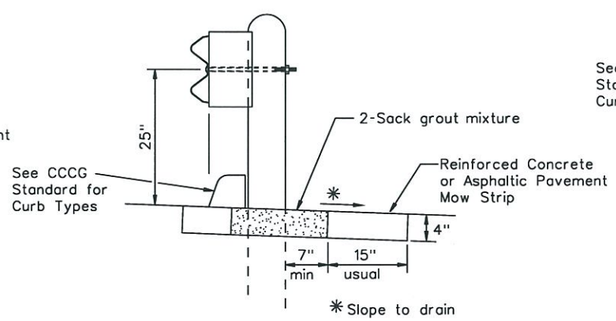
GENERAL NOTES

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 and placed in accordance with Section 421.2.F, "Mortar and Grout." Payment for furnishing and placing the grout mixture will be subsidiary to the pay item of asphaltic pavement or reinforced concrete.



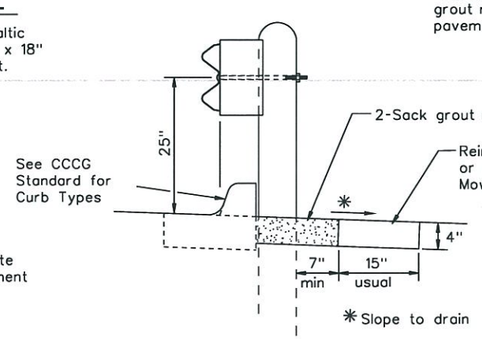
CURB OPTION (1)

This option will increase the post embedment through out the system.



CURB OPTION (2)

Curb shown on top of mow strip



CURB OPTION (3)

Texas Department of Transportation

Design Division Standard

METAL BEAM GUARD FENCE

(MOW STRIP)

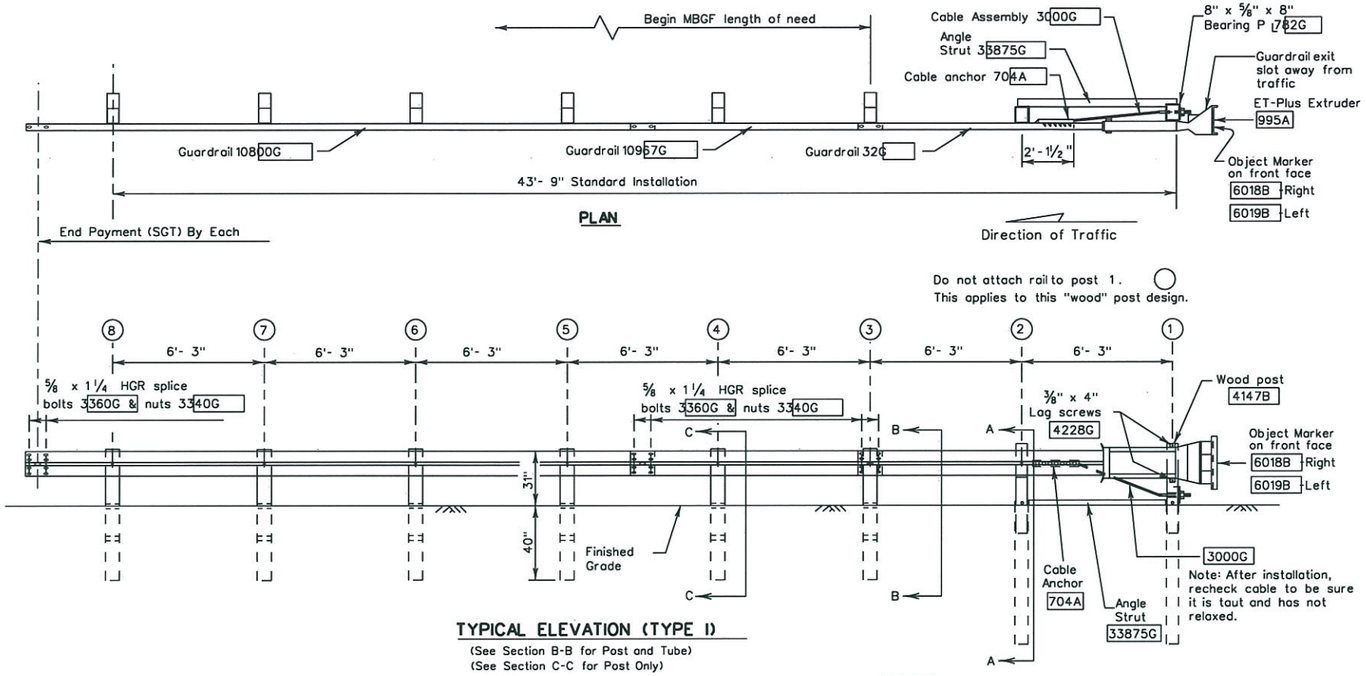
GF(31)MS-11

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©TxDOT December 2011	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	02	323	MILE 2
	DIST	COUNTY		SHEET NO.
	21	HIDALGO		100

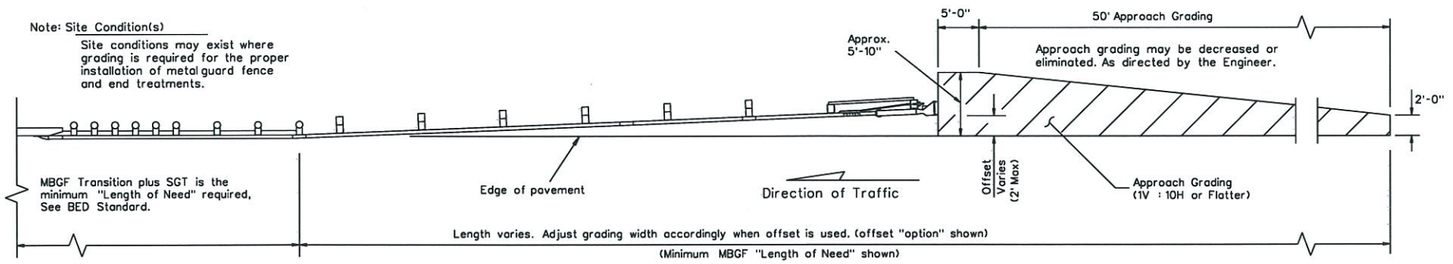
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FILE:



POST & TUBE OPTIONS	
Type I Posts 1 thru 2	○
Type II Posts 1 thru 4	○
Type III Posts 1 thru 8	○



GRADING AT GUARDRAIL END TREATMENTS

GENERAL NOTES

1. For additional information contact: Trinity Highway Products, 1-800-527-6050.
2. The Type of SGT unit will be specified elsewhere in the plans. Numbers in 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	

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 to prevent the terminal head from encroaching on the shoulder. The flare may be decreased or eliminated for specific installations, if directed by the Engineer.
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.
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 as directed by the Engineer.
12. An object marker shall be installed on the front of the impact head as detailed on D&OM(VIA).
13. A special site evaluation should be considered, prior to using this end treatment where there is less than 25 feet between the extrusion side of the end treatment and any adjacent driving lane.

BILL OF MATERIAL

Code #	POST & TUBE OPTIONS Type I Qty.	Type II Qty.	Type III Qty.	DESCRIPTION
32G	1	1	1	Guardrail (12 Ga) at 12'- 6" (ANC)
10967G	1	1	1	Guardrail (12 Ga) at 9'- 4 ½"
10800G	1	1	1	Guardrail (12 Ga) at 25'- 0"
724G	2	2	2	Steel Tube - 6"x 8"x 72"x ⅛" min
741G	0	2	6	Steel Tube - 6" x 8" x 54" x ⅛" min
4140B	2	4	8	Wood Posts - 5 ½ "x 7 ½ " x 48 ¼"
4071B	6	4	0	Wood CRT Posts - 6 x" 8 x" 72 "
4075B	6	6	6	Wood Block - 6 x"8 x"14 "
705G	1	1	1	Pipe Sleeve - 2 std. pipe x 5 ½ "
782G	1	1	1	Bearing Plate - 8 x 8' x ⅝ "
704A	1	1	1	Cable Anchor Bracket
3000G	1	1	1	Cable Assembly (¾ x"78) "
33875G	1	1	1	Angle Strut
995A	1	1	1	ET-Plus Extruder
5148G	2	2	2	¾" x 9 ½" Hex Hd (Top of tubes 1&2)A325
3300G	7	7	7	⅝ " Washers
3478G	2	4	8	⅝" x 7 ½" Hex Bolt
3500G	1	1	1	⅝" x 10 "Post Bolt (Post 2) ○
3580G	6	6	6	⅝" x 18 " Post Bolt (Posts 3 thru 8) ○
3360G	24	24	24	⅝" x 1 ¼ "Splice Bolt
3340G	33	37	45	⅝" Hex Nut
4228G	2	2	2	⅜" x 4 " Lag Screw
3910G	2	2	2	1 "Hex Nut
3900G	2	2	2	1 "Washer
6018B	1	1	1	Right - Object Marker
6019B	1	1	1	Left - Object Marker
3700G	4	4	4	¾" Washer
3704G	2	2	2	¾" Heavy Hex Nut
3497G	0	2	6	⅝" x 9 ½" Hex Hd (Top of Tubes 3-8)A307

Texas Department of Transportation

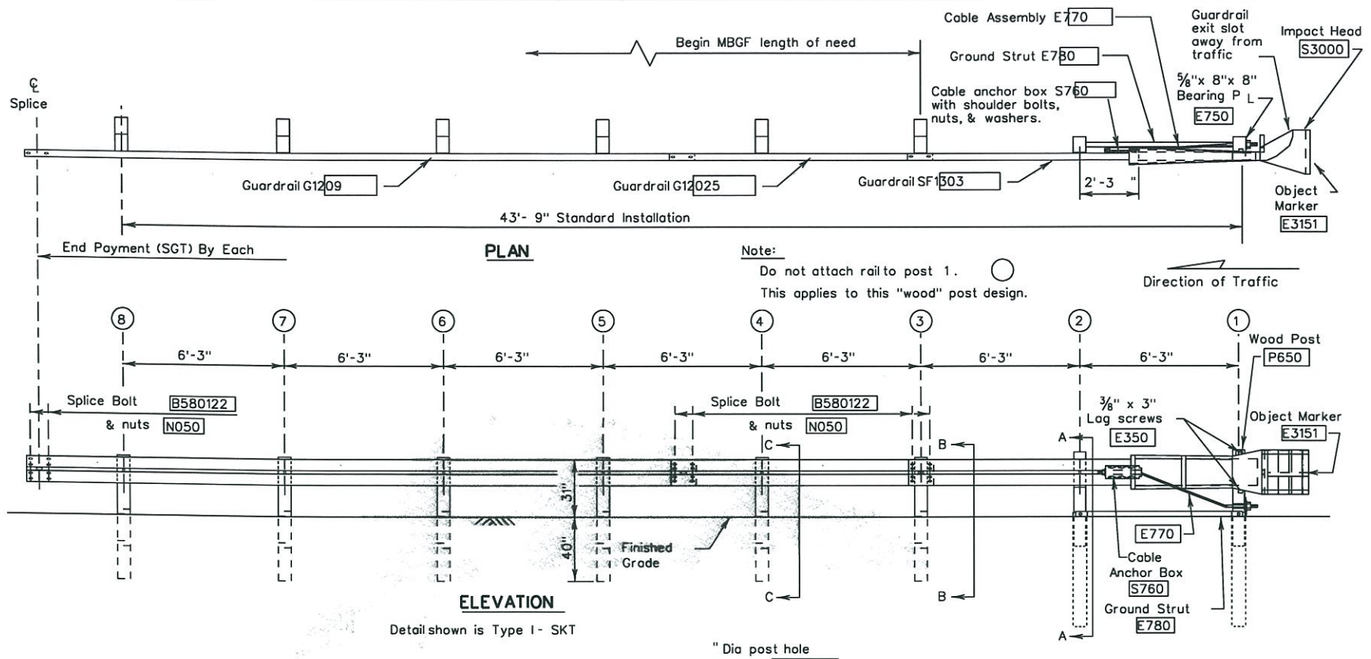
Design Division Standard

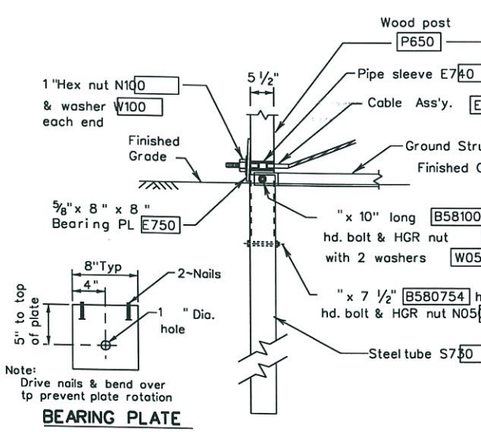
SINGLE GUARDRAIL TERMINAL (ET-31) (WOOD POST) SGT(7)31-11

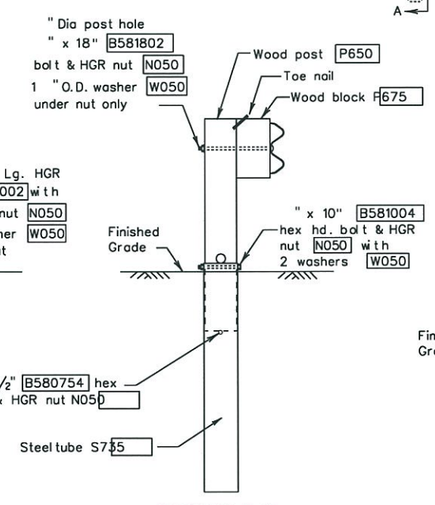
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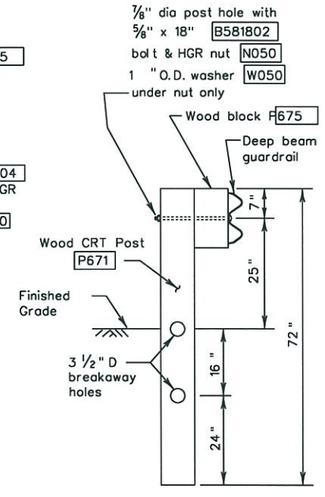
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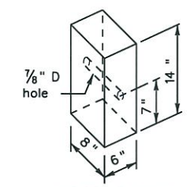
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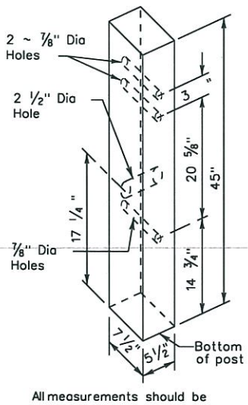












GENERAL NOTES

1. For additional information contact: Interstate Steel Inc.,(432) 263-3725.
2. The Type of SGT unit will be specified elsewhere in the plans. Numbers in 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 (4) 2	(1) Posts 3 thru (8)	○
Type II Posts	1 thru (4) 4	(2) Posts 5 thru (8)	○
Type III Posts	1 thru (4) 8	○	

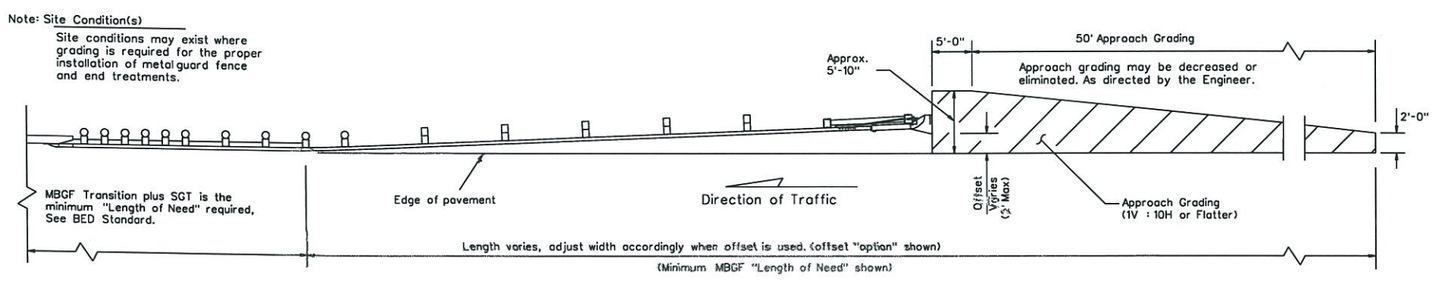
3. SGT's placed within the "minimum" 150 ft. radius, shall be installed straight. Standard rail elements may be installed within the radius, without special fabrication.
4. All bolts, nuts cable assemblies, cable anchors, steel tubes & bearing plates shall be galvanized.
5. A flare rate of 25:1 may be used to prevent the terminal head from encroaching on the shoulder. The flare may be decreased or eliminated for specific installations, if directed by the Engineer.
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 as directed by the Engineer.
12. An object marker shall be installed on the front of the impact head as detailed on D&OM(VIA).
13. A special site evaluation should be considered, prior to using this end treatment where there is less than 25 feet between the outlet side of the end treatment and any adjacent driving lane.

BILL OF MATERIAL

Code #	POST & TUBE OPTIONS Type I Qty.	Type II Qty.	Type III Qty.	DESCRIPTION
S1303	1	1	1	Guardrail (12 Ga.) 12'- 6" SKT Panel
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"
S735	0	2	6	Steel Tube - 6" x 8" x 54" x ⅛"
P650	2	4	8	Wood Post - 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 - x 8' x 8' "
S760	1	1	1	Cable Anchor Box
E770	1	1	1	Cable Assembly
E780	1	1	1	Ground Strut
S3000	1	1	1	Impact Head
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	21	⅝" Washers
B581002	1	1	1	⅝" x 10 "HGR Post Bolt (Post 2)
B580122	24	24	24	⅝" x 1¼ 'HGR Splice Bolt
B581802	6	6	6	⅝" x 18 " HGR Post Bolt (Posts 3 thru (8) ○)
N050	33	37	45	⅝" HGR Nut (16-Spl, 7-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)
SB58A	8	8	8	Cable Anchor Box Shoulder Bolts
N055A	8	8	8	½" A325 Structural Nut
W050A	16	16	16	½" A325 Structural Washer
E3151	1	1	1	Object Marker - (18 x 18) "

POST & TUBE OPTIONS

Type I post 1 thru (4) 2 ○
Type II post 1 thru (4) 4 ○
Type III post 1 thru (4) 8 ○



GRADING AT GUARDRAIL END TREATMENTS

Texas Department of Transportation

Design Division Standard

SINGLE GUARDRAIL TERMINAL (SKT-31) (WOOD POST)

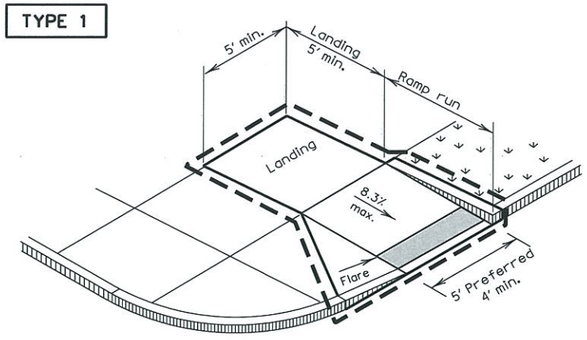
SGT(8)31-11

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	21	HIDALGO		102

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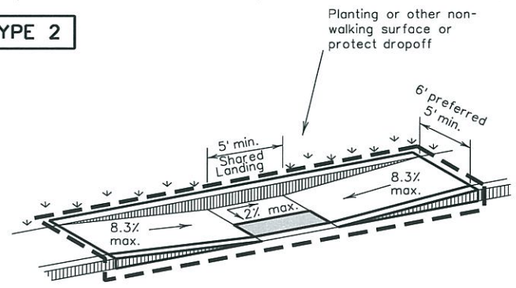
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TYPE 1



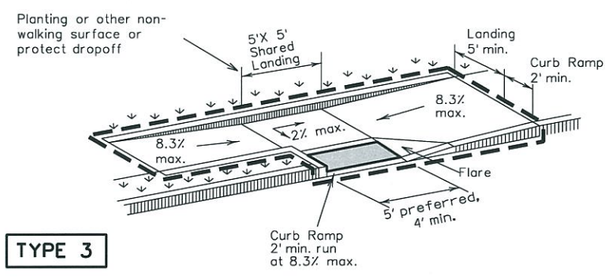
PERPENDICULAR CURB RAMP

TYPE 2

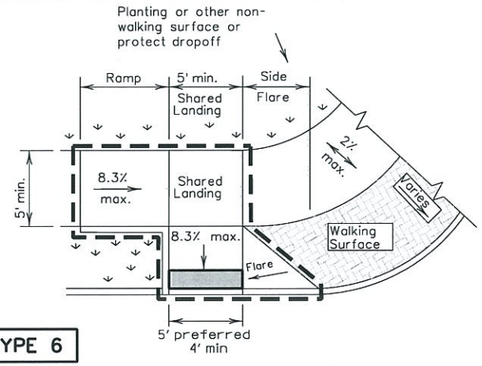


PARALLEL CURB RAMP
(Use only where water will not pond in the landing.)

TYPE 3

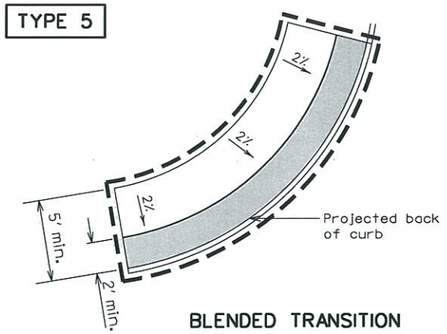


TYPE 6



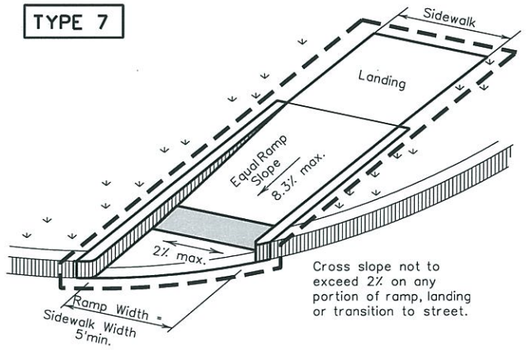
COMBINATION CURB RAMPS

TYPE 5



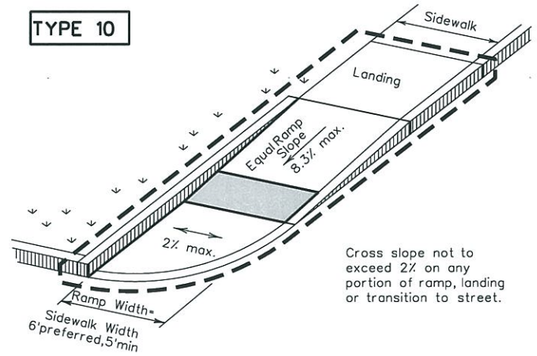
BLENDED TRANSITION

TYPE 7



(Sidewalk set back from curb)

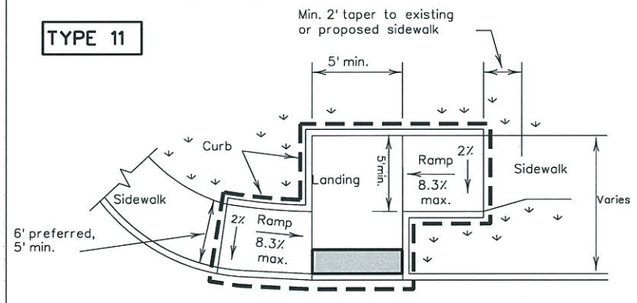
TYPE 10



(Sidewalk adjacent to curb)

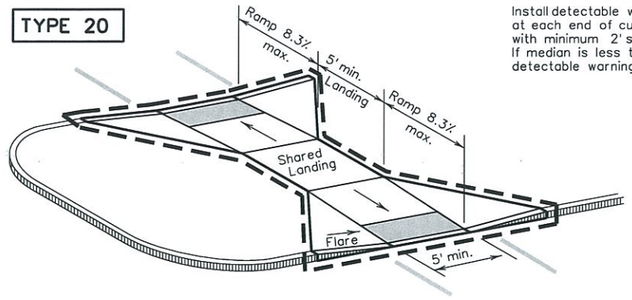
DIRECTIONAL RAMPS WITHIN RADIUS

TYPE 11



OFFSET PARALLEL CURB RAMP

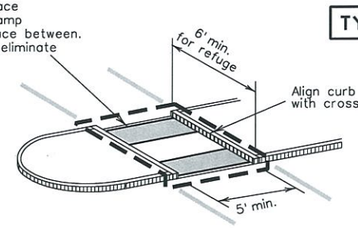
TYPE 20



Install detectable warning surface at each end of cut-through ramp with minimum 2' smooth surface between. If median is less than 6' wide, eliminate detectable warning surfaces.

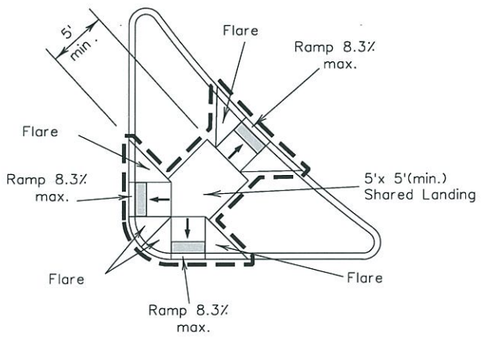
CURB RAMPS AT MEDIAN ISLANDS

TYPE 21



Curb details are shown elsewhere in the plans.

TYPE 22



COMBINATION ISLAND RAMPS

NOTES / LEGEND:

See General Notes on sheet 2 of 4 for more information.

Denotes planting or non-walking surface not part of pedestrian circulation path.

Ramp Limits of Payment

Detectable Warning Surface

SHEET 1 OF 4

Texas Department of Transportation
Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-12A

FILE: ped12a.dgn	DN: TxDOT		CK: PK	DW: TxDOT		CK: HD
© TxDOT March 2002	CONT	SECT	JOB		HIGHWAY	
REVISIONS	0921	02	323		MILE 2	
VP June 13, 2012	DIST	COUNTY			SHEET NO.	
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DATE:
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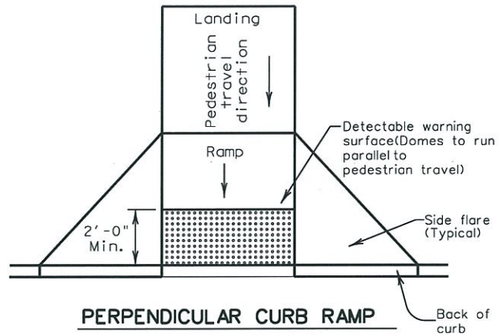
General Notes

Curb Ramps

1. Install a curb ramp or blended transition at each pedestrian street crossing.
2. All slopes shown are maximum allowable. Lesser slopes that will still drain properly should be used. Adjust curb ramp length or grade of approach sidewalks as directed.
3. The minimum sidewalk width is 5'. Where the sidewalk is adjacent to the back of curb, a 6' sidewalk width is desirable. Where a 5' sidewalk cannot be provided due to site constraints, sidewalk width may be reduced to 4' for short distances. 5'x 5' passing areas at intervals not to exceed 200' are required.
4. Landings shall be 5'x 5' minimum with a maximum 2% slope in any direction.
5. Maneuvering space at the bottom of curb ramps shall be a minimum of 4'x 4' wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.
6. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.
7. Provide flared sides where the pedestrian circulation path crosses the curb ramp. Flared sides shall be sloped at 10% maximum, measured parallel to the curb. Returned curbs may be used only where pedestrians would not normally walk across the ramp, either because the adjacent surface is planted, substantially obstructed, or otherwise protected.
8. Additional information on curb ramp location, design, light reflective value and texture may be found in the current edition of the Texas Accessibility Standards (TAS) and 16 TAC 68.102.
9. To serve as a pedestrian refuge area, the median should be a minimum of 6' wide, measured from back of curbs. Medians should be designed to provide accessible passage over or through them.
10. Small channelization islands, which do not provide a minimum 5'x 5' landing at the top of curb ramps, shall be cut through level with the surface of the street.
11. Crosswalk dimensions, crosswalk markings and stop bar locations shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, curb ramps shall align with theoretical crosswalks unless otherwise directed.
12. Handrails are not required on curb ramps. Provide curb ramps wherever on accessible route crosses (penetrates) a curb.
13. Curb ramps and landings shall be constructed and paid for in accordance with Item 531 "Sidewalks".
14. Place concrete at a minimum depth of 5" for ramps, flares and landings, unless otherwise directed.
15. Provide a smooth transition where the curb ramps connect to the street.
16. Curbs shown on sheet 1 within the limits of payment are considered part of the curb ramp for payment, whether it is concrete curb, gutter, or combined curb and gutter.
17. Existing features that comply with TAS may remain in place unless otherwise shown on the plans.

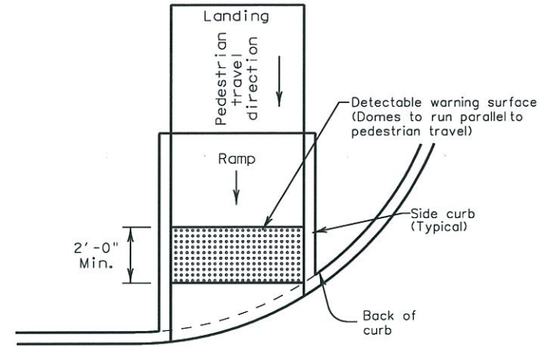
Detectable Warning Material

18. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with Section 705 of the TAS. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material adjacent to uncolored concrete, unless specified elsewhere in the plans.
19. Detectable Warning Materials must meet TxDOT Departmental Materials Specification DMS 4350 and be listed on the Material Producer List. Install products in accordance with manufacturer's specifications.
20. Detectable warning surfaces must be slip resistant and not allow water to accumulate.
21. Detectable warning surfaces shall be a minimum of 24" in depth in the direction of pedestrian travel, and extend the full width of the curb ramp or landing where the pedestrian access route enters the street.
22. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb. Align the rows of domes to be perpendicular to the grade break between the ramp run and the street. Detectable warning surfaces may be curved along the corner radius.
23. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.



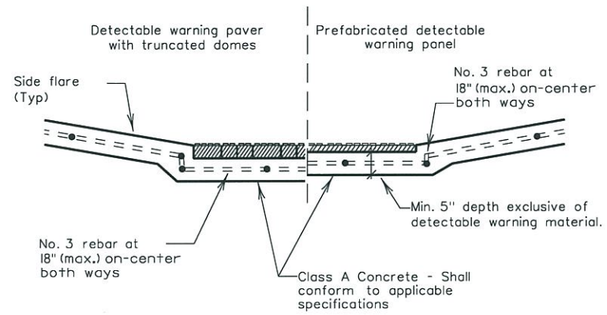
PERPENDICULAR CURB RAMP

Typical placement of detectable warning surface on sloping ramp run.

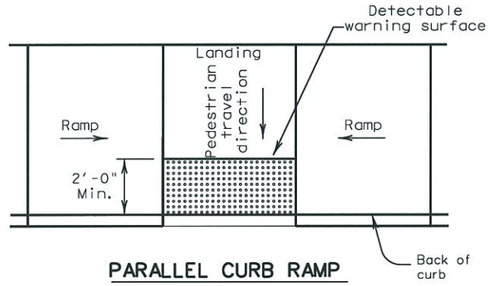


DIRECTIONAL CURB RAMP

Typical placement of detectable warning surface on sloping ramp run.



SECTION: CURB RAMP AT DETECTABLE WARNING



PARALLEL CURB RAMP

Typical placement of detectable warning surface on landing at street edge.

DETECTABLE WARNINGS

Detectable Warning Pavers

24. Furnish detectable warning paver units meeting all requirements of ASTM C-936, C-33. Lay in a two by two unit basket weave pattern or as directed.
25. Lay full-size units first followed by closure units consisting of at least 25 percent of a full unit. Cut detectable warning paver units using a power saw.

Sidewalks

26. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within one or more reach ranges specified in TAS 308.
27. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items so as not to obstruct the pedestrian access route or clear ground space.
28. Street grades and cross slopes shall be as shown elsewhere in the plans.
29. Changes in level greater than 1/4 inch are not permitted.
30. The least possible grade should be used to maximize accessibility. The running slope of sidewalks and crosswalks within the public right of way may follow the grade of the parallel roadway. Where a continuous grade greater than 5% must be provided, handrails may be desirable to improve accessibility. Handrails may also be needed to protect pedestrians from potentially hazardous conditions. If provided, handrails shall comply with TAS 505.
31. Handrail extensions shall not protrude into the usable landing area or into intersecting pedestrian routes.
32. Driveways and turnouts shall be constructed and paid for in accordance with Item "Intersections, Driveways and Turnouts". Sidewalks shall be constructed and paid for in accordance with Item, "Sidewalks".
33. Sidewalk details are shown elsewhere in the plans.

Texas Department of Transportation
Design Division Standard

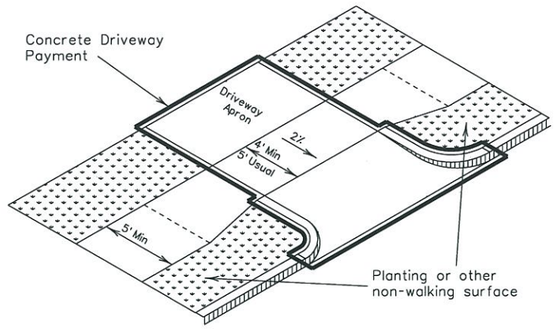
PEDESTRIAN FACILITIES CURB RAMPS

PED-12A

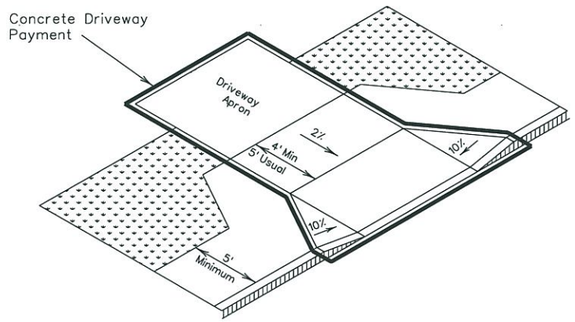
FILE: ped12a.dgn	DN: TxDOT	CK: PK	DW: TxDOT	CK: HD			
© TxDOT March 2002	CONT	SECT	JOB		HIGHWAY		
REVISIONS	0921	02	323		MILE 2		
VP June 13, 2012	DIST	COUNTY			SHEET NO.		
	21	HIDALGO			104		

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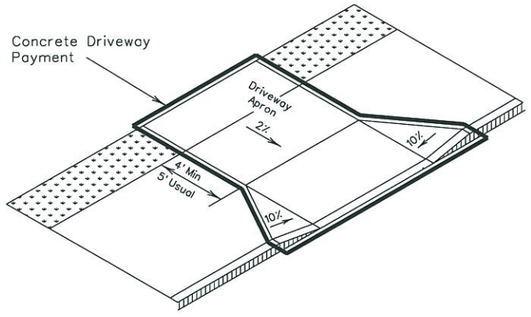
DATE:
FILE:



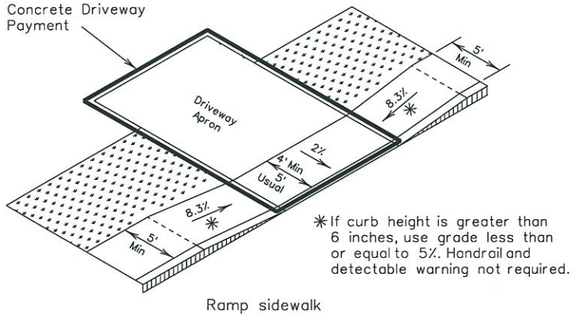
Setback sidewalk



Apron offset sidewalk

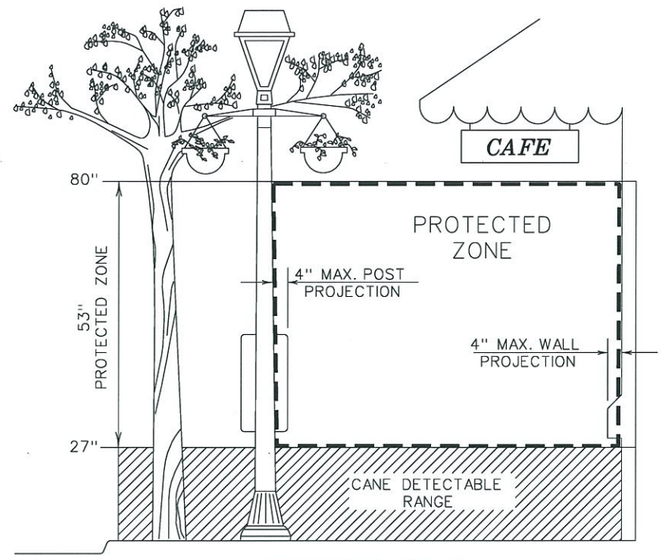


Wide sidewalk



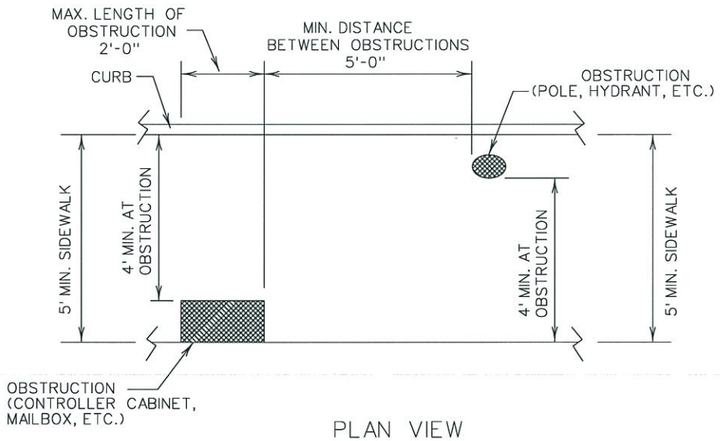
Ramp sidewalk

SIDEWALK TREATMENT AT DRIVEWAYS



PROTECTED ZONE

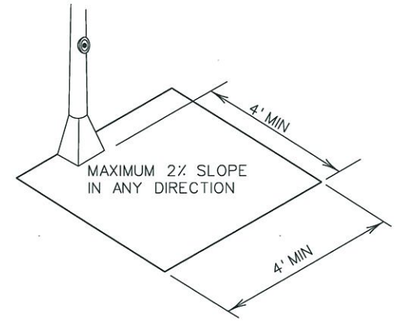
In pedestrian circulation area, maximum 4" projection for post or wall mounted objects between 27"and 80" above the surface.



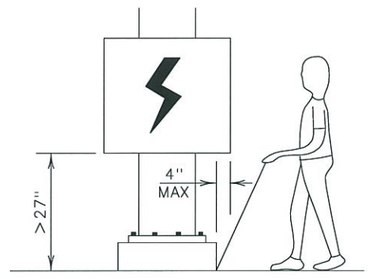
PLAN VIEW

PLACEMENT OF STREET FIXTURES

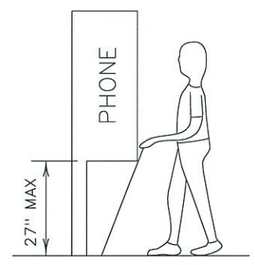
(ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' x 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.)



CLEAR GROUND SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



When an obstruction of a height greater than 27" from the surface would create a protrusion of more than 4" into the pedestrian circulation area, construct additional curb or foundation at the bottom to provide a maximum 4" overhang.



Protruding objects of a height ≤27" are detectable by cane and do not require additional treatment.

DETECTION BARRIER FOR VERTICAL CLEARANCE <80"

SHEET 3 OF 4

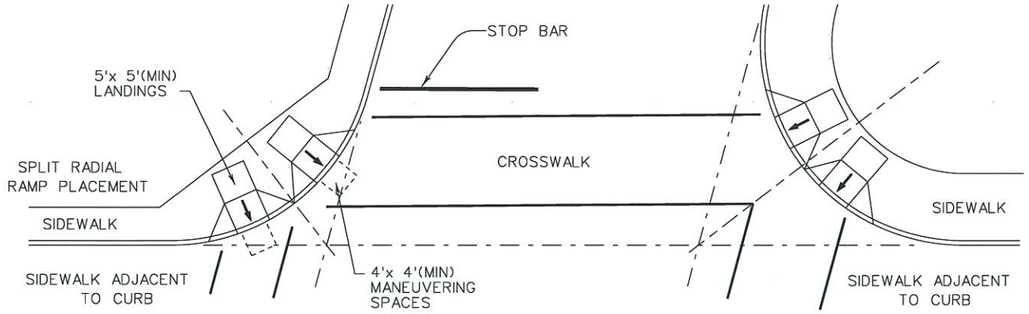
Texas Department of Transportation
Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

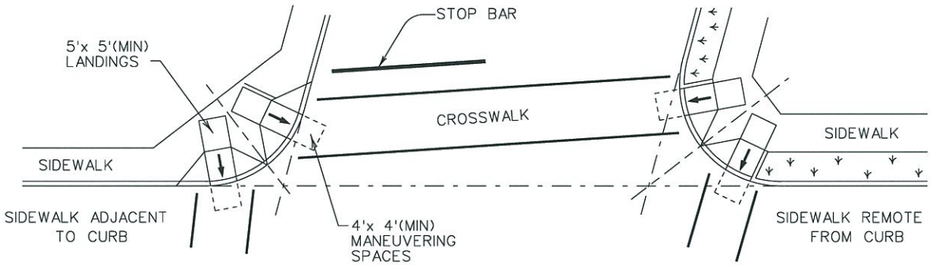
PED-12A

FILE: ped12a.dgn		DN: TxDOT	CK: PK	DW: TxDOT		CK: HD	
©TxDOT March 2002		CONT	SECT	JOB		HIGHWAY	
REVISIONS		0921	02	323		MILE 2	
VP June 13, 2012		DIST	COUNTY			SHEET NO.	
		21	HIDALGO			105	

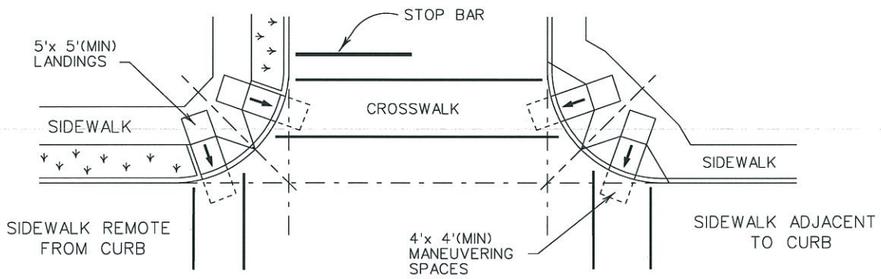
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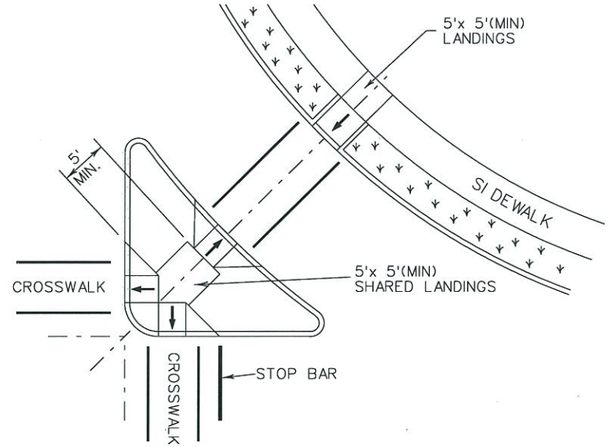
SKEWED INTERSECTION WITH "LARGE" RADIUS



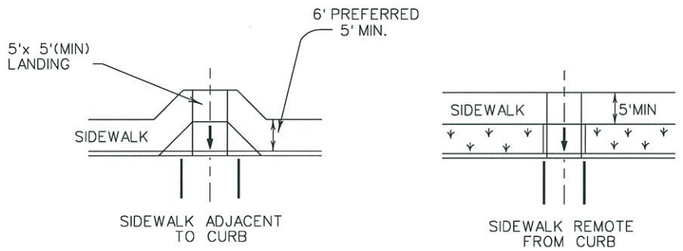
SKEWED INTERSECTION WITH "SMALL" RADIUS



NORMAL INTERSECTION WITH "SMALL" RADIUS



AT INTERSECTION
W/FREE RIGHT TURN & ISLAND



MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

TYPICAL CROSSING LAYOUTS

SHEET 4 OF 4

Texas Department of Transportation
Design Division Standard

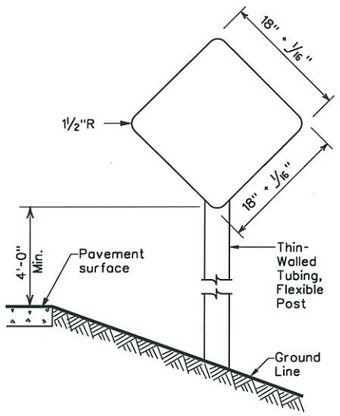
PEDESTRIAN FACILITIES CURB RAMPS

PED-12A

FILE: ped12a.dgn		DN: TxDOT	CK: PK	DW: TxDOT	CK: HD	
©TxDOT March 2002		CONT	SECT	JOB	HIGHWAY	
REVISIONS		0921	02	323	MILE 2	
VP June 13, 2012		DIST	COUNTY		SHEET NO.	
		21	HIDALGO		106	

DATE:
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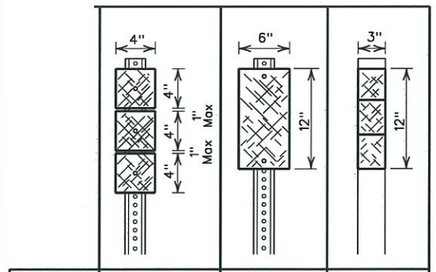


TYPE 1
18" x 18"
Yellow
Type E Sheeting

TYPE 4
18" x 18"
Red
Type D Sheeting

Use Sign blank 0.080" thick sheet aluminum conforming to ASTM B-209 Alloy 6061-T6. Use reflective sheeting in accordance with DMS 8300.

TYPES 1 and 4

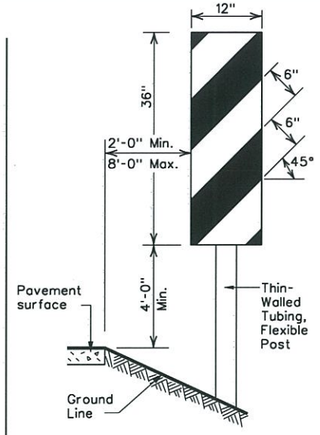


Number of Reflectors	X	Y	Z
Post	WC	WC	FLX

NOTES
1. All type 2 object markers are yellow
2. WC-wing channel post, 1.12 lbs/ft steel per ASTM A 1011 SS Gr 50, or ASTM A499
3. FLX-flexible post (embedded and surface mount)

Typically used on bridge rail approach ends, some bridge abutments and at bridge rail exits on two-lane, two-way roadways

TYPE 2

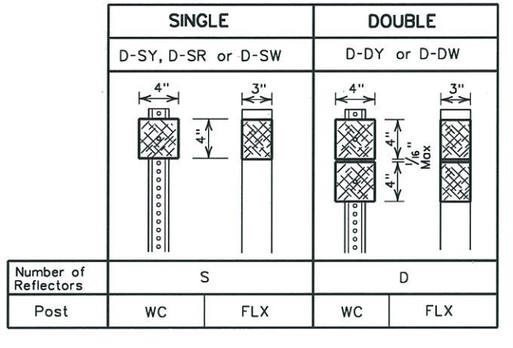


OM-3 Directions
L - Placed on Left Side
R - Placed on Right Side
C - Placed on Center

Use Sign blank .080" thick sheet aluminum conforming to ASTM B-209 Alloy 6061-T6. Use reflective sheeting in accordance with DMS 8300, Type E. Use at bridges with no approach rails.

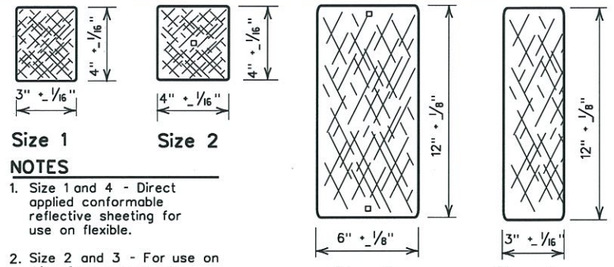
TYPE 3

OBJECT MARKERS



NOTES
1. Reflector Units: W-White, R-Red, Y-Yellow
2. Length of post may vary to meet field conditions.
3. WC-wing channel post, 1.12 lbs/ft Steel per ASTM A 1011 SS Gr 50, or ASTM A499
4. FLX-flexible post (embedded and surface mount)

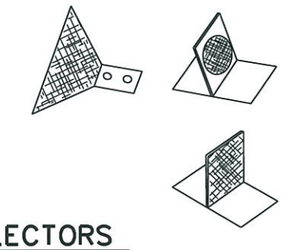
DELINEATORS



NOTES
1. Size 1 and 4 - Direct applied conformable reflective sheeting for use on flexible.
2. Size 2 and 3 - For use on Wing Channel post only. Use approved metal, plastic or fiberglass backplate with 17/64" square mounting holes.
3. Yellow, White & Red: Conformable Reflective Sheeting as per DMS 8300.

REFLECTOR UNIT SIZES

NOTES
1. A reflector unit or sheeting (per DMS 8600) attached to a bracket to facilitate the mounting of the reflector on concrete traffic barrier, railing, metal beam guard fence (MBGF) or other locations shown on the plans. A list of appoved barrier reflectors can be found at: www.txdot.gov
2. Yellow, White and Red: Conformable Reflective Sheeting as per DMS 8300.



BARRIER REFLECTORS

D & OM DESCRIPTIVE CODES

INSTL DEL ASSM (D-XX)SZ X (XXX)XXX(XX)

NUMBER OF REFLECTORS
S - Single
D - Double

COLOR OF REFLECTORS
W - White
Y - Yellow
R - Red

REFLECTOR UNIT SIZE
1 or 2

TYPE OF POST OR DELINEATOR
WC - Wing Channel Post
FLX - Flexible Post
TYC - Barrier Reflector

TYPE OF MOUNT
GND - Embedded (drivable or set in concrete)
CTB - Concrete Barrier Mount
GF1 or GF2 - Guard Fence Attachment
SRF - Surface Mount

DIRECTION
If Required
BI - Bi-Directional
BR - Bi-Directional with red on back

INSTL OM ASSM (OM-XX) (XXX)XXX(XX)

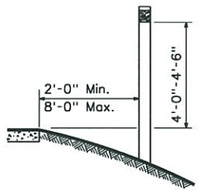
TYPE OF OBJECT MARKER
1, 2, 3, or 4

NUMBER OF REFLECTORS OR DIRECTION
X - 3-Size 2 reflector units (Type 2 only)
Y - 1-Size 3 reflector unit (Type 2 only)
Z - 3-Size 1 or 1-Size 4 reflector unit(s) (Type 2 only)
L - Left Side (Type 3 Object Marker only)
R - Right Side (Type 3 Object Marker only)
C - Center (Type 3 Object Marker only)

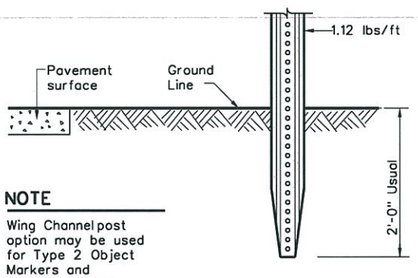
TYPE OF POST
WC - Wing Channel Post
FLX - Flexible Post
TWT - Thin Walled Tubing

TYPE OF MOUNT
GND - Embedded (drivable or set in concrete)
SRF - Surface Mount

DIRECTION
If Required
BI - Bi-Directional

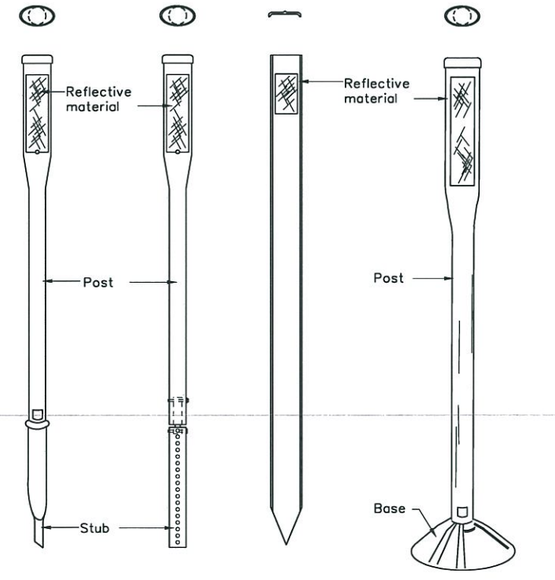


TYPICAL INSTALLATION



NOTE
Wing Channel post option may be used for Type 2 Object Markers and delineators only.

WING CHANNEL



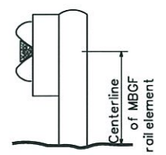
EMBEDDED **SURFACE MOUNT**

NOTES
1. See Material Producer List for approved devices.
2. Install to manufacturer's recommenations.

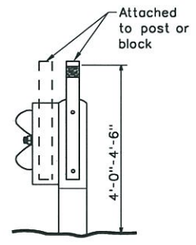
FLEXIBLE POSTS



CTB



GF1



GF2

BARRIER REFLECTORS

GENERAL NOTES
1. Place delineators on a section of roadway the same distance from the edge of pavement.
2. Where a restriction prevents consistent placement from the pavement edge, place the affected object markers in line with the innermost edge of the obstruction.
3. When object markers are more than 8'-0" from the edge of the pavement, it may not be possible to maintain a height of 4'-0"-4'-6". If this is the case, place the object markers as close to the desired height as possible.
4. Install all delineators, object markers and barrier reflectors in accordance with the manufacturer's recommendation.

DEPARTMENTAL MATERIAL SPECIFICATIONS

FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES)	DMS-4400
SIGN FACE MATERIALS	DMS-8300
DELINEATORS AND OBJECT MARKERS	DMS-8600

Texas Department of Transportation
Traffic Operations Division

DELINEATOR & OBJECT MARKER INSTALLATION AND MATERIAL DESCRIPTION D & OM(1)-10

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REVISIONS
10-09
4-10

DN: TXDOT | CK: TXDOT | DW: TXDOT | CK: TXDOT

CONT	SECT	JOB	HIGHWAY
0921	02	323	MILE 2
DIST	COUNTY		SHEET NO.
21	HIDALGO		107

DATE:
FILE:

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Type of Road or Condition		Required (shall be used)	Recommended (should be used)	Optional (may be used)	Prohibited (cannot be used)	Delineator Spacing	
Freeways or Expressways	Tangent	D-SW on right or raised pavement markers				200-530 ft	
	Curve	D-SW on right				see Table	
	Ramp	D-SW on one side See Note 1 *	On outside of interchange ramp curves				
Other Than Freeways or Expressways	Tangent			D-SY or D-DY on left side of two-way roads	D-SW on right or left side	200-530 ft see Table	
	Curve						
Acceleration and Deceleration Lanes			D-DW or D-DY			spacing	100 ft
Crossovers		D-DY on left side of through road on far side of crossover					
Wrong-way				D-SR for wrong-way traffic			
Pavement Narrowing (lane merge)			D-SW (right) or D-SY (left) adjacent to affected lane for full length of transition		See Note 2 **		
Truck escape ramps		D-SR on both sides of ramp				50 ft spacing	
With guard fence, bridge rail, or concrete barrier				100 ft use min. of 3			

General Notes: Unless indicated otherwise, the color of a delineators must conform to the color of the pavement edge line on the side of the road where the delineators are placed. Barrier markers can be used to replace required delineators. DS-R can be mounted on the back side of existing delineator posts.

* 1. Delineation required on one side either SY or SW.

** 2. Minimum of 3.

When degree of curve or radius is not known

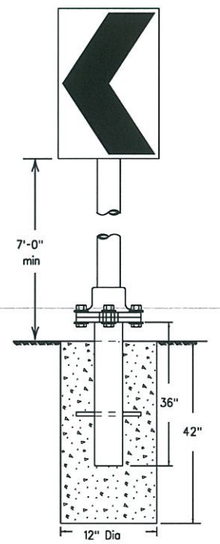
Advisory Speed (MPH)	Spacing in Curve A	Spacing in Strtaway 2xA	Chevron Spacing in Curve B
65	130	260	
60	110	220	
55	100	200	160
50	85	170	160
45	75	150	160
40	70	140	120
35	60	120	120
30	55	110	80
25	50	100	80
20	40	80	80
15	35	70	40

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

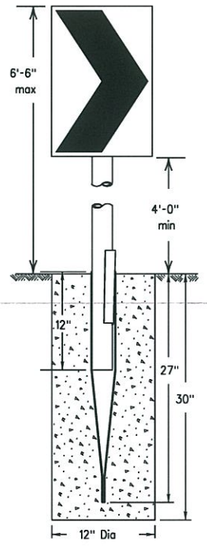
When degree of curve or radius is known

Degree of Curve	Radius of Curve	Spacing in Curve A	Spacing in Strtaway 2A	Chevron Spacing in Curve B
1	5730	225	450	
2	2865	160	320	
3	1910	130	260	
4	1433	110	220	
5	1146	100	200	160
6	955	90	180	160
7	819	85	170	160
8	716	75	150	160
9	637	75	150	120
10	573	70	140	120
11	521	65	130	120
12	478	60	120	120
13	441	60	120	120
14	409	55	110	80
15	382	55	110	80
16	358	55	110	80
19	302	50	100	80
23	249	40	80	80
29	198	35	70	40
38	151	30	60	40
57	101	20	40	40

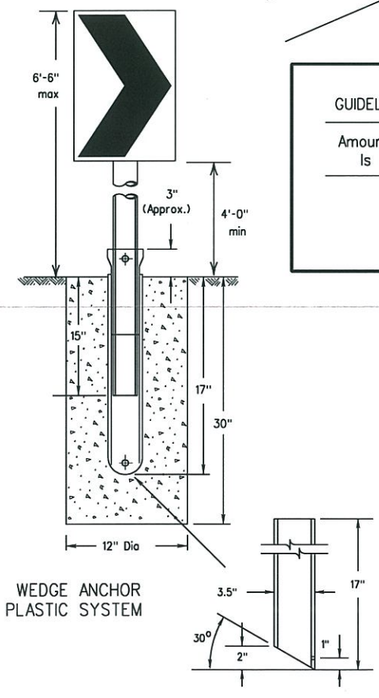
Curve delineator approach and departure spacing should include 3 delineators spaced at 2A. This spacing should be used during design preparation or when the degree of curve is known.



SLIPBASE SYSTEM



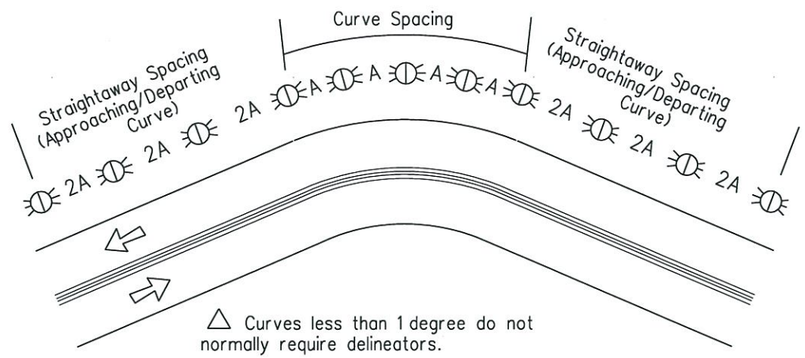
WEDGE ANCHOR STEEL SYSTEM



WEDGE ANCHOR PLASTIC SYSTEM

For Chevron Specifications and payment, refer to Item 644 "Small Roadside Sign Supports and Assemblies".

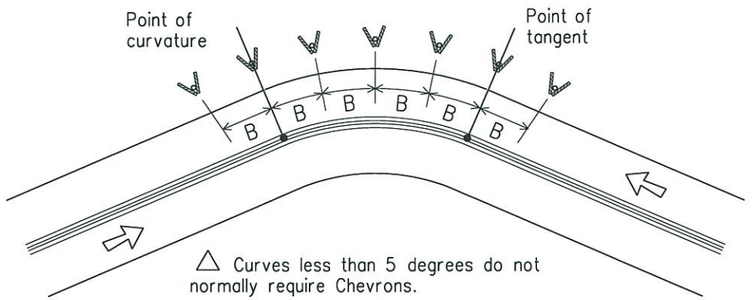
Suggested Spacing for Highway Delineators on Horizontal Curves △



△ Curves less than 1 degree do not normally require delineators.

Suggested Spacing for Chevrons on Horizontal Curves △

The Chevron may be used to provide additional emphasis and guidance for a change in horizontal alignment. A Chevron may be used as a supplement to delineation.



△ Curves less than 5 degrees do not normally require Chevrons.

GUIDELINES FOR USE OF WARNING DEVICES AT CURVES WITH ADVISORY SPEED LIMITS

Amount by which Advisory Speed Is less than Posted Speed	Warning Devices Needed
0 to 14 MPH	RPMs
15 to 24 MPH	RPMs and Delineators
25 MPH or greater	RPMs and Chevrons

Texas Department of Transportation
Traffic Operations Division

TYPICAL DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(2)-04

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REVISIONS

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

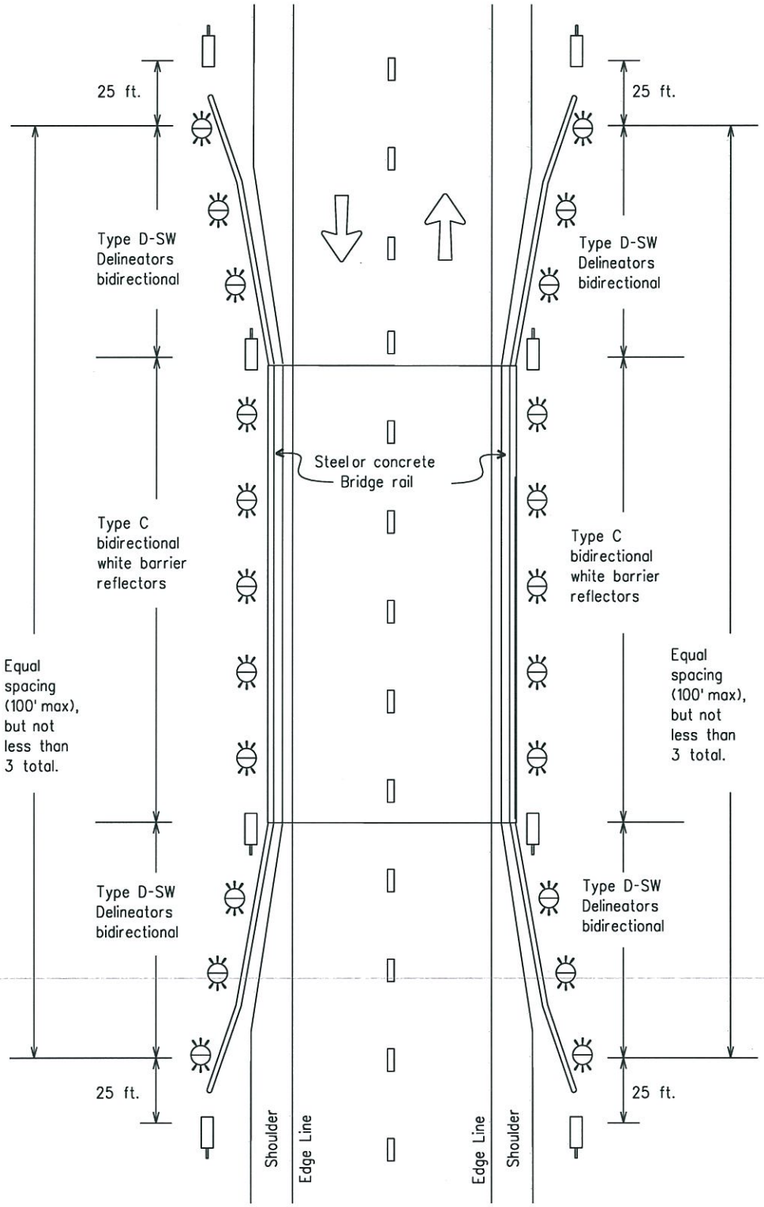
CONT	SECT	JOB	HIGHWAY
0921	02	323	MILE 2
DIST	COUNTY		SHEET NO.
21	HIDALGO		108

DATE:
FILE:

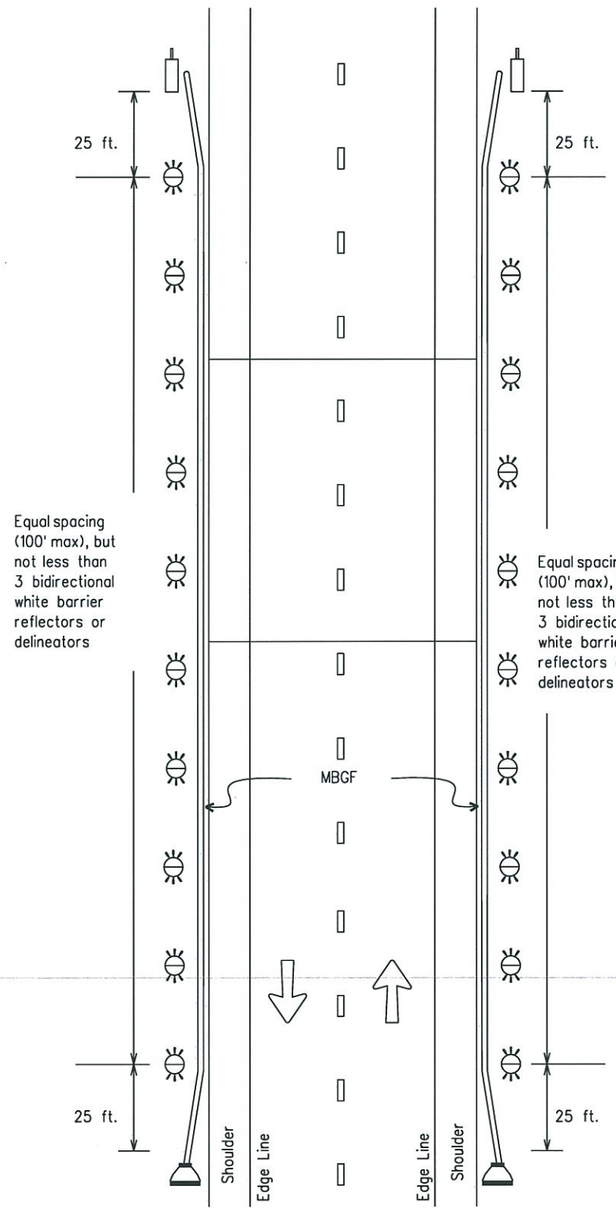
20B

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Two-way, Two lane Roadway with Reduced Width Approach Rail

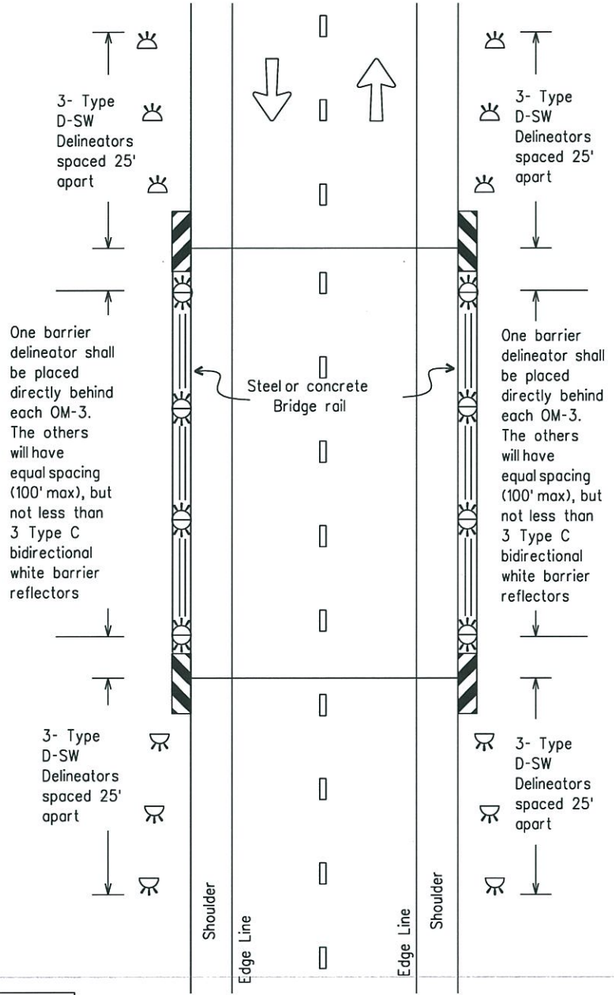


Two-way, Two lane Roadway with Metal Beam Guard Fence (MBGF)



Terminal Ends include OB-3F. There is no need to install an OM-2 in front of terminal.

