

CONT	SECT	JOB	HIGHWAY
0251	06	036	US 281
DIST	COUNTY		SHEET NO.
BWD	LAMPASAS		1

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	PROJECT INDEX

STATE OF TEXAS DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED STATE HIGHWAY IMPROVEMENT

FEDERAL AID PROJECT NO. F 2023 (638)

US 281 LAMPASAS COUNTY

NET LENGTH OF ROADWAY = 9,004.77 FT. 1.705 MI.
 NET LENGTH OF BRIDGE = 0.00 FT. 0.000 MI.
 NET LENGTH OF PROJECT = 9,354.77 FT. 1.772 MI.

LIMITS: FROM US 183 TO BURNET COUNTY LINE

FOR THE CONSTRUCTION OF US 281 TO WIDEN ROAD AND ADD LANES

CONSISTING OF WIDENING FROM 4 LANE UNDIVIDED TO 4 LANE DIVIDED WITH FLUSH MEDIAN,
STORM DRAIN, C&G, AND SIDEWALK.

FUNCTIONAL CLASSIFICATION =
 URBAN PRINCIPAL ARTERIAL
 (US 281)
 DESIGN SPEED = URBAN 45 MPH
 DESIGN SPEED = RURAL 50 MPH
 A. D. T. (2020) = 10,857
 A. D. T. (2040) = 15,200

FINAL PLANS

LETTING DATE: _____
 DATE CONTRACTOR BEGAN WORK: _____
 DATE WORK WAS COMPLETED & ACCEPTED: _____
 FINAL CONTRACT COST: \$ _____
 CONTRACTOR: _____

REQUIRED SIGNS SHALL BE IN ACCORDANCE WITH BC (1) - 21 THRU BC (12) - 21 AND THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

THE CONSTRUCTION WORK WAS PERFORMED IN ACCORDANCE WITH THE PLANS AND CONTRACT.

 P. E. _____

 DATE

Registered Accessibility Specialist (RAS) Inspection Required
 TDLR No. TABS2023014946

RESOLUTION 23.2

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF: LAMPASAS:

SECTION 1.
 That the certain agreement dated March 13, 2023 between the State of Texas and the City of LAMPASAS, for the blanket coverage of various projects covering the installation, construction, existence, use, operation and maintenance of certain highway lighting in the City of LAMPASAS, be and the same is hereby approved, and MAYOR T.J. MONROE is hereby authorized to execute said contract on behalf of said City and to transmit the same to the State of Texas for appropriate action.

Section 2.
 That this Resolution shall take effect immediately upon its passage.

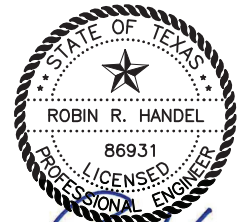
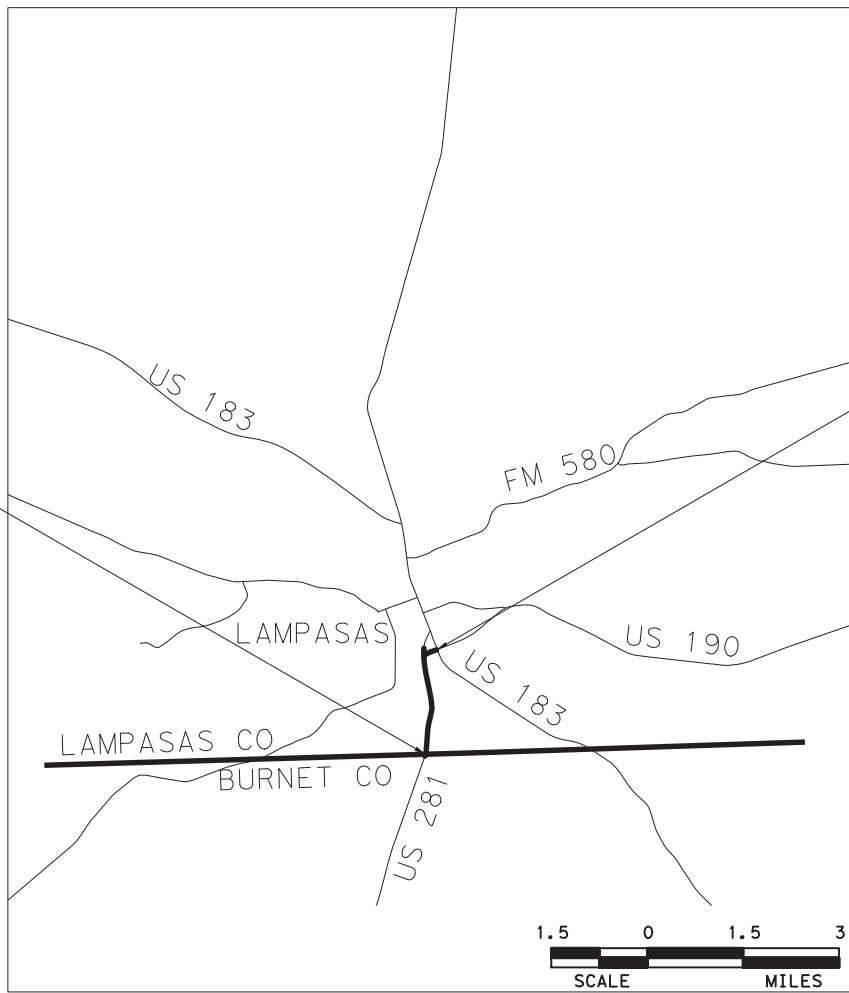
3/13/2023

CONCURRENCE:

T.J. Monroe
 CITY MAYOR

BEGIN PROJECT
 CSJ 0251-06-036
 STA 89+66.72
 RM 416+1.396

END PROJECT
 CSJ 0251-06-036
 STA 506+11.95
 RM 418+0.000



FIRM REGISTRATION No. F-1741

PREPARED BY: *Ke Huhll*
 CONSULTANT DESIGN ENGINEER
 OR PROJECT MANAGER

REF MRK:

NO EXCEPTIONS
 EQUATIONS: STA
 510+00.00 BK =
 STA 0+00.00 AH =
 -51,000.00'
 NO RAILROAD CROSSINGS

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, JULY 2022)



4/4/2023

SUBMITTED FOR LETTING:

DocuSigned by:
AA Stt, P.E.
 77D14777834646F...
 DISTRICT DESIGN ENGINEER

4/4/2023

RECOMMENDED FOR LETTING:

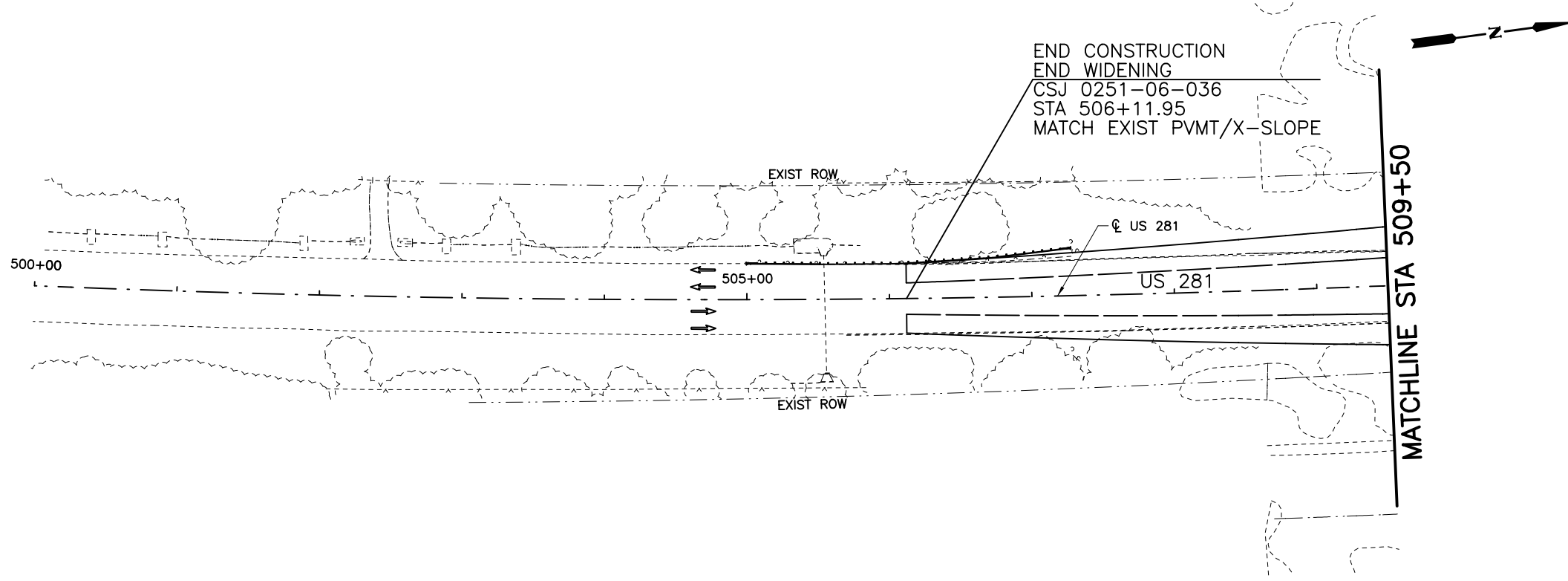
DocuSigned by:
AA Stt, P.E.
 77D14777834646F...
 DISTRICT DIRECTOR OF TRANSPORTATION
 PLANNING AND DEVELOPMENT

4/4/2023

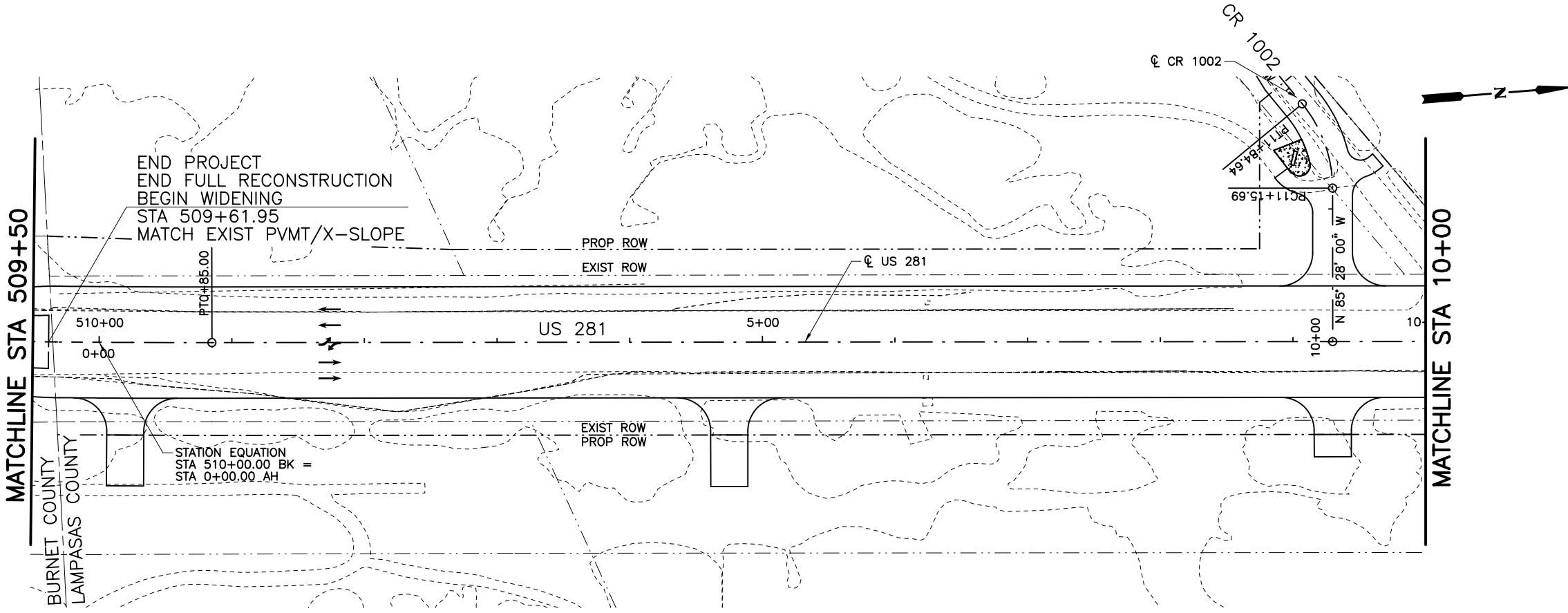
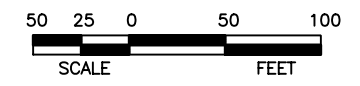
RECOMMENDED FOR LETTING:

DocuSigned by:
Gregory W. Cedillo, P.E.
 58E2D01C26B344F...

DATE: 1/31/2023 11:52:20 AM
 FILE: D:\stv-sw-pw-bent\ev.com\stv-sw-pw-01\Documents\Active Projects\TXD01600493_00\TXD01600493_04\8.00 Plans and Drawings\8.30 Cut Sheets\8.3.01 General\49304NG001.dgn



END CONSTRUCTION
 END WIDENING
 CSJ 0251-06-036
 STA 506+11.95
 MATCH EXIST PVMT/X-SLOPE



END PROJECT
 END FULL RECONSTRUCTION
 BEGIN WIDENING
 STA 509+61.95
 MATCH EXIST PVMT/X-SLOPE

STATION EQUATION
 STA 510+00.00 BK =
 STA 0+00.00 AH



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741



US 281

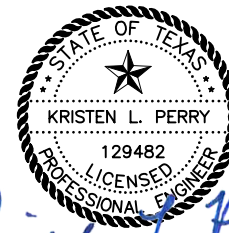
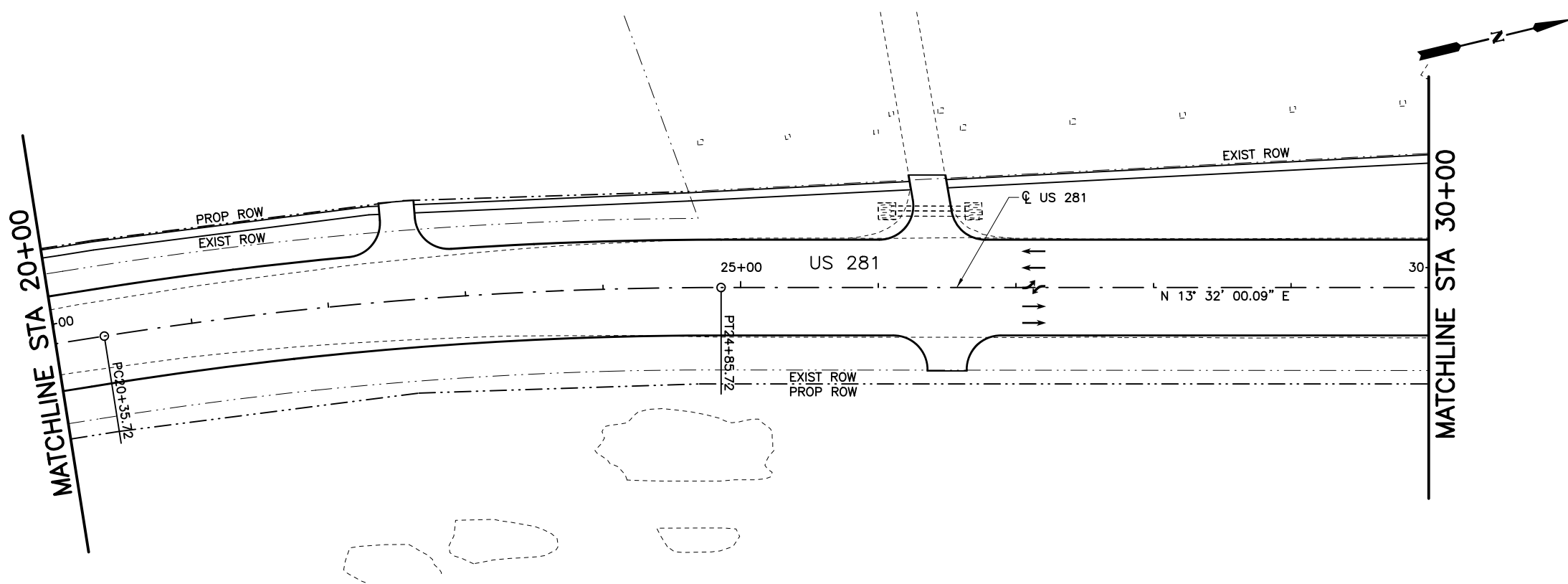
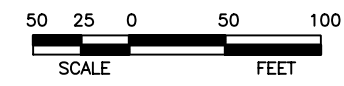
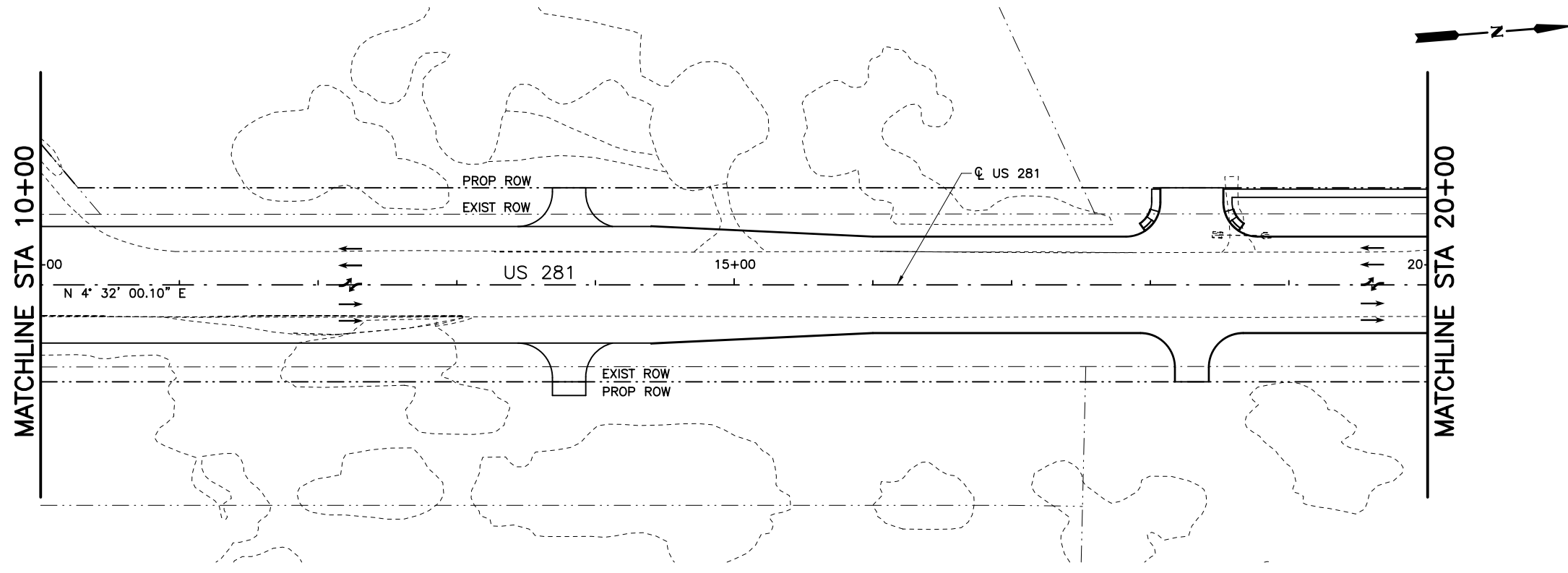
PROJECT LAYOUT

END PROJECT TO STA 10+00

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	CPY	6	TEXAS		US 281		
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	CPY	BWD	LAMPASAS	0251	06	036	3

cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/

1/31/2023 12:02:00 PM k.perry
 pw:/



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741



US 281

PROJECT LAYOUT

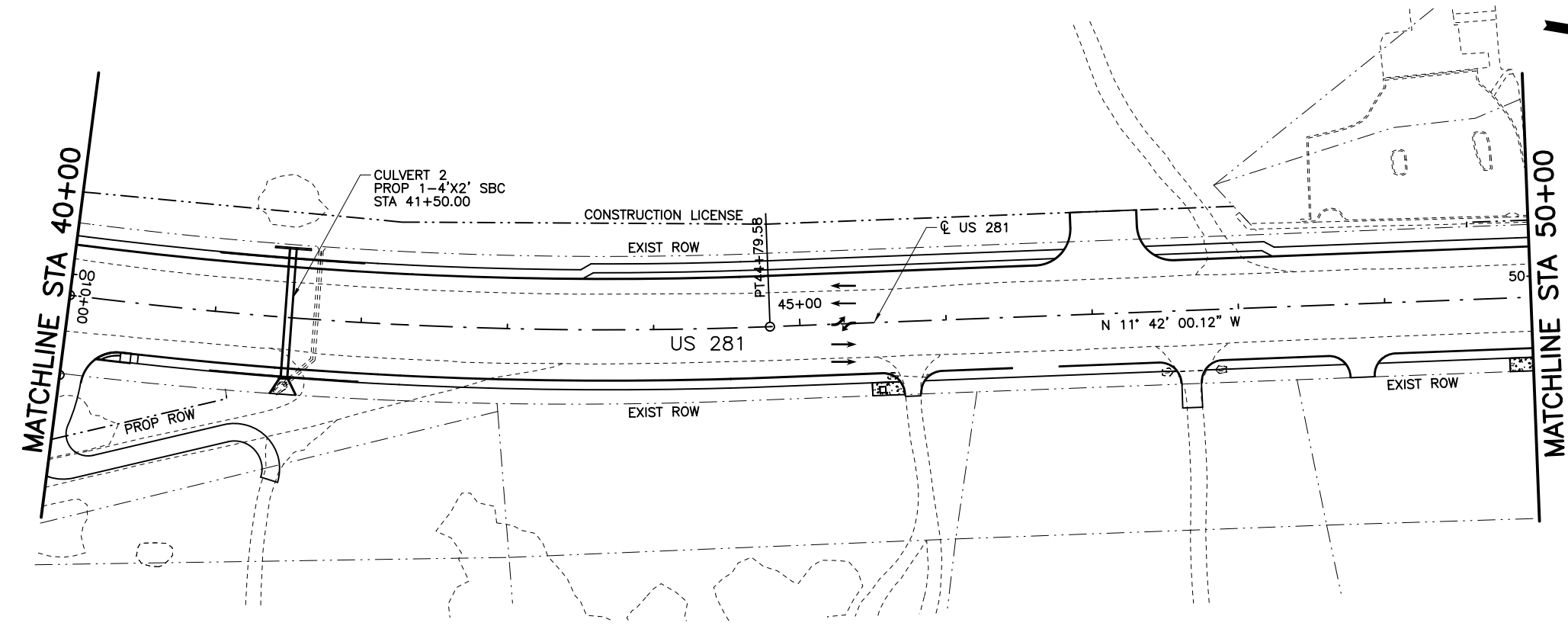
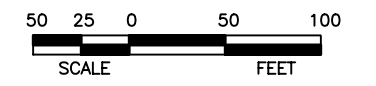
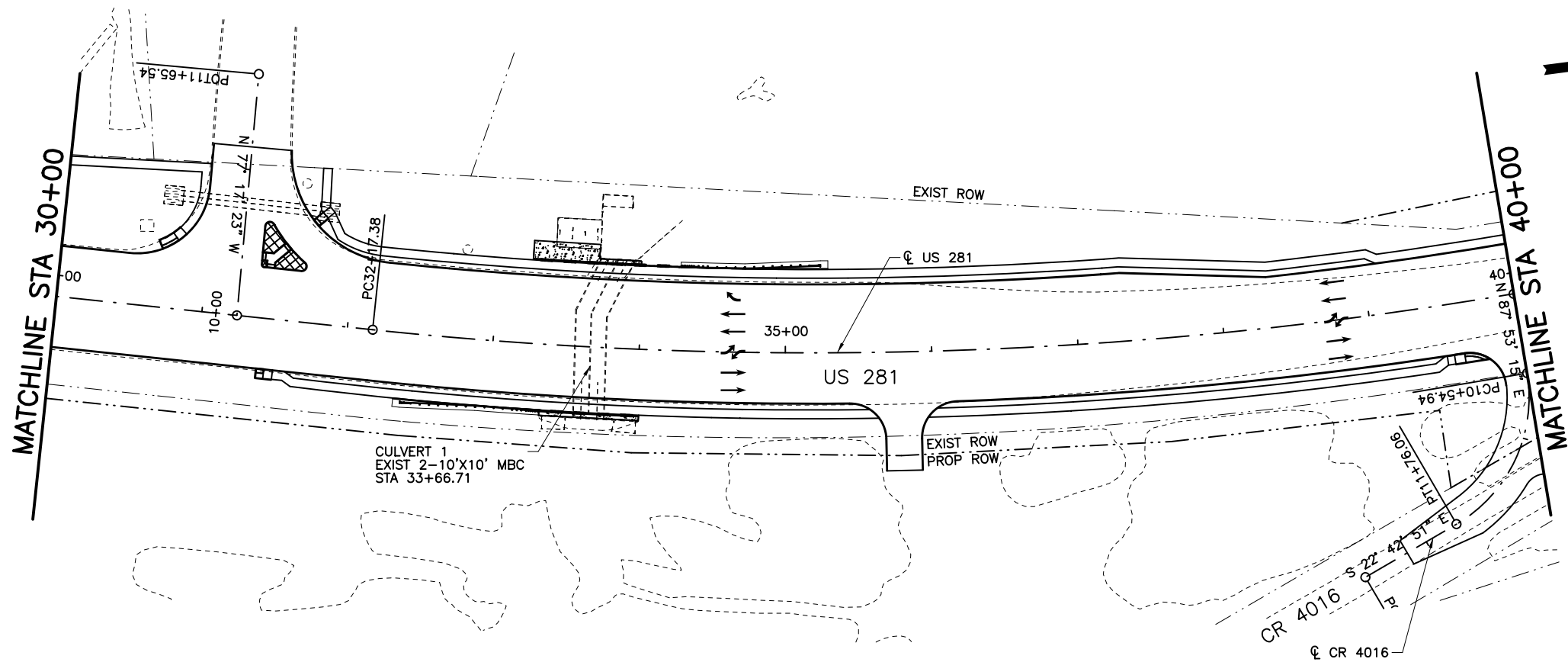
STA 10+00 TO STA 30+00

Designed:	CPY	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	CPY	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Drawn:	CPY	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Checked:	CPY	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06

cp/bw_ANSIB.tbl
cp/pdf_ANSIB.plt/cfg
pw:/

1/31/2023 12:02:17 PM k.perry

pw:/



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741



US 281

PROJECT LAYOUT

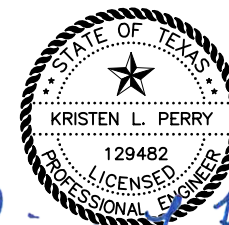
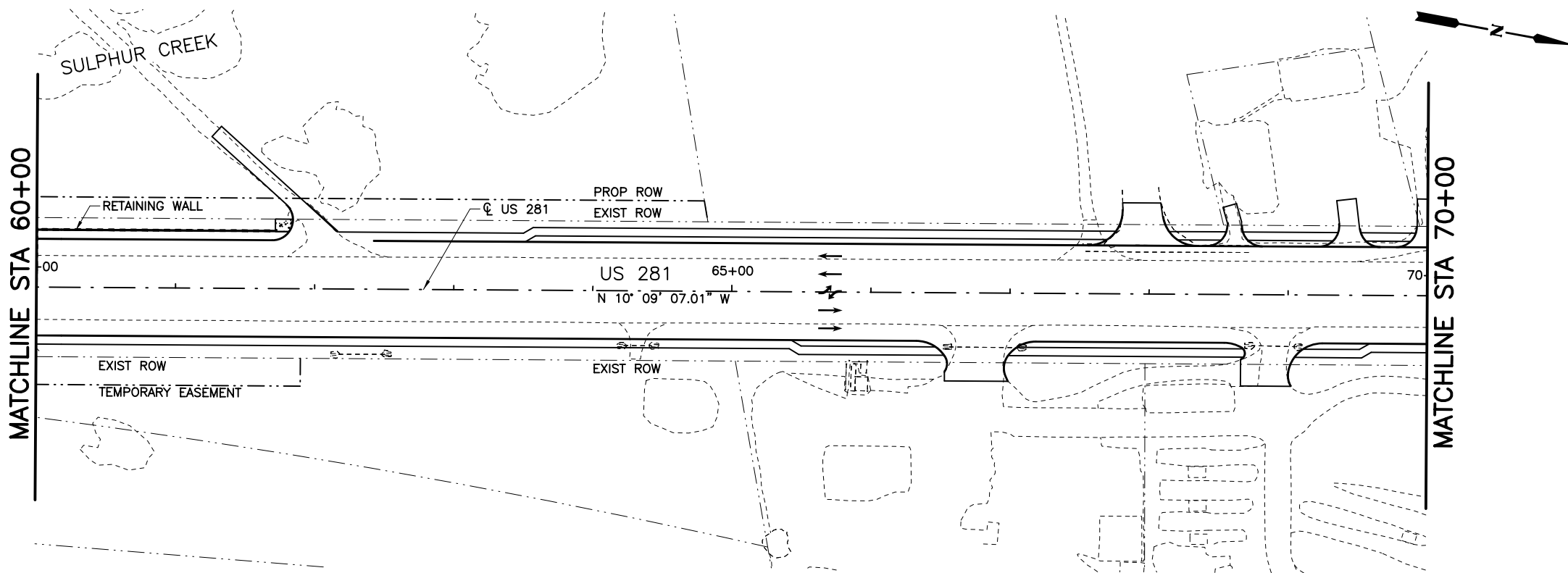
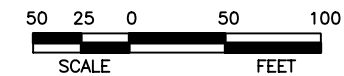
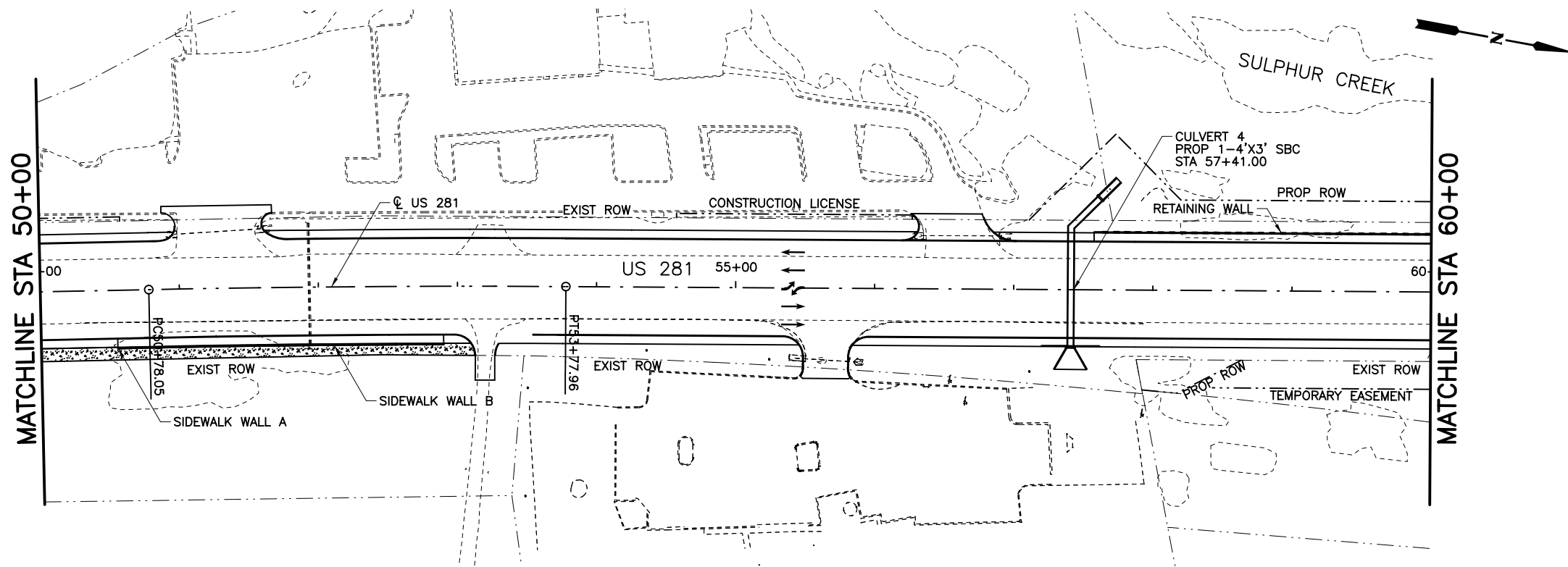
STA 30+00 TO STA 50+00

Designed:	CPY	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	CPY	DIST.	LAMPASAS	COUNTY	LAMPASAS	CONTROL NO.	0251	SECTION NO.	06
Drawn:	CPY	JOB NO.	036	SHEET NO.	5				

cpybw_ANSIB.tbl
cpypdf_ANSIB.pltcfgr
pw:/

1/31/2023 12:02:31 PM kpererry

pw:/



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741

©2023 Texas Department of Transportation

US 281

PROJECT LAYOUT

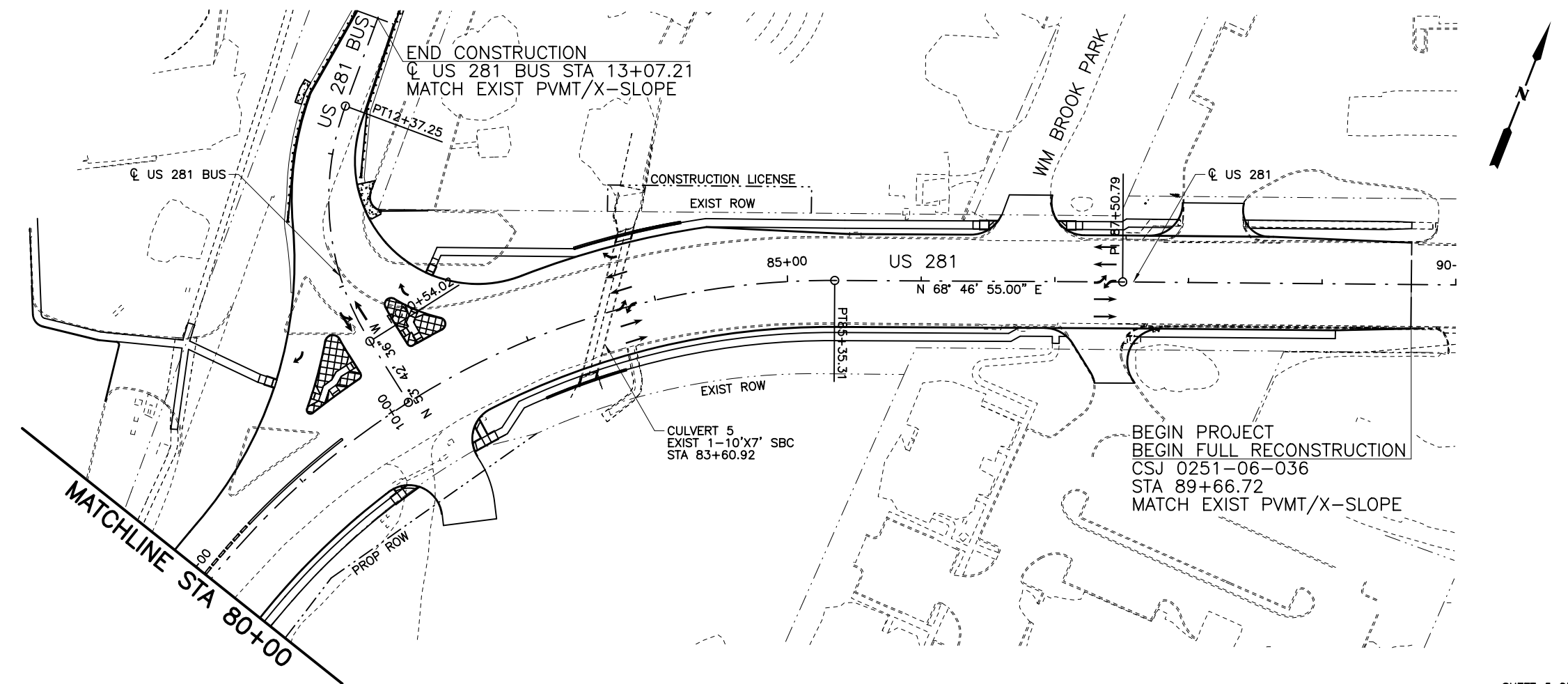
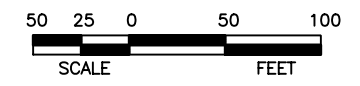
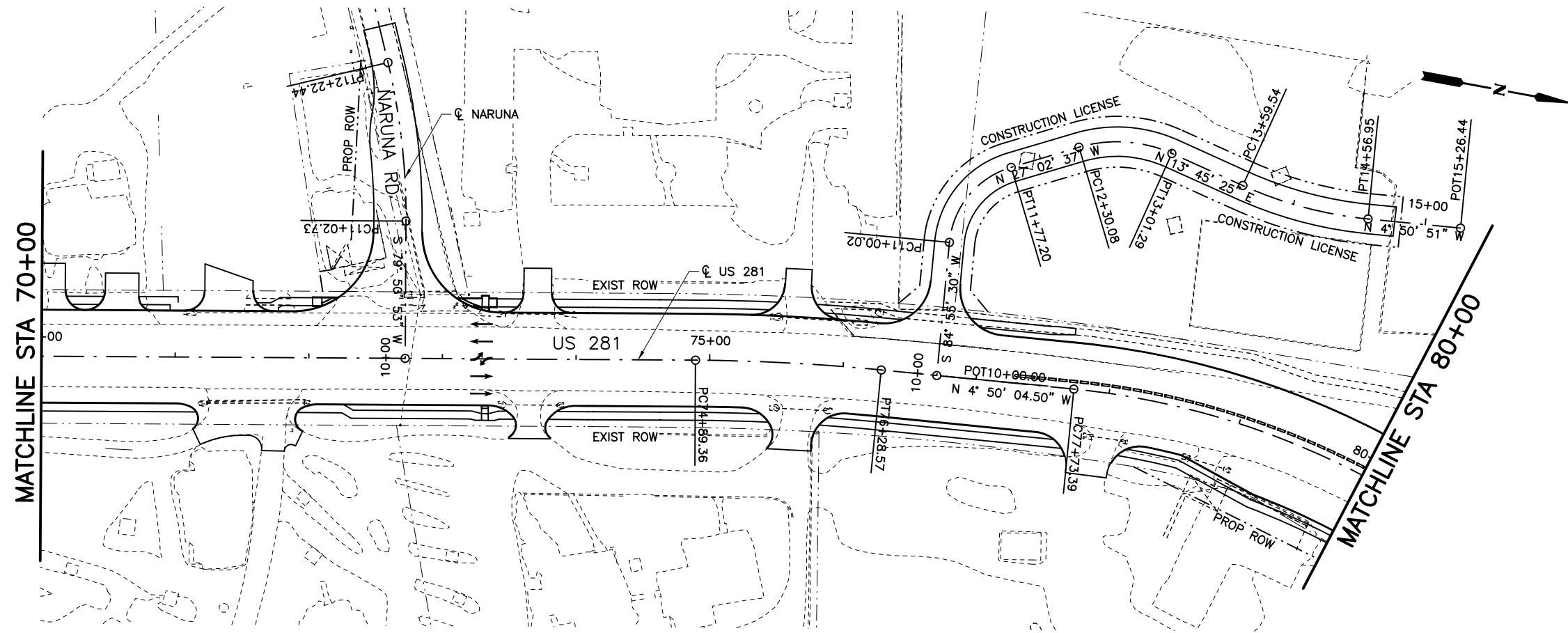
STA 50+00 TO STA 70+00

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	CPY	6	TEXAS		US 281		
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	CPY	BWD	LAMPASAS	0251	06	036	6

cpybw_ANSIB.tbl
cpypdf_ANSIB.pltcfgr
pw:/

1/31/2023 12:02:43 PM k.perry

pw:/



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741

©2023 Texas Department of Transportation

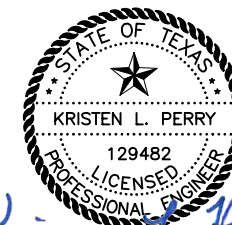
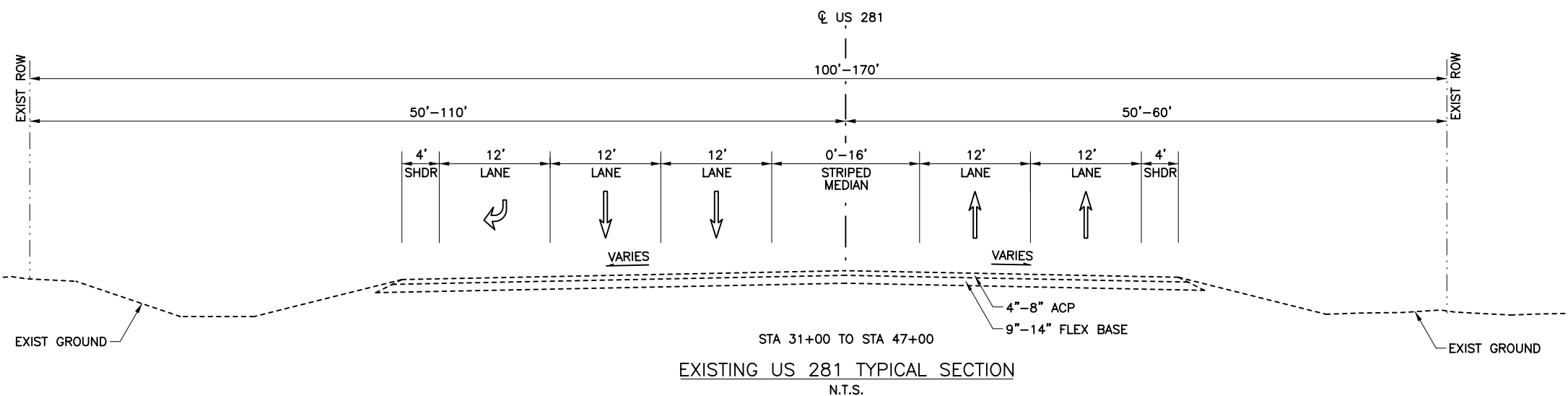
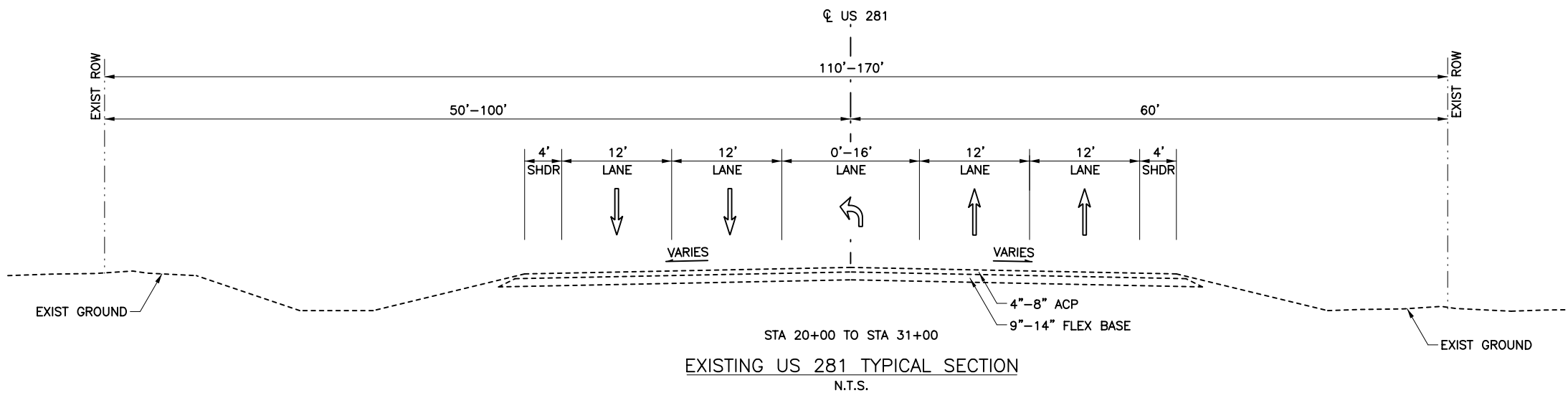
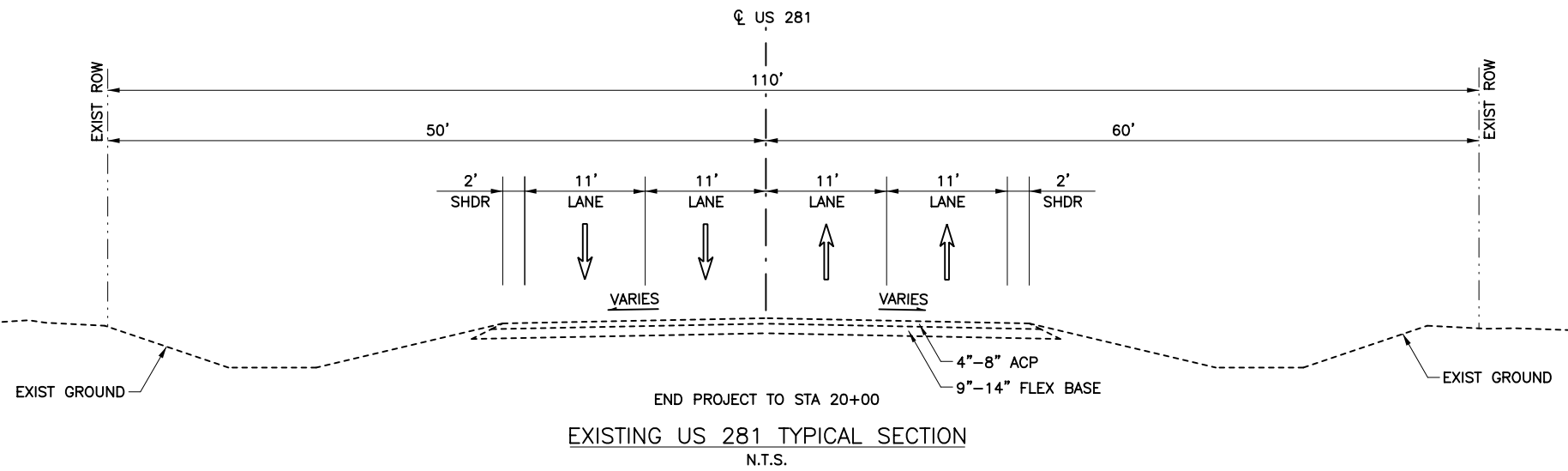
US 281

PROJECT LAYOUT

STA 70+00 TO BEGIN PROJECT

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	CPY	6	TEXAS		US 281		
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	CPY	BWD	LAMPASAS	0251	06	036	7

1/31/2023 12:02:54 PM k.perry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE

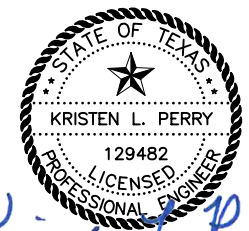
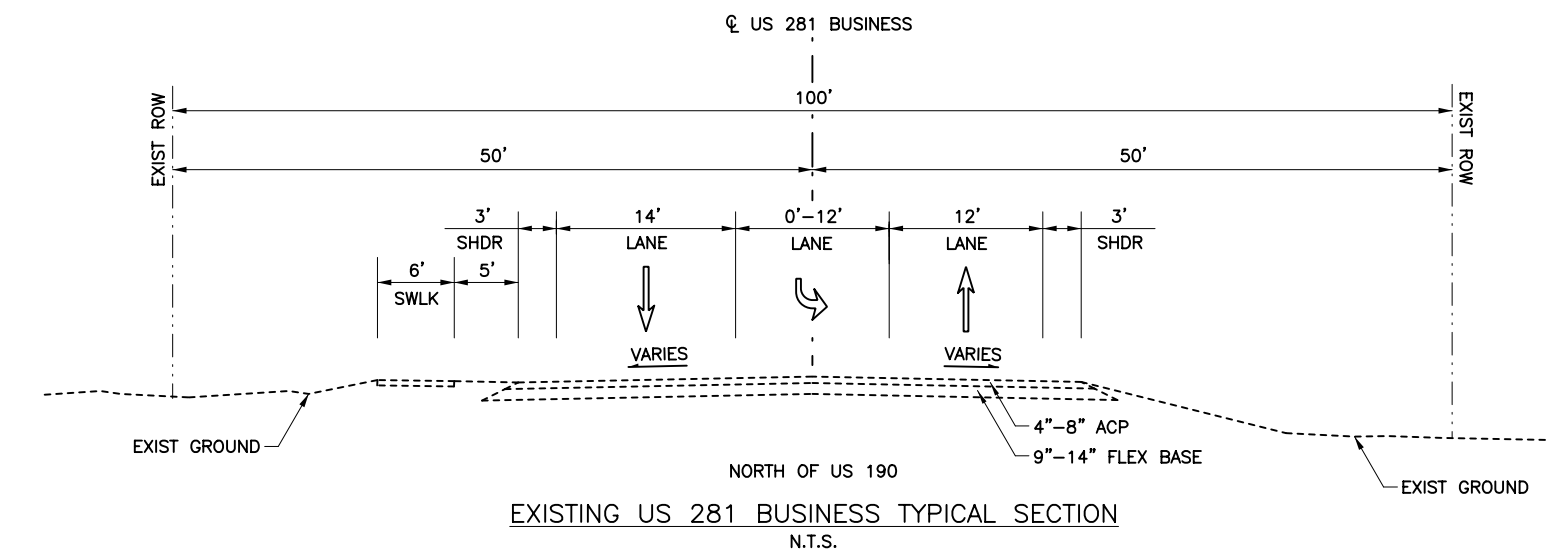
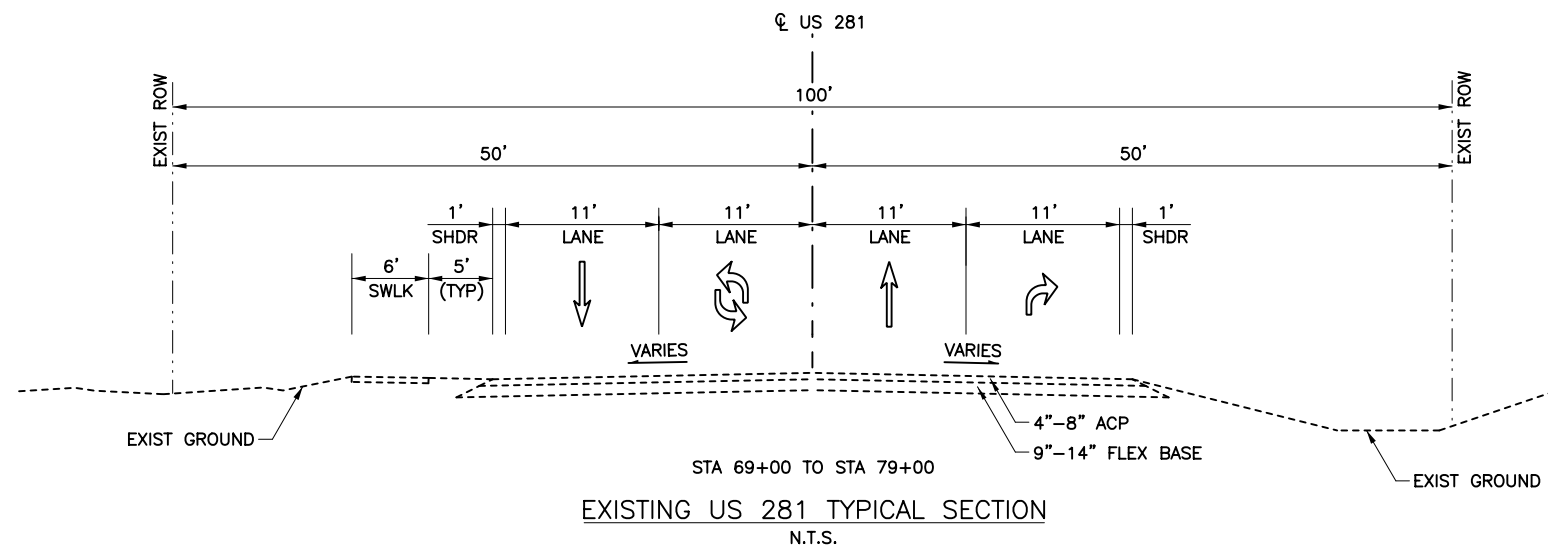
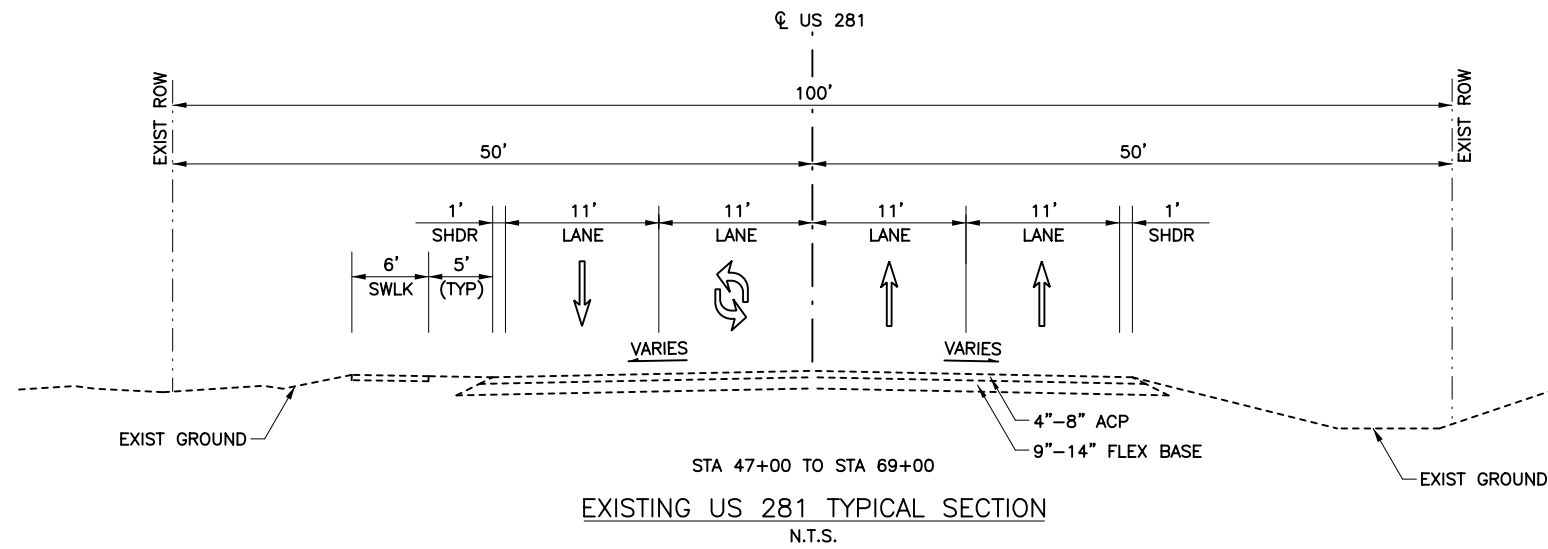


TEXAS REGISTERED ENGINEERING FIRM F-1741



TYPICAL SECTIONS

Designed:	CPY	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	CPY	DIST.	BWD	COUNTY	LAMPASAS	CONTROL NO.	0251	SECTION NO.	06
Drawn:	CPY	JOB NO.	036	SHEET NO.	8				



1/31/2023

Kristen L. Perry

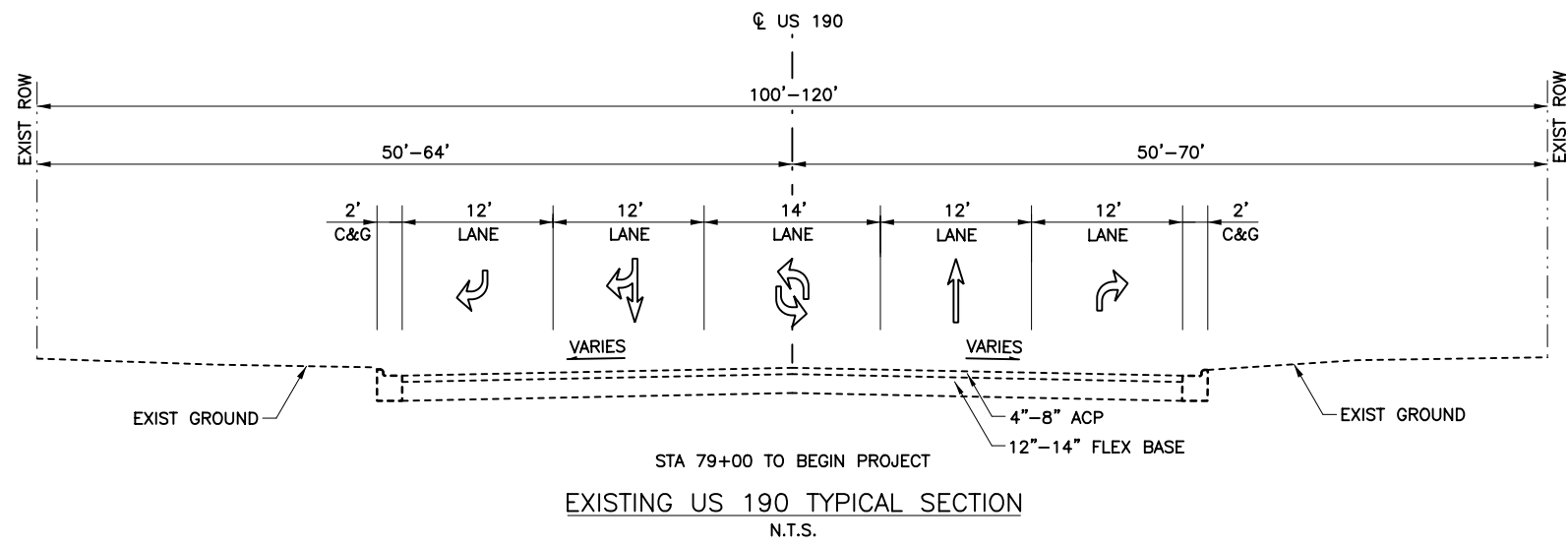
NO.	REVISION	BY	DATE

CP&Y
TEXAS REGISTERED ENGINEERING FIRM F-1741

©2023 **Texas Department of Transportation**

TYPICAL SECTIONS

Designed:	CPY	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	CPY	DIST.	BWD	COUNTY	LAMPASAS	CONTROL NO.	0251	SECTION NO.	06
Drawn:	CPY	JOB NO.	036	SHEET NO.	9				



cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/

1/31/2023 12:03:29 PM kperry

pw:/



1/31/2023

Kristen L. Perry

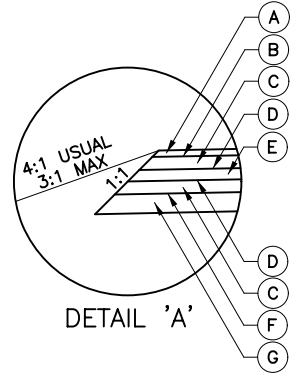
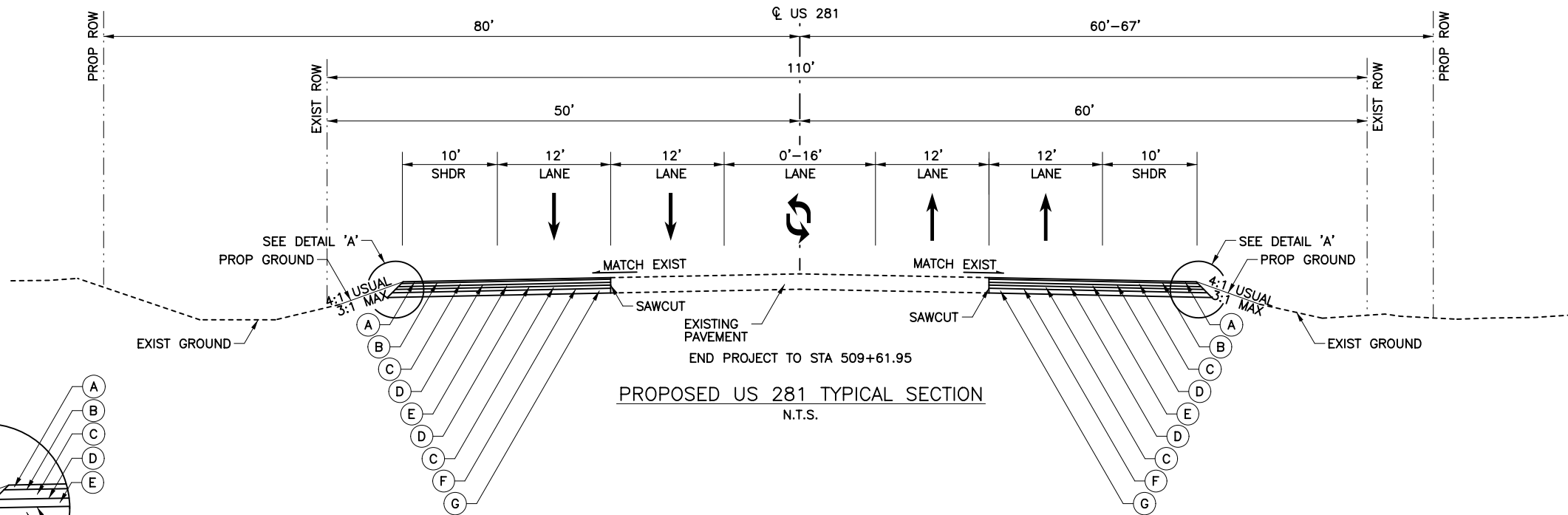
NO.	REVISION	BY	DATE



TYPICAL SECTIONS

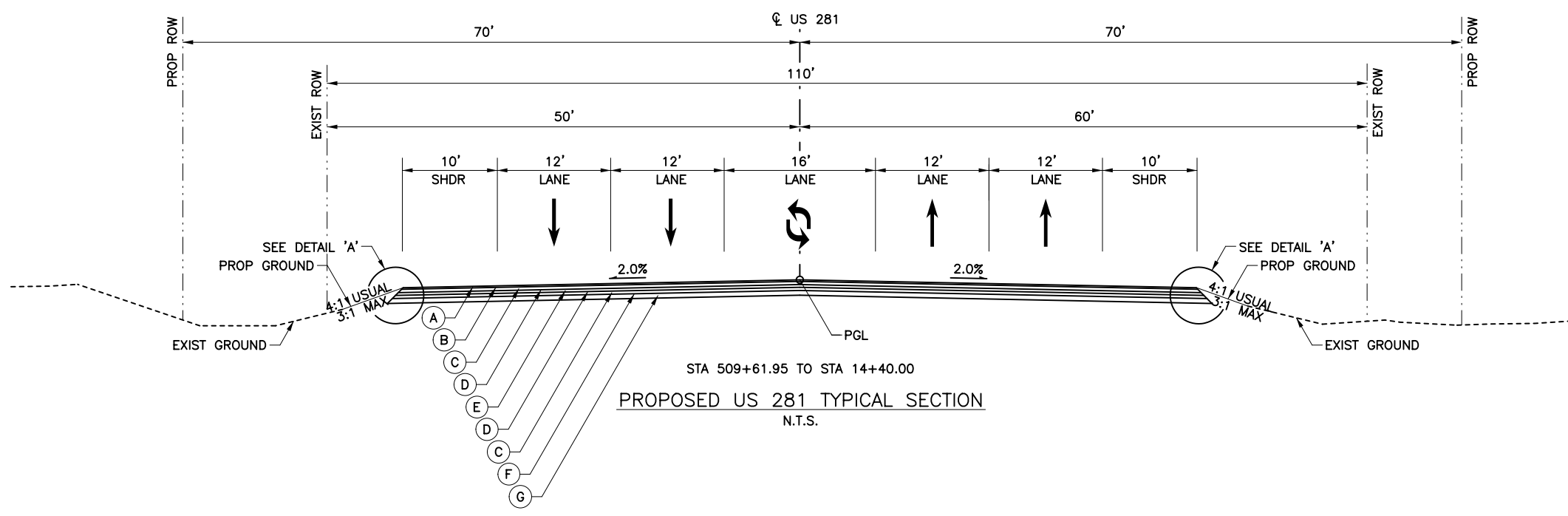
Designed:	CPY	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	CPY	DIST.	BWD	COUNTY	LAMPASAS	CONTROL NO.	0251	SECTION NO.	06
Drawn:	CPY	JOB NO.	036	SHEET NO.	10				

cpybw_ANSIB.tbl
 cpybw_ANSIB.plt
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.01 General/49304Gntyp04.dgn
 2/17/2023 3:27:15 PM kperry



LEGEND

- (A) 2" STONE-MATRIX ASPHALT TYPE SMA-D (PG 76-22)
- (B) BONDING COURSE (MC-30)
- (C) 4" TYPE B ACP (PG 64-22)
- (D) TACK COAT
- (E) 3 1/2" TYPE B ACP (PG 64-22)
- (F) PRIME COAT (MC-30)
- (G) 6" CEMENT TREAT SUBGRADE. LOCATIONS TO BE DETERMINED IN THE FIELD WITH THE A.E.



Kristen L. Perry
2/17/2023

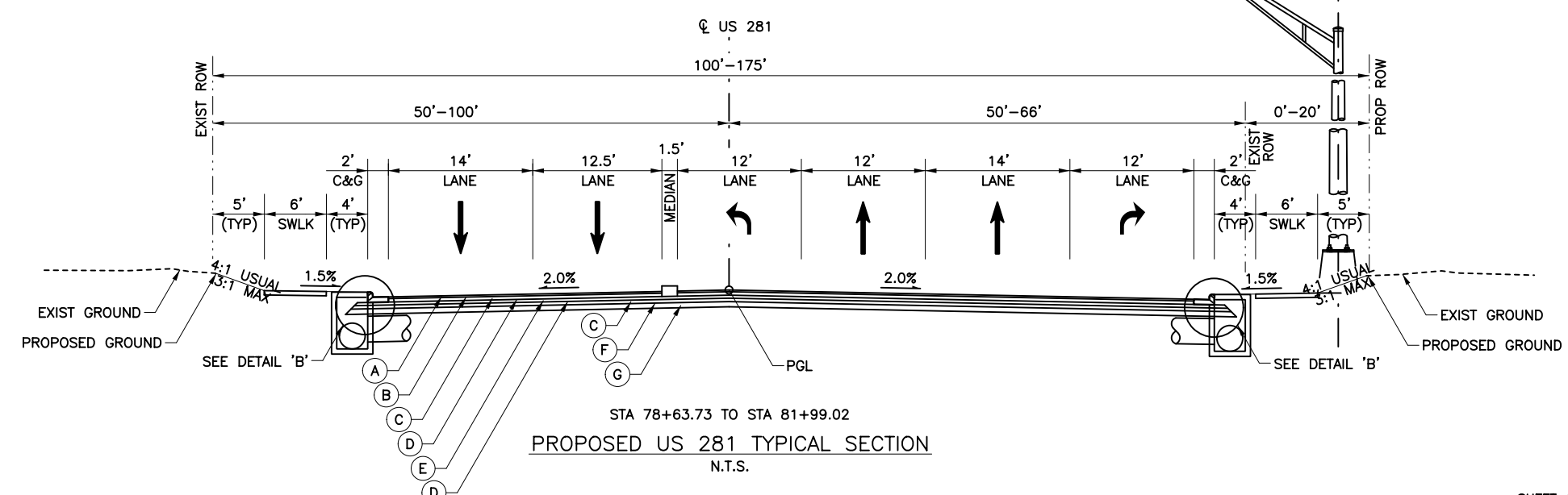
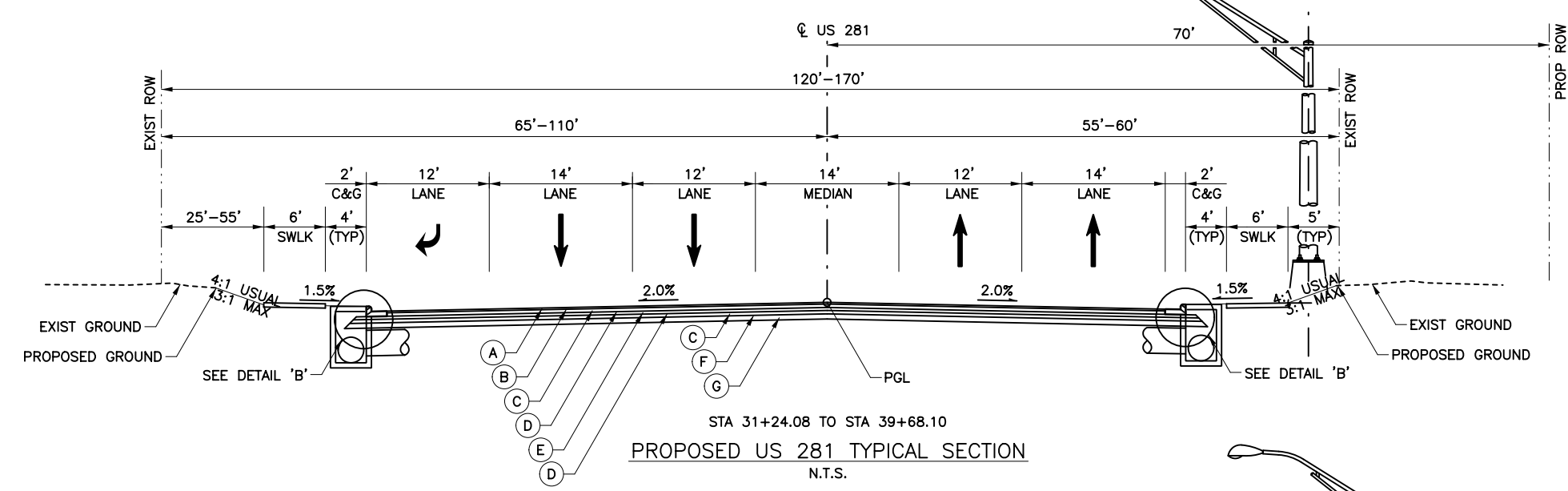
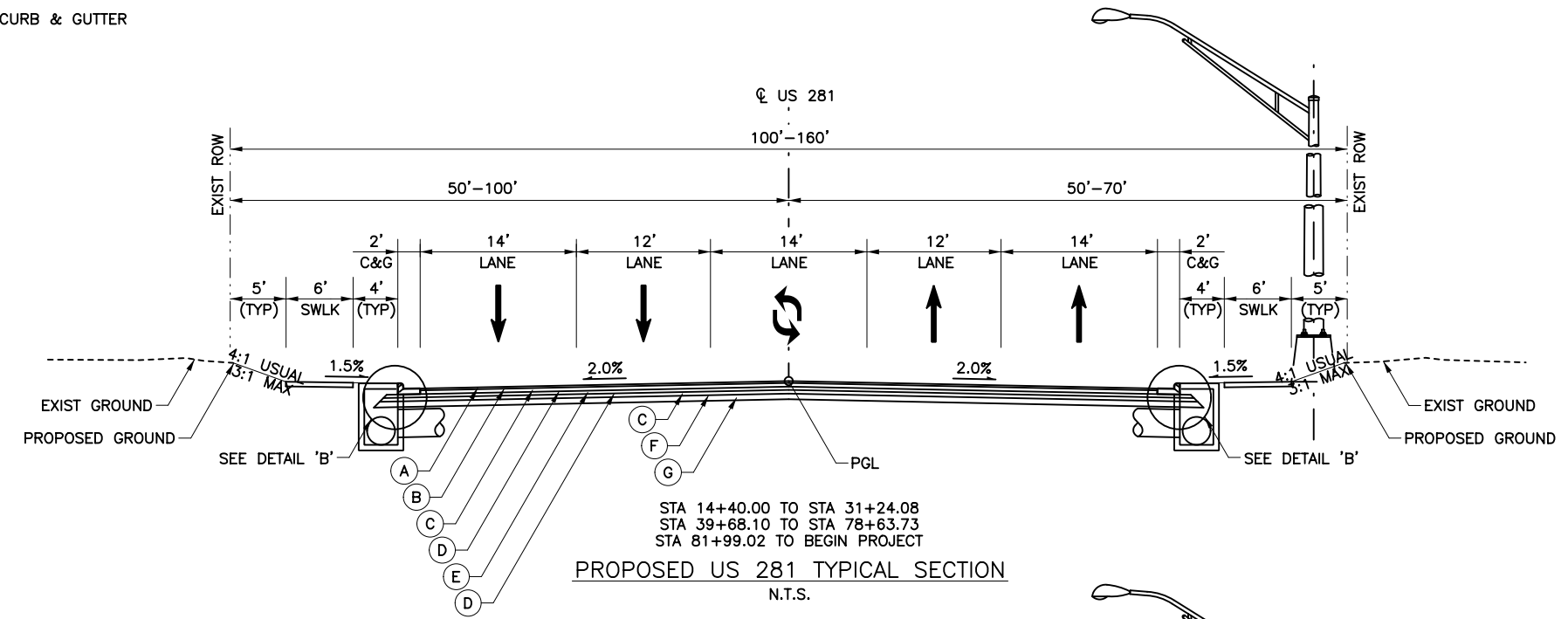
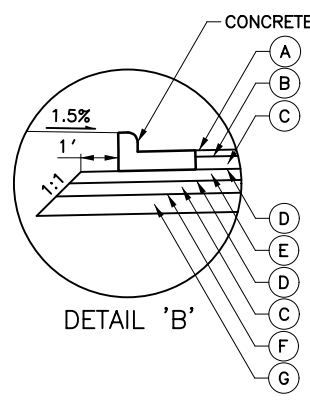
NO.	REVISION	BY	DATE



TYPICAL SECTIONS

Designed:	CPY	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	CPY	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Drawn:	CPY	JOB NO.	036	SHEET NO.	11				
Checked:	CPY								

cpybw_ANSIB.tbl
 cpybw_ANSIB.plt
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.01 General/49304Gntyp05.dgn
 2/17/2023 3:28:21 PM kperry



LEGEND

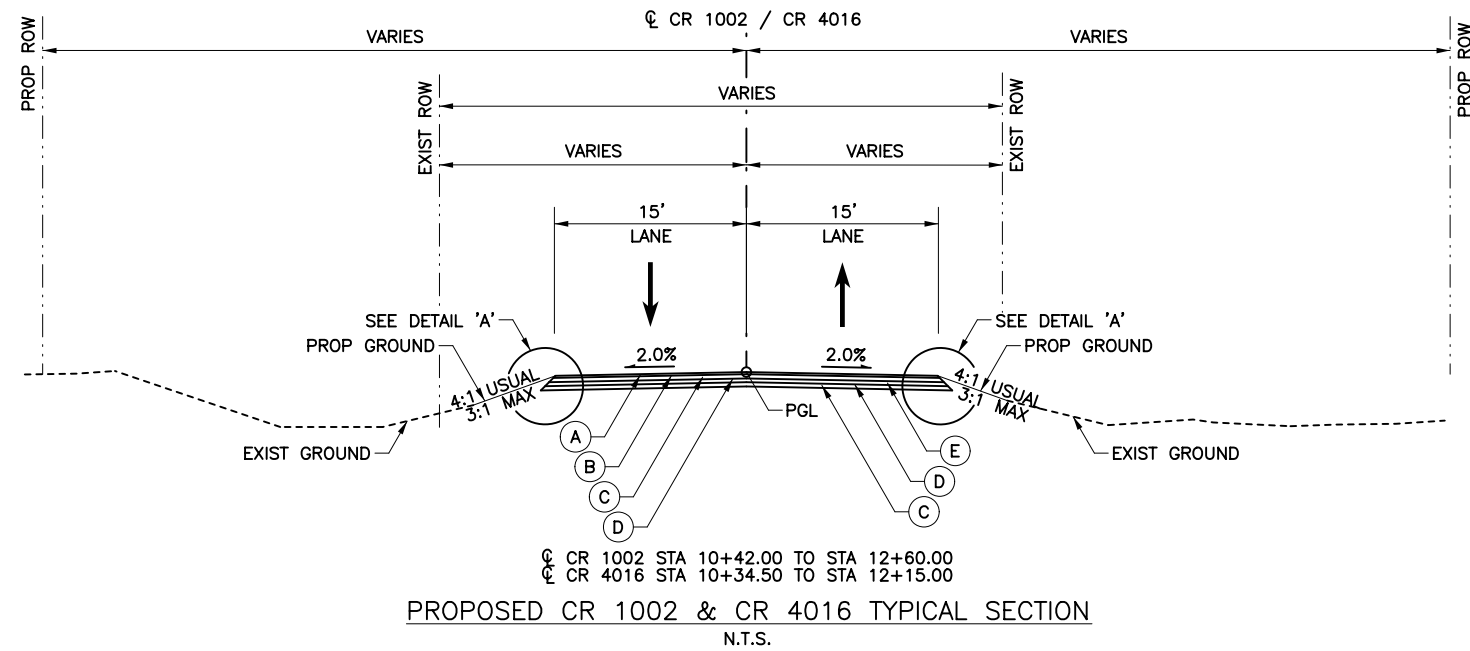
- (A) 2" STONE-MATRIX ASPHALT TYPE SMA-D (PG 76-22)
- (B) BONDING COURSE (MC-30)
- (C) 4" TYPE B ACP (PG 64-22)
- (D) TACK COAT
- (E) 3 1/2" TYPE B ACP (PG 64-22)
- (F) PRIME COAT (MC-30)
- (G) 6" CEMENT TREAT SUBGRADE. LOCATIONS TO BE DETERMINED IN THE FIELD WITH THE A.E.



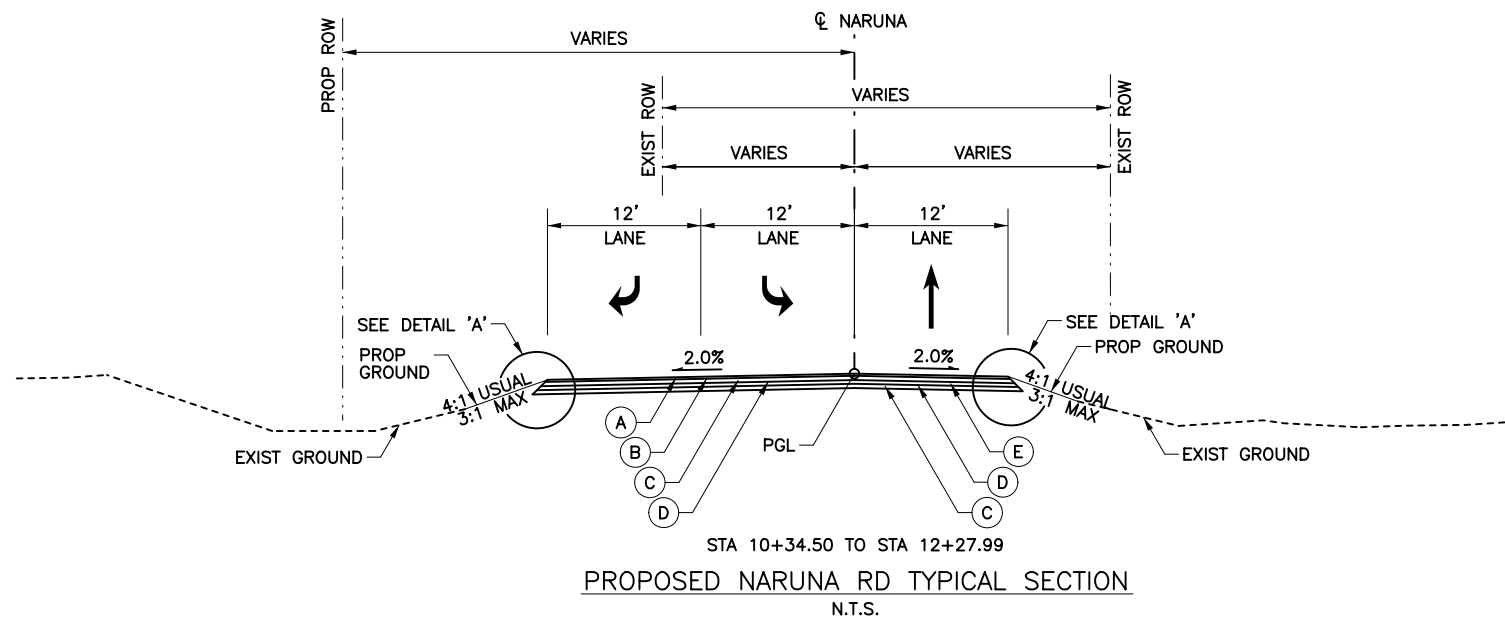
Kristen L. Perry

2/17/2023

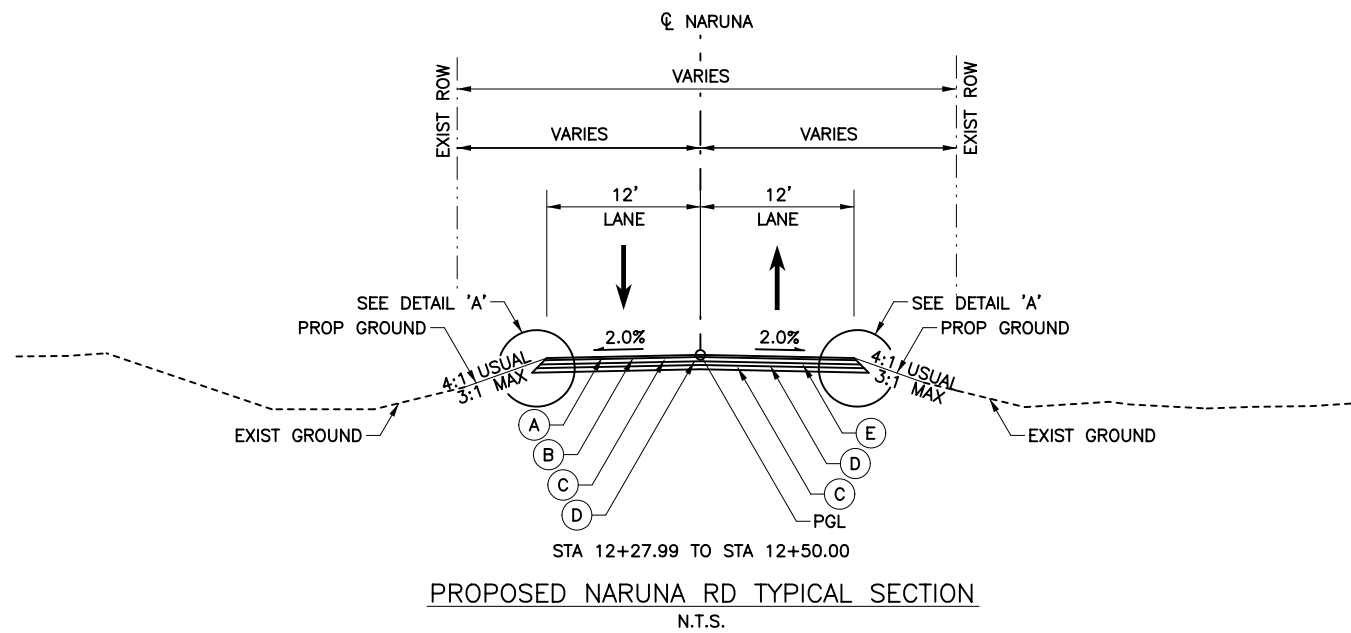
NO.	REVISION	BY	DATE
TEXAS REGISTERED ENGINEERING FIRM F-1741			
©2023 Texas Department of Transportation			
TYPICAL SECTIONS			
Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.
Checked: CPY			US 281
Drawn: CPY	DIST. COUNTY	CONTROL NO. SECTION NO.	JOB NO. SHEET NO.
Checked: CPY	BWD LAMPASAS	0251 06	036 12



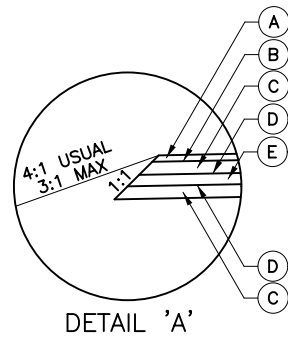
PROPOSED CR 1002 & CR 4016 TYPICAL SECTION
N.T.S.



PROPOSED NARUNA RD TYPICAL SECTION
N.T.S.

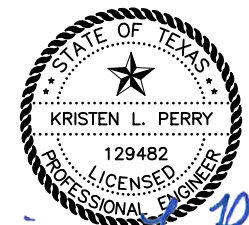


PROPOSED NARUNA RD TYPICAL SECTION
N.T.S.



LEGEND

- (A) 2" STONE-MATRIX ASPHALT TYPE SMA-D (PG 76-22)
- (B) BONDING COURSE (MC-30)
- (C) 4" TYPE B ACP (PG 64-22)
- (D) TACK COAT
- (E) 3 1/2" TYPE B ACP (PG 64-22)
- (F) PRIME COAT (MC-30)
- (G) 6" CEMENT TREAT SUBGRADE. LOCATIONS TO BE DETERMINED IN THE FIELD WITH THE A.E.



1/31/2023

Kristin L. Perry

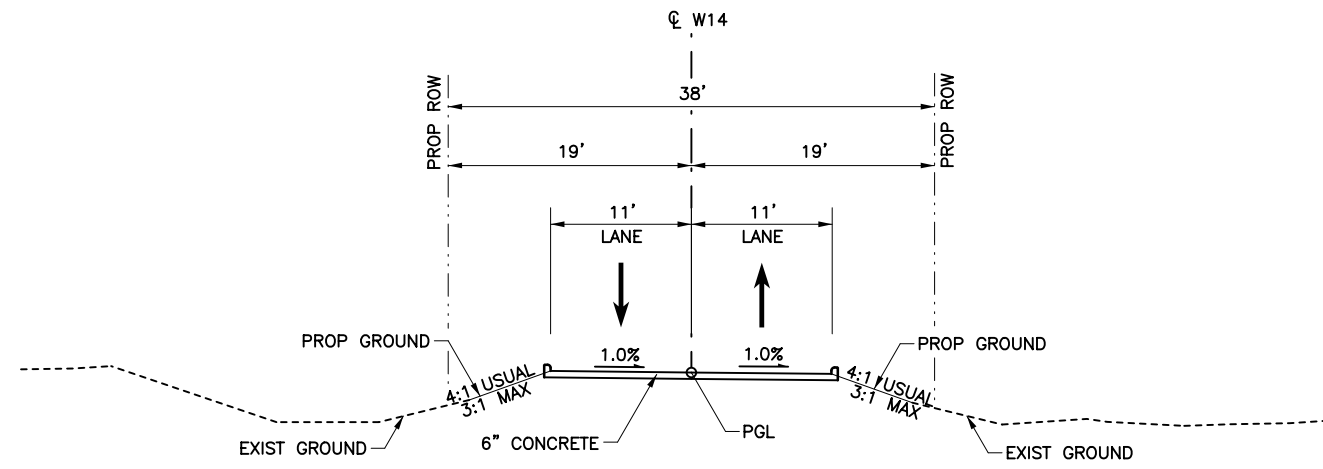
NO.	REVISION	BY	DATE

CP&Y
TEXAS REGISTERED ENGINEERING FIRM F-1741

©2023 Texas Department of Transportation

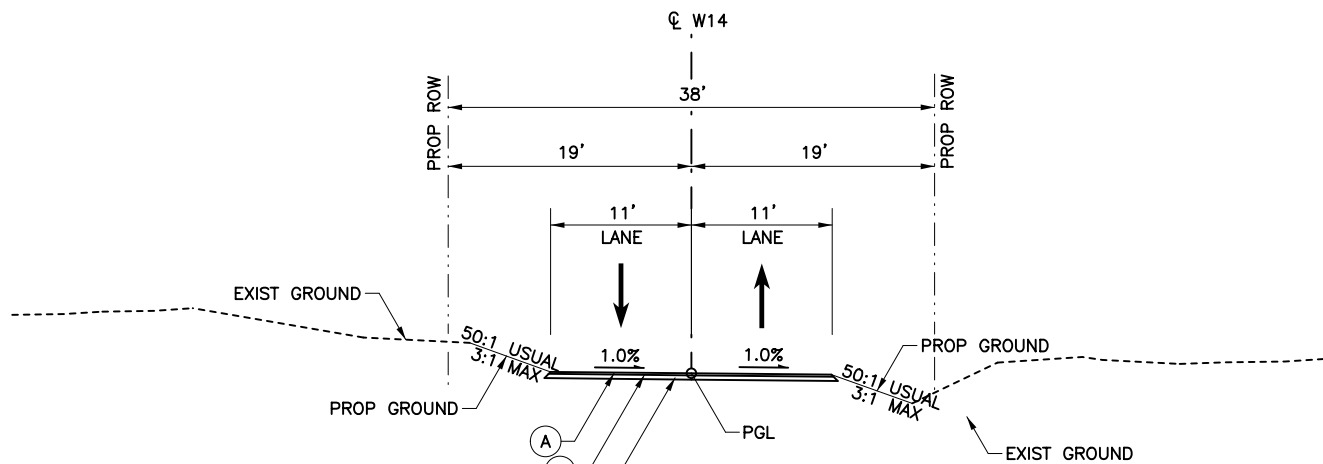
TYPICAL SECTIONS

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	CPY	6	TEXAS		US 281		
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	CPY	BWD	LAMPASAS	0251	06	036	13



W14 STA 10+34.50 TO STA 11+70.00

PROPOSED W14 TYPICAL SECTION
N.T.S.

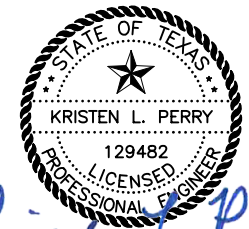


W14 STA 11+70.00 TO STA 14+56.95

PROPOSED W14 TYPICAL SECTION
N.T.S.

LEGEND

- (A) 2" STONE-MATRIX ASPHALT
TYPE SMA-D (PG 76-22)
- (B) BONDING COURSE (MC-30)
- (C) 4" TYPE B ACP (PG 64-22)
- (D) TACK COAT
- (E) 3 1/2" TYPE B ACP (PG 64-22)
- (F) PRIME COAT (MC-30)
- (G) 6" CEMENT TREAT
SUBGRADE. LOCATIONS
TO BE DETERMINED IN
THE FIELD WITH THE A.E.



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741



TYPICAL SECTIONS

Designed:	CPY	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	CPY	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Drawn:	CPY	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Checked:	CPY	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06

GENERAL NOTES

TEST TO BE IN ACCORDANCE WITH
TEXAS DEPARTMENT OF TRANSPORTATION
STANDARD TEST METHODS.

Item	Description	Soil Constants		
		Max LL.	Max. PI	Min. PI
* 132	Embankment (Final)(Dens Cont)(Ty C)	40	25	3

* Applies to borrow only.

Job control samples for gradation and P.I. testing will be taken from the windrow after blade mixing.

Asphalt Surface Areas-SY

Item	Description	Course	Roadway	Detour
251	Base Material	Subgrade	17,392	0
275	Cement	Subgrade	17,392	0
310	Asph (MC-30)	Prime	17,277	0
3080	STONE-MTRX-ASPH SMA-D SAC-A PG76-22	4 th Lift	77,850	0
3076	D-GR HMA TY-B PG64-22	3 rd Lift	78,002	0
3076	TACK COAT	Tack	77,062	0
3076	D-GR HMA TY-B PG64-22	2 nd Lift	82,690	0
3076	TACK COAT	Tack	83,023	0
3076	D-GR HMA TY-B PG64-22	1 st Lift	83,402	0
3084	BONDING COURSE	Bonding	77,898	0

Basis of Estimate

Item	Description	Course	Rate	SY	Quantity
275	Cement	Subgrade	110 LB/CF @ 2.5%	77,392	108 TONS
310	Asph (MC-30)	Prime	0.10 Gal/SY	17,277	1,728 Gal
3080	STONE-MTRX-ASPH SMA-D SAC-A PG76-22	4 th Lift	120 LB/SY/IN	77,850	9,342 TONS SMA-D
3076	D-GR HMA TY-B PG64-22	3 rd Lift	113 lbs/sy/in	78,002	17,629 TONS
3076	TACK COAT	Tack	0.10 Gal/Sy	77,062	7,706 Gal
3076	D-GR HMA TY-B PG64-22	2 nd Lift	113 lbs/sy/in	82,690	16,352 TONS
3076	TACK COAT	Tack	0.10 Gal/Sy	83,023	8,302 Gal
3076	D-GR HMA TY-B PG64-22	1 st Lift	113 lbs/sy/in	83,402	18,849 TONS
3084	BONDING COURSE	Bonding	0.15 Gal/Sy	77,898	11,685 Gal

The Contractor will not be allowed to store equipment, materials, incidentals, hazardous chemicals, petroleum products, concrete washouts, etc. in the Department's R.O.W. without written permission from the Engineer.

Trees that are to be trimmed and brush that is to be trimmed or removed that are not over the roadway or bridge(s), will be trimmed or removed in accordance with the Roadside Vegetation Management Manual to a height of fourteen feet. Remove limbs at the trunk with less than twenty-one feet of clearance above the pavement or bridge(s).

See the "Environmental" section of the plans for additional information.

TEXAS ONE CALL

Fiber optic cable systems, gas lines, underground power lines, water lines, sewer lines, and other various utilities may be buried within the project limits. Protection of these utility systems is of extreme importance since any break could disrupt service to users resulting in business interruption and loss of revenue and profits. The Contractor shall telephone Texas One Call at 1-800-344-8377 (a 24-hour number), to determine if utilities are buried anywhere on the project in accordance with all UNDERGROUND FACILITY DAMAGE PREVENTION AND SAFETY laws. This action; however, will in no way be interpreted as relief of responsibilities under the terms of the Contract as set out in the plans and specifications. Coordinate the repair of all damages caused by daily operations and have facilities restored to service in a timely manner as directed at no additional cost to TxDOT.

GENERAL

Unless specifically noted as applying to only a certain project or projects, these general notes will apply to all projects associated to this contract.

Contractor questions on this project are to be addressed to the following individual(s):

Name	Email Address
Bart Fris P.E.	bart.fris@txdot.gov

Contractor questions will be accepted through email, phone, and in person by the above individual(s).

Questions may be submitted via the Letting Pre-Bid Q&A web page. This webpage can be accessed from the Notice to Contractors dashboard located at the following Address:
<https://tableau.txdot.gov/views/ProjectInformationDashboard/NoticetoContractors>

All contractor questions will be reviewed by the Engineer. All questions and any corresponding responses that are generated will be posted through the same Letting Pre-Bid Q&A web page.

The Letting Pre-Bid Q&A web page for each project can be accessed by using the dashboard to navigate to the project you are interested in by scrolling or filtering the dashboard using the controls on the left. Hover over the blue hyperlink for the project you want to view the Q&A for and click on the link in the window that pops up.

County: LAMPASAS

Highway: US 281

Control: 0251-06-036

The term "Article" or "Section" referred to hereon is defined in the forward of the Standard Specifications for Construction and Maintenance of Highways, Streets, And Bridges adopted by the Texas Department of Transportation November 2014.

A "Regulatory Construction Speed Zone" has been requested for this project.

Saw-Cutting with approved equipment as directed by the Engineer will be required at project limits, longitudinally, and/or at notch downs to establish clean and straight joints. This work will not be paid for directly but will be considered subsidiary to various bids.

Saw-Cutting with approved equipment as directed by the Engineer will be required at project limits to establish clean and straight joints. This work will not be paid for directly but will be considered subsidiary to various bids.

The following standard sheets have a modified version: **ECD (MOD)**

The total disturbed area is shown on the SW3P sheet(s).

All electrical submittals will be forwarded to District Director of Operations (325-643-0417). No electrical work will be performed prior to approval of electrical materials.

The Contractor will establish drainage in ditches before seeding or as directed by the Engineer.

Watering for dust control will be required as Directed by the Engineer and will be considered subsidiary to the various bid items.

SURVEY CONTROL - PROJECT CONTROL DATUM

Horizontal – NAD83(2011) Epoch 2010.00
Vertical – NAVD88(Geiod12A)
Coordinate System – Texas State Plane
Zone – Texas Central (4203)
Units – U.S. Survey Foot
Project Combined Scale Factor 1.00012 (Lampasas County)

Project Control positions derived by RTK observations utilizing TxDOT VRS completed on, or about, 12/2013 Surface/Grid values are shown hereon. Bearing Basis/Directional Control related to Grid North.

The Contractor Force Account "Mowing" that has been established for this project is intended for full width mowing of the entire right of way, as directed by the Engineer. When required, mowing will be restricted to 2 times a year and within the project sign limits. Unless otherwise directed, summer mowing will be required during the 1st week of June and winter mowing will be required during the 3rd week of October. Mowing for this project has been estimated for 2 years (4 mowing's).

County: LAMPASAS

Highway: US 281

SHEET 15A

Control: 0251-06-036

ITEM 5 CONTROL OF WORK

The responsibility for the construction surveying on this contract will be in accordance with Section 5.9.1. "Method A".

Contractor shall protect all TXDOT survey control monuments. If monuments are damaged or removed during construction, they will be replaced at contractor's expense.

The contractor will be required to place and maintain Blue Tops with wooden hubs for rework base and new flexible base.

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 addition 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 bidder's expense.

When a precast or cast-in-place concrete element is included in the plans, a precast concrete alternate may be submitted in accordance with "Standard Operating Procedure for Alternate Precast Proposal Submission" found online at <https://www.txdot.gov/inside-txdot/forms-publications/consultants-contractors/publications/bridge.html#design>. Acceptance or denial of an alternate is at the sole discretion of the Engineer. Impacts to the project schedule and any additional costs resulting from the use of alternates are the sole responsibility of the Contractor.

ITEM 6 CONTROL OF MATERIALS

To comply with the latest provisions of Build America, Buy America Act (BABA Act) of the Bipartisan Infrastructure Law, the contractor must submit a notarized original of the TxDOT Construction Material Buy America Certification Form for all items classified as construction materials. This form is not required for materials classified as a manufactured product.

Refer to the Buy America Material Classification Sheet for clarification on material categorization.

The Buy America Material Classification Sheet is located at the below link.
<https://www.txdot.gov/business/resources/materials/buy-america-material-classification-sheet.html>
for clarification on material categorization.

In accordance with **Section 6.10.2**, the Contractor will dispose of all painted steel at a steel recycling or smelting facility and a receipt will be required. In lieu of this, the Contractor has the option to either show proof that the paint is lead free or show proof that the lead paint has been abated by an abatement certified company. The Department will not be obligated for the cost of paint testing and/or abatement materials, processes, personnel, incidentals, etc.

ITEM 7 LEGAL RELATIONS AND RESPONSIBILITIES

Roadway closures during the following key dates and/or special events are prohibited:

1. "Spring Ho" (Including Golf Tournament and 5K/10K runs) will be in the month of July for both 2024 and 2025. Exact dates are to be determined. Coordinate with City of Lampasas Chamber of Commerce for exact dates.
2. "Total Eclipse" will be occurring on April 8th, 2024. A Significant traffic increase is anticipated during April 6th – April 9th as the City of Lampasas is expecting 100,000 visitors.
3. Golf Tournament will be occurring at Hancock Park on Memorial Day weekend for both 2024 and 2025 (May 25th-27th 2024 and May 24th – 26th 2025).

ITEM 8 PROSECUTION AND PROGRESS

Working days will be computed and charged in accordance with Section 8.3.1.4. "Standard Workweek".

Work will not be performed without time being charged unless otherwise exempted by the Section as defined above.

Working day charges will be in accordance with **SP 008---003** (90 calendar days after the date of the written authorization to begin work. Do not begin any work before the end of this period unless authorized in writing by the Engineer.) This delay is for contractor mobilization.

Construction will be completed in order, sequentially; as described in the traffic control plan phasing. Each step/phase will be completed before starting on the next step/phase unless otherwise approved by the Engineer.

INCENTIVES

The Daily Road-User Cost for this project is \$4,853 per day. Liquidated damages will be increased by the Daily Road-User Cost in accordance with **SP 000-1243 and SP 008-006**. For additional information and definitions see **SP 000-1243 and SP 008-006** in the project proposal.

Incentives described below will apply for substantial completion of work or contract completion for the following phases (milestones).

Incentive 1 –Business 281 (Milestone 1) - Incentive 1 begins when road closure occurs for Phase 1 - US 281 BUS Intersection. Incentive 1 will end when the Engineer approves substantial completion of all ACP Type B, Curb & Gutter, storm sewer, sidewalk (including stamped concrete) and MBGF between stations 80+20 and 83+76 (7.25 lf) of US 281 and stations 10+07.25 to 17+30 of US 281 BUS and the intersection is open to traffic. Time for the incentives will be based on 33 Working Days as defined in 8.3.1.4. The maximum number of days used in computing the incentive credit for this Incentive will be 10 days. The maximum incentive available is \$48,530 for this Incentive no disincentive will be assessed.

Incentive 2 –High School Intersection & Naruna Road (Milestone 2) - Incentive 2 begins when either road closure occurs for Phase 1A (Lampasas High School Intersection) or Phase 1B (Naruna Rd.) but will begin no later than June 17, 2024. Incentive 2 will end when the Engineer approves substantial completion of all ACP Type B and Curb & Gutter in Phase 1A and Phase 1B and both intersections are open to traffic. Time for this incentive will be based on 22 Working Days as defined in 8.3.1.4. The maximum number of days used in computing the incentive credit for this Incentive will be 10 days. The maximum incentive available is \$48,530 for this Incentive no disincentive will be assessed.

Incentive 3 – Phase 1 (Southbound Lanes) Incentive begins when traffic shift and temporary pavement markings are complete for Phase 1. Incentive 3 will end when all elements of Phase one are substantially complete as directed by the Area Engineer and traffic has shifted to Phase 2 with temporary pavement markings in place. Time for this incentive will be based on 202 Working Days as defined in 8.3.1.4. The maximum number of days used in computing the incentive credit for this Incentive will be 40 days. The maximum incentive available is \$194,120 for this incentive, no disincentive will be assessed.

Incentive 4 – Phase 2A (Center Paved Median) Incentive 4 begins when traffic shift and temporary pavement markings are complete for Phase 2A. Incentive 4 will end when all elements of Phase 2A are substantially complete as directed by the Area Engineer with temporary pavement markings in place and traffic is open for the two-way left turn lane. Time for this incentive will be based on 28 Working Days as defined in 8.3.1.4. The maximum number of days used in computing the incentive credit for this Incentive will be 10 days. The maximum incentive available is \$48,530 for this incentive, no disincentive will be assessed.

Incentive 5 – Phase 2B (Northbound Lanes) Incentive 5 begins when traffic shift and temporary pavement markings are complete for Phase 2A. Incentive 5 will end when all elements of Phase 2B are substantially complete as directed by the Area Engineer with permanent pavement markings in place and traffic is open for five lanes. Time for this incentive will be based on 121 Working Days as defined in 8.3.1.4. The maximum number of days used in computing the incentive credit for this Incentive will be 30 days. The maximum incentive available is \$145,590 for this incentive, no disincentive will be assessed.

PROJECT SCHEDULES

Critical Path Method (CPM) scheduling will be required to be submitted and maintained monthly by the Contractor unless otherwise directed by the Engineer. (8.5.2.)

For monthly submittals, the Contractor will provide the schedule in an Adobe Acrobat compatible format (PDF file). If the Engineer requests the schedule in an electronic format, the Contractor will submit a schedule that is fully compatible with Primavera P6 Professional Release 15.

Contractor shall submit "3-week look ahead" schedules throughout the project. Updates shall be submitted every Friday.

ITEM 9 MEASUREMENT AND PAYMENT

Monthly estimates will be computed from the 29th of the previous month through the 28th of the current month unless otherwise approved in writing by the Engineer.

County: LAMPASAS

Highway: US 281

Control: 0251-06-036

The progress payment period will end two working days before the last working day of the month. Deliver invoices to be paid as material on hand on or before the end of the progress payment period.

ITEM 100 PREPARING RIGHT OF WAY

Remove all trees, brush, and shrubs within the R.O.W., unless otherwise directed by the Engineer. Perform Preparing Right of Way in such a manner that does not disturb the native grasses unnecessarily.

All trees greater than 24" removed paid by each. See tree removal and protection plan.

Within the construction limits, blade and windrow the top 8 inches of vegetative material to just outside the construction limits. Once ditch slopes and drainage have been established and approved, blade the windrow evenly over the disturbed area within the construction limits. This work is to be done as the job progresses and in conjunction with seeding. Work on the project may be suspended, if in the opinion of the Engineer, the Contractor does not make a good faith effort to stabilize loose material as the project progresses. Time will not be suspended. This work is subsidiary to Item 100.

The removal of existing and temporary fence will not be paid for directly but will be considered subsidiary to Item 100 "Preparing Right Of Way".

ITEM 104 REMOVING CONCRETE

The Contractor will make a 1" cut to use as a guide before full depth cutting. Saw-Cut the full depth through the concrete before existing pavement removal. The Contractor will be required to make neat and clean cuts. Guides or additional equipment may be required by the Engineer to make neat and clean cuts. Repair damage caused by the Contractor's operation without additional compensation.

ITEM 105 REMOVING STABILIZED BASE AND/OR ASPHALTIC PAVEMENT

Salvage and Stockpile all existing flexible base removed at the following locations:
FM 580 at FM 1715
US 183 near CR 1045
US 281 near Lampasas Municipal Airport

Stockpiles may be no taller than 16 feet high.

Existing Flex base may be used to correct subgrade soft spots as directed by the Engineer.

Existing ACP shall become property of the Contractor.

ITEM 110 EXCAVATION

Contractor to stockpile excavation and use as needed for salvaged embankment.

County: LAMPASAS

Highway: US 281

ITEM 132 EMBANKMENT

Refer to Item 210 "Rolling" for additional roller requirements.

Shape the embankment, near the drainage structures, to the slope of the safety end treatment.

Embankment for the drainage structures is included in the quantities shown on the plan & profile sheets.

"Final" embankment that is not accounted for in the cross section(s) or typical section(s) but that has been estimated or shown for informational purposes, e.g., additional areas under guard fence, around S.E.T.s, etc.; will be measured in its final position as defined in Section 132.4.1. Shrinkage or swell factors will not be considered in determining the calculated quantities.

Embankment as shown in the plans or placed as directed will be placed before the installation of MBGF.

ITEM 164 SEEDING FOR EROSION CONTROL

The Contractor should anticipate multiple mobilizations for seeding at each project location.

Additional wildflower seed will be required to be added to the seeding mixture. The wildflower seed will be provided by TxDOT and is estimated at 5 lbs/acre in addition to the required seeding as specified in Item 164. The Contractor will notify the Maintenance Supervisor a minimum of 4 weeks in advance of permeant/final seeding to ensure time for the proper seed to be acquired. The Contractor can acquire this additional seed at the Mills County Maintenance office located at 130 US Hwy 84, Goldthwaite, Tx. Contact the Mills County Maintenance Supervisor (Carlos Reyes) at (325) 648-3028 for further information. The equipment, labor, tools, and incidentals to mix and apply this seed will be considered subsidiary to Item 164.

ITEM 166 FERTILIZER

Fertilize all areas of project to be seeded.

Furnish and apply fertilizer with analysis of 20-10-10 at a rate of 300 bulk pounds per acre.

ITEM 168 VEGETATIVE WATERING

Water all areas of project to be seeded or sodded.
Vegetative watering is estimated at 1 inch per week for 4 weeks.

Vegetative watering may be adjusted as directed by the Engineer to ensure saturation for vegetative establishment.

ITEM 169 SOIL RETENTION BLANKETS

Soil retention blankets of the class and type specified in the E&Q Summary have been estimated at 444 SY for this project. Soil retention blankets will only be used as directed by the Engineer.

SHEET 15C

Control: 0251-06-036

County: LAMPASAS

Highway: US 281
ITEM 210 ROLLING

Control: 0251-06-036

Required Roller Type and Size for Compacted Layers

Thickness of compacted lift	Minimum Static weight of roller (tons)	Drum Type
< 6 inches	12	Smooth
6 to 7 inches	15	Smooth or Padfoot
8 to 9 inches	18	Padfoot
10 inches or greater	20	Padfoot

ITEM 247 FLEXIBLE BASE

Refer to Item 210 for additional roller requirements.

Ride quality will be measured before the application of prime coat unless otherwise approved in writing by the Engineer.

A grader (a road grader, a blade, a maintainer, or a motor grader) will be used to process base unless otherwise approved by the Engineer.

Do not add field sand to modify the finish material to meet requirements.

Place new flexible base in lifts of approximately equal depth not to exceed 6 inches unless otherwise directed.

Density requirements for this item may be waived for the construction of detours as directed by the Engineer.

ITEM 251 REWORKING BASE COURSES

Triaxle strength requirements will be waved.

Proctor will be required.

Grade flexible base to typical section and profile to match existing grade. Contractor will establish grade to produce a smooth ride as directed.

Reworking Base Material Ty A will consist of a light scarifying to create a non-slip plane as directed by the Engineer.

In accordance with Section 251.4.2.2, windrowing of the salvaged material will be allowed.

In accordance with Section 251.4.2.3, prof rolling will be required and soft spots will corrected as approved or directed by the Engineer.

ITEM 275 CEMENT TREATMENT (ROAD-MIXED)

Microcracking will be required for this project.

County: LAMPASAS

Highway: US 281

SHEET 15D

Control: 0251-06-036

7-day unconfined compressive strength minimum requirements are 200 psi for cement treatment of new or reworked flexible base.

ITEM 310 PRIME COAT

Cure prime placed with a cutback asphalt binder for 21 days before placing subsequent surface courses unless otherwise directed by the Engineer.

Finished base must be dampened before the application of a cutback asphalt binder is placed. The cutback asphalt binder will not be placed if standing water is visible on the finished base. This work will not be paid for directly but will be considered subsidiary to Item 310.

ITEM 401 FLOWABLE BACKFILL

All flowable backfill will be "Non-Excavatable" unless otherwise specified.

ITEM 416 DRILLED SHAFT FOUNDATIONS

Casing is anticipated for the installation of the drilled shafts. Refer to **Section 416.3.3** for requirements.

ITEM 420 CONCRETE SUBSTRUCTURES

Concrete shall not be placed if temperatures are forecasted to fall below 32 degrees Fahrenheit according to NOAA within 72 hours.

Culverts will be constructed in conjunction with roadway construction phasing, unless otherwise directed by the Engineer.

All Class C Concrete has been measured for plan quantity payment.

Unless otherwise shown on the plans, all culvert extensions and safety end treatments will conform to the slope of the existing structures.

ITEM 421 HYDRAULIC CEMENT CONCRETE

Concrete shall not be placed if temperatures are forecasted to fall below 32 degrees Fahrenheit according to NOAA within 72 hours.

Furnish dome lids with 4" x 8" cylinder test molds.

Strength testing equipment is not required for Contract controlling test.

ITEM 432 RIPRAP

Locations and quantities may be varied as directed by the Engineer to accommodate field conditions.

Mow Strip(s) will be installed before the final lift of ACP is installed.

Riprap (Conc) (CI B) is required inside all Type I safety end treatments, unless otherwise directed by the Engineer.

Limit excavation to within 1' of riprap. If excavation exceeds these limits without the Engineer's approval, riprap will be extended to the limits of the disturbance. No additional compensation will be allowed for this work.

ITEM 459 GABIONS AND GABION MATTRESSES

Type 2 filter fabric in accordance with DMS6200, "Filter Fabric" is required for this project.

Locations and quantities may be varied as directed by the Engineer to accommodate field conditions.

Limit excavation to within 1' of the gabion(s) or gabion mattress(s). If excavation exceeds these limits without the Engineer's approval, the gabion(s) or gabion mattress(s) will be extended to the limits of the disturbance. No compensation for the additional work will be allowed.

ITEM 465 MANHOLES AND INLETS

Precast inlets are allowable, but the tops and gutter depressions will be cast-in-place only. Nose of curb inlets will have a two inch (2") radius round galvanized steel form to be left in place. Steel will conform to requirements of ASTM A36 or A500 Class B.

Where inlets are part of an ADA compliant pedestrian path, the inlet top will be cast as wide as the approaching and departing sidewalk(s). It will be slip doweled with #4 bars extending as detailed in the plans and will have an expansion joint between the inlet top and the sidewalk unless shown or directed by the Engineer.

At grade inlets will be required to have multiple 3½ inch wide x 1½ inch deep "block outs" angled at 30° to 45°, to the roadway, on 12 inch centers, or as directed, to facilitate drainage before the final lift of hotmix is installed. Once the final lift of hotmix is installed, the "block outs" will be patched by an approved method. This work will not be paid for directly and will be considered subsidiary to Item 465 "Manholes and Inlets".

Inlets in sag conditions will be required to have multiple 3½ inch wide x 1½ inch deep "block outs" angled at 90°, to the roadway, on 12 inch centers, or as directed, to facilitate drainage before the final lift of hotmix is installed. Once the final lift of hotmix is installed, the "block out" will be patched by an approved method. This work will not be paid for directly and will be considered subsidiary to Item 465 "Manholes and Inlets".

ITEM 502 BARRICADES, SIGNS, AND TRAFFIC HANDLING

The Contractor will be required to keep all TCP devices clean. If notified by the Engineer to clean the TCP devices, the Contractor will have until the end of that daylight period to comply. Failure to comply will result in a suspension of all work until the TCP devices are clean. Time will not be suspended.

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 Engineer may choose to use existing bid items if it does not slow the implementation of enhancement.

The Engineer will determine the locations of speed zone signs. The Contractor will furnish, install and remove speed zone signs at locations as directed by the Engineer.

Excavations in Intersections adjacent to travel lanes will not be exposed or open overnight. Backfilling will take place the day excavations are made.

All equipment operated by the Contractor on or within thirty feet (30') of the roadway will have a functioning flashing beacon mounted on it. Motor graders will have two standard orange warning flags mounted on them in addition to the flashing beacon.

The Contractor will be responsible for maintaining the edge of the roadway throughout the project in a traversable condition and/or as directed by the Engineer. Salvaged milling may be used as directed by the Engineer. Any salvaged millings not used on the project shall become property of the Department. This work will not be paid for directly and will be considered subsidiary to Item 502 "Barricades, Signs, and Traffic Handling".

All devices shown on the TCP Standards are required and considered subsidiary to Item 502 unless specifically outlined elsewhere in the plans.

All signs will be constructed in accordance with the details shown in the current Standard Highway Sign Designs for Texas manual.

ITEM 504 FIELD OFFICE AND LABORATORY

Furnish and provide a Type E structure that meets all of the following requirements:

1. Provide at least 325 square feet of gross floor area in rooms 8 feet high. Partition the floor area into at least 2 interconnected rooms with doors, 2 exterior doors, and at least 2 windows in each room. One exterior door opening must be 48-inch minimum width. If steps are required to gain access to the 48-inch door, provide handrails and a strong and sturdy loading dock with minimum dimensions of 60 inches wide by 60 inches deep.
2. The strong floor and landing of the facility shall support the weight of all equipment and personnel, providing a stable, essentially zero deflection, during testing operations, acceptable to the Engineer.
3. Conforms to Laboratory requirements in Item 504.2.1.2.2 and conforms to Asphalt Content by Ignition Method in Item 504.2.2.4.1
4. Provide water, electricity, chairs, trash disposal, and janitorial services.
5. Furnish and install adequate equipment, outlets, lighting, air-conditioning, heating, and ventilation. Provide a partitioned restroom furnished with restroom supplies, a lavatory, and a flush toilet connected to a sewer or septic tank.

This structure type will be located at each HMAC plant for the sole use of the Engineer and will be separate from the Contractors' testing lab. In addition, provide the following:

The Contractor will furnish the Superpave or Texas Gyrotory Compactor to the Engineer under the asphalt concrete pavement Item(s) of work.

The remaining lab testing equipment and calibrations will be provided by TxDOT.

No direct payment will be made for Engineer field labs. All construction, maintenance, utilities, custodial services, security, and permits necessary to establish and maintain readiness of this facility will be the responsibility of the Contractor.

ITEM 506 TEMPORARY EROSION, SEDIMENTATION, AND ENVIRONMENTAL CONTROLS

The Contractor should anticipate multiple mobilizations for the installation of BMP's on this project.

BMP's will not be installed until authorized by the Engineer.

The Engineer will determine actual time and placement locations of BMP's and temporary measures once construction has begun.

Stockpile sites may be cleared of cover vegetation, but the vegetation root system will not be destroyed.

ITEM 508 CONSTRUCTING DETOURS

Flexible Base used for detour construction will be 10" Ty-B GR-1-2.

Density Control testing is waived for the detour construction.

ITEM 512 PORTABLE TRAFFIC BARRIER

Portable Concrete Traffic Barrier will be supplied by the Contractor.

Portable Concrete Traffic Barrier will be used at specified locations for protection of workmen and the traveling public. When barrier sections are stockpiled on the project they will be placed in a location that will not endanger the traveling public.

ITEM 528 COLOR TEXTURED CONCRETE AND LANDSCAPE PAVERS

COLORED TEXTURE CONCRETE

The color shall be a Bomanite Coquina (C-1), or approved equivalent, and the texture shall be a Bomanite Bomacron Canyon Stone Pattern, or approved equivalent.

After the imprint has been applied, the concrete shall receive a Bomaseal 1-18, or approved equivalent, to seal concrete from water penetration.

Expansion joint material shall be one half inch (1/2") Fiber Board, placed one half inch (1/2") below the concrete surface to allow for placement of an expansion joint sealant. The sealant is to be a color that is compatible with the color of the Color Texturized Concrete.

The sealant shall meet the following specifications:

Sonolastic

SL-1 (or approved equal)

One Compound Non-Priming Urethane

Self-leveling sealant conforming to Federal Specification TT-5-00230 C

Ty I Class A: ASTM C-920

Ty S Grade P Class 25 use TM

3'x3' sample shall be formed and poured so that the Engineer can approve color and pattern before placement.