Two-way, Two lane Roadway Bridge with No Approach Rail



LEGEND

- Bidirectional Delineator
- Delineator
- OM-3
- OM-2
- Terminal End

Texas Department of Transportation
Traffic Operations Division

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(3)-04

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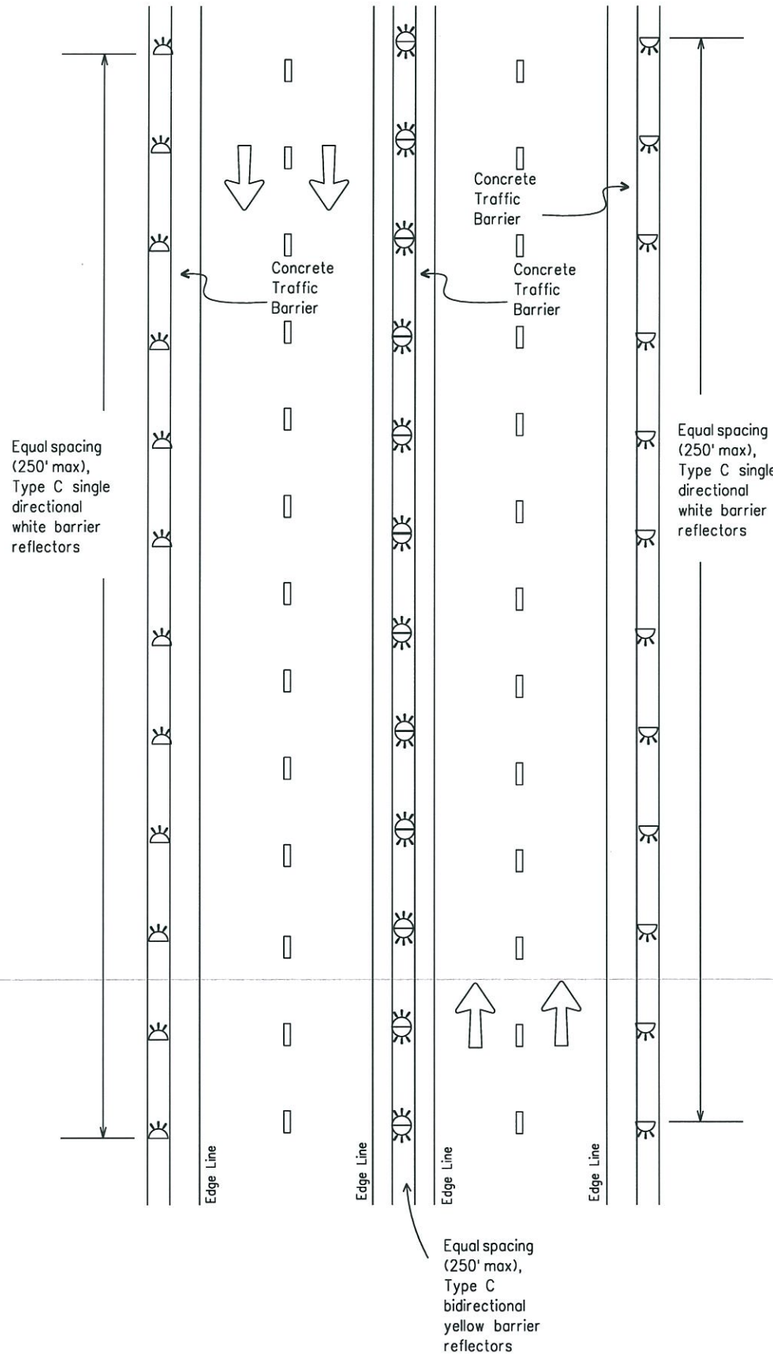
CONT	SECT	JOB	HIGHWAY
0921	02	323	MILE 2
DIST	COUNTY		SHEET NO.
21	HIDALGO		109

DATE:
FILE:

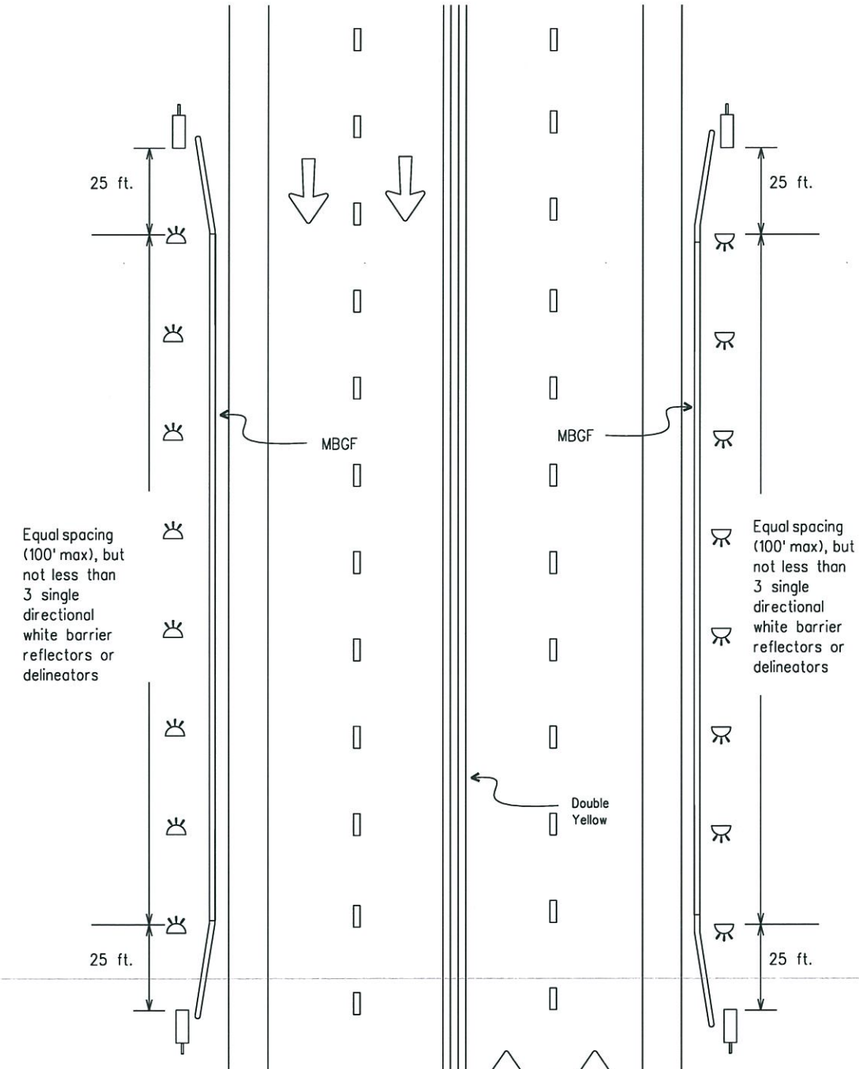
20C

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Continuous Concrete Barrier



Multi-lane Undivided, Two-way Roadway with Metal Beam Guard Fence (MBGF)



LEGEND

- Bidirectional Delineator
- Delineator
- OM-3
- OM-2

Texas Department of Transportation
Traffic Operations Division

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(4)-04

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REVISIONS

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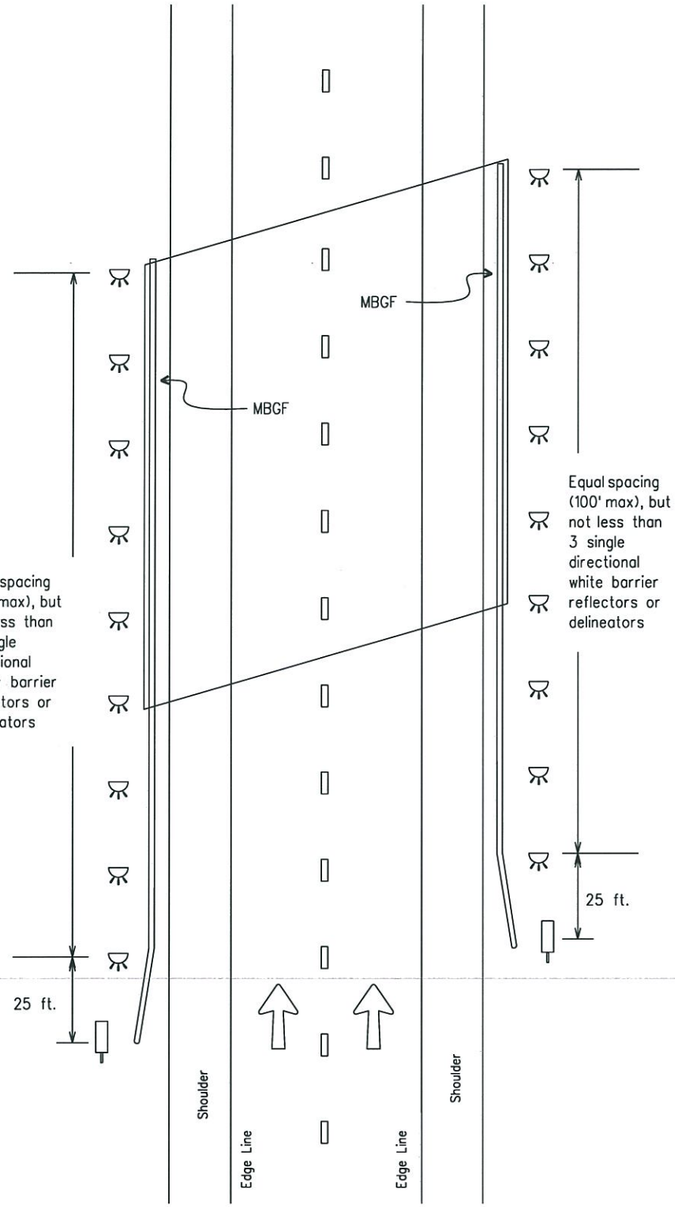
CONT	SECT	JOB	HIGHWAY
0921	02	323	MILE 2
DIST	COUNTY		SHEET NO.
21	HIDALGO		110

DATE:
FILE:

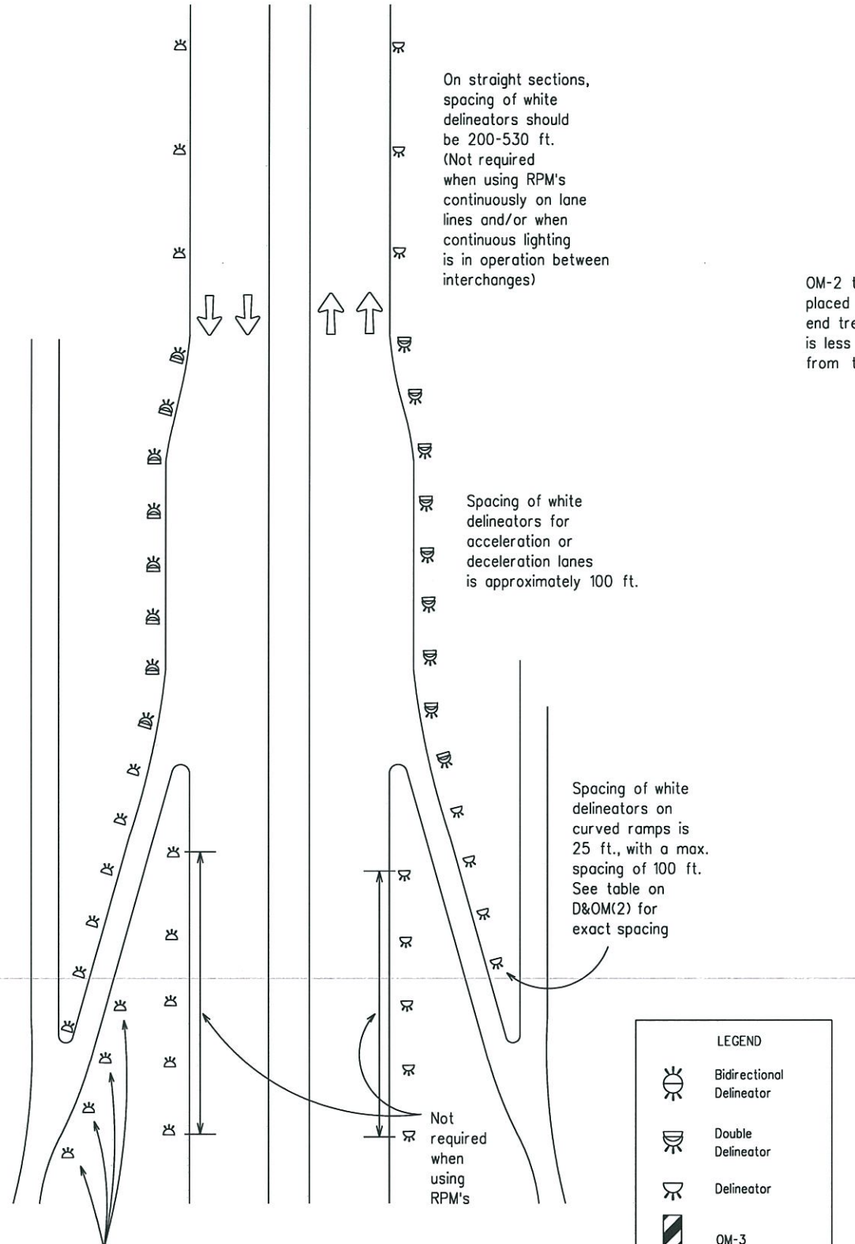
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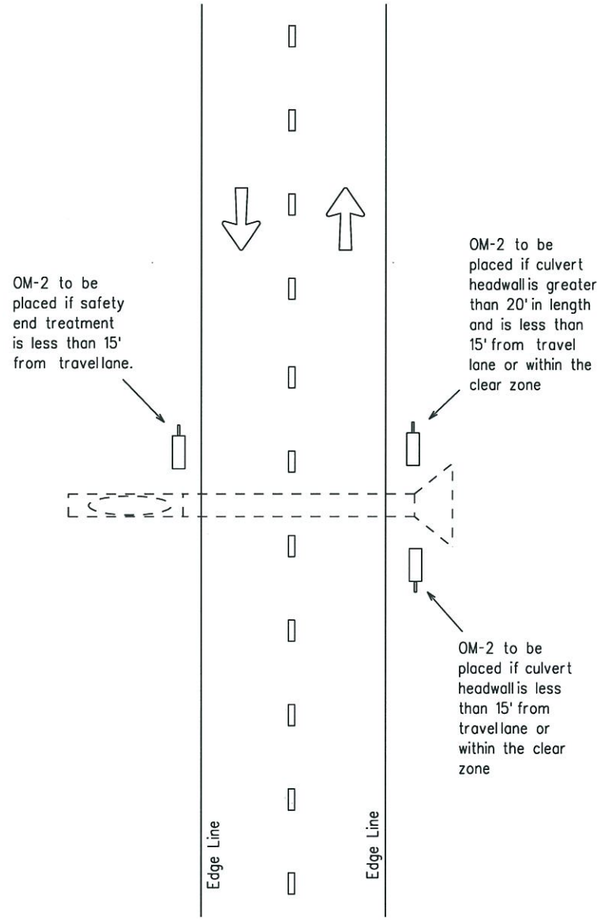
Divided Roadway with Metal Beam Guard Fence



Freeway Delineation including Ramps



For Culverts without MBGF



LEGEND

- Bidirectional Delineator
- Double Delineator
- Delineator
- OM-3
- OM-2

Texas Department of Transportation
Traffic Operations Division

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(5)-04

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REVISIONS

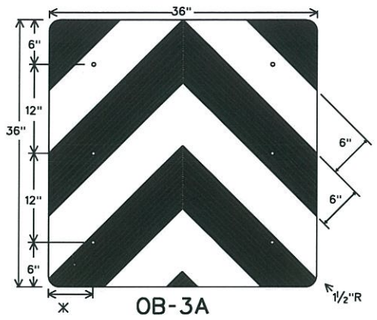
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CONT	SECT	JOB	HIGHWAY
0921	02	323	MILE 2
DIST	COUNTY		SHEET NO.
21	HIDALGO		111

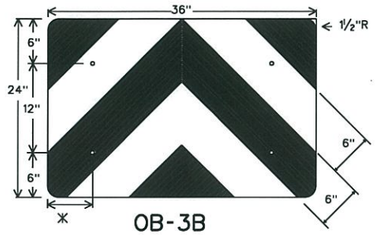
DATE:
FILE:

20F

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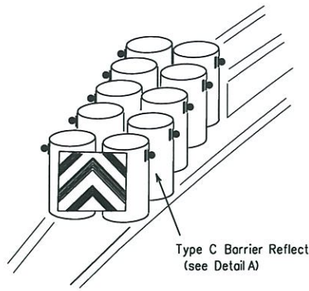


OB-3A



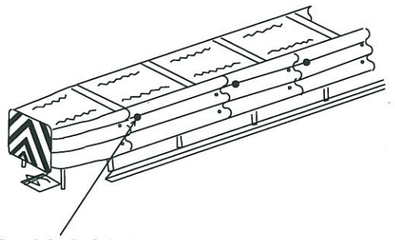
OB-3B

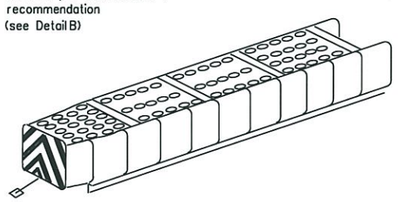
* adjust to fit attenuator per manufacturer's recommendation, or as directed by the Engineer.

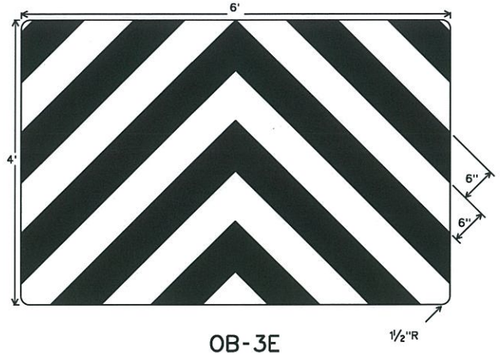


Object Marker blank to be 0.08" thick sheet aluminum conforming to ASTM B-209 Alloy 6061-T6 aluminum as per Specification DMS 7110.

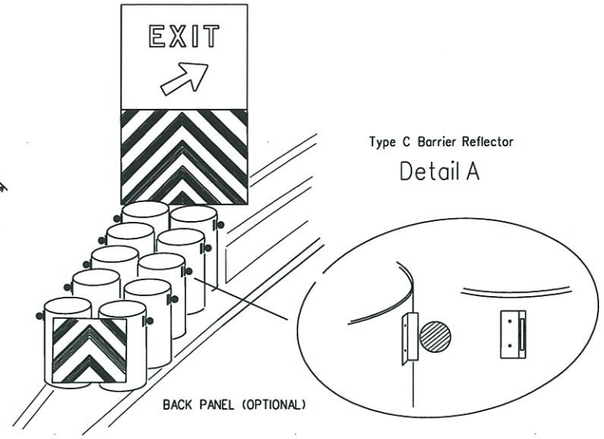
Mounting should be flush with top of VIA. Minimum size 36" x 24".

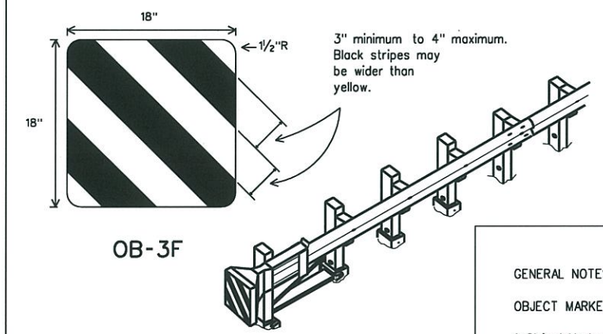






OB-3E





OB-3F

TYPICAL GUARDRAIL END TREATMENT

GENERAL NOTES:

1. Back panel will be mounted independent of the attenuator. The minimum mounting height is flush with the top of the attenuator.
2. Attenuator may have additional yellow reflective and black striping, and/or reflectors placed on sides. CHEVRONS (W1-8) may be erected to delineate roadway curvature beyond the attenuator. These additional devices will be installed if required elsewhere in the plans.
3. Mount Back Panel per details on SMD Standards, or as detailed elsewhere in the plans.

GENERAL NOTES:

OBJECT MARKERS

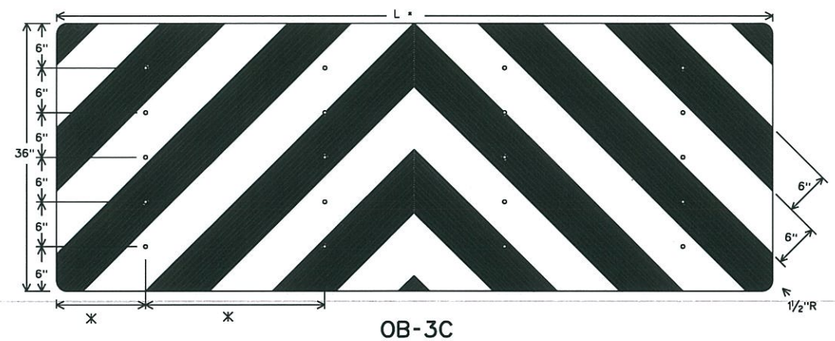
1. Object Markers shall conform to the Texas MUTCD and meet the color and reflectivity requirement of Department Material Specification DMS 8300, Type C. Background shall be yellow reflective and Chevron shall be black.
2. OB-3F is intended for use only with guardrail terminal ends. OM-BF may be fabricated from adhesive backed reflective sheeting applied directly to guardrail end treatment, or applied directly to an "end cap" as per the manufacturer's recommendation. Direct applied sheeting shall provide a smooth surface and have no wrinkles, air bubbles, cuts or tears.
3. Size may be reduced to fit smaller devices, however, the minimum size shall be:
   (a) 24 x 24 inch for attenuators, and
   (b) 18 x 18 inches for guardrail end treatments.
4. Pop rivets, screws, or nuts and bolts may be used to attach object markers and reflectors. Holes, slots or other openings may be cut or drilled through object markers to allow cable or other attachments.
5. When traffic passes only on one side of attenuator, only the OM-3 marker should be installed. OM-3 should be installed per the requirements of D & OM Standards with a minimum mounting height of 18 inches.

TYPE C REFLECTORS

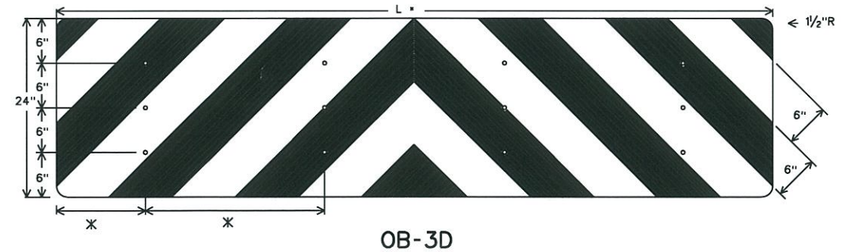
1. Type C delineators shall consist of a Type A or Type B reflector unit (per DMS 8600) attached to a bracket to facilitate delineator mounting on attenuators, guardrails and concrete traffic barriers.
2. Type C reflectors may also be used to delineate side of attenuator, guardrail and concrete traffic barrier.
3. Type C reflectors shall meet the requirements of DMS 8600.

A list of approved Type C Delineators can be found at:

ftp//ftp.dot.state.tx.us/pub/txdot-info/cmd/mpl/typecdeln.pdf



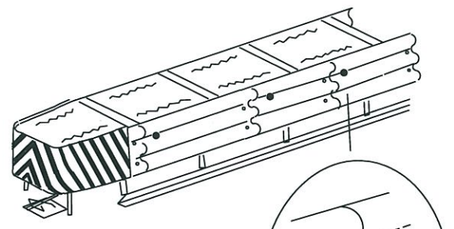
OB-3C

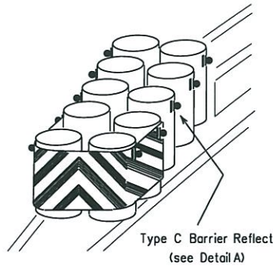


OB-3D

* spacing adjusted to attach through centerline of drum, per attenuator manufacturers recommendation, or as directed by the Engineer.

Mounting should be flush with top of attenuator. Minimum size 96" x 24".





Texas Department of Transportation
Traffic Operations Division

DELINEATORS & OBJECT MARKERS FOR VEHICLE IMPACT ATTENUATORS

D & OM(VIA)-04

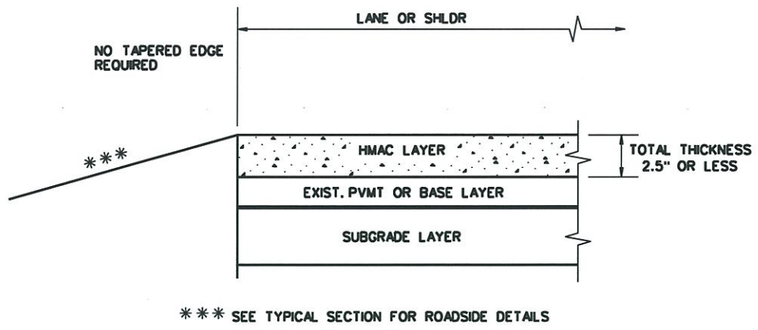
©TxDOT December 1989	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
REVISIONS	CONT	SECT	JOB	HIGHWAY
4-92	0921	02	323	MILE 2
8-95	DIST	COUNTY		SHEET NO.
4-98	21	HIDALGO		112
8-04				

20F

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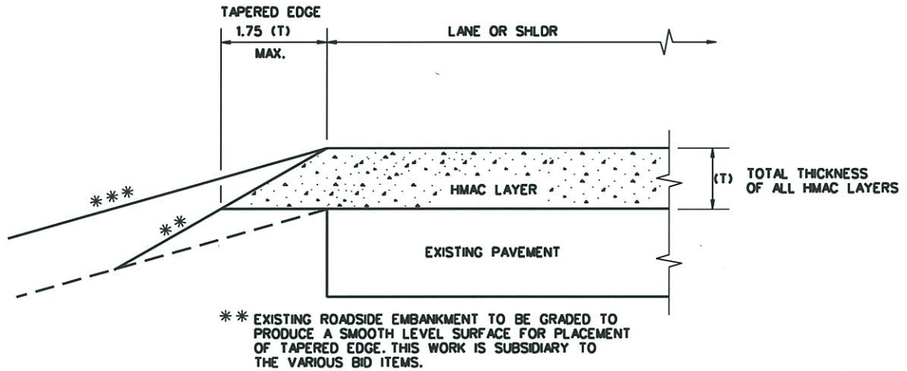
DATE:
FILE:



*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 1

THIN HMAC SURFACES OR HMAC OVERLAY
WITH THICKNESS OF 2.5" OR LESS

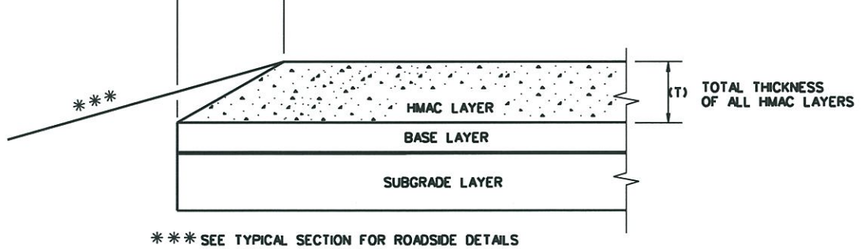


** EXISTING ROADSIDE EMBANKMENT TO BE GRADED TO PRODUCE A SMOOTH LEVEL SURFACE FOR PLACEMENT OF TAPERED EDGE. THIS WORK IS SUBSIDIARY TO THE VARIOUS BID ITEMS.

*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 2

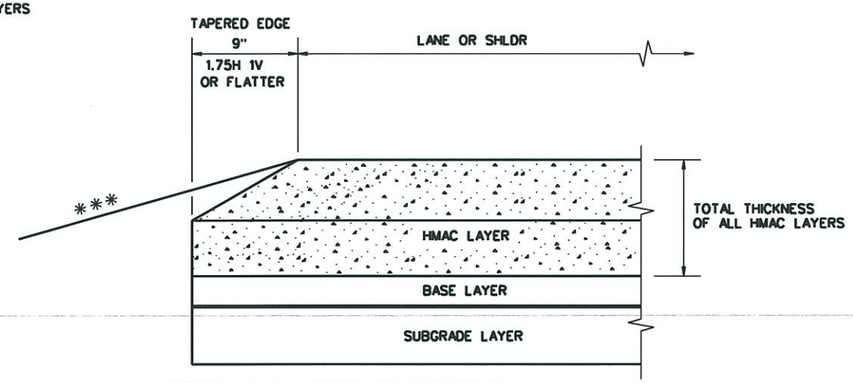
OVERLAY OF EXISTING PAVEMENT
HMAC THICKNESS 2.5" TO 5"



*** 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

(NOT TO SCALE)

GENERAL NOTES

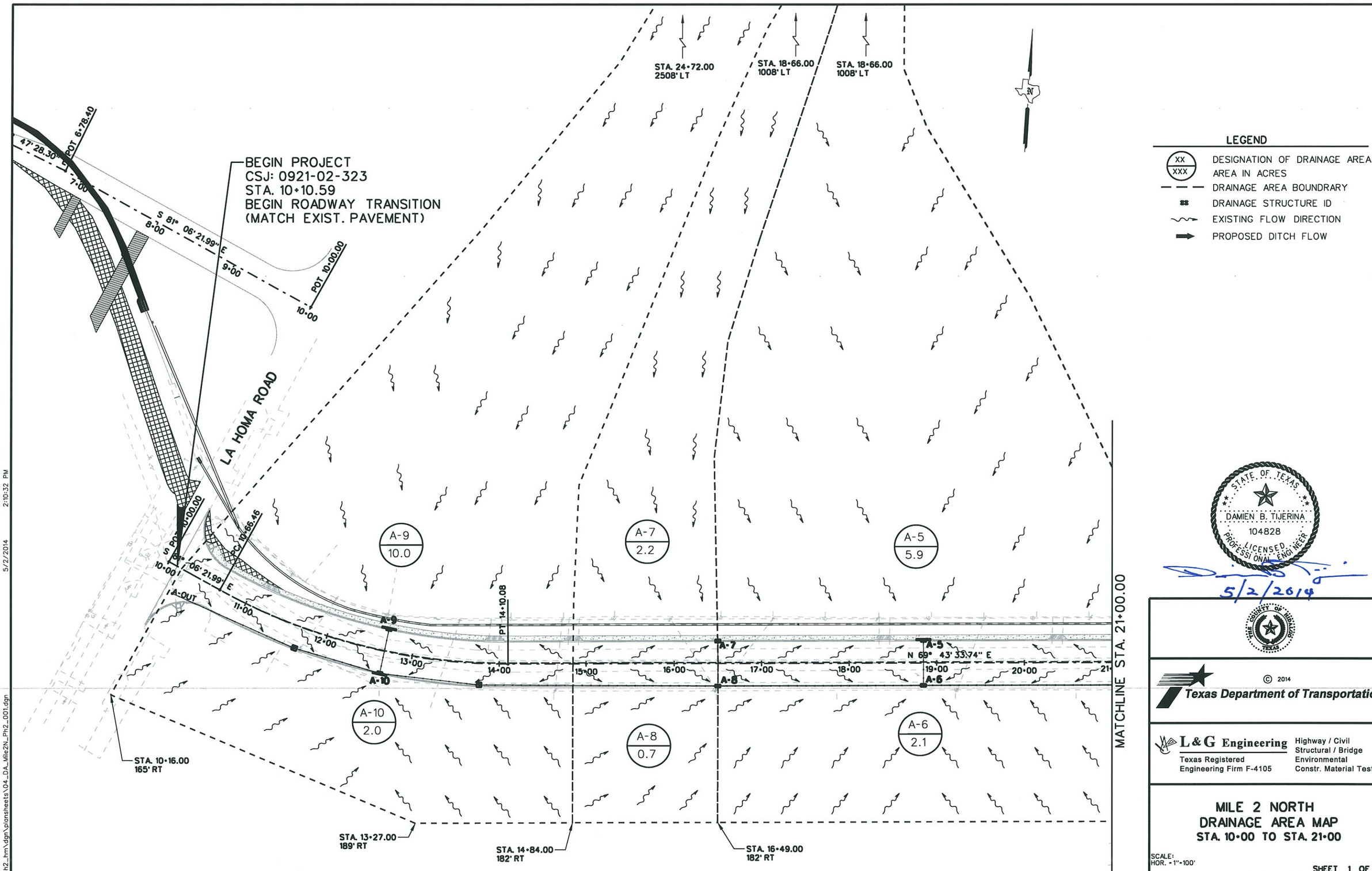
1. UNLESS OTHERWISE SHOWN IN THE PLANS, A VERTICAL EDGE IS PERMISSIBLE FOR HMAC PLACED GREATER THAN 5" BELOW THE EDGE OF PAVEMENT AND FOR THICKNESS OF HMAC LESS THAN 2.5".
2. FOR FURTHER INFORMATION REGARDING THE ROADSIDE AND PAVEMENT DETAILS, SEE TYPICAL SECTIONS.
3. PAYMENT FOR TAPERED EDGE WILL BE 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.

Texas Department of Transportation | Design Division Standard

TAPERED EDGE DETAILS
HMAC PAVEMENT

TE(HMAC)-11

FILE: tehmac11.dgn	DN: TxDOT	CK: RL	DW: KB	CK:
© TxDOT January 2011	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	02	323	MILE 2
	DIST	COUNTY		SHEET NO.
	21	HIDALGO		113



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STATE OF TEXAS
DAMIEN B. TIJERINA
104828
LICENSED
PROFESSIONAL ENGINEER
5/2/2014

THE COUNTY OF HIDALGO TEXAS

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L&G Engineering
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Engineering Firm F-4105

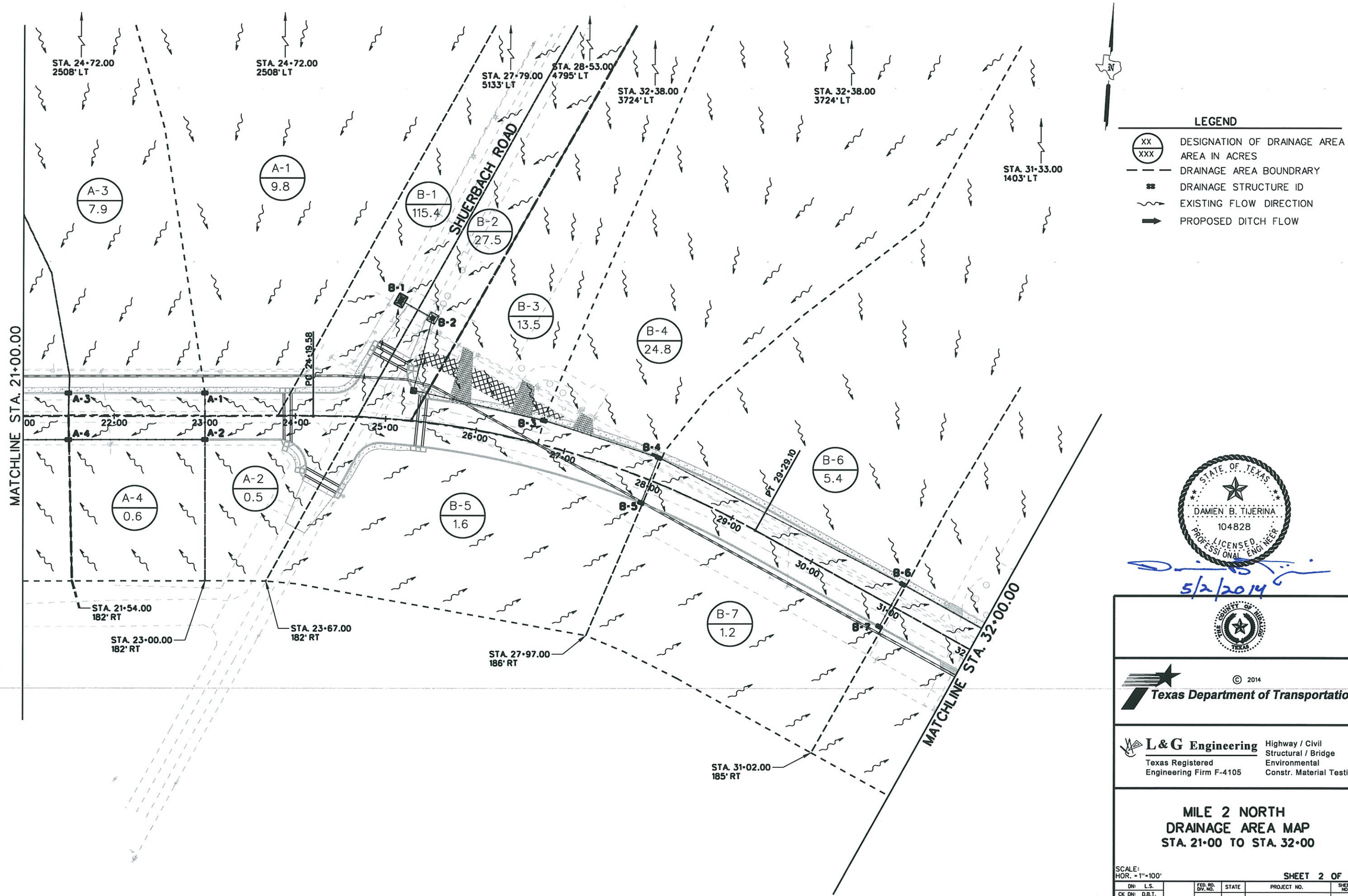
Highway / Civil
Structural / Bridge
Environmental
Constr. Material Testing

MILE 2 NORTH
DRAINAGE AREA MAP
STA. 10+00 TO STA. 21+00

SCALE:
HOR. = 1"=100'

SHEET 1 OF 3

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.				SHEET NO.
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CK DW: D.B.T.	21	HIDALGO	0921	02	323		MILE 2
TR:							
CK TR:							



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5/2/2014

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Highway / Civil
Structural / Bridge
Environmental
Constr. Material Testing

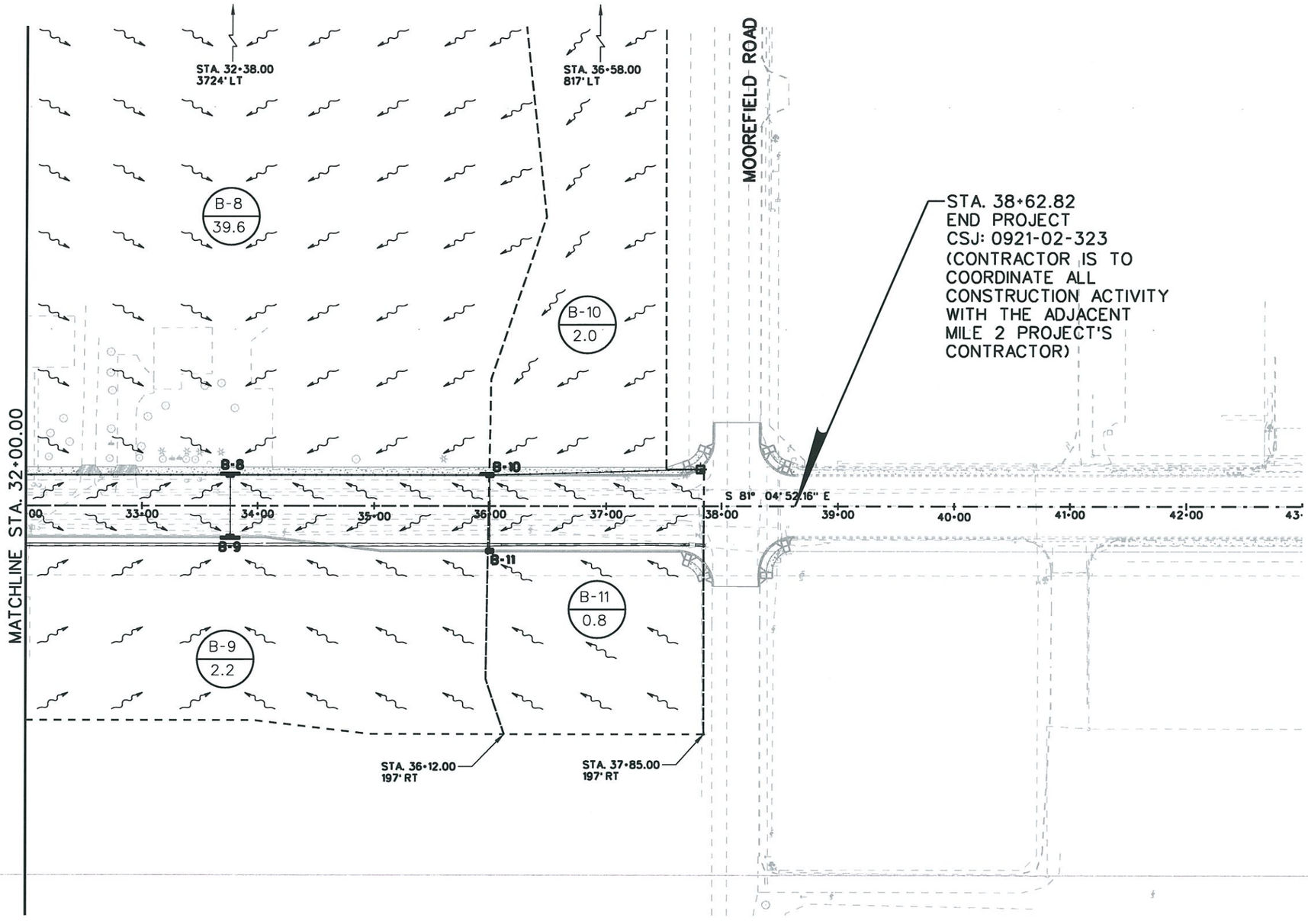
MILE 2 NORTH
DRAINAGE AREA MAP
STA. 21+00 TO STA. 32+00

SCALE:
HOR. = 1"=100'

SHEET 2 OF 3

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.				SHEET NO.
CK DN: D.B.T.	6	TX					115
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		HIGHWAY NO.
CK DW: D.B.T.	21	HIDALGO	0921	02	323		MILE 2
TR:							
CK TR:							

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LEGEND

XX / XXX	DESIGNATION OF DRAINAGE AREA AREA IN ACRES
	DRAINAGE AREA BOUNDRARY
■■	DRAINAGE STRUCTURE ID
	EXISTING FLOW DIRECTION
	PROPOSED DITCH FLOW

STATE OF TEXAS
DAMIEN B. TIJERINA
104828
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5/2/2014

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Engineering Firm F-4105

Highway / Civil
Structural / Bridge
Environmental
Constr. Material Testing

MILE 2 NORTH
DRAINAGE AREA MAP
STA. 32+00 TO STA. 42+62.82

SCALE:
HOR. = 1"=100'

SHEET 3 OF 3

DN: L.S.		FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN: D.B.T.		6	TX				116
DW: L.S.		STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: D.B.T.		21	HIDALGO	0921	02	323	MILE 2
TR:	
CK TR:	

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DRAINAGE AREA COMPUTATIONS

AREA ID	DESCRIPTION	TIME OF CONCENTRATION	Tc USED	DISCHARGE	INTENSITY	COMPOSITE C VALUE	COMPOSITE AREA	TOTAL SUBAREA C VALUE	TOTAL SUBAREA	REMAINDER C VALUE	REMAINDER AREA	SUBAREA 1 AREA	SUBAREA 1 C VALUE	SUBAREA 1 DESCRIPTION	SUBAREA 2 AREA	SUBAREA 2 C VALUE	SUBAREA 2 DESCRIPTION	SUBAREA 3 AREA	SUBAREA 3 C VALUE	SUBAREA 3 DESCRIPTION	SUBAREA 4 AREA	SUBAREA 4 C VALUE	SUBAREA 4 DESCRIPTION
		(MINUTES)	(MINUTES)	(CFS)	(IN/HOUR)		(ACRES)		(ACRES)		(ACRES)	(ACRES)			(ACRES)			(ACRES)			(ACRES)	(ACRES)	
A-1		210.1	210.1	2.5	0.8	0.3	9.8	0.3	9.8	0.3		0.319	0.250	Grass	0.106	0.150	Agricultural	9.297	0.300	1 Fam Resid	0.059	0.850	Pavement
A-2		23.4	23.4	0.9	4.1	0.5	0.5	0.5	0.5	0.3	0.008	0.337	0.300	One Family Residential	0.150	0.850	Pavement						
A-3		211.9	211.9	2.0	0.8	0.3	7.9	0.3	7.9	0.3		0.189	0.250	Grass	0.098	0.850	Pavement	7.576	0.300	1 Fam Resid			
A-4		27.1	27.1	0.9	3.7	0.4	0.6	0.4	0.6	0.3		0.098	0.850	Pavement	0.525	0.300	1 Fam Resid						
A-5		52.9	52.9	4.6	2.4	0.3	5.9	0.3	5.9	0.3	0.006	0.320	0.850	Pavement	5.571	0.300	1 Fam Resid						
A-6		36.8	36.8	2.5	3.0	0.4	2.1	0.4	2.1	0.3		0.329	0.850	Pavement	1.780	0.300	1 Fam Resid						
A-7		56.5	56.5	1.6	2.3	0.3	2.2	0.3	2.2	0.3		0.106	0.850	Pavement	2.070	0.300	1 Fam Resid						
A-8		29.3	29.3	0.9	3.5	0.4	0.7	0.4	0.7	0.3		0.110	0.850	Pavement	0.585	0.300	1 Fam Resid						
A-9		145.1	145.1	3.5	1.1	0.3	10.0	0.3	10.0	0.3	0.004	0.412	0.250	Grass	0.320	0.850	Pavement	9.263	0.300	1 Fam Resid			
A-10		37.6	37.6	2.3	3.0	0.4	2.0	0.4	2.0	0.3	0.002	1.691	0.300	One Family Residential	0.308	0.850	Pavement						

LINK COMPUTATIONS

LINK ID	UPSTREAM NODE	DOWNSTREAM NODE	NUMBER OF BARRELS	RISE	SPAN	ACTUAL LENGTH	HYDRAULIC LENGTH	SLOPE	INVERT UPSTREAM	INVERT DOWNSTREAM	DISCHARGE	CAPACITY	SOFFIT UPSTREAM	HGL UPSTREAM	EGL UPSTREAM	SOFFIT DOWNSTREAM	HGL DOWNSTREAM	EGL DOWNSTREAM	MANNING'S N VALUE	ACTUAL VELOCITY UPSTREAM	ACTUAL VELOCITY DOWNSTREAM	UNIFORM VELOCITY	CRITICAL VELOCITY	ACTUAL DEPTH UPSTREAM	ACTUAL DEPTH DOWNSTREAM	UNIFORM DEPTH	CRITICAL DEPTH	FRICTION SLOPE	CRITICAL SLOPE
				(FT.)	(FT.)	(FT.)	(FT.)	(%)	(FT.)	(FT.)	(CFS)	(CFS)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)		(FPS)	(FPS)	(FPS)	(FPS)	(FT.)	(FT.)	(FT.)	(FT.)		
LA-1	A-1	A-2	1	1.50	n/a	49.00	52.00	0.2450	147.71	147.59	2.46	6.06	149.21	148.55	148.61	149.09	148.46	148.56	0.012	2.42	2.33	3.08	3.78	0.84	0.87	0.693	0.594	0.0020	0.0040
LA-2	A-2	A-4	1	1.50	n/a	144.82	150.02	0.2550	147.59	147.22	2.65	6.19	149.09	148.46	148.56	148.72	148.36	148.41	0.012	2.51	1.84	3.19	3.87	0.87	1.14	0.715	0.617	0.0030	0.0040
LA-3	A-3	A-4	1	1.50	n/a	49.00	52.00	0.3880	147.41	147.22	2.00	7.62	148.91	148.37	148.41	148.72	148.36	148.41	0.012	1.68	1.39	3.45	3.56	0.96	1.14	0.545	0.533	0.0040	0.0040
LA-4	A-4	A-6	1	2.00	n/a	259.82	265.02	0.2000	146.72	146.20	4.83	11.79	148.72	148.36	148.41	148.20	148.28	148.35	0.012	1.75	1.54	3.34	4.31	1.64	2.00	0.939	0.773	0.0020	0.0040
LA-5	A-5	A-6	1	1.50	n/a	49.00	52.00	0.3880	146.87	146.68	4.63	7.62	148.37	148.36	148.47	148.18	148.28	148.35	0.012	2.62	2.62	4.30	4.64	1.49	1.50	0.880	0.826	0.0040	0.0050
LA-6	A-6	A-8	1	2.00	n/a	229.82	235.02	0.1520	146.20	145.85	7.09	10.29	148.20	148.28	148.35	147.85	148.08	148.18	0.012	2.26	2.26	3.31	4.85	2.00	2.00	1.291	0.945	0.0010	0.0040
LA-7	A-7	A-8	1	1.50	n/a	49.00	52.00	1.8570	147.51	146.60	1.62	16.68	149.01	148.15	148.22	148.10	146.93	147.42	0.012	2.24	5.62	5.67	3.34	0.64	0.33	0.327	0.477	0.0190	0.0040
LA-8	A-8	A-MH1	1	2.00	n/a	268.10	273.17	0.1190	145.85	145.53	7.87	9.11	147.85	148.08	148.18	147.53	147.80	147.89	0.012	2.50	2.50	3.06	5.02	2.00	2.00	1.525	0.998	0.0010	0.0040
LA-9	A-MH1	A-10	1	2.00	n/a	109.28	114.36	0.1010	145.53	145.42	7.87	8.36	147.53	147.80	147.89	147.42	147.68	147.77	0.012	2.50	2.50	2.85	5.02	2.00	2.00	1.643	0.998	0.0010	0.0040
LA-10	A-9	A-10	1	1.50	n/a	49.00	52.00	1.4490	147.31	146.60	3.54	14.74	148.81	148.36	148.36	148.10	147.13	147.76	0.012	2.67	6.37	6.51	4.23	1.05	0.53	0.520	0.718	0.0150	0.0040
LA-11	A-10	A-MH2	1	2.50	n/a	96.19	101.27	0.1460	145.42	145.28	11.01	18.24	147.92	147.68	147.77	147.78	147.63	147.71	0.012	2.36	2.30	3.68	5.22	2.26	2.35	1.467	1.111	0.0010	0.0040
LA-12	A-MH2	A-OUT	1	2.50	n/a	150.52	152.99	0.1530	145.28	145.05	11.01	18.69	147.78	147.63	147.71	147.55	147.55	147.63	0.012	2.30	2.24	3.68	5.22	2.35	2.50	1.467	1.111	0.0010	0.0040

NOTE:
1) STORM DRAIN CALCULATIONS MADE USING GEOPAK DRAINAGE.
2) PONDING WIDTHS DO NOT EXCEED THE WIDTH ALLOWED BY THE HYDRAULIC MANUAL.
3) RAINFALL FREQUENCY 2YR
4) MINIMUM TIME OF CONCENTRATION = 10 MIN.

STATE OF TEXAS
DAMIEN B. TIJERINA
104828
LICENSED PROFESSIONAL ENGINEER
5/2/2014

THE COUNTY OF HIDALGO TEXAS

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L&G Engineering
Texas Registered Engineering Firm F-4105
Highway / Civil
Structural / Bridge
Environmental
Constr. Material Testing

MILE 2 NORTH HYDRAULIC DATA NETWORK A

SCALE:
HOR. - N.T.S.
VER. -

SHEET 1 OF 2

DN: D.B.T.		FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN: D.B.T.		21	TX				117
DW: D.B.T.		STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: D.B.T.							
TR:		21	HIDALGO	0921	02	323	MILE 2
CK TR:							

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INLET HYDRAULICS CSJ: 0921-02-323

LINK ID	DISCHARGE	AREA DISCHARGE	SUPPLIED DISCHARGE	BY PASS FLOW INTO	BY PASS NODE ID	MAX BY PASS	BY PASS FLOW	CAPACITY	TYPE	PROFILE TYPE	STATION	OFFSET	ELEVATION UPSTREAM	LONGITUDINAL SLOPE	COMPUTED PONDED WIDTH	MAX PONDED WIDTH	COMPUTED PONDED DEPTH	MAX PONDED DEPTH	LENGTH REQUIRED	CURB LENGTH	CURB DEPRESSION	CURB HEIGHT	CURB DEPRESSION WIDTH	GRATE TYPE	GRATE LENGTH	GRATE WIDTH	GRATE AREA	GRATE PERIMETER	GRATE CLOG AREA	GRATE CLOG PER	SPREAD N	COMPOSITE SPREAD SLOPE
	(CFS)	(CFS)	(CFS)	(CFS)		(CFS)	(CFS)	(CFS)				(FT.)		(%)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)		(FT.)	(FT.)	(SQ. FT.)	(FT.)	(SQ. ft.)	(SQ. FT.)		
A-1	2.459	2.46			A-3	0.5		2.46	Curb	On Grade	23+00.00	-26.00	151.82	0.2010	10.67	15.00	0.27	0.50	6.96	8.70	0.42	0.42	1.50	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.012	0.025
A-2	0.936	0.94			A-4	0.5		0.94	Curb	On Grade	23+00.00	26.00	151.82	0.2010	7.43	15.00	0.19	0.50	3.99	8.70	0.42	0.42	1.50	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.012	0.025
A-3	2	2.00			A-5	0.5		2.00	Curb	On Grade	21+50.00	-26.00	151.51	0.2010	9.88	15.00	0.25	0.50	6.18	8.70	0.42	0.42	1.50	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.012	0.025
A-4	0.892	0.89			A-6	0.5		0.89	Curb	On Grade	21+50.00	26.00	151.51	0.2010	7.16	15.00	0.21	0.50	3.46	8.70	0.42	0.42	1.50	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.012	0.029
A-5	4.633	4.63				0.5		20.41	Curb	Sag	18+85.00	-26.00	150.98	n/a	10.90	15.00	0.19	0.50	6.26	22.40	0.42	0.42	1.50	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.012	0.025
A-6	2.48	2.48				0.5		9.27	Curb	Sag	18+85.00	26.00	150.98	n/a	8.04	15.00	0.21	0.50	6.26	8.70	0.42	0.42	1.50	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.012	0.029
A-7	1.616	1.62			A-5	0.5		1.62	Curb	On Grade	16+50.00	-26.00	151.62	0.2720	8.62	15.00	0.22	0.50	5.84	8.70	0.42	0.42	1.50	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.012	0.025
A-8	0.949	0.95			A-6	0.5		0.95	Curb	On Grade	16+50.00	26.00	151.62	0.2720	7.68	15.00	0.19	0.50	3.90	8.70	0.42	0.42	1.50	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.015	0.025
A-9	3.539	3.54				0.5		20.41	Curb	Sag	12+24.00	-26.00	151.42	n/a	7.99	15.00	0.16	0.50	4.66	22.40	0.42	0.42	1.50	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.012	0.025
A-10	2.314	2.31				0.5		20.41	Curb	Sag	12+24.00	26.00	151.42	n/a	7.40	15.00	0.12	0.50	4.66	22.40	0.42	0.42	1.50	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.015	0.025

ESTIMATED STORM DRAIN QUANTITIES						ITEM 464 (R.C.P. CL III)			ITEM 400				ITEM 402
									2001	2005	2007	2011	2001
LINK ID	LINK UPSTREAM NODE	LINK DOWNSTREAM NODE	LINK RISE	RCP SIZE	ACTUAL LENGTH	18"	24"	30"	STRUCTURAL EXCAVATION	Cement Stablizied Backfill (EA)	Structural Excavation (SPL) (EA)	Sand Backfill (EA)	TRENCH PROTECTION
			(LF)	(IN.)	(FT.)	(LF)	(LF)	(LF)	(CY)				(LF)
LA-1	A-1	A-2	1.5	18	49	49			42	16	4		
LA-2	A-2	A-4	1.5	18	145	145			126	48	11		
LA-3	A-3	A-4	1.5	18	49	49			42	16	4		
LA-4	A-4	A-6	2	24	260		260		276		22	104	
LA-5	A-5	A-6	1.5	18	49	49			42	16	4		
LA-6	A-6	A-8	2	24	230		230		269		19	92	179
LA-7	A-7	A-8	1.5	18	49	49			46	16	4		1
LA-8	A-8	A-MH1	2	24	268		268		343		22	108	268
LA-9	A-MH1	A-10	2	24	109		153		143		9	44	109
LA-10	A-9	A-10	1.5	18	49	49			45	16	4		
LA-11	A-10	A-MH2	2.5	30	96			52	139		9	47	96
LA-12	A-MH2	A-OUT	2.5	30	151			151	198		14	74	14
TOTAL						**390**	**911**	**203**	**1711**	**128**	**124**	**470**	**667**

Inlets & Manholes							ITEM 465 - INLETS		ITEM 465 - MH
NODE ID	TYPE	STATION	OFFSET	ELEVATION	REFERENCE CHAIN	REFERENCE PGL	TY "F"	Inlet Extensions	TY "M"
							(EA)	(EA)	(EA)
A-1	Curb	23+00.00	-26	152.69	CHN03	PGL	1		
A-2	Curb	23+00.00	26	152.69	CHN03	PGL	1		
A-3	Curb	21+50.00	-26	152.37	CHN03	PGL	1		
A-4	Curb	21+50.00	26	152.37	CHN03	PGL	1		
A-5	Curb	18+85.00	-26	151.80	CHN03	PGL	1	2	
A-6	Curb	18+85.00	26	151.80	CHN03	PGL	1		
A-7	Curb	16+50.00	-26	152.37	CHN03	PGL	1		
A-8	Curb	16+50.00	26	152.37	CHN03	PGL	1		
A-9	Curb	12+24.00	-26	152.06	CHN03	PGL	1	2	
A-10	Curb	12+24.00	26	152.06	CHN03	PGL	1	2	
A-MH1	Junction	13+78.00	24.5	152.00	CHN03	PGL			1
A-MH2	Junction	11+70.00	25	151.62	CHN03	PGL			1
A-OUT	Outlet	10+21.00	30	150.00	CHN03	PGL			
TOTAL							**10**	**6**	**2**

NOTE:
1) STORM DRAIN CALCULATIONS MADE USING GEOPAK DRAINAGE.
2) PONDING WIDTHS DO NOT EXCEED THE WIDTH ALLOWED BY THE HYDRAULIC MANUAL.
3) RAINFALL FREQUENCY 2YR
4) MINIMUM TIME OF CONCENTRATION = 10 MIN.

STATE OF TEXAS
DAMIEN B. TIJERINA
104828
LICENSED PROFESSIONAL ENGINEER
5/2/2014

THE COUNTY OF HIDALGO TEXAS

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L&G Engineering
Texas Registered Engineering Firm F-4105
Highway / Civil
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MILE 2 NORTH HYDRAULIC DATA NETWORK A

SCALE:
HOR. - N.T.S.
VER. -

SHEET 2 OF 2

DN: D.B.T.	FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN: D.B.T.	6	TX				118
DW: D.B.T.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: D.B.T.	21	HIDALGO	0921	02	323	MILE 2
TR:						
CK TR:						

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DRAINAGE AREA COMPUTATIONS

AREA ID	DESCRIPTION	TIME OF CONCENTRATION	Tc USED	DISCHARGE	INTENSITY	COMPOSITE C VALUE	COMPOSITE AREA	TOTAL SUBAREA C VALUE	TOTAL SUBAREA	REMAINDER C VALUE	REMAINDER AREA	SUBAREA 1 AREA	SUBAREA 1 C VALUE	SUBAREA 1 DESCRIPTION	SUBAREA 2 AREA	SUBAREA 2 C VALUE	SUBAREA 2 DESCRIPTION	SUBAREA 3 AREA	SUBAREA 3 C VALUE	SUBAREA 3 DESCRIPTION	SUBAREA 4 AREA	SUBAREA 4 C VALUE	SUBAREA 4 DESCRIPTION
		(MINUTES)	(MINUTES)	(CFS)	(IN/HOUR)		(ACRES)		(ACRES)		(ACRES)	(ACRES)			(ACRES)			(ACRES)			(ACRES)	(ACRES)	
B-1		292.2	292.2	19.6	0.6	0.3	115.4	0.3	115.4	0.3	0.006	82.454	0.250	Grass	2.658	0.150	Agricultural	0.580	0.850	Pavement	29.659	0.300	1 Fam Resid
B-2		146.6	146.6	6.3	1.1	0.2	27.5	0.2	27.5	0.3	0.001	2.063	0.250	Grass	17.746	0.150	Agricultural	0.320	0.850	Pavement	7.323	0.300	1 Fam Resid
B-3		287.1	287.1	2.5	0.7	0.3	13.5	0.3	13.5	0.3	0.007	1.731	0.250	Grass	0.812	0.150	Agricultural	0.100	0.850	Pavement	10.814	0.300	1 Fam Resid
B-4		323.2	323.2	4.2	0.6	0.3	24.8	0.3	24.8	0.3	0.007	7.274	0.250	Grass	0.435	0.150	Agricultural	0.110	0.850	Pavement	17.016	0.300	1 Fam Resid
B-5		44.8	44.8	1.4	2.7	0.3	1.6	0.3	1.6	0.3	0.007	1.335	0.250	Grass		0.400	1 Fam Resid	0.220	0.850	Pavement			
B-6		51.5	51.5	3.8	2.4	0.3	5.4	0.3	5.4	0.3	0.007	3.824	0.250	Grass	0.290	0.850	Pavement	1.261	0.300	1 Fam Resid			
B-7		36.4	36.4	1.1	3.1	0.3	1.2	0.3	1.2	0.3	0.001	1.136	0.250	Grass	0.100	0.850	Pavement						
B-8		245.3	245.3	7.7	0.7	0.3	39.6	0.3	39.6	0.3	0.001	12.988	0.250	Grass	7.554	0.150	Agricultural	0.500	0.850	Pavement	18.540	0.300	1 Fam Resid
B-9		36.4	36.4	1.4	3.1	0.2	2.2	0.2	2.2	0.3		0.163	0.250	Grass	1.802	0.150	Agricultural	0.187	0.850	Pavement			
B-10		40.9	40.9	1.2	2.8	0.2	2.0	0.2	2.0	0.3	0.029	1.680	0.150	Agricultural	0.150	0.850	Pavement	0.151	0.300	1 Fam Resid			
B-11		30.6	30.6	0.7	3.4	0.2	0.8	0.2	0.8	0.3	0.005	0.724	0.150	Agricultural	0.110	0.850	Pavement						

NOTE:
1) STORM DRAIN CALCULATIONS MADE USING GEOPAK DRAINAGE.
2) PONDING WIDTHS DO NOT EXCEED THE WIDTH ALLOWED BY THE HYDRAULIC MANUAL.
3) RAINFALL FREQUENCY 2YR
4) MINIMUM TIME OF CONCENTRATION = 10 MIN.

STATE OF TEXAS
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MILE 2 NORTH HYDRAULIC DATA NETWORK B

SCALE:
HOR. - N.T.S.
VER. -

SHEET 1 OF 3

DN: D.B.T.	FED. RD. DIV. NO.	STATE	PROJECT NO.	SHEET NO.
CK DN: D.B.T.	21	TX		119
DW: D.B.T.	STATE DIST. NO	COUNTY	CONTROL NO. / SECTION NO. / JOB NO.	HIGHWAY NO.
CK DW: D.B.T.	21	HIDALGO	0921 / 02 / 323	MILE 2
TR:				
CK TR:				

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LINK COMPUTATIONS

LINK ID	UPSTREAM NODE	DOWNSTREAM NODE	NUMBER OF BARRELS	RISE	SPAN	ACTUAL LENGTH	HYDRAULIC LENGTH	SLOPE	INVERT UPSTREAM	INVERT DOWNSTREAM	DISCHARGE	CAPACITY	SOFFIT UPSTREAM	HGL UPSTREAM	EGL UPSTREAM	SOFFIT DOWNSTREAM	HGL DOWNSTREAM	EGL DOWNSTREAM	MANNING'S N VALUE	ACTUAL VELOCITY UPSTREAM	ACTUAL VELOCITY DOWNSTREAM	UNIFORM VELOCITY	CRITICAL VELOCITY	ACTUAL DEPTH UPSTREAM	ACTUAL DEPTH DOWNSTREAM	UNIFORM DEPTH	CRITICAL DEPTH	FRICTION SLOPE	CRITICAL SLOPE
				(FT.)	(FT.)	(FT.)	(FT.)	(%)	(FT.)	(FT.)	(CFS)	(CFS)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)		(FPS)	(FPS)	(FPS)	(FPS)	(FT.)	(FT.)	(FT.)	(FT.)		
LB-1	B-1	B-2	1	2.00	n/a	36.98	39.98	1.3520	148.00	147.50	19.57	30.66	150.00	150.88	150.88	149.50	148.80	150.07	0.012	6.23	9.04	9.78	7.31	2.00	1.30	1.217	1.590	0.0140	0.0070
LB-2	B-2	B-MH1	1	2.00	n/a	79.02	83.02	1.2650	147.50	146.50	23.20	29.66	149.50	149.26	150.28	148.50	147.94	149.37	0.012	7.91	9.61	9.82	8.10	1.76	1.44	1.408	1.712	0.0130	0.0080
LB-3	B-MH1	B-3	1	2.50	n/a	142.34	147.42	0.3510	146.00	145.50	23.20	28.33	148.50	147.85	148.41	148.00	147.40	147.68	0.012	5.95	5.81	6.01	6.80	1.85	1.90	1.833	1.640	0.0030	0.0050
LB-4	B-3	B-4	1	3.00	n/a	128.21	133.42	0.1480	145.00	144.81	25.66	29.92	148.00	147.40	147.68	147.81	147.22	147.56	0.012	4.24	4.21	4.44	6.51	2.40	2.41	2.288	1.635	0.0010	0.0040
LB-5	B-5	B-4	1	1.50	n/a	51.00	54.00	1.0780	147.05	146.50	1.40	12.71	148.55	147.63	147.69	148.00	146.85	147.16	0.012	2.20	4.47	4.50	3.21	0.58	0.35	0.348	0.442	0.0110	0.0040
LB-6	B-4	B-6	1	3.00	n/a	298.04	303.24	0.1510	144.81	144.36	28.21	30.20	147.81	147.22	147.56	147.36	146.72	147.10	0.012	4.63	4.72	4.54	6.74	2.41	2.36	2.464	1.718	0.0020	0.0040
LB-7	B-7	B-6	1	1.50	n/a	51.00	54.00	0.9800	146.45	145.95	1.13	12.12	147.95	146.96	147.02	147.45	146.27	146.53	0.012	2.14	4.08	4.08	3.04	0.51	0.32	0.322	0.396	0.0100	0.0040
LB-8	B-6	B-8	1	3.00	n/a	270.99	276.19	0.1510	144.36	143.95	29.29	30.23	147.36	146.72	147.10	146.95	146.13	146.45	0.012	4.90	5.33	4.25	6.83	2.36	2.18	2.816	1.752	0.0010	0.0040
LB-9	B-9	B-8	1	1.50	n/a	51.00	54.00	0.6860	145.70	145.35	1.44	10.14	147.20	146.30	146.33	146.85	145.75	145.98	0.012	2.21	3.85	3.87	3.22	0.60	0.40	0.396	0.451	0.0070	0.0040
LB-10	B-8	B-10	1	3.50	n/a	218.65	223.85	0.1510	143.45	143.12	35.61	45.55	146.95	146.13	146.45	146.62	145.88	146.19	0.012	4.51	4.37	4.92	6.90	2.68	2.76	2.464	1.851	0.0010	0.0040
LB-11	B-11	B-10	1	1.50	n/a	63.00	66.00	0.7940	145.65	145.15	0.70	10.91	147.15	146.03	146.09	146.65	145.42	145.59	0.012	2.01	3.28	3.29	2.60	0.38	0.27	0.267	0.314	0.0080	0.0040
LB-12	B-10	B-MH3	1	3.50	n/a	176.51	182.08	0.1530	143.12	142.85	35.91	45.86	146.62	145.88	146.19	146.35	145.69	146.02	0.012	4.41	4.29	4.96	6.92	2.76	2.84	2.464	1.859	0.0020	0.0040

NOTE:
1) STORM DRAIN CALCULATIONS MADE USING GEOPAK DRAINAGE.
2) PONDING WIDTHS DO NOT EXCEED THE WIDTH ALLOWED BY THE HYDRAULIC MANUAL.
3) RAINFALL FREQUENCY 2YR
4) MINIMUM TIME OF CONCENTRATION = 10 MIN.

STATE OF TEXAS
DAMIEN B. TIJERINA
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5/2/2014

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MILE 2 NORTH
HYDRAULIC DATA
NETWORK B

SCALE:
HOR. - N.T.S.
VER. -

SHEET 2 OF 3

DN: D.B.T.	FED. RD. DIV. NO.	STATE	PROJECT NO.				SHEET NO.
CK DN: D.B.T.	6	TX					120
DW: D.B.T.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		HIGHWAY NO.
CK DW: D.B.T.	21	HIDALGO	0921	02	323		MILE 2
TR:							
CK TR:							

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INLET HYDRAULICS

LINK ID	DISCHARGE	AREA DISCHARGE	BY PASS NODE ID	MAX BY PASS	BY PASS FLOW	CAPACITY	TYPE	PROFILE TYPE	STATION	OFFSET	ELEVATION UPSTREAM	LONGITUDINAL SLOPE	COMPUTED PONDED WIDTH	MAX PONDED WIDTH	COMPUTED PONDED DEPTH	MAX PONDED DEPTH	LENGTH REQUIRED	CURB LENGTH	CURB DEPRESSION	CURB HEIGHT	CURB DEPRESSION WIDTH	GRATE TYPE	GRATE LENGTH	GRATE WIDTH	GRATE AREA	GRATE PERIMETER	GRATE CLOG AREA	GRATE CLOG PER	SPREAD N	COMPOSITE SPREAD SLOPE
	(CFS)	(CFS)		(CFS)	(CFS)	(CFS)				(FT.)		(%)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)		(FT.)	(FT.)	(SQ. FT.)	(FT.)	(SQ. ft.)	(SQ. FT.)		
B-1	19.57	19.57		0.5		46.05	Grate	Sag	25+05.40	-132.00	152.28	n/a	13.49	14.00	1.13	2.00	n/a	n/a	n/a	n/a	n/a	45 Tilt Bar	6	3	18	18	0.5	0.707	0.03	0.1
B-2	6.282	6.28		0.5		30.70	Grate	Sag	25+38.00	-116.00	152.91	n/a	6.41	10.00	0.69	2.00	n/a	n/a	n/a	n/a	n/a	45 Tilt Bar	3	3	9	12	0.5	0.707	0.03	0.167
B-3	2.536	2.54	B-4	0.5		2.54	Curb	On Grade	26+70.00	-27.00	152.12	0.4770	9.99	16.00	0.25	0.50	7.77	8.70	0.42	0.42	1.50	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.015	0.025
B-4	4.204	4.20	B-6	0.5		4.20	Curb	On Grade	28+00.00	-27.00	151.56	0.2280	12.74	16.00	0.32	0.50	9.74	13.70	0.42	0.42	1.50	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.012	0.025
B-5	1.397	1.40	B-7	0.5		1.40	Curb	On Grade	28+00.00	27.00	151.56	0.2280	9.17	16.00	0.23	0.50	4.68	8.70	0.42	0.42	1.50	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.015	0.025
B-6	3.842	3.84	B-8	0.5		3.84	Curb	On Grade	31+00.00	-27.00	150.88	0.2280	13.39	16.00	0.34	0.50	8.37	8.70	0.42	0.42	1.50	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.015	0.025
B-7	1.134	1.13	B-9	0.5		1.13	Curb	On Grade	31+00.00	27.00	150.88	0.2280	8.48	16.00	0.21	0.50	4.15	8.70	0.42	0.42	1.50	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.015	0.025
B-8	7.678	7.68		0.5		20.41	Curb	Sag	33+76.17	-27.00	150.24	n/a	12.62	16.00	0.26	0.50	4.19	22.40	0.42	0.42	1.50	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.012	0.025
B-9	1.442	1.44		0.5		20.41	Curb	Sag	33+76.17	27.00	150.24	n/a	7.34	16.00	0.09	0.50	4.87	22.40	0.42	0.42	1.50	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.015	0.025
B-10	1.233	1.23	B-8	0.5		1.23	Curb	On Grade	36+00.00	-27.00	150.74	0.2320	8.02	16.00	0.20	0.50	4.83	13.70	0.42	0.42	1.50	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.012	0.025
B-11	0.699	0.70	B-9	0.5		0.70	Curb	On Grade	36+00.00	39.00	150.47	0.2320	6.48	27.00	0.16	0.50	3.49	8.70	0.42	0.42	1.50	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.012	0.025

ESTIMATED STORM DRAIN QUANTITIES

LINK ID	LINK UPSTREAM NODE	LINK DOWNSTREAM NODE	LINK RISE	RCP SIZE	ACTUAL LENGTH	ITEM 464 (R.C.P. CL III) 18"	24"	30"	36"	42"	48"	ITEM 400 2001 STRUCTURAL EXCAVATION	2005 Cement Stabilized Backfill	2007 Structrual Excavation (SPL)	2011 Sand Backfill	ITEM 402 2001 TRENCH PROTECTION
			(LF)	(IN.)	(FT.)	(LF)	(LF)	(LF)	(LF)	(LF)	(LF)	(CY)	(CY)	(CY)	(CY)	(LF)
CSJ: 0921-02-323																
LB-1	B-1	B-2	2	24	37		37					40		3	15	13
LB-2	B-2	B-MH1	2	24	79		79					91		7	32	3
LB-3	B-MH1	B-3	2.5	30	142			142				199		13	70	142
LB-4	B-3	B-4	3	36	128				128			222		13	75	128
LB-5	B-5	B-4	1.5	18	51	51						49	17	4		
LB-6	B-4	B-6	3	36	298				298			507		31	176	298
LB-7	B-7	B-6	1.5	18	51	51						48	17	4		
LB-8	B-6	B-8	3	36	271				271			448		28	160	271
LB-9	B-9	B-8	1.5	18	51	51						52	17	4		25
LB-10	B-8	B-10	3.5	42	219					219		436		25	151	219
LB-11	B-11	B-10	1.5	18	63	63						66	21	5		42
LB-12	B-10	B-MH3	3.5	42	177					177		372		20	122	177
GRAND TOTAL						**216**	**116**	**142**	**697**	**396**		**2530**	**72**	**157**	**801**	**1318**

Inlets & Manholes

NODE ID	TYPE	STATION	OFFSET	ELEVATION	REFERENCE CHAIN	REFERENCE PGL	ITEM 465 - INLETS 2103 TY "F"	2113 TY "CC"	2109 Inlet Extension	ITEM 465 - MH 2005 TY "M"
							(EA)	(EA)	(EA)	(EA)
CSJ: 0921-02-323										
B-1	Grate	25+05.40	-132	152.28	CHN03	PGL		1		
B-2	Grate	25+38.00	-116	152.91	CHN03	PGL		1		
B-3	Curb	26+70.00	-27	152.12	CHN03	PGL	1			
B-4	Curb	28+00.00	-27	151.56	CHN03	PGL	1		1	
B-5	Curb	28+00.00	27	151.56	CHN03	PGL	1			
B-6	Curb	31+00.00	-27	150.88	CHN03	PGL	1			
B-7	Curb	31+00.00	27	150.88	CHN03	PGL	1			
B-8	Curb	33+76.17	-27	150.24	CHN03	PGL	1		2	
B-9	Curb	33+76.17	27	150.24	CHN03	PGL	1		2	
B-10	Curb	36+00.00	-27	150.74	CHN03	PGL	1		1	
B-11	Curb	36+00.00	39	150.47	CHN03	PGL	1			
B-MH1	Junction	25+27.00	-33.9	152.17	CHN03	PGL				1
GRAND TOTAL							**9**	**2**	**6**	**1**

NOTE:
1) STORM DRAIN CALCULATIONS MADE USING GEOPAK DRAINAGE.
2) PONDING WIDTHS DO NOT EXCEED THE WIDTH ALLOWED BY THE HYDRAULIC MANUAL.
3) RAINFALL FREQUENCY 2YR
4) MINIMUM TIME OF CONCENTRATION = 10 MIN.