Contractors, who have not had three years experience with this method, should have a company representative present at installation to insure proper installation and procedures.

ITEM 529 CONCRETE CURB, GUTTER, AND COMBINED CURB AND GUTTER

Reinforcing steel will be required in all curb and gutter. Fibers will be allowed.

Construct tooled joints every 8' corresponding to the joints in the sidewalk where applicable or as directed by the Engineer.

Construct expansion joints to correspond to the sidewalk or as directed by the Engineer.

ITEM 530 INTERSECTIONS, DRIVEWAYS, AND TURNOUTS

Only two adjacent intersections may be closed at a time unless otherwise approved by the Engineer.

The Contractor will always maintain access to driveways unless otherwise coordinated with the property owner(s) and approved by the Engineer.

All intersections, driveways, and turnouts will be primed and receive a two course surface treatment matching the rates as shown on the basis of estimate for "ROADWAY" unless otherwise shown on the plans or directed by the Engineer.

ITEM 531 SIDEWALKS

Expansion joints will be asphalt board, minimum one-half inch (1/2") thickness.

Fiber board will be required around existing features such as signs, fireplugs, utility poles, etc. as directed by the Engineer. When existing features are in the proposed sidewalk area, provide a four foot (4') minimum pathway.

Any excavation/embankment necessary for establishing new ramps to proper grade will be considered subsidiary to the various bid items.

County: LAMPASAS

Highway: US 281

Control: 0251-06-036

The Contractor may be required to use orange pedestrian safety barriers to protect excavated areas as directed by the Engineer.

Unless otherwise shown in the plans, reinforcement will be #4 bars on eighteen inch (18") centers or equivalent.

Fiber mesh will not be used on this project.

Sidewalks will be saw cut one third the depth of concrete or marked every 4 feet in length, by the use of an approved jointing tool or as Directed by the Engineer.

Sidewalks that are adjacent to other concrete areas will be poured separately to ensure compliant cross slope on the walking path.

ITEM 540 METAL BEAM GUARD FENCE

The area shown on the Roadway Details – MBGF sheets having a one course surface treatment will match the rates as shown on the basis of estimate for "ROADWAY" unless otherwise directed by the Engineer.

ITEM 545 CRASH CUSHION ATTENUATORS

Crash Cushion Attenuators will be supplied by the Contractor.

ITEM 552 WIRE FENCE

Wire fence quantities shown on the plans are approximate and may be adjusted in the field as approved by the Engineer.

Notify the Engineer three weeks prior to beginning any fence work.

ITEM 560 MAILBOX ASSEMBLIES

Mailboxes will be kept in a position accessible to the carrier's vehicle along the travel way except when performance of grading operations necessitates the moving of mailboxes. When grading operations necessitate the moving of mailboxes, the contractor will place them at a nearby location which will be accessible to the carrier's vehicle. Mailboxes will be returned to a position accessible to the carrier's vehicle along the travel way when grading operations are not in progress. This work will not be paid for directly but will be subsidiary to Item 560.

A Type 2 Object Marker in accordance with Traffic Engineering standard Delineators & Object Markers or tube type post wrapped with 12" Conformable Reflective Sheeting in accordance with DMS 8300 will be required on both the approach and departure side of each mailbox assembly and will not be paid for directly but will be considered subsidiary to Item 560 Mailbox Assemblies.

County: LAMPASAS

SHEET 15G

Highway: US 281

Control: 0251-06-036

Mailboxes that create a protrusion of more than 4" into the pedestrian circulation path will have an additional curb or foundation at the bottom to provide a maximum 4" overhang. This work will not be paid for directly but will be considered subsidiary to Item 560 Mailbox Assemblies.

ITEM 585 RIDE QUALITY FOR PAVEMENT SURFACES

Surface Test Type B will be required on this project.

Schedule 2 will be used when calculating Pay Adjustment for Ride quality.

Diamond grinding will not be allowed unless otherwise approved by the Engineer.

ITEM 600 ELECTRIC GENERAL

Electrical materials, wiring, and fittings not covered by the plans and specifications for this project will conform to the requirements of the current edition of the National Electrical Code as published by the National Fire Protection Association.

Contractor will maintain signals through construction with the exception of camera detection. Contractor will notify the District Director of Operations at 325-643-0417, 48 hours prior to beginning any electrical related work items and 48 hours prior to traffic switch so the district signal personnel can adjust the camera detection.

Electrical Contractor, Signal Shop personnel and Project Inspector will conduct a 'Tool Box' meeting to discuss upcoming electrical work.

All materials will be from the pre-qualified material producer list, "Roadway Illumination and Electrical Supplies" located on the TxDOT website. Electrical submittals will be required for all materials not on the pre-qualified list.

All electrical submittals will be forwarded to District Director of Operations (325-643-0417). No electrical work will be performed prior to approval of electrical materials.

ITEM 610 ROADWAY ILLUMINATION ASSEMBLIES

All luminaire poles will be steel.

For both transformer and shoe-base type illumination poles, provide double-pole breakaway fuse holder as shown on the Texas Department of Transportation (TxDOT)-Construction Division's (CST) material producers list. Category is "Roadway Illumination and Electrical Supplies". Fuse holder is shown on list under Items 610 & 620. Provide 10 amp time delay fuses.

For instructions on submitting shop drawings electronically go to TxDOT home page, Divisions (bottom left), Bridge, Shop Drawings, Electronic Submission of Shop Drawings, Guide to Electronic Shop Drawing Submittal.pdf or click on the following link:

http://ftp.dot.state.tx.us/pub/txdot-info/library/pubs/bus/bridge/e_submit_guide.pdf

County: LAMPASAS

Highway: US 281

Control: 0251-06-036

For project specific shop drawings, furnish drawings of the complete assembly in accordance with Item 441, "Steel Structures". Submit shop drawings electronically.

Pre-approved shop drawing manufacturers and assembly model numbers can be found on the Texas Department of Transportation(TxDOT) – Construction Division's(CST) material producer list. Category is "Roadway Illumination and Electrical Supplies."

Use 480 volt electronic LED drivers for luminaires on this project.

Provide 12 circuit Buchanan Type 112SN, Kulka Type 985-GP-10 CU, or equal terminal strip in the luminaire pole access compartment. The conductors for the line and load side of the terminal strip will be identified with a plastic label with two straps per tag. The load side will have each signal head and ped head identified on the tag.

Fabricate steel roadway illumination poles in accordance with TxDOT standards RIP (Roadway Illumination Poles -2011). Poles fabricated according to RIP require no shop drawings. Alternate designs to RIP or the use of aluminum to fabricate poles will require the submission of shop drawings electronically.

Limitations on Use of the RIP Standard

The Roadway Illumination Pole (RIP) standard details were developed for installations in locations where the 3-second gust basic maximum wind speed is 110 mph, and where the elevation of the base of the pole is less than (i.e. not more than) 25' above the elevation of surrounding terrain, in accordance with the "AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals," 4th Edition (2001) (AASHTO Design Specifications). For poles to be installed in regions where the maximum basic wind speed exceeds 110 mph or to be mounted more than 25' above the surrounding terrain, the contractor will provide poles meeting the following requirements:

- Submittals. Following the electronic shop drawing submittal process (see http://ftp.dot.state.tx.us/pub/txdot-info/library/pubs/bus/bridge/e_submit_guide.pdf) the contractor will submit to the Engineer, for approval, fabrication drawings and calculations for the poles. The drawings and calculations will be sealed by a Texas registered or licensed professional engineer (P.E.).
- Luminaire Structural Support Requirements. Lighting poles, arms, and anchor bolt assemblies will have a 25 year design life to safely resist dead loads, ice loads and the required basic wind speeds at the location of installation in accordance with the current edition of the AASHTO Design Specifications. For transformer base poles, the fabricator will include transformer base and connecting hardware in calculations and shop drawing submittals. All transformer bases will have been structurally tested to resist the theoretical plastic moment capacity of the pole. Certification of the plastic moment load test and FHWA breakaway requirement test of the model of base being furnished will be submitted with the shop drawings. Shop drawings will show breakaway base model number, and manufacturer's name and logo. Manufacturer's shop drawings will include the ASTM designations for all materials to be used.

County: LAMPASAS

Highway: US 281

ITEM 618 CONDUIT

All conduit will be SCH 80 PVC.

Where PVC, duct cable, and HDPE conduit 1" and larger is allowed and installed as per TxDOT standards, provide a PVC elbow at all ground boxes and foundations.

See plans & specifications regarding type of conduit. High density polyethylene (HDPE) may be substituted where PVC is called out. High density polyethylene (HDPE) may be threaded and used with threaded PVC connectors or couplings. All couplings & connections will be tight & waterproof. Each end of every PVC pipe connection and/or coupling will be cleaned with PVC cleaner and glued thoroughly with PVC sealer. Proposed and existing conduit will be brought into a pull box and elbowed unless otherwise shown. Where a rigid metal conduit run terminates, a bushing will be provided to protect the wire from abrasion.

The conduit will be placed at a minimum depth of two 2 ft. unless otherwise shown on the plans or directed by the Engineer. If utility lines or other obstacles are at the 2 ft. minimum depth then the conduit will be routed under the utility or obstacle unless otherwise approved by the Engineer.

The conduit will be placed on a 2 in. Sand cushion and then backfilled with a minimum of six inch (6") sand fill. The remainder of the trench will be backfilled with flexible base or soil as required by location of conduit on the project.

Flexible metal will not be permitted on this project.

Do not use cast iron junction boxes in concrete traffic barriers and single slope traffic barriers. Use polymer concrete junction boxes instead of the cast iron junction boxes shown on standard sheets CTBI (3), CTBI (4), and SSCB (4). Mount the junction boxes flush (+ 0", - 1/2") with concrete surface of concrete barrier.

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

The polymer concrete barrier box will not be paid for separately, but will be considered subsidiary to ITEM 618, "CONDUIT".

ITEM 620 ELECTRICAL CONDUCTORS

Labeling conductors with label maker is acceptable.

Grounding conductors that share the same conduit, junction box, ground box or structure will be bonded together at every accessible point in accordance with the National Electrical Code.

For Flashing Beacons (Item 685) and Ped poles (Item 687) within the project, provide single-pole breakaway disconnects. Use Bussman HEBW, Littlefuse LEB, Ferraz-Shawmut FEB, or equal on ungrounded conductors.

SHEET 15H

Control: 0251-06-036

For all grounded conductors use Bussman HET, Littlefuse LET, Ferraz-Shawmut FEBN, or equal. These breakaway connectors have a white colored marking and a permanently installed solid neutral.

ITEM 624 GROUND BOXES

All concrete used on ground boxes with aprons or cast in various slabs, will be as thick as the ground box depth within the dimensions as shown on TxDOT's ED Standard Sheets. No variance from this will be allowed.

ITEM 628 ELECTRICAL SERVICE

Any service installed by others will comply with all TxDOT standards from weather-head to fixtures.

Coordinate setting up the electrical service with the Area Engineer to insure the meter is installed under the proper account name.

Photocell enclosed in pedestal services will be orientated in a northerly direction unless otherwise directed.

The Contractor will verify conductor slack length at the weather head with the utility provider. If the utility provider requires a conductor slack length that does not meet the requirements shown on ED(7) notify the Engineer immediately for a resolution.

ITEM 644 SMALL ROADSIDE SIGN ASSEMBLIES

The Contractor will notify the Engineer 5 working days before installing any sign base. The Engineer will coordinate with the Contractor and the Maintenance office to assure proposed sign placements are in accordance with the current version of the Sign Crew Field Book and the TMUTCD. Any signs that are placed without this coordination by the Contractor that are not located correctly will be removed and relocated at the Contractor's expense.

Triangular Slip Bases will be supplied by TxDOT. All other components of the sign assembly (stubs, posts, hardware, signs, etc.) will be supplied by the Contractor. The Contractor can acquire the bases at the Lampasas County Maintenance office located at 1133 N US281, Lampasas, TX 76550. Contact the Lampasas County Maintenance Supervisor (Steven Hamrick) at (512) 556-5435 for further information.

For Triangular Slip Base systems use HWYCOM (3 way set screw), Southern Plains (2 bolt clamp), or approved equivalent.

Build signs not detailed in the plans according to the latest edition of the Standard Highway Sign Designs for Texas.

TxDOT will mark the locations of the SPEED LIMIT (R2-1) and REDUCED SPEED LIMIT AHEAD (W3-5) signs.

Existing roadside signs are to be removed/relocated and mounted on temporary supports and placed during construction as directed by the Engineer. The removal/relocation and temporary mounting of any

existing sign (stop, yield, warning, etc.) will not be paid for directly but will be considered subsidiary to Item 644 unless otherwise directed by the Engineer.

Signs that are to be transferred to new posts must be placed upon the new supports before the end of the working day. Regulatory signs must be transferred immediately.

Conformable Retroreflective Sheeting in accordance with DMS 8300 will be required on all Warning, Stop, and Yield signs. Retroreflective sheeting wrapped around a sign support is yellow unless the sign on the support is a Stop or Yield, in which case the sheeting will be red. Retroreflective sheeting will have a height on the post of 12 inches and the bottom of the sheeting will be 4 feet above the edge of the travel lane. Retroreflective sheeting will not be paid for directly but will be considered subsidiary to Item 644 Small Roadside Sign Assemblies.

ITEM 656 FOUNDATIONS FOR TRAFFIC CONTROL DEVICES

Drilled shaft foundations for electrical use will be grounded using an 8' ground rod unless otherwise specified.

ITEM 662 WORK ZONE PAVEMENT MARKINGS

Removable work zone pavement markings will be raised pavement markers unless otherwise approved by the Engineer.

Bituminous material used for raised pavement markers will be removed before the next lift of pavement material is placed.

Temporary tabs will not be placed on a road more than 24 hours prior to operations beginning on the road.

The temporary tabs will be removed by an acceptable method approved by the Engineer once final striping has been placed.

Temporary tabs will be placed in accordance with WZ (STPM) standard.

ITEM 666 RETROREFLECTORIZED PAVEMENT MARKINGS

A mobile retroreflectometer is not required for this project.

Type II markings must meet the following minimum retroreflectivity values for edgeline markings, centerline or no passing barrier-line, and lane lines when measured any time after 3 days, but not later than 10 days after application: White markings: 175 mcd/m²lx, Yellow markings: 100 mcd/m²lx.

Furnish a needlepoint micrometer gauge Mitutoyo - Model 342-711-30 or equivalent.

Sealed roadways will be allowed to cure for 3 days before final striping is placed unless otherwise directed by the Engineer.

County: LAMPASAS

Highway: US 281

Control: 0251-06-036

Crosswalks will be 24 inch wide "longitudinal" style in accordance with TMUTCD 3B.18.15 or as directed by the Engineer.

Unless otherwise approved, all 4 in. longitudinal striping (centerline, edgeline, etc.) will be placed and approved before any other striping (crosswalks, stop bars, arrows, numbers, etc.) is allowed to begin.

ITEM 672 RAISED PAVEMENT MARKERS

Place raised pavement markers no sooner than 24 hours after final striping has been placed or as directed.

ITEM 677 ELIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS

Use "Blasting Method" in accordance with 677.4.3 for eliminating existing pavement markings. Water blasting will be the only allowable option and the method will be approved by the Engineer.

ITEM 680 INSTALLATION OF HIGHWAY TRAFFIC SIGNALS

Contractor will be responsible for all temporary control and operation of the traffic signal. Any components needed to facilitate this work will be the responsibility of the Contractor.

Traffic signals will be made of polycarbonate and be highway yellow in color. Cover heads until signal system is put into operation. All faces will be equipped with tunnel visors and backplates. Backplates will be black polycarbonate.

Controller cabinet will be grounded using a ground rod.

Wire nuts will not be permitted unless approved by the Engineer.

Signal signs will be subsidiary to this Item. (**Section 680.5.1.**)

The Traffic Signal Cabinet, Controller, and preformed cabinet base will be provided by TxDOT and installed by Contractor. Concrete pad will be provided by the Contractor.

ITEM 685 ROADSIDE FLASHING BEACON ASSEMBLIES

For bidding purposes, assume all solar installations will be the two-pole configuration. Actual configuration will be designated on the WORK ORDER.

One-Pole Solar Powered Roadside Flashing Beacon will consist of an installation with one foundation, pole and transformer base and the use of a ground box/battery vault as shown on standard sheet(s).

This roadside flashing beacon will have one pole as described in the plans.

Batteries will be placed in ground vault/battery box.

The flasher assembly will be capable of supporting two 12" LED beacons for a school zone situation.

County: LAMPASAS

SHEET 15J

Highway: US 281

Control: 0251-06-036

Roadside Flashing Beacon foundations will be of the Screw-in Anchor type.

Roadside Flashing Beacon foundations will be Drilled Shafts. See **TxDOT Standard TS-FD** for additional information.

ITEM 3076 DENSE – GRADED HOT-MIX ASPHALT (QCQA)

RAS will not be allowed.

Field Lab will be required.

A Superpave Gyrotory Compactor is required for this project.

Power washing each lift of hot-mix before the placement of consecutive lifts may be required as directed by the Engineer to ensure proper surface preparation. (Article 341.4.7.)

Use Ty-D for profile transitions at the both ends of the job to tie to existing pavement and additional areas as directed by the Engineer.

The use of Warm Mix Asphalt (WMA) is allowed. (Article 341.2.6.2)

The use of Warm Mix Asphalt (WMA) is required if the haul distance from the Hotmix Plant to the Project is greater than 50 miles.

During paving operations; proper adjustment of Surge Volume Remixing MTV is required to ensure clean pickup of HMAC and to have residual HMAC not be in excess of 1/4" to 3/8" as approved by the Engineer. HMAC will not be dumped in a windrow that is determined by the Engineer to be an excessive distance from the paving operation.

Belly dumps will not be allowed if a spray paver is used.

See item 504 for additional structure requirements located at HMAC plant(s).

ITEM 3080 STONE-MATRIX ASPHALT MIXTURES

Binder substitution us not allowed.

RAP and RAS will not be allowed.

Mix to be placed in one lift.

ITEM 3084 BONDING COURSE

Rates will be adjusted in the field based on the exposed surface as directed by the Engineer.

A test strip will be required.

ITEM 6185 TRUCK MOUNTED ATTENUATOR (TMA) AND TRAILER ATTENUATOR (TA)

Provide the number of vehicles with truck mounted attenuators (TMA) listed in the table below. The Contractor will be responsible for determining if one or more of these operations will be ongoing at the same time to determine the total number of TMAs needed for the project.

STANDARD / PHASE	# TMA'S REQUIRED
TCP(1-1)	1
TCP(1-2)	1
TCP(1-3)	1 per workspace
TCP(1-4)	1
TCP(1-5)	1
TCP(1-6)	1
TCP(2-1)	1
TCP(2-2)	1
TCP(2-3)	1 per workspace
TCP(2-4)	1
TCP(2-5)	1
TCP(2-6)	1
TCP(2-7)	0
TCP(2-8)	0
TCP(3-1)	2
TCP(3-2)	3
TCP(3-3)	2 or 3
TCP(3-4)	1 or 2 per workspace
TCP(3-5)	1
TCP(5-1)	1
TCP(6-1)	1 or 2
TCP(6-2)	1
TCP(6-3)	1
TCP(6-4)	1 or 2
TCP(6-5)	1 or 2
TCP(6-6)	1 per lane
TCP(6-7)	Refer to TCP(6-6)
TCP(6-8)	1
TCP(6-9)	1
TCP(7-1)	N/A to be used in conjunction with another TCP
WZ(BTS-1) & WZ(BTS-2)	1

Stationary shadow vehicle(s) with TMA are estimated at 546 days for this project. (273 days x 2 TMA's)

Mobile shadow vehicle(s) with TMA are estimated at 656 hours for this project. (41 days x 8 hrs/day x 2 TMA's)



Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0251-06-036

DISTRICT Brownwood
HIGHWAY US 281

COUNTY Lampasas

CONTROL SECTION JOB				0251-06-036		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00022772			
COUNTY				Lampasas			
HIGHWAY				US 281			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL		
	100-6002	PREPARING ROW	STA	93.550		93.550	
	100-6007	PREP ROW (TREE)(GREATER THAN 24" DIA)	EA	24.000		24.000	
	104-6015	REMOVING CONC (SIDEWALKS)	SY	1,779.000		1,779.000	
	104-6017	REMOVING CONC (DRIVEWAYS)	SY	583.000		583.000	
	104-6022	REMOVING CONC (CURB AND GUTTER)	LF	2,069.000		2,069.000	
	104-6036	REMOVING CONC (SIDEWALK OR RAMP)	SY	34.000		34.000	
	104-6044	REMOVING CONC (FLUME)	SY	27.000		27.000	
	105-6033	REMOVING STB BASE AND ASPH PAV(10-14")	SY	59,410.000		59,410.000	
	110-6001	EXCAVATION (ROADWAY)	CY	28,405.000		28,405.000	
	110-6003	EXCAVATION (SPECIAL)	CY	716.000		716.000	
	132-6004	EMBANKMENT (FINAL)(DENS CONT)(TY B)	CY	349.000		349.000	
	132-6006	EMBANKMENT (FINAL)(DENS CONT)(TY C)	CY	12,316.000		12,316.000	
	162-6002	BLOCK SODDING	SY	9,093.000		9,093.000	
	164-6035	DRILL SEEDING (PERM) (RURAL) (CLAY)	SY	37,877.000		37,877.000	
	164-6051	DRILL SEED (TEMP)(WARM OR COOL)	SY	3,278.000		3,278.000	
	168-6001	VEGETATIVE WATERING	MG	1,130.000		1,130.000	
	169-6003	SOIL RETENTION BLANKETS (CL 1) (TY C)	SY	444.000		444.000	
	247-6053	FL BS (CMP IN PLC)(TYD GR1-2)(FNAL POS)	CY	735.000		735.000	
	251-6027	REWORK BS MTL (TY B) (6") (DENS CONT)	SY	17,392.000		17,392.000	
	275-6001	CEMENT	TON	108.000		108.000	
	310-6009	PRIME COAT (MC-30)	GAL	1,728.000		1,728.000	
	400-6006	CUT & RESTORING PAV	SY	356.000		356.000	
	401-6001	FLOWABLE BACKFILL	CY	7,508.000		7,508.000	
	402-6001	TRENCH EXCAVATION PROTECTION	LF	9,140.000		9,140.000	
	403-6001	TEMPORARY SPL SHORING	SF	2,147.000		2,147.000	
	416-6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	300.000		300.000	
	416-6031	DRILL SHAFT (TRF SIG POLE) (30 IN)	LF	22.000		22.000	
	416-6032	DRILL SHAFT (TRF SIG POLE) (36 IN)	LF	65.000		65.000	
	420-6054	CL C CONC (HEADWALL)	CY	15.200		15.200	
	420-6066	CL C CONC (RAIL FOUNDATION)	CY	173.000		173.000	
	420-6074	CL C CONC (MISC)	CY	13.700		13.700	
	432-6001	RIPRAP (CONC)(4 IN)	CY	55.000		55.000	
	432-6002	RIPRAP (CONC)(5 IN)	CY	25.100		25.100	
	432-6003	RIPRAP (CONC)(6 IN)	CY	31.000		31.000	
	432-6031	RIPRAP (STONE PROTECTION)(12 IN)	CY	10.900		10.900	
	432-6045	RIPRAP (MOW STRIP)(4 IN)	CY	53.000		53.000	
	450-6030	RAIL (TY C221)	LF	583.200		583.200	

DISTRICT	COUNTY	CCSJ	SHEET
Brownwood	Lampasas	0251-06-036	16



Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0251-06-036

DISTRICT Brownwood
HIGHWAY US 281

COUNTY Lampasas

CONTROL SECTION JOB				0251-06-036		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00022772			
COUNTY				Lampasas			
HIGHWAY				US 281			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL		
	450-6040	RAIL (TY C66)	LF	52.000		52.000	
	450-6103	RAIL (TY PR11)	LF	621.000		621.000	
	459-6009	GABIONS (3' X 3')(GALV)	CY	1,202.000		1,202.000	
	462-6001	CONC BOX CULV (3 FT X 2 FT)	LF	483.000		483.000	
	462-6003	CONC BOX CULV (4 FT X 2 FT)	LF	90.000		90.000	
	462-6004	CONC BOX CULV (4 FT X 3 FT)	LF	788.000		788.000	
	462-6075	CONC BOX CULV (10 FT X 7 FT)(EXTEND)	LF	13.000		13.000	
	464-6005	RC PIPE (CL III)(24 IN)	LF	9,131.000		9,131.000	
	464-6007	RC PIPE (CL III)(30 IN)	LF	1,827.000		1,827.000	
	464-6032	RC PIPE (ARCH)(CL III)(DES 3)	LF	24.000		24.000	
	465-6014	INLET (COMPL)(PCO)(3FT)(LEFT)	EA	13.000		13.000	
	465-6015	INLET (COMPL)(PCO)(3FT)(RIGHT)	EA	16.000		16.000	
	465-6016	INLET (COMPL)(PCO)(3FT)(BOTH)	EA	10.000		10.000	
	465-6018	INLET (COMPL)(PCO)(4FT)(LEFT)	EA	3.000		3.000	
	465-6019	INLET (COMPL)(PCO)(4FT)(RIGHT)	EA	2.000		2.000	
	465-6020	INLET (COMPL)(PCO)(4FT)(BOTH)	EA	5.000		5.000	
	465-6023	INLET (COMPL)(PCO)(5FT)(RIGHT)	EA	1.000		1.000	
	465-6024	INLET (COMPL)(PCO)(5FT)(BOTH)	EA	2.000		2.000	
	465-6034	INLET (COMPL)(PCU)(4FT)(LEFT)	EA	2.000		2.000	
	465-6036	INLET (COMPL)(PCU)(4FT)(BOTH)	EA	1.000		1.000	
	465-6060	INLET (COMPL)(PSL)(SL)(6FTX6FT)	EA	1.000		1.000	
	465-6071	INLET (COMPL)(PSL)(RC)(4FTX4FT)	EA	2.000		2.000	
	465-6076	INLET (COMPL)(PSL)(RC)(6FTX6FT)	EA	1.000		1.000	
	465-6126	INLET (COMPL)(PSL)(FG)(3FTX3FT-3FTX3FT)	EA	8.000		8.000	
	466-6171	WINGWALL (PW - 1) (HW=10 FT)	EA	1.000		1.000	
	466-6173	WINGWALL (PW - 1) (HW=12 FT)	EA	1.000		1.000	
	466-6178	WINGWALL (PW - 1) (HW=3 FT)	EA	1.000		1.000	
	466-6183	WINGWALL (PW - 1) (HW=8 FT)	EA	1.000		1.000	
	466-6206	WINGWALL (SW - 0) (HW=3 FT)	EA	1.000		1.000	
	466-6207	WINGWALL (SW - 0) (HW=4 FT)	EA	1.000		1.000	
	467-6148	SET (TY I)(S= 4 FT)(HW= 5 FT)(3:1) (C)	EA	1.000		1.000	
	467-6154	SET (TY I)(S= 4 FT)(HW= 6 FT)(3:1) (C)	EA	1.000		1.000	
	467-6389	SET (TY II) (24 IN) (RCP) (3: 1) (P)	EA	5.000		5.000	
	467-6395	SET (TY II) (24 IN) (RCP) (6: 1) (P)	EA	32.000		32.000	
	467-6543	SET (TY II) (DES 3) (RCP) (4: 1) (P)	EA	2.000		2.000	
	480-6001	CLEAN EXIST CULVERTS	EA	2.000		2.000	
	496-6002	REMOV STR (INLET)	EA	2.000		2.000	

DISTRICT	COUNTY	CCSJ	SHEET
Brownwood	Lampasas	0251-06-036	16A



CONTROLLING PROJECT ID 0251-06-036

DISTRICT Brownwood
HIGHWAY US 281

COUNTY Lampasas

Estimate & Quantity Sheet

CONTROL SECTION JOB				0251-06-036		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00022772			
COUNTY				Lampasas			
HIGHWAY				US 281			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL		
	496-6004	REMOV STR (SET)	EA	48.000		48.000	
	496-6006	REMOV STR (HEADWALL)	EA	2.000		2.000	
	496-6007	REMOV STR (PIPE)	LF	2,288.000		2,288.000	
	496-6008	REMOV STR (BOX CULVERT)	LF	10.000		10.000	
	496-6031	REMOV STR (CATTLE GUARD)	EA	1.000		1.000	
	496-6043	REMOV STR (SMALL FENCE)	LF	5,437.000		5,437.000	
	496-6093	REMOV STR (MASONARY)	LF	23.000		23.000	
	496-6099	REMOVE STR (RAIL)	LF	300.000		300.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	23.000		23.000	
	506-6002	ROCK FILTER DAMS (INSTALL) (TY 2)	LF	406.000		406.000	
	506-6011	ROCK FILTER DAMS (REMOVE)	LF	406.000		406.000	
	506-6026	EMBANK (EROSN & SEDMT CONT, IN PLACE)	CY	5,583.000		5,583.000	
	506-6035	SANDBAGS FOR EROSION CONTROL	EA	165.000		165.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	12,427.000		12,427.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	12,427.000		12,427.000	
	506-6041	BIODEG EROSN CONT LOGS (IN STL) (12")	LF	1,738.000		1,738.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	1,738.000		1,738.000	
	508-6001	CONSTRUCTING DETOURS	SY	3,021.000		3,021.000	
	528-6001	COLORED TEXTURED CONC (4")	SY	2,134.000		2,134.000	
	529-6007	CONC CURB & GUTTER (TY I)	LF	754.000		754.000	
	529-6008	CONC CURB & GUTTER (TY II)	LF	16,205.000		16,205.000	
	529-6013	CONC CURB (SPECIAL) (TYPE II)	LF	405.000		405.000	
	529-6017	CONC CURB (TY F2)	LF	129.000		129.000	
	529-6018	CONC CURB (TY F3)	LF	57.000		57.000	
	530-6004	DRIVEWAYS (CONC)	SY	4,248.000		4,248.000	
	530-6005	DRIVEWAYS (ACP)	SY	1,456.000		1,456.000	
	530-6007	TURNOUTS (CONC)	SY	61.000		61.000	
	530-6008	TURNOUTS (ACP)	SY	24.000		24.000	
	531-6001	CONC SIDEWALKS (4")	SY	6,874.000		6,874.000	
	531-6003	CONC SIDEWALKS (6")	SY	433.000		433.000	
	531-6004	CURB RAMPS (TY 1)	EA	4.000		4.000	
	531-6005	CURB RAMPS (TY 2)	EA	4.000		4.000	
	531-6009	CURB RAMPS (TY 6)	EA	3.000		3.000	
	531-6010	CURB RAMPS (TY 7)	EA	6.000		6.000	
	531-6013	CURB RAMPS (TY 10)	EA	2.000		2.000	
	531-6016	CURB RAMPS (TY 21)	EA	1.000		1.000	



DISTRICT	COUNTY	CCSJ	SHEET
Brownwood	Lampasas	0251-06-036	16B



CONTROLLING PROJECT ID 0251-06-036

DISTRICT Brownwood
HIGHWAY US 281

COUNTY Lampasas

Estimate & Quantity Sheet

CONTROL SECTION JOB				0251-06-036		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00022772			
COUNTY				Lampasas			
HIGHWAY				US 281			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL		
	531-6017	CURB RAMPS (TY 22)	EA	2.000		2.000	
	533-6001	RUMBLE STRIPS (SHOULDER)	LF	3,396.000		3,396.000	
	540-6002	MTL W-BEAM GD FEN (STEEL POST)	LF	525.000		525.000	
	540-6006	MTL BEAM GD FEN TRANS (THRIE-BEAM)	EA	6.000		6.000	
	542-6001	REMOVE METAL BEAM GUARD FENCE	LF	595.000		595.000	
	544-6001	GUARDRAIL END TREATMENT (INSTALL)	EA	8.000		8.000	
	544-6003	GUARDRAIL END TREATMENT (REMOVE)	EA	6.000		6.000	
	550-6001	CHAIN LINK FENCE (INSTALL) (6')	LF	100.000		100.000	
	550-6037	GATE (INSTALL) (DOUBLE)	SF	288.000		288.000	
	552-6004	WIRE FENCE (TY D)	LF	709.000		709.000	
	560-6003	MAILBOX INSTALL-M (TWG-POST) TY 1	EA	1.000		1.000	
	560-6007	MAILBOX INSTALL-S (WC-POST) TY 3	EA	5.000		5.000	
	610-6290	IN RD IL (TY SA) 50T-12 (400W EQ) LED	EA	30.000		30.000	
	618-6023	CONDT (PVC) (SCH 40) (2")	LF	4,749.000		4,749.000	
	618-6024	CONDT (PVC) (SCH 40) (2") (BORE)	LF	1,275.000		1,275.000	
	618-6029	CONDT (PVC) (SCH 40) (3")	LF	6,675.000		6,675.000	
	618-6030	CONDT (PVC) (SCH 40) (3") (BORE)	LF	1,685.000		1,685.000	
	618-6046	CONDT (PVC) (SCH 80) (2")	LF	415.000		415.000	
	618-6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	560.000		560.000	
	618-6053	CONDT (PVC) (SCH 80) (3")	LF	560.000		560.000	
	618-6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	1,760.000		1,760.000	
	620-6002	ELEC CONDR (NO.14) INSULATED	LF	8,695.000		8,695.000	
	620-6007	ELEC CONDR (NO.8) BARE	LF	8,790.000		8,790.000	
	620-6008	ELEC CONDR (NO.8) INSULATED	LF	12,670.000		12,670.000	
	620-6009	ELEC CONDR (NO.6) BARE	LF	375.000		375.000	
	620-6010	ELEC CONDR (NO.6) INSULATED	LF	1,050.000		1,050.000	
	621-6005	TRAY CABLE (4 CONDR) (12 AWG)	LF	1,185.000		1,185.000	
	624-6002	GROUND BOX TY A (122311)W/APRON	EA	13.000		13.000	
	624-6006	GROUND BOX TY BATTERY (162915)W/APRON	EA	2.000		2.000	
	624-6010	GROUND BOX TY D (162922)W/APRON	EA	10.000		10.000	
	628-6045	ELC SRV TY A 240/480 060(NS)SS(E)SP(O)	EA	1.000		1.000	
	628-6145	ELC SRV TY D 120/240 060(NS)SS(E)SP(O)	EA	2.000		2.000	
	628-6146	ELC SRV TY D 120/240 060(NS)SS(E)SP(U)	EA	1.000		1.000	
	628-6307	ELC SRV TY T 120/240 000(NS)GS(N)SP(O)	EA	1.000		1.000	
	636-6001	ALUMINUM SIGNS (TY A)	SF	22.000		22.000	
	644-6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	32.000		32.000	
	644-6002	IN SM RD SN SUP&AM TY10BWG(1)SA(P-BM)	EA	1.000		1.000	



DISTRICT	COUNTY	CCSJ	SHEET
Brownwood	Lampasas	0251-06-036	16C



Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0251-06-036

DISTRICT Brownwood
HIGHWAY US 281

COUNTY Lampasas

CONTROL SECTION JOB				0251-06-036		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00022772			
COUNTY				Lampasas			
HIGHWAY				US 281			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL		
	644-6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	EA	13.000		13.000	
	644-6030	IN SM RD SN SUP&AM TYS80(1)SA(T)	EA	1.000		1.000	
	644-6033	IN SM RD SN SUP&AM TYS80(1)SA(U)	EA	1.000		1.000	
	644-6034	IN SM RD SN SUP&AM TYS80(1)SA(U-1EXT)	EA	2.000		2.000	
	644-6035	IN SM RD SN SUP&AM TYS80(1)SA(U-2EXT)	EA	1.000		1.000	
	644-6036	IN SM RD SN SUP&AM TYS80(1)SA(U-BM)	EA	2.000		2.000	
	644-6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA	7.000		7.000	
	644-6076	REMOVE SM RD SN SUP&AM	EA	54.000		54.000	
	658-6014	INSTL DEL ASSM (D-SW)SZ (BRF)CTB (BI)	EA	3.000		3.000	
	658-6062	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)	EA	14.000		14.000	
	658-6081	INSTL DEL ASSM (D-SW)SZ 1(WFLX)GND(BI)	EA	8.000		8.000	
	658-6099	INSTL OM ASSM (OM-2Z)(WFLX)GND	EA	8.000		8.000	
	662-6001	WK ZN PAV MRK NON-REMOV (W)4"(BRK)	LF	30.000		30.000	
	662-6002	WK ZN PAV MRK NON-REMOV (W)4"(DOT)	LF	836.000		836.000	
	662-6004	WK ZN PAV MRK NON-REMOV (W)4"(SLD)	LF	51,974.000		51,974.000	
	662-6012	WK ZN PAV MRK NON-REMOV (W)8"(SLD)	LF	2,689.000		2,689.000	
	662-6016	WK ZN PAV MRK NON-REMOV (W)24"(SLD)	LF	194.000		194.000	
	662-6017	WK ZN PAV MRK NON-REMOV (W)(ARROW)	EA	15.000		15.000	
	662-6029	WK ZN PAV MRK NON-REMOV(W)(WORD)	EA	15.000		15.000	
	662-6032	WK ZN PAV MRK NON-REMOV (Y)4"(BRK)	LF	2,940.000		2,940.000	
	662-6034	WK ZN PAV MRK NON-REMOV (Y)4"(SLD)	LF	53,025.000		53,025.000	
	662-6061	WK ZN PAV MRK REMOV (W)4"(DOT)	LF	73.000		73.000	
	662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	4,788.000		4,788.000	
	662-6071	WK ZN PAV MRK REMOV (W)8"(SLD)	LF	489.000		489.000	
	662-6075	WK ZN PAV MRK REMOV (W)24"(SLD)	LF	88.000		88.000	
	662-6080	WK ZN PAV MRK REMOV (W)(ARROW)	EA	4.000		4.000	
	662-6090	WK ZN PAV MRK REMOV (W)(WORD)	EA	4.000		4.000	
	662-6091	WK ZN PAV MRK REMOV (W)18"(YLD TRI)	EA	17.000		17.000	
	662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	6,292.000		6,292.000	
	662-6109	WK ZN PAV MRK SHT TERM (TAB)TY W	EA	1,850.000		1,850.000	
	662-6111	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	EA	2,037.000		2,037.000	
	666-6018	REFL PAV MRK TY I (W)6"(DOT)(100MIL)	LF	17.000		17.000	
	666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	6,860.000		6,860.000	
	666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	1,165.000		1,165.000	
	666-6306	RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)	LF	4,866.000		4,866.000	
	666-6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	3,908.000		3,908.000	
	666-6318	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	LF	2,799.000		2,799.000	

DISTRICT	COUNTY	CCSJ	SHEET
Brownwood	Lampasas	0251-06-036	16D



CONTROLLING PROJECT ID 0251-06-036

DISTRICT Brownwood
HIGHWAY US 281

COUNTY Lampasas

Estimate & Quantity Sheet

CONTROL SECTION JOB				0251-06-036		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00022772			
COUNTY				Lampasas			
HIGHWAY				US 281			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL		
	666-6321	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	LF	23,083.000		23,083.000	
	668-6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	40.000		40.000	
	668-6078	PREFAB PAV MRK TY C (W) (DBL ARROW)	EA	1.000		1.000	
	668-6085	PREFAB PAV MRK TY C (W) (WORD)	EA	26.000		26.000	
	668-6092	PREFAB PAV MRK TY C (W) (36")(YLD TRI)	EA	28.000		28.000	
	672-6007	REFL PAV MRKR TY I-C	EA	587.000		587.000	
	672-6009	REFL PAV MRKR TY II-A-A	EA	805.000		805.000	
	677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	67,573.000		67,573.000	
	677-6003	ELIM EXT PAV MRK & MRKS (8")	LF	1,677.000		1,677.000	
	677-6007	ELIM EXT PAV MRK & MRKS (24")	LF	146.000		146.000	
	677-6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	7.000		7.000	
	677-6012	ELIM EXT PAV MRK & MRKS (WORD)	EA	7.000		7.000	
	678-6002	PAV SURF PREP FOR MRK (6")	LF	4,740.000		4,740.000	
	678-6004	PAV SURF PREP FOR MRK (8")	LF	1,943.000		1,943.000	
	678-6008	PAV SURF PREP FOR MRK (24")	LF	50.000		50.000	
	678-6009	PAV SURF PREP FOR MRK (ARROW)	EA	4.000		4.000	
	678-6016	PAV SURF PREP FOR MRK (WORD)	EA	4.000		4.000	
	678-6023	PAV SURF PREP FOR MRK (36")(YLD TRI)	EA	10.000		10.000	
	680-6003	INSTALL HWY TRF SIG (SYSTEM)	EA	3.000		3.000	
	680-6004	REMOVING TRAFFIC SIGNALS	EA	1.000		1.000	
	681-6001	TEMP TRAF SIGNALS	EA	2.000		2.000	
	682-6001	VEH SIG SEC (12")LED(GRN)	EA	18.000		18.000	
	682-6002	VEH SIG SEC (12")LED(GRN ARW)	EA	4.000		4.000	
	682-6003	VEH SIG SEC (12")LED(YEL)	EA	24.000		24.000	
	682-6004	VEH SIG SEC (12")LED(YEL ARW)	EA	5.000		5.000	
	682-6005	VEH SIG SEC (12")LED(RED)	EA	18.000		18.000	
	682-6006	VEH SIG SEC (12")LED(RED ARW)	EA	4.000		4.000	
	682-6018	PED SIG SEC (LED)(COUNTDOWN)	EA	16.000		16.000	
	682-6021	BACK PLATE (12")(1 SEC)	EA	2.000		2.000	
	682-6049	BACKPLATE W/REFL BRDR(4 SEC)	EA	1.000		1.000	
	682-6060	BACKPLATE W/REFL BRDR(3 SEC)	EA	21.000		21.000	
	684-6007	TRF SIG CBL (TY A)(12 AWG)(2 CONDR)	LF	2,645.000		2,645.000	
	684-6009	TRF SIG CBL (TY A)(12 AWG)(4 CONDR)	LF	2,725.000		2,725.000	
	684-6010	TRF SIG CBL (TY A)(12 AWG)(5 CONDR)	LF	24.000		24.000	
	684-6012	TRF SIG CBL (TY A)(12 AWG)(7 CONDR)	LF	2,740.000		2,740.000	
	685-6004	INSTL RDSO FLSH BCN ASSM (SOLAR PWRD)	EA	2.000		2.000	
	686-6029	INS TRF SIG PL AM (S)1 ARM(28')	EA	1.000		1.000	



DISTRICT	COUNTY	CCSJ	SHEET
Brownwood	Lampasas	0251-06-036	16E



Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0251-06-036

DISTRICT Brownwood
HIGHWAY US 281

COUNTY Lampasas

CONTROL SECTION JOB				0251-06-036		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00022772			
COUNTY				Lampasas			
HIGHWAY				US 281			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL		
	686-6031	INS TRF SIG PL AM(S)1 ARM(28')LUM	EA	1.000		1.000	
	686-6043	INS TRF SIG PL AM(S)1 ARM(40')LUM	EA	1.000		1.000	
	686-6051	INS TRF SIG PL AM(S)1 ARM(48')LUM	EA	4.000		4.000	
	687-6001	PED POLE ASSEMBLY	EA	9.000		9.000	
	688-6001	PED DETECT PUSH BUTTON (APS)	EA	16.000		16.000	
	688-6003	PED DETECTOR CONTROLLER UNIT	EA	3.000		3.000	
	690-6127	REMOVE LUMINAIRE POLE	EA	6.000		6.000	
	1004-6001	TREE PROTECTION	EA	20.000		20.000	
	3076-6001	D-GR HMA TY-B PG64-22	TON	52,830.000		52,830.000	
	3076-6066	TACK COAT	GAL	16,008.000		16,008.000	
	3080-6007	STONE-MTRX-ASPH SMA-D SAC-A PG76-22	TON	9,340.000		9,340.000	
	3084-6001	BONDING COURSE	GAL	11,685.000		11,685.000	
	6001-6001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	500.000		500.000	
	6007-6036	FO CBL (12 SMF)	LF	1,410.000		1,410.000	
	6007-6050	FO CBL (36 SMF)	LF	7,095.000		7,095.000	
	6007-6089	FO SPLICE ENCLOSURE (TYPE 2)	EA	5.000		5.000	
	6007-6094	FIBER OPTIC FUSION SPLICE	EA	5.000		5.000	
	6016-6013	ITS MULTI-DUCT CND (RMC)	LF	335.000		335.000	
	6058-6001	BBU SYSTEM (EXTERNAL BATT CABINET)	EA	2.000		2.000	
	6158-6001	TMSP RADAR SPEED CONTROL MONITOR	EA	2.000		2.000	
	6185-6002	TMA (STATIONARY)	DAY	460.000		460.000	
	6185-6005	TMA (MOBILE OPERATION)	DAY	90.000		90.000	
	6186-6004	ITS GND BOX(PCAST) TY 1 (243648)W/APRN	EA	40.000		40.000	
	6306-6001	VIVDS PROSR SYS	EA	2.000		2.000	
	6306-6002	VIVDS CAM ASSY FXD LNS	EA	7.000		7.000	
	6306-6005	VIVDS CNTRL SOFTWARE	EA	2.000		2.000	
	6306-6006	VIVDS TEMPORARY	EA	2.000		2.000	
	6306-6007	VIVDS CABLING	LF	1,625.000		1,625.000	
	18	EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000		1.000	
		SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	


US 281 PLAN SHEET NO.	SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS																	
	400 6006	508 6001	662 6001	662 6002	662 6004	662 6012	662 6016	662 6017	662 6029	662 6032	662 6034	662 6061	662 6063	662 6071	662 6075	662 6080	662 6090	662 6091
	CUT AND RESTORING PAV	CONSTRUCTING DETOURS	WV ZN PAV MRK NON-REMOV (W)4"(BRK)	WV ZN PAV MRK NON-REMOV (W)4"(DOT)	WV ZN PAV MRK NON-REMOV (W)4"(SLD)	WV ZN PAV MRK NON-REMOV (W)8"(SLD)	WV ZN PAV MRK NON-REMOV (W)24"(SLD)	WV ZN PAV MRK NON-REMOV (W)(ARROW)	WV ZN PAV MRK NON-REMOV (W)(WORD)	WV ZN PAV MRK NON-REMOV (Y)4"(BRK)	WV ZN PAV MRK NON-REMOV (Y)4"(SLD)	WV ZN PAV MRK REMOV (W)4"(DOT)	WV ZN PAV MRK REMOV (W)4"(SLD)	WV ZN PAV MRK REMOV (W)8"(SLD)	WV ZN PAV MRK REMOV (W)24"(SLD)	WV ZN PAV MRK REMOV (W)(ARROW)	WV ZN PAV MRK REMOV (W)(WORD)	WV ZN PAV MRK REMOV (W)18"(YLDTRI)
	SY	SY	LF	LF	LF	LF	LF	EA	EA	LF	LF	LF	LF	LF	LF	EA	EA	EA
PHASE 1																		
48														111				
49					796								628	787				
50					2200								2200					
51		252			2200								2200					
52	48	681		133	2303	481	44	3	3				1863					
53	28			107	2200								1771					
54	59				2200								2200					
55		240			2200								2200					
56	221	1533			2030					300			2174					
57		315			1599					40	1500	46	290	41	44	2	1	7
58											27	612	248				1	
US 281 PHASE 1 TOTALS	356	3,021	0	240	17,728	481	44	3	3	340	16,736	73	1,800	289	44	2	2	7
PHASE 1A																		
61																		
US 281 PHASE 1A TOTALS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHASE 1B																		
62																		
US 281 PHASE 1B TOTALS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

US 281 PLAN SHEET NO.	SUMMARY OF TRAFFIC CONTROL ITEMS											
	662 6095	662 6109	662 6111	677 6001	677 6003	677 6007	677 6008	677 6012	6001 6001	6158 6001	6185 6002	6185 6005
	WV ZN PAV MRK REMOV (Y)4"(SLD)	WV ZN PAV MRK SHT TERM (TAB) TY W	WV ZN PAV MRK SHT TERM (TAB) TY Y-2	ELIM EXT PAV MRK & MRKS (4")	ELIM EXT PAV MRK & MRKS (8")	ELIM EXT PAV MRK & MRKS (24")	ELIM EXT PAV MRK & MRKS (ARROW)	ELIM EXT PAV MRK & MRKS (WORD)	PORTABLE CHANGEABLE MESSAGE SIGN	TMSP RADAR SPEED CONTROL MONITOR	TMA (STATIONARY)	TMA (MOBILE OPERATION)
	LF	EA	EA	LF	LF	LF	EA	EA	DAY	EA	DAY	DAY
PHASE 1												
48	874			985								
49	1572			3580								
50				3580								
51				3580								
52				3320	510	40						
53				3580								
54				3580								
55				3580								
56				3580								
57	466			2302	30		2	2				
58	580			987	45	40						
US 281 PHASE 1 TOTALS	3,492	0	0	32,654	585	80	2	2	0	0	0	0
PHASE 1A												
61												
US 281 PHASE 1A TOTALS	0	0	0	0	0	0	0	0	0	0	0	0
PHASE 1B												
62												
US 281 PHASE 1B TOTALS	0	0	0	0	0	0	0	0	0	0	0	0

cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcf
 pw:/

1/30/2023 3:24:31 PM skunz


pw:/

NO.	REVISION	BY	DATE
RTG		RODRIGUEZ TRANSPORTATION GROUP FRM #587	
 ©2023 Texas Department of Transportation			
US 281 TRAFFIC CONTROL PLAN SUMMARY OF TCP ITEMS PHASE 1, 1A, 1B			
Designed:	RTG	FED. RD. DIV. NO.	STATE
Checked:	RTG	6	TEXAS
Drawn:	RTG	DIST.	COUNTY
Checked:	RTG	BWD	LAMPASAS
		CONTROL NO.	SECTION NO.
		0251	06
		JOB NO.	SHEET NO.
		036	17

1/31/2023 4:20:39 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfq
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.36 RTG Cut Sheets/TCP_QNTY_09.dgn

US 281 PLAN SHEET NO.	SUMMARY OF TRAFFIC CONTROL ITEMS																	
	400 6006	508 6001	662 6001	662 6002	662 6004	662 6012	662 6016	662 6017	662 6029	662 6032	662 6034	662 6061	662 6063	662 6071	662 6075	662 6080	662 6090	662 6091
	CUT AND RESTORING PAV	CONSTRUCTING DETOURS	WV ZN PAV MRK NON-REMOV (W)4"(BRK)	WV ZN PAV MRK NON-REMOV (W)4"(DOT)	WV ZN PAV MRK NON-REMOV (W)4"(SLD)	WV ZN PAV MRK NON-REMOV (W)8"(SLD)	WV ZN PAV MRK NON-REMOV (W)24"(SLD)	WV ZN PAV MRK NON-REMOV (W)4"(ARROW)	WV ZN PAV MRK NON-REMOV (W)(WORD)	WV ZN PAV MRK NON-REMOV (Y)4"(BRK)	WV ZN PAV MRK NON-REMOV (Y)4"(SLD)	WV ZN PAV MRK REMOV (W)4"(DOT)	WV ZN PAV MRK REMOV (W)4"(SLD)	WV ZN PAV MRK REMOV (W)8"(SLD)	WV ZN PAV MRK REMOV (W)24"(SLD)	WV ZN PAV MRK REMOV (W)(ARROW)	WV ZN PAV MRK REMOV (W)(WORD)	WV ZN PAV MRK REMOV (W)18"(YLDTRI)
SY	SY	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
PHASE 2A																		
63A													979					
63B					1576							311						
63C					2040	360		2	2			2040						
63D					2200							2200						
63E					1460	505	22	1	1			1964						
63F					2188	30						2200						
63G					2200							2200						
63H					2200							2200						
63I					1844	197			1			1938						
63J				64	1358		44	2	1			1535		309	38		1	10
63K			30										1080	162	44	2	1	
US 281 PHASE 2A TOTALS	0	0	30	64	17,066	1,092	66	5	5	0	17,853	0	2,679	200	44	2	2	10
PHASE 2B																		
64																		
65				79	1686							1799						
66				155	2120	400		2	2			2120						
67				185	2200	86						2200						
68				80	1435	630	36	3	2	100		2192						
69				33	2069				1	550		2200						
70					2200					550		2200						
71					2200					550		2200						
72					1832				1	510		1910						
73					1438		48	2	1	340		1615		309				
74																		
US 281 PHASE 2B TOTALS	0	0	0	532	17,180	1,116	84	7	7	2,600	18,436	0	309	0	0	0	0	0
US 281 PROJECT TOTALS	356	3,021	30	836	51,974	2,689	194	15	15	2,940	53,025	73	4,788	489	88	4	4	17

US 281 PLAN SHEET NO.	SUMMARY OF TRAFFIC CONTROL ITEMS											
	662 6095	662 6109	662 6111	677 6001	677 6003	677 6007	677 6008	677 6012	6001 6001	6158 6001	6185 6002	6185 6005
	WV ZN PAV MRK REMOV (Y)4"(SLD)	WV ZN PAV MRK SHT TERM (TAB) TY W	WV ZN PAV MRK SHT TERM (TAB) TY Y-2	ELIM EXT PAV MRK & MRKS (4")	ELIM EXT PAV MRK & MRKS (8")	ELIM EXT PAV MRK & MRKS (24")	ELIM EXT PAV MRK & MRKS (ARROW)	ELIM EXT PAV MRK & MRKS (WORD)	PORTABLE CHANGEABLE MESSAGE SIGN	TMSP RADAR SPEED CONTROL MONITOR	TMA (STATIONARY)	TMA (MOBILE OPERATION)
LF	EA	EA	LF	LF	LF	EA	EA	DAY	EA	DAY	DAY	
PHASE 2A												
63A	526											
63B	622											
63C												
63D												
63E												
63F												
63G												
63H												
63I												
63J	468											
63K	716											
US 281 PHASE 2A TOTALS	2,332	0	0	0	0	0	0	0	0	0	0	0
PHASE 2B												
64												
65				3152								
66				4080	360		2	2				
67				4400								
68				3424	505	22	1	1				
69				4388	30							
70				4400								
71				4400								
72				3782	197			1				
73	468			2893		44	2	1				
74												
US 281 PHASE 2B TOTALS	468	0	0	34,919	1,092	66	5	5	0	0	0	0
US 281 PROJECT TOTALS	6,292	1,850	2,037	67,573	1,677	146	7	7	500	2	460	90

NO.	REVISION	BY	DATE
RTG		RODRIGUEZ TRANSPORTATION GROUP FRM #587	
 ©2023 Texas Department of Transportation			
US 281 TRAFFIC CONTROL PLAN SUMMARY OF TCP ITEMS PHASE 2A & PHASE 2B			
Designed: RTG	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.
Checked: RTG	DIST.	COUNTY	CONTROL NO. SECTION NO. JOB NO.
Drawn: RTG	BWD	LAMPASAS	0251 06 036
Checked: RTG			US 281 SHEET NO. 18



SUMMARY OF EARTHWORK		
LOCATION	0110	0132
	6001	6006
	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL) (DENS CONT) (TY C)
	CY	CY
506+50.00 R1	33	1
507+00.00 R1	62	6
507+50.00 R1	56	16
508+00.00 R1	56	30
508+50.00 R1	65	38
509+00.00 R1	87	41
509+50.00 R1	104	42
0+00.00 R2	115	60
0+50.00 R2	145	76
1+00.00 R2	199	83
1+50.00 R2	227	79
2+00.00 R2	225	51
2+50.00 R2	236	34
3+00.00 R2	221	38
3+50.00 R2	180	53
4+00.00 R2	150	79
4+50.00 R2	137	118
5+00.00 R2	134	131
5+50.00 R2	117	115
6+00.00 R2	102	90
6+50.00 R2	103	82
7+00.00 R2	108	67
7+50.00 R2	120	38
8+00.00 R2	132	29
8+50.00 R2	143	43
9+00.00 R2	90	52
9+50.00 R2	29	74
10+00.00 R2	53	121
10+50.00 R2	85	125
11+00.00 R2	91	97
11+50.00 R2	89	70
12+00.00 R2	85	46
12+50.00 R2	108	26
13+00.00 R2	122	36
13+50.00 R2	102	58
14+00.00 R2	80	76
14+50.00 R2	73	84
15+00.00 R2	51	51
15+50.00 R2	96	19
16+00.00 R2	179	19
16+50.00 R2	193	24
17+00.00 R2	206	19
17+50.00 R2	240	17
18+00.00 R2	181	24
18+50.00 R2	98	23
19+00.00 R2	128	21
19+50.00 R2	149	22
20+00.00 R2	132	46
20+50.00 R2	138	85
21+00.00 R2	182	123
21+50.00 R2	236	109
22+00.00 R2	302	42
22+50.00 R2	295	6
23+00.00 R2	293	2
23+50.00 R2	332	0

SUMMARY OF EARTHWORK		
LOCATION	0110	0132
	6001	6006
	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL) (DENS CONT) (TY C)
	CY	CY
24+00.00 R2	306	0
24+50.00 R2	269	0
25+00.00 R2	230	0
25+50.00 R2	199	0
26+00.00 R2	165	1
26+50.00 R2	117	1
27+00.00 R2	136	0
27+50.00 R2	189	0
28+00.00 R2	212	0
28+50.00 R2	241	0
29+00.00 R2	276	0
29+50.00 R2	317	0
30+00.00 R2	342	1
30+50.00 R2	347	16
31+00.00 R2	257	32
31+50.00 R2	138	33
32+00.00 R2	86	19
32+50.00 R2	39	56
33+00.00 R2	17	156
33+50.00 R2	15	206
34+00.00 R2	12	216
34+50.00 R2	4	329
35+00.00 R2	1	434
35+50.00 R2	2	390
36+00.00 R2	66	298
36+50.00 R2	132	224
37+00.00 R2	127	177
37+50.00 R2	114	137
38+00.00 R2	103	113
38+50.00 R2	107	103
39+00.00 R2	115	91
39+50.00 R2	131	80
40+00.00 R2	104	106
40+50.00 R2	64	180
41+00.00 R2	99	252
41+50.00 R2	118	238
42+00.00 R2	71	209
42+50.00 R2	28	196
43+00.00 R2	31	149
43+50.00 R2	59	125
44+00.00 R2	88	115
44+50.00 R2	101	101
45+00.00 R2	103	110
45+50.00 R2	110	86
46+00.00 R2	127	37
46+50.00 R2	142	19
47+00.00 R2	144	8
47+50.00 R2	145	10
48+00.00 R2	142	23
48+50.00 R2	120	37
49+00.00 R2	95	56
49+50.00 R2	71	83
50+00.00 R2	39	105
50+50.00 R2	13	124
51+00.00 R2	2	126

SUMMARY OF EARTHWORK		
LOCATION	0110	0132
	6001	6006
	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL) (DENS CONT) (TY C)
	CY	CY
51+50.00 R2	2	141
52+00.00 R2	4	214
52+50.00 R2	3	247
53+00.00 R2	0	212
53+50.00 R2	3	184
54+00.00 R2	6	162
54+50.00 R2	6	158
55+00.00 R2	4	169
55+50.00 R2	10	141
56+00.00 R2	21	120
56+50.00 R2	40	91
57+00.00 R2	67	68
57+50.00 R2	132	73
58+00.00 R2	175	50
58+50.00 R2	174	40
59+00.00 R2	178	35
59+50.00 R2	167	36
60+00.00 R2	144	47
60+50.00 R2	119	62
61+00.00 R2	104	68
61+50.00 R2	94	64
62+00.00 R2	98	50
62+50.00 R2	116	69
63+00.00 R2	142	98
63+50.00 R2	163	82
64+00.00 R2	188	64
64+50.00 R2	223	51
65+00.00 R2	244	41
65+50.00 R2	243	35
66+00.00 R2	246	26
66+50.00 R2	258	15
67+00.00 R2	276	4
67+50.00 R2	293	7
68+00.00 R2	291	9
68+50.00 R2	286	7
69+00.00 R2	311	4
69+50.00 R2	319	1
70+00.00 R2	284	3
70+50.00 R2	261	3
71+00.00 R2	251	6
71+50.00 R2	264	5
72+00.00 R2	265	0
72+50.00 R2	279	1
73+00.00 R2	321	3
73+50.00 R2	262	2
74+00.00 R2	180	6
74+50.00 R2	171	10
75+00.00 R2	182	6
75+50.00 R2	197	3
76+00.00 R2	234	1
76+50.00 R2	255	1
77+00.00 R2	226	0
77+50.00 R2	226	2
78+00.00 R2	278	1
78+50.00 R2	302	1

SUMMARY OF EARTHWORK		
LOCATION	0110	0132
	6001	6006
	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL) (DENS CONT) (TY C)
	CY	CY
79+00.00 R2	310	1
79+50.00 R2	301	8
80+00.00 R2	270	28
80+50.00 R2	260	61
81+00.00 R2	297	94
81+50.00 R2	475	75
82+00.00 R2	545	20
82+50.00 R2	360	15
83+00.00 R2	174	76
83+50.00 R2	91	117
84+00.00 R2	91	76
84+50.00 R2	134	70
85+00.00 R2	176	59
85+50.00 R2	191	9
86+00.00 R2	182	1
86+50.00 R2	138	0
87+00.00 R2	95	0
87+50.00 R2	63	1
88+00.00 R2	33	16
88+50.00 R2	28	18
89+00.00 R2	37	5
89+50.00 R2	43	2
PROJECT TOTALS	28405	12316

1/31/2023 12:04:05 PM kperry
 cpw:_ANSIB.tbl
 cpw:_ANSIB.pltcfp
 pw:/

NO.	REVISION	BY	DATE
 TEXAS REGISTERED ENGINEERING FIRM F-1741			
 ©2023 Texas Department of Transportation US 281			
SUMMARY OF EARTHWORK ITEMS			
Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251
Drawn: CPY	SECTION NO. 06	JOB NO. 036	HIGHWAY NO. US 281
Checked: CPY	SHEET NO. 19		

SUMMARY OF REMOVAL ITEMS

SHEET NUMBER	0100	0104	0104	0104	0104	0104	0105**	0105 *	0496	0496	0496	0496	0496	0496	0496	0496	0496
	6007	6015	6017	6022	6036	6044	6033		6002	6004	6006	6007	6008	6031	6043	6093	6099
	PREP ROW (TREE) (GREATER THAN 24" DIA)	REMOVING CONC (SIDEWALKS)	REMOVING CONC (DRIVEWAYS)	REMOVING CONC (CURB AND GUTTER)	REMOVING CONC (SIDEWALK OR RAMP)	REMOVING CONC (FLUME)	REMOVING STB BASE AND ASPH PAV(10-14")	REMOVING STAB BASE & ASPH PAV (4" - 6")	REMOV STR (INLET)	REMOV STR (SET)	REMOV STR (HEADWALL)	REMOV STR (PIPE)	REMOV STR (BOX CULVERT)	REMOV STR (CATTLE GUARD)	REMOV STR (SMALL FENCE)	REMOV STR (MASONRY)	REMOV STR (RAIL)
	EA	SY	SY	LF	SY	SY	SY	SY	EA	EA	EA	LF	LF	EA	LF	LF	LF
CSJ 0251-06-036																	
SHEET 98	6						6,834	407								1,460	
SHEET 99	6						12,484	403		4		200			2,276		
SHEET 100		107				11	14,102	1,313		8		448			739		
SHEET 101	4	1,147	139				10,305	1,255		18		482		1	680	23	300
SHEET 102	8	525	444	2,069	34	16	15,476	2,538	2	18	2	1,158	10		282		
SHEET 103							209										
PROJECT TOTALS	24	1,779	583	2,069	34	27	59,410	5,916	2	48	2	2,288	10	1	5,437	23	300

*FOR CONTRACTOR'S INFORMATION ONLY



**CONTRACTOR TO SALVAGE ALL EXISTING FLEX BASE AND STOCKPILE IT FOR USE IN 6" SUBGRADE

SUMMARY OF REMOVAL ITEMS CON'T

SHEET NUMBER	0542	0544	0644	0690	1004
	6001	6003	6076	6127	6001
	REMOVE METAL BEAM GUARD FENCE	GUARDRAIL END TREATMENT (REMOVE)	REMOVE SM RD SN SUP&AM	REMOVE LUMINAIRE POLE	TREE PROTECTION
	LF	EA	EA	EA	EA
CSJ 0251-06-036					
SHEET 98	125	2	8		3
SHEET 99			5		3
SHEET 100			7		3
SHEET 101			9		
SHEET 102	70	2	25	6	11
SHEET 103	400	2			
PROJECT TOTALS	595	6	54	6	20

SUMMARY OF WALL ITEMS

WALL ID	0110	0132	0403	0420	0420	0450	0459
	6003	6004	6001	6066	6074	6030	6009
	EXCAVATION (SPECIAL)	EMBANKMENT (FINAL) (DENS CONT)(TY B)	TEMPORARY SPL SHORING	CL C CONC (RAIL FOUNDATION)	CL C CONC (MISC)	RAIL (TY C221)	GABIONS (3' X 3') (GALV)
	CY	CY	SF	CY	CY	LF	CY
CSJ 0251-06-036							
GABION RETAINING WALL	716	349	2147	147		414	1202
SIDEWALK INLET CLOSURE WALL					0.3		
PROJECT TOTALS	716	349	2147	147	0.3	414	1202



NO.	REVISION	BY	DATE
 TEXAS REGISTERED ENGINEERING FIRM F-1741			
 ©2023 Texas Department of Transportation US 281			
SUMMARY OF REMOVAL AND WALL ITEMS			
Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251
Drawn: CPY	SECTION NO. 06	JOB NO. 036	HIGHWAY NO. US 281
Checked: CPY	SHEET NO. 20		

1/31/2023 12:04:12 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcf
 pw:/

SUMMARY OF ROADWAY ITEMS

SHEET NUMBER	0100	0251	0275	0310	0420	0432	0432	0432	0450	0450	0450	0528	0529	0529	0529	0529	0529	0530	0530	0530	0530	0531	0531	
	6002	6027	6001	6009	6066	6001	6003	6045	6030	6040	6103	6001	6013	6007	6008	6017	6018	6004	6005	6007	6008	6001	6003	
	PREPARING ROW	REWORK BS MTL (TY B) (6") (DENS CONT)	CEMENT	PRIME COAT (MC-30)	CL C CONC (RAIL FOUNDATION)	RIPRAP (CONC) (4 IN)	RIPRAP (CONC) (6 IN)	RIPRAP (MOW STRIP) (4 IN)	RAIL (TY C221)	RAIL (TY C66)	RAIL (TY PR11)	COLORED TEXTURED CONC (4')	CONC CURB (SPECIAL) (TY II)	CONC CURB & GUTTER (TY I)	CONC CURB & GUTTER (TY II)	CONC CURB (TY F2)	CONC CURB (TY F3)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	TURNOUTS (CONC)	TURNOUTS (ACP)	CONC SIDEWALKS (4')	CONC SIDEWALKS (6')	
	STA	SY	TON	GAL	CY	CY	CY	CY	LF	LF	LF	SY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	SY	
			110 LB/CF @ 2.5%	0.1 GAL/SY																				
CSJ 0251-06-036																								
SHEET 104	3.38																							
SHEET 105	5.50																		473					
SHEET 106	5.00																		169					
SHEET 107	5.00														120				232					
SHEET 108	5.00														1030			207	124			115		
SHEET 109	5.00														1029			133				323		
SHEET 110	5.00														1049			170	111			316		
SHEET 111	5.00				26	10	7	8	169.2			288			1300							563		
SHEET 112	5.00							2				343			1036			153				607		
SHEET 113	5.00									200		61			961							633		
SHEET 114	5.00					4						105			985			335		22		528		
SHEET 115	5.00					31						234			938	129	57	256		15		425	156	
SHEET 116	5.00										42			82	993			233				422	158	
SHEET 117	5.00					1						64			993			166		15		506	119	
SHEET 118	5.00											279			984			547				547		
SHEET 119	5.00	2458	15	244								165		204	788			691		9		403		
SHEET 120	5.00	4230	26	420								212	272	68	1016			361				382		
SHEET 121	5.00	4586	29	457								145	356	133	691			386				425		
SHEET 122	4.67	3806	24	378									261	176	918			466				435		
SHEET 123						5													80					
SHEET 125															79				267		24			
SHEET 126															189									
SHEET 127																		144						
SHEET 128		2312	14	229		4	24	21		26.0					1106							244		
SHEET 129								22		26.0														
PROJECT TOTALS	93.55	17392	108	1728	26	55	31	53	169.2	52.0	621	2134	405	754	16205	129	57	4248	1456	61	24	6874	433	



1/31/2023 6:55:46 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfq
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.02 Summaries/49304RDpsum01.dgn

NO.	REVISION	BY	DATE
 TEXAS REGISTERED ENGINEERING FIRM F-1741			
 ©2023 Texas Department of Transportation US 281			
SUMMARY OF ROADWAY ITEMS			
Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251
Drawn: CPY	SECTION NO. 06	JOB NO. 036	SHR. NO. 21
Checked: CPY	SECTION NO. 06	JOB NO. 036	SHR. NO. 21

SUMMARY OF ROADWAY ITEMS CON'T

SHEET NUMBER	0531	0531	0531	0531	0531	0531	0531	0540	0540	0544	0550	0550	0552	0560	0560	3076	3076	3080	3084	
	6004	6005	6009	6010	6013	6016	6017	6002	6006	6001	6001	6037	6004	6003	6007	6001	6066	6007	6001	
	CURB RAMP (TY 1)	CURB RAMP (TY 2)	CURB RAMP (TY 6)	CURB RAMP (TY 7)	CURB RAMP (TY 10)	CURB RAMP (TY 21)	CURB RAMP (TY 22)	MTL W-BEAM GD FEN (STEEL POST)	MTL BEAM GD FEN TRANS (THRIE BEAM)	GUARDRAIL END TREATMENT (INSTALL)	CHAIN LINK FENCE (INSTALL) (6')	GATE (INSTALL) (DOUBLE)	WIRE FENCE (TY D)	MAILBOX INSTALL-M (TWG-POST) TY 1	MAILBOX INSTALL-S (WC-POST) TY 3	D-GR HMA TY-B PG64-22	TACK COAT	STONE-MTRX- ASPH SMA-D SAC-A PG76-22	BONDING COURSE	
	EA	EA	EA	EA	EA	EA	EA	LF	EA	EA	LF	SF	LF	EA	EA	TON	GAL	TON	GAL	
																113 LB/SY/IN	0.1 GAL/SY	120 LB/SY/IN	0.15 GAL/SY	
CSJ 0251-06-036																				
SHEET 104								125		2						886	273	159	199	
SHEET 105																3352	1032	611	765	
SHEET 106																3079	948	561	703	
SHEET 107																3067	943	556	696	
SHEET 108		2														2573	780	446	558	
SHEET 109																2538	770	440	550	
SHEET 110																2538	770	440	550	
SHEET 111	1	2				1		50	2	2						3234	982	564	705	
SHEET 112					1								54			2782	843	485	606	
SHEET 113					1								489			2538	768	440	550	
SHEET 114											100	288	166		1	2538	770	440	550	
SHEET 115														2	2538	770	440	550		
SHEET 116															2538	770	440	550		
SHEET 117														1	2538	770	440	550		
SHEET 118															2538	770	440	550		
SHEET 119	1		1	2										1	2538	764	440	550		
SHEET 120															2625	797	456	570		
SHEET 121			2	2											2895	882	514	643		
SHEET 122				2											2358	715	408	511		
SHEET 123															484	149	86	108		
SHEET 125														1	403	127	72	91		
SHEET 126															634	200	114	143		
SHEET 127															232		120	152		
SHEET 128	2						2	200	2	2					1384	415	228	285		
SHEET 129								150	2	2										
PROJECT TOTALS	4	4	3	6	2	1	2	525	6	8	100	288	709	1	5	52830	16008	9340	11685	


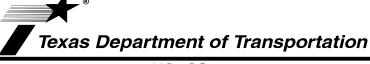
cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcf
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.02 Summaries/49304RDpsum02.dgn
 3/2/2023 8:49:14 AM kperry

NO.	REVISION	BY	DATE
 TEXAS REGISTERED ENGINEERING FIRM F-1741			
 ©2023 Texas Department of Transportation US 281			
SUMMARY OF ROADWAY ITEMS			
Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.
Checked: CPY			US 281
Drawn: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251
Checked: CPY			SECTION NO. 06
			JOB NO. 036
			SHEET NO. 22

SUMMARY OF DRAINAGE ITEMS (CON'T)

DRAINAGE SYSTEM	FROM NODE	TO NODE	0247	0401	0402	0462	0462	0464	0464	0464	0465	0465	0465	0465	0465	0465	0465	0465	0465	0465	0465	0465	0466	0466	0467	0467	0467		
			6053	6001	6001	6001	6004	6005	6007	6032	6014	6015	6016	6018	6019	6020	6023	6024	6034	6036	6071	6060	6076	6126	6183	6206	6389	6395	6543
			FL BS (CMP IN PLC) (TYD GR1-2) (FNAL POS)	FLOWABLE BACKFILL	TRENCH EXCAVATION PROTECTION	CONC BOX CULV (3 FT X 2 FT)	CONC BOX CULV (4 FT X 3 FT)	RC PIPE (CL III) (24 IN)	RC PIPE (CL III) (30 IN)	RC PIPE (CL III) (DES 3)	INLET (COMPL) (PCO) (3FT) (LEFT)	INLET (COMPL) (PCO) (3FT) (RIGHT)	INLET (COMPL) (PCO) (3FT) (BOTH)	INLET (COMPL) (PCO) (4FT) (LEFT)	INLET (COMPL) (PCO) (4FT) (RIGHT)	INLET (COMPL) (PCO) (4FT) (BOTH)	INLET (COMPL) (PCO) (5FT) (LEFT)	INLET (COMPL) (PCO) (5FT) (RIGHT)	INLET (COMPL) (PCO) (5FT) (BOTH)	INLET (COMPL) (PSL) (RC) (4FTX4FT)	INLET (COMPL) (PSL) (SL) (6FTX6FT)	INLET (COMPL) (PSL) (RC) (6FTX6FT)	INLET (COMPL) (PSL) (FG) (3FTX3FT-3 FTX3FT)	WINGWALL (PW-1) (HW=8FT)	WINGWALL (SW-0) (HW=3FT)	SET (TY II) (24 IN) (RCP) (3:1) (P)	SET (TY II) (24 IN) (RCP) (6:1) (P)	SET (TY II) (DES 3) (RCP) (4:1) (P)	
			CY	CY	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
LINE C3	C3-1	OUTLET C2		26				112																					
LINE C3 TOTAL				26				112																					
LINE D1	D1-1	D1-2	20	102	274			269			1																		
LINE D1	D1-2	D1-3	13	56	116			111			1																		
LINE D1	D1-3	D1-4	9	41	95			90						1															
LINE D1	D1-4	PB-D1-01	6	23	51				46					1															
LINE D1	PB-D1-01	PB-D1-02	14	46	72				72																				
LINE D1	PB-D1-02	D1-7	12	63	152				152																				
LINE D1	D1-7	D1-8	10	63	158				153				1																
LINE D1	D1-8	PB-D1-03	13	98	90				85							1													
LINE D1	PB-D1-03	MH-D1-01	1	69	331				331																				
LINE D1	MH-D1-01	OUTLET D1	66	466	380				376											1									
LAT D1-5	D1-5	PB-D1-01	4	12	39			35																					
LAT D1-6	D1-6	PB-D1-02	2	8	26			22																					
LAT D1-9	D1-9	PB-D1-03	1	7	20			15			1																		
LINE D1 TOTAL			171	1054	1804			542	1215		2		1	3						1						2			
LINE D2	D2-1	D2-2	12	77	219			215				1																	
LINE D2	D2-2	D2-3	9	83	250			245				1																	
LINE D2	D2-3	D2-4	15	102	230			225				1																	
LINE D2	D2-4	D2-5	8	68	180			175				1																	
LINE D2	D2-5	D2-6	13	98	242			237				1																	
LINE D2	D2-6	D2-7	11	61	105			100				1																	
LINE D2	D2-7	PB-D2-01	11	90	84			79																					
LINE D2	PB-D2-01	PB-D2-03	14	111	84			84				1																	
LINE D2	PB-D2-03	PB-D2-02	18	142	108			108																					
LINE D2	PB-D2-02	D2-11	15	109	109			109																					
LINE D2	D2-11	D2-12		510	42				37																				
LINE D2	D2-12	OUTLET D2		248	23				18																				
LAT D2-8	D2-8	PB-D2-01	2	18	17			12			1																		
LAT D2-8A	D2-8A	PB-D2-03	2	18	17			12				1																	
LAT D2-9	D2-9	D2-10		4	23			19				1																	
LAT D2-9	D2-10	PB-D2-02	2	16	15			12																					
LINE D2 TOTAL			132	1755	1748			1632	55		1	8	1		2														
LINE D3	D3-1	PB-D3-01	1	4	18			15				1																	
LINE D3	PB-D3-01	D3-2	12	41	66			72																					
LINE D3	D3-2	PB-D3-02		1				3				1																	
LINE D3	PB-D3-02	OUTLET D3		7				30																					
LINE D3 TOTAL			13	53	84			120				1	1																
LINE D4	D4-1	D4-2		4	24			19																					
LINE D4	D4-2	D4-3	13	59	195			190				1																	
LINE D4	D4-3	OUTLET D4	35	184	360			355					1																
LINE D4 TOTAL			48	247	579			564				1	1																
SHEET TOTALS			364	3135	4215			2970	1270		4	10	4	3	2	1													

cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcf
 pw://
 1/31/2023 12:04:38 PM kperry
 pw://

NO.	REVISION	BY	DATE
 TEXAS REGISTERED ENGINEERING FIRM F-1741			
 ©2023 Texas Department of Transportation US 281			
SUMMARY OF DRAINAGE ITEMS			
Designed:	CPY	FED. RD. DIV. NO.	STATE
Checked:	CPY	6	TEXAS
Drawn:	CPY	DIST.	COUNTY
Checked:	CPY	BWD	LAMPASAS
		CONTROL NO.	SECTION NO.
		0251	06
		JOB NO.	SHEET NO.
		036	24



SUMMARY OF DRAINAGE ITEMS (CON'T)

DRAINAGE SYSTEM	FROM NODE	TO NODE	0247	0401	0402	0462	0462	0464	0464	0464	0465	0465	0465	0465	0465	0465	0465	0465	0465	0465	0465	0465	0466	0466	0467	0467	0467				
			6053	6001	6001	6001	6004	6005	6007	6032	6014	6015	6016	6018	6019	6020	6023	6024	6034	6036	6071	6060	6076	6126	6183	6206	6389	6395	6543		
			FL BS (CMP IN PLC) (TYD GR1-2) (FNAL POS)	FLOWABLE BACKFILL	TRENCH EXCAVATION PROTECTION	CONC BOX CULV (3 FT X 2 FT)	CONC BOX CULV (4 FT X 3 FT)	RC PIPE (CL III) (24 IN)	RC PIPE (CL III) (30 IN)	RC PIPE (CL III) (DES 3)	INLET (COMPL) (PCO) (3FT) (LEFT)	INLET (COMPL) (PCO) (3FT) (RIGHT)	INLET (COMPL) (PCO) (3FT) (BOTH)	INLET (COMPL) (PCO) (4FT) (LEFT)	INLET (COMPL) (PCO) (4FT) (RIGHT)	INLET (COMPL) (PCO) (4FT) (BOTH)	INLET (COMPL) (PCO) (5FT) (LEFT)	INLET (COMPL) (PCO) (4FT) (BOTH)	INLET (COMPL) (PCU) (4FT) (LEFT)	INLET (COMPL) (PCU) (4FT) (BOTH)	INLET (COMPL) (PSL) (RC) (4FTX4FT)	INLET (COMPL) (PSL) (SL) (6FTX6FT)	INLET (COMPL) (PSL) (RC) (6FTX6FT)	INLET (COMPL) (PSL) (FG) (3FTX3FT-3 FTX3FT)	WINGWALL (PW-1) (HW=8FT)	WINGWALL (SW-0) (HW=3FT)	SET (TY II) (24 IN) (RCP) (3:1) (P)	SET (TY II) (24 IN) (RCP) (6:1) (P)	SET (TY II) (DES 3) (RCP) (4:1) (P)		
			CY	CY	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA		
LINE D5	MH-D5-01	D5-3		633	56				46																						
LINE D5	D5-3	D5-4		895	70				65																						
LINE D5	D5-4	D5-5		482	40				35																						
LINE D5	D5-5	D5-6	13	32	110				105																						
LINE D5	D5-6	D5-7	8	26	110				105																						
LINE D5	D5-7	D5-8	16	23	92				87																						
LINE D5	D5-8	D5-9	19	39	107				102																						
LINE D5	D5-9	OUTLET D5	2	7	18				12																						
LINE D5 TOTAL			58	2137	603				557						4			2	1	1											
CULVERT A1			2	6						24																					2
CULVERT A2			10	49					136																						4
CULVERT A3			6	26					80																						4
CULVERT A4			13	64	20				176																						4
CULVERT A5			8	72					168																						6
CULVERT A6			12	94					192																						6
CULVERT A7			25	169					384																						6
CULVERT A8			3	13					56																						2
CULVERT A9			3	16					48																						4
SHEET TOTALS			140	2646	623				1240	557	24				4			2	1	1							4	32	2		
PROJECT TOTALS			676	7405	9011	483	674	9131	1827	24	13	16	10	3	2	5	1	2	2	1	2	1	1	8	1	1	5	32	2		

SUMMARY OF CULVERT ITEMS



SHEET NUMBER	0247	0401	0402	0420	0420	0432	0432	0462	0462	0462	0466	0466	0466	0466	0467	0467	0480
	6053	6001	6001	6054	6074	6002	6031	6003	6004	6075	6171	6173	6178	6207	6148	6154	6001
	FL BS (CMP IN PLC) (TYD GR1-2) (FNAL POS)	FLOWABLE BACKFILL	TRENCH EXCAVATION PROTECTION	CL C CONC (HEADWALL)	CL C CONC (MISC)	RIPRAP (CONC) (5 IN)	RIPRAP (STONE PROTECTION) (12 IN)	CONC BOX CULV (4 FT X 2 FT)	CONC BOX CULV (4 FT X 3 FT)	CONC BOX CULV (10 FT X 7 FT) (EXTEND)	WINGWALL (PW - 1) (HW=10 FT)	WINGWALL (PW - 1) (HW=12 FT)	WINGWALL (PW - 1) (HW=3 FT)	WINGWALL (SW - 0) (HW=4 FT)	SET (TY I) (S= 4 FT) (HW= 5 FT) (3:1) (C)	SET (TY I) (S= 4 FT) (HW= 6 FT) (3:1) (C)	CLEAN EXIST CULVERTS
	CY	CY	LF	CY	CY	CY	CY	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA
CSJ 0251-06-036																	
CULVERT 1 - SHEET 184				15.2													1
CULVERT 2 - SHEET 185	23	23	42			3.1	10.9	90					1		1		
CULVERT 4 - SHEET 186	29	66	87			5.5		114					1		1		
CULVERT 5 - SHEET 187	7	14			13.4	16.5				13	1	1					1
PROJECT TOTALS																	
	59	103	129	15.2	13.4	25.1	10.9	90	114	13	1	1	1	1	1	1	2

cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/

NO.	REVISION	BY	DATE
 TEXAS REGISTERED ENGINEERING FIRM F-1741			
 ©2023 Texas Department of Transportation US 281			
SUMMARY OF DRAINAGE ITEMS			
Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251
Drawn: CPY	SECTION NO. 06	JOB NO. 036	SHEET NO. 25
Checked: CPY	SHEET 3 OF 3		

ITEM	CODE	DESCRIPTION	UNITS	US 281 AT STA 16+00	US 281 AT LAMPASAS HIGH SCHOOL	US 281 AT PLUM STREET (US 281 BUS)	US 281 AT NARUNA RD	TOTAL
0416	6031	DRILL SHAFT (TRF SIG POLE) (30 IN)	LF			11	11	22
0416	6032	DRILL SHAFT (TRF SIG POLE) (36 IN)	LF			39	26	65
0618	6046	CONDT (PVC) (SCH 80) (2")	LF		60	185	170	415
0618	6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF			455	105	560
0618	6053	CONDT (PVC) (SCH 80) (3")	LF		15	230	315	560
0618	6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF		200	905	655	1760
0620	6007	ELEC CONDR (NO. 8) BARE	LF		260	1535	780	2575
0620	6009	ELEC CONDR (NO. 6) BARE	LF		15	340	20	375
0620	6010	ELEC CONDR (NO. 6) INSULATED	LF		25	990	35	1050
0621	6005	TRAY CABLE (4 CONDR) (12 AWG)	LF			870	315	1185
0624	6010	GROUND BOX TY D (162922)W/ APRON	EA		1	5	4	10
0628	6145	ELC SRV TY D 120/240 060(NS)SS(E)SP(O)	EA		1		1	2
0628	6146	ELC SRV TY D 120/240 060(NS)SS(E)SP(U)	EA			1		1
0628	6307	ELC SRV TY T 120/240 000(NS)GS(N)SP(O)	EA			1		1
0680	6003	INSTALL HWY TRF SIG (SYSTEM)	EA		1	1	1	3
	*	NEMA TS2 TYPE 2 SIGNAL CONTROLLER	EA			1	1	2
	*	NEMA TS2 SIGNAL CABINET	EA			1	1	2
	*	TRF SIG CONTROLLER CONCRETE BASEPAD FOUNDATION	EA			1	1	2
	*	ROD, 5/8" X 10' COPPER GROUND (CONTROLLER ONLY)	EA			1	1	2
	*	LED LUMINAIRE (250 WATT EQUIVALENT)	EA			4	2	6
	*	MAST ARM, 8' LUMINAIRE	EA			4	2	6
	*	CONTROLLER POWER SUPPLY	EA			1	1	2
	*	DETECTOR CARD RACK/UNIT	EA			1	1	2
	*	CONTROL, PHOTOELECTRIC	EA			1	1	2
	*	SIGN, REGULATORY (36" X 36") (W3-3)	EA	1				1
	*	SIGN, REGULATORY (30" X 30") (R3-8 MOD)	EA		1			1
	*	SIGN, REGULATORY (36" X 42") (R10-17T)	EA				1	1
	*	SIGN, STREET NAME (U. S. 281)	EA			2		2
	*	SIGN, STREET NAME (U. S. 281 BUS)	EA			2		2
	*	SIGN, STREET NAME (NARUNA RD)	EA				2	2
0680	6004	REMOVING TRAFFIC SIGNALS	EA			1		1
0681	6001	TEMP TRAF SIGNALS	EA		1	1		2
	*	POLE, 50' WOOD POLE	EA		4	4		8
	*	CONDT (RM) (3")	LF		210	30		240
	*	CONDT (PVC) (SCH 80) (3")	LF		190			190
	*	ELEC CONDR (NO. 8) BARE	LF		210	65		275
	*	ELEC CONDR (NO. 6) BARE	LF		190	65		255
	*	ELEC CONDR (NO. 6) INSULATED	LF		570	365		935
	*	TEMP POLE MOUNTED, FULLY-ACTUATED CONTROLLER CABINET	EA		1	1		2
	*	SIGNAL HEAD (1W-3S) 12" LENS HORIZONTAL (RYG)	EA		6	8		14
	*	SIGNAL HEAD (1W-3S) 12" LENS HORIZONTAL (RAYAGA)	EA			2		2
	*	SIGNAL HEAD (1W-3S) 12" LENS VERTICAL (RYG)	EA		1			1
	*	SIGNAL HEAD (1W-5S) 12" LENS HORIZONTAL (RYAGAG)	EA		1			1
	*	BACKPLATE W/REFL BRDR (3 SEC)	EA		7	10		17
	*	BACKPLATE W/REFL BRDR (5 SEC)	EA		1			1
	*	TRAY CABLE (4 CONDR) (12 AWG)	LF			910		910
	*	TRF SIG CBL (TY A) (12 AWG) (7 CONDR)	LF		925	910		1835
	*	ROD, 5/8" X 8' COPPER GROUND	EA		1	1		2
	*	GALVANIZED GUARD, GUY WIRE	EA		8	8		16
	*	WIRE, 1/4" GALV. GUY (HIGH STRENGTH)	LF		350	630		980
	*	WIRE, 5/8" GALV. GUY (HIGH STRENGTH)	LF		350	630		980
	*	8" - 4 WAY EXPANDING ANCHOR	EA		2	2		4
	*	8' LUMINAIRE ARM	EA			4		4
	*	250 W HPS EQUIVALENT LED LUMINAIRE	EA			4		4
	*	SIGN, STREET NAME (U. S. 281)	EA			2		2
	*	SIGN, STREET NAME (U. S. 281 BUS)	EA			2		2
	*	SIGN, REGULATORY (30" X 36") (R10-10L)	EA			2		2
	*	SIGN, REGULATORY (30" X 36") (R10-12)	EA			2		2
0682	6001	VEH SIG SEC (12")LED (GRN)	EA		2	10	6	18
0682	6002	VEH SIG SEC (12")LED (GRN ARW)	EA		1	2	1	4
0682	6003	VEH SIG SEC (12")LED (YEL)	EA	2	2	10	6	20
0682	6004	VEH SIG SEC (12")LED (YEL ARW)	EA		1	2	2	5
0682	6005	VEH SIG SEC (12")LED (RED)	EA		2	10	6	18
0682	6006	VEH SIG SEC (12") LED (RED ARW)	EA		1	2	1	4
0682	6018	PED SIG SEC (LED) (COUNTDOWN)	EA		4	8	4	16
0682	6021	BACK PLATE (12") (1 SEC)	EA	2				2
0682	6049	BACKPLATE W/REFL BRDR (4 SEC)	EA				1	1
0682	6060	BACKPLATE W/REFL BRDR (3 SEC)	EA		3	12	6	21
0684	6007	TRF SIG CBL (TY A) (12 AWG) (2 CONDR)	LF		530	1530	585	2645
0684	6009	TRF SIG CBL (TY A) (12 AWG) (4 CONDR)	LF		550	1570	605	2725
0684	6012	TRF SIG CBL (TY A) (12 AWG) (7 CONDR)	LF			1830	910	2740
0686	6029	INS TRF SIG PL AM(S)1 ARM(28')	EA				1	1
0686	6031	INS TRF SIG PL AM(S)1 ARM(28') LUM	EA			1		1
0686	6043	INS TRF SIG PL AM(S)1 ARM(40') LUM	EA			1		1
0686	6051	INS TRF SIG PL AM(S)1 ARM(48') LUM	EA			2		2
0687	6001	PED POLE ASSEMBLY	EA		3	4	2	9
	*	DRILL SHAFT (24 IN)	LF		18	24	12	54
0688	6001	PED DETECT PUSH BUTTON (APS)	EA		4	8	4	16
	*	SIGN, PEDESTRIAN PUSHBUTTON (SYMBOL TYPE) (9" X 15") (R10-3e) (L)	EA		1	4	3	8
	*	SIGN, PEDESTRIAN PUSHBUTTON (SYMBOL TYPE) (9" X 15") (R10-3e) (R)	EA		3	4	1	8
0688	6003	PED DETECTOR CONTROLLER UNIT	EA		1	1	1	3
6058	6001	BBU SYSTEM (EXTERNAL BATT CABINET)	EA			1	1	2
6306	6001	VIVDS PROSR SYS	EA			1	1	2
6306	6002	VIVDS CAM ASSY FXD LNS	EA			4	3	7
6306	6005	VIVDS CNTRL SOFTWARE	EA			1	1	2
6306	6006	VIVDS TEMPORARY	EA		1	1		2
	*	VIVDS PROCESSOR SYSTEM	EA		1	1		2
	*	VIVDS CAMERA ASSEMBLY	EA		3	4		7
	*	VIVDS SET-UP SYSTEM	EA		1	1		2
	*	VIVDS COMMUNICATION CABLE (COAXIAL)	LF		415	545		960
	*	VIVDS POWER CABLE (3/C - #16)	LF		415	545		960
6306	6007	VIVDS CABLING	LF			1025	600	1625

* MATERIALS SUBSIDIARY TO PERTINENT ITEMS

NO.	REVISION	BY	DATE
			
			
US 281 SUMMARY OF TRAFFIC SIGNAL QUANTITIES			
Designed:	KHA	FED. RD. DIV. NO.	STATE
Checked:	KHA	6	TEXAS
Drawn:	KHA	DIST.	COUNTY
Checked:	KHA	BWD	LAMPASAS
		CONTROL NO.	SECTION NO.
		0251	06
		JOB NO.	SHEET NO.
		036	26

1/30/2023 13:03:57
 Justin.Kinne
 pw:/



cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcf
 pw:/

Justin.Kinne

1/30/2023 13:04:09

pw:/

US 281 ROADWAY FIBER QUANTITIES									
TXDOT SPEC ITEM #	0620 6002	6007 6036	6007 6050	6007 6089	6007 6094	0618 6029	0618 6030	6016 6013	6186 6004
ITEM DESCRIPTION	ELEC CONDR (NO.14) INSULATED	FO CBL (12 SMF)	FO CBL (36 SMF)	FO SPLICE ENCLOSURE (TYPE 2)	FIBER OPTIC FUSION SPLICE	CONDT (PVC) (SCH 40) (3")	CONDT (PVC) (SCH 40) (3") (BORE)	ITS MULTI-DUCT CND (RMC)	ITS GND BOX(PCAST) TY 1 (243648)W/ APRN
UNITS	LF	LF	LF	EA	EA	LF	LF	LF	EA
US 281 FIBER SHEETS									
FIBER LAYOUT, BEGIN TO 50+00 (SHEET 1 OF 5)	1965	20	1755	1	1	1700	265		9
FIBER LAYOUT, STA 50+00 TO 70+00 (SHEET 2 OF 5)	2015		2015			1805	210		6
FIBER LAYOUT, STA 70+00 TO 90+00 (SHEET 3 OF 5)	2340	960	1380	2	2	1940	400		8
FIBER LAYOUT, STA 90+00 TO END (SHEET 4 OF 5)	375	375		1	1	175	200		3
FIBER LAYOUT, US 281 BUSINESS (SHEET 5 OF 5)	2000	55	1945	1	1	1055	610	335	14
TOTAL	8695	1410	7095	5	5	6675	1685	335	40

NO.	REVISION	BY	DATE
			
			
US 281 SUMMARY OF FIBER QUANTITIES			
Designed:	KHA	FED. RD. DIV. NO.	STATE
Checked:	KHA	6	TEXAS
Drawn:	KHA	DIST.	COUNTY
Checked:	KHA	BWD	LAMPASAS
		CONTROL NO.	SECTION NO.
		0251	06
		JOB NO.	SHEET NO.
		036	27



cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcf
 pw:/

Justin.Kinne

1/30/2023 13:04:17

pw:/

US 281 ROADWAY ILLUMINATION QUANTITIES								
TXDOT SPEC ITEM #	0416 6029	0610 6290	0618 6023	0618 6024	0620 6007	0620 6008	0624 6002	0628 6045
ITEM DESCRIPTION	DRILL SHAFT (RDWY ILL POLE) (30 IN)	IN RD IL (TY SA) 50T-12 (400W EQ) LED	CONDT (PVC) (SCH 40) (2")	CONDT (PVC) (SCH 80) (2") (BORE)	ELEC CONDR (NO.8) BARE	ELEC CONDR (NO.8) INSULATED	GROUND BOX TY A (122311)W/ APRON	ELC SRV TY A 240/480 060(NS)SS(E)SP(O)
UNITS	LF	EA	LF	LF	LF	LF	EA	EA
US 281 ILLUMINATION SHEETS								
ILLUMINATION LAYOUT, END TO 50+00 (SHEET 1 OF 3)	80	8	1445	170	1665	3330	2	
ILLUMINATION LAYOUT, STA 50+00 TO 70+00 (SHEET 2 OF 3)	100	10	1810	315	2200	4640	4	1
ILLUMINATION LAYOUT, STA 70+00 TO BEGIN (SHEET 3 OF 3)	120	12	1470	790	2350	4700	7	
TOTAL	300	30	4,725	1,275	6,215	12,670	13	1

NO.	REVISION	BY	DATE
			
			
US 281 SUMMARY OF ILLUMINATION QUANTITIES			
Designed:	KHA	FED. RD. DIV. NO.	STATE
Checked:	KHA	6	TEXAS
Drawn:	KHA	DIST.	COUNTY
Checked:	KHA	BWD	LAMPASAS
		CONTROL NO.	SECTION NO.
		0251	06
		JOB NO.	SHEET NO.
		036	28

SUMMARY OF LIGHT POLE DETAILS

POLE NO.	POLE LOCATIONS			WATT	TYPE	POLE/FIXTURE STANDARD TYPE	30" DRILLED SHAFT LENGTH (FT)
	ROADWAY	STATION	OFFSET				
A-01	US 281	66+29.72	47.00' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
A-02	US 281	68+29.72	47.00' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
A-03	US 281	70+29.72	47.00' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
A-04	US 281	72+29.72	47.00' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
A-05	US 281	74+29.72	47.00' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
A-06	US 281	76+32.03	47.00' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
A-07	US 281	78+33.88	47.00' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
A-08	US 281	80+27.2	59.00' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
A-09	US 281	81+08.40	67.14' LT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
A-10	US 281	83+24.57	57.21' LT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
A-11	US 281	84+27.32	47.00' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
A-12	US 281	86+32.94	47.00' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
A-13	US 281	88+32.57	43.00' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
A-14	US 281	90+46.20	47.00' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
B-01	US 281	63+98.05	43.00' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
B-02	US 281	61+77.14	43.27' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
B-03	US 281	60+18.38	43.21' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
B-04	US 281	58+29.69	43.47' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
B-05	US 281	56+29.55	43.33' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
B-06	US 281	54+29.62	43.00' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
B-07	US 281	52+29.67	43.62' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
B-08	US 281	50+29.65	43.36' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
B-09	US 281	48+29.54	43.00' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
B-10	US 281	46+36.90	43.00' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
B-11	US 281	44+28.46	43.00' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
B-12	US 281	42+28.45	43.00' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
B-13	US 281	40+46.00	43.00' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
B-14	US 281	38+28.56	47.00' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
B-15	US 281	36+28.54	47.00' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10
B-16	US 281	34+50.48	49.00' RT	400-EQ	LED	IN RD IL AM (TY SA) 50T-12 (400W EQ); LED	10

SUMMARY OF CONDUIT AND CONDUCTORS

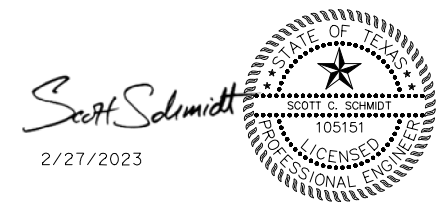
CONDUIT RUN NO.	CIRCUITS CONTAINED IN RUN	RUN LENGTH (FEET)	GROUND SIZE & LENGTH (FT)			CONDUCTOR SIZE & LENGTH (FT)			CONDUIT SIZE & LENGTH (FT)		
			NO. 8 BARE	NO. 6 BARE	NO. 4 BARE	NO. 8 INSULATED	NO. 6 INSULATED	NO. 4 INSULATED	2" PVC SCHD 40 (TRENCH)	2" PVC SCHD 80 (BORE)	2" RM CONDUIT
1	A, B	15	20			80			15		
2	A, B	95	100			400				95	
3	A	105	110			220			105		
4	A	200	205			410			150	50	
5	A	200	205			410			160	40	
6	A	200	205			410			125	75	
7	A	200	205			410			175	25	
8	A	200	205			410			160	40	
9	A	200	205			410			160	40	
10	A	180	185			370			180		
11	A	40	45			90			40		
12	A	110	115			230				110	
13	A	50	55			110			50		
14	A	200	205			410				200	
15	A	115	120			240				115	
16	A	15	20			40			15		
17	A	90	95			190				90	
18	A	40	45			90			40		
19	A	200	205			410			200		
20	A	200	205			410			155	45	
21	A	155	160			320			155		
22	A	50	55			110				50	
23	A	15	20			40			15		
24	B	130	135			270			130		
25	B	225	230			460			225		
26	B	160	165			330			160		
27	B	190	195			390			190		
28	B	55	60			120			55		
29	B	70	75			150				70	
30	B	80	85			170			80		
31	B	200	205			410			160	40	
32	B	200	205			410			180	20	
33	B	200	205			410			200		
34	B	200	205			410			175	25	
35	B	195	200			400			175	20	
36	B	210	215			430			190	20	
37	B	205	210			420			205		
38	B	55	60			120			55		
39	B	60	65			130				60	
40	B	75	80			160			75		
41	B	225	230			460			180	45	
42	B	205	210			420			205		
43	B	185	190			380			185		
SUBTOTALS			6215	0	0	12670	0	0	4725	1275	0

SUMMARY OF GROUND BOXES

SHEET NO.	GROUND BOX #	GROUND BOX DESCRIPTION	CHAIN	STATION	SIDE
ILLUMINATION LAYOUT SHEET 1 OF 3	GB 1	GROUND BOX TY A	US 281	41+19.65	RIGHT
ILLUMINATION LAYOUT SHEET 1 OF 3	GB 2	GROUND BOX TY A	US 281	41+78.64	RIGHT
ILLUMINATION LAYOUT SHEET 2 OF 1	GB 3	GROUND BOX TY A	US 281	57+08.66	RIGHT
ILLUMINATION LAYOUT SHEET 2 OF 2	GB 4	GROUND BOX TY A	US 281	57+75.47	RIGHT
ILLUMINATION LAYOUT SHEET 2 OF 3	GB 5	GROUND BOX TY A	US 281	65+26.01	LEFT
ILLUMINATION LAYOUT SHEET 2 OF 3	GB 6	GROUND BOX TY A	US 281	65+26.01	RIGHT
ILLUMINATION LAYOUT SHEET 3 OF 3	GB 7	GROUND BOX TY A	US 281	80+68.97	RIGHT
ILLUMINATION LAYOUT SHEET 3 OF 3	GB 8	GROUND BOX TY A	US 281	80+68.32	LEFT
ILLUMINATION LAYOUT SHEET 3 OF 3	GB 9	GROUND BOX TY A	US 281	82+87.95	RIGHT
ILLUMINATION LAYOUT SHEET 3 OF 3	GB 10	GROUND BOX TY A	US 281	83+02.44	LEFT
ILLUMINATION LAYOUT SHEET 3 OF 3	GB 11	GROUND BOX TY A	US 281	83+85.53	RIGHT
ILLUMINATION LAYOUT SHEET 3 OF 3	GB 12	GROUND BOX TY A	US 281	89+85.50	RIGHT
ILLUMINATION LAYOUT SHEET 3 OF 3	GB 13	GROUND BOX TY A	US 281	90+32.98	RIGHT

ELECTRICAL SERVICE DATA

ELECTRICAL SERVICE POLE	SHEET NO.	ELECTRICAL SERVICE DESCRIPTION (SEE ED(5) -14)	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN CKT. BRK. POLE/AMP	TWO-POLE CONTACTOR AMPS	PANELBD/LOADCENTER AMP RATING	CIRCUIT NO.	BRANCH CKT. BKR. POLE/AMPS	BRANCH CIRCUIT AMPS	KVA LOAD
ES-1	283	ELC SRV TY A 240/480 060 (NS)SS(E)SP(O)	1 1/4"	3/#6	N/A	2P/60	2P/ 60	N/A	A B	2P/20 2P/20	7.28 8.32	7.5



NO.	REVISION	BY	DATE

Kimley»Horn F-928

©2023 Texas Department of Transportation

US 281
ILLUMINATION SUMMARY

Designed: KHA	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.			HIGHWAY NO. US 281
Checked: KHA	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06	JOB NO. 036	SHEET NO. 29

2/27/2023 17:27:37 Justin.Kinne
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfp
 pw:/

VOLTAGE DROP: CIRCUIT A

RUN NO.	CURRENT THIS RUN	ADDTN'L BRANCH CURRENT IF ANY	DISTANCE TO NEXT RUN	WIRE SIZE A.W.G.	WIRE RESISTANCE	CURRENT RUNNING TOTAL	VOLTAGE DROP	RUNNING TOTAL VOLTAGE DROP
	[AMPS]	[AMPS]	[FEET]	[NO.]	[OHMS/FEET]	[AMPS]	[VOLTS]	[VOLTS]
23	0.52		15	8	0.001308	0.52	0.01	0.01
22	0.52		50	8	0.001308	0.52	0.03	0.03
21	0.52		155	8	0.001308	0.52	0.11	0.11
20	0.52		200	8	0.001308	1.04	0.27	0.38
19	0.52		200	8	0.001308	1.56	0.41	0.79
18+17+16+15+14+13+12+11	0.52	1.04	660	8	0.001308	3.12	2.69	3.48
10	0.52		180	8	0.001308	3.64	0.86	4.34
9	0.52		200	8	0.001308	4.16	1.09	5.42
8	0.52		200	8	0.001308	4.68	1.22	6.65
7	0.52		200	8	0.001308	5.20	1.36	8.01
6	0.52		200	8	0.001308	5.72	1.50	9.51
5	0.52		200	8	0.001308	6.24	1.63	11.14
4	0.52		200	8	0.001308	6.76	1.77	12.91
3+2+1	0.52		215	8	0.001308	7.28	2.05	14.95

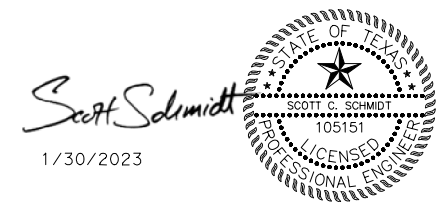
VOLTAGE DROP: CIRCUIT B

RUN NO.	CURRENT THIS RUN	ADDTN'L BRANCH CURRENT IF ANY	DISTANCE TO NEXT RUN	WIRE SIZE A.W.G.	WIRE RESISTANCE	CURRENT RUNNING TOTAL	VOLTAGE DROP	RUNNING TOTAL VOLTAGE DROP
	[AMPS]	[AMPS]	[FEET]	[NO.]	[OHMS/FEET]	[AMPS]	[VOLTS]	[VOLTS]
43	0.52		185	8	0.001308	0.52	0.13	0.13
42	0.52		205	8	0.001308	1.04	0.28	0.40
41	0.52		225	8	0.001308	1.56	0.46	0.86
40	0.52		75	8	0.001308	2.08	0.20	1.07
39	0.52		60	8	0.001308	2.60	0.20	1.27
38	0.52		55	8	0.001308	3.12	0.22	1.50
37	0.52		205	8	0.001308	3.64	0.98	2.47
36	0.52		210	8	0.001308	4.16	1.14	3.62
35	0.52		195	8	0.001308	4.68	1.19	4.81
34	0.52		200	8	0.001308	5.20	1.36	6.17
33	0.52		200	8	0.001308	5.72	1.50	7.67
32	0.52		200	8	0.001308	6.24	1.63	9.30
31	0.52		200	8	0.001308	6.76	1.77	11.07
28+29+30	0.52		200	8	0.001308	7.28	1.90	12.97
27	0.52		190	8	0.001308	7.80	1.94	14.91
26	0.52		160	8	0.001308	8.32	1.74	16.65
25	0.52		225	8	0.001308	8.84	2.60	19.25
24+2+1	0.52		240	8	0.001308	9.36	2.94	22.19

cpybw_ANSIB.tbl
cpypdf_ANSIB.pltcfp
pw:/

Justin.Kinne

1/30/2023 13:04:31



NO.	REVISION	BY	DATE
US 281 ILLUMINATION SUMMARY			
Designed:	KHA	FED. RD. DIV. NO.	STATE
Checked:	KHA	6	TEXAS
Drawn:	KHA	DIST.	COUNTY
Checked:	KHA	BWD	LAMPASAS
		CONTROL NO.	SECTION NO.
		0251	06
		JOB NO.	SHEET NO.
		036	30

SUMMARY OF PAVEMENT MARKING ITEMS



SHEET NUMBER	0533	0666	0666	0666	0666	0666	0666	0666	0668	0668	0668	0668	0672	0672	0678	0678	0678	0678	0678	0678
	6001	6018	6036	6048	6306	6309	6318	6321	6077	6078	6085	6092	6007	6009	6002	6004	6008	6009	6016	6023
	RUMBLE STRIPS (SHOULDER)	REFL PAV MRK TY I (W)6"(DOT)(100MIL)	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	PREFAB PAV MRK TY C (W) (ARROW)	PREFAB PAV MRK TY C (W) (DBL ARROW)	PREFAB PAV MRK TY C (W) (WORD)	PREFAB PAV MRK TY C (W) (36") (YLD TRI)	REFL PAV MRKR TY I-C	REFL PAV MRKR TY II-A-A	PAV SURF PREP FOR MRK (6")	PAV SURF PREP FOR MRK (8")	PAV SURF PREP FOR MRK (24")	PAV SURF PREP FOR MRK (ARROW)	PAV SURF PREP FOR MRK (WORD)	PAV SURF PREP FOR MRK (36") (YLD TRI)
	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	LF	LF	LF	EA	EA	EA
CSJ 0251-06-036																				
SHEET 288	2616		445	23	1007	2708	233	5280	6		2		73	169	3378					
SHEET 289	780		349		1000	1200	800	4000	3		1		67	120						
SHEET 290		17	1464	318	930		644	4340	8	1	6	6	120	140	150	150				
SHEET 291			205		1000		873	4000	3		1		60	113						
SHEET 292			2571	774	823		143	4425	16		12	12	170	222						
SHEET 293			1826	50	106		106	1038	4		4	10	97	41	1212	1793	50	4	4	10
PROJECT TOTALS	3396	17	6860	1165	4866	3908	2799	23083	40	1	26	28	587	805	4740	1943	50	4	4	10

SUMMARY OF SMALL SIGNS ITEMS

SHEET NUMBER	0618	0624	0636	0644	0644	0644	0644	0644	0644	0644	0644	0644	0682	0684	0685
	6023	6006	6001	6001	6002	6004	6030	6033	6034	6035	6036	6068	6003	6010	6004
	CONDT (PVC) (SCH 40) (2")	GROUND BOX TY BATTERY (162915) W/APRON	ALUMINUM SIGNS (TY A)	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	IN SM RD SN SUP&AM TY10BWG(1)SA(P-BM)	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	IN SM RD SN SUP&AM TYS80(1)SA(T)	IN SM RD SN SUP&AM TYS80(1)SA(U)	IN SM RD SN SUP&AM TYS80(1)SA(U-1EXT)	IN SM RD SN SUP&AM TYS80(1)SA(U-2EXT)	IN SM RD SN SUP&AM TYS80(1)SA(U-BM)	RELOCATE SM RD SN SUP&AM TY 10BWG	VEH SIG SEC (12")LED(YE L)	TRF SIG CBL (TY A)(12 AWG)(5 CONDR)	INSTL RDSO FLSH BCN ASSM (SOLAR PWRD)
	LF	EA	SF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	LF	EA
CSJ 0251-06-036															
SHEET 288				5		3	1								
SHEET 289	12	1	11	5		1							2	12	1
SHEET 290	12	1	11	9		2						2	2	12	1
SHEET 291				1							1	3			
SHEET 292				12	1	7		1	2	1	1	2			
SHEET 293															
PROJECT TOTALS	24	2	22	32	1	13	1	1	2	1	2	7	4	24	2

SUMMARY OF D&OM ITEMS

SHEET NUMBER	0658	0658	0658	0658
	6014	6062	6081	6099
	INSTL DEL ASSM (D-SW)SZ 1(BRF)CTB(BI)	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)	INSTL DEL ASSM (D-SW)SZ 1(WFLX)GND(BI)	INSTL OM ASSM (OM-2Z)(FLX) GND
	EA	EA	EA	EA
CSJ 0251-06-036				
SHEET 288		3		
SHEET 289			8	
SHEET 290	3	3		2
SHEET 291				2
SHEET 292		8		4
SHEET 293				
PROJECT TOTALS	3	14	8	8

NO.	REVISION	BY	DATE
 TEXAS REGISTERED ENGINEERING FIRM F-1741			
 ©2023 Texas Department of Transportation US 281			
SUMMARY OF SIGNING & STRIPING ITEMS			
Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251
Drawn: CPY	SECTION NO. 06	JOB NO. 036	SHEET NO. 31
Checked: CPY			

2/27/2023 11:07:45 AM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfq
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.02 Summaries/49304RDss.dgn

SUMMARY OF SMALL SIGNS

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.

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)				BRIDGE MOUNT CLEARANCE SIGNS (See Note 2)
							POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION	
							FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	1 or 2	UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	PREFABRICATED P = "Plain" T = "T" U = "U"	
288	1	W3-5		36 X 36	X		10BWG	1	SA	T	
	2	R2-1		24 X 30	X		10BWG	1	SA	P	
	3	R2-1		24 X 30	X		10BWG	1	SA	P	
	4	I-2dT M1-4 D10-7aT D10-7aT R19-10aT	 	54 X 24 30 X 24 3 X 10 3 X 10 24 X 24	X		S80	1	SA	T	
	5	I-2dT		72 X 24	X		10BWG	1	SA	T	
	6	M3-1 M1-4 R19-10aT D10-7aT D10-7aT	 	24 X 12 30 X 24 24 X 24 3 X 10 3 X 10	X		10BWG	1	SA	P	
	7	D20-1TL		24 X 24	X		10BWG	1	SA	P	
	8	R1-1		36 X 36	X		10BWG	1	SA	P	
	9	W3-5		36 X 36	X		10BWG	1	SA	T	

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.
<http://www.txdot.gov/>

- NOTE:**
- 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.
 - For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS) Standard Sheet.
 - For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).
 - For R2-1, W3-5, W13-1P, and S5-1 signs, contractor to coordinate with engineer on speed limits.



SUMMARY OF SMALL SIGNS

SOSS

FILE: slums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
4-16	DIST	COUNTY	SHEET NO.	
8-16	BWD	LAMPASAS	32	

DATE: 1/31/2023
 FILE: pw./

SUMMARY OF SMALL SIGNS

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 units.

DATE: 2/22/2023
 FILE: pw:\Active Projects\TXDO1600493.00\TXDO1600493.04\8.00 Plans and Drawings\8.30 of 8.30\TXDO1600493.04.dwg

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)				BRIDGE MOUNT CLEARANCE SIGNS (See Note 2)	
							POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION		
										PREFABRICATED		1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels
289	1	D20-1TR		24 X 24	X		10BWG	1	SA	P		
	2	R2-1		24 X 30	X		10BWG	1	SA	P		
	3	R2-1		24 X 30	X		10BWG	1	SA	P		
	4	I-2aT		54 X 24	X		10BWG	1	SA	T		
	5	R2-1 S5-3	 	24 X 30 24 X 30	X		10BWG	1	SA	P		
	6	S5-1 S7-1T	 	24 X 48 24 X 18	X		FLASHING BEACON ASSEMBLY					
	7	S1-1 SW16-9P		36 X 36 24 X 12	X		10BWG	1	SA	P		
290	1	S1-1 SW16-7PL		36 X 36 21 X 15	X		10BWG	1	SA	P		

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.
<http://www.txdot.gov/>

- NOTE:**
- 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.
 - For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS) Standard Sheet.
 - For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).
 - For R2-1, W3-5, W13-1P, and S5-1 signs, contractor to coordinate with engineer on speed limits.

Texas Department of Transportation
Traffic Operations Division Standard


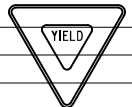






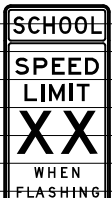

SUMMARY OF SMALL SIGNS

SOSS

FILE: slums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
4-16	DIST	COUNTY	SHEET NO.	
8-16	BWD	LAMPASAS	33	

SUMMARY OF SMALL SIGNS

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 units or the accuracy of the information contained herein. TxDOT is not responsible for any errors or omissions in this document. DATE: 2/22/2023 FILE: pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 of 115/8.30.00 Summary of Small Signs.dwg

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)				BRIDGE MOUNT CLEARANCE SIGNS (See Note 2)
							POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION	
							FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	1 or 2	UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	PREFABRICATED P = "Plain" T = "T" U = "U"	
	2	S1-1 SW16-7PL		36 X 36 21 X 15	X		10BWG	1	SA	P	
	3	R1-2		36 X 36 X 36	X		10BWG	1	SA	T	
	4	R3-7R		36 X 36	X		10BWG	1	SA	P	
	5	D20-1TR		24 X 24	X		10BWG	1	SA	P	
	6	R2-1		24 X 30	X		10BWG	1	SA	P	
	7	W14-2		36 X 36	X		10BWG	1	SA	T	
	8	R1-1		36 X 36	X		10BWG	1	SA	P	
	9	D20-1TL		24 X 24	X		10BWG	1	SA	P	
	10	S5-1 S7-1T	 	24 X 48 24 X 18	X		FLASHING BEACON ASSEMBLY				

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.
<http://www.txdot.gov/>

- NOTE:**
- 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.
 - For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS) Standard Sheet.
 - For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).
 - For R2-1, W3-5, W13-1P, and S5-1 signs, contractor to coordinate with engineer on speed limits.




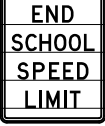



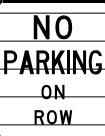

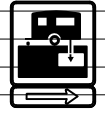
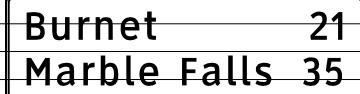
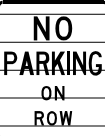
SUMMARY OF SMALL SIGNS

SOSS

FILE: slums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
4-16	DIST	COUNTY	SHEET NO.	
8-16	BWD	LAMPASAS	34	

SUMMARY OF SMALL SIGNS

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.

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)				BRIDGE MOUNT CLEARANCE SIGNS (See Note 2)
							POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION	
							FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	1 or 2	UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	PREFABRICATED P = "Plain" T = "T" U = "U"	
	11	R2-1 S5-3	 	24 X 30 24 X 30	X		10BWG	1	SA	P	
	12						SIGN TO BE RELOCATED				
	13	S1-1 SW16-9P		36 X 36 24 X 12	X		10BWG	1	SA	P	
	14						SIGN TO BE RELOCATED				
291	1						SIGN TO BE RELOCATED				
	2						SIGN TO BE RELOCATED				
	3	D9-12 D5-5aTPR		24 X 24 24 X 6	X		10BWG	1	SA	P	
	4	D2-2		102 X 30	X		S80	1	SA	U	BM
	5						SIGN TO BE RELOCATED				

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website:
<http://www.txdot.gov/>

- NOTE:**
- 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.
 - For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS) Standard Sheet.
 - For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).
 - For R2-1, W3-5, W13-1P, and S5-1 signs, contractor to coordinate with engineer on speed limits.



SUMMARY OF SMALL SIGNS



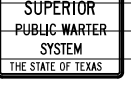
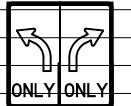
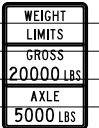
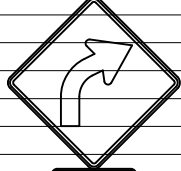


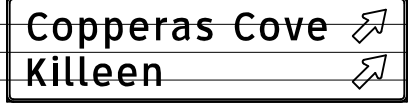
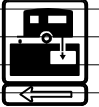

SOSS

FILE: slums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CON: 0251	SECT: 06	JOB: 036	HIGHWAY: US 281
4-16 8-16	DIST: BWD	COUNTY: LAMPASAS	SHEET NO.: 35	

DATE: 1/31/2023
 FILE: pw/

SUMMARY OF SMALL SIGNS


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 units, the accuracy of the drawings, or the results or damages resulting from its use.

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY				BRIDGE MOUNT CLEARANCE SIGNS (See Note 2)	
							XXXXX (X) XX (X-XXXX)		ANCHOR TYPE	MOUNTING DESIGNATION		
							POST TYPE	POSTS		PREFABRICATED		1EXT or 2EXT = # of Ext
							FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	1 or 2	UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	P = "Plain" T = "T" U = "U"	BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	TY = TYPE TY N TY S
292	1	R8-3aTR		24 X 30	X			10BWG	1	SA	P	
	2	R8-3aTL		24 X 30	X			10BWG	1	SA	P	
	3							SIGN TO BE RELOCATED				
	5			30 X 30	X			10BWG	1	SA	P	
	6							SIGN TO BE RELOCATED				
	7	W1-2R W13-1P	 	36 X 36 18 X 18	X			10BWG	1	SA	T	
	8	W11-2		36 X 36	X			10BWG	1	SA	T	
	9	D1-2		114 X 30	X			S80	1	SA	U	BM
	10	D9-12 D5-5aTPL		24 X 24 24 X 6	X			10BWG	1	SA	P	
	11	R1-1		36 X 36	X			10BWG	1	SA	P	

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.
<http://www.txdot.gov/>

- NOTE:
1. 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.
 2. For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS) Standard Sheet.
 3. For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).
 4. For R2-1, W3-5, W13-1P, and S5-1 signs, contractor to coordinate with engineer on speed limits.



Texas Department of Transportation

Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS



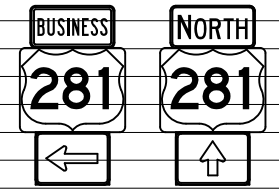

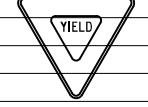
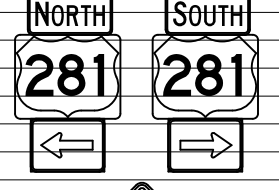


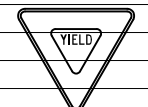
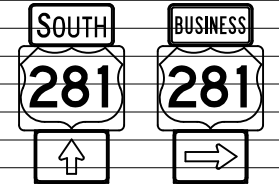
FILE: slums16.dgn	DW: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
4-16	DIST	COUNTY	SHEET NO.	
8-16	BWD	LAMPASAS	36	

DATE: 2/18/2023
 FILE: pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 of 8.30 2023/sums16.dgn

SUMMARY OF SMALL SIGNS

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.

DATE: 1/31/2023
 FILE: dmc/

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)				BRIDGE MOUNT CLEARANCE SIGNS (See Note 2)
							POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION	
							FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	1 or 2	UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	PREFABRICATED P = "Plain" T = "T" U = "U"	
	12	M2-1 M4-3 M1-4		21 X 15 24 X 12 30 X 24	X		10BWG	1	SA	P	
	13	R3-7R		36 X 36	X		10BWG	1	SA	P	
	14	M4-3 M1-4 M6-1 M3-1 M1-4 M6-3		24 X 12 30 X 24 21 X 15 24 X 12 30 X 24 21 X 15	X		S80	1	SA	U	1EXT
	15	R5-1		36 X 36	X		10BWG	1	SA	P	
	16	R1-2		36 X 36 X 36	X		10BWG	1	SA	T	
	17	M3-1 M1-4 M6-1 M3-3 M1-4 M6-1		24 X 12 30 X 24 21 X 15 24 X 12 30 X 24 21 X 15	X		S80	1	SA	U	1EXT
	18	W8-13aT		36 X 36	X		10BWG	1	SA	T	
	19	R5-1		36 X 36	X		10BWG	1	SA	P	
	20	R1-2		36 X 36 X 36	X		10BWG	1	SA	T	
	21	M3-3 M1-4 M6-3 M4-3 M1-4 M6-1		24 X 12 30 X 24 21 X 15 24 X 12 30 X 24 21 X 15	X		S80	1	SA	U	

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website:
<http://www.txdot.gov/>

- NOTE:**
- 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.
 - For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS) Standard Sheet.
 - For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).
 - For R2-1, W3-5, W13-1P, and S5-1 signs, contractor to coordinate with engineer on speed limits.




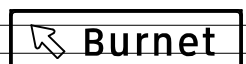


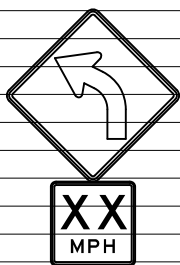

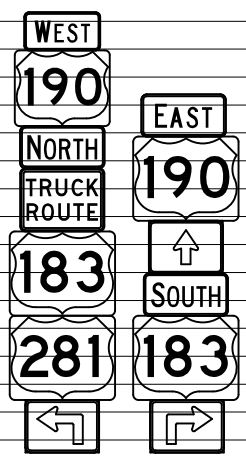
SUMMARY OF SMALL SIGNS

SOSS

FILE: slums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
4-16	DIST	COUNTY	SHEET NO.	
8-16	BWD	LAMPASAS	37	

SUMMARY OF SMALL SIGNS

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.

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)				BRIDGE MOUNT CLEARANCE SIGNS (See Note 2)
							POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION	
							FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	1 or 2	UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	PREFABRICATED P = "Plain" T = "T" U = "U"	
	22	M2-1 M1-4		21 X 15 30 X 24	X		10BWG	1	SA	P	
	23	D1-1		66 X 18	X		10BWG	1	SA	T	
	24	M2-1 M4-3 M1-4		21 X 15 24 X 12 30 X 24	X		10BWG	1	SA	P	
	25	D3-1B R1-1		54 X 8 36 X 36	X		10BWG	1	SA	P	BM
	26	W1-2L W13-1P		36 X 36 18 X 18	X		10BWG	1	SA	T	
	27	R3-7R		36 X 36	X		10BWG	1	SA	P	
	28	M3-4 M1-4 M3-1 R14-1 M1-4 M1-4 M5-1L M3-2 M1-4 M6-3 M3-3 M1-4 M5-1R		24 X 12 30 X 24 24 X 12 24 X 18 30 X 24 30 X 24 21 X 15 24 X 12 30 X 24 21 X 15 24 X 12 30 X 24 21 X 15 30 X 24 21 X 15	X		S80	1	SA	U	2EXT

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.
<http://www.txdot.gov/>

- NOTE:**
- 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.
 - For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS) Standard Sheet.
 - For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).
 - For R2-1, W3-5, W13-1P, and S5-1 signs, contractor to coordinate with engineer on speed limits.



SUMMARY OF SMALL SIGNS

SOSS

FILE: slums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
4-16	DIST	COUNTY		SHEET NO.
8-16	BWD	LAMPASAS		38

DATE: 1/31/2023
 FILE: pw./

SUMMARY OF EROSION CONTROL CSJ 0251-06-036



SHEET NO	LOCATION EROSION CONTROL PLAN	0162	0164	0164	*0166	0168	0169	0506	0506	0506	0506	0506	0506	0506	0506
		6002	6035	6051	*6001	6001	6003	6002	6011	6026	6035	6038	6039	6041	6043
		BLOCK SODDING	DRILL SEEDING (PERM) (RURAL) (CLAY)	DRILL SEED (TEMP) (WARM OR COOL)	FERTILIZER	VEGETATIVE WATERING	SOIL RETENTION BLANKETS (CL 1) (TY C)	ROCK FILTER DAMS (INSTALL) (TY 2)	ROCK FILTER DAMS (REMOVE)	EMBANK (EROSN & SEDMT CONT. IN PLACE)	SANDBAGS FOR EROSION CONTROL	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)	BIODEG EROSN CONT LOGS (INSTL) (12")	BIODEG EROSN CONT LOGS (REMOVE)
		SY	SY	SY	TON	MG	SY	LF	LF	CY	EA	LF	LF	LF	LF
	PHASE 1				300 LB/AC										
358	END PROJECT TO STA 10+00		5873		0.18	132				653		269	269	100	100
359	STA 10+00 TO STA 30+00		6724	889	0.24	171				846	12	2408	2408	165	165
360	STA 30+00 TO STA 50+00		5859	717	0.20	148		159	60	731	24	2103	2103	250	185
361	STA 50+00 TO STA 70+00	82	2407	481	0.10	67	444	30		330	12	1225	1225	131	131
362	STA 70+00 TO BEGIN PROJECT	5623		1191	0.21	153		41	25	757	27	1523	1523	338	338
363	BUSINESS 281 STA 12+50 TO END	1058			0.03	24				117		706	706		
	PHASE 1 TOTAL	6763	20863	3278	0.96	695	444	230	85	3434	75	8234	8234	984	919
	PHASE 2														
364	END PROJECT TO STA 10+00		3944		0.12	89				438		1391	1391		
365	STA 10+00 TO STA 30+00		5435		0.17	122				604	12	1739	1739	60	60
366	STA 30+00 TO STA 50+00		5197		0.16	117		50	149	577	15	508	508	227	292
367	STA 50+00 TO STA 70+00	276	2438		0.09	61		86	116	302	12			151	151
368	STA 70+00 TO BEGIN PROJECT	2054			0.06	46		40	56	228	51	555	555	316	316
	PHASE 2 TOTAL	2330	17014		0.60	435		176	321	2149	90	4193	4193	754	819
	PROJECT TOTAL	9093	37877	3278	1.56	1130	444	406	406	5583	165	12427	12427	1738	1738

*FOR CONTRACTOR INFORMATION ONLY

cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcf
 pw:/

1/31/2023 12:05:36 PM kperry

pw:/

NO.	REVISION	BY	DATE
 TEXAS REGISTERED ENGINEERING FIRM F-1741			
 ©2023 Texas Department of Transportation			
US 281 SUMMARY OF EROSION CONTROL			
Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.
Checked: CPY	DIST. LAMPASAS	COUNTY	SECTION NO. 06
Drawn: CPY	JOB NO. 036	CONTROL NO. 0251	SHEET NO. 39

GENERAL NOTES

- CONTRACTOR SHALL MAINTAIN ALL PERTINENT ADVANCED WARNING SIGNAGE DURING CONSTRUCTION.
- LOCATION AND SPACING OF TEMPORARY SIGNS ARE APPROXIMATE. CONTRACTOR SHALL REFER TO TXDOT TCP STANDARDS BC(1)-21 THRU BC(12)-21 AND TMUTCD FOR ACTUAL SIGN SPACING REQUIREMENTS. SIGNS MAY BE ADJUSTED DUE TO FIELD CONDITIONS AND SAFETY TO TRAVELING PUBLIC. RELOCATE SIGNS AT INTERSECTIONS AS NEEDED TO PROVIDE BETTER VISIBILITY AND MAINTAIN PEDESTRIAN ACCESS.
- ALL CONSTRUCTION TO BE COMPLETED AS INDICATED IN THE APPLICABLE PLAN SHEETS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ALL CONFLICTING EXISTING AND WORK ZONE PAVEMENT MARKINGS.
- TEMPORARY PAVEMENT QUANTITIES SHOWN IN SQUARE YARDS WILL BE PAID FOR UNDER ITEM 508 CONSTRUCTING DETOURS. TEMPORARY PAVEMENT STRUCTURE SHALL CONSIST OF 10" ACP TYPE B.
- CHANNELIZING DEVICE LOCATIONS SHOWN ON THE TRAFFIC CONTROL PLAN SHEETS ARE APPROXIMATE. ACTUAL LOCATIONS SHALL BE DETERMINED IN THE FIELD USING SUGGESTED SPACING SHOWN ON THE TCP STANDARDS.
- ADDITIONAL SIGNS, BARRICADES, AND/OR OTHER CHANNELIZING DEVICES MAY BE NEEDED, REQUIRED, AND/OR ADJUSTED TO MATCH FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
- ACCESS TO ALL SIDE STREETS AND DRIVEWAYS SHOULD BE MAINTAINED AT ALL TIMES AT THE SOLE EXPENSE OF THE CONTRACTOR. THE CONTRACTOR WILL CONTACT THE BUSINESS OR PROPERTY OWNER AT LEAST 5 DAYS IN ADVANCE OF DRIVEWAY CONSTRUCTION. IF THE PROPERTY OWNER HAS MORE THAN ONE DRIVEWAY, CONSTRUCTION WILL ONLY BE PERMITTED ON ONE DRIVEWAY AT A TIME. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ADEQUATE TEMPORARY SURFACING FOR TRANSITIONS BETWEEN PAVEMENT ELEVATIONS FOR ALL SIDE STREETS AND DRIVEWAYS. THIS WORK SHALL BE SUBSIDIARY TO ITEM 508.
- TRAFFIC SHALL BE CONTROLLED OR DETOURED AS SHOWN ON THE PHASING PLAN SHEETS, DETOUR ROUTING PLAN SHEETS, OR AS DIRECTED BY THE ENGINEER. EACH PHASE AND STEP SHALL BE COMPLETED IN SEQUENCE BEFORE BEGINNING WORK IN THE NEXT PHASE UNLESS OTHERWISE APPROVED. CONTRACTOR MAY PROPOSE AN OPTIONAL CONSTRUCTION SEQUENCING AND TRAFFIC CONTROL PLAN, TO BE APPROVED BY THE ENGINEER.
- ALL ROADWAYS AND CENTER MEDIAN TO BE COMPLETED BEFORE PLACEMENT OF THE FINAL 2" SURFACE COURSE, UNLESS OTHERWISE DIRECTED BY THE ENGINEER, DRAINAGE AT CURB INLETS TO BE MAINTAINED UNTIL THE FINAL ROADWAY SURFACE IS PLACED AND ALL ASSOCIATED WORK IS SUBSIDIARY TO THE VARIOUS BID ITEMS.
- CONTRACTOR SHALL BE RESTRICTED FROM WORKING IN AREAS WHERE ANY UTILITY ADJUSTMENTS ARE TAKING PLACE DURING CONSTRUCTION.

US 281

- PRE-PHASE 1: CONSTRUCTION OF TEMPORARY PAVEMENT AND CROSS CULVERTS ALONG US 281
- PLACE TEMPORARY PAVEMENT ALONG THE OUTSIDE OF NORTHBOUND US 281 AT STA 21+96.00 TO STA 35+33.74 (TYPICALLY 8' WIDE) AND STA 65+00.00 TO STA 83+83.81 (TYPICALLY 0-17' WIDE). INSTALL TEMPORARY DRAINAGE ALONG ANY DRIVEWAYS IMPACTED BY TEMPORARY PAVEMENT CONSTRUCTION. THIS WORK SHALL BE SUBSIDIARY TO ITEM 508.
 - PRIOR TO US 281 CONSTRUCTION, INSTALL PROPOSED STORM SEWER AT STA 51+80.00 AND PROPOSED CULVERTS AT STA 41+50.00 AND 57+41.00. CONSTRUCTION OF THE PROPOSED CULVERTS WILL BE PERFORMED IN HALVES USING TXDOT TCP STANDARD (2-4)-18.
- PHASE 1: CONSTRUCTION OF WESTBOUND/SOUTHBOUND US 281, HANCOCK SPRINGS DRIVEWAY, & BUSINESS US 281
- CONSTRUCT HANCOCK SPRINGS DRIVEWAY AS SHOWN IN US 281 PHASE 1 TCP PLANS.
 - BUSINESS US 281 CONSTRUCTION UP TO US 281 INTERSECTION WILL BE PRIORITIZED PRIOR TO US 281 CONSTRUCTION. PLACE TEMPORARY PAVEMENT AT BUSINESS US 281 INTERSECTION FROM STA 80+24.17 TO STA 83+13.42 (TYPICALLY 6' WIDE). TRAFFIC ALONG US 281 WILL BE SHIFTED TO ACCOMMODATE ADEQUATE SPACE FOR CONSTRUCTION UTILIZING TXDOT TCP STANDARD (2-5)-18. REFER TO TCP US 281 PHASE 1 PLAN SHEETS AND US 281 DETOUR ROUTING PLANS FOR ADDITIONAL INFORMATION.
 - INSTALL ALL DRAINAGE ELEMENTS SHOWN ON THE US 281 PHASE 1 TCP PLANS. ADJUST GRADING TO FINAL ELEVATION AT ALL AREAS WHERE DRAIN LINES ARE TO BE INSTALLED.
 - CONSTRUCT ASPHALT PAVEMENT ALONG CR 1002. ACCESS TO US 281 MUST REMAIN OPEN AT ALL TIMES DURING CONSTRUCTION.
 - USE APPROPRIATE TRAFFIC CONTROL DEVICES ALONG US 281 AS SHOWN IN THE PHASE 1 TCP PLANS. PLACE PERMANENT ASPHALT PAVEMENT FROM STA 506+11.95 TO STA 30+46.96 (€ US 281) AND STA 32+24.48 TO STA 89+66.85 (€ US 281). DRIVEWAY AND SIDE STREET TRAFFIC SHALL BE MAINTAINED THROUGH THE WORK ZONE USING 3:1 SAFETY WEDGES AND LEAVE OUT SECTIONS.
- PHASE 1A: CONSTRUCTION OF LAMPASAS HIGH SCHOOL INTERSECTION
- CONSTRUCTION OF LAMPASAS HIGH SCHOOL DRIVEWAY INTERSECTION WILL OCCUR IN SUMMER OF 2024 AND MUST BE COMPLETED BEFORE THE 2024 SCHOOL YEAR BEGINS.
 - ADJUST ANY SIGNALS IMPACTED BY CONSTRUCTION AS SHOWN IN THE US 281 PHASE 1A PLANS.
 - USE APPROPRIATE TRAFFIC CONTROL DEVICES ALONG US 281 AS SHOWN IN THE PHASE 1A TCP PLANS. PLACE PERMANENT ASPHALT PAVEMENT FROM STA 30+46.96 TO STA 32+24.48 (€ US 281).

PHASE 1B: CONSTRUCTION OF NARUNA ROAD INTERSECTION

- CONSTRUCTION OF NARUNA ROAD INTERSECTION WILL OCCUR IN SUMMER OF 2024 AND MUST BE COMPLETED BEFORE THE 2024 SCHOOL YEAR BEGINS.
- USE APPROPRIATE TRAFFIC CONTROL DEVICES ALONG US 281 AS SHOWN IN THE PHASE 1B TCP PLANS. PLACE PERMANENT ASPHALT PAVEMENT ALONG NARUNA RD. ACCORDING TO ROADWAY PLANS. DETOUR TRAFFIC ACCORDING TO TCP DETOUR ROUTING PLANS.

PHASE 2A: CONSTRUCTION OF ADDITIONAL WESTBOUND/SOUTHBOUND US 281

- USE APPROPRIATE TRAFFIC CONTROL DEVICES ALONG US 281 AS SHOWN IN THE PHASE 2A TCP PLANS. PLACE PERMANENT ASPHALT PAVEMENT FROM STA 506+11.95 TO STA 89+66.85 (€ US 281).

PHASE 2B: CONSTRUCTION OF EASTBOUND/NORTHBOUND US 281

- INSTALL ALL DRAINAGE ELEMENTS SHOWN ON THE US 281 PHASE 2B TCP PLANS. ADJUST GRADING TO FINAL ELEVATION AT ALL AREAS WHERE DRAIN LINES ARE TO BE INSTALLED.
- CONSTRUCT ASPHALT PAVEMENT ALONG CR 4016. ACCESS TO US 281 MUST REMAIN OPEN AT ALL TIMES DURING CONSTRUCTION.
- USE APPROPRIATE TRAFFIC CONTROL DEVICES ALONG US 281 AS SHOWN IN THE PHASE 2B TCP PLANS. PLACE PERMANENT ASPHALT PAVEMENT FROM STA 506+11.95 TO STA 89+66.85 (€ US 281).

POST PHASE 2: COMPLETION OF PROJECT

- ONCE PHASE 2 IS COMPLETE, CONSTRUCT PROPOSED CENTER MEDIAN AT THE NORTHBOUND INTERSECTION OF US 281 AND BUSINESS US 281 PRIOR TO APPLICATION OF FINAL 2" ROADWAY SURFACE. REFER TO TCP (2-5)-18 AND ROADWAY PLANS FOR ADDITIONAL INFORMATION.
- AFTER APPLICATION OF FINAL ROADWAY SURFACE, PLACE PERMANENT PAVEMENT MARKINGS AS SHOWN IN THE FINAL ROADWAY PLANS.
- UPON COMPLETION OF THE PROJECT, CONTRACTOR MUST CLEAR OUT ANY EQUIPMENT AND LOOSE DEBRIS ALONG THE PROJECT LIMITS.



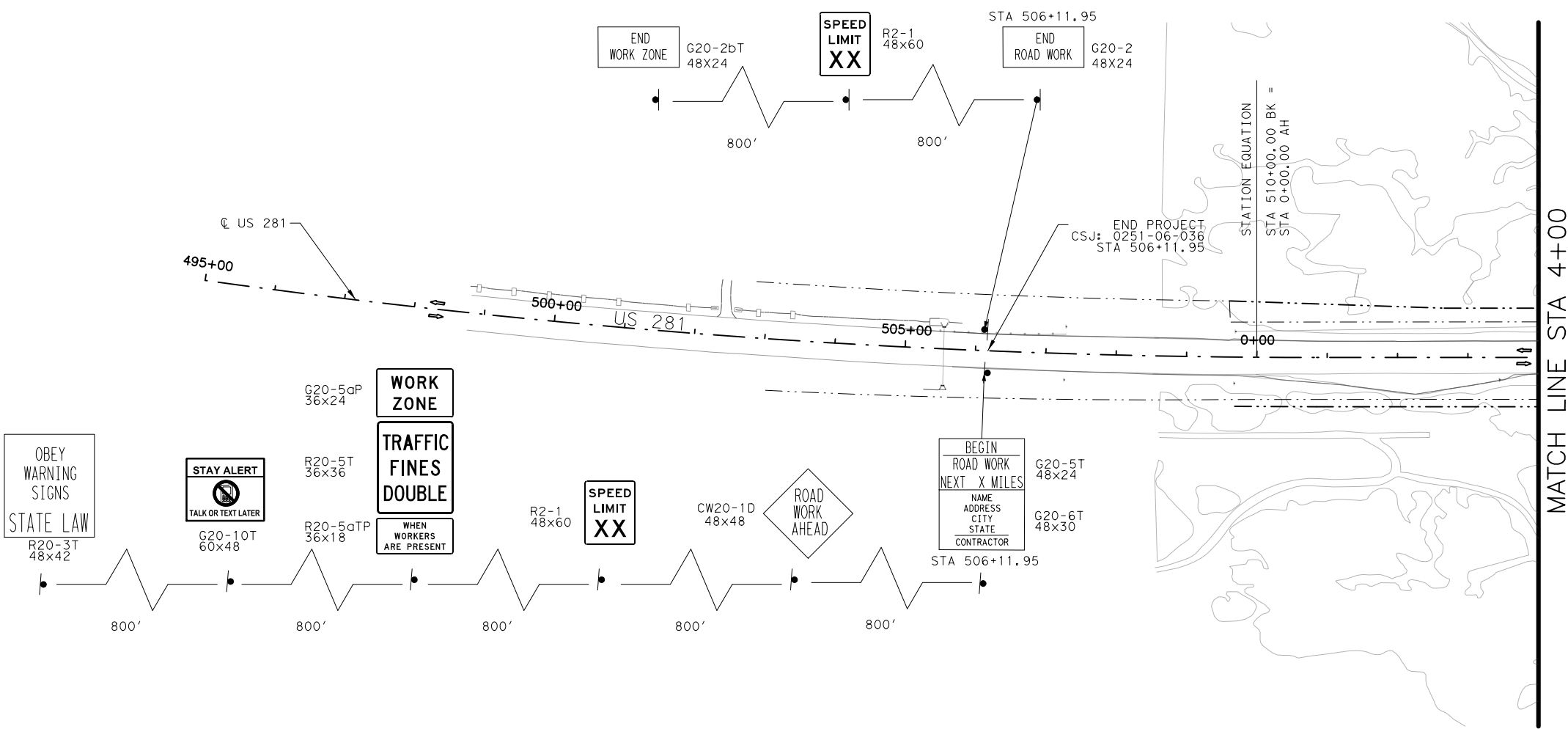
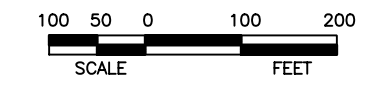
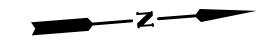
NO.	REVISION	BY	DATE



US 281
TRAFFIC CONTROL PLAN
NARRATIVE

Designed:	RTG	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	RTG	DIST.	LAMPASAS	COUNTY	LAMPASAS	CONTROL NO.	0251	SECTION NO.	06
Drawn:	RTG	JOB NO.	036	SHEET NO.	40				

cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.36 RTG Cut Sheets/TCP_NARR_01.dgn
 4/4/2023 9:14:08 PM skunz



NOTES:
 1. PLACE PROJECT LIMIT SIGNS AT LOCATIONS SHOWN AS FIELD CONDITIONS PERMIT. SIGNS WILL REMAIN FOR THE DURATION OF THE PROJECT OR AS DIRECTED.



NO.	REVISION	BY	DATE

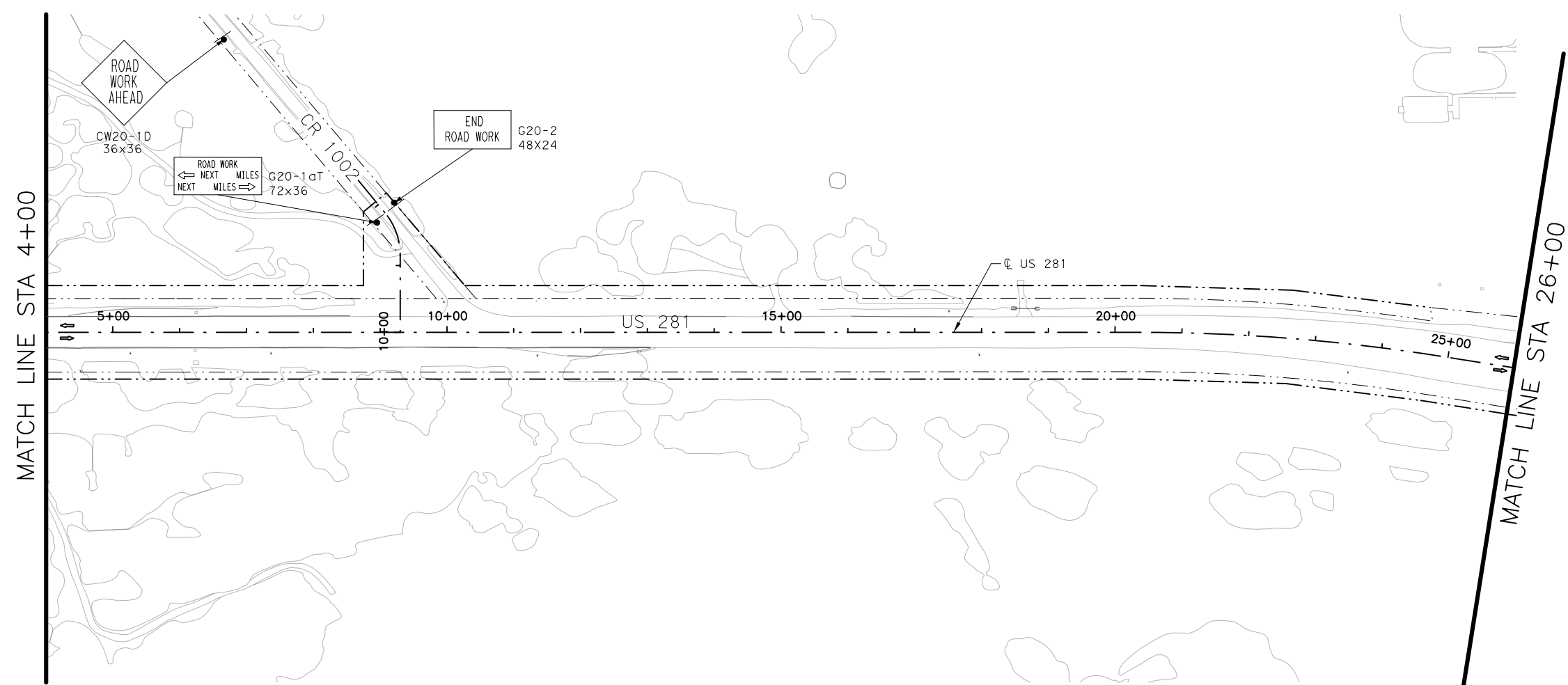
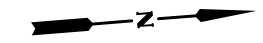
RTG RODRIGUEZ TRANSPORTATION GROUP
 FIRM #587



US 281
TRAFFIC CONTROL PLAN
 US 281
ADVANCE WARNING SIGN LAYOUT
 END TO STA 4+00

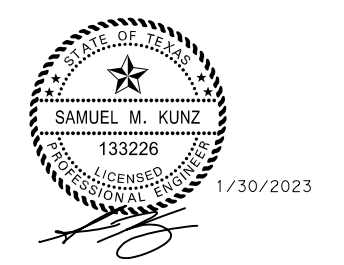
Designed:	RTG	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	RTG	6	TEXAS		US 281		
Drawn:	RTG	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	RTG	BWD	LAMPASAS	0251	06	036	41

1/30/2023 3:24:51 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/



NOTES:

1. PLACE PROJECT LIMIT SIGNS AT LOCATIONS SHOWN AS FIELD CONDITIONS PERMIT. SIGNS WILL REMAIN FOR THE DURATION OF THE PROJECT OR AS DIRECTED.



NO.	REVISION	BY	DATE

RTG RODRIGUEZ TRANSPORTATION GROUP
FRM #587



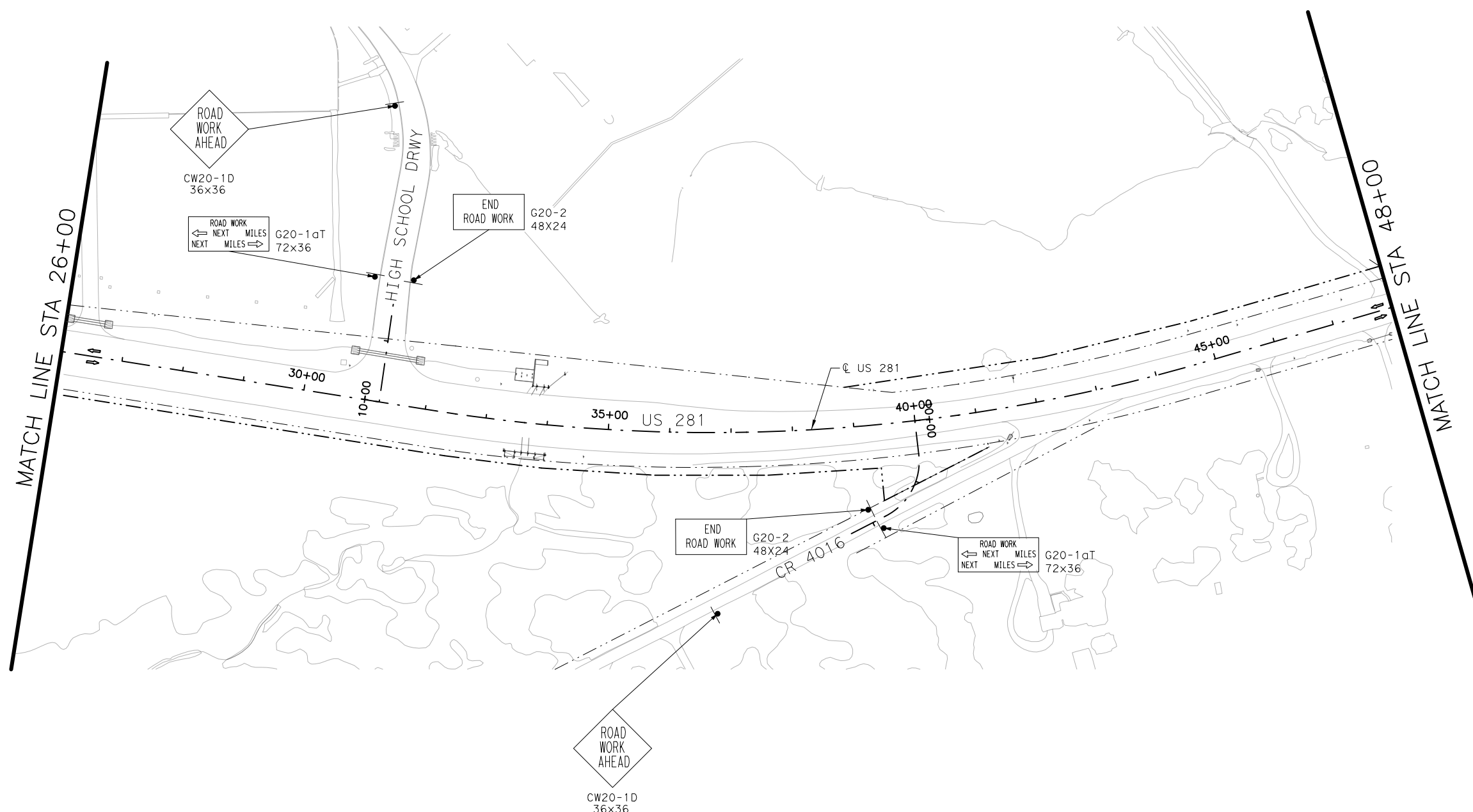
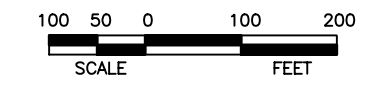
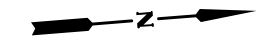
US 281
TRAFFIC CONTROL PLAN
US 281
ADVANCE WARNING SIGN LAYOUT
STA 4+00 TO STA 26+00

Designed:	RTG	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	RTG	DIST.	BWD	COUNTY	LAMPASAS	CONTROL NO.	0251	SECTION NO.	06
Drawn:	RTG	JOB NO.	036	SHEET NO.	42				

cpybw_ANSIB.tbl
cpypdf_ANSIB.pltcfgr
pw:/

1/30/2023 3:24:57 PM skunz

pw:/



NOTES:
1. PLACE PROJECT LIMIT SIGNS AT LOCATIONS SHOWN AS FIELD CONDITIONS PERMIT. SIGNS WILL REMAIN FOR THE DURATION OF THE PROJECT OR AS DIRECTED.



NO.	REVISION	BY	DATE



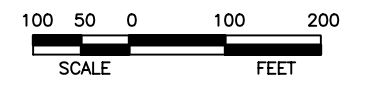
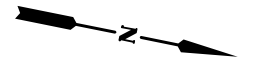
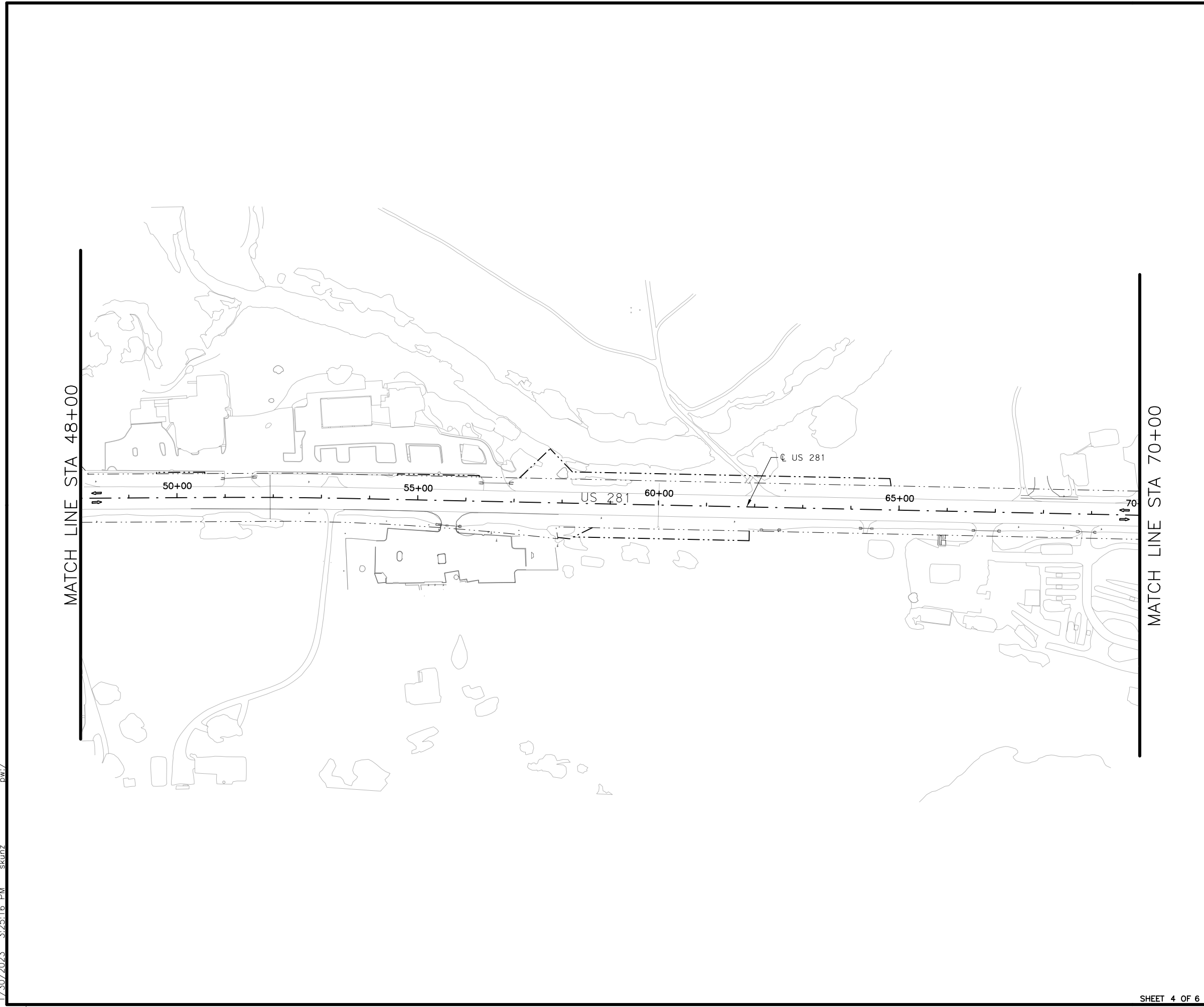
US 281
TRAFFIC CONTROL PLAN
US 281
ADVANCE WARNING SIGN LAYOUT
STA 26+00 TO STA 48+00

Designed:	RTG	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	RTG	6	TEXAS		US 281		
Drawn:	RTG	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	RTG	BWD	LAMPASAS	0251	06	036	43

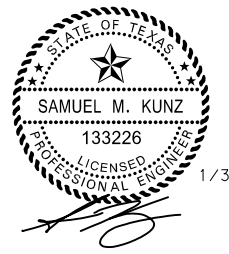
1/30/2023 3:25:04 PM skunz
pw:/

cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/

1/30/2023 3:25:16 PM skunz



NOTES:
 1. PLACE PROJECT LIMIT SIGNS AT LOCATIONS SHOWN AS FIELD CONDITIONS PERMIT. SIGNS WILL REMAIN FOR THE DURATION OF THE PROJECT OR AS DIRECTED.



NO.	REVISION	BY	DATE

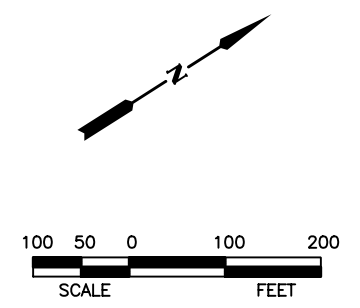
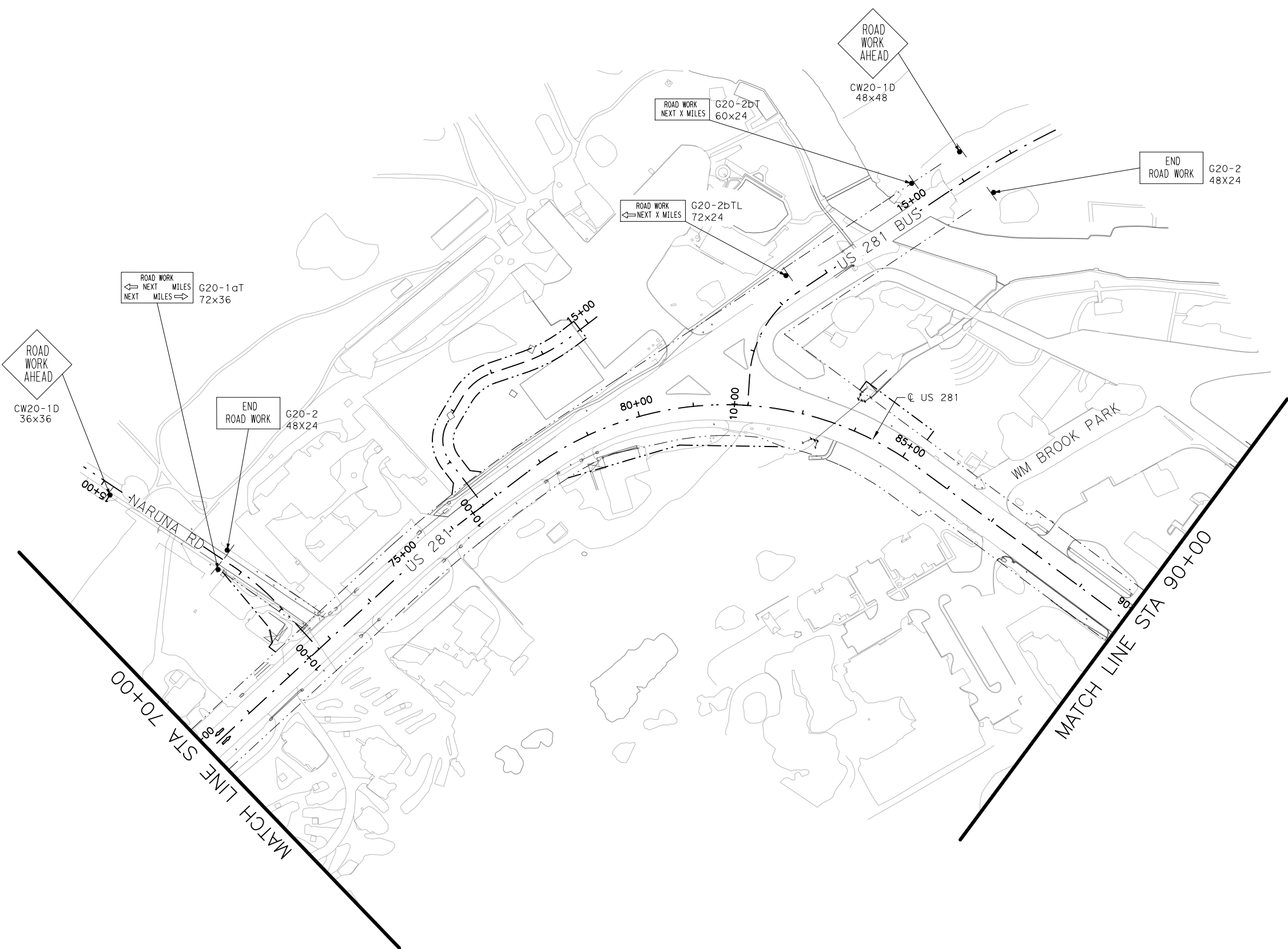
RTG RODRIGUEZ TRANSPORTATION GROUP
 FIRM #587

©2023 Texas Department of Transportation

US 281
 TRAFFIC CONTROL PLAN
 US 281
 ADVANCE WARNING SIGN LAYOUT
 STA 48+00 TO STA 70+00

Designed:	RTG	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	RTG	DIST.	BWD	COUNTY	LAMPASAS	CONTROL NO.	0251	SECTION NO.	06
Drawn:	RTG	JOB NO.	036	SHEET NO.	44				

1/30/2023 3:25:29 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/



NOTES:
 1. PLACE PROJECT LIMIT SIGNS AT LOCATIONS SHOWN AS FIELD CONDITIONS PERMIT. SIGNS WILL REMAIN FOR THE DURATION OF THE PROJECT OR AS DIRECTED.



NO.	REVISION	BY	DATE

RTG RODRIGUEZ TRANSPORTATION GROUP
 FIRM #587

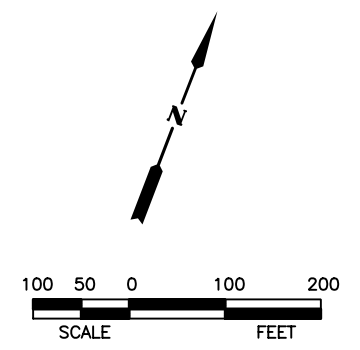
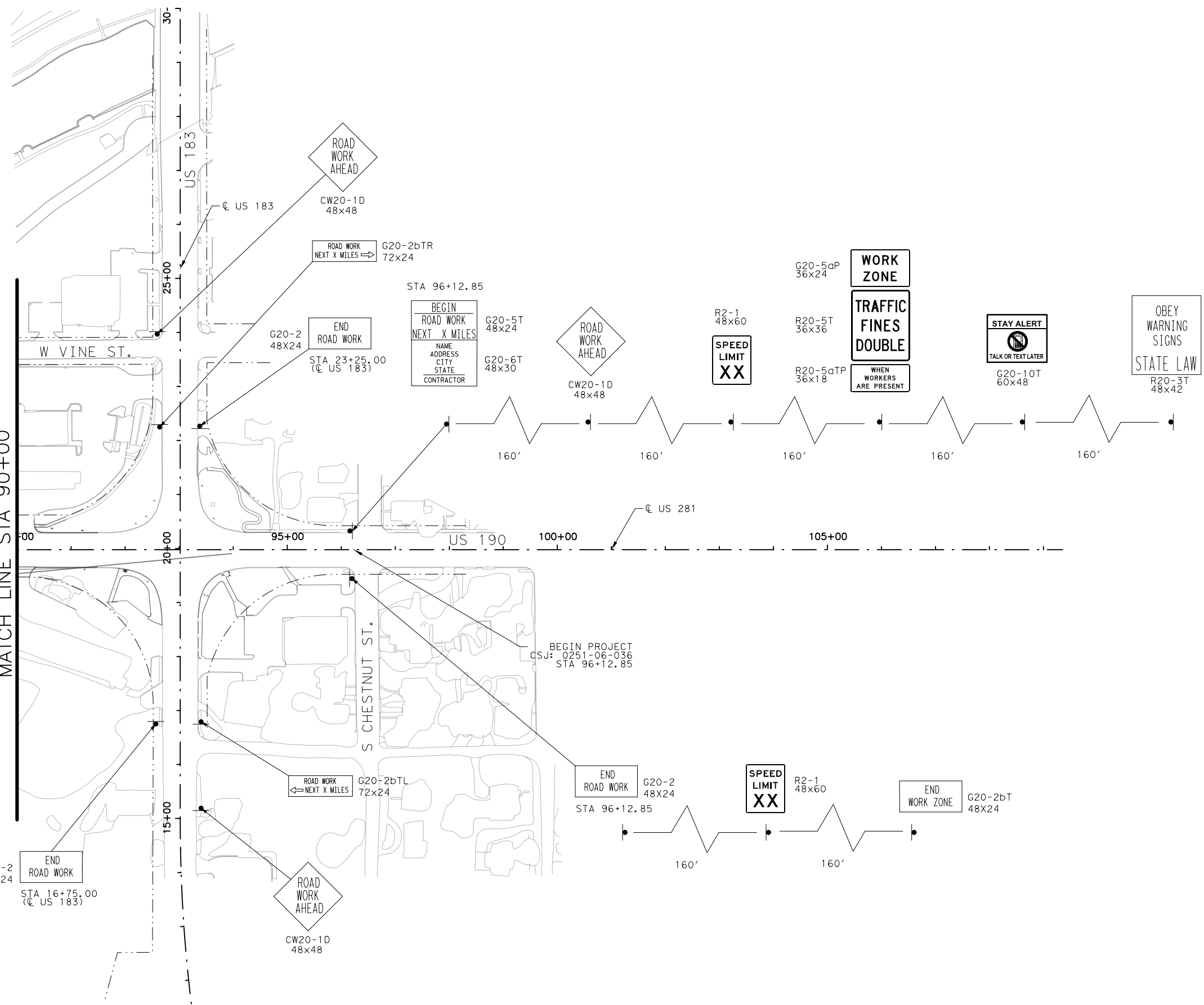


US 281
 TRAFFIC CONTROL PLAN
 US 281
 ADVANCE WARNING SIGN LAYOUT
 STA 70+00 TO STA 90+00

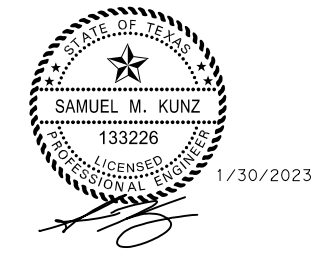
Designed:	RTG	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	RTG	6	TEXAS		US 281		
Drawn:	RTG	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	RTG	BWD	LAMPASAS	0251	06	036	45

1/30/2023 3:25:44 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/

MATCH LINE STA 90+00



NOTES:
 1. PLACE PROJECT LIMIT SIGNS AT LOCATIONS SHOWN AS FIELD CONDITIONS PERMIT. SIGNS WILL REMAIN FOR THE DURATION OF THE PROJECT OR AS DIRECTED.



NO.	REVISION	BY	DATE

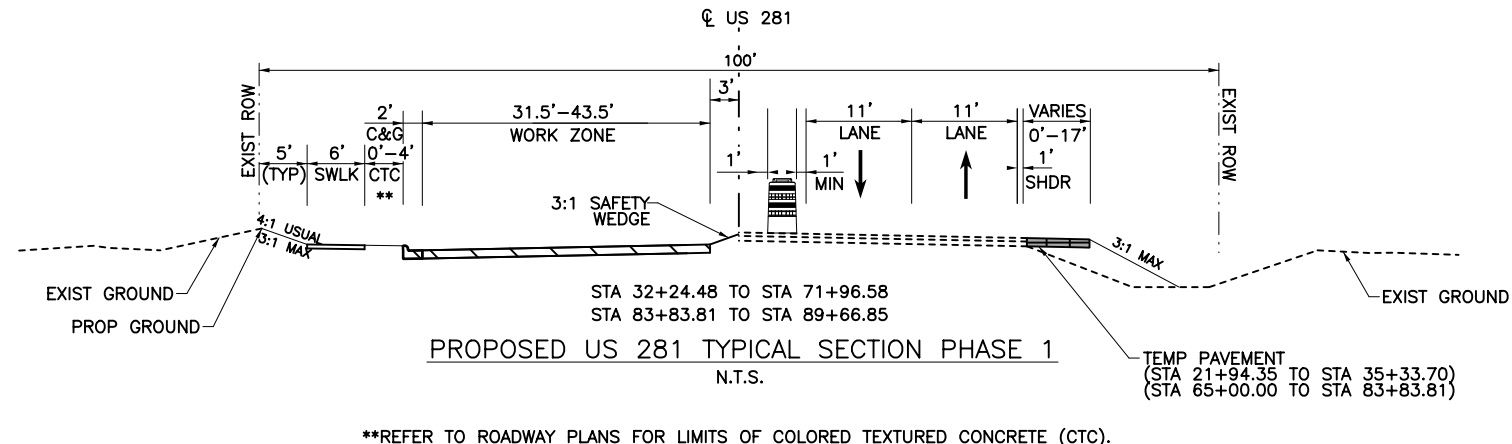
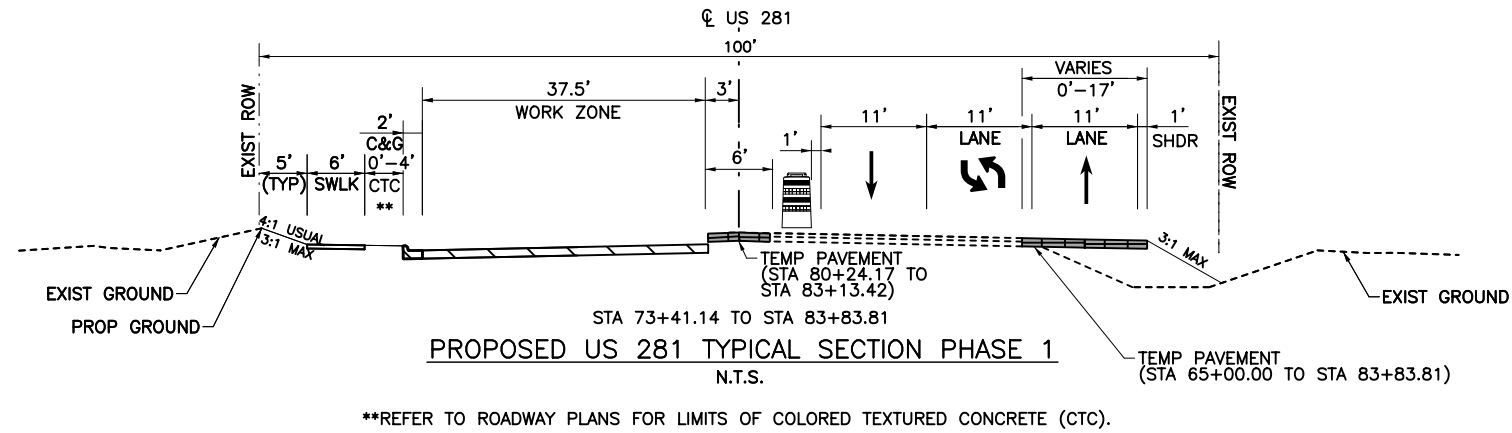
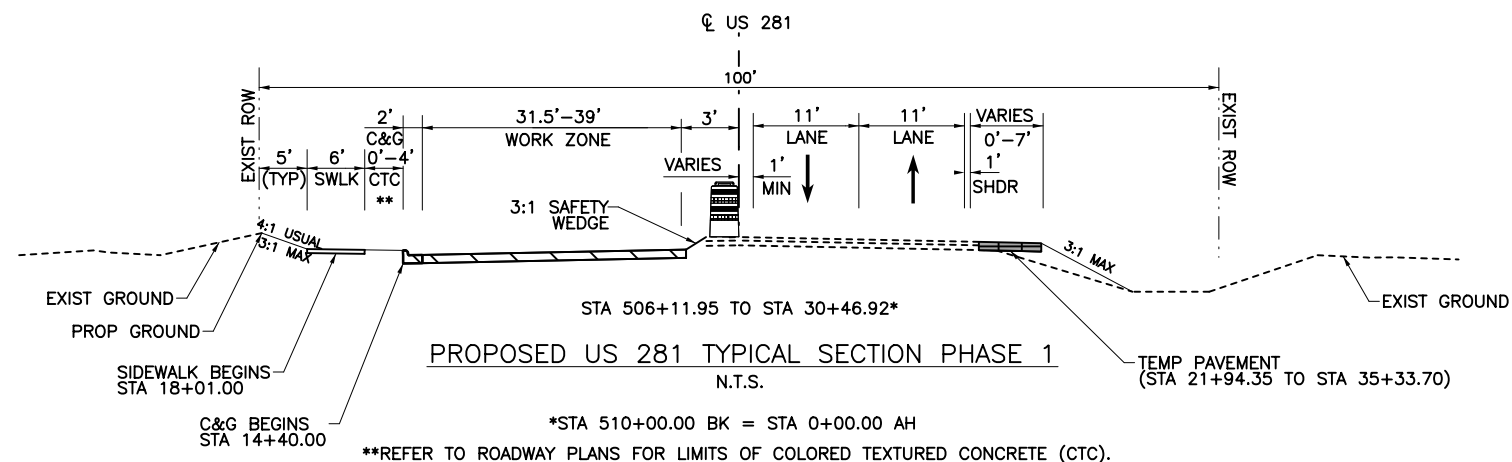


©2023 Texas Department of Transportation

US 281
 TRAFFIC CONTROL PLAN
 US 281
 ADVANCE WARNING SIGN LAYOUT
 STA 90+00 TO BEGIN

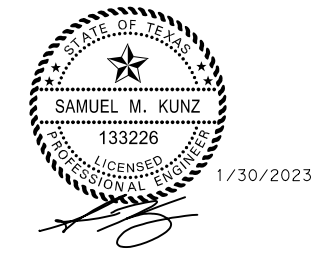
Designed:	RTG	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	RTG	6	TEXAS		US 281		
Drawn:	RTG	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	RTG	BWD	LAMPASAS	0251	06	036	46

1/30/2023 3:25:51 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/



LEGEND

- PERMANENT PAVEMENT THIS PHASE
- TEMPORARY PAVEMENT THIS PHASE
- COMPLETED PERMANENT PAVEMENT
- COMPLETED TEMPORARY PAVEMENT
- TEMPORARY TRAFFIC FLOW



NO.	REVISION	BY	DATE

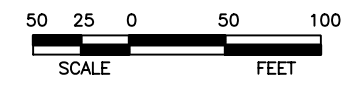
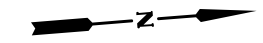
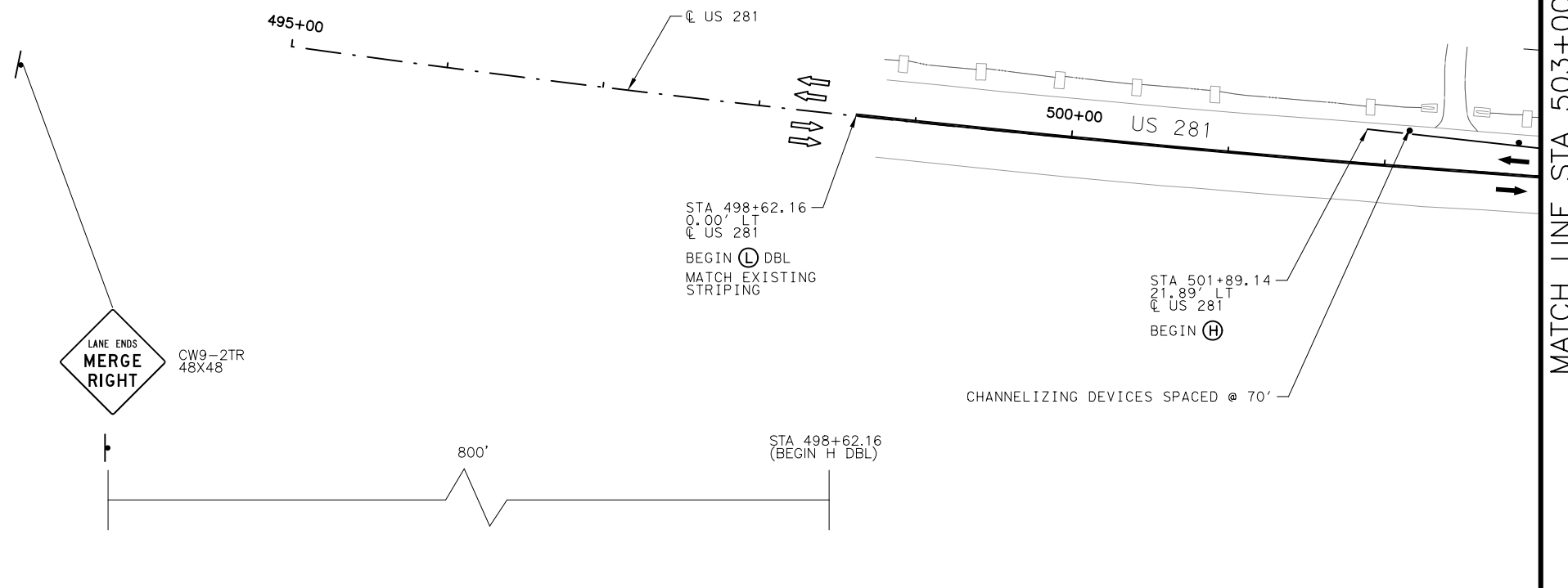
RTG RODRIGUEZ TRANSPORTATION GROUP
 FRM #587

©2023 Texas Department of Transportation

US 281
TRAFFIC CONTROL PLAN
TYPICAL SECTIONS
US 281
PHASE 1

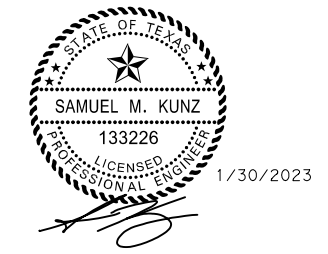
Designed:	RTG	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	RTG	6	TEXAS		US 281		
Drawn:	RTG	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	RTG	BWD	LAMPASAS	0251	06	036	47

1/30/2023 3:26:02 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcf
 pw:/



LEGEND

- PERMANENT PAVEMENT THIS PHASE
- TEMPORARY PAVEMENT THIS PHASE
- COMPLETED PERMANENT PAVEMENT
- COMPLETED TEMPORARY PAVEMENT
- BARREL CHANNELIZING DEVICE (N.T.S.)
- TEMPORARY TRAFFIC FLOW
- TY 3 BARRICADE
- CONSTRUCTION/TRAFFIC SIGN
- (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)

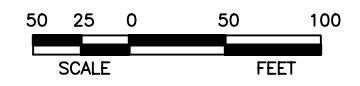
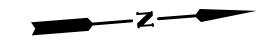


NO.	REVISION	BY	DATE



US 281
TRAFFIC CONTROL PLAN
 US 281
 PHASE 1
 END TO STA 503+00

Designed:	RTG	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	RTG	6	TEXAS		US 281		
Drawn:	RTG	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	RTG	BWD	LAMPASAS	0251	06	036	48



LEGEND

- PERMANENT PAVEMENT THIS PHASE
- TEMPORARY PAVEMENT THIS PHASE
- COMPLETED PERMANENT PAVEMENT
- COMPLETED TEMPORARY PAVEMENT
- BARREL CHANNELIZING DEVICE (N.T.S.)
- TEMPORARY TRAFFIC FLOW
- TY 3 BARRICADE
- CONSTRUCTION/TRAFFIC SIGN
- (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)

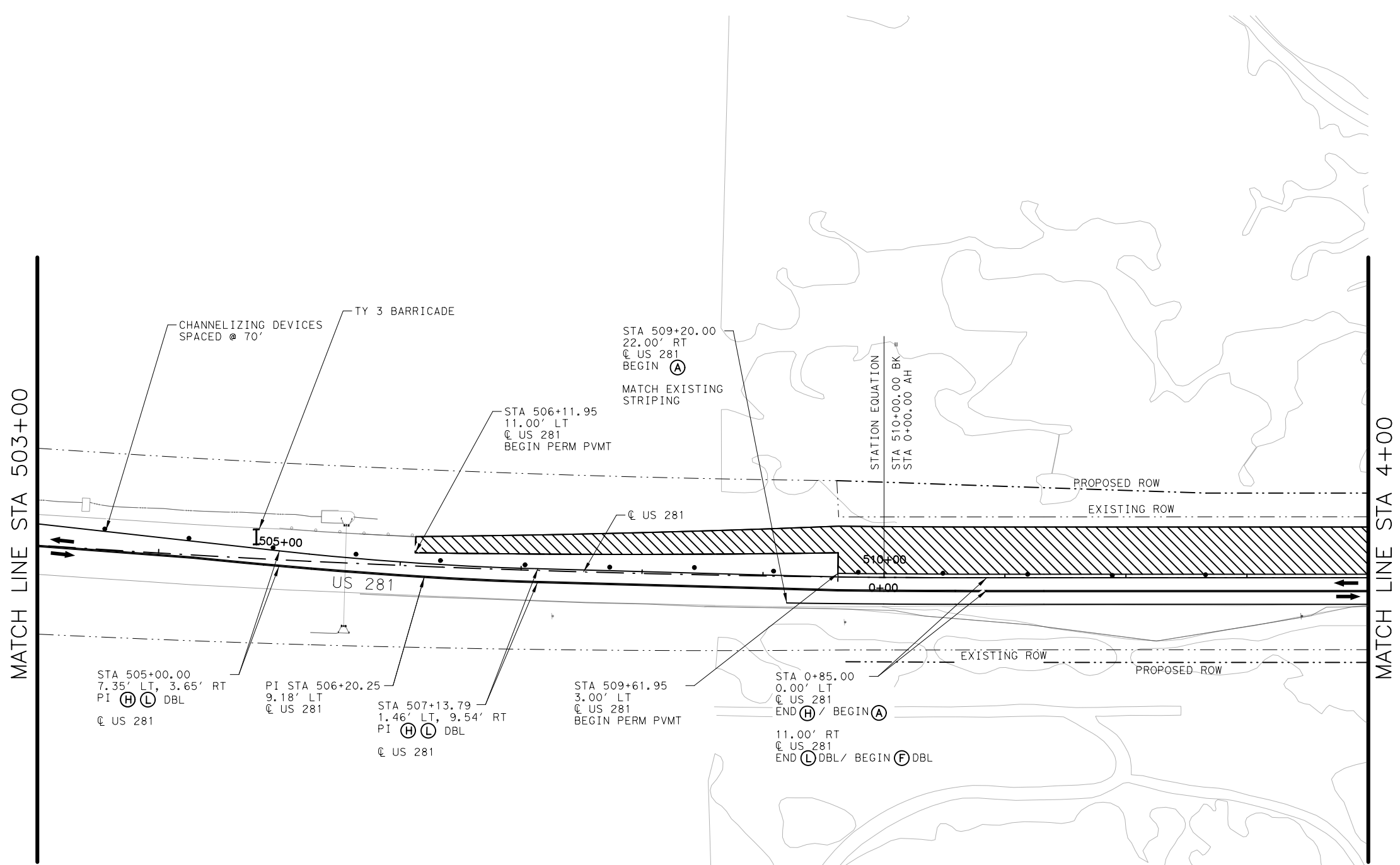


NO.	REVISION	BY	DATE

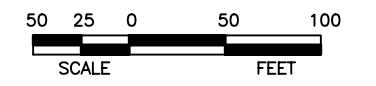
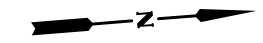


US 281
TRAFFIC CONTROL PLAN
 US 281
PHASE 1
 STA 503+00 TO STA 4+00









Designed:	RTG	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	RTG	6	TEXAS		US 281		
Drawn:	RTG	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	RTG	BWD	LAMPASAS	0251	06	036	49

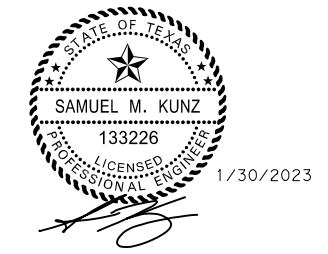


1/30/2023 3:26:11 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/



LEGEND

-  PERMANENT PAVEMENT THIS PHASE
-  TEMPORARY PAVEMENT THIS PHASE
-  COMPLETED PERMANENT PAVEMENT
-  COMPLETED TEMPORARY PAVEMENT
-  BARREL CHANNELIZING DEVICE (N.T.S.)
-  TEMPORARY TRAFFIC FLOW
-  TY 3 BARRICADE
-  CONSTRUCTION/TRAFFIC SIGN
- (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)

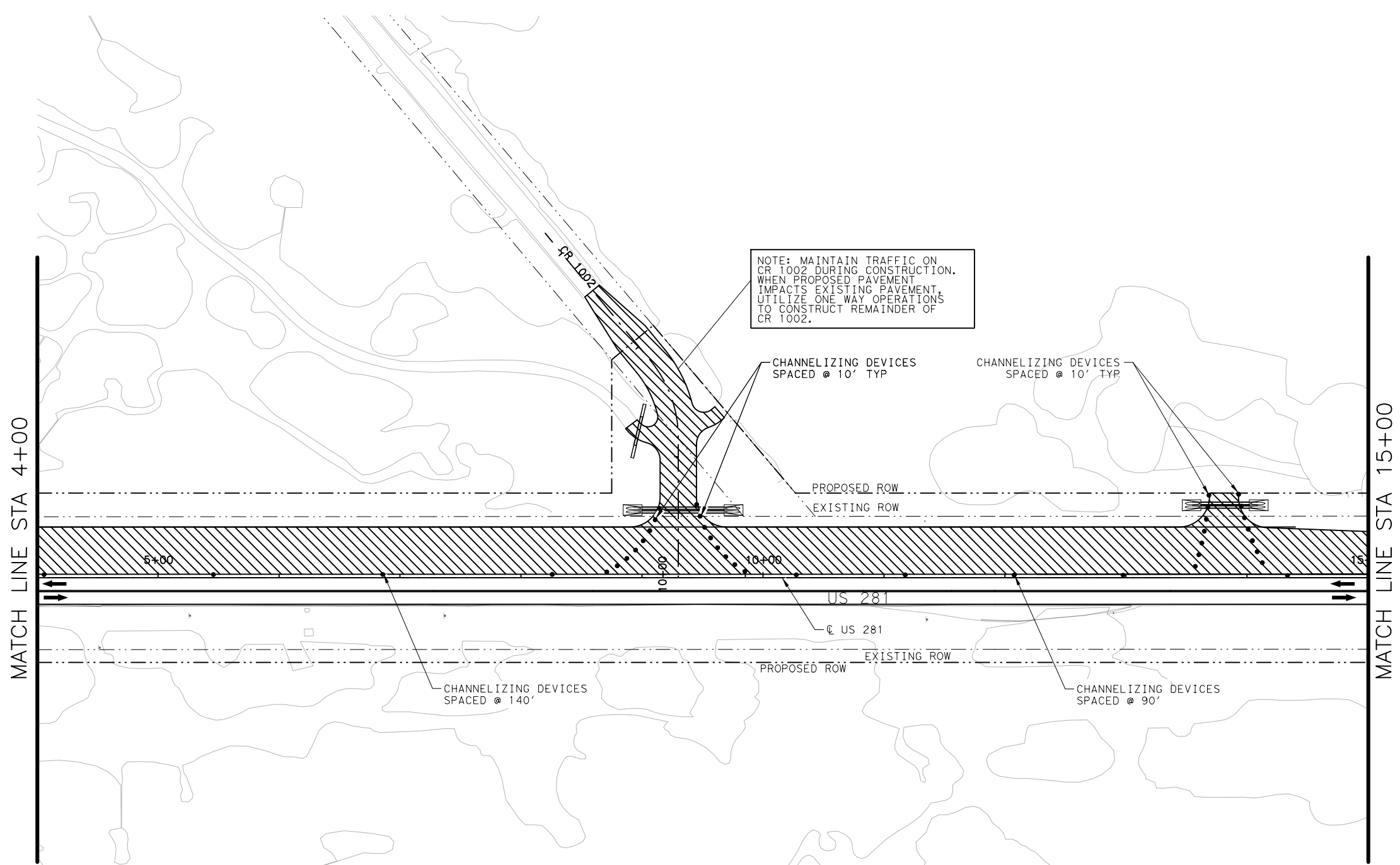


NO.	REVISION	BY	DATE

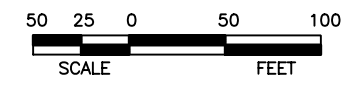
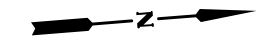


US 281
TRAFFIC CONTROL PLAN
 US 281
PHASE 1
 STA 4+00 TO STA 15+00









Designed:	RTG	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	RTG	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Drawn:	RTG	JOB NO.	036	SHEET NO.	50				
Checked:	RTG	BWD							

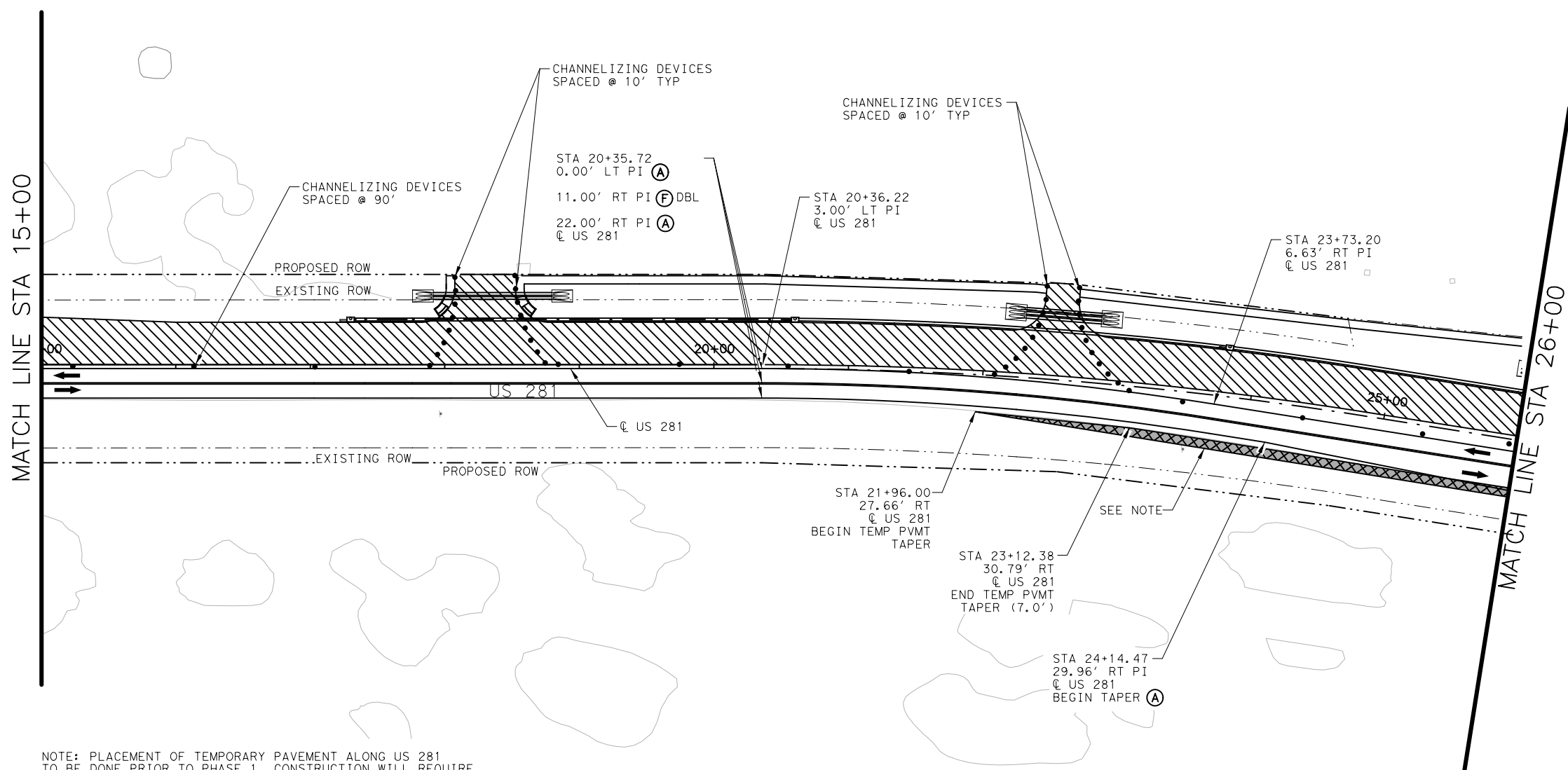
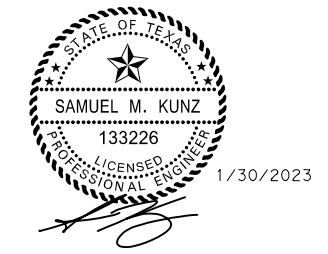


1/30/2023 3:26:24 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/



LEGEND

-  PERMANENT PAVEMENT THIS PHASE
-  TEMPORARY PAVEMENT THIS PHASE
-  COMPLETED PERMANENT PAVEMENT
-  COMPLETED TEMPORARY PAVEMENT
-  BARREL CHANNELIZING DEVICE (N.T.S.)
-  TEMPORARY TRAFFIC FLOW
-  TY 3 BARRICADE
-  CONSTRUCTION/TRAFFIC SIGN
- (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)



NOTE: PLACEMENT OF TEMPORARY PAVEMENT ALONG US 281 TO BE DONE PRIOR TO PHASE 1. CONSTRUCTION WILL REQUIRE OUTSIDE LANE AND SHOULDER CLOSURE. REFER TO TCP NARRATIVE AND TCP STANDARD TCP(2-1)-18 AND TCP(2-5)-18 FOR ADDITIONAL INFORMATION.

1/30/2023 3:26:37 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/

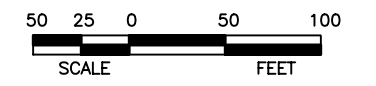
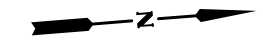
NO.	REVISION	BY	DATE

RTG RODRIGUEZ TRANSPORTATION GROUP
 FIRM #587























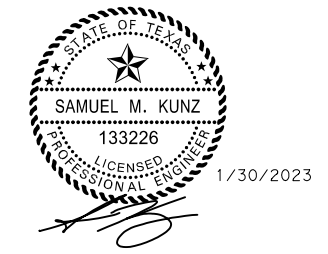
US 281
TRAFFIC CONTROL PLAN
 US 281
 PHASE 1
 STA 15+00 TO STA 26+00

DESIGNED:	RTG	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	RTG	6	TEXAS		US 281		
Drawn:	RTG	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	RTG	BWD	LAMPASAS	0251	06	036	51



LEGEND

-  PERMANENT PAVEMENT THIS PHASE
-  TEMPORARY PAVEMENT THIS PHASE
-  COMPLETED PERMANENT PAVEMENT
-  COMPLETED TEMPORARY PAVEMENT
-  BARREL CHANNELIZING DEVICE (N.T.S.)
-  TEMPORARY TRAFFIC FLOW
-  TY 3 BARRICADE
-  CONSTRUCTION/TRAFFIC SIGN
-  WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
-  WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
-  WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
-  WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
-  WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
-  WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
-  WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
-  WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
-  WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
-  WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
-  WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
-  WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)

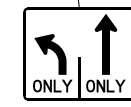
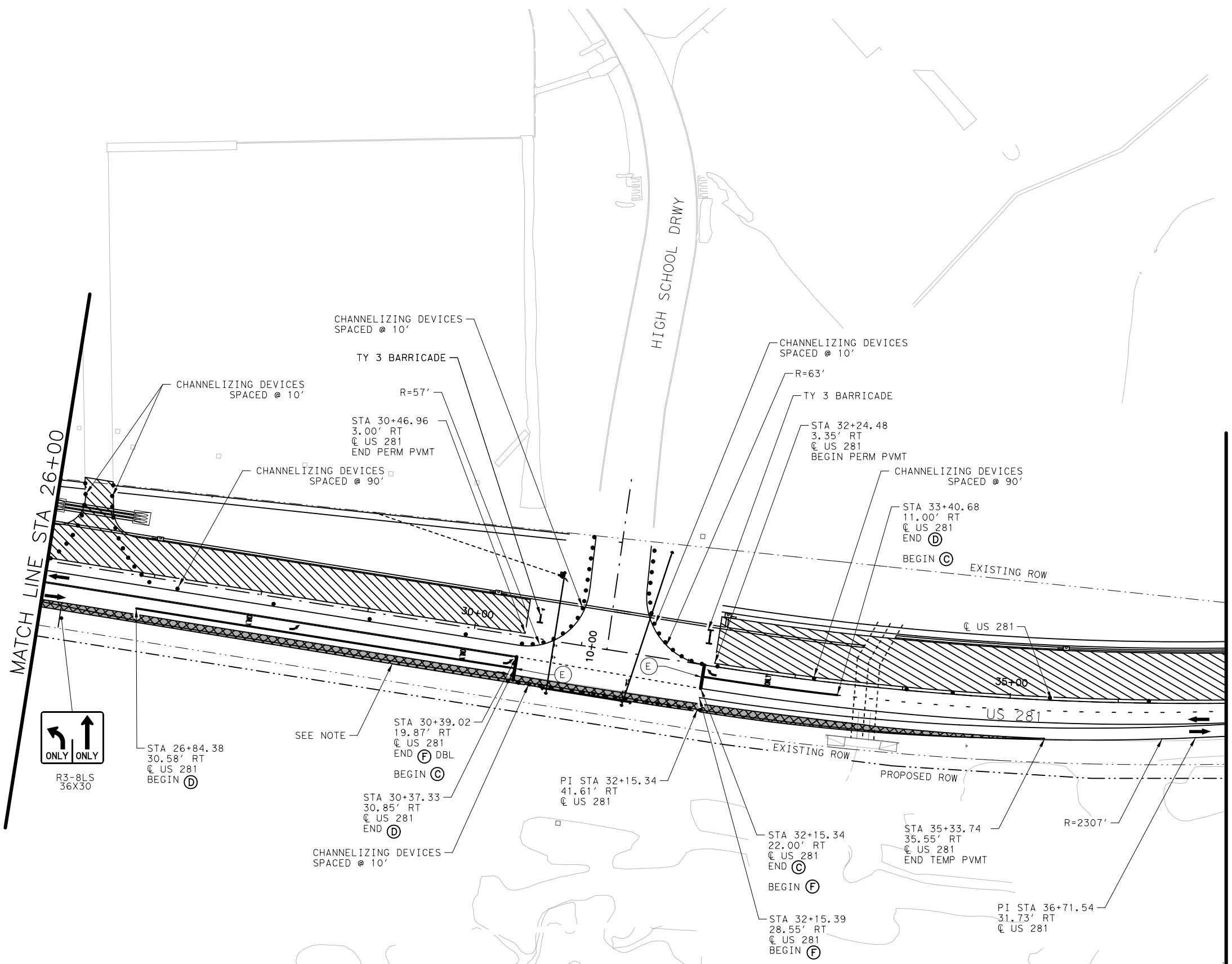


NO.	REVISION	BY	DATE



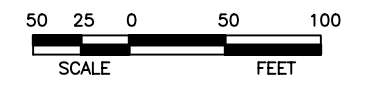
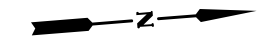
US 281
TRAFFIC CONTROL PLAN
 US 281
PHASE 1
 STA 26+00 TO STA 37+00

Designed:	RTG	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	RTG	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Drawn:	RTG	JOB NO.	036	SHEET NO.	52				























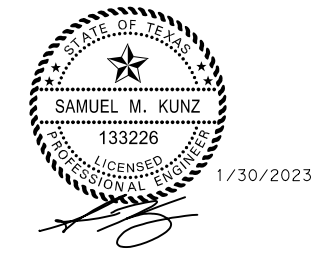
NOTE: PLACEMENT OF TEMPORARY PAVEMENT ALONG US 281 TO BE DONE PRIOR TO PHASE 1. CONSTRUCTION WILL REQUIRE OUTSIDE LANE AND SHOULDER CLOSURE. REFER TO TCP NARRATIVE AND TCP STANDARD TCP (2-1)-18 AND TCP (2-5)-18 FOR ADDITIONAL INFORMATION.

1/30/2023 3:26:48 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/



LEGEND

-  PERMANENT PAVEMENT THIS PHASE
-  TEMPORARY PAVEMENT THIS PHASE
-  COMPLETED PERMANENT PAVEMENT
-  COMPLETED TEMPORARY PAVEMENT
-  BARREL CHANNELIZING DEVICE (N.T.S.)
-  TEMPORARY TRAFFIC FLOW
-  TYPE 3 BARRICADE
-  CONSTRUCTION/TRAFFIC SIGN
-  (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
-  (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
-  (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
-  (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
-  (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
-  (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
-  (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
-  (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
-  (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
-  (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
-  (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
-  (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)

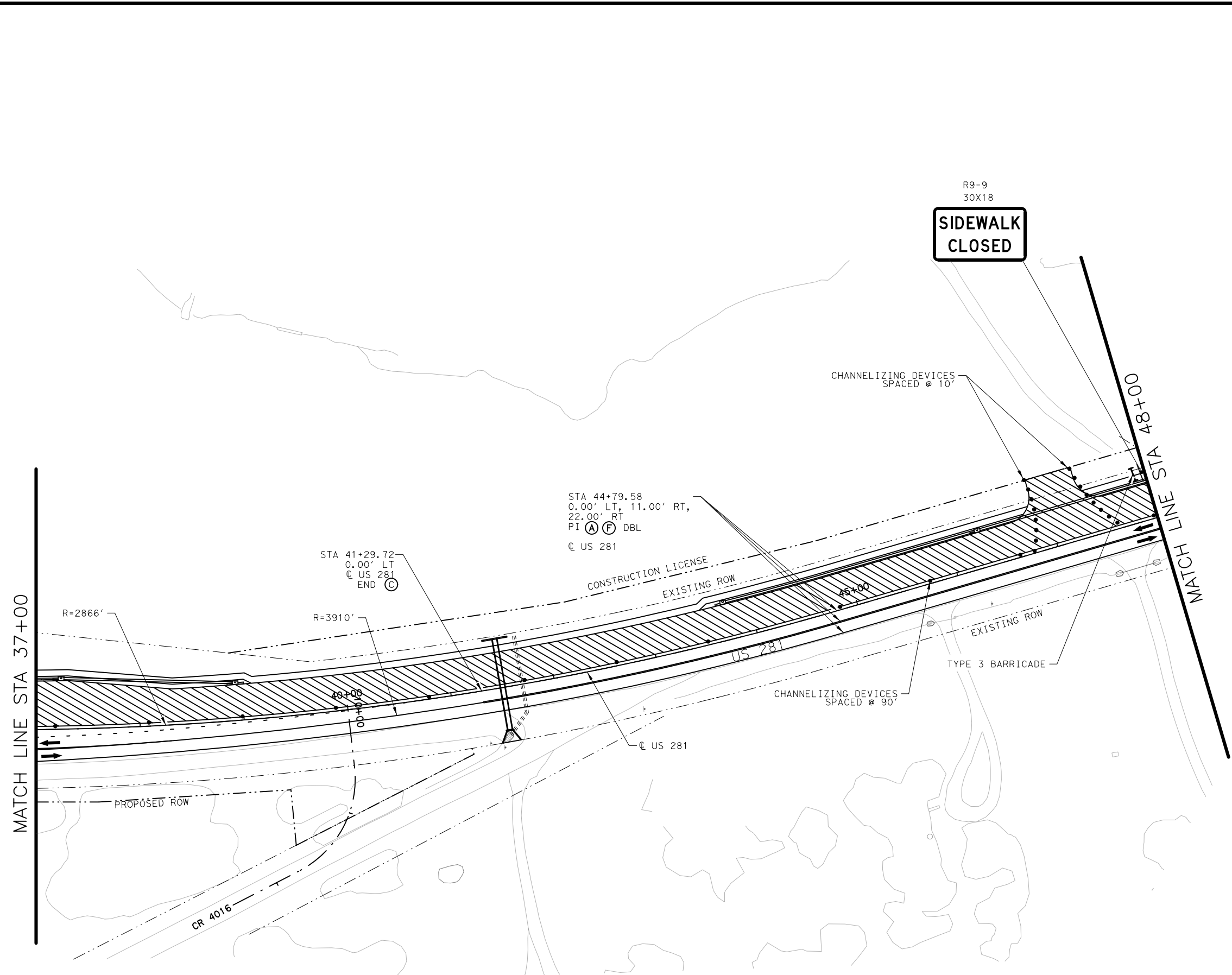


NO.	REVISION	BY	DATE

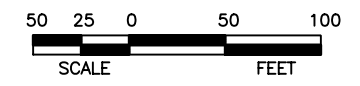
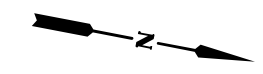


US 281
TRAFFIC CONTROL PLAN
 US 281
 PHASE 1
 STA 37+00 TO STA 48+00









Designed:	RTG	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	RTG	6	TEXAS		US 281		
Drawn:	RTG	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	RTG	BWD	LAMPASAS	0251	06	036	53

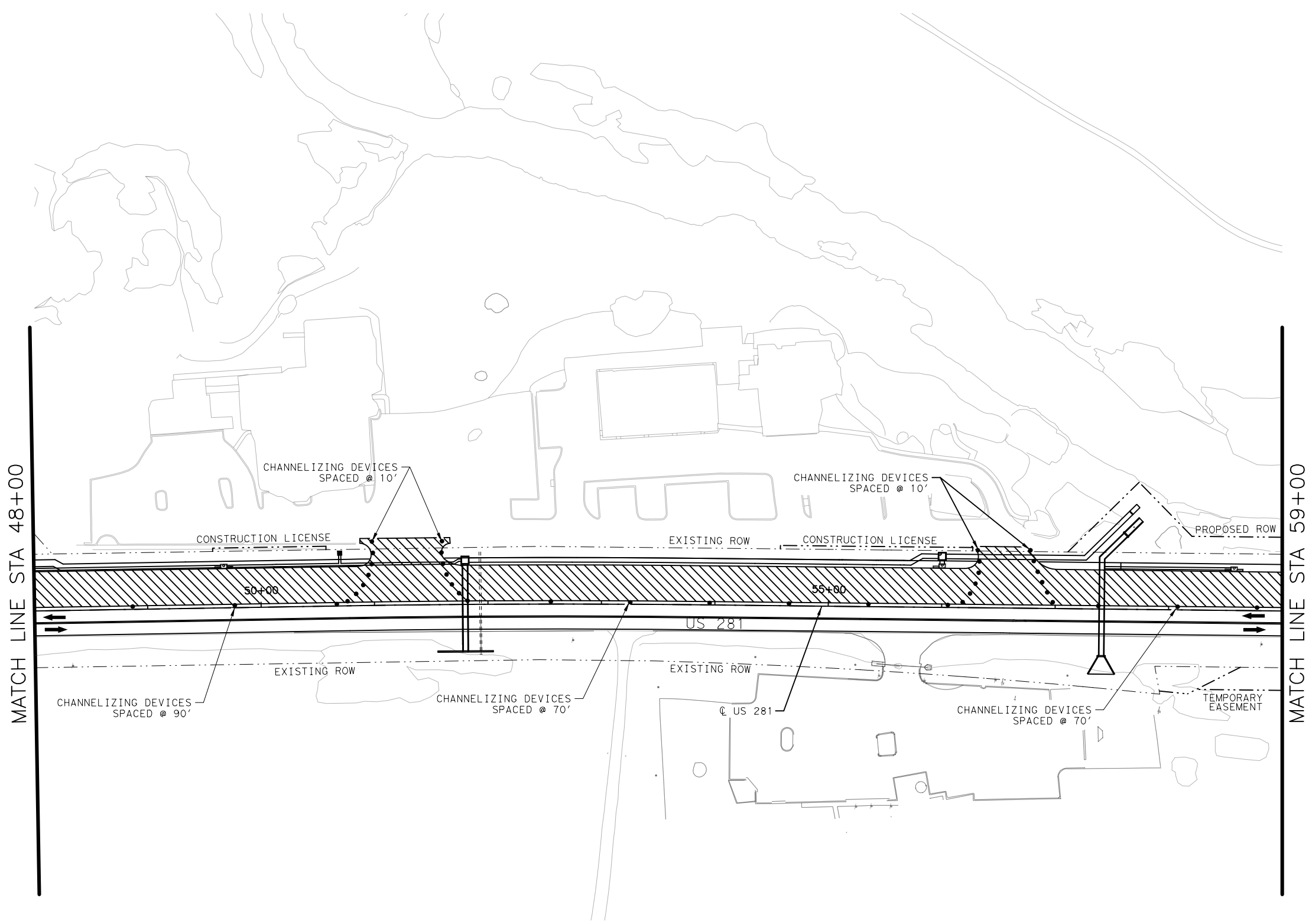
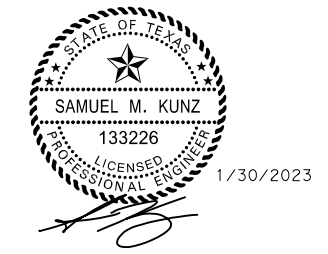


1/30/2023 3:27:00 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/



LEGEND

-  PERMANENT PAVEMENT THIS PHASE
-  TEMPORARY PAVEMENT THIS PHASE
-  COMPLETED PERMANENT PAVEMENT
-  COMPLETED TEMPORARY PAVEMENT
-  BARREL CHANNELIZING DEVICE (N.T.S.)
-  TEMPORARY TRAFFIC FLOW
-  TY 3 BARRICADE
-  CONSTRUCTION/TRAFFIC SIGN
- (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)



1/30/2023 3:27:12 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/

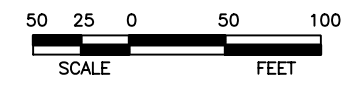
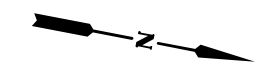
NO.	REVISION	BY	DATE

RTG RODRIGUEZ TRANSPORTATION GROUP
FRM #587









©2023 Texas Department of Transportation

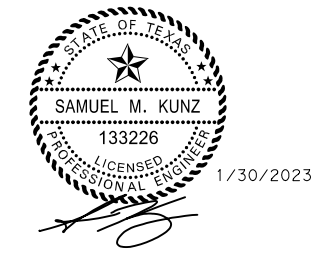
US 281
TRAFFIC CONTROL PLAN
 US 281
 PHASE 1
 STA 48+00 TO STA 59+00

Designed:	RTG	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	RTG	DIST.	LAMPASAS	COUNTY	LAMPASAS	CONTROL NO.	0251	SECTION NO.	06
Drawn:	RTG	JOB NO.	036	SHEET NO.	54				



LEGEND

-  PERMANENT PAVEMENT THIS PHASE
-  TEMPORARY PAVEMENT THIS PHASE
-  COMPLETED PERMANENT PAVEMENT
-  COMPLETED TEMPORARY PAVEMENT
-  BARREL CHANNELIZING DEVICE (N.T.S.)
-  TEMPORARY TRAFFIC FLOW
-  TY 3 BARRICADE
-  CONSTRUCTION/TRAFFIC SIGN
- (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)

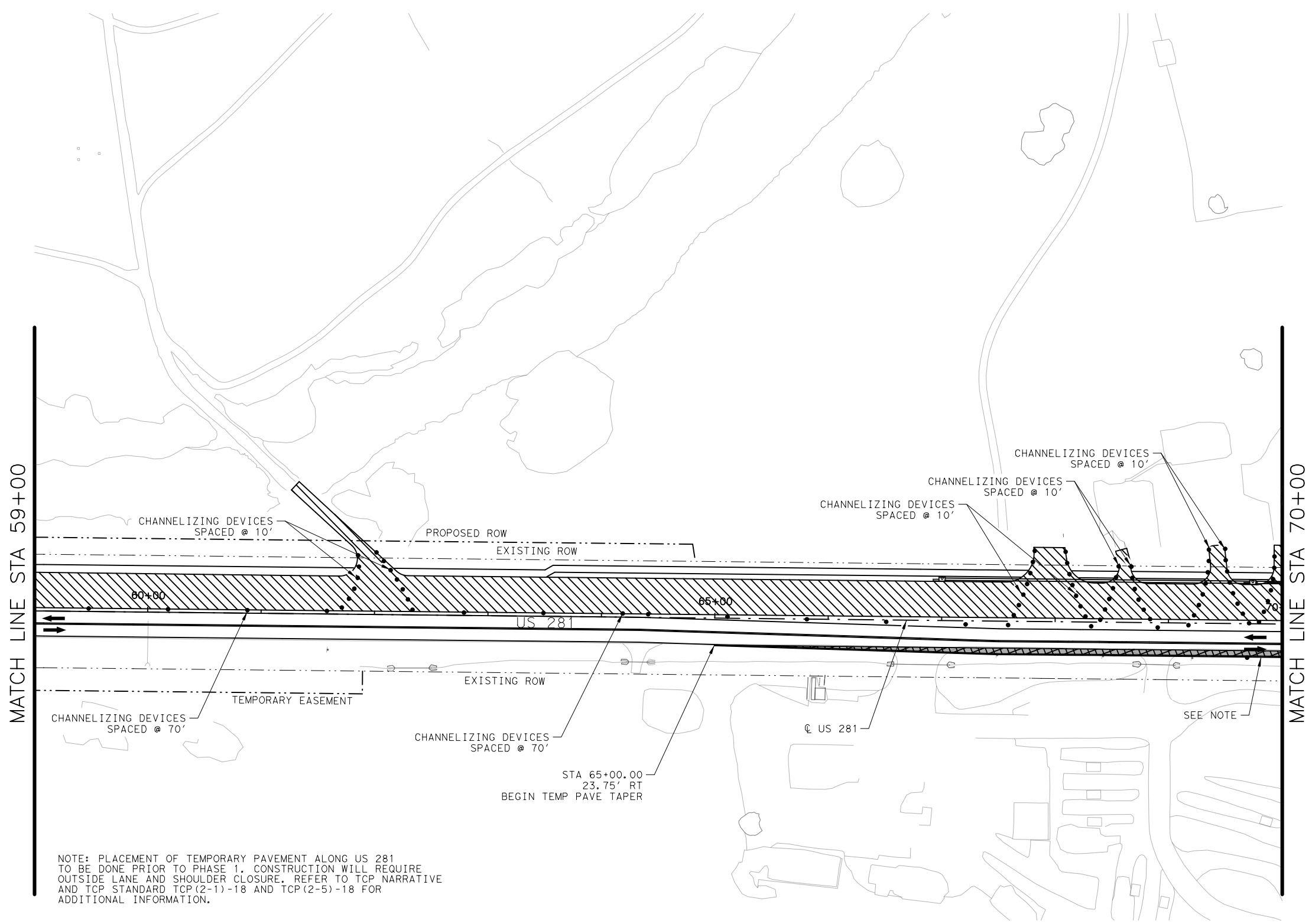


NO.	REVISION	BY	DATE



US 281
TRAFFIC CONTROL PLAN
 US 281
 PHASE 1
 STA 59+00 TO STA 70+00

Designed:	RTG	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	RTG	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Drawn:	RTG	JOB NO.	036	SHEET NO.	55				
Checked:	RTG	BWD							

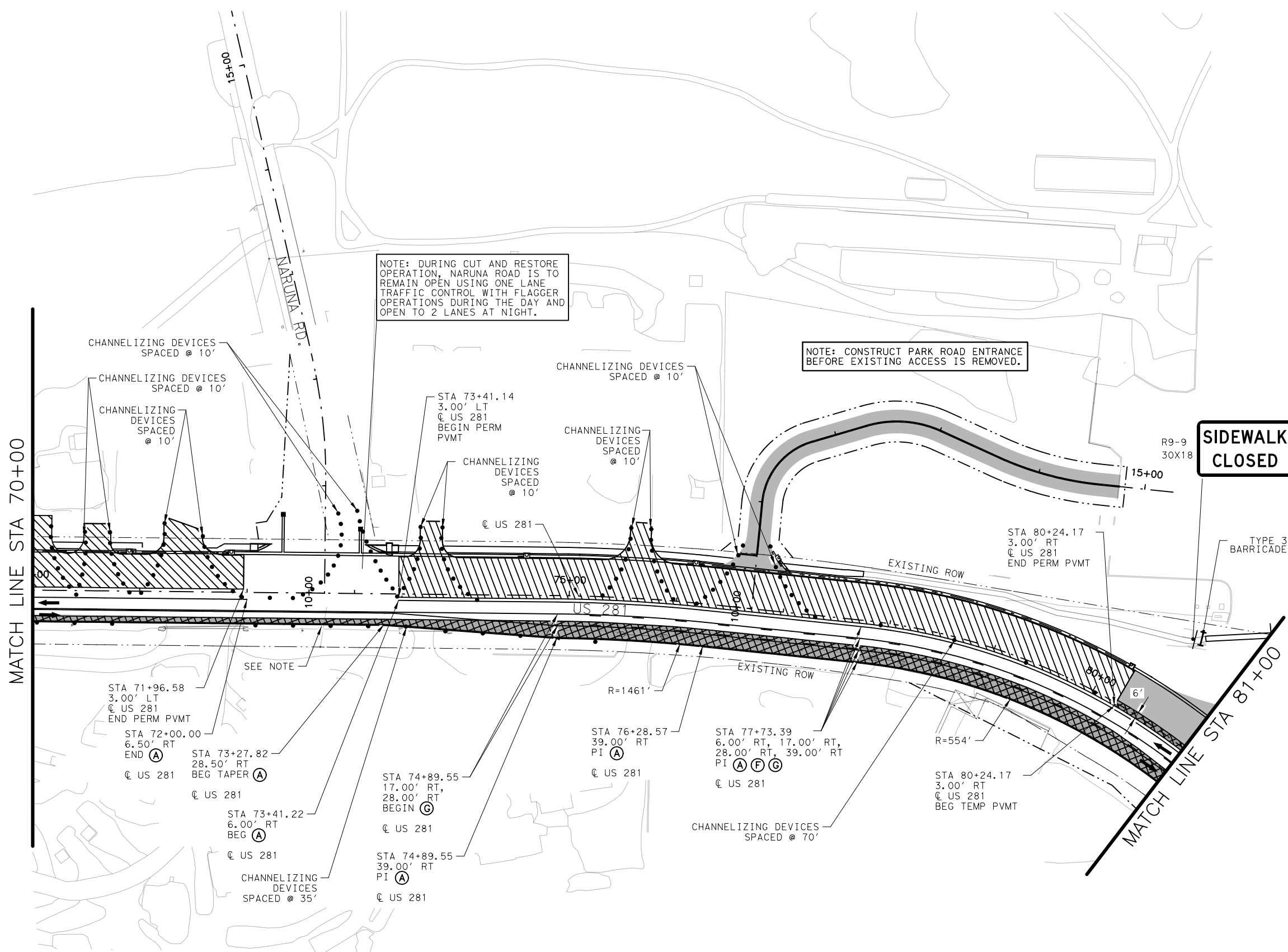


NOTE: PLACEMENT OF TEMPORARY PAVEMENT ALONG US 281 TO BE DONE PRIOR TO PHASE 1. CONSTRUCTION WILL REQUIRE OUTSIDE LANE AND SHOULDER CLOSURE. REFER TO TCP NARRATIVE AND TCP STANDARD TCP (2-1)-18 AND TCP (2-5)-18 FOR ADDITIONAL INFORMATION.

STA 65+00.00
 23.75' RT
 BEGIN TEMP PAVE TAPER

1/30/2023 3:27:26 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/

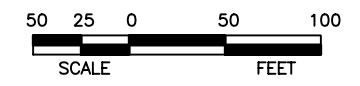
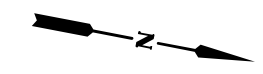
3/9/2023 1:26:14 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.36 RTG Cut Sheets/TCP_PH109.dgn



NOTE: DURING CUT AND RESTORE OPERATION, NARUNA ROAD IS TO REMAIN OPEN USING ONE LANE TRAFFIC CONTROL WITH FLAGGER OPERATIONS DURING THE DAY AND OPEN TO 2 LANES AT NIGHT.

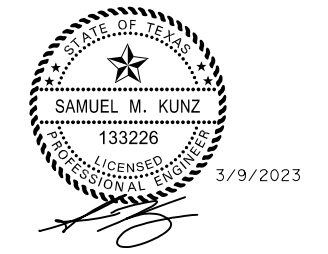
NOTE: CONSTRUCT PARK ROAD ENTRANCE BEFORE EXISTING ACCESS IS REMOVED.

SIDEWALK CLOSED



LEGEND

- PERMANENT PAVEMENT THIS PHASE
- TEMPORARY PAVEMENT THIS PHASE
- COMPLETED PERMANENT PAVEMENT
- COMPLETED TEMPORARY PAVEMENT
- BARREL CHANNELIZING DEVICE (N.T.S.)
- TEMPORARY TRAFFIC FLOW
- TY 3 BARRICADE
- CONSTRUCTION/TRAFFIC SIGN
- (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)



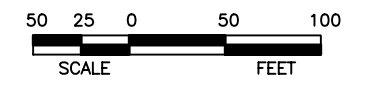
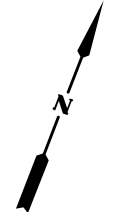
NO.	REVISION	BY	DATE

RTG RODRIGUEZ TRANSPORTATION GROUP
 FIRM #587

©2023 Texas Department of Transportation

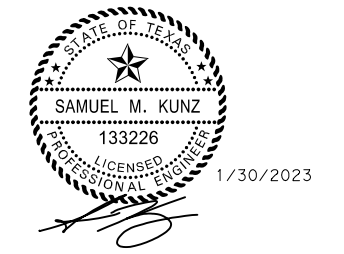
US 281
TRAFFIC CONTROL PLAN
 US 281
PHASE 1
 STA 70+00 TO STA 81+00

Designed:	RTG	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	RTG	6	TEXAS		US 281		
Drawn:	RTG	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	RTG	BWD	LAMPASAS	0251	06	036	56



LEGEND

- PERMANENT PAVEMENT THIS PHASE
- TEMPORARY PAVEMENT THIS PHASE
- COMPLETED PERMANENT PAVEMENT
- COMPLETED TEMPORARY PAVEMENT
- BARREL CHANNELIZING DEVICE (N.T.S.)
- TEMPORARY TRAFFIC FLOW
- TY 3 BARRICADE
- CONSTRUCTION/TRAFFIC SIGN
- WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)

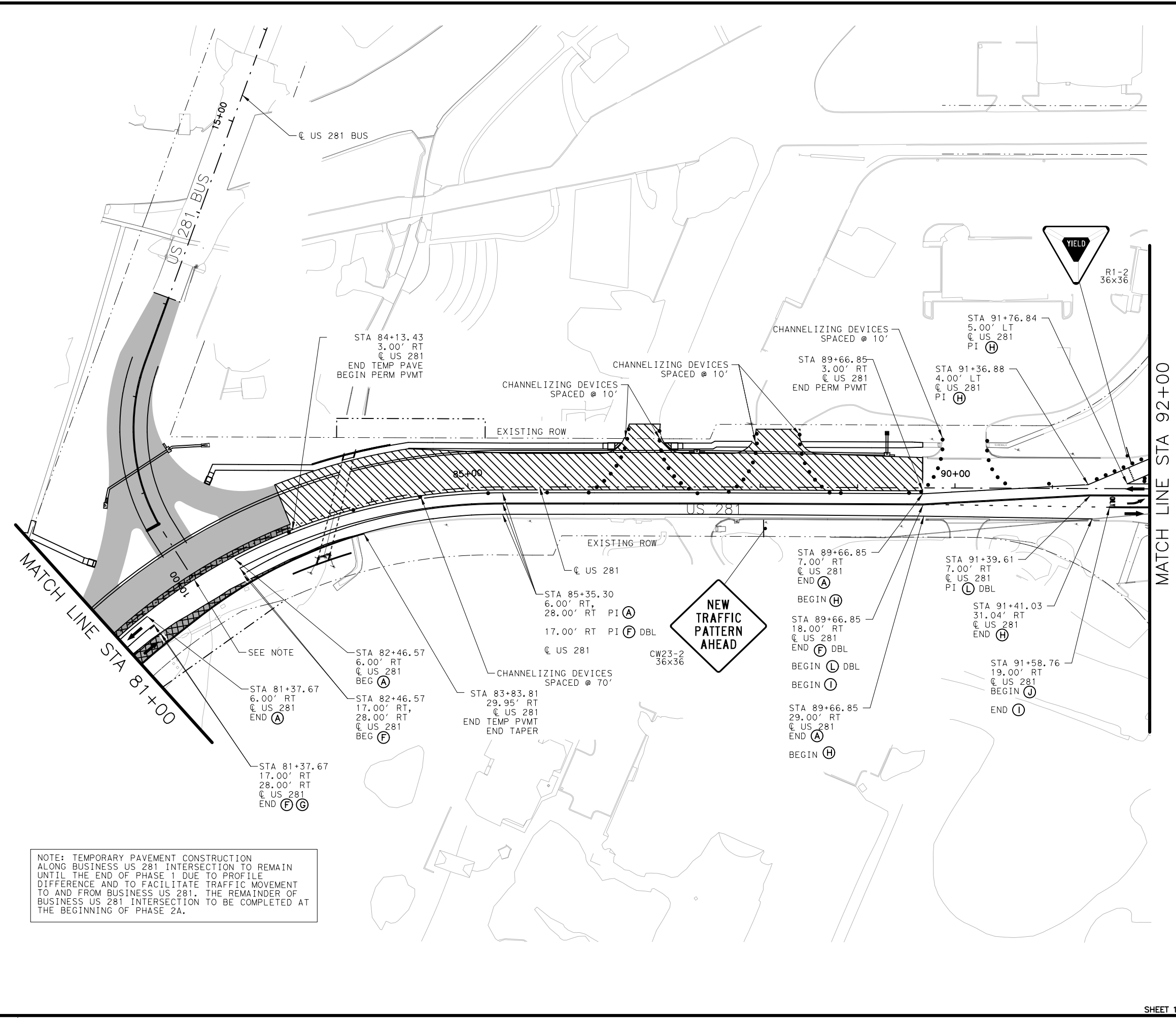


NO.	REVISION	BY	DATE



US 281
TRAFFIC CONTROL PLAN
 US 281
 PHASE 1
 STA 81+00 TO STA 92+00

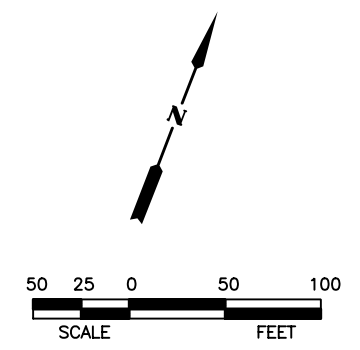
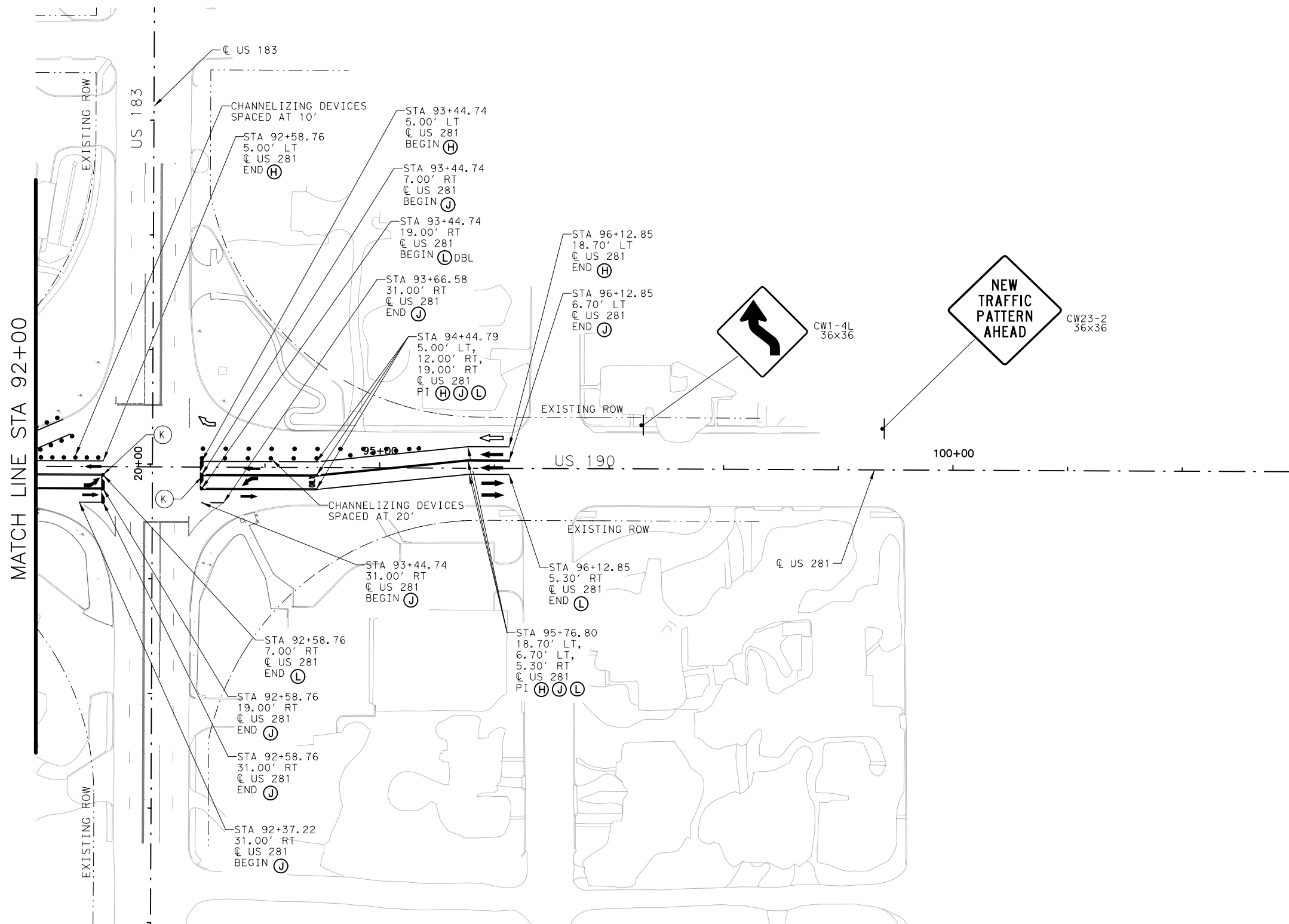
Designed:	RTG	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	RTG	6	TEXAS		US 281		
Drawn:	RTG	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	RTG	BWD	LAMPASAS	0251	06	036	57



NOTE: TEMPORARY PAVEMENT CONSTRUCTION ALONG BUSINESS US 281 INTERSECTION TO REMAIN UNTIL THE END OF PHASE 1 DUE TO PROFILE DIFFERENCE AND TO FACILITATE TRAFFIC MOVEMENT TO AND FROM BUSINESS US 281. THE REMAINDER OF BUSINESS US 281 INTERSECTION TO BE COMPLETED AT THE BEGINNING OF PHASE 2A.