STATE OF TEXAS
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Constr. Material Testing

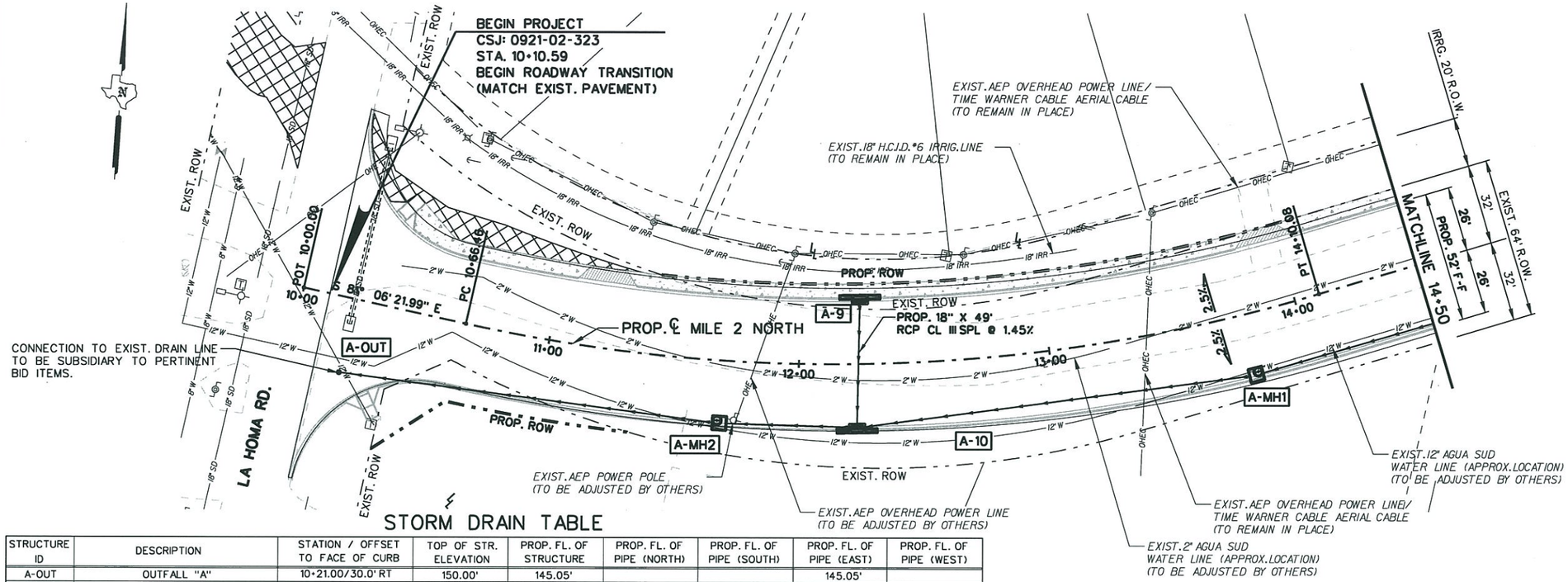
MILE 2 NORTH HYDRAULIC DATA NETWORK B

SCALE:
HOR. - N.T.S.
VER. -

SHEET 3 OF 3

DN: D.B.T.	FED. RD. DIV. NO.	STATE	PROJECT NO.	SHEET NO.
CK DN: D.B.T.	6	TX		121
DW: D.B.T.	STATE DIST. NO	COUNTY	CONTROL NO. / SECTION NO. / JOB NO.	HIGHWAY NO.
CK DW: D.B.T.	21	HIDALGO	0921 / 02 / 323	MILE 2
TR:				
CK TR:				

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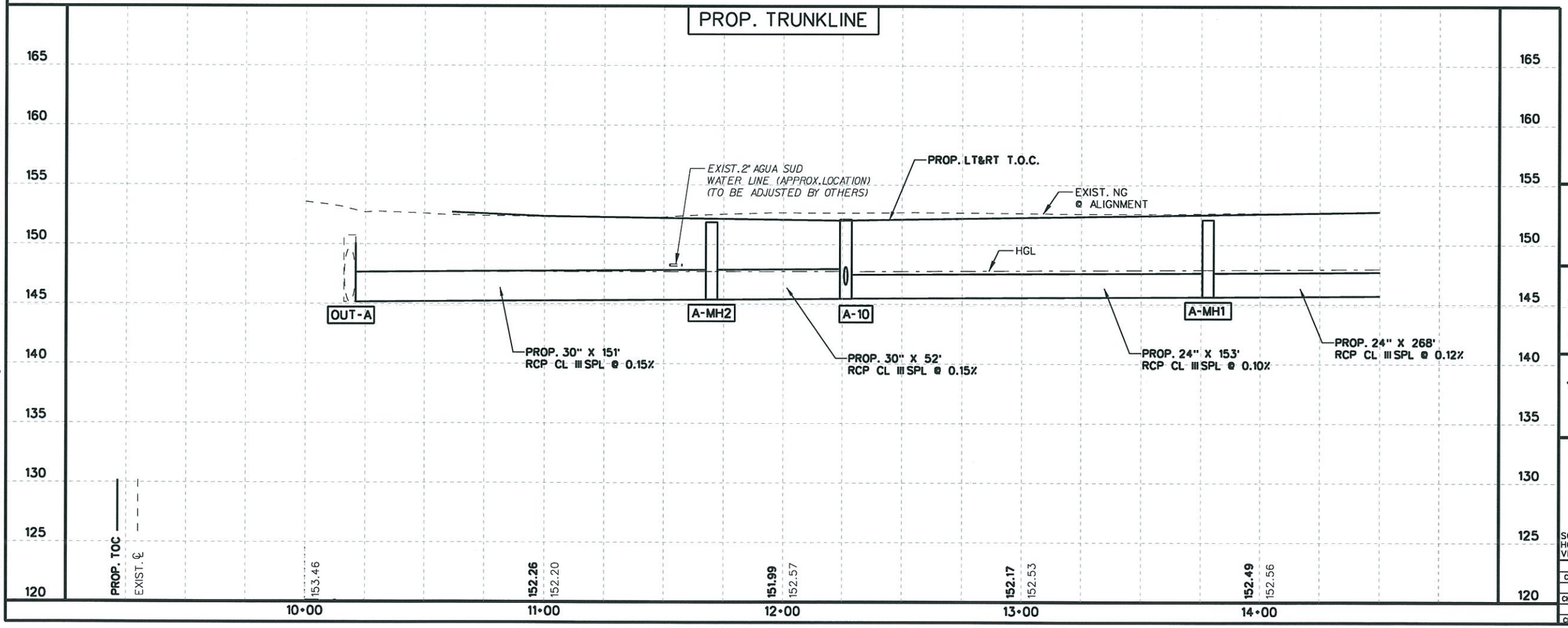
SEE P&P'S FOR PAYMENT

SEE DRIVEWAY/TURNOUT TABLE FOR ALL SIDE DRAIN QUANTITIES AND FLOW LINE ELEVATIONS

STORM DRAIN TABLE

STRUCTURE ID	DESCRIPTION	STATION / OFFSET TO FACE OF CURB	TOP OF STR. ELEVATION	PROP. FL. OF STRUCTURE	PROP. FL. OF PIPE (NORTH)	PROP. FL. OF PIPE (SOUTH)	PROP. FL. OF PIPE (EAST)	PROP. FL. OF PIPE (WEST)
A-OUT	OUTFALL "A"	10+21.00/30.0' RT	150.00'	145.05'			145.05'	
A-MH2	MANHOLE	11+70.00/25.0' RT	151.62'	145.28'			145.28'	145.28'
A-10	TY "F" INLET W/2 EXT	12+24.00/26.0' RT	152.06'	145.42'	146.60'		145.42'	145.42'
A-9	TY "F" INLET W/2 EXT	12+24.00/26.0' LT	152.06'	147.31'		147.31'		
A-MH1	MANHOLE	13+78.00/24.5' RT	152.00'	145.53'			145.53'	145.53'

PROP. TRUNKLINE



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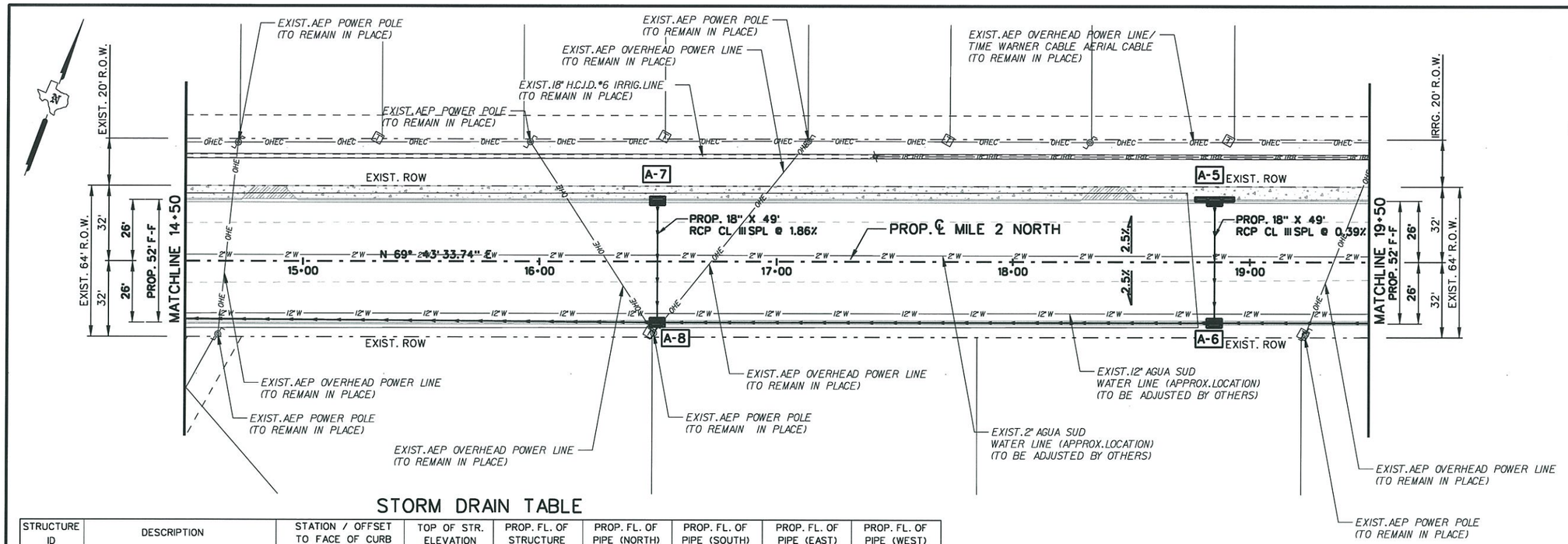
MILE 2 NORTH UTILITY & DRAINAGE STA. 10+00 TO STA. 14+50

SCALE:
HOR. - 1"=50'
VER. - 1"=10'

SHEET 1 OF 6

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.				SHEET NO.
CK DN: D.B.T.	6	TX					122
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		HIGHWAY NO.
CK DW: D.B.T.	21	HIDALGO	0921	02	323		MILE 2
TR:							
CK TR:							

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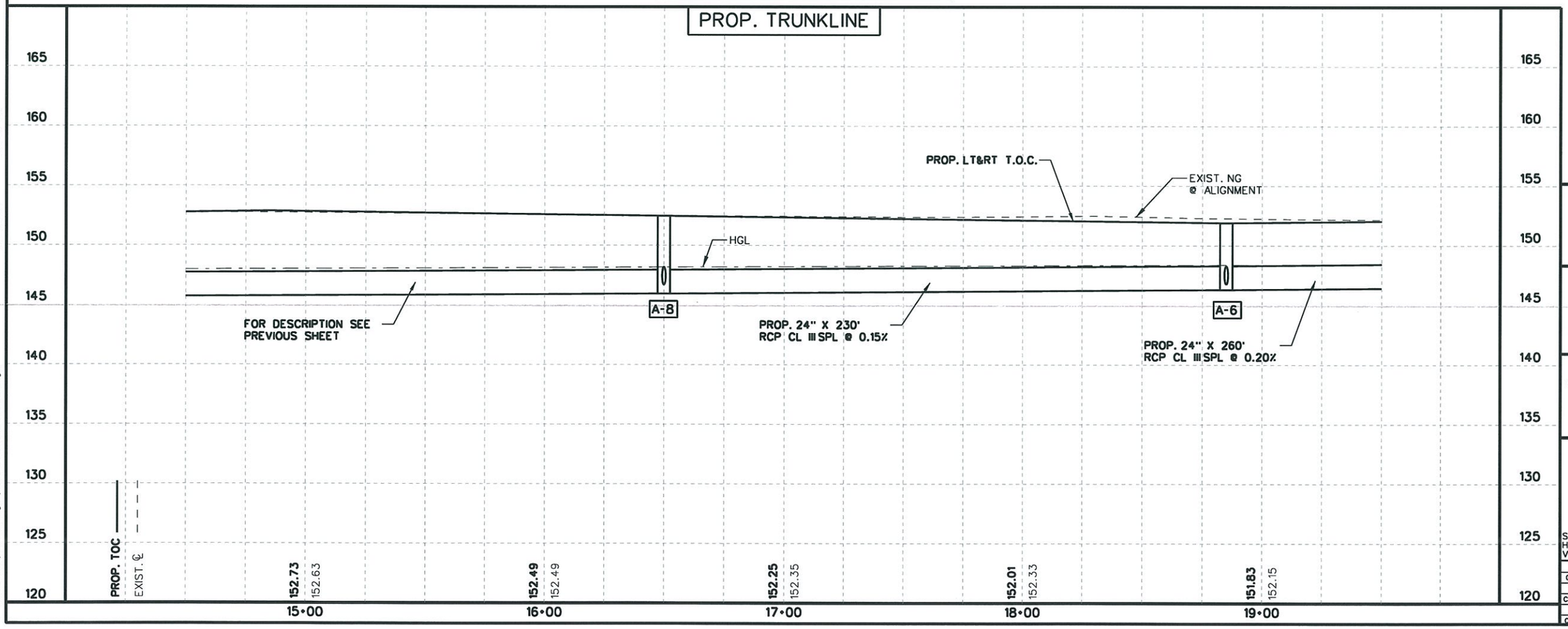


LEGEND:

- SEE P&P'S FOR PAYMENT
- SEE DRIVEWAY/TURNOUT TABLE FOR ALL SIDE DRAIN QUANTITIES AND FLOW LINE ELEVATIONS

STORM DRAIN TABLE

STRUCTURE ID	DESCRIPTION	STATION / OFFSET TO FACE OF CURB	TOP OF STR. ELEVATION	PROP. FL. OF STRUCTURE	PROP. FL. OF PIPE (NORTH)	PROP. FL. OF PIPE (SOUTH)	PROP. FL. OF PIPE (EAST)	PROP. FL. OF PIPE (WEST)
A-7	TY "F" INLET	16+50.00/26.0' LT.	152.37'	147.51'		147.51'		
A-8	TY "F" INLET	16+50.00/26.0' RT.	152.37'	145.85'	146.60'		145.85'	145.85'
A-6	TY "F" INLET	18+85.00/26.0' RT.	151.80'	146.20'	146.68'		146.20'	146.20'
A-5	TY "F" INLET W/2 EXT	18+85.00/26.0' LT.	151.80'	146.87'		146.87'		



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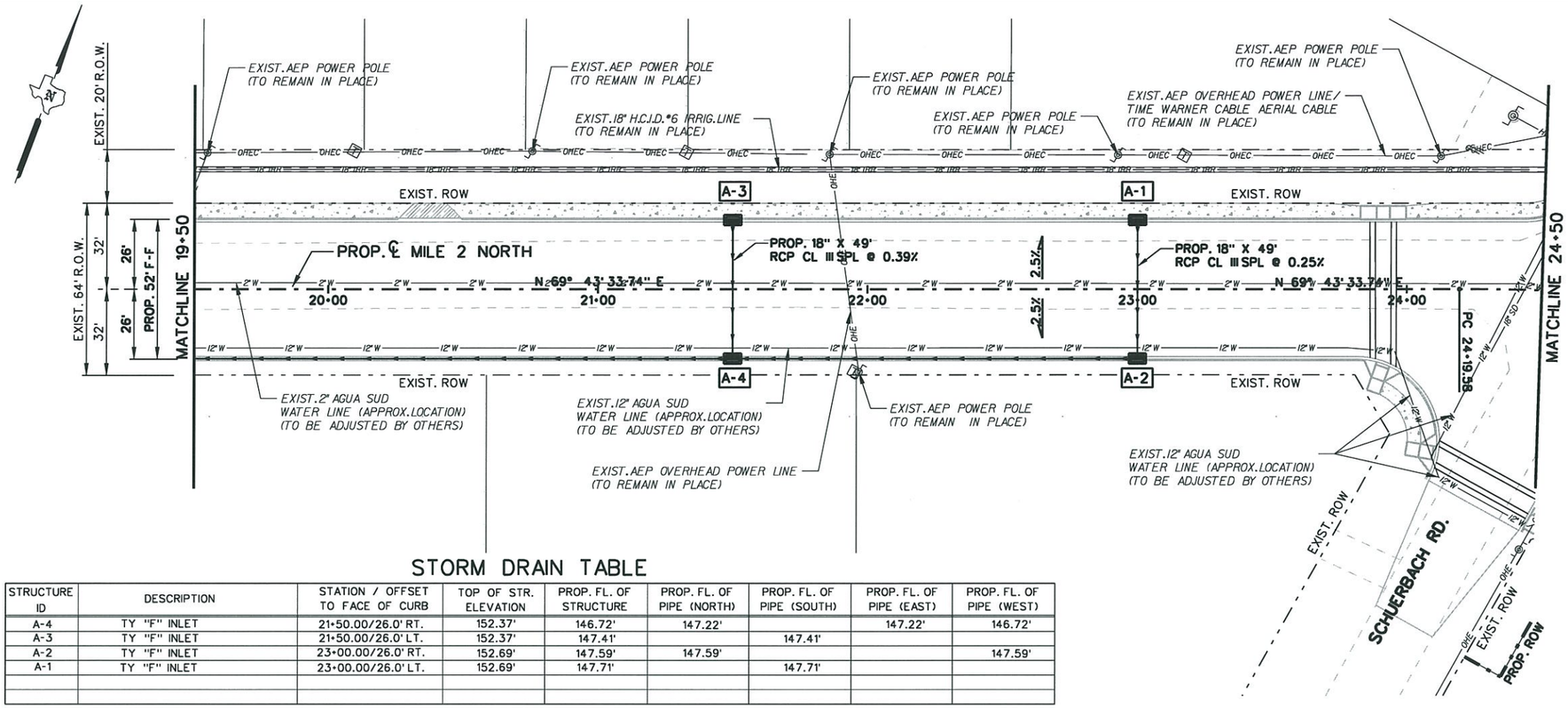
MILE 2 NORTH UTILITY & DRAINAGE STA. 14+50 TO STA. 19+50

SCALE:
HOR. - 1"=50'
VER. - 1"=10'

SHEET 2 OF 6

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.				SHEET NO.
CK DN: D.B.T.	6	TX					123
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		HIGHWAY NO.
CK DW: D.B.T.	21	HIDALGO	0921	02	323		MILE 2
TR:							
CK TR:							

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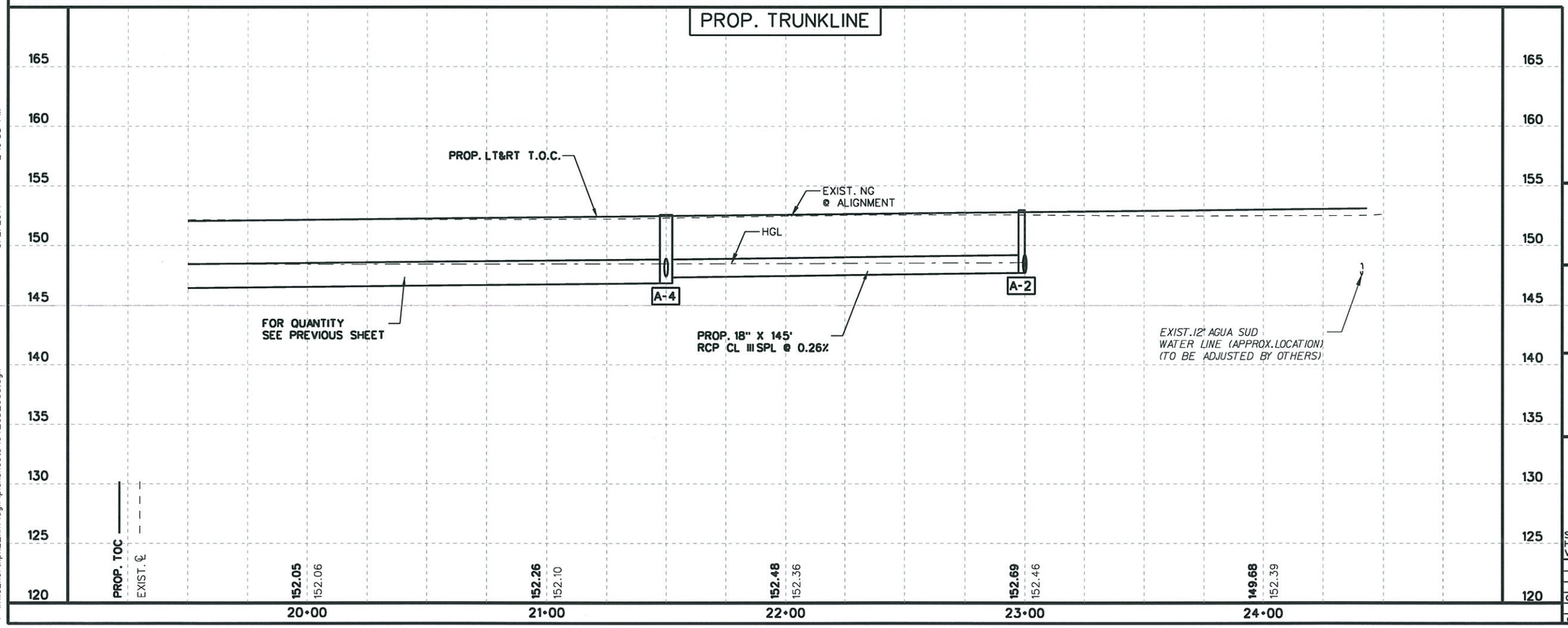


LEGEND:

- SEE P&P'S FOR PAYMENT
- SEE DRIVEWAY/TURNOUT TABLE FOR ALL SIDE DRAIN QUANTITIES AND FLOW LINE ELEVATIONS

STORM DRAIN TABLE

STRUCTURE ID	DESCRIPTION	STATION / OFFSET TO FACE OF CURB	TOP OF STR. ELEVATION	PROP. FL. OF STRUCTURE	PROP. FL. OF PIPE (NORTH)	PROP. FL. OF PIPE (SOUTH)	PROP. FL. OF PIPE (EAST)	PROP. FL. OF PIPE (WEST)
A-4	TY "F" INLET	21+50.00/26.0' RT.	152.37'	146.72'	147.22'		147.22'	146.72'
A-3	TY "F" INLET	21+50.00/26.0' LT.	152.37'	147.41'		147.41'		
A-2	TY "F" INLET	23+00.00/26.0' RT.	152.69'	147.59'	147.59'			147.59'
A-1	TY "F" INLET	23+00.00/26.0' LT.	152.69'	147.71'		147.71'		



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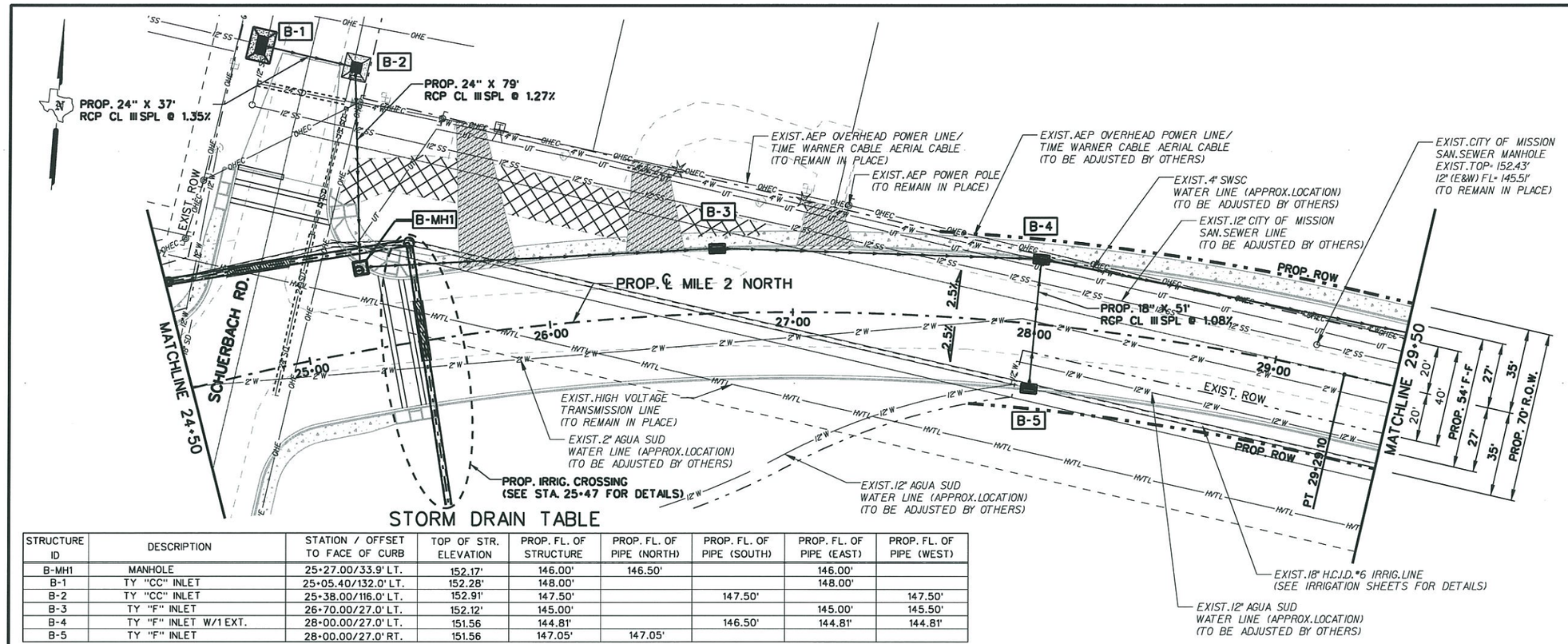
MILE 2 NORTH UTILITY & DRAINAGE STA. 19+50 TO STA. 24+50

SCALE:
HOR. - 1"=50'
VER. - 1"=10'

SHEET 3 OF 6

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.				SHEET NO.
CK DN: D.B.T.	6	TX					124
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		HIGHWAY NO.
CK DW: D.B.T.	21	HIDALGO	0921	02	323		MILE 2
TR:							
CK TR:							

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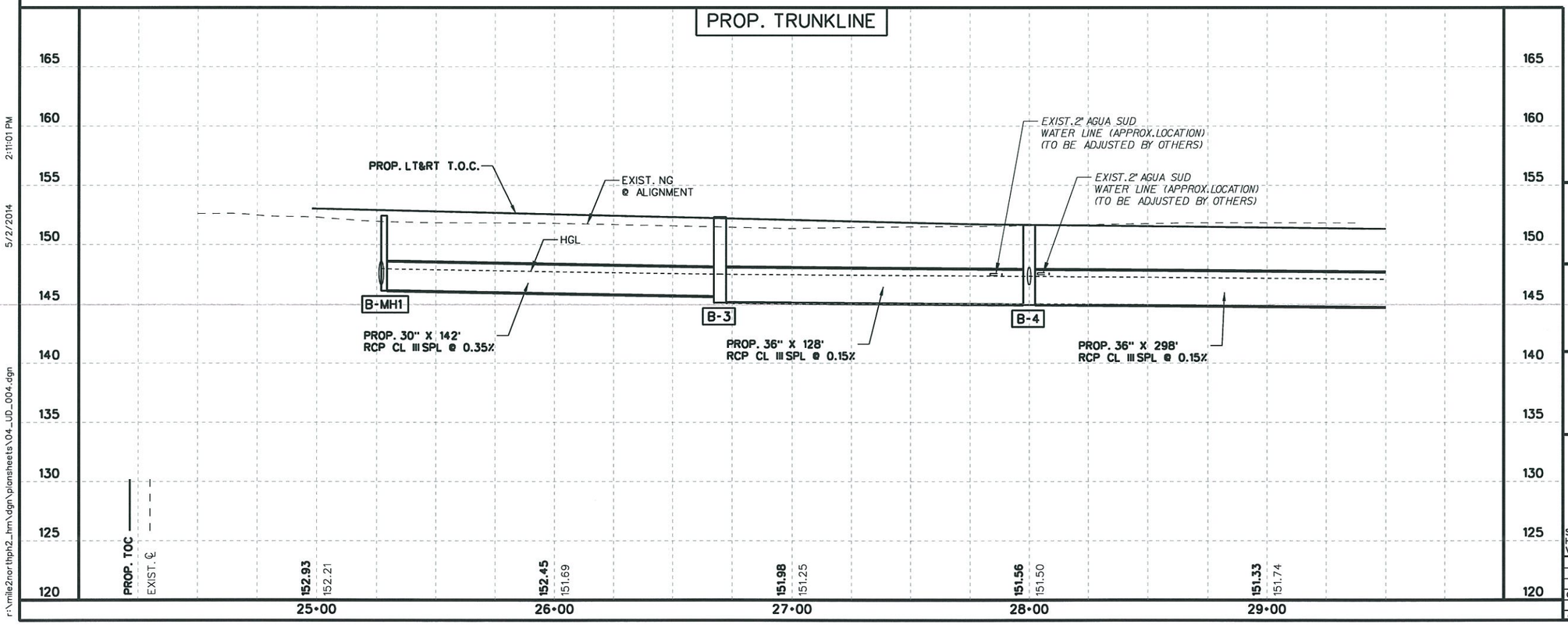
LEGEND:

- SEE P&P'S FOR PAYMENT
- SEE DRIVEWAY/TURNOUT TABLE FOR ALL SIDE DRAIN QUANTITIES AND FLOW LINE ELEVATIONS

STORM DRAIN TABLE

STRUCTURE ID	DESCRIPTION	STATION / OFFSET TO FACE OF CURB	TOP OF STR. ELEVATION	PROP. FL. OF STRUCTURE	PROP. FL. OF PIPE (NORTH)	PROP. FL. OF PIPE (SOUTH)	PROP. FL. OF PIPE (EAST)	PROP. FL. OF PIPE (WEST)
B-MH1	MANHOLE	25+27.00/33.9' LT.	152.17'	146.00'	146.50'		146.00'	
B-1	TY "CC" INLET	25+05.40/132.0' LT.	152.28'	148.00'			148.00'	
B-2	TY "CC" INLET	25+38.00/116.0' LT.	152.91'	147.50'		147.50'		147.50'
B-3	TY "F" INLET	26+70.00/27.0' LT.	152.12'	145.00'			145.00'	145.50'
B-4	TY "F" INLET W/1 EXT.	28+00.00/27.0' LT.	151.56	144.81'		146.50'	144.81'	144.81'
B-5	TY "F" INLET	28+00.00/27.0' RT.	151.56	147.05'	147.05'			

PROP. TRUNKLINE



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MILE 2 NORTH
UTILITY & DRAINAGE
STA. 24+50 TO STA. 29+50

SCALE:
HOR. = 1"=50'
VER. = 1"=10'

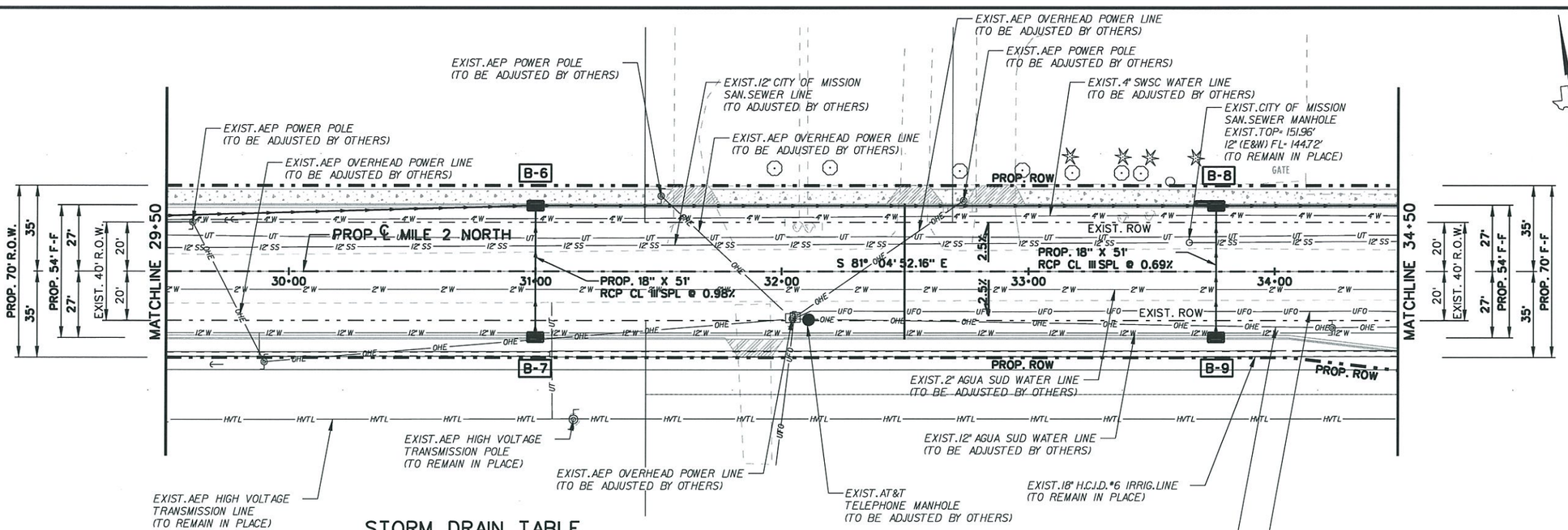
SHEET 4 OF 6

DN: L.S.	CK DN: D.B.T.	DW: L.S.	CK DW: D.B.T.	TR:	CK TR:

FED. RD. DIV. NO.	STATE	PROJECT NO.	SHEET NO.
6	TX		125

STATE DIST. NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
21	HIDALGO	0921	02	323	MILE 2

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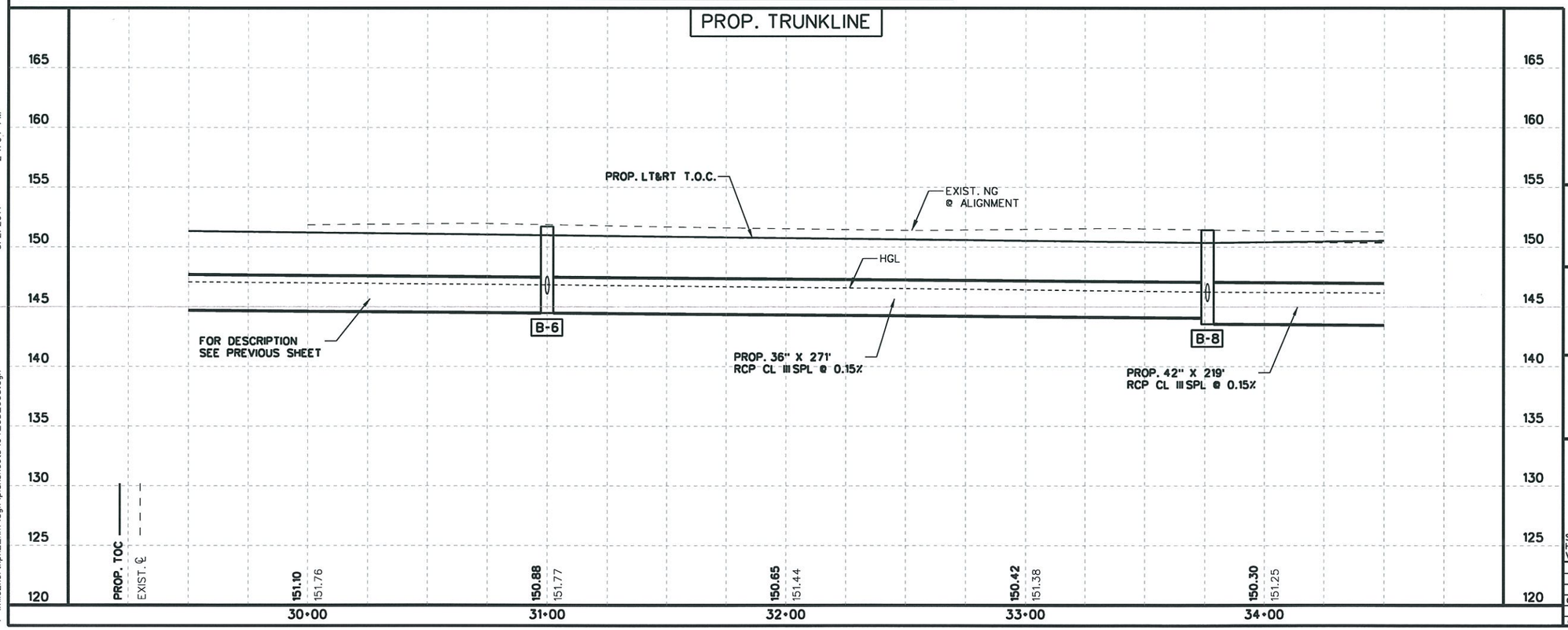
LEGEND:

SEE P&P'S FOR PAYMENT

SEE DRIVEWAY/TURNOUT TABLE FOR ALL SIDE DRAIN QUANTITIES AND FLOW LINE ELEVATIONS

STORM DRAIN TABLE

STRUCTURE ID	DESCRIPTION	STATION / OFFSET TO FACE OF CURB	TOP OF STR. ELEVATION	PROP. FL. OF STRUCTURE	PROP. FL. OF PIPE (NORTH)	PROP. FL. OF PIPE (SOUTH)	PROP. FL. OF PIPE (EAST)	PROP. FL. OF PIPE (WEST)
B-6	TY "F" INLET	31+00.00/27.0' LT.	150.88'	144.36'		145.95'	144.36'	144.36'
B-7	TY "F" INLET	31+00.00/27.0' RT	150.88'	146.45'	146.45'			
B-8	TY "F" INLET W/2 EXT.	33+76.17/27.0' LT.	150.24'	143.45'		145.35'	143.45'	143.95'
B-9	TY "F" INLET W/2 EXT.	33+76.17/27.0' RT.	150.24'	145.70'	145.70'			



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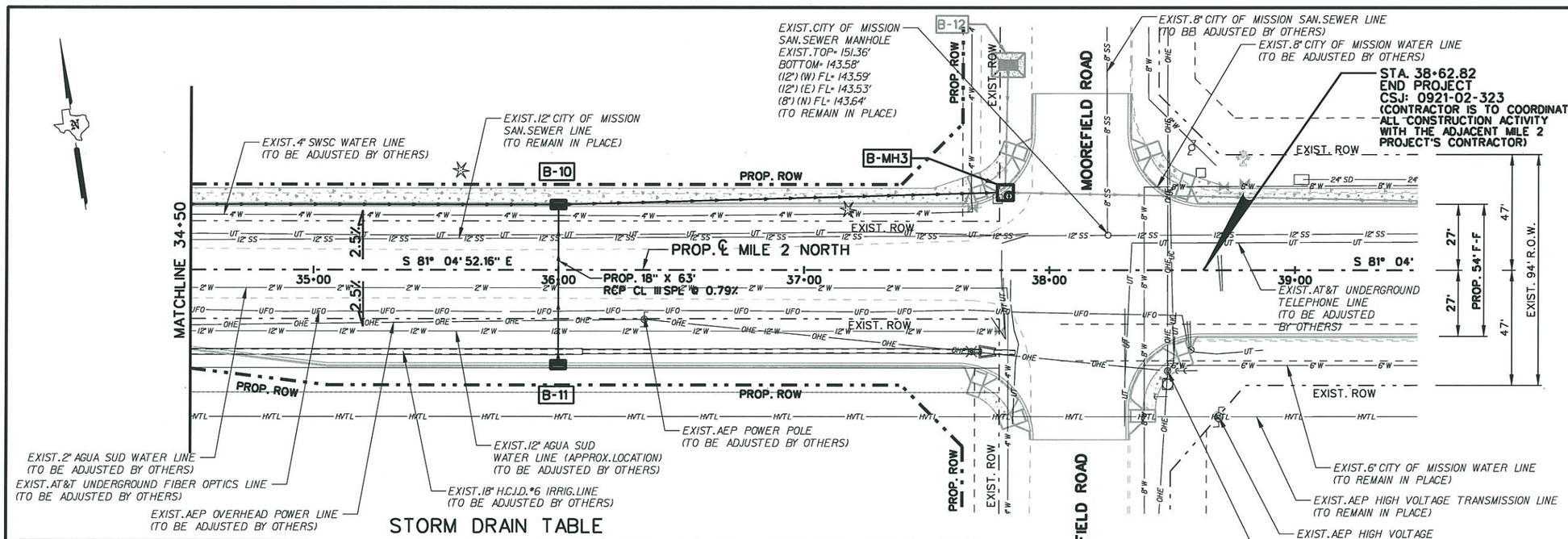
MILE 2 NORTH UTILITY & DRAINAGE STA. 29+50 TO STA. 34+50

SCALE:
HOR. - 1"=50'
VER. - 1"=10'

SHEET 5 OF 6

DN: L.S.	CK DN: D.B.T.	DW: L.S.	CK DW: D.B.T.	TR:	CK TR:	FED. RD. DIV. NO.	STATE	PROJECT NO.	SHEET NO.
						6	TX		126
						STATE DIST. NO	COUNTY	CONTROL NO. / SECTION NO. / JOB NO.	HIGHWAY NO.
						21	HIDALGO	0921 / 02 / 323	MILE 2

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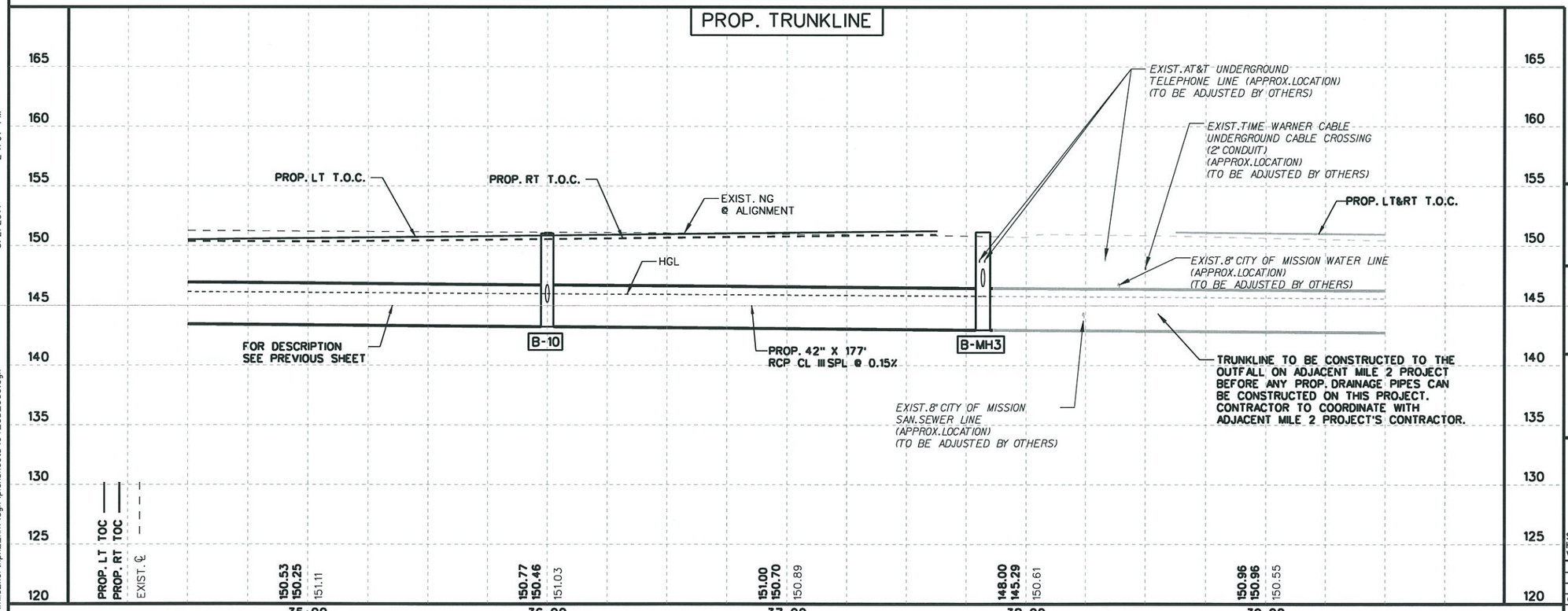


LEGEND:

- SEE P&P'S FOR PAYMENT
- ★ SEE DRIVEWAY/TURNOUT TABLE FOR ALL SIDE DRAIN QUANTITIES AND FLOW LINE ELEVATIONS
- ⊛ TO BE REMOVED UNDER ITEM 496. INCLUDES PAYMENT FOR REMOVAL OF ALL APPURTENANCES. (SEE DRIVEWAY TABLE PAYMENT)

STORM DRAIN TABLE

STRUCTURE ID	DESCRIPTION	STATION / OFFSET TO FACE OF CURB	TOP OF STR. ELEVATION	PROP. FL. OF STRUCTURE	PROP. FL. OF PIPE (NORTH)	PROP. FL. OF PIPE (SOUTH)	PROP. FL. OF PIPE (EAST)	PROP. FL. OF PIPE (WEST)
B-10	TY "F" INLET W/1 EXT.	36+00.00/27.0' LT.	150.74'	143.12'		145.15'	143.12'	143.12'
B-11	TY "F" INLET	36+00.00/39.0' RT	150.47'	145.65'	145.65'			
B-MH3	MANHOLE	37+82.00/31.7' LT.	150.61'	142.85'	146.50'		142.85'	142.85'



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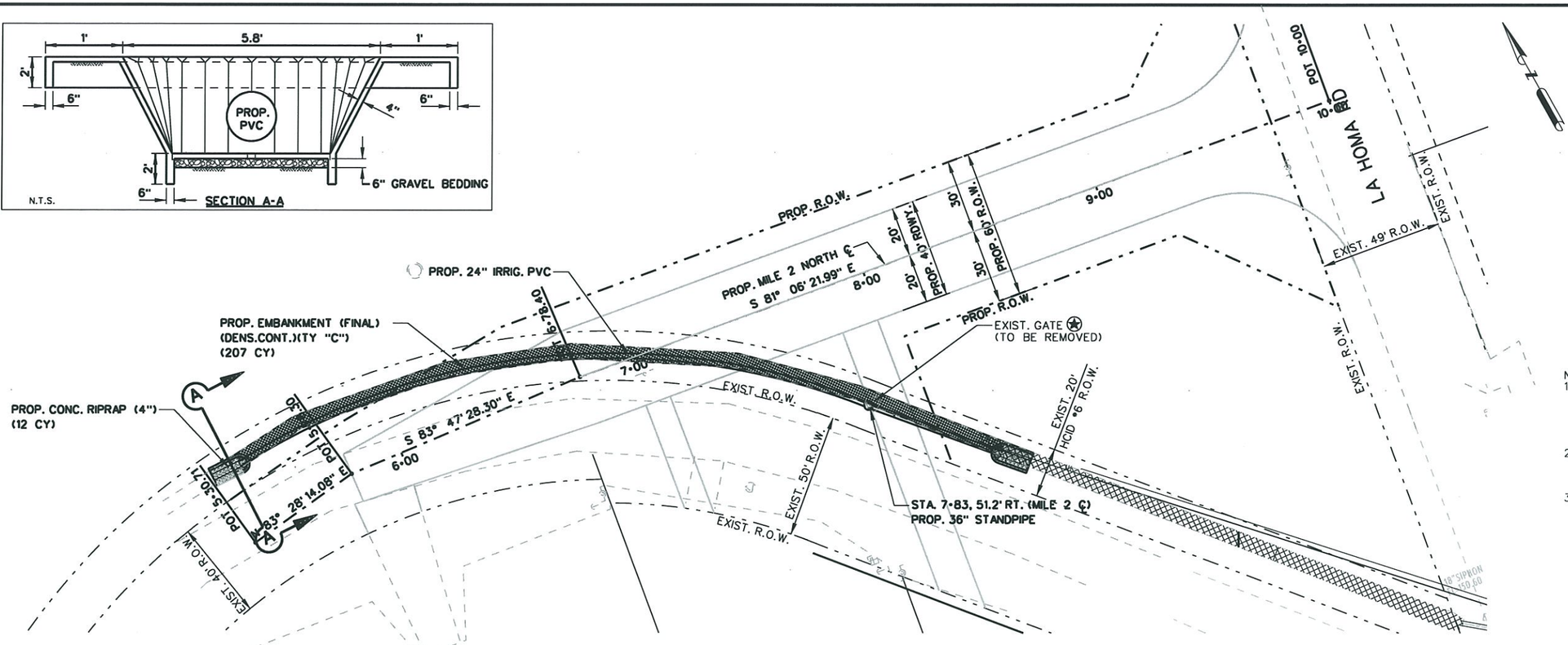
MILE 2 NORTH UTILITY & DRAINAGE STA. 34+50 TO STA. 38+62.82

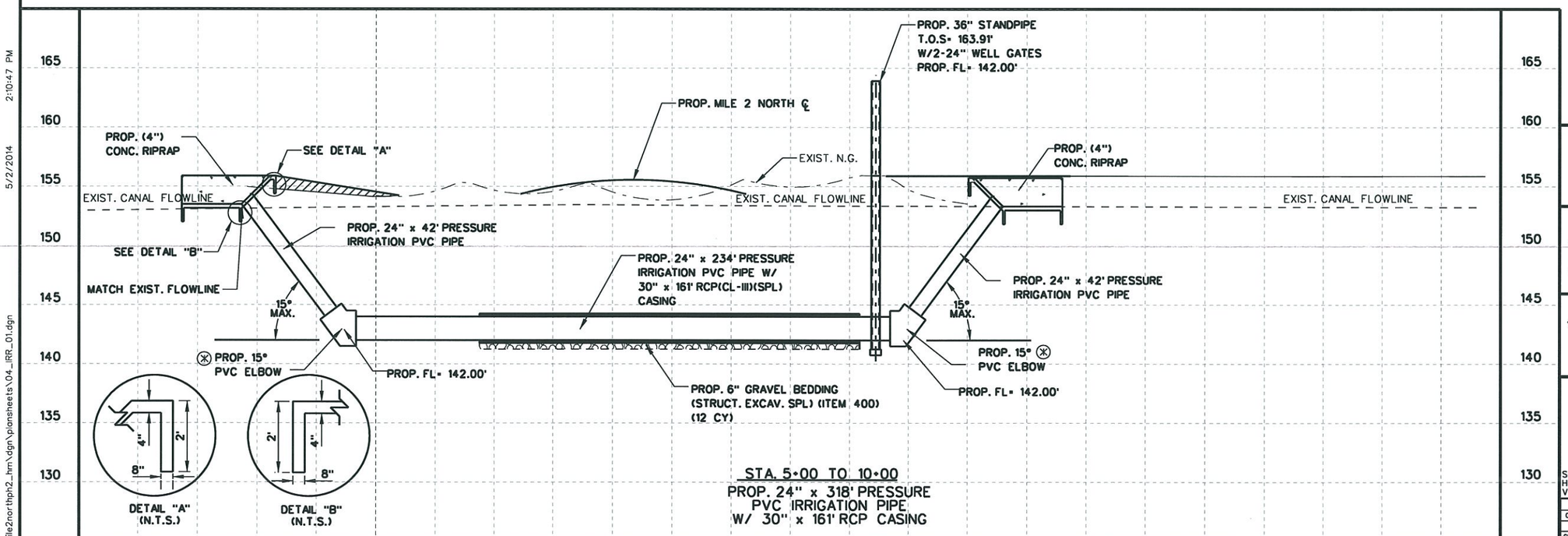
SCALE:
HOR. - 1"=50'
VER. - 1"=10'

SHEET 6 OF 6

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN: D.B.T.	6	TX				127
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: D.B.T.	21	HIDALGO	0921	02	323	MILE 2
TR:						
CK TR:						

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STA. 5+00 TO 10+00
PROP. 24" x 318' PRESSURE
PVC IRRIGATION PIPE
W/ 30" x 161' RCP CASING

SHEET SUMMARY

ITEM	DESCRIPTION	UNIT	QUANTITY
104	REMOVE CONC. RIP-RAP (4")	SY	12
132	EMBANKMENT	CY	207
⊙ 400	STRUCTURAL EXCAVATION	CY	416
432	CONC. RIPRAP (4")	CY	12
402	TRENCH PROTECTION	LF	318
432	STRUCTURAL EXCAVATION (SPL)	CY	12
496	REMOVE STRUCTURE (PIPE)	LF	-
496	REMOVE STRUCTURE (SMALL)	EA	1
4035	RCLHPP CL III(30")	LF	161
4035	RCLHPP CL III(36")	LF	22
4269	PRESSURE PVC IRRIG. PIPE (24")	LF	318

⊗ NON-PAY, SUBSIDIARY TO PERTINENT BID ITEMS.

★ TO BE REMOVED UNDER ITEM 496. INCLUDES PAYMENT FOR REMOVAL OF ALL APPURTENANCES.

⊙ NON-PAY ITEM. FOR CONTRACTORS INFORMATION ONLY.

★ TO BE REMOVED UNDER ITEM 100 "PREP. R.O.W." INCLUDES REMOVAL OF ALL APPURTENANCES.

RFD ROCK FILTER DAM TY 2

T.O.S. - TOP OF STRUCTURE

NOTE:
1. THE CONTRACTOR WILL COORDINATE AND CONTACT H.C.I.D.#6 AND THE CITY OF MISSION/L&G ENGINEERING 78 HOURS PRIOR TO ANY WORK DONE ON OR NEAR THE IRRIGATION STRUCTURES. JOE AGUILAR - (956) 585-8389
2. THE CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.
3. ALL PVC ELBOWS, AND CONNECTIONS SHALL BE SUBSIDIARY TO PERTINENT BID ITEMS.

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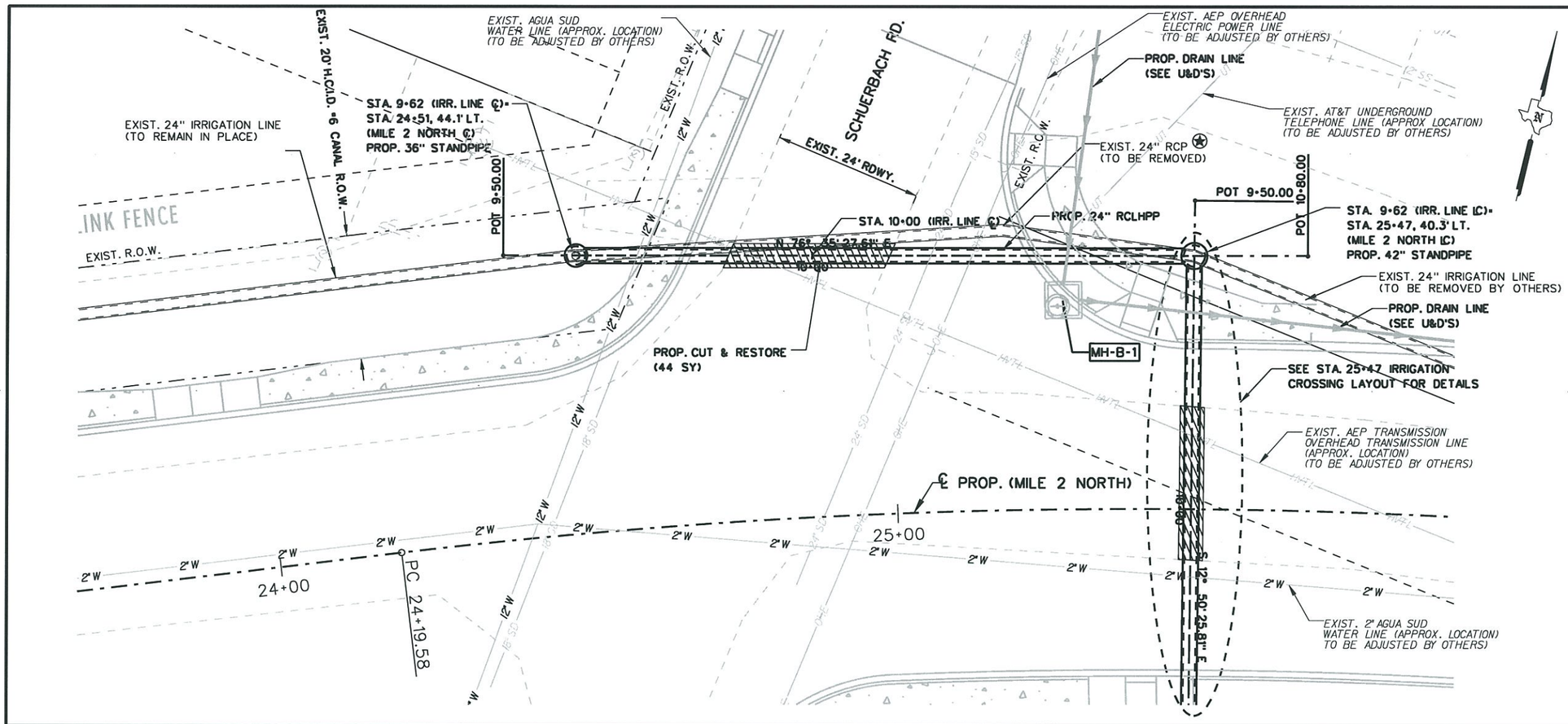
MILE 2 NORTH IRRIGATION LAYOUT (H.C.I.D.#6) STA. 5+00 TO STA. 10+00

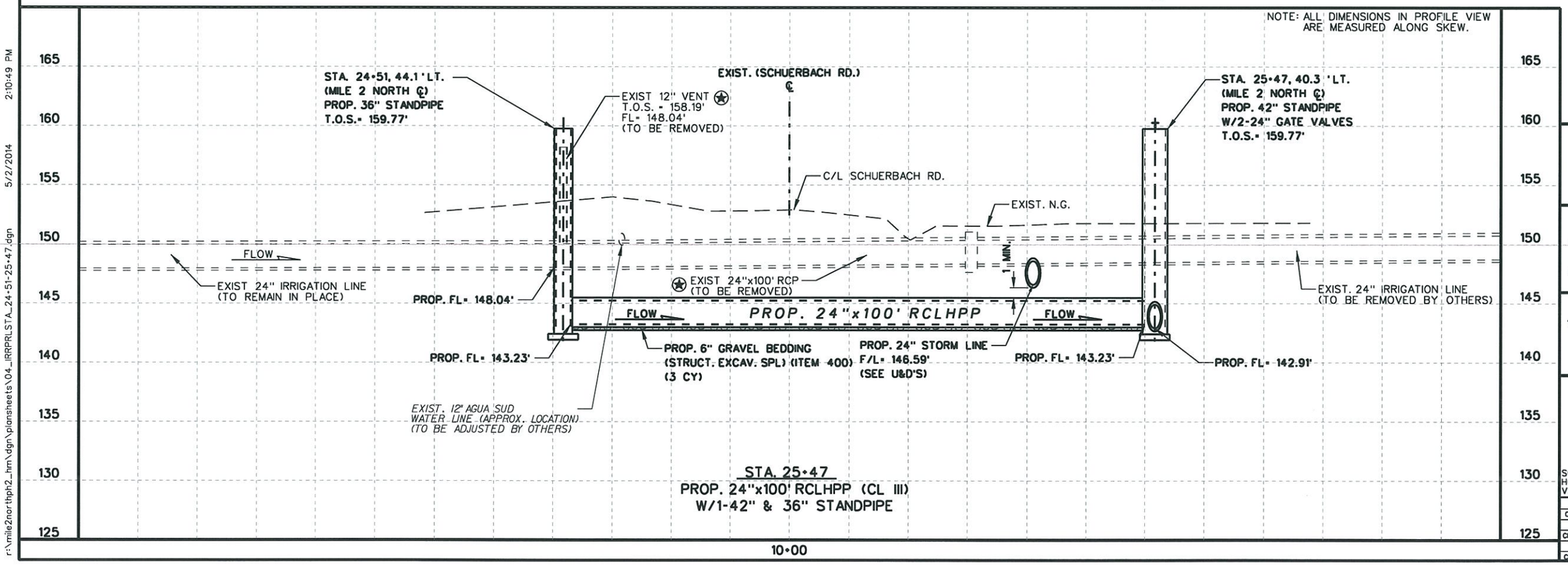
SCALE:
HOR. = 1"=50'
VER. = 1"=10'

SHEET 1 OF 3

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN: A.J.S.	6	TX				128
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: A.J.S.	21	HIDALGO	0921	02	323	MILE 2
TR:						
CK TR:						

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STA. 25+47
PROP. 24"x100' RCLHPP (CL III)
W/1-42" & 36" STANDPIPE

SHEET SUMMARY

	ITEM	DESCRIPTION	UNIT	QUANTITY
⊙	400	STRUCTURAL EXCAVATION	CY	127
	400	STRUCTURAL EXCAVATION (SPL)	CY	3
	400	CUT AND RESTORE	SY	44
	400	CEMENT STABILIZED BACKFILL	CY	16
	402	TRENCH PROTECTION	LF	100
	496	REMOVE STRUCTURE (PIPE)	LF	100
	4035	RCLHPP CL III (24")	EA	100
	4035	RCLHPP CL III (36")	LF	17
	4035	RCLHPP CL III (42")	EA	17
	4061	WELL GATE (24")	EA	2

⊗ NON-PAY, SUBSIDIARY TO PERTINENT BID ITEMS.

⊛ TO BE REMOVED UNDER ITEM 496. INCLUDES PAYMENT FOR REMOVAL OF ALL APPURTENANCES.

⊙ NON-PAY ITEM. FOR CONTRACTORS INFORMATION ONLY.

★ TO BE REMOVED UNDER ITEM 100 "PREP. R.O.W." INCLUDES REMOVAL OF ALL APPURTENANCES.

RFD ROCK FILTER DAM TY 2

T.O.S. - TOP OF STRUCTURE

NOTE:
1. THE CONTRACTOR WILL COORDINATE AND CONTACT H.C.I.D.#6 AND THE CITY OF MISSION/L&G ENGINEERING 78 HOURS PRIOR TO ANY WORK DONE ON OR NEAR THE IRRIGATION STRUCTURES. JOE AGUILAR - (956) 585-8389
2. THE CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.
3. ALL PVC ELBOWS, AND CONNECTIONS SHALL BE SUBSIDIARY TO PERTINENT BID ITEMS.

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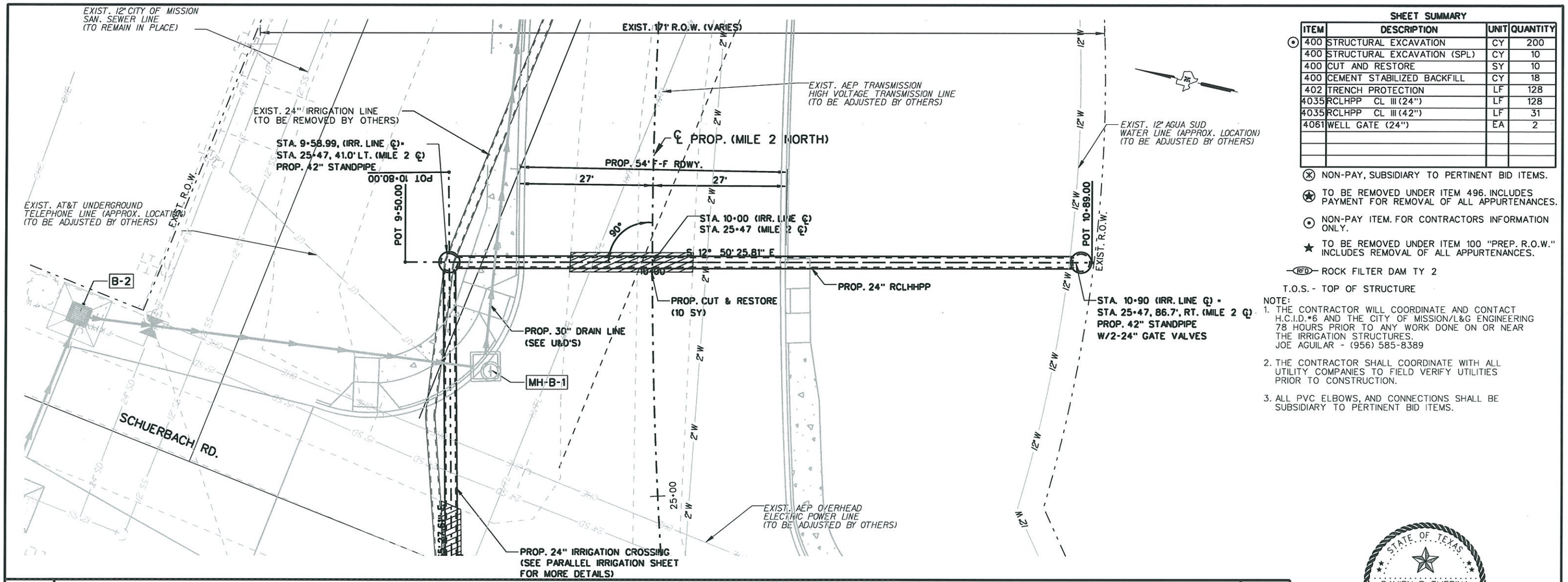
MILE 2 NORTH IRRIGATION PARALLEL LAYOUT (H.C.I.D.#6) STA. 24+51 TO STA. 25+47

SCALE: HOR. = 1"= 20' VER. = 1"= 10'

SHEET 2 OF 3

DN: E.R.	FED. RD. DIV. NO.	STATE	PROJECT NO.				SHEET NO.
CK DN: D.B.T.	6	TEXAS					129
DW: E.R.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		HIGHWAY NO.
CK DW: D.B.T.	21	HIDALGO	0921	02	323		MILE 2
TR:							
CK TR:							

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SHEET SUMMARY

	ITEM	DESCRIPTION	UNIT	QUANTITY
⊙	400	STRUCTURAL EXCAVATION	CY	200
	400	STRUCTURAL EXCAVATION (SPL)	CY	10
	400	CUT AND RESTORE	SY	10
	400	CEMENT STABILIZED BACKFILL	CY	18
	402	TRENCH PROTECTION	LF	128
	4035	RCLHPP CL III (24")	LF	128
	4035	RCLHPP CL III (42")	LF	31
	4061	WELL GATE (24")	EA	2

⊗ NON-PAY, SUBSIDIARY TO PERTINENT BID ITEMS.

✱ TO BE REMOVED UNDER ITEM 496. INCLUDES PAYMENT FOR REMOVAL OF ALL APPURTENANCES.

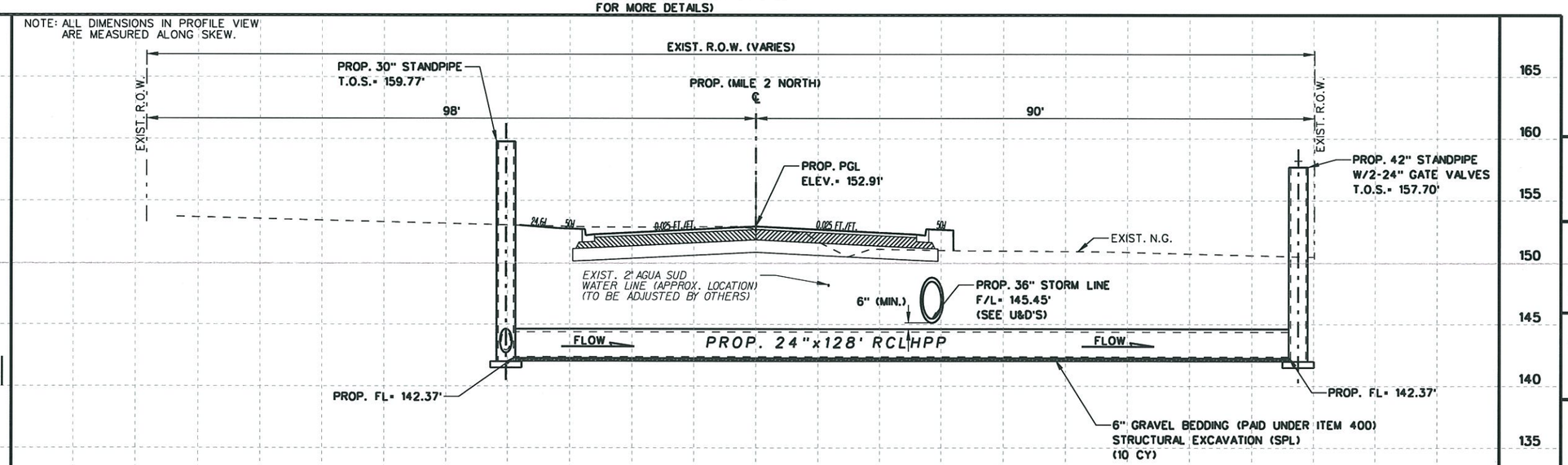
⊙ NON-PAY ITEM. FOR CONTRACTORS INFORMATION ONLY.

★ TO BE REMOVED UNDER ITEM 100 "PREP. R.O.W." INCLUDES REMOVAL OF ALL APPURTENANCES.

RFD ROCK FILTER DAM TY 2

T.O.S. - TOP OF STRUCTURE

NOTE:
1. THE CONTRACTOR WILL COORDINATE AND CONTACT H.C.I.D.#6 AND THE CITY OF MISSION/L&G ENGINEERING 78 HOURS PRIOR TO ANY WORK DONE ON OR NEAR THE IRRIGATION STRUCTURES. JOE AGUILAR - (956) 585-8389
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STA. 25+47
PROP. 24"x128' RCLHPP (CL III)

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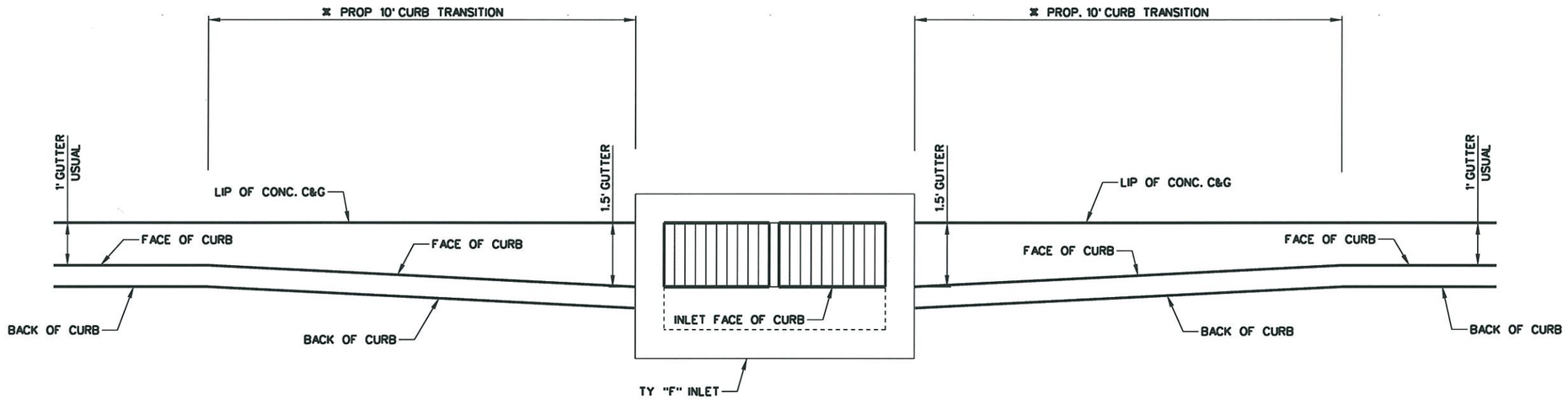
MILE 2 NORTH IRRIGATION CROSSING LAYOUT (H.C.I.D.#6) STA. 25+47

SCALE:
HOR. = 1"= 20'
VER. = 1"= 10'

SHEET 3 OF 3

DN:	FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN:	6	TEXAS				130
DW:	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW:	21	HIDALGO	0921	02	323	MILE 2
TR:						
CK TR:						

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NOTE:

* CURB TRANSITION TO BE USED AT ALL TY "F" INLETS

MAINTAIN LIP OF C&G PARALLEL TO ROADWAY CL. TRANSITION/FLARE FACE OF CURB & BACK OF CURB TO MATCH INLET FACE OF CURB. (NON-PAY SUBSIDIARY TO ITEM 529)

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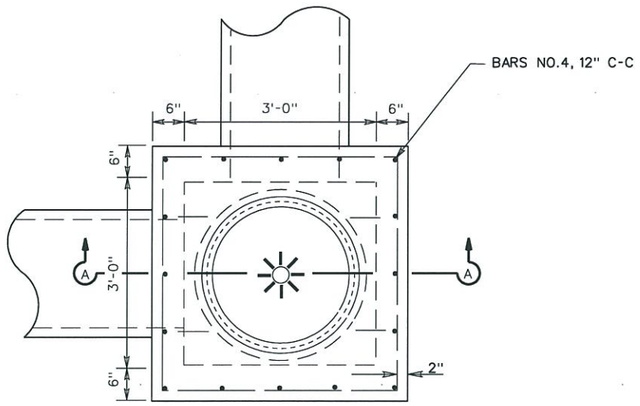
MILE 2 NORTH INLET CURB TRANSITION DETAIL

SCALE:N.T.S.

SHEET 1 OF 1

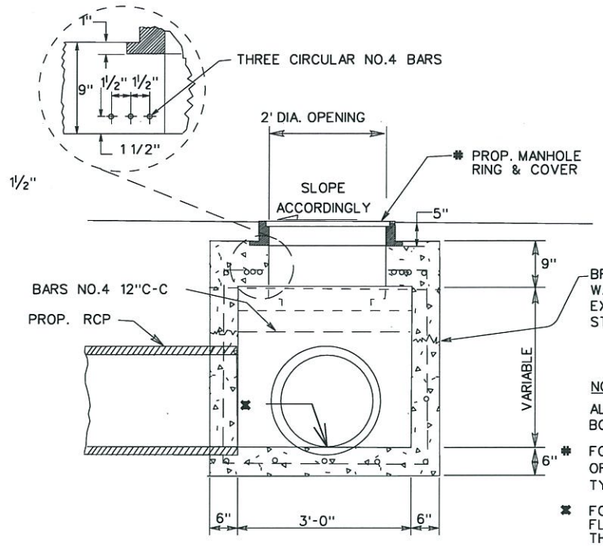
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CK DW: D.B.T.		21	HIDALGO	0921	02	323	MILE 2
TR:							
CK TR:							

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PLAN VIEW

(TO BE PAID UNDER ITEM 479 "ADJUST INLET (JCT BOX)"



SECTION A-A
ADJUST INLET (JUNCT. BOX)

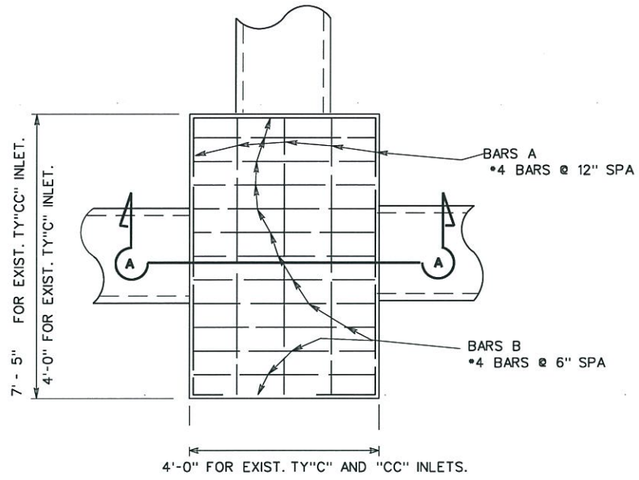
BREAK BACK EXIST. INLET WALLS TO 1' BELOW EXIST. TOP TO LAP EXIST. STEEL WITH PROPOSED STEEL

NOTE:

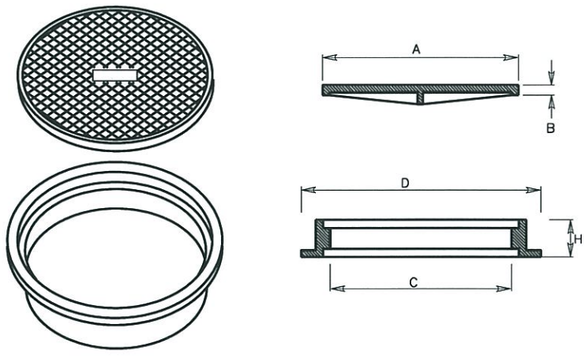
ALL STEEL TO BE NO. 4 BARS, 12" C-C IN BOTH DIRECTIONS.

* FOR MANHOLES LOCATED WITHIN PAVED PORTIONS OF THE ROADWAY, THE COVER SHALL BE OF A TYPE THAT CAN BE BOLTED TO THE RING.

✖ FOR RCP GREATER THAN 24 INCHES, THE STRUCTURE FLOOR NEEDS TO BE CONSTRUCTED TO THE PIPE WALL THICKNESS BELOW THE DESIGN FLOWLINE. THE CONTRACTOR THEN NEEDS TO GROUT THE STRUCTURE FLOOR BACK UP TO THE DESIGN FLOWLINE. THE GROUTING IS SUBSIDIARY TO THE STRUCTURE COST.



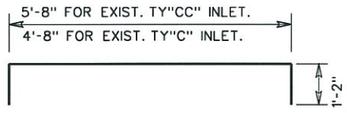
PLAN



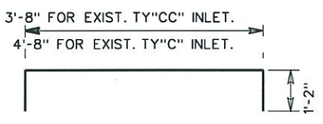
LID			RING		
"A"	"B"	WEIGHT	"C"	"D"	"H"
2'-2"	1"	174 lbs. (min)	2'-0"	2'-7½"	5"

RING & COVER DETAILS
(FOR MANHOLE TY "A" AND "A1")
(NON-PAY)

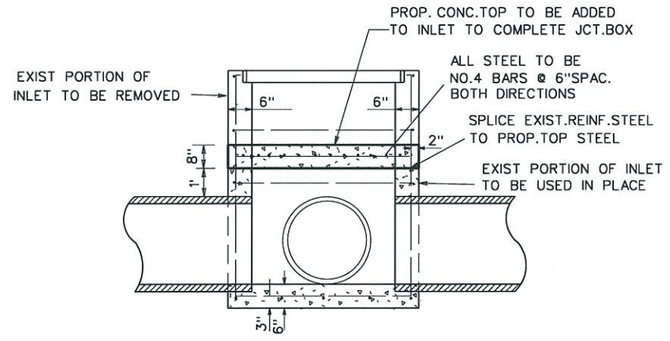
NOTES: RINGS AND COVERS OF SLIGHTLY DIFFERENT DIMENSIONS BUT APPROXIMATELY THE SAME WEIGHT MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



BARS A



BARS B



EXIST TY "C" OR TY "CC" INLET TO BE CONVERTED TO JCT. BOX

SECTION A-A
ADJ. INLET (CAP)

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PHARR DISTRICT STANDARD

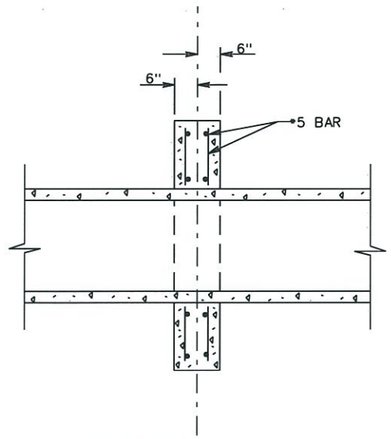
TEXAS DEPARTMENT OF TRANSPORTATION

INLET AND MANHOLE CAPPING DETAIL

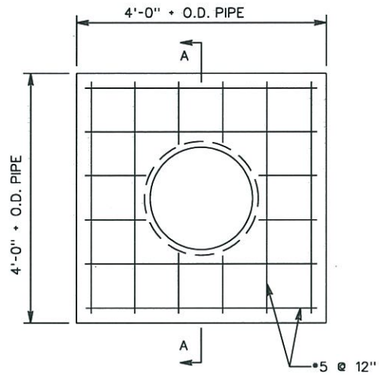
REV. 9/11

CAPDET.DGN

FED.RD. DIV.NO.	FILE NO.		PROJECT NO.			SHEET NO.
6						132
STATE	STATE DIST.NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	HIDALGO	0921	02	323	MILE 2

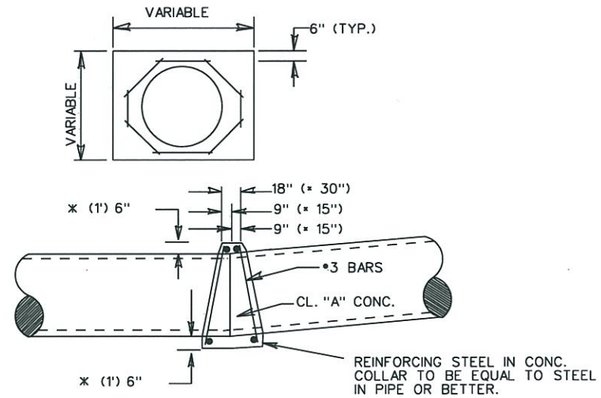


SECTION A-A



FRONT ELEVATION

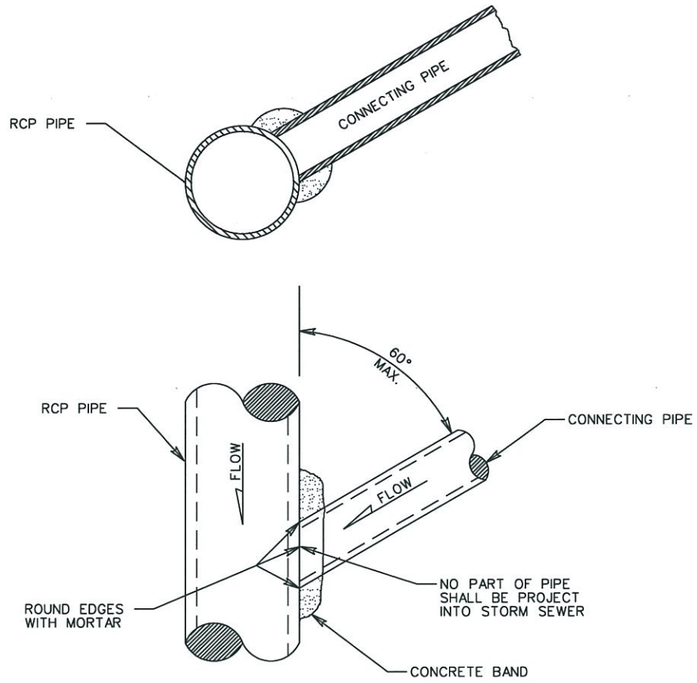
CONCRETE PIPE COLLAR



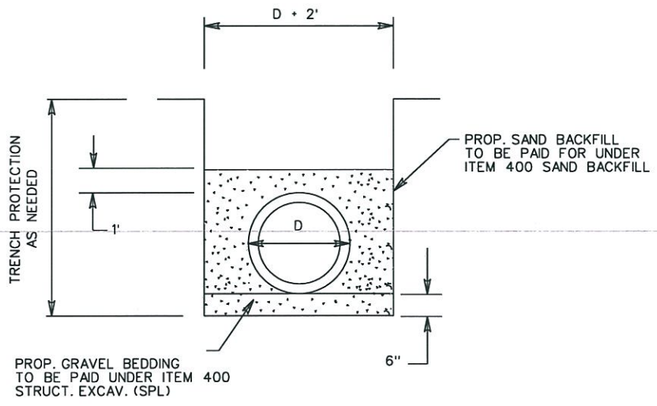
DETAIL FOR CONC. COLLARS DRAINAGE STRUCTURES AND PIPE SIPHONS (HORIZ. & VERT. BENDS)

NOTE: PROP. CONC. COLLAR WILL NOT BE PAID FOR DIRECTLY BUT WILL BE SUBSIDIARY TO THE BIDS ITEMS INVOLVED.

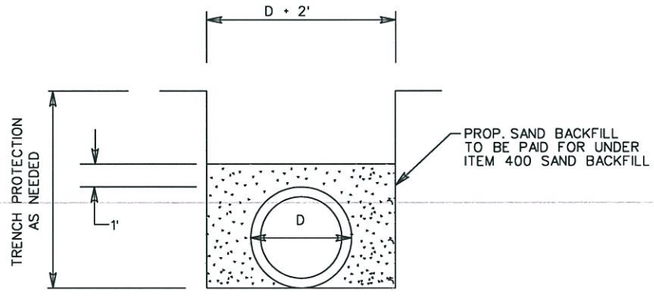
* FOR 42" AND LARGER PIPE



TYPICAL REINFORCED CONC. PIPE CONNECTION WITHOUT MANHOLE



SPIRAL RIB CMP
TYPICAL BACKFILL DETAIL GRAVEL & SAND



REINFORCED CONCRETE PIPE
TYPICAL BACKFILL DETAIL-SAND

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PHARR DISTRICT STANDARD

TEXAS DEPARTMENT OF TRANSPORTATION

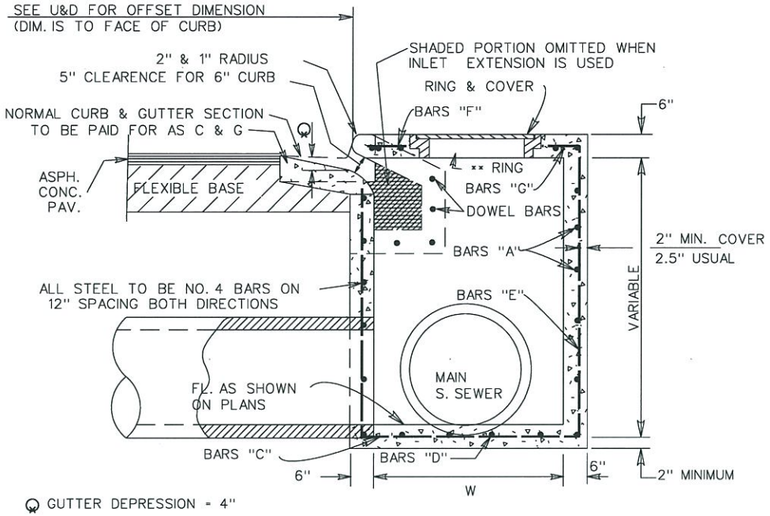
MISCELLANEOUS PIPE DETAILS

REV. 3/13

COLLAR.DGN

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		FILE NO.			SHEET NO.
6						133
STATE	STATE DIST.NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	HIDALGO	0921	02	323	MILE 2

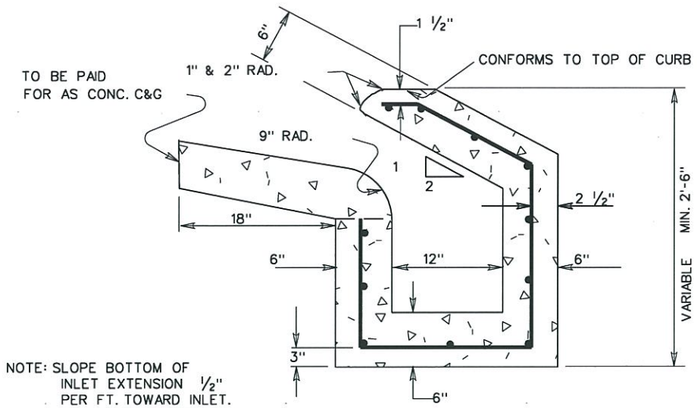
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DATE: 5/1/2014 3:25:06 PM



INLET TY "A"
To be used with Curb & Gutter

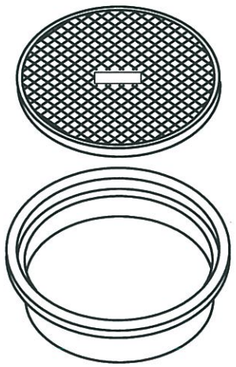
SECTION A-A

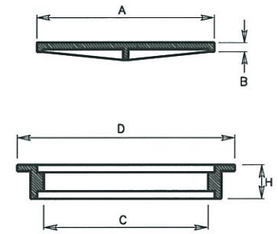
INLET TYPE	W	MAX PIPE SIZE ALLOW (DIA.)
A	3'-0"	24"
A-1	4'-0"	36"
A-2	5'-0"	48"
A-3	6'-0"	60"

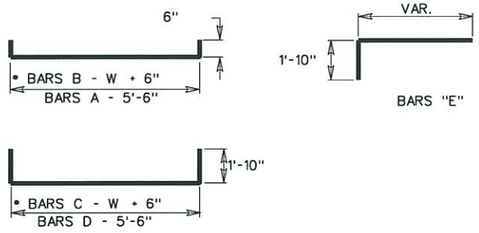


NOTE: SLOPE BOTTOM OF INLET EXTENSION ½" PER FT. TOWARD INLET. ALL STEEL TO BE NO. 4 BARS ON 12" SPACING NORMAL TO THE CROSS SECTION.

SECTION B-B
INLET EXTENSION



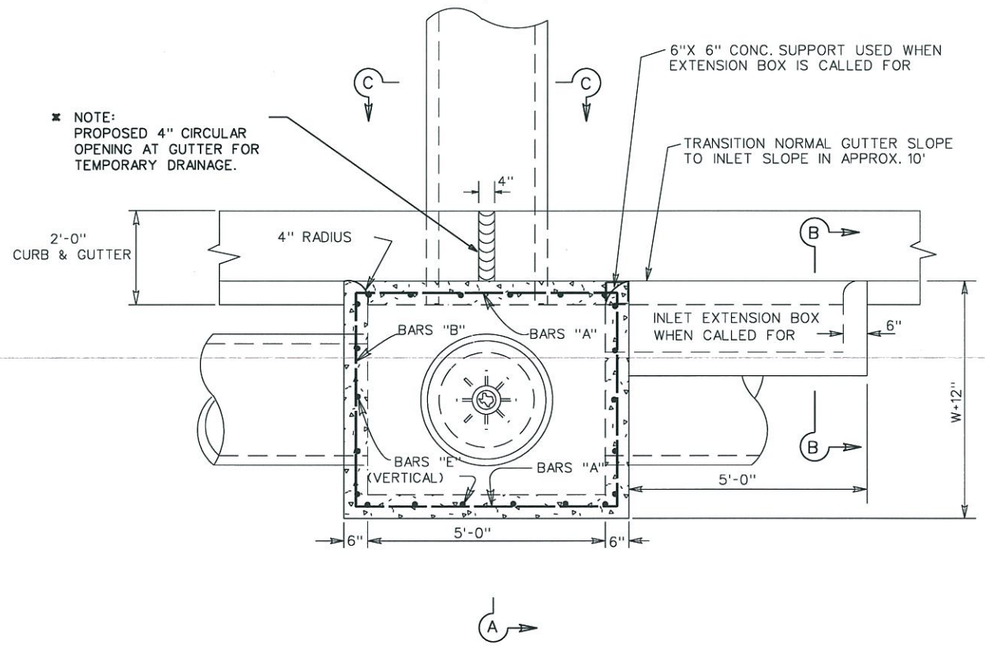




LID			RING				TOTAL WT.
"A"	"B"	WEIGHT	"C"	"D"	"H"	WEIGHT	
25⅝"	1"	125 lbs. (min)	24	32	5	185 lbs.	310 lbs.

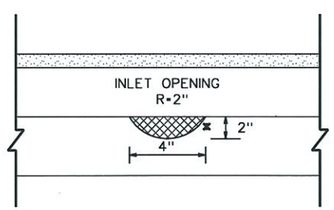
RING & COVER

REINFORCING STEEL DETAILS



PLAN

NOTE: RINGS AND COVERS OF SLIGHTLY DIFFERENT DIMENSIONS BUT APPROXIMATELY THE SAME WEIGHT MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER. RING AND COVER TO BE SUBSIDIARY.



CURB OPENING DETAIL
SECTION C-C
FRONT

* CURB OPENING TO BE LEFT IN PLACE UNTIL THE FINAL LIFT OF HOT MIX IS IN PLACE. CURB OPENING TO BE FILLED WITH EPOXY & MORTAR AS PER ITEM 421. EPOXY & MORTAR TO BE SUBSIDIARY TO ITEM 465.

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PHARR DISTRICT STANDARD

TEXAS DEPARTMENT OF TRANSPORTATION

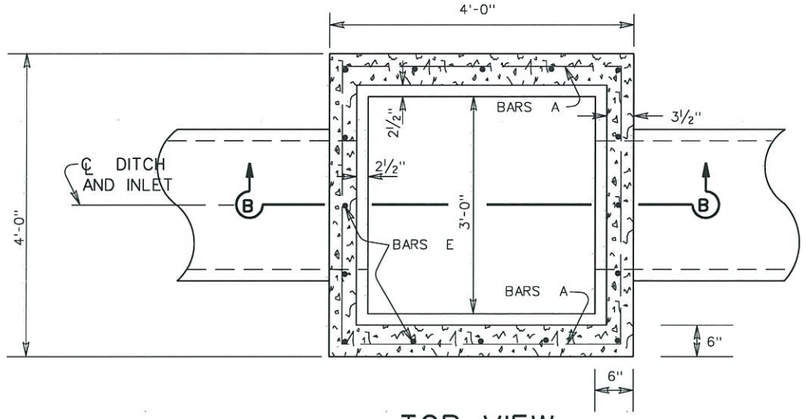
INLET TY "A" DETAIL

REV. 08/13

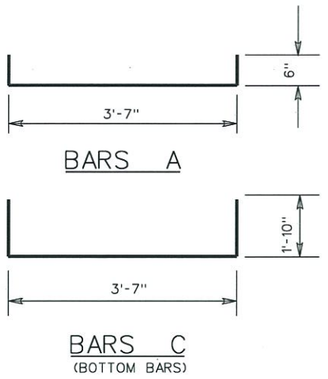
INLETA.DGN

FED.RD. DIV.NO.	PROJECT NO.		FILE NO.			SHEET NO.
6						134
STATE	STATE DIST.NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	HIDALGO	0921	02	323	MILE 2

N.T.S.

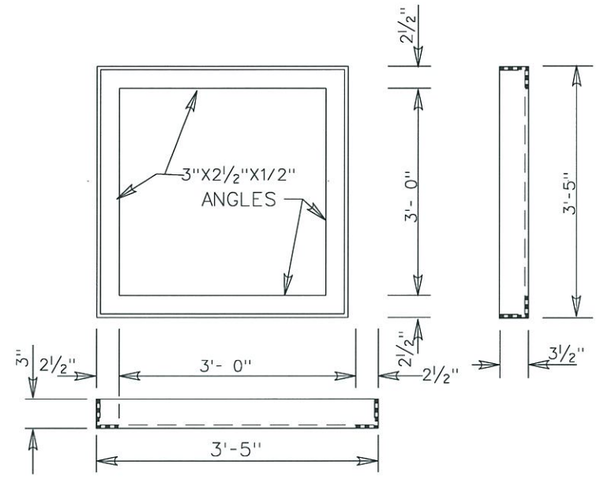


TOP VIEW



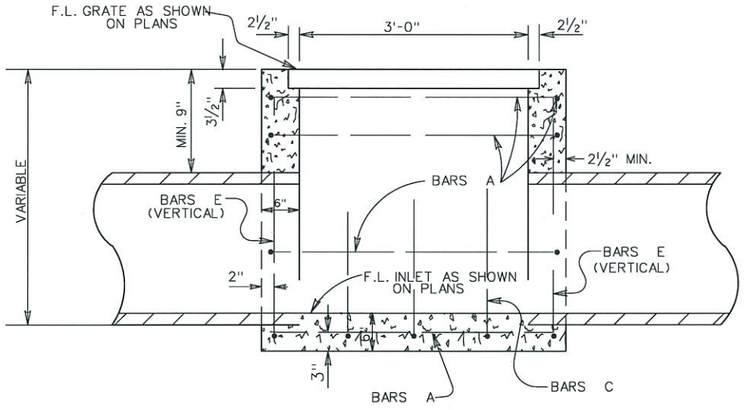
REINFORCING STEEL DETAILS

NOTE: ALL STEEL TO BE NO. 4 BARS ON 12" SPACING IN BOTH DIRECTIONS



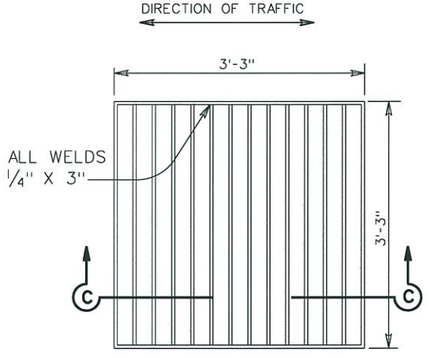
FRAME DETAIL

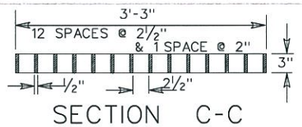
FRAME INLET GRATE TO BE SUBSIDIARY



SECTION B-B

INLET TY "C"





SECTION C-C

WELDED STEEL INLET GRATE

GENERAL NOTES:
TY "C" INLET TO BE USED
FOR PIPES LESS OR EQUAL TO 24"

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PHARR DISTRICT STANDARD

TEXAS DEPARTMENT OF TRANSPORTATION

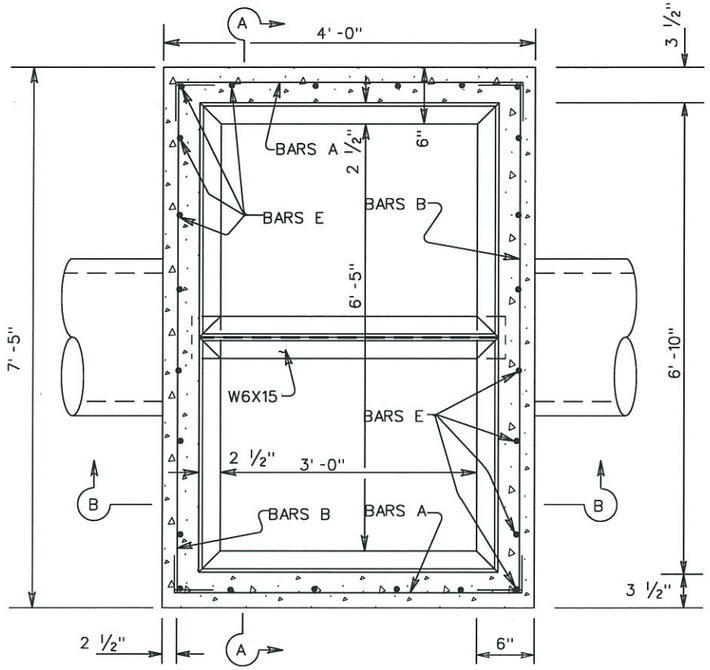
TY "C" INLET DETAILS

REV. 4/02

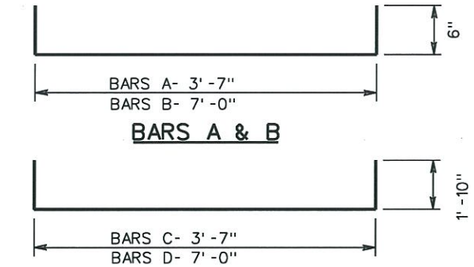
INLETC.DGN

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		FILE NO.			SHEET NO.
6						135
STATE	STATE DIST.NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	HIDALGO	0921	02	323	MILE 2

AD-76-0

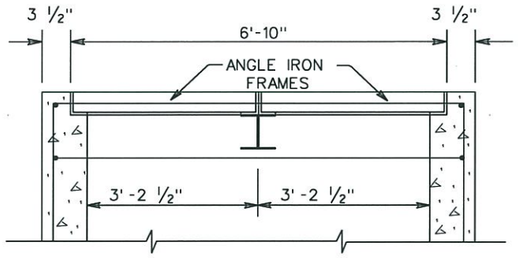


PLAN

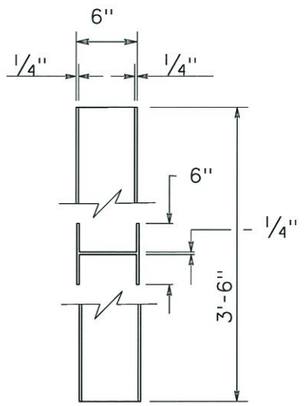


BARS A & B

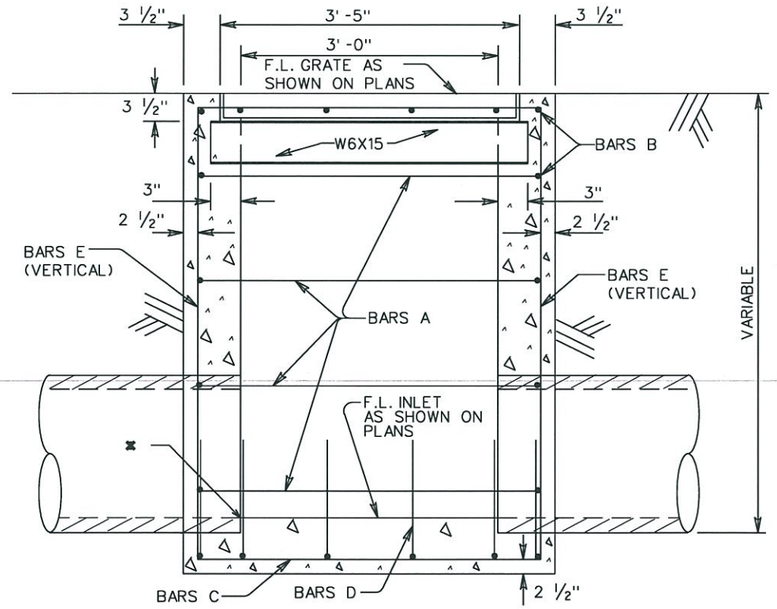
BARS C & D



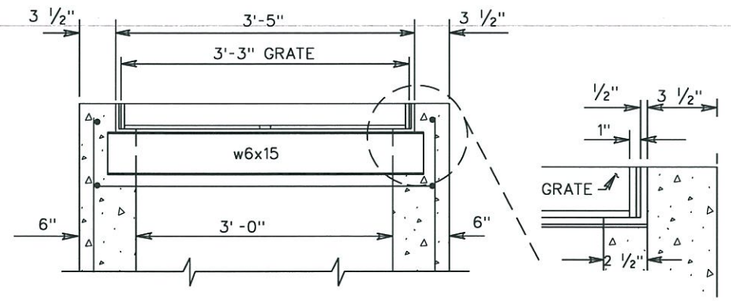
SEC. A-A



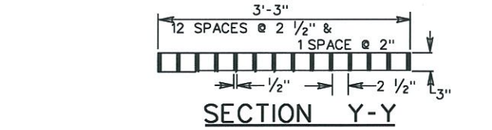
I-BEAM DETAILS
W 6 X 15



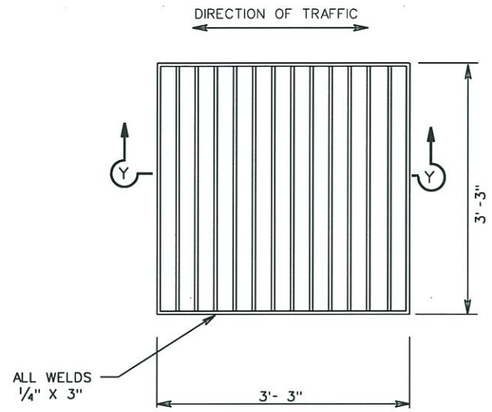
SEC. B-B



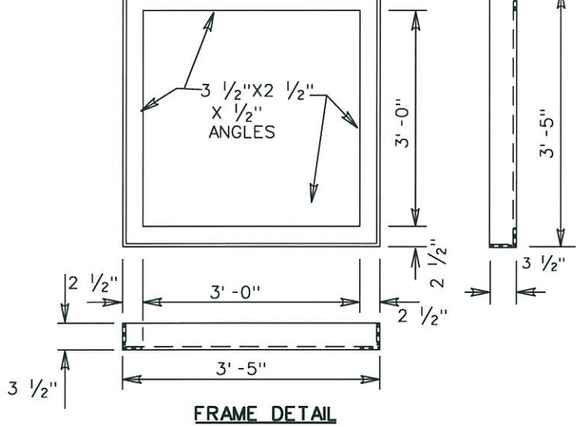
SEC. B-B
(DETAIL W/GRATE)



SECTION Y-Y



SECTION Y-Y
GRATE DETAILS



FRAME DETAIL
TWO FRAMES PER INLET
TO BE SUBSIDIARY TO INLET ITEM

✖ FOR RCP GREATER THAN 24 INCHES, THE STRUCTURE FLOOR NEEDS TO BE CONSTRUCTED TO THE PIPE WALL THICKNESS BELOW THE DESIGN FLOWLINE. THE CONTRACTOR THEN NEEDS TO GROUT THE STRUCTURE FLOOR BACK UP TO THE DESIGN FLOWLINE. THE GROUTING IS SUBSIDIARY TO THE STRUCTURE COST.

NOTE: ALL STEEL REINFORCING TO BE NO. 4 BARS ON 1' -0" SPACING IN BOTH DIRECTIONS
ALL STEEL TO BE GR. 60.

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PHARR DISTRICT STANDARD

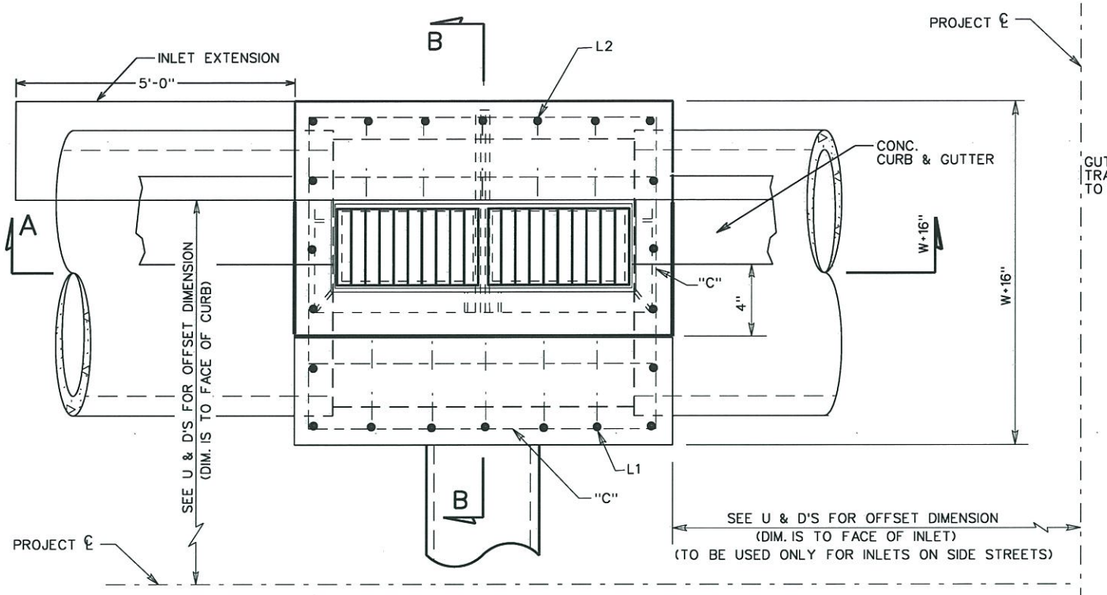
TEXAS DEPARTMENT OF TRANSPORTATION

INLET TY "CC" DETAIL

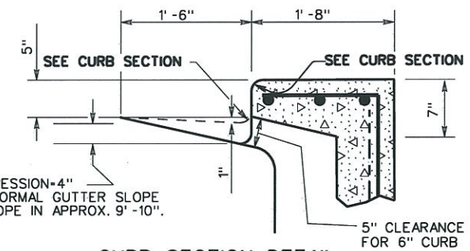
REV. 9/11

INLETCC.DGN

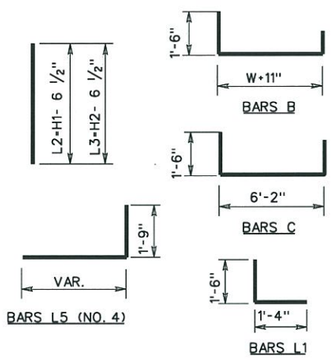
FED.RD. DIV.NO.	FILE NO.		PROJECT NO.			SHEET NO.
6						136
STATE	STATE DIST.NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	HIDALGO	0921	02	323	MILE 2



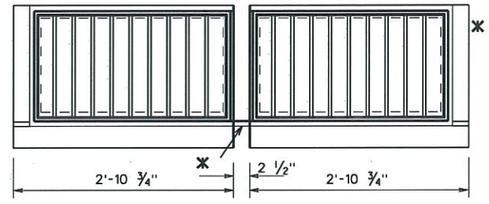
PLAN VIEW



CURB SECTION DETAIL

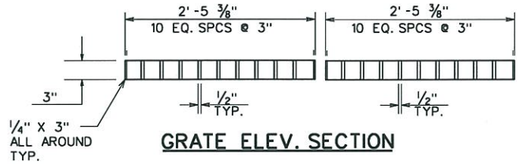


REINFORCING STEEL DETAILS

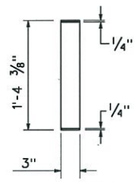


FRAMES AND GRATE TOP VIEW
TO BE SUBSIDIARY TO INLET ITEM

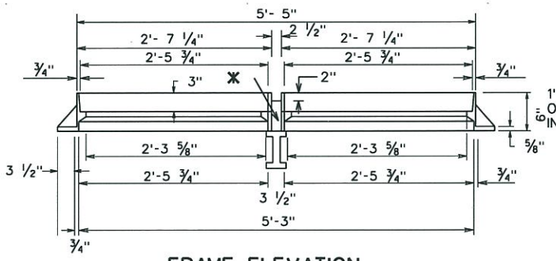
CONTRACTOR IS TO LEAVE THE GAP OPEN UNTIL THE FINAL LIFT OF HOT MIX IS LAID FOR DRAINAGE. THEN THE CONTRACTOR IS TO FILL IN THE GAP WITH EPOXY & MORTAR AS PER ITEM 421. THE MORTAR IS SUBSIDIARY TO ITEM 465. PROVIDE A 4" X 2 ½"X ¾" STEEL SPACER PLATE TO BE WELDED TO THE BOTTOM FRONT OF ONE OF THE FRAMES.



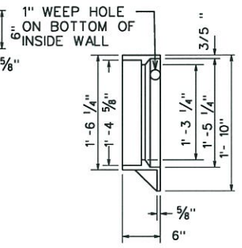
GRATE ELEV. SECTION



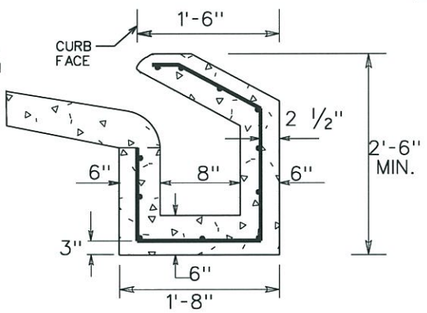
GRATE SECTION



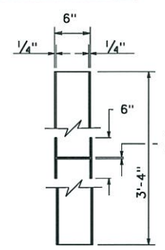
FRAME ELEVATION



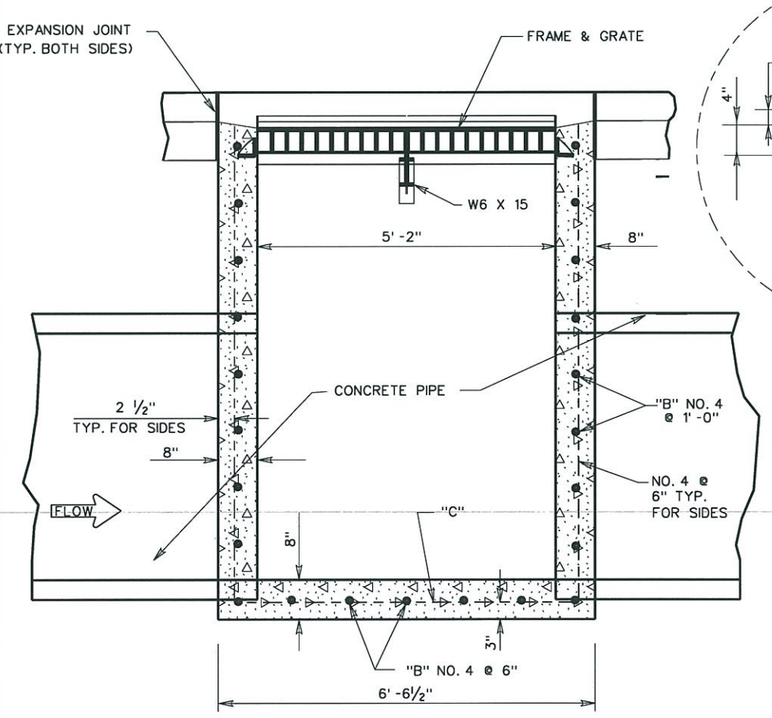
FRAME SECTION



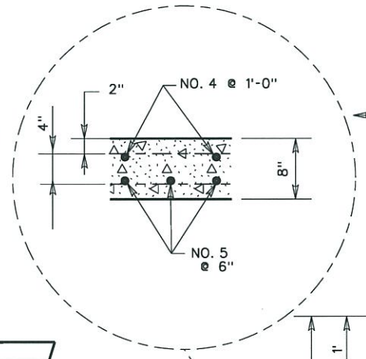
INLET EXTENSION

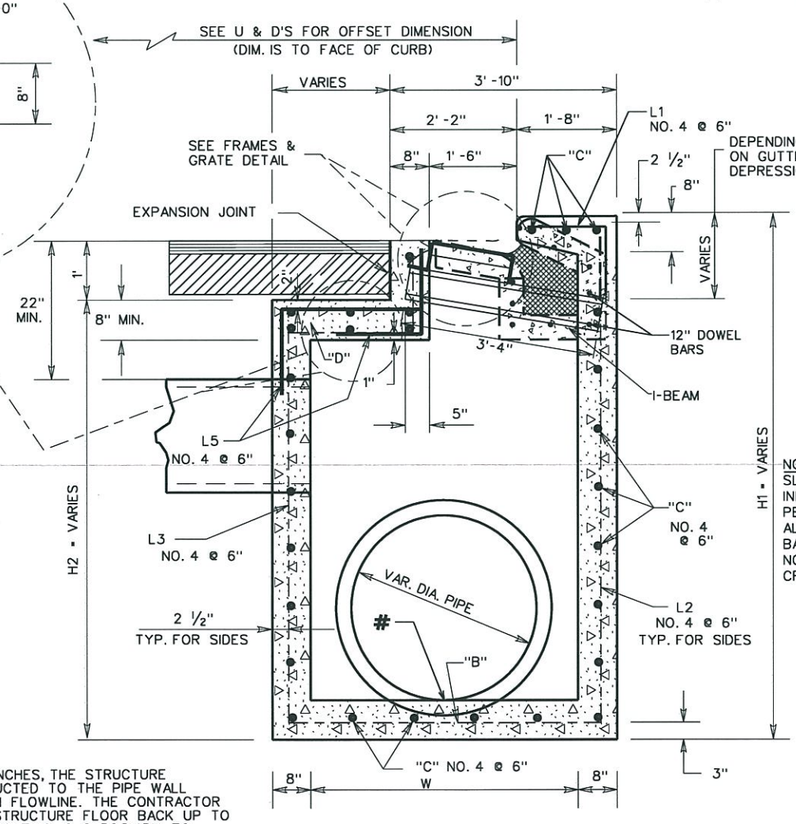


I-BEAM DETAILS
W 6 X 15



SECTION A-A





SECTION B-B

INLET TYPE	W	MAX PIPE SIZE ALLOW (DIA.)
F	3'-0"	24"
F-1	4'-0"	36"
F-2	5'-0"	48"
F-3	6'-0"	60"

✖ ALL 4 INLET TYPES WILL BE PAID UNDER BID ITEM TY "F" INLET.

FOR RCP GREATER THAN 24 INCHES, THE STRUCTURE FLOOR NEEDS TO BE CONSTRUCTED TO THE PIPE WALL THICKNESS BELOW THE DESIGN FLOWLINE. THE CONTRACTOR THEN NEEDS TO GROUT THE STRUCTURE FLOOR BACK UP TO THE DESIGN FLOWLINE. THE GROUTING IS SUBSIDIARY TO THE STRUCTURE COST.

NOTE:
SLOPE BOTTOM OF INLET EXTENSION ½" PER FT. TOWARD INLET. ALL STEEL TO BE NO. 4 BARS ON 12" SPACING NORMAL TO THE CROSS SECTION.

NOTE: ALL REINFORCEMENT BARS SHALL BE GRADE 60.

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PHARR DISTRICT STANDARD

Texas Department of Transportation

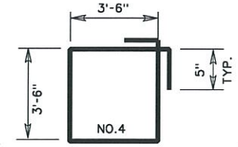
TY "F" INLET DETAILS

REV. 9/11

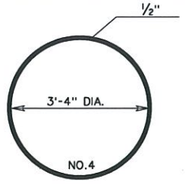
INLETF.DGN

FED.RD. DIV.NO.	STATE AID PROJECT NO.		FILE NO.			SHEET NO.
6						137
STATE	STATE DIST.NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	HIDALGO	0921	02	323	MILE 2

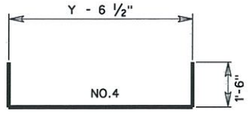
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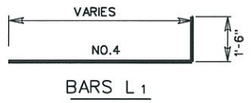
BARS O



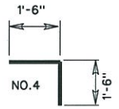
CONCENTRIC BAR



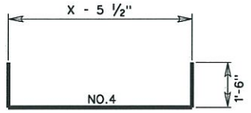
BARS C



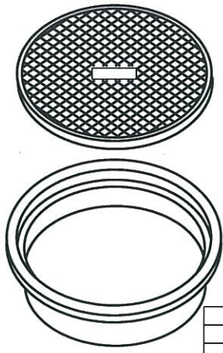
BARS L 1

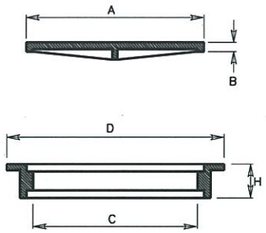


BARS L 2



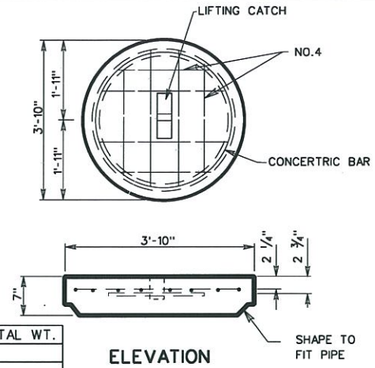
BARS B



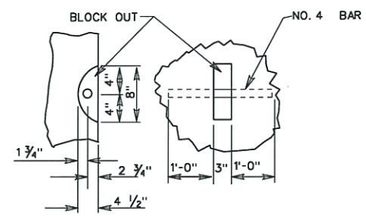


LID			RING				TOTAL WT.
"A"	"B"	WEIGHT	"C"	"D"	"H"	WEIGHT	
25⅝"	1"	125 lbs. (min)	24	32	5	185 lbs.	310 lbs.

RING & COVER DETAILS (STEEL)
(SUBSIDIARY)

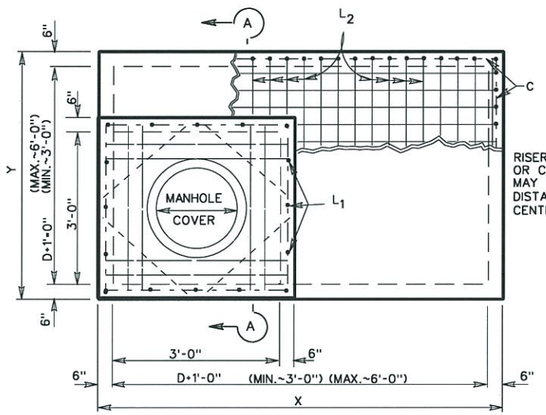


ELEVATION



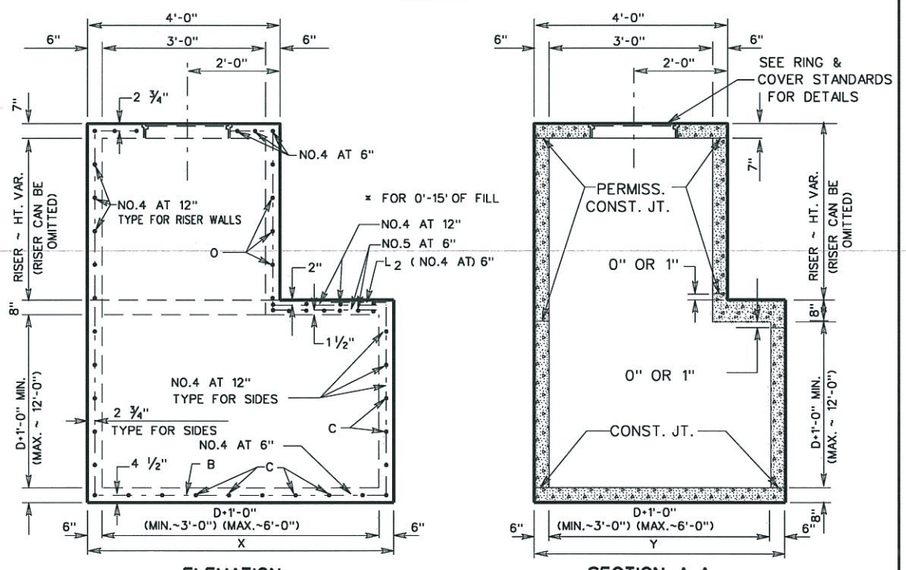
LIFTING CATCH

CONCRETE PIPE RISER COVER
OPTIONAL PRECAST CONCRETE LIFT-OFF COVER
(SUBSIDIARY)



NOTE:
RISER, EITHER CAST-IN-PLACE OR CONCRETE PIPE. MAY BE LOCATED IN ANY CORNER. DISTANCE TO ROAD ℄ IS FROM CENTER OF STRUCTURE.

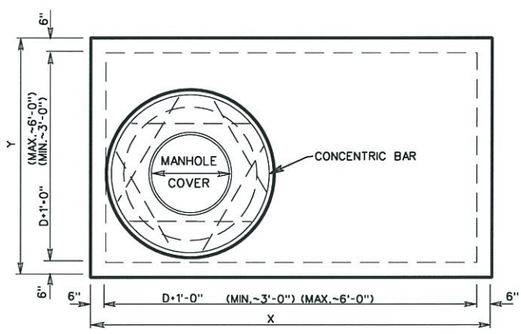
PLAN



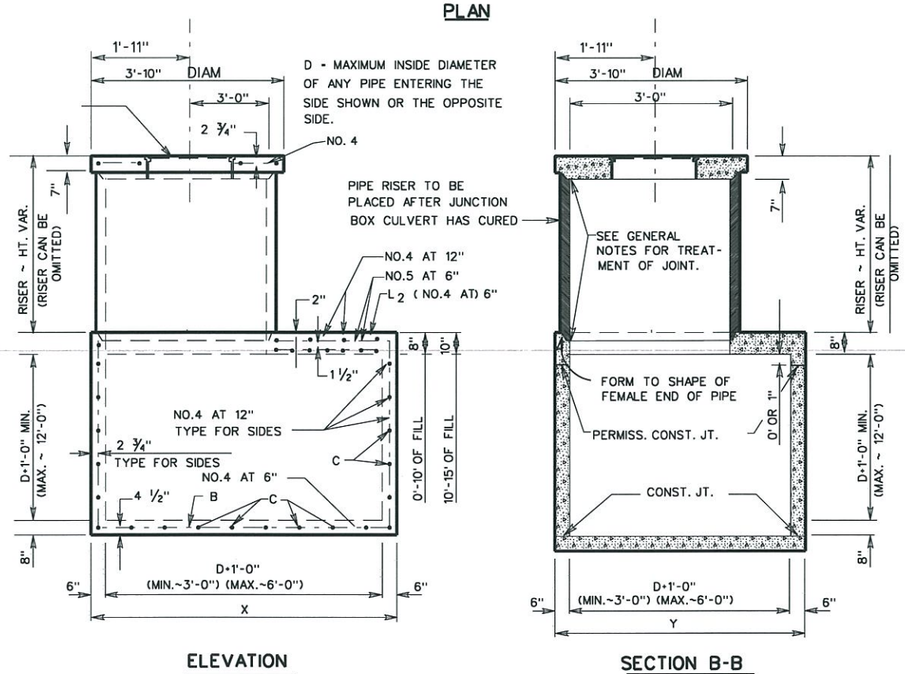
ELEVATION

SECTION A-A

MANHOLE WITH CAST-IN-PLACE RISER



PLAN



ELEVATION

SECTION B-B

OPTIONAL MANHOLE WITH PIPE RISER

GENERAL NOTES

UNLESS OTHERWISE SHOWN IN THE PLANS. PAYMENT WILL BE MADE FOR EACH MANHOLE OF THE TYPE M.
EXPOSED EDGES SHALL BE CHAMFERED 3/4".
ALTERNATE DESIGN DRAWINGS BEARING THE SEAL OF A REGISTERED PROFESSIONAL ENGINEER WILL BE ACCEPTABLE FOR PRECAST CONSTRUCTION OF MANHOLES

SHOP DRAWINGS WILL NOT BE REQUIRED.

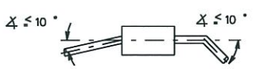
ALL MANHOLES LOCATED ON PAVED SURFACES WILL BE CONSTRUCTED WITH A COVER OF THE TYPE THAT WILL ENABLE IT TO BE BOLTED TO THE RING.

THE CONTRACTOR MAY WITH THE APPROVAL OF THE ENGINEER FURNISH MANHOLES OF EQUIVALENT STRUCTURAL DESIGN.

IN AREAS OF CONFLICT BETWEEN REINFORCING STEEL. BLOCK-OUTS PIPES, ANCHOR BOLTS OR OTHER REINFORCING STEEL. THE REINFORCEMENT SHALL BE BENT OR ADJUSTED TO CLEAR AS DIRECTED BY THE ENGINEER.

THE RISER MAY BE CONSTRUCTED OF REINFORCED CONCRETE AS SHOWN OR OF REINFORCED CONCRETE PIPE, CLASS III, IN ACCORDANCE WITH ASTM DESIGNATION C-76. IF PIPE IS USED, JOINTS SHALL CONFORM TO THE ITEM "REINFORCED CONCRETE PIPE CULVERTS". PRECAST CONCRETE LIFT OFF COVER MAY BE SUBSTITUTED FOR "RING AND COVER".

CONNECTING PIPES SHOULD WITHIN 10 DEG. OF NORMAL TO INLET GRATE IF NECESSARY. PIPE ELBOW OR CURBED APPROACH ALIGNMENT SHOULD BE USED TO STAY WITHIN THIS LIMIT.



PIPES MAY ENTER ALL WALLS. THE MAXIMUM LEGTH OF PIPE THAT CAN BE ACCOMODATED IS 60". MORE THAN ONE PIPE MAY ENTER A SIDE SUBJECT TO THE MAXIMUM BOX DIMENSIONS SHOWN. THE CLEAR DISTANCE BETWEEN ADJACEMENT PIPES SHOULD BE 9" MINIMUM.

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PHARR DISTRICT STANDARD

TEXAS DEPARTMENT OF TRANSPORTATION

TYPE "M" MANHOLE (JUNCTION BOX WITH ACCESS)

REV. 08/13

MANHOLE2.DGN

FED.RD. DIV.NO.	PROJECT NO.	FILE NO.	SHEET NO.
6			138

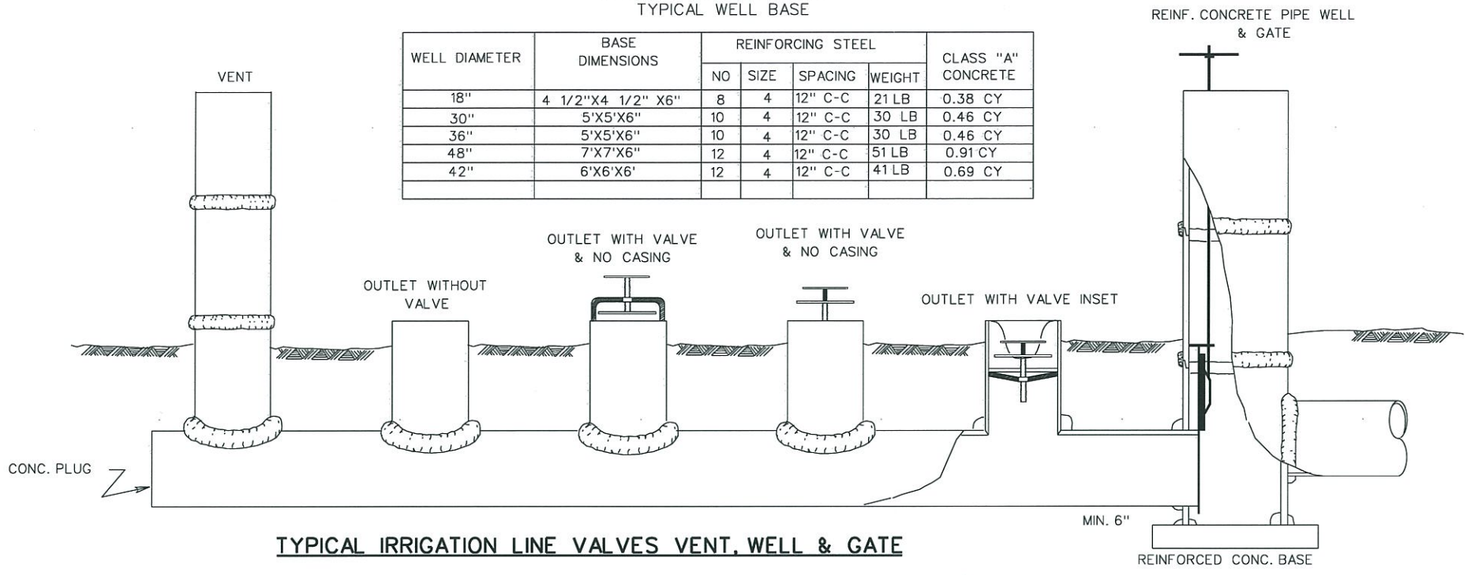
STATE	STATE DIST.NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	HIDALGO	0921	02	323	MILE 2

N.T.S.

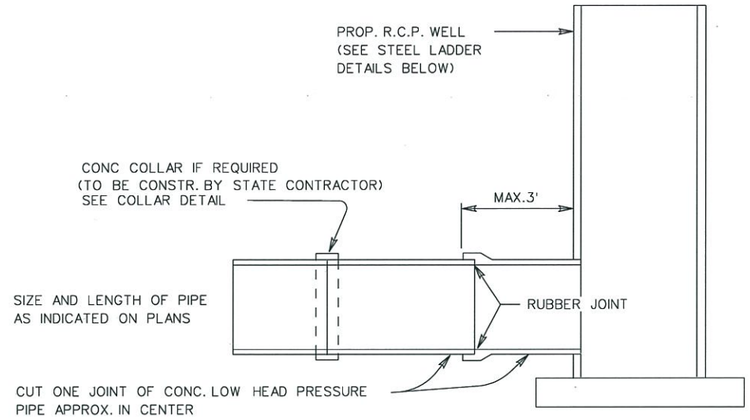
AD-76-0

ESTIMATED QUANTITIES FOR
TYPICAL WELL BASE

WELL DIAMETER	BASE DIMENSIONS	REINFORCING STEEL				CLASS "A" CONCRETE
		NO	SIZE	SPACING	WEIGHT	
18"	4 1/2"X4 1/2" X6"	8	4	12" C-C	21 LB	0.38 CY
30"	5'X5'X6"	10	4	12" C-C	30 LB	0.46 CY
36"	5'X5'X6"	10	4	12" C-C	30 LB	0.46 CY
48"	7'X7'X6"	12	4	12" C-C	51 LB	0.91 CY
42"	6'X6'X6'	12	4	12" C-C	41 LB	0.69 CY



TYPICAL IRRIGATION LINE VALVES VENT, WELL & GATE



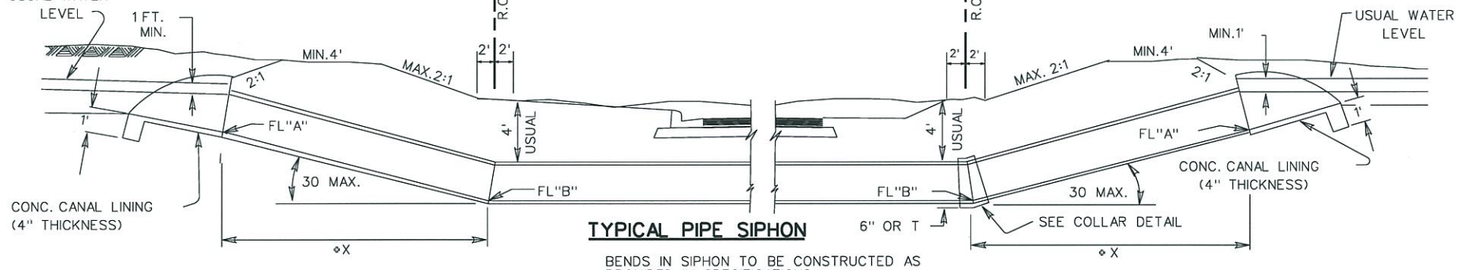
TYPICAL CONC. PIPE WELL DETAILS FOR CONNECTING CONC. LOW HEAD PRESSURE PIPE

GENERAL NOTES

HEIGHT OF RELOCATED WELLS AND VENTS TO BE EQUIVALENT TO THAT OF EXISTING STRUCTURES OR AS REQUIREDFOR PROPER OPERATION.

CONCRETE REQUIRED FOR PLUGS OR CAPS WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED AS SUB-SIDIARY TO THE VARIOUS BID ITEMS OF THIS CONTRACT.

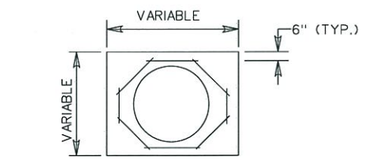
IN GENERAL THE PARTICULAR TYPE OR DESIGN OF THE EXISTING FACILITY TO BE EXTENDED OR RELOCATED SHALL BE DUPLICATED.

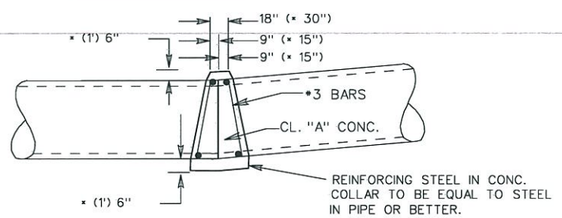


TYPICAL PIPE SIPHON

BENDS IN SIPHON TO BE CONSTRUCTED AS PROVIDED IN SPECIFICATIONS

*X AND FL "A" AS SHOWN ON PLANS ARE NOMINAL DESIGN DIMENSIONS AND MAY BE VARIED IN FIELD TO FIT EXISTING CONDITIONS.





DETAIL FOR CONC. COLLARS DRAINAGE STRUCTURES AND PIPE SIPHONS (HORIZ. & VERT. BENDS)

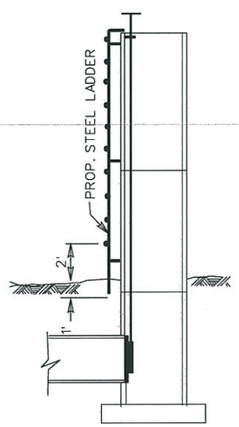
NOTE: PROP. CONC. COLLAR WILL NOT BE PAID FOR DIRECTLY BUT WILL BE SUBSIDIARY TO THE BIDS ITEMS INVOLVED.

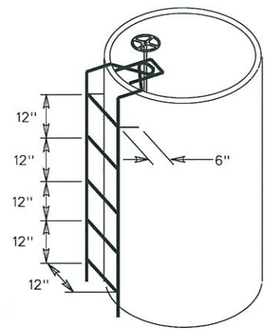
* FOR 42" AND LARGER PIPE

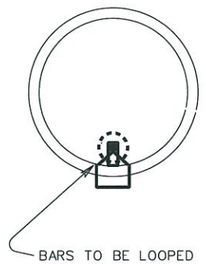
LADDER TO BE CONSTRUCTED OF ¾" DIA. REINF. STEEL. THE PARALLEL SIDEPIECES SPACED 12" APART TO BE HOOKED OVER TOP OF WELL AND STAND-OFFS WELDED AT TOP RUNG, AT THEIR MID-POINT AND BOTTOM. RUNGS TO BE WELDED TO SIDEPIECES AT 12" INTERVALS THE FIRST RUNG TO BE 2' FROM NATURAL GROUND.

STEEL LADDER TO BE PAID FOR AS SUBSIDIARY TO PRICE OF WELL.

NOTE: COMMERCIAL FABRICATED OR CAST METAL STEPS MAY BE USED IF APPROVED BY THE ENGINEER AND/OR THE WATER DISTRICT INVOLVED.







STEEL LADDER DETAILS

TO BE USED ON ALL WELLS WITH GATES WHEN THE DISTANCE FROM NATURAL GROUND TO TOP OF WELL IS 6 FT. OR MORE.

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PHARR DISTRICT STANDARD

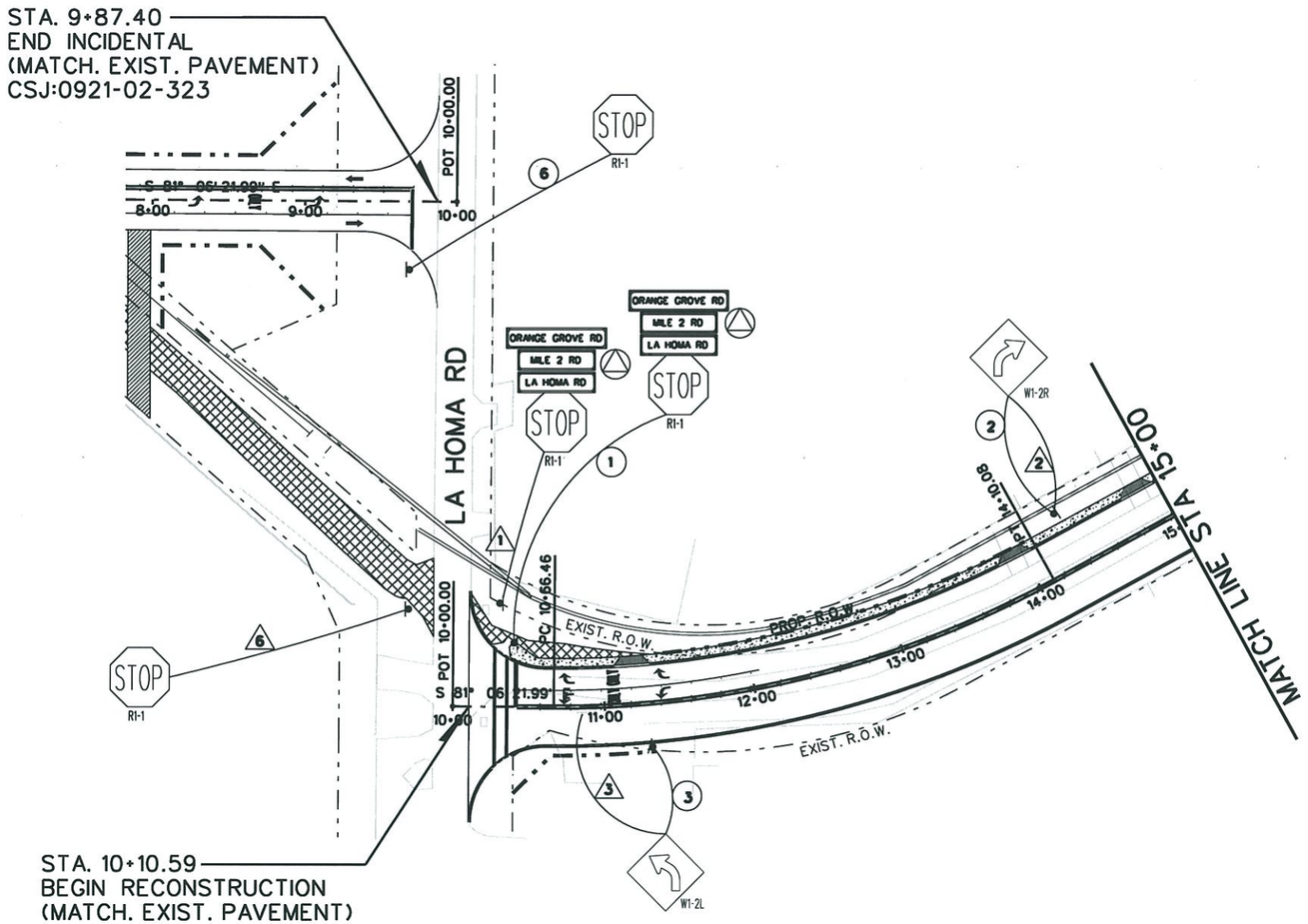
TEXAS DEPARTMENT OF TRANSPORTATION

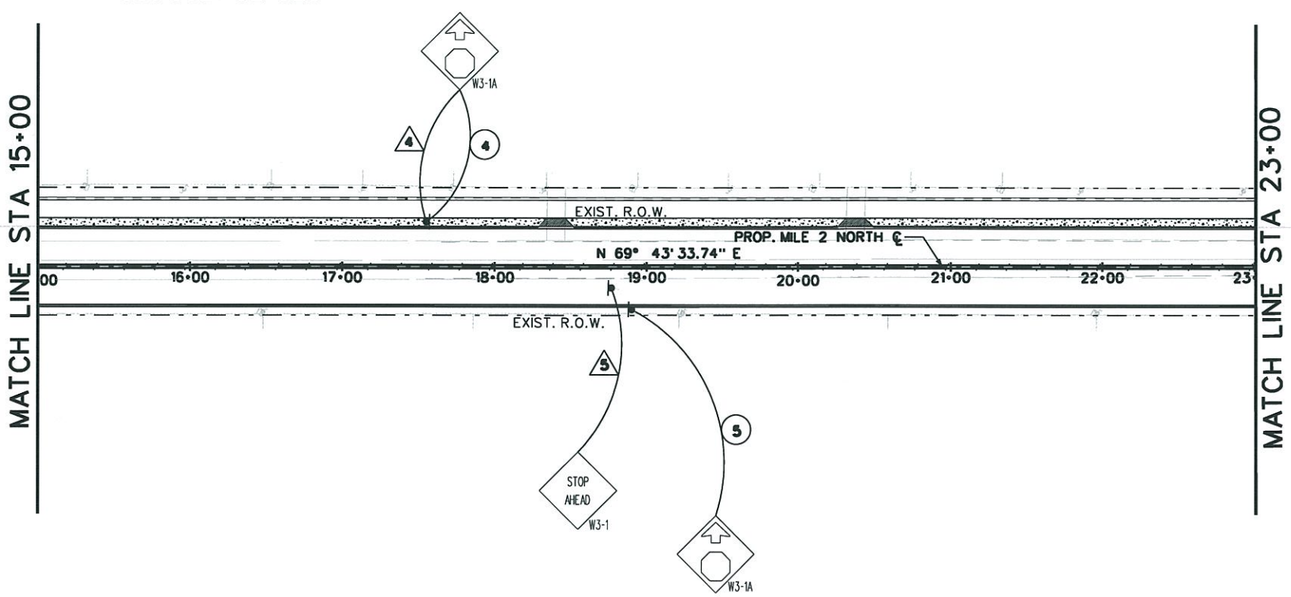
IRRIGATION CROSSING DETAIL

REV. 6/99

IRRIG1.DGN

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		FILE NO.			SHEET NO.
6						139
STATE	STATE DIST.NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	HIDALGO	0921	02	323	MILE 2







SIGINING LEGEND

- SIGNS TO REMAIN IN PLACE
- SIGNS TO BE REMOVED (ITEM 644)
- STREET SIGNS TO BE REMOVED & REPLACED BY OTHERS
- SIGNS TO BE INSTALLED (ITEM 644)
- LARGE SIGNS TO BE INSTALLED
- EXISTING LARGE SIGNS TO BE REMOVED

STATE OF TEXAS
DAMIEN B. TIJERINA
104828
LICENSED PROFESSIONAL ENGINEER

5/2/2014

THE COUNTY OF HIDALGO TEXAS

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Texas Department of Transportation

L&G Engineering
Texas Registered Engineering Firm F-4105

Highway / Civil
Structural / Bridge
Environmental
Constr. Material Testing

MILE 2 NORTH
SIGNING LAYOUT SHEET
STA. 10+00 TO STA. 23+00

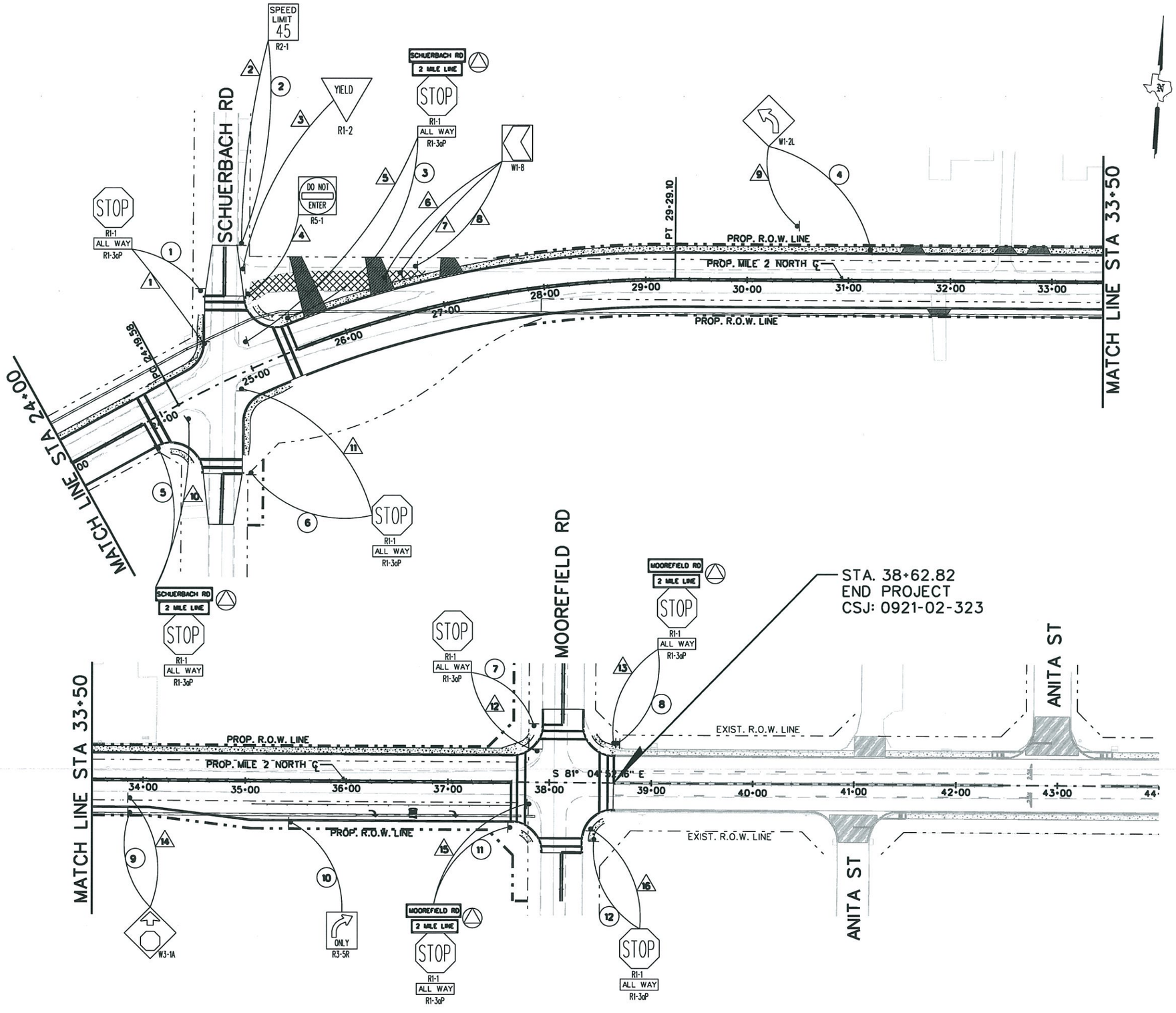
SCALE:
HOR. = 1"=100'
VER. =

SHEET 1 OF 2

DN: E.R.		FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN: D.B.T.		6	TX				140
DW: E.R.		STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: D.B.T.		21	HIDALGO	0921	02	323	MILE 2
TR:							
CK TR:							

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5/2/2014



SIGNING LEGEND

- SIGNS TO REMAIN IN PLACE
- SIGNS TO BE REMOVED (ITEM 644)
- STREET SIGNS TO BE REMOVED & REPLACED BY OTHERS
- SIGNS TO BE INSTALLED (ITEM 644)
- LARGE SIGNS TO BE INSTALLED
- EXISTING LARGE SIGNS TO BE REMOVED

STATE OF TEXAS
DAMIEN B. TIJERINA
104828
LICENSED
PROFESSIONAL ENGINEER

5/2/2014

COUNTY OF HIDALGO TEXAS

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Texas Department of Transportation

L&G Engineering
Texas Registered
Engineering Firm F-4105

Highway / Civil
Structural / Bridge
Environmental
Constr. Material Testing

MILE 2 NORTH
SIGNING LAYOUT SHEET
STA. 24+00 TO STA. 38+62.82

SCALE:
HOR. = 1"=100'
VER. =

SHEET 2 OF 2

DN: E.R.	FED. RD. DIV. NO.	STATE	PROJECT NO.				SHEET NO.
CK DN: D.B.T.	6	TX					141
DW: E.R.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		HIGHWAY NO.
CK DW: D.B.T.	21	HIDALGO	0921	02	323		MILE 2
TR:							
CK TR:							

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5/2/2014

DATE:
FILE:

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SUMMARY OF SMALL SIGNS

SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)

Post Type
FRP = Fiberglass
TWT = Thin-Wall
10BWG = 10 BWG
S80 = Sch 80

Posts (1 or 2)

Anchor Type
UA=Univer-Conc
UB=Univer-Bolt
SA=Slip-Conc
SB=Slip-Bolt
WS=Wedge Steel
WP=Wedge Plastic

Mounting Designation
P = Prefab. "Plain"
T = Prefab. "T"
U = Prefab. "U"

1EXT or 2EXT = # of Ext.
BM = Extruded Wind Beam
WC = 1.12 #/ft Wing Chan.
EXAL= Extruded Aluminum

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN TEXT	DIMENSIONS	ALUMINUM TYPE A	ALUMINUM TYPE G	Post Type	Posts (1 or 2)	Anchor Type	Mounting Designation
			CSJ:0921-02-323							
1 of 2										
	1	R1-1	STOP	36X36	✓		S80	1	SA	P
	2	W1-2R	SYM CURVE RIGHT	36X36			S80	1	SA	P
	3	W1-2L	SYM CURVE LEFT	36X36	✓		S80	1	SA	P
	4	W3-1A	SYM STOP AHEAD	36X36	✓		S80	1	SA	P
	5	W3-1A	SYM STOP AHEAD	36X36	✓		S80	1	SA	P
	6	R1-1	STOP	36X36	✓		S80	1	SA	P
2 of 2										
	1	R1-1	STOP	36X36	✓		S80	1	SA	P
		R1-3aP	ALL WAY	18X6	✓					
	2	R2-1	SPEED LIMIT 45	24X30	✓		S80	1	SA	P
	3	R1-1	STOP	36X36	✓		S80	1	SA	P
		R1-3aP	ALL WAY	18X6	✓					
	4	W1-2L	SYM CURVE LEFT	36X36	✓		S80	1	SA	P
	5	R1-1	STOP	36X36	✓		S80	1	SA	P
		R1-3aP	ALL WAY	18X6	✓					
	6	R1-1	STOP	36X36	✓		S80	1	SA	P
		R1-3aP	ALL WAY	18X6	✓					
	7	R1-1	STOP	36X36	✓		S80	1	SA	P
		R1-3aP	ALL WAY	18X6	✓					
	8	R1-1	STOP	36X36	✓		S80	1	SA	P
		R1-3aP	ALL WAY	18X6	✓					
	9	W3-1A	SYM STOP AHEAD	36X36	✓		S80	1	SA	P
	10	R3-5R	RIGHT TURN (ONLY)	24X30	✓		S80	1	SA	P
	11	R1-1	STOP	36X36	✓		S80	1	SA	P
		R1-3aP	ALL WAY	18X6	✓					
	12	R1-1	STOP	36X36	✓		S80	1	SA	P
		R1-3aP	ALL WAY	18X6	✓					

ALUMINUM SIGN BLANKS (TYPE A)

Square Ft.	Min. Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

Sign supports shall be located as shown on the plans, except that the Engineer may shift the sign supports, within design guidelines, where necessary to secure a more desirable location or to avoid conflict with utilities. Unless otherwise shown on the plans, the Contractor shall stake and the Engineer will verify all sign support locations.