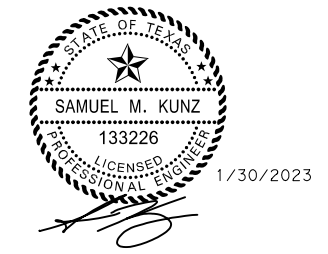
1/30/2023 3:27:50 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/

1/30/2023 3:28:02 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfp
 pw:/



LEGEND

- PERMANENT PAVEMENT THIS PHASE
- TEMPORARY PAVEMENT THIS PHASE
- COMPLETED PERMANENT PAVEMENT
- COMPLETED TEMPORARY PAVEMENT
- BARREL CHANNELIZING DEVICE (N.T.S.)
- TEMPORARY TRAFFIC FLOW
- TY 3 BARRICADE
- CONSTRUCTION/TRAFFIC SIGN
- WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)



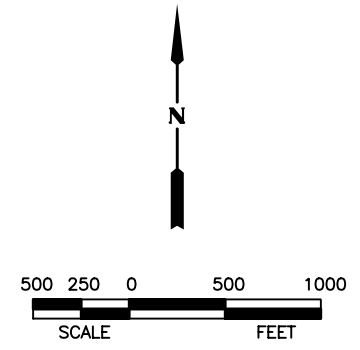
NO.	REVISION	BY	DATE



©2023 Texas Department of Transportation

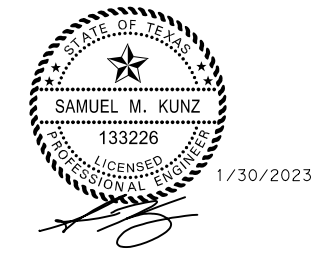
US 281
TRAFFIC CONTROL PLAN
 US 281
 PHASE 1
 STA 92+00 TO BEGIN

Designed:	RTG	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	RTG	6	TEXAS		US 281		
Drawn:	RTG	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	RTG	BWD	LAMPASAS	0251	06	036	58



LEGEND

- XXXX ROAD CLOSED
- ➔ TEMPORARY TRAFFIC FLOW
- I TY 3 BARRICADES
- CONSTRUCTION/TRAFFIC SIGN



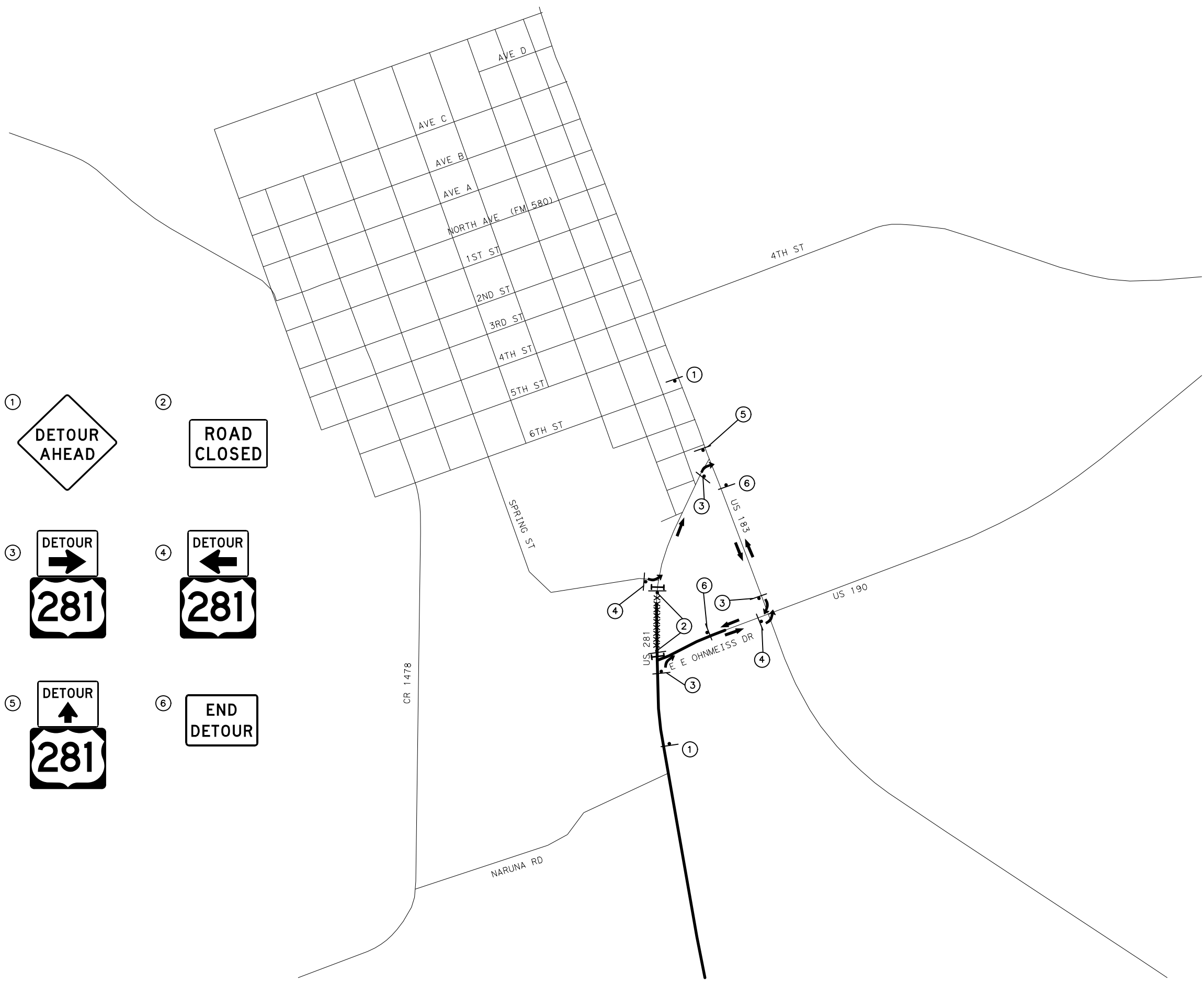
NO.	REVISION	BY	DATE

RTG RODRIGUEZ TRANSPORTATION GROUP
FIRM #587

©2023 Texas Department of Transportation

US 281
**TRAFFIC CONTROL PLAN
DETOUR ROUTING PLAN
PRE-PHASE 1
US 281**

Designed:	RTG	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	RTG	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Drawn:	RTG	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Checked:	RTG	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
								JOB NO.	036
								SHEET NO.	59



①

③

⑤

②

④

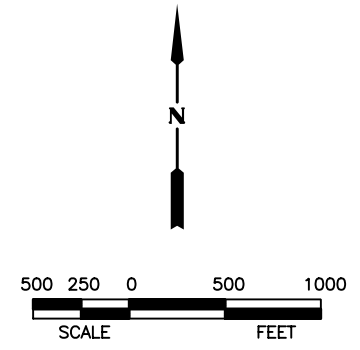
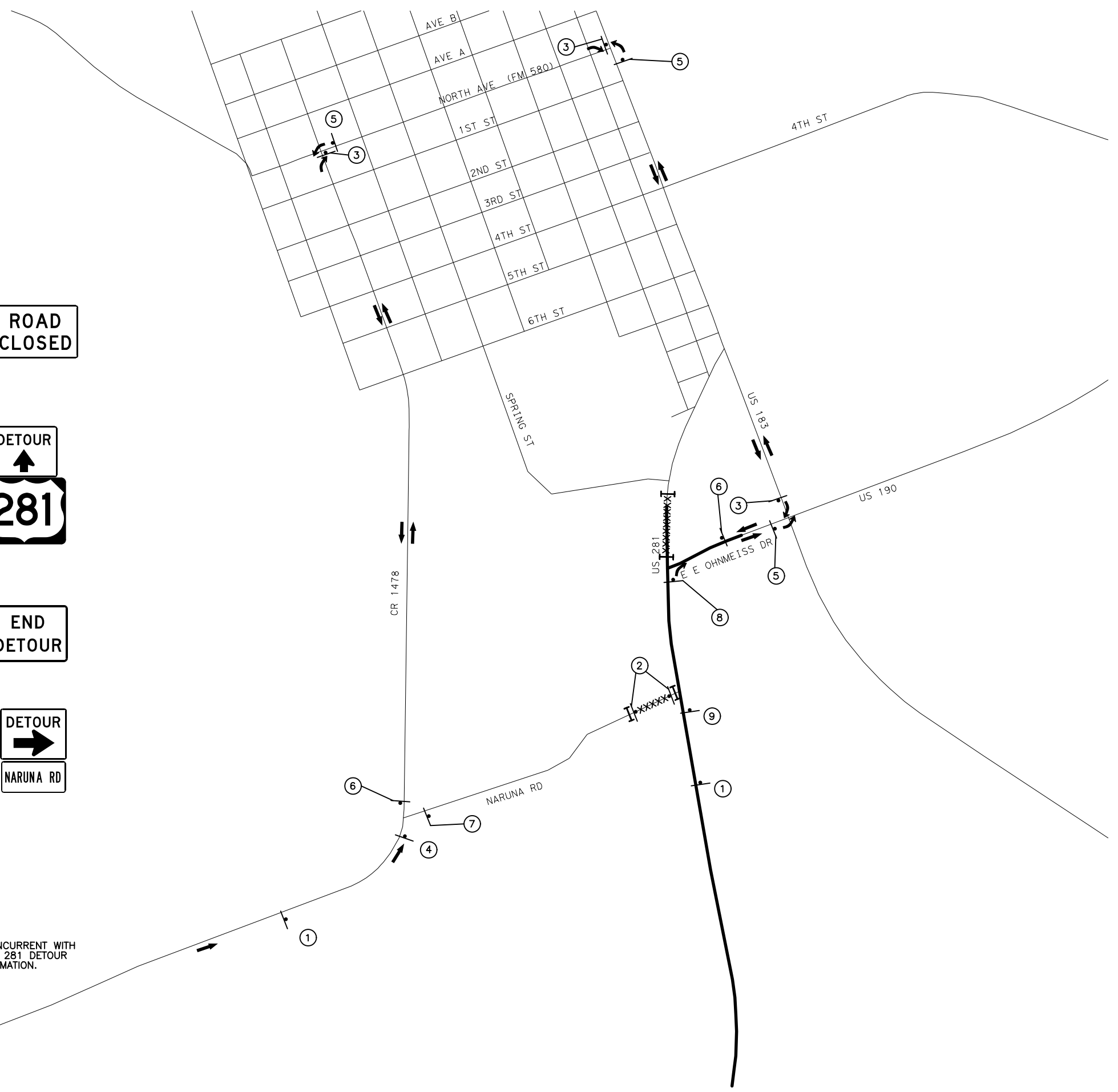
⑥

1/30/2023 3:28:10 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcf
 pw:/

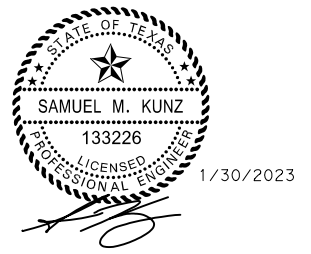
1/30/2023 3:28:17 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/

- ①
- ②
- ③
- ④
- ⑤
- ⑥
- ⑦
- ⑧
- ⑨

NOTE: US 281 CLOSURE TO RUN CONCURRENT WITH NARUNA RD. CLOSURE. REFER TO US 281 DETOUR ROUTING PLAN FOR ADDITIONAL INFORMATION.



- LEGEND**
- XXXX ROAD CLOSED
 - TEMPORARY TRAFFIC FLOW
 - TY 3 BARRICADES
 - CONSTRUCTION/TRAFFIC SIGN



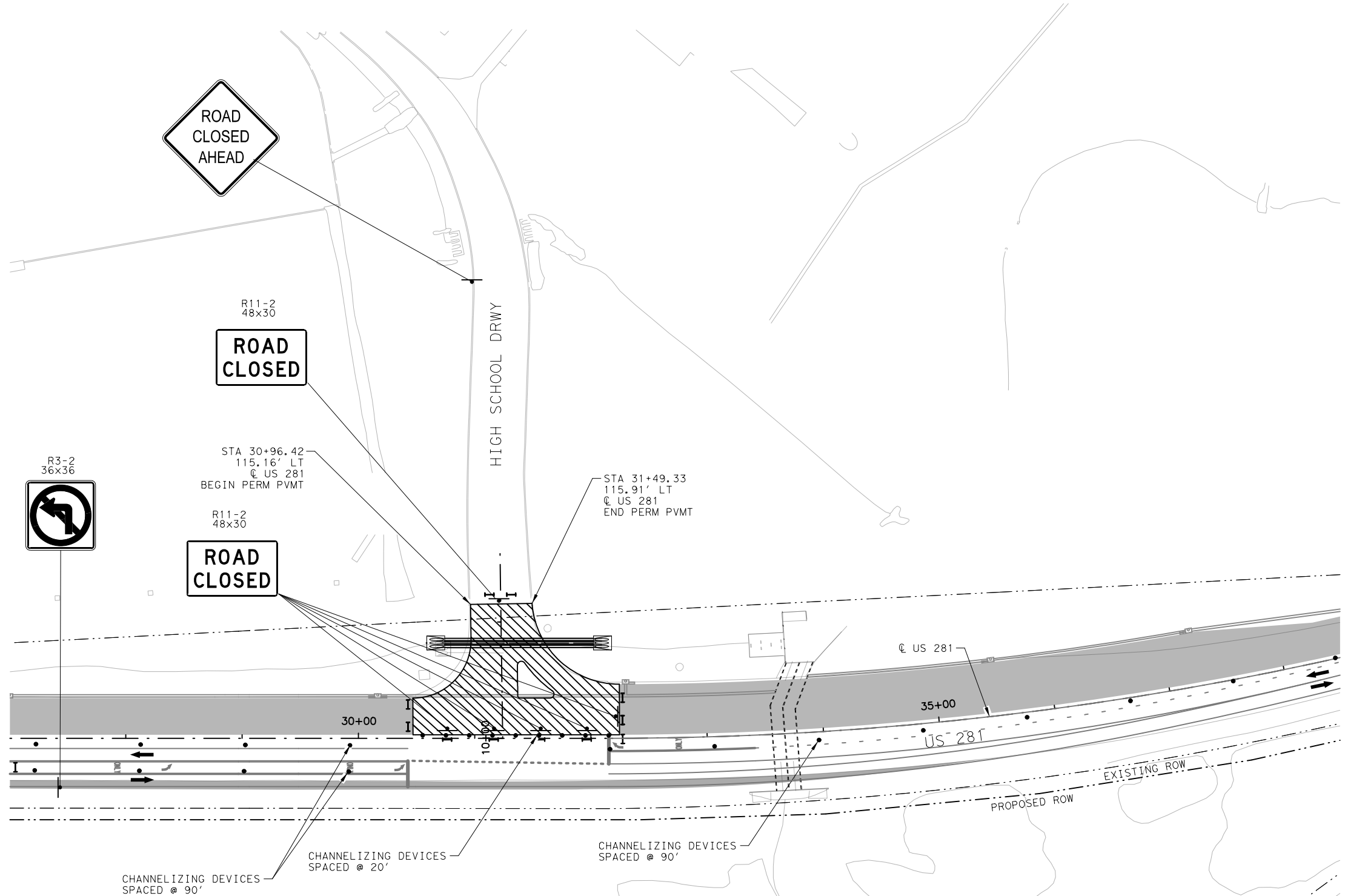
NO.	REVISION	BY	DATE



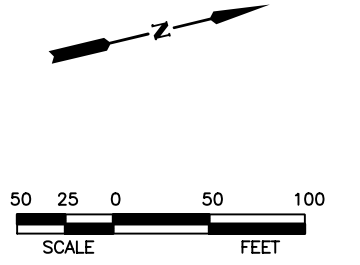
©2023 Texas Department of Transportation

US 281
**TRAFFIC CONTROL PLAN
 DETOUR ROUTING PLAN
 PHASE 1B
 NARUNA RD.**

Designed:	RTG	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	RTG	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Drawn:	RTG	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Checked:	RTG	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06

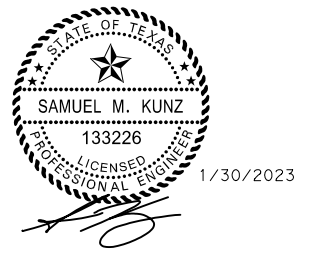


NOTE: HIGH SCHOOL DRIVEWAY TO REMAIN CLOSED IN PHASE 1A. CONSTRUCTION TO OCCUR IN SUMMER 2024 AND OPEN TO TRAFFIC PRIOR TO THE 2024 SCHOOL YEAR. REFER TO TCP NARRATIVE FOR ADDITIONAL INFORMATION.



LEGEND

- PERMANENT PAVEMENT THIS PHASE
- TEMPORARY PAVEMENT THIS PHASE
- COMPLETED PERMANENT PAVEMENT
- COMPLETED TEMPORARY PAVEMENT
- BARREL CHANNELIZING DEVICE (N.T.S.)
- TEMPORARY TRAFFIC FLOW
- TY 3 BARRICADE
- CONSTRUCTION/TRAFFIC SIGN
- (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)



NO.	REVISION	BY	DATE

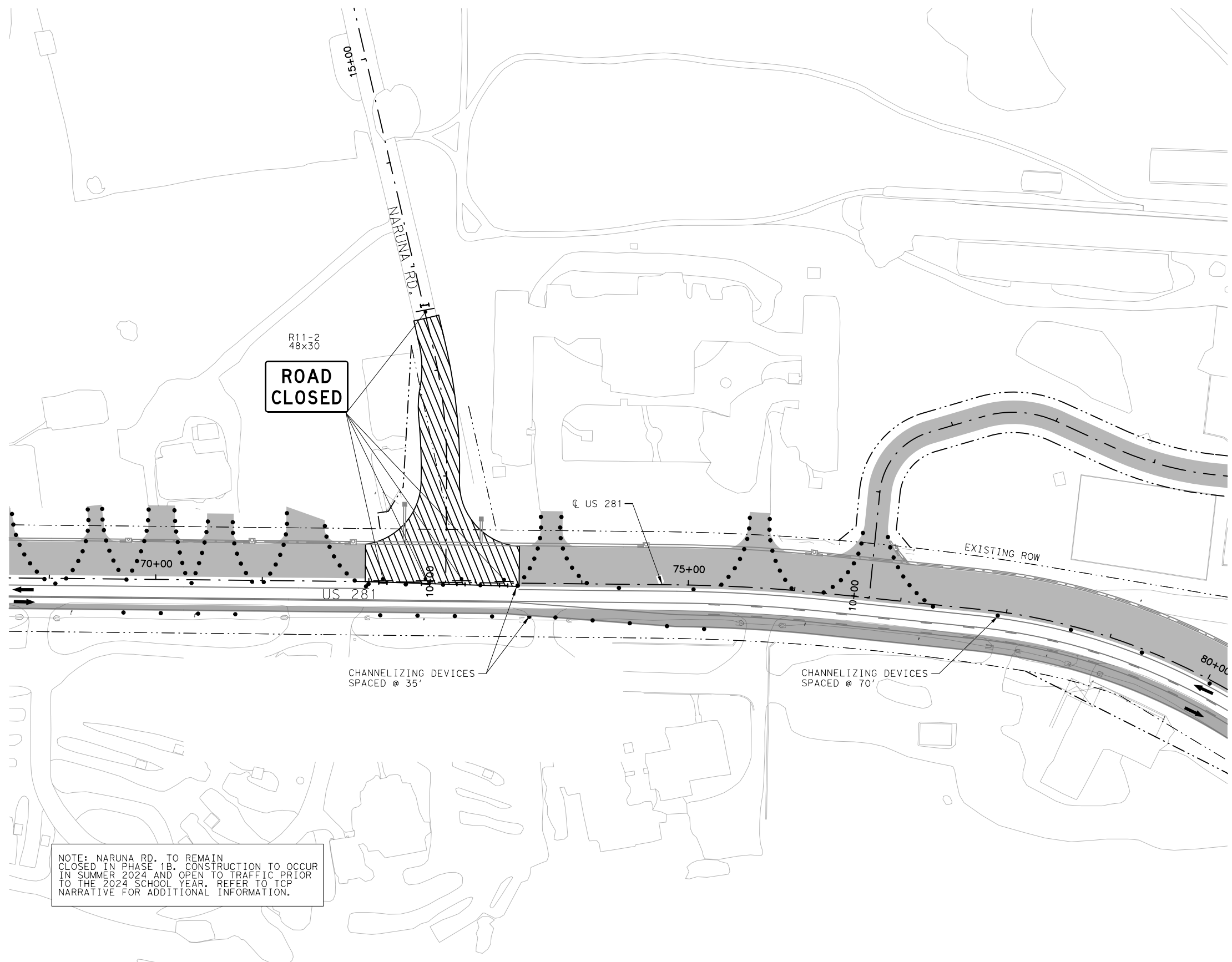
RTG RODRIGUEZ TRANSPORTATION GROUP
FRM #587

©2023 Texas Department of Transportation

US 281
TRAFFIC CONTROL PLAN
US 281
PHASE 1A
BEGIN TO END

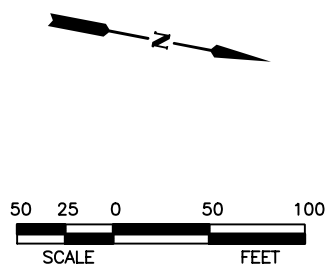
Designed:	RTG	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	RTG	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Drawn:	RTG	JOB NO.	036	SHEET NO.	61				

1/30/2023 3:28:25 PM skunz
pw:/



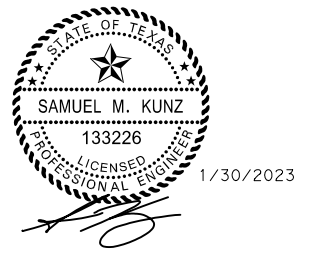
**ROAD
CLOSED**

NOTE: NARUNA RD. TO REMAIN CLOSED IN PHASE 1B. CONSTRUCTION TO OCCUR IN SUMMER 2024 AND OPEN TO TRAFFIC PRIOR TO THE 2024 SCHOOL YEAR. REFER TO TCP NARRATIVE FOR ADDITIONAL INFORMATION.



LEGEND

- PERMANENT PAVEMENT THIS PHASE
- TEMPORARY PAVEMENT THIS PHASE
- COMPLETED PERMANENT PAVEMENT
- COMPLETED TEMPORARY PAVEMENT
- BARREL CHANNELIZING DEVICE (N.T.S.)
- TEMPORARY TRAFFIC FLOW
- TY 3 BARRICADE
- CONSTRUCTION/TRAFFIC SIGN
- (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)



NO.	REVISION	BY	DATE



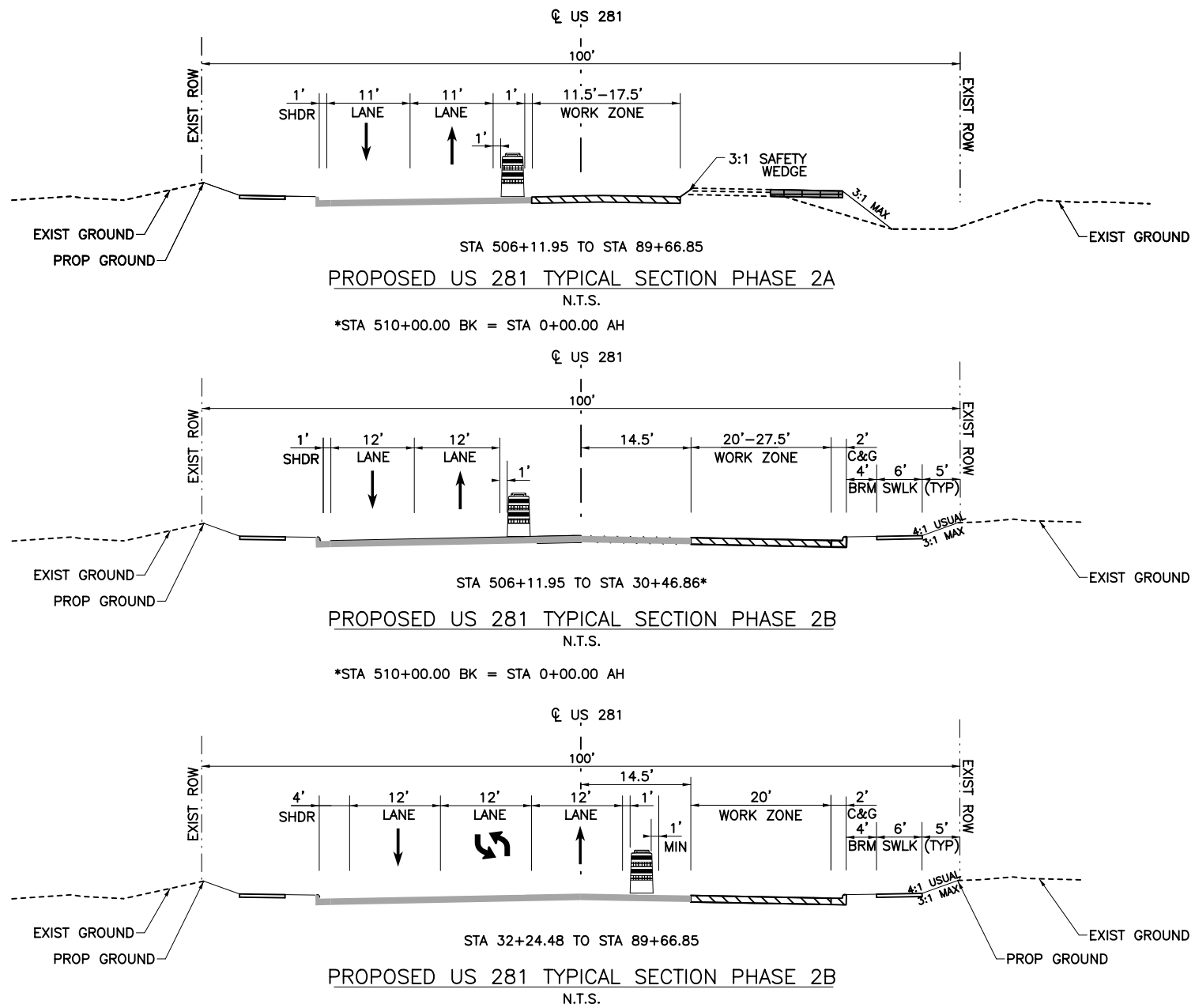
US 281
TRAFFIC CONTROL PLAN
 US 281
PHASE 1B
 BEGIN TO END

Designed:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	6	TEXAS				US 281
Drawn:	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	BWD	LAMPASAS	0251	06	036	62

1/30/2023 3:28:31 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/

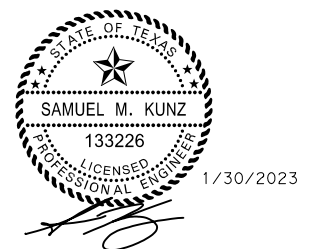
cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/

1/30/2023 3:29:01 PM skunz



LEGEND

- PERMANENT PAVEMENT THIS PHASE
- TEMPORARY PAVEMENT THIS PHASE
- COMPLETED PERMANENT PAVEMENT
- COMPLETED TEMPORARY PAVEMENT
- TEMPORARY TRAFFIC FLOW



NO.	REVISION	BY	DATE

RTG RODRIGUEZ
 TRANSPORTATION
 GROUP
 FRM #587

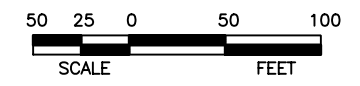
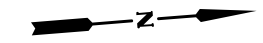
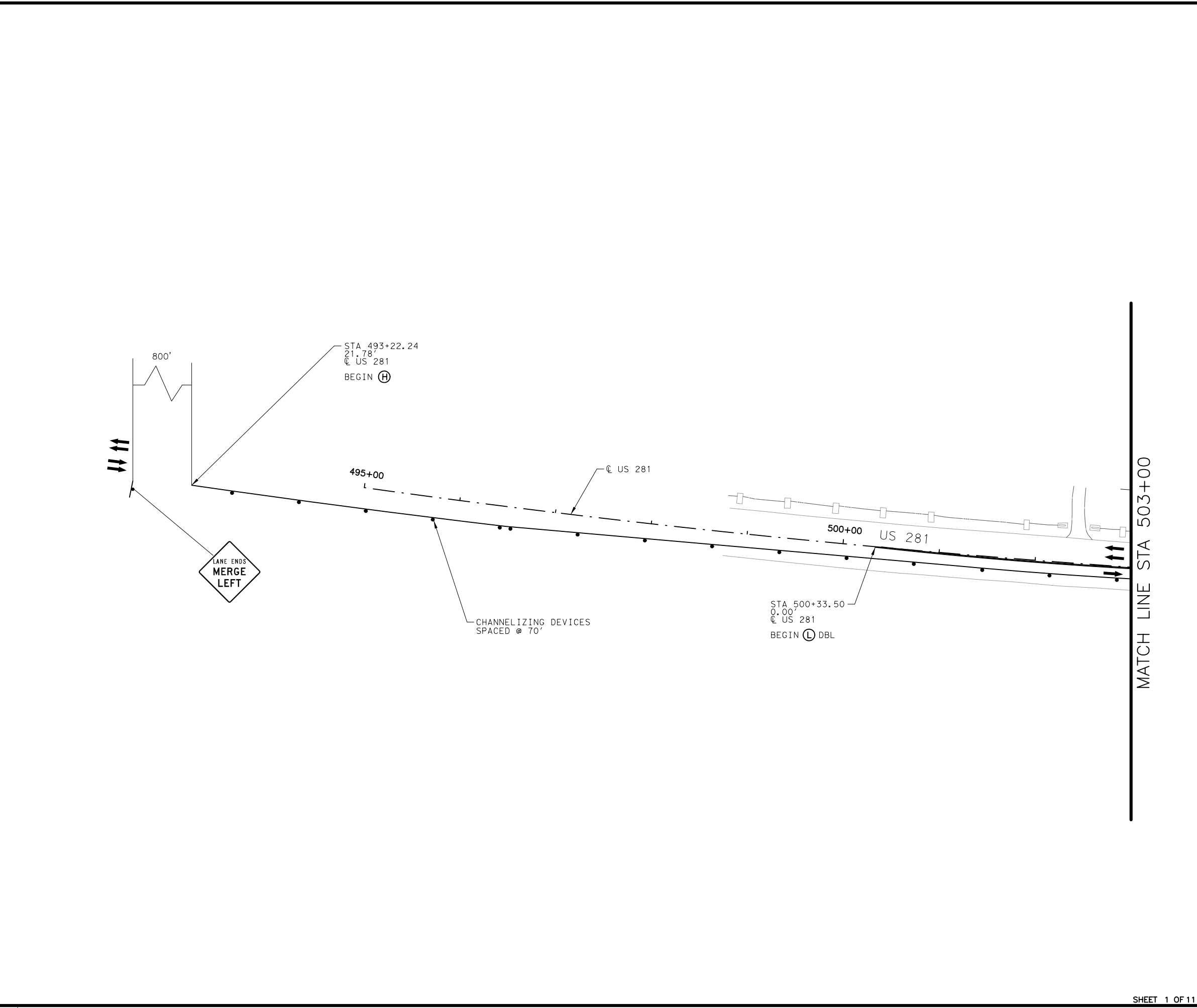
©2023 Texas Department of Transportation

US 281
TRAFFIC CONTROL PLAN
TYPICAL SECTIONS
US 281
PHASE 2A & PHASE 2B

Designed:	RTG	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	RTG	6	TEXAS		US 281		
Drawn:	RTG	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	RTG	BWD	LAMPASAS	0251	06	036	63

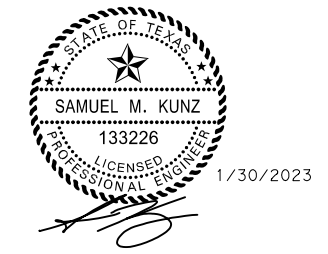
cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/

1/30/2023 4:28:04 PM skunz



LEGEND

- PERMANENT PAVEMENT THIS PHASE
- TEMPORARY PAVEMENT THIS PHASE
- COMPLETED PERMANENT PAVEMENT
- COMPLETED TEMPORARY PAVEMENT
- BARREL CHANNELIZING DEVICE (N.T.S.)
- TEMPORARY TRAFFIC FLOW
- TY 3 BARRICADE
- CONSTRUCTION/TRAFFIC SIGN
- (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)



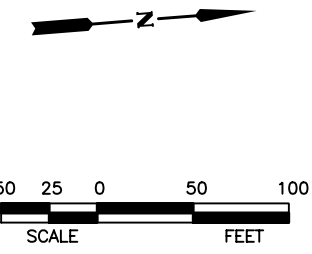
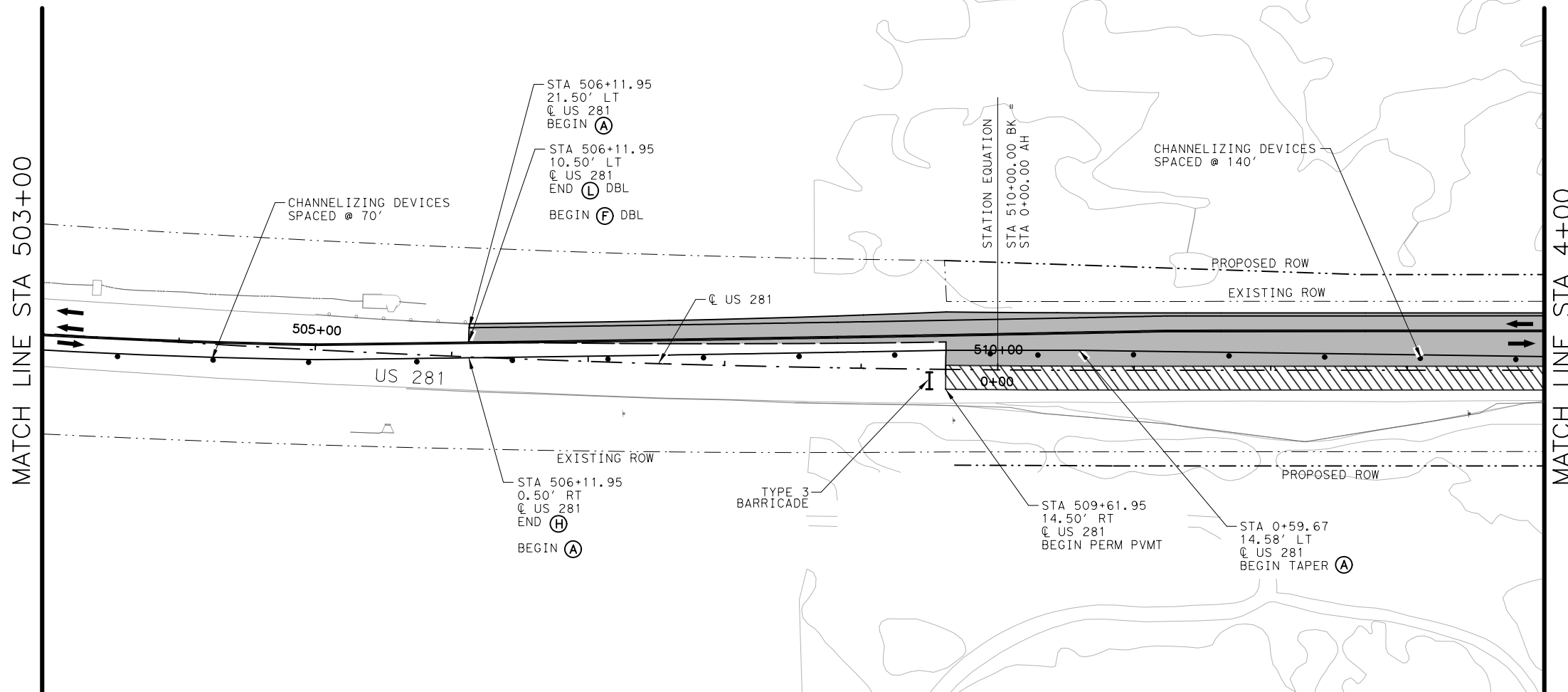
NO.	REVISION	BY	DATE



US 281
TRAFFIC CONTROL PLAN
 US 281
PHASE 2A
 END TO STA 503+00

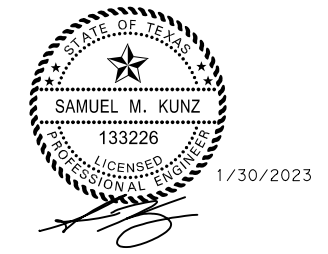
Designed:	RTG	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	RTG	6	TEXAS		US 281		
Drawn:	RTG	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	RTG	BWD	LAMPASAS	0251	06	036	63A

1/30/2023 4:28:11 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/



LEGEND

- PERMANENT PAVEMENT THIS PHASE
- TEMPORARY PAVEMENT THIS PHASE
- COMPLETED PERMANENT PAVEMENT
- COMPLETED TEMPORARY PAVEMENT
- BARREL CHANNELIZING DEVICE (N.T.S.)
- TEMPORARY TRAFFIC FLOW
- TYPE 3 BARRICADE
- CONSTRUCTION/TRAFFIC SIGN
- WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)



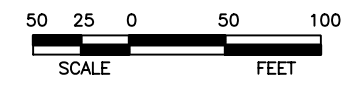
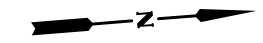
NO.	REVISION	BY	DATE

RTG RODRIGUEZ TRANSPORTATION GROUP
 FIRM #587









©2023 Texas Department of Transportation

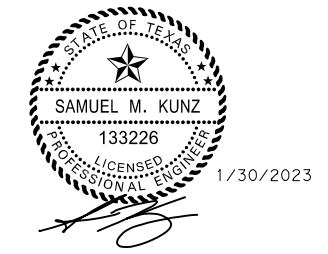
US 281
TRAFFIC CONTROL PLAN
 US 281
PHASE 2A
 STA 503+00 TO STA 4+00

Designed:	RTG	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	RTG	6	TEXAS		US 281		
Drawn:	RTG	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	RTG	BWD	LAMPASAS	0251	06	036	63B



LEGEND

-  PERMANENT PAVEMENT THIS PHASE
-  TEMPORARY PAVEMENT THIS PHASE
-  COMPLETED PERMANENT PAVEMENT
-  COMPLETED TEMPORARY PAVEMENT
-  BARREL CHANNELIZING DEVICE (N.T.S.)
-  TEMPORARY TRAFFIC FLOW
-  TY 3 BARRICADE
-  CONSTRUCTION/TRAFFIC SIGN
- (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)

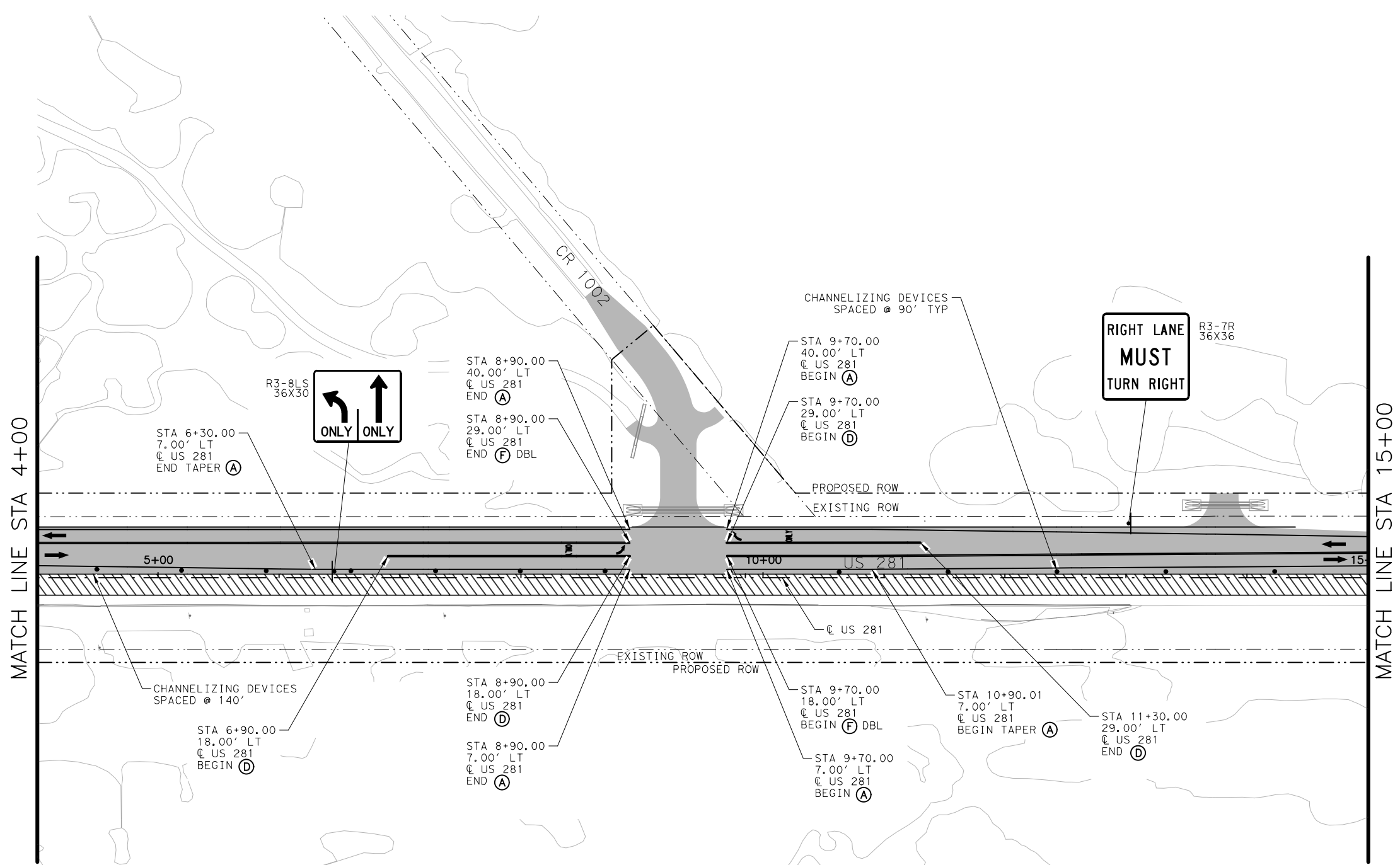


NO.	REVISION	BY	DATE

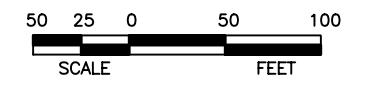
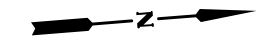


US 281
TRAFFIC CONTROL PLAN
 US 281
 PHASE 2A
 STA 4+00 TO STA 15+00









Designed:	RTG	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	RTG	6	TEXAS		US 281		
Drawn:	RTG	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	RTG	BWD	LAMPASAS	0251	06	036	63C

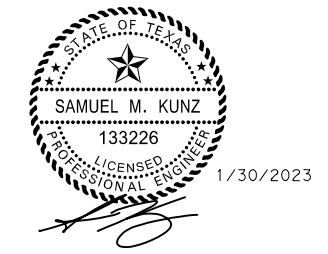


1/30/2023 4:28:18 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/



LEGEND

-  PERMANENT PAVEMENT THIS PHASE
-  TEMPORARY PAVEMENT THIS PHASE
-  COMPLETED PERMANENT PAVEMENT
-  COMPLETED TEMPORARY PAVEMENT
-  BARREL CHANNELIZING DEVICE (N.T.S.)
-  TEMPORARY TRAFFIC FLOW
-  TY 3 BARRICADE
-  CONSTRUCTION/TRAFFIC SIGN
- (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)

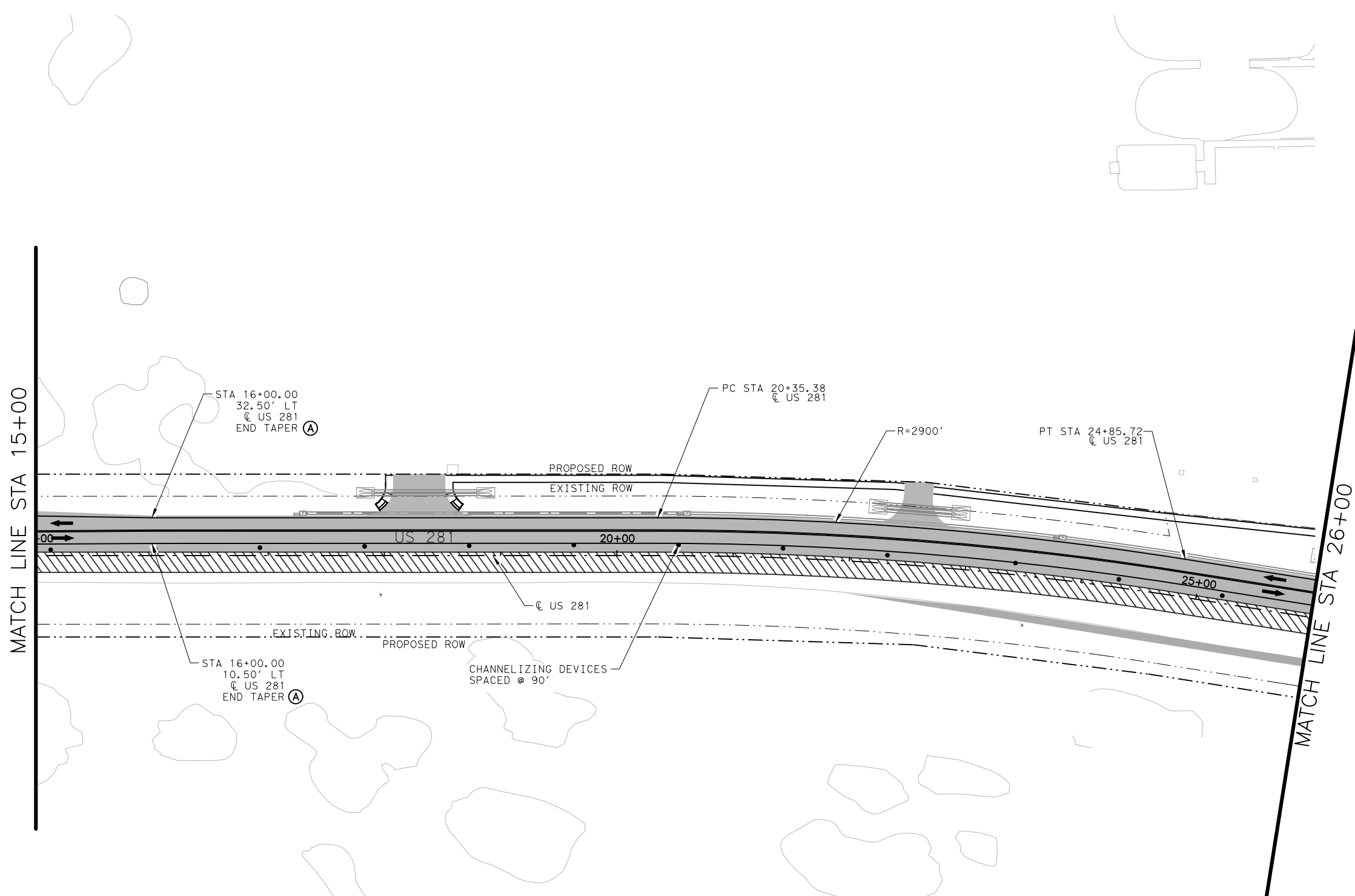


NO.	REVISION	BY	DATE

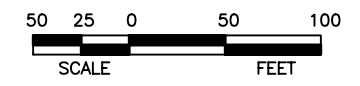
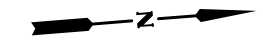


US 281
TRAFFIC CONTROL PLAN
 US 281
PHASE 2A
 STA 15+00 TO STA 26+00









Designed:	RTG	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	RTG	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Drawn:	RTG	JOB NO.	036	SHEET NO.	63D				
Checked:	RTG	BWD							

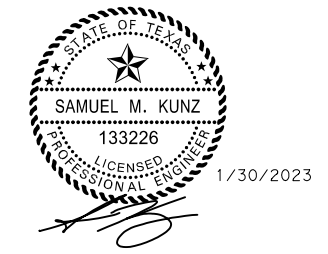


1/30/2023 4:28:30 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcf
 pw:/



LEGEND

-  PERMANENT PAVEMENT THIS PHASE
-  TEMPORARY PAVEMENT THIS PHASE
-  COMPLETED PERMANENT PAVEMENT
-  COMPLETED TEMPORARY PAVEMENT
-  BARREL CHANNELIZING DEVICE (N.T.S.)
-  TEMPORARY TRAFFIC FLOW
-  TY 3 BARRICADE
-  CONSTRUCTION/TRAFFIC SIGN
- (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)

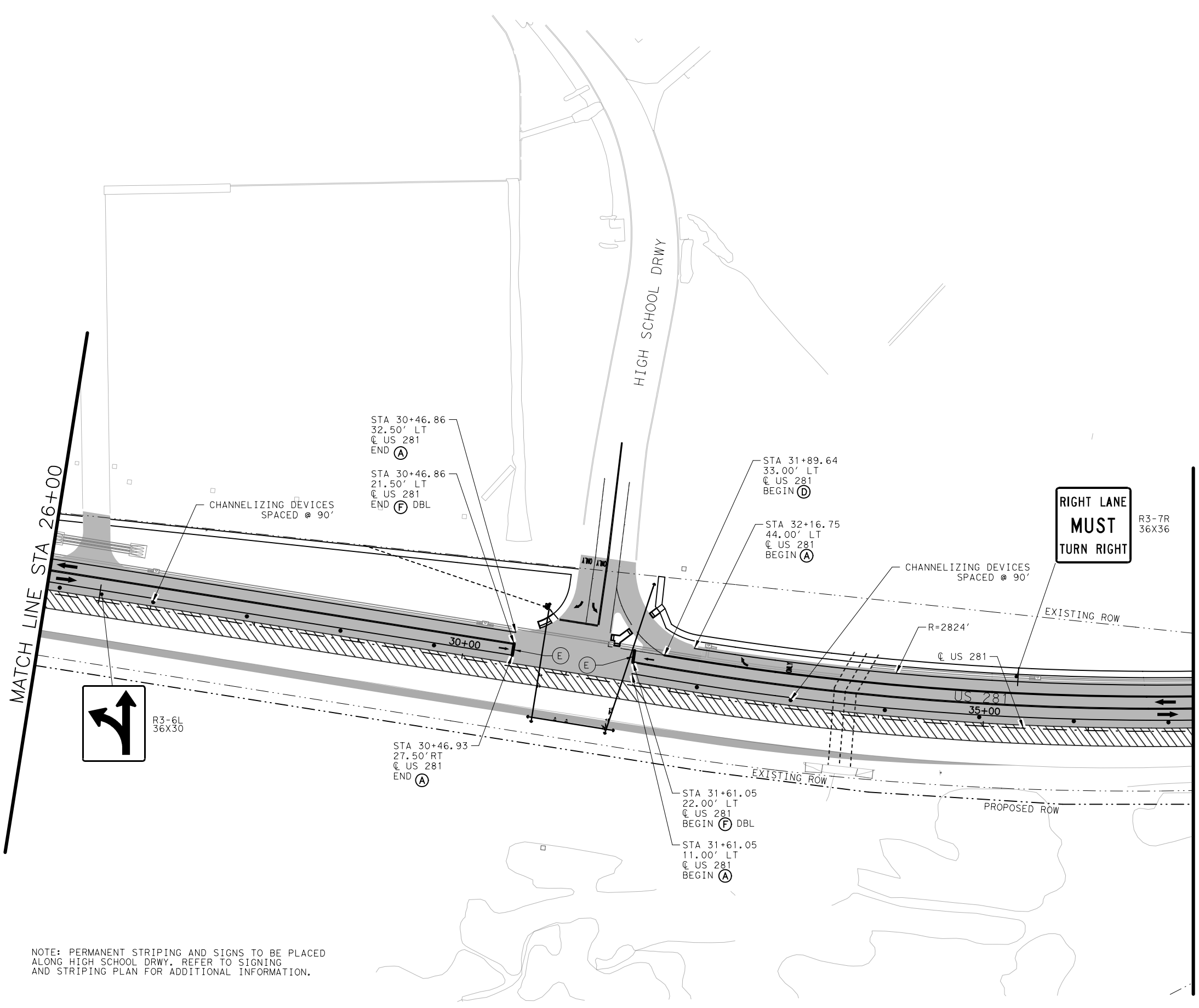


NO.	REVISION	BY	DATE

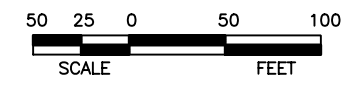
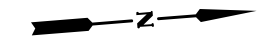


US 281
TRAFFIC CONTROL PLAN
 US 281
PHASE 2A
 STA 26+00 TO STA 37+00

Designed:	RTG	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	RTG	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Drawn:	RTG	JOB NO.	036	SHEET NO.	63E				



1/30/2023 4:28:38 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/



LEGEND

- PERMANENT PAVEMENT THIS PHASE
- TEMPORARY PAVEMENT THIS PHASE
- COMPLETED PERMANENT PAVEMENT
- COMPLETED TEMPORARY PAVEMENT
- BARREL CHANNELIZING DEVICE (N.T.S.)
- TEMPORARY TRAFFIC FLOW
- TY 3 BARRICADE
- CONSTRUCTION/TRAFFIC SIGN
- (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)

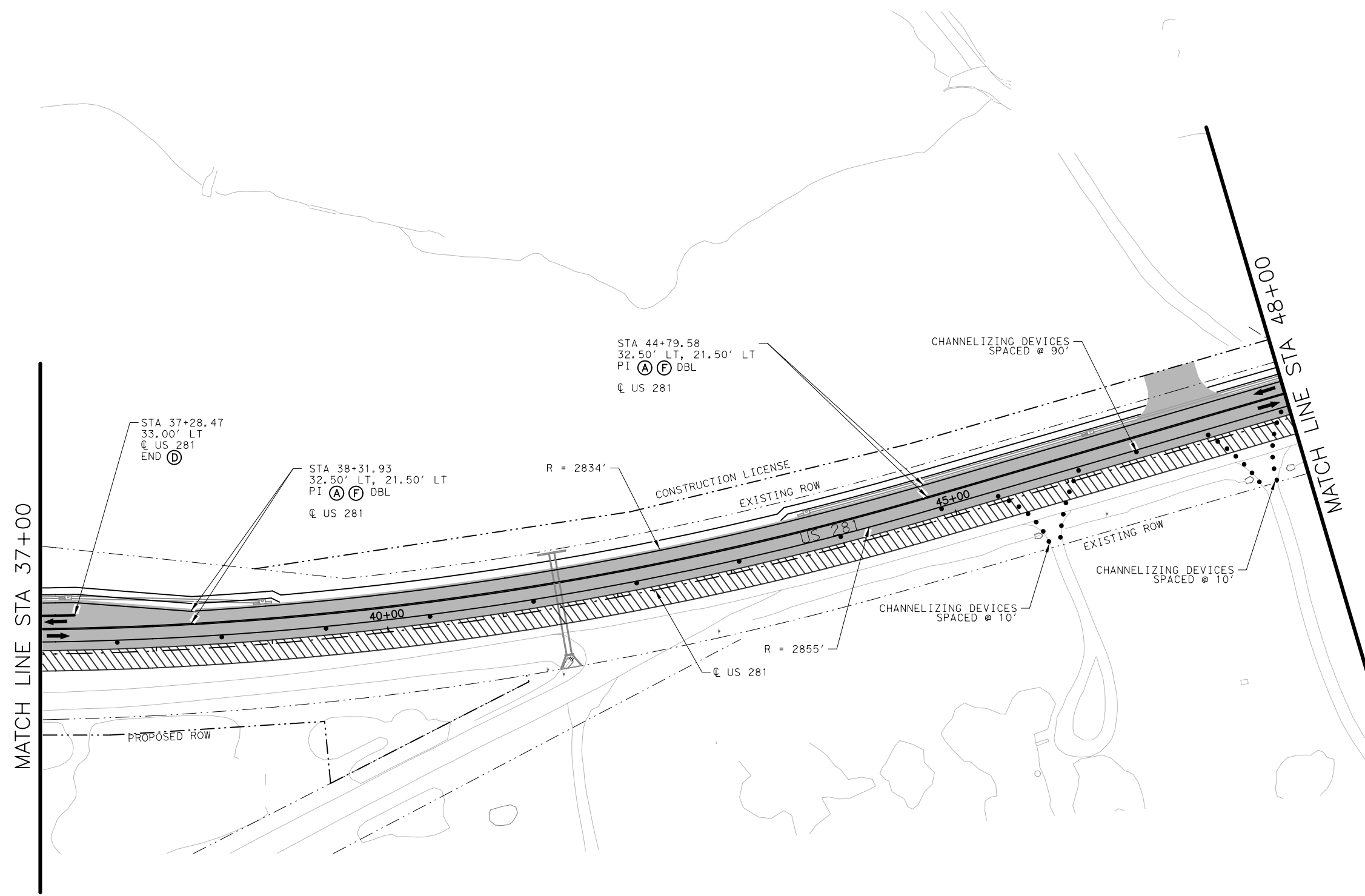


NO.	REVISION	BY	DATE

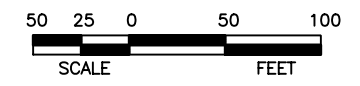
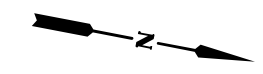


US 281
TRAFFIC CONTROL PLAN
 US 281
PHASE 2A
 STA 37+00 TO STA 48+00









Designed:	RTG	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	RTG	6	TEXAS		US 281		
Drawn:	RTG	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	RTG	BWD	LAMPASAS	0251	06	036	63F



1/30/2023 4:28:46 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/



LEGEND

-  PERMANENT PAVEMENT THIS PHASE
-  TEMPORARY PAVEMENT THIS PHASE
-  COMPLETED PERMANENT PAVEMENT
-  COMPLETED TEMPORARY PAVEMENT
-  BARREL CHANNELIZING DEVICE (N.T.S.)
-  TEMPORARY TRAFFIC FLOW
-  TY 3 BARRICADE
-  CONSTRUCTION/TRAFFIC SIGN
- (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)

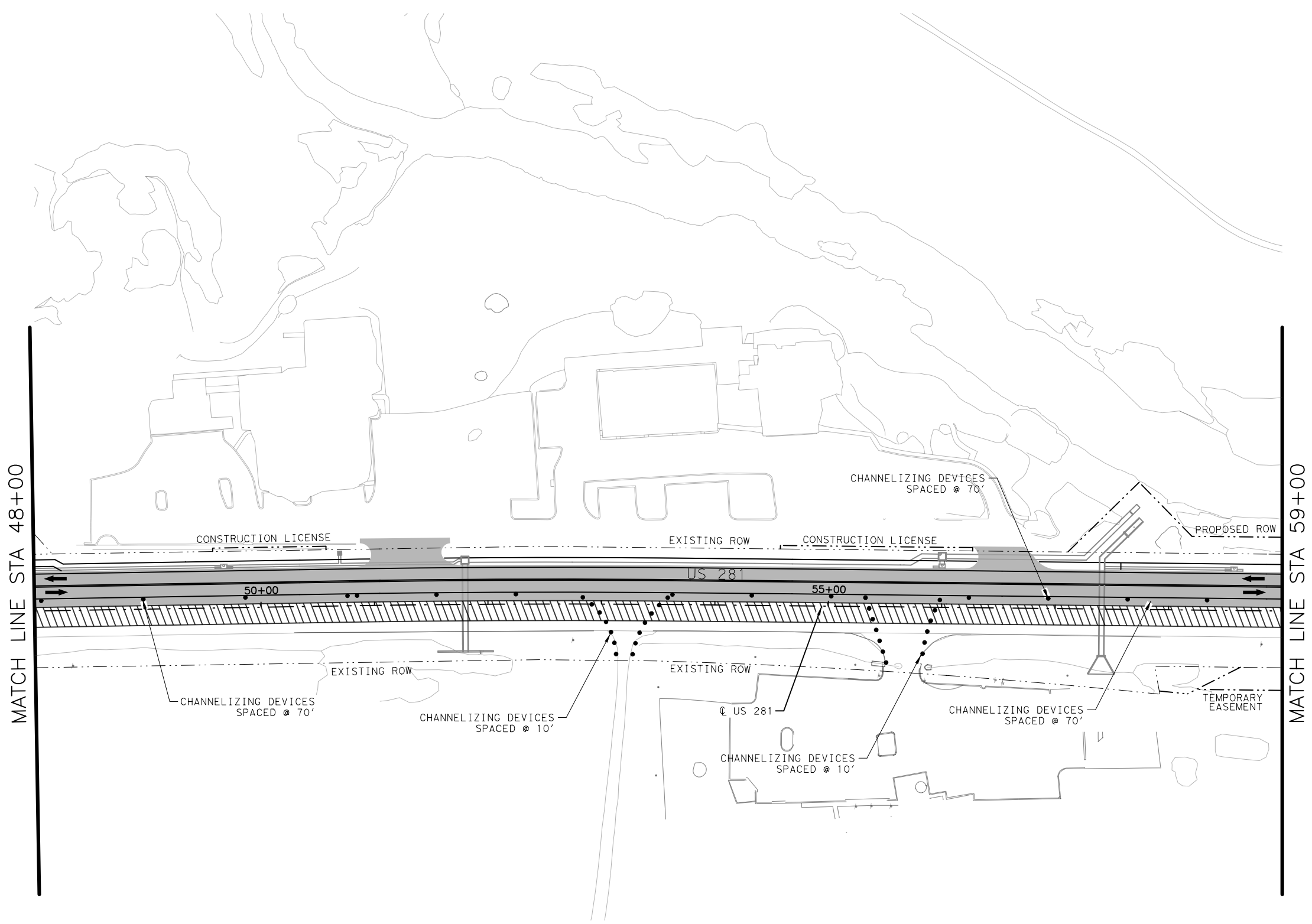


NO.	REVISION	BY	DATE

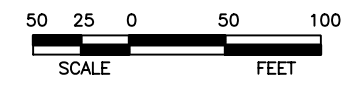
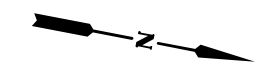


US 281
TRAFFIC CONTROL PLAN
 US 281
PHASE 2A
 STA 48+00 TO STA 59+00









Designed:	RTG	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	RTG	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Drawn:	RTG	JOB NO.	036	SHEET NO.	63G				
Checked:	RTG	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06

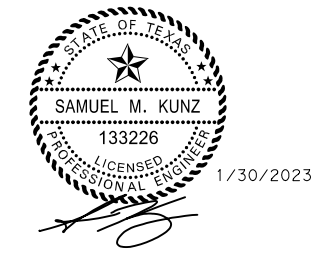


1/30/2023 4:29:04 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/



LEGEND

-  PERMANENT PAVEMENT THIS PHASE
-  TEMPORARY PAVEMENT THIS PHASE
-  COMPLETED PERMANENT PAVEMENT
-  COMPLETED TEMPORARY PAVEMENT
-  BARREL CHANNELIZING DEVICE (N.T.S.)
-  TEMPORARY TRAFFIC FLOW
-  TY 3 BARRICADE
-  CONSTRUCTION/TRAFFIC SIGN
- (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)

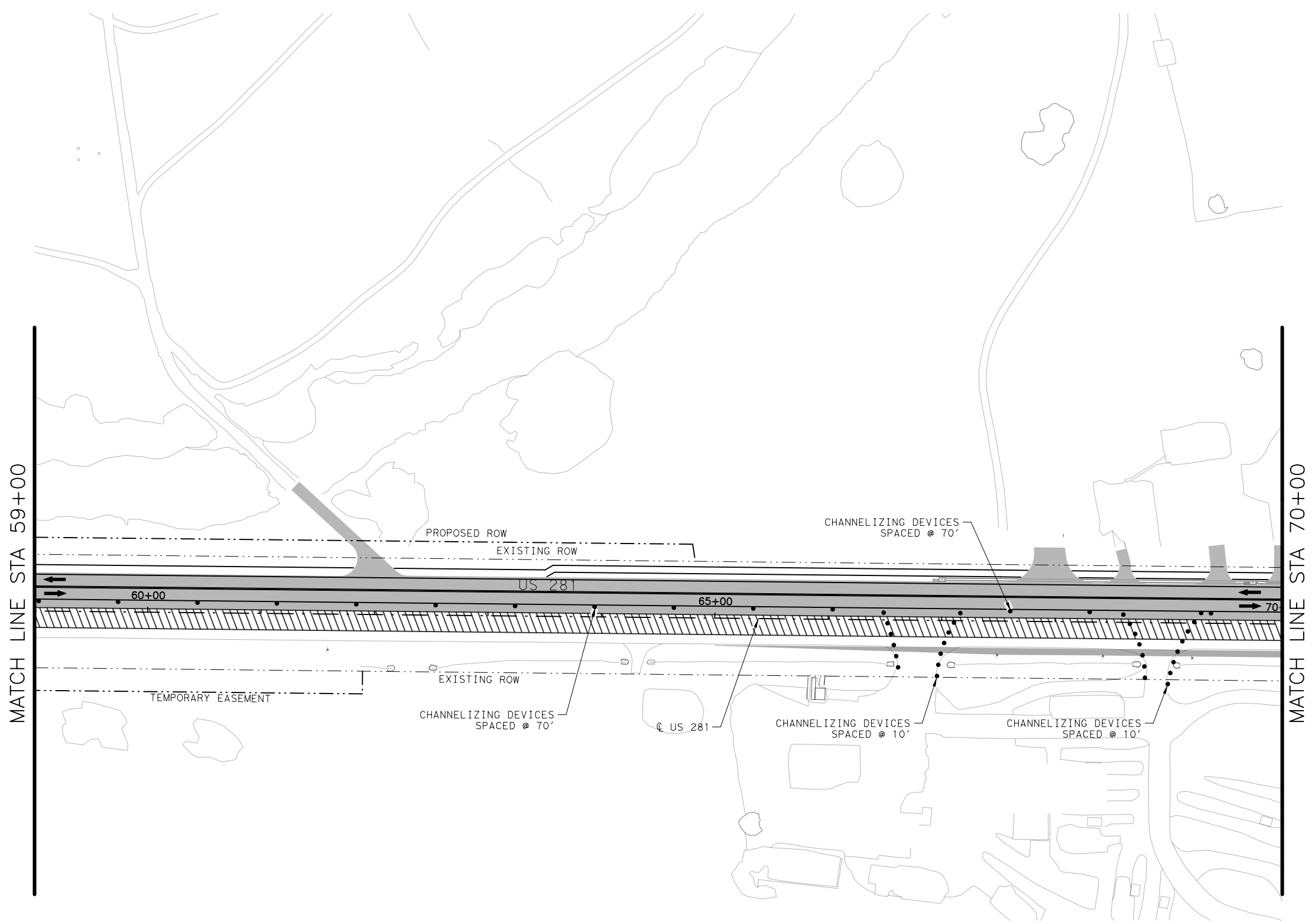


NO.	REVISION	BY	DATE

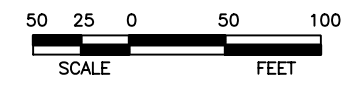
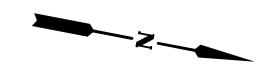


US 281
TRAFFIC CONTROL PLAN
 US 281
PHASE 2A
 STA 59+00 TO STA 70+00

Designed:	RTG	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	RTG	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Drawn:	RTG	JOB NO.	036	SHEET NO.	63H				

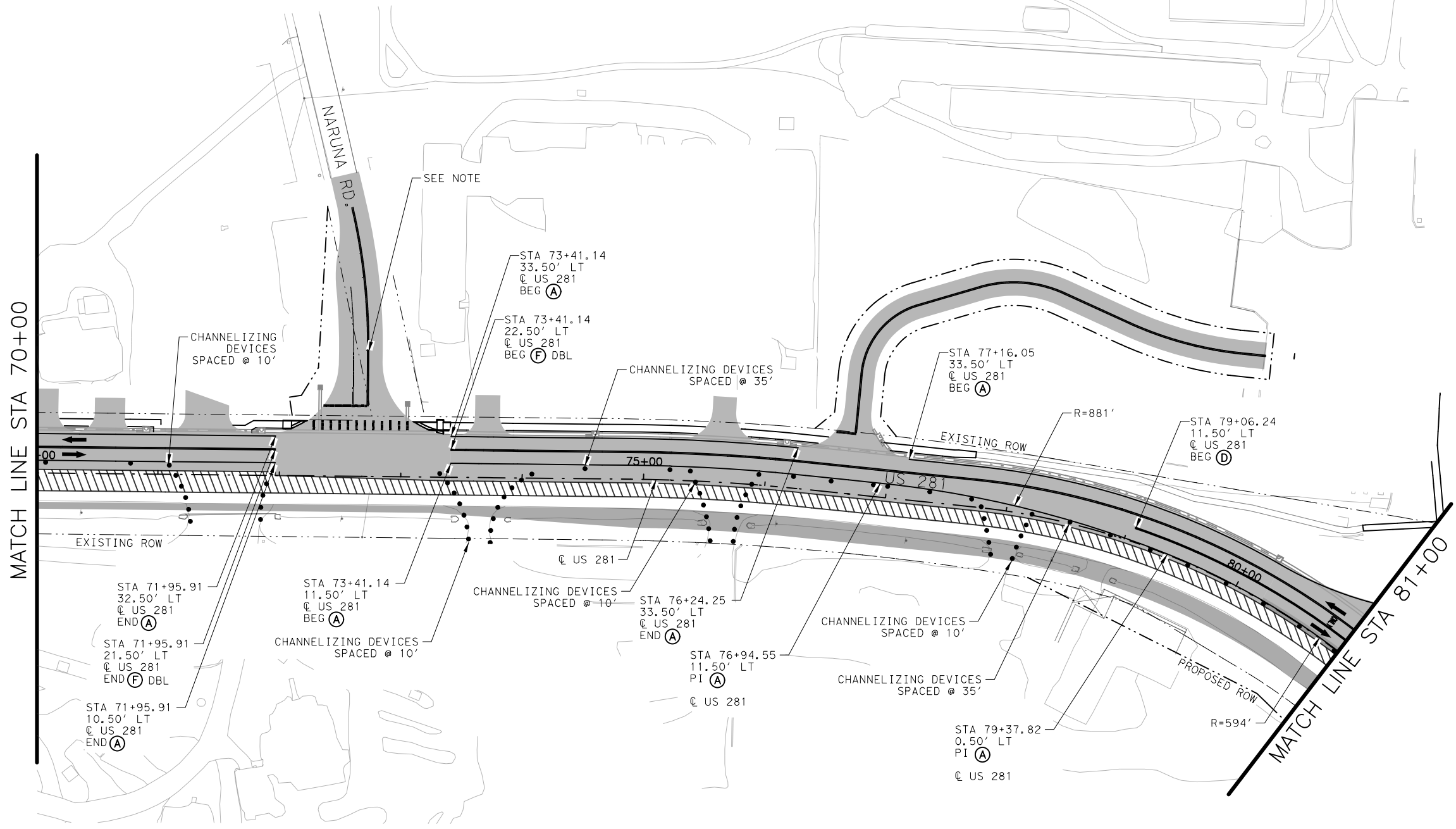


1/30/2023 4:29:13 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/



LEGEND

- PERMANENT PAVEMENT THIS PHASE
- TEMPORARY PAVEMENT THIS PHASE
- COMPLETED PERMANENT PAVEMENT
- COMPLETED TEMPORARY PAVEMENT
- BARREL CHANNELIZING DEVICE (N.T.S.)
- TEMPORARY TRAFFIC FLOW
- TY 3 BARRICADE
- CONSTRUCTION/TRAFFIC SIGN
- (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)



NOTE: PERMANENT STRIPING AND SIGNS TO BE PLACED ALONG NARUNA RD. REFER TO SIGNING AND STRIPING PLAN FOR ADDITIONAL INFORMATION.

1/30/2023 4:29:19 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/

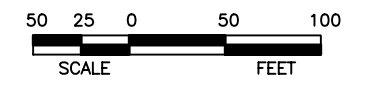
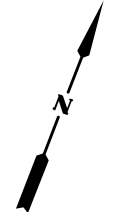
NO.	REVISION	BY	DATE

RODRIGUEZ TRANSPORTATION GROUP
FRM #587

©2023 Texas Department of Transportation

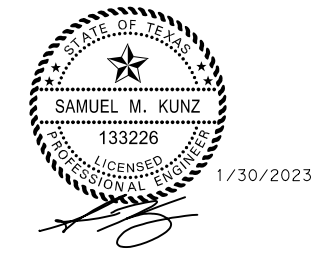
US 281
TRAFFIC CONTROL PLAN
US 281
PHASE 2A
 STA 70+00 TO STA 81+00

Designed:	RTG	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	RTG	6	TEXAS		US 281		
Drawn:	RTG	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	RTG	BWD	LAMPASAS	0251	06	036	631



LEGEND

- PERMANENT PAVEMENT THIS PHASE
- TEMPORARY PAVEMENT THIS PHASE
- COMPLETED PERMANENT PAVEMENT
- COMPLETED TEMPORARY PAVEMENT
- BARREL CHANNELIZING DEVICE (N.T.S.)
- TEMPORARY TRAFFIC FLOW
- TY 3 BARRICADE
- CONSTRUCTION/TRAFFIC SIGN
- (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)

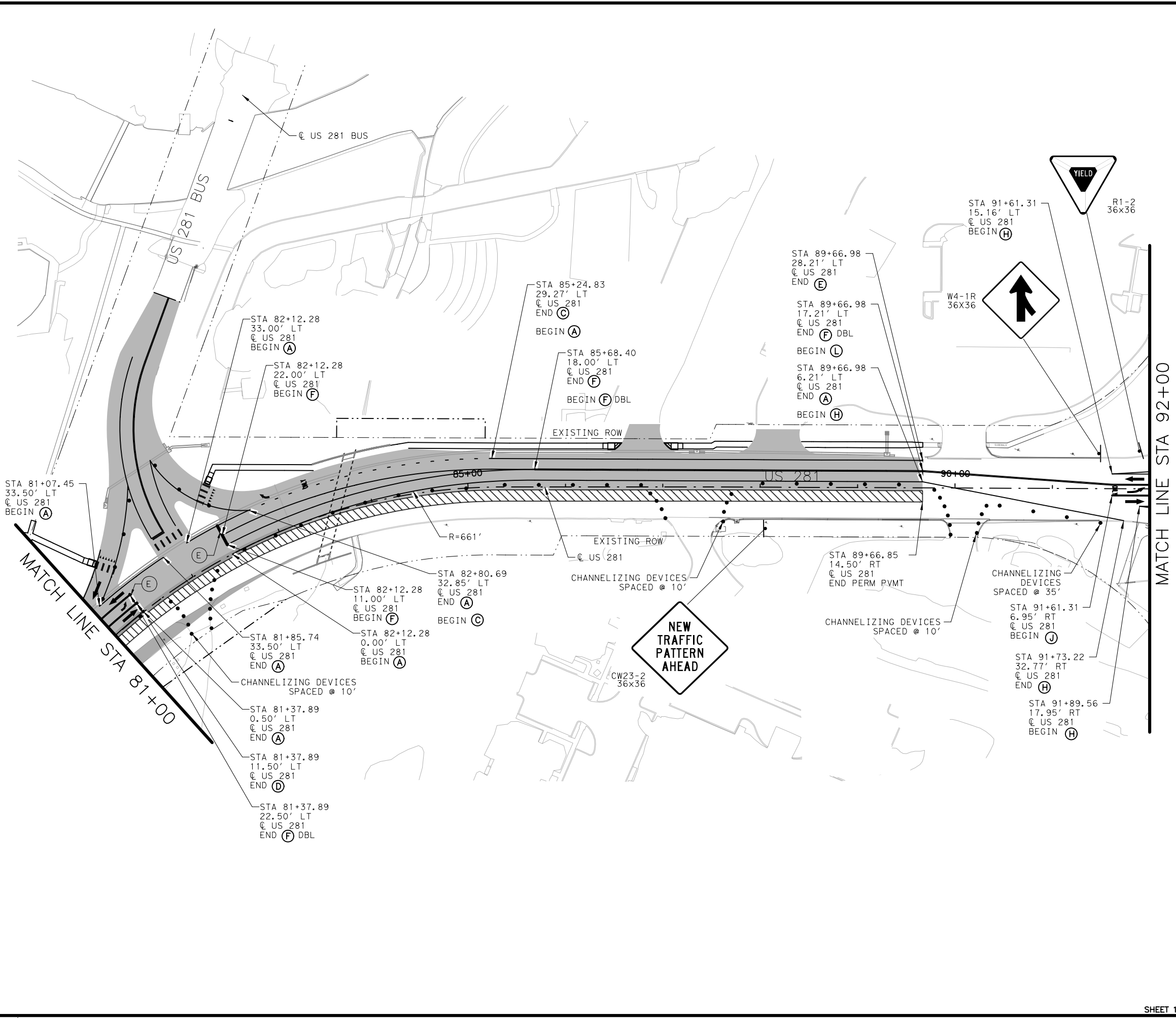


NO.	REVISION	BY	DATE



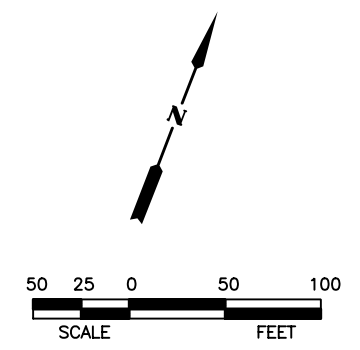
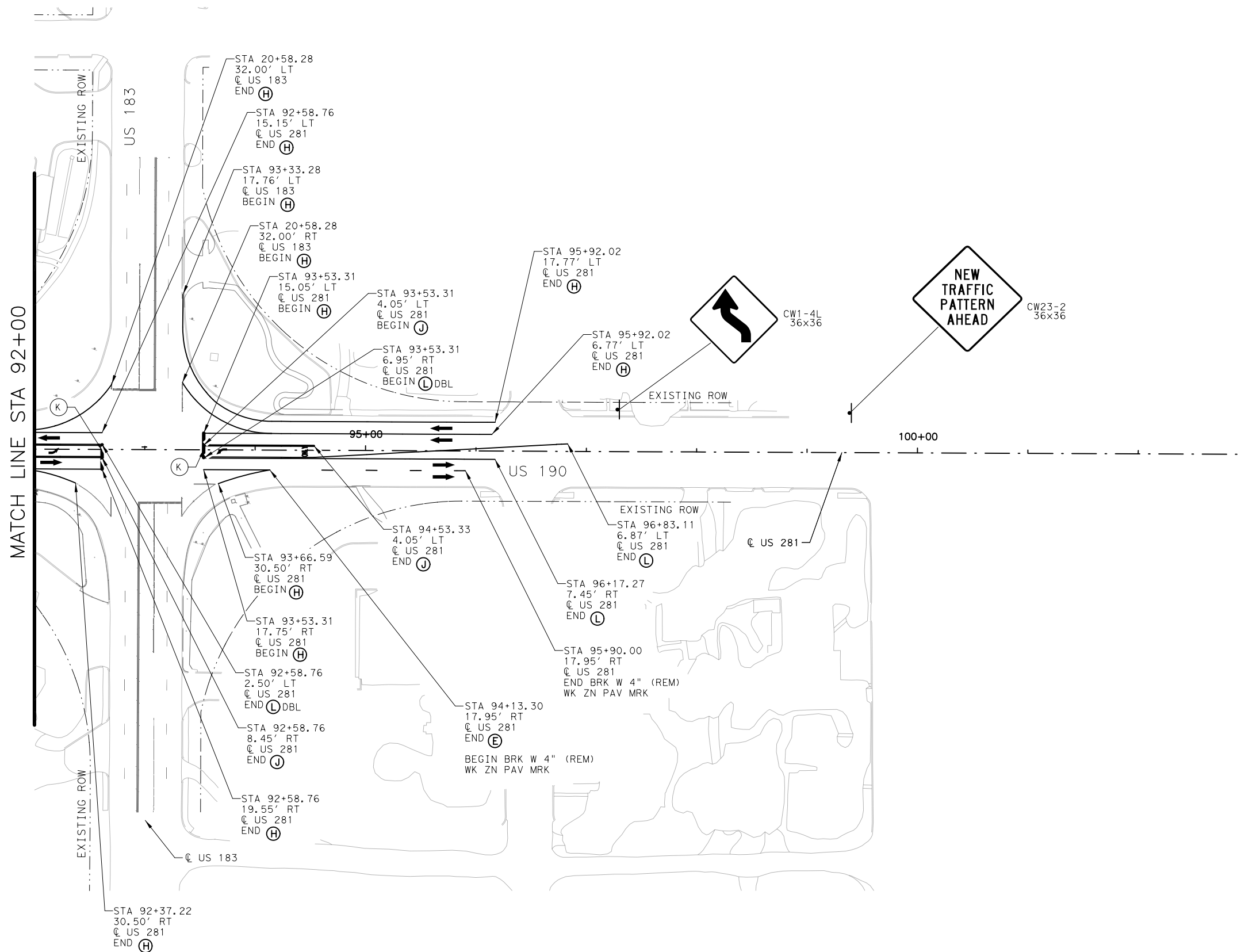
US 281
TRAFFIC CONTROL PLAN
 US 281
 PHASE 2A
 STA 81+00 TO STA 92+00

Designed:	RTG	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	RTG	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Drawn:	RTG	JOB NO.	036	SHEET NO.	63J				



1/30/2023 4:29:26 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/

1/30/2023 4:29:31 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw/



LEGEND

- PERMANENT PAVEMENT THIS PHASE
- TEMPORARY PAVEMENT THIS PHASE
- COMPLETED PERMANENT PAVEMENT
- COMPLETED TEMPORARY PAVEMENT
- BARREL CHANNELIZING DEVICE (N.T.S.)
- TEMPORARY TRAFFIC FLOW
- TY 3 BARRICADE
- CONSTRUCTION/TRAFFIC SIGN
- WRK ZN PAV MRK (W)(4\"/>



NO.	REVISION	BY	DATE



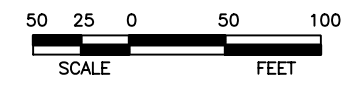
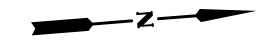
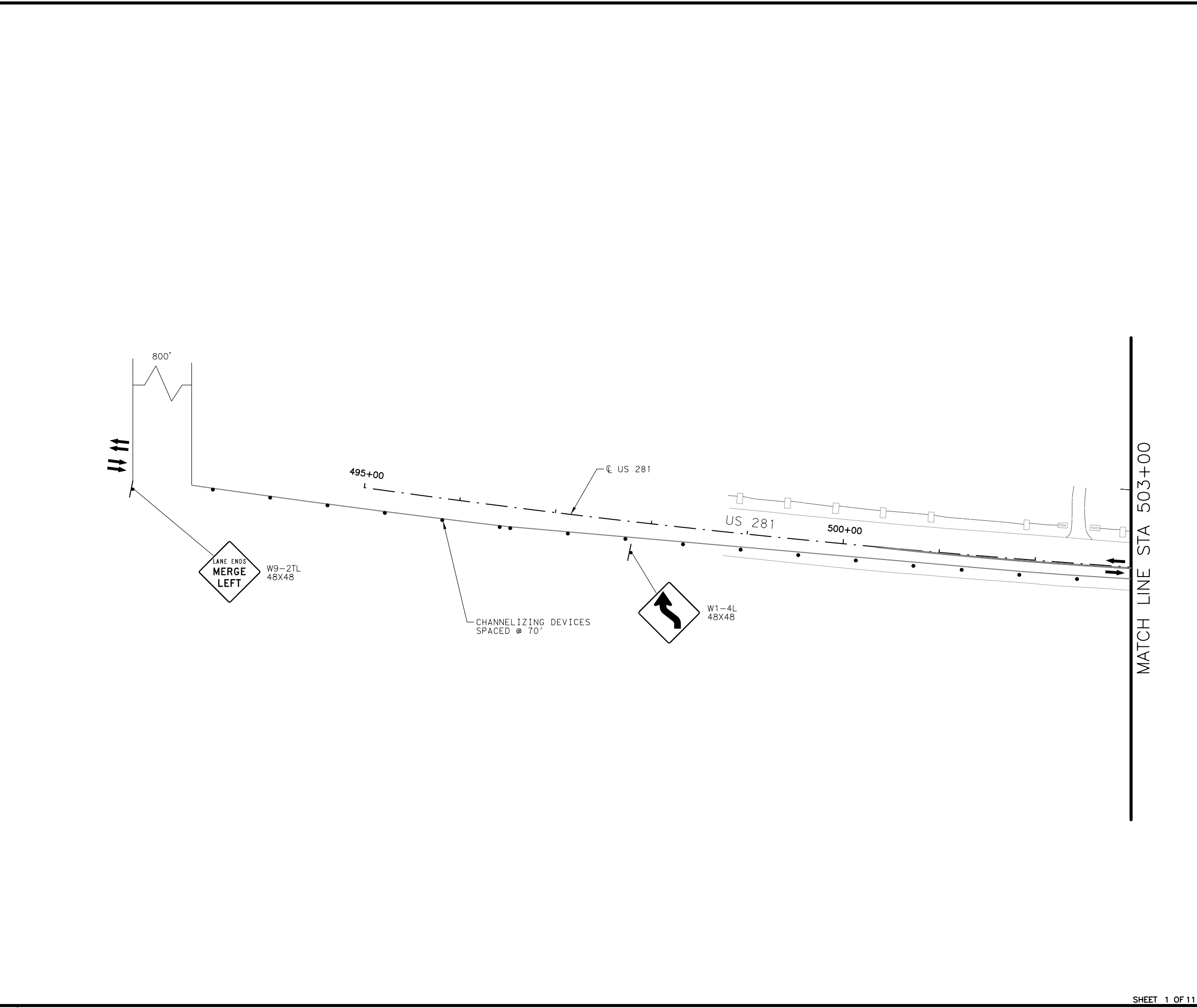
©2023 Texas Department of Transportation

US 281
TRAFFIC CONTROL PLAN
 US 281
 PHASE 2A
 STA 92+00 TO BEGIN

Designed:	RTG	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	RTG	6	TEXAS		US 281		
Drawn:	RTG	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	RTG	BWD	LAMPASAS	0251	06	036	63K

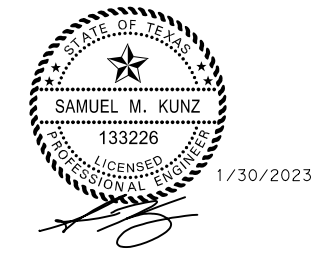
cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/

1/30/2023 3:29:09 PM skunz



LEGEND

- PERMANENT PAVEMENT THIS PHASE
- TEMPORARY PAVEMENT THIS PHASE
- COMPLETED PERMANENT PAVEMENT
- COMPLETED TEMPORARY PAVEMENT
- BARREL CHANNELIZING DEVICE (N.T.S.)
- TEMPORARY TRAFFIC FLOW
- TY 3 BARRICADE
- CONSTRUCTION/TRAFFIC SIGN
- (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)

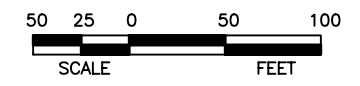
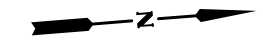


NO.	REVISION	BY	DATE











US 281
TRAFFIC CONTROL PLAN
 US 281
PHASE 2B
 END TO STA 503+00

Designed:	RTG	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	RTG	6	TEXAS		US 281		
Drawn:	RTG	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	RTG	BWD	LAMPASAS	0251	06	036	64



LEGEND

-  PERMANENT PAVEMENT THIS PHASE
-  TEMPORARY PAVEMENT THIS PHASE
-  COMPLETED PERMANENT PAVEMENT
-  COMPLETED TEMPORARY PAVEMENT
-  BARREL CHANNELIZING DEVICE (N.T.S.)
-  TEMPORARY TRAFFIC FLOW
-  TY 3 BARRICADE
-  CONSTRUCTION/TRAFFIC SIGN
- (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)

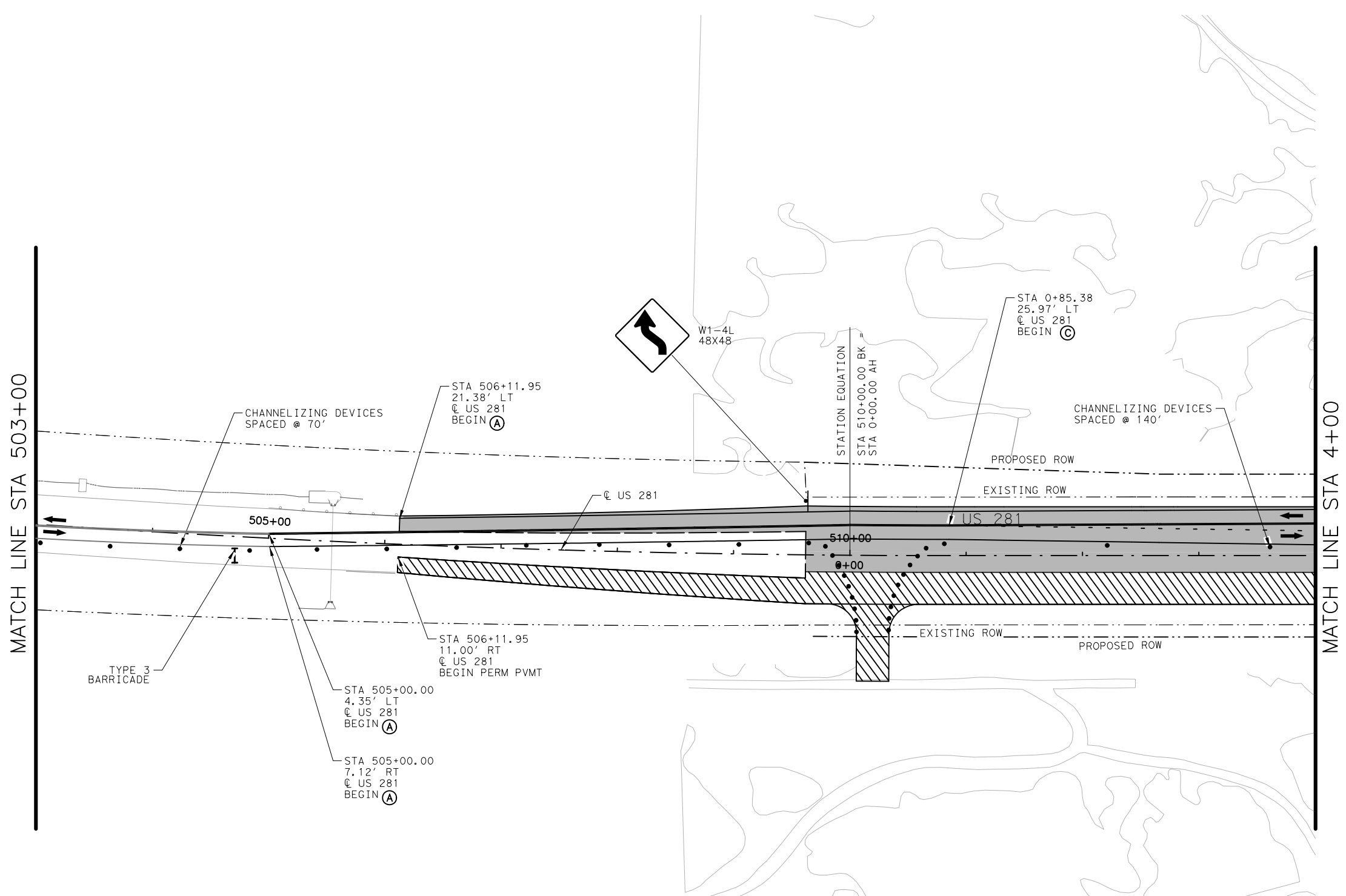


NO.	REVISION	BY	DATE

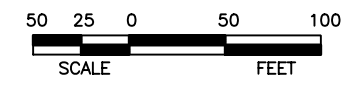
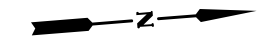


US 281
TRAFFIC CONTROL PLAN
 US 281
 PHASE 2B
 STA 503+00 TO STA 4+00









Designed:	RTG	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	RTG	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Drawn:	RTG	JOB NO.	036						
Checked:	RTG	BWD							65

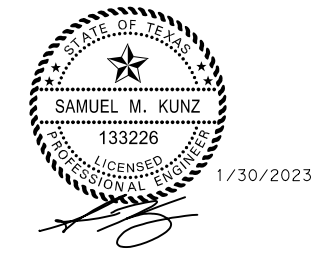


1/30/2023 3:29:18 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/



LEGEND

-  PERMANENT PAVEMENT THIS PHASE
-  TEMPORARY PAVEMENT THIS PHASE
-  COMPLETED PERMANENT PAVEMENT
-  COMPLETED TEMPORARY PAVEMENT
-  BARREL CHANNELIZING DEVICE (N.T.S.)
-  TEMPORARY TRAFFIC FLOW
-  TY 3 BARRICADE
-  CONSTRUCTION/TRAFFIC SIGN
- (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)

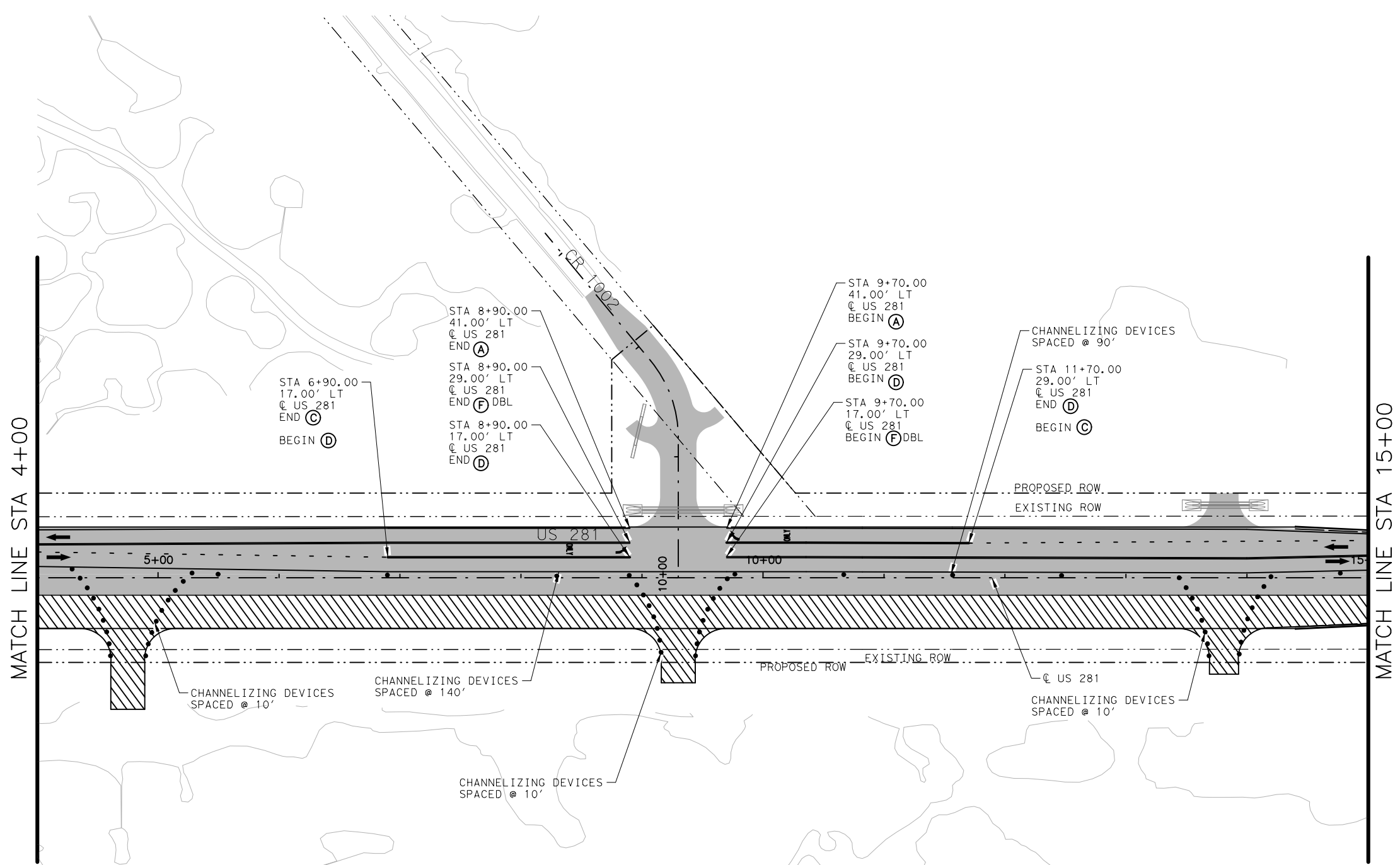


NO.	REVISION	BY	DATE

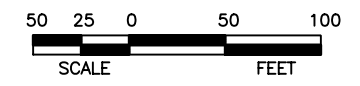
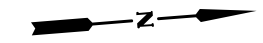


US 281
TRAFFIC CONTROL PLAN
US 281
PHASE 2B
STA 4+00 TO STA 15+00









Designed:	RTG	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	RTG	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Drawn:	RTG	JOB NO.	036	SHEET NO.	66				
Checked:	RTG	BWD							

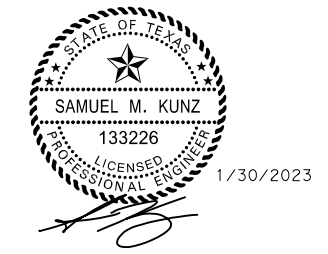


1/30/2023 3:29:31 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/



LEGEND

-  PERMANENT PAVEMENT THIS PHASE
-  TEMPORARY PAVEMENT THIS PHASE
-  COMPLETED PERMANENT PAVEMENT
-  COMPLETED TEMPORARY PAVEMENT
-  BARREL CHANNELIZING DEVICE (N.T.S.)
-  TEMPORARY TRAFFIC FLOW
-  TY 3 BARRICADE
-  CONSTRUCTION/TRAFFIC SIGN
- (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)

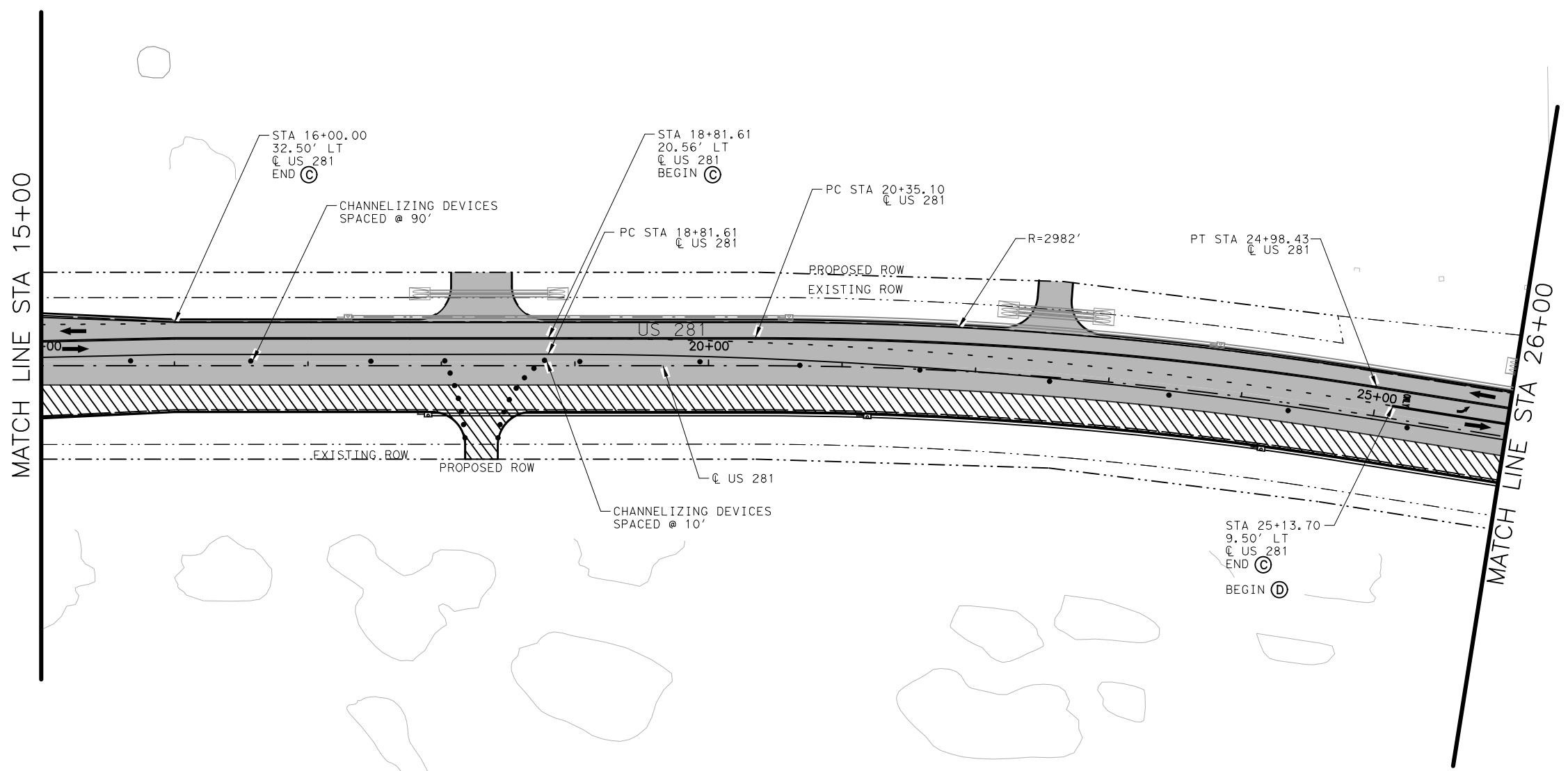


NO.	REVISION	BY	DATE

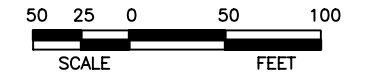
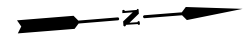


US 281
TRAFFIC CONTROL PLAN
 US 281
 PHASE 2B
 STA 15+00 TO STA 26+00





















Designed:	RTG	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	RTG	6	TEXAS		US 281		
Drawn:	RTG	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	RTG	BWD	LAMPASAS	0251	06	036	67



1/30/2023 3:29:41 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/



LEGEND

-  PERMANENT PAVEMENT THIS PHASE
-  TEMPORARY PAVEMENT THIS PHASE
-  COMPLETED PERMANENT PAVEMENT
-  COMPLETED TEMPORARY PAVEMENT
-  BARREL CHANNELIZING DEVICE (N.T.S.)
-  TEMPORARY TRAFFIC FLOW
-  TY 3 BARRICADE
-  CONSTRUCTION/TRAFFIC SIGN
-  (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
-  (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
-  (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
-  (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
-  (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
-  (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
-  (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
-  (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
-  (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
-  (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
-  (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
-  (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)



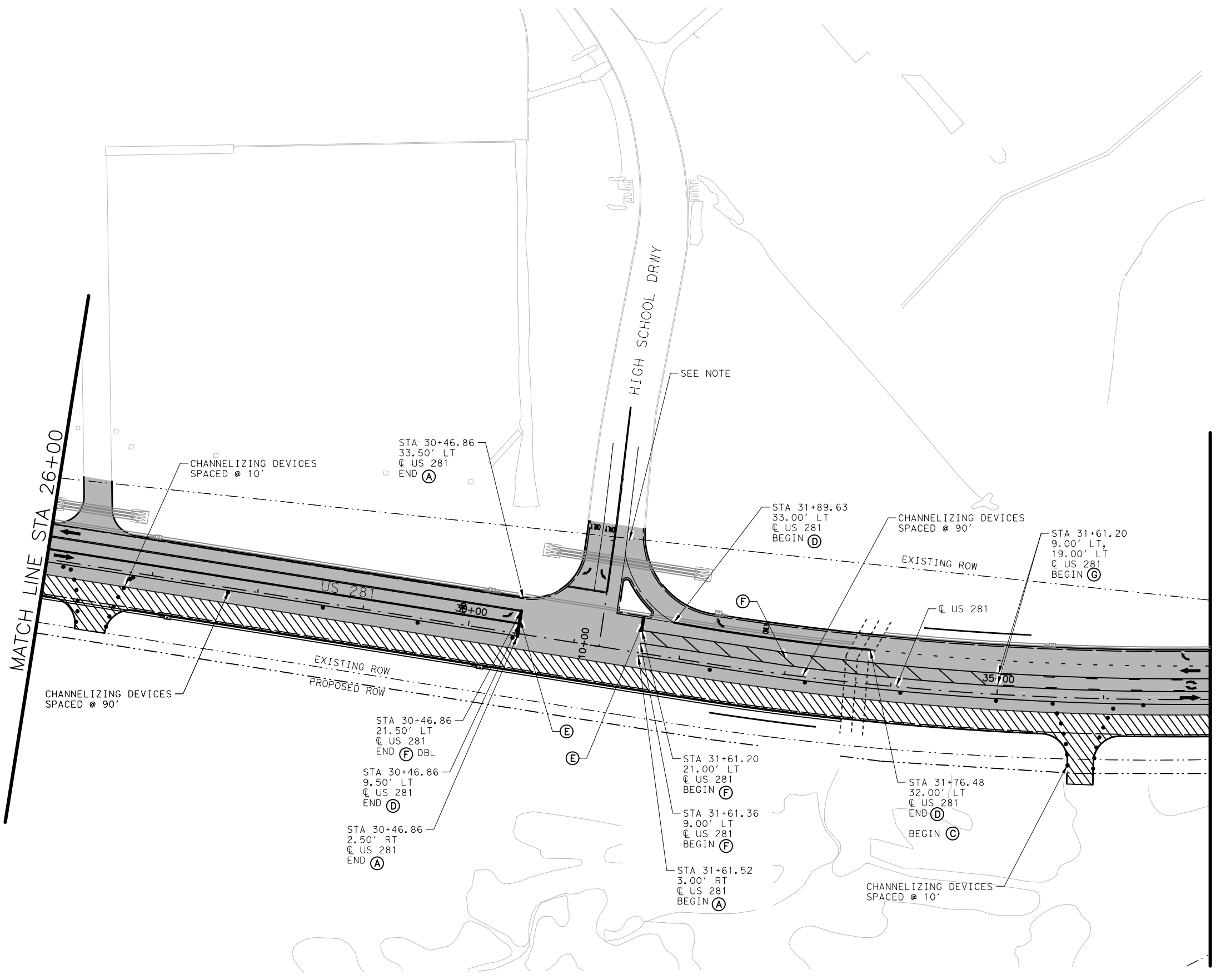
NO.	REVISION	BY	DATE

RTG RODRIGUEZ TRANSPORTATION GROUP
FRM #587

©2023 Texas Department of Transportation

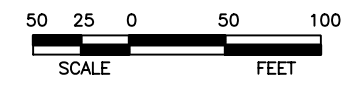
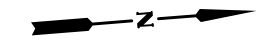
US 281
TRAFFIC CONTROL PLAN
US 281
PHASE 2B
STA 26+00 TO STA 37+00

Designed:	RTG	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	RTG	6	TEXAS		US 281		
Drawn:	RTG	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	RTG	BWD	LAMPASAS	0251	06	036	68



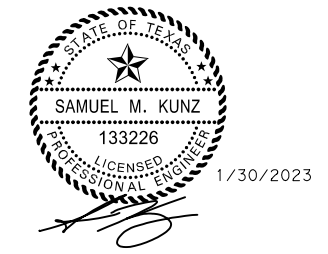
cpybw_ANSIB.tbl
cpypdf_ANSIB.pltcfgr
pw:/

1/30/2023 3:29:52 PM skunz
pw:/



LEGEND

- PERMANENT PAVEMENT THIS PHASE
- TEMPORARY PAVEMENT THIS PHASE
- COMPLETED PERMANENT PAVEMENT
- COMPLETED TEMPORARY PAVEMENT
- BARREL CHANNELIZING DEVICE (N.T.S.)
- TEMPORARY TRAFFIC FLOW
- TY 3 BARRICADE
- CONSTRUCTION/TRAFFIC SIGN
- (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)

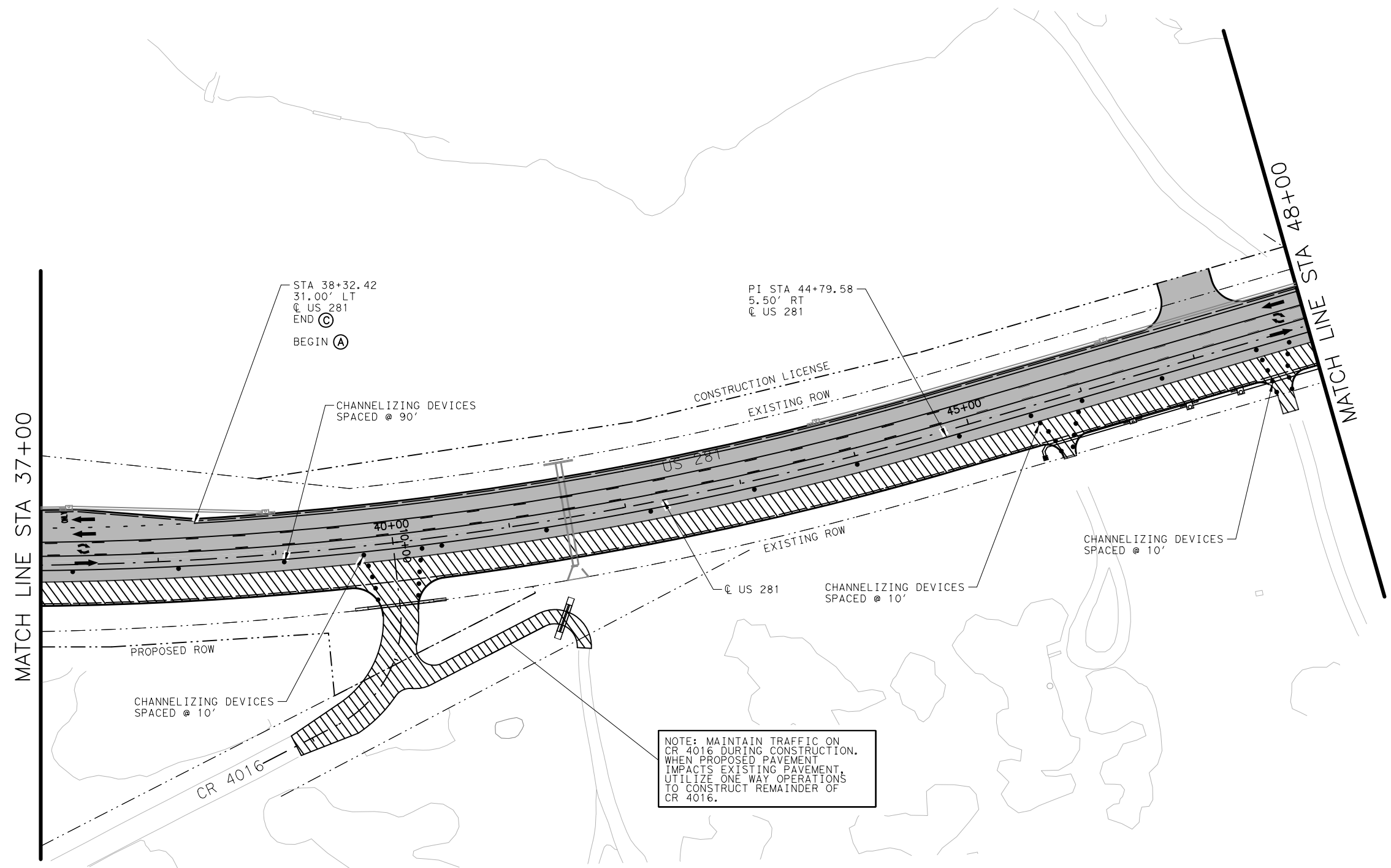


NO.	REVISION	BY	DATE



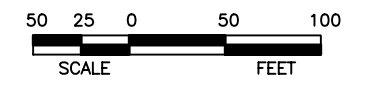
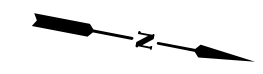
US 281
TRAFFIC CONTROL PLAN
 US 281
PHASE 2B
 STA 37+00 TO STA 48+00

Designed:	RTG	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	RTG	6	TEXAS		US 281		
Drawn:	RTG	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	RTG	BWD	LAMPASAS	0251	06	036	69











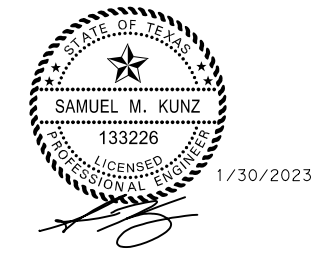
NOTE: MAINTAIN TRAFFIC ON CR 4016 DURING CONSTRUCTION. WHEN PROPOSED PAVEMENT IMPACTS EXISTING PAVEMENT, UTILIZE ONE WAY OPERATIONS TO CONSTRUCT REMAINDER OF CR 4016.

1/30/2023 3:30:03 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/



LEGEND

-  PERMANENT PAVEMENT THIS PHASE
-  TEMPORARY PAVEMENT THIS PHASE
-  COMPLETED PERMANENT PAVEMENT
-  COMPLETED TEMPORARY PAVEMENT
-  BARREL CHANNELIZING DEVICE (N.T.S.)
-  TEMPORARY TRAFFIC FLOW
-  TY 3 BARRICADE
-  CONSTRUCTION/TRAFFIC SIGN
- (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)

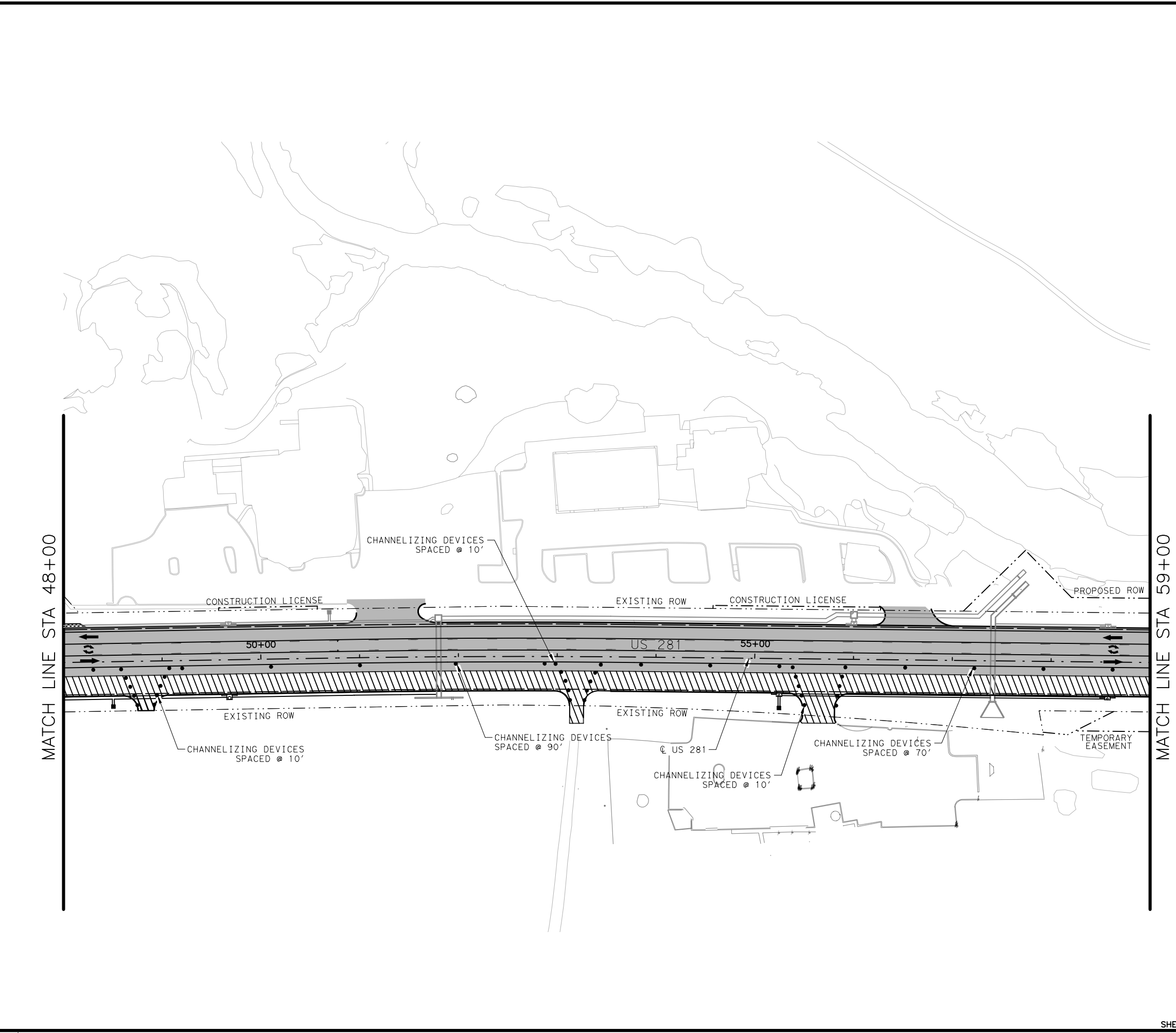


NO.	REVISION	BY	DATE

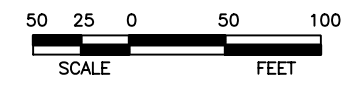
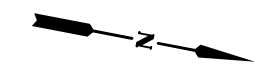


US 281
TRAFFIC CONTROL PLAN
 US 281
PHASE 2B
 STA 48+00 TO STA 59+00









Designed:	RTG	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	RTG	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Drawn:	RTG	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Checked:	RTG	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
								JOB NO.	036
								SHEET NO.	70

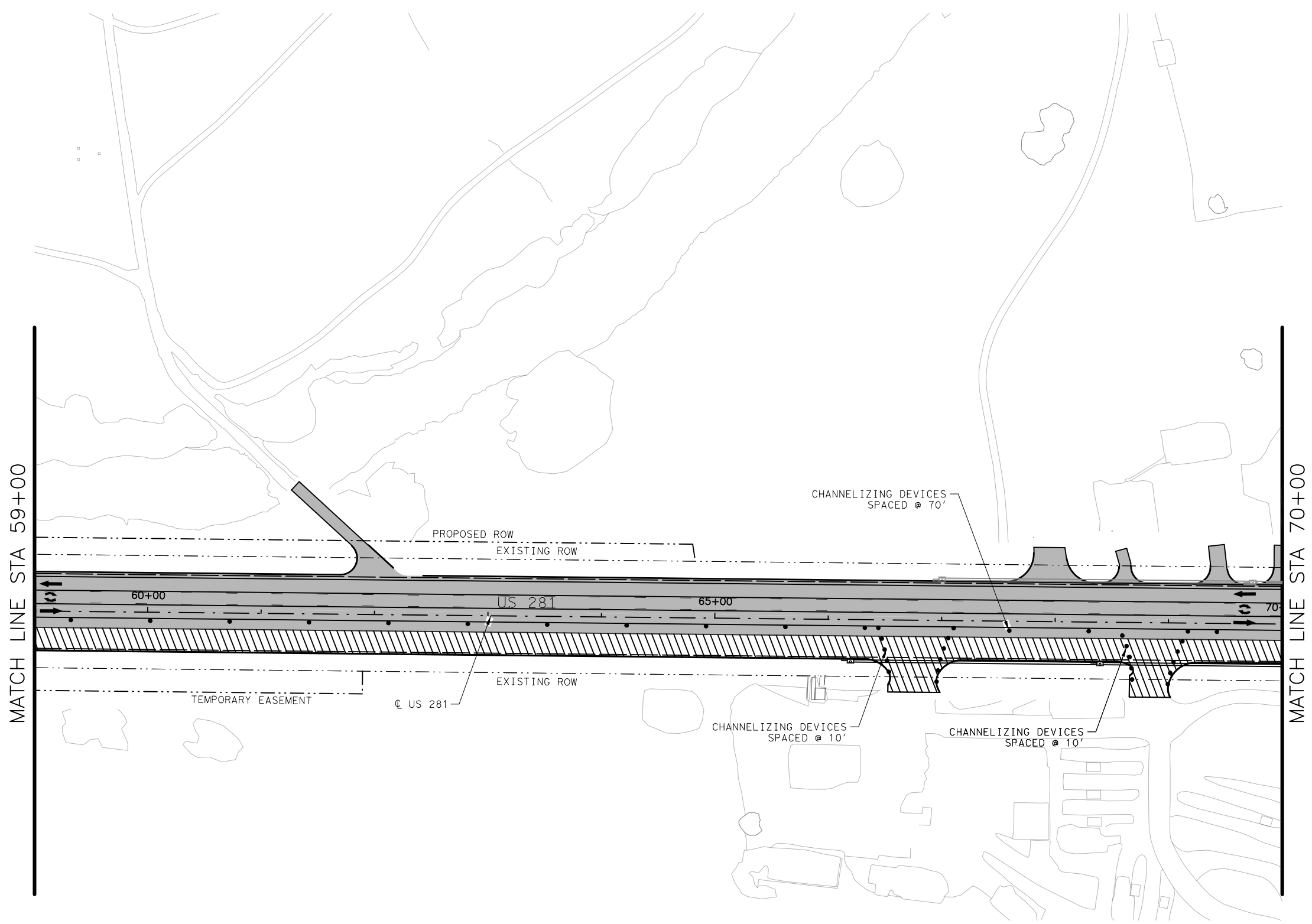
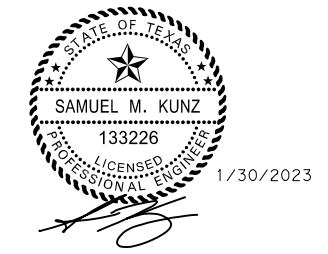


1/30/2023 3:30:13 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/





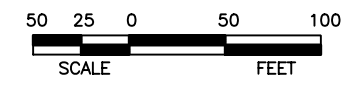
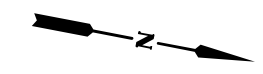
LEGEND

-  PERMANENT PAVEMENT THIS PHASE
-  TEMPORARY PAVEMENT THIS PHASE
-  COMPLETED PERMANENT PAVEMENT
-  COMPLETED TEMPORARY PAVEMENT
-  BARREL CHANNELIZING DEVICE (N.T.S.)
-  TEMPORARY TRAFFIC FLOW
-  TY 3 BARRICADE
-  CONSTRUCTION/TRAFFIC SIGN
- (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)











1/30/2023 3:30:26 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/

NO.	REVISION	BY	DATE
 RODRIGUEZ TRANSPORTATION GROUP <small>FIRM #587</small>			
 ©2023 Texas Department of Transportation			
US 281 TRAFFIC CONTROL PLAN US 281 PHASE 2B STA 59+00 TO STA 70+00			
Designed: RTG	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.
Checked: RTG	DIST. LAMPASAS	COUNTY 0251	SECTION 06
Drawn: RTG	JOB NO. 036	SHEET NO. 71	HIGHWAY NO. US 281



LEGEND

-  PERMANENT PAVEMENT THIS PHASE
-  TEMPORARY PAVEMENT THIS PHASE
-  COMPLETED PERMANENT PAVEMENT
-  COMPLETED TEMPORARY PAVEMENT
-  BARREL CHANNELIZING DEVICE (N.T.S.)
-  TEMPORARY TRAFFIC FLOW
-  TY 3 BARRICADE
-  CONSTRUCTION/TRAFFIC SIGN
- (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)



NO.	REVISION	BY	DATE

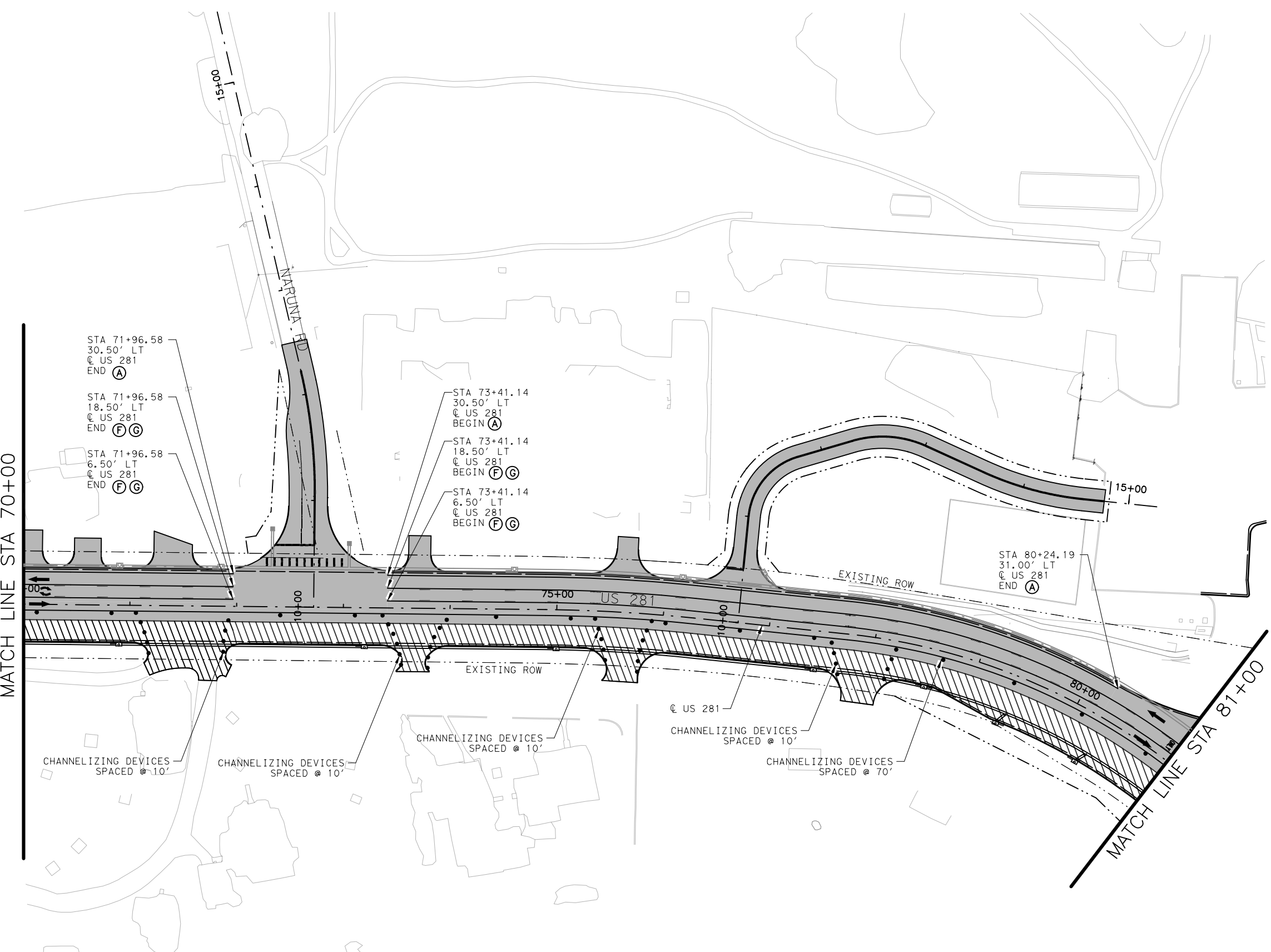


US 281
TRAFFIC CONTROL PLAN
 US 281
PHASE 2B
 STA 70+00 TO STA 81+00

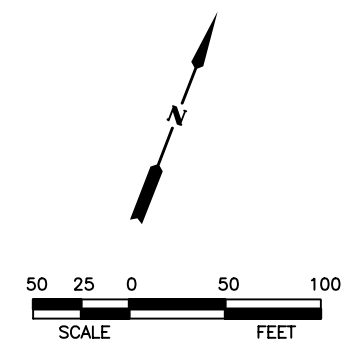
Designed:	RTG	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	RTG	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Drawn:	RTG	JOB NO.	036	SHEET NO.	72				

MATCH LINE STA 70+00

MATCH LINE STA 81+00



1/30/2023 3:30:36 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/



LEGEND

- PERMANENT PAVEMENT THIS PHASE
- TEMPORARY PAVEMENT THIS PHASE
- COMPLETED PERMANENT PAVEMENT
- COMPLETED TEMPORARY PAVEMENT
- BARREL CHANNELIZING DEVICE (N.T.S.)
- TEMPORARY TRAFFIC FLOW
- TY 3 BARRICADE
- CONSTRUCTION/TRAFFIC SIGN
- WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)



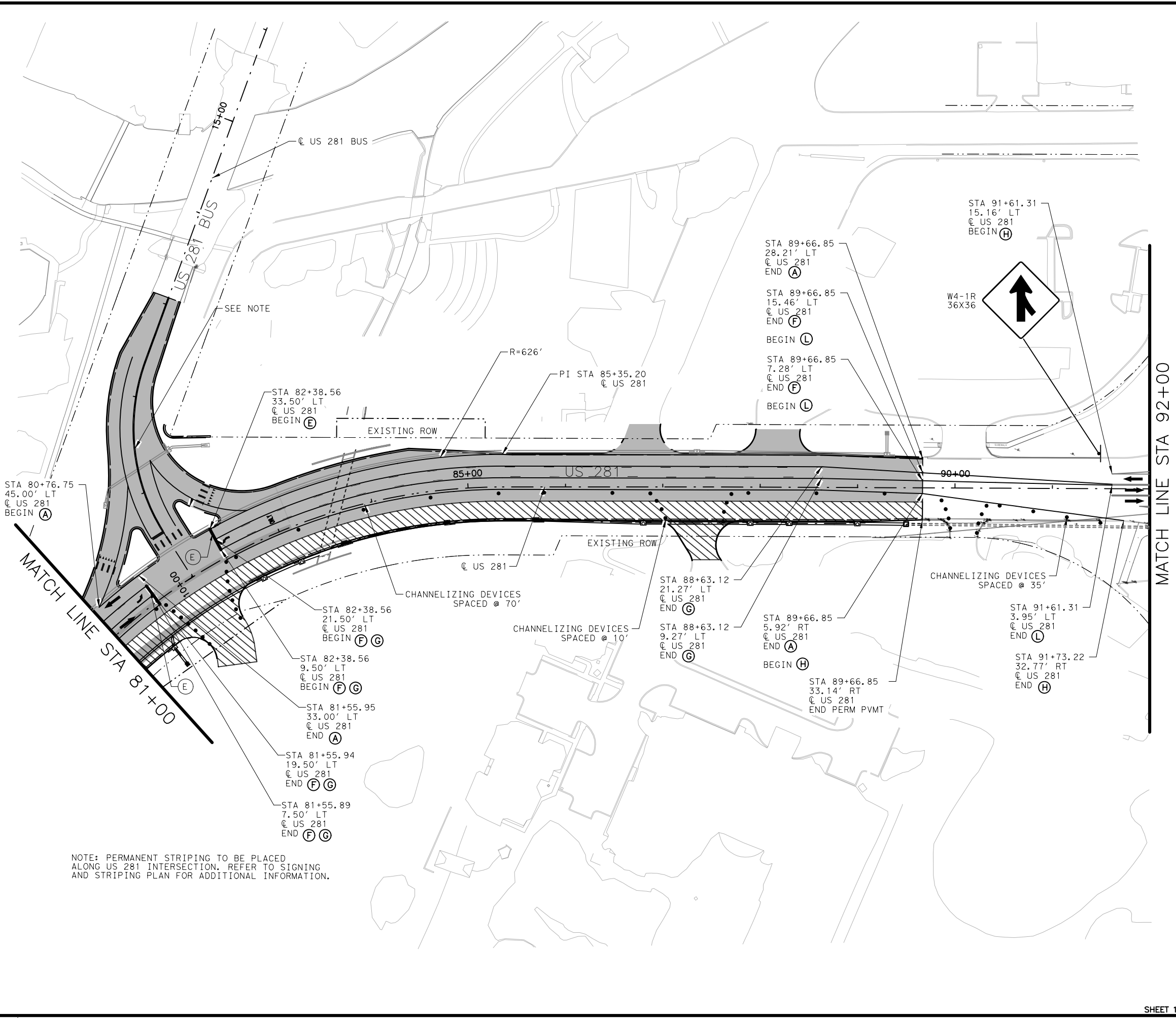
NO.	REVISION	BY	DATE

RTG RODRIGUEZ TRANSPORTATION GROUP
FIRM #587



US 281
TRAFFIC CONTROL PLAN
US 281
PHASE 2B
STA 81+00 TO STA 92+00

Designed:	RTG	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	RTG	6	TEXAS		US 281		
Drawn:	RTG	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	RTG	BWD	LAMPASAS	0251	06	036	73

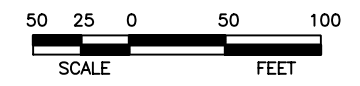
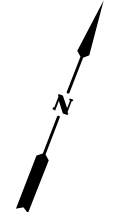
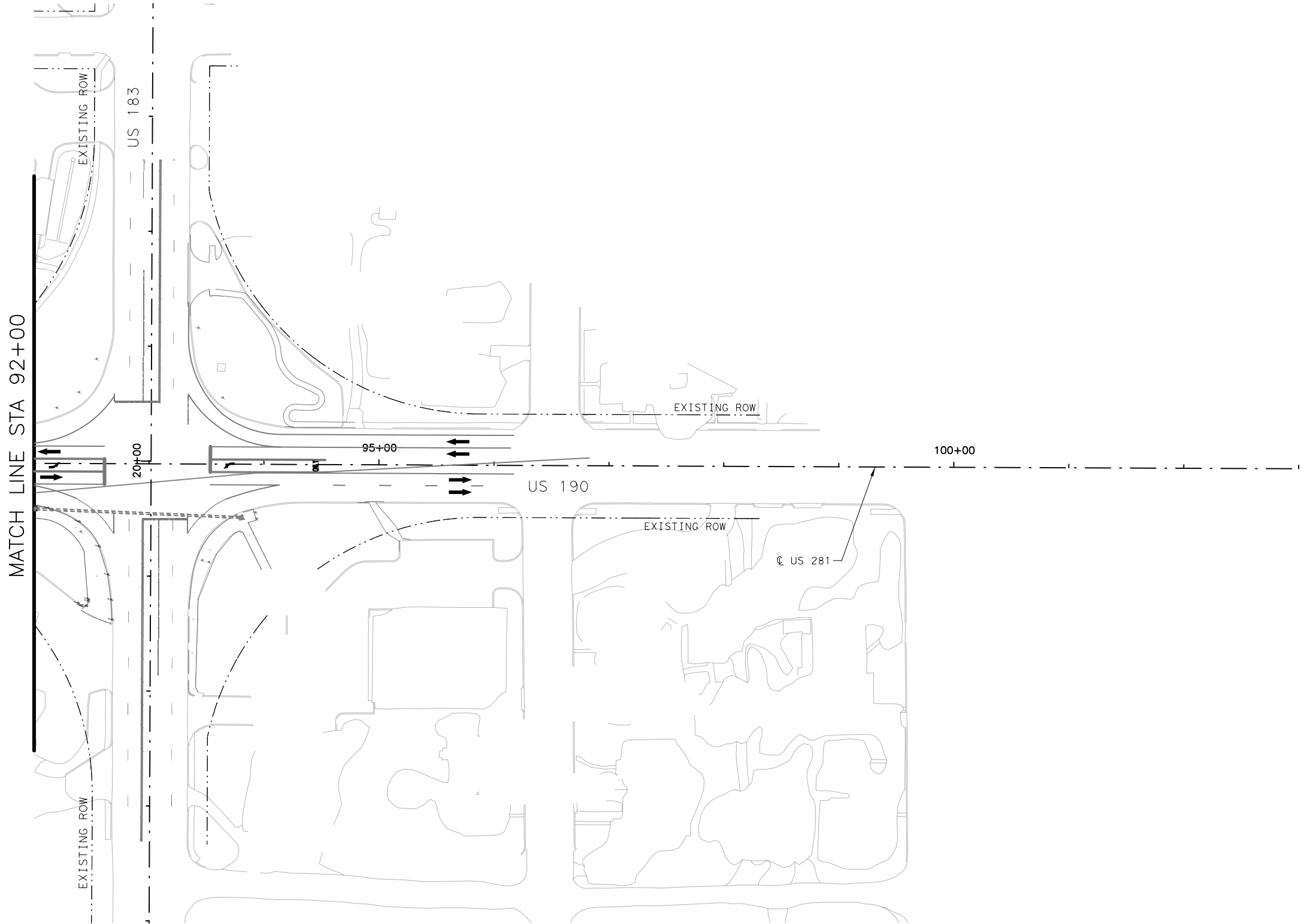


1/30/2023 3:44:24 PM skunz
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/

cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/

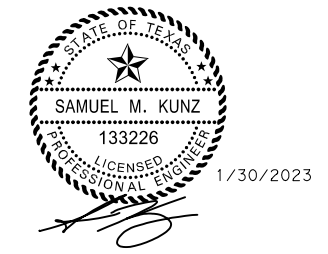
1/30/2023 3:30:57 PM skunz

pw:/



LEGEND

- PERMANENT PAVEMENT THIS PHASE
- TEMPORARY PAVEMENT THIS PHASE
- COMPLETED PERMANENT PAVEMENT
- COMPLETED TEMPORARY PAVEMENT
- BARREL CHANNELIZING DEVICE (N.T.S.)
- TEMPORARY TRAFFIC FLOW
- TY 3 BARRICADE
- CONSTRUCTION/TRAFFIC SIGN
- (A) WRK ZN PAV MRK (W)(4")(SLD)(NON-REMOV)
- (B) WRK ZN PAV MRK (W)(4")(BRK)(NON-REMOV)
- (C) WRK ZN PAV MRK (W)(4")(DOT)(NON-REMOV)
- (D) WRK ZN PAV MRK (W)(8")(SLD)(NON-REMOV)
- (E) WRK ZN PAV MRK (W)(24")(SLD)(NON-REMOV)
- (F) WRK ZN PAV MRK (Y)(4")(SLD)(NON-REMOV)
- (G) WRK ZN PAV MRK (Y)(4")(BRK)(NON-REMOV)
- (H) WRK ZN PAV MRK (W)(4")(SLD)(REMOV)
- (I) WRK ZN PAV MRK (W)(4")(DOT)(REMOV)
- (J) WRK ZN PAV MRK (W)(8")(SLD)(REMOV)
- (K) WRK ZN PAV MRK (W)(24")(SLD)(REMOV)
- (L) WRK ZN PAV MRK (Y)(4")(SLD)(REMOV)



NO.	REVISION	BY	DATE



US 281
TRAFFIC CONTROL PLAN
 US 281
 PHASE 2B
 STA 92+00 TO BEGIN

Designed:	RTG	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	RTG	6	TEXAS		US 281		
Drawn:	RTG	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	RTG	BWD	LAMPASAS	0251	06	036	74

DISCLAIMER: 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.

DATE:
 FILE:

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. Where highway construction or maintenance work is being undertaken, other than mobile operations as defined by the Texas Manual on Uniform Traffic Control Devices, CSJ limit signs are required. CSJ limit signs are shown on BC(2). The OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits. For mobile operations, CSJ limit signs are not required.
11. Traffic control devices should be in place only while work is actually in progress or a definite need exists.
12. The Engineer has the final decision on the location of all traffic control devices.
13. Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

WORKER SAFETY NOTES:



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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

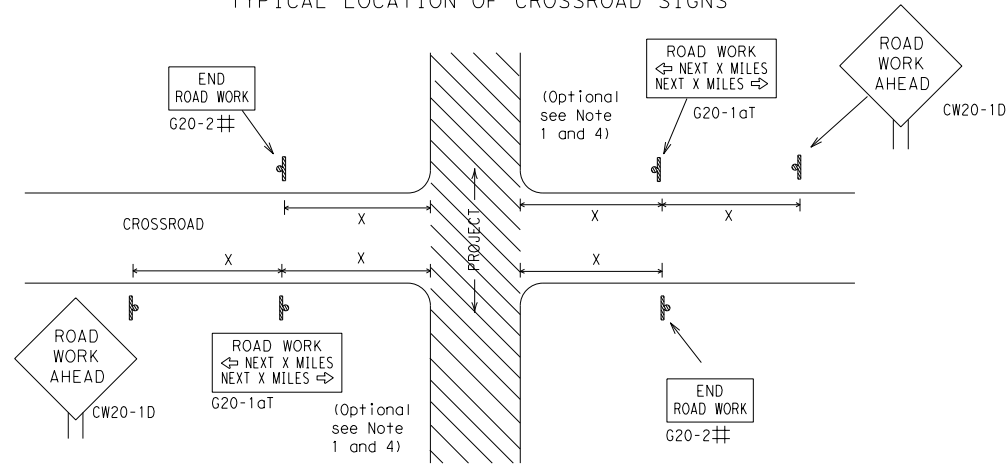
THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT http://www.txdot.gov
COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS) "
STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD)
TEXAS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

SHEET 1 OF 12

			
BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS			
BC (1) -21			
FILE:	bc-21.dgn	DN:	TxDOT
© TxDOT	November 2002	CK:	TxDOT
		DW:	TxDOT
		CK:	TxDOT
REVISIONS	CONT	SECT	JOB
4-03 7-13	0251	06	036
9-07 8-14			US 281
5-10 5-21	DIST	COUNTY	SHEET NO.
	BWD	LAMPASAS	75

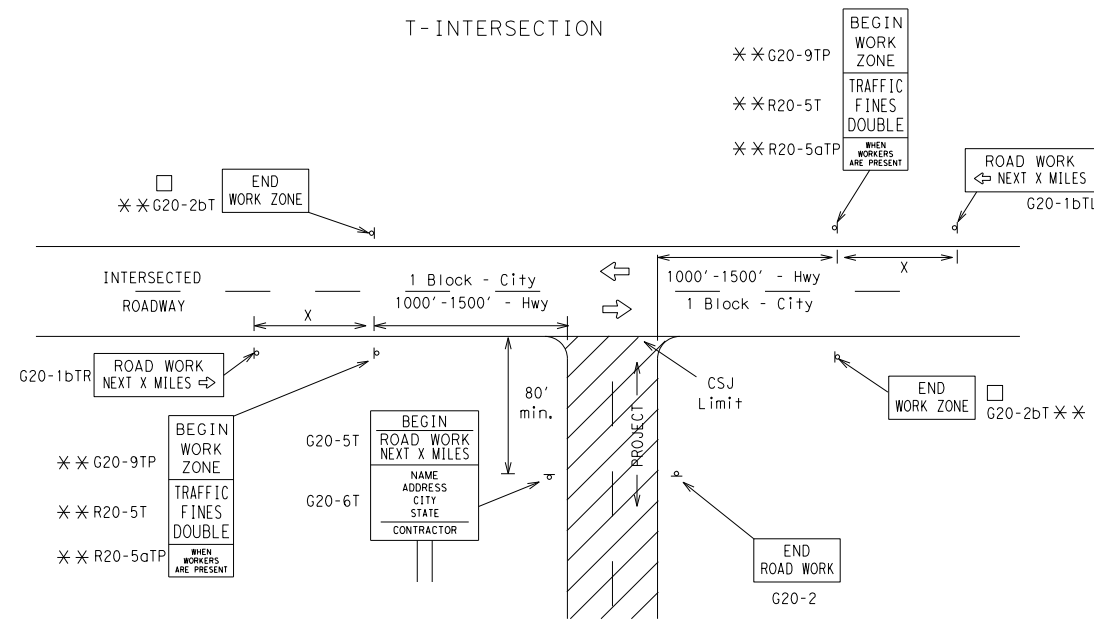
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

TYPICAL LOCATION OF CROSSROAD SIGNS



- ## May be mounted on back of "ROAD WORK AHEAD" (CW20-1D) sign with approval of Engineer. (See note 2 below)
- 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.
 - 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 as per TMUTCD Part 5. This information shall be shown in the plans.
 - 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.
 - 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.
 - Additional traffic control devices may be shown elsewhere in the plans for higher volume crossroads.
 - 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

- 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.
- 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

Sign Number or Series	SIZE		SPACING	
	Conventional Road	Expressway/Freeway	Posted Speed MPH	Sign Δ Spacing "x" Feet (Apprx.)
CW20 ⁴	48" x 48"	48" x 48"	30	120
CW21			35	160
CW22			40	240
CW23			45	320
CW25			50	400
CW1, CW2, CW7, CW8, CW9, CW11, CW14	36" x 36"	48" x 48"	55	500 ²
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12			60	600 ²
			65	700 ²
			70	800 ²
			80	1000 ²
*			*	³

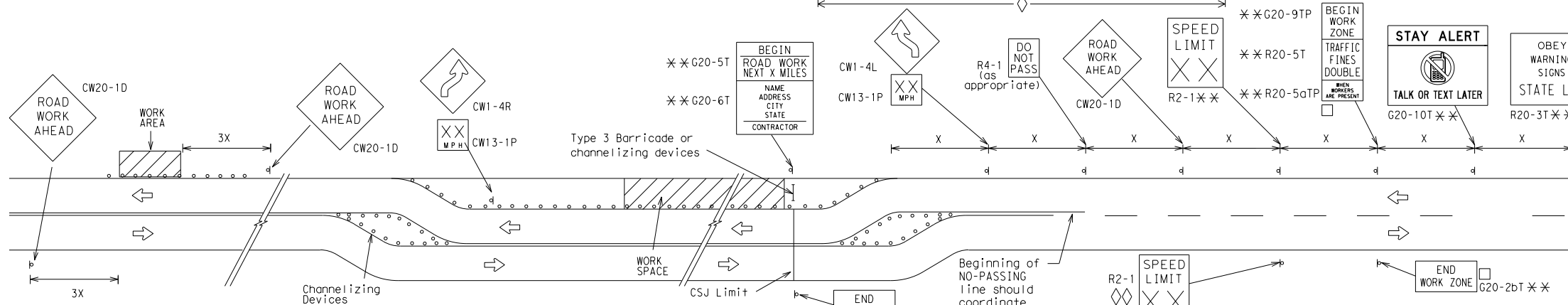
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

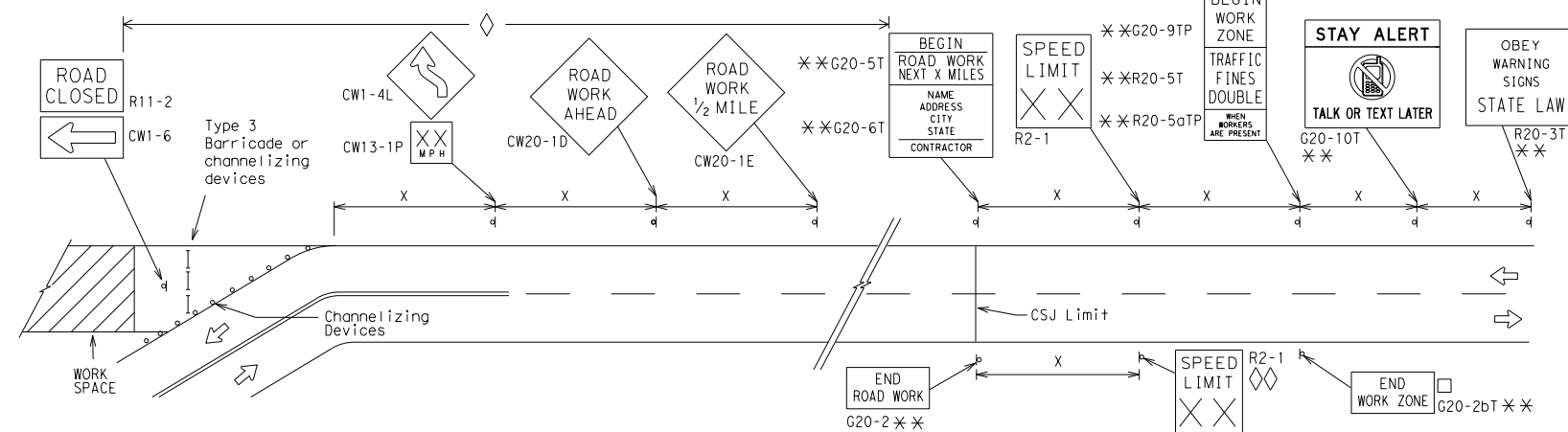
- Special or larger size signs may be used as necessary.
- Distance between signs should be increased as required to have 1500 feet advance warning.
- Distance between signs should be increased as required to have 1/2 mile or more advance warning.
- 36" x 36" "ROAD WORK AHEAD" (CW20-1D) signs may be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

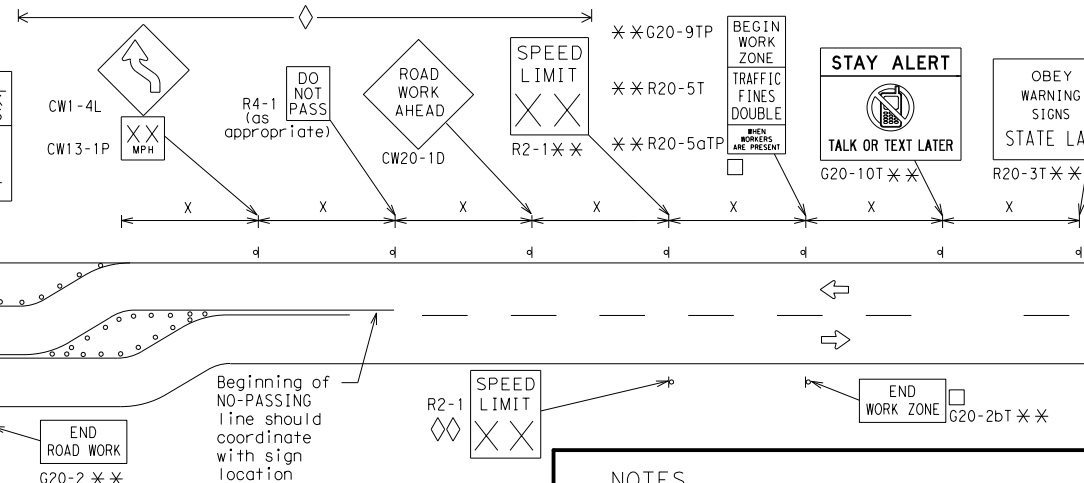


When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD" (CW20-1D) signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing of signs and channelizing devices.

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING DOWNSTREAM OF THE CSJ LIMITS



SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT 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.

** CSJ limit signing is required for highway construction and maintenance work, with the exception of mobile operations.

◇ 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.

SHEET 2 OF 12



BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

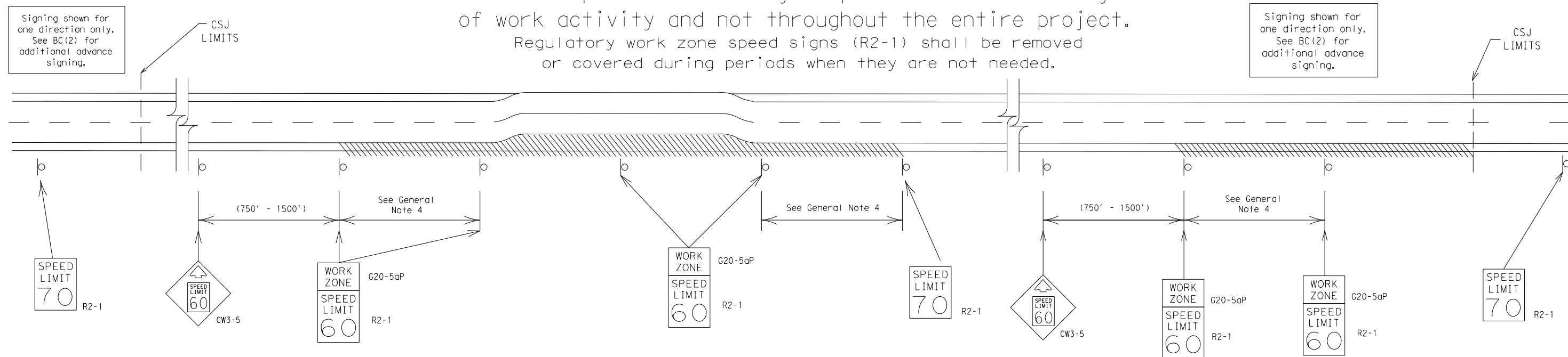
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
9-07 8-14	DIST	COUNTY	SHEET NO.	
7-13 5-21	BWD	LAMPASAS	76	

DATE: FILE:

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:

- rough road or damaged pavement surface
- substantial alteration of roadway geometrics (diversions)
- construction detours
- grade
- width
- other conditions readily apparent to the driver

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

- Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
- Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
- Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
- 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
- Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
- 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.
- Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
- Techniques that may help reduce traffic speeds include but are not limited to:
 - Law enforcement.
 - Flagger stationed next to sign.
 - Portable changeable message sign (PCMS).
 - Low-power (drone) radar transmitter.
 - Speed monitor trailers or signs.
- Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.
- 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.

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.

DATE:
FILE:

SHEET 3 OF 12



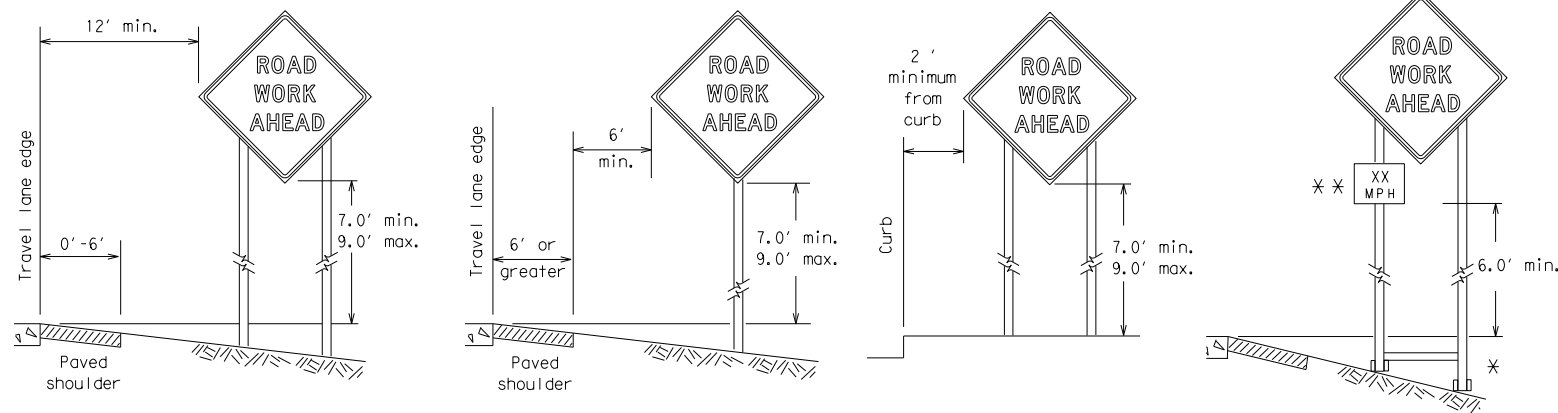
BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC (3) -21

FILE:	bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS		0251	06	036	US 281
9-07	8-14	DIST	COUNTY		SHEET NO.
7-13	5-21	BWD	LAMPASAS		77

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.

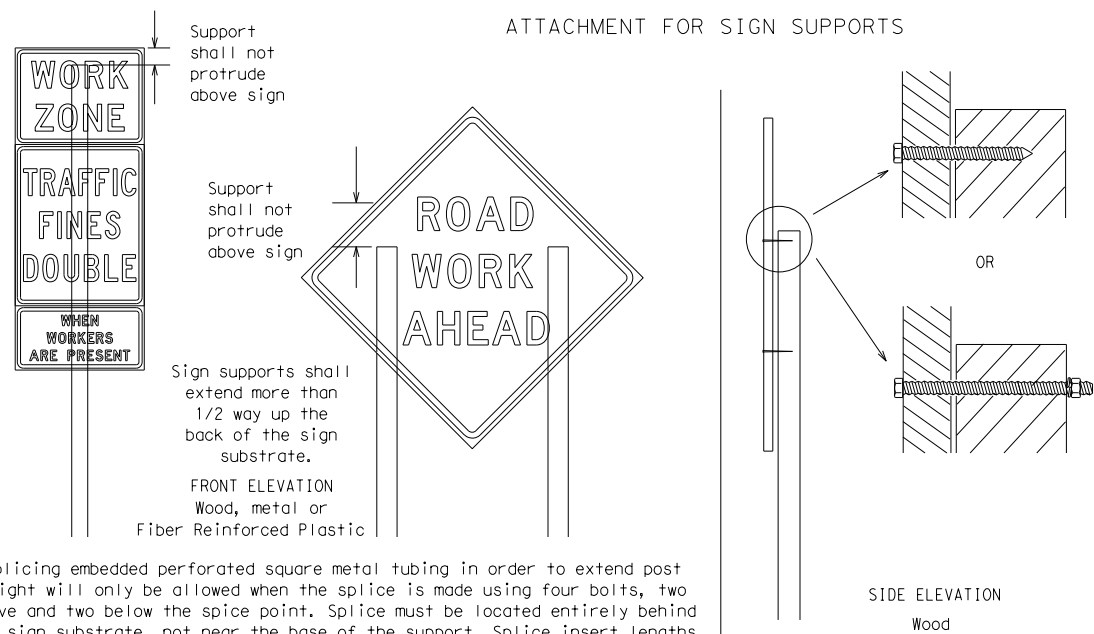
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



* 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 travel lane. 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 splice 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.

GENERAL NOTES FOR WORK ZONE SIGNS

- Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
- Wooden sign posts shall be painted white.
- Barricades shall NOT be used as sign supports.
- 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.
- 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.
- The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD) for small roadside signs. Supports for temporary large roadside signs shall meet the requirements detailed on the Temporary Large Roadside Signs (TLRS) standard sheets. The Contractor shall install the sign support in accordance with the manufacturer's recommendations. If there is a 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.
- 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.
- 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.
- 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)

- 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.
 - Long-term stationary - work that occupies a location more than 3 days.
 - 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.
 - Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
 - Short, duration - work that occupies a location up to 1 hour.
 - Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

SIGN MOUNTING HEIGHT

- 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.
- 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.
- Long-term/Intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
- Short-term/Short Duration signs shall be used only during daylight and shall be removed at the end of the workday or raised to appropriate Long-term/Intermediate sign height.
- 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

- 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

- 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.
- "Mesh" type materials are NOT an approved sign substrate, regardless of the tightness of the weave.
- 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

- 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).
- White sheeting, meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background.
- Orange sheeting, meeting the requirements of DMS-8300 Type B_{FL} or Type C_{FL}, shall be used for rigid signs with orange backgrounds.

SIGN LETTERS

- 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

- When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
- 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.
- 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.
- 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 shall NOT be used to cover signs.
- Duct tape or other adhesive material shall NOT be affixed to a sign face.
- Signs and anchor stubs shall be removed and holes backfilled upon completion of work.

SIGN SUPPORT WEIGHTS

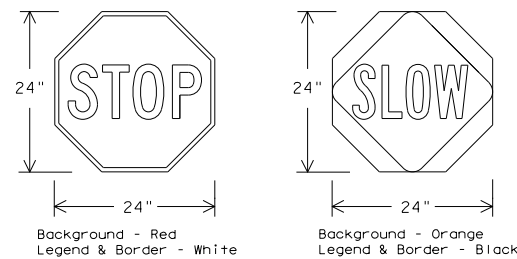
- Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
- The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
- Rock, concrete, iron, steel or other solid objects shall not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

FLAGS ON SIGNS

- 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.

STOP/SLOW PADDLES

- STOP/SLOW paddles are the primary method to control traffic by flaggers. The STOP/SLOW paddle size should be 24" x 24".
- STOP/SLOW paddles shall be retroreflectORIZED when used at night.
- STOP/SLOW paddles may be attached to a staff with a minimum length of 6' to the bottom of the sign.
- 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.



SHEETING REQUIREMENTS (WHEN USED AT NIGHT)		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	ORANGE	TYPE B _{FL} OR C _{FL} SHEETING
LEGEND & BORDER	WHITE	TYPE B OR C SHEETING
LEGEND & BORDER	BLACK	ACRYLIC NON-REFLECTIVE FILM

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

- 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, specific service (LOGO), 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.
- 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. For details for covering large guide signs see the TS-CD standard.
- When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
- 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.
- If permanent signs are to be removed and relocated using temporary supports, the Contractor shall use crashworthy supports as shown on the BC standard sheets, TLRS standard sheets or the CWZTCD list. The signs shall meet the required mounting heights shown on the BC, or the SMD standard sheets during construction. This work should be paid for under the appropriate pay item for relocating existing signs.
- 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.

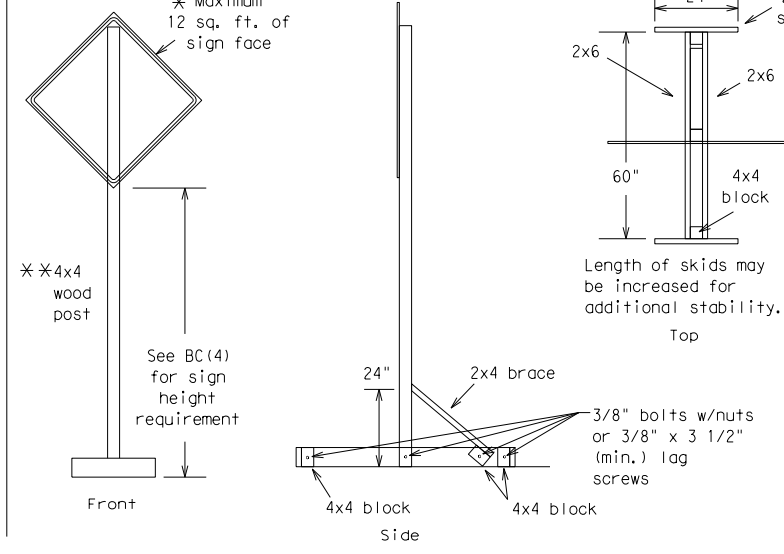
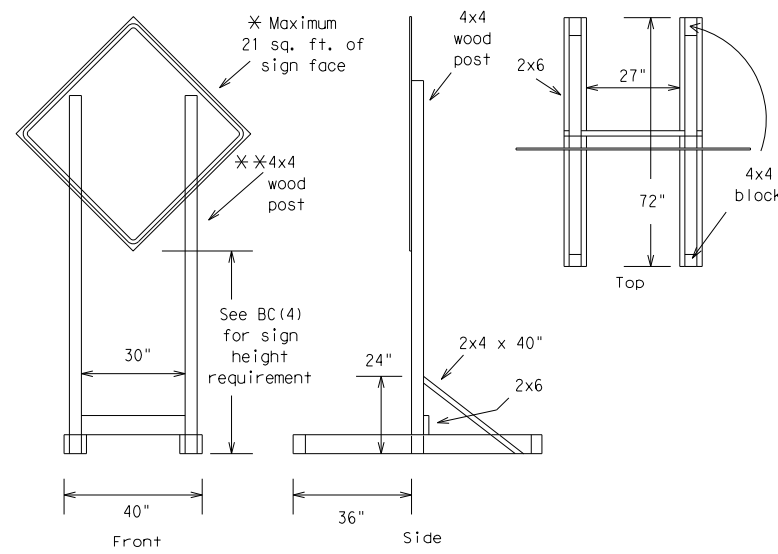
Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC (4) -21

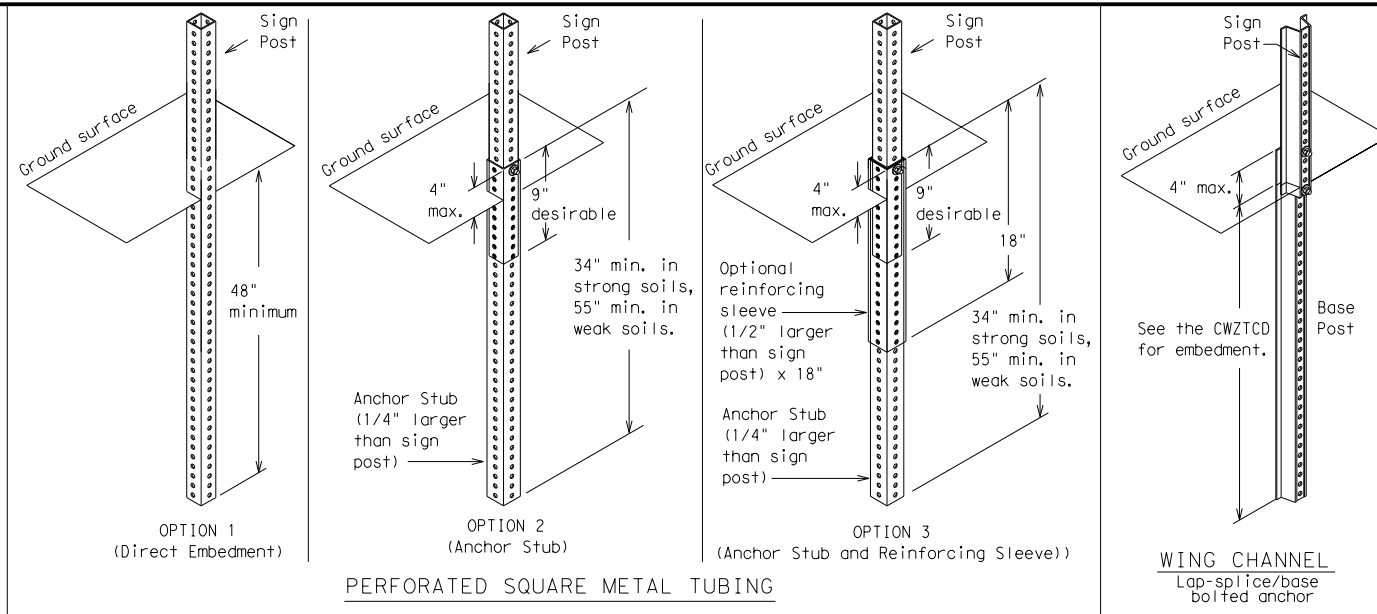
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
	0251	06	036	US 281
9-07 8-14	DIST	COUNTY	SHEET NO.	
7-13 5-21	BWD	LAMPASAS	78	

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.



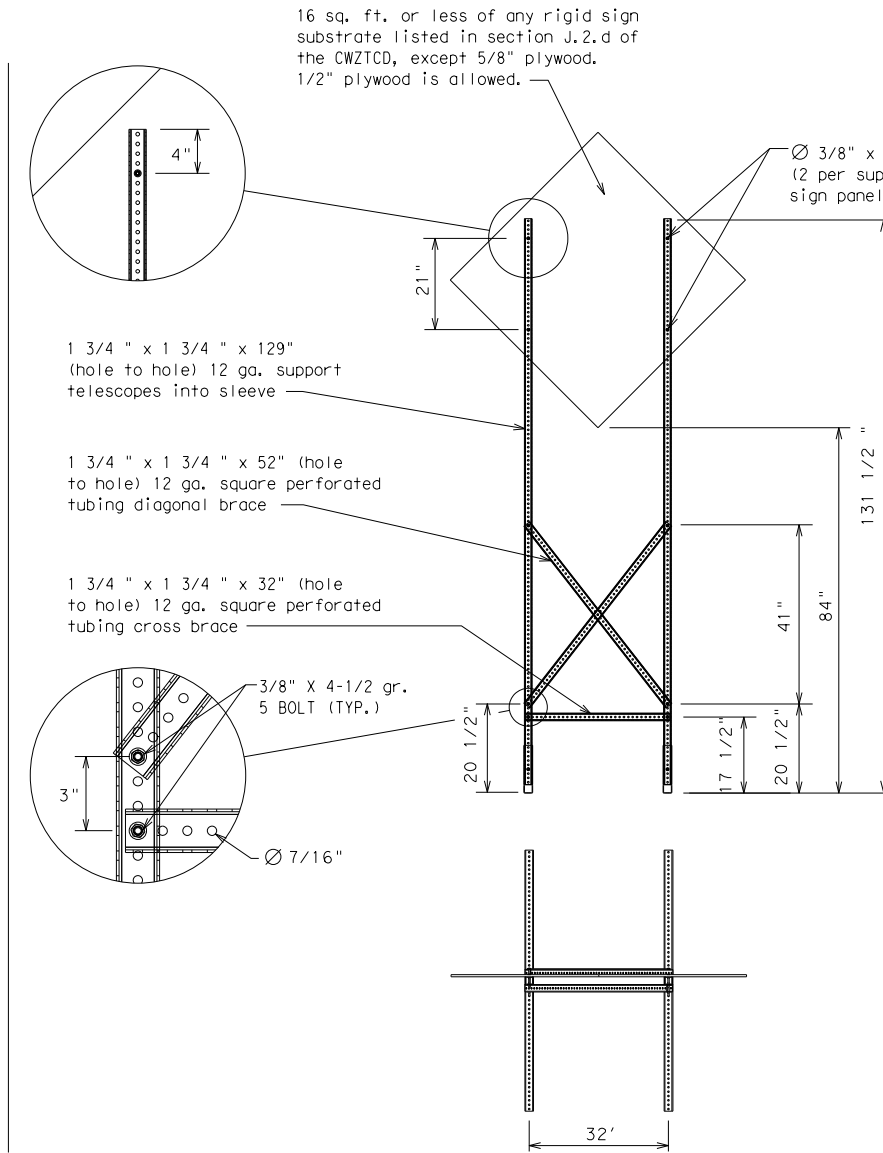
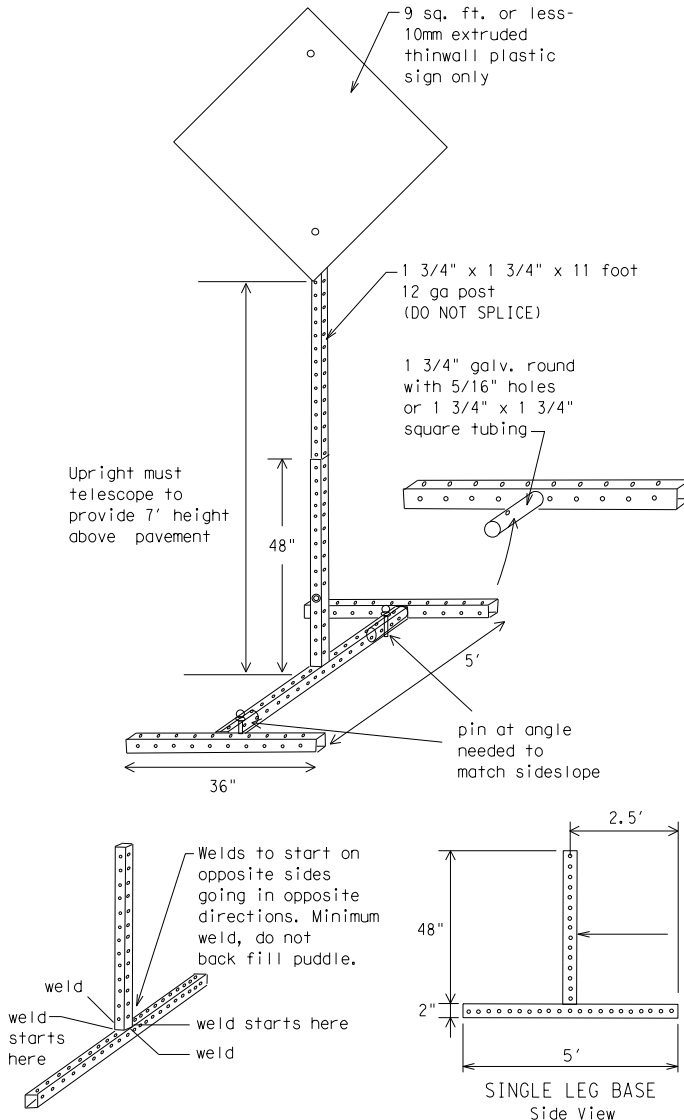
SKID MOUNTED WOOD SIGN SUPPORTS

* 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

* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID 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.

SHEET 5 OF 12



BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

FILE:	bc-21.dgn	DN:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
©TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0251	06	036	US 281				
9-07	8-14	DIST	COUNTY	SHEET NO.					
7-13	5-21	BWD	LAMPASAS	79					

DATE:
FILE:

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

PORTABLE CHANGEABLE MESSAGE SIGNS

- The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
- Messages on PCMS should contain no more than 8 words (about four to eight characters per word), not including simple words such as "TO," "FOR," "AT," etc.
- 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.
- Use the word "EXIT" to refer to an exit ramp on a freeway; i.e., "EXIT CLOSED." Do not use the term "RAMP."
- Always use the route or interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
- When in use, the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
- The message term "WEEKEND" should be used only if the work is to start on Saturday morning and end by Sunday evening at midnight. Actual days and hours of work should be displayed on the PCMS if work is to begin on Friday evening and/or continue into Monday morning.
- The Engineer/Inspector may select one of two options which are available for displaying a two-phase message on a PCMS. Each phase may be displayed for either four seconds each or for three seconds each.
- Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
- Do not present redundant information on a two-phase message; i.e., keeping two lines of the message the same and changing the third line.
- Do not use the word "Danger" in message.
- Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
- Do not display messages that scroll horizontally or vertically across the face of the sign.
- 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.
- 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.
- Each line of text should be centered on the message board rather than left or right justified.
- If disabled, the PCMS should default to an illegible display that will not alarm motorists and will only be used to alert workers that the PCMS has malfunctioned. A pattern such as a series of horizontal solid bars is appropriate.

WORD OR PHRASE	ABBREVIATION	WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD	Major	MAJ
Alternate	ALT	Miles	MI
Avenue	AVE	Miles Per Hour	MPH
Best Route	BEST RTE	Minor	MNR
Boulevard	BLVD	Monday	MON
Bridge	BRDG	Normal	NORM
Canal	CANT	North	N
Center	CTR	Northbound	(route) N
Construction Ahead	CONST AHD	Parking	PKING
CROSSING	XING	Road	RD
Detour Route	DETOUR RTE	Right Lane	RT LN
Do Not	DONT	Saturday	SAT
East	E	Service Road	SERV RD
Eastbound	(route) E	Shoulder	SHLDR
Emergency	EMER	Slippery	SLIP
Emergency Vehicle	EMER VEH	South	S
Entrance, Enter	ENT	Southbound	(route) S
Express Lane	EXP LN	Speed	SPD
Expressway	EXPWY	Street	ST
XXXX Feet	XXXX FT	Sunday	SUN
Fog Ahead	FOG AHD	Telephone	PHONE
Freeway	FRWY, FWY	Temporary	TEMP
Freeway Blocked	FWY BLKD	Thursday	THURS
Friday	FRI	To Downtown	TO DWNTN
Hazardous Driving	HAZ DRIVING	Traffic	TRAF
Hazardous Material	HAZMAT	Travelers	TRVLR
High-Occupancy	HOV	Tuesday	TUES
Vehicle	HWY	Time Minutes	TIME MIN
Highway	HR, HRS	Upper Level	UPR LEVEL
Hour(s)	HR, HRS	Vehicles (s)	VEH, VEHS
Information	INFO	Warning	WARN
It Is	ITS	Wednesday	WED
Junction	JCT	Weight Limit	WT LIMIT
Left	LFT	West	W
Left Lane	LFT LN	Westbound	(route) W
Lane Closed	LN CLOSED	Wet Pavement	WET PVMT
Lower Level	LWR LEVEL	Will Not	WONT
Maintenance	MAINT		

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

FREEWAY CLOSED X MILE
ROAD CLOSED AT SH XXX
ROAD CLSD AT FM XXXX
RIGHT X LANES CLOSED
CENTER LANE CLOSED
NIGHT LANE CLOSURES
VARIOUS LANES CLOSED
EXIT CLOSED
MALL DRIVEWAY CLOSED
XXXXXXXX BLVD CLOSED

Other Condition List

FRONTAGE ROAD CLOSED
SHOULDER CLOSED XXX FT
RIGHT LN CLOSED XXX FT
RIGHT X LANES OPEN
DAYTIME LANE CLOSURES
I-XX SOUTH EXIT CLOSED
EXIT XXX CLOSED X MILE
RIGHT LN TO BE CLOSED
X LANES CLOSED TUE - FRI

ROADWORK XXX FT
FLAGGER XXXX FT
RIGHT LN NARROWS XXXX FT
MERGING TRAFFIC XXXX FT
LOOSE GRAVEL XXXX FT
DETOUR X MILE
ROADWORK PAST SH XXXX
BUMP XXXX FT
TRAFFIC SIGNAL XXXX FT

ROAD REPAIRS XXXX FT
LANE NARROWS XXXX FT
TWO-WAY TRAFFIC XX MILE
CONST TRAFFIC XXX FT
UNEVEN LANES XXXX FT
ROUGH ROAD XXXX FT
ROADWORK NEXT FRI-SUN
US XXX EXIT X MILES
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
DETOUR NEXT X EXITS
USE EXIT XXX
STAY ON US XXX SOUTH
TRUCKS USE US XXX N
WATCH FOR TRUCKS
EXPECT DELAYS
REDUCE SPEED XXX FT
USE OTHER ROUTES
STAY IN LANE *

Location List

AT FM XXXX
BEFORE RAILROAD CROSSING
NEXT X MILES
PAST US XXX EXIT
XXXXXXXX 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

- Only 1 or 2 phases are to be used on a PCMS.
- The 1st phase (or both) should be selected from the "Road/Lane/Ramp Closure List" and the "Other Condition List".
- A 2nd phase can be selected from the "Action to Take/Effect on Travel, Location, General Warning, or Advance Notice Phase Lists".
- A Location Phase is necessary only if a distance or location is not included in the first phase selected.
- 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.
- 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

- The words RIGHT, LEFT and ALL can be interchanged as appropriate.
- Roadway designations IH, US, SH, FM and LP can be interchanged as appropriate.
- EAST, WEST, NORTH and SOUTH (or abbreviations E, W, N and S) can be interchanged as appropriate.
- Highway names and numbers replaced as appropriate.
- ROAD, HIGHWAY and FREEWAY can be interchanged as needed.
- AHEAD may be used instead of distances if necessary.
- FT and MI, MILE and MILES interchanged as appropriate.
- AT, BEFORE and PAST interchanged as needed.
- 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

- 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.
- When symbol signs, such as the "Flagger Symbol" (CW20-7) are represented graphically on the Full Matrix PCMS sign and, with the approval of the Engineer, it shall maintain the legibility/visibility requirement listed above.
- When symbol signs are represented graphically on the Full Matrix PCMS, they shall only supplement the use of the static sign represented, and shall not substitute for, or replace that sign.
- 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.

SHEET 6 OF 12

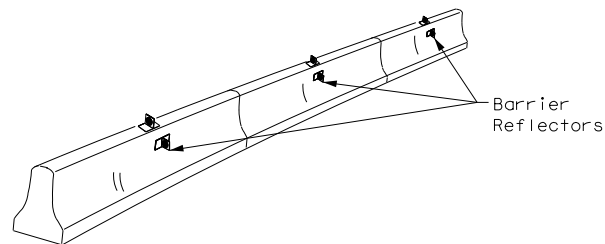
		Texas Department of Transportation		Traffic Safety Division Standard
BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)				
BC (6) - 21				
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT: 0251	SECT: 06	JOB: 036	HIGHWAY: US 281
REVISIONS				
9-07 8-14				
7-13 5-21	DIST: BWD	COUNTY: LAMPASAS	SHEET NO. 80	

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.

DATE: FILE:

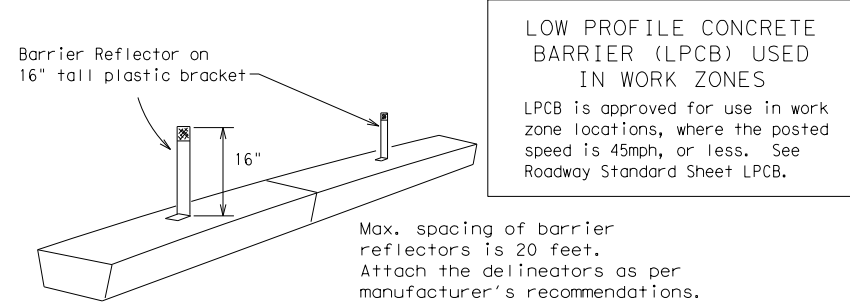
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

- 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).
- Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 512.



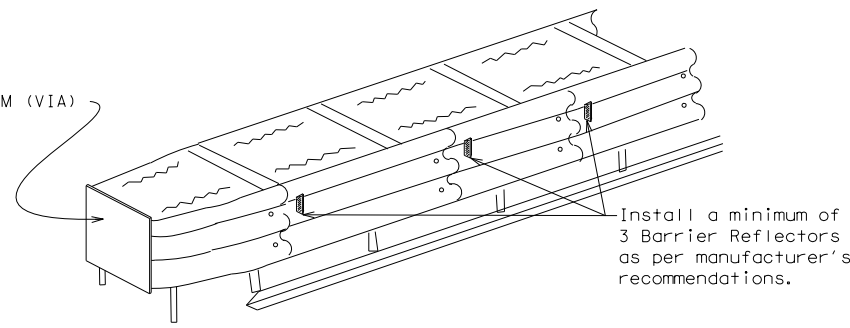
CONCRETE TRAFFIC BARRIER (CTB)

- 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.
- 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.
- When CTB separates traffic traveling in the same direction, no barrier reflectors will be required on top of the CTB.
- Barrier Reflector units shall be yellow or white in color to match the edgeline being supplemented.
- Maximum spacing of Barrier Reflectors is forty (40) feet.
- Pavement markers or temporary flexible-reflective roadway marker tabs shall NOT be used as CTB delineation.
- Attachment of Barrier Reflectors to CTB shall be per manufacturer's recommendations.
- Missing or damaged Barrier Reflectors shall be replaced as directed by the Engineer.
- Single slope barriers shall be delineated as shown on the above detail.



LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES
 LPCB is approved for use in work zone locations, where the posted speed is 45mph, or less. See Roadway Standard Sheet LPCB.

LOW PROFILE CONCRETE BARRIER (LPCB)



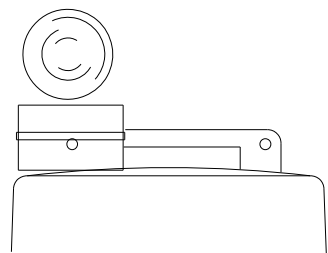
DELINEATION OF END TREATMENTS

END TREATMENTS FOR CTB'S USED IN WORK ZONES
 End treatments used on CTB's in work zones shall meet the appropriate crashworthy standards as defined in the Manual for Assessing Safety Hardware (MASH). Refer to the CWZTCD List for approved end treatments and manufacturers.

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

WARNING LIGHTS

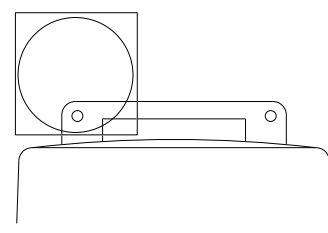
- Warning lights shall meet the requirements of the TMUTCD.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet 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_{FL} or C_{FL} Sheeting meeting the requirements of Departmental Material Specification DMS-8300.
- 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".
- The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
- 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.
- 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.
- The location of warning lights and warning reflectors on drums shall be as shown elsewhere in the plans.



Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

- Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
- Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
- 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.
- 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.
- Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
- Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
- The maximum spacing for warning lights on drums should be identical to the channelizing device spacing.



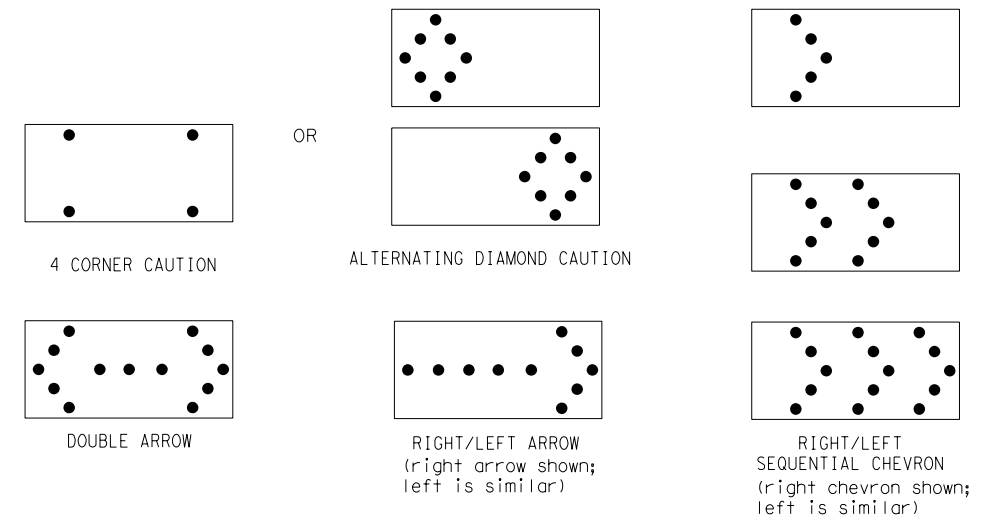
Warning reflector may be round or square. Must have a yellow reflective surface area of at least 30 square inches

WARNING REFLECTORS MOUNTED ON PLASTIC DRUMS AS A SUBSTITUTE FOR TYPE C (STEADY BURN) WARNING LIGHTS

- 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.
- 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.
- The warning reflector shall have a minimum retroreflective surface area (one-side) of 30 square inches.
- Round reflectors shall be fully reflectorized, including the area where attached to the drum.
- 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.
- 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.
- When used near two-way traffic, both sides of the warning reflector shall be reflectorized.
- The warning reflector should be mounted on the side of the handle nearest approaching traffic.
- 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.

- 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.
- 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.
- 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.
- The Flashing Arrow Board should be able to display the following symbols:



- The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
- The straight line caution display is NOT ALLOWED.
- 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.
- 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.
- The sequential arrow display is NOT ALLOWED.
- The flashing arrow display is the TxDOT standard; however, the sequential chevron display may be used during daylight operations.
- The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
- A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
- 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.
- 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

TRUCK-MOUNTED ATTENUATORS

- Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the Manual for Assessing Safety Hardware (MASH).
- Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
- Refer to the CWZTCD for a list of approved TMAs.
- TMAs are required on freeways unless otherwise noted in the plans.
- 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.
- 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.

SHEET 7 OF 12

Texas Department of Transportation
BARRICADE AND CONSTRUCTION ARROW PANEL, REFLECTORS, WARNING LIGHTS & ATTENUATOR
 BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
9-07 8-14	DIST	COUNTY	SHEET NO.	
7-13 5-21	BWD	LAMPASAS	81	

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.

DATE: FILE:

GENERAL NOTES

- For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
- 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.
- 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.
- 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).
- 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.
- 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:

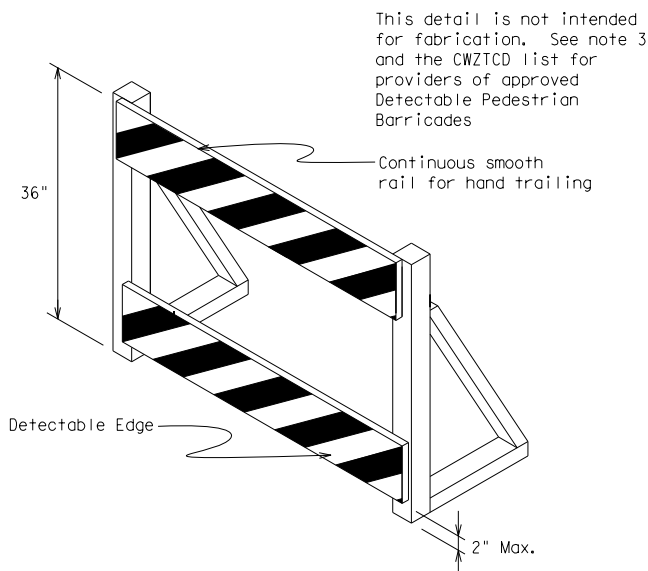
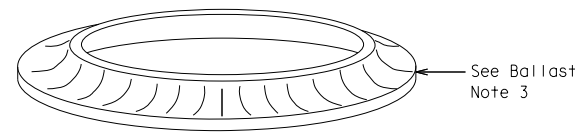
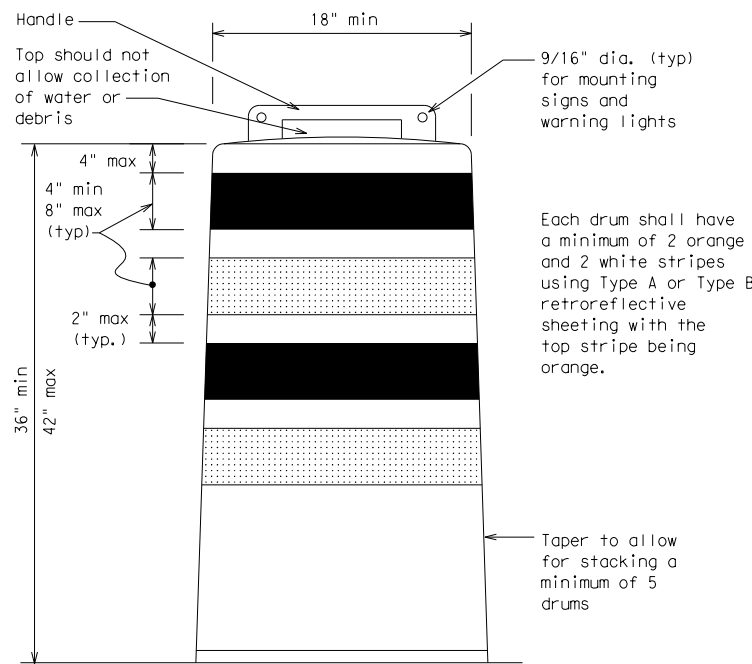
- Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
- The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
- 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.
- Drums shall present a profile that is a minimum of 18 inches in width at the 36 inch height when viewed from any direction. The height of drum unit (body installed on base) shall be a minimum of 36 inches and a maximum of 42 inches.
- The top of the drum shall have a built-in handle for easy pickup and shall be designed to drain water and not collect debris. The handle shall have a minimum of two widely spaced 9/16 inch diameter holes to allow attachment of a warning light, warning reflector unit or approved compliant sign.
- 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.
- 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.
- Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
- Drum body shall have a maximum unballasted weight of 11 lbs.
- Drum and base shall be marked with manufacturer's name and model number.

RETROREFLECTIVE SHEETING

- The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
- 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.

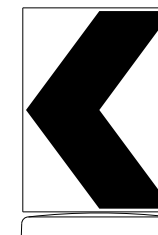
BALLAST

- 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.
- Bases with built-in ballast shall weigh between 40 lbs. and 50 lbs. Built-in ballast can be constructed of an integral crumb rubber base or a solid rubber base.
- Recycled truck tire sidewalls may be used for ballast on drums approved for this type of ballast on the CWZTCD list.
- 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.
- 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.
- Ballast shall not be placed on top of drums.
- Adhesives may be used to secure base of drums to pavement.

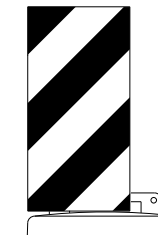


DETECTABLE PEDESTRIAN BARRICADES

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



18" x 24" Sign
(Maximum Sign Dimension)
Chevron CW1-8, Opposing Traffic Lane Divider, Driveway sign D70a, Keep Right R4 series or other signs as approved by Engineer



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

- Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
- Chevrons and other work zone signs with an orange background shall be manufactured with Type B_{FL} or Type C_{FL} Orange sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Sign Face Material," unless otherwise specified in the plans.
- Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type A or Type B. Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
- 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.
- Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
- Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
- 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.
- 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.

SHEET 8 OF 12

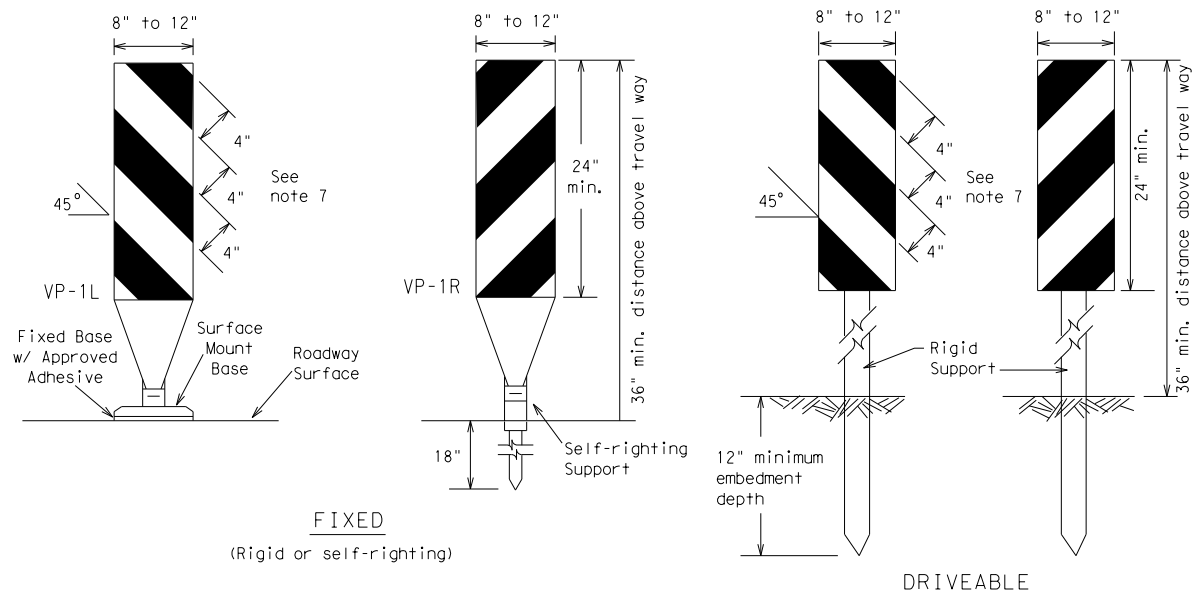


BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC (8) - 21

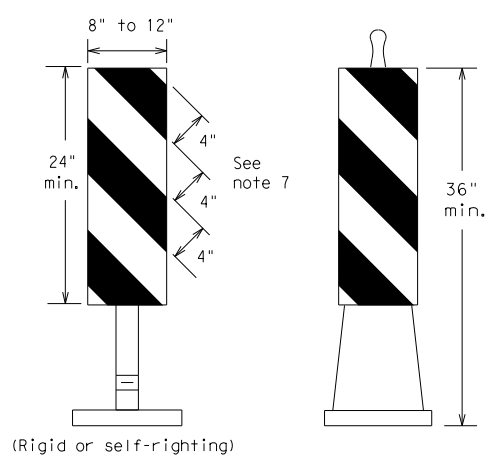
FILE:	bc-21.dgn	DN:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0251	06	036	US 281				
4-03	8-14	DIST	COUNTY		SHEET NO.				
9-07	5-21	BWD	LAMPASAS		82				
7-13									

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.



FIXED
(Rigid or self-righting)

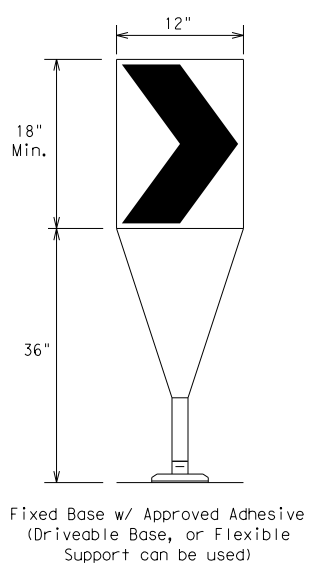
DRIVEABLE



PORTABLE

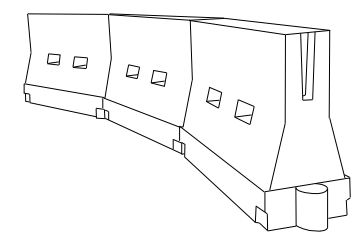
VERTICAL PANELS (VPs)

- Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
- 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 for additional requirements on the use VP's for drop-offs.
- 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 travel lane.
- VP's used on expressways and freeways or other high speed roadways, may have more than 270 square inches of retroreflective area facing traffic.
- Self-righting supports are available with portable base. See "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
- Sheeting for the VP's shall be retroreflective Type A or Type B conforming to Departmental Material Specification DMS-8300, unless noted otherwise.
- Where the height of reflective material on the vertical panel is 36 inches or greater, a panel stripe of 6 inches shall be used.



- The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
- 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.
- 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.
- To be effective, the chevron should be visible for at least 500 feet.
- Chevrons shall be orange with a black nonreflective legend. Sheeting for the chevron shall be retroreflective Type B_{FL} or Type C_{FL} conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.
- For Long Term Stationary use on tapers or transitions on freeways and divided highways, self-righting chevrons may be used to supplement plastic drums but not to replace plastic drums.

CHEVRONS



LONGITUDINAL CHANNELIZING DEVICES (LCD)

- 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.
- LCDs may be used instead of a line of cones or drums.
- LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
- LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
- LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(7) when placed roughly parallel to the travel lanes.
- LCDs used as barricades placed perpendicular to traffic should have at least one row of reflective sheeting meeting the requirements for barricade rails as shown on BC(10). Place reflective sheeting near the top of the LCD along the full length of the device.

WATER BALLASTED SYSTEMS USED AS BARRIERS

- Water ballasted systems used as barriers shall not be used solely to channelize road users, but also to protect the work space per the appropriate Manual for Assessing Safety Hardware (MASH) crashworthiness requirements based on roadway speed and barrier application.
- 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.
- 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.
- Water ballasted systems used as barriers should not be used for a merging taper except in low speed (less than 45 MPH) urban areas. When used on a taper in a low speed urban area, the taper shall be delineated and the taper length should be designed to optimize road user operations considering the available geometric conditions.
- When water ballasted systems used as barriers have blunt ends exposed to traffic, they should be attenuated as per manufacturer recommendations or flared to a point outside the clear zone.

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

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

GENERAL NOTES

- 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).
- 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.
- 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).
- 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.
- Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh a minimum of 30 lbs.
- Pavement surfaces shall be prepared in a manner that ensures proper bonding between the adhesives, the fixed mount bases and the pavement surface. Adhesives shall be prepared and applied according to the manufacturer's recommendations.
- The installation and removal of channelizing devices shall not cause detrimental effects to the final pavement surfaces, including pavement surface discoloration or surface integrity. Driveable bases shall not be permitted on final pavement surfaces. The Engineer/Inspector shall approve all application and removal procedures of fixed bases.

Posted Speed	Formula	Minimum Desirable Taper Lengths * X			Suggested Maximum Spacing of Channelizing Devices	
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent
30	L = 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'

*X 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



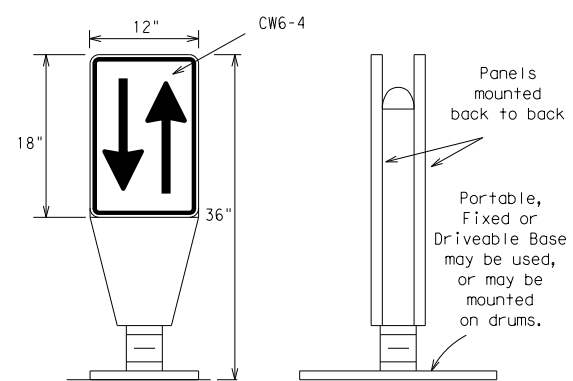
BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC (9) - 21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
9-07 8-14	DIST	COUNTY	SHEET NO.	
7-13 5-21	BWD	LAMPASAS	83	

DATE: FILE:

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



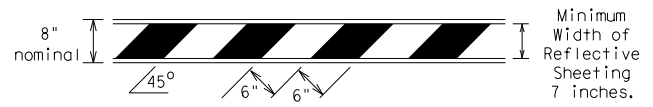
- Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base is secured to the pavement with an adhesive or rubber weight to minimize movement caused by a vehicle impact or wind gust.
- The OTLD may be used in combination with 42" cones or VPs.
- Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs placed between the OTLD's should not exceed 100 foot spacing.
- The OTLD shall be orange with a black non-reflective legend. Sheeting for the OTLD shall be retroreflective Type B_{FL} or Type C_{FL} conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.

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.

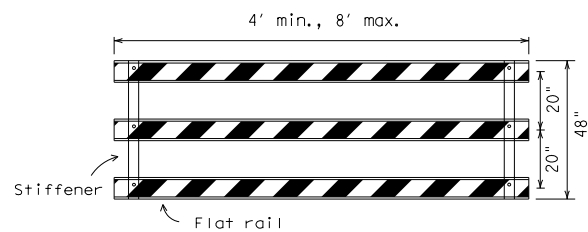
TYPE 3 BARRICADES

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 or Type B conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.



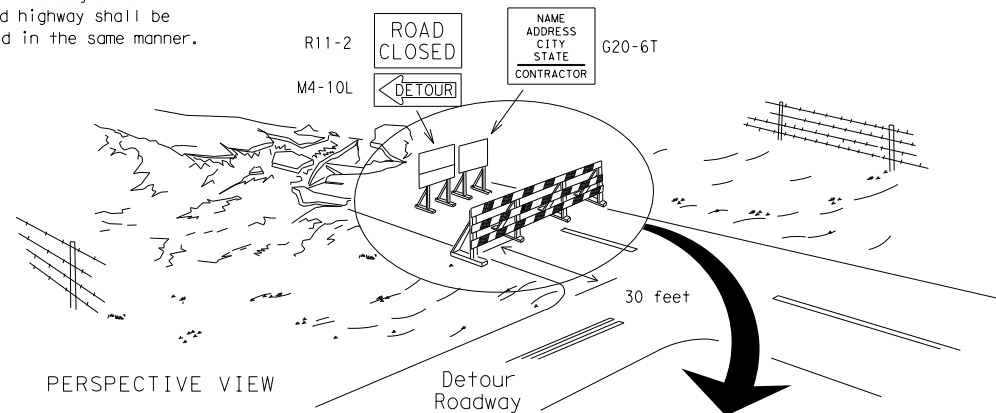
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



Stiffener may be inside or outside of support, but no more than 2 stiffeners shall be allowed on one barricade.

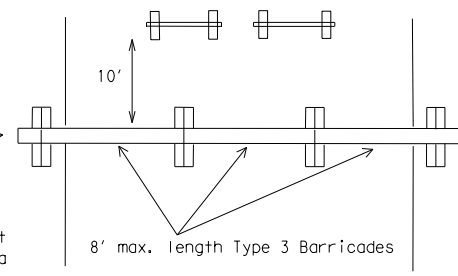
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

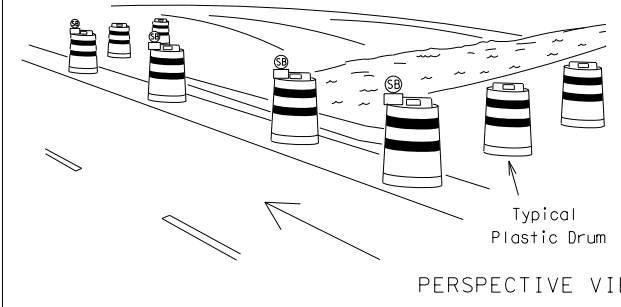
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.



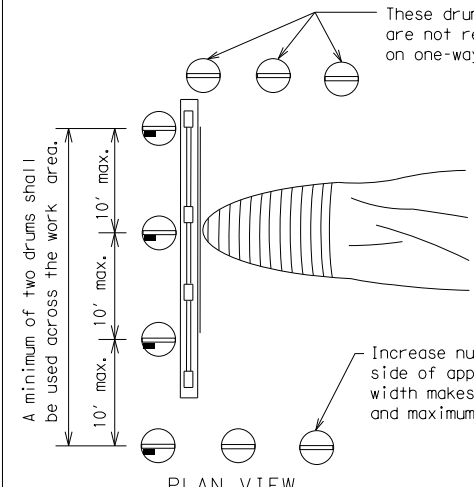
PLAN VIEW

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

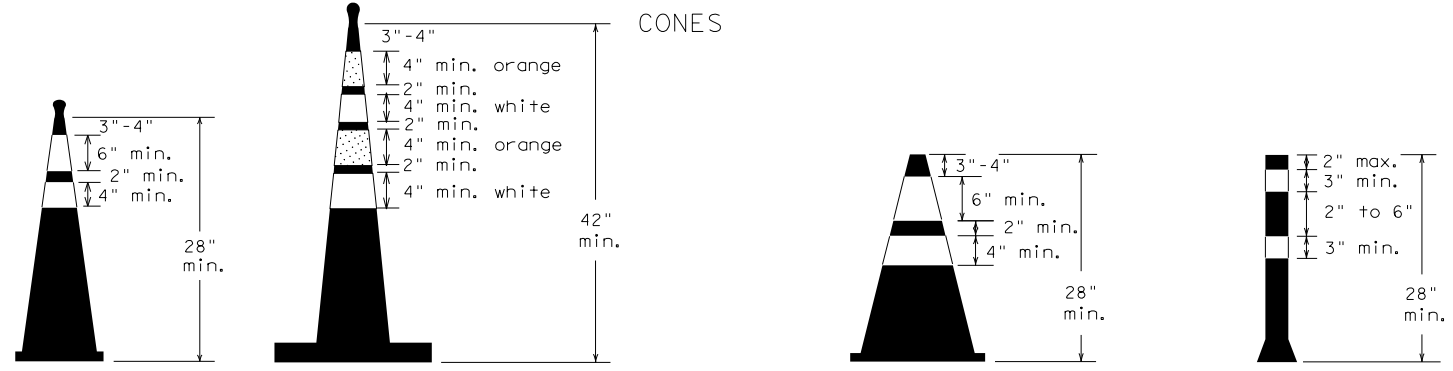


PLAN VIEW

1. Where positive redirection 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.

LEGEND	
	Plastic drum
	Plastic drum with steady burn light or yellow warning reflector
	Steady burn warning light or yellow warning reflector

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS

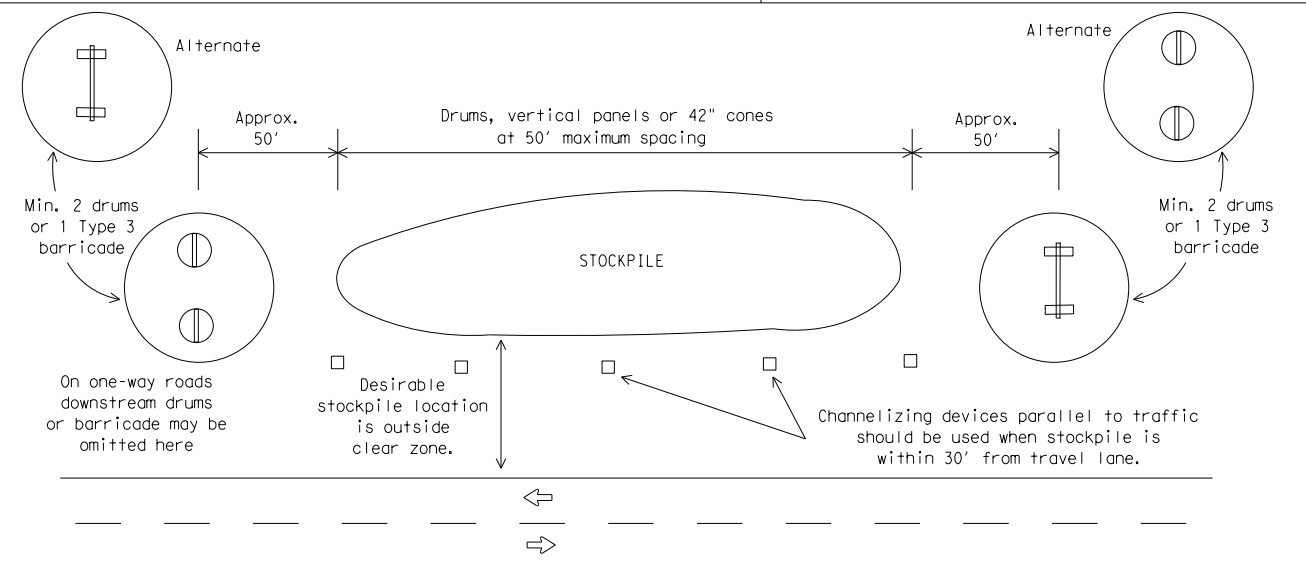


Two-Piece cones

One-Piece cones

Tubular Marker

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.



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

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 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 or Type B.
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.



BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
9-07 8-14	DIST	COUNTY	SHEET NO.	
7-13 5-21	BWD	LAMPASAS	84	

DATE: FILE:

WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

- Raised pavement markers are to be placed according to the patterns on BC(12).
- 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

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

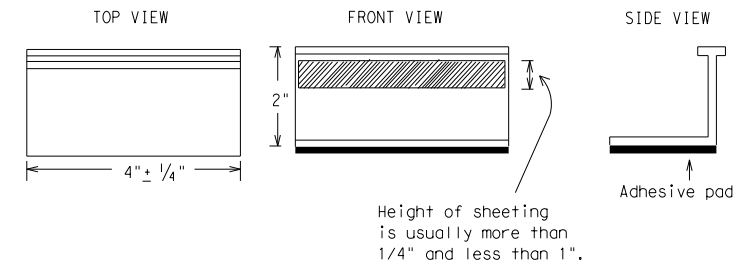
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

- Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of DMS-8242.
- 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.
 - 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.
 - 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.
- Small design variances may be noted between tab manufacturers.
- 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

- Raised pavement markers used as guidemarks shall be from the approved product list, and meet the requirements of DMS-4200.
- All temporary construction raised pavement markers provided on a project shall be of the same manufacturer.
- 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).

SHEET 11 OF 12



BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

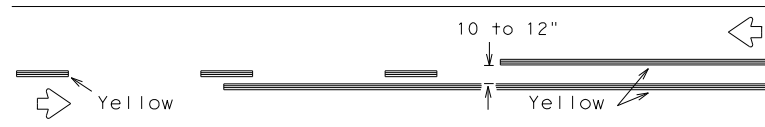
BC(11)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
	0251	06	036	US 281
REVISIONS	DIST	COUNTY	SHEET NO.	
2-98 9-07 5-21	BWD	LAMPASAS	85	
1-02 7-13				
11-02 8-14				

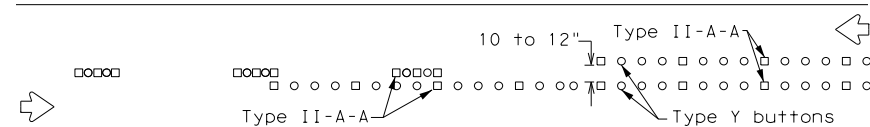
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

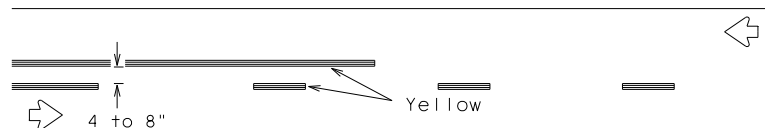
PAVEMENT MARKING PATTERNS



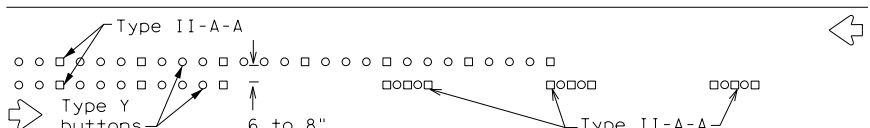
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



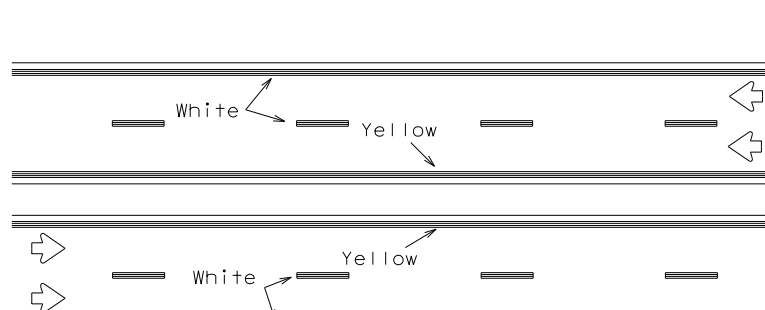
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



RAISED PAVEMENT MARKERS - PATTERN B

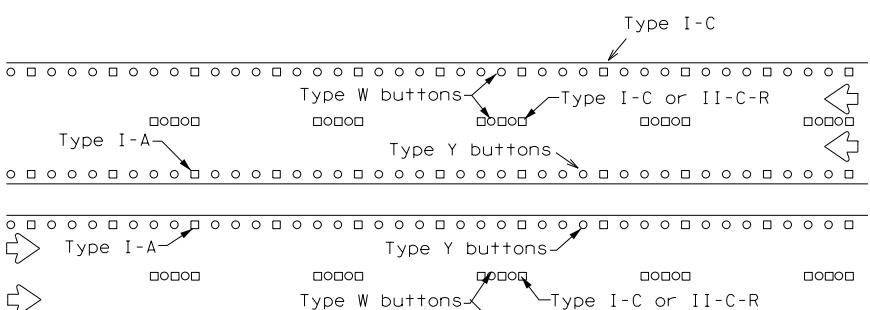
Pattern A is the TXDOT Standard, however Pattern B may be used if approved by the Engineer. Prefabricated markings may be substituted for reflectorized pavement markings.

CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO-LANE, TWO-WAY HIGHWAYS



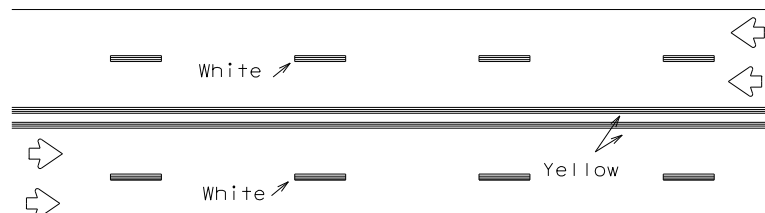
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectorized pavement markings.



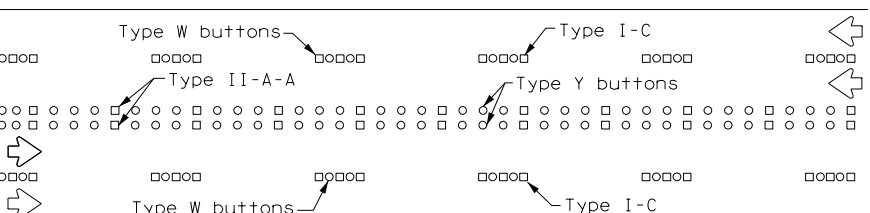
RAISED PAVEMENT MARKERS

EDGE & LANE LINES FOR DIVIDED HIGHWAY



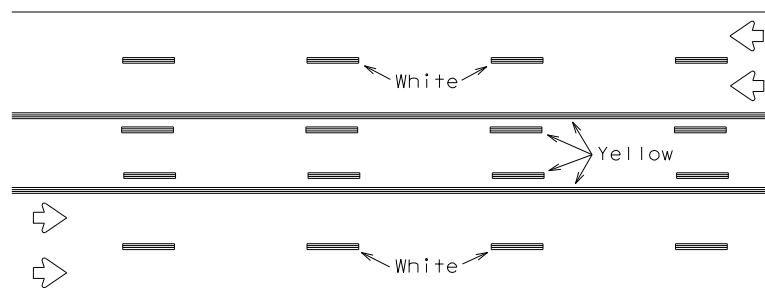
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectorized pavement markings.



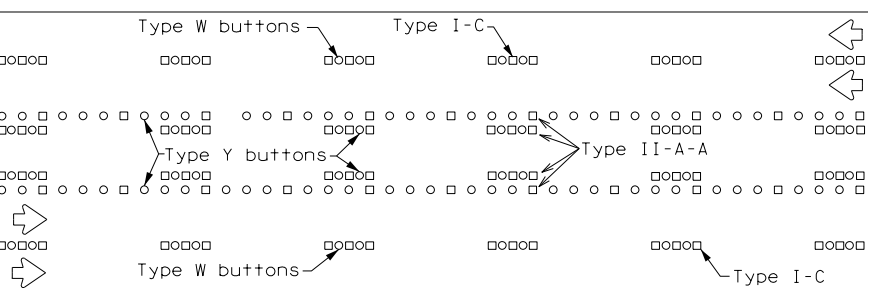
RAISED PAVEMENT MARKERS

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS

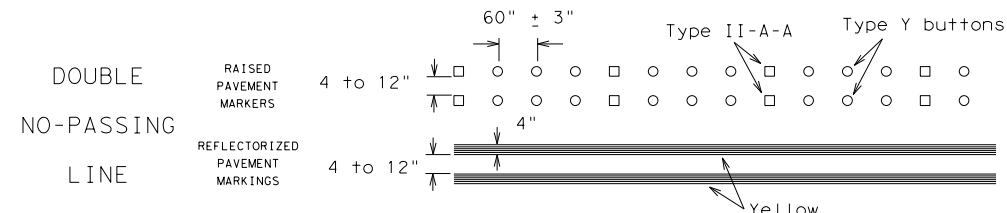
Prefabricated markings may be substituted for reflectorized pavement markings.



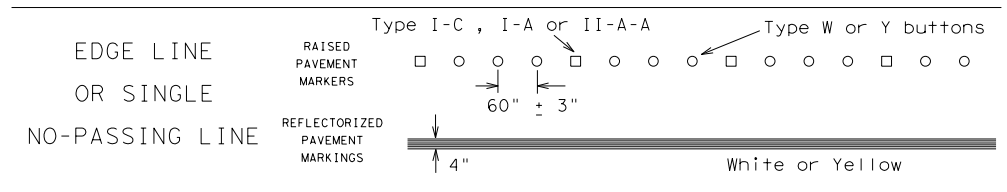
RAISED PAVEMENT MARKERS

TWO-WAY LEFT TURN LANE

STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



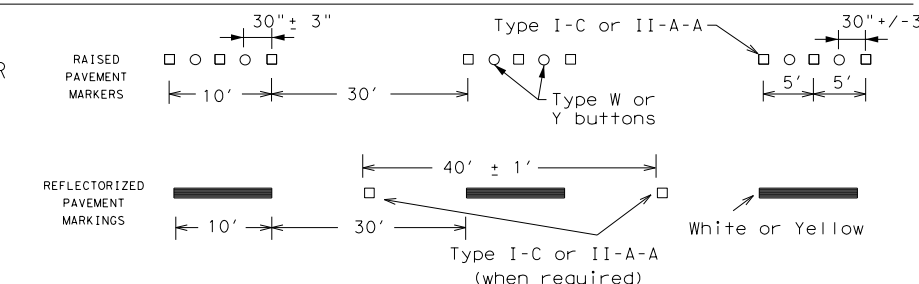
SOLID LINES



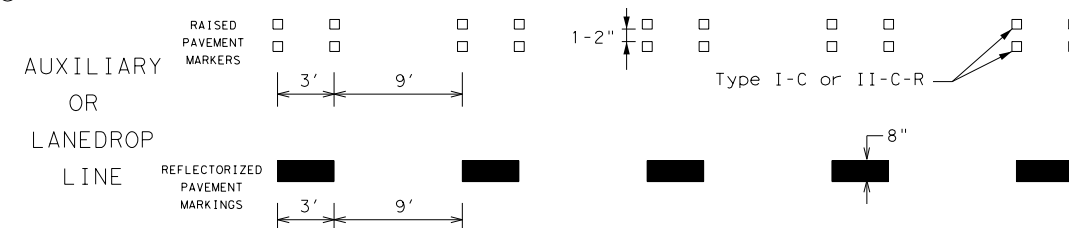
WIDE LINE



CENTER LINE OR LANE LINE

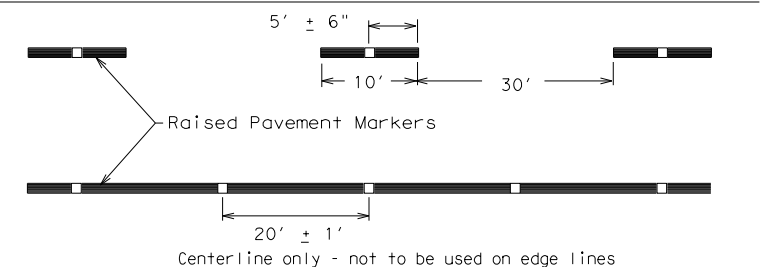


BROKEN LINES



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.



SHEET 12 OF 12



BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

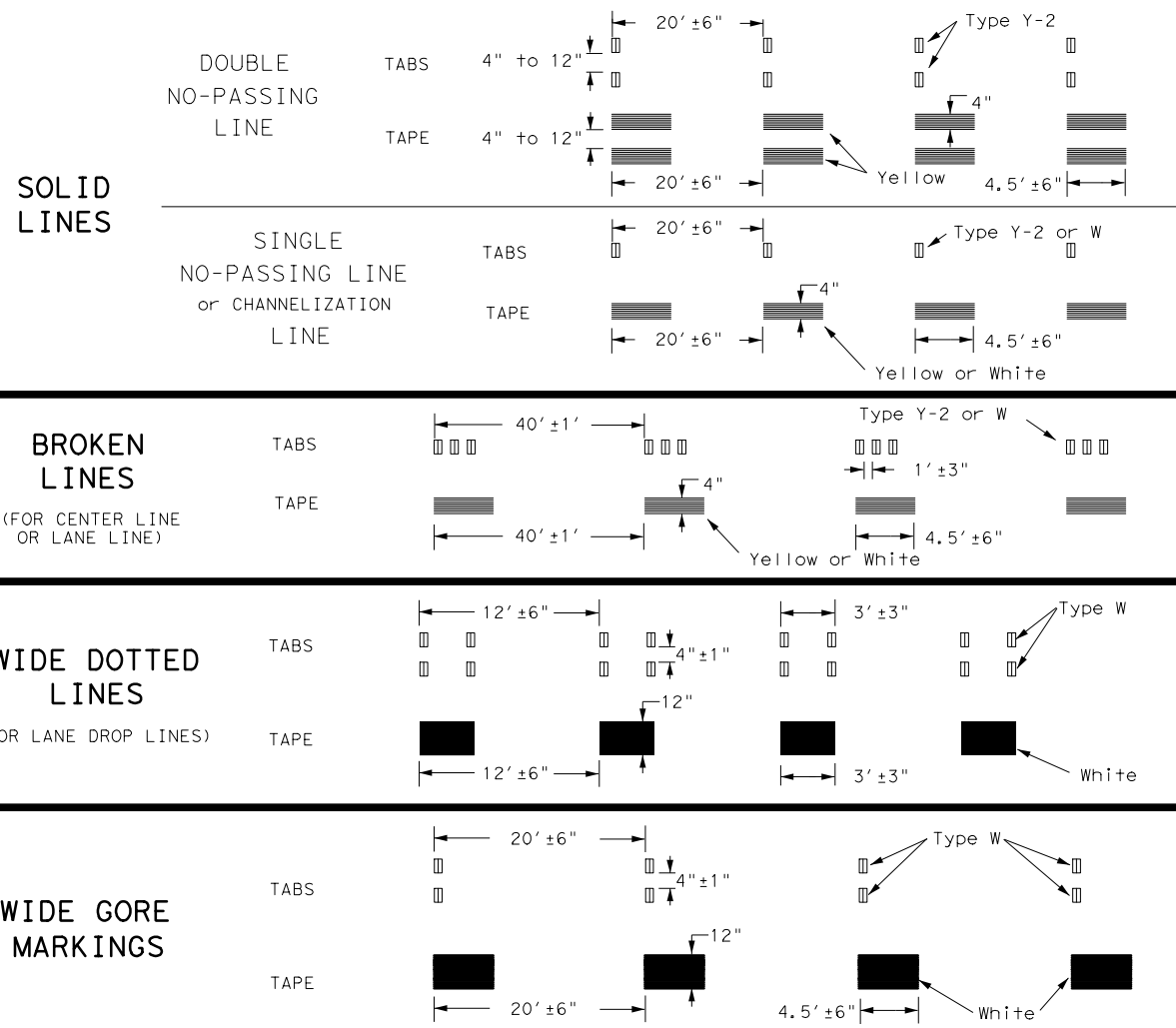
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
1-97 9-07 5-21				
2-98 7-13	DIST	COUNTY	SHEET NO.	
11-02 8-14	BWD	LAMPASAS	86	

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.

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.

WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS



NOTES:

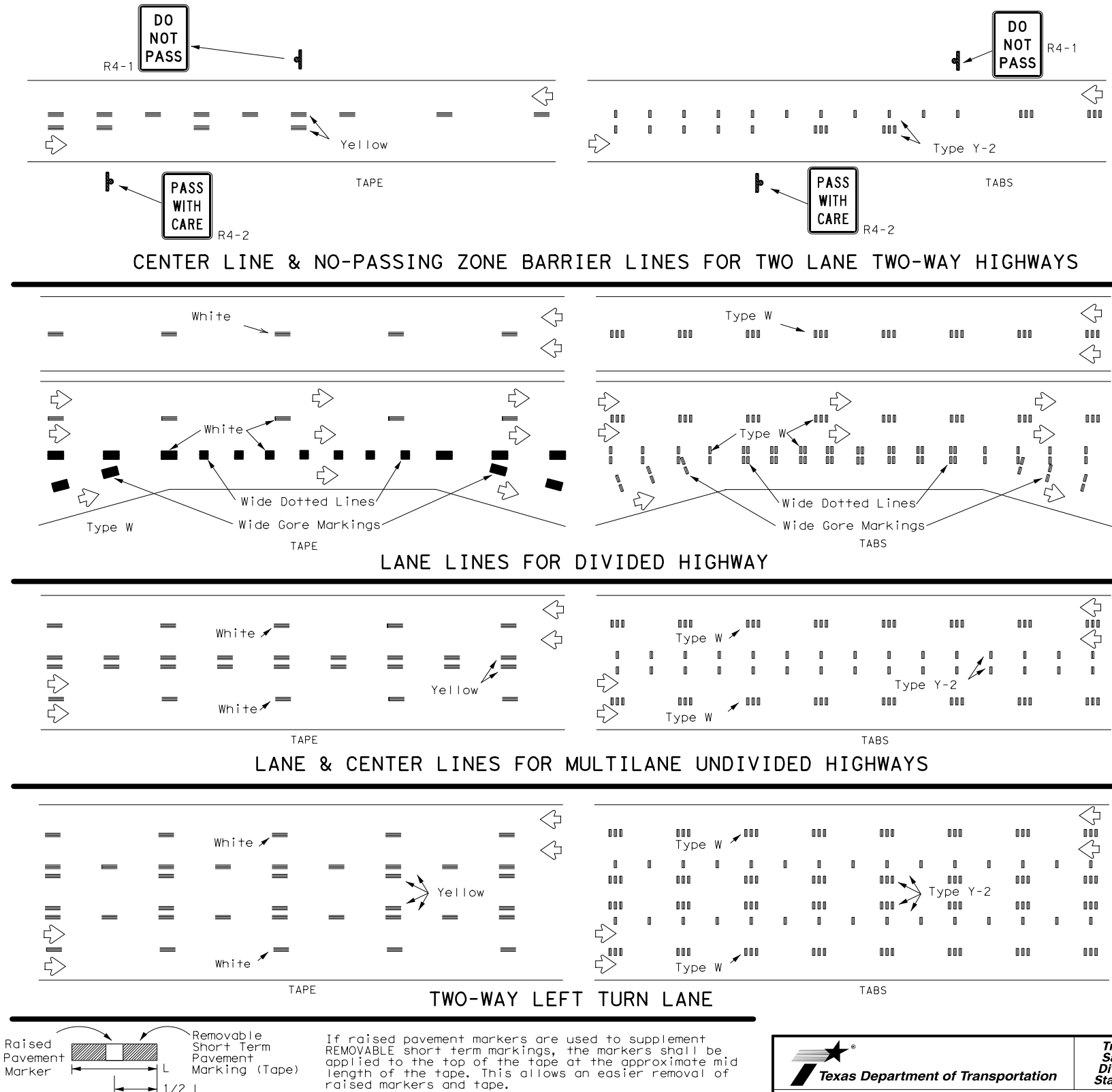
- Short term pavement markings may be prefabricated markings (stick down tape) or temporary flexible reflective roadway marker tabs unless otherwise specified elsewhere in plans.
- Short term pavement markings shall NOT be used to simulate edge lines.
- Dimensions indicated on this sheet are typical 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.
- 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.
- 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.
- 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.
- 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).
- 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)

- 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(11).
- Tabs shall meet requirements of Departmental Material Specification DMS-8242.
- 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.
- 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.

DATE: FILE:

WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



PREFABRICATED PAVEMENT MARKINGS

- Temporary Removable Prefabricated Pavement Markings shall meet the requirements of DMS-8241.
- Non-removable Prefabricated Pavement Markings shall meet the requirements of either DMS-8240 "Permanent Prefabricated Pavement Markings" or DMS-8243 "Temporary Construction-Grade Prefabricated Pavement Markings."

RAISED PAVEMENT MARKERS

- 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)

- 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



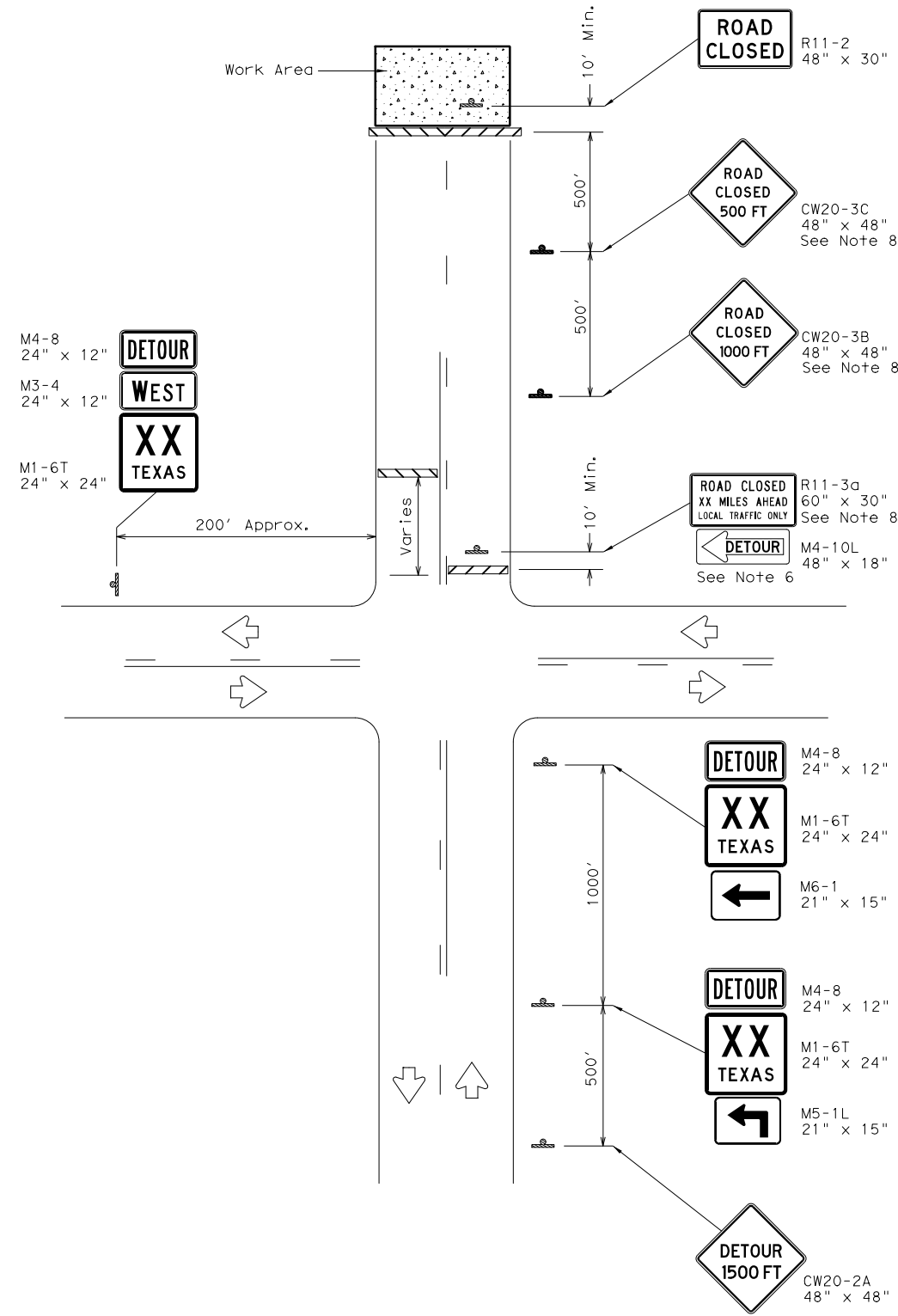
WORK ZONE SHORT TERM PAVEMENT MARKINGS

WZ (STPM) -23

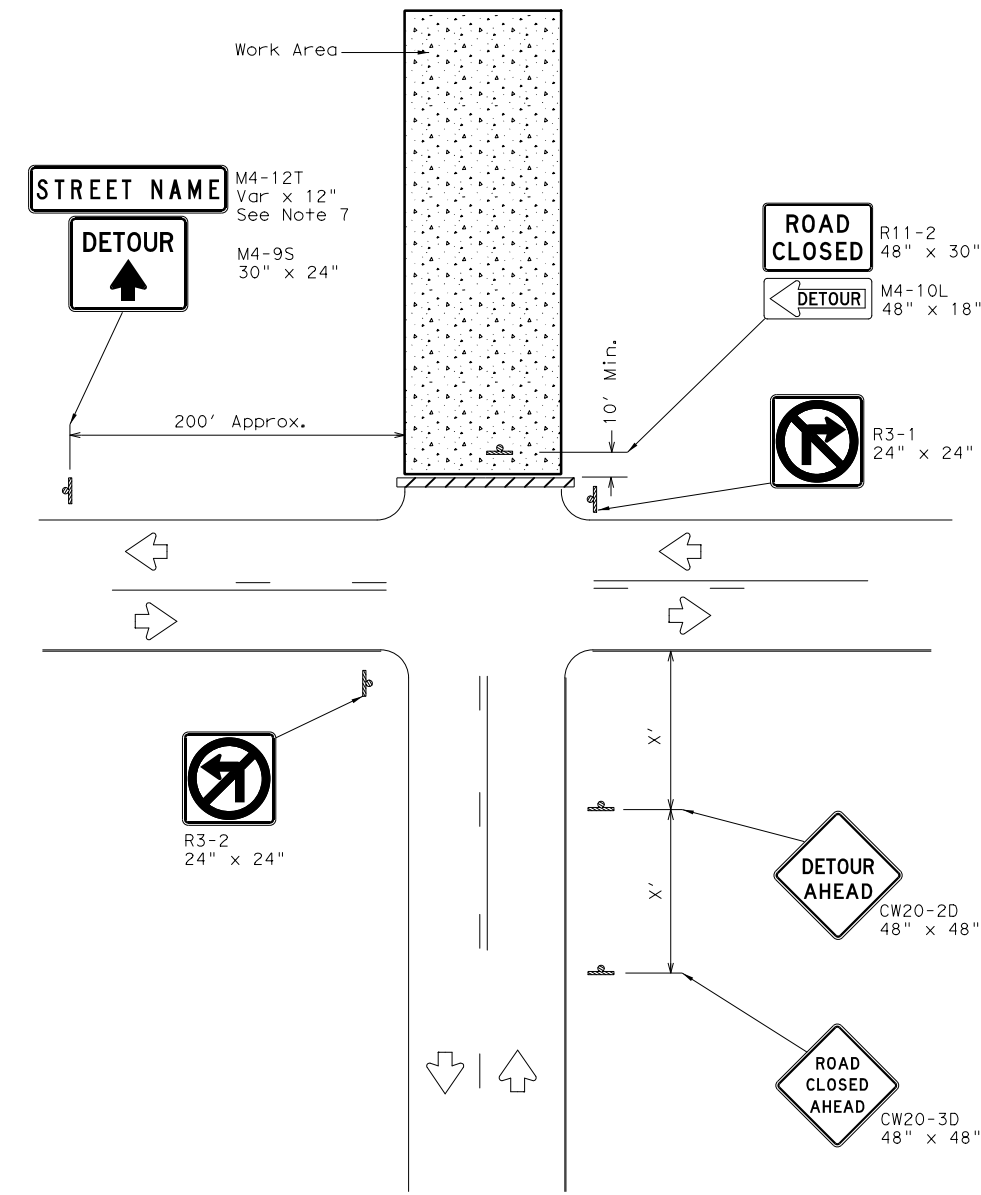
FILE:	wzstpm-23.dgn	DATE:	TxDOT	CHK:	TxDOT	DWG:	TxDOT	CHK:	TxDOT
© TxDOT	February 2023	CONT:	0251	SECT:	06	JOB:	036	US 281	HIGHWAY
4-92	7-13	REVISIONS							
1-97	2-23								
3-03		DIST:	BWD	COUNTY:	LAMPASAS	SHEET NO.:		87	

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.

DATE:
FILE:



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

- This sheet is intended to provide details for temporary work zone road closures. For permanent road closure details see the D&OM standards.
- Barricades used shall meet the requirements shown on Barricade and Construction Standard BC(10) and listed on the Compliant Work Zone Traffic Control Devices List (CWZTCD).
- Stockpiled materials shall not be placed on the traffic side of barricades.
- Barricades at the road closure should extend from pavement edge to pavement edge.
- 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.
- 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.
- The Street Name (M4-12T) sign is to be placed above the DETOUR (M4-9S) sign.
- For urban areas where there is a shorter distance between the intersection and the actual closure location, the ROAD CLOSED XX MILES AHEAD (R11-3a) sign may be replaced with a ROAD CLOSED TO THRU TRAFFIC (R11-4) sign. If adequate space does not exist between the intersection and the closure a single ROAD CLOSED AHEAD (CW20-3D) sign spaced as per the table above may replace the ROAD CLOSED 1000 FT (CW20-3B) and ROAD CLOSED 500 FT (CW20-3C) signs.
- Signs and barricades shown shall be subsidiary to Item 502. Locations where these details will be required shall be as shown elsewhere in the plans.