SUMMARY OF SMALL SIGNS

SOSS

©TxDOT May 1987

REVISIONS	
DN: TxDOT	11-93
CK: TxDOT	7-95
DW: TxDOT	8-95
CK: TxDOT	2-07
DW: TxDOT	1-02
CK: TxDOT	9-08

DIST	COUNTY	CONT	SECT	JOB	HIGHWAY
21	HIDALGO	0921	02	323	MILE 2 NORTH

SHEET NO. 142

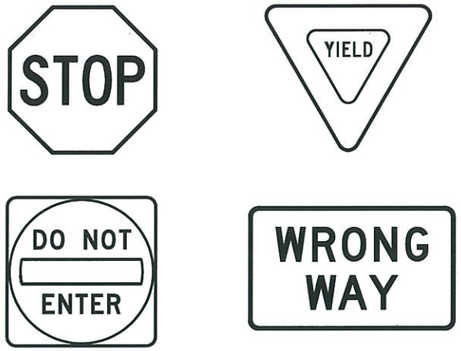
SUMMARY OF SMALL SIGNS

PLAN SHT. NO.	SIGN NO.	SIGN TYPE	SIGN TEXT	SIGN DIMENS. (INCHES)	REMOVE SMALL SIGN ASSM. (EA)	RELOCATE SMALL SIGN ASSM. (EA)
1of7			CSJ: 0921-02-323			
	1	R1-1	STOP	30X30	X	
	2	W1-2R	ROAD CURVES RIGHT	36X36	X	
	3	W1-2L	ROAD CURVES LEFT	36X36	X	
	4	W3-1a	SYM STOP AHEAD	36X36	X	
	5	W3-1	STOP AHEAD	36X36	X	
	6	R1-1	STOP	30X30	X	
2of7						
	1	R1-1	STOP	30X30	X	
		R1-3	4-WAY PLAQUE	9X12		
	2	R2-1	SPEED LIMIT 45	30X30	X	
	3	R5-1	YIELD	30X30X30	X	
	4	R5-1	DO NOT ENTER	30X30	X	
	5	R1-1	STOP	30X30	X	
		R1-3	4-WAY PLAQUE	9X12		
	6	W1-8	CHEVRON	24X30	X	
	7	W1-8	CHEVRON	24X30	X	
	8	W1-8	CHEVRON	24X30	X	
	9	W1-2L	ROAD CURVES LEFT	36X36	X	
	10	R1-1	STOP	30X30	X	
		R1-3	4-WAY PLAQUE	9X12		
	11	R1-1	STOP	30X30	X	
		R1-3	4-WAY PLAQUE	9X12		
	12	R1-1	STOP	30X30	X	
		R1-3	4-WAY PLAQUE	9X12		
	13	R1-1	STOP	30X30	X	
		R1-3	4-WAY PLAQUE	9X12		
	14	W3-1a	SYM STOP AHEAD	36X36	X	
	15	R1-1	STOP	30X30	X	
		R1-3	4-WAY PLAQUE	9X12		
	16	R1-1	STOP	30X30	X	
		R1-3	4-WAY PLAQUE	9X12		

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DATE:
FILE:

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

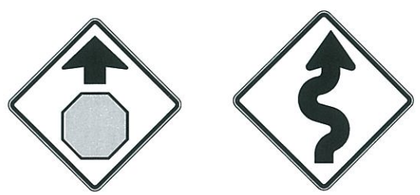
REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS
(EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



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
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-03 7-13 9-08	0921	02	323	MILE 2
	DIST	COUNTY		SHEET NO.
	21	HIDALGO		144

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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)

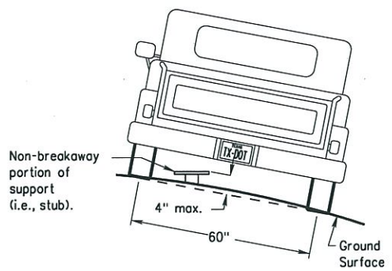
Anchor Type

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-1) to (SLIP-3))

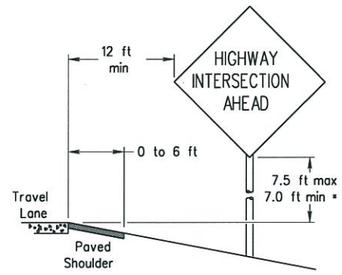
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



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).

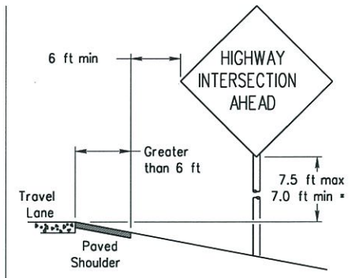
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

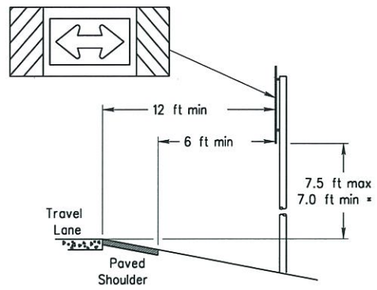
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



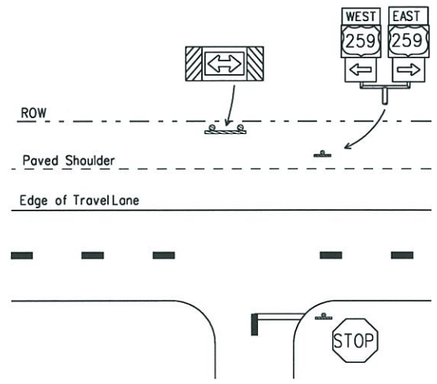
GREATER THAN 6 FT. WIDE

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.

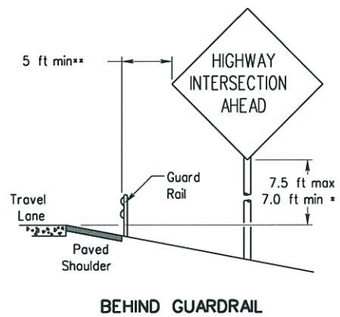
T-INTERSECTION



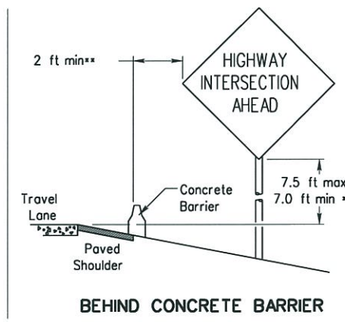
When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



BEHIND BARRIER



BEHIND GUARDRAIL



BEHIND CONCRETE BARRIER

**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

* 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

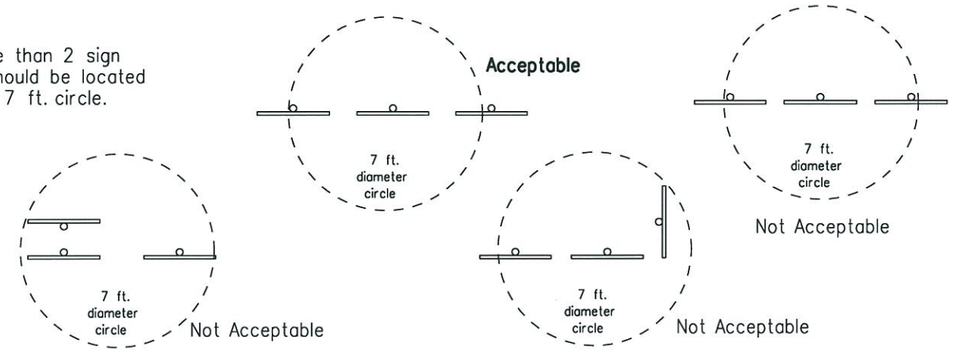
(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

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.

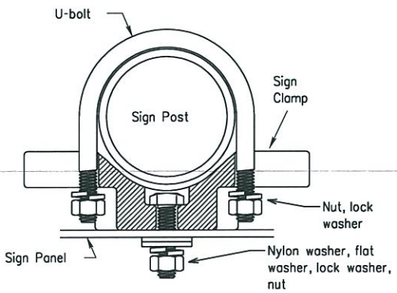
The website address is:
http://www.txdot.gov/publications/traffic.htm

No more than 2 sign posts should be located within a 7 ft. circle.



TYPICAL SIGN ATTACHMENT DETAIL

Single Signs

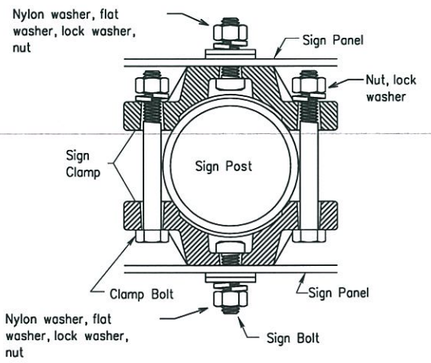


Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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.

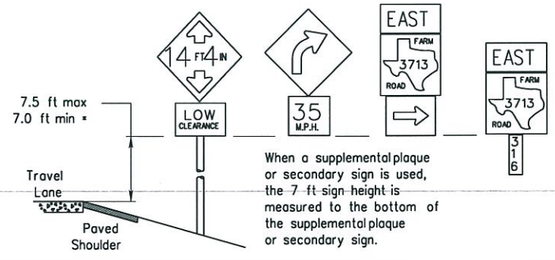
Sign clamps may be either the specific size clamp or the universal clamp.

Back-to-Back Signs



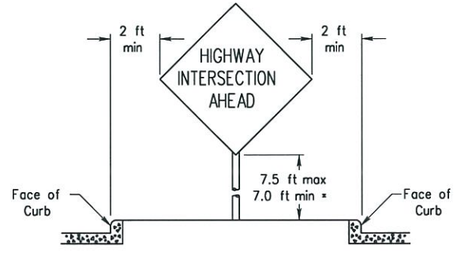
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



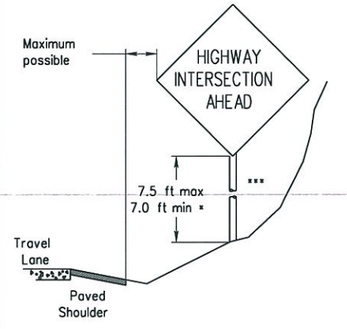
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

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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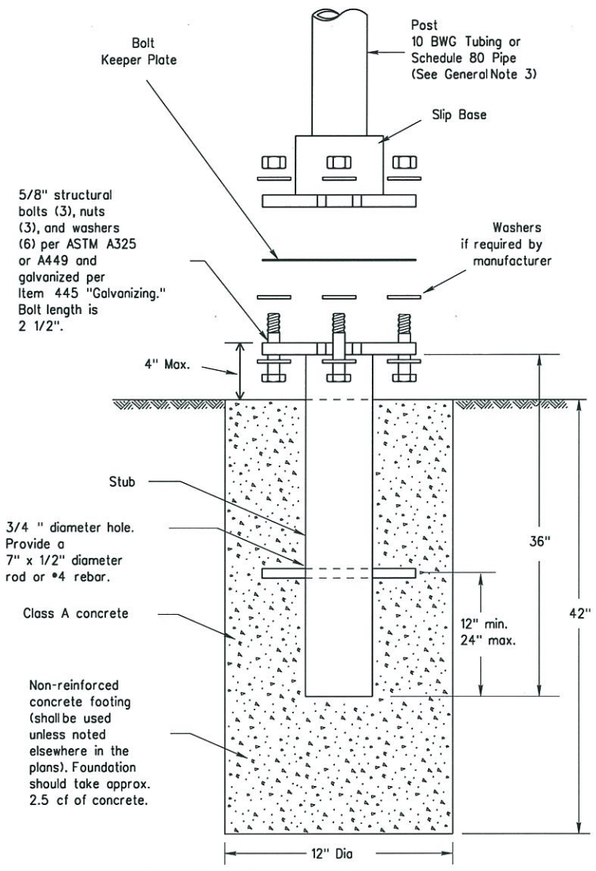
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0921	02	323	MILE 2
DIST	COUNTY		SHEET NO.
21	HIDALGO		145

9-08 REVISIONS

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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

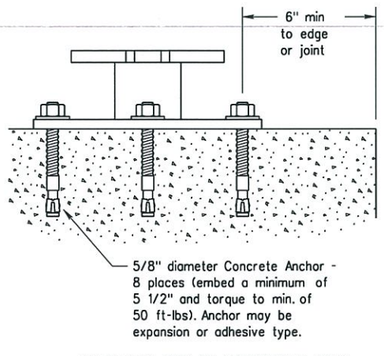
Foundation

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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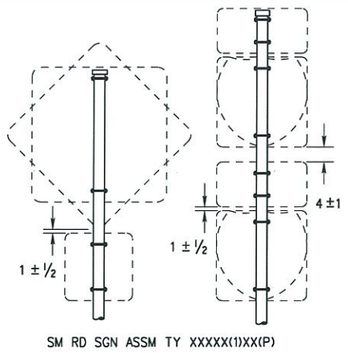
REVISIONS
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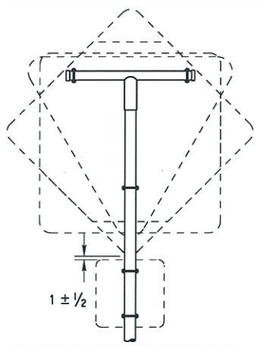
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DIST	COUNTY		SHEET NO.
21	HIDALGO		146

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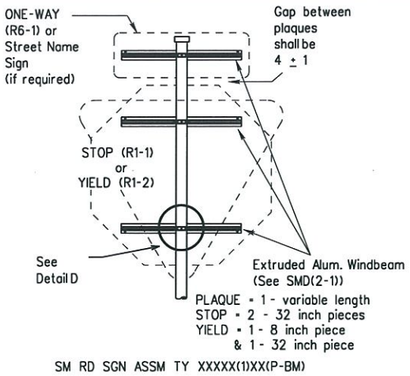
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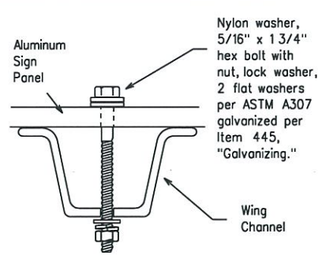
SM RD SGN ASSM TY XXXXX(1)XX(P)



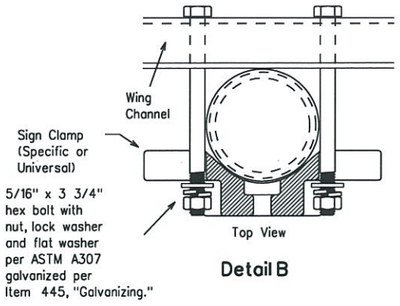
SM RD SGN ASSM TY XXXXX(1)XX(T)



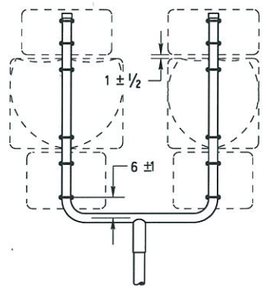
SM RD SGN ASSM TY XXXXX(1)XX(P-BM)



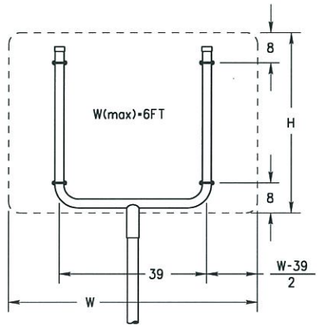
Detail A



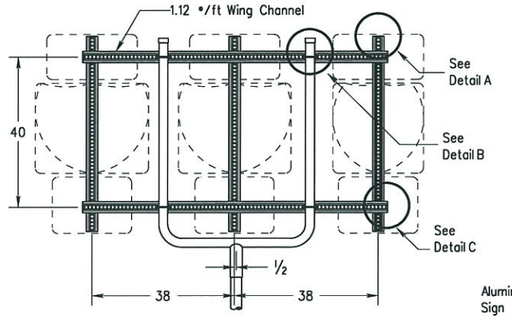
Detail B



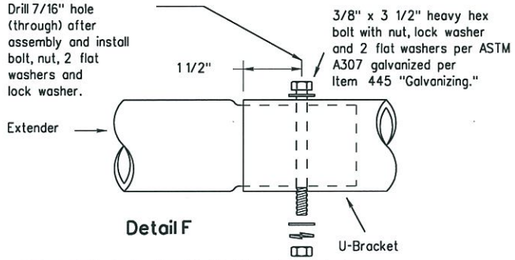
SM RD SGN ASSM TY XXXXX(1)XX(U)



SM RD SGN ASSM TY XXXXX(1)XX(U)

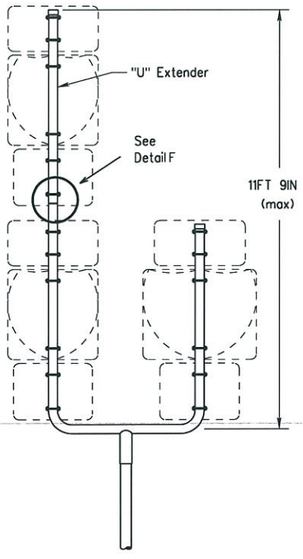


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(See Note 11)

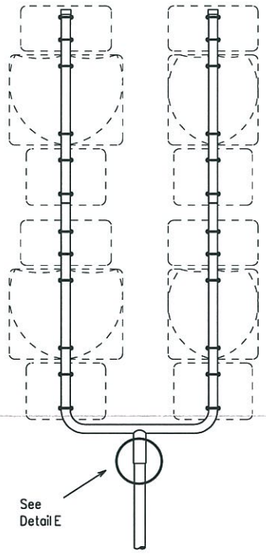


Detail F

Splices shall only be allowed behind the sign substrate.

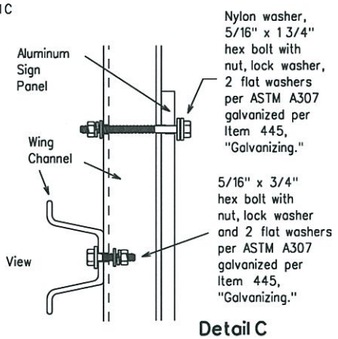


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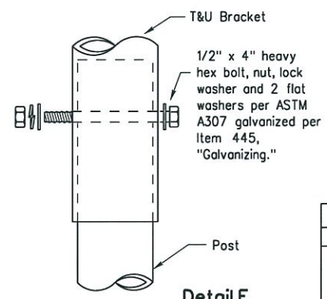


SM RD SGN ASSM TY S80(1)XX(U-2EXT)

SM RD SGN ASSYM TY XXXXX(2)XX(P)

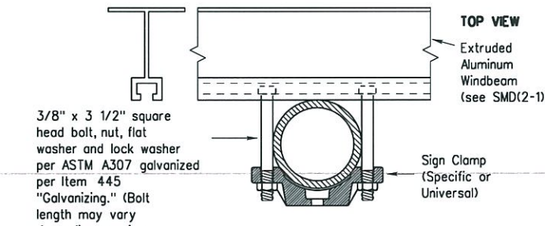


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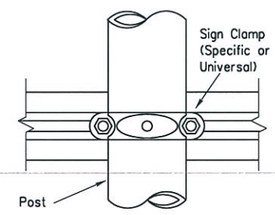


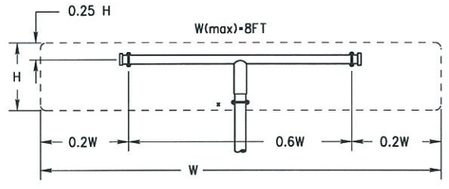
Detail E

SIDE VIEW



Detail D

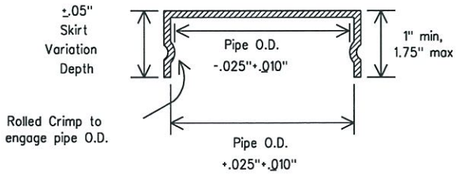




All dimensions are in english unless detailed otherwise.

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.

GENERAL NOTES:

1.

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

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. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
11. 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.
12. Post open ends shall be fitted with Friction Caps.
13. Sign blanks shall be the sizes and shapes shown on the plans.

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)

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-2)-08

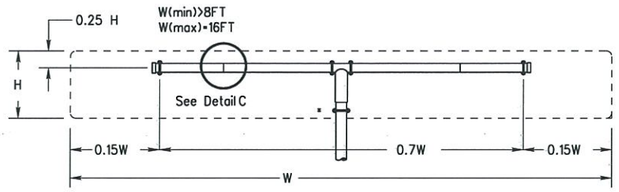
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DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
CONT	SECT	JOB	HIGHWAY
0921	02	323	MILE 2
DIST	COUNTY		SHEET NO.
21	HIDALGO		147

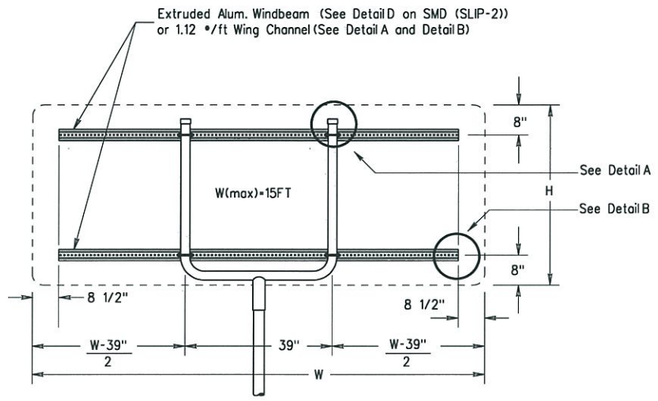
REVISIONS
9-08

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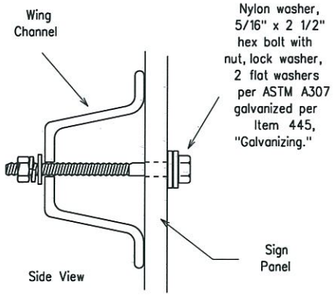
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



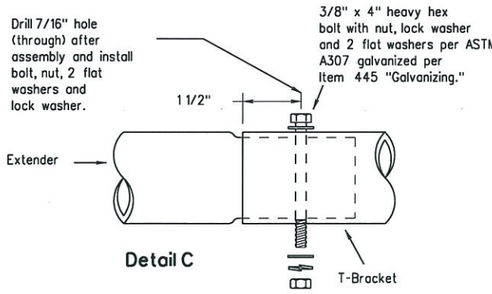
SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)
(* - See Note 12)



SM RD SGN ASSM TY XXXXX(1)XX(U-XX)

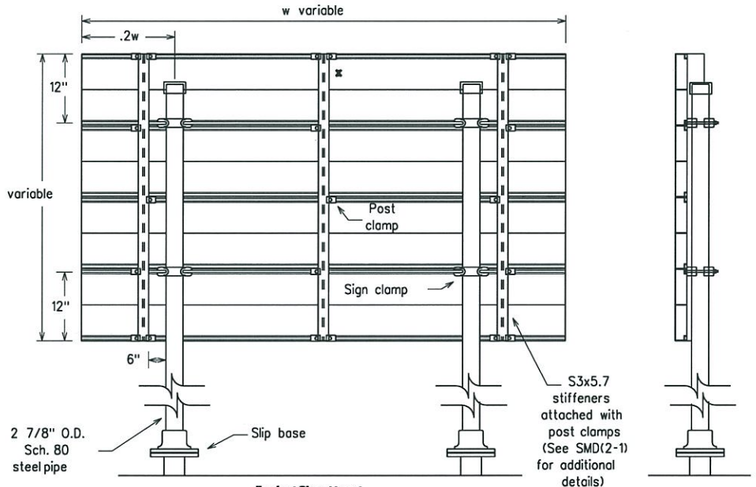


Detail B



Detail C

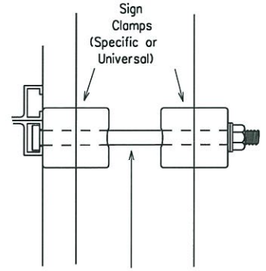
Splices shall only be allowed behind the sign substrate.



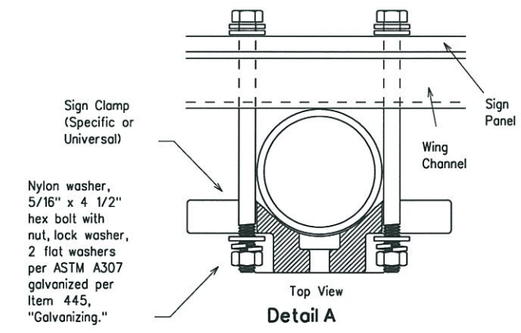
Typical Sign Mount

SM RD SGN ASSM TY S80(2)XX(P-EXAL)

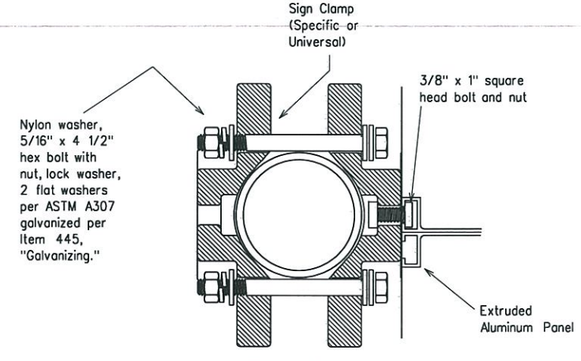
* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.



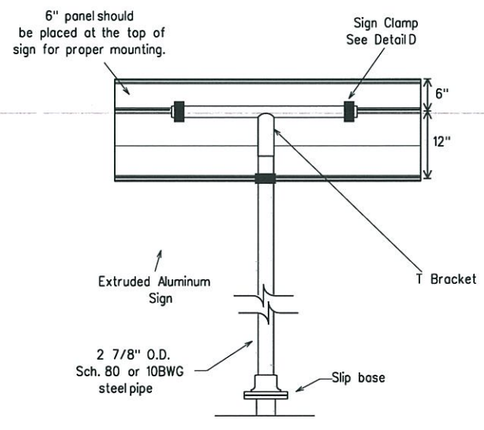
Detail E



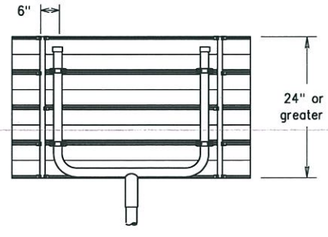
Detail A



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:

1.

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

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.
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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)
	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)

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-3)-08

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REVISIONS
9-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

CONT	SECT	JOB	HIGHWAY
0921	02	323	MILE 2
DIST	COUNTY		SHEET NO.
21	HIDALGO		148

DATE:
FILE:

26D

SUMMARY OF REFLECTORIZED PAVEMENT MARKINGS (TYPE I) ITEM 666											SUMMARY OF PREFABRICATED PAV. MRK. (TYPE B) ITEM 668					SUMMARY OF RAISED PAVEMENT MARKERS ITEM 672		
CODE	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	U	V	W
SHEET	4" SOLID WHITE	4" SOLID YELLOW	4" BROKEN WHITE	4" BROKEN YELLOW	8" SOLID WHITE	8" SOLID YELLOW	4"SOLID DBL YELLOW	24" SOLID WHITE	24" SOLID YELLOW	12" SOLID WHITE	WORD ONLY	SGL ARROW	DBL ARROW	U-TURN ARROW	RR XING SYMBOL	CL B TYPE I-C	CL B TYPE II-CR	CL B TYPE II-AA
	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA
CSJ: 0921-02-323																		
SHEET 1 OF 2	-	-	630	-	370	-	3,760	70	-	143	3	6	-	-	-	55	-	192
SHEET 2 OF 2	-	-	640	-	255	-	2,960	191	-	783	1	2	-	-	-	50	-	150
GRAND TOTAL	-	-	1,270	-	625	-	6,720	261	-	926	4	8	-	-	-	105	-	342

STATE OF TEXAS
DAMIEN B. TIJERINA
104828
LICENSED PROFESSIONAL ENGINEER
5/2/2014

THE COUNTY OF HIDALGO TEXAS

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Texas Registered Engineering Firm F-4105

Highway / Civil
Structural / Bridge
Environmental
Constr. Material Testing

MILE 2 NORTH
BASIS OF ESTIMATE

SCALE:
HOR. - 1"=100'

SHEET 1 OF 1

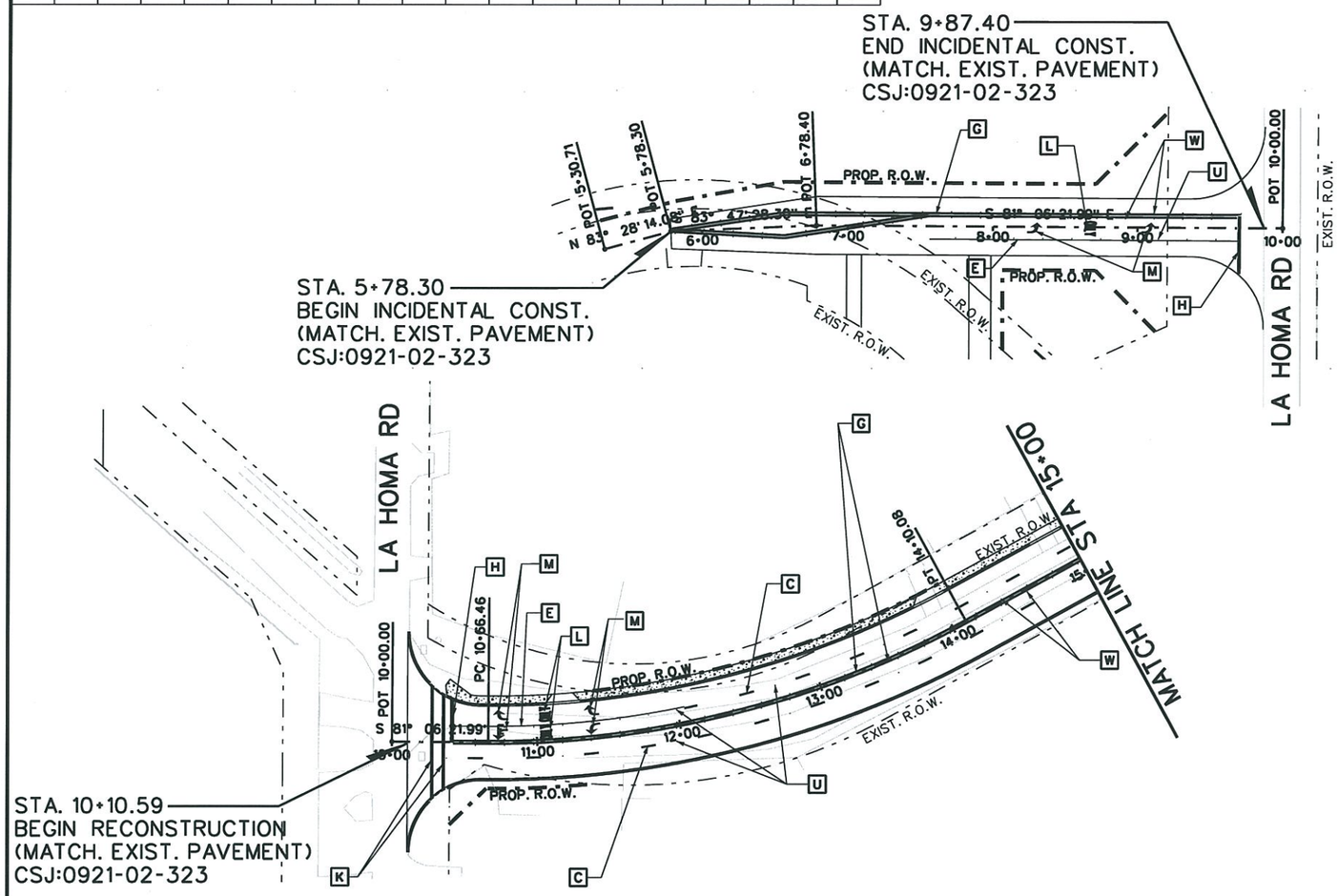
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TR:								
CK TR:								

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5/2/2014

PAVEMENT MARKING QUANTITIES

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	U	V	W	⇨
-	-	630	-	370	-	3760	70	-	143	3	6	-	-	-	-	55	-	192	-



PAVEMENT MARKINGS LEGEND
TYPE I-THERMOPLASTIC (ITEM 666)

- A 4" WHITE SOLID
- B 4" YELLOW SOLID
- C 4" WHITE BROKEN
- D 4" YELLOW BROKEN
- E 8" WHITE SOLID
- F 8" YELLOW SOLID
- G 4" DOUBLE YELLOW SOLID
- H 24" WHITE SOLID
- J 24" YELLOW SOLID
- K 12" WHITE SOLID

PRE-FABRICATED PAVEMENT MARKINGS LEGEND
TYPE B -ITEM 668

- L WORD "ONLY"
- M SINGLE ARROW
- N DOUBLE ARROW
- P U-TURN ARROW

RAISED PAVEMENT MARKERS LEGEND
TYPE B -ITEM 672

- U TYPE I-C REFLECTIVE CL B
- V TYPE II-CR REFLECTIVE CL B
- W TYPE II-AA REFLECTIVE CL B
- ⇨ TRAFFIC FLOW

STATE OF TEXAS
DAMIEN B. TIJERINA
104828
LICENSED PROFESSIONAL ENGINEER

5/2/2014

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Highway / Civil
Structural / Bridge
Environmental
Constr. Material Testing

MILE 2 NORTH
STRIPING LAYOUT SHEET
STA. 10+10.70 TO STA. 23+50

SCALE:
HOR. - 1"=100'
VER. -

SHEET 1 OF 2

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DW: E.R.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
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TR:						
CK TR:						

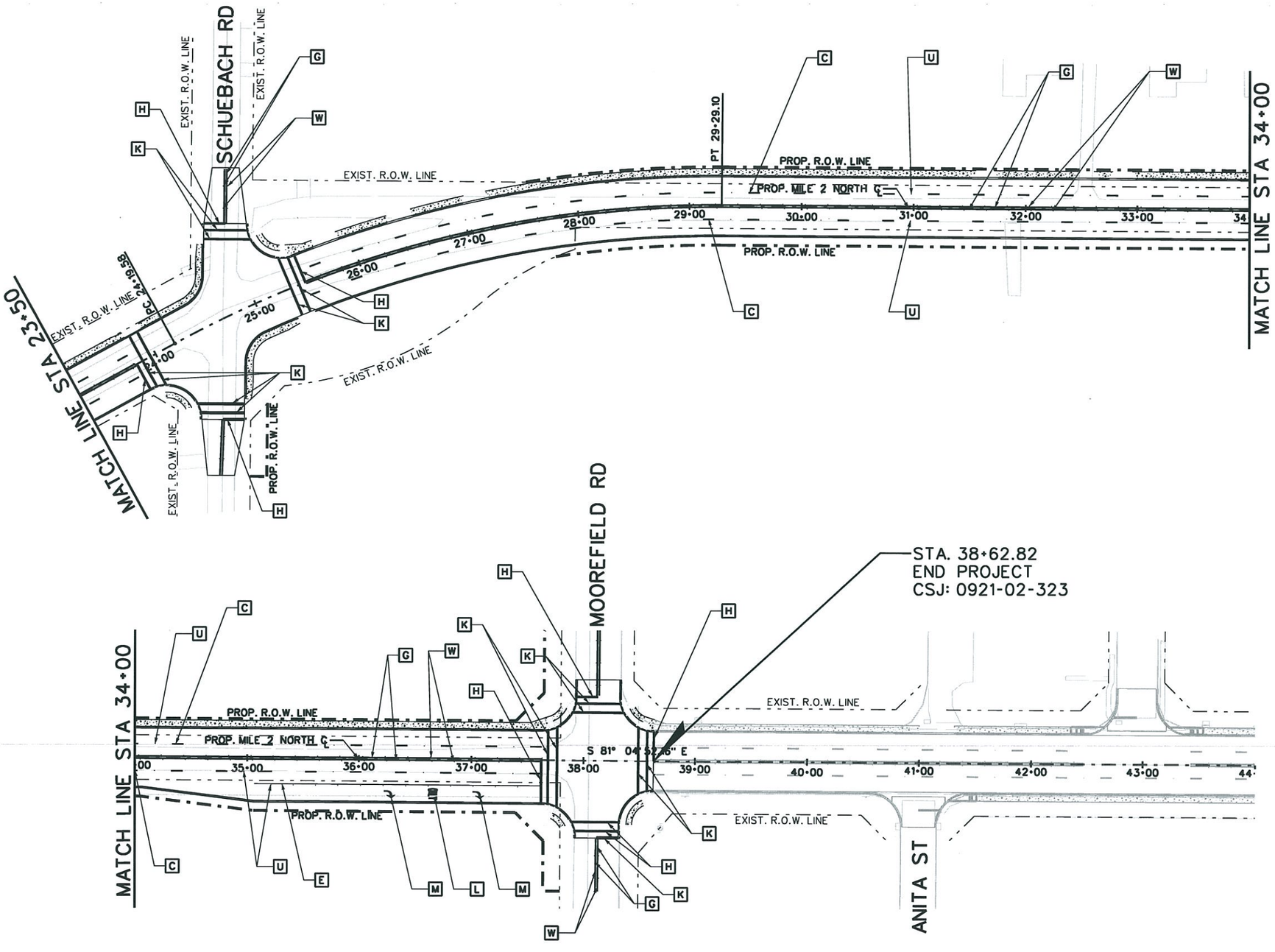
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5/2/2014

CSJ: 0921-02-323

PAVEMENT MARKING QUANTITIES

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	U	V	W	◇
-	-	640	-	255	-	2960	191	-	783	1	2	-	-	-	-	50	-	150	



PAVEMENT MARKINGS LEGEND
TYPE I-THERMOPLASTIC (ITEM 666)

- A 4" WHITE SOLID
- B 4" YELLOW SOLID
- C 4" WHITE BROKEN
- D 4" YELLOW BROKEN
- E 8" WHITE SOLID
- F 8" YELLOW SOLID
- G 4" DOUBLE YELLOW SOLID
- H 24" WHITE SOLID
- J 24" YELLOW SOLID
- K 12" WHITE SOLID

PRE-FABRICATED PAVEMENT MARKINGS LEGEND TYPE B -ITEM 668

- L WORD "ONLY"
- M SINGLE ARROW
- N DOUBLE ARROW
- P U-TURN ARROW

RAISED PAVEMENT MARKERS LEGEND TYPE B -ITEM 672

- U TYPE I-C REFLECTIVE CL B
- V TYPE II-CR REFLECTIVE CL B
- W TYPE II-AA REFLECTIVE CL B
- ⇨ TRAFFIC FLOW

STATE OF TEXAS
DAMIEN B. TIJERINA
104828
LICENSED PROFESSIONAL ENGINEER
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Highway / Civil
Structural / Bridge
Environmental
Constr. Material Testing

MILE 2 NORTH
STRIPING LAYOUT SHEET
STA. 23+50 TO STA. 38+62.82

SCALE:
HOR. - 1"=100'
VER. -

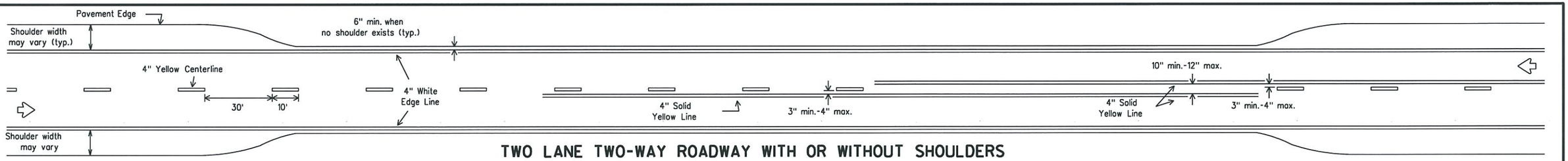
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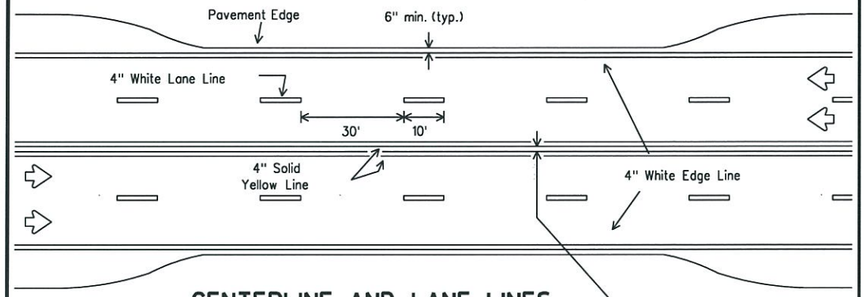
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5/2/2014

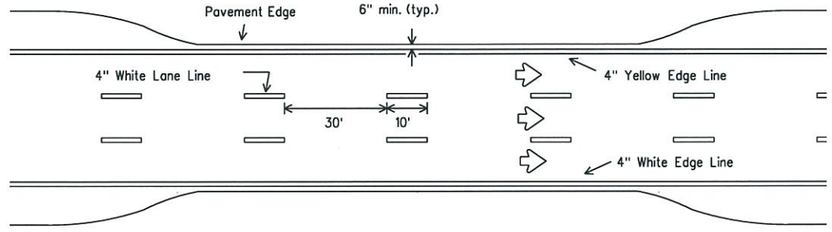
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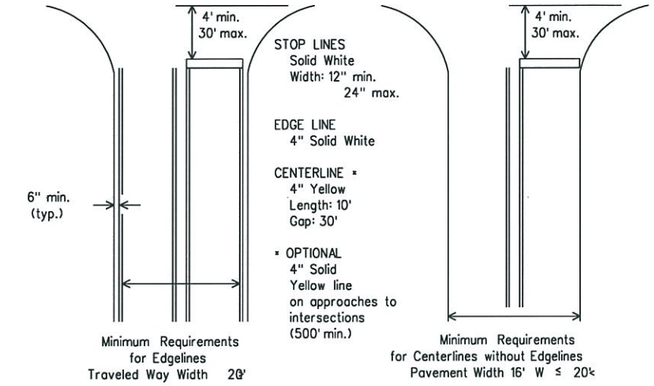
TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

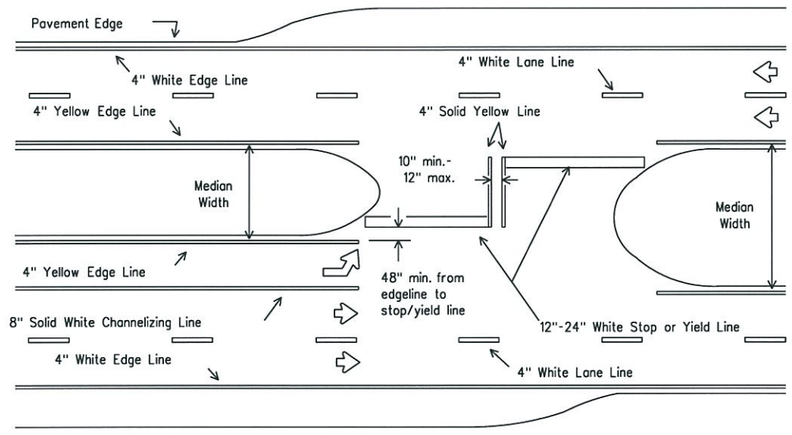


EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



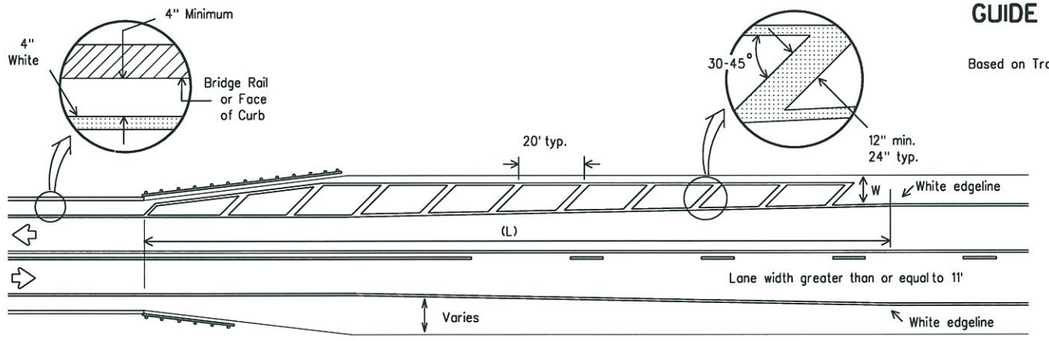
GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Highways



All medians shall be field measured to determine the location of necessary striping. Stop/Yield bars and centerlines shall be placed when the median width is greater than 30 ft. The median width is defined as the area between two roadways of a divided highway measured from edge of traveled way to edge of traveled way. The median excludes turn lanes. The median width might be different between intersections, interchanges and of opposite approaches of the same intersection. The narrow median width will be the controlling width to determine if markings are required.

FOUR LANE DIVIDED ROADWAY INTERSECTIONS



NOTES:

1. No-passing zone on bridge approach is optional but if used, it shall be a minimum 500 feet long.
2. For crosshatching length (L) see Table 1.
3. The width of the offset (W) and the required crosshatching width is the full shoulder width in advance of the bridge.
4. The crosshatching is not required if delineators or barrier reflectors are used along the structure.
5. For guard fence details, refer elsewhere in the plans.

ROADWAYS WITH REDUCED SHOULDER WIDTHS ACROSS BRIDGE OR CULVERT

TABLE 1 - TYPICAL LENGTH (L)

Posted Speed *	Formula
≤ 40	$L = \frac{WS^2}{60}$
≥ 45	L=WS

* 85th Percentile Speed may be used on roads where traffic speeds normally exceed the posted speed limit. Crosshatching length should be rounded up to nearest 5 foot increment.

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

EXAMPLES:

An 8 foot shoulder in advance of a bridge reduces to 4 feet on a 70 MPH roadway. The length of the crosshatching should be:

L = 8 x 70 = 560 ft.

A 4 foot shoulder in advance of a bridge reduces to 2 feet on a 40 MPH roadway. The length of the crosshatching should be:

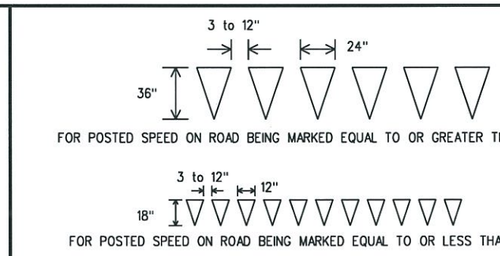
L = 4(40) ? 60 = 106.67 ft. rounded to 110 ft.

GENERAL NOTES

1. Edgeline striping shall be as shown in the plans or as directed by the Engineer. The edgeline should typically be placed a minimum of 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edgelines are not required in curb and gutter sections of roadways.
2. The traveled way includes only that portion of the roadway used for vehicular travel and not the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the inside of edgeline to inside of edgeline of a two lane roadway.

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

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



YIELD LINES

Texas Department of Transportation
Traffic Operations Division

TYPICAL STANDARD PAVEMENT MARKINGS

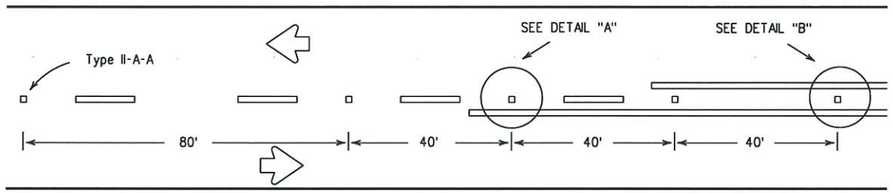
PM(1)-12

© TxDOT November 1978	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
REVISIONS	CONT	SECT	JOB	HIGHWAY
8-95 2-12	0921	02	323	MILE 2
5-00	DIST	COUNTY		SHEET NO.
8-00	21	HIDALGO		152
3-03				

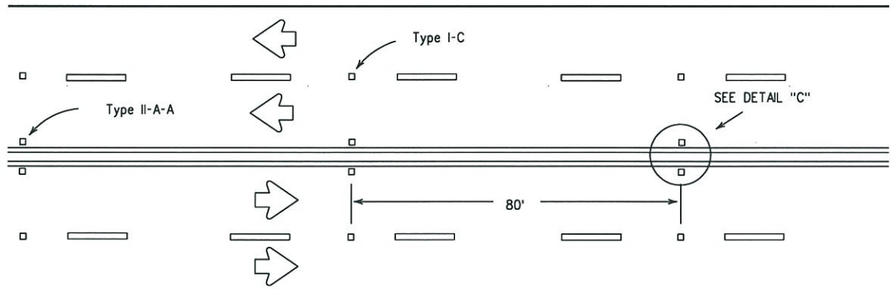
DATE:
FILE:

22A

REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

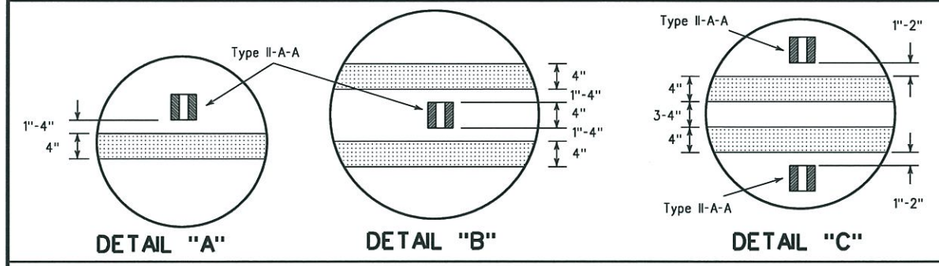


CENTERLINE FOR ALL TWO LANE ROADWAYS

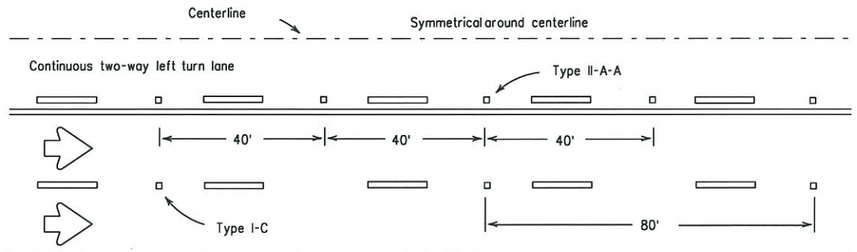


CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY HIGHWAYS

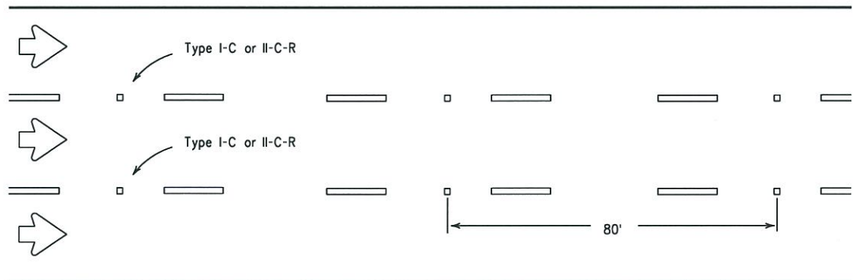
Raised pavement marker Type I-C, clear face toward normal traffic, shall be placed on 80-foot centers.



DETAIL "A" DETAIL "B" DETAIL "C"

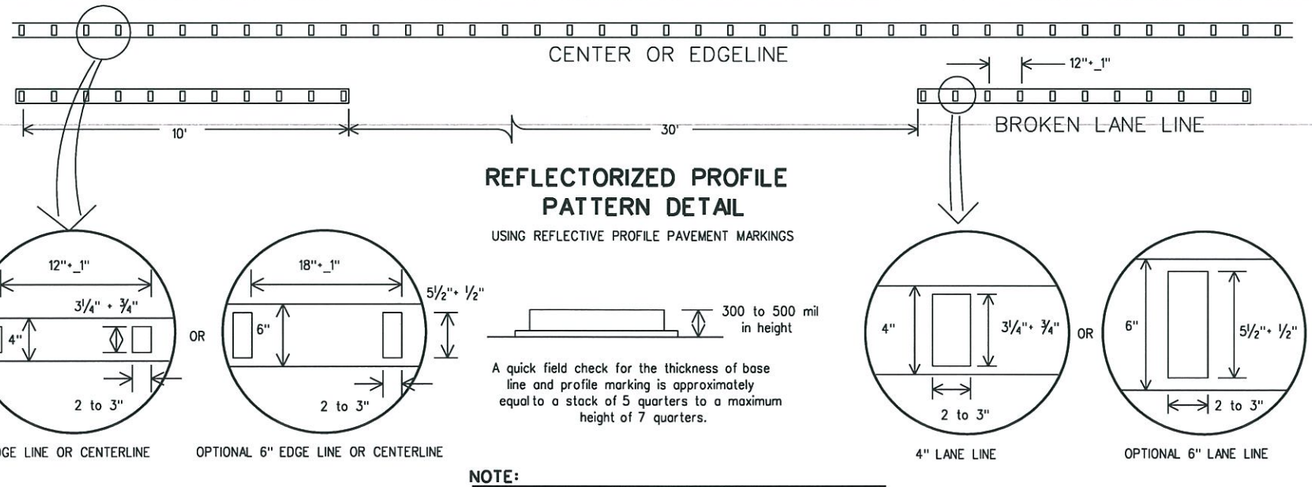


CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.



4" EDGE LINE OR CENTERLINE — OPTIONAL 6" EDGE LINE OR CENTERLINE — 4" LANE LINE — OPTIONAL 6" LANE LINE

REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

A quick field check for the thickness of base line and profile marking is approximately equal to a stack of 5 quarters to a maximum height of 7 quarters.

NOTE:

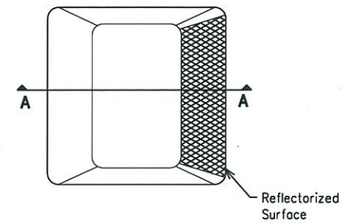
Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

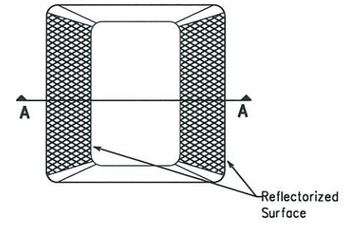
1. All raised pavement markers placed in broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.

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

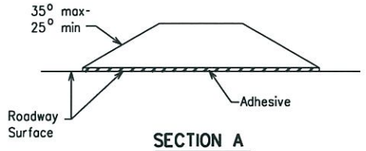
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS

Texas Department of Transportation
Traffic Operations Division

POSITION GUIDANCE USING RAISED MARKERS
REFLECTORIZED PROFILE MARKINGS
PM(2)-12

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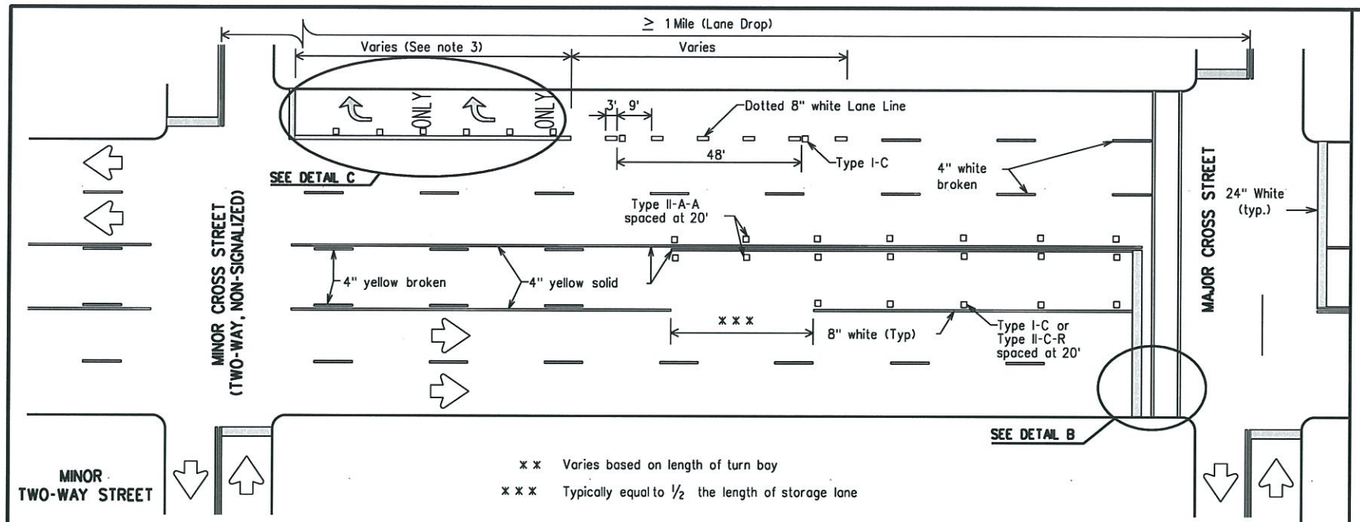
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4-92 2-10	0921	02	323	MILE 2
5-00 2-12	DIST	COUNTY		SHEET NO.
8-00	21	HIDALGO		153
2-08				

22B

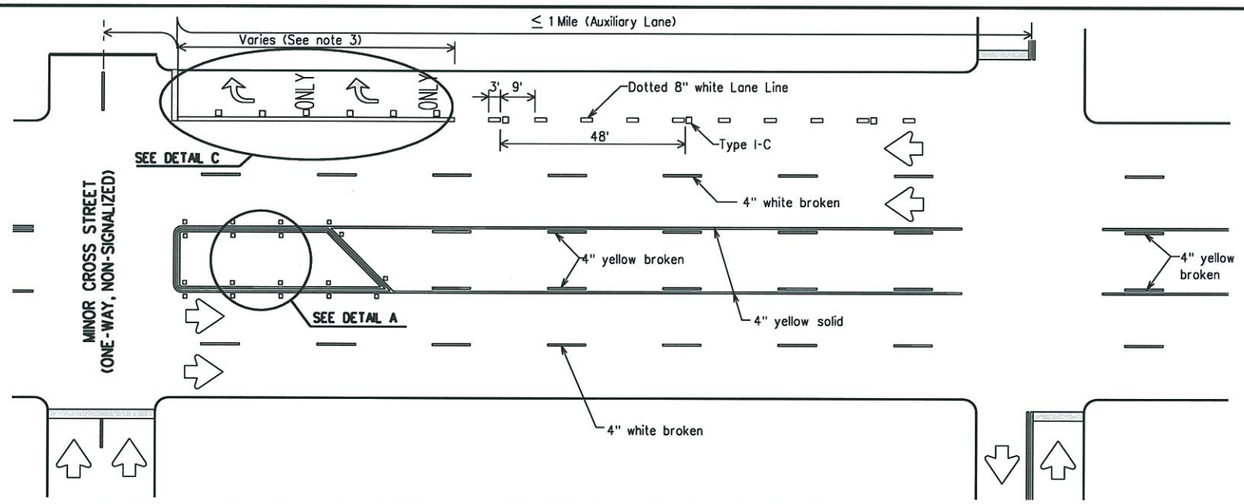
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DATE:
FILE:

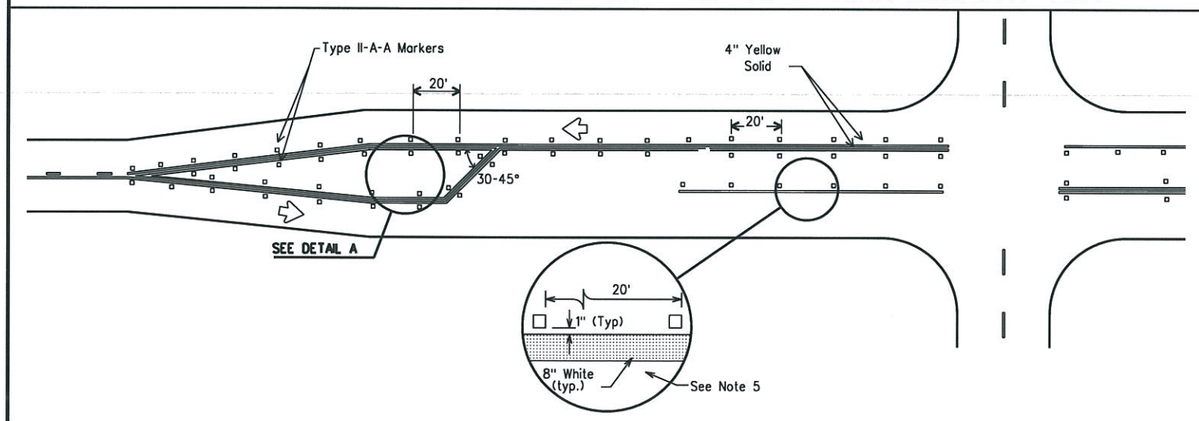
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



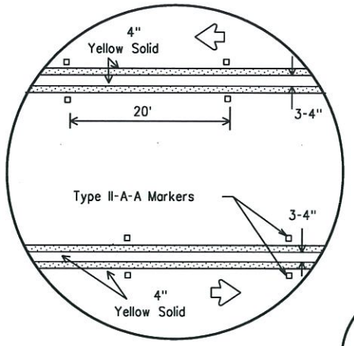
TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



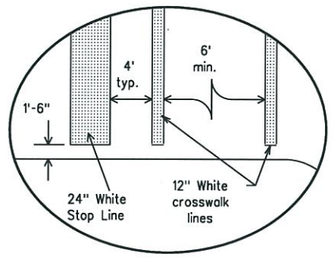
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



TYPICAL TWO-LANE HIGHWAY INTERSECTION WITH LEFT TURN BAYS

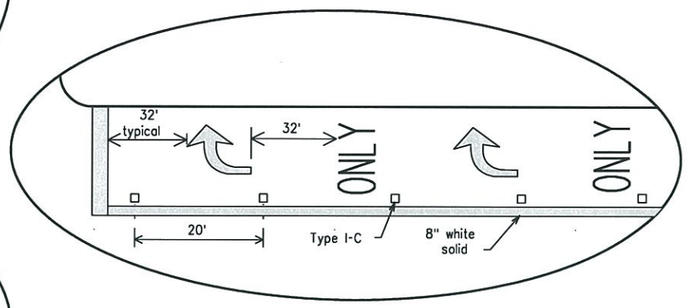


DETAIL A



Final placement of Stop Bar and Crosswalk shall be approved by the Engineer in the field.

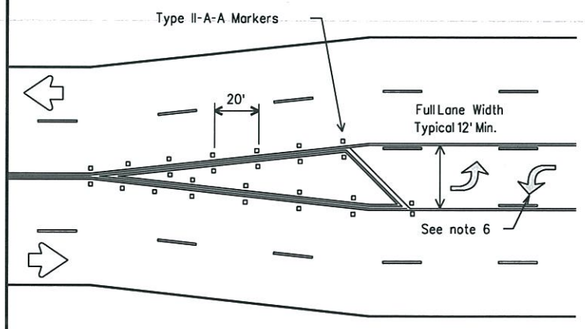
DETAIL B



DETAIL C

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

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

GENERAL NOTES

1. Refer elsewhere in plans for additional RPM placement and details.
2. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows as shown in the Standard Highway Sign Designs for Texas.
3. When lane used word and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 180 feet. When a single lane use arrow or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
4. Other crosswalk paterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used.
5. Raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Raised pavement marker Type II-C-R with divided highways and raised medians.
6. A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

Texas Department of Transportation
Traffic Operations Division

PAVEMENT MARKINGS FOR TWO-WAY LEFT TURN LANES DIVIDED HIGHWAYS AND RURAL LEFT TURN BAYS

PM(3)-12

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REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
5-00 2-12	CONT	SECT	JOB	HIGHWAY
8-00	0921	02	323	MILE 2
3-03	DIST	COUNTY		SHEET NO.
2-10	21	HIDALGO		154

DATE:
FILE:

22C

MILE 2 ROAD - PROJECT 1 - FLASHING BEACON QUANTITIES (CSJ 0921-02-323)

ITEM	DESCR CODE	DESCRIPTION	UNIT	FLASHING BEACON SCHUERBACH	FLASHING BEACON MOOREFIELD	TOTALS
0416	2032	DRILL SHAFT (TRF SIG POLE) (36 IN)	LF	30.4	30.4	60.8
0618	2024	CONDT (PVC) (SCHD 40) (4")	LF	8	8	16
0620	2009	ELEC CONDR (NO. 6) BARE	LF	70	70	140
0620	2010	ELEC CONDR (NO. 6) INSULATED	LF	35	35	70
0621	2004	TRAY CABLE (4 CONDR) (12 AWG)	LF	175	215	390
0625	2004	ZINC - COAT STL WIRE STRAND (3/8 IN)	LF	120	135	255
0628	2145	ELC SRV TY T 120/240 000 (NS)GS(L)TS(O)	EA	1	1	2
0680	2001	INSTALL HWY TRF SIG (FLASH BEACON)	EA	1	1	2
0682	2027	VEH SIG SEC (12 IN) LED (RED)	EA	8	8	16
0684	2010	TRF SIG CBL (TY A) (12 AWG) (5 CONDR)	LF	110	140	250
686	2018	INS TRF SIG PL AM(S) STR (TY D) LUM	EA	2	2	4
*		CONTROLLER, FLASHING BEACON	EA	1	1	2

* QUANTITIES ARE SHOWN FOR CONTRACTOR'S INFORMATION ONLY. THESE ITEMS ARE SUBSIDIARY TO VARIOUS OTHER ITEMS.

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L&G Engineering
Texas Registered Engineering Firm F-4105
Highway / Civil
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Environmental
Constr. Material Testing

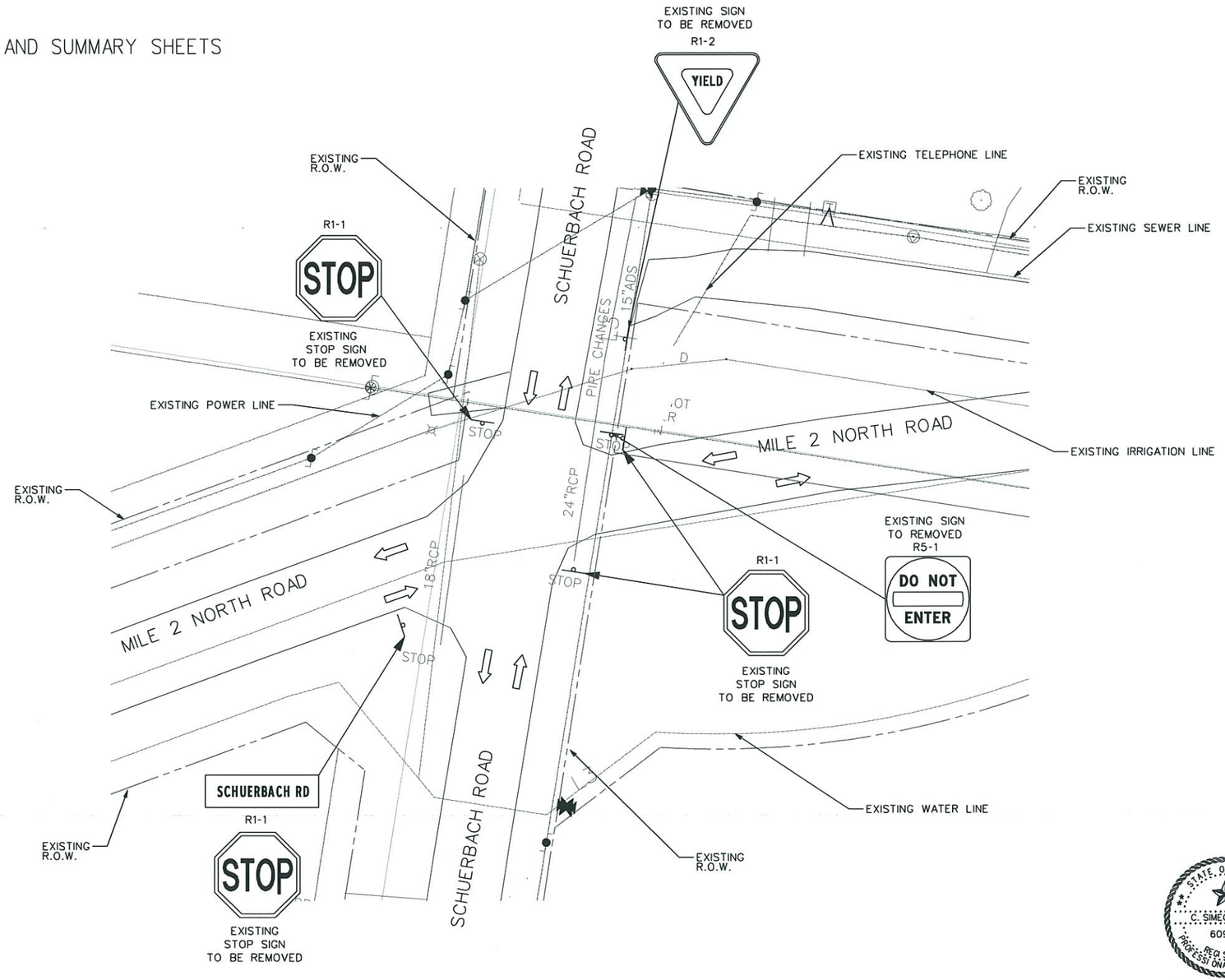
ETSI
11500 Northwest Freeway, Suite 491
Houston, Texas 77092
Tel. (713) 956-9601 Fax (713) 956-9667
Ergonomic Transportation Solutions, Inc.
TBPE REG.NO. F-625

MILE 2 ROAD - FROM LA HOMA RD TO EAST OF MOOREFIELD RD
PROJECT 1 QUANTITIES

DN: RLM	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN: HCS	6	TEXAS					MILE 2
DW:	STATE DIST. NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW:	21	HIDALGO	0921	02	323		155
TR:							
CK TR:							

NOTE:

SEE SIGNING LAYOUT AND SUMMARY SHEETS FOR MORE DETAILS.