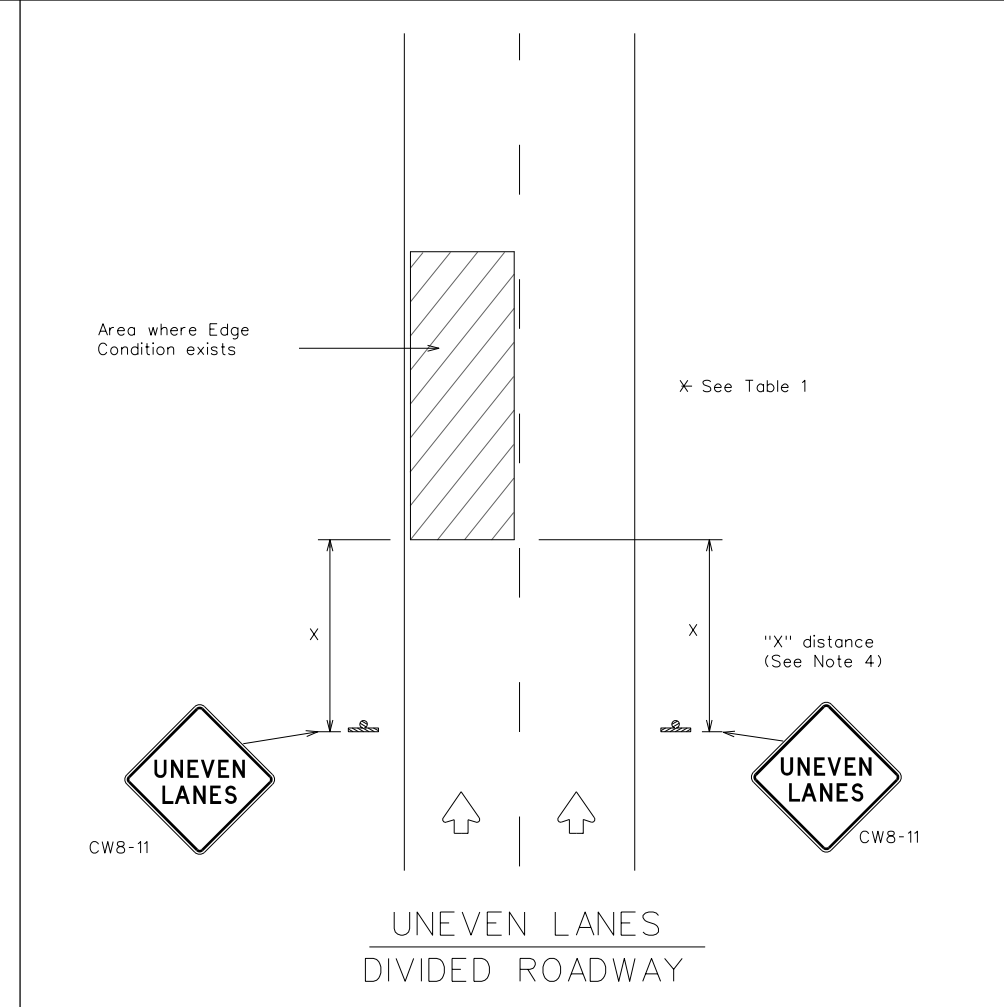
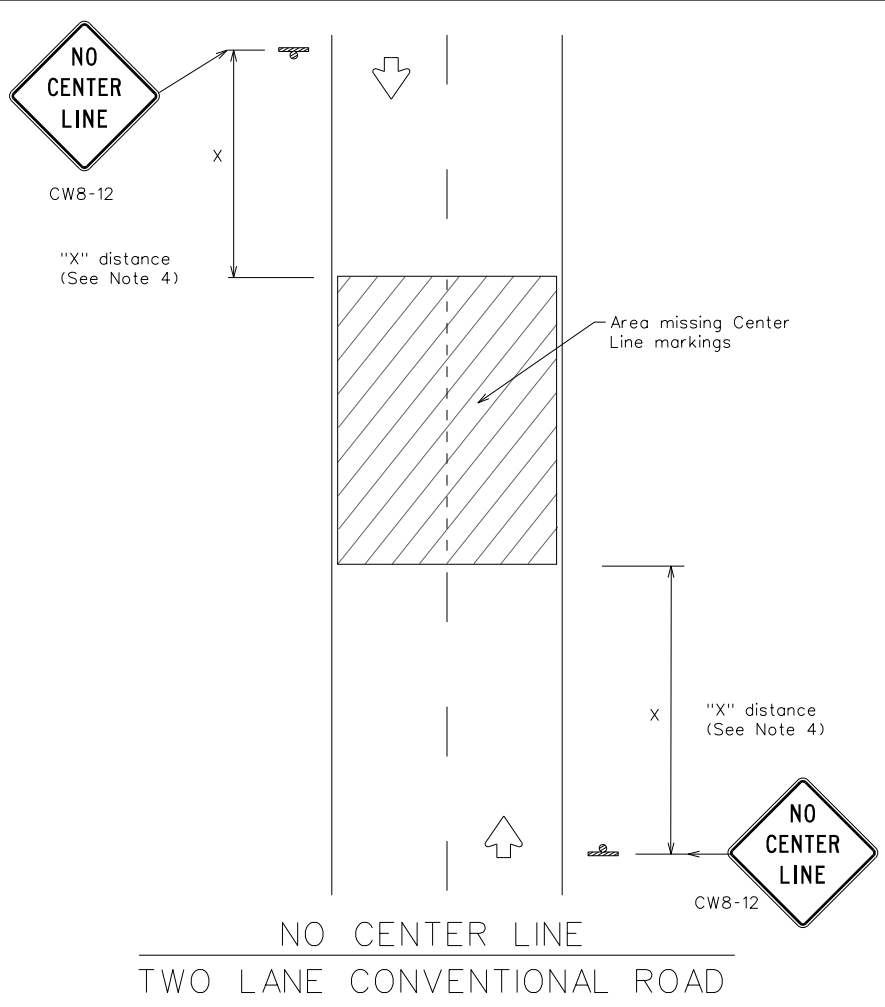
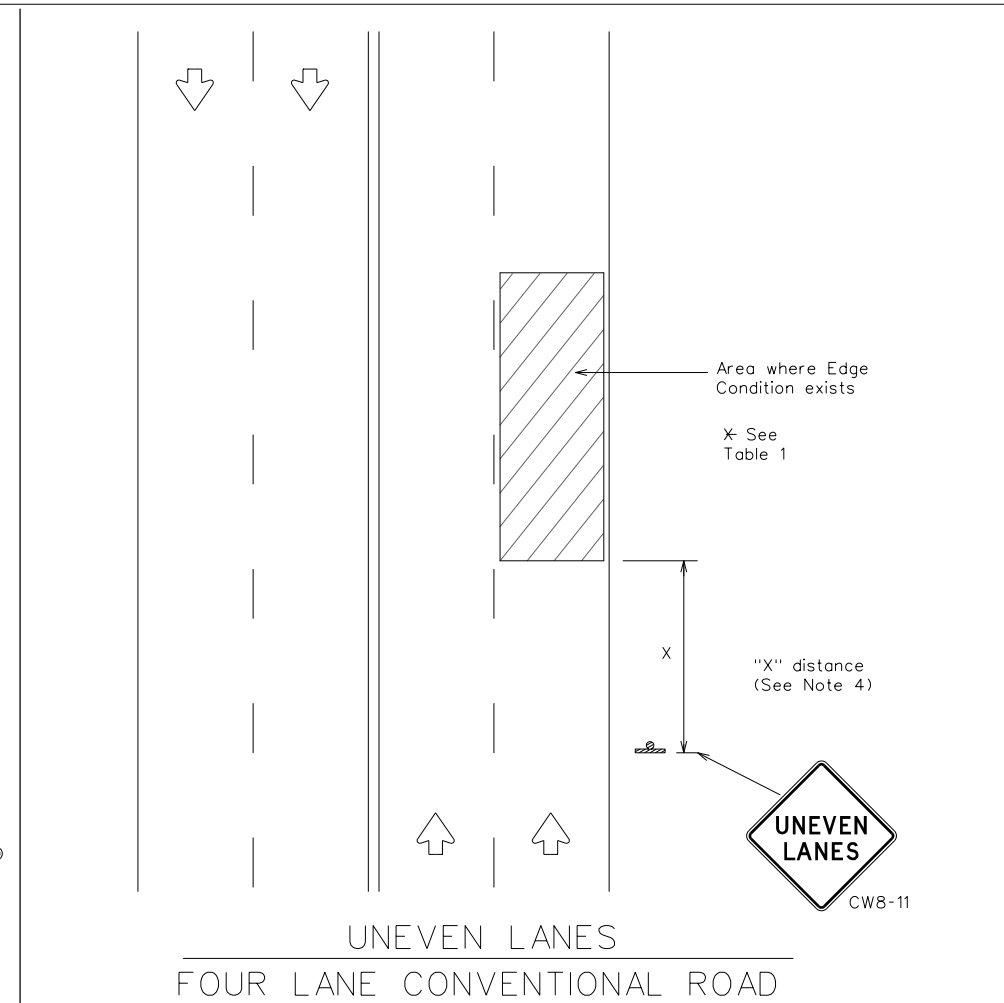
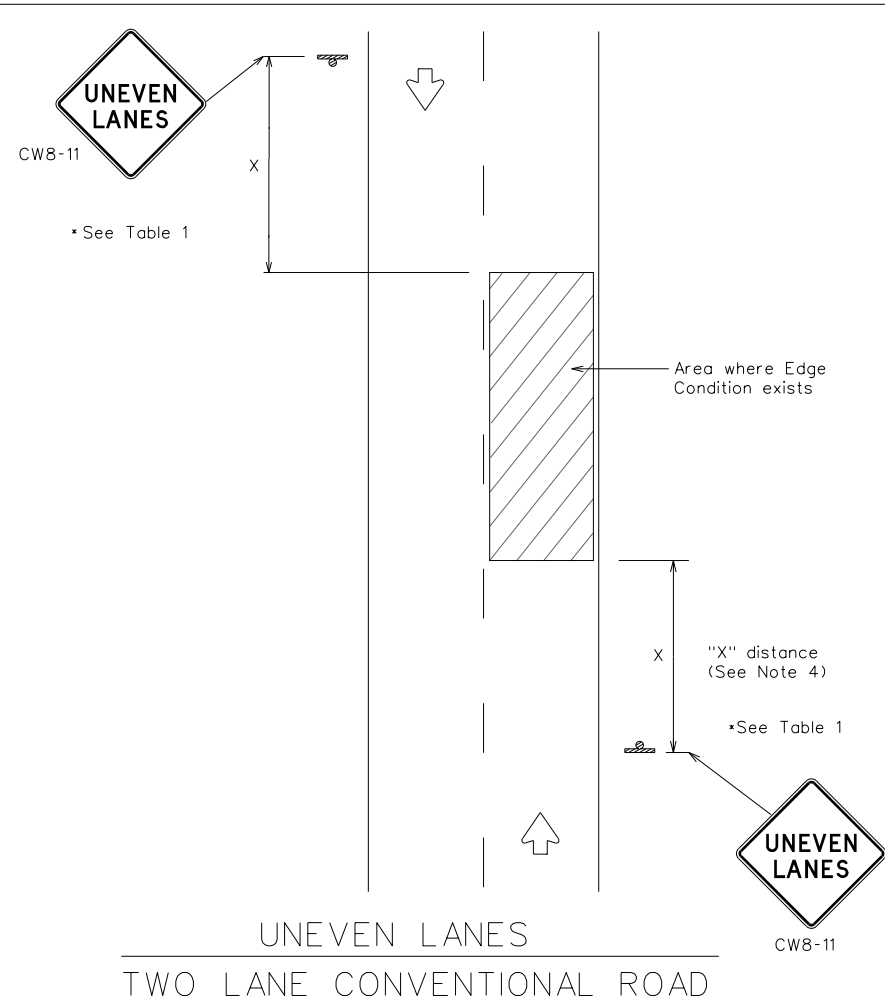
WORK ZONE ROAD CLOSURE DETAILS

WZ (RCD) - 13

FILE: wzrcd-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT August 1995	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
1-97 4-98 7-13	DIST	COUNTY	SHEET NO.	
2-98 3-03	BWD	LAMPASAS	88	

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.

DATE: FILE:



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

- 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.
- 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.
- 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.
- Signs shall be spaced at the distances recommended as per BC standards.
- 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."
- 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.
- Short term markings shall not be used to simulate edge lines.
- All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition.

Edge Condition	Edge Height (D)	* Warning Devices
①	Less than or equal to: 1/4" (maximum-planing) 1/2" (typical-overlay)	Sign: CW8-11
②	Less than or equal to 3"	Sign: CW8-11
③	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

WZ(UL)-13

FILE: wzul-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
8-95 2-98 7-13	DIST	COUNTY		SHEET NO.
1-97 3-03	BWD	LAMPASAS	88A	

112

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.

DATE: FILE:

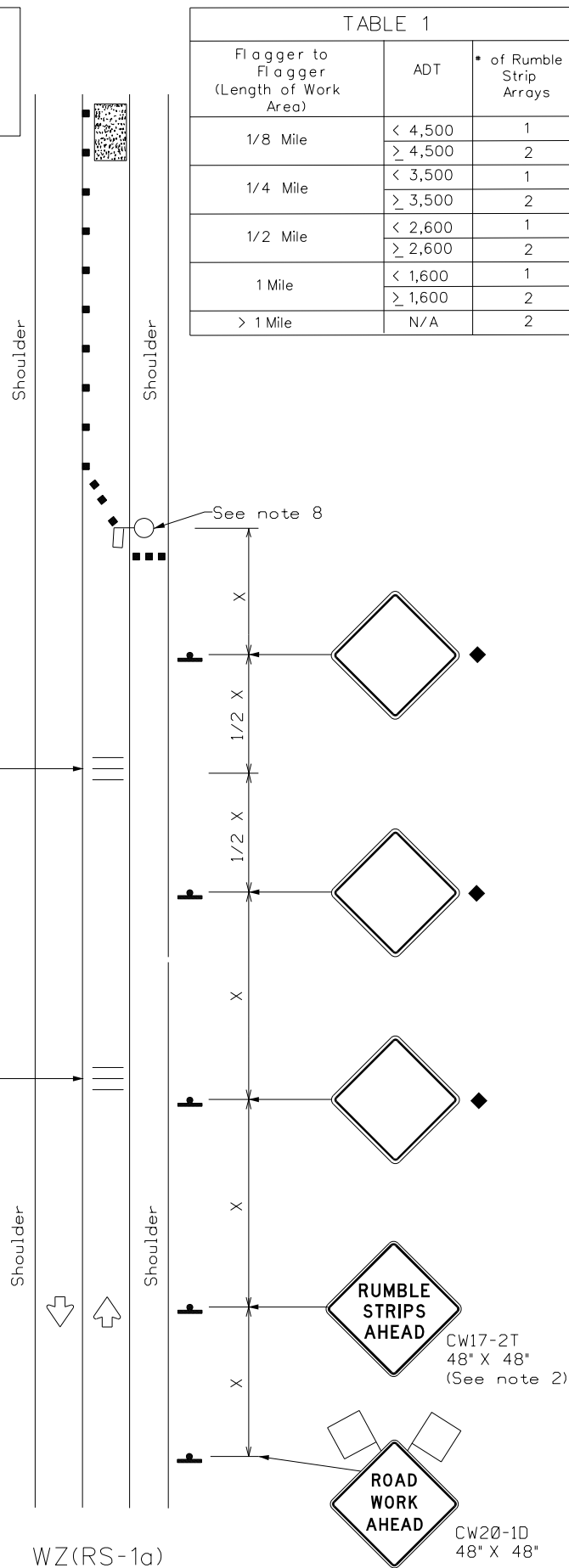
Warning sign and rumble strip sequence in opposite direction is same as below.

Flagger to Flagger (Length of Work Area)	ADT	# of Rumble Strip Arrays
1/8 Mile	< 4,500	1
	≥ 4,500	2
1/4 Mile	< 3,500	1
	≥ 3,500	2
1/2 Mile	< 2,600	1
	≥ 2,600	2
1 Mile	< 1,600	1
	≥ 1,600	2
> 1 Mile	N/A	2

Rumble Strip Array (See note 1)

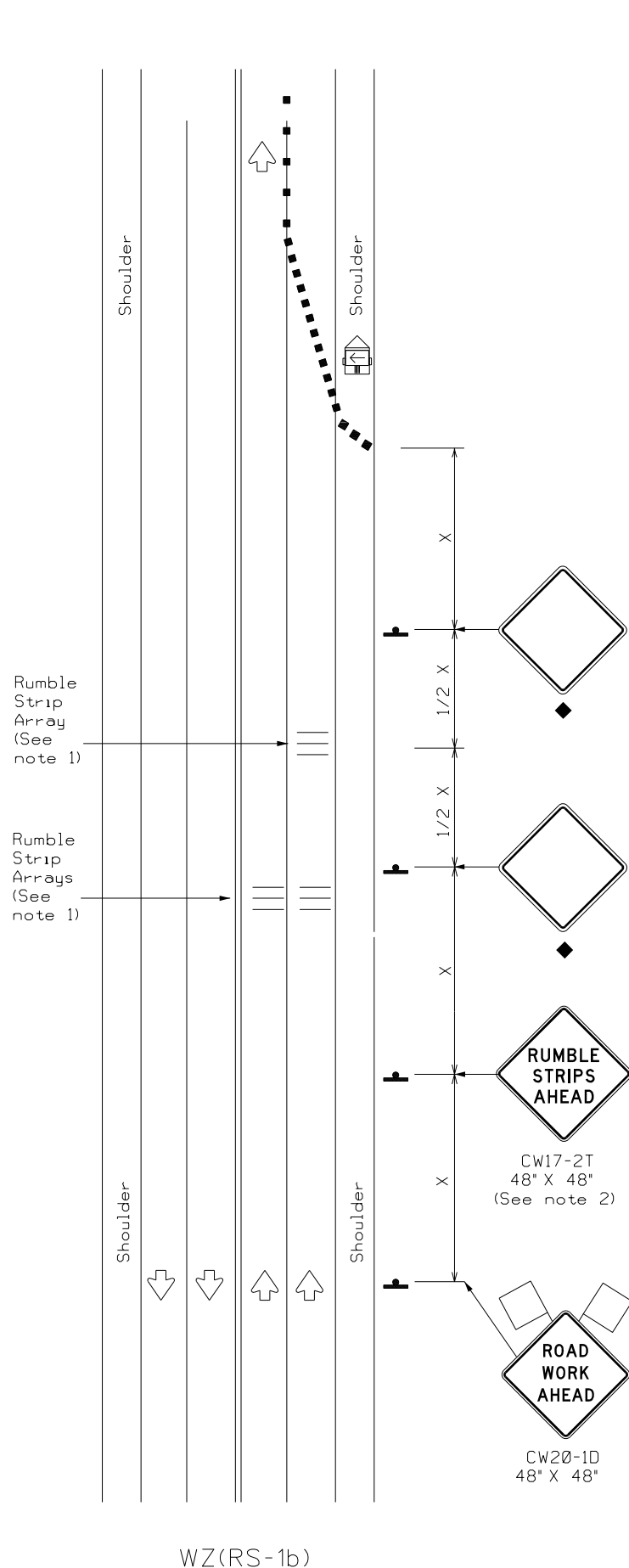
Rumble Strip Array (See note 1)

The second Rumble Strip Array is required when the ADT thresholds in Table 1 indicate the need for 2 Arrays.



WZ(RS-1a)

RUMBLE STRIPS ON ONE-LANE TWO-WAY APPLICATION



WZ(RS-1b)

RUMBLE STRIPS FOR LANE CLOSURE ON CONVENTIONAL ROADWAY

GENERAL NOTES

- Each Rumble Strip Array should consist of three rumble strips spaced center to center at the spacing shown in Table 2, placed transverse across the lane at locations shown.
- The CW17-2T "RUMBLE STRIPS AHEAD" sign should be located after the CW20-1D "ROAD WORK AHEAD" sign and spaced as shown. If traffic is observed to be queuing, or is expected to queue beyond the Rumble Strips, the CW17-2T sign and the first Rumble Strip Array may be located upstream of the CW20-1D sign as necessary to provide needed warning.
- Temporary Rumble Strips will be considered subsidiary to Item 502, and shall be a product listed on the Compliant Work Zone Traffic Control Devices.
- Remove Temporary Rumble Strips before removing the advanced warning signs.
- Temporary Rumble Strips should not be used on horizontal curves, loose gravel, soft or bleeding asphalt, heavily rutted pavements or unpaved surfaces.
- Temporary Rumble Strips shall be installed and maintained as per manufacturer's recommendations.
- This standard sheet shall be used in conjunction with other appropriate TCP standard, TMUTCD typical application or project specific detail for the project.
- The one-lane two-way application may utilize a flagger, an Automated Flagger Assistance Device (AFAD) or a Portable Traffic Signal (PTS).
- Replace defective Temporary Rumble Strips as directed by the Engineer.
- Temporary Rumble Strips may be used on freeways or expressways based on engineering judgment and written direction from the Engineer.

Speed	Approximate distance between strips in an array
≤ 40 MPH	10'
> 40 MPH & ≤ 55 MPH	15'
= 60 MPH	20'
≥ 65 MPH	* 35'+

	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Panel		Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed * x	Formula L = WS ² / 60	Minimum Desirable Taper Lengths * x			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	L = 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
 * x * Taper lengths have been rounded off.
 L=Length of Taper(FT) W=Width of Offset(FT)
 S=Posted Speed(MPH)

MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓		

◆ Signs are for illustrative purposes only. Signs required may vary depending on the TCP, TMUTCD Typical Application, or project specific details for the project.
 * For posted speeds in excess of 65 MPH, it is recommended that spacing is increased as speed limits increase. Increasing space between rumble strips will improve effectiveness.

Texas Department of Transportation Traffic Safety Division Standard

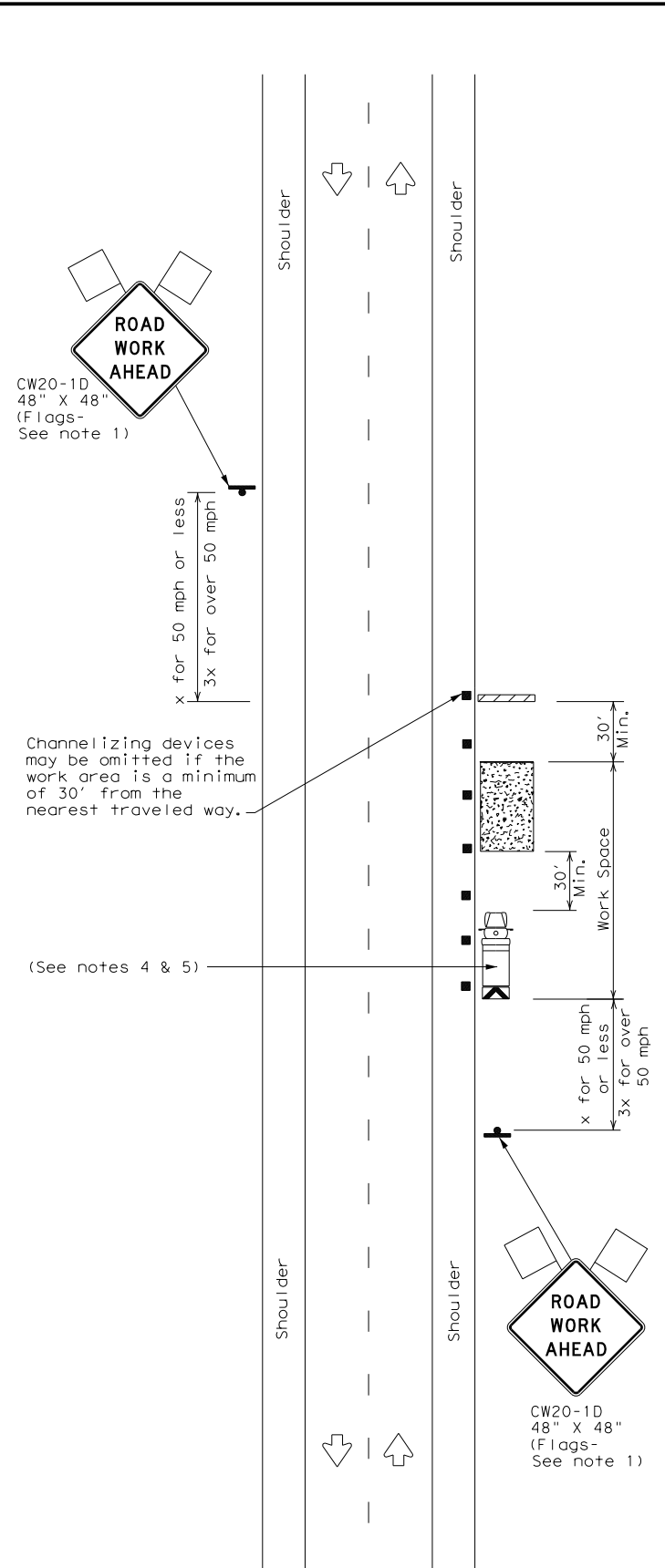
TEMPORARY RUMBLE STRIPS

WZ(RS)-22

FILE: wzs22.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2012	CONT 0251	SECT 06	JOB 036	HIGHWAY US 281
REVISIONS	2-14 1-22 4-16	DIST	COUNTY	SHEET NO.
		BWD	LAMPASAS	89

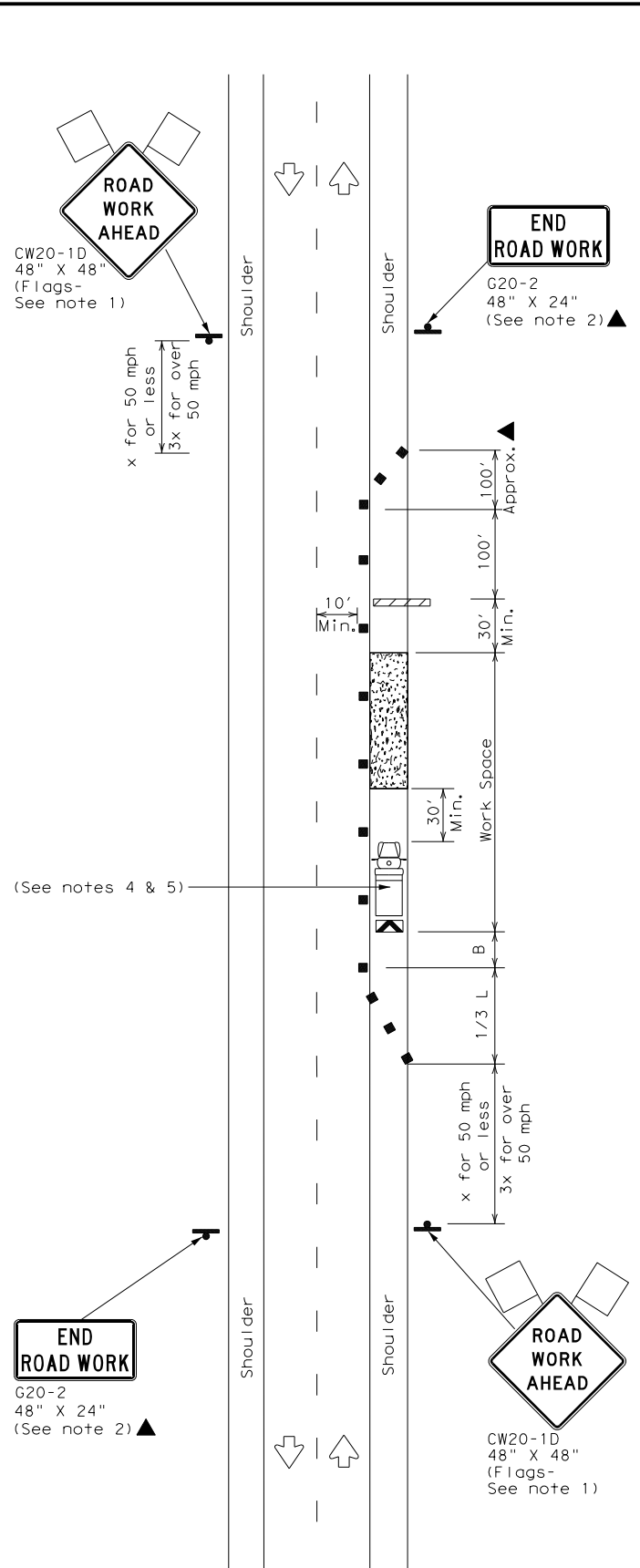
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: FILE:



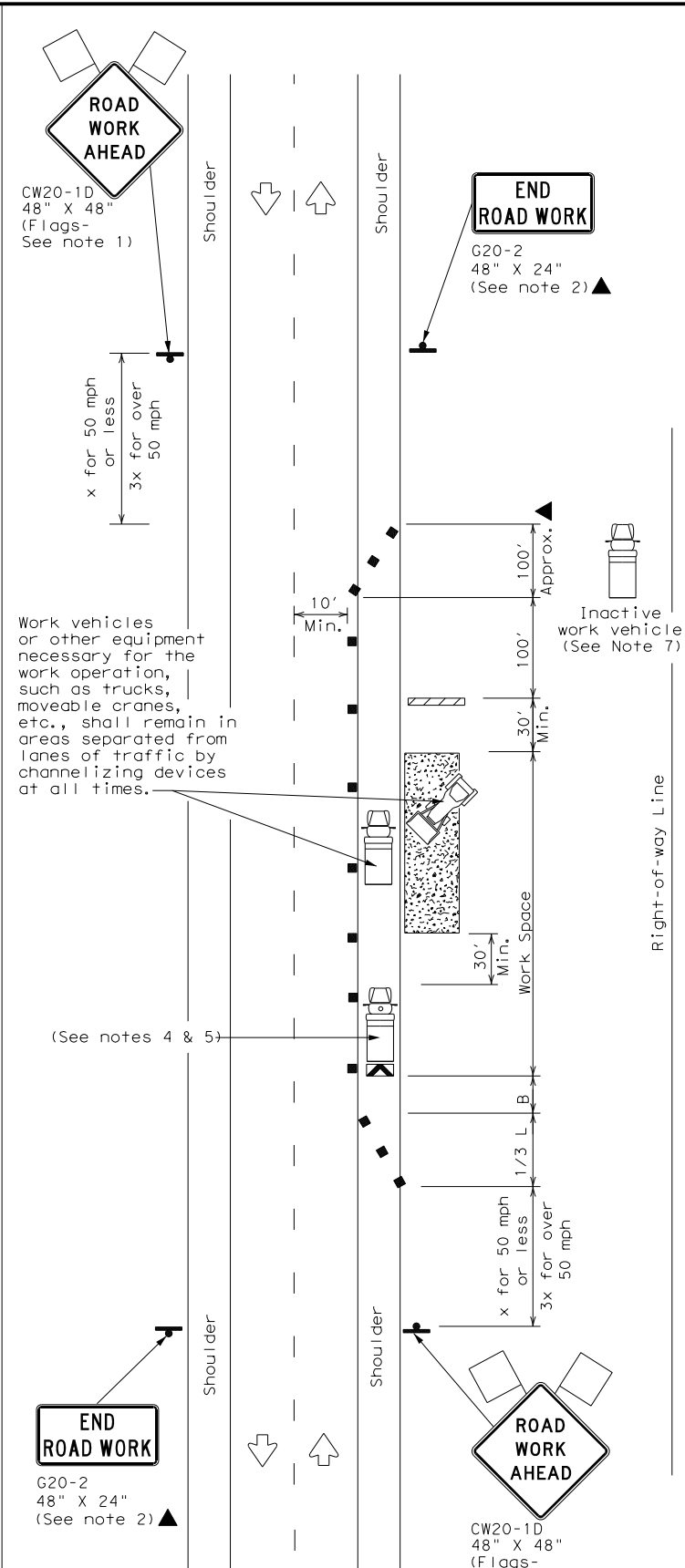
TCP (2-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
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

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

Texas Department of Transportation
Traffic Operations Division Standard

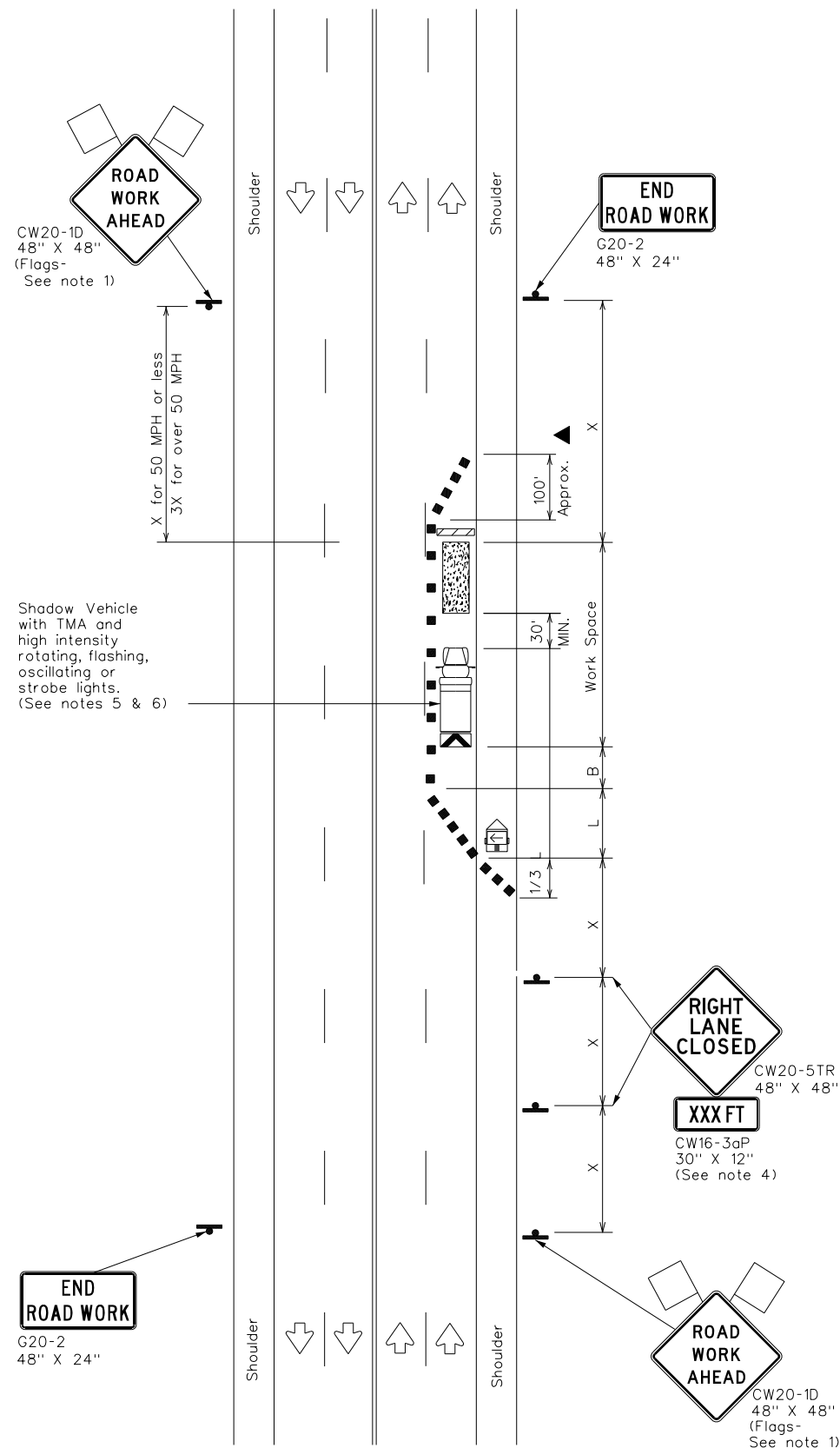
TRAFFIC CONTROL PLAN
CONVENTIONAL ROAD
SHOULDER WORK

TCP (2-1) - 18

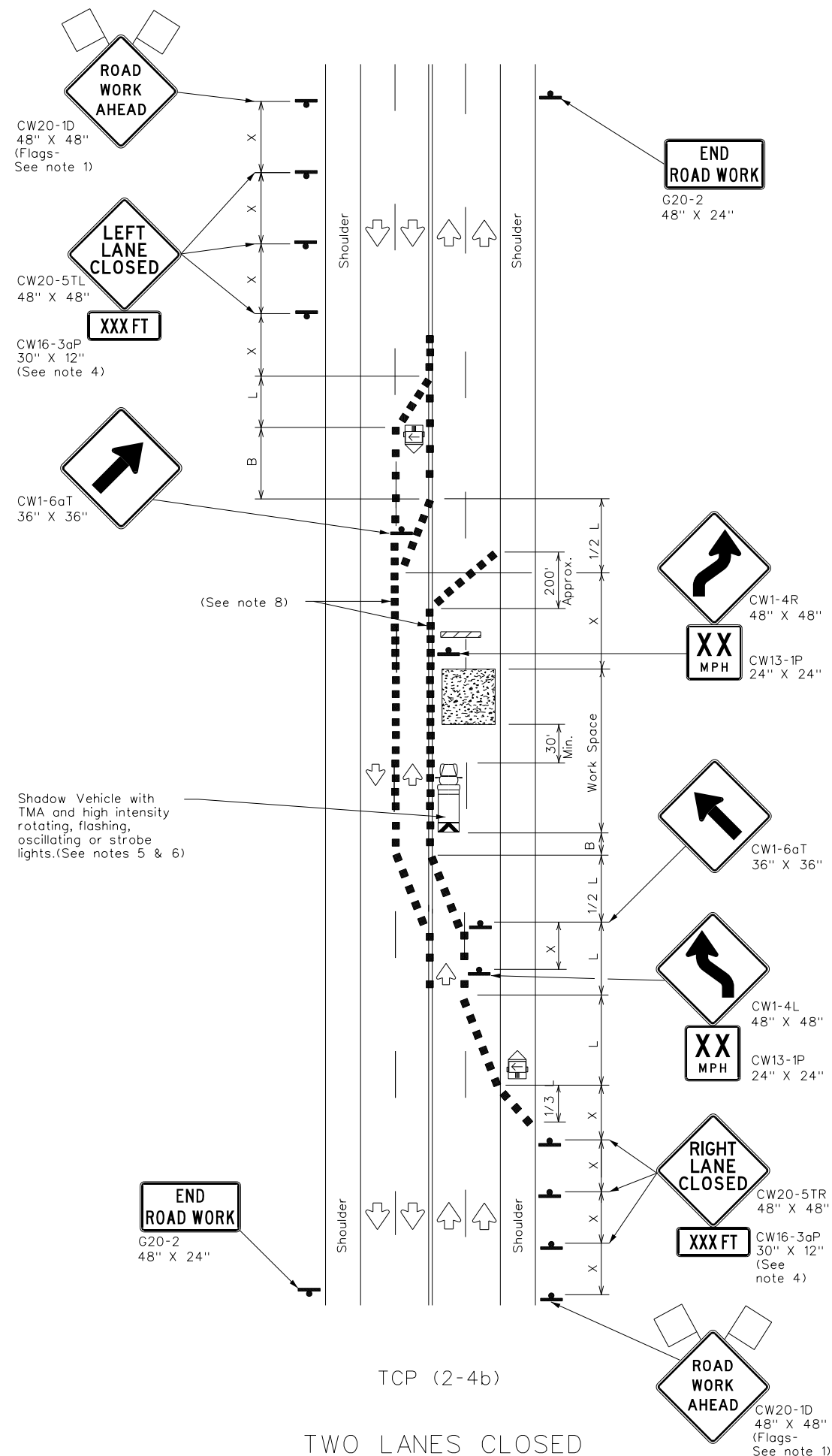
FILE: tcp2-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CON:	SECT:	JOB:	HIGHWAY:
REVISIONS	0251	06	036	US 281
2-94 4-98	DIST:	COUNTY:	SHEET NO.:	
8-95 2-12	BWD	LAMPASAS	90	
1-97 2-18				

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.

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		Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths x x			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "x" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
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

- Flags attached to signs where shown, are REQUIRED.
- All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
- The downstream taper is optional. When used, it should be 100 feet minimum length per lane.
- 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.
- A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
- Additional Shadow Vehicles with TMAs may be positioned 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)

- 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)

- 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.



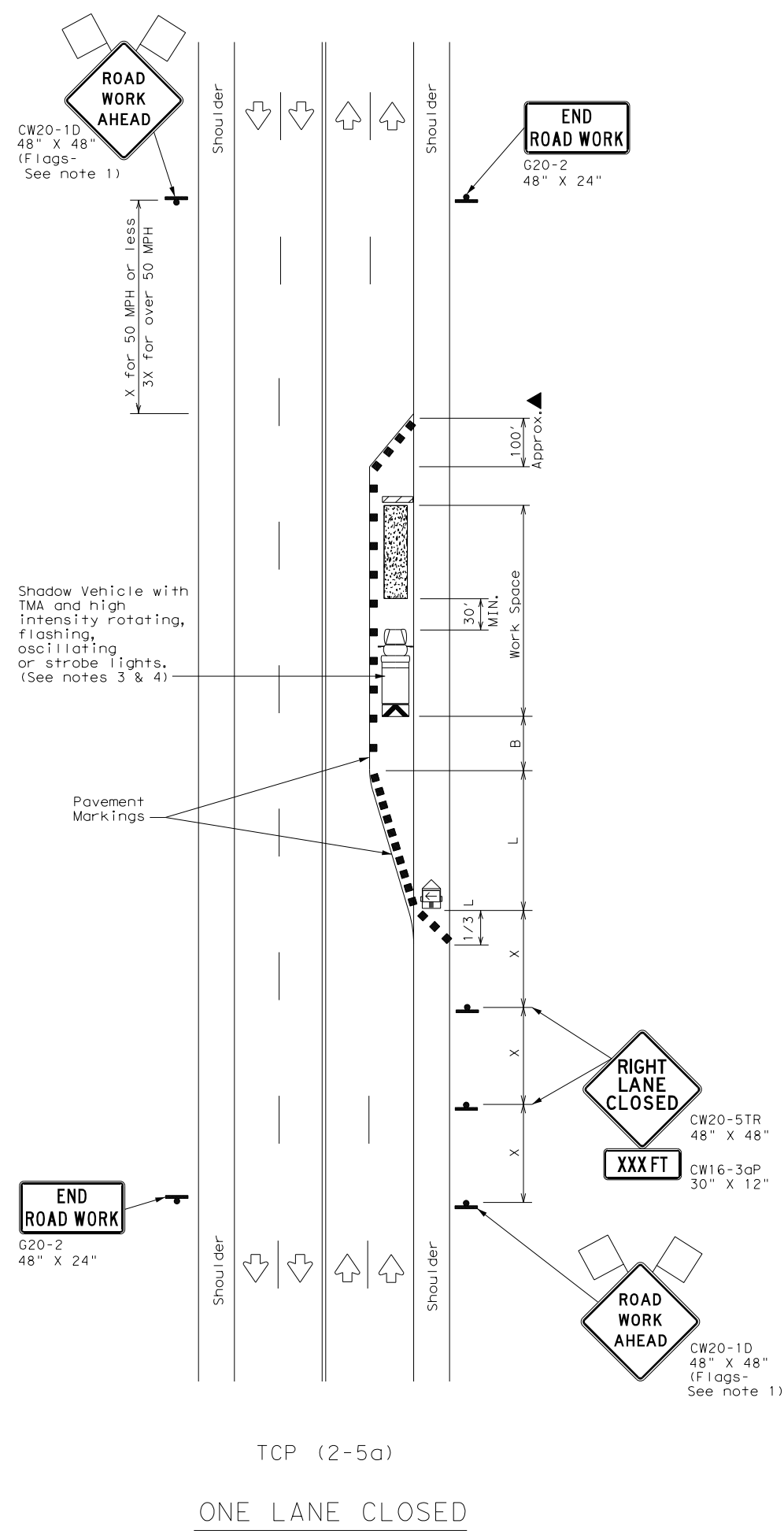
TRAFFIC CONTROL PLAN
LANE CLOSURES ON MULTILANE
CONVENTIONAL ROADS

TCP(2-4)-18

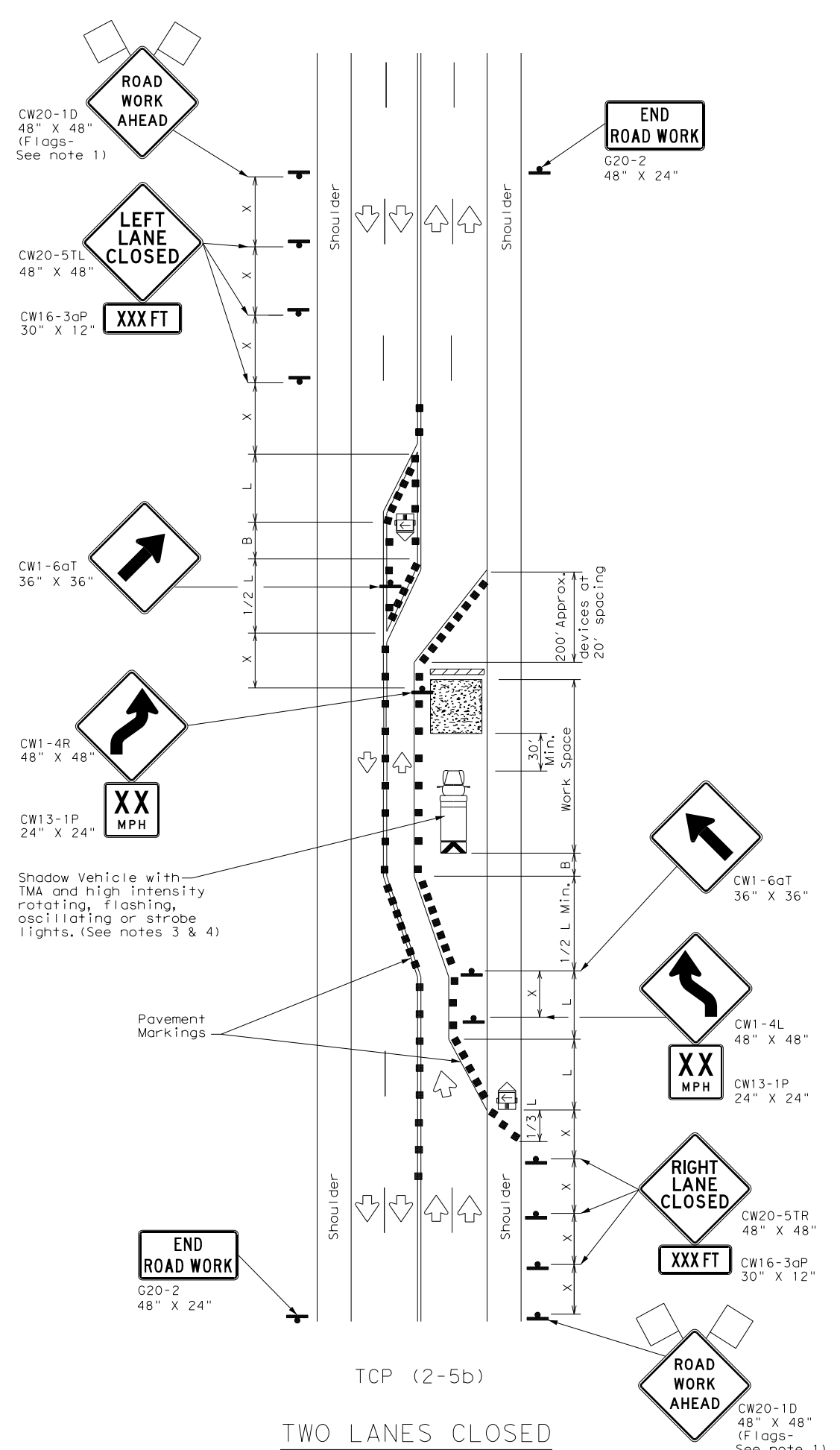
FILE: tcp2-4-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
8-95 3-03	DIST	COUNTY		SHEET NO.
1-97 2-12	BWD	LAMPASAS		91
4-98 2-18				

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.

DATE: FILE:



TCP (2-5a)
ONE LANE CLOSED



TCP (2-5b)
TWO LANES CLOSED

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths X			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	L = 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)

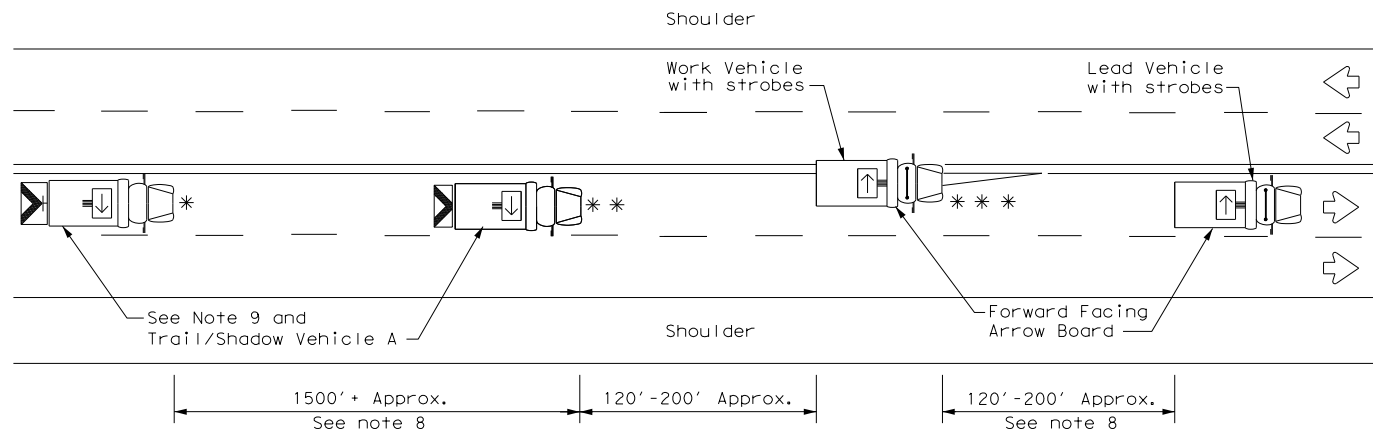
TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
			✓	✓

- GENERAL NOTES
- Flags attached to signs where shown, are REQUIRED.
 - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
 - A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
 - Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.
 - The downstream taper is optional. When used, it should be 100 feet approximately per lane, with channelizing devices spaced at 20 feet.

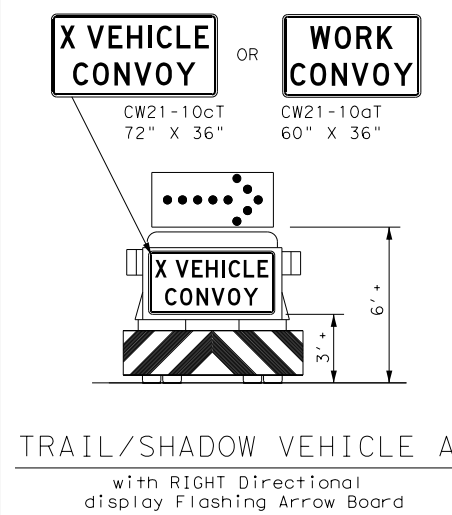
- TCP (2-5a)
- If this TCP is used for a left lane closure, CW20-5TL "LEFT LANE CLOSED" signs shall be used and channelizing devices shall be placed on the centerline to protect the work space from opposing traffic, with the arrow board placed in the closed lane near the end of the merging taper.
- TCP (2-5b)
- Conflicting pavement markings shall be removed for long-term projects.

		Traffic Operations Division Standard	
TRAFFIC CONTROL PLAN LONG TERM LANE CLOSURES MULTILANE CONVENTIONAL RDS.			
TCP (2-5) - 18			
FILE: tcp2-5-18.dgn	DN:	CK:	DW: CK:
© TxDOT December 1985	CON: 0251	SECT: 06	JOB: 036 HIGHWAY: US 281
8-95 2-12 1-97 3-03 4-98 2-18	REVISIONS		SHEET NO. 92
	DIST: BWD	COUNTY: LAMPASAS	

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.



TCP (3-1a)
UNDIVIDED MULTILANE ROADWAY



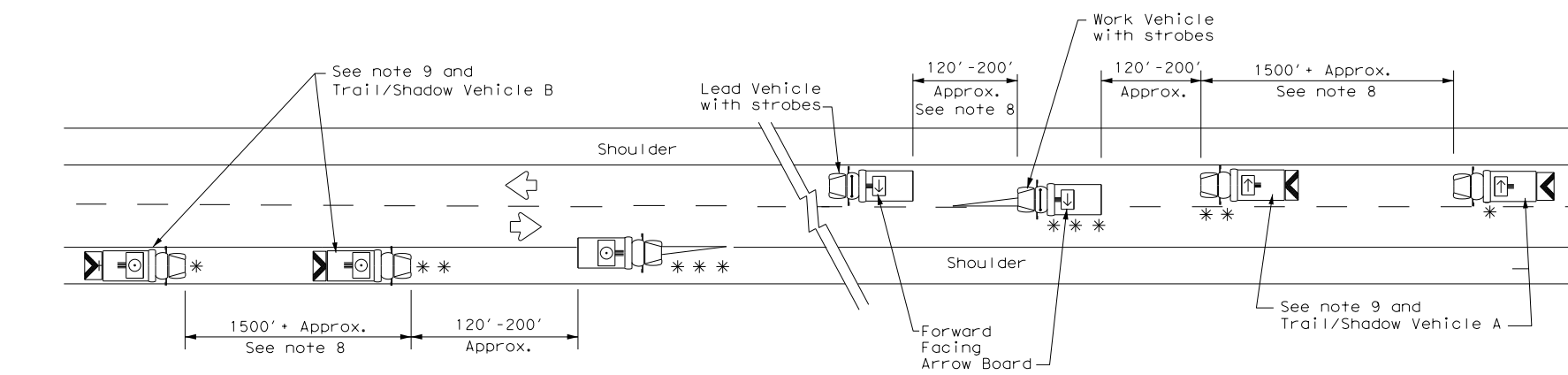
TRAIL/SHADOW VEHICLE A
with RIGHT Directional display Flashing Arrow Board

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)

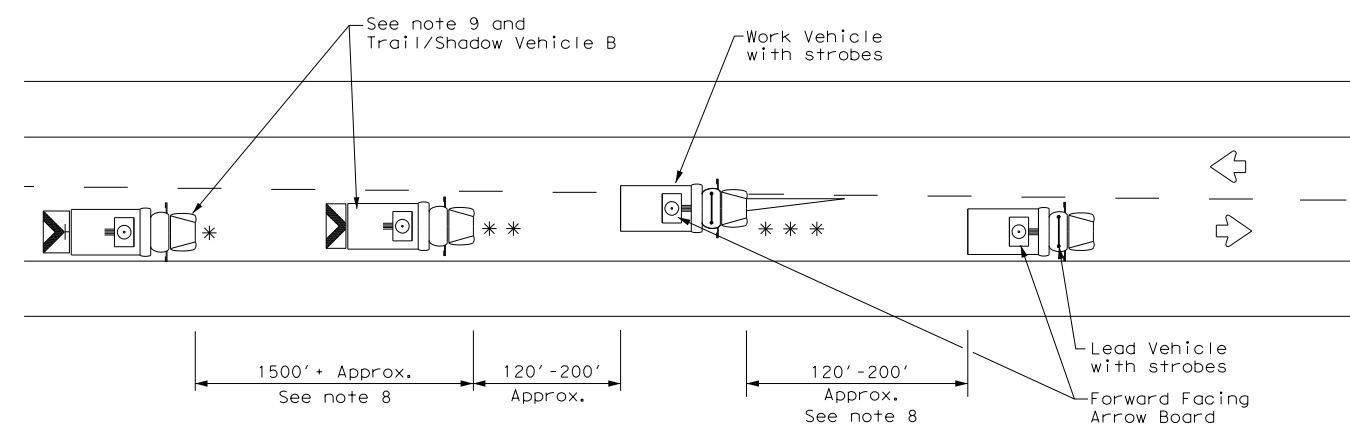
TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
✓				

GENERAL NOTES

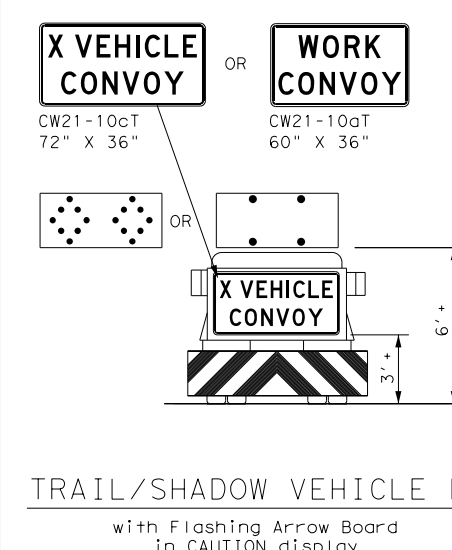
- TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used the WORK vehicle must be equipped with an arrow board. The Engineer will determine if the LEAD VEHICLE and/or TRAIL VEHICLE are required based on prevailing roadway conditions, traffic volume, and sight distance restrictions.
- 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.
- The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE and TRAIL VEHICLE are required.
- 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.
- 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.
- Each vehicle shall have two-way radio communication capability.
- When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
- 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.
- "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.
- 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.



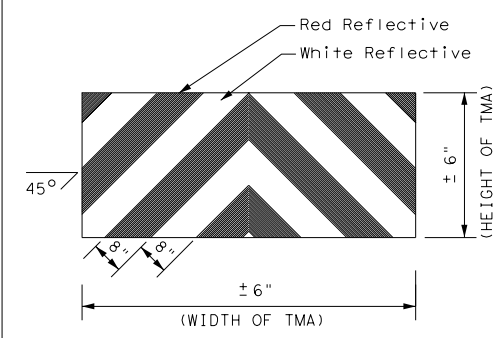
TCP (3-1b)
TWO-WAY ROADWAY WITH PAVED SHOULDERS



TCP (3-1c)
TWO-WAY ROADWAY WITHOUT PAVED SHOULDERS



TRAIL/SHADOW VEHICLE B
with Flashing Arrow Board in CAUTION display



STRIPING FOR TMA



TRAFFIC CONTROL PLAN
MOBILE OPERATIONS
UNDIVIDED HIGHWAYS

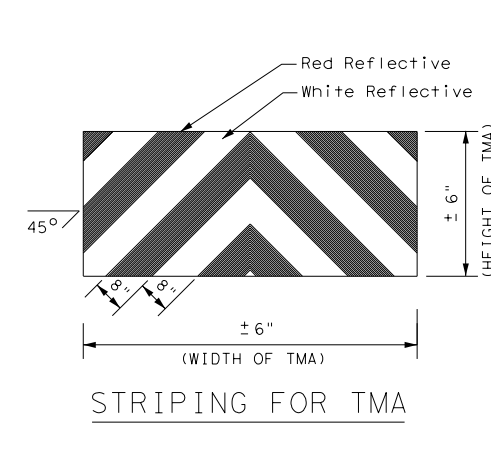
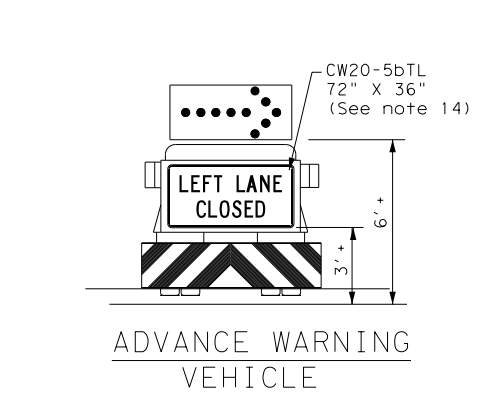
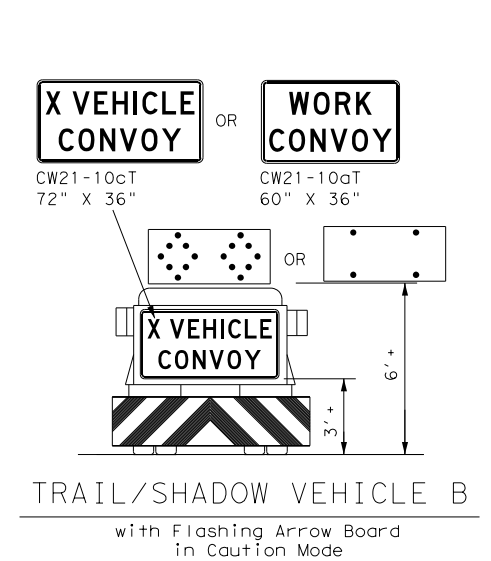
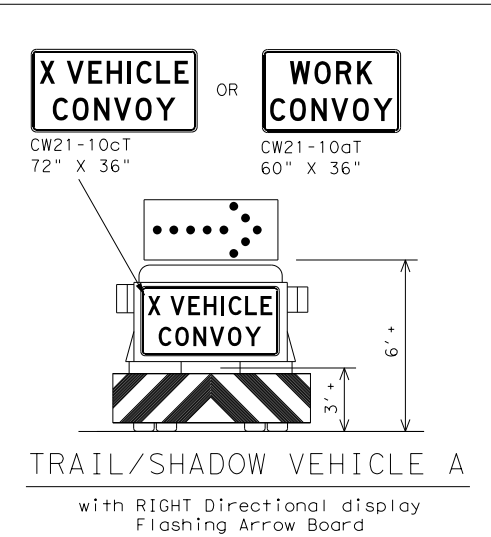
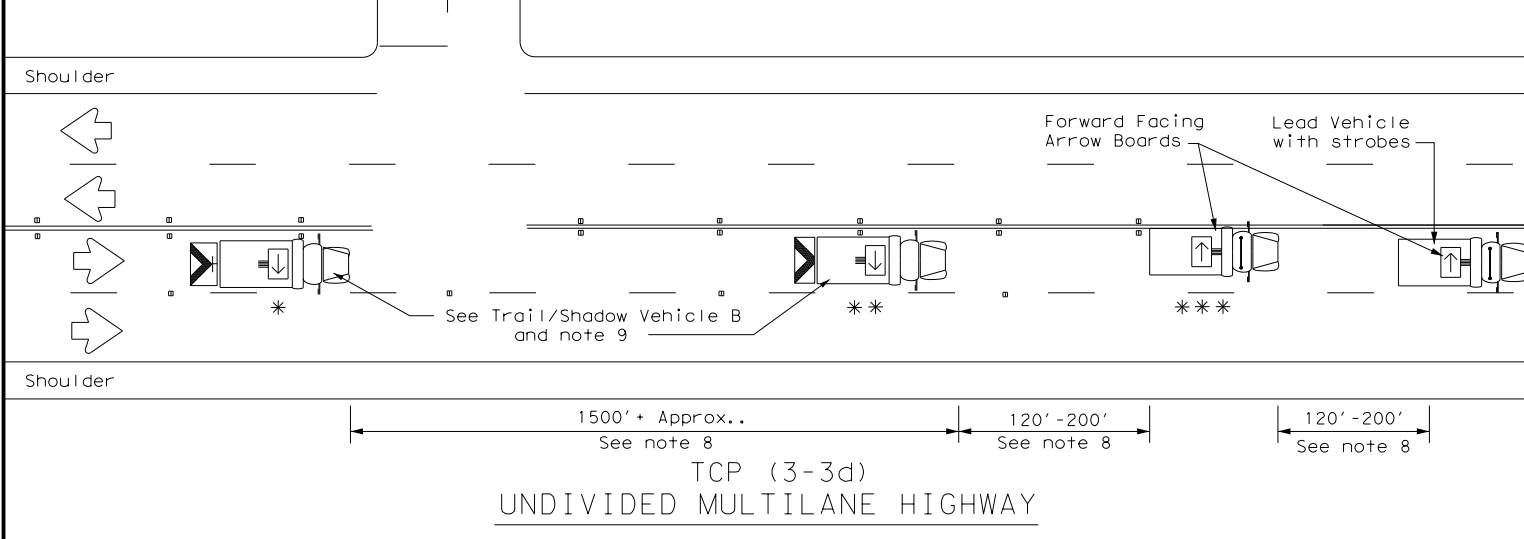
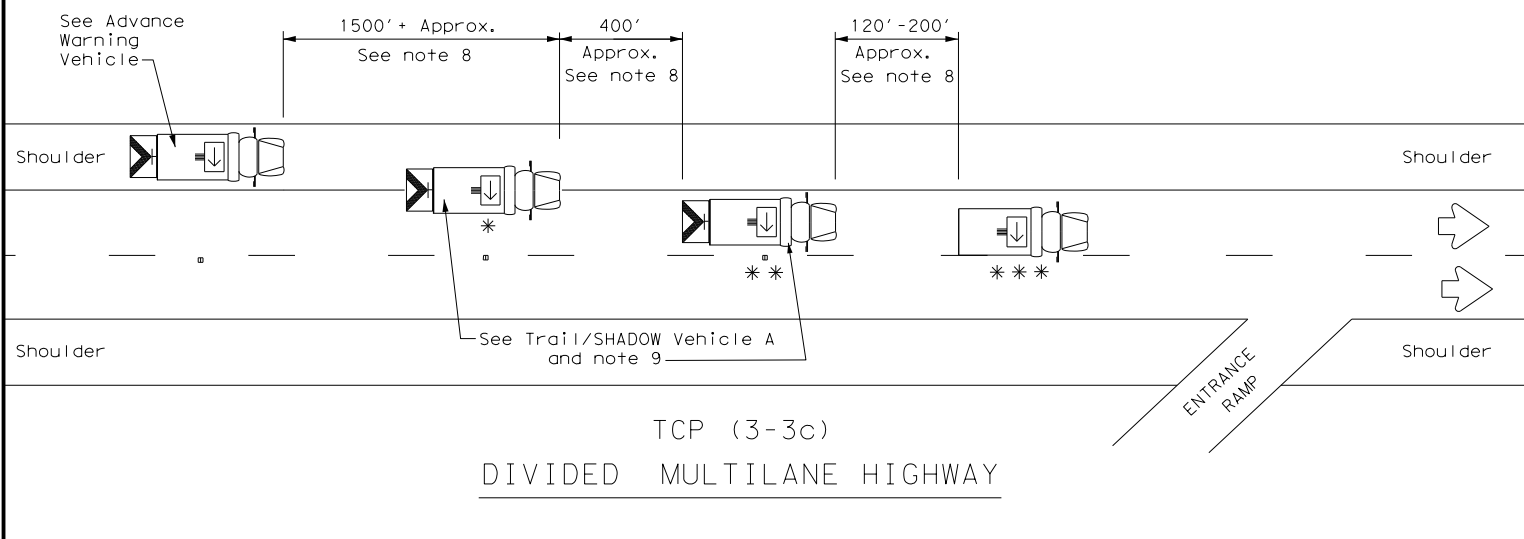
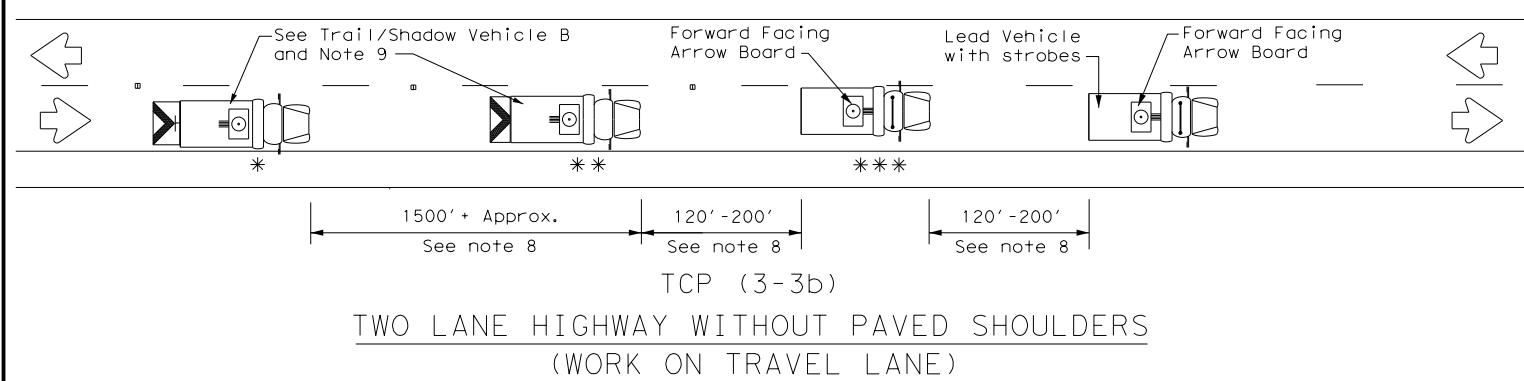
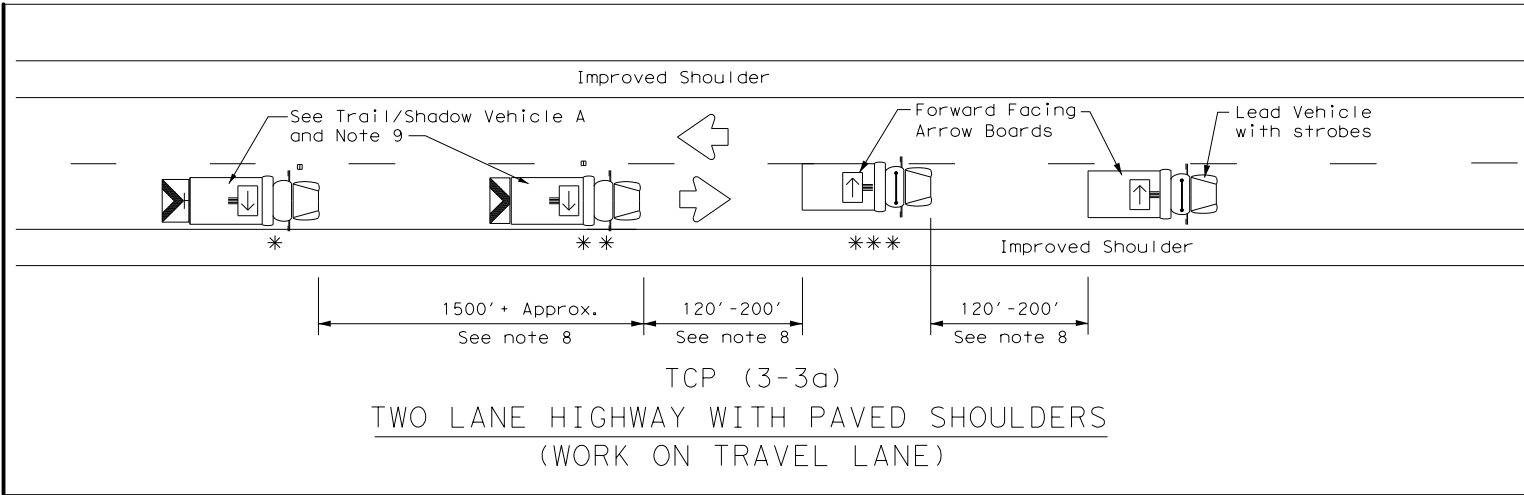
TCP (3-1) - 13

FILE:	tcp3-1.dgn	DN:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
© TxDOT	December 1985	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0251	06	036	US 281				
2-94	4-98								
8-95	7-13								
1-97									
		DIST	COUNTY		SHEET NO.				
		BWD	LAMPASAS		93				

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.

DATE: FILE:



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
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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 (CW20-5dTL) 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.

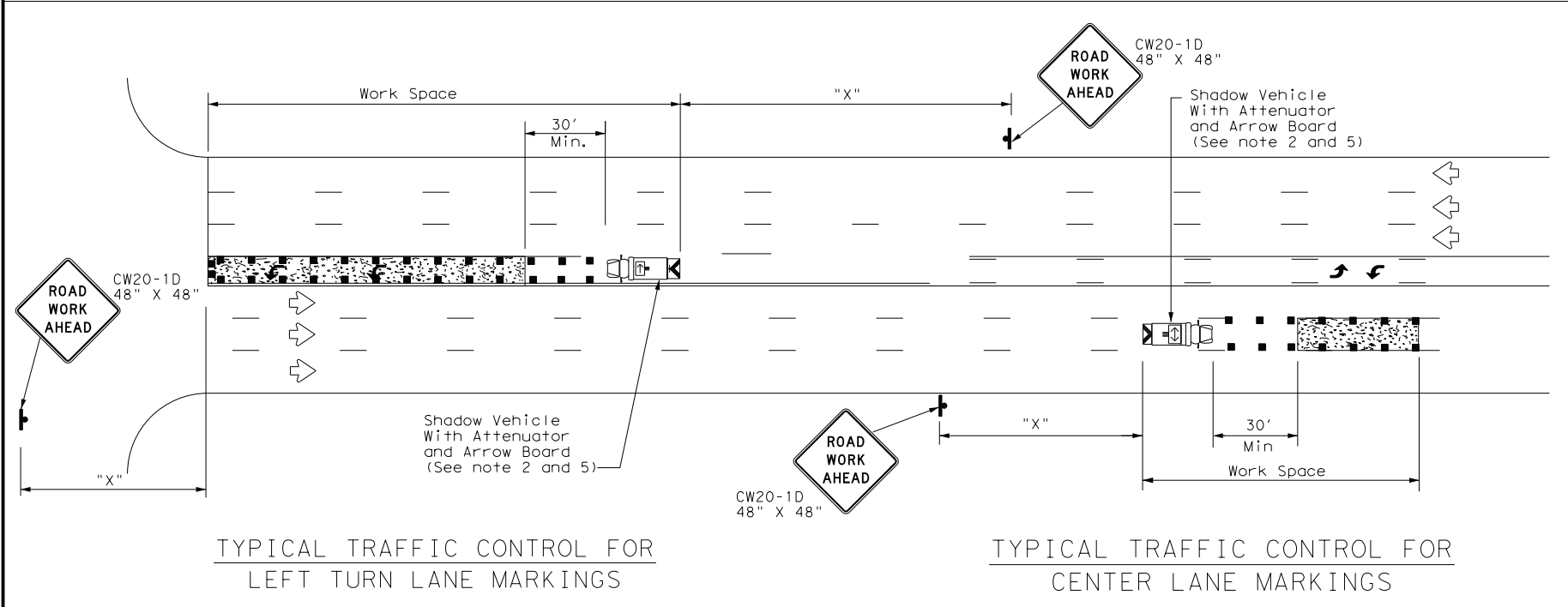
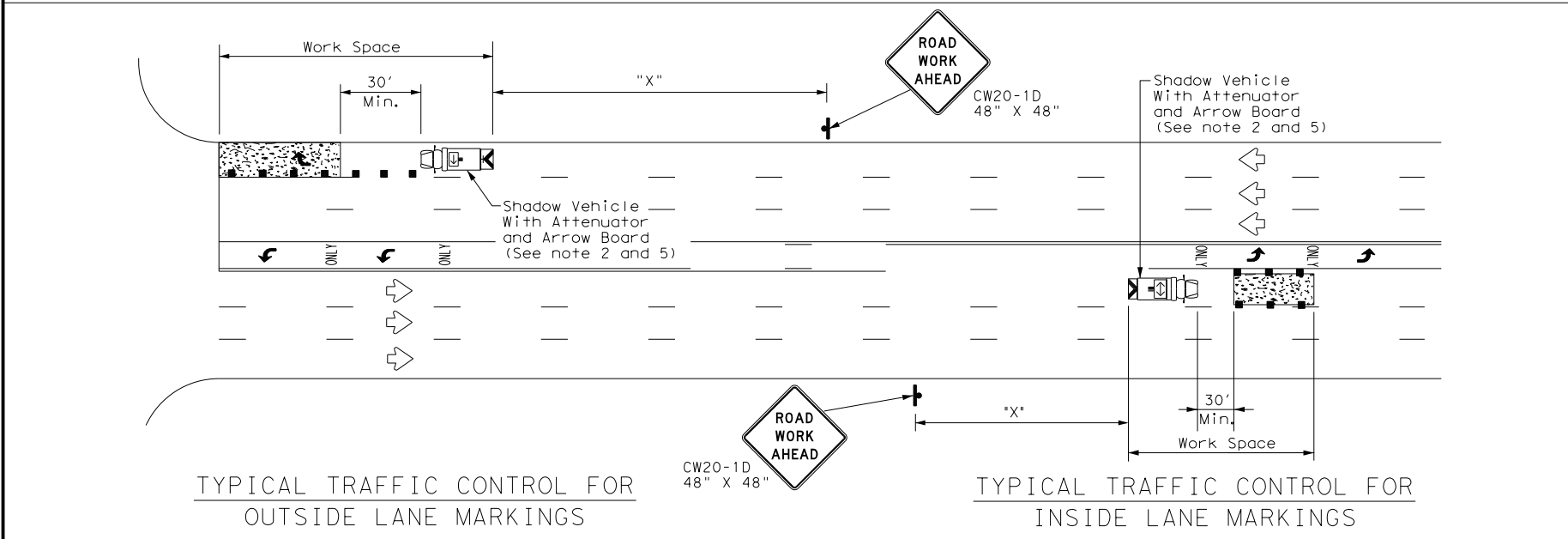
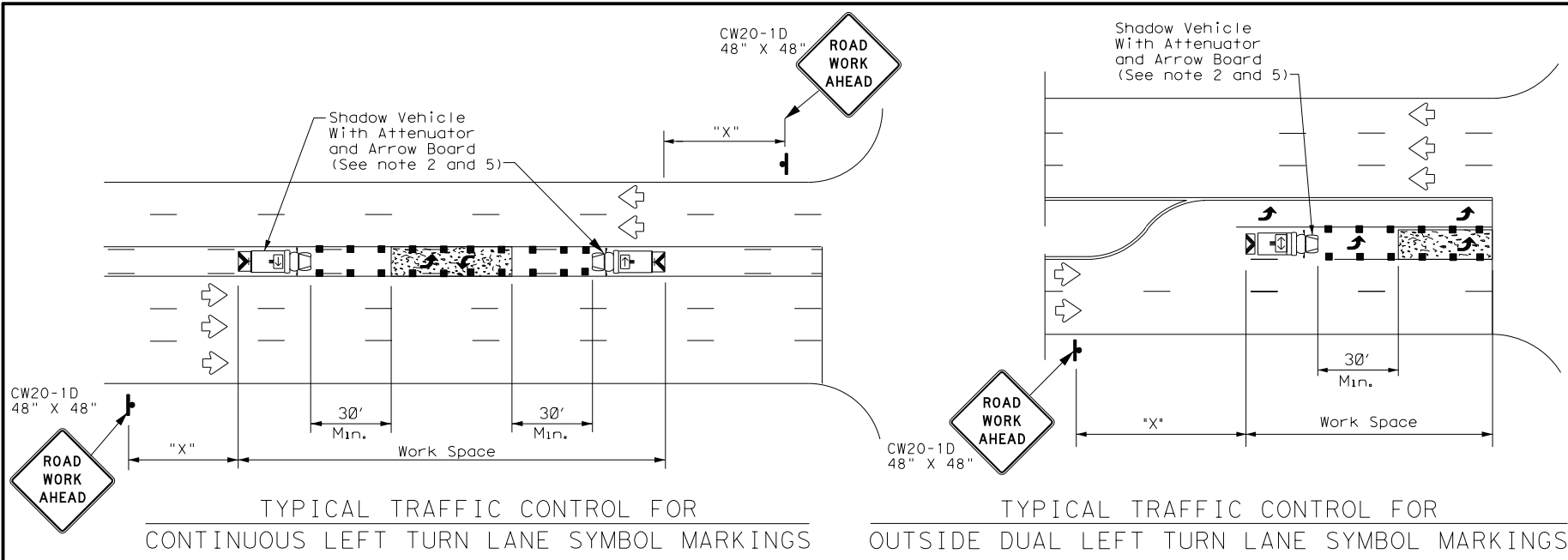
Texas Department of Transportation

**TRAFFIC CONTROL PLAN
MOBILE OPERATIONS
RAISED PAVEMENT
MARKER INSTALLATION/
REMOVAL
TCP (3-3) - 14**

FILE: tcp3-3.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT September 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
2-94 4-98	DIST	COUNTY	SHEET NO.	
8-95 7-13	BWD	LAMPASAS	94	
1-97 7-14				

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 formats or for incorrect resulting from its use.

DATE: FILE:



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	Channelizing Devices

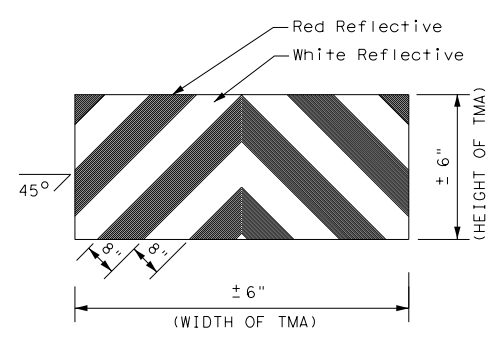
Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	L = WS ² / 60	150'	165'	180'	30'	60'	120'	90'
35		205'	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. This traffic control plan is for use on conventional roads posted at 45 mph or less and is intended for mobile operations that move continuously or intermittently (stopping up to approximately 15 minutes) such as short-line striping and in-lane rumble strips. When activities are anticipated to take longer amounts of time or traffic conditions warrant, a short duration or short-term stationary traffic control plan should be used.
2. A Truck Mounted Attenuator shall be used on Shadow Vehicle. Striping on the back panel of all truck mounted attenuators shall be 8" red and white reflective sheeting placed in an inverted "V" design. Reflective sheeting shall meet or exceed the reflectivity and color requirements of departmental material specification DMS-8300, Type A.
3. All traffic control devices shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD), latest edition.
4. The use of yellow rotating beacons or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the drivers side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
5. Flashing arrow board shall be used on Shadow Vehicle. Flashing arrow board shall be Type B or Type C as per BC Standards. The arrow board operation shall be controlled from inside the truck.



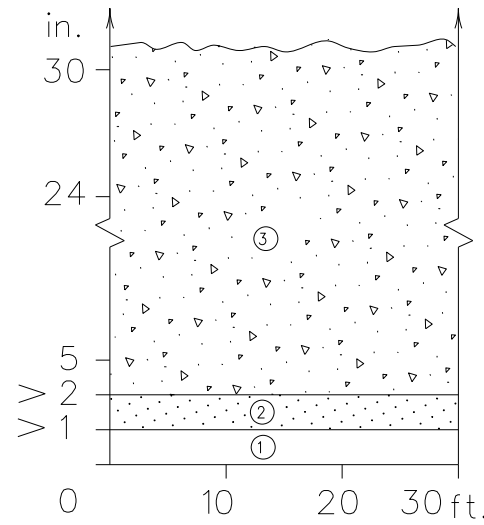
Texas Department of Transportation Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
MOBILE OPERATIONS FOR
ISOLATED WORK AREAS
UNDIVIDED HIGHWAYS
TCP (3-4) - 13

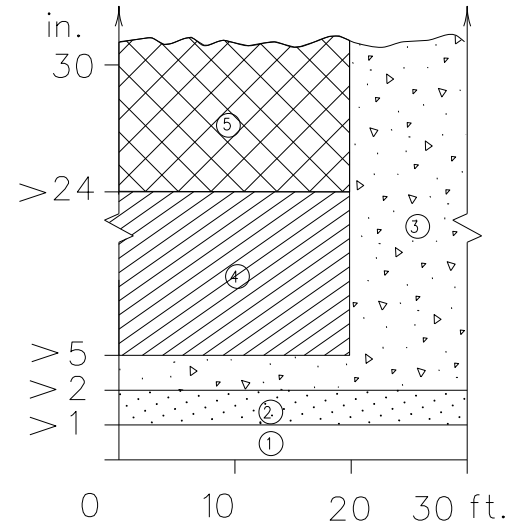
FILE: tcp3-4.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT July, 2013	CONT: 0251	SECT: 06	JOB: 036	HIGHWAY: US 281
REVISIONS	DIST: BWD	COUNTY: LAMPASAS	SHEET NO.: 95	

DEFINITION OF TREATMENT ZONES FOR VARIOUS EDGE CONDITIONS

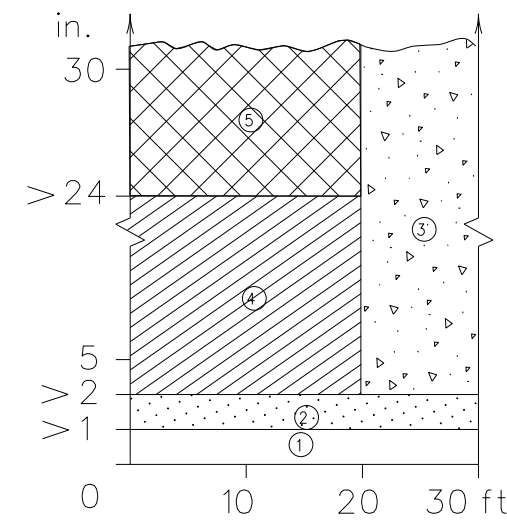
Edge Height (D) in Inches versus Lateral Clearance (Y) in Feet



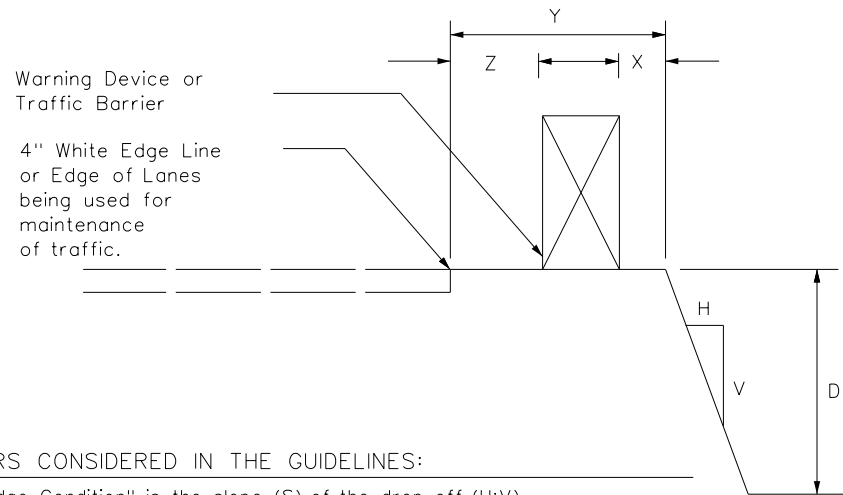
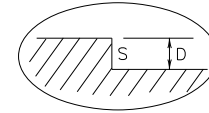
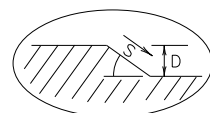
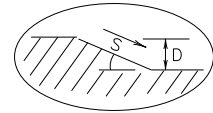
Edge Condition I
S = (3:1) (or flatter)



Edge Condition II
S = ((2.99):1) to (1:1)



Edge Condition III
S is steeper than (1:1)



Warning Device or Traffic Barrier

4" White Edge Line or Edge of Lanes being used for maintenance of traffic.

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	CW8-9a or CW 8-11, signs plus drums. Where restricted space precludes the use of drums, use vertical panels. An edge slope to that of the profered 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.

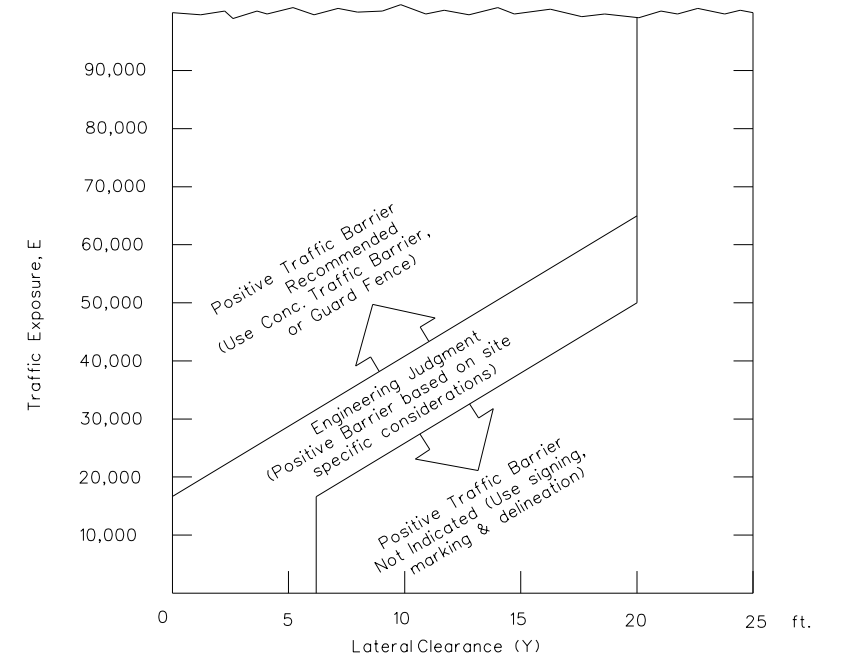
FACTORS CONSIDERED IN THE GUIDELINES:

- The "Edge Condition" is the slope (S) of the drop-off (H:V). The "Edge Height" is the depth of the drop-off "D".
- 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.
- 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.
- 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.
- 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.

Edge Condition Notes:

- 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.
- Edge Condition II: Most vehicles are able to traverse an edge condition with a slope between (2.99 to 1) and (1 to 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" exceeds 24 inches, the possibility for rollover is greater in most vehicles.
- 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.
- 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 ()



- 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.
- 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.
- An approved end treatment should be provided for any positive barrier end located within the clear zone.

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.

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.

DATE: 08-01-2023 \$TIME\$
FILE: BOLLMENT.DGN

Engineer's Seal

 Date: 01/30/2023

Texas Department of Transportation
 Traffic Safety Division Standard

TREATMENT FOR VARIOUS EDGE CONDITIONS

FILE: edgecon.dgn	DN:	CK:	DW:	CK:
© TxDOT August 2000	CONT: 0251	SECT: 06	JOB: 036	HIGHWAY: US 281
03-01 08-01 9-21	DIST: BWD	COUNTY: LAMPASAS	SHEET NO.: 95A	

HORIZONTAL ALIGNMENT FOR \underline{C} CR 1002

Beginning chain CR1002 description
 Point 1 N 10,347,740.5850 E 2,970,730.7251 Sta 10+00.00
 Course from 1 to PC CR 1002-1 N 85° 27' 59.90" W Dist 115.6923

Curve Data

Curve CR 1002-1
 P.I. Station 11+51.60 N 10,347,752.5674 E 2,970,579.5991
 Delta = 39° 30' 15.80" (LT)
 Degree = 57° 17' 44.81"
 Tangent = 35.9080
 Length = 68.9482
 Radius = 100.0000
 External = 6.2515
 Long Chord = 67.5906
 Mid. Ord. = 5.8637
 P.C. Station 11+15.69 N 10,347,749.7292 E 2,970,615.3948
 P.T. Station 11+84.64 N 10,347,731.9863 E 2,970,550.1746
 C.C. N 10,347,650.0421 E 2,970,607.4908
 Back = N 85° 27' 59.90" W
 Ahead = S 55° 01' 44.30" W
 Chord Bear = S 74° 46' 52.20" W

Course from PT CR 1002-1 to 2 S 55° 01' 44.30" W Dist 136.9807
 Point 2 N 10,347,653.4741 E 2,970,437.9269 Sta 13+21.62

Ending chain CR1002 description

HORIZONTAL ALIGNMENT FOR \underline{C} CR 4016

Beginning chain CR4016 description
 Point 20 N 10,350,774.4714 E 2,971,137.5476 Sta 10+00.00
 Course from 20 to PC CR 4016-1 N 87° 53' 14.99" E Dist 54.9401

Curve Data

Curve CR 4016-1
 P.I. Station 11+24.18 N 10,350,779.0489 E 2,971,261.6445
 Delta = 69° 23' 54.25" (RT)
 Degree = 57° 17' 44.81"
 Tangent = 69.2412
 Length = 121.1231
 Radius = 100.0000
 External = 21.6320
 Long Chord = 113.8536
 Mid. Ord. = 17.7848
 P.C. Station 10+54.94 N 10,350,776.4966 E 2,971,192.4504
 P.T. Station 11+76.06 N 10,350,715.1778 E 2,971,288.3808
 C.C. N 10,350,676.5645 E 2,971,196.1365
 Back = N 87° 53' 14.99" E
 Ahead = S 22° 42' 50.76" E
 Chord Bear = S 57° 24' 47.89" E

Course from PT CR 4016-1 to 21 S 22° 42' 50.76" E Dist 72.0501
 Point 21 N 10,350,648.7157 E 2,971,316.2018 Sta 12+48.11

Ending chain CR4016 description

HORIZONTAL ALIGNMENT FOR \underline{C} W-03

Beginning chain W03 description
 Point 10 N 10,349,907.4444 E 2,971,038.0856 Sta 10+00.00
 Course from 10 to 11 N 77° 17' 23.20" W Dist 165.5427
 Point 11 N 10,349,943.8671 E 2,970,876.5995 Sta 11+65.54

Ending chain W03 description

HORIZONTAL ALIGNMENT FOR \underline{C} NARUNA RD

Beginning chain NARUNA description
 Point NARUNA1 N 10,353,995.0209 E 2,970,567.8784 Sta 10+00.00
 Course from NARUNA1 to PC NARUNA-1 S 79° 50' 52.99" W Dist 102.7281

Curve Data

Curve NARUNA-1
 P.I. Station 11+62.87 N 10,353,966.3134 E 2,970,407.5573
 Delta = 13° 43' 04.25" (LT)
 Degree = 11° 27' 32.96"
 Tangent = 60.1430
 Length = 119.7108
 Radius = 500.0000
 External = 3.6042
 Long Chord = 119.4251
 Mid. Ord. = 3.5784
 P.C. Station 11+02.73 N 10,353,976.9141 E 2,970,466.7586
 P.T. Station 12+22.44 N 10,353,941.9759 E 2,970,352.5585
 C.C. N 10,353,484.7422 E 2,970,554.8883
 Back = S 79° 50' 52.99" W
 Ahead = S 66° 07' 48.75" W
 Chord Bear = S 72° 59' 20.87" W

Course from PT NARUNA-1 to NARUNA2 S 66° 07' 48.75" W Dist 749.5626
 Point NARUNA2 N 10,353,638.6583 E 2,969,667.1080 Sta 19+72.00

Ending chain NARUNA description

HORIZONTAL ALIGNMENT FOR \underline{C} W14

Beginning chain W14 description
 Point W16 N 10,354,388.4559 E 2,970,507.9196 Sta 10+00.00
 Course from W16 to PC W141 S 84° 55' 30.40" W Dist 100.0171

Curve Data

Curve W14-1
 P.I. Station 11+43.89 N 10,354,375.7280 E 2,970,364.5977
 Delta = 68° 01' 52.31" (RT)
 Degree = 88° 08' 50.47"
 Tangent = 43.8688
 Length = 77.1789
 Radius = 65.0000
 External = 13.4186
 Long Chord = 72.7244
 Mid. Ord. = 11.1225
 P.C. Station 11+00.02 N 10,354,379.6086 E 2,970,408.2945
 P.T. Station 11+77.20 N 10,354,414.8002 E 2,970,344.6519
 C.C. N 10,354,444.3538 E 2,970,402.5448
 Back = S 84° 55' 30.40" W
 Ahead = N 27° 02' 37.29" W
 Chord Bear = N 61° 03' 33.45" W

Course from PT W141 to PC W142 N 27° 02' 37.30" W Dist 52.8792

Curve Data

Curve W14-2
 P.I. Station 12+67.27 N 10,354,495.0214 E 2,970,303.7000
 Delta = 40° 48' 01.90" (RT)
 Degree = 57° 17' 44.81"
 Tangent = 37.1902
 Length = 71.2104
 Radius = 100.0000
 External = 6.6917
 Long Chord = 69.7153
 Mid. Ord. = 6.2720
 P.C. Station 12+30.08 N 10,354,461.8976 E 2,970,320.6093
 P.T. Station 13+01.29 N 10,354,531.1447 E 2,970,312.5439
 C.C. N 10,354,507.3646 E 2,970,409.6753
 Back = N 27° 02' 37.29" W
 Ahead = N 13° 45' 24.60" E
 Chord Bear = N 6° 38' 36.35" W

Course from PT W142 to PC W143 N 13° 45' 24.60" E Dist 58.2524

Curve Data

Curve W14-3
 P.I. Station 14+08.68 N 10,354,635.4549 E 2,970,338.0817
 Delta = 18° 36' 15.42" (LT)
 Degree = 19° 05' 54.94"
 Tangent = 49.1384
 Length = 97.4118
 Radius = 300.0000
 External = 3.9977
 Long Chord = 96.9844
 Mid. Ord. = 3.9451
 P.C. Station 13+59.54 N 10,354,587.7261 E 2,970,326.3965
 P.T. Station 14+56.95 N 10,354,684.4175 E 2,970,333.9293
 C.C. N 10,354,659.0666 E 2,970,035.0023
 Back = N 13° 45' 24.60" E
 Ahead = N 4° 50' 50.82" W
 Chord Bear = N 4° 27' 16.89" E

Course from PT W143 to W17 N 4° 50' 50.82" W Dist 69.4933
 Point W17 N 10,354,753.6623 E 2,970,328.0569 Sta 15+26.44

Ending chain W14 description

HORIZONTAL ALIGNMENT FOR \underline{C} US 183

Beginning chain CLUS183 description
 Point CLUS1831 N 10,354,904.4366 E 2,971,769.0032 Sta 15+00.00
 Course from CLUS1831 to CLUS1832 N 20° 58' 20.23" W Dist 1,600.0000
 Point CLUS1832 N 10,356,398.4424 E 2,971,196.3370 Sta 31+00.00

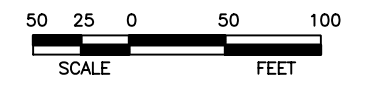
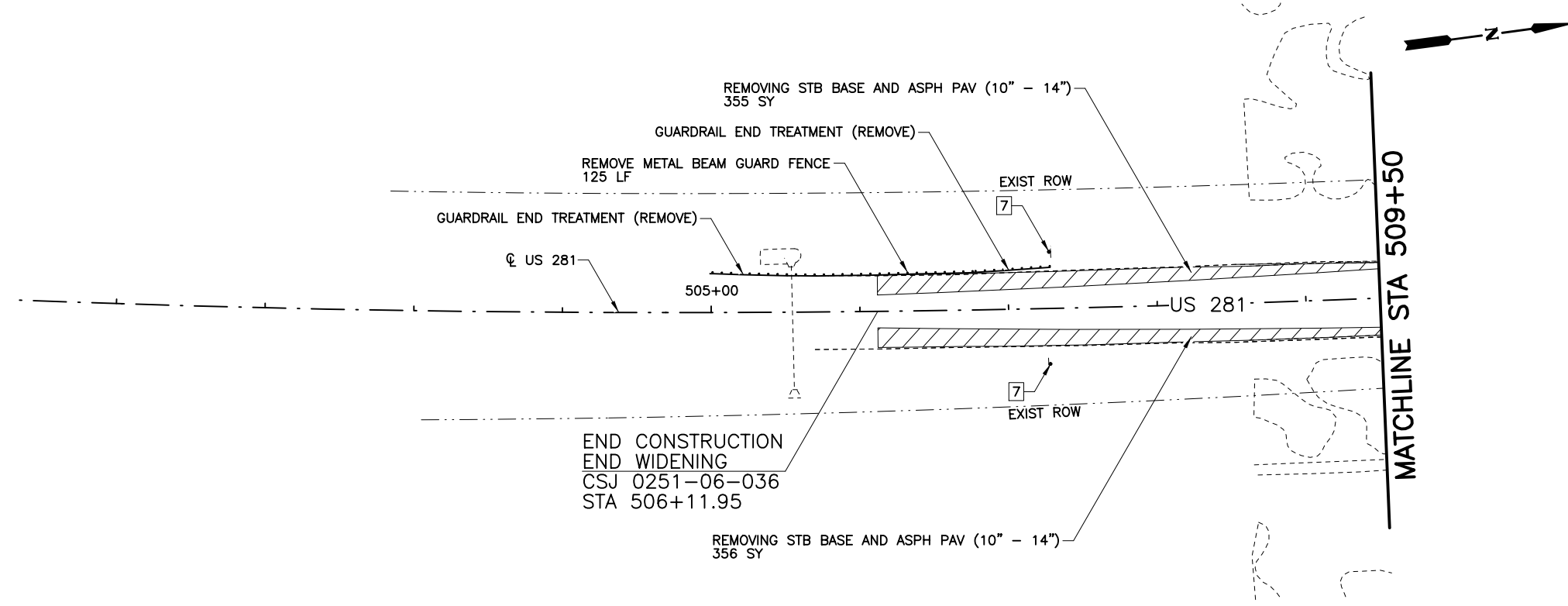
Ending chain CLUS183 description



9/2/2022

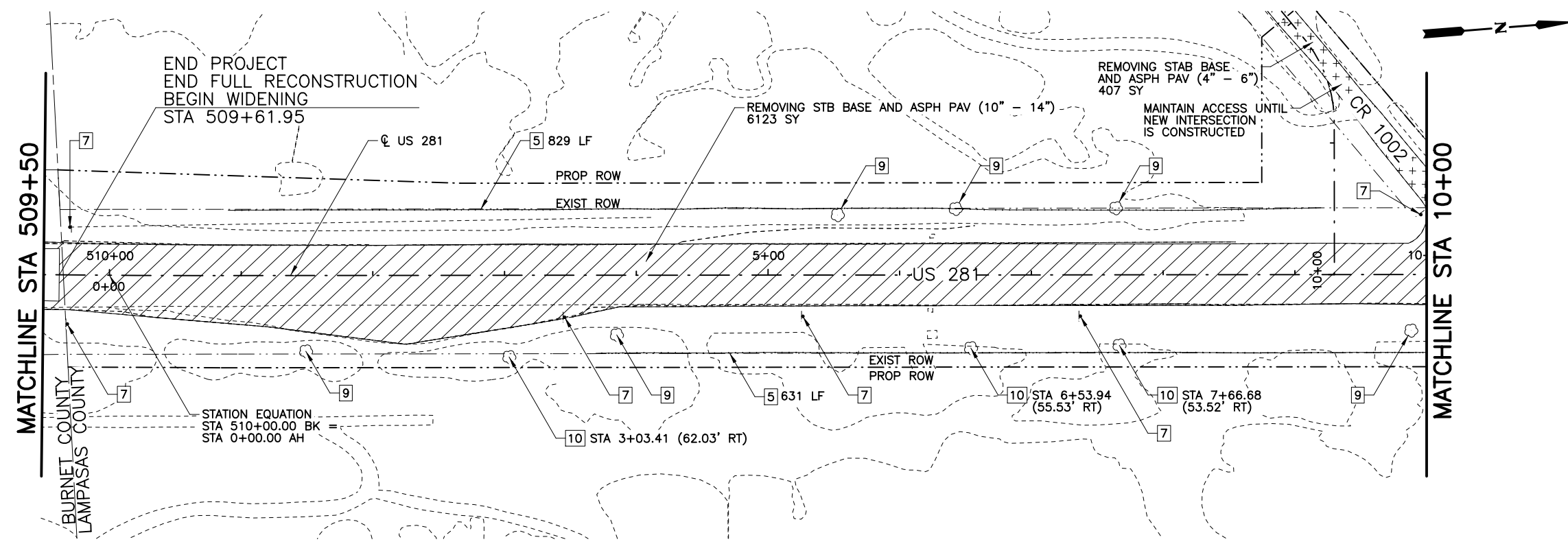
Kristin L. Perry

NO.	REVISION	BY	DATE
CP&Y TEXAS REGISTERED ENGINEERING FIRM F-1741			
©2022 Texas Department of Transportation			
HORIZONTAL ALIGNMENT DATA			
Designed:	CPY	FED. RD. DIV. NO. 6	STATE TEXAS
Checked:	CPY	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Drawn:	CPY	DIST. COUNTY	CONTROL NO. SECTION JOB NO. SHEET
Checked:	CPY	BWD LAMPASAS	0251 06 036 97



LEGEND

SYMBOL	DESCRIPTION
	REMOVING STB BASE AND ASPH PAV (10" - 14")
	REMOVE CONC (DRIVEWAYS)
	REMOVING STB BASE AND ASPH PAV (4" - 6")
	REMOVE CONC (SIDEWALKS)
	REMOV STR (INLET)
	REMOV STR (SET)
	REMOV STR (HEADWALL)
	REMOV STR (PIPE)
	REMOV STR (SMALL FENCE)
	REMOV STR (RAIL)
	REMOVE SM RD SN SUP&AM
	REMOVE LUMINAIRE POLE
	REMOVE TREE
	TREE PROTECTION



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741

©2023 Texas Department of Transportation

US 281

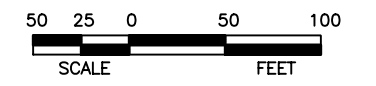
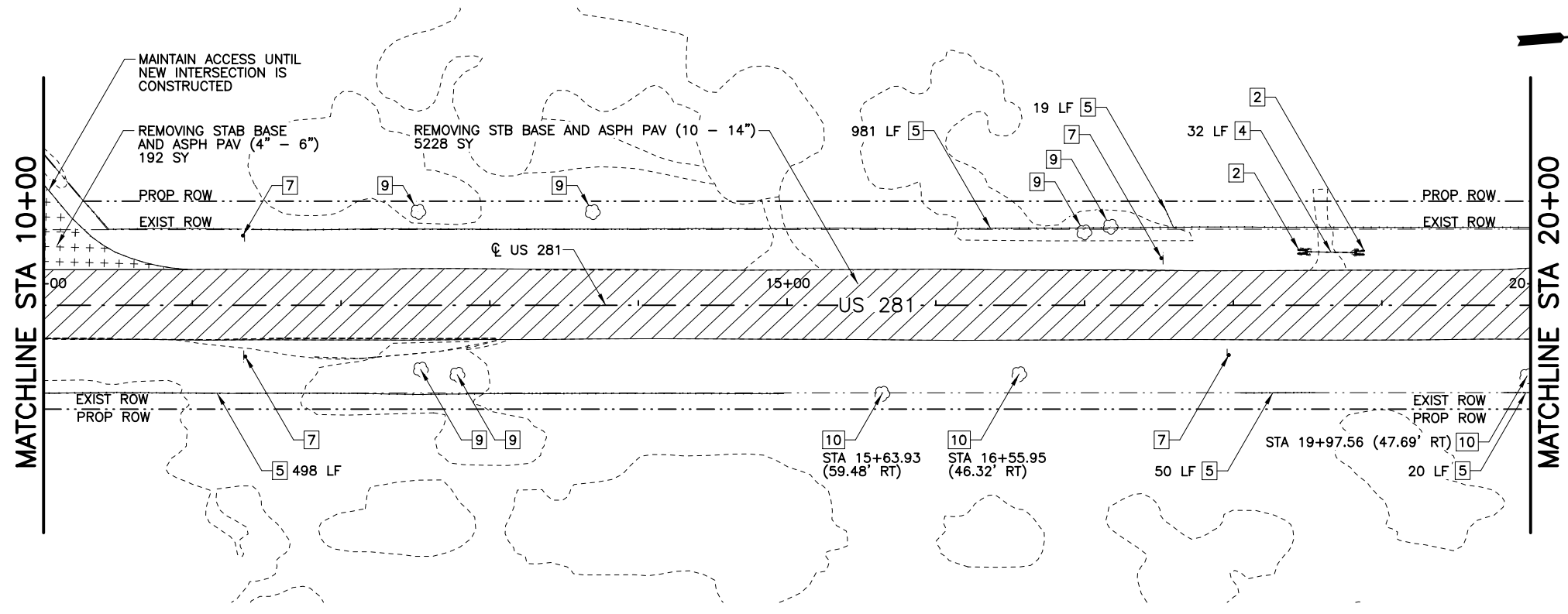
REMOVAL PLAN

Designed:	CPY	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.	0251-06-036	HIGHWAY NO.	US 281
Checked:	CPY	DIST.	LAMPASAS	COUNTY	LAMPASAS	CONTROL NO.	0251	SECTION NO.	06
Drawn:	CPY	JOB NO.	036	SHEET NO.	98				

cp/bw_ANSIB.tbl
cp/pdf_ANSIB.plt/cfg
pw:/

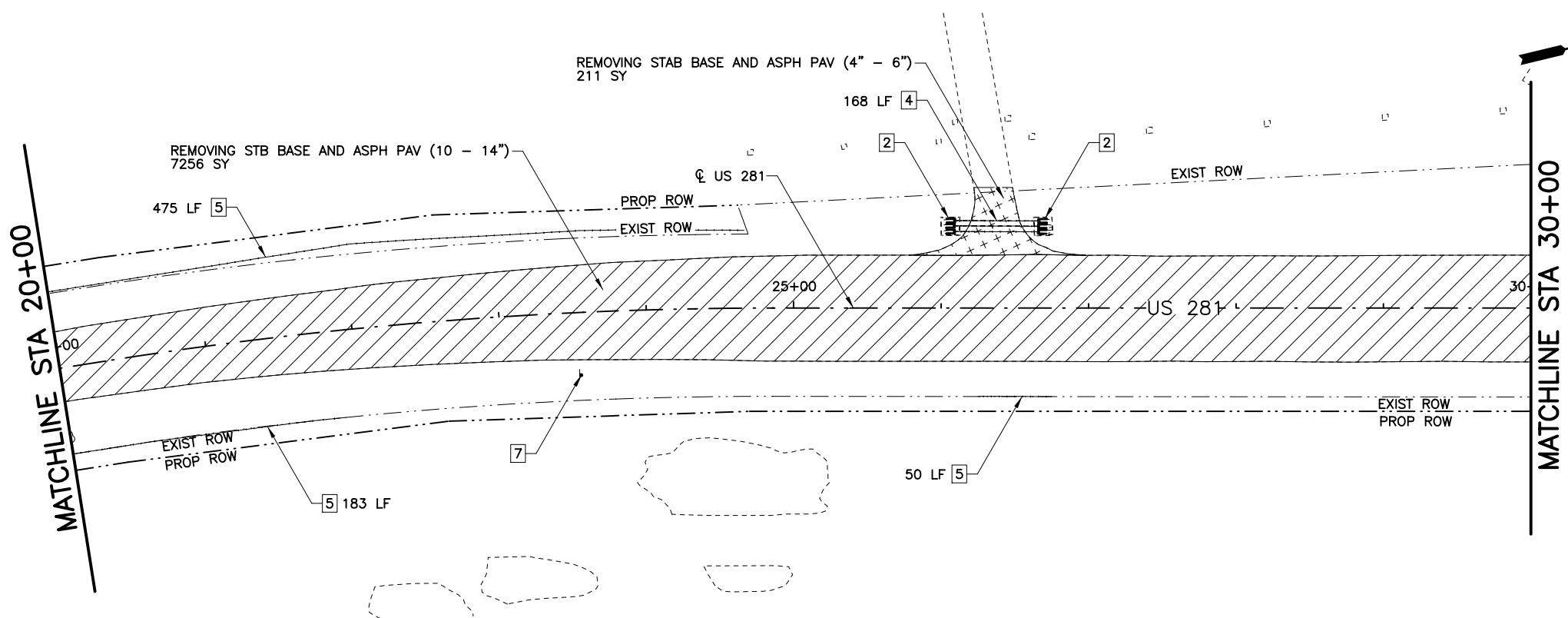
1/31/2023 3:35:55 PM k.perry

pw:/



LEGEND

SYMBOL	DESCRIPTION
	REMOVING STB BASE AND ASPH PAV (10" - 14")
	REMOVE CONC (DRIVEWAYS)
	REMOVING STB BASE AND ASPH PAV (4" - 6")
	REMOVE CONC (SIDEWALKS)
1	REMOV STR (INLET)
2	REMOV STR (SET)
3	REMOV STR (HEADWALL)
4	REMOV STR (PIPE)
5	REMOV STR (SMALL FENCE)
6	REMOV STR (RAIL)
7	REMOVE SM RD SN SUP&AM
8	REMOVE LUMINAIRE POLE
9	REMOVE TREE
10	TREE PROTECTION



1/31/2023

Kristin L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741

©2023 Texas Department of Transportation

US 281

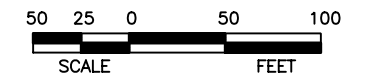
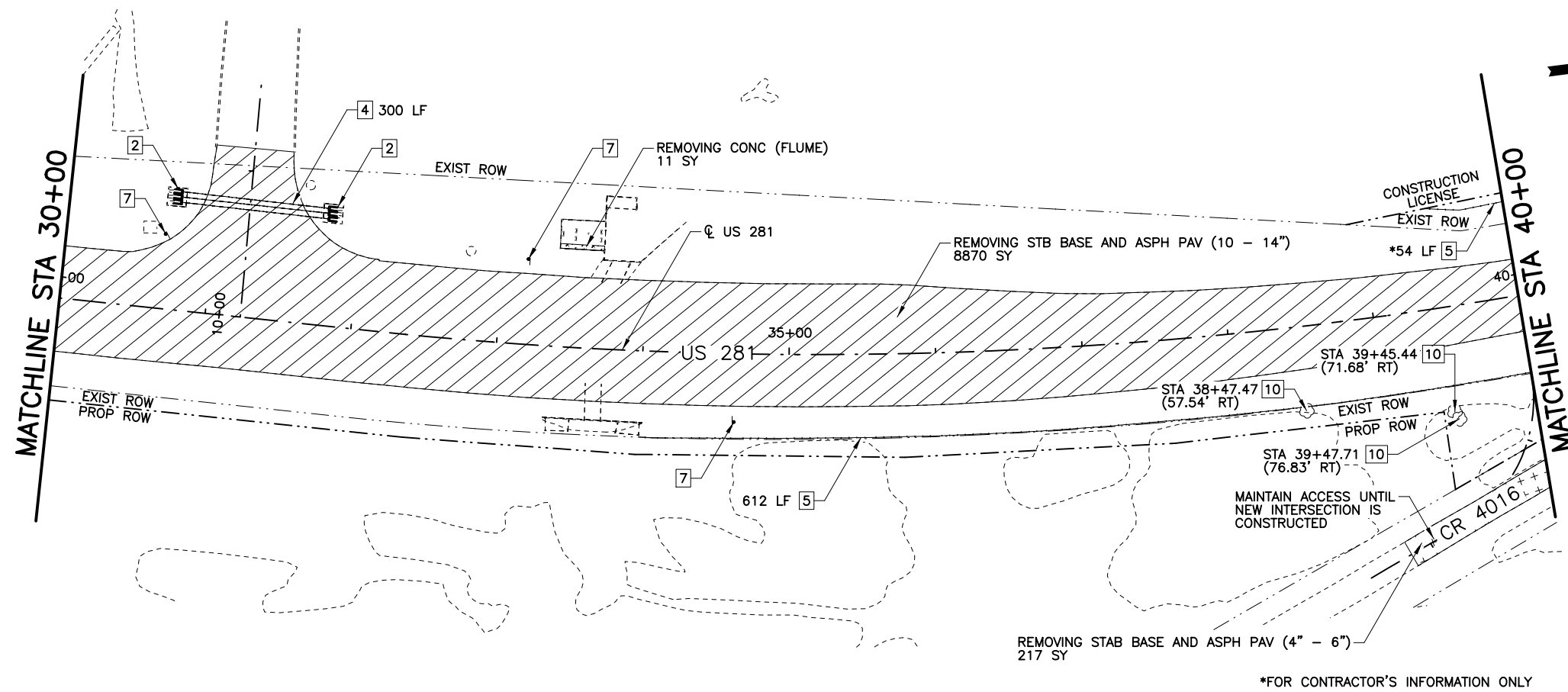
REMOVAL PLAN

Designed:	CPY	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	CPY	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Drawn:	CPY	JOB NO.	036	SHEET NO.	99				
Checked:	CPY	BWD							

cp/bw_ANSIB.tbl
cp/pdf_ANSIB.plt/cfg
pw:/

1/31/2023 3:36:06 PM kperry

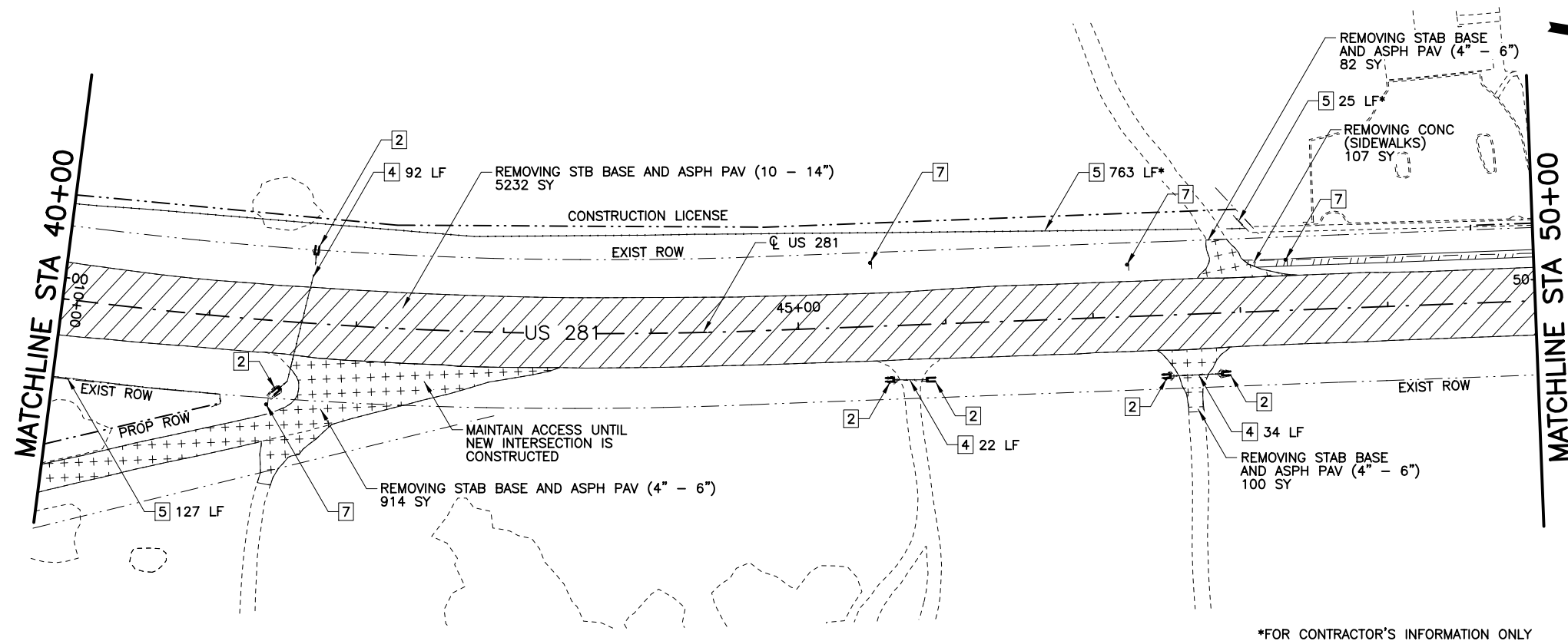
pw:/



LEGEND

SYMBOL	DESCRIPTION
	REMOVING STB BASE AND ASPH PAV (10" - 14")
	REMOVE CONC (DRIVEWAYS)
	REMOVING STB BASE AND ASPH PAV (4" - 6")
	REMOVE CONC (SIDEWALKS)
1	REMOV STR (INLET)
2	REMOV STR (SET)
3	REMOV STR (HEADWALL)
4	REMOV STR (PIPE)
5	REMOV STR (SMALL FENCE)
6	REMOV STR (RAIL)
7	REMOVE SM RD SN SUP&AM
8	REMOVE LUMINAIRE POLE
9	REMOVE TREE
10	TREE PROTECTION