LEGEND

⇦ DIRECTION OF TRAFFIC

N

0 10 20 40

SCALE 1" = 40'

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L&G Engineering
Texas Registered Engineering Firm F-4105
Highway / Civil
Structural / Bridge
Environmental
Constr. Material Testing

ETSI
Ergonomic Transportation Solutions, Inc.
11500 Northwest Freeway, Suite 491
Houston, Texas 77092
Tel. (713) 956-9601 Fax (713) 956-9667
TBPE REG.NO. F-625

STATE OF TEXAS
C. SIMEONDIS
60919
REGISTERED PROFESSIONAL ENGINEER

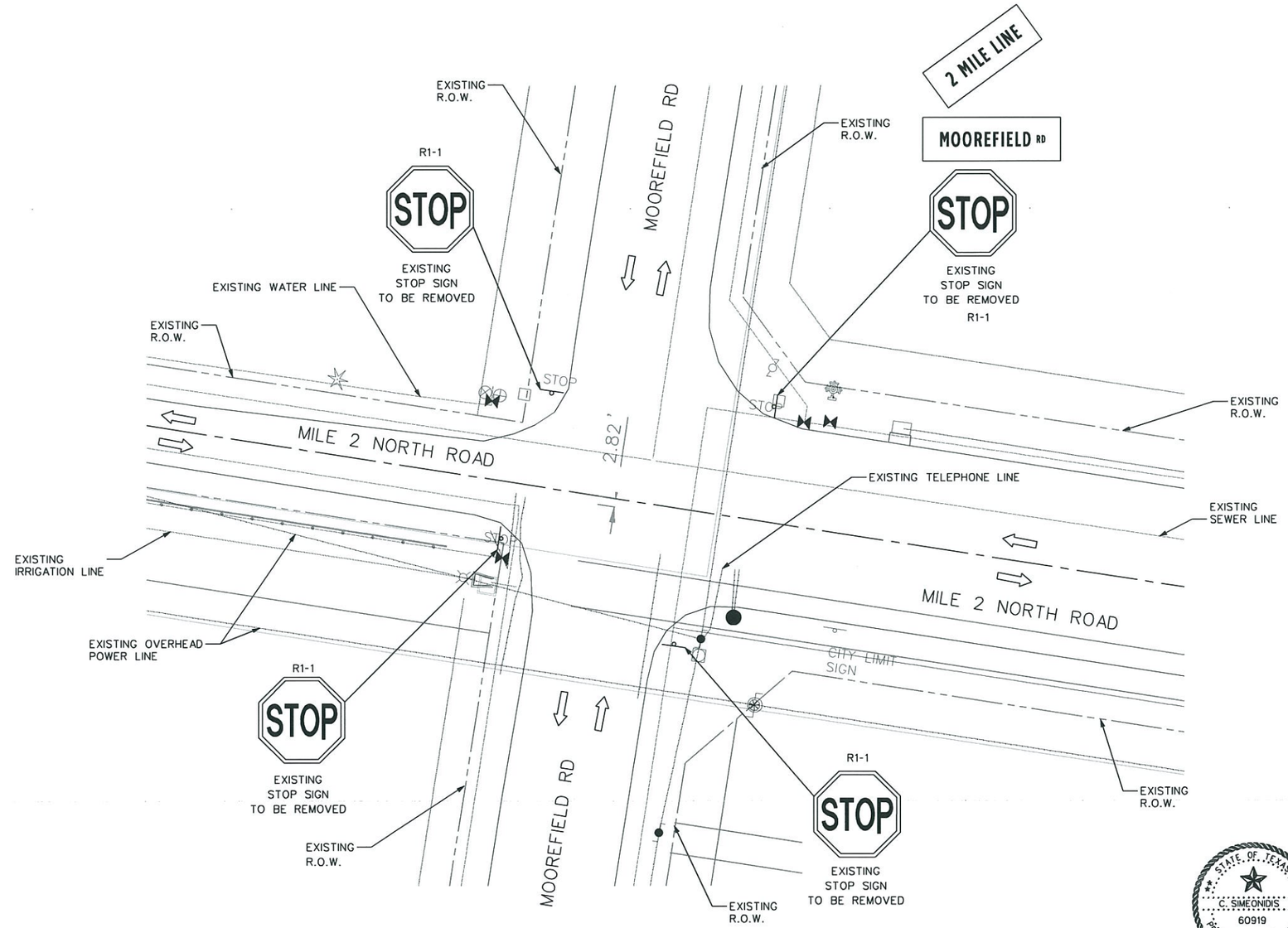
THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY C. SIMEONDIS, P.E. 60919 ON MARCH 31, 2014

EXISTING LAYOUT MILE 2 NORTH ROAD AT SCHUERBACH ROAD

DN: RLM	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN: HCS	6	TEXAS					MILE 2
DW:	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW:	21	HIDALGO	0921	02	323		156
TR:							
CK TR:							

LEGEND

DIRECTION OF TRAFFIC



0 10 20 40

SCALE 1" = 40'

NOTE:

SEE SIGNING LAYOUT AND SUMMARY SHEETS FOR MORE DETAILS.

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Highway / Civil
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Houston, Texas 77092
Tel. (713) 956-9601 Fax (713) 956-9667
TBPE REG.NO. F-625

STATE OF TEXAS
C. SIMEONIDIS
60919
REGISTERED PROFESSIONAL ENGINEER

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY C. SIMEONIDIS, P.E. 60919 ON MARCH 31, 2014

EXISTING CONDITION LAYOUT
MILE 2 NORTH ROAD AT MOOREFIELD ROAD

DN: RLM		FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN: HCS		6	TEXAS					MILE 2
DW:		STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW:		21	HIDALGO	0921	02	323		157
TR:								
CK TR:								

PROPOSED ELECTRICAL SCHEDULE

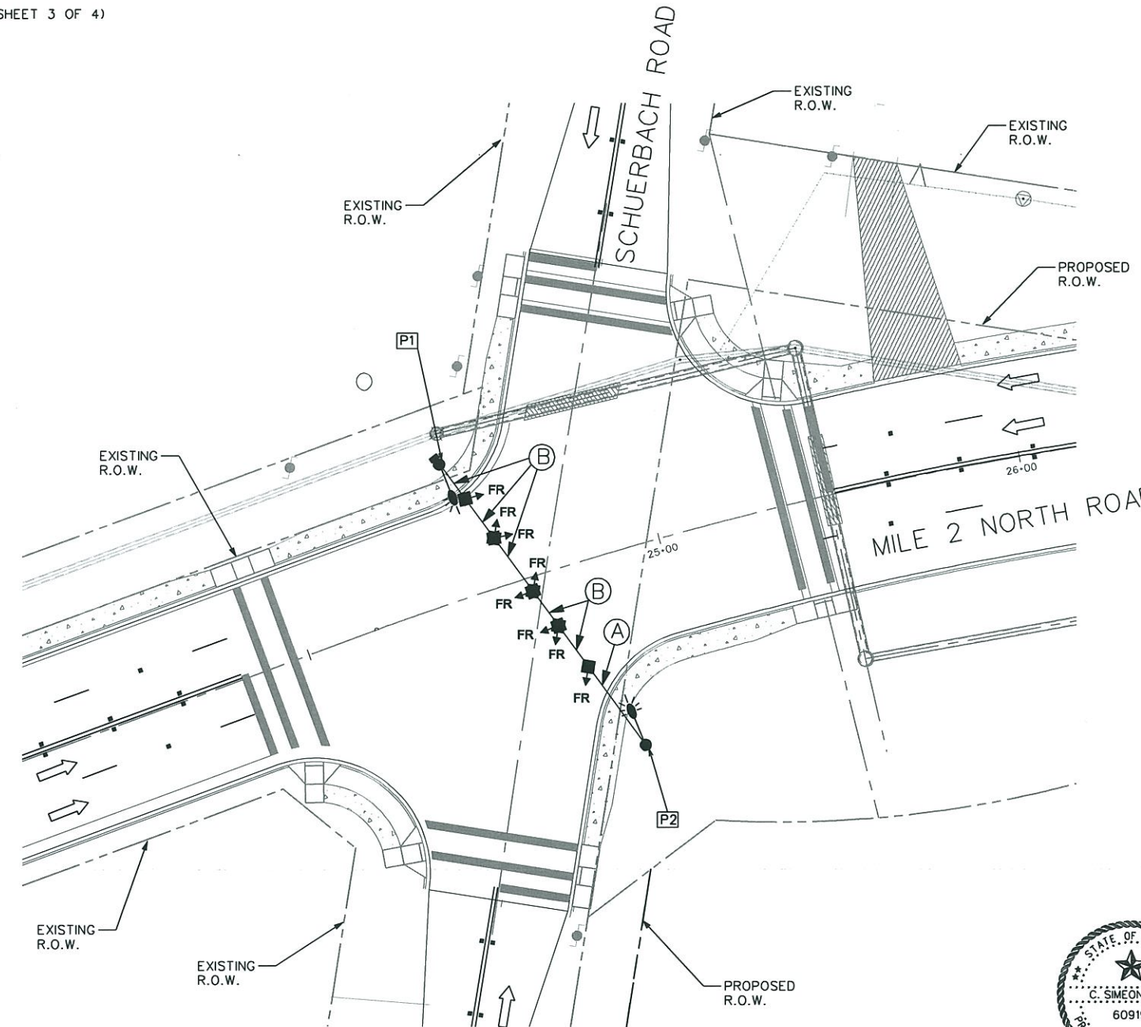
ITEM	TOTAL QTY.	RUN NUMBER	A	B	POLE
		RUN LENGTH (FT.)	30	75	35
POWER	35	1/C - # 6			1
GROUND	70	1/C - # 6 BARE			2
SIGNAL CABLE	110	5/C # 12		1	1
LUMINAIRE	175	4/C # 12 (TRAY CABLE)	1	1	2
CONDUIT	8	4" PVC*			

* PVC IN POLE FOUNDATION (SEE MISCELLANEOUS DETAILS PHARR DISTRICT STANDARD SHEET 3 OF 4)

POLE LOCATIONS			
POLE NO.	DESCRIPTION	STA.	OFFSET
P1	34' STEEL POLE WITH FLASHER CONTROLLER, LUMINAIRE, AND OVERHEAD ELECTRIC SERVICE	24+ 50.15	36.84' LT
P2	34' STEEL POLE WITH LUMINAIRE	24+ 79.41	52.86' RT

NOTE: STATION NUMBERS ARE WITH REFERENCE TO THE CENTER LINE OF MILE 2 NORTH ROAD

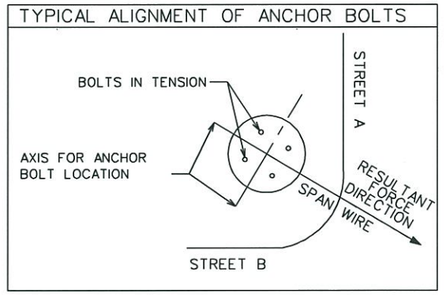
STEEL STRAIN POLES				
POLE NO.	QUANTITY	POLE DESIGNATION	FOUNDATION TYPE	FOUNDATION DEPTH
P1	1	SPL 34 D-100	36-B	15.2'
P2	1	SPL 34 D-100	36-B	15.2'
TOTALS	2			30.4'



LEGEND

- PROPOSED STRAIN POLE
- PROPOSED SPAN WIRE MOUNTED 12" FLASHING BEACON HEAD (1 WAY- 1 SECTION)
- PROPOSED SPAN WIRE MOUNTED 12" FLASHING BEACON HEAD (2 WAY- 1 SECTION)
- PROPOSED POLE MOUNTED CONTROLLER WITH ELECTRICAL SERVICE
- PROPOSED LUMINAIRE ARM
- FR FLASHING RED
- DIRECTION OF TRAFFIC FLOW

TYPICAL ALIGNMENT OF ANCHOR BOLTS



0 10 20 40
SCALE 1" = 40'

Elec. Service No.	Sheet No.	Electrical Service Description (see ED (4) & (5) - 03)	Service Conduit Size	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole/Amp	Two-Pole Contactor Amps	Panelbd/ Loadcenter Amp Rating	Circuit No.	Branch Ckt. Bkr. Pole/Amps	Branch Circuit Amps	KVA Load
FB 1	SCHUERBACH	ELC SRV TY T 120/240 000 (NS)GS(L)TS(O)	1 1/4"	3/#6	N/A	N/A	N/A	100	F.B.	1P/20	12	<2.2
									LIGHT	2P/20	3	

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CITY OF MISSION

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Texas Department of Transportation

L&G Engineering
Texas Registered Engineering Firm F-4105
Highway / Civil
Structural / Bridge
Environmental
Constr. Material Testing

ETSI
11500 Northwest Freeway, Suite 491
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Ergonomic Transportation Solutions, Inc.
TBPE REG.NO. F-625

PROPOSED FLASHING BEACON LAYOUT MILE 2 NORTH ROAD AT SCHUERBACH ROAD

DN: RLM	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN: HCS	6	TEXAS					MILE 2
DW:	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW:	21	HIDALGO	0921	02	323		158
TR:							
CK TR:							

PROPOSED ELECTRICAL SCHEDULE

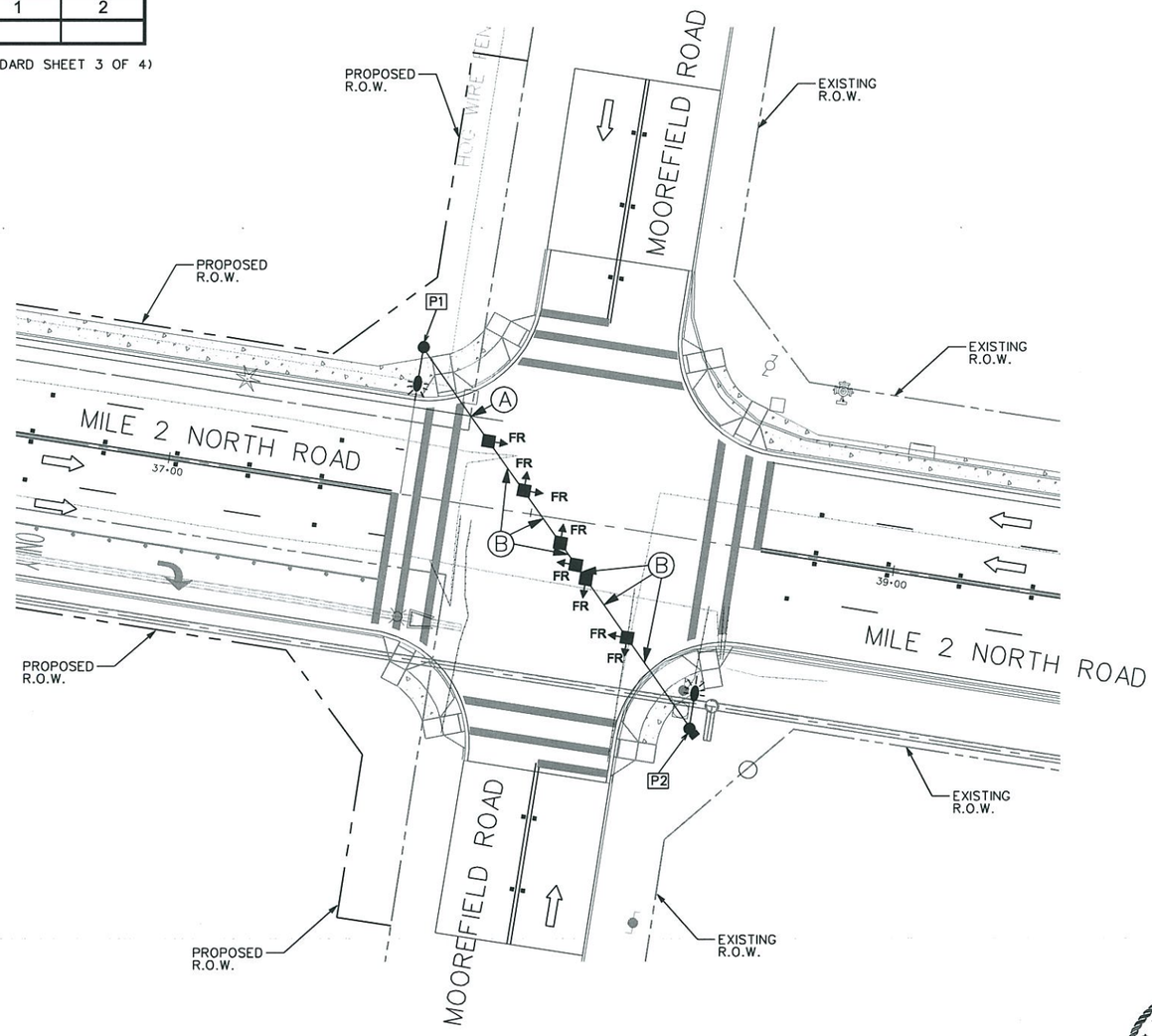
ITEM	TOTAL QTY.	RUN NUMBER	A	B	POLE
		RUN LENGTH (FT.)	40	105	35
POWER	35	1/C - # 6			1
GROUND	70	1/C - # 6 BARE			2
SIGNAL CABLE	140	5/C # 12		1	1
LUMINAIRE	215	4/C # 12 (TRAY CABLE)	1	1	2
CONDUIT	8	4" PVC*			

* PVC IN POLE FOUNDATION (SEE MISCELLANEOUS DETAILS PHARR DISTRICT STANDARD SHEET 3 OF 4)

POLE LOCATIONS			
POLE NO.	DESCRIPTION	STA.	OFFSET
P1	34' STEEL POLE WITH LUM	37+64.01	40.48' LT
P2	34' STEEL POLE WITH FLASHER CONTROLLER, LUM, AND OVERHEAD ELECTRIC SERVICE	38+51.87	51.13' RT

NOTE: STATION NUMBERS ARE WITH REFERENCE TO THE CENTER LINE OF MILE 2 NORTH ROAD

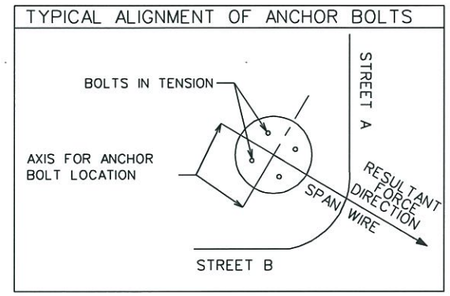
STEEL STRAIN POLES				
POLE NO.	QUANTITY	POLE DESIGNATION	FOUNDATION TYPE	FOUNDATION DEPTH
P1	1	SPL 34 D-100	36-B	15.2'
P2	1	SPL 34 D-100	36-B	15.2'
TOTALS	2			30.4'



LEGEND

- PROPOSED STRAIN POLE
- PROPOSED SPAN WIRE MOUNTED 12" FLASHING BEACON HEAD (1 WAY- 1 SECTION)
- PROPOSED SPAN WIRE MOUNTED 12" FLASHING BEACON HEAD (2 WAY- 1 SECTION)
- PROPOSED POLE MOUNTED CONTROLLER WITH ELECTRICAL SERVICE
- PROPOSED LUMINAIRE ARM
- FR FLASHING RED
- DIRECTION OF TRAFFIC FLOW

TYPICAL ALIGNMENT OF ANCHOR BOLTS



SCALE 1" = 40'

Elec. Service No.	Sheet No.	Electrical Service Description (see ED (4) & (5) - 03)	Service Conduit Size	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole/Amp	Two-Pole Contactor Amps	Panelbd/ Loadcenter Amp Rating	Circuit No.	Branch Ckt. Bkr. Pole/Amps	Branch Circuit Amps	KVA Load
FB2	MOOREFIELD	ELC SRV TY T 120/240 000 (NS)GS(L)TS(O)	1 1/4"	3/#6	N/A	N/A	N/A	100	F.B.	1P/20	12	<2.2
									LIGHT	2P/20	3	

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STATE OF TEXAS · C. SIMEONIDIS · 60919 · REGISTERED PROFESSIONAL ENGINEER

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Tel. (713) 956-9601 Fax (713) 956-9667
TBPE REG.NO. F-625

PROPOSED FLASHING BEACON LAYOUT MILE 2 NORTH ROAD AT MOOREFIELD ROAD

DN: RLM	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN: HCS	6	TEXAS					MILE 2
DW:	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW:	21	HIDALGO	0921	02	323		159
TR:							
CK TR:							

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DATE:
FILE:

I. GENERAL REQUIREMENTS FOR ALL ELECTRICAL WORK

The location of all conductors, conduits, junction boxes, ground boxes, and electrical services is diagrammatic only and may be shifted by the Engineer to accommodate local conditions.

Materials shall be new and unused. Materials and installation shall comply with the applicable provisions of the National Electrical Code (NEC), National Electrical Manufacturers Association (NEMA) standards, and shall be Underwriters Laboratories (UL) Listed unless otherwise shown on the plans or specifications or approved by the Engineer in writing. Faulty fabrication or poor workmanship in any material, equipment, or installation shall be justification for rejection. When reference is made to UL, it can be considered to mean a Nationally Recognized Independent Testing Lab (NRTL). Comparable standards of Canadian Standard Association, Electrical Testing Laboratories or Factory Mutual can be equal to the referenced UL standard. Where reference is made to NEMA listed devices, IEC listed devices shall not be considered to be an acceptable equal to a NEMA listed device. Acceptable devices may have both a NEMA and IEC listing.

With the exception of high strength bolts, miscellaneous nuts, bolts and hardware may be stainless steel when plans specify galvanized, provided that bolts are 1/2 inch or less in diameter. The Contractor shall provide the following electrical test instruments as required by the Engineer to confirm compliance with the contract and the NEC. Those test instruments are voltmeter, amp probe, megger (1000 volt DC) and torque wrenches. All meters shall have been properly calibrated within one year. Calibration certification shall be provided to the Engineer upon request. Calibration certification tag shall also be applied to the meter. The Contractor shall operate meters during inspection as requested by the Engineer. Grounding shall be as shown on the plans and in accordance with the NEC. Metallic conduit, light poles, luminaires on bridge structures, and all metal enclosures shall be bonded to the system-grounding conductor. The ground rod in each ground box or junction box at the bridge ends, and in each ground box installed for underpass lighting will also be bonded to the system grounding conductor. The grounding conductor shall be bare or, if insulated, shall be green. Ground rods, connectors, and bonding jumpers will not be paid for separately, but will be subsidiary to the various bid items.

SUBMITTALS:

The contractor shall submit for approval six (6) copies of catalog cut sheets for each of the following three (3) categories.
Category 1. Electrical services including photocell.
Catagory 2. Breakaway disconnects, heat shrink tubing, heat shrink filler tape, GelCaps and ground boxes which will include loading capacity certification.
Category 3. Highmast assembly kits, when applicable. See Item 614 "Highmast Illumination Assemblies". Submittals shall be legible and shall be marked to indicate which product on a cut sheet is to be supplied. Where manufacturers provide warranties and guarantees as a customary trade practice, the Contractor shall furnish to the State such warranties and guarantees.
Any deviation from plans or specifications, including deviations due to plan error should be prominently displayed on the submittal. Any changes not prominently noted in submittal and incorporated into the work without proper authorization will constitute grounds for rejection of that portion of the work.

II. CONDUIT

A. MATERIALS

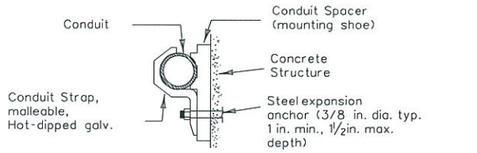
1. Conduit and fittings shall be UL Listed for the intended use shown on plan sheets.
2. Conduit shall be the type shown by descriptive code or shown elsewhere on the plans. Substitution of the various types of conduits will not be permitted. All flexible conduit in rigid metallic conduit (RMC) systems shall be Liquidtight Flexible Metal (LFMC) conduit. All flexible conduit in PVC systems shall be Liquidtight Flexible Non-metallic conduit (LFNC).
3. All exposed conduits shall be RMC, unless otherwise specifically shown on the plans. All metal conduit shall be properly grounded.
4. Couplings, connectors, conduit bodies, grounding bushings, and offset nipples for RMC shall be electro-zinc plated steel or hot dipped galvanized malleable iron, threaded or threadless compression type, rain-tight and shall be UL listed for the intended use.
5. Expansion joints for metal conduit shall be provided with an internal or external bonding jumper and shall be UL listed.
6. Unless otherwise shown on the plans, junction box minimum sizes shall be in accordance with the following table which applies to the greatest number of conductors entering the box through one conduit with no more than four conduits per box. When a mixture of conductor sizes are present, the conductors shall be counted as if all are of the larger size. Situations not applicable to the table shall be sized in accordance with NEC 370-28.

AWG	3 CONDUCTORS	5 CONDUCTORS	7 CONDUCTORS
#1	10" x 10" x 4"	12" x 12" x 4"	16" x 16" x 4"
#2	8" x 8" x 4"	10" x 10" x 4"	12" x 12" x 4"
#4	8" x 8" x 4"	10" x 10" x 4"	10" x 10" x 4"
#6	8" x 8" x 4"	8" x 8" x 4"	10" x 10" x 4"
#8	8" x 8" x 4"	8" x 8" x 4"	8" x 8" x 4"

7. RMC system junction boxes equal to or smaller, in any dimension, than 12 x 12 x 6 (HxWxD), surface mounted and containing conductors #8 or larger, shall be hot dipped galvanized cast iron with minimum wall thickness of 3/16 inch, shall have external mounting lugs, and shall be UL listed Crouse-Hinds Type WAB, OZ/Gedney Type YS or approved equal. Unless otherwise shown elsewhere on the plans, RMC system junction boxes larger than the aforementioned boxes but equal to or smaller, in any dimension, than 18 x 18 x 6 (HxWxD) shall be 14-ga. stainless steel; RMC system junction boxes larger than 18 x 18 x 6 (HxWxD) shall be 12-ga. stainless steel. All metal junction boxes shall be equipped with a threaded hole or lug for grounding. Stainless steel boxes 12 x 12 x 6 and larger need not be UL Listed but shall meet the other requirements of the NEC and shall have ribs, stiffeners, or thicker metal and shall have external mounting feet. Junction boxes with an internal volume of more than 100 cu. in. may be supported by connection of two or more rigid metal conduits, where specifically shown on the plans or where approved by the Engineer.
8. Junction boxes containing only #10 or #12 AWG conductors shall be Crouse Hinds Type GRFX, Appleton Type JBOX, two-gang FD, or similar approved cast iron box. Boxes shall be sized according to NEC Table 370-16(a).
9. IMC and EMT conduit shall not be used unless specifically required by the plan layout sheets. Junction boxes in EMT conduit systems shall be made from galvanized sheeting and shall be UL listed and approved for outdoor use, unless otherwise noted on the plans. Sheet metal junction boxes shall be sized in accordance with the NEC. Junction boxes for IMC conduit systems shall meet the requirements of boxes used with RMC systems.
10. Junction boxes in PVC conduit systems shall be PVC, intended for outdoor use, unless otherwise noted on the plans.
11. Elbows in PVC conduit systems one inch and larger shall be rigid metal, with the exception of traffic signal systems which may have PVC elbows instead of rigid. If any part of the rigid metal elbow is buried less than 18 inches underground the elbow and rigid metal extension shall be grounded. Grounding shall be accomplished by means of a grounding bushing installed on the extension. Unless specifically shown on the plans, rigid metal elbows containing, or entering ground boxes containing only communications conductors, loop detectors, or other low voltage power limited circuits need not be grounded unless a ground wire is present in the conduit or ground box. The rigid metal elbows located in concrete foundations may be extended with PVC conduit and need not be grounded provided that the end of the elbow nearest the end of the conduit run exiting the foundation is at least 2 inches below the concrete. RMC elbows will not be eliminated. RMC elbows will not be paid for directly, but will be subsidiary to various bid items.
12. High-Density Polyethylene (HDPE) conduit shall meet the requirements of Item 622, Duct Cable, except that the HDPE conduit, when bid under Item 618, Conduit, shall not contain factory installed conductors. Fittings for HDPE conduit shall be UL listed as an electrical conduit connector or shall be thermally fused using an electrically heated wound wire resistance welding method. HDPE conduit may be substituted for bored schedule 40 or schedule 80 PVC conduit. When such substitution is made, bored HDPE shall be schedule 40 of the size PVC being replaced. The HDPE conduit shall transition to PVC (or RMC elbow when required) at the bore pit. Size and schedule shall be as shown on the plans. Substituted conduit may not be extended to ground boxes or foundations; RMC elbows shall be installed at ground boxes and foundations. RMC elbows will not be eliminated.
13. All conduit support hardware including straps, nuts, bolts, screws, retaining anchors and washers shall be hot dipped galvanized or stainless steel. Strut type conduit straps shall be stainless steel or hot dipped galvanized. Strut type straps need not be made of malleable type material. Stamped-cadmium plated straps will not be allowed. Straps having only one mounting hole shall not be allowed for use on conduits 2 inches and larger with the exception of electrical service poles where stainless steel standoff straps will be allowed. Two piece conduit straps designed to be used with a mounting shoe shall be installed only with the correctly sized shoe.

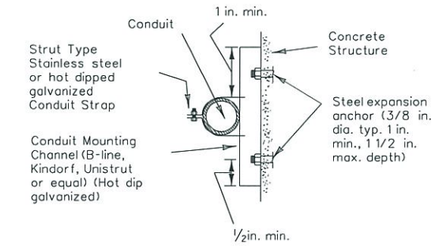
B. CONSTRUCTION METHODS

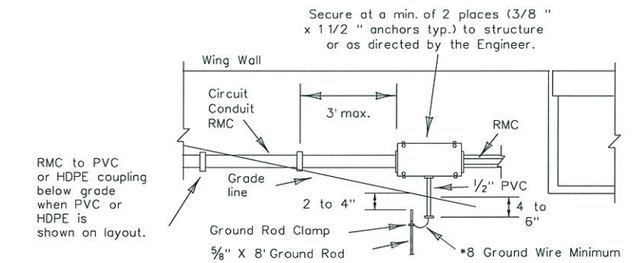
1. Conduit in structures shall have expansion fittings at structure expansion joints. All straight runs of RMC conduit exposed on structures such as bridges shall have expansion joints installed at maximum intervals of 150 feet. Expansion joints shall be installed so they allow for movement of the conduit. Installation of the joint in such a manner that will not allow for movement shall be repaired at no expense to the state. The method of determining the final setting length of the expansion joint shall be provided to the Engineer upon request.
2. Conduit supports shall be spaced at maximum intervals of 5 feet. Conduit spacers shall be used with metal conduit placed on surfaces of concrete structures (See conduit mounting options).
3. Conduit supports shall not be attached directly to prestressed concrete beams except as shown specifically in the plans and approved by the Engineer.
4. Unless otherwise shown on the plans, conduit placed beneath existing roadways, driveways, or sidewalks, or after the base or surfacing operation has begun, shall be accomplished by jacking or boring. The Contractor shall back fill and compact the bore pits to the bottom of the conduit prior to installing connecting conduit or duct cable to prevent bending of the connection.
5. Conduit trenched in the subgrade of new roadways shall be backfilled with excavated material, unless otherwise noted on the plans. Conduit trenched in the sub-base of new roadways shall be backfilled with cement-stabilized base.
6. Open ends of all conduit and raceways shall be fitted with temporary caps or plugs to prevent entry of dirt, debris and rodents during construction. The temporary cap may be constructed of duct tape, but in all cases shall be tightly fixed to the conduit and shall be durable. The contractor shall clean out the conduit and prove it clear in accordance with Standard Specifications Item 618.3 prior to installing any conductors.
7. Conduit entry into the top of enclosures such as safety switches, meter cans, service enclosures, auxiliary enclosures and junction boxes shall be made weatherproof using conduit sealing hubs, or threaded bosses.
8. A bonding jumper shall be installed from each grounding bushing to the nearest grounding rod, grounding lug, and/or equipment grounding conductor. All jumpers shall be the same size as equipment grounding conductor. Conduit used as casing under roadways for duct cable need not be grounded if duct extends full length through the casing. At electrical services, grounding electrode conductor shall be a solid Copper #6 AWG.
9. Metal junction boxes shall be bonded to the grounding conductor in accordance with the NEC.
10. Conduits entering ground boxes shall be placed so that the conduit ends shall be not less than 3 inches nor more than 6 inches from bottom of box (See ground box detail on sheet ED(3).
11. Conduit ends shall be sealed with heat shrink boots with waterproof sealant, urethane foam, or by other methods approved by the Engineer. Sealing shall be done after completion of any required pull tests. Duct tape shall not be used as a permanent conduit sealant. Silicone caulking shall not be used as a sealant.
12. All strut mounting material and hardware shall be hot-dip galvanized or shall be stainless steel. The cut ends of strut and non-galvanized rigid metal conduit threads shall be coated with a zinc rich paint (90% or more zinc content). Zinc rich paint may only be used to touch up galvanized material as allowed under item 445.6 galvanizing. The painting of non-galvanized material with a zinc rich paint shall not be considered as an approved alternative for galvanized materials.
13. All PVC conduit terminations shall be fitted with bushings or bell ends. All metal conduit terminations shall be fitted with a grounding type bushing.



CONDUIT MOUNTING OPTIONS

(Attachment to concrete surfaces)
(See para. II.B.2)

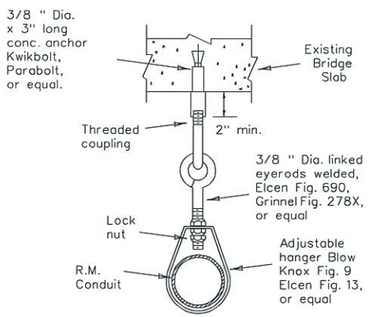




TYPICAL CONDUIT ENTRY TO BRIDGE STRUCTURE DETAIL

NOTES

1.) Ground rod clamp to be UL listed for direct burial.
2.) For conduit placed in structure, use flush-mounted box.
3.) Bond junction box and metal conduits to equipment grounding conductor and grounding electrode conductor using listed connector.
4.) Seal all conduits entering the junction box from underground.
5.) Install bell end or bushing on 1/2 " PVC conduit both ends.
6.) Ground rod to be driven within 8 inches of 1/2 inch PVC conduit end.



CONDUIT HANGER DETAIL

(Attachment to horizontal surfaces)
Hangers need not be UL listed for electrical use
ie: plumber pipe hangers are acceptable

5/03 Revision

⚠ Revised notes.

Texas Department of Transportation
Traffic Operations Division

ELECTRICAL DETAILS-CONDUIT

ED(1)-03

©TxDOT January 1992	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
REVISIONS	CONT	SECT	JOB	HIGHWAY
4-98	0921	02	323	MILE 2 RD
12-00	DIST	COUNTY		SHEET NO.
3-03	PHR	HIDALGO		160
5-03				

71A

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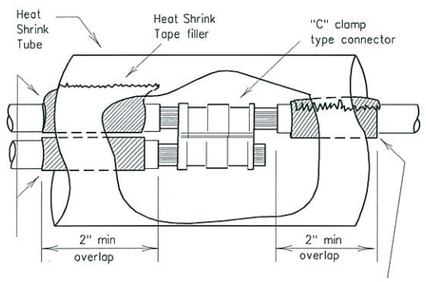
I. ELECTRICAL CONDUCTORS

A. MATERIALS

1. Insulated conductors shall be NEC Type XHHW. Insulated conductors shall be color coded in accordance with the NEC, articles 200, 250, and 310: i.e. Insulation of grounded conductors (neutrals) shall be white. Grounding conductors (ground wires) shall be bare or insulation shall be green.Insulation of ungrounded conductors (hots) shall be any color except green, white, or gray. Identification of conductors *6 American Wire Guage (AWG) and smaller shall be by continuous jacket color. Color coding of electrical conductors *4 AWG and larger shall be either by continuous color jacket or by colored tape. Colored tape marker shall consist of a half-lap of tape covering a 6-inch length of conductor.
2. Where two or more circuits are present in one conduit or enclosure, the conductors of each circuit shall be identified by a permanent non-metallic tag at each accessible location. The tag shall be fastened to the conductors by two plastic straps. Each tag shall indicate circuit number, letter, or other identification shown in the plans.
3. Grounding electrode conductor *6 AWG for bonding to ground rod at electrical service, shall be solid. Connection of conductor to ground rod shall be made using UL Listed connectors designed for such purposes.
4. Heat Shrink Tape filler shall be used to seal the ends of heat shrink tubing around two or more conductors that are insulated with heat shrink tubing. Tape material shall have a minimum dielectric strength of 225 volts per mil and shall be cross-linked butyl rubber. Tape shall be supplied in rolls and shall have a backing (release paper) to prevent the tape from sticking to itself.
5. Heat shrink tubing shall be heavy wall, UL listed for 600 volts or greater and shall have factory applied internal sealant.
6. GelCaps shall be UL listed for 600-volt applications. GelCap shall have see-through elastomer molded cover. Cover shall be filled with high dielectric insulating gel silicone sealant to provide waterseal. Cover shall be held in place by snap-lock, molded clamp made of UV stable polypropylene.
7. Splicing materials, insulating materials, breakaway disconnects, GelCaps and fuse holders will not be paid for directly but shall be subsidiary to various bid items.

B. CONSTRUCTION METHODS

1. After conductors have been installed in conduit, a pull test shall be made on conductors. When any length of conductor cannot be freely pulled, the Contractor shall make any needed alterations or repairs at no expense to the State.
2. The Contractor shall perform insulation resistance tests in accordance with Item 620, "Electrical Conductors." The Contractor shall coordinate with the Engineer to witness the tests.
3. A sufficient length of conductor for making up connections shall be left in ground boxes (2 feet minimum, 3 feet maximum, to point of splice, 3 feet minimum, 4 feet maximum, when conductor is pulled through with no splice), enclosures, weatherheads and pole bases (1 foot minimum, 1.5 feet maximum).
4. Splices shall be made only in junction boxes, ground boxes, pole bases, or electrical enclosures and shall be made with listed compression or screw type pressure connectors, terminal blocks, bolted lugs, or split bolt connectors. Splices shall be insulated with heavy wall heat shrink tubing or GelCaps and shall be made so as to provide a watertight splice. Heat shrink sleeve shall overlap conductor insulation a minimum of 2 inches on both sides of the splice. Where heat shrink tubing may not shrink sufficiently to provide a watertight seal around the individual conductors, prior to heating the tubing, the Contractor shall increase the diameter of the conductors insulation using heat shrink filler tape to provide a watertight seal between the individual conductors and the heat shrink tubing. Tape shall be visible after completion of all splices. Where filler tape is used but not visible, the Engineer shall approve each individual splice by conducting a physical inspection of each splice. When it appears the tubing has been burned, or overheated the tubing shall be considered to be defective and shall be replaced.
5. GelCaps when used in place of heat shrink method of splicing, shall be sized and installed according to manufacturer's specifications. (Raychem GelCap and GelCap SL or equal.)
6. Wire nuts may be used for *8 AWG or smaller conductors in above-ground junction boxes, but not in pole bases or ground boxes. Wire nuts shall be positioned upright to prevent the accumulation of water. Wire nuts used at these locations shall have factory applied waterproof sealant.
7. Conductors in illumination poles shall be supported by a J-hook in the top of the pole.
8. All conductors bid under Item 620 "Electrical Conductors" shall have breakaway electrical disconnects installed anytime conductors pass through a break-away support device.
9. For terminating the conductors, insulation-jacketing material shall be removed in such a manner as to not nick any of the individual strands of the conductor. When individual conductor strands are removed, the conductor shall be considered to be damaged.
10. When a conductor or cable has been damaged, or fails to pass an insulation resistance test, the conductor shall be replaced.
11. Duct tape, black electrical tape, or wire nuts shall not be used in the repair of a damaged conductor.
12. For terminations, no more than one wire may be installed under a single pressure connector, unless the device is listed for more than one wire.
13. Conductors connected to break-away in line fuse holders must be installed in accordance with the specific manufacturer's installation instructions. Where threaded connections are made, they shall be properly torqued. Where crimp type connections are made, crimps shall be made using properly sized crimping pliers. Proper conductor terminations are critical to the safe operation of break-away devices.
14. Waterproofing boots shall be properly trimmed to fit snugly around the conductor so as to provide a water proof connection. No more than one wire may enter a single opening in any one boot. Water proofing boots must provide the correct number of openings. Where only one wire is to be connected to a boot, the boot may not be a two wire type.



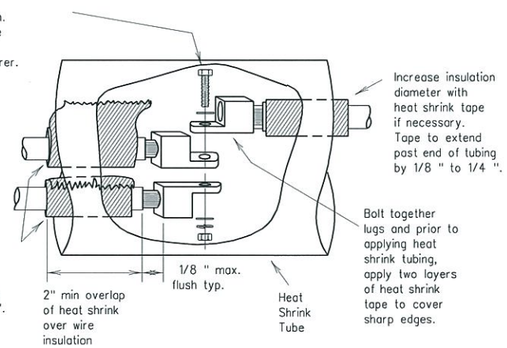
Seal between Conductors with heat shrink tape. Tape to extend past end of tubing by 1/8 " to 1/4 ".

Increase insulation diameter with heat shrink tape if necessary. Tape to extend past end of tubing by 1/8 " to 1/4 ".

SPLICE OPTION 1

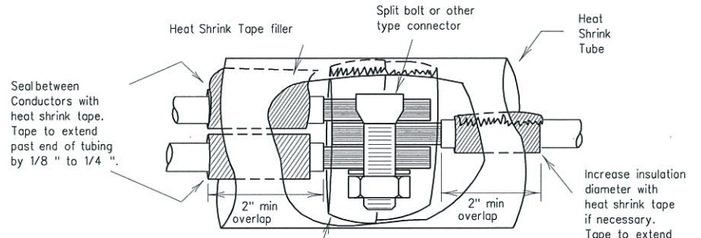
C-CLAMP

Stainless steel or brass machine screw, nut, 2 flat washers, lock washer or self locking nut. Machine screw to be a min. of 10-24, 3/16 or the same size as the mounting hole provided by the manufacturer. Secure wrench tight. Movement of lugs after final assembly shall be considered to be a defective connection.



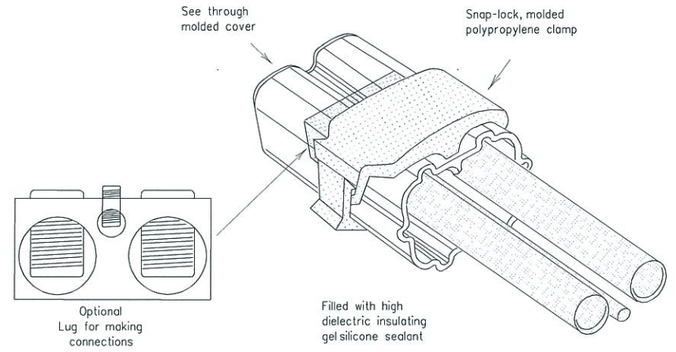
SPLICE OPTION 2

BOLTED WIRE LUGS



SPLICE OPTION 3

SPLIT BOLT



SPLICE OPTION 4

GELCAP

GelCap shall be sized and installed according to manufacturers specifications

15. All conduits that contain circuit wiring of 50 volts or more shall contain an equipment grounding conductor (EGC). Conduit for traffic signals shall have an EGC, with a minimum size of *8 AWG stranded. Unless otherwise shown on the plans, the EGC for all other conduits shall be the same AWG size as the largest current carrying conductor contained in that conduit. The EGC shall be paid for item 620-Electrical Conductors.

C. TEMPORARY WIRING

1. Temporary conductors and electrical equipment to provide power for utilization equipment, shall be installed in accordance with the NEC article 305. All temporary wiring materials and methods shall comply with the standard sheets. All power outlets for portable electrical equipment, power tools, ice machines, ice storage bins and refrigerators located outdoors at grade, supplied from a utility power source, shall be provided with a ground fault circuit interrupter.
2. Residual current protective devices (GFCI) may be any one of the following: molded cord and plug set, receptacle, or circuit breaker type.
3. Where wire nuts are approved for temporary wiring, they shall be of the self-sealing type.
4. All conductor splices must be contained within a listed enclosure, ground box or the splices will be more than ten feet above grade vertically and more than five feet horizontally from any metal structure. Where temporary conductors are installed in any area that is likely to be subjected to vehicle traffic, or mobile construction equipment, the vertical clearance to ground shall be at least 18 feet when measured at the lowest point. Where power conductors are to be supported by a span wire, the span wire shall be properly grounded.
5. Existing conduit containing service conductors uncovered during the construction process shall be repaired in a timely manner in accordance with the NEC. Existing non-metallic conduit exposed during construction shall not be left exposed above grade, or with less than eighteen inches of cover, without protective methods approved by the Engineer.

Texas Department of Transportation
Traffic Operations Division

ELECTRICAL DETAILS-CONDUCTORS

ED(2)-03

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ELECTRICAL SERVICES NOTES

All work, materials, services, and incidentals, whether or not specifically shown on the plans, which may be necessary for a complete and proper electrical service installation as specified in the plans to obtain electrical power shall be paid for, performed, furnished and installed by the Contractor. The Contractor shall contact the Utility for metering and shall comply with all Utility requirements.

Primary line extensions, connection charges, meter charges, and other charges by the Utility company to provide power to the location shown, when required, shall be paid for under force account work. The costs associated with these charges shall be approved by the Engineer prior to engaging the Utility company to do the work. The Contractor shall consult with the appropriate Utility to determine costs and requirements, and shall coordinate the Utility's work as approved by the Engineer. The Contractor shall be reimbursed only the amount billed by the Utility. No additional amount for supervision of the Utility's work will be paid.

Materials shall be new and unused, materials and installation shall comply with the applicable provisions of the National Electrical Code (NEC) and National Electrical Manufacturers Association (NEMA) standards and shall be Underwriters Laboratories (UL) Listed. Electrical Service conduits, conductors, disconnects, contactors, circuit breaker panel sizes, and branch circuit breakers, shall be as shown in the Electrical Service Data elsewhere in the plans. Faulty fabrication or poor workmanship in any material, equipment, or installation shall be justification for rejection.

The Contractor shall submit for approval no less than six (6) copies of catalog cut sheets on electrical service materials. Submittals shall be legible and shall be marked to indicate which product on a cut-sheet is to be supplied. Where manufacturers provide warranties and guarantees as a customary trade practice, Contractor shall furnish to the State such warranties or guarantees.

The Contractor shall provide locks keyed with Master #2195 for all lockable electrical enclosures. Keys and locks become property of the State. Unless otherwise approved by the Engineer, enclosures shall not be energized until locks are provided and all bolts are installed.

Circuit directories, where provided, shall be filled out. All breakers and components in shop built panels and enclosures shall be labeled with duo-colored plastic labels. Letters shall be a minimum 3/8 " in height.

Enclosures with external disconnects that de-energize all equipment inside the enclosure, need not have dead front trim, except that incoming line terminations shall be protected from incidental contact.

When galvanized is specified for nuts, screws, bolts or miscellaneous hardware, stainless steel may be used. All wiring and components shall be rated for 75 degrees C. Minimum size for service entrance conductors shall be #6 XHHW.

I. Safety Switch. A safety switch, placed ahead of the meter, shall only be used when specified by the Utility and when shown on the Electrical Service Data. The switch shall be UL Listed, heavy duty type, 600 volt, unfused, with a UL type 3R enclosure and equipped with a solid neutral (s/n) assembly. The switch shall be padlockable in the "on" position.

II. Service Type. Electrical service types A, C, D, and T shall be as schematically detailed on ED(4) or ED(5). Other service types shall be as detailed elsewhere on the plans.

III. Branch Circuit Breakers. Circuit breakers shall be thermal magnetic and have a minimum interrupting capacity of 10,000 amps and a voltage rating compatible with their use. Circuit breakers shall be sized as shown in the electrical service data. Circuit breakers in panelboards and load centers shall be full size and designed exclusively for the panelboard or load center in use. Tandem and half-width breakers shall not be used. All circuit breakers shall be permanently and clearly marked identifying the circuit or device supplied. Circuit breakers shall be UL Listed to UL489.

IV. Circuit Breaker Panelboard. Panelboards shall be UL Listed. Panelboards shall have copper busses, a minimum of 6 one-pole spaces or as required in the electrical service data, and when required will be rated for service equipment. Enclosure shall meet or exceed UL type 3R classification. Panelboards shall have a threaded hub conduit entry for conduit entering the top of the enclosure. Circuit breakers shall be bolt-in type only.

V. Circuit Breaker Load Center. Load centers shall be UL Listed.
Load centers for type T services may have copper or aluminum busses, all other load centers will be copper bus only. Load center will have a minimum of 4 one-pole spaces, and shall be rated for service equipment. Enclosure shall meet UL type 3R classification. Load centers shall have a threaded hub conduit entry for conduit entering the top of the enclosure. Circuit breakers shall be plug-in type only. Load centers for type T services shall accomodate a maximum of 6 one-pole breakers.

VI. Separate or Auxiliary Enclosure. Separate enclosures for HOA, photocell and lighting contactors for types D & T Services shall be a UL Listed assembly with outer door. Interior shall have dead front trim. HOA switch operator shall extend through the dead front trim. Photocell shall be mounted inside the enclosure as described in paragraph XIII when required by descriptive code. Separate enclosures shall meet the construction requirements of paragraph VIII. E, except that separate enclosure shall not have external operating handle, need not have a data pocket and door may latch at only one point. All equipment may be located in one enclosure instead of two, when approved by the Engineer.

VII. Where a Type D or T service is provided, laminated "as built" drawings are required as shown on ED(5) VIII E; shall be delivered before completion of the work, to the Engineer in lieu of placement within these smaller enclosures. Conduit may not enter the back wall of a service enclosure penetrating the equipment mounting panel. Provide grounding bushings on all metal conduits, terminate bonding jumper to grounding bus. Grounding bushing is not required when the end of the metal conduit is fitted with a conduit sealing hub or threaded boss such as a meter base.

EXPLANATION OF ELECTRICAL SERVICE DESCRIPTIVE CODE

ELEC SERV TY X (XXX/XXX) XXX (XX) XX (X) XX (X)

Example: ELEC SERV TY A(240/480)100(NS)SS(E)GC(O)

Schematic Type

Service Voltage (V / V)

Disconnect Amp Rating
(000 indicates main lug only)

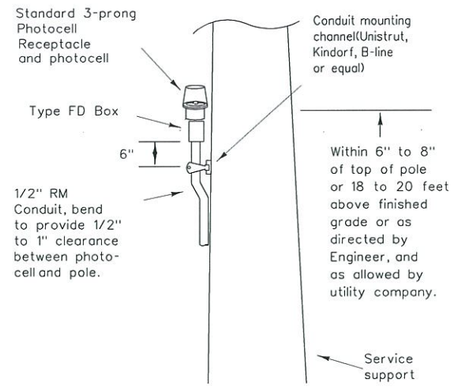
SS= Safety switch ahead of meter
NS= No switch ahead of meter and/or no meter required

Enclosure Type
GS= Galvanized steel (see ED(5)VIII,D)
SS= Stainless steel
AL= Aluminum

Photocell Mounting Location
T= Top of pole
E= Inside service/separate enclosure
L= Luminaire mounted
N= None

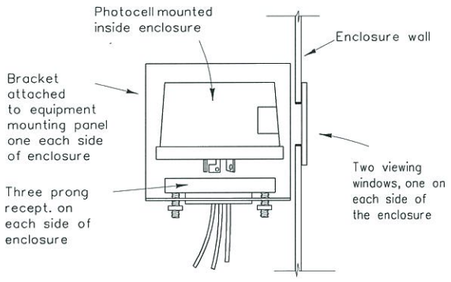
Service Support Type
GC= Granite concrete
OC= Other concrete
TP= Timber pole
SP= Steel pole
SF= Steel frame
OT= Pole by others or paid for separately
EX= Existing pole
TS= Switch gear to be placed on traffic signal pole
RT= Rectangular structural tubing
PS= Pedestal Service (see ED(5)VIII,G)

O= Overhead service
U= Underground service



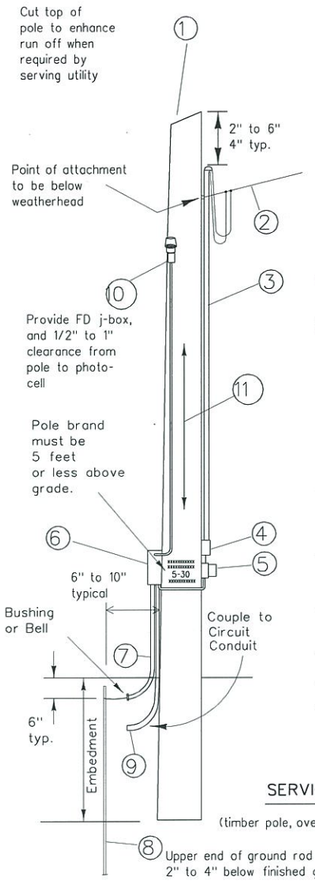
TOP MOUNTED PHOTOCELL

Conduit support spacing 3 feet from enclosure; 5 feet max.



ENCLOSURE MOUNTED PHOTOCELL

For photocell specifications see ED(5),XIII.



1 - Class 5 pole, height as required
2 - Service drop from utility company (attached below weatherhead)
3 - Service conduit and service entrance conductors(RMC) (See Electrical Service Data)
4 - Safety switch (when required)
5 - Meter (when required)
6 - Service enclosure
7 - No. 6 bare grounding electrode conductor in 1/2 " PVC to ground rod - extend 1/2 " PVC 6" underground.
8 - 5/8 " x 8' Copper clad ground rod - drive ground rod completely underground unless otherwise approved by the Engineer.
9 - RM conduit - same size as branch circuit conduit.
10 - Photocell and conduit - if top mounted. (See Electrical Service Data)
11 - When required by the serving utility provide bare #6 awg copper conductor. Run wire from pole top to butt wrap or copper butt plate. Protect conductor to a height of 8 ft above finish grade.

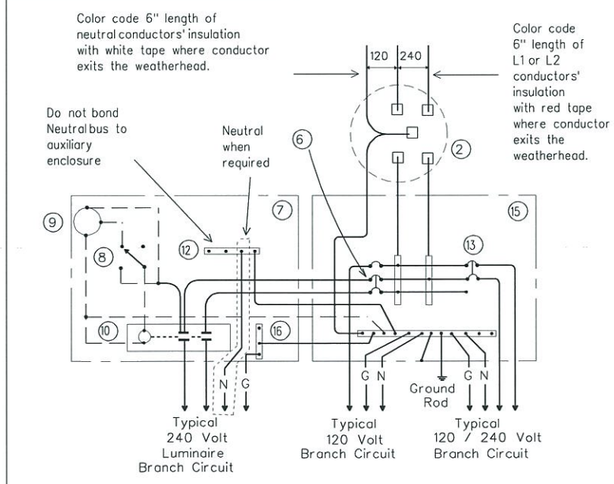
LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

(If applicable)

- Liquidtight flexible metal conduit, may be used when meter and service enclosure are mounted 90 to 180 degrees to each other. Size shall be same as service entrance conduit.
- LFMC shall not exceed 3 ft. and shall be securely supported within one ft. of each end. No strap required for LFMC shorter then 12"
- Each end of LFMC must have a grounding bushing or be terminated with a grounding fitting.
- A neutral conductor must be installed within the LFMC.
- Bend in liquidtight flexible metal conduit shall not exceed 180 degrees.
- A pull test is required on all installed conductors, at least six inches of free conductor movement shall be demonstrated to the satisfaction of the Engineer.

SERVICE SUPPORT TYPE TP (O)

(timber pole, overhead service, typical arrangement)



SCHEMATIC TYPE T
120/240 VOLTS - THREE WIRE

Install photocell and lighting contactor when shown on Electrical Service Data.

SCHEMATIC LEGEND

1 - omitted
2 - Meter (when required)
3 - Service Assembly Enclosure
4 - Main Disconnect Breaker (Not Used)
5 - Omit
6 - Circuit Breaker, 15 Amp typical for control circuit wiring
7 - Auxiliary Enclosure
8 - Control Station ("H-O-A" Switch)
9 - Photo Electric Control (enclosure-mounted shown)
10 - Lighting Contactor
11 - Power Distribution Terminal Blocks (Not Used)
12 - Neutral Bus required when 120 v. lights are controlled by lighting contactor
13 - Branch Circuit Breaker (See Electrical Service Data)
14 - Circuit Breaker Panelboard (Not Used)
15 - Load Center
16 - Ground Bus

——— Power Wiring
– – – – – Control Wiring
—N— Neutral Conductor (when required-to serve 120 v. loads only)
—G— Equipment grounding conductor-always required

TIMBER POLE NOTES

1. Conduit and electrical conductors attached to the electrical service pole and underground within 12 inches of service pole shall not be paid for directly but shall be subsidiary to the service pole.
2. Pole top mounted photocell, install on north side of pole or in service enclosure as required. See Electrical Service Data.
3. Attach meter and service equipment with stainless steel or galvanized channel (Unistrut, Kindorf, or equal). Gain pole as required to provide flat surfaces for each strut. Paint ends of galvanized channel with zinc rich paint. Gain depth 5/8" max. Gain height 1 7/8" max. Strut to be 1" max. deep, and 1 5/8" wide max. Secure each strut section to timber pole with two galvanized or SS lag bolts, 1/4" diameter min. by 1 1/2" length min. Place flat cut galvanized or SS washer on each lag bolt. Gain pole in a neat and workmanlike manner.
4. Embedment depth shall be as required in Item 627 Treated Timber Poles.
5. Poles trimmed for excess length shall be trimmed from the top end only.

Texas Department of Transportation
Traffic Operations Division

ELECTRICAL DETAILS- SERVICE SCHEMATICS AND SUPPORT-TYPE TP (OVERHEAD)

ED(4)-03

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SERVICE ENCLOSURE NOTES

VIII. Service Assembly Enclosures. All service assemblies and enclosures shall be UL Listed for the intended purpose.

A. Shop built or shop assembled service assemblies (all types except Type T and Type D without lighting contactor or enclosure mounted photo cell) and all auxiliary equipment enclosures mounted with service equipment and paid for as part of Item 628, "Electrical Services", shall be built or assembled by a UL Listed Industrial Control Panel shop and shall have a unique serial numbered UL Label with the words "LISTED ENCLOSED INDUSTRIAL CONTROL PANEL". The same or an additional label shall have the name, location, and phone number of the shop, the UL file number of the shop, the shop order or drawing number, date of manufacture or assembly, and the line voltage. The service assembly enclosure shall also be labeled "SUITABLE ONLY FOR USE AS SERVICE EQUIPMENT".

B. Conduit entries into the top of enclosures shall have threaded hub. Conduit entries through the equipment mounting back plate will not be allowed.

C. All service enclosure front doors shall be permanently labeled "DANGER HIGH VOLTAGE". Label shall be a self sticking type, intended for outdoor installation. Lettering style, layout and colors of red, black and white shall be as required by OSHA. Label letters shall be 1 to 1 1/2 inches high or as high as the enclosure door width will permit for smaller services. Separate or auxiliary lighting enclosures need not be OSHA labeled when mounted in the same viewing plane as the service enclosure front door. Where only one type of load is served by the service, the service door shall be marked using duo-colored plastic labels or self adhesive vinyl weather resistant labels, minimum of 1 inch high; applied in a neat and workmanlike manner. On the label will be the service number shown on the plans as well as identifying the load served specifically (i.e. lighting, landscaping, signals, traffic management or other wording as directed by the Engineer). Safety switches need not be OSHA labeled unless specifically required by the serving utility.

D. Type GS enclosures will only be allowed for service Types D and T without an enclosure mounted photocell and/or lighting contactor and the Type C panelboard. This spec will allow an "off the shelf" product meeting these specifications to be used. Type GS enclosures shall be made from pre-galvanized steel sheeting, hot dipped galvanized steel, or powder coat painted steel unless shown differently on the plans. Steel enclosures shall be painted inside and outside; galvanized enclosures may be painted. Unless otherwise approved by the Engineer, painted enclosures shall be gray, beige, white or light green. Panelboard/loadcenter enclosures shall meet UL type 3R requirements, shall have a dead front trim, and an outer padlockable door preventing unauthorized persons from operating contained equipment. Galvanized steel is no longer allowed for Types A,C,or custom-built D or T enclosures. If GS is shown in the descriptive code for any of these, an AL shall be provided.

E. Type AL enclosures for service Types A and C shall meet UL type 3R requirements and shall also meet additional requirements of this paragraph. The enclosure shall have both a main disconnect remote operator handle and a door latch handle. Die-cast handles are not acceptable. The main disconnect remote operator shall be flange-mounted, shall interlock the door when in the "on" position, and shall be padlockable in both the "on" or "off" positions. Door latch shall latch at two or more points, operate by a handle separate from disconnect switch and be capable of being locked. Door closure clamps will not be allowed. Lock must be keyed to Master •2195. All the enclosures shall have either a continuous stainless steel piano hinge with stainless steel pin or enclosures less than 30 inches may have two heavy duty hinges, those over 30 inches must have three. Heavy duty two and three point hinges shall have a 0.185 inch minimum diameter electro-zinc plated steel pin or a stainless steel pin. Two point hinged doors shall be rated for 56 lbs of loading. Three point hinged doors shall be rated for 70 lbs of loading. The door shall have an attached data packet constructed of either thermoplastic or metal. Pocket shall be 12" x 12", unless that size will not fit in enclosure. The pocket shall then be as large as possible, as approved by the Engineer, and mechanically attached with stainless steel nuts and bolts, or stainless steel or aluminum rivets. Enclosure shall include an equipment mounting panel installed inside the enclosure on collar studs or tapped bosses, and constructed of a minimum 12 guage galvanized steel. Equipment mounting panels shall not be painted. Enclosure shall have factory installed external mounting feet. Enclosure door shall be capable of opening at least 130 degrees, with arm or other approved means to hold the door open. Only the enclosure exterior will be primed and painted. Paint color shall be beige or gray and shall be powder coat paint as shown below. Condensation drainage shall be provided in the bottom of the enclosure before leaving the factory. The Contractor shall prepare and submit a schematic drawing unique to an individual service. The approved drawing shall be laminated and placed in the document pocket of the service at the time of shipment to the job site. All applicable wiring diagrams and plan sheet layouts for all equipment and branch breaker circuits supplied by that service shall also be laminated and placed in the document pocket prior to shipping. Type AL enclosures for Type D and T services with enclosure mounted photocell and/or lighting contactor shall have the loadcenter interior mounted in an enclosure with properly adapted dead front trim. Types D and T shall not have a loadcenter exterior "can" mounted inside another enclosure meeting these specifications. (Do not put one enclosure inside another enclosure). Types D and T with enclosure mounted photocell and/or lighting contactor shall meet the additional requirements of this paragraph except that remote-operating handle will not be provided.

F. Type SS enclosures for Type A and C shall meet all the requirements above for their respective type AL. Type SS enclosures for D and T shall meet all the requirements above for their respective type AL. Stainless Steel shall not be painted.

G. PS enclosure shall be as detailed and specified on ED(8). Galvanized steel will not be allowed for any pedestal service. If GS is shown in the descriptive code an AL will be provided.

IX. Powder Coat Paint. Powder coating shall be either a polyester thermosetting resin, a zinc rich primer with a TGIC (triglycidyl isocyanurate) powder overcoating, or a zinc-rich epoxy powder, applied by either electrostatic spray or fluidized bed immersion, high temperature oven cured, high density, low gloss, 4 mil thick (minimum), coating. Adhesion shall meet the 5A or 5B classifications of ASTM D3359. Finish shall be uniform in appearance and free of scratches.

X. Main Disconnect. Main disconnect device shall be a circuit breaker, as specified in the Electrical Service Data, shall be two or three pole, and rated for the voltage and amperage specified. Circuit breaker shall be an UL Listed thermal-magnetic circuit breaker controlled by flange-mounted remote operator in the service assembly enclosure when required. Circuit breakers shall have a minimum interrupting rating of 10,000 Amps. When the utility company provides a transformer larger than 50 KVA, Contractor shall verify that the available fault current is less than the circuit breaker amps interrupting capacity (AIC) rating and shall provide documentation from the Utility to the Engineer. Documentation shall be submitted at the same time as other electrical submittals. Circuit breaker shall be UL Listed to UL489. No backfed breakers will be allowed for use as a main disconnect.

XI. Control Circuit. Control circuit protection shall be 15 amp circuit breaker.

XII. Control Station ("H-O-A" Switch). Control station shall be a maintained-contact, three position selector switch in an UL type enclosure. Switch shall be rated 600 volts and shall be fitted with "Hand-Off-Auto" legend.

XIII. Photo Electric Control. Photo electric control shall consist of a photocell, internal lightning arrester, and relay or bimetallic switch mounted inside a weatherproof enclosure with standard 3-prong twist lock photocell plug and receptacle. The enclosure shall be made of poly-acrylic with clear acrylic window. Enclosure chassis shall be molded thermosetting plastic. The photocell shall have a polyethylene gasket, and shall have a hermetically sealed cadmium sulfide cell. The arrester shall have an enclosed type expulsion arrester rated 2.0 kV sparkover with 5,000 amps follow-through. Relay or switch shall be time delay type with normally closed contacts. Photo electric control shall be rated a minimum of 1800 VA, voltage as required. Enclosure mounted photocells shall be the same as above except that the photocell shall be mounted inside the enclosure. The enclosure shall have two acrylic paned windows, or other material approved by the Engineer, one on each side of the enclosure. Each window shall be rectangular approximately one inch by two inches, round 2 inch diameter, or as otherwise approved by the Engineer. Bracket and photocell's receptacle will be mounted inside enclosure next to each window. Except for window side, 2" of clearance is required on all sides of photocell for ease of replacement. The photocell's receptacle is held in place by two mounting screws on bracket and located next to each window of the enclosure. The 3-prong twist lock photocell shall be mounted in a position to receive light from the window closest to the photocell. The photocell shall be mounted in a position to receive light from one window. Top of pole mounted photocells shall be mounted as shown on ED(4). The Contractor shall be responsible for proper operation of the photo-electric control. The Contractor shall move and/or adjust or shield the photocell from stray or ambient nighttime light or shall make any other adjustments required for proper operation. The photocell shall face North when practicable. Unless otherwise shown on the plans, the photocell shall turn on the illumination system at 1.0 +(-) 0.5 footcandle and turn off the illumination system at two footcandles higher than turn on.

XIV. Lighting Contactor. Lighting contactor shall be a UL Listed NEMA rated lighting contactor, two-pole or multipole as required, electrically held type designed to control high pressure sodium lighting loads, with silver alloy double break contacts rated at 240 volts, 480 volts or 600 volts as required. Lighting contactor shall not be the DIN rail mounted type.

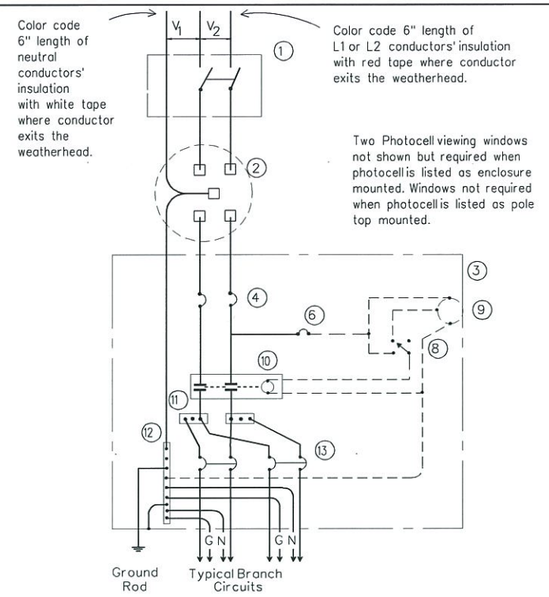
XV. Power Distribution Terminal Blocks. Power distribution terminal blocks shall be rated for 600 volts and shall be used for line side connections to branch circuit breakers where more than one circuit breaker is required. Lugs on blocks shall be properly sized for conductors being used. Only one conductor shall be placed under each lug.

XVI. Neutral/Ground Bus. Neutral/ground bus shall be a factory made bus permanently bonded to the enclosure with properly sized lugs for grounding and neutral conductors.

SCHEMATIC LEGEND

1 - Safety Switch (when required)
2 - Meter (when required)
3 - Service Assembly Enclosure
4 - Main Disconnect Breaker (See Electrical Service Data)
5 - Omit
6 - Circuit Breaker, 15Amp
7 - Auxiliary Enclosure
8 - Control Station ("H-O-A" Switch)
9 - Photo Electric Control (enclosure-mounted shown)
10 - Lighting Contactor
11 - Power Distribution Terminal Blocks
12 - Neutral/Ground Bus
13 - Branch Circuit Breaker (See Electrical Service Data)
14 - Circuit Breaker Panelboard (See Electrical Service Data)
(If Type C is shown as AL or SS on descriptive code, this is the service assembly enclosure only. Panelboard enclosure is GS unless otherwise noted.
15 - Load Center

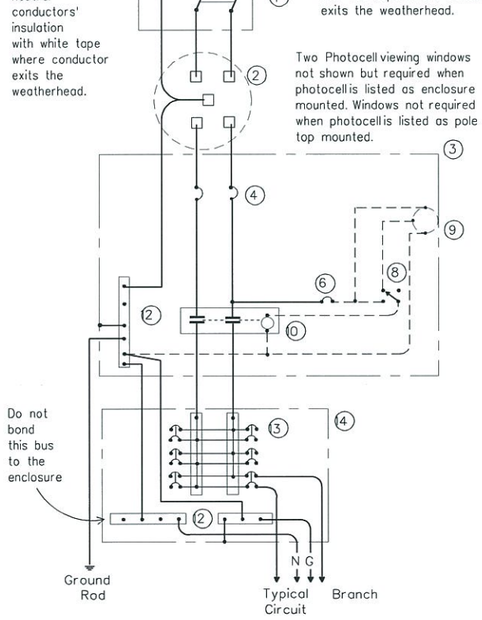
Power Wiring ————
Control Wiring — — —
Neutral Conductor N (when required) serve 120 v. loads only)
Equipment Grounding conductor-always required



SCHEMATIC TYPE A

THREE WIRE

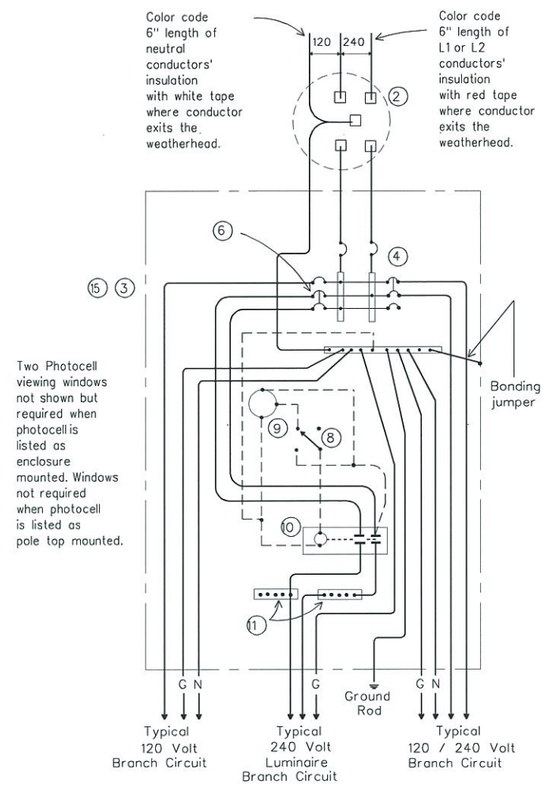
Maximum feeder circuit size (High Mast Poles): 100 amps for two pole 480V, 125 amps for one or two pole 120V or 240V. Maximum branch circuit size: 50 amps.



SCHEMATIC TYPE C

THREE WIRE

Maximum feeder circuit size (High Mast Poles): 100 amps for two pole 480V, 125 amps for one or two pole 120V or 240V. Maximum branch circuit size: 50 amps.



SCHEMATIC TYPE D

120/240 VOLTS - THREE WIRE

Install photocell and lighting contactor when shown on Electrical Service Data. See Type D service notes.

TYPE D SERVICE NOTES

Photocell and lighting contactor shall be located either in the same UL type 3R enclosure with load center or, if approved by Engineer, in separate enclosure. There shall be a window on each side of enclosure to allow operation of photocell. Both photocell contactor and breaker area shall have dead front trim. Enclosure, except for RT and PS supports, shall not exceed 36 inches in height or 16 inches in width unless approved by the Engineer. Ty D load center with lighting controls or TY D separate lighting control enclosure shall have power distribution blocks for a minimum of 4, •8 conductors per phase.

Texas Department of Transportation
Traffic Operations Division

ELECTRICAL DETAILS- SERVICE ENCLOSURE & NOTES

ED(5)-03

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II. GROUND RODS

A. MATERIALS

1. All ground rods installed at electrical services, including supplemental lightning protection ground rods specified by the plans in other locations such as pole bases, shall be copper clad and UL listed. Rods shall be a minimum diameter of 5/8 inch. The length shall be a minimum of 8 feet. Larger diameter or longer length rods may be called for in some specific locations, see the individual plans sheets.
2. Ground rod clamps shall be listed to be in direct contact with the soil. Where concrete encasement is required, the clamp shall be listed for concrete encasement.

B. CONSTRUCTION METHODS

1. Ground rods installed in locations such as pole bases, to provide supplemental lightning protection need not be totally in contact with the soil. Where called for in the plans, rods may be encased in soil or concrete or any combination of soil and concrete. When concrete encased, the connection of the conductor to the rod shall be readily accessible for inspection or repairs. When driven into the soil the upper end shall be between 2 to 4 inches below finished grade. Ground rods shall not be placed in the same drilled hole as a timber pole.
2. Ground rods shall be installed such that the end imprinted with the rod's part number is installed as being the upper end.
3. Non-conductive coatings such as concrete splatter shall be removed from the rod at the clamp location.
4. Routing of lightning protection ground rod wires shall be run as short and straight as possible. Where bends are required they shall have a minimum radius of four inches.
5. Unless specifically called for by the plans, conduits used for ground rod wires shall be non-metallic. Where metal conduits are specified, a grounding bushing and properly sized bonding jumper shall be provided and properly installed on each end.
6. Where rocky soil or a solid rock bottom is encountered when driving a ground rod and the horizontal trench placement method is the only viable solution, written authorization from the Engineer must be obtained.

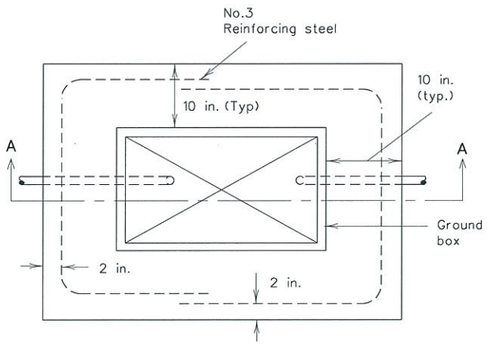
III. GROUND BOX

A. MATERIALS

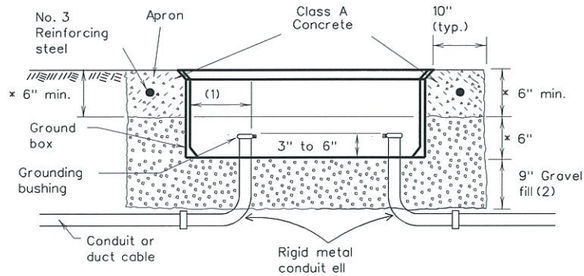
1. Ground boxes 16x30x24 inches (WxLxD) or smaller shall be polymer concrete of the type required by the descriptive code shown elsewhere. Larger ground boxes shall be as shown elsewhere in the plans.
2. All ground boxes and covers shall be permanently marked either by impress or by permanent ink, with manufacturer's model number and manufacturer's name or logo.
3. Covers shall be bolted down, and bolt holes in the box shall be arranged to drain dirt.
4. Ground box Types A, B, C, D & E shall meet the following requirements:
   a. Ground boxes and covers be manufactured from polymer concrete reinforced with continuous strands of woven or stitched borosilicate fiberglass cloth. The polymer concrete shall be made from catalyzed polyester resin, sand and aggregate, and shall have a minimum compressive strength of 11,000 psi. Polymer concrete containing chopped fiberglass or fiberglass reinforced plastic is not acceptable.
   b. Minimum inside dimensions shall be as follows (width x length x depth):
      Type A shall be 11.5 inches x 21 inches x 10 inches, (122311)
      Type B shall be 11.5 inches x 21 inches x 20 inches, (122322)
      Type C shall be 15.25 inches x 28.25 inches x 10 inches, (162911)
      Type D shall be 15.25 inches x 28.25 inches x 20 inches, (162922)
      Type E shall be 11.5 inches x 21 inches x 16 inches, (122317)
   c. Bottom edge of box or extension shall be footed with a minimum 1 1/4 inch flange.
   d. Ground boxes shall withstand 600 lbs. per sq. ft. applied over the entire sidewall with less than 1/4 inch deflection per foot length of box. Ground boxes and covers shall withstand a test loading of 20,000 lbs. over a 10 inch by 10 inch area centered on the cover with less than 1/2 inch deflection. Ground boxes and covers shall meet Western Underground Standards 3.6. Manufacturer shall supply certification by an independent laboratory or sealed by a Texas-Licensed Professional Engineer.
   e. Covers shall be 2 inch (nominal) thick polymer concrete. All hardware shall be stainless steel. Cover shall be secured with two 1/2 inch stainless steel bolts. Bolts shall be self-retaining and shall withstand a minimum of 70 ft-lbs. torque and shall have a minimum 750 lbs. straight pull out strength. Nuts shall be floating and shall provide a minimum of 1/2 inch movement from the center of the nut. Covers shall be skid resistant, minimum 0.5 coefficient of friction. Covers shall be interchangeable between manufacturers and shall conform to the dimensions shown herein. Unless otherwise approved by the Engineer, cover shall be legibly imprinted with the following words in minimum 1 inch letters:
      Ground Boxes containing wiring for traffic signals shall be labeled, Danger High Voltage Traffic Signal.
      Ground boxes containing wiring for illumination systems shall be labeled, Danger High Voltage Illumination.
      Ground boxes containing wiring for traffic management systems shall be labeled, Danger High Voltage Traffic Management.
      Ground boxes containing wiring for sign illumination systems shall be labeled, Danger High Voltage Sign Illumination.
      Ground boxes containing wiring for traffic signals that also contain illumination, powered by the signal electrical service, shall be labeled, Danger High Voltage Traffic Signal.

B. CONSTRUCTION METHODS

1. Ground boxes shall be set on a 9 inch (minimum) bed of aggregate from 3/4 " up to 2" in size. Aggregate shall be in place prior to setting box and conduits shall be capped. Any gravel or dirt in conduit shall be removed.
2. When required by Item descriptive code, construction of an apron encasing a ground box including concrete and reinforcing steel shall not be paid for directly but shall be subsidiary to the ground box. Reinforcing steel may be field bent. Concrete for aprons shall be considered miscellaneous concrete for testing purposes. Aprons shall be cast in place.
3. Conduit holes may be cut in the walls of type B & D boxes at least 18 inches beneath the cover.
4. If, within the limits of this project, the Contractor must utilize an existing ground box equipped with a metal cover, the Contractor shall bond the cover to the grounding conductor with a 3 foot long flexible stranded jumper the same size as the grounding conductor. Connection of bonding jumper to metal ground cover shall not be paid for directly but shall be subsidiary to various bid items. The box(es) must be clearly shown on the plans with plan notes fully describing the work required.
5. If there are other ground boxes with metal Covers within the project limits but not involved in the contract, the Engineer may direct the Contractor to ground the covers, designating and identifying the specific boxes in writing. This work will be paid for separately.
6. Termination to metal ground box covers shall be made using a tank ground type lug.



PLAN VIEW

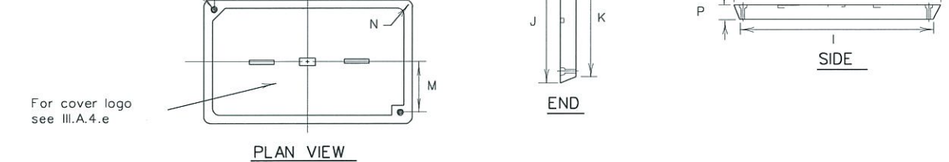


SECTION A - A

APRON FOR GROUND BOXES

(Where required)

(1) Final position of end of conduit shall not exceed one-half the distance to the side of box opposite the conduit entry.
(2) Place gravel "under" the box. not "in" the box. Gravel should not encroach on the interior volume of the box.
(3) Install bushing on the upper end of all ells.
(4) Where a ground rod is present in the ground box, connect it to any and all equipment grounding conductors using a listed connector.
(5) Maintain sufficient space between all conduits so as to allow for proper installation of bushings.
(6) All conduits shall be installed in a neat and workmanlike manner.
(7) All conduits installed in the ground box shall be sealed after completion of conductor installation and any required pull tests. Silicone shall not be used as sealant.



PLAN VIEW

END

GROUND BOX COVER

GROUND BOX COVER DIMENSIONS								
BOX	DIMENSIONS (INCHES)							
SIZE	H	I	J	K	L	M	N	P
A, B & E	23 1/4	23	13 3/4	13 1/2	9 7/8	5 1/8	1 3/8	2
C & D	30 1/2	30 1/4	17 1/2	17 1/4	13 1/4	6 3/4	1 3/8	2

* = REVISED, PHARR DISTRICT

5/03 Revision
⚠ Revised notes.

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
PHARR DISTRICT STANDARD

ELECTRICAL DETAILS- GROUND BOXES

ED(3)-03 (PHR)

©TxDOT January 1992	DN: KB	CK: JW	DW: DN	CK: GC	REG NO.:

REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT			SHEET
4-98 12-00 3-03 5-03	PHR	6				164
	COUNTY		CONTROL	SECTION	JOB	HIGHWAY
	HIDALGO		0921	02	323	MILE 2 RD

71C

DN:
CK:
DW:
CK:

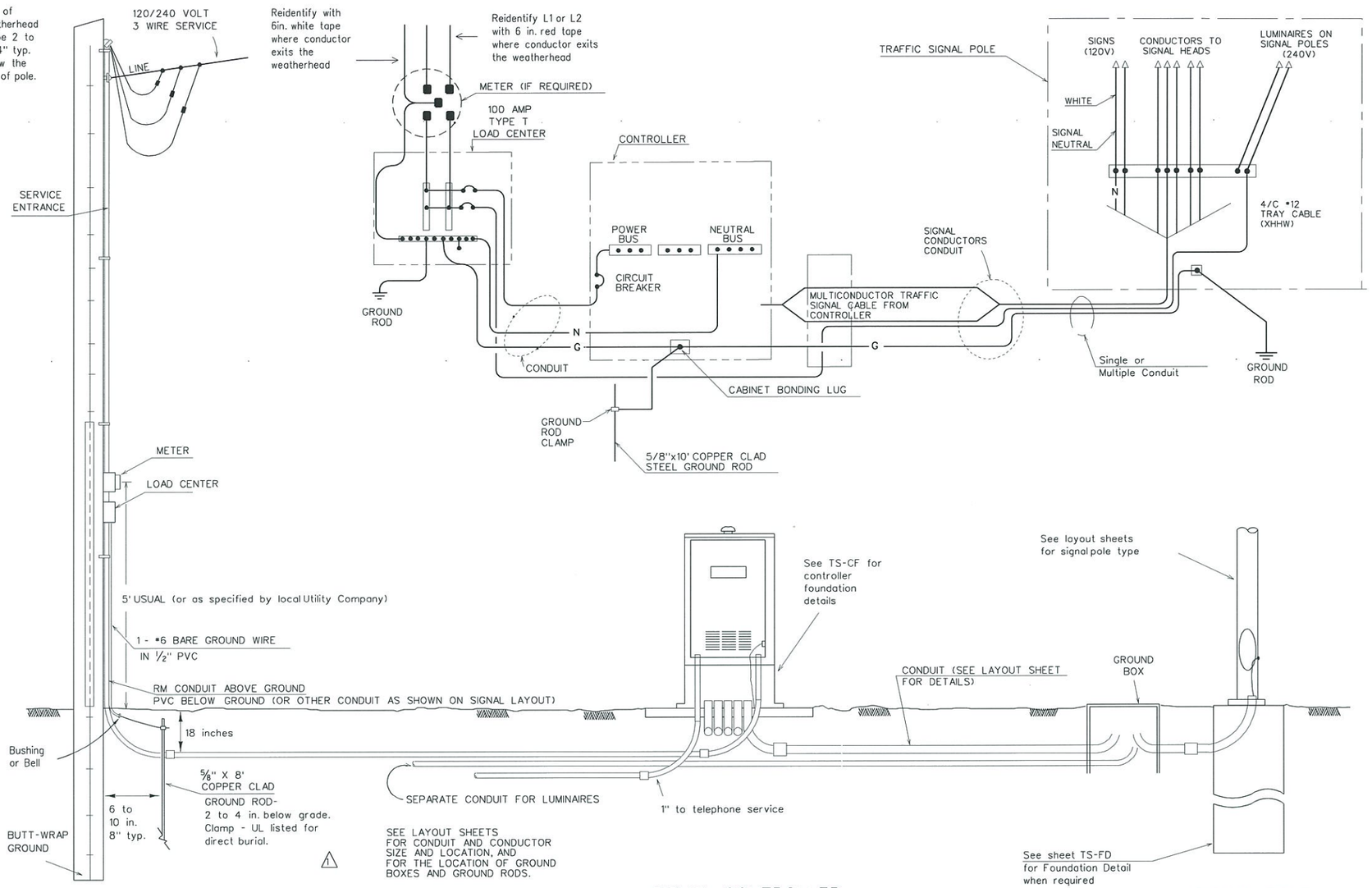
LEVELS DISPLAYED 4/23/2014

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	

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NOTES:

1. Luminaire conductors shall not be looped through controller cabinet.
2. Electrical system to include an equipment grounding conductor noted here as "G". All exposed metal parts are to be bonded to grounding conductor.
3. Photocell, when required, shall be mounted at top of pole or in enclosure as shown on ED(4) and ED(5) and as required by descriptive code.
4. Roadway lighting fixtures, when required, shall be in accordance with the material and construction methods of the Item, "Roadway Illumination Assemblies" except for the test period for proper operation of the luminaires. Installed roadway lighting luminaires and internally lighted street name signs shall be tested for proper operation as a part of the associated traffic signal system.
5. Internally lighted street name signs (ILSN), when required, shall be in accordance with the Item "Internally Lighted Street Name Signs". Because of the electrical isolation of ILSN hinges, a #12 green grounding conductor shall be run to the ILSN fixture.
6. Install ground rod at alternate location when directed by the Engineer. Maintain a minimum of 8 ft in contact with the earth.
7. Liquidtight flexible metal conduit (LFMC), may be used when meter and service enclosure are mounted 90 to 180 degrees to each other. LFMC shall be same size as service entrance conduit. LFMC shall not exceed 3 ft. and shall be securely supported within one foot of each end. No strap required for a LFMC shorter than 12". Each end of LFMC must have a grounding bushing or be terminated with a grounding fitting. A neutral conductor must be installed within the LFMC. Bend in liquidtight flexible metal conduit shall not exceed 180 degrees.
8. Minimum embedment depth as per Item 627 Treated Timber Poles.
9. Pole to be set plumb.
10. Back fill thoroughly tamped in 6 in. lifts. Place 6 inches additional backfill above grade around pole base to allow for settling, as per Item 627.
11. Excess pole length shall be trimmed from the top at a slope to aid water run off.
12. Gain pole two places for each meter, service, separate or auxiliary enclosure. See ED(4) for details.
13. All illumination and power conductors to be pull tested and megged. Do not meg traffic signal cable.
14. Enclosures are to be locked, and ground box covers are to be bolted before power is applied to the circuit.
15. Conduits entering top of enclosures to be fitted with conduit sealing hub or threaded boss, such as meter hub. Off-set nipple, when required, shall not be zinc-die-pressure cast. All metal conduits not connected to conduit sealing hub, or threaded boss must have a grounding bushing. Terminate bonding jumper to ground bus. All conduits entering enclosures shall be sealed. Silicone shall not be allowed.



ELECTRICAL SERVICE

(TYPE T TIMBER POLE SHOWN AS EXAMPLE, SEE ELECTRICAL DETAILS, LAYOUT SHEETS, AND ELECTRICAL SERVICE DATA SHEET FOR SERVICE REQUIRED AND FOR DETAILS.)

SIGNAL CONTROLLER

SIGNAL POLE

Unless shown elsewhere in the plans, electrical service data shall be as follows.

ELECTRICAL SERVICE DATA

ELECTRICAL SERVICE DESCRIPTION(SEE ED(4))	SERVICE CONDUIT SIZE (RMC)	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN DISCONNECT CKT. BRK. POLE/AMP	TWO-POLE CONTACTOR AMPS	PANELBD./ LOADCENTER AMP RATING (MIN)	CIRCUIT NO.	BRANCH CKT. BRK. POLE/AMPS	KVA LOAD
TY T (120/240)000(NS)GS(L)TS(O)	1 1/4	3/#6	N/A	None	N/A	100	T.S. Lighting	1P/50 2P/20	<5.5
TY T (120/240)000(NS)GS(L)TS(O)	1 1/4	3/#6	N/A	None	N/A	100	F.B. Lighting	1P/20 2P/20	<2.2

5/03 Revision

⚠ Revised notes.

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
PHARR DISTRICT STANDARD

ELECTRICAL DETAILS- TYPICAL TRAFFIC SIGNAL SYSTEM DETAILS

ED(7)-03 (PHR)

©TxDOT January 1992	DN: KB	CK: JW	DW: DN	CK: GC	MSG NO.:

REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
4-98	PHR	6		165
12-00	COUNTY		CONTROL / SECTION / JOB	HIGHWAY
3-03	HIDALGO		0921 / 02 / 323	MILE 2 RD
5-03				71G

LEVELS DISPLAYED 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

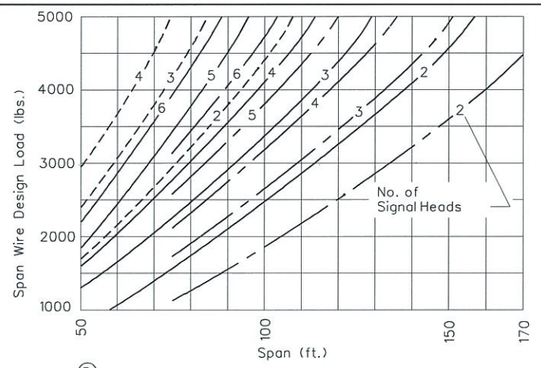
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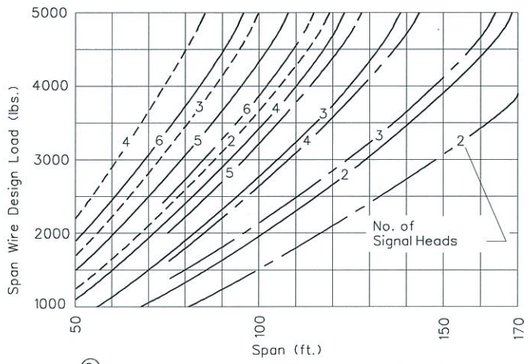
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STRAIN POLE DESCRIPTION	Pole Type	Found-ation Type	Maximum Permissible Span Wire Load (lbs.)
26' Pole	A	36-A	4900
30' Pole	B	36-A	4300
30' Pole with Lum.	B	36-A	4000
30' Pole with 20' Mast Arm	C	36-B	4400
30' Pole with 24' Mast Arm	C	36-B	4000
30' Pole with 28' Mast Arm	C	36-B	3600
30' Pole with 32' Mast Arm	C	36-B	3300
30' Pole with 36' Mast Arm	C	36-B	2900
30' Pole with 20' Mast Arm & Lum.	C	36-B	4100
30' Pole with 24' Mast Arm & Lum.	C	36-B	3800
30' Pole with 28' Mast Arm & Lum.	C	36-B	3400
30' Pole with 32' Mast Arm & Lum.	C	36-B	3000
30' Pole with 36' Mast Arm & Lum.	C	36-B	2500
34' Pole	D	36-B	5200
34' Pole with Lum.	D	36-B	4900

② Numbers on Load Span Charts indicate the number of signal heads on the span. The total span wire design load is based on one 5-section head and one or more additional 3-section head(s). Design wind pressures on cables are assumed as 1.6 lb/ft. Weight of span wire cables (one per signal head) is assumed as 0.65 lb/ft which includes an allowance for conductor cables and miscellaneous hardware. The effect of the sway cable on load distribution is ignored as it is assumed to break at design wind conditions. When a pole supports 2 spans, the span wire design loads for both spans should be added vectorially to determine the design load for that pole.



②SIGNALS WITH 12-INCH LENS



②SIGNALS WITH 8-INCH LENS

Signal Head Type	Wt. Per Head	Wind Area ⬙
5-Section, 12" Lens	125 lbs	9.6 sq. ft.
5-Section, 8" Lens	70 lbs	4.8 sq. ft.
3-Section, 12" Lens	75 lbs	5.64 sq. ft.
3-Section, 8" Lens	45 lbs	3.0 sq. ft.

⬙ Effective projected design wind area (actual area times drag coefficient)

– – – – – – – – Sag = 4'-6" (26' or 30' Pole)
———— Sag = 8'-0" (30' or 34' Pole)
———— – – Sag = 11'-6" (34' Pole)

SHIPPING PARTS LIST

Poles (Without Traffic Signal Arm)

Pole Type	Strain poles with Luminaire: Ship each pole with the following hardware attached: handhole at base, pole cap, 2 clamp-on simplex and 1 pipe plug.			Strain poles without Luminaire: Ship each pole with the following hardware attached: handhole at base, pole cap and 1 pipe plug.		
	Description	Designation	Quantity	Description	Designation	Quantity
A				26' Strain Pole	SP 26 A-100	
B	30' Strain Pole	SPL 30 B-100		30' Strain Pole	SP 30 B-100	
D	34' Strain Pole	SPL 34 D-100	**4**	34' Strain Pole	SP 34 D-100	

Poles (With Traffic Signal Arm)

Pole Type	Strain poles with Luminaire: Ship each pole with the following hardware attached: handhole at base, pole cap, clamp-on simplex and 3 pipe plugs.			Strain poles without Luminaire: Ship each pole with the following hardware attached: handhole at base, pole cap and 3 pipe plugs.		
	Description	Designation	Quantity	Description	Designation	Quantity
C	30' SPw/TS Arm	SPL 30 C-100		30' SPw/TS Arm	SP 30 C-100	

Traffic Signal Arms (For Type C poles)

Nominal Arm Length	Type I Arm (1 Signal): Ship each Type Arm with the following hardware attached: 2 CGB Connectors, 1 clamp with bolts and washers		Type II Arm (2 Signals): Ship each Type Arm with the following hardware attached: 1 Bracket Assembly, 3 CGB Connectors and 1 clamp with bolts and washers		Type III Arm (3 Signals): Ship each Type Arm with the following hardware attached: 2 Bracket Assemblies, 4 CGB Connectors and 1 clamp with bolts and washers	
ft.	Designation	Quantity	Designation	Quantity	Designation	Quantity
20	20I-100					
24	24I-100		24 II -100			
28	28I-100		28 II -100			
32			32 II -100		32 III -100	
36			36 II -100		36 III -100	

Anchor Bolt Assemblies (1 per pole)

Templates may be removed for shipment.

Anchor Bolt Diameter	Anchor Bolt Length	Quantity
1 ¾"	3'-10"	
2"	4'-3"	**4**

Each Anchor Bolt Assembly consists of the following: Top and Bottom templates, 4 anchor bolts, 8 nuts, 8 flat washers, and 4 nut anchor devices (Type 2) per Standard Drawing "TS-FD".

Luminaire Arms

Nominal Arm Length	Quantity
8' Arm	**4**

① See Sheet "DMA-100"

Pole Type	ROUND POLES D_B in.	D_T in.	④thk in.	H ft.	POLYGONAL POLES D_B in.	D_T in.	④thk in.	H ft.
A	12.5	8.9	.239	26	13.0	9.0	.239	26
B	13.5	9.3	.239	30	14.0	9.0	.239	30
C	15.5	11.3	.239	30	16.0	11.0	.239	30
D	15.5	10.7	.239	34	16.0	11.0	.239	34

D_B = Pole Base O.D. D_T = Pole Top O.D. H = Pole Height

④ Thickness shown are minimum, thicker materials may be used.

STATE OF TEXAS · C. SIMEONIDIS · 60919 · REGISTERED PROFESSIONAL ENGINEER

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY C. SIMEONIDIS, P.E. 60919 ON APRIL 23, 2014

SHEET 1 OF 2

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES STRAIN POLE ASSEMBLIES

(100 MPH WIND ZONE)

SP-100(1)-12

©TxDOT March 1996

DN: MS	CK: JSY	DW: BR	CK: JSY

REVISIONS: 6-96, 1-12

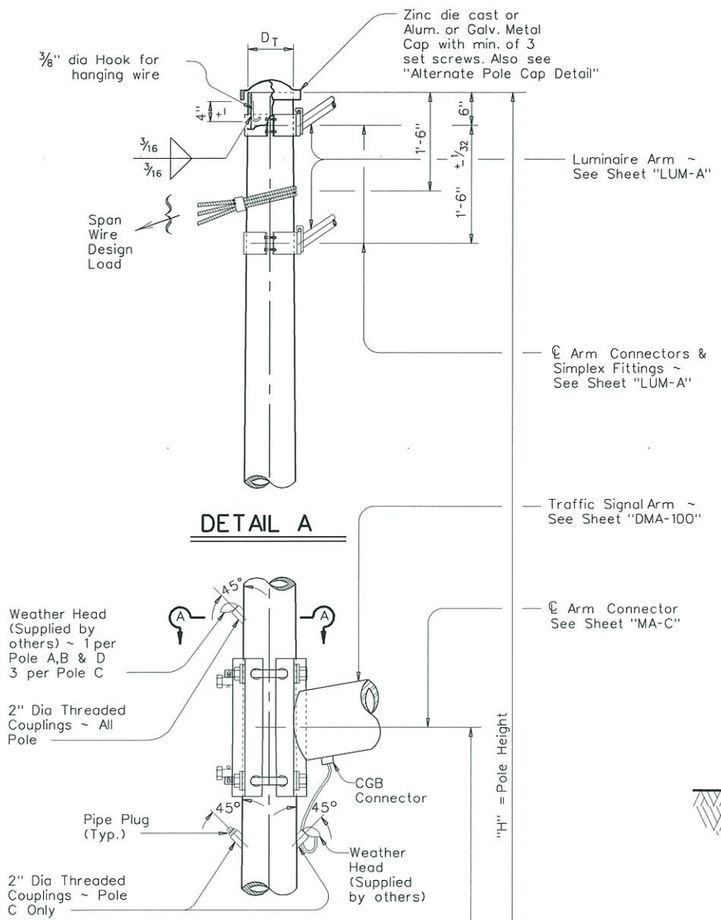
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0921	02	323	MLE 2 RD
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		166

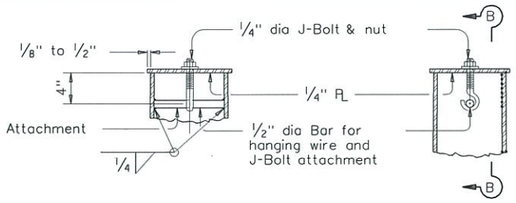
121A

DATE:
FILE:

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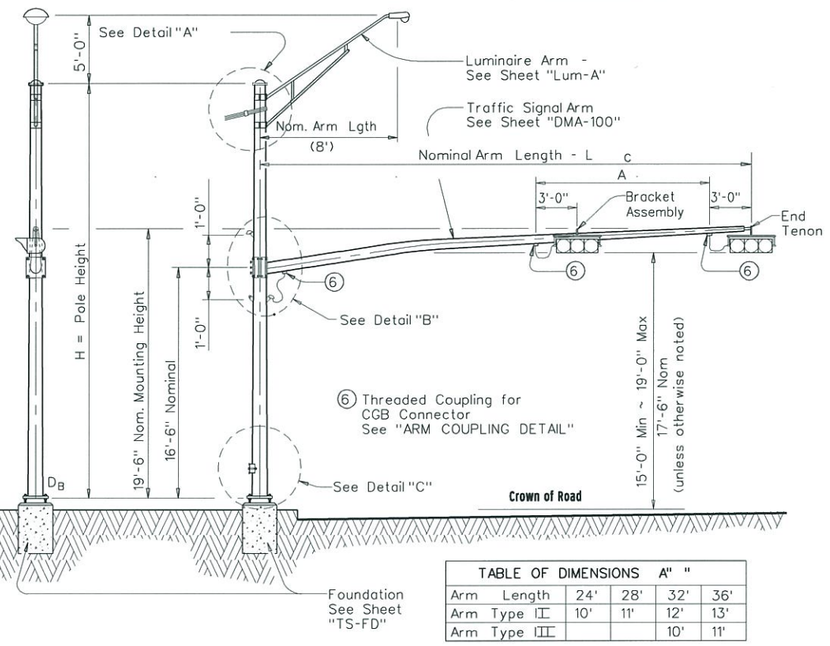
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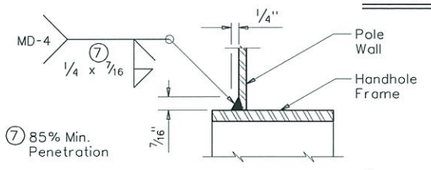
SECTION B-B

ALTERNATE POLE CAP DETAIL

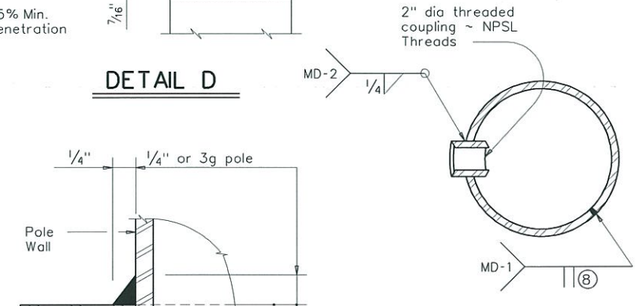


STRUCTURE ASSEMBLY

TABLE OF DIMENSIONS A" "				
Arm Length	24'	28'	32'	36'
Arm Type I℄	10'	11'	12'	13'
Arm Type III			10'	11'

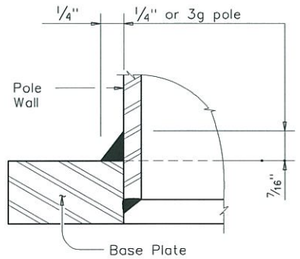


DETAIL D

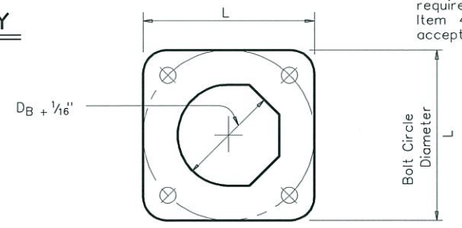


SECTION A-A
(Pole Coupling and Seam Weld Details)

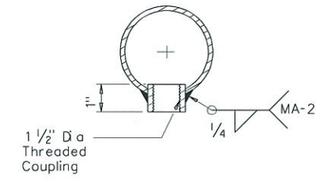
8 60% Min. penetration, except 100% penetration within 6" of circumferential base welds.



DETAIL E



BASE PLATE PLAN



ARM COUPLING DETAIL

MATERIALS	
Round Shafts or Polygonal Shafts ⑨	ASTM A595 Gr.A, A588, A1008 HSLAS Gr.50 Class 2, A1011 HSLAS Gr.50 Class 2, A572 Gr.50 or A1011 SS Gr.50 ⑩
Plates ⑨	ASTM A36, A588, or A572 Gr.50
Connection Bolts	ASTM A325 except where noted
Pin Bolts	ASTM A325
Pipe ⑨	ASTM A53 Gr.B, A501, A1008 HSLAS-F Gr.50, A1011 HSLAS-F Gr.50
Steel Cable	ASTM A475, 7 Wire Utilities Grade
Misc. Hardware	Galvanized steel or stainless steel or as noted

⑨ ASTM A572, A1008 HSLAS, A1011 HSLAS, A1008 HSLAS-F, A1011 HSLAS-F, or A1011 SS may have higher yield strengths but shall not have less elongation than the grade indicated.

⑩ ASTM A1011 SS Gr.50 shall also have a minimum elongation of 18 percent in 8 inches or 23 percent in 2 inches. Material thickness in excess of those stipulated under A1011 SS will be acceptable providing the material meets all other A1011 SS requirements and the requirements of this item.

GENERAL NOTES

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications thereto. Design Wind Speed equals 100 mph plus a 1.3 gust factor. The maximum permissible span wire design loads tabulated are calculated at a stress load of 1.4 times the basic allowable stress. A simultaneous wind on the pole, mast arm, and luminaire is also included.

See standard sheet "DMA-100" for details of clamp-on traffic signal arms, sheet "MA-C" for traffic signal arm connection details, sheet "LUM-A" for luminaire arm and connection details, and sheet "TS-FD" for anchor bolt and foundation details.

Fabrication shall be in accordance with Item 686, "Traffic Signal Pole Assemblies (Steel)" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. Materials, fabrication tolerances, and shipping practices shall meet the requirements of this sheet and Item 686, "Traffic Signal Pole Assemblies (Steel)".

Unless otherwise noted, all parts shall be galvanized in accordance with Item 445, "Galvanizing", after fabrication.

Deviation from the details and dimensions shown herein require submission of shop drawings in accordance with Item 441, "Steel Structures". Alternate designs are not acceptable.

Foundation Type	Anchor Bolt Diameter	Bolt Hole Diameter	Bolt Circle Diameter	Base PL Dim. L x T
36-A	1 3/4"	2"	19"	19" x 1 3/4"
36-B	2"	2 1/4"	21"	21" x 2"

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES STRAIN POLE ASSEMBLIES

(100 MPH WIND ZONE)

SP-100(2)-12

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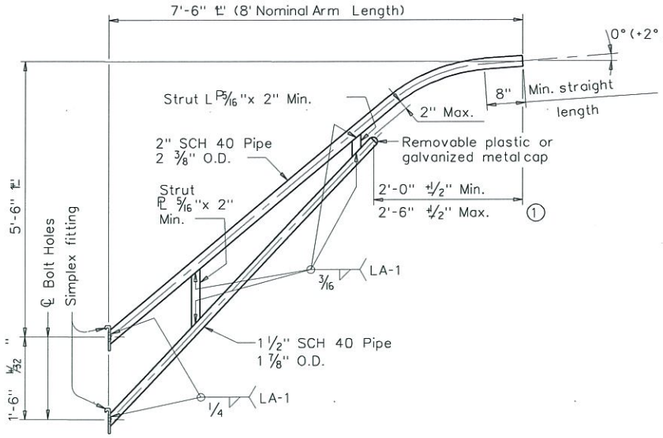
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REVISIONS	CONT	SECT	JOB	HIGHWAY
6-96	0921	02	323	MILE 2 RD
1-12	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		167

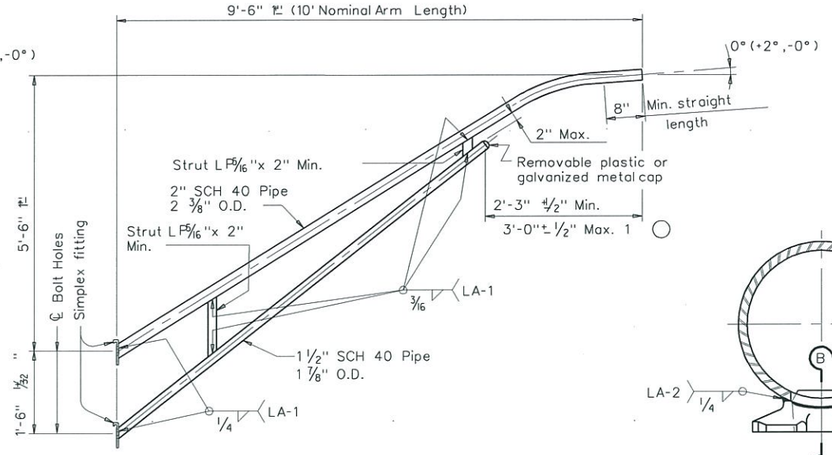
121B

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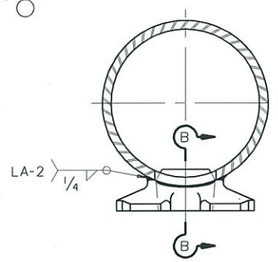
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8-FOOT LUMINAIRE ARM



10-FOOT LUMINAIRE ARM



DIRECT ATTACHMENT DETAIL

MATERIALS	
Pole or Arm Simplex	ASTM A27 Gr.65-35 or A148 Gr.80-50, A576 Gr.1021 3 ◯ or A36 (Arm only)
Arm Pipes	ASTM A53 Gr.B, A501, A1008 HSLAS-F Gr.50 4 ◯ or A1011 HSLAS-F Gr.50 4 ◯
Arm Strut Plates 2 ◯	ASTM A36, A572 Gr.50 4 ◯ or A588
Misc.	ASTM designations as noted

(1) Dimensional limits are given to show acceptable variation in design. All of a Fabricator's production of a particular arm length shall have the same dimensions within specified tolerances.

(2) Any of the materials listed for plates may be used where the drawings do not specify a particular ASTM designation.

(3) A576 must be suitable for forging and also meet minimum tensile strength of 65 ksi, minimum yield of 35 ksi, and elongation in 2 inches of 22 percent.

(4) ASTM A572, A1008 HSLAS-F, and A1011 HSLAS-F may have higher yield strengths but shall not have less elongation than the grade indicated.

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Revisions thereto. Design Wind Speed equals 90 mph plus a 1.3 gust factor. Arms are designed to support a 60 lb. luminaire having an effective projected area (actual area times drag coefficient) of 1.6 sq. ft.

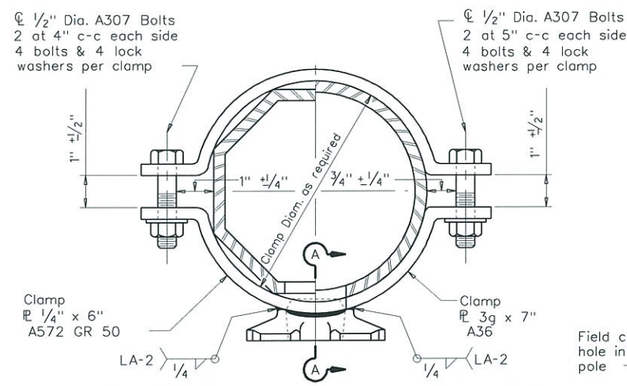
Materials and fabrication shall be in accordance with Item 686, "Traffic Signal Pole Assemblies (Steel)" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. In the absense of specified Fabricaton tolerances, dimensions shall be within the tolerances generally obtainable in normal fabrication practice.

Unless otherwise noted, all parts shall be galvanized after fabrication in accordance with Item 445, "Galvanizing".

Deviation from the details and dimensions shown herein require submission of shop drawings in accordance with Item 441, "Steel Structures". Alternate designs are not acceptable.

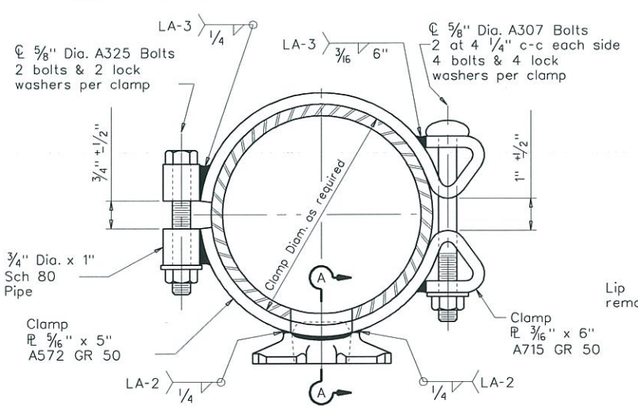
Each pole simplex fitting shall be supplied with 2 ASTM A325 bolts and 2 lock washers of the size specified. The bolts and lock washers shall be secured to the pole with the other hardware items called for in the plans. When clamp attachment is specified, the Fabricator shall ship the clamp assembly securely attached to the pole at the location shown on the plans.

If clamp assemblies are ordered without poles, the Fabricator shall ship one upper and one lower clamp assembly together in a single package, including all nuts and washers required for the clamps and simplex fittings.



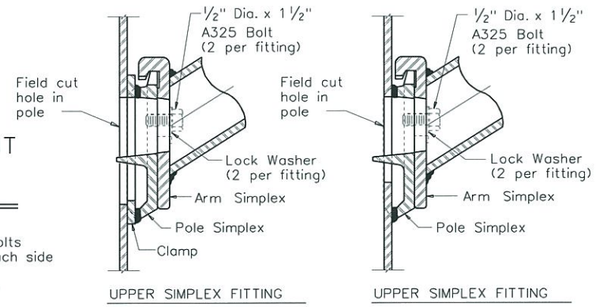
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CLAMP ATTACHMENT DETAIL NO.2 (HALF SECTION)



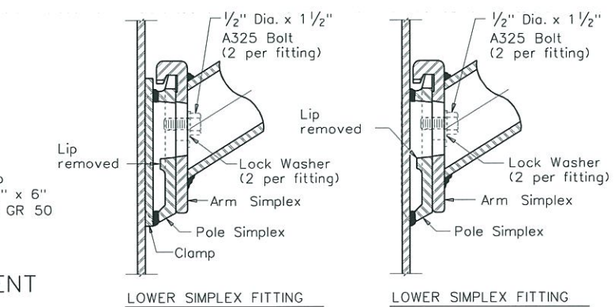
CLAMP ATTACHMENT DETAIL NO.3 (HALF SECTION)

CLAMP ATTACHMENT DETAIL NO.4 (HALF SECTION)



UPPER SIMPLEX FITTING

UPPER SIMPLEX FITTING

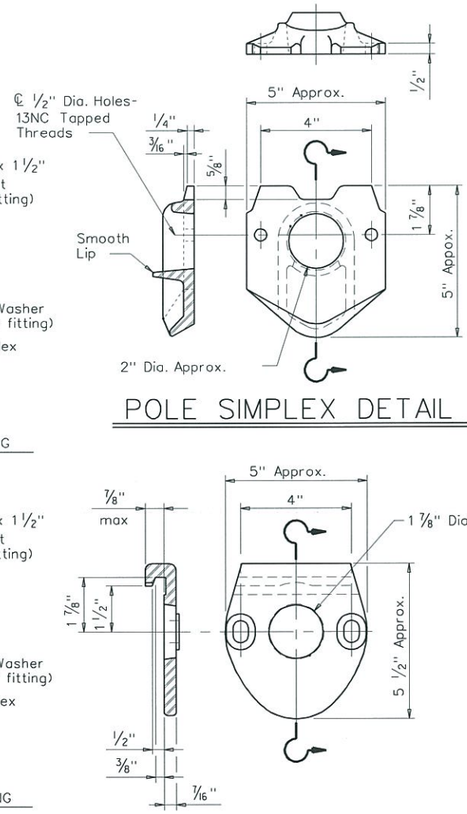


LOWER SIMPLEX FITTING

LOWER SIMPLEX FITTING

SECTON A-A

SECTON B-B



POLE SIMPLEX DETAIL

ARM SIMPLEX DETAIL

Texas Department of Transportation
Traffic Operations Division

STANDARD ASSEMBLY DRAWINGS FOR LUMINAIRE SUPPORT STRUCTURES

ARM DETAILS

LUM-A-12

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DN: LEH	CK: JSY	DW: LTT	CK: TEB
REVISIONS 5-96 1-99 1-12	CONT	SECT	JOB	HIGHWAY
	0921	02	323	MILE 2 RD
	DIST	COUNTY		SHEET NO.
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FOUNDATION DESIGN TABLE

FDN TYPE	DRILLED SHAFT DIA	REINFORCING STEEL		EMBEDDED DRILLED SHAFT LENGTH-ft 4 5 6			ANCHOR BOLT DESIGN (1)				FOUNDATION DESIGN LOAD (2)		TYPICAL APPLICATION
		VERT BARS	SPIRAL & PITCH	TEXAS CONE PENETROMETER N blows/ft			ANCHOR BOLT DIA	Fy (ksi)	BOLT CIR DIA	ANCHOR TYPE	MOMENT K-ft	SHEAR Kips	
				10	15	40							
24-A	24"	4- #5	#2 at 12"	5.7	5.3	4.5	3/4"	36	12 3/4"	1	10	1	Pedestal pole, pedestal mounted controller.
30-A	30"	8- #8	#3 at 6"	11.3	10.3	8.0	1 1/2"	55	17"	2	87	3	Mast arm assembly. (see Selection Table)
36-A	36"	10- #8	#3 at 6"	13.2	12.0	9.4	1 3/4"	55	19"	2	131	5	Mast arm assembly. (see Selection Table) 30' strain pole with or without luminaire.
36-B	36"	12- #8	#3 at 6"	15.2	13.6	10.4	2"	55	21"	2	190	7	Mast arm assembly. (see Selection Table) Strain pole taller than 30' & strain pole with mast arm
42-A	42"	14- #8	#3 at 6"	17.4	15.6	11.9	2 1/4"	55	23"	2	271	9	Mast arm assembly. (see Selection Table)

NOTES:

(1) Anchor bolt design develops the foundation capacity given under Foundation Design Loads.

(2) Foundation Design Loads are the allowable moments and shears at the base of the structure.

(3) Foundations may be listed separately or grouped according to similarity of location and type. Quantities are for the Contractor's information only.

(4) Field Penetrometer readings at a depth of approximately 3 to 5 feet may be used to adjust shaft lengths.

(5) If rock is encountered, the Drilled Shaft shall extend a minimum of two diameters into solid rock.

(6) Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

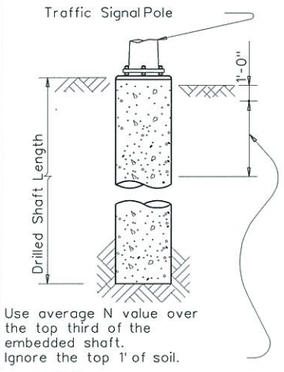
FOUNDATION SUMMARY TABLE (3)

LOCATION IDENTIFICATION	AVG. N BLOW /ft.	FDN TYPE	NO. EA	DRILLED SHAFT LENGTH (FEET) (6) 24-A	30-A	36-A	36-B	42-A
MILE 2 RD @ SCHUERBACH RD	10	36-B	2			30.4		
MILE 2 RD @ MOOREFIELD RD	10	36-B	2			30.4		
TOTAL DRILLED SHAFT LENGTHS						60.8		

FOUNDATION SELECTION TABLE FOR STANDARD MAST ARM PLUS ILSN SUPPORT ASSEMBLIES (ft)

		FDN 30-A	FDN 36-A	FDN 36-B	FDN 42-A
80 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH	32'	48'		
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS	24' X 24'			
		28' X 28'			
		32' X 28'	32' X 32'		
			36' X 36'		
			40' X 36'		
			44' X 28'	44' X 36'	
100 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH		36'	44'	
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS		24' X 24'		
			28' X 28'		
			32' X 24'	32' X 32'	
				36' X 36'	
				40' x24'	40' X 36'
					44' x 36'

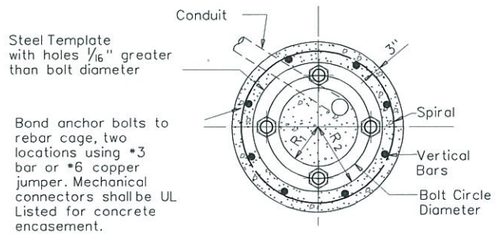
EXAMPLE:
1. For 80mph design wind speed, foundation 30-A can support up to a 32' arm with another arm up to 28'
2. For 100mph design wind speed, foundation 36-A can support a single 36' mast arm.

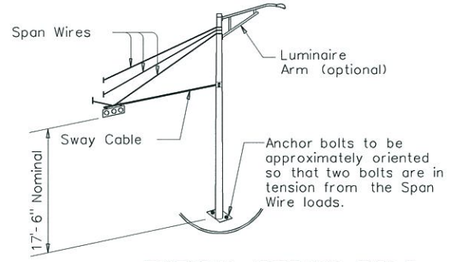


ANCHOR BOLT & TEMPLATE SIZES

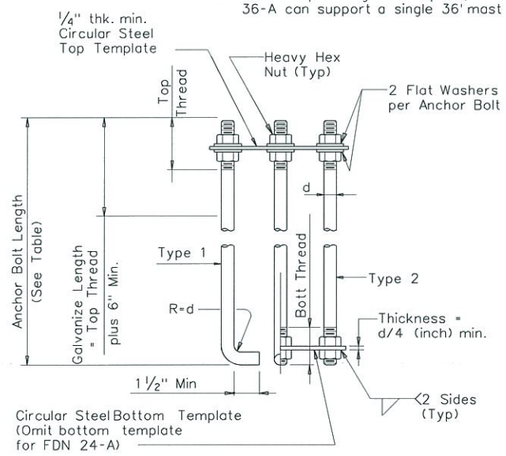
BOLT DIA IN.	(7) BOLT LENGTH	TOP THREAD	BOTTOM THREAD	BOLT CIRCLE	R2	R1
3/4"	1'-6"	3"	—	12 3/4"	7 1/8"	5 5/8"
1 1/2"	3'-4"	6"	4"	17"	10"	7"
1 3/4"	3'-10"	7"	4 1/2"	19"	11 1/4"	7 3/4"
2"	4'-3"	8"	5"	21"	12 1/2"	8 1/2"
2 1/4"	4'-9"	9"	5 1/2"	23"	13 3/4"	9 1/4"

(7) Min dimensions given, longer bolts are acceptable.



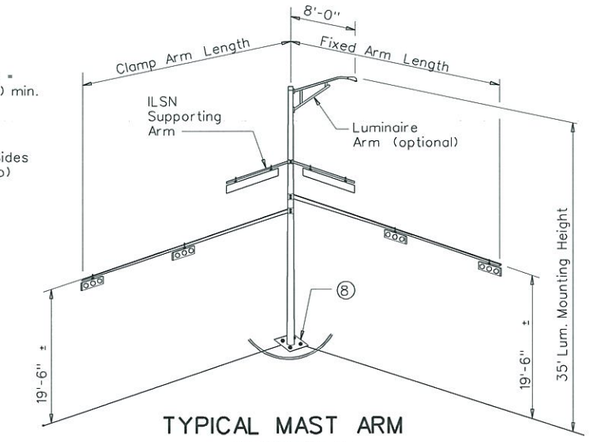


TYPICAL STRAIN POLE ASSEMBLY



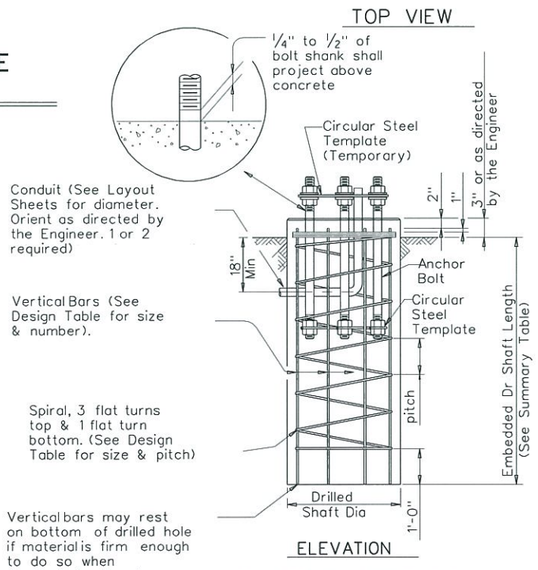
HOOKED ANCHOR (TYPE 1) NUT ANCHOR (TYPE 2)

ANCHOR BOLT ASSEMBLY



TYPICAL MAST ARM ASSEMBLY

(8) Orient anchor bolts orthogonal with the fixed arm direction to ensure that two bolts are in tension under dead load.



ELEVATION

FOUNDATION DETAILS

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and interim revisions thereto.

Reinforcing steel shall conform to Item 440, "Reinforcing Steel".

Concrete shall be Class "C".

Threads for anchor bolts and nuts shall be rolled or cut threads of 8UN series up to 2" in diameter or UNC series for all sizes. Bolts and nuts shall have Class 2A and 2B fit tolerances. Galvanized nuts shall be tapped after galvanizing.

Anchor bolts that are larger than 1" in diameter shall conform to "alloy steel" or "medium-strength mild steel" per Item 449, "Anchor Bolts". Anchor bolts that are 1" in diameter or less shall conform to ASTM A36. Galvanize a minimum of the top end thread length plus 6" for all anchor bolts unless otherwise noted. Exposed washers and exposed nuts shall be galvanized. All galvanizing shall be in accordance with Item 445, "Galvanizing".

Templates and embedded nuts need not be galvanized. Lubricate and tighten anchor bolts when erecting the structure in accordance with Item 449, "Anchor Bolts".

STATE OF TEXAS
C. SIMEONIDIS
60919
REGISTERED PROFESSIONAL ENGINEER

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY C. SIMEONIDIS, P.E. 60919 ON APRIL 23, 2014

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL POLE FOUNDATION

TS-FD-12

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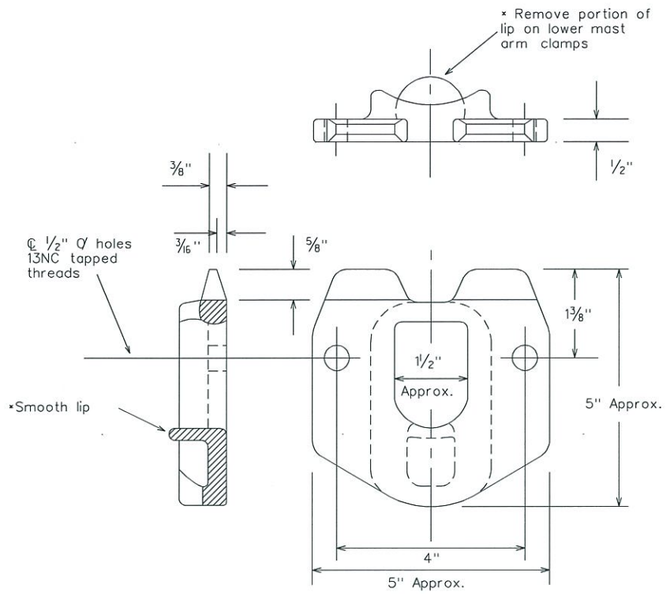
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REVISIONS
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11-99
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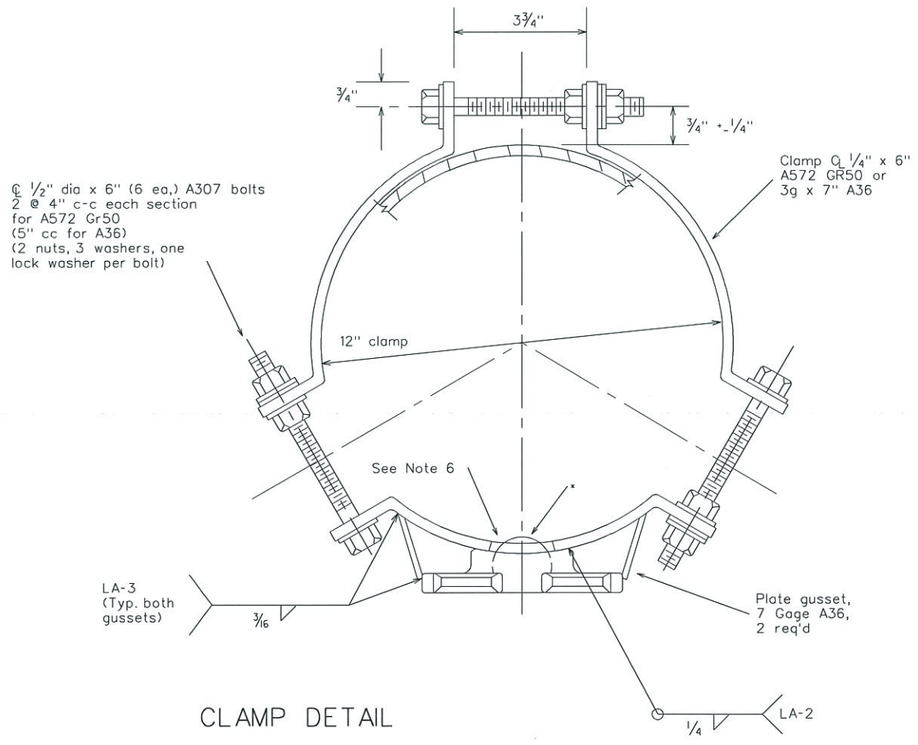
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DIST	COUNTY		SHEET NO.
PHR	HIDALGO		169

128

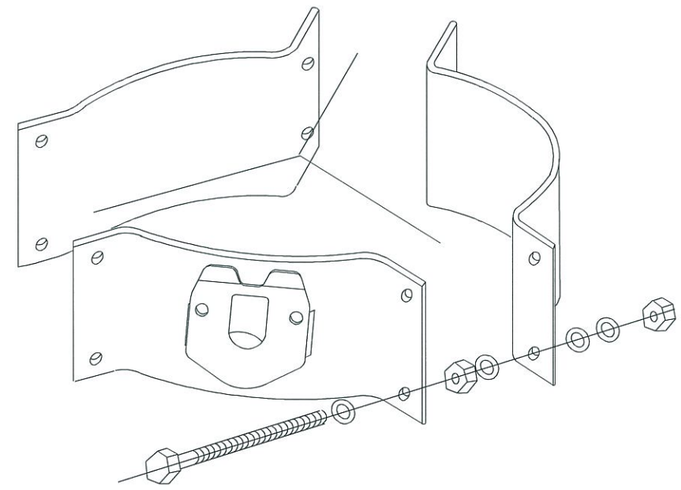
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POLE SIMPLEX DETAILS



CLAMP DETAIL



PROJECTION

OTHER MATERIALS:

1. Pole simplex shall be ASTM A27 GR65-35 or A148 GR80-50 or A576 GR1021. ASTM A576 must be suitable for forging and also meet minimum tensile of 65ksi, minimum yield of 35ksi, and a minimum elongation of 22 percent in 2 inches.
2. Welded tabs and backplates shall be ASTM A-36 steel or better.
3. Nylon insert locknuts shall conform to ASTM A563.

GENERAL NOTES:

1. Materials and fabrication shall be in accordance with Standard Sheet "MA-C" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. In the absence of specified fabrication tolerances, dimensions shall be within the tolerances generally obtainable in normal fabrication practice.
2. All parts shall be galvanized after fabrication in accordance with Item 445, "Galvanizing". The throat of the Simplex shall be made free of all rough or sharp edges resulting from the galvanizing process.
3. Each simplex fitting shall be supplied with 2 ASTM A325 bolts, 1/2in. X 1 1/2in. and 2 lock washers. The bolts and lock washers shall be secured to the clamp with the other hardware items. The Fabricator shall ship clamp assembly together in a single package, including all bolts, nuts, and washers required for the clamp and simplex fitting.
4. Design conforms to 1994 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals" and interim revisions thereto. Design Wind Speed equals 80 mph plus a 1.3 gust factor. Clamps are designed to support a 60 lb. luminaire having an effective projected area (actual area times drag coefficient) of 1.6 sq.ft., 12 ft. maximum arm length.
5. Each assembly shall consist of one upper piece simplex fitting having a smooth lip and one lower piece simplex fitting with the lip removed.
6. Approximately 2 in. diameter hole in upper mast arm clamp.

For 8.9 - 12 inch diameter Signal Poles
(Two req'd for each mast arm)

Texas Department of Transportation
Traffic Operations Division

CLAMP ON FITTING ASSEMBLY FOR LUMINAIRE MAST ARM

CFA-12

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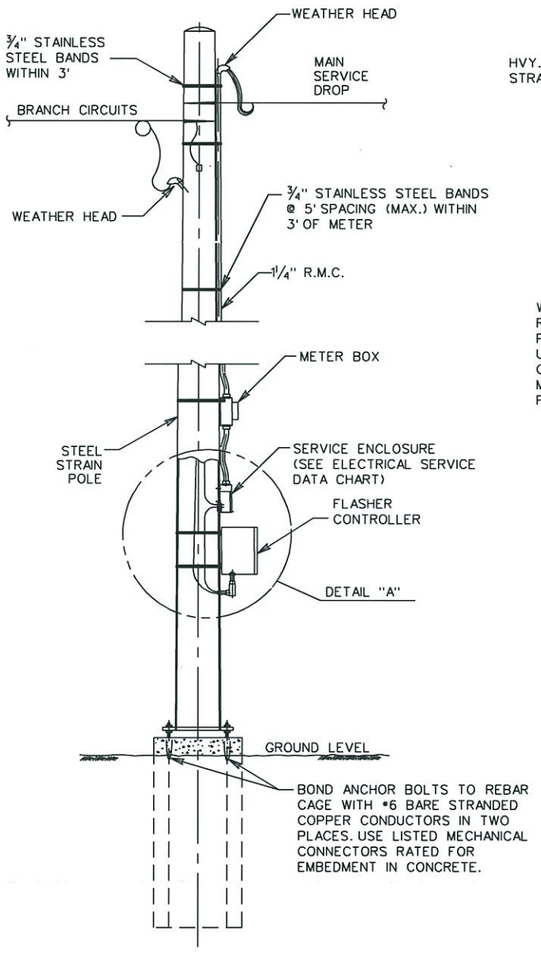
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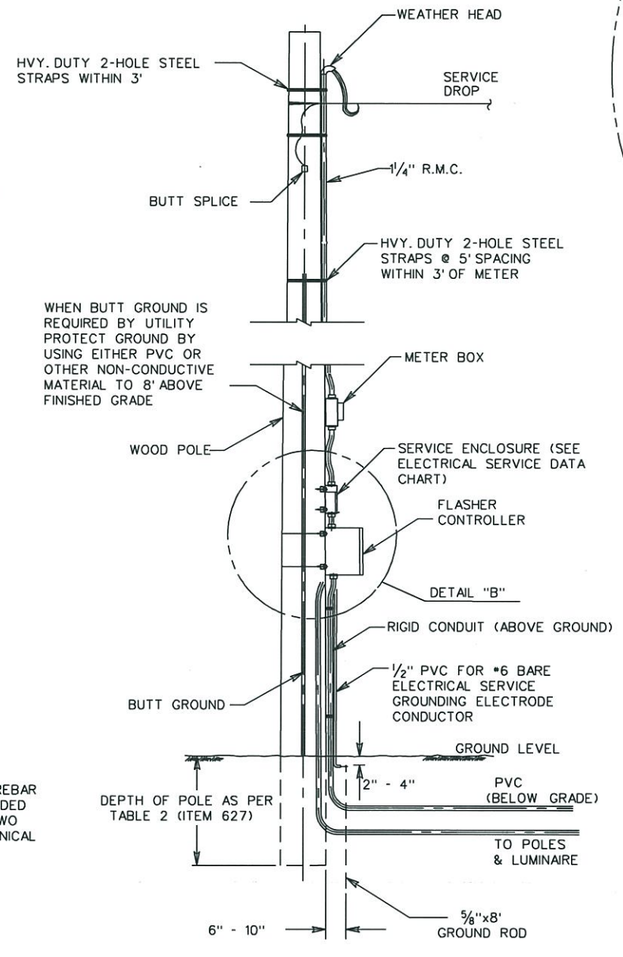
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DIST	COUNTY		SHEET NO.
PHR	HIDALGO		170

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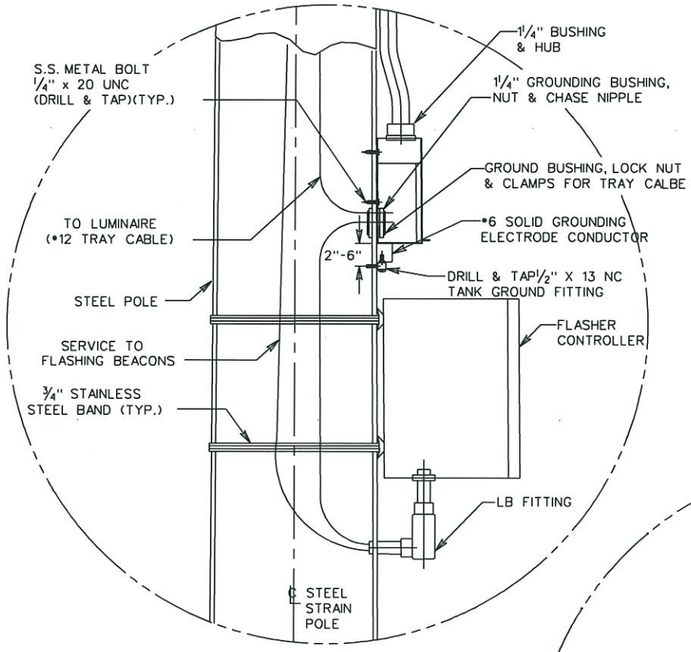
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STEEL STRAIN POLE
WITH FLASHER CONTROLLER



WOOD POLE



DETAIL "A"

NOTES:

ENSURE MAIN SERVICE DROP IS BELOW WEATHERHEAD.

BREAKER BOX & METER BOX SHALL BE ATTACHED TO WOOD POLE BY GALVANIZED CHANNEL (SEE DETAIL "B").

BOLT BOX TO GALVANIZED CHANNEL MOUNTED FLUSH WITH POLE.

CONDUIT SHALL BE ATTACHED TO POLE WITH H.D. 2-HOLE STRAPS AND 1½"x1/4" #8 S.S. SCREW OR LAG BOLT.

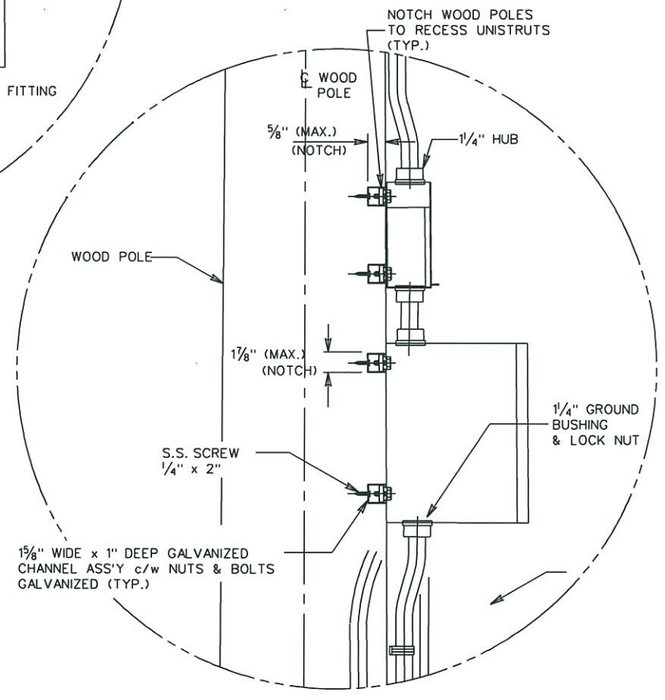
ALL EXPOSED CONDUIT SHALL BE RIGID METAL CONDUIT EXCEPT CONDUIT USED ON ELECTRICAL SERVICE GROUNDING ELECTRODE CONDUCTOR.

WHEN SERVICE IS CONNECTED WITHIN 100' OF THE CONTROLLER, NO PULL BOX SHALL BE USED.

DISTRIBUTION TO LUMINAIRE SHALL BE OUT OF THE SERVICE BREAKER BOX. EACH LUMINAIRE SHALL HAVE A SEPARATE PHOTO CONTROL.

FURNISH & INSTALL 3 PRONG WEATHERPROOF LOCK TYPE BASE WITH PHOTO CELL TO CONTROL ILLUMINATION SIGN WHICH IS ATTACHED TO TRAFFIC SIGNAL SUPPORTS. LOCKBASE & PHOTO CELL SHALL BE INSTALLED ON TRAFFIC SIGNAL POLE NEAREST CABINET.

ALL CONDUIT & CONDUCTORS FROM SERVICE TO CONTROLLER CABINET SHALL BE AS PER PLANS.



DETAIL "B"

PHARR DISTRICT STANDARD

Texas Department of Transportation
Traffic Operations Division

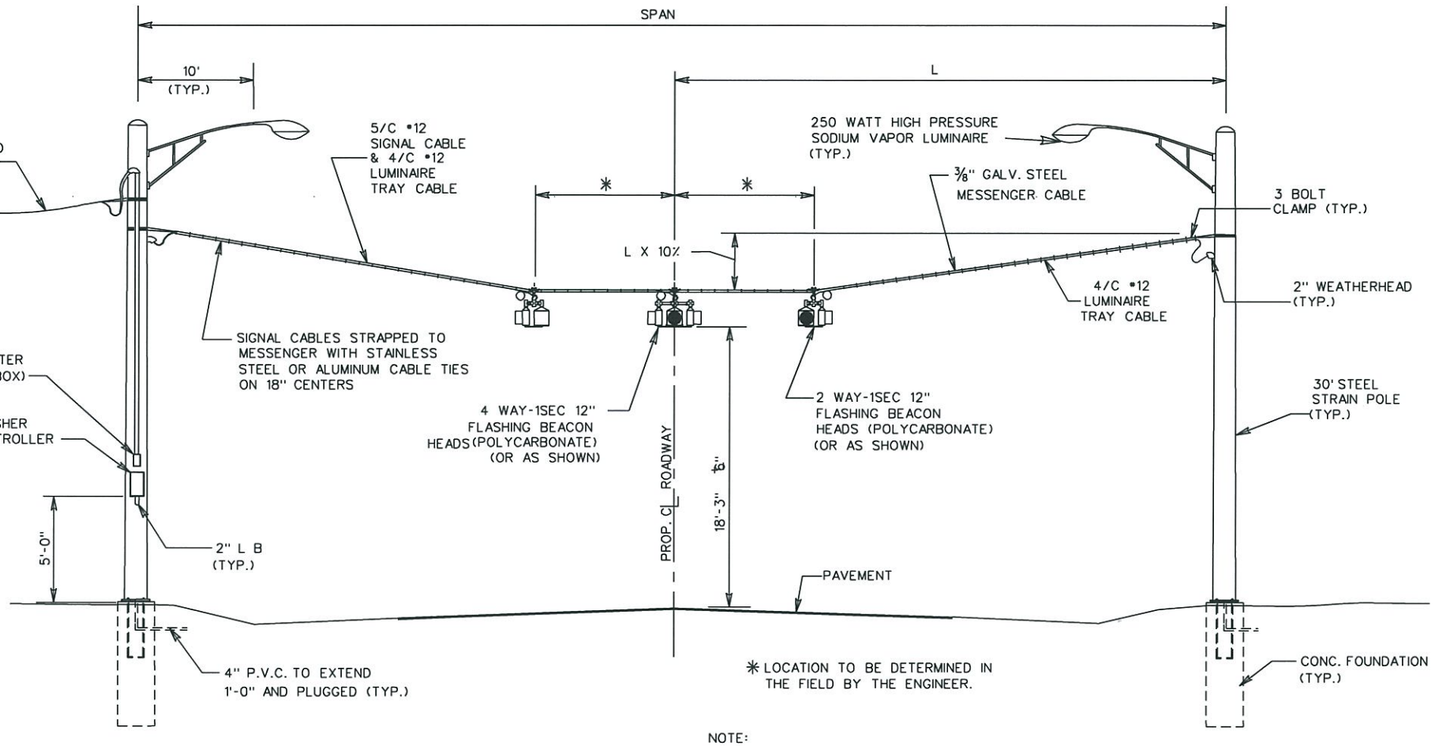
ELECTRICAL SERVICE DESIGN WITH FLASHER CONTROLLER

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SHEET 1 OF 1

DN: OG	DRAWING	DATE	FED.RD. DIV.NO.	STATE	FEDERAL AID PROJECT NO.			SHEET NO.
CK DN: JSL	ORIGINAL	APR. 2010	6	TEXAS				171
DW: OG			STATE DIST.NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: JSL			PHR	HIDALGO	0921	02	323	MILE 2

ELECTRICAL SERVICE



* LOCATION TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

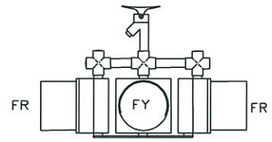
NOTE:
ALL FLASHING BEACONS SHALL FLASH SIMULTANEOUSLY FOR EACH APPROACH.

TYPICAL FLASHING BEACON INSTALLATION

NOT TO SCALE

NOTES:

1. - THE CONTRACTOR SHALL INSTALL STEEL STRAIN POLES, LUMINAIRES, FLASHING BEACON HEADS, SIGNAL CABLES AND SPAN WIRE AS SHOWN.
2. - THE LOCATIONS SHOWN FOR THE STEEL STRAIN POLES IS APPROXIMATE. THEIR EXACT LOCATIONS WILL BE DETERMINED IN THE FIELD BY THE ENGINEER IN COORDINATION WITH THE PHARR DISTRICT SIGNAL SHOP.
3. - THE EXACT LOCATION OF ALL KNOWN UNDER-GROUND UTILITIES IS NOT CERTAIN. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ANY UNDERGROUND UTILITIES BEFORE DRILLING FOR STEEL POLE FOUNDATIONS AND SERVICE POLES.
4. - SIGNAL CABLE SHALL BE #12 AWG AND SERVICE CABLE SHALL BE #6 AWG.
5. - THE CONTRACTOR SHALL FURNISH NEW LED TRAFFIC SIGNAL LAMPS FOR ALL FLASHING BEACON HEADS.
6. - THE LUMINAIRES SHALL BE EQUIPPED WITH PHOTO ELECTRIC CELLS FOR THEIR OPERATION.