*FOR CONTRACTOR'S INFORMATION ONLY



*FOR CONTRACTOR'S INFORMATION ONLY



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE



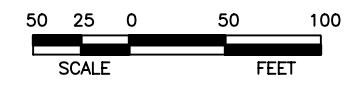
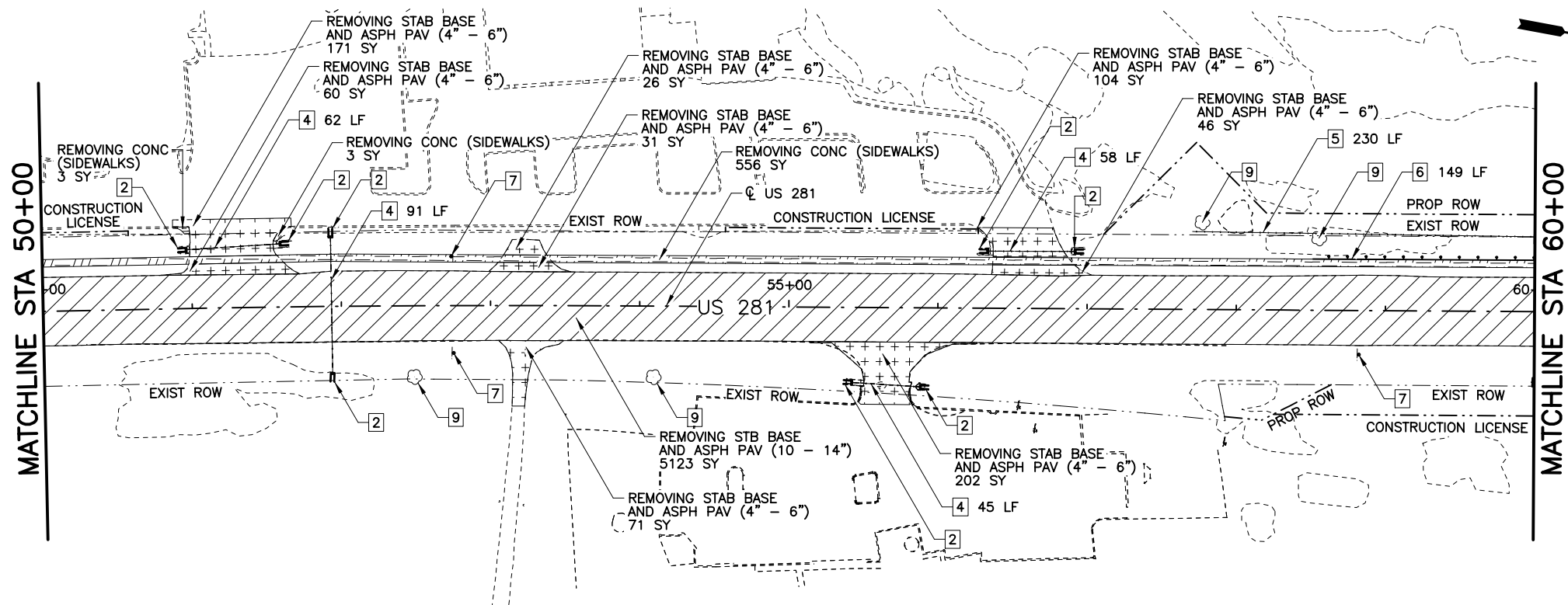
TEXAS REGISTERED ENGINEERING FIRM F-1741

©2023 Texas Department of Transportation

US 281

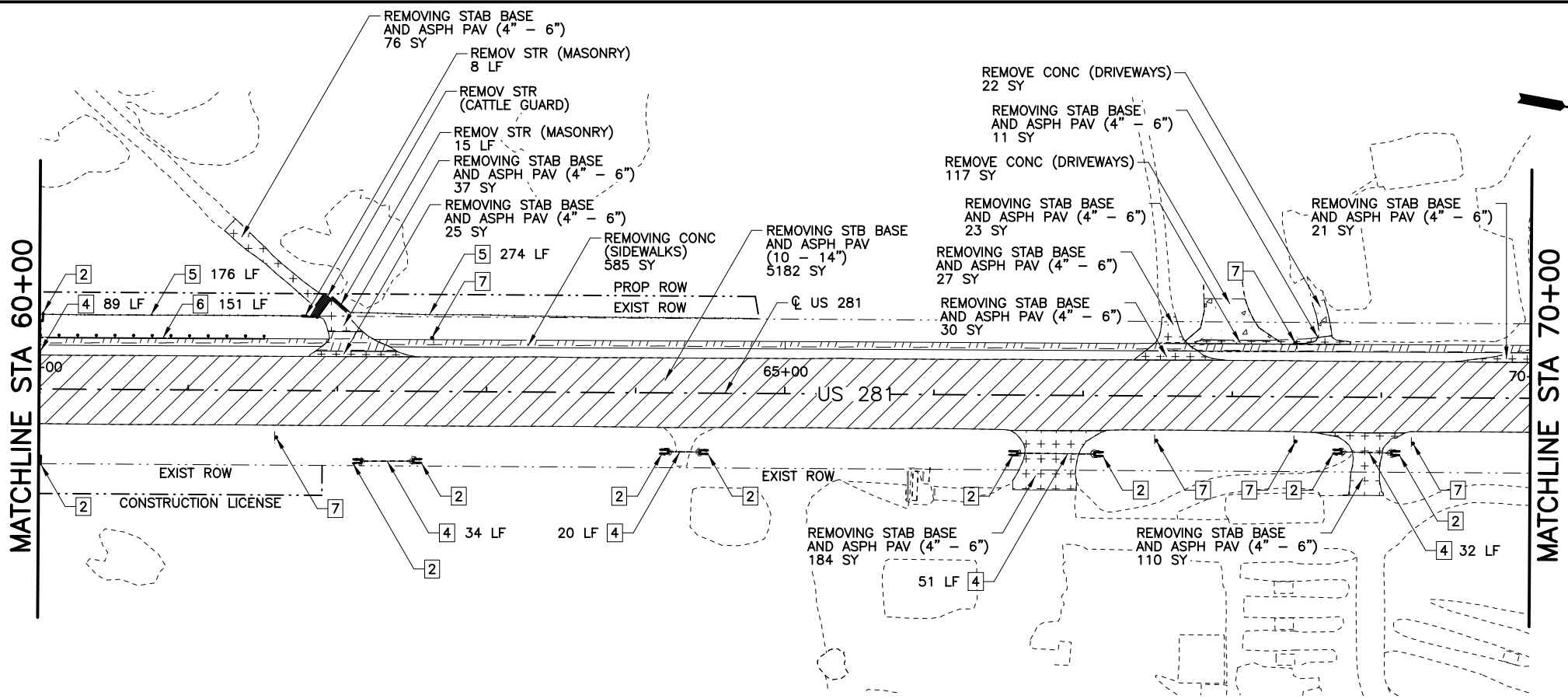
REMOVAL PLAN

Designed:	CPY	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.	0251 06 036	HIGHWAY NO.	US 281
Checked:	CPY	DIST.	LAMPASAS	COUNTY	0251	SECTION NO.	06	JOB NO.	036
Drawn:	CPY	DIST.	LAMPASAS	COUNTY	0251	SECTION NO.	06	JOB NO.	036
Checked:	CPY	DIST.	LAMPASAS	COUNTY	0251	SECTION NO.	06	JOB NO.	036



LEGEND

SYMBOL	DESCRIPTION
	REMOVING STB BASE AND ASPH PAV (10" - 14")
	REMOVE CONC (DRIVEWAYS)
	REMOVING STB BASE AND ASPH PAV (4" - 6")
	REMOVE CONC (SIDEWALKS)
	REMOV STR (INLET)
	REMOV STR (SET)
	REMOV STR (HEADWALL)
	REMOV STR (PIPE)
	REMOV STR (SMALL FENCE)
	REMOV STR (RAIL)
	REMOVE SM RD SN SUP&AM
	REMOVE LUMINAIRE POLE
	REMOVE TREE
	TREE PROTECTION



1/31/2023

Kristin L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741

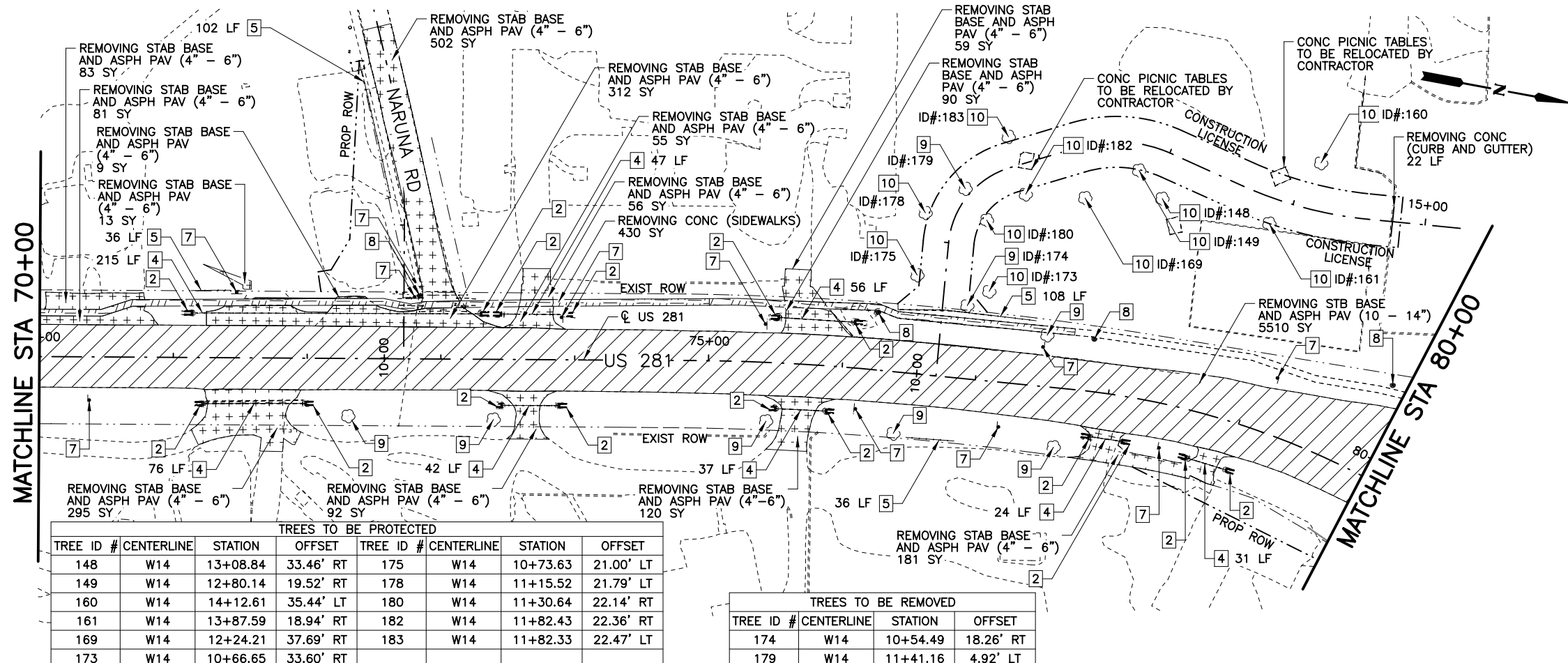
©2023 Texas Department of Transportation

US 281

REMOVAL PLAN

Designed:	CPY	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	CPY	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Drawn:	CPY	JOB NO.	036	SHEET NO.	101				
Checked:	CPY	BWD							

1/31/2023 3:36:23 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/

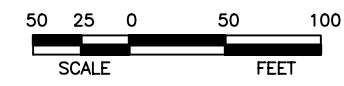


TREES TO BE PROTECTED

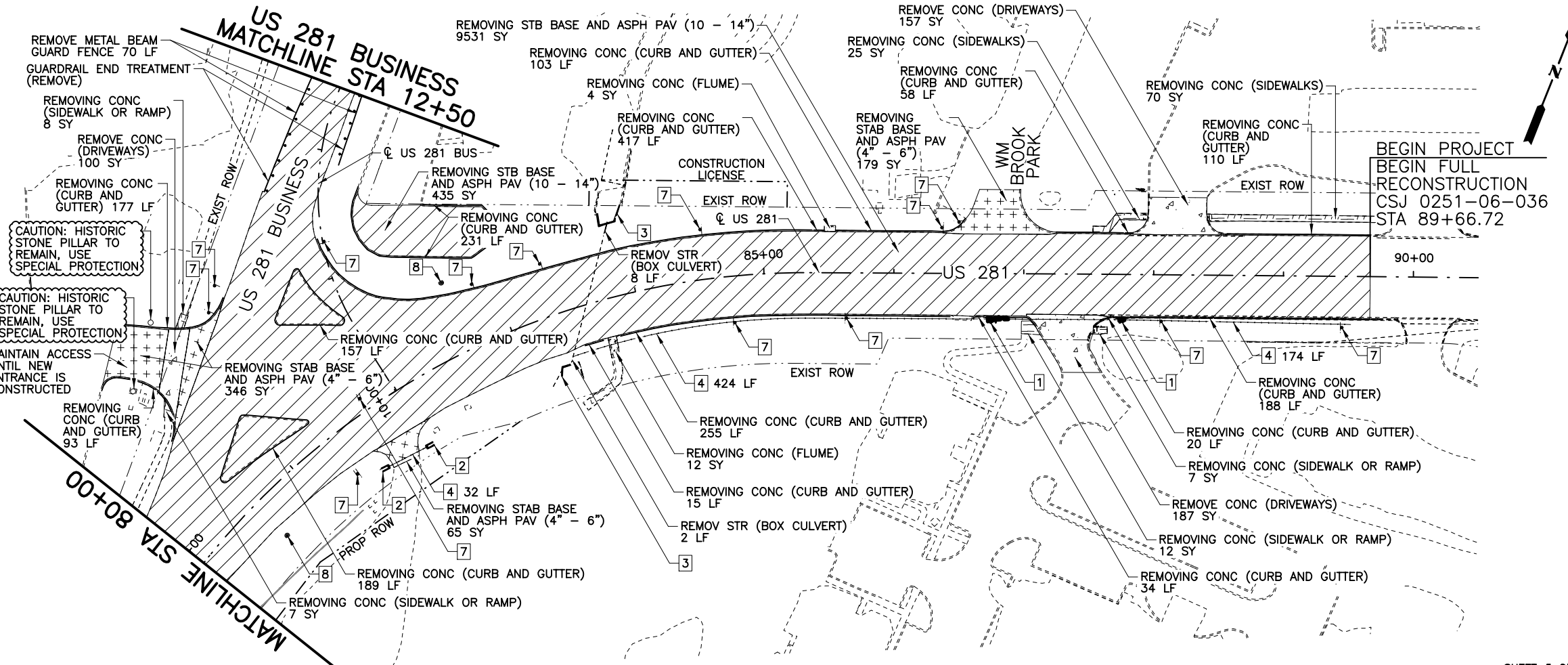
TREE ID #	CENTERLINE	STATION	OFFSET	TREE ID #	CENTERLINE	STATION	OFFSET
148	W14	13+08.84	33.46' RT	175	W14	10+73.63	21.00' LT
149	W14	12+80.14	19.52' RT	178	W14	11+15.52	21.79' LT
160	W14	14+12.61	35.44' LT	180	W14	11+30.64	22.14' RT
161	W14	13+87.59	18.94' RT	182	W14	11+82.43	22.36' RT
169	W14	12+24.21	37.69' RT	183	W14	11+82.33	22.47' LT
173	W14	10+66.65	33.60' RT				

TREES TO BE REMOVED

TREE ID #	CENTERLINE	STATION	OFFSET
174	W14	10+54.49	18.26' RT
179	W14	11+41.16	4.92' LT



- LEGEND**
- SYMBOL DESCRIPTION**
- REMOVING STB BASE AND ASPH PAV (10" - 14")
 - REMOVE CONC (DRIVEWAYS)
 - REMOVING STB BASE AND ASPH PAV (4" - 6")
 - REMOVE CONC (SIDEWALKS)
 - REMOV STR (INLET)
 - REMOV STR (SET)
 - REMOV STR (HEADWALL)
 - REMOV STR (PIPE)
 - REMOV STR (SMALL FENCE)
 - REMOV STR (RAIL)
 - REMOVE SM RD SN SUP&AM
 - REMOVE LUMINAIRE POLE
 - REMOVE TREE
 - TREE PROTECTION



CAUTION: HISTORIC STONE PILLAR TO REMAIN, USE SPECIAL PROTECTION

CAUTION: HISTORIC STONE PILLAR TO REMAIN, USE SPECIAL PROTECTION

MAINTAIN ACCESS UNTIL NEW ENTRANCE IS CONSTRUCTED



1/31/2023

Kristin L. Perry

NO.	REVISION	BY	DATE



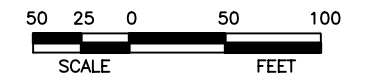
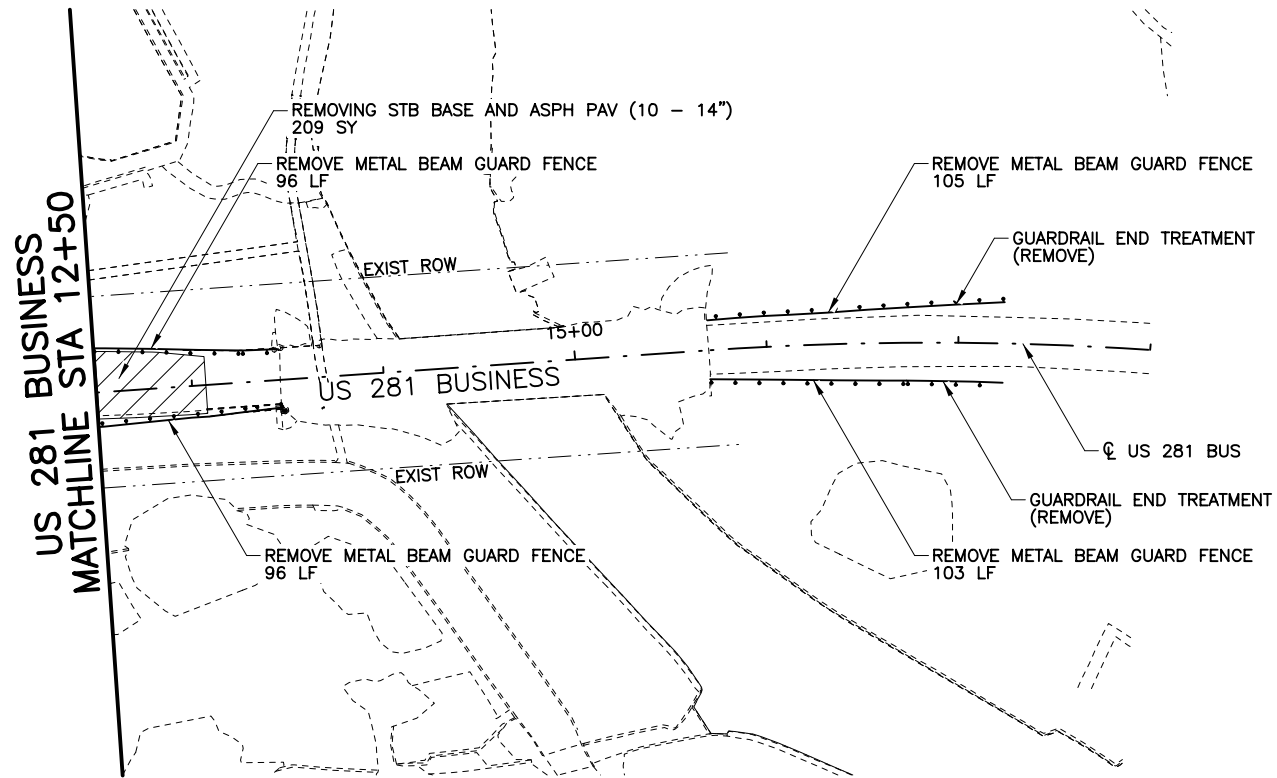
TEXAS REGISTERED ENGINEERING FIRM F-1741

©2023 Texas Department of Transportation

US 281

REMOVAL PLAN

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	CPY	6	TEXAS		US 281		
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	CPY	BWD	LAMPASAS	0251	06	036	102



LEGEND

SYMBOL	DESCRIPTION
	REMOVING STB BASE AND ASPH PAV (10" - 14")
	REMOVE CONC (DRIVEWAYS)
	REMOVING STB BASE AND ASPH PAV (4" - 6")
	REMOVE CONC (SIDEWALKS)
1	REMOV STR (INLET)
2	REMOV STR (SET)
3	REMOV STR (HEADWALL)
4	REMOV STR (PIPE)
5	REMOV STR (SMALL FENCE)
6	REMOV STR (RAIL)
7	REMOVE SM RD SN SUP&AM
8	REMOVE LUMINAIRE POLE
9	REMOVE TREE
10	TREE PROTECTION

cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/

1/31/2023 3:36:42 PM kperry



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE



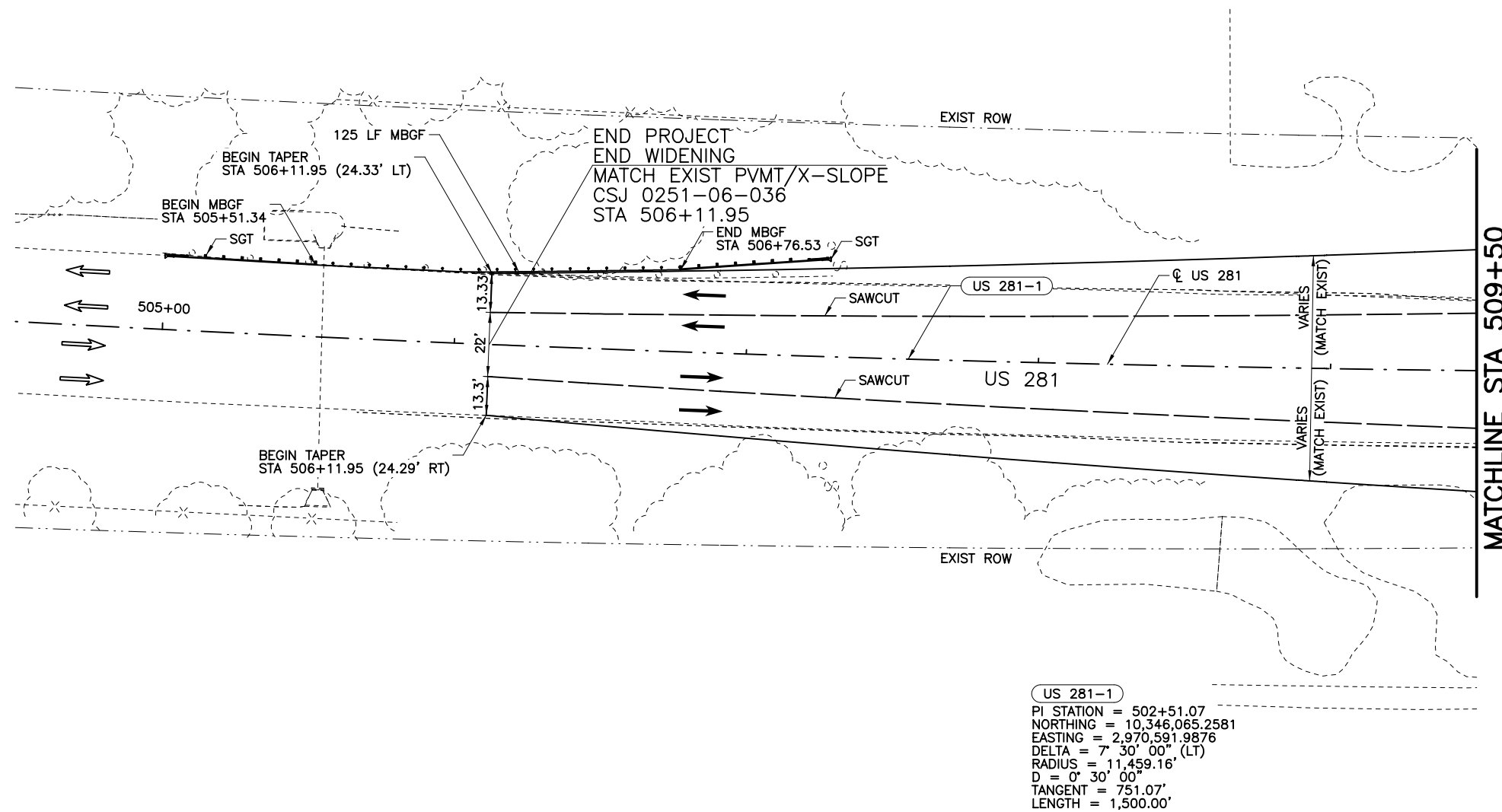
TEXAS REGISTERED ENGINEERING FIRM F-1741

©2023 Texas Department of Transportation

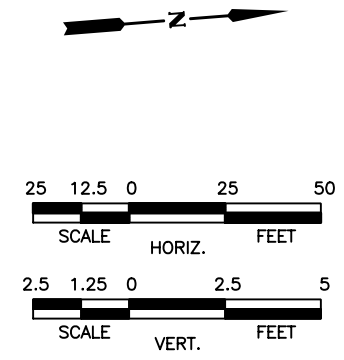
US 281 BUSINESS

REMOVAL PLAN

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
Checked:	CPY	6	TEXAS		US 281
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.
Checked:	CPY	BWD	LAMPASAS	0251	06
					JOB NO.
					036
					SHEET NO.
					103



US 281-1
 PI STATION = 502+51.07
 NORTHING = 10,346,065.2581
 EASTING = 2,970,591.9876
 DELTA = 7° 30' 00" (LT)
 RADIUS = 11,459.16'
 D = 0° 30' 00"
 TANGENT = 751.07'
 LENGTH = 1,500.00'



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED RIPRAP
 - PROPOSED STAMPED CONCRETE RIPRAP
 - PROPOSED RAISED ISLAND
 - DRIVEWAY ID

- NOTES:**
1. ALL STATIONS AND OFFSETS ARE FROM C US 281 UNLESS NOTED OTHERWISE.
 2. ALL LINEAR DIMENSIONS ARE TO THE FACE OF CURB.
 3. SEE CROSS STREETS PLAN & PROFILE SHEET FOR ADDITIONAL CROSS STREET INFORMATION.
 4. SEE DRIVEWAY DETAILS SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
 5. SEE MISCELLANEOUS DETAILS SHEETS FOR ADDITIONAL MAILBOX INFORMATION.
 6. SEE DRAINAGE DETAILS FOR ADDITIONAL INFORMATION.
 7. SEE SIDEWALK WALL/RETAINING WALL DETAILS FOR ADDITIONAL INFORMATION.

1/31/2023

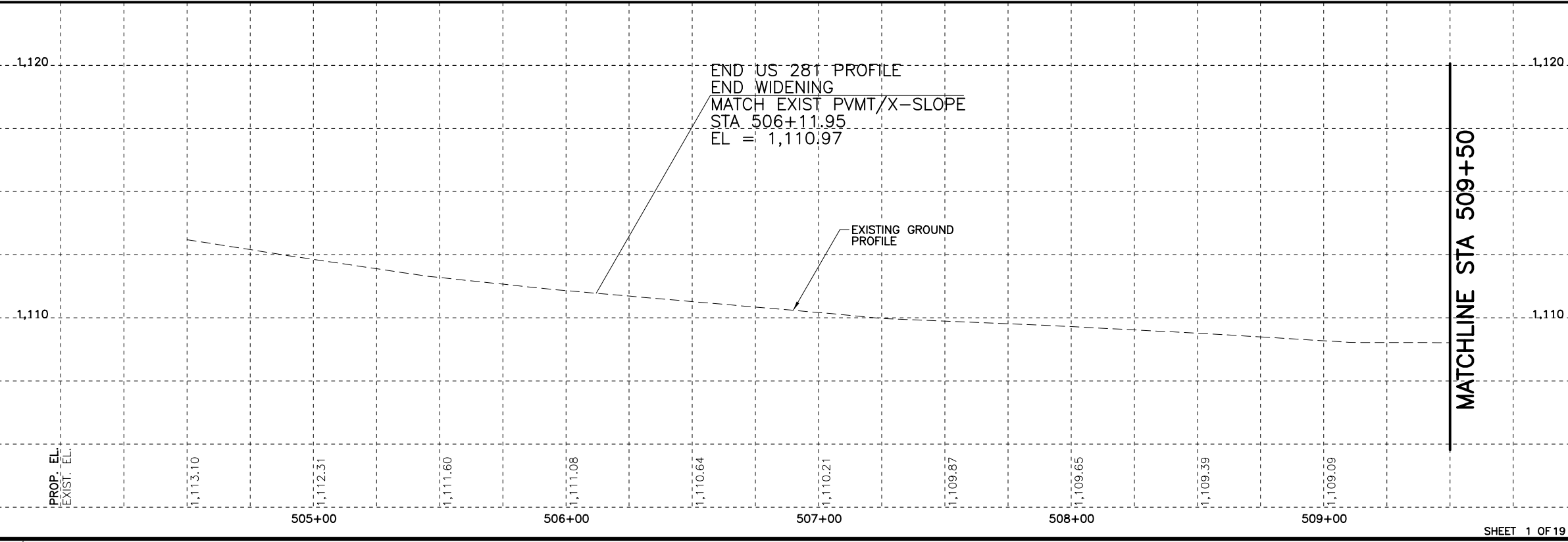
NO.	REVISION	BY	DATE

US 281

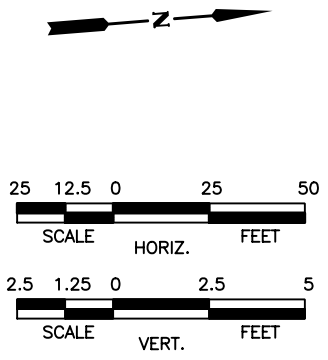
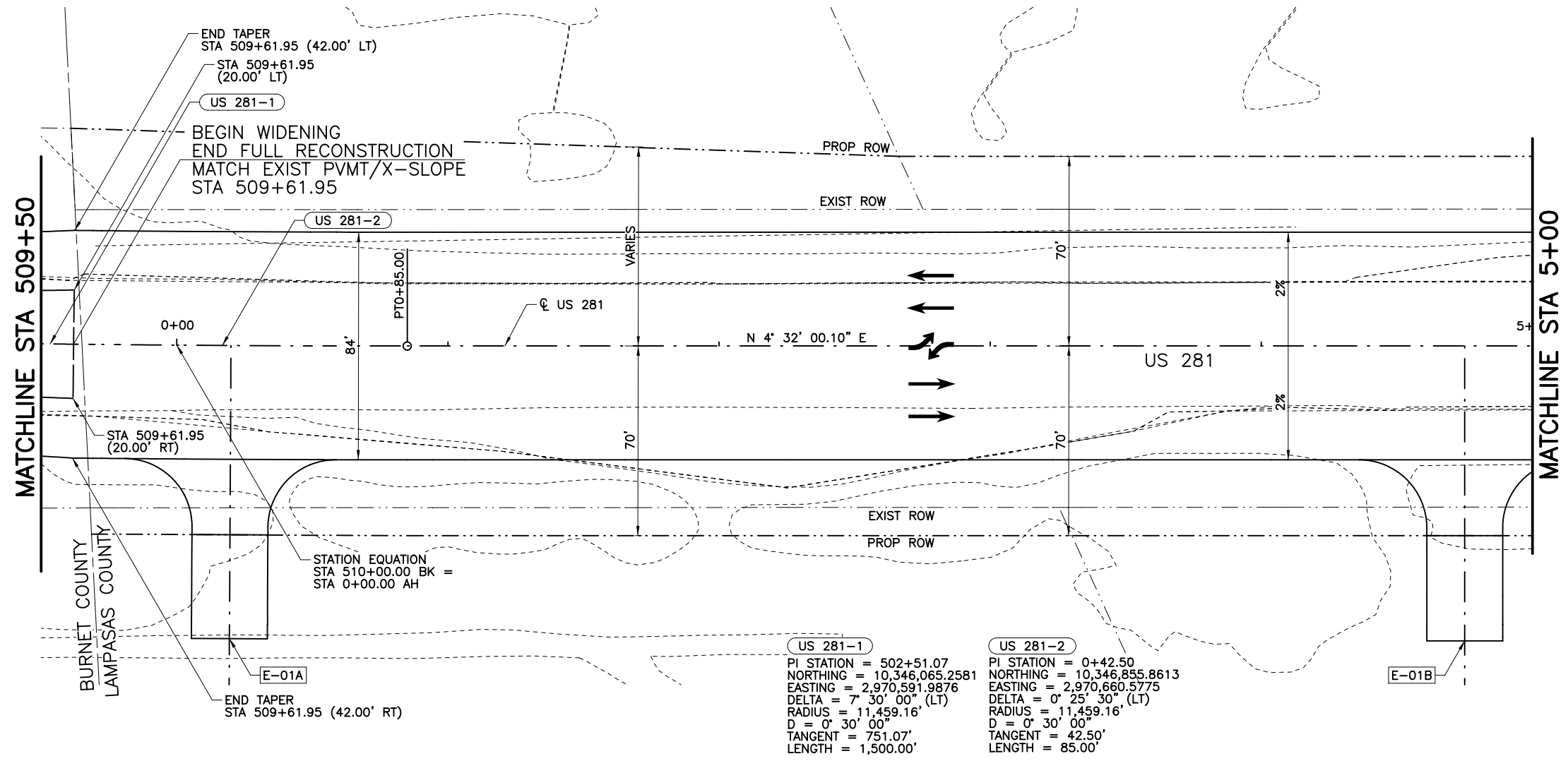
ROADWAY PLAN & PROFILE

END PROJECT TO STA 509+50

Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 104		



1/31/2023 3:36:49 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcf
 pw:/

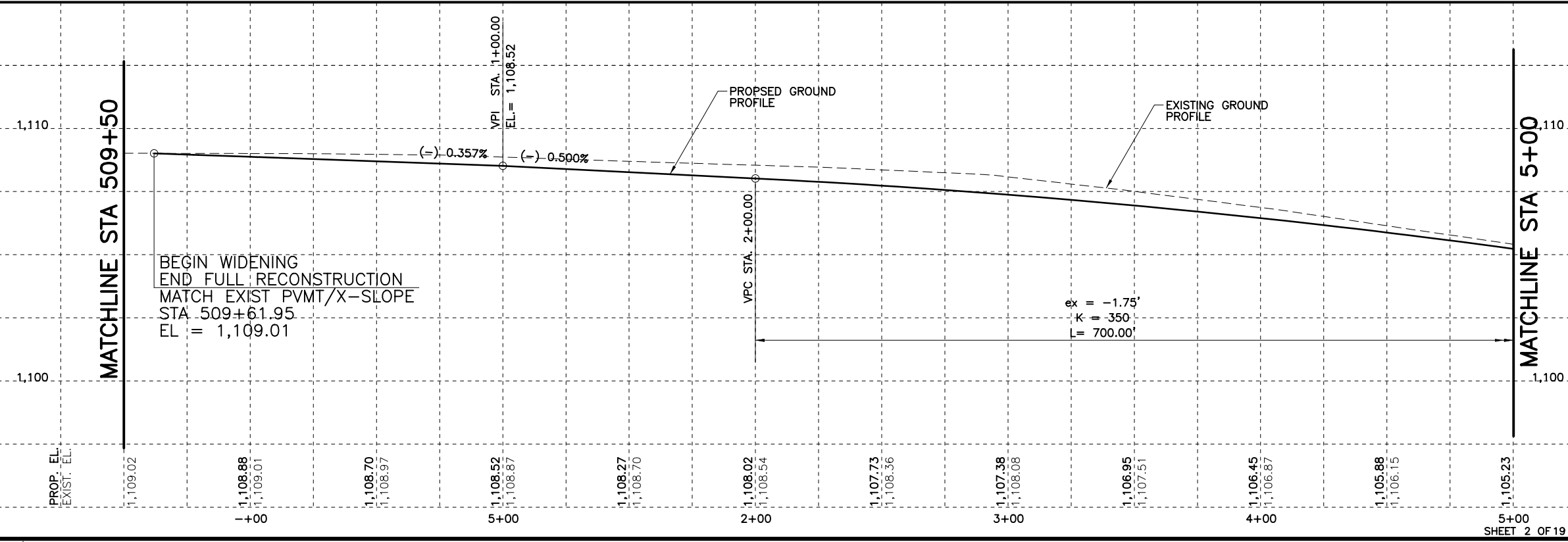


- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED RIPRAP
 - PROPOSED STAMPED CONCRETE RIPRAP
 - PROPOSED RAISED ISLAND
 - DRIVEWAY ID

- NOTES:**
1. ALL STATIONS AND OFFSETS ARE FROM \odot US 281 UNLESS NOTED OTHERWISE.
 2. ALL LINEAR DIMENSIONS ARE TO THE FACE OF CURB.
 3. SEE CROSS STREETS PLAN & PROFILE SHEET FOR ADDITIONAL CROSS STREET INFORMATION.
 4. SEE DRIVEWAY DETAILS SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
 5. SEE MISCELLANEOUS DETAILS SHEETS FOR ADDITIONAL MAILBOX INFORMATION.
 6. SEE DRAINAGE DETAILS FOR ADDITIONAL INFORMATION.
 7. SEE SIDEWALK WALL/RETAINING WALL DETAILS FOR ADDITIONAL INFORMATION.

US 281-1
 PI STATION = 502+51.07
 NORTHING = 10,346,065.2581
 EASTING = 2,970,591.9876
 DELTA = 7° 30' 00" (LT)
 RADIUS = 11,459.16'
 D = 0° 30' 00"
 TANGENT = 751.07'
 LENGTH = 1,500.00'

US 281-2
 PI STATION = 0+42.50
 NORTHING = 10,346,855.8613
 EASTING = 2,970,660.5775
 DELTA = 0° 25' 30" (LT)
 RADIUS = 11,459.16'
 D = 0° 30' 00"
 TANGENT = 42.50'
 LENGTH = 85.00'



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741



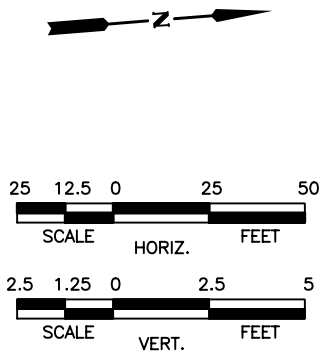
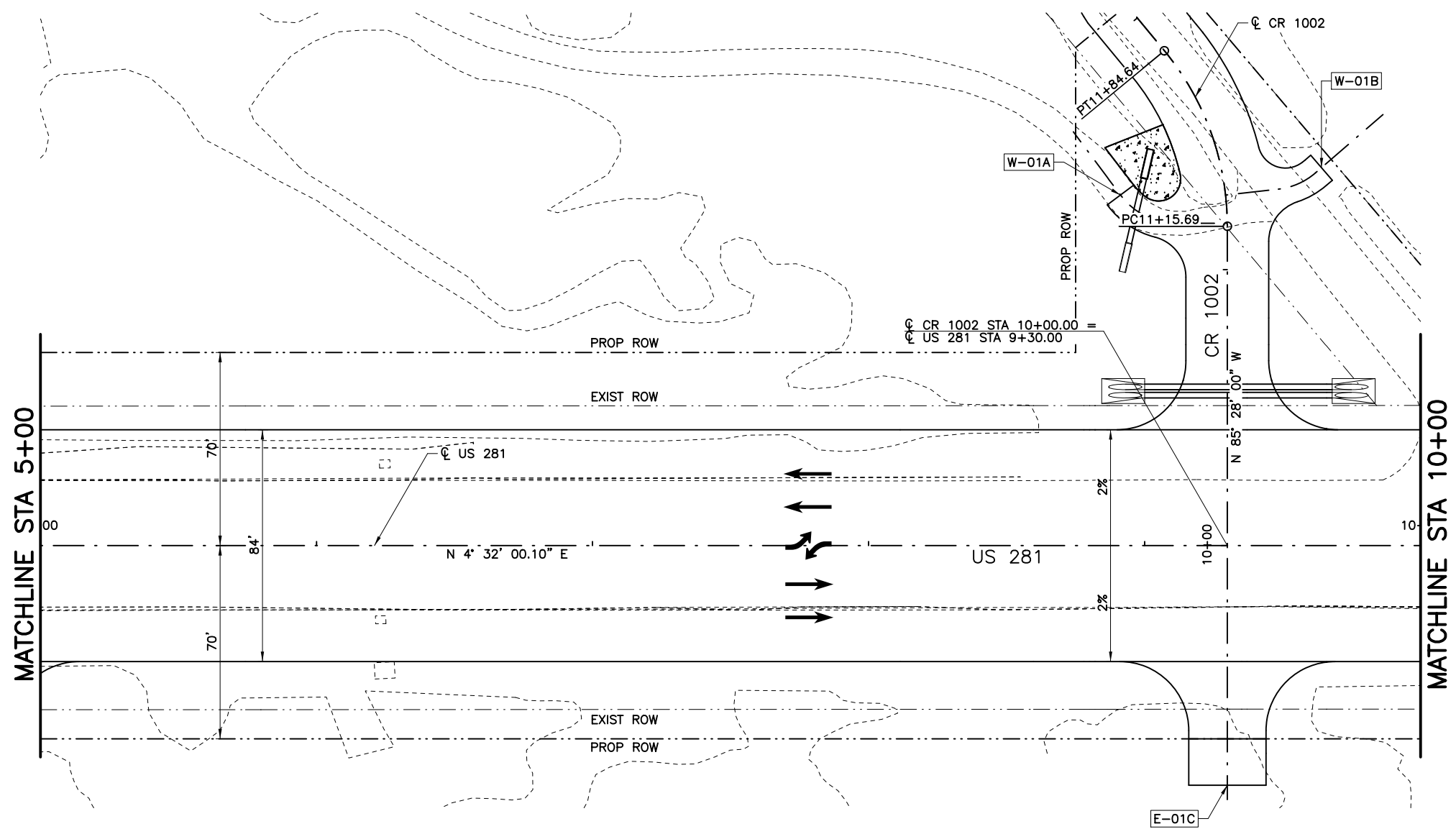
US 281

ROADWAY PLAN & PROFILE

STA 509+50 TO STA 5+00

Designed: CPY	FED. RD. DIST. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 105		

1/31/2023 3:36:56 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED RIPRAP
 - PROPOSED STAMPED CONCRETE RIPRAP
 - PROPOSED RAISED ISLAND
 - DRIVEWAY ID

- NOTES:**
1. ALL STATIONS AND OFFSETS ARE FROM C US 281 UNLESS NOTED OTHERWISE.
 2. ALL LINEAR DIMENSIONS ARE TO THE FACE OF CURB.
 3. SEE CROSS STREETS PLAN & PROFILE SHEET FOR ADDITIONAL CROSS STREET INFORMATION.
 4. SEE DRIVEWAY DETAILS SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
 5. SEE MISCELLANEOUS DETAILS SHEETS FOR ADDITIONAL MAILBOX INFORMATION.
 6. SEE DRAINAGE DETAILS FOR ADDITIONAL INFORMATION.
 7. SEE SIDEWALK WALL/RETAINING WALL DETAILS FOR ADDITIONAL INFORMATION.



Kristen L. Perry

1/31/2023

NO.	REVISION	BY	DATE



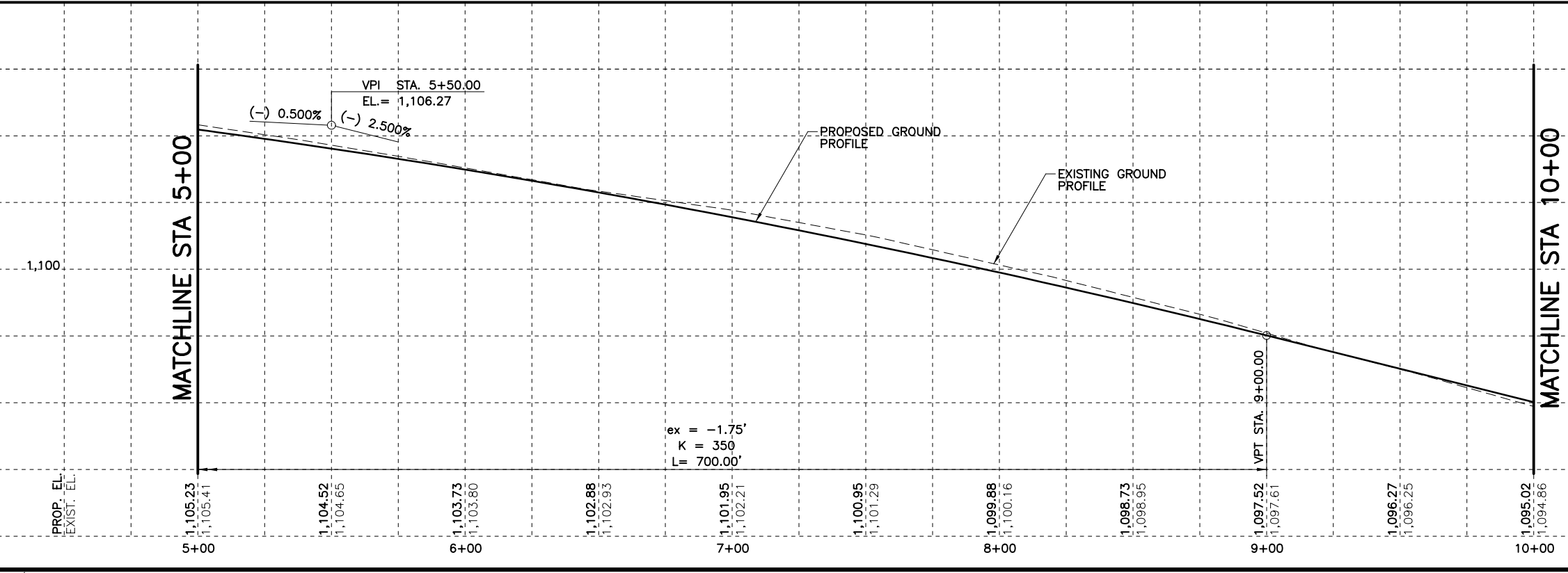
TEXAS REGISTERED ENGINEERING FIRM F-1741



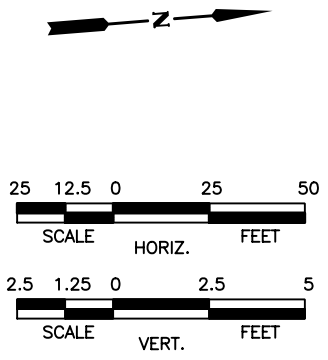
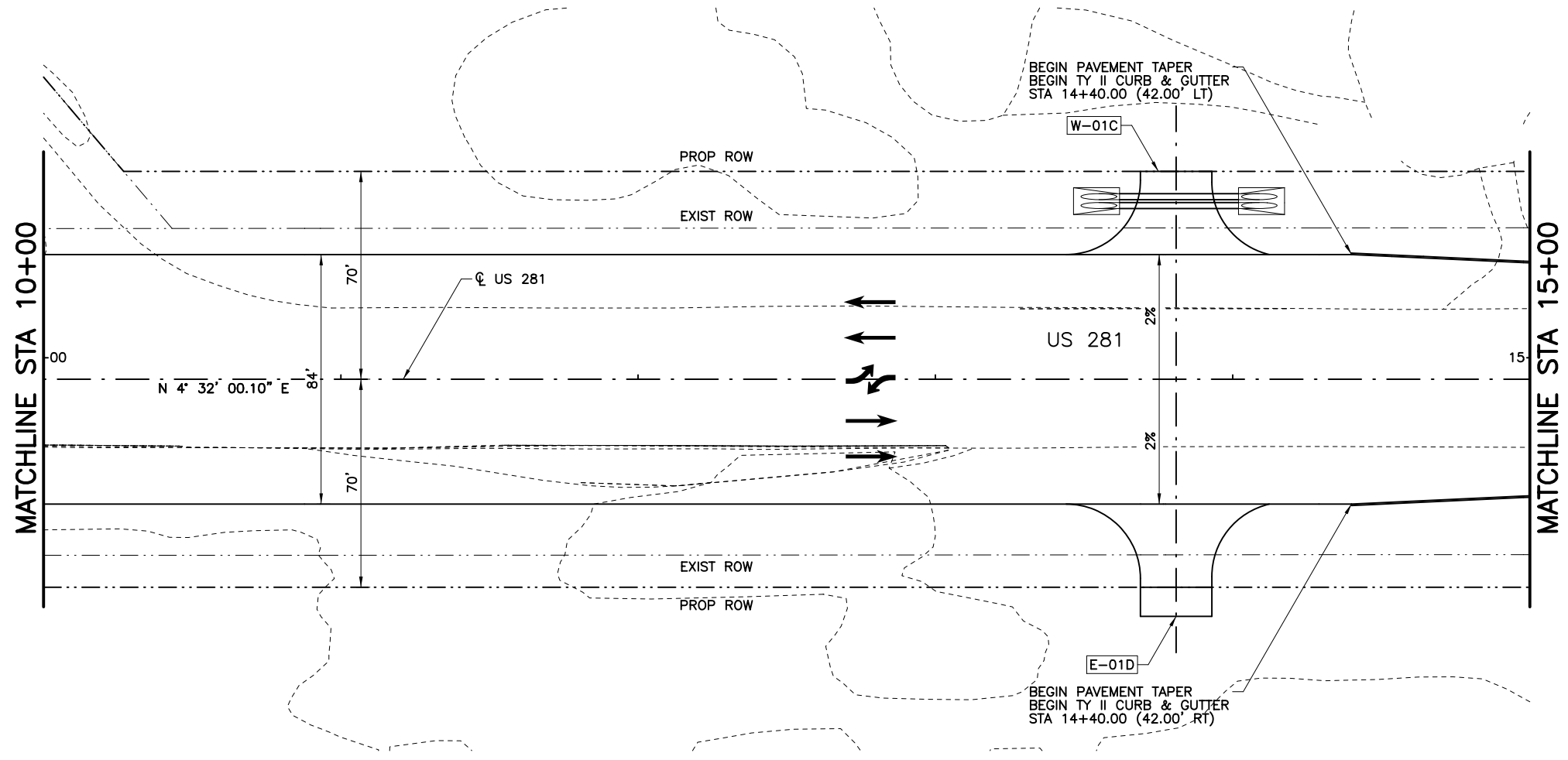
US 281
ROADWAY PLAN & PROFILE

STA 5+00 TO STA 10+00

Designed: CPY	FED. RD. DIST. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 106		

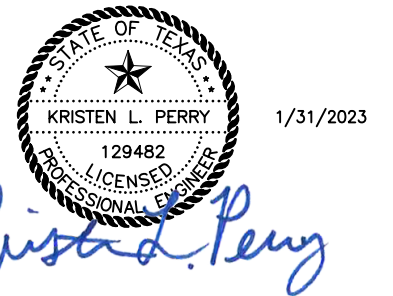


1/31/2023 3:37:04 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED RIPRAP
 - PROPOSED STAMPED CONCRETE RIPRAP
 - PROPOSED RAISED ISLAND
 - DRIVEWAY ID

- NOTES:**
1. ALL STATIONS AND OFFSETS ARE FROM ϕ US 281 UNLESS NOTED OTHERWISE.
 2. ALL LINEAR DIMENSIONS ARE TO THE FACE OF CURB.
 3. SEE CROSS STREETS PLAN & PROFILE SHEET FOR ADDITIONAL CROSS STREET INFORMATION.
 4. SEE DRIVEWAY DETAILS SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
 5. SEE MISCELLANEOUS DETAILS SHEETS FOR ADDITIONAL MAILBOX INFORMATION.
 6. SEE DRAINAGE DETAILS FOR ADDITIONAL INFORMATION.
 7. SEE SIDEWALK WALL/RETAINING WALL DETAILS FOR ADDITIONAL INFORMATION.



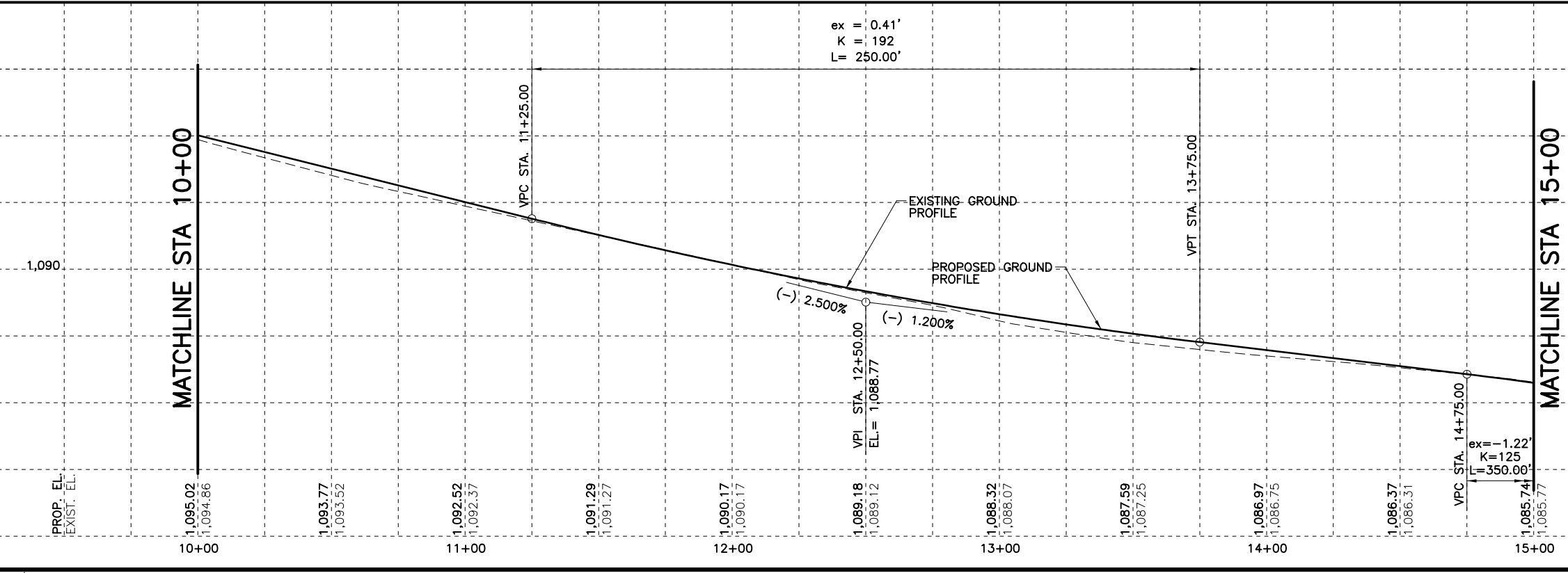
NO.	REVISION	BY	DATE



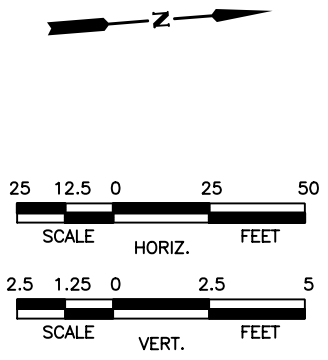
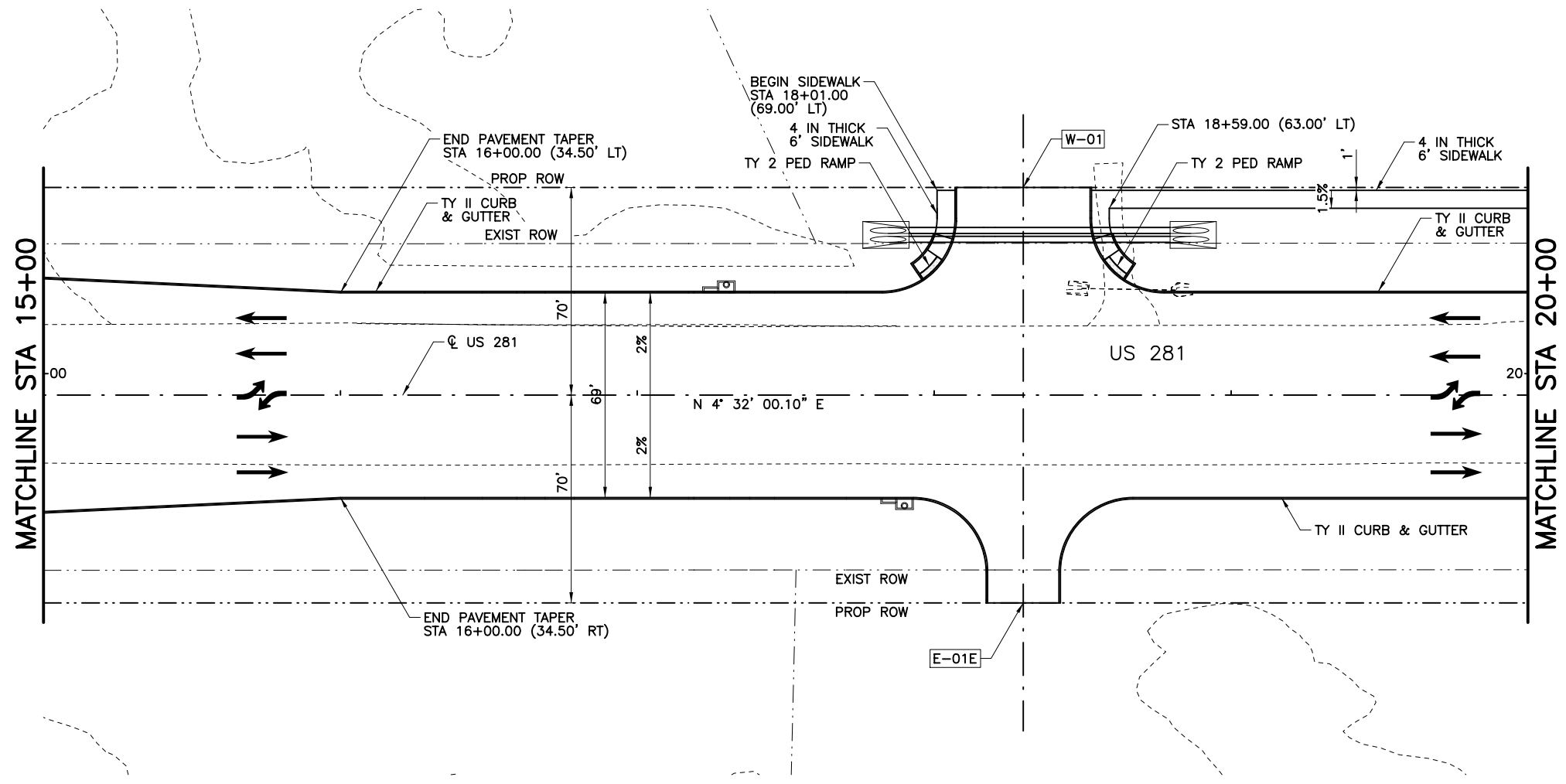
ROADWAY PLAN & PROFILE

STA 10+00 TO STA 15+00

Designed: CPY	FED. RD. DIST. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 107		



1/31/2023 3:37:14 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED RIPRAP
 - PROPOSED STAMPED CONCRETE RIPRAP
 - PROPOSED RAISED ISLAND
 - DRIVEWAY ID

- NOTES:**
1. ALL STATIONS AND OFFSETS ARE FROM C US 281 UNLESS NOTED OTHERWISE.
 2. ALL LINEAR DIMENSIONS ARE TO THE FACE OF CURB.
 3. SEE CROSS STREETS PLAN & PROFILE SHEET FOR ADDITIONAL CROSS STREET INFORMATION.
 4. SEE DRIVEWAY DETAILS SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
 5. SEE MISCELLANEOUS DETAILS SHEETS FOR ADDITIONAL MAILBOX INFORMATION.
 6. SEE DRAINAGE DETAILS FOR ADDITIONAL INFORMATION.
 7. SEE SIDEWALK WALL/RETAINING WALL DETAILS FOR ADDITIONAL INFORMATION.



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741

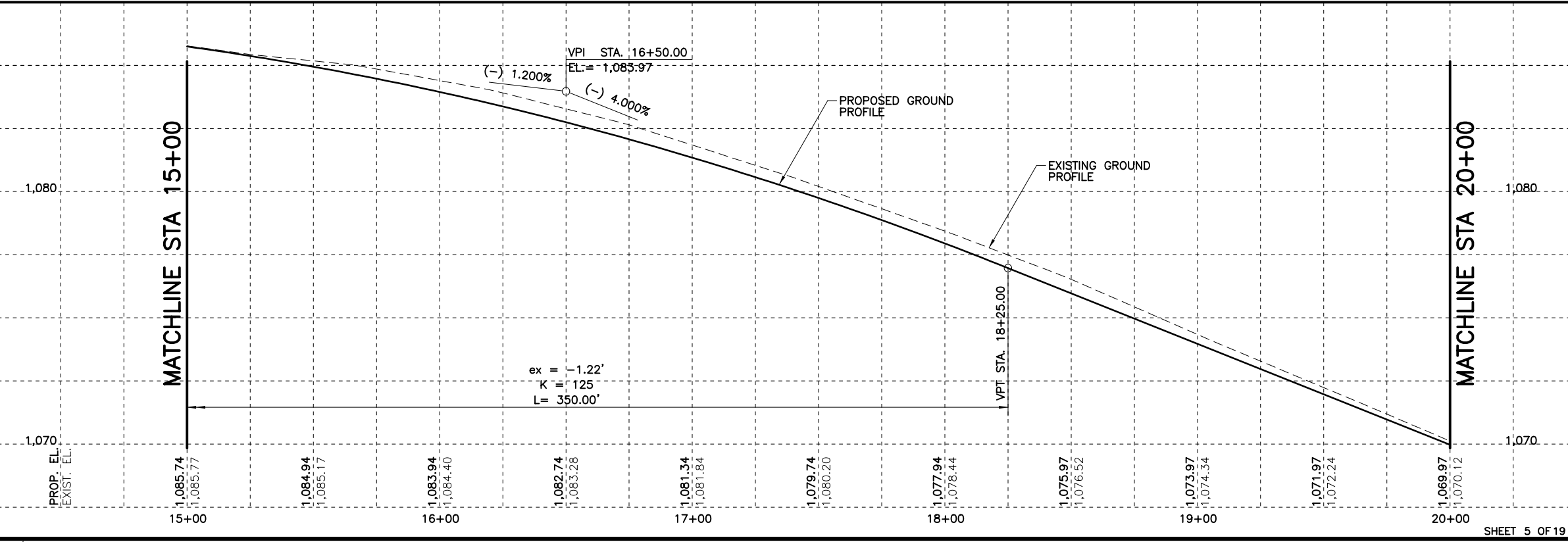


US 281

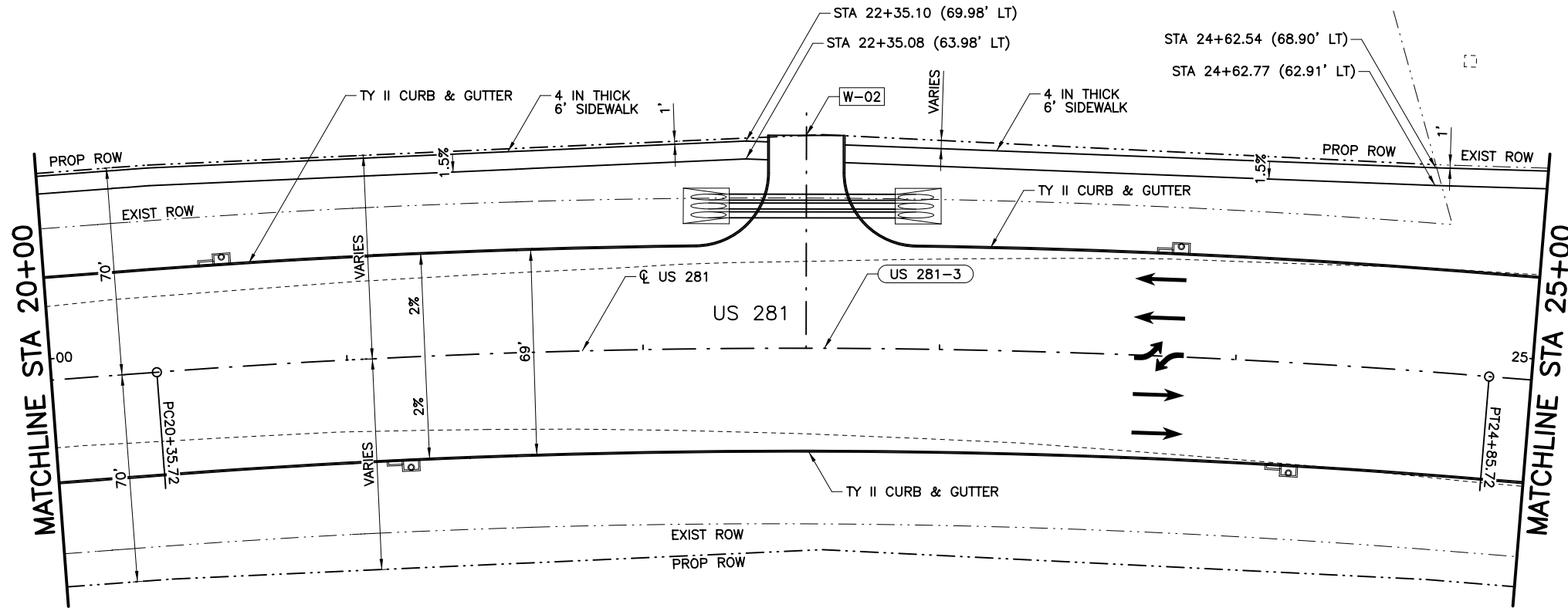
ROADWAY PLAN & PROFILE

STA 15+00 TO STA 20+00

Designed: CPY	FED. RD. DIST. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 108		

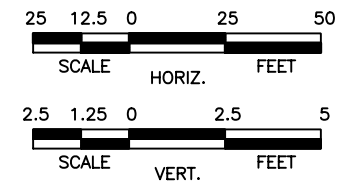
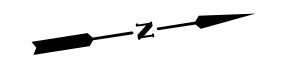


1/31/2023 3:37:21 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:



US 281-3
 PI STATION = 22+61.19
 NORTHING = 10,349,067.6084
 EASTING = 2,970,835.9416
 DELTA = 9° 00' 00" (RT)
 RADIUS = 2,864.79'
 D = 2' 00' 00"
 TANGENT = 225.46'
 LENGTH = 450.00'

ex = 1.65'
 K = 121
 L = 400.00'



LEGEND

- EXISTING LANE
- PROPOSED LANE
- PROPOSED RIPRAP
- PROPOSED STAMPED CONCRETE RIPRAP
- PROPOSED RAISED ISLAND
- DRIVEWAY ID

NOTES:

1. ALL STATIONS AND OFFSETS ARE FROM C US 281 UNLESS NOTED OTHERWISE.
2. ALL LINEAR DIMENSIONS ARE TO THE FACE OF CURB.
3. SEE CROSS STREETS PLAN & PROFILE SHEET FOR ADDITIONAL CROSS STREET INFORMATION.
4. SEE DRIVEWAY DETAILS SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
5. SEE MISCELLANEOUS DETAILS SHEETS FOR ADDITIONAL MAILBOX INFORMATION.
6. SEE DRAINAGE DETAILS FOR ADDITIONAL INFORMATION.
7. SEE SIDEWALK WALL/RETAINING WALL DETAILS FOR ADDITIONAL INFORMATION.



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741

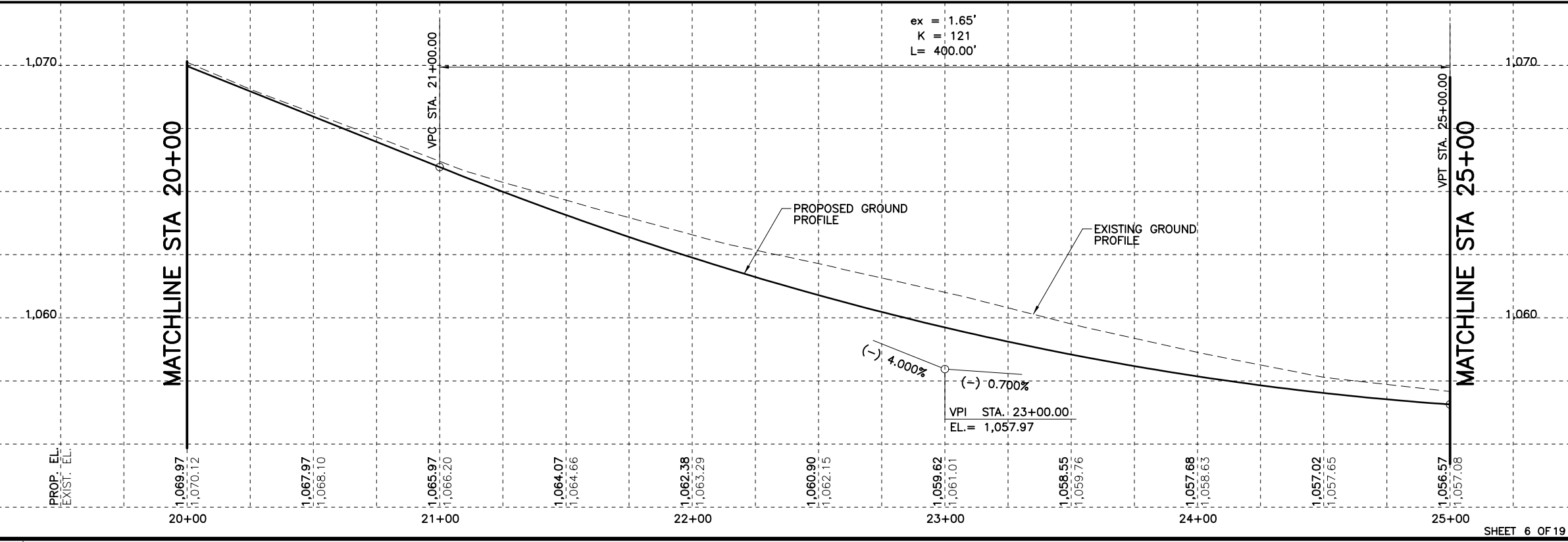


US 281

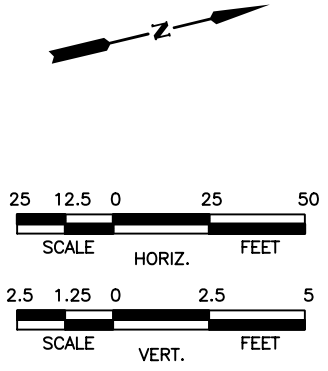
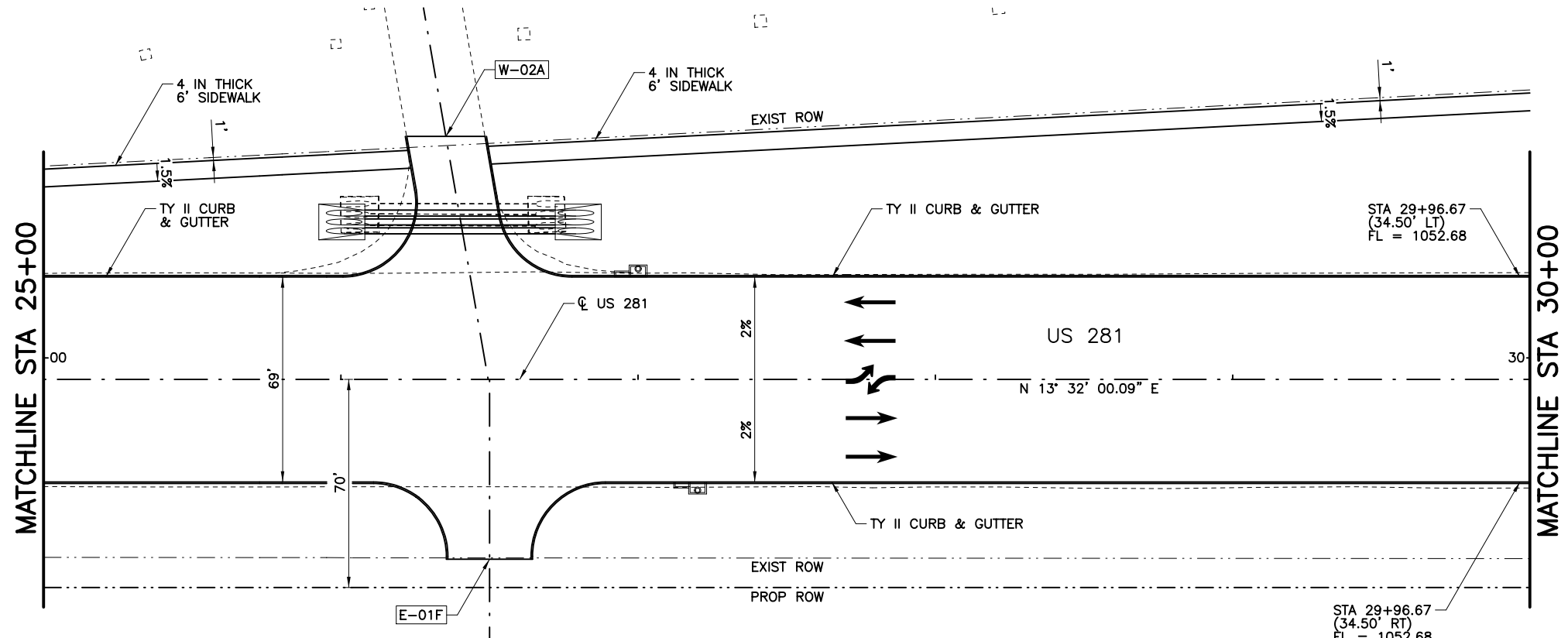
ROADWAY PLAN & PROFILE

STA 20+00 TO STA 25+00

Designed: CPY	FED. RD. DIST. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 109		



1/31/2023 3:37:25 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcf
 pw:/



LEGEND

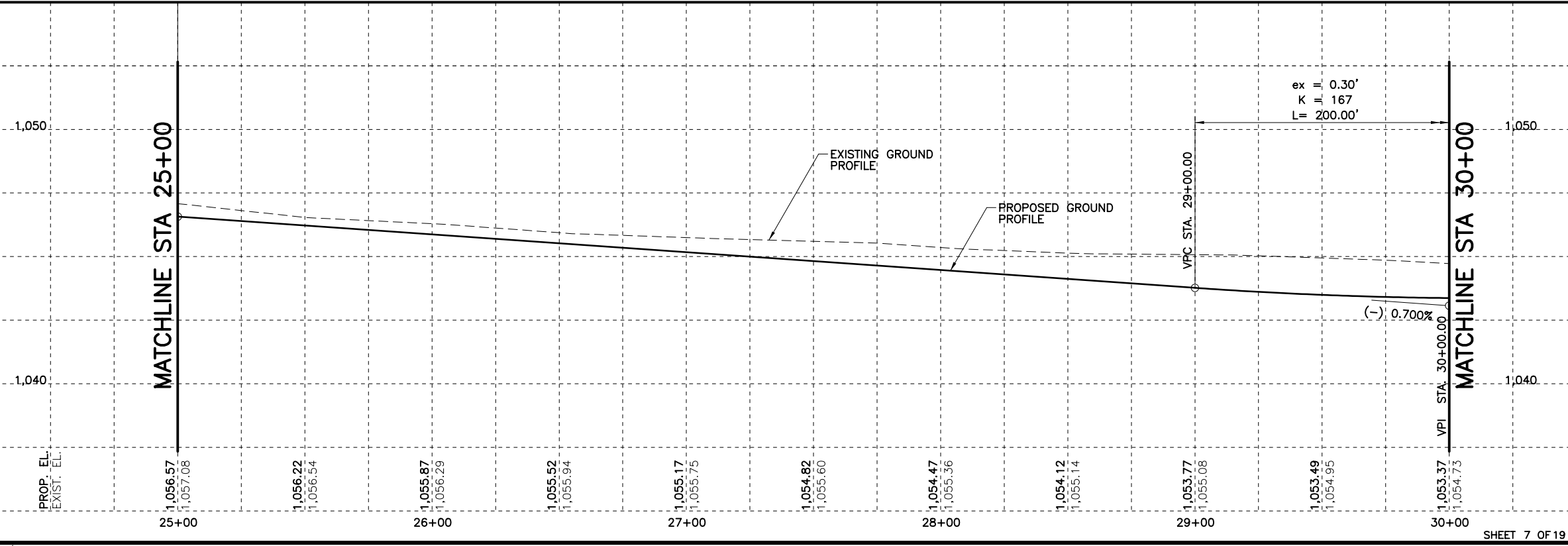
- EXISTING LANE
- PROPOSED LANE
- PROPOSED RIPRAP
- PROPOSED STAMPED CONCRETE RIPRAP
- PROPOSED RAISED ISLAND
- DRIVEWAY ID

NOTES:

1. ALL STATIONS AND OFFSETS ARE FROM C US 281 UNLESS NOTED OTHERWISE.
2. ALL LINEAR DIMENSIONS ARE TO THE FACE OF CURB.
3. SEE CROSS STREETS PLAN & PROFILE SHEET FOR ADDITIONAL CROSS STREET INFORMATION.
4. SEE DRIVEWAY DETAILS SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
5. SEE MISCELLANEOUS DETAILS SHEETS FOR ADDITIONAL MAILBOX INFORMATION.
6. SEE DRAINAGE DETAILS FOR ADDITIONAL INFORMATION.
7. SEE SIDEWALK WALL/RETAINING WALL DETAILS FOR ADDITIONAL INFORMATION.



Kristen L. Perry



NO.	REVISION	BY	DATE



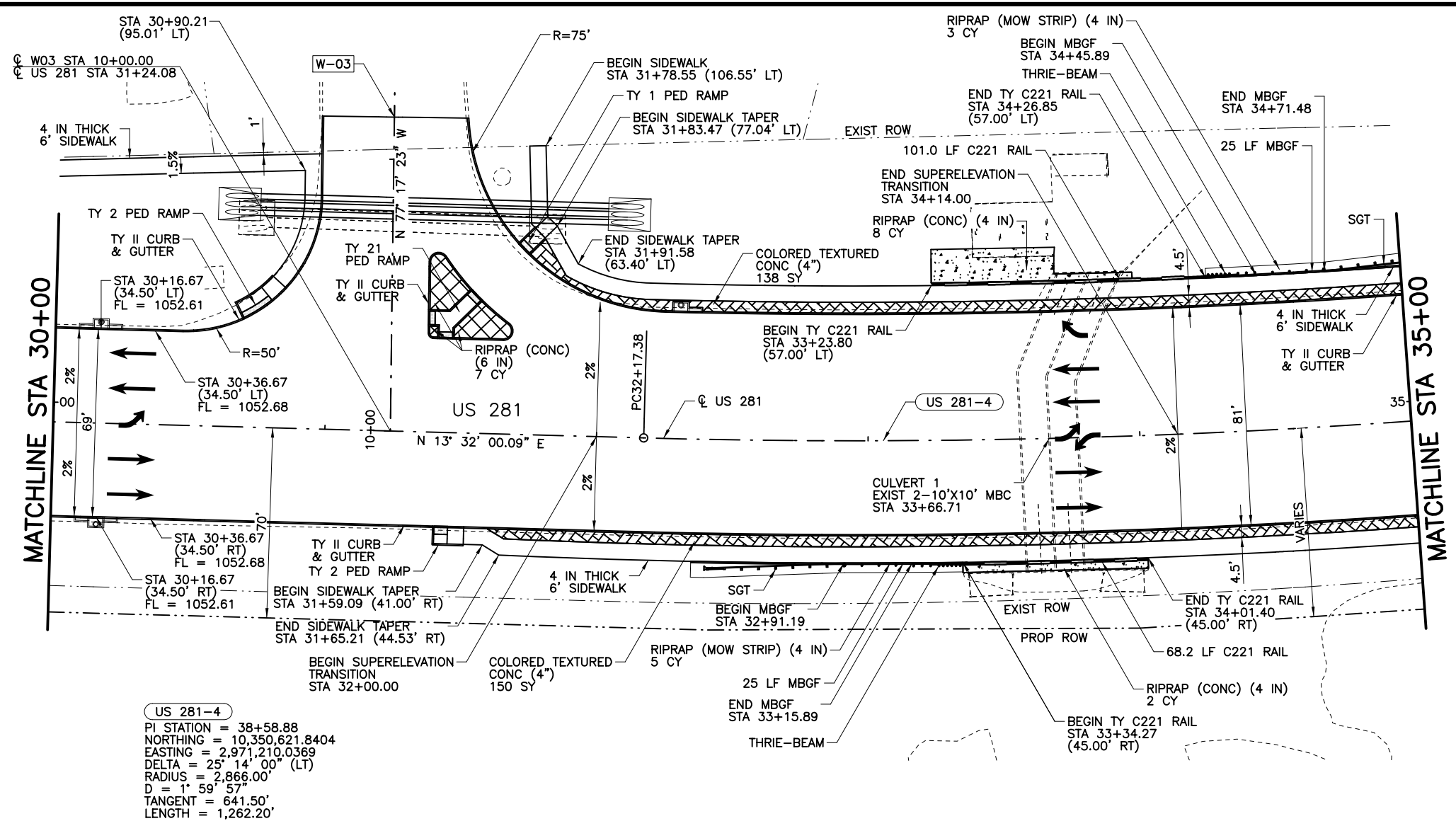
©2023 Texas Department of Transportation
US 281

ROADWAY PLAN & PROFILE

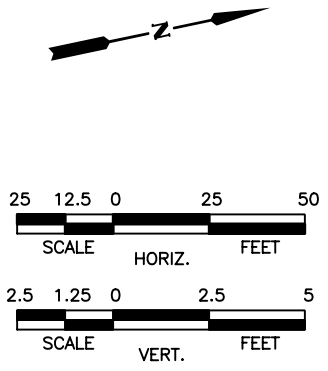
STA 25+00 TO STA 30+00

Designed:	CPY	FED. AID DIST. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	CPY	6	TEXAS		US 281		
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	CPY	BWD	LAMPASAS	0251	06	036	110

1/31/2023 3:37:31 PM kperry
cp/bw_ANSIB.tbl
cp/pdf_ANSIB.plt/cfg
pw:/



US 281-4
 PI STATION = 38+58.88
 NORTHING = 10,350,621.8404
 EASTING = 2,971,210.0369
 DELTA = 25° 14' 00" (LT)
 RADIUS = 2,866.00'
 D = 1' 59' 57"
 TANGENT = 641.50'
 LENGTH = 1,262.20'

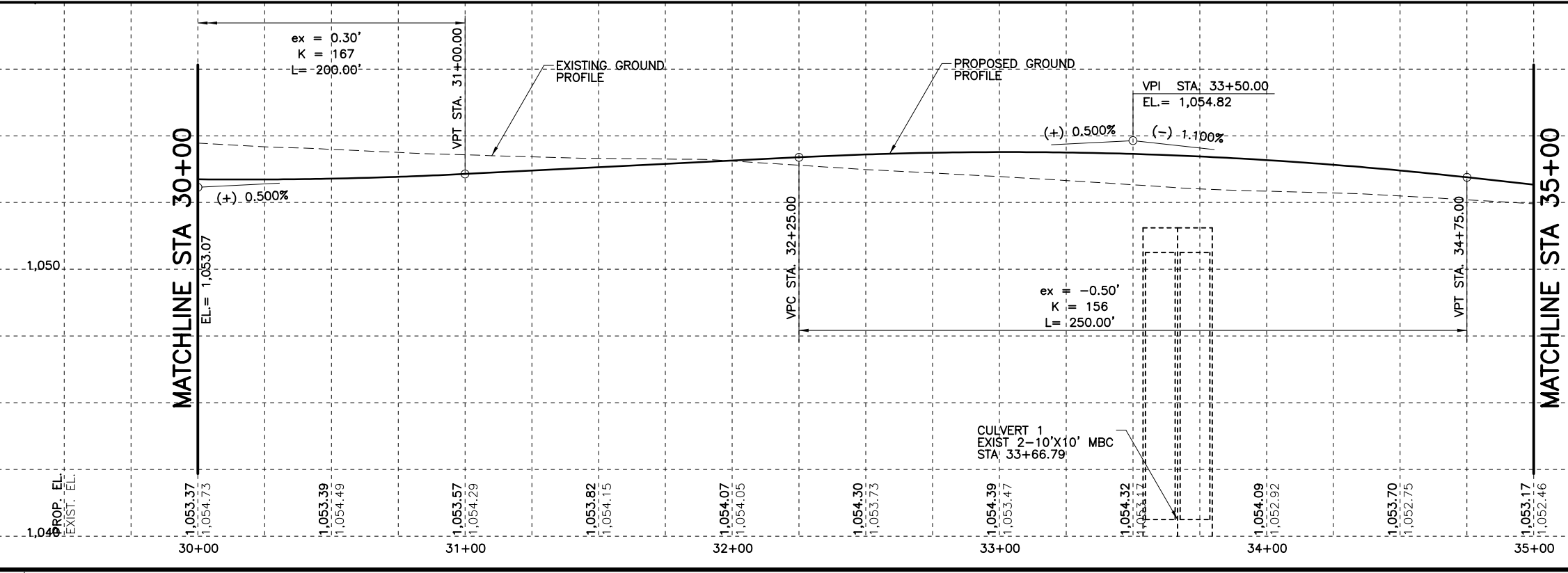


- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED RIPRAP
 - PROPOSED STAMPED CONCRETE RIPRAP
 - PROPOSED RAISED ISLAND
 - DRIVEWAY ID

- NOTES:**
1. ALL STATIONS AND OFFSETS ARE FROM ϕ US 281 UNLESS NOTED OTHERWISE.
 2. ALL LINEAR DIMENSIONS ARE TO THE FACE OF CURB.
 3. SEE CROSS STREETS PLAN & PROFILE SHEET FOR ADDITIONAL CROSS STREET INFORMATION.
 4. SEE DRIVEWAY DETAILS SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
 5. SEE MISCELLANEOUS DETAILS SHEETS FOR ADDITIONAL MAILBOX INFORMATION.
 6. SEE DRAINAGE DETAILS FOR ADDITIONAL INFORMATION.
 7. SEE SIDEWALK WALL/RETAINING WALL DETAILS FOR ADDITIONAL INFORMATION.



Kristin L. Perry



NO.	REVISION	BY	DATE

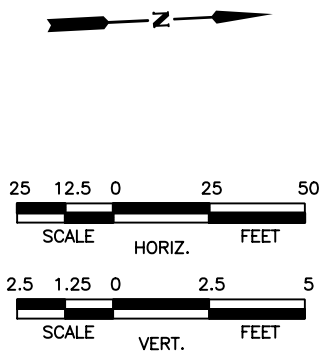
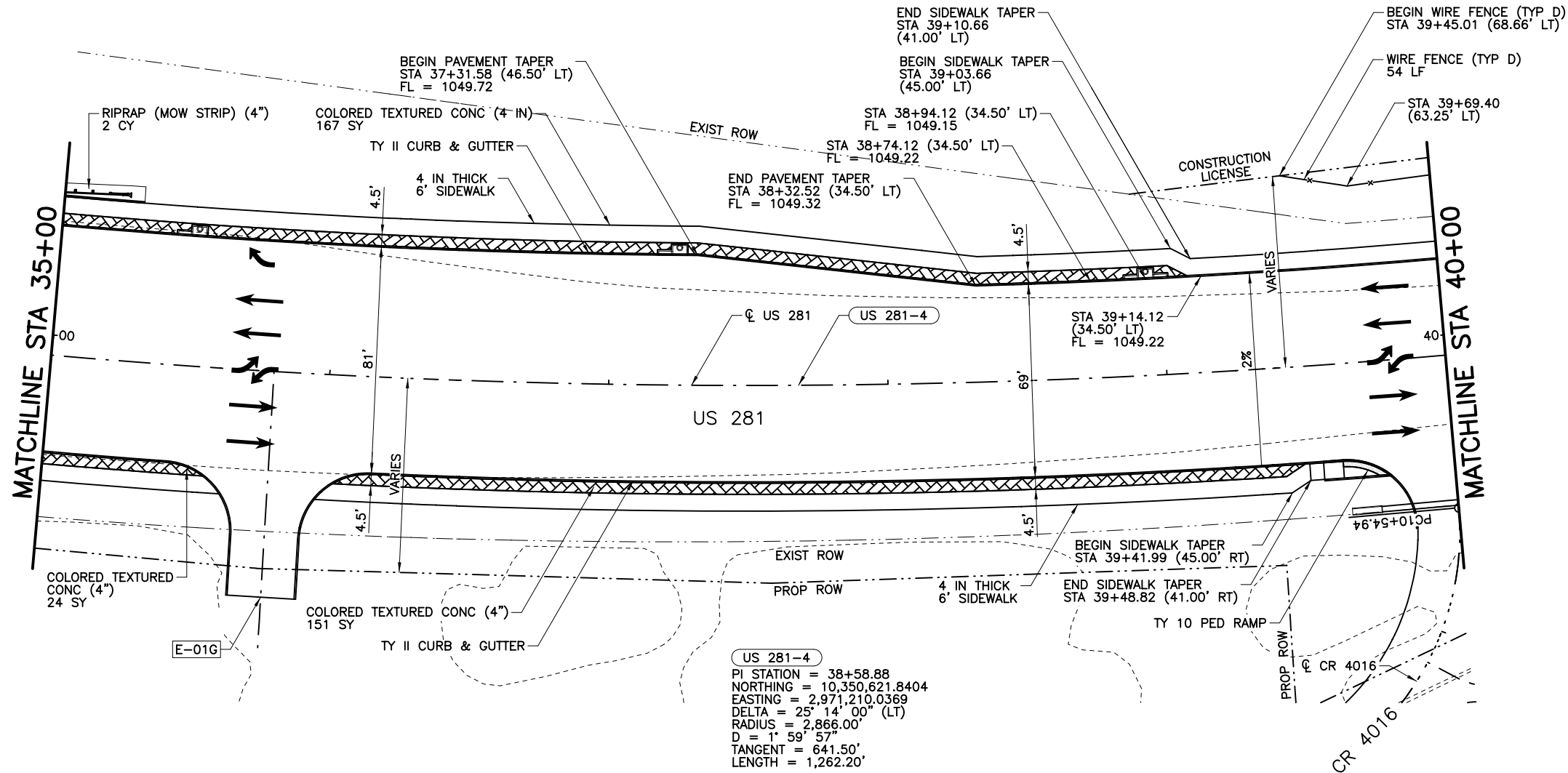


©2023 Texas Department of Transportation
 US 281

ROADWAY PLAN & PROFILE

STA 30+00 TO STA 35+00

Designed:	CPY	FED. RD. DIST. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	CPY	6	TEXAS		US 281		
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	CPY	BWD	LAMPASAS	0251	06	036	111

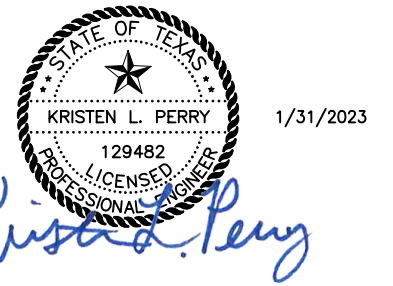


- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED RIPRAP
 - PROPOSED STAMPED CONCRETE RIPRAP
 - PROPOSED RAISED ISLAND
 - DRIVEWAY ID

- NOTES:**
1. ALL STATIONS AND OFFSETS ARE FROM ϕ US 281 UNLESS NOTED OTHERWISE.
 2. ALL LINEAR DIMENSIONS ARE TO THE FACE OF CURB.
 3. SEE CROSS STREETS PLAN & PROFILE SHEET FOR ADDITIONAL CROSS STREET INFORMATION.
 4. SEE DRIVEWAY DETAILS SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
 5. SEE MISCELLANEOUS DETAILS SHEETS FOR ADDITIONAL MAILBOX INFORMATION.
 6. SEE DRAINAGE DETAILS FOR ADDITIONAL INFORMATION.
 7. SEE SIDEWALK WALL/RETAINING WALL DETAILS FOR ADDITIONAL INFORMATION.

US 281-4
 PI STATION = 38+58.88
 NORTHING = 10,350,621.8404
 EASTING = 2,971,210.0369
 DELTA = 25° 14' 00" (LT)
 RADIUS = 2,866.00'
 D = 1° 59' 57"
 TANGENT = 641.50'
 LENGTH = 1,262.20'

ex = 0.64'
 K = 176
 L = 300.00'



NO.	REVISION	BY	DATE

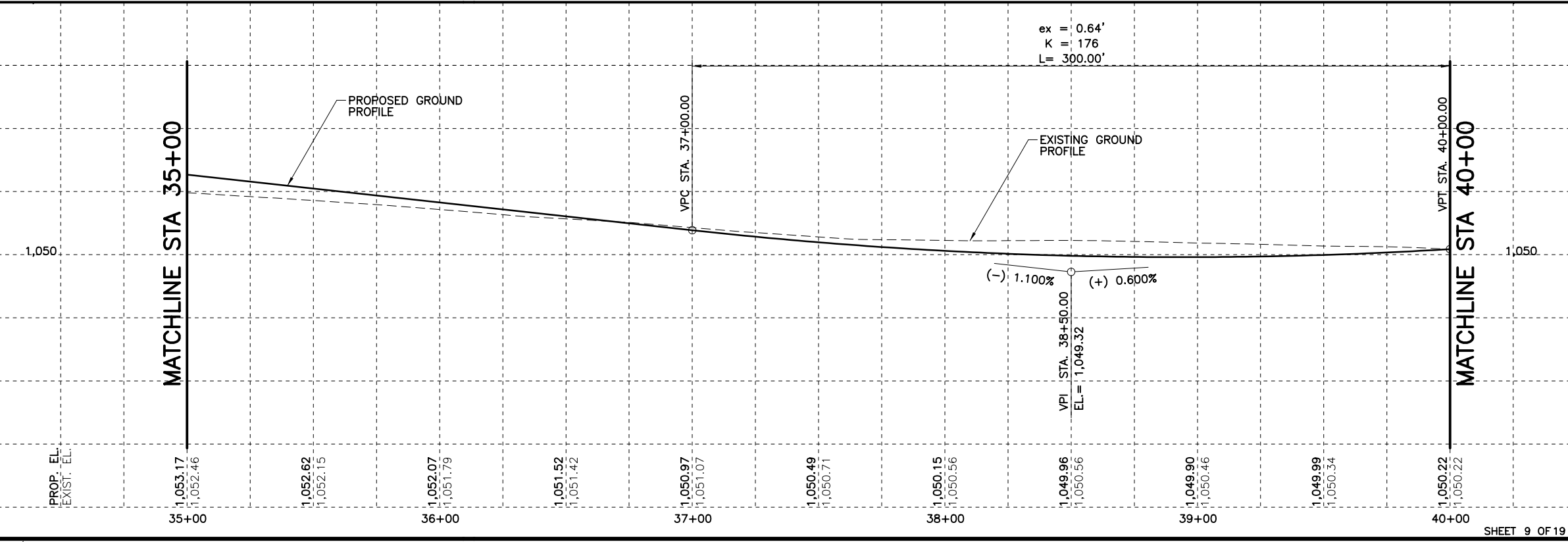


©2023 Texas Department of Transportation
 US 281

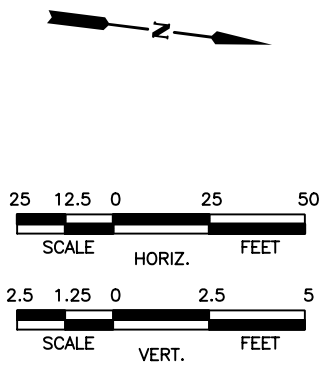
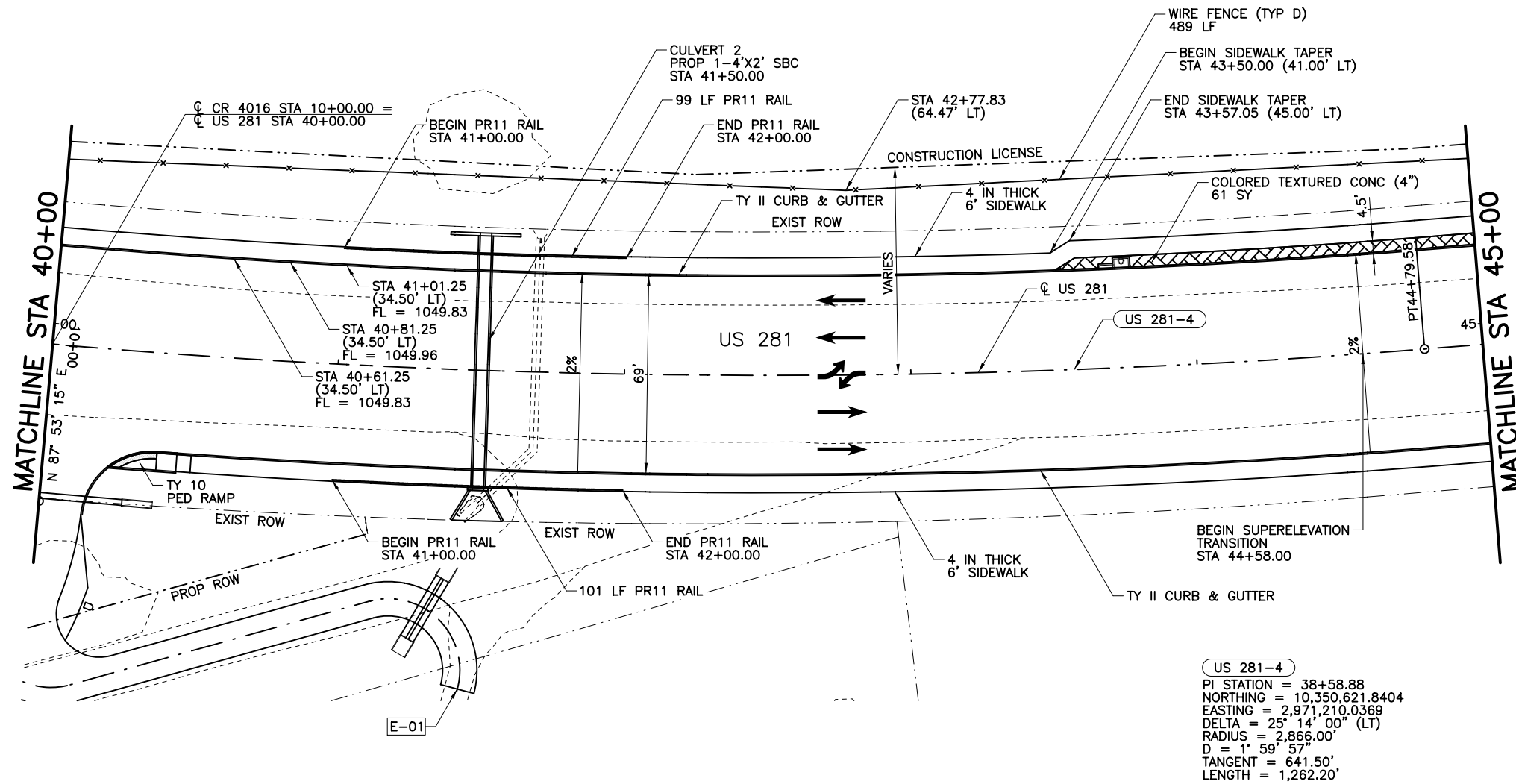
ROADWAY PLAN & PROFILE

STA 35+00 TO STA 40+00

Designed: CPY	FED. RD. DIST. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 112		



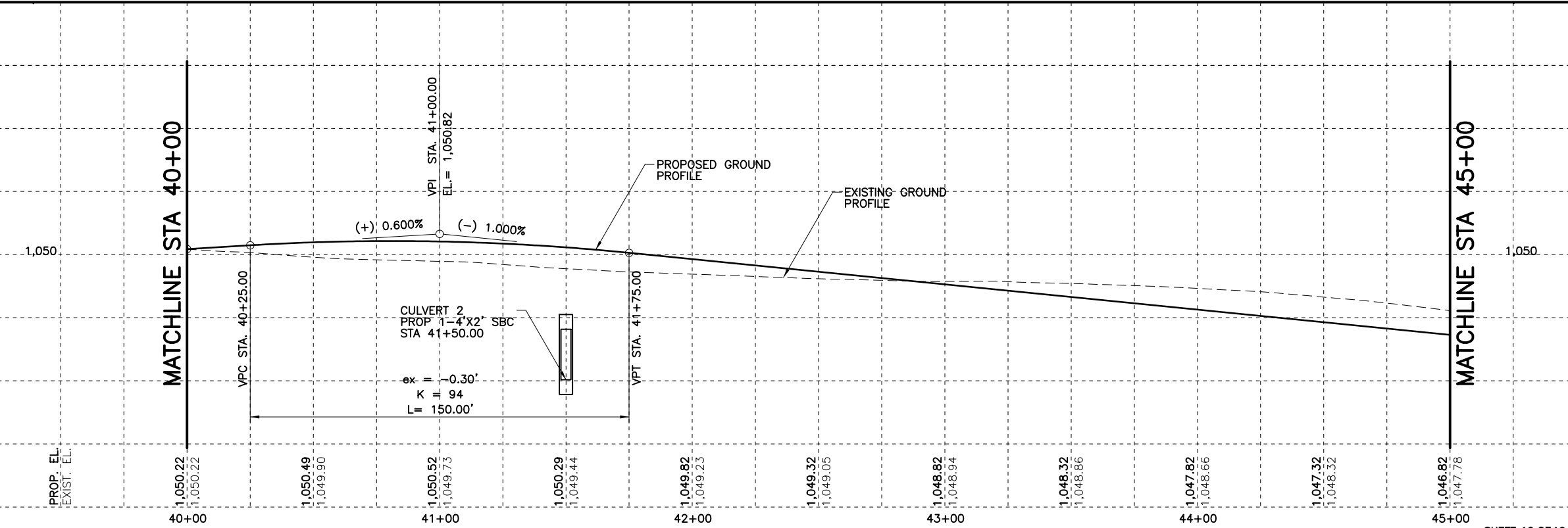
1/31/2023 3:37:42 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfp
 pw:/



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED RIPRAP
 - PROPOSED STAMPED CONCRETE RIPRAP
 - PROPOSED RAISED ISLAND
 - DRIVEWAY ID

- NOTES:**
1. ALL STATIONS AND OFFSETS ARE FROM C US 281 UNLESS NOTED OTHERWISE.
 2. ALL LINEAR DIMENSIONS ARE TO THE FACE OF CURB.
 3. SEE CROSS STREETS PLAN & PROFILE SHEET FOR ADDITIONAL CROSS STREET INFORMATION.
 4. SEE DRIVEWAY DETAILS SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
 5. SEE MISCELLANEOUS DETAILS SHEETS FOR ADDITIONAL MAILBOX INFORMATION.
 6. SEE DRAINAGE DETAILS FOR ADDITIONAL INFORMATION.
 7. SEE SIDEWALK WALL/RETAINING WALL DETAILS FOR ADDITIONAL INFORMATION.

US 281-4
 PI STATION = 38+58.88
 NORTHING = 10,350,621.8404
 EASTING = 2,971,210.0369
 DELTA = 25° 14' 00" (LT)
 RADIUS = 2,866.00'
 D = 1' 59' 57"
 TANGENT = 641.50'
 LENGTH = 1,262.20'



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE



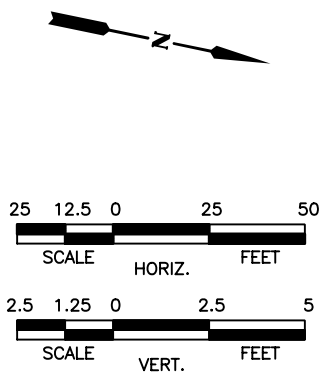
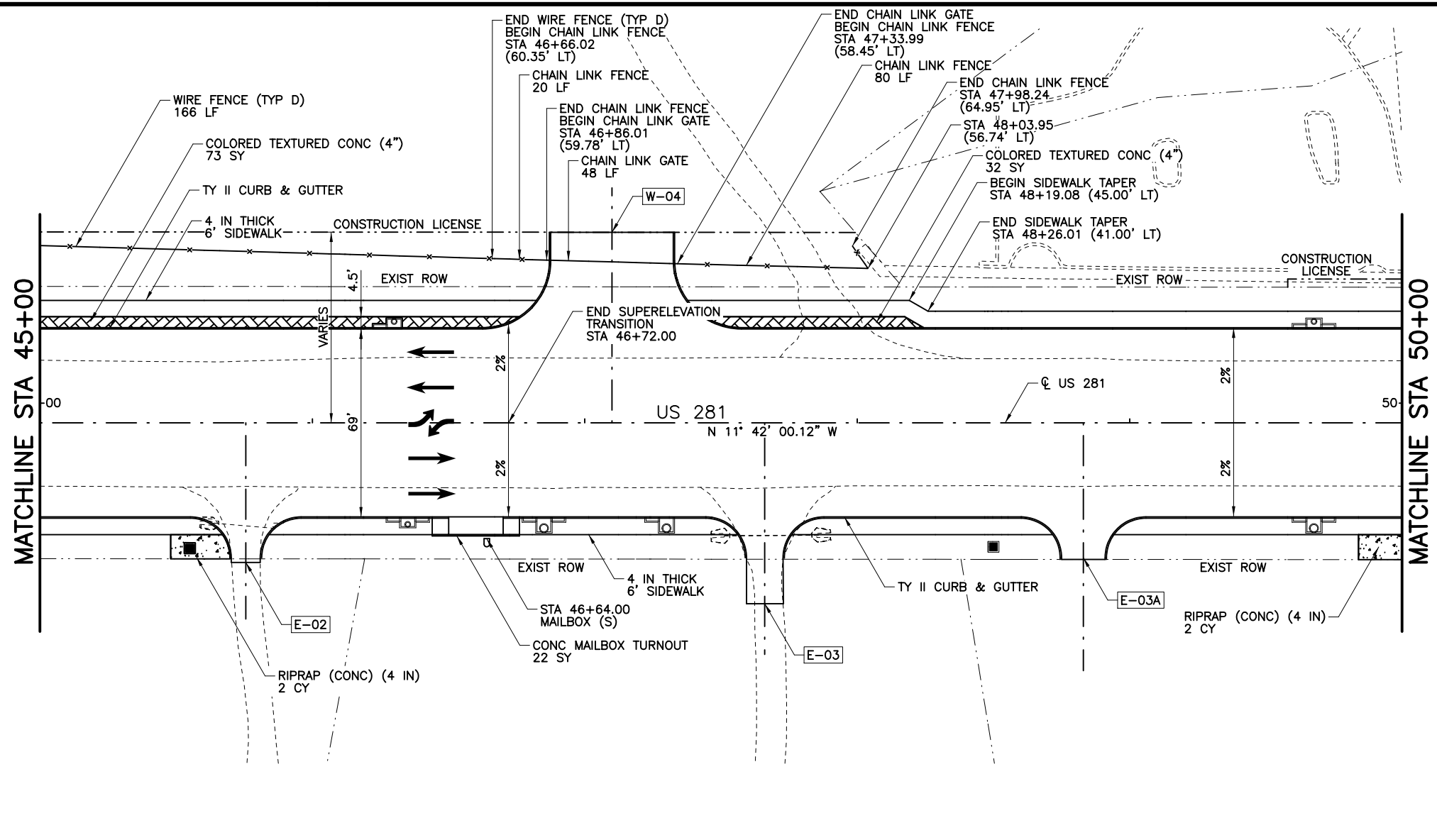
©2023 Texas Department of Transportation

US 281
ROADWAY PLAN & PROFILE

STA 40+00 TO STA 45+00

Designed:	CPY	FED. RD. DIST. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	CPY	6	TEXAS		US 281		
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	CPY	BWD	LAMPASAS	0251	06	036	113

1/31/2023 3:37:51 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED RIPRAP
 - PROPOSED STAMPED CONCRETE RIPRAP
 - PROPOSED RAISED ISLAND
 - DRIVEWAY ID

- NOTES:**
1. ALL STATIONS AND OFFSETS ARE FROM ϕ US 281 UNLESS NOTED OTHERWISE.
 2. ALL LINEAR DIMENSIONS ARE TO THE FACE OF CURB.
 3. SEE CROSS STREETS PLAN & PROFILE SHEET FOR ADDITIONAL CROSS STREET INFORMATION.
 4. SEE DRIVEWAY DETAILS SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
 5. SEE MISCELLANEOUS DETAILS SHEETS FOR ADDITIONAL MAILBOX INFORMATION.
 6. SEE DRAINAGE DETAILS FOR ADDITIONAL INFORMATION.
 7. SEE SIDEWALK WALL/RETAINING WALL DETAILS FOR ADDITIONAL INFORMATION.



Kristen L. Perry
1/31/2023

NO.	REVISION	BY	DATE

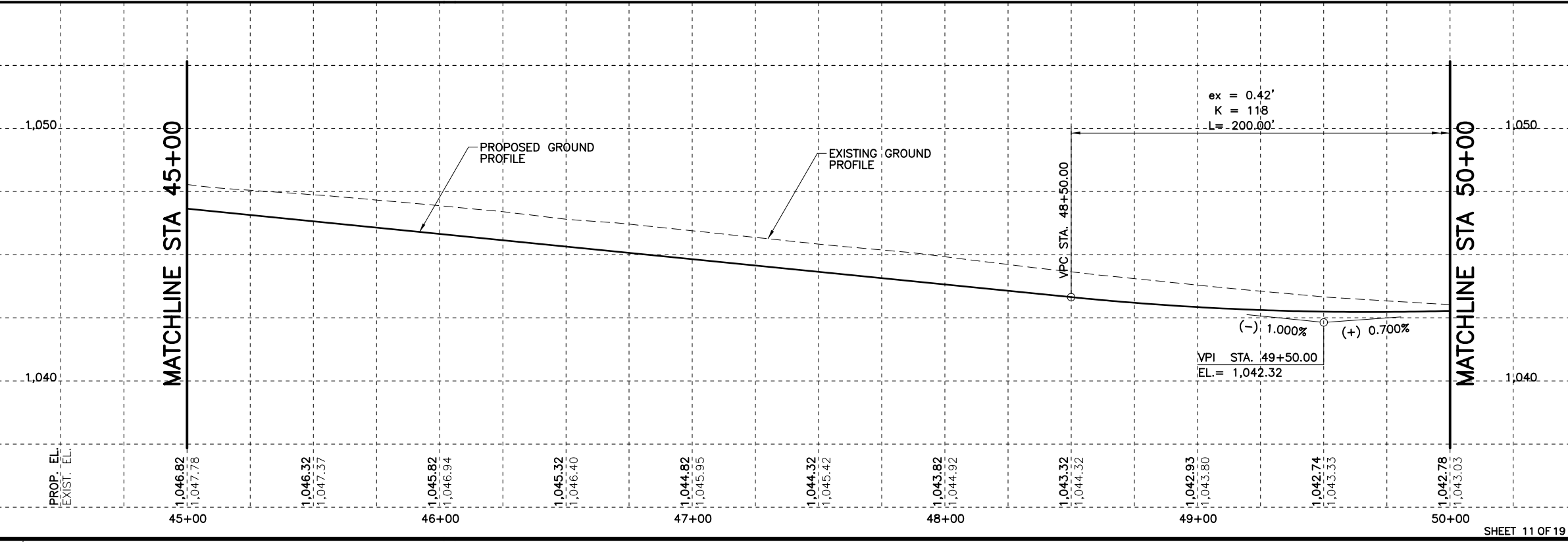


©2023 Texas Department of Transportation
US 281

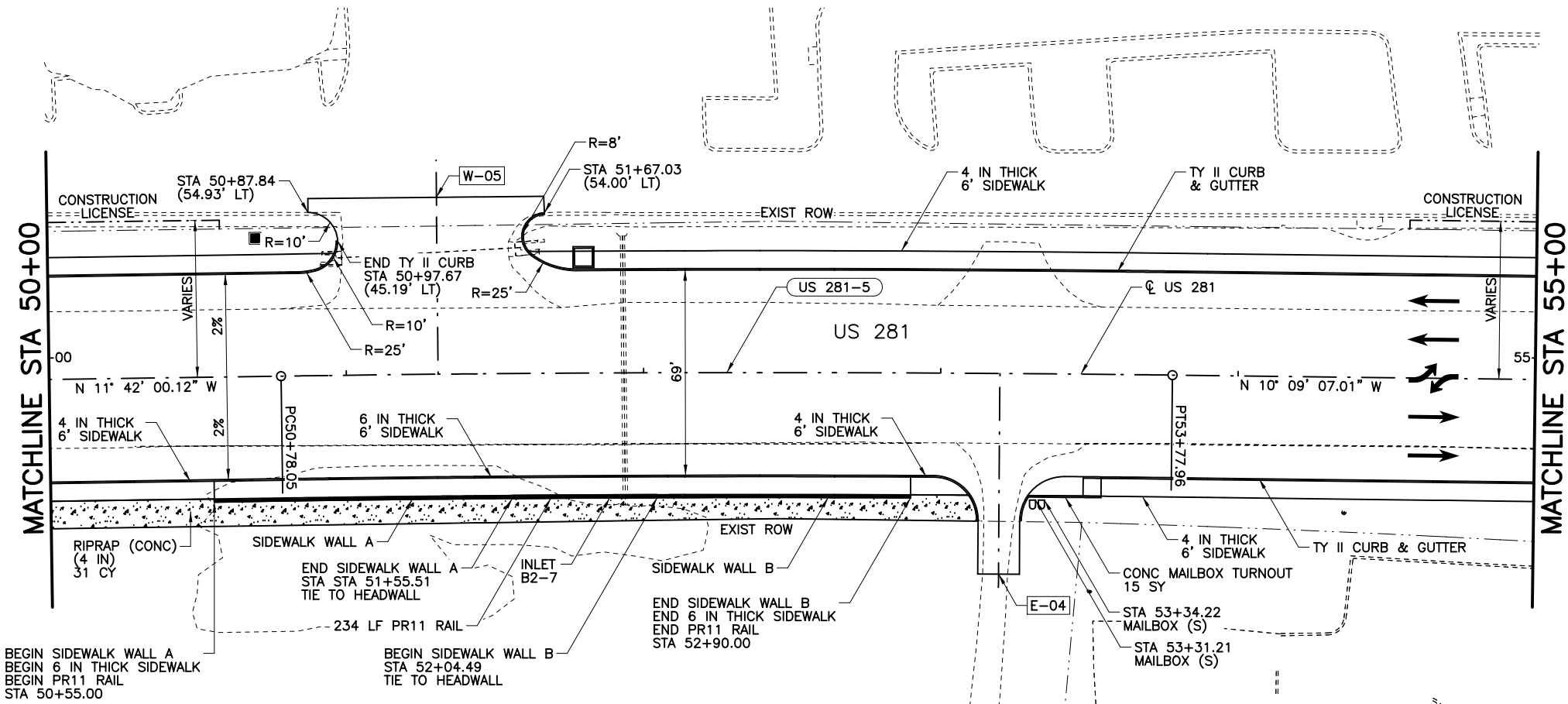
ROADWAY PLAN & PROFILE

STA 45+00 TO STA 50+00

Designed: CPY	FED. RD. DIST. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 114		



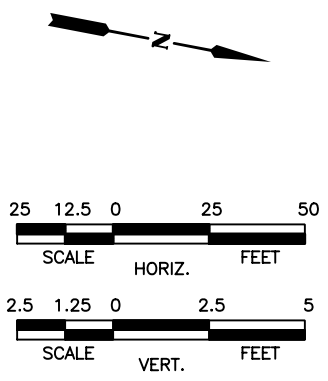
1/31/2023 3:37:58 PM kperry
cpvbw_ANSIB.tbl
cpypdf_ANSIB.pltcfgrw:/



SIDEWALK WALL SUMMARY TABLE

WALL ID	CONC CURB (TY F2)			CONC CURB (TY F3)		
	FROM STA	TO STA	LF	FROM STA	TO STA	LF
SIDEWALK WALL A	50+55.00	51+19.00	64.0	51+19.00	51+55.51	36.5
SIDEWALK WALL B	52+25.00	52+90.00	65.0	52+04.49	52+25.00	20.5

US 281-5
 PI STATION = 52+28.01
 NORTHING = 10,351,982.8974
 EASTING = 2,970,928.1747
 DELTA = 1° 32' 53" (RT)
 RADIUS = 11,100.00'
 D = 0° 30' 58"
 TANGENT = 149.97'
 LENGTH = 299.91'



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED RIPRAP
 - PROPOSED STAMPED CONCRETE RIPRAP
 - PROPOSED RAISED ISLAND
 - DRIVEWAY ID

- NOTES:**
- ALL STATIONS AND OFFSETS ARE FROM C US 281 UNLESS NOTED OTHERWISE.
 - ALL LINEAR DIMENSIONS ARE TO THE FACE OF CURB.
 - SEE CROSS STREETS PLAN & PROFILE SHEET FOR ADDITIONAL CROSS STREET INFORMATION.
 - SEE DRIVEWAY DETAILS SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
 - SEE MISCELLANEOUS DETAILS SHEETS FOR ADDITIONAL MAILBOX INFORMATION.
 - SEE DRAINAGE DETAILS FOR ADDITIONAL INFORMATION.
 - SEE SIDEWALK WALL/RETAINING WALL DETAILS FOR ADDITIONAL INFORMATION.