DETAIL

4 WAY-1 SEC.
12" FLASHING BEACON HEAD
(OR AS SHOWN)

Texas Department of Transportation
Traffic Operations Division
PHARR DISTRICT STANDARD

TRAFFIC SIGNAL CONSTRUCTION DETAILS MISCELLANEOUS DETAILS

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SHEET 4 OF 4

DN: OG	DRAWING	DATE	FED.RD. DIV.NO.	STATE	PROJECT NO.				SHEET NO.
CK DN: JSL	ORIGINAL	APR. 2010	6	TEXAS					172
DW: OG			STATE DIST.NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		HIGHWAY NO.
CK DW: JSL			PHR	HIDALGO	0921	02	323		MILE 2

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ROADWAY ILLUMINATION LIGHT FIXTURES

Fixture Housing:

A. Provide *UL listed fixture suitable for use in wet locations. Ensure optical compartment meets IEC Standard 60529-IP 65. Place a permanent label inside fixture indicating fixture meets *UL, IP 65 optical, and shows date of manufacture. Meet ANSI 136.15 wattage label requirements.

B. Construct fixture housing, lens frame, and door from 96% copper-free, die cast aluminum. Provide fixture mounting to a 2-in. pipe arm. Equip fixture with a 4-bolt clamp capable of adjustments plus or minus 5 degrees from level. Meet ANSI 136.31 3.0 G vibration requirements.

C. Attach a level bubble to the fixture housing. Ensure the level bubble is sensitive to 1 degree changes in position at any point within 5 degrees of the level position. Ensure the level bubble is clearly visible from the ground up to a 50 ft. mounting height. Ensure level bubble corresponds to level position of fixture.

D. Do not exceed 1.6 sq. ft. effective projected area. Do not exceed 60 lb. maximum weight.

E. Equip fixture with a 3-prong photocell receptacle with shorting cap installed.

F. Paint inside and outside of fixture light gray, when installing on galvanized poles. For all other fixtures, paint to match the color of the pole as directed by the Department.

G. Use a thermoset powder coat system. Ensure paint exceeds 1000-hr. salt-spray test in accordance with ASTM B117. Ensure a nominal thickness of 2.5 mil and no pigment loss upon 50 double-rubs using Methyl Ethyl Ketone (MEK) solvent in accordance with ASTM D5402, "Standard Practice for Assessing the Solvent Resistance of Organic Coatings Using Solvent Rubs."

H. Fabricate brackets, nuts, bolts, washers, ballast tray, and parts from stainless-steel, or aluminum of adequate thickness as approved by the Department except that:
1. The 4 bolts/studs, 4 flat washers, 4 lock washers, and clamp that attach the luminaire to the arm may be galvanized in accordance with ASTM A123, A153 or B633. Provide means to ensure clamp is in the open position when installing.
2. Glass lens retainer spring clips may be fabricated from galvanized steel in accordance with ASTM A153.
3. Provide nylon throat or other approved locking means for all stainless steel nuts.

I. Provide optical assemblies which meet the following:
1. Polished aluminum reflectors with Alzak or equal coating.
2. Do not paint reflectors, except that, when approved by the Engineer, some surfaces may be painted with 92% reflective white paint.
3. Reflectors may be one piece or segmented as follows.
   a. One piece reflectors:
      1. Seal photometric compartment by the use of a seamless or vulcanized seam, closed-cell silicone gasket, or other method approved by the Department.
      2. Provide a non-adjustable lamp socket mounting method so the lamp center is consistent with the reflector.
   b. Segmented reflectors:
      1. Attach segments at both ends (or opposite sides if segments are square) of the segment to a rigid aluminum base plate and side wall support assembly. Seal glass lens to lens frame with a one piece seamless silicone gasket.
4. Equip the optical assembly with a lamp support in addition to the lamp socket to ensure the outer envelope is positioned as intended.

J. Provide 5/32 in. thick (min.) clear heat tempered or borosilicate glass.

Electrical Components:

K. Meet the following ballast requirements and pass tests in accordance with Test Method Tex-1130-T, "Ballasts of Lighting Assemblies."
1. Mount electrical components on a removable stainless steel or aluminum tray of adequate thickness.
2. Provide a fixture wiring diagram on or near the ballast.
3. Use a copper wound magnetic regulating three isolated coil ballast.
4. Provide ballast factor between 0.95 and 1.0.
5. When the circuit voltage indicated on the plans is applied, the ballast input wattage during fluctuations of the test voltage of plus 10 percent and minus 10 percent, do not exceed the following:
   a. 220 Watts for 150 watt nominal lamp rating
   b. 440 Watts for 250 watt nominal lamp rating
   c. 552 Watts for 400 watt nominal lamp rating
6. During fluctuation of the test voltage of plus 10 percent and minus 10 percent, ensure the lamp wattage fluctuation does not exceed a total of 20 percent and ballast maintains lamp wattage within the following limits.
   a. 110 Watts minimum and 180 Watts maximum for 150 Watt nominal lamp rating
   b. 175 Watts minimum and 370 Watts maximum for 250 Watt nominal lamp rating
   c. 280 Watts minimum and 475 Watts maximum for 400 Watt nominal lamp rating
7. Ensure the ballast power factor, when tested at circuit voltage indicated on the plans, is not less than 90%.
8. Permanently and clearly mark ballast or fixture to indicate following:
   a. Lamp type
   b. Catalog number
   c. Voltage rating
   d. Connection diagram
   e. Manufacturer
   f. *UL listing

L. Meet the following electronic starting aid requirements and pass tests in accordance with Test Method Tex-1140-T, "Electronic Starting Aids of High Pressure Sodium Vapor Lighting Assembies."
1. Provide a starting pulse with an amplitude of 2500 volts minimum, 4000 volts maximum.
2. Ensure the pulse width is a minimum of 0.8 microseconds at 2250 volts.
3. Ensure the pulse occurs when the open circuit voltage is equal to or greater than 90 percent of peak open circuit voltage.
4. Ensure pulse repetition rate is a minimum of one per cycle.
5. Provide a pulse current of 0.18 amperes (min.).
6. Discontinue to pulse when, either,
   a. the lamp starts, or
   b. after a minimum of 3 minutes and a maximum of 10 minutes if the lamp fails to start.

M. Do not place fuses inside pole mounted luminaires. For wall mount or underpass mounted luminaires, provide internal 10 amp time-delay fuses.

N. Provide a two position terminal block for connecting supply wires which meet the following requirements:
1. Insulate using nylon, porcelain, or phenolic material. Ensure phenolic terminal block is of adequate construction as approved by the Department.
2. Fabricate terminals from nickel, tin plated brass, or aluminum.

O. Equip fixture with MOV surge protection in accordance with IEEE recommendations.
1. Connect MOV from line to neutral or from line to line.
2. Install MOV on the terminal block.

Lamp & Socket:

P. Provide *UL listed mogul base lamp sockets rated for 600 V, 1500 W that can withstand a 5000 V pulse. Meet *UL 496 requirements. Use porcelain-insulated lamp sockets with nickel plated copper alloy screw shells. Equip socket shell with a spring tensioned contact. Use nickel-plated copper alloy or stainless steel for the spring and contact.

Q. Supply and secure lamps inside the fixture that meet the following:
1. Use pre-qualified high pressure sodium (HPS) lamps from TxDOT's material producers list of the wattages shown on the plans. No alternatives allowed.
2. Average rated lamp life 30,000 hours.
3. Fully extinguish at end of usable lamp life and remain extinguished without cycling.
4. Do not provide lamps that burn at reduced output at end of life.
5. Meet the Federal Toxic Characteristic Leachate Procedure (TCLP) limits.

Performance:

R. Meet the following photometric requirements using published photometric data and photometric data obtained by testing sampled fixtures.
1. 150 Watt mast arm (underpass) mounted luminaire. Meet IESNA Cutoff requirements. Provide a minimum intensity of 0.20 foot-candle in a rectangular area measuring 110.0 ft. by 30.0 ft., when mounted in a level position as indicated on the properly mounted fixture level bubble 20.0 ft. above the midpoint of either long side of the surface area. Do not exceed 50:1 maximum to minimum horizontal illuminance uniformity ratio within the rectangular area.
2. 250-watt mast arm mounted luminaire. Meet IESNA Cutoff requirements. Provide a minimum intensity of 0.20 foot-candle in a rectangular area measuring 190.0 ft. by 45.0 ft., when mounted properly in a level position as indicated on the level bubble 40.0 ft. above the midpoint either long side of the surface area. Ensure light intensities along a line parallel to and 20.0 ft. in from the long side of this rectangular area do not decrease by more than 0.50 foot-candles in any 5.0 ft. interval along the line from 10.0 ft. to 90.0 ft. on both sides of the luminaire and provide a minimum intensity of 0.30 foot-candles at any point along the line. Do not exceed 20:1 maximum-to-minimum horizontal illuminance uniformity ratio within the rectangular area.
3. 400-watt mast arm mounted luminaire. Meet IESNA Cutoff requirements. Provide a minimum intensity of 0.20 foot-candle in a rectanglular area measuring 220.0 ft. by 60.0 ft. when mounted properly in a level position as indicated on the level bubble 50.0 ft. above the midpoint of either long side of the surface area. Ensure light intensities along a line parallel to and 30.0 ft. in from the long side of this rectangular area do not decrease by more than 0.75 foot-candle in any 10.0 ft. interval along the line from 10.0 ft. to 90.0 ft. on both sides of the luminaire and provide a minimum intensity of 0.30 foot-candle at any point along the line. Do not exceed 20:1 maximum-to-minimum horizontal illuminance uniformity ratio within the rectangular area.

S. Ensure photometric data is consistent from fixture to fixture. Match published photometric data (or approved photometric reports submitted during the prequalification process as the typical photometric output instead of published data) as follows:
1. Point of maximum candela within 5 degrees horizontally and vertically.
2. Maximum candela within 20% of published maximum candela.
3. Fixture efficiency within 10% of published efficiency.

* When reference is made to UL, it can be considered to mean a Nationally Recognized Independent Testing Lab (NRTL). Comperable standards of Canadian Standard Association, Electrical Testing Laboratories or Factory Mutual can be equal to the referenced UL standard.

DATE:
FILE:

Texas Department of Transportation
Traffic Operations Division

ROADWAY ILLUMINATION DETAILS
(RDWY ILLUM LIGHT FIXTURES)
RID(LUM1)-07

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DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS

CONT	SECT	JOB	HIGHWAY
0921	02	323	MILE 2 RD
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		173

72A

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Prequalification:

T. Use only pre-qualified fixtures. No alternates will be considered.
1. Only materials with approved product codes or designations from prequalified producers are accepted on bids. The Construction Division (CST) of the Texas Department of Transportation (TxDOT) maintains the material producers list of approved producer product codes or designations. Use the following website to view this list:
http://www.dot.state.tx.us/business/producer _list.htm
Use of prequalified material does not relieve the contractor of the responsibility to provide materials that meet the specifications. All materials, including those shown on the prequalified material list, may be inspected and tested at any time and may be rejected if not in compliance with the specifications.
2. Notify the Department in writing as to which fixture from the prequalified list of approved fixtures will be supplied on each project.
3. To have a fixture listed as pre-qualified:
a. Submit a sample of each type of luminaire and all pertinent data, including published photometric data and recently tested photometric data (IES format, both "averaged" and both sides of "un-averaged" data) to:
TXDOT- TRF 118 East Riverside Dr. Austin, TX 78704
b. Demonstrate a commitment to quality.
c. Submit the following documentation:
1. QA/QC program documentation with the following minimum requirements:
a. Written statement of the companies QA/QC policy.
b. QA/QC person employed that has special QA/QC training and has QA/QC as their primary job responsibility.
c. A written procedure specifically for handling orders for fixtures built to TxDOT specifications.
d. A written procedure for keeping track of fixtures built, certified, and tested for TxDOT orders.
e. A check list of features for TxDOT fixtures with QA/QC person signature.
2. Fixture UL certification
3. IP 65 certification
4. 3G certification
5. Aluminum casting and paint analysis
6. Socket, MOV, and shutoff ignitor data
7. Stainless steel and aluminum bracket data
8. Ballast electrical data
9. Photometric data
10. Lamp data
d. Prequalification samples, if approved, will not be returned to the manufacturer but will be retained by the the Department for comparison testing. Once a fixture has been approved, do not change any material or manufacturing method without prior approval of the Department. Unapproved changes will result in rejection of the fixture.
e. In addition, luminaires will be tested for compliance with this specification. Luminaires that inconsistently pass testing or that are inconsistent with published photometric information will be removed from the pre-qualified list at the discretion of the Department.

Sampling:

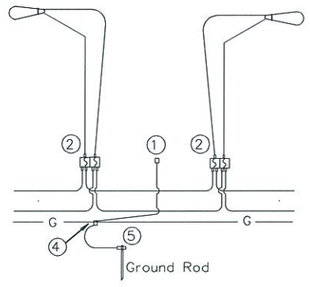
U. Sample in accordance with Test Method Tex-1110-T, "Sampling Lighting Assemblies."

Manufacturer Warranty:

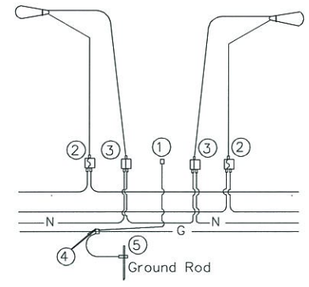
V. Replace failed fixtures, when non-operable due to defects in materials or workmanship within five years of installation with a fixture that passes all testing, delivered to the project location. Lamps and photocells are subject to the warranties of their respective manufacturers.

Testing:

W. Conduct electrical testing required in the Ballast section. Provide photometric testing of fixtures. Test fixtures at the following rates.
1. Manufactuer Testing. Before fixtures are shipped from the manufacturer, test fixtures as follows. From each lot or manufacturing run, select one completed fixture of each 25, with a minimum of 2 and a maximum of 5. Test photometrics at an independent test lab inspected and approved by TxDOT. Electrical testing may be performed at manufacturer's facility.
a. Provide IES photometric report in two formats:
1. Standard averaged format for asymmetric fixtures.
2. Un-averaged format showing both sides. Un-averaged data may be supplied in two files or as approved by the Department.
b. Provide electrical and photometric test data directly to TRF-TE electronically for evaluation prior to shipping fixtures to the project. Do not ship fixtures until test data for each lot is approved by TRF-TE.
c. Provide the following information on test reports:
1. TxDOT's Control-Section-Job number, maintenance contract number, or purchase order number the fixtures are assigned to,
2. a unique fixture test number per fixture,
3. date of manufacture, and
4. quantities supplied and lot number per fixture type.
d. Write the unique lab report number on the top of the fixture housing with permanent marker. Ensure the test lab retains the results for 5 years. Provide the Department access to documentation.
e. Retain records of manufacturing lots, test reports, lot quantities, and other pertinent details. Submit records to the Department upon request.
f. Submit to TRF-TE a daily shipment report for shipments to each job.
g. Make available to TxDOT inspectors upon request, all manufacturing facilities involved in the production of fixtures for use on Department projects, inventories of fixtures produced to Department specifications, and records of fixture testing and tracking.
2. Departmental Test Reporting. Departmental test reports will be issued in accordance with Tex 1110-T.



FOR THREE-WIRE CIRCUIT-CENTER GROUNDED
LUMINAIRES SERVED AT 480V ON 240 ∉80 VOLT SERVICE OR LUMINAIRES SERVED AT 240V FOR FOR 120 /240 VOLT SERVICE.



FOUR-WIRE CIRCUIT-CENTER GROUNDED
LUMINAIRES SERVED AT 240V
(240/480 VOLT SERVICE)

NOTES:

① Use 1/2 in.-13 UNC threaded, copper or tin-plated copper, pole bonding connector, sized appropriately for conductors.
②③ Use pre-qualified Breakaway Connectors for both T-Base and Shoe-Base installations.
④ Split Bolt or other connector.
⑤ Use Ground Rod Clamp listed for its intended purpose (i.e. concrete, direct burial...)

Texas Department of Transportation
Traffic Operations Division

ROADWAY ILLUMINATION DETAILS

(RDWY ILLUM LIGHT FIXTURES)

RID(LUM2)-07

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DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS

CONT	SECT	JOB	HIGHWAY
0921	02	323	MILE 2 RD
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		174

728

DATE:
FILE:

During the planning phase of project development, the following Environmental Permits, Issues and Commitments have been developed during coordination with resource agencies, local governmental entities and the general public. Any change orders and/or deviations from the final design must be reported to the Engineer prior to the commencement of construction activities as additional environmental clearances may be required.

I. Clean Water Act, Section 402: Stormwater Pollution Prevention

Action Items Required : ☐ No Action Required

1. ☒ The contractor must implement the SW3P by installing Best Management Practices (BMPs) as indicated in the construction plans and maintained appropriately throughout construction. BMPs must be in place prior to the start of construction. The SW3P may need to be revised as necessary as construction progresses.
2. ☒ For all construction PSL's off the ROW, the contractor must certify compliance with all applicable laws, rules and regulations pertaining to the preservation of cultural resources, natural resources and the environment.
3. ☒ Based on the acreage of impact, select the appropriate box below:

   ☐ This project will disturb less than 1 acre of soil and is not part of a larger common plan of development; therefore, a NOI and TPDES Site Notice are not required for this project.

   or

   ☐ This project will disturb equal to or more than 1 acre of soil but less than 5 acres; therefore a NOI is not required but a TPDES Site Notice is required. The Construction Site Notice (CSN) is required to be posted at the construction site in a publicly accessible location for review by the public, TCEQ, EPA and other Inspectors.

   or

   ☒ This project will disturb equal to or more than 5 acres of soil and will require a NOI and TPDES Site Notice. The NOI and Site Notice are required to be posted at the construction site in a publicly accessible location.

4. ☒ Need to address MS4 requirements (Cameron & Hidalgo Counties only) ☐ MS4 requirements not needed

II. Clean Water Act, Sections 401 and 404 Compliance

Action Items Rquired : ☐ No Action Required

1. ☒ Filling, dredging or excavating in any water bodies, rivers, creeks, streams, wetlands or wet areas is prohibited unless specified in the USACE permit and approved by the Engineer. The contractor shall adhere to all agreements, mitigation plans, and BMPs required by the NWP as regulated by the USACE.

   The Contractor must adhere to all of the terms and conditions associated with the following permit(s):

   ☒ No Permit Required
   ☐ Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)
   ☐ Nationwide Permit 14 - PCN Required (1/10th to <1/2 acre, 1/3 in tidal waters)
   ☐ Individual 404 Permit Required
   ☐ Other Nationwide Permit Required: NWP* _____

2. ☒ The contractor is responsible for obtaining new or revised Section 404 permit(s) for Contractor initiated changes in construction methods that change Impacts To Waters Of The U.S., including wetlands. The Contractor will ensure that the water quality of the State will be maintained and not degraded.

3. ☒ Best Management Practices for applicable 401 General Conditions:

General Condition 12 - Categories I and II BMPs required

Category I (Erosion Control)

☒ Temporary Vegetation	☐ Diversion Dike
☐ Blankets, Matting	☐ Erosion Control Compost
☐ Mulch	☐ Mulch Filter Berms and/or Socks
☐ Sod	☒ Compost Filter Berms and/or Socks
☐ Interceptor Swale	☐ Compost Blankets

Category II (Sedimentation Control)

☒ Silt Fence	☐ Erosion Control Compost
☒ Rock Berm	☐ Mulch Filter Berms and/or Socks
☐ Triangular Filter Dike	☒ Compost Filter Berms and/or Socks
☐ Sand Bag Berm	☐ Stone Outlet Sediment Traps
☐ Hay (Straw) Bale Dike	☐ Sediment Basins
☐ Brush Berms	

General Condition 21 - Category III BMPs required

Category III (Post-Construction TSS Control)

☐ Vegetative Filter Strips	☐ Mulch Filter Berms and/or Socks
☐ Retention/Irrigation	☒ Compost Filter Berms and/or Socks
☐ Extended Detention Basin	☐ Vegetation-Lined Ditches
☐ Constructed Wetlands	☐ Sand Filter Systems
☐ Wet Basins	☐ Grassy Swales
☐ Erosion Control Compost	☐ Sedimentation Chambers

4. ☒ Other Project Specific Actions:
   1. Must comply with all the requirements of Special Specification Item No. 1122-011
   2.
   3.
   4.

III. Cultural Resources

Action Items Required : ☐ No Action Required

1. ☒ Refer to the 2004 TxDOT Standard Specifications For Construction And Maintenance Of Highways, Streets, And Brides, Item 7.19.A, in the event historical issues or archeological artifacts are found during construction. Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) cease work in the immediate area and contact the Engineer immediately.
2. ☐ Other Project Specific Actions:
   1.
   2.
   3.

IV. Vegetation Resources

Action Items Required : ☐ No Action Required

1. ☒ In accordance with the 2004 TxDOT Standard Specifications; Item 164 - Seeding For Erosion Control; provide and install temporary or permanent seeding for erosion control as shown on the plans or as directed by the Engineer for all seeding and replanting of right of way where possible.
2. ☒ In accordance with Executive Order 13112 on invasive species and the Executive Memorandum on Beneficial Landscaping, native species of plants shall be used for all seeding and replanting of right of way where possible for rural roadways (TxDOT Special Provision 164-006).
3. ☒ Avoid or minimize the clearing of woody vegetation.
4. ☒ Other Project Specific Actions:
   1. Vegetation adjacent to the ROW line would be protected and preserved.
   2. Brush and shrubs in the roadway section to be obliterated will be allowed to naturally invade/encroach this area.
   3.
   4.

V. Federal Listed, and Proposed Threatened and Endangered Species, Critical Habitat, State Listed Species, Candidate Species and Migratory Birds

Action Items Required : ☐ No Action Required

1. ☒ Under the Migratory Bird Treaty Act of 1918 (MBTA), codified at 16 U.S.C. 703-712 and as enforced by the USFWS, the proposed construction work will not remove active nests from bridges, trees, ground and other structures during migratory bird nesting season, (February 1st. through November 1st.). If the Contractor needs to perform work within right of way during nesting season, a qualified Biologist shall conduct a survey to determine if nests are present. If present, Contractor shall maintain a minimum 25 foot buffer zone of vegetation around the nest until the young have fledged or the nest is not occupied. A MBTA Nest Survey Form may be obtained from the Pharr District Office Environmental Section.
2. ☒ If caves or sinkholes are discovered, cease work in the immediate area and contact the Engineer immediately.
3. ☒ There is the potential for the presence of state-listed species & species of concern in the project area and state law prohibits the taking (incidental or otherwise) of state-listed species. Taking is defined as the collection, hooking, hunting, netting, shooting, or snare by any means or devices. If any listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately.

   List of Species: Cactus Ferruginous Pygmy Owl, Texas Botten's Sparrow, Western Burrowing Owl, Plain Spotted Skunk, Black Stripped Snake, White lipped Frog, Texas Tortoise, South Texas Siren (Large Form), Black Spotted Newt, Sheep Frog, Texas Indigo Snake, Texas Horned Lizard, and Mexican Mud-Plantain.
4. ☐ Other Project Specific Actions:
   1.
   2.
   3.
   4.

VI. Hazardous Materials on Contamination Issues

Action Items Required : ☐ No Action Required

☒ **General (applies to all projects):**

Comply with the Hazard Communication Act (HCA) for personnel who will be working with hazardous materials by conducting safety meetings prior to beginning construction and making workers aware of potential hazards in the workplace. Ensure that all workers are provided with personal protective equipment appropriate for any hazardous materials used.

Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the HCA.

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

Contact the Engineer if any of the following are detected:

- Dead or distressed vegetation (identified as not normal)
- Trash piles, drums, canisters, barrels, etc.
- Undesirable smells or odors
- Evidence of leaching or seepage of contaminant substances

Any other evidence indicating possible hazardous materials or contamination discovered on site.

1. ☒ If potentially hazardous material and/or contaminated media (i.e.: soil, groundwater, surface water, sediment, building materials) are unexpectedly encountered during construction, assure that such materials and contamination are handled according to applicable federal and state regulations, cease work in the immediate area and contact the Engineer immediately.
2. Does the project involve any bridge class structure rehabilitation or replacements (bridge class structures not including box culverts)?

   ☐ Yes ☒ No

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

3. Are the results of the asbestos inspection positive (is asbestos present)?

   ☐ Yes ☒ No

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

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

4. ☐ The Contractor is responsible for providing the date(s) for abatement activities and/or demolition with careful coordination between the Engineer and an Asbestos Consultant in order to minimize construction delays and subsequent claims.

VII. Other Environmental Issues

Action Items Required : ☐ No Action Required

1. ☒ Noise

   Contractor shall make every reasonable effort to minimize construction noise through abatement measures such as work hour controls and proper maintenance of equipment mufflers.

2. ☒ Air

   Contractor shall practice common dust control techniques such as surface chemical treatment or watering of unpaved road surfaces and vehicle speed reduction shall be implemented to minimize and prevent airborne dust during construction.

Pharr District Contact No. 956-702-6100 Revised 11/13/2012

List of Abbreviations

BMP: Best Management Practice
CGP: Construction General Permit
DSHS: Texas Department of State Health Services
FEMA: Federal Emergency Management Agency
FHWA: Federal Highway Administration
MOA: Memorandum of Agreement
MOU: Memorandum of Understanding
MS4: Municipal Separate Stormwater Sewer System
MBTA: Migratory Bird Treaty Act
NOI: Notice of Intent
NOT: Notice of Termination
NWP: Nationwide Permit
PCN: Pre-Construction Notification
PSL: Project Specific Location
SPCC: Spill Prevention Control and Countermeasure
SW3P: Storm Water Pollution Prevention Plan
TCEQ: Texas Commission on Environmental Quality
THC: Texas Historical Commission
TPDES: Texas Pollutant Discharge Elimination System
TPWD: Texas Parks and Wildlife Department
TxDOT: Texas Department of Transportation
T&E: Threatened and Endangered Species
USACE: U.S. Army Corp of Engineers
USFWS: U.S. Fish and Wildlife Service

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Texas Department of Transportation

PHARR DISTRICT

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC)

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6			MILE 2
STATE	DISTRICT	COUNTY	
TEXAS	PHR	HIDALGO	SHEET NO.
CONTROL	SECTION	JOB	
0921	02	323	175

Date Printed: X-X-XX

SITE DESCRIPTION

PROJECT LIMITS:
FROM: LA HOMA RD.
TO: MOOREFIELD RD.

PROJECT SITE MAPS:

Project Location Map: See Title Sheet (Sheet 1), and Project Layout (Sheet 3)
Drainage Patterns: See Drainage Area Maps (Sheets 114-116)

Major Controls and Locations of Stabilization Practices: See SW3P Layouts (Sheets 177-179)

Surface Waters and Discharge Locations: See U&D Layouts (Sheets 122-127)

PROJECT DESCRIPTION:
Reconstruction of an existing two lane rural roadway to a four lane urban roadway consisting of grading, flexible base, lime treated subgrade, asphaltic concrete pavement flashing beacons, traffic signals, signing, pavement markings, and storm drain structures.

MAJOR SOIL DISTURBING ACTIVITIES:
The drainage system, consisting of drainage pipes, inlets, and manholes, will be installed. Excavation and Embankment will be utilitilzed to build the roadway through out the entire project.

TOTAL PROJECT AREA: 7 Acres

TOTAL AREA TO BE DISTURBED: 7 Acres (100%)

WEIGHTED RUNOFF COEFFICIENT:
Before Construction: 0.66
After Construction: 0.76

EXISTING CONDITION OF SOIL & VEGETATIVE
Grassy area existing between the existing Right-Of-Way and the existing roadway.

NAME OF RECEIVING WATERS:
Outfall #1 drains into the Mission Lateral

ENDANGERED SPECIES, DESIGNATED CRITICAL HABITAT AND HISTORICAL PROPERTY:
There are a potential presence of Species of Concern (SOC) within th eproject area that Includes: Ferruginous Pygmy Owl, Texas Botteri's Sparrow, Western Burrowing owl, Plain Spotted Skunk, Texas Indigo snake, Black striped snak, Texas Horned Lizard, Texas Tortoise, South Texas Siren (Large form and Siren SD 1), Black-spotted newt, Mexican treefrog, Sheep frog, White Lipped Frog and Mexican Mud-plantain.

State law prohibits the taking (incidental or otherwise) of state listed Species of Concern, where take is defined as its collection, hooking, hunting, netting, shooting, or snare by any means or devices.

The documentation satisfying TPDES Construction General Permit eligibility pertaining to the existence or of any protective action taken with regards to endangered species or designated critical habitat or historical property in this project area is contained in the project's Environmental Impact Study and can be viewed under the State Open Records Act at the address shown below:

TEXAS DEPARTMENT OF TRANSPORTATION
PHARR DISTRICT HEADQUARTERS
ATTN: ENVIRONMENTAL COORDINATOR
600 W. EXPRESSWAY 83
PHARR, TX 78577
PHONE: 956-702-6100

EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

- T TEMPORARY SEEDING
- ___ MULCHING (Hay or Straw)
- ___ BUFFER ZONES
- ___ PLANTING
- P SEEDING
- ___ SODDING
- T BIODEGRADABLE EROSION CONTROL SOCKS
- ___ PRESERVATION OF NATURAL RESOURCES
- ___ FLEXIBLE CHANNEL LINER
- ___ RIGID CHANNEL LINER
- ___ SOIL RETENTION BLANKET
- ___ COMPOST MANUFACTURED COMPOST
- ___ OTHER: (Specify Practice)

STRUCTURAL PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

- T SILT FENCES
- T BIODEGRADABLE EROSION CONTROL SOCKS
- ___ HAY BALES
- T ROCK FILTER DAMS
- ___ DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
- ___ DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
- ___ DIVERSION DIKE AND SWALE COMBINATIONS
- ___ PIPE SLOPE DRAINS
- ___ PAVED FLUMES
- ___ ROCK BEDDING AT CONSTRUCTION EXIT
- T TIMBER MATTING AT CONSTRUCTION EXIT
- ___ PIPE MATTING OR EQUAL AT CONSTRUCTION EXIT
- ___ CHANNEL LINERS
- ___ SEDIMENT TRAPS
- ___ SEDIMENT BASINS
- ___ STORM INLET SEDIMENT TRAP
- ___ STONE OUTLET STRUCTURES
- P CURBS AND GUTTERS
- P STORM SEWERS
- ___ VELOCITY CONTROL DEVICES
- ___ OTHER: (Specify Practice)

STORM WATER MANAGEMENT:
Storm water drainage will be managed by storm drain networks.
This storm drain network will carry drainage within the ROW and ultimately to the designated outfall.

STORM WATER MANAGEMENT ACTIVITIES:
The order of activities will be as follows:
1.- Install perimeter controls, clear R.O.W. on side where construction will take place.
2. Install Proposed trunk lines/inlets, Install silt fences, erosion control logs, and rock filter dams along roadway, storm sewer networks, and outfalls as shown on the SW3P layouts.
3. Construct proposed roadway.
4. Construct roadway section up to the first 1.5" layer of ACP.
5. Seed each section completed with temp. seeding from edge of pavement to right of way line.
6. Once all construction activity is complete, place permanent seeding from edge of pavement to right of way line.

All work shall be done according to plans or as instructed by the engineer.

NON-STORM WATER MANAGEMENT DISCHARGES:
Non-storm water discharges should be filtered, or held in retention basins, before being allowed to mix with storm water. These discharges consist of non-polluted ground water, spring water, foundation and/or footing drain water; and water used for dust control, pavement washing and vehicle wastewater containing no detergents.

OTHER REQUIREMENTS & PRACTICES

OTHER EROSION AND SEDIMENT CONTROLS:

MAINTENANCE: All erosion and sediment controls will be maintained in good working order. If a repair is necessary, it will be done at the earliest date possible, but no later than 7 calendar days after the surrounding exposed ground has dried sufficiently to prevent further damage from heavy equipment. The areas adjacent to creeks and drainage ways shall have priority followed by devices protecting storm sewer inlets.

INSPECTION: For areas of the construction site that have not been finally stabilized, area used for storage of materials, structural control measures, and locations where vehicles enter or exit the site, personnel provided by the permittee and familiar with the SW3P must inspect disturbed areas at least once every fourteen (14) calendar days and within twenty-four (24) hours of the end of a storm event 0.5 inches or greater.

WASTE MATERIALS: All waste materials will be collected and stored in a securely lidded dumpster. All trash and construction debris from the site will be deposited as necessary at a local dump. No construction waste material will be buried on site.

HAZARDOUS WASTE (INCLUDING SPILL REPORTING): At a minimum, any products in the following categories to be hazardous: Paints, Acids for cleaning masonry surfaces, Cleaning Solvents, Asphalt products, Chemical additives for soil stabilization, or Concrete curing compounds and additives. In the event of a spill which may be hazardous, the spill Coordinator should be contacted immediately. Emptying of excess concrete should not be allowed on site. Likewise, washout of concrete trucks should not be performed on site. These discharges are considered non-allowable non-storm water discharges. Concrete trucks should never be allowed to dump into storm drains or sanitary sewers.

SANITARY WASTE: All sanitary waste will be collected from the portable units as necessary or as required by local regulation by a licensed sanitary waste management contractor.

OFFSITE VEHICLE TRACKING: The Contractor shall be rquired, on a regular basis or as may be directed by the Engineer, to dampen haul roads for dust control, stabilize construction entrances and to remove excess dirt from the roadway.

MANAGEMENT PRACTICES: (Example Below - May be used as applicable, revised or expanded)
1. Disposal areas, stockpiles, and haul roads shall be constructed in a manner that will minimize and control the amount of sediment that may enter receiving waters. Disposal areas shall not be located in any wet land, water body or stream bed.
2. Construction staging areas and vehicle maintenance areas shall be constructed by the Contractor in a manner to minimize the runoff of pollutants.
3. All waterways shall be cleared as soon as practicable of temporary embankment, temporary bridges, matting, falsework, piling, or debris or other obstructions placed during construction operations that are not a part of the finished work.

OTHER:
1. Construction Materials List of materials stored on job site to be provided by Contractor.
2. The project SW3P File shall be located at the project field office or within the Contractor's mobile office at all times and shall contain the N.O.I., CGP, Signature Authorization, Certification/Qualification Statements, Inspection Reports, Required Maps, and the TPDES Permit, Part II. This File to be persented to authorized State and Federal Agents upon request.

Reserved Space For Seal

STATE OF TEXAS
DAMIEN B. TIJERINA
104828
LICENSED
PROFESSIONAL ENGINEER

5/2/2014

P.E.

Signature of Registrant & Date

© 2012

Texas Department of Transportation

TxDOT STORM WATER POLLUTION PREVENTION PLAN (SW3P)

REV. 11/12 SW3P.DGN

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			176
STATE	DIST.	COUNTY	
TEXAS	PHARR	HIDALGO	
CONT.	SECT.	JOB	HIGHWAY NO.
0921	02	323	MILE 2

STA. 9+87.40
END INCIDENTAL CONST.
(MATCH. EXIST. PAVEMENT)
CSJ:0921-02-323

STA. 5+78.30
BEGIN INCIDENTAL CONST.
(MATCH. EXIST. PAVEMENT)
CSJ:0921-02-323

STA. 10+10.59
BEGIN RECONSTRUCTION
(MATCH. EXIST. PAVEMENT)
CSJ:0921-02-323

POT 5+30.71
POT 5+78.30
POT 6+78.40
POT 10+00.00
N 8° 28' 14.08" E
S 83° 47' 28.30" E
S 81° 06' 21.99" E
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
IRRIGATION LINE
LA HOMA ROAD
PC 10+66.46
A-OUT
A-MH2
PROP. R.O.W.
EXIST. R.O.W. LINE
80:0.08
MATCH LINE STA. 16+00

EXIT TY 2
AS DIRECTED BY
THE ENGINEER

SCF-1
INSTALLED
REMOVED

SCF-2
INSTALLED
REMOVED

SCF-3
INSTALLED
REMOVED

SCF-4
INSTALLED
REMOVED

TECL-1
INSTALLED
REMOVED

TECL-2
INSTALLED
REMOVED

TECL-3
INSTALLED
REMOVED

TECL-4
INSTALLED
REMOVED

CI-ST

SHEET SUMMARY

ITEM	DESCRIPTION	UNIT	QUANTITY
1122-2048	BIO ERSN LOGS (12")	LF	80
1122-2017	CONST EXITS (INST)(TY 2)	SY	78
1122-2019	CONST EXITS (REMOVE)	SY	78
1122-2037	TEMP SED CONT FENCE (INSTALL)	LF	60

LEGEND:

CI-ST	TEMP ERSN CONT LOGS (20 LF)
SCF	15 LF SED CONT FENCE ALONG ROADSIDE DITCH 500' USUAL SPACING
RFD1	ROCK FILTER DAM (TYPE 2)

STATE OF TEXAS
DAMIEN B. TIJERINA
104828
LICENSED PROFESSIONAL ENGINEER
5/2/2014

THE COUNTY OF HIDALGO TEXAS

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Texas Department of Transportation

L&G Engineering
Texas Registered Engineering Firm F-4105
Highway / Civil
Structural / Bridge
Environmental
Constr. Material Testing

MILE 2 NORTH
SW3P LAYOUTS
STA. 10+00 TO STA. 16+00

SCALE:
HOR. - 1"=100'
VER. -

SHEET 1 OF 3

DN: L.S.	FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
CK DN: D.B.T.	6	TX				177
DW: L.S.	STATE DIST. NO	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: D.B.T.	21	HIDALGO	0921	02	323	MILE 2
TR:						
CK TR:						

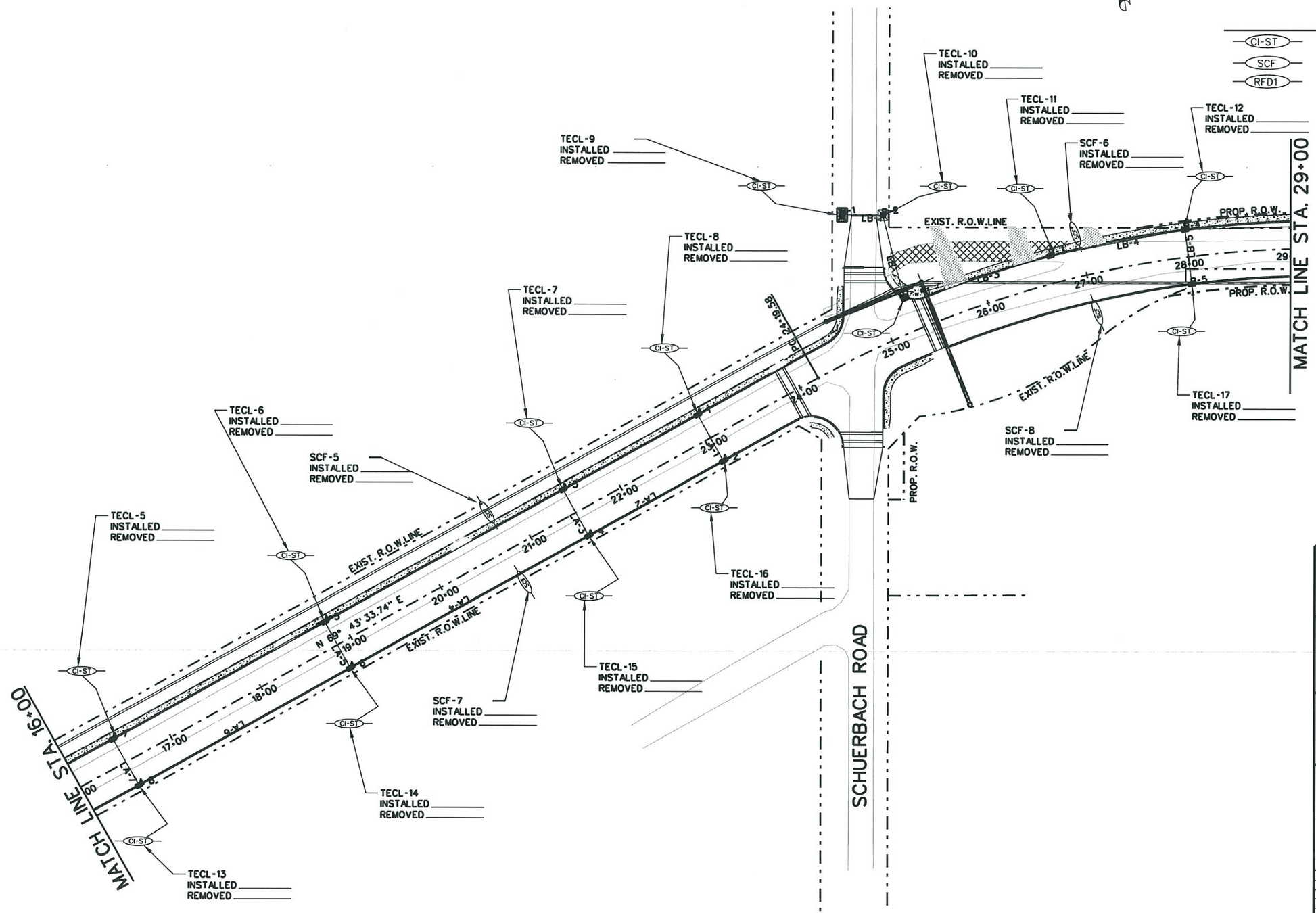
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SHEET SUMMARY

ITEM	DESCRIPTION	UNIT	QUANTITY
1122-2048	BIO ERSN LOGS (12")	LF	280
1122-2037	TEMP SED CONT FENCE (INSTALL)	LF	60

LEGEND:

CI-ST	TEMP ERSN CONT LOGS (20 LF)
SCF	15 LF SED CONT FENCE ALONG ROADSIDE DITCH 500' USUAL SPACING
RFD1	ROCK FILTER DAM (TYPE 2)



STATE OF TEXAS
DAMIEN B. TIJERINA
104828
LICENSED PROFESSIONAL ENGINEER
5/2/2014

THE COUNTY OF HIDALGO TEXAS

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L&G Engineering
Texas Registered Engineering Firm F-4105

Highway / Civil
Structural / Bridge
Environmental
Constr. Material Testing

MILE 2 NORTH
SW3P LAYOUTS
STA. 16+00 TO STA. 29+00

SCALE:
HOR. = 1"=100'
VER. =

SHEET 2 OF 3

DN: L.S.		FED. RD. DIV. NO.	STATE	PROJECT NO.				SHEET NO.
CK DN: D.B.T.		6	TX					178
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CK DW: D.B.T.		21	HIDALGO	0921	02	323		MILE 2
TR:								
CK TR:								

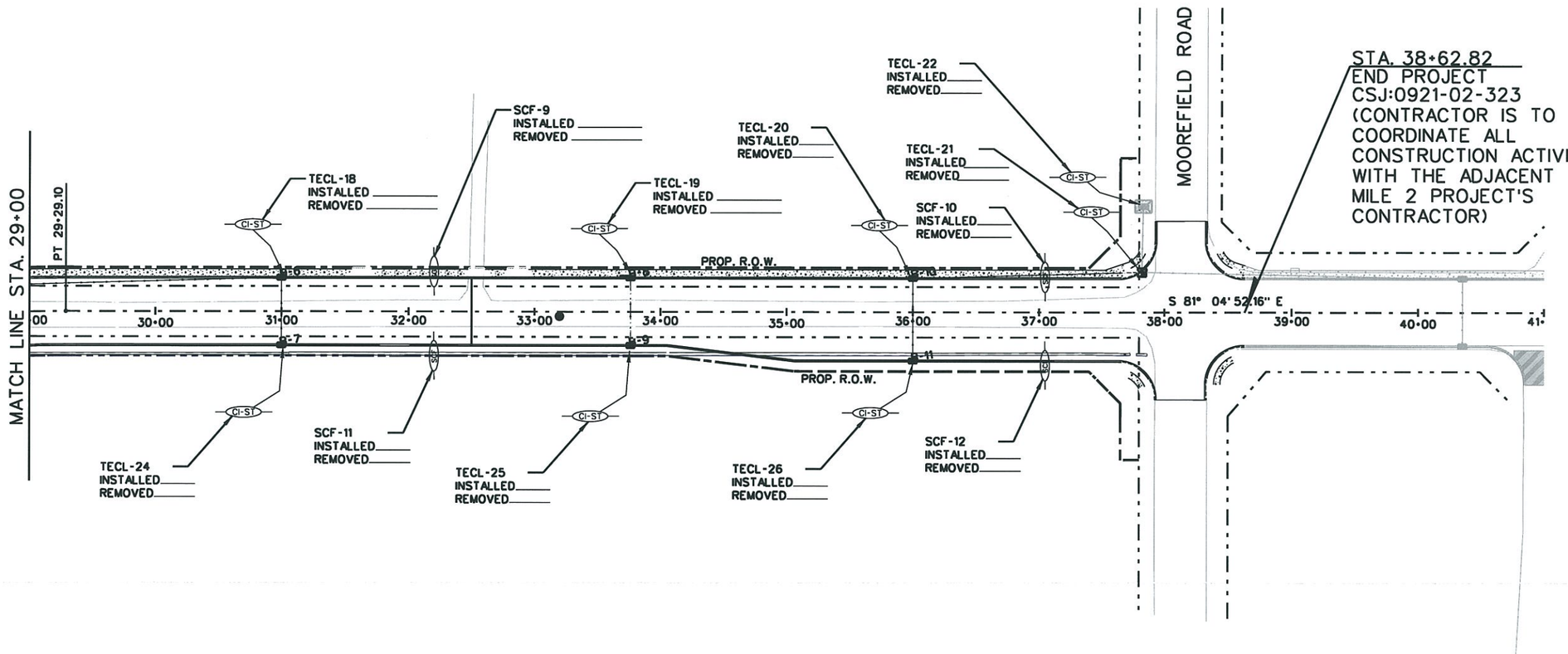
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SHEET SUMMARY

ITEM	DESCRIPTION	UNIT	QUANTITY
1122-2048	BIO ERSN LOGS (12")	LF	160
1122-2037	TEMP SED CONT FENCE (INSTALL)	LF	60

LEGEND:

CI-ST	TEMP ERSN CONT LOGS (20 LF)
SCF	15 LF SED CONT FENCE ALONG ROADSIDE DITCH 500' USUAL SPACING
RFD1	ROCK FILTER DAM (TYPE 2)



STATE OF TEXAS
DAMIEN B. TIJERINA
104828
LICENSED PROFESSIONAL ENGINEER
5/2/2014

COUNTY OF HIDALGO TEXAS

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L&G Engineering
Texas Registered Engineering Firm F-4105

Highway / Civil
Structural / Bridge
Environmental
Constr. Material Testing

MILE 2 NORTH
SW3P LAYOUTS
STA. 29+00 TO STA. 38+62.82

SCALE:
HOR. - 1"=100'
VER. -

SHEET 3 OF 3

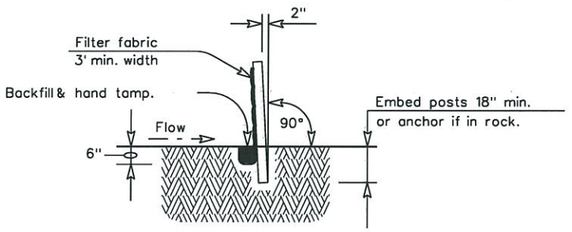
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FED. RD. DIV. NO.	STATE	PROJECT NO.			SHEET NO.
6	TX				179
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21	HIDALGO	0921	02	323	MILE 2

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DATE:
FILE:



SECTION A-A

GENERAL NOTES

1. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

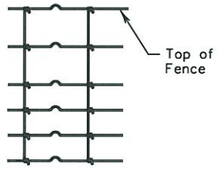
PLAN SHEET LEGEND

Sediment Control Fence —— SCF ——

SEDIMENT CONTROL FENCE USAGE GUIDELINES

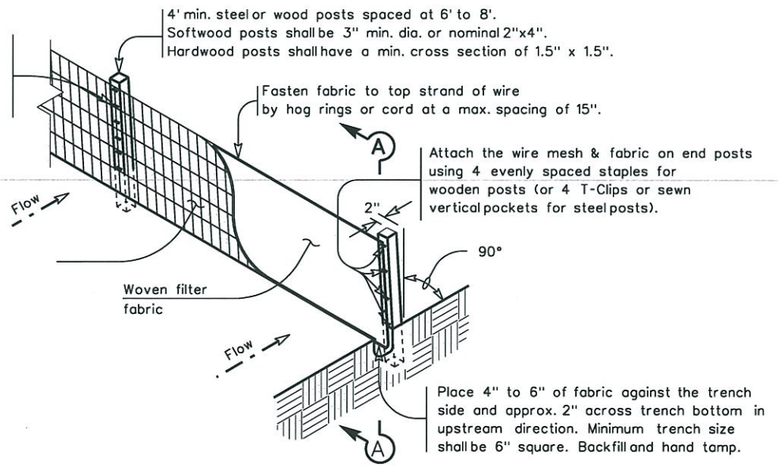
A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a max. 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.



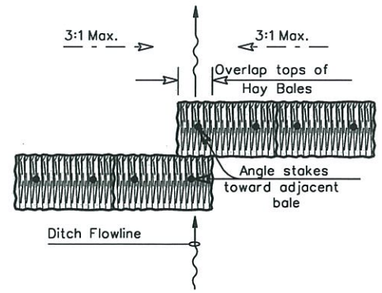
Galv. Hinge joint knot woven mesh (12.5 Ga. Min.) requires a minimum of five horizontal wires spaced at a max.12 inches apart and all vertical wires spaced at a max. 12 inches apart.

Hinge Joint Knot Woven Mesh (Option)

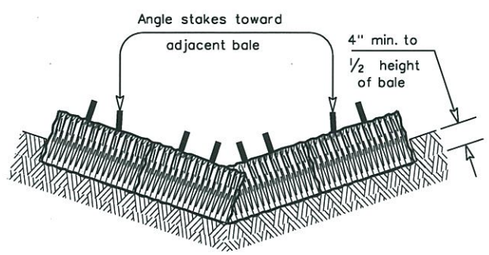


TEMPORARY SEDIMENT CONTROL FENCE

SCF



PLAN VIEW



PROFILE VIEW

PLANS SHEET LEGEND

Baled Hay —— BH ——

BALED HAY USAGE GUIDELINES

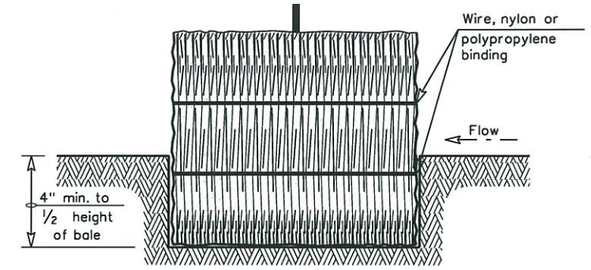
A Baled Hay installation may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A two year storm frequency may be used to calculate the flow rate to be filtered. The installation should be sized to filter a maximum flow thru rate of 5 GPM/FT^2 of cross sectional area. Baled hay may be used at the following locations:

1. Where the runoff approaching the baled hay flows over disturbed soil for less than 100'. If the slope of the disturbed soil exceeds 10%, the length of slope upstream the baled hay should be less than 50'.
2. Where the installation will be required for less than 3 months.
3. Where the contributing drainage area is less than ½ acre.

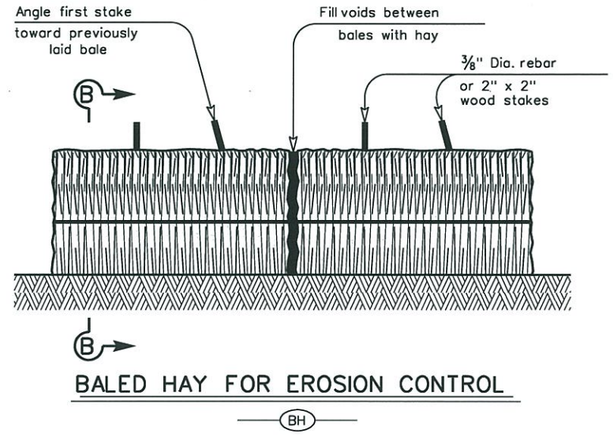
For Baled Hay installations in small ditches, the additional following considerations apply:

1. The ditch sideslopes should be graded as flat as possible to maximize the drainage flowrate thru the hay.
2. The ditch should be graded large enough to contain the overtopping drainage when sediment has filled to the top of the baled hay.

Bales should be replaced usually every 2 months or more often during wet weather when loss of structural integrity is accelerated.



SECTION B-B



BALED HAY FOR EROSION CONTROL

BH

GENERAL NOTES

1. Hay bales shall be a minimum of 30" in length and weigh a minimum of 50 Lbs.
2. Hay bales shall be bound by either wire or nylon or polypropylene string. The bales shall be composed entirely of vegetative matter.
3. Hay bales shall be embedded in the soil a minimum of 4" and where possible ½ the height of the bale.
4. Hay bales shall be placed in a row with ends tightly abutting the adjacent bales. The bales shall be placed with bindings parallel to the ground.
5. Hay bales shall be securely anchored in place with ⅜" Dia. rebar or 2" x 2" wood stakes, driven through the bales. The first stake shall be angled towards the previously laid bale to force the bales together.
6. 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

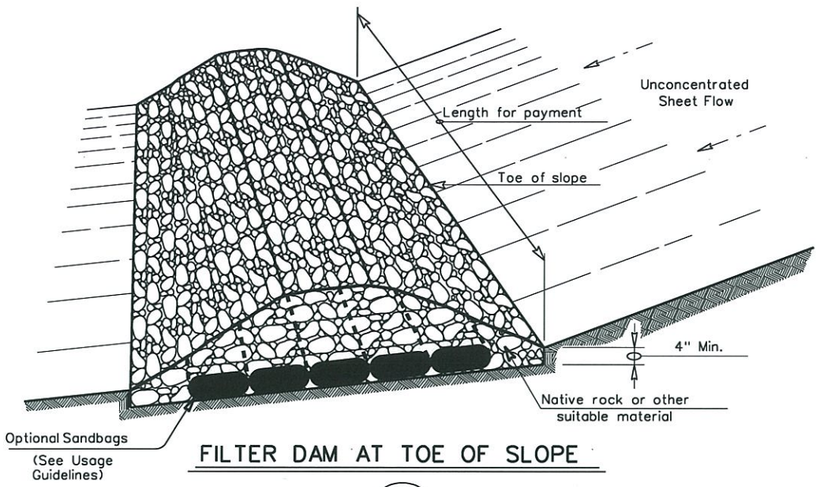
FENCE & BALED HAY

EC(1)-09

FILE: ec109.dgn	DN: TxDOT	CK: AM	DW: TV	CK: BD
©TxDOT June 1993	CONT	SECT	JOB	HIGHWAY
2 REVISIONS	0921	02	323	MILE 2
	DIST	COUNTY		SHEET NO.
	21	HIDALGO		180

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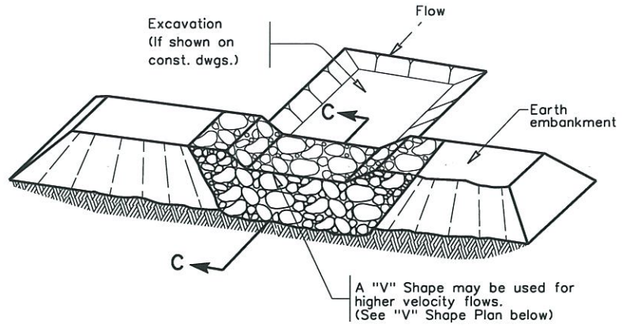
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FILTER DAM AT TOE OF SLOPE

RFD1

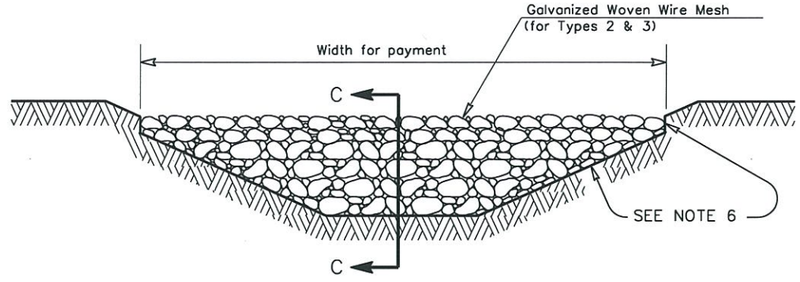
TYPE 1



FILTER DAM AT SEDIMENT TRAP

RFD1 — OR — RFD2

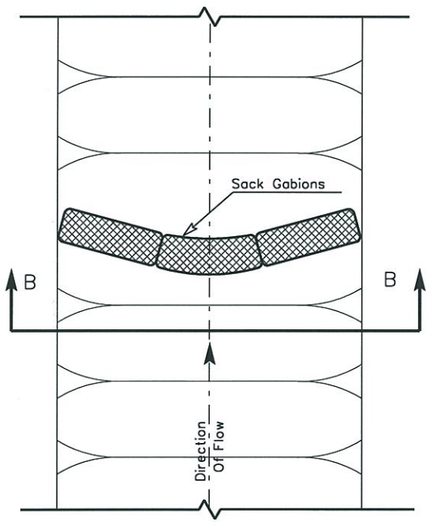
TYPE 1 OR TYPE 2



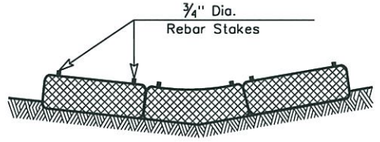
FILTER DAM AT CHANNEL SECTIONS

RFD1 — OR — RFD2 — OR — RFD3

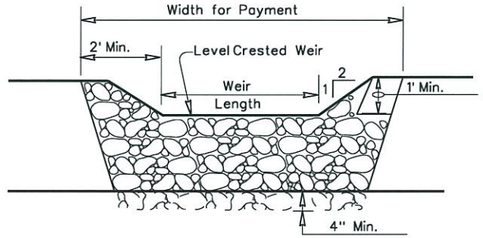
TYPE 1 OR TYPE 2



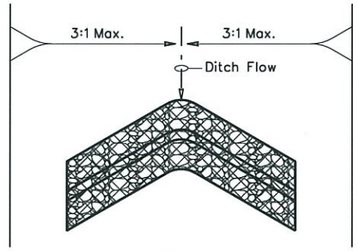
PLAN VIEW



SECTION B-B

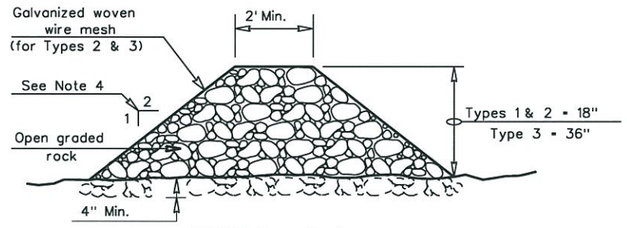


PROFILE



"V" SHAPE

(Plan View)



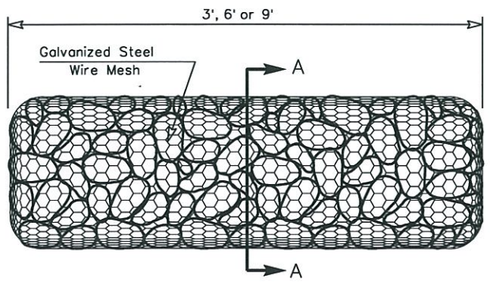
SECTION C-C

PLANS SHEET LEGEND

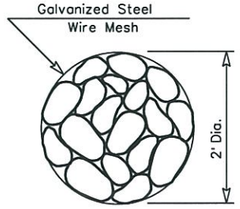
Type 1 Rock Filter Dam — RFD1

Type 2 Rock Filter Dam — RFD2

Type 3 Rock Filter Dam — RFD3



TYPE 4 (SACK GABIONS)



SECTION A-A

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): 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 (approx. 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): Type 2 may be used in ditches and at dike or swale outlets.

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

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

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. 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 ¾" dia. rebar stakes.
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.

Texas Department of Transportation
Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

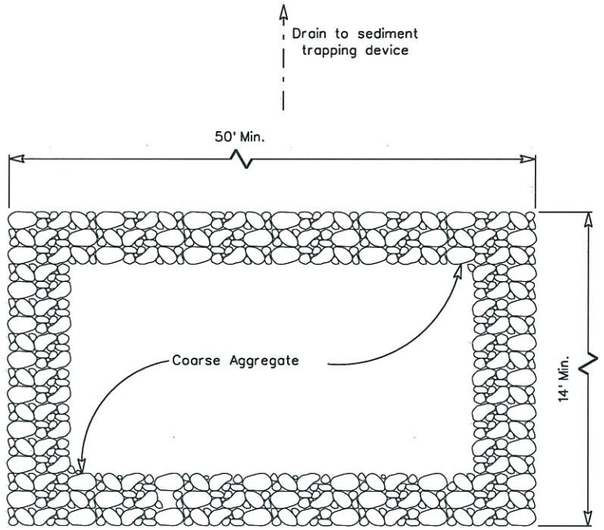
ROCK FILTER DAMS

EC(2)-93

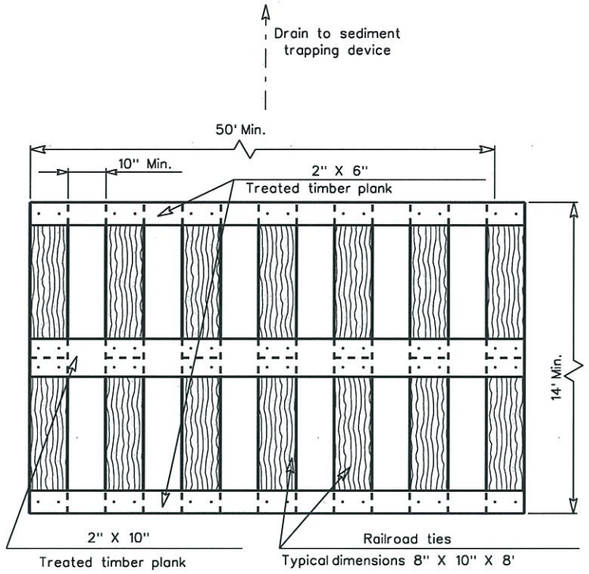
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© TxDOT June 1993	CONT	SECT	JOB	HIGHWAY
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	DIST	COUNTY		SHEET NO.
	21	HIDALGO		181

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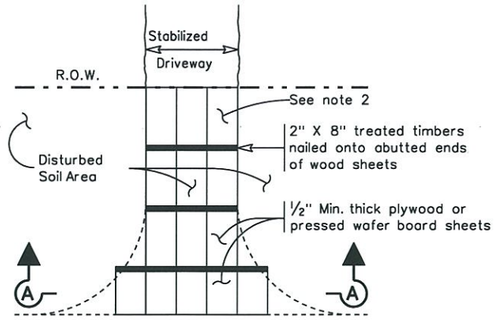
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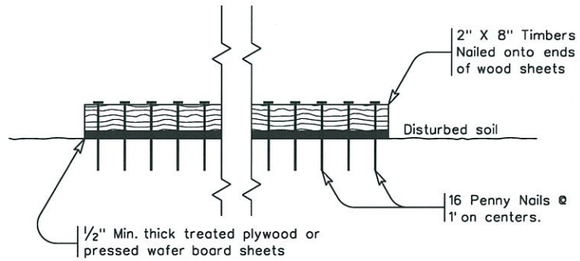
PLAN



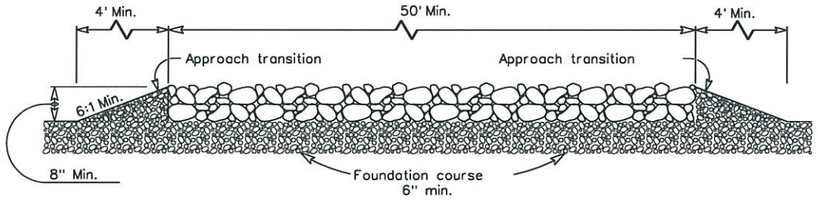
PLAN



PLAN



SECTION A-A

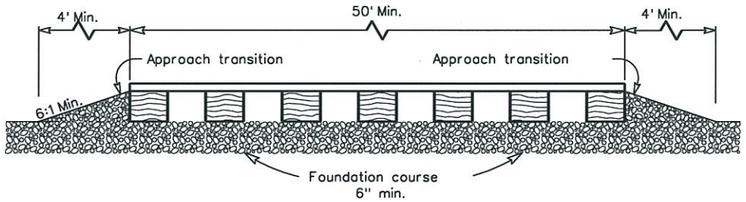


PROFILE

CONSTRUCTION EXIT (TYPE 1)

GENERAL NOTES

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 material as 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.



PROFILE

CONSTRUCTION EXIT (TYPE 2)

GENERAL NOTES

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.

CONSTRUCTION EXIT (TYPE 3)

GENERAL NOTES

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

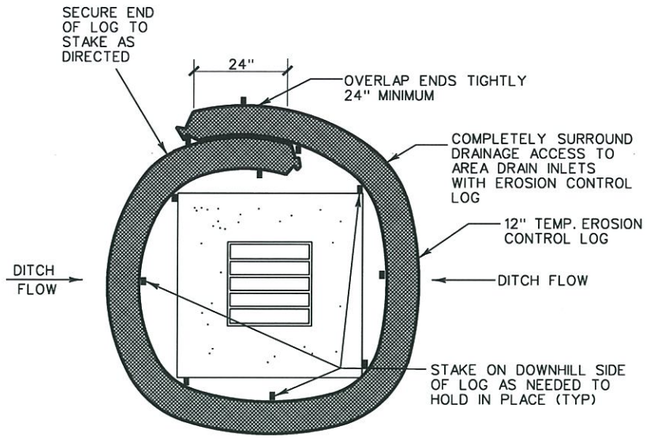
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

EC(3)-93

FILE: ec393.dgn	DN: TxDOT	CK: HEJ	DW: BD	CK:		
©TxDOT June 1993	CONT	SECT	JOB		HIGHWAY	
REVISIONS	0921	02	323		MILE 2	
	DIST	COUNTY			SHEET NO.	
	21	HIDALGO			182	

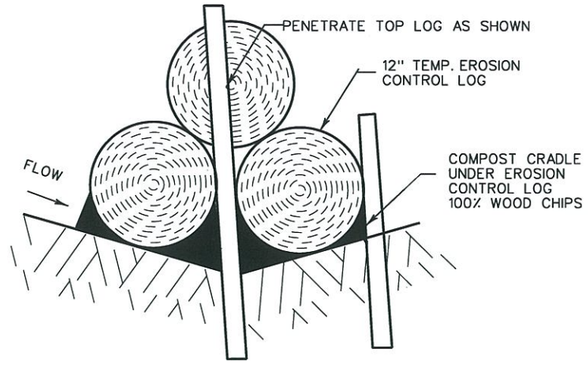
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DROP INLET SEDIMENT TRAP

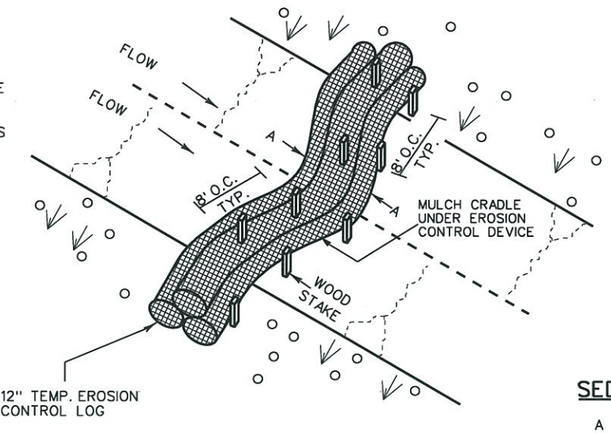
NTS

DI-ST



DITCH LINE SEDIMENT TRAP A-A

DL-ST



DITCH LINE SEDIMENT TRAP

DL-ST

PLANS SHEET LEGEND

DI-ST — DROP INLET SEDIMENT TRAP

DL-ST — DITCH LINE SEDIMENT TRAP

BOCI-ST — BACK OF CURB INLET SEDIMENT TRAP

ROW-ST — RIGHT OF WAY SEDIMENT TRAP

CI-ST — CURB INLET SEDIMENT TRAP

SEDIMENT BASIN & TRAP USAGE GUIDELINES

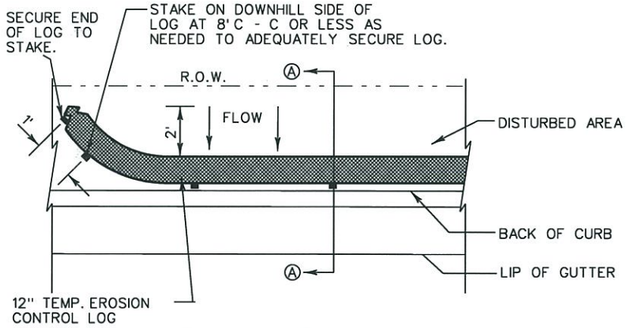
A sediment trap may be used to precipitate sediment out of runoff draining from an unstabilized area.

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).

Sediment traps should be placed in the following locations:

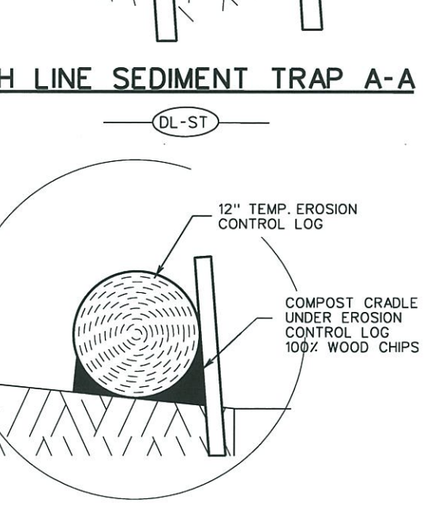
1. Immediately preceding drain inlets
2. Just before the drainage enters a water course
3. Just before the drainage leaves the right of way
4. Just before the drainage leaves the construction limits where drainage flows away from the project

The trap should be cleaned when the capacity has been reduced by ½ or the sediment has accumulated to a depth of 1', whichever is less.
Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for seperately.

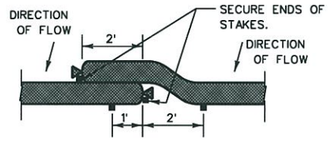


PLAN VIEW

NTS

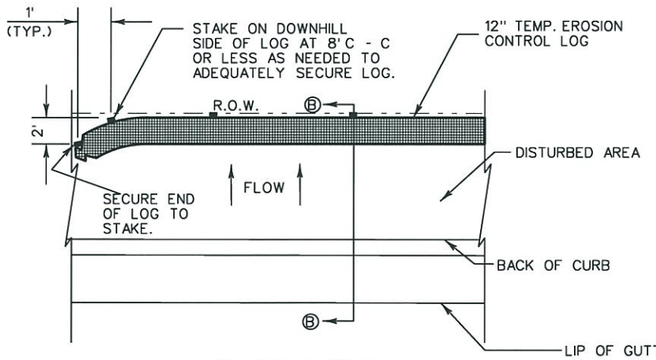


COMPOST CRADLE



LAP DETAIL

NTS

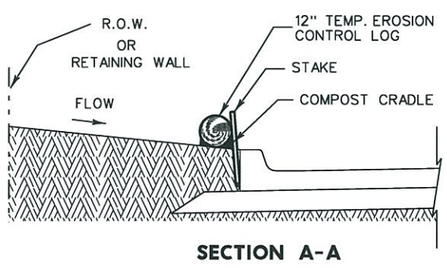


PLAN VIEW

NTS

GENERAL NOTES

1. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED. MAXIMUM LENGTH OF LOGS SHALL BE 30' FOR 12" DIAMETER LOGS.
2. 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.
3. STUFF LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE DENSITY THAT WILL HOLD SHAPE WITHOUT EXCESSIVE DEFORMATION.
4. STAKES SHALL BE 2" X 2" WOOD 4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG.
5. COMPOST CRADLE MATERIAL IS INCIDENTAL AND WILL NOT BE PAID FOR SEPARATELY.

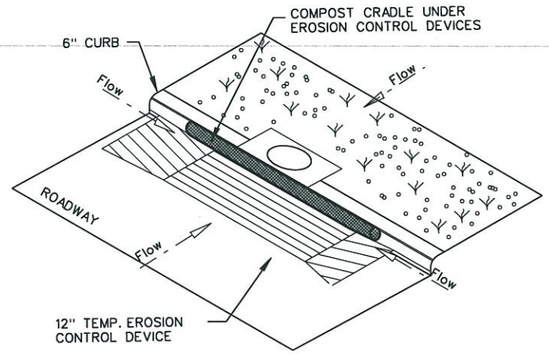


SECTION A-A

BACK OF CURB INLET SEDIMENT TRAP

NTS

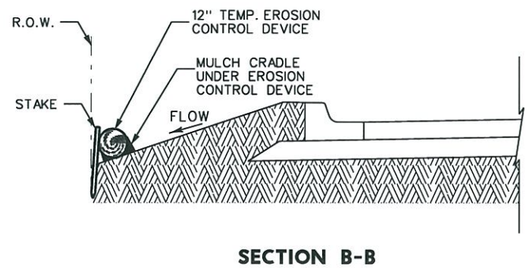
BOCI-ST



CURB INLET SEDIMENT TRAP

NTS

CI-ST



SECTION B-B

RIGHT-OF-WAY SEDIMENT TRAP

NTS

ROW-ST

PHARR DISTRICT STANDARD

Texas Department of Transportation

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TEMPORARY EROSION CONTROL LOGS
TECL-06 (PHR)

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6			MILE 2
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	PHARR	HIDALGO	
CONTROL	SECTION	JOB	
0921	02	323	183

LEVELS DISPLAYED

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	