Kristen L. Perry
 1/31/2023

NO.	REVISION	BY	DATE

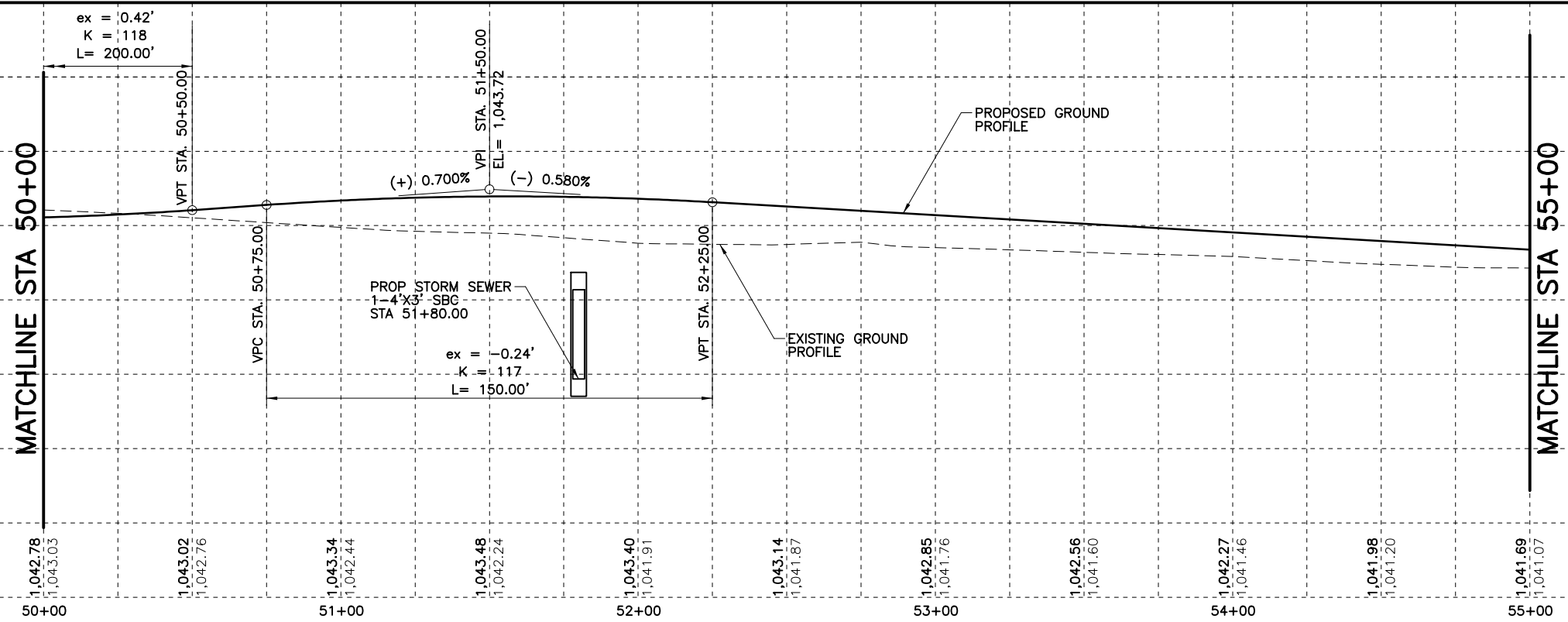


©2023 Texas Department of Transportation
 US 281

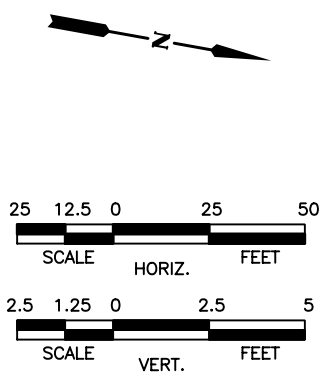
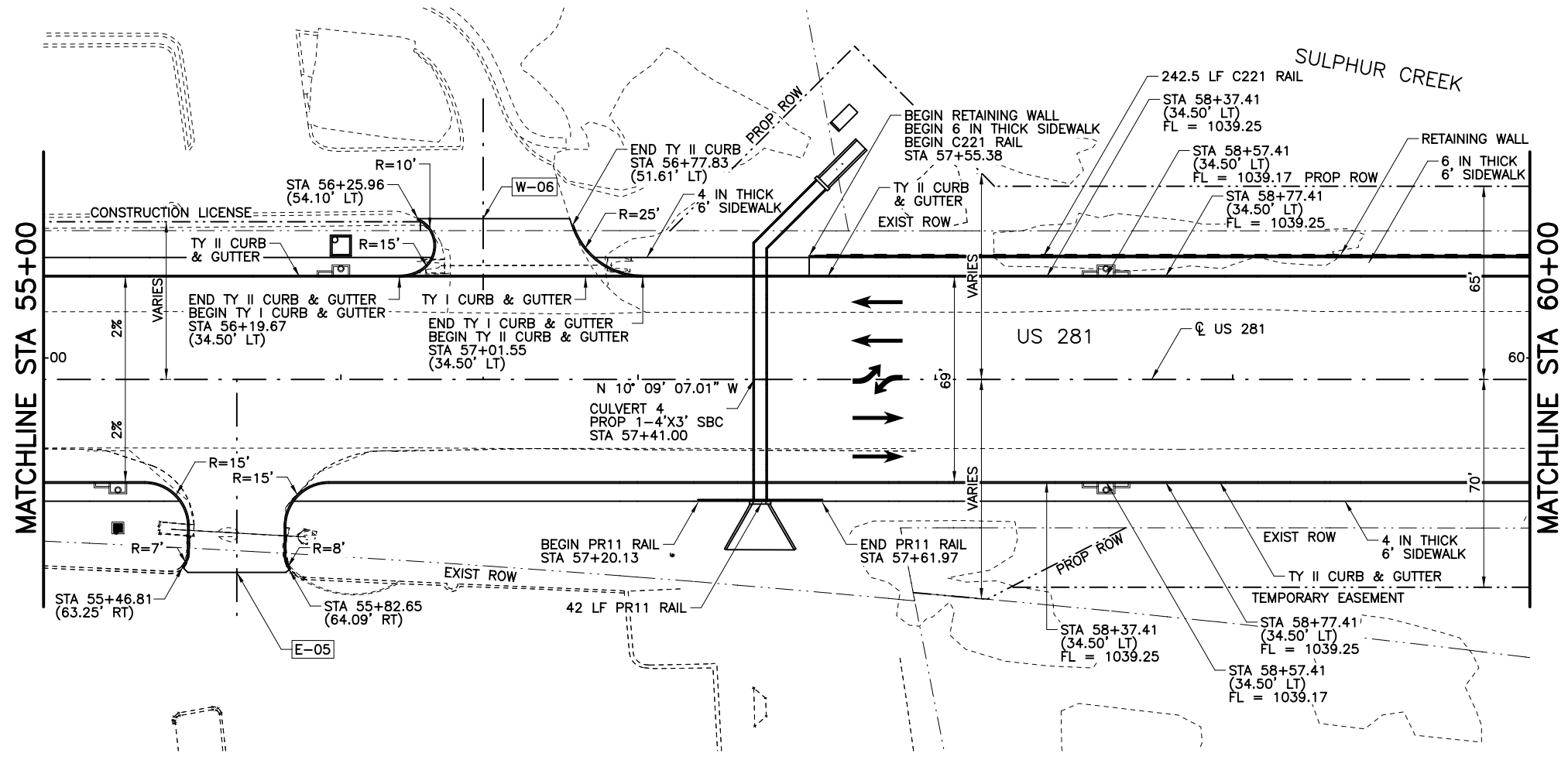
ROADWAY PLAN & PROFILE

STA 50+00 TO STA 55+00

Designed: CPY	FED. RD. DIST. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 115		



1/31/2023 3:38:13 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcf
 pw:/



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED RIPRAP
 - PROPOSED STAMPED CONCRETE RIPRAP
 - PROPOSED RAISED ISLAND
 - DRIVEWAY ID

- NOTES:**
- ALL STATIONS AND OFFSETS ARE FROM CL US 281 UNLESS NOTED OTHERWISE.
 - ALL LINEAR DIMENSIONS ARE TO THE FACE OF CURB.
 - SEE CROSS STREETS PLAN & PROFILE SHEET FOR ADDITIONAL CROSS STREET INFORMATION.
 - SEE DRIVEWAY DETAILS SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
 - SEE MISCELLANEOUS DETAILS SHEETS FOR ADDITIONAL MAILBOX INFORMATION.
 - SEE DRAINAGE DETAILS FOR ADDITIONAL INFORMATION.
 - SEE SIDEWALK WALL/RETAINING WALL DETAILS FOR ADDITIONAL INFORMATION.



Kristen L. Perry
1/31/2023

NO.	REVISION	BY	DATE

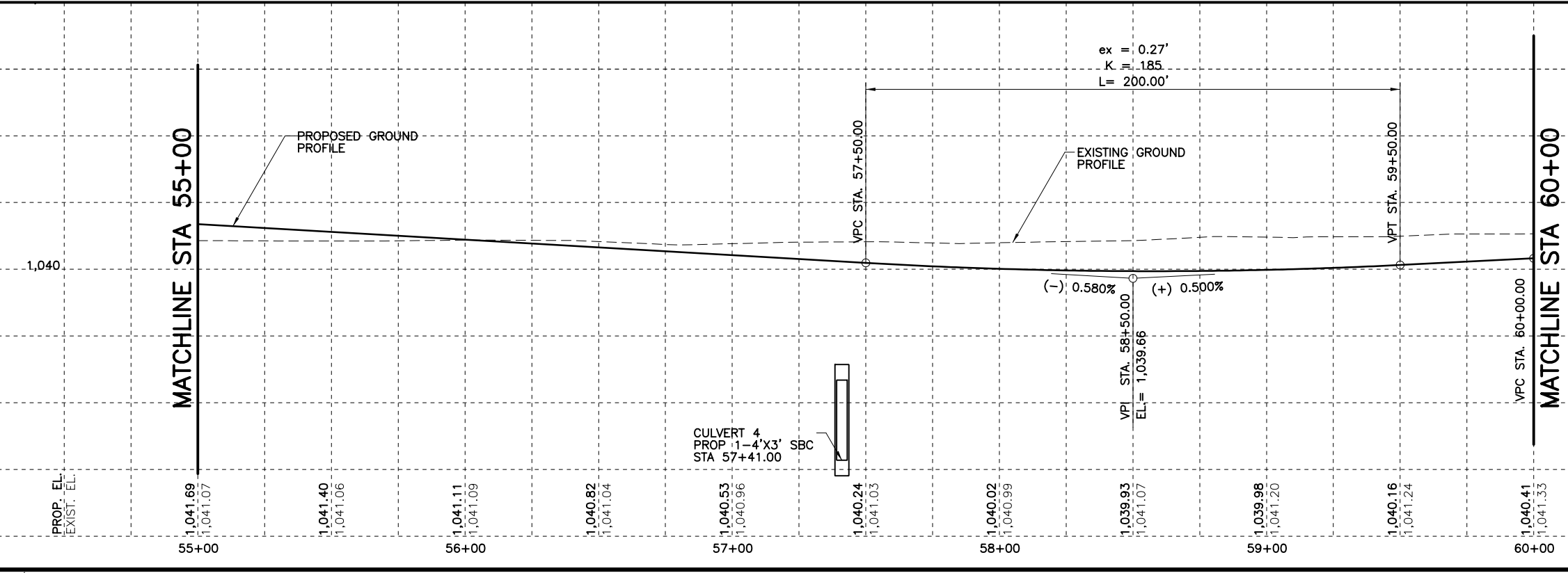


©2023 Texas Department of Transportation
US 281

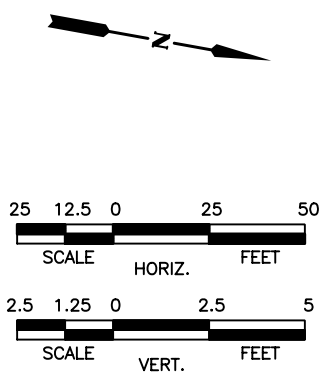
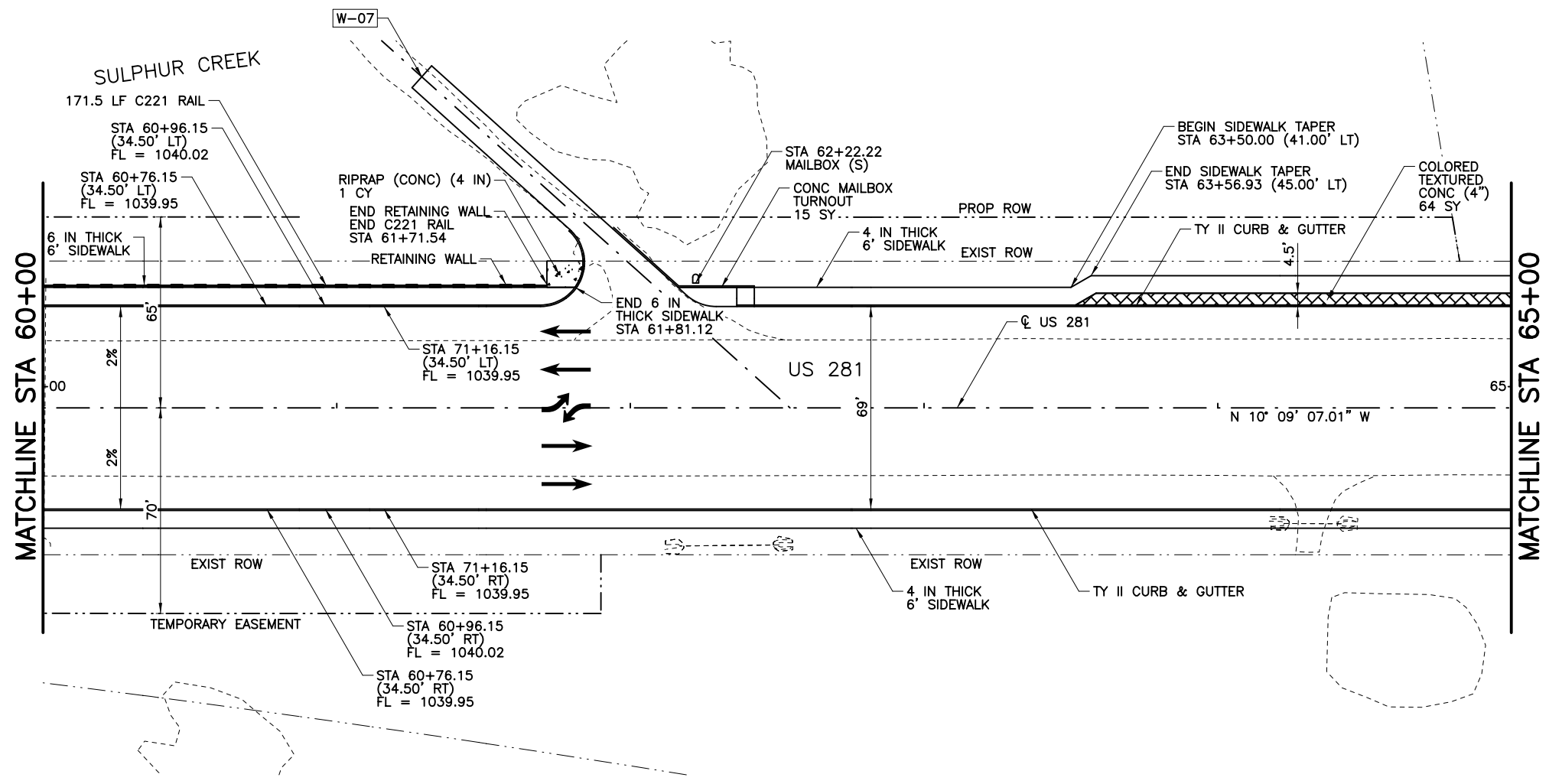
ROADWAY PLAN & PROFILE

STA 55+00 TO STA 60+00

Designed: CPY	FED. RD. DIST. NO.: 6	STATE: TEXAS	FEDERAL AID PROJECT NO.:	HIGHWAY NO.: US 281
Checked: CPY	DIST.:	COUNTY: LAMPASAS	CONTROL NO.: 0251	SECTION NO.: 06
Drawn: CPY	JOB NO.: 036	SHEET NO.: 116		



1/31/2023 3:38:24 PM kperry
cpw:\baw_ansi\ib.tbl
cpw\pdf_ansi\ib.plt
pw:/



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED RIPRAP
 - PROPOSED STAMPED CONCRETE RIPRAP
 - PROPOSED RAISED ISLAND
 - DRIVEWAY ID

- NOTES:**
1. ALL STATIONS AND OFFSETS ARE FROM \odot US 281 UNLESS NOTED OTHERWISE.
 2. ALL LINEAR DIMENSIONS ARE TO THE FACE OF CURB.
 3. SEE CROSS STREETS PLAN & PROFILE SHEET FOR ADDITIONAL CROSS STREET INFORMATION.
 4. SEE DRIVEWAY DETAILS SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
 5. SEE MISCELLANEOUS DETAILS SHEETS FOR ADDITIONAL MAILBOX INFORMATION.
 6. SEE DRAINAGE DETAILS FOR ADDITIONAL INFORMATION.
 7. SEE SIDEWALK WALL/RETAINING WALL DETAILS FOR ADDITIONAL INFORMATION.



Kristen L. Perry
1/31/2023

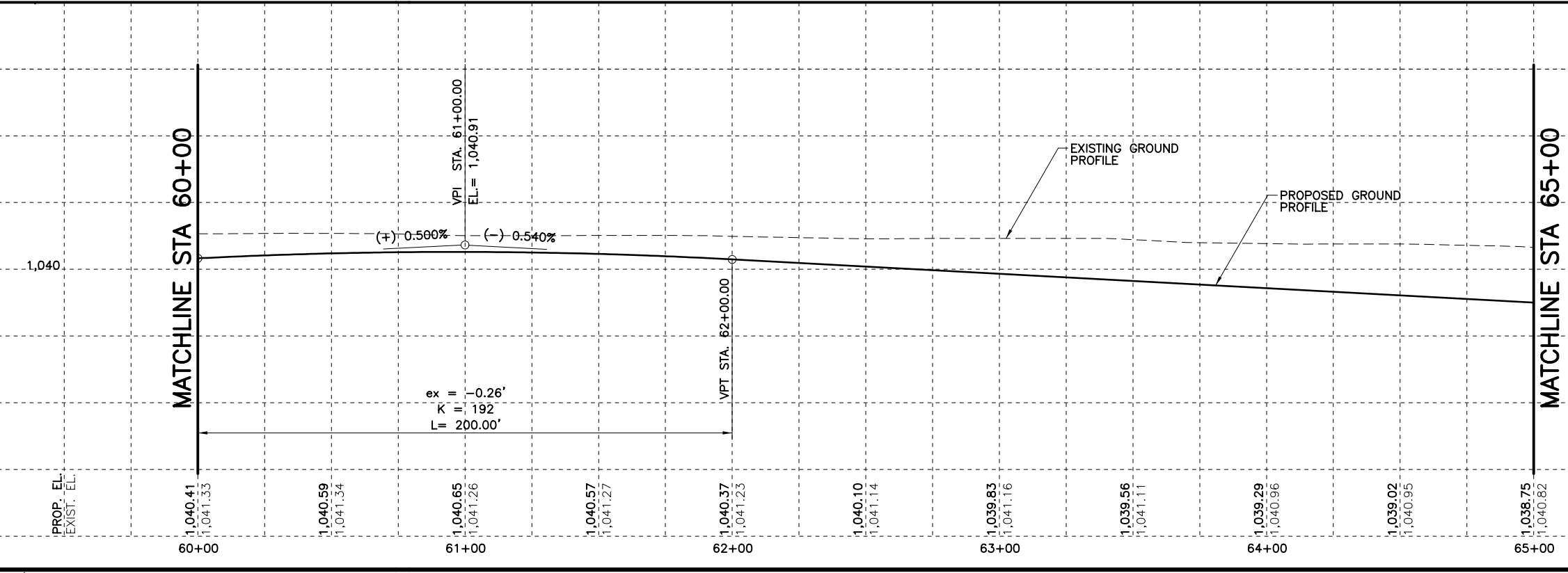
NO.	REVISION	BY	DATE



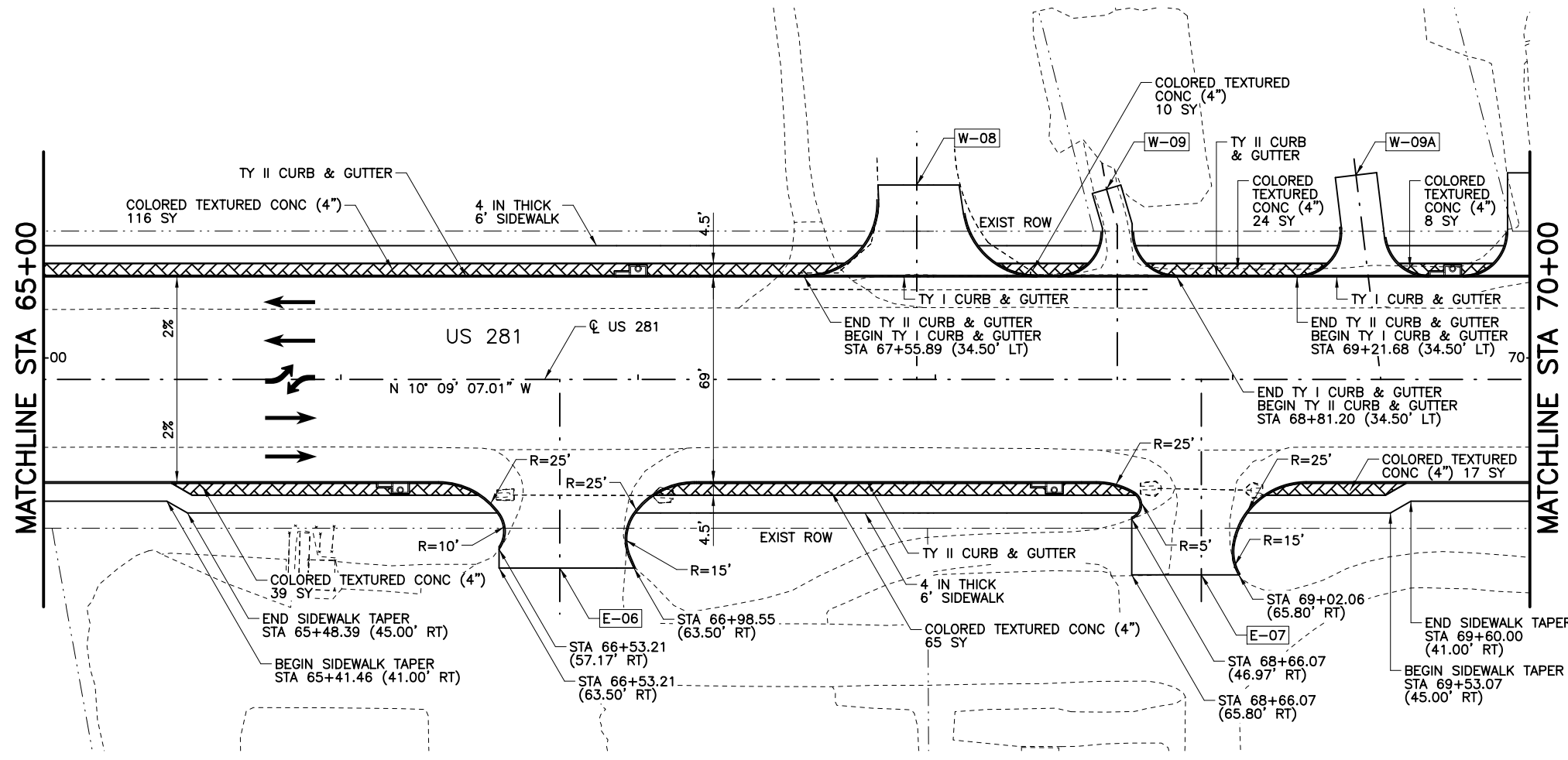
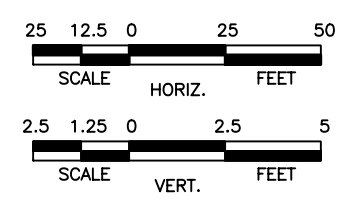
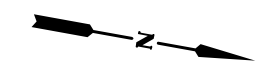
ROADWAY PLAN & PROFILE

STA 60+00 TO STA 65+00

Designed: CPY	FED. RD. DIST. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 117		



1/31/2023 3:38:32 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcf
 pw:/

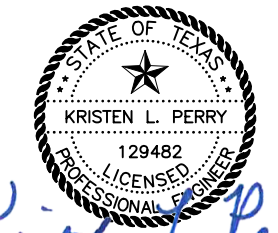


LEGEND

- EXISTING LANE
- PROPOSED LANE
- PROPOSED RIPRAP
- PROPOSED STAMPED CONCRETE RIPRAP
- PROPOSED RAISED ISLAND
- DRIVEWAY ID

NOTES:

1. ALL STATIONS AND OFFSETS ARE FROM C US 281 UNLESS NOTED OTHERWISE.
2. ALL LINEAR DIMENSIONS ARE TO THE FACE OF CURB.
3. SEE CROSS STREETS PLAN & PROFILE SHEET FOR ADDITIONAL CROSS STREET INFORMATION.
4. SEE DRIVEWAY DETAILS SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
5. SEE MISCELLANEOUS DETAILS SHEETS FOR ADDITIONAL MAILBOX INFORMATION.
6. SEE DRAINAGE DETAILS FOR ADDITIONAL INFORMATION.
7. SEE SIDEWALK WALL/RETAINING WALL DETAILS FOR ADDITIONAL INFORMATION.



Kristen L. Perry
1/31/2023

NO.	REVISION	BY	DATE



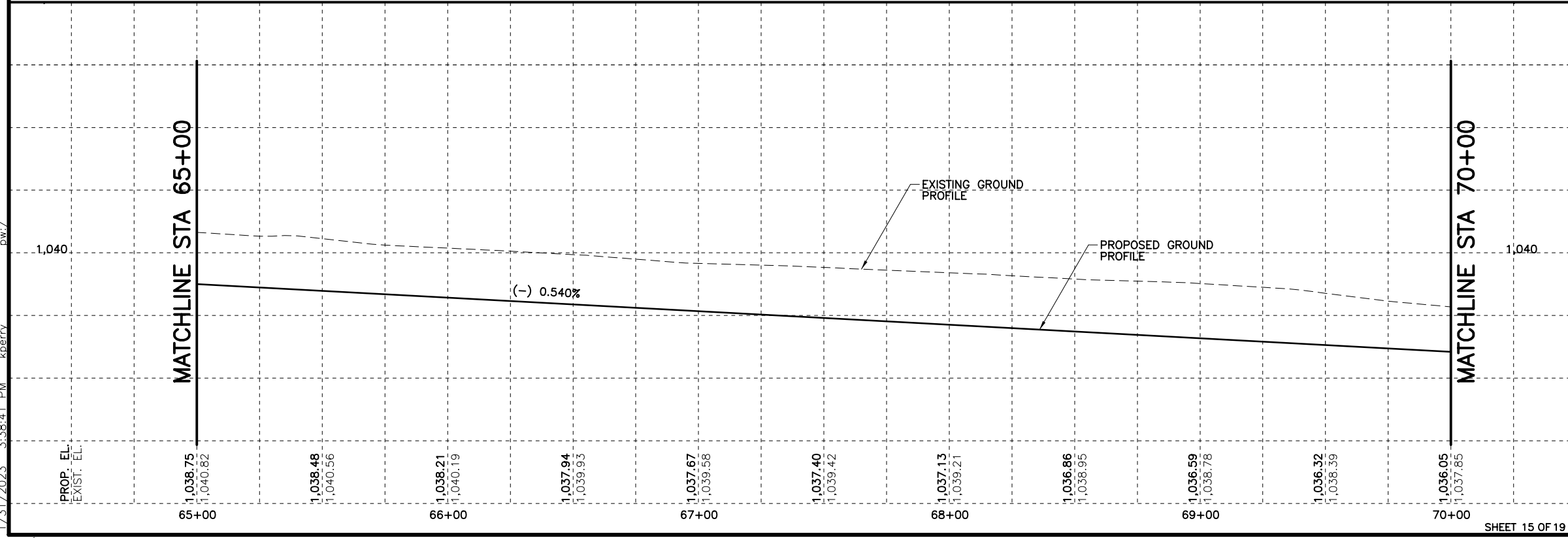
©2023 Texas Department of Transportation
US 281

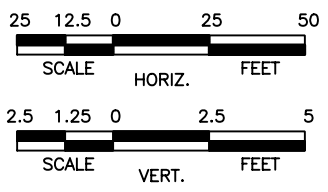
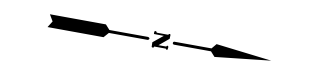
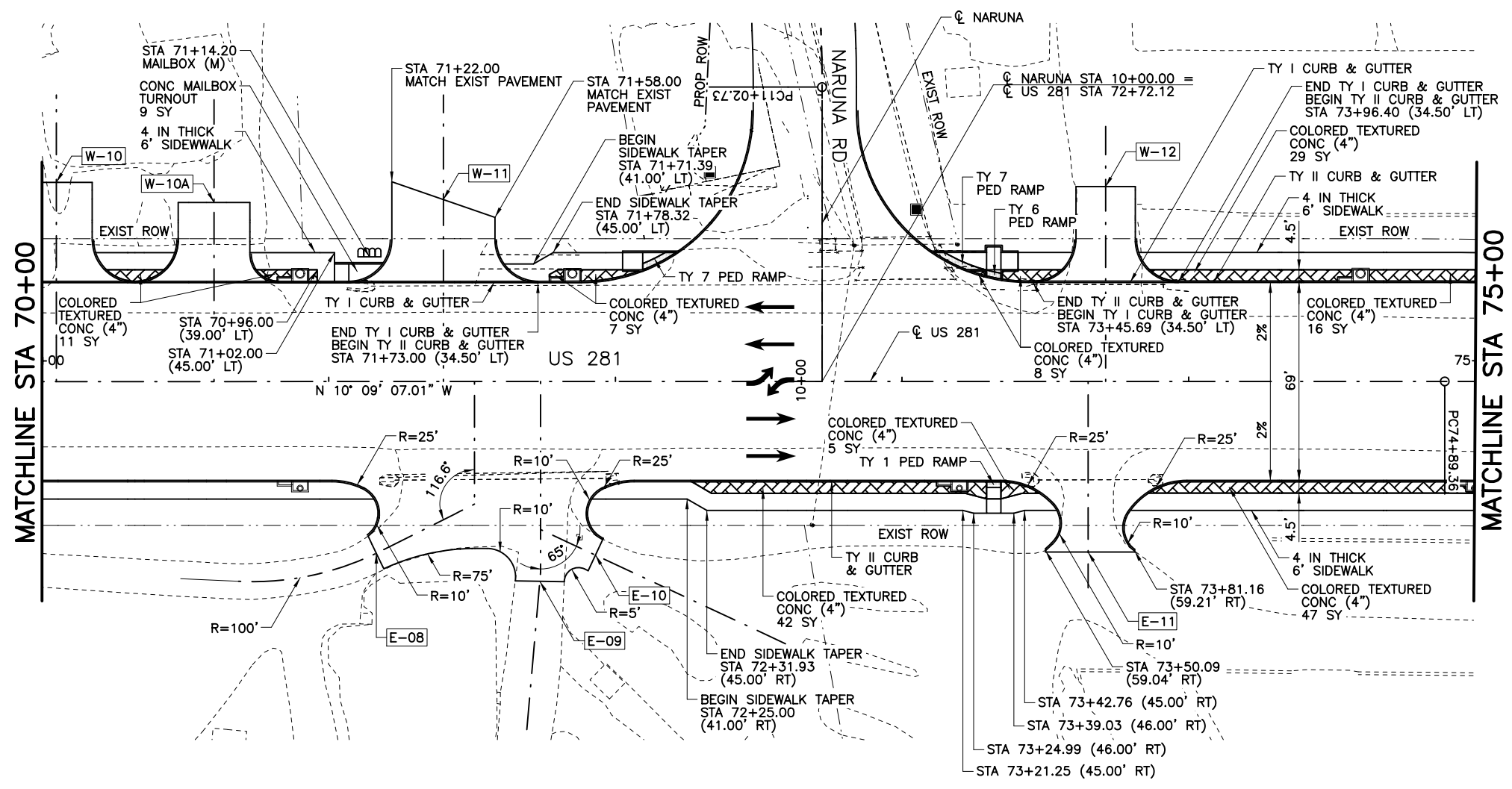
ROADWAY PLAN & PROFILE

STA 65+00 TO STA 70+00

Designed: CPY	FED. RD. DIST. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 118		

1/31/2023 3:38:41 PM kperry
cpvbw_ANSIB.tbl
cpvpdf_ANSIB.pltcfgr
pw:/





LEGEND

- EXISTING LANE
- PROPOSED LANE
- PROPOSED RIPRAP
- PROPOSED STAMPED CONCRETE RIPRAP
- PROPOSED RAISED ISLAND
- DRIVEWAY ID

NOTES:

1. ALL STATIONS AND OFFSETS ARE FROM C US 281 UNLESS NOTED OTHERWISE.
2. ALL LINEAR DIMENSIONS ARE TO THE FACE OF CURB.
3. SEE CROSS STREETS PLAN & PROFILE SHEET FOR ADDITIONAL CROSS STREET INFORMATION.
4. SEE DRIVEWAY DETAILS SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
5. SEE MISCELLANEOUS DETAILS SHEETS FOR ADDITIONAL MAILBOX INFORMATION.
6. SEE DRAINAGE DETAILS FOR ADDITIONAL INFORMATION.
7. SEE SIDEWALK WALL/RETAINING WALL DETAILS FOR ADDITIONAL INFORMATION.



Kristen L. Perry
1/31/2023

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741



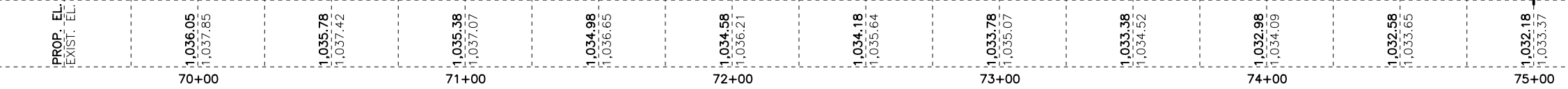
US 281

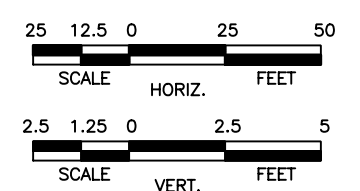
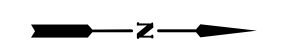
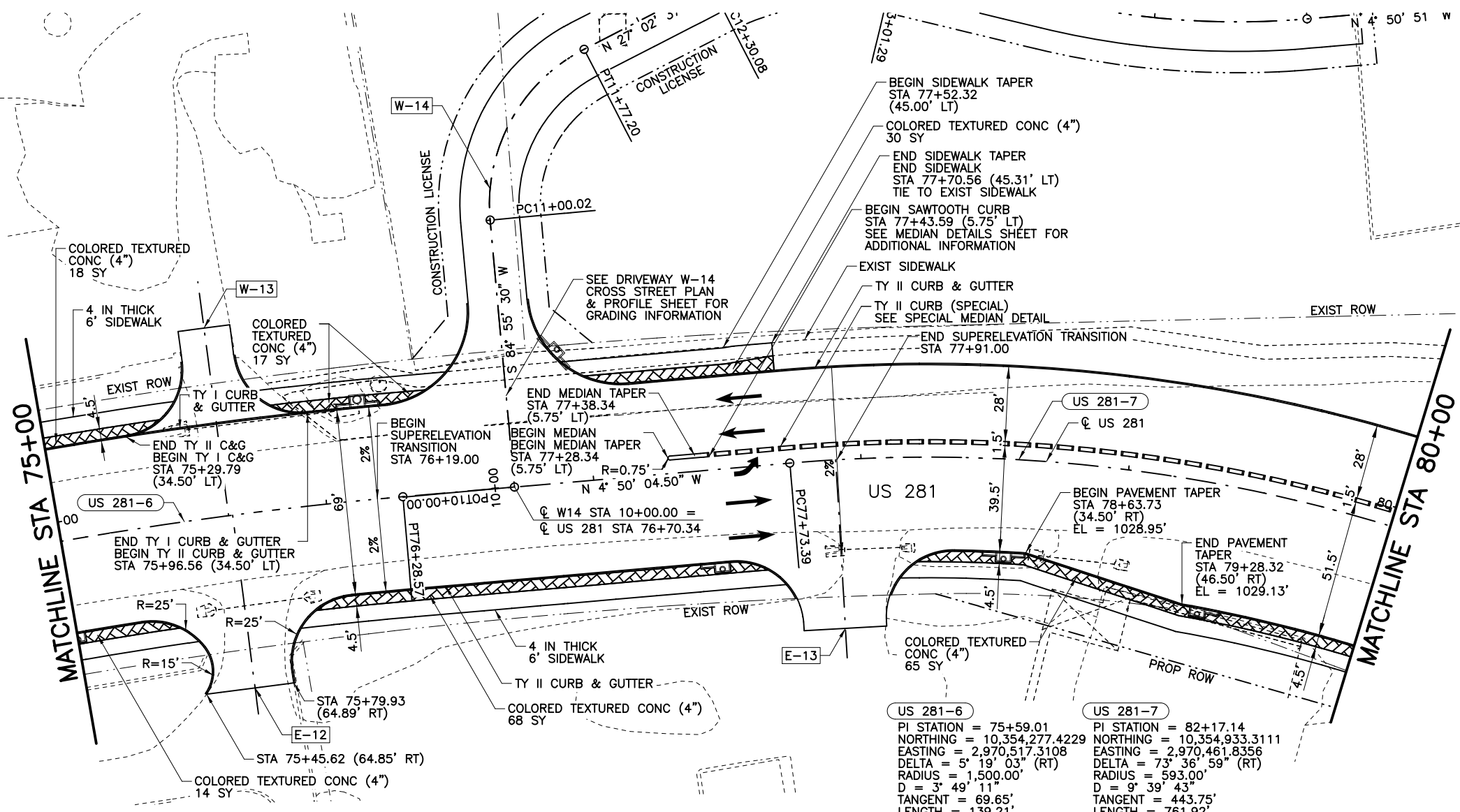
ROADWAY PLAN & PROFILE

STA 70+00 TO STA 75+00

Designed: CPY	FED. RD. DIST. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 119		

1/31/2023 3:38:48 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:



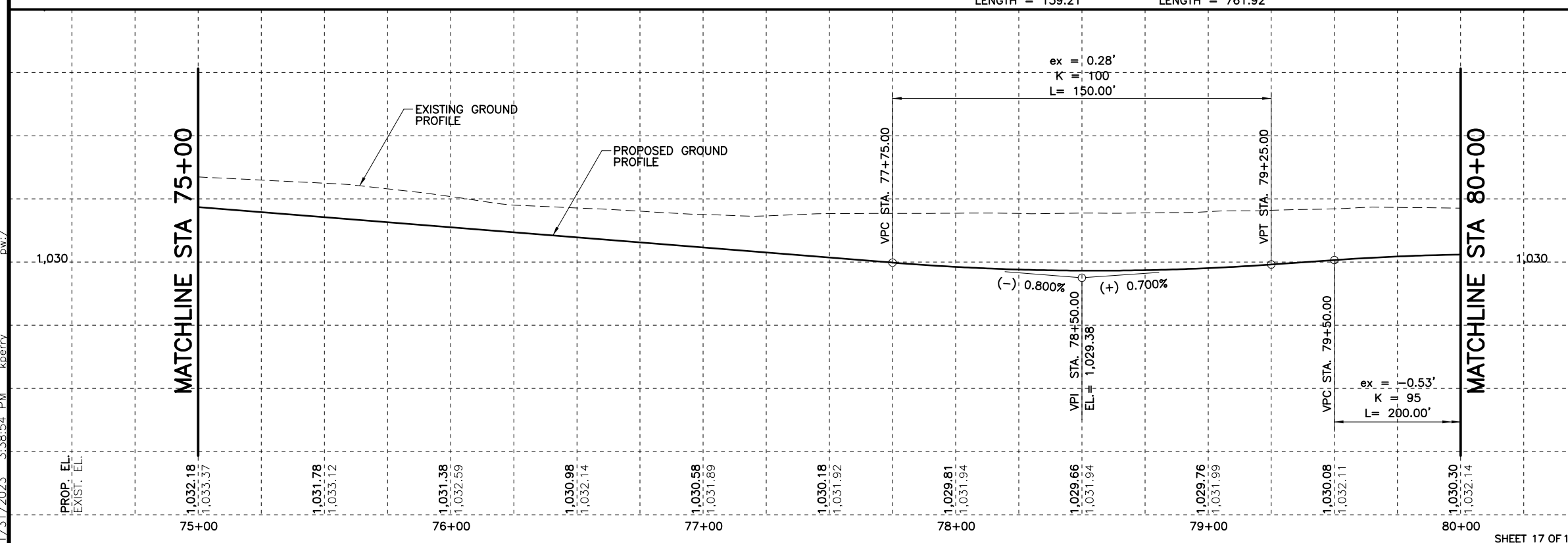


- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED RIPRAP
 - PROPOSED STAMPED CONCRETE RIPRAP
 - PROPOSED RAISED ISLAND
 - DRIVEWAY ID

- NOTES:**
1. ALL STATIONS AND OFFSETS ARE FROM C US 281 UNLESS NOTED OTHERWISE.
 2. ALL LINEAR DIMENSIONS ARE TO THE FACE OF CURB.
 3. SEE CROSS STREETS PLAN & PROFILE SHEET FOR ADDITIONAL CROSS STREET INFORMATION.
 4. SEE DRIVEWAY DETAILS SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
 5. SEE MISCELLANEOUS DETAILS SHEETS FOR ADDITIONAL MAILBOX INFORMATION.
 6. SEE DRAINAGE DETAILS FOR ADDITIONAL INFORMATION.
 7. SEE SIDEWALK WALL/RETAINING WALL DETAILS FOR ADDITIONAL INFORMATION.

US 281-6
 PI STATION = 75+59.01
 NORTHING = 10,354,277.4229
 EASTING = 2,970,517.3108
 DELTA = 5° 19' 03" (RT)
 RADIUS = 1,500.00'
 D = 3° 49' 11"
 TANGENT = 69.65'
 LENGTH = 139.21'

US 281-7
 PI STATION = 82+17.14
 NORTHING = 10,354,933.3111
 EASTING = 2,970,461.8356
 DELTA = 73° 36' 59" (RT)
 RADIUS = 593.00'
 D = 9° 39' 43"
 TANGENT = 443.75'
 LENGTH = 761.92'



Kristen L. Perry
 1/31/2023

NO.	REVISION	BY	DATE



©2023 Texas Department of Transportation
 US 281

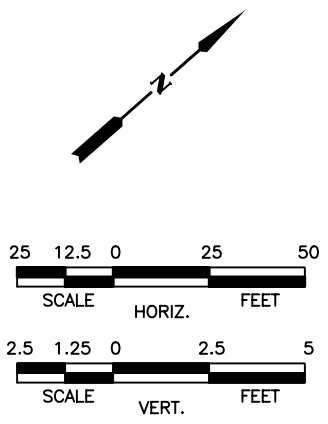
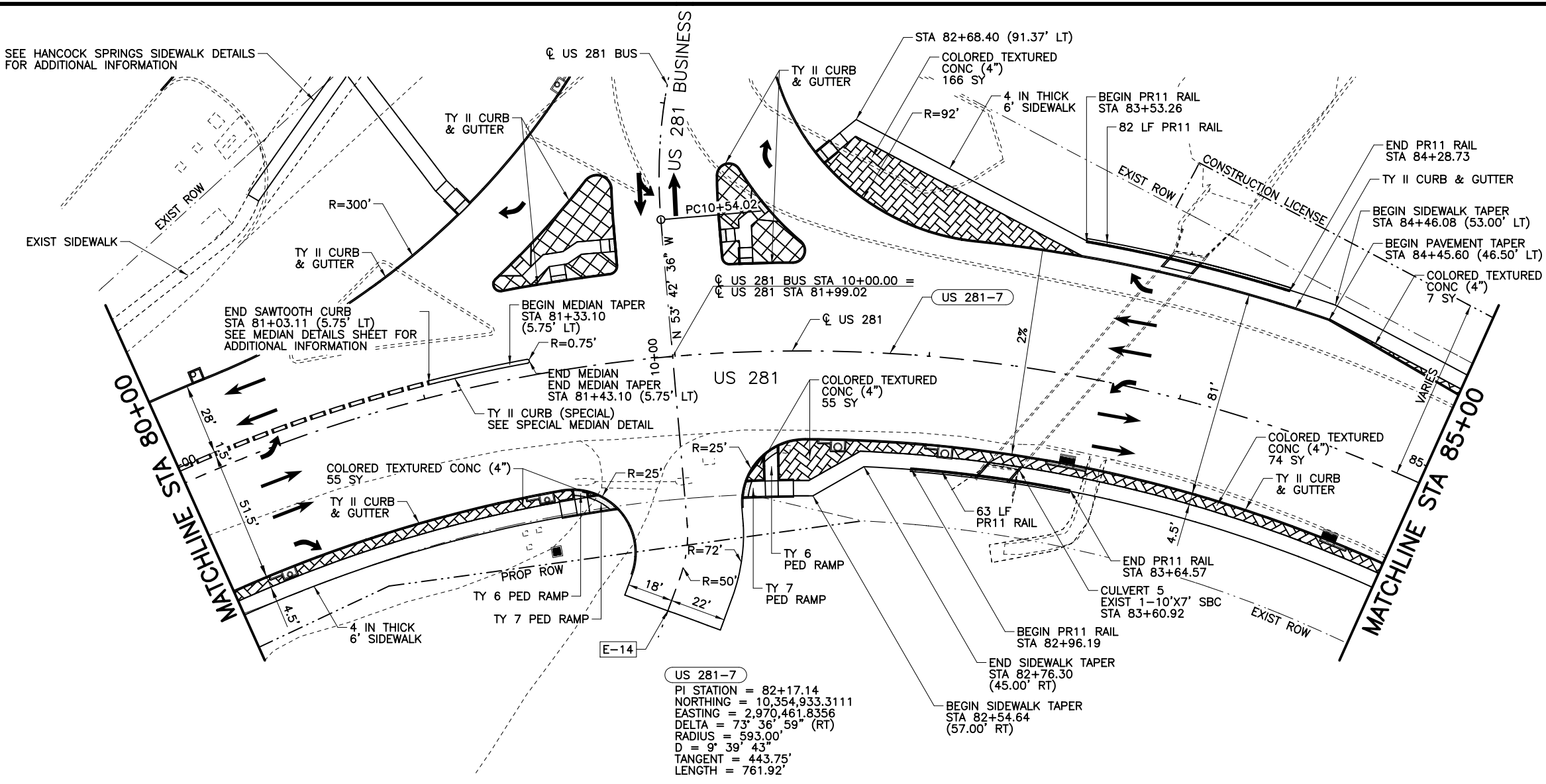
ROADWAY PLAN & PROFILE

STA 75+00 TO STA 80+00

Designed: CPY	FED. RD. DIST. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 120		

1/31/2023 3:38:54 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:

SEE HANCOCK SPRINGS SIDEWALK DETAILS FOR ADDITIONAL INFORMATION

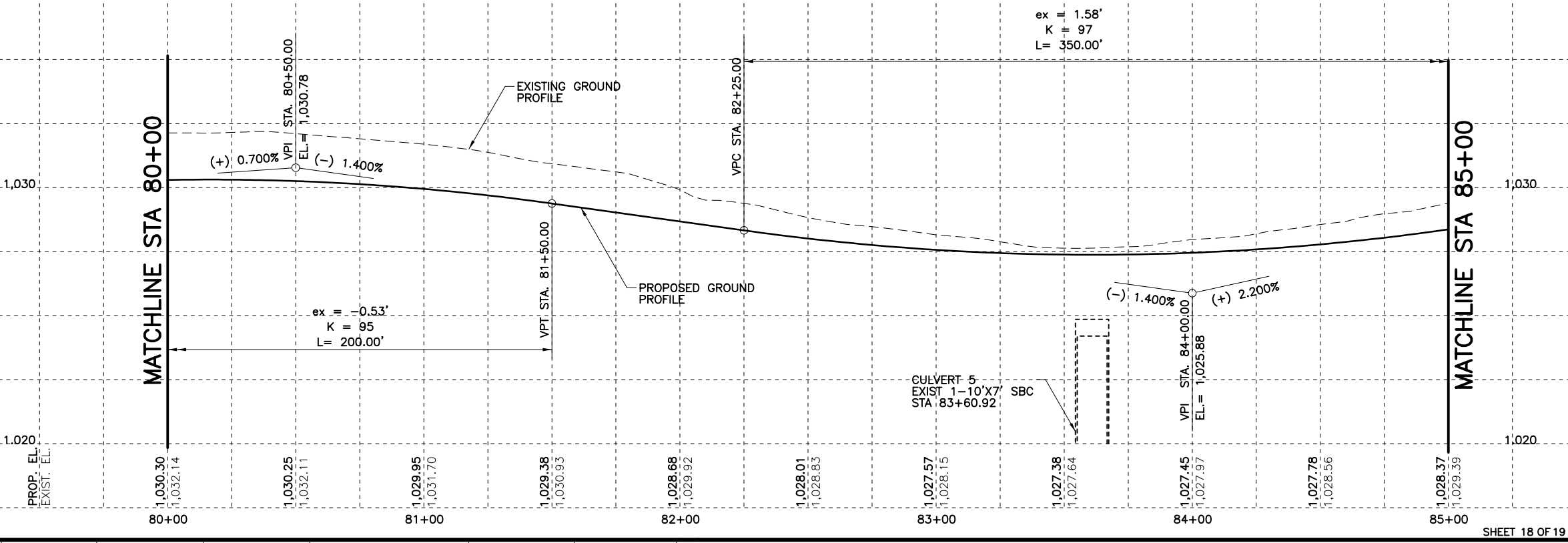


- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED RIPRAP
 - PROPOSED STAMPED CONCRETE RIPRAP
 - PROPOSED RAISED ISLAND
 - DRIVEWAY ID

- NOTES:**
1. ALL STATIONS AND OFFSETS ARE FROM C US 281 UNLESS NOTED OTHERWISE.
 2. ALL LINEAR DIMENSIONS ARE TO THE FACE OF CURB.
 3. SEE CROSS STREETS PLAN & PROFILE SHEET FOR ADDITIONAL CROSS STREET INFORMATION.
 4. SEE DRIVEWAY DETAILS SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
 5. SEE MISCELLANEOUS DETAILS SHEETS FOR ADDITIONAL MAILBOX INFORMATION.
 6. SEE DRAINAGE DETAILS FOR ADDITIONAL INFORMATION.
 7. SEE SIDEWALK WALL/RETAINING WALL DETAILS FOR ADDITIONAL INFORMATION.

US 281-7
 PI STATION = 82+17.14
 NORTHING = 10,354,933.3111
 EASTING = 2,970,461.8356
 DELTA = 73° 36' 59" (RT)
 RADIUS = 593.00'
 D = 9° 39' 43"
 TANGENT = 443.75'
 LENGTH = 761.92'

ex = 1.58'
 K = 97
 L = 350.00'



2/17/2023
 Kristen L. Perry

NO.	REVISION	BY	DATE

CP&Y
 TEXAS REGISTERED ENGINEERING FIRM F-1741

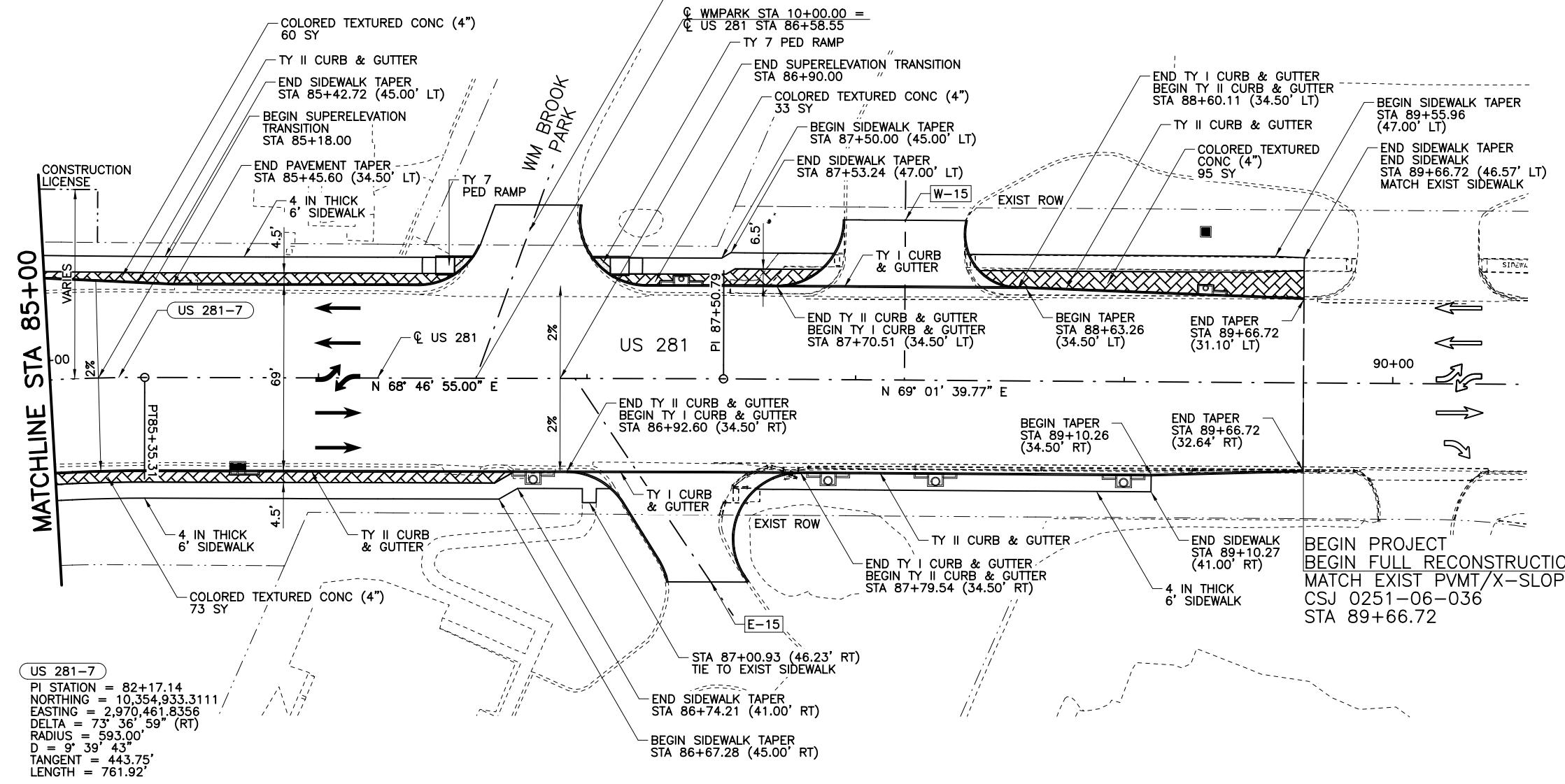
©2023 Texas Department of Transportation
 US 281

ROADWAY PLAN & PROFILE
 STA 80+00 TO STA 85+00

Designed:	CPY	FED. RD. DIST. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	CPY	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Drawn:	CPY	JOB NO.	036	SHEET NO.	121				

2/17/2023 3:25:05 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfq
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.04 Roadway/49304RDpp18.dgn

MATCHLINE STA 85+00

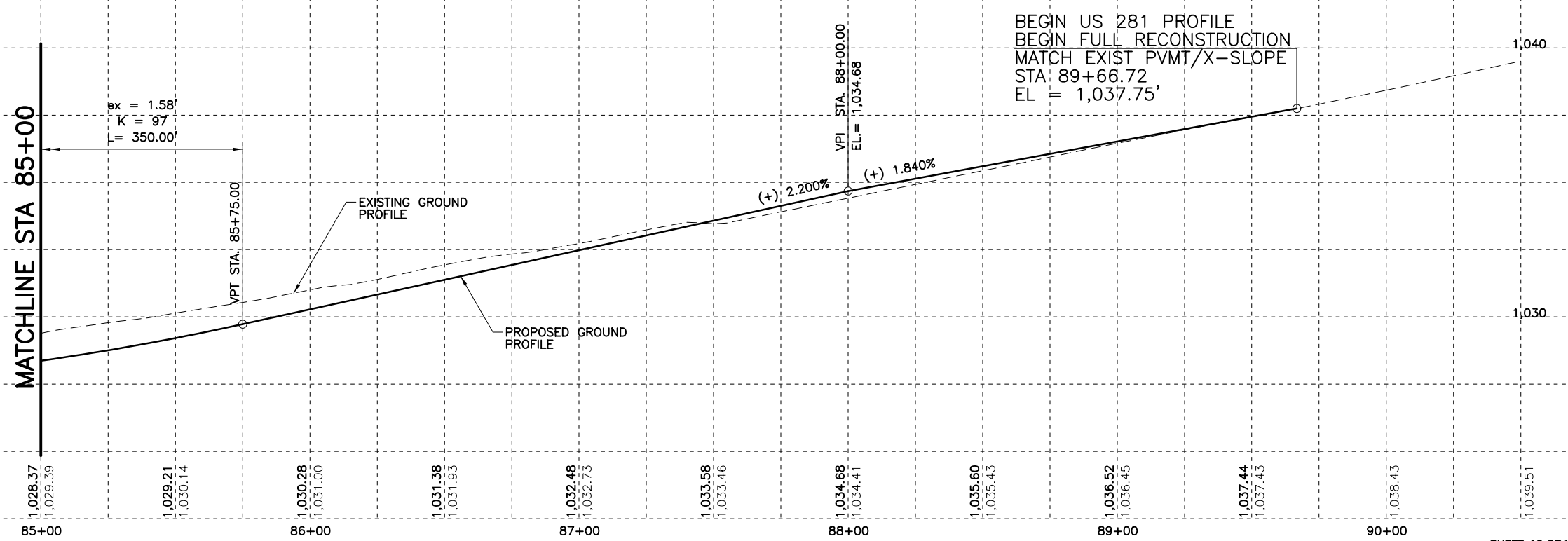


US 281-7
 PI STATION = 82+17.14
 NORTHING = 10,354,933.3111
 EASTING = 2,970,461.8356
 DELTA = 73° 36' 59" (RT)
 RADIUS = 593.00'
 D = 9° 39' 43"
 TANGENT = 443.75'
 LENGTH = 761.92'

BEGIN PROJECT
 BEGIN FULL RECONSTRUCTION
 MATCH EXIST PVMT/X-SLOPE
 CSJ 0251-06-036
 STA 89+66.72

- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - ▨ PROPOSED RIPRAP
 - ▨ PROPOSED STAMPED CONCRETE RIPRAP
 - ▨ PROPOSED RAISED ISLAND
 - X-XXX DRIVEWAY ID
- NOTES:**
1. ALL STATIONS AND OFFSETS ARE FROM C US 281 UNLESS NOTED OTHERWISE.
 2. ALL LINEAR DIMENSIONS ARE TO THE FACE OF CURB.
 3. SEE CROSS STREETS PLAN & PROFILE SHEET FOR ADDITIONAL CROSS STREET INFORMATION.
 4. SEE DRIVEWAY DETAILS SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
 5. SEE MISCELLANEOUS DETAILS SHEETS FOR ADDITIONAL MAILBOX INFORMATION.
 6. SEE DRAINAGE DETAILS FOR ADDITIONAL INFORMATION.
 7. SEE SIDEWALK WALL/RETAINING WALL DETAILS FOR ADDITIONAL INFORMATION.

MATCHLINE STA 85+00



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741



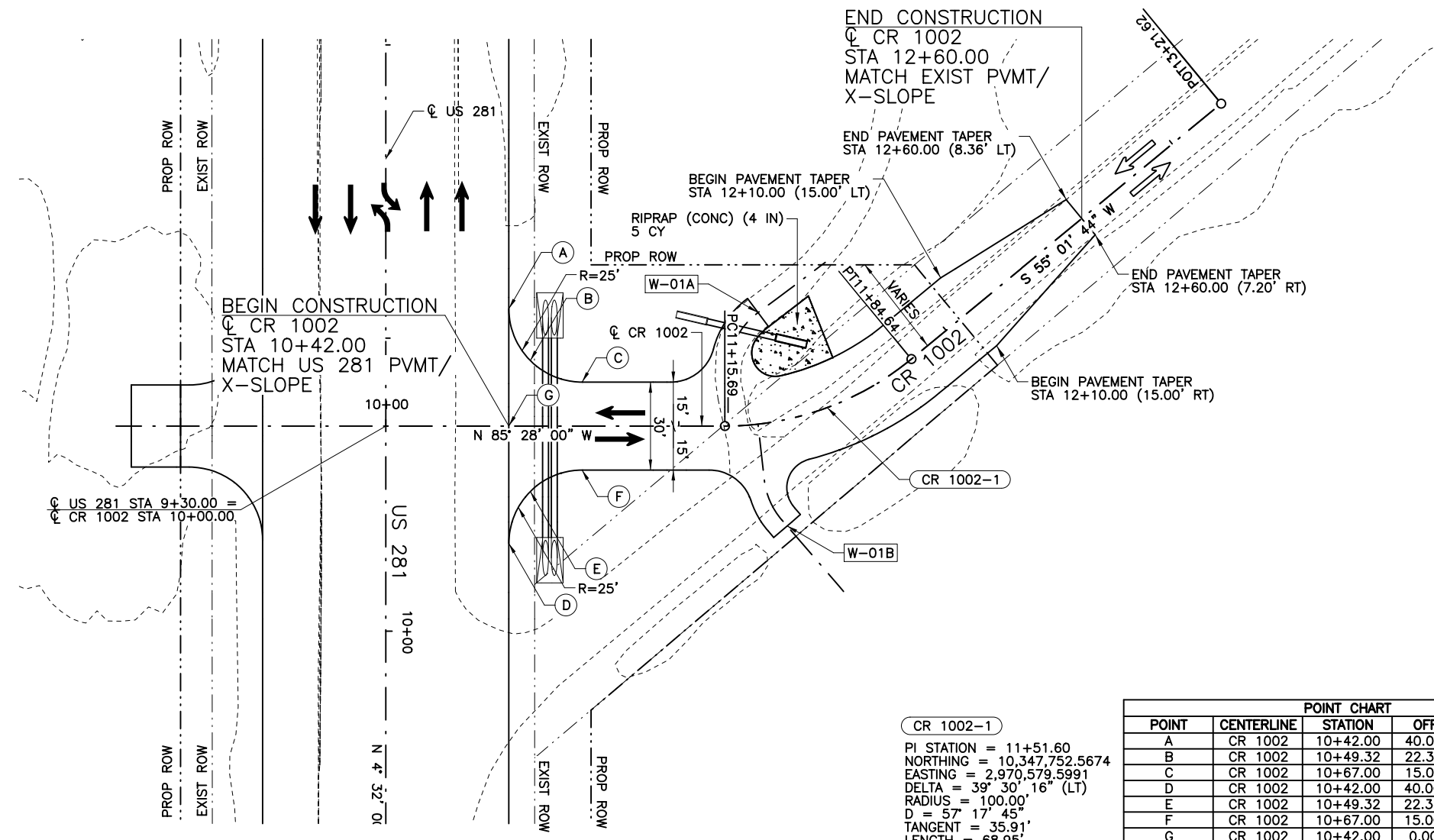
US 281

ROADWAY PLAN & PROFILE

STA 85+00 TO BEGIN PROJECT

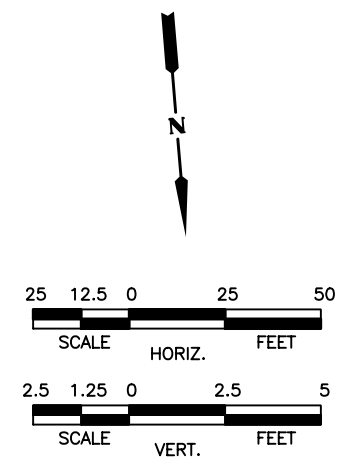
Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 122		

1/31/2023 3:39:05 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw



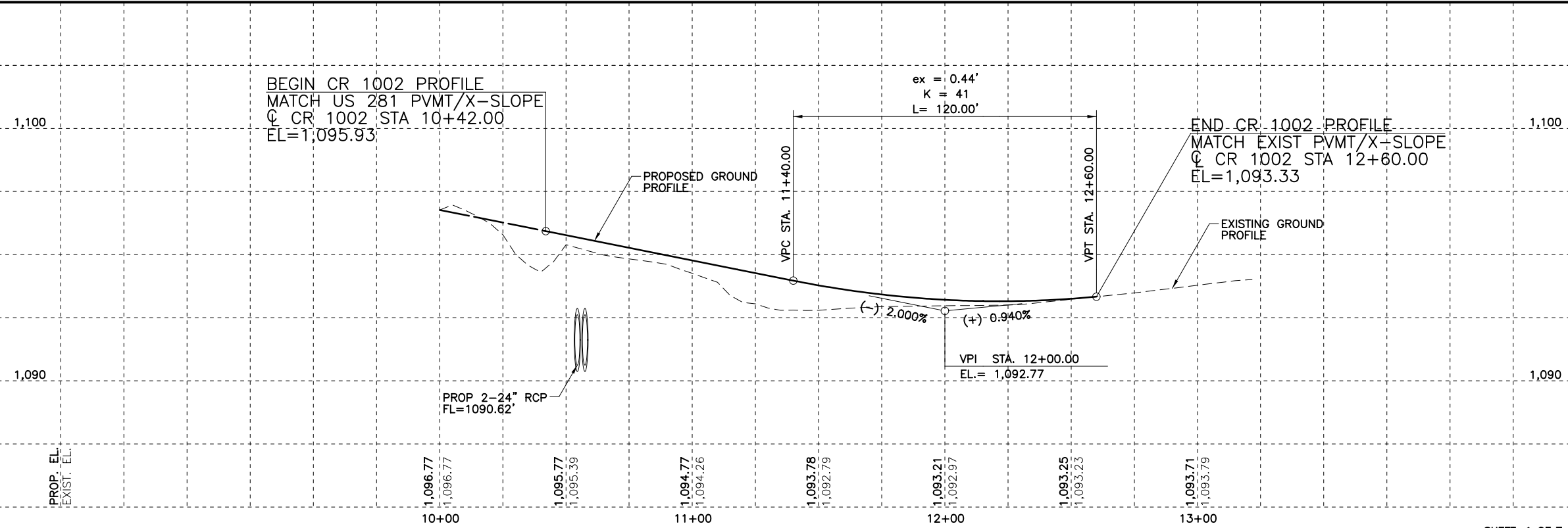
CR 1002-1
 PI STATION = 11+51.60
 NORTHING = 10,347,752.5674
 EASTING = 2,970,579.5991
 DELTA = 39° 30' 16" (LT)
 RADIUS = 100.00'
 D = 57° 17' 45"
 TANGENT = 35.91'
 LENGTH = 68.95'

POINT	CENTERLINE	STATION	OFFSET	ELEVATION
A	CR 1002	10+42.00	40.00' LT	1096.93'
B	CR 1002	10+49.32	22.32' LT	1096.03'
C	CR 1002	10+67.00	15.00' LT	1095.13'
D	CR 1002	10+42.00	40.00' RT	1094.93'
E	CR 1002	10+49.32	22.32' RT	1095.03'
F	CR 1002	10+67.00	15.00' RT	1095.13'
G	CR 1002	10+42.00	0.00' LT	1095.93'



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED RIPRAP
 - PROPOSED STAMPED CONCRETE RIPRAP
 - PROPOSED RAISED ISLAND
 - DRIVEWAY ID

- NOTES:**
- ALL STATIONS AND OFFSETS ARE FROM C CR 1002 UNLESS NOTED OTHERWISE.
 - ALL LINEAR DIMENSIONS ARE TO THE FACE OF CURB.
 - SEE DRIVEWAY DETAILS SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
 - SEE MISCELLANEOUS DETAILS SHEETS FOR ADDITIONAL MAILBOX INFORMATION.
 - SEE DRAINAGE DETAILS FOR ADDITIONAL INFORMATION.
 - SEE SIDEWALK WALL/RETAINING WALL DETAILS FOR ADDITIONAL INFORMATION.



Kristin L. Perry
 1/31/2023

NO.	REVISION	BY	DATE



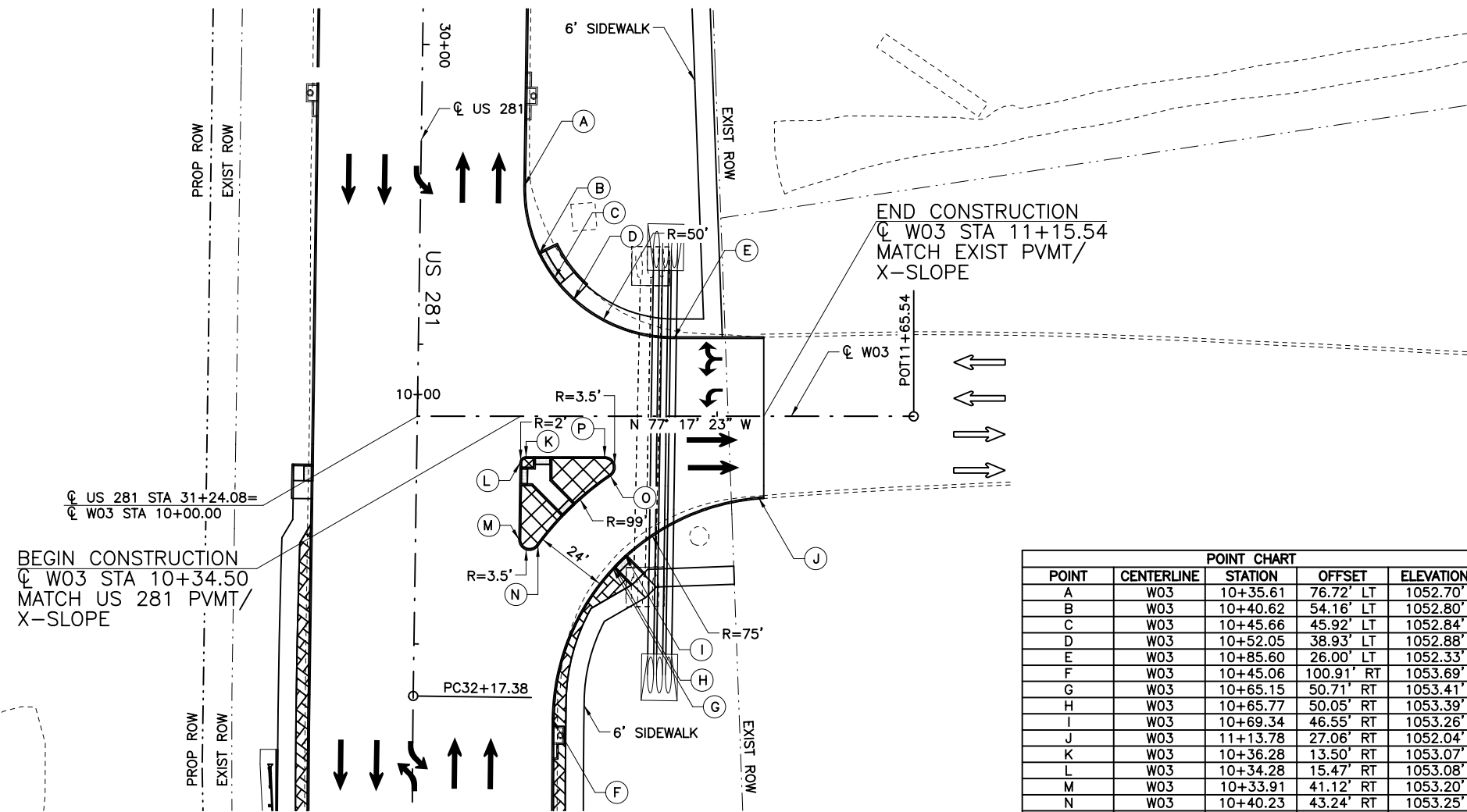
TEXAS REGISTERED ENGINEERING FIRM F-1741



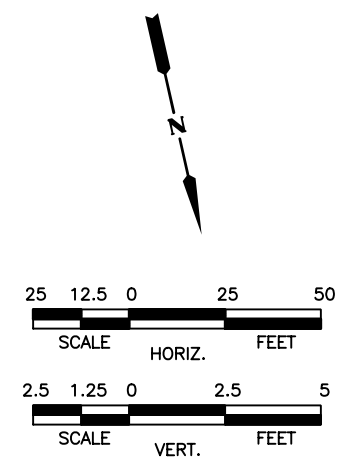
US 281
CROSS STREET PLAN & PROFILE
 CR 1002

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
Checked:	CPY	6	TEXAS		US 281
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.
Checked:	CPY	BWD	LAMPASAS	0251	06
					JOB NO.
					036
					SHEET NO.
					123

1/31/2023 3:39:13 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:



POINT CHART				
POINT	CENTERLINE	STATION	OFFSET	ELEVATION
A	W03	10+35.61	76.72' LT	1052.70'
B	W03	10+40.62	54.16' LT	1052.80'
C	W03	10+45.66	45.92' LT	1052.84'
D	W03	10+52.05	38.93' LT	1052.88'
E	W03	10+85.60	26.00' LT	1052.33'
F	W03	10+45.06	100.91' RT	1053.69'
G	W03	10+65.15	50.71' RT	1053.41'
H	W03	10+65.77	50.05' RT	1053.39'
I	W03	10+69.34	46.55' RT	1053.26'
J	W03	11+13.78	27.06' RT	1052.04'
K	W03	10+36.28	13.50' RT	1053.07'
L	W03	10+34.28	15.47' RT	1053.08'
M	W03	10+33.91	41.12' RT	1053.20'
N	W03	10+40.23	43.24' RT	1053.25'
O	W03	10+64.44	19.90' RT	1053.40'
P	W03	10+62.48	13.50' RT	1053.20'

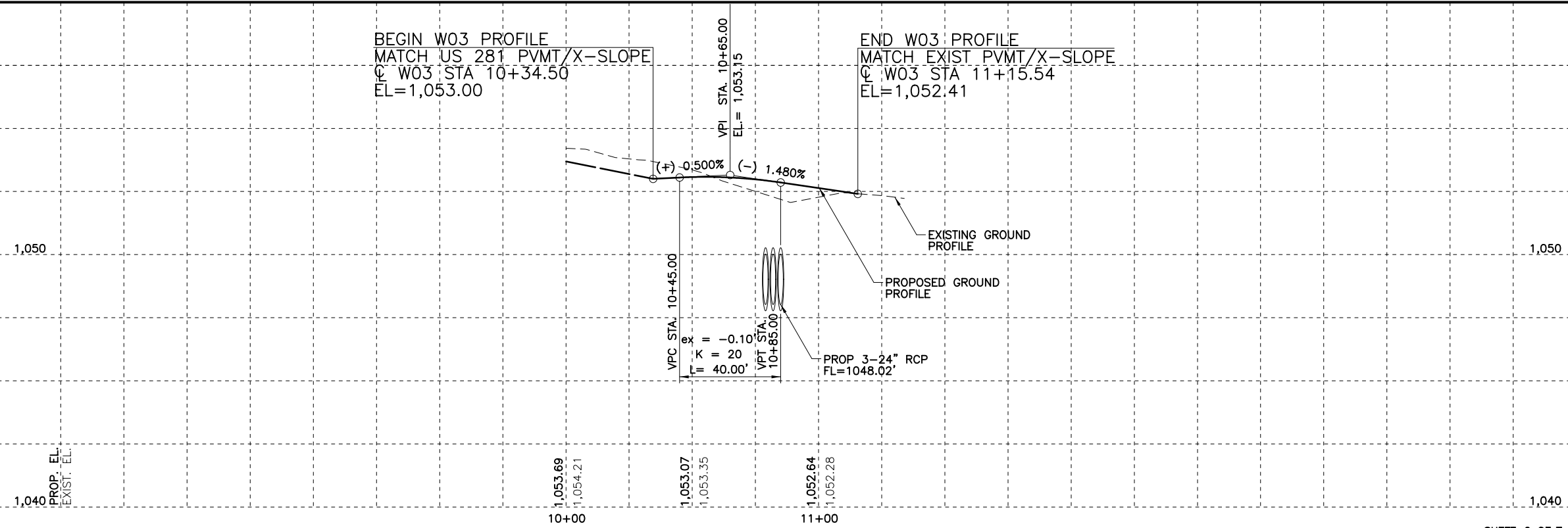


- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED RIPRAP
 - PROPOSED STAMPED CONCRETE RIPRAP
 - PROPOSED RAISED ISLAND
 - DRIVEWAY ID

- NOTES:**
- ALL STATIONS AND OFFSETS ARE FROM C/W03 UNLESS NOTED OTHERWISE.
 - ALL LINEAR DIMENSIONS ARE TO THE FACE OF CURB.
 - SEE DRIVEWAY DETAILS SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
 - SEE MISCELLANEOUS DETAILS SHEETS FOR ADDITIONAL MAILBOX INFORMATION.
 - SEE DRAINAGE DETAILS FOR ADDITIONAL INFORMATION.
 - SEE SIDEWALK WALL/RETAINING WALL DETAILS FOR ADDITIONAL INFORMATION.

BEGIN W03 PROFILE
MATCH US 281 PVMT/X-SLOPE
C/W03 STA 10+34.50
EL=1,053.00

END W03 PROFILE
MATCH EXIST PVMT/X-SLOPE
C/W03 STA 11+15.54
EL=1,052.41



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741



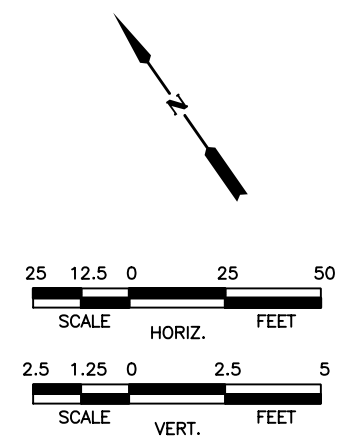
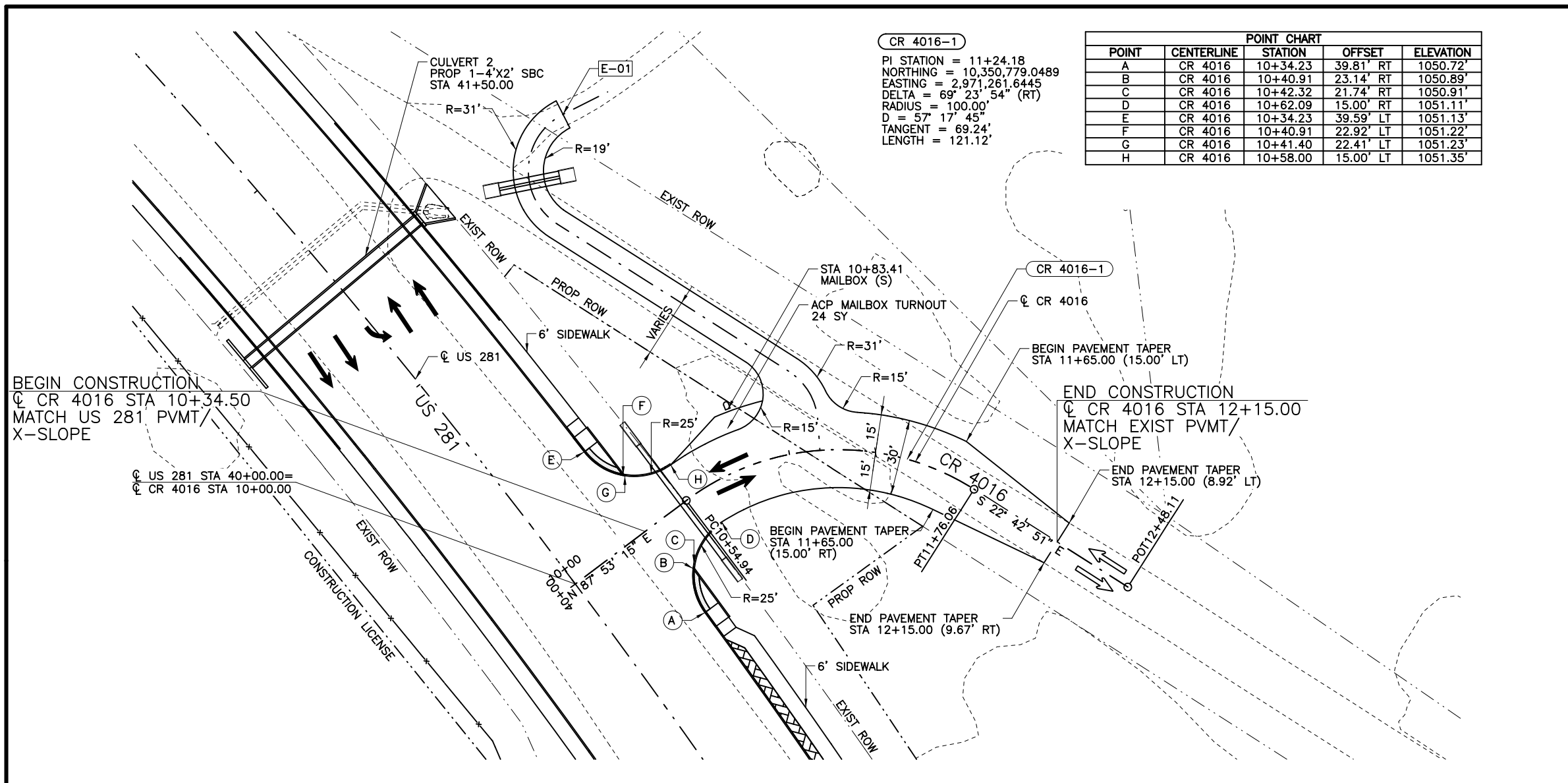
US 281

CROSS STREET PLAN & PROFILE

DRIVEWAY W-03

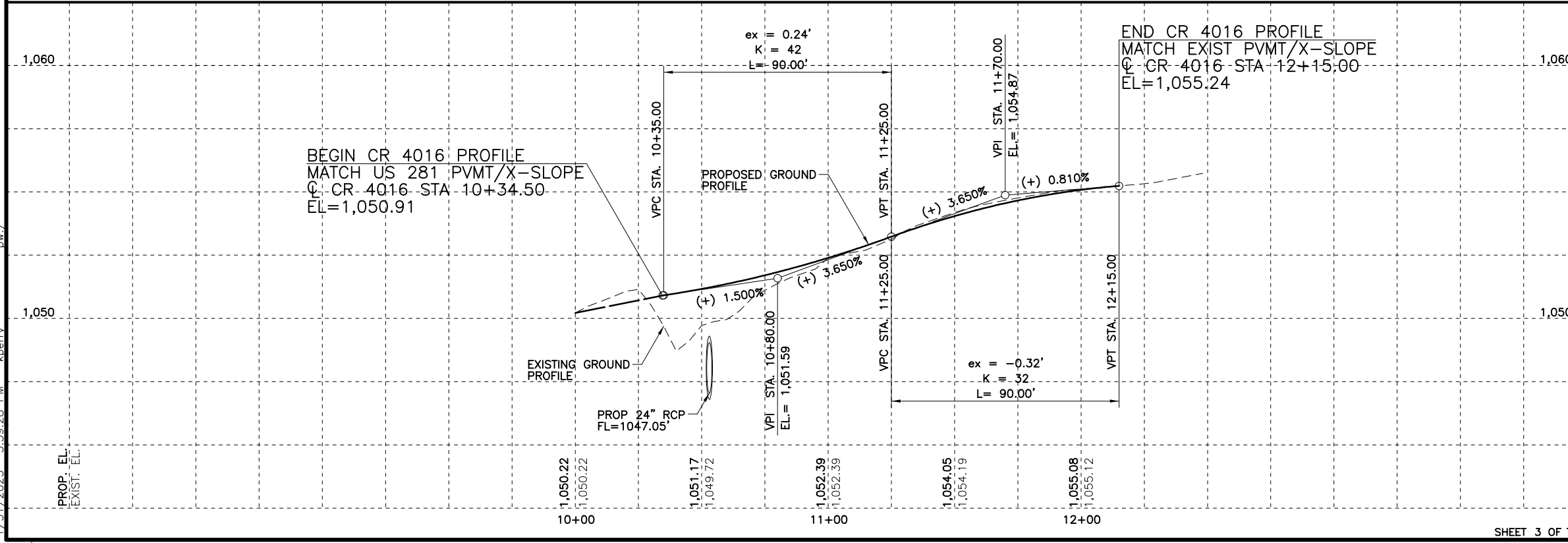
Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 124		

1/31/2023 3:39:19 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED RIPRAP
 - PROPOSED STAMPED CONCRETE RIPRAP
 - PROPOSED RAISED ISLAND
 - DRIVEWAY ID

- NOTES:**
- ALL STATIONS AND OFFSETS ARE FROM C CR 4016 UNLESS NOTED OTHERWISE.
 - ALL LINEAR DIMENSIONS ARE TO THE FACE OF CURB.
 - SEE DRIVEWAY DETAILS SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
 - SEE MISCELLANEOUS DETAILS SHEETS FOR ADDITIONAL MAILBOX INFORMATION.
 - SEE DRAINAGE DETAILS FOR ADDITIONAL INFORMATION.
 - SEE SIDEWALK WALL/RETAINING WALL DETAILS FOR ADDITIONAL INFORMATION.



Kristen L. Perry
 1/31/2023

NO.	REVISION	BY	DATE



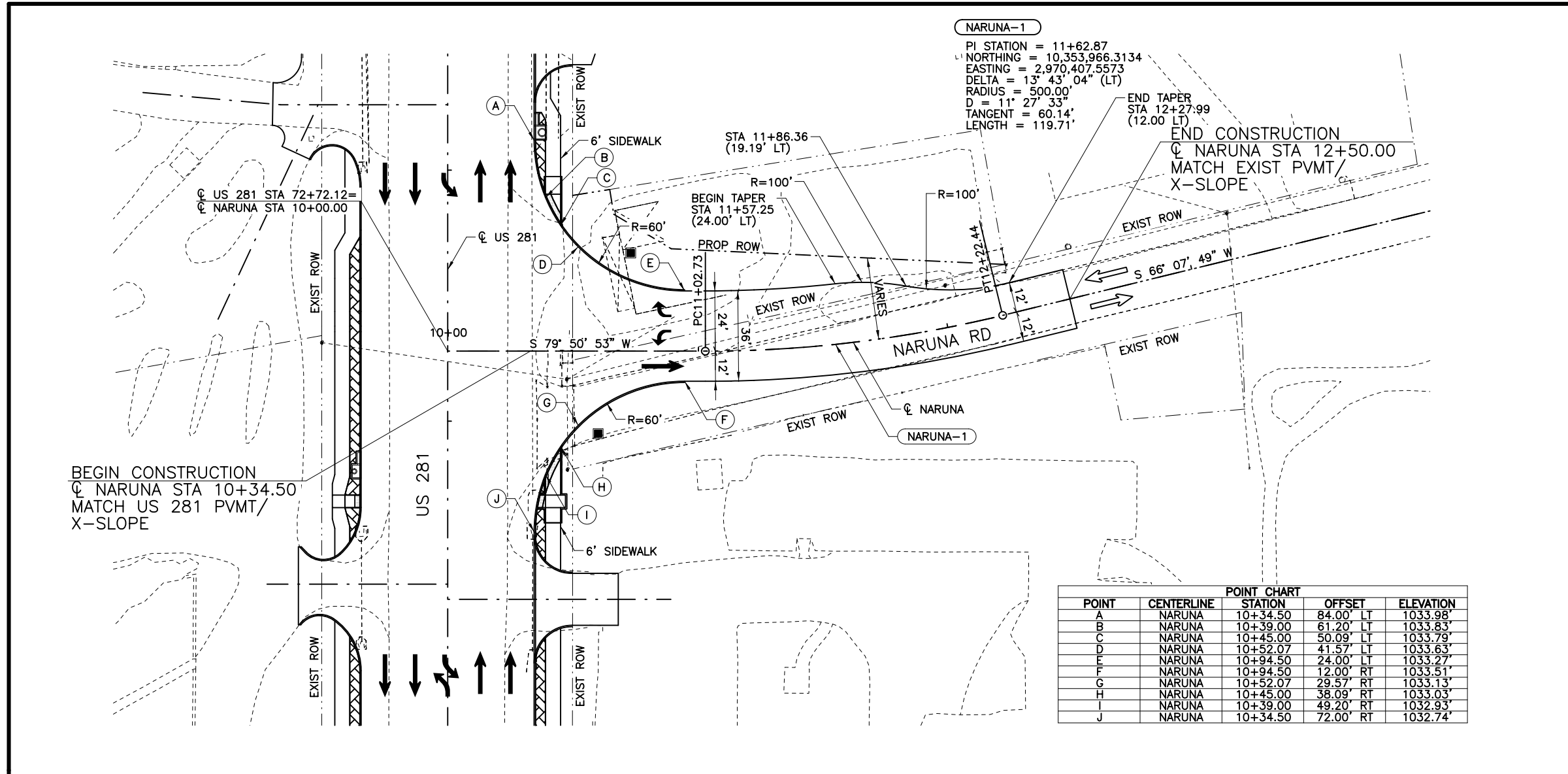
©2023 Texas Department of Transportation
 US 281

CROSS STREET PLAN & PROFILE

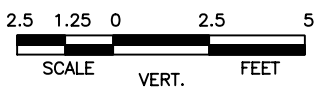
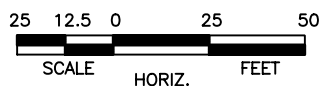
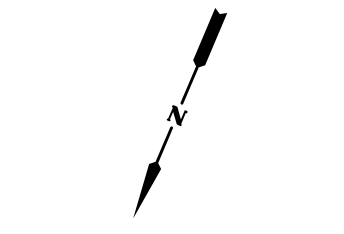
CR 4016

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
Checked:	CPY	6	TEXAS		US 281
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.
Checked:	CPY	BWD	LAMPASAS	0251	06
					JOB NO. SHEET NO.
					036 125

1/31/2023 3:39:28 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:



NARUNA-1
 PI STATION = 11+62.87
 NORTHING = 10,353,966.3134
 EASTING = 2,970,407.5573
 DELTA = 13° 43' 04" (LT)
 RADIUS = 500.00'
 D = 11° 27' 33"
 TANGENT = 60.14'
 LENGTH = 119.71'



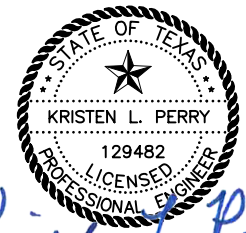
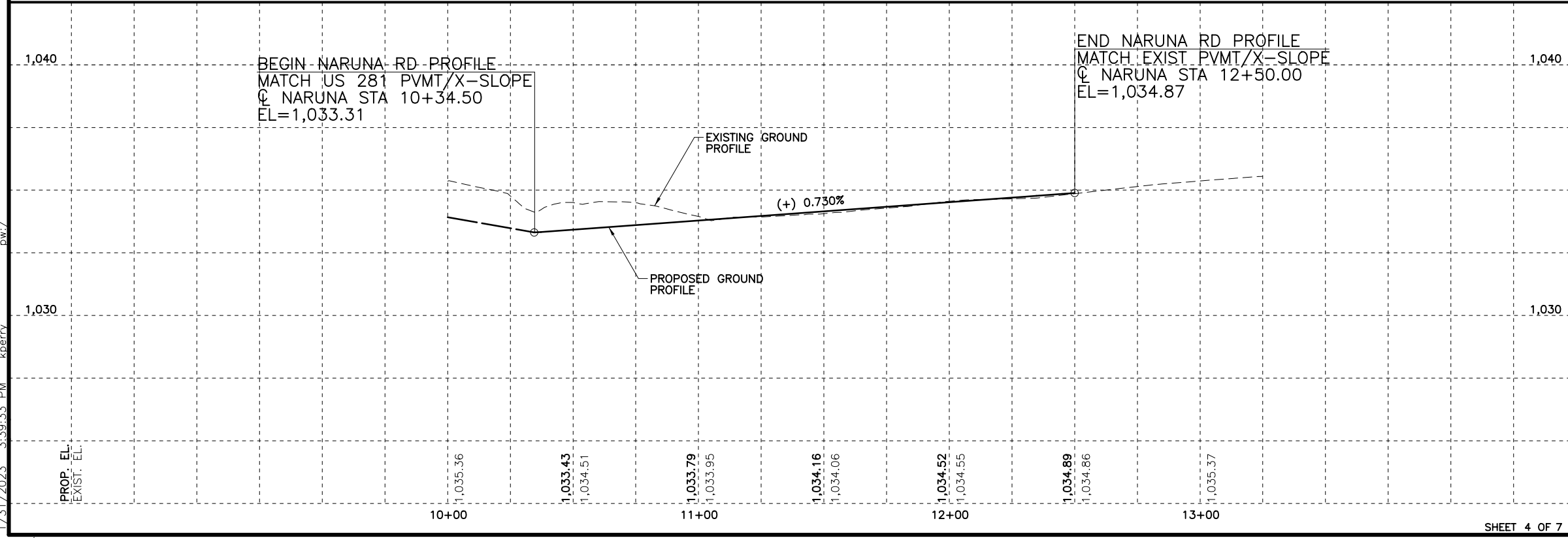
LEGEND

- EXISTING LANE
- PROPOSED LANE
- ▭ PROPOSED RIPRAP
- ▩ PROPOSED STAMPED CONCRETE RIPRAP
- ▩ PROPOSED RAISED ISLAND
- X-XXX DRIVEWAY ID

NOTES:

- ALL STATIONS AND OFFSETS ARE FROM C NARUNA UNLESS NOTED OTHERWISE.
- ALL LINEAR DIMENSIONS ARE TO THE FACE OF CURB.
- SEE DRIVEWAY DETAILS SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
- SEE MISCELLANEOUS DETAILS SHEETS FOR ADDITIONAL MAILBOX INFORMATION.
- SEE DRAINAGE DETAILS FOR ADDITIONAL INFORMATION.
- SEE SIDEWALK WALL/RETAINING WALL DETAILS FOR ADDITIONAL INFORMATION.

POINT	CENTERLINE	STATION	OFFSET	ELEVATION
A	NARUNA	10+34.50	84.00' LT	1033.98'
B	NARUNA	10+39.00	61.20' LT	1033.83'
C	NARUNA	10+45.00	50.09' LT	1033.79'
D	NARUNA	10+52.07	41.57' LT	1033.63'
E	NARUNA	10+94.50	24.00' LT	1033.27'
F	NARUNA	10+94.50	12.00' RT	1033.51'
G	NARUNA	10+52.07	29.57' RT	1033.13'
H	NARUNA	10+45.00	38.09' RT	1033.03'
I	NARUNA	10+39.00	49.20' RT	1032.93'
J	NARUNA	10+34.50	72.00' RT	1032.74'



Kristin L. Perry
 1/31/2023

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741

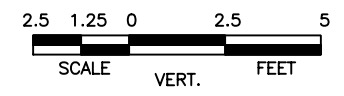
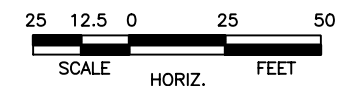
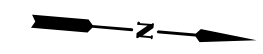


US 281

CROSS STREET PLAN & PROFILE

NARUNA RD

Designed: CPY	FED. RD. DIST. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 126		

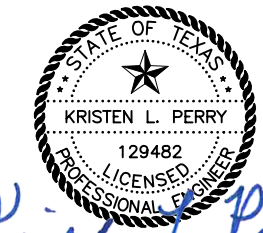


LEGEND

- EXISTING LANE
- PROPOSED LANE
- PROPOSED RIPRAP
- PROPOSED STAMPED CONCRETE RIPRAP
- PROPOSED RAISED ISLAND
- DRIVEWAY ID

NOTES:

1. ALL STATIONS AND OFFSETS ARE FROM ϕ W14 UNLESS NOTED OTHERWISE.
2. ALL LINEAR DIMENSIONS ARE TO THE FACE OF CURB.
3. SEE DRIVEWAY DETAILS SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
4. SEE MISCELLANEOUS DETAILS SHEETS FOR ADDITIONAL MAILBOX INFORMATION.
5. SEE DRAINAGE DETAILS FOR ADDITIONAL INFORMATION.
6. SEE SIDEWALK WALL/RETAINING WALL DETAILS FOR ADDITIONAL INFORMATION.



1/31/2023

Kristin L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741



US 281

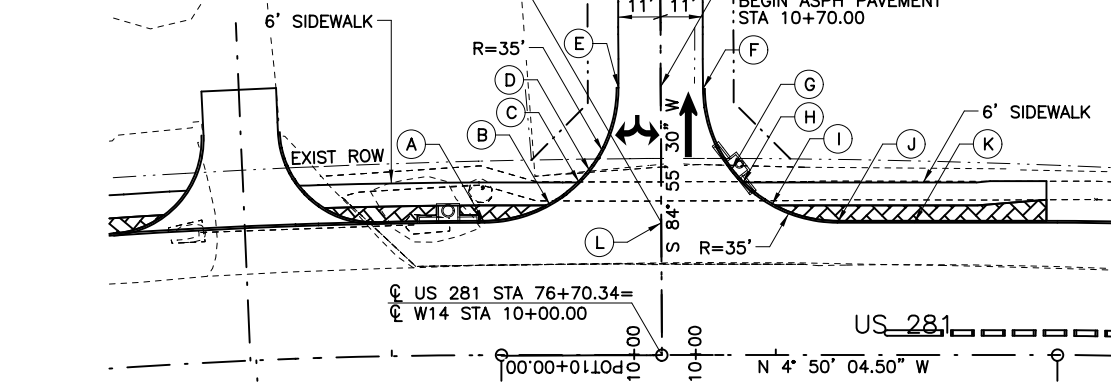
CROSS STREET PLAN & PROFILE

DRIVEWAY W-14

Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 127		

BEGIN W-14 CONSTRUCTION
 BEGIN CONC DRIVEWAY PAVEMENT
 ϕ W14 STA 10+34.50
 MATCH US 281 PVMT/X-SLOPE

END W-14 CONSTRUCTION
 ϕ W14 STA 14+76.93
 MATCH EXIST
 PVMT/X-SLOPE

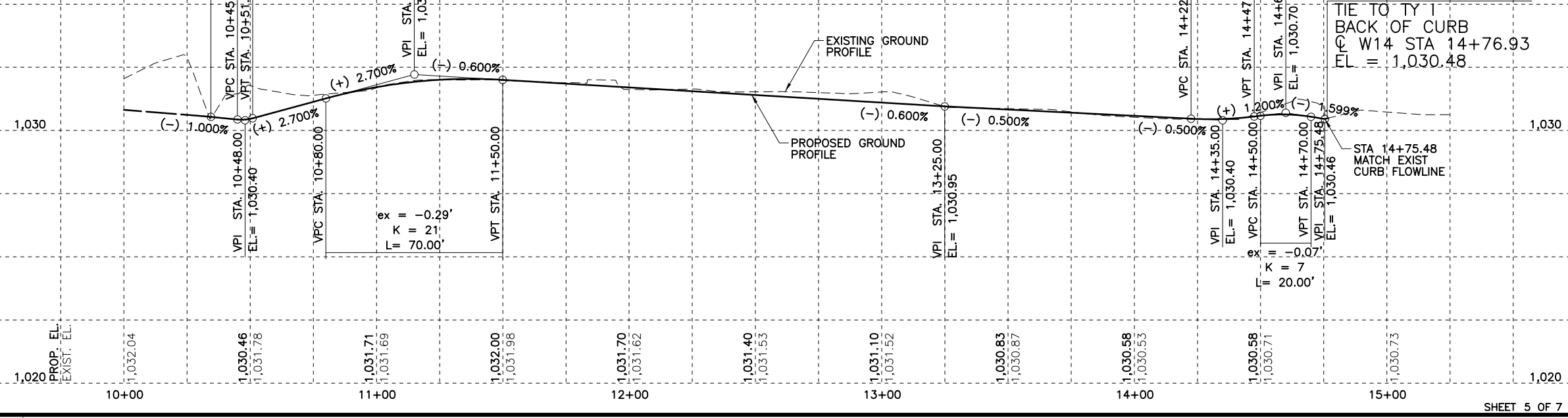


W14-1	W14-2	W14-3
PI STATION = 11+43.89	PI STATION = 12+67.27	PI STATION = 14+08.68
NORTHING = 10,354,375.7280	NORTHING = 10,354,495.0214	NORTHING = 10,354,635.4549
EASTING = 2,970,364.5977	EASTING = 2,970,303.7000	EASTING = 2,970,338.0817
DELTA = 68° 01' 52" (RT)	DELTA = 40° 48' 02" (RT)	DELTA = 18° 36' 15" (LT)
RADIUS = 65.00'	RADIUS = 100.00'	RADIUS = 300.00'
D = 88° 08' 50"	D = 57° 17' 45"	D = 19° 05' 55"
TANGENT = 43.87'	TANGENT = 37.19'	TANGENT = 49.14'
LENGTH = 77.18'	LENGTH = 71.21'	LENGTH = 97.41'

POINT	CENTERLINE	STATION	OFFSET	ELEVATION
A	W14	10+34.69	46.05' LT	1030.54'
B	W14	10+39.12	28.95' LT	1030.53'
C	W14	10+44.92	21.27' LT	1030.52'
D	W14	10+48.00	18.53' LT	1030.52'
E	W14	10+69.69	11.00' LT	1031.10'
F	W14	10+69.31	11.00' RT	1030.87'
G	W14	10+48.00	18.23' RT	1030.25'
H	W14	10+44.61	21.20' RT	1030.29'
I	W14	10+38.88	28.70' RT	1030.38'
J	W14	10+34.31	45.85' RT	1030.55'
K	US 281	77+36.05	34.50' LT	1030.54'
L	US 281	76+70.19	34.50' LT	1030.54'

BEGIN W-14 PROFILE
 MATCH US 281
 PVMT/X-SLOPE
 ϕ W14 STA 10+34.50
 EL = 1,030.54

END W-14 PROFILE
 TIE TO TY 1
 BACK OF CURB
 ϕ W14 STA 14+76.93
 EL = 1,030.48

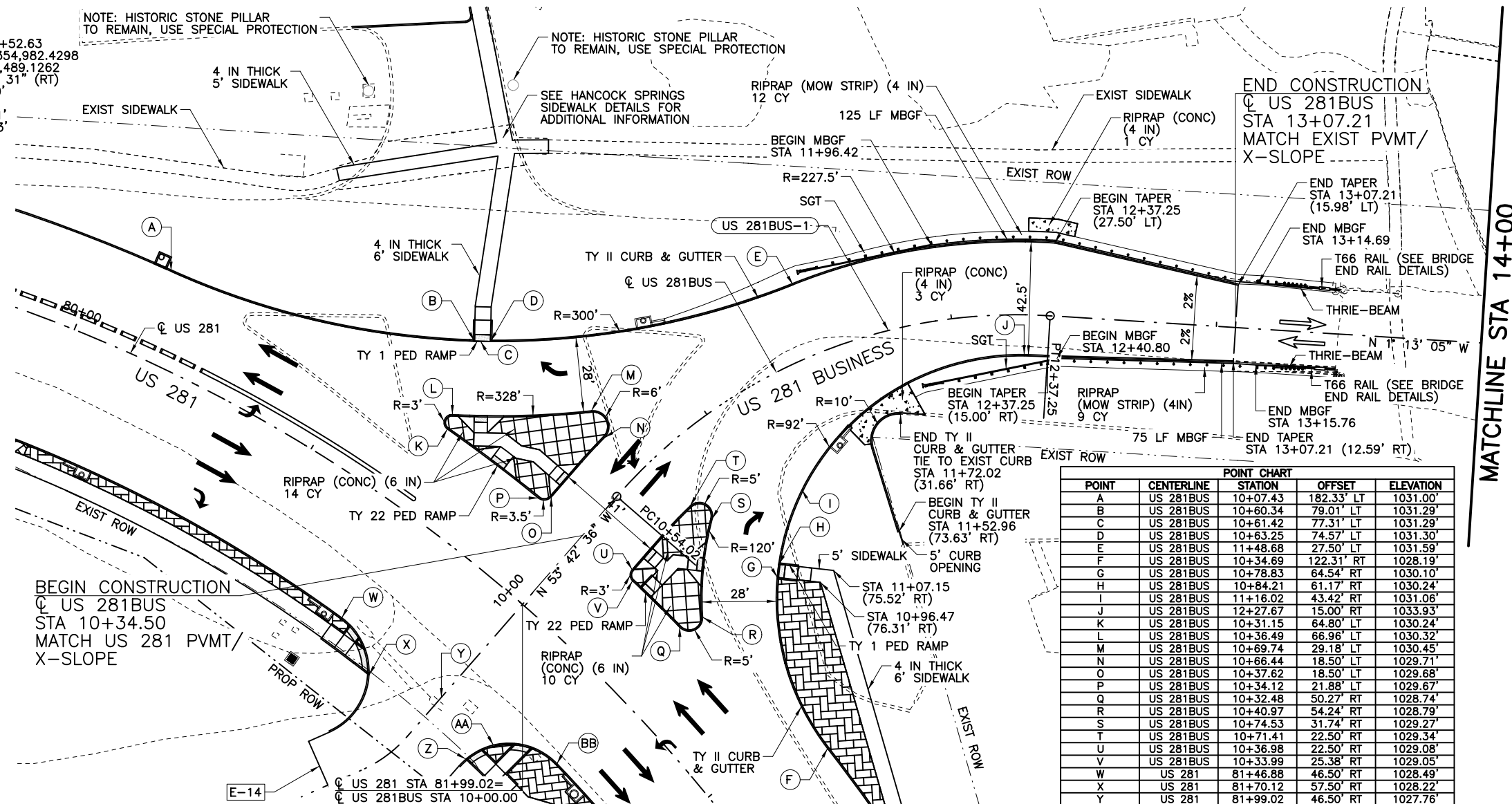


1/31/2023 3:39:39 PM kperry
cp/bw_ANSIB.tbl
cp/pdf_ANSIB.plt/cfg
pw:/

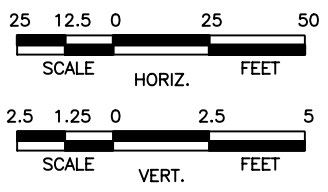
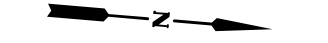
US 281BUS-1
 PI STATION = 11+52.63
 NORTHING = 10,354,982.4298
 EASTING = 2,970,489.1262
 DELTA = 52° 29' 31" (RT)
 RADIUS = 200.00'
 D = 28° 38' 52"
 TANGENT = 98.61'
 LENGTH = 183.23'

NOTE: HISTORIC STONE PILLAR TO REMAIN, USE SPECIAL PROTECTION

NOTE: HISTORIC STONE PILLAR TO REMAIN, USE SPECIAL PROTECTION

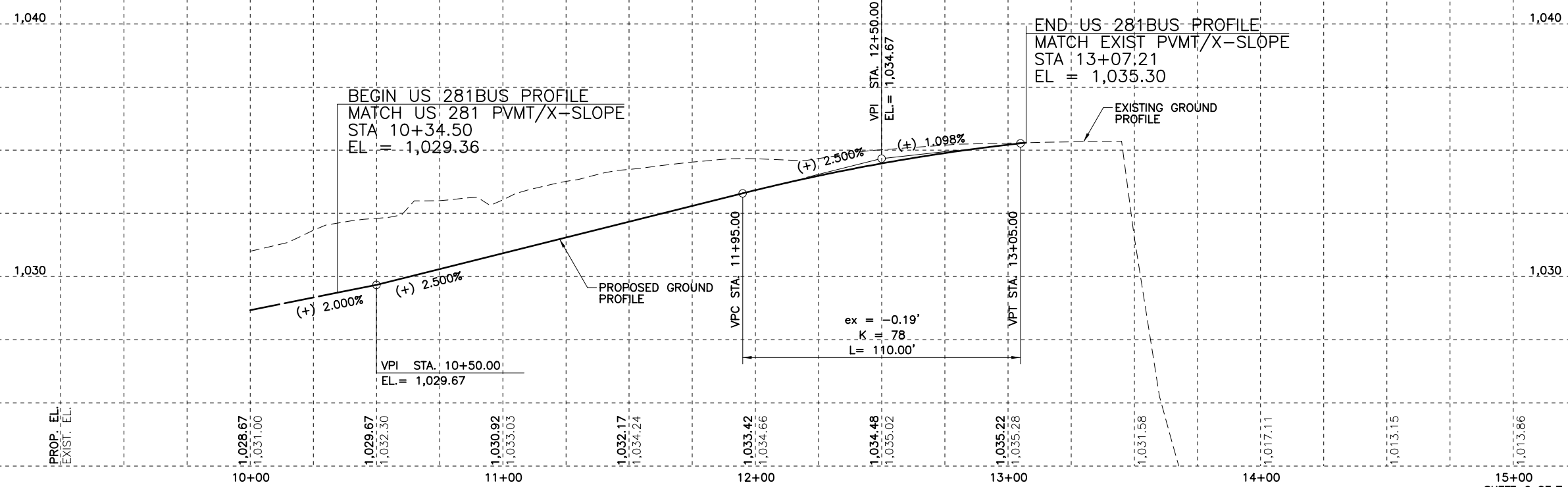


POINT	CENTERLINE	STATION	OFFSET	ELEVATION
A	US 281BUS	10+07.43	182.33' LT	1031.00'
B	US 281BUS	10+60.34	79.01' LT	1031.29'
C	US 281BUS	10+61.42	77.31' LT	1031.29'
D	US 281BUS	10+63.25	74.57' LT	1031.30'
E	US 281BUS	11+48.68	27.50' LT	1031.59'
F	US 281BUS	10+34.69	122.31' RT	1028.19'
G	US 281BUS	10+78.83	64.54' RT	1030.10'
H	US 281BUS	10+84.21	61.17' RT	1030.24'
I	US 281BUS	11+16.02	43.42' RT	1031.06'
J	US 281BUS	12+27.67	15.00' RT	1033.93'
K	US 281BUS	10+31.15	64.80' LT	1030.24'
L	US 281BUS	10+36.49	66.96' LT	1030.32'
M	US 281BUS	10+69.74	29.18' LT	1030.45'
N	US 281BUS	10+66.44	18.50' LT	1029.71'
O	US 281BUS	10+37.62	18.50' LT	1029.68'
P	US 281BUS	10+34.12	21.88' LT	1029.67'
Q	US 281BUS	10+32.48	50.27' RT	1028.74'
R	US 281BUS	10+40.97	54.24' RT	1028.79'
S	US 281BUS	10+74.53	31.74' RT	1029.27'
T	US 281BUS	10+71.41	22.50' RT	1029.34'
U	US 281BUS	10+36.98	22.50' RT	1029.08'
V	US 281BUS	10+33.99	25.38' RT	1029.05'
W	US 281	81+46.88	46.50' RT	1028.49'
X	US 281	81+70.12	57.50' RT	1028.22'
Y	US 281	81+99.02	46.50' RT	1027.76'
Z	US 281	82+23.68	57.50' RT	1027.47'
AA	US 281	82+27.88	46.50' RT	1027.42'
BB	US 281	82+51.33	34.50' RT	1027.31'



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED RIPRAP
 - PROPOSED STAMPED CONCRETE RIPRAP
 - PROPOSED RAISED ISLAND
 - DRIVEWAY ID

- NOTES:**
1. ALL STATIONS AND OFFSETS ARE FROM C US 281BUS UNLESS NOTED OTHERWISE.
 2. ALL LINEAR DIMENSIONS ARE TO THE FACE OF CURB.
 3. SEE DRIVEWAY DETAILS SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
 4. SEE MISCELLANEOUS DETAILS SHEETS FOR ADDITIONAL MAILBOX INFORMATION.
 5. SEE DRAINAGE DETAILS FOR ADDITIONAL INFORMATION.
 6. SEE SIDEWALK WALL/RETAINING WALL DETAILS FOR ADDITIONAL INFORMATION.



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741

©2023 Texas Department of Transportation

US 281 BUSINESS

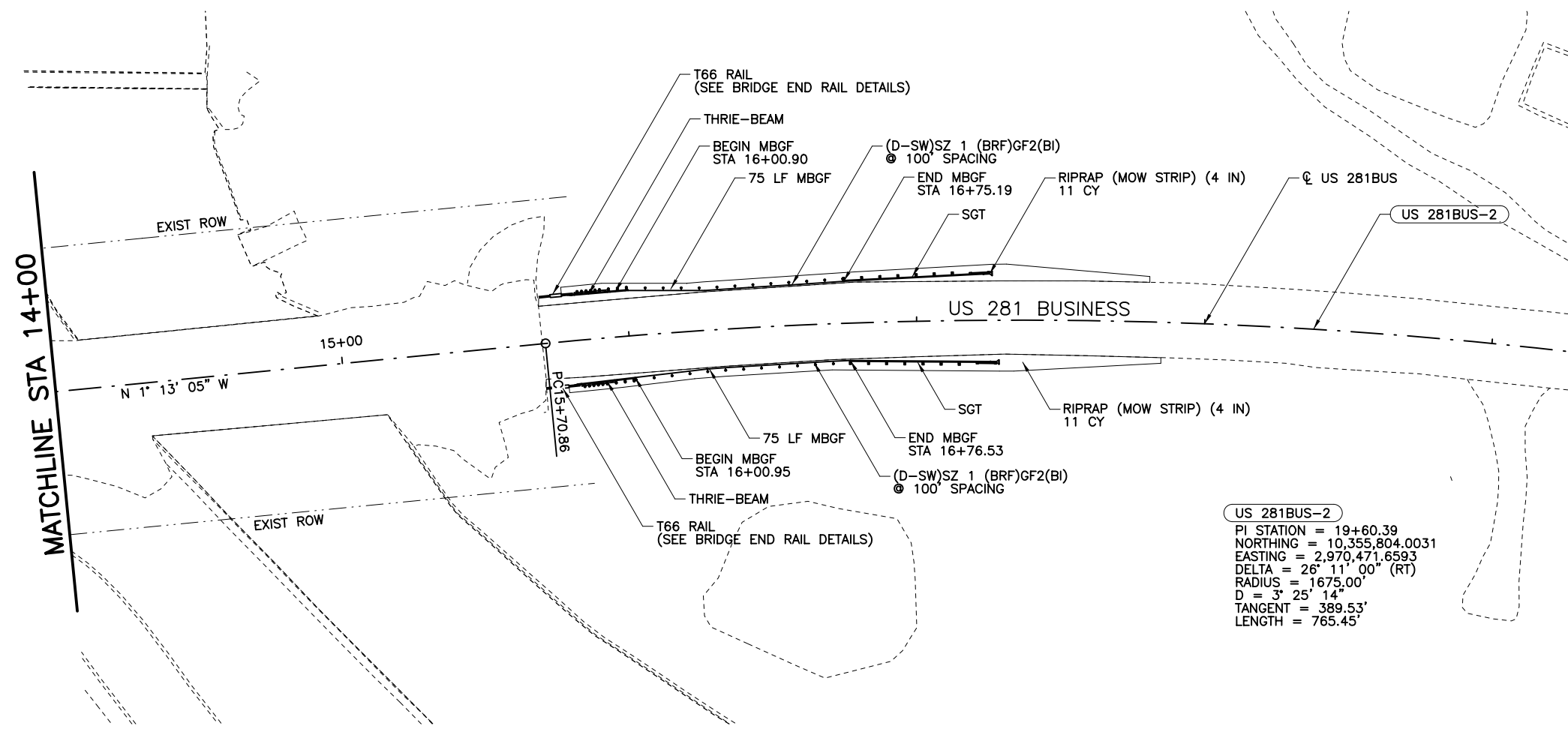
CROSS STREET PLAN & PROFILE

US 281 BUSINESS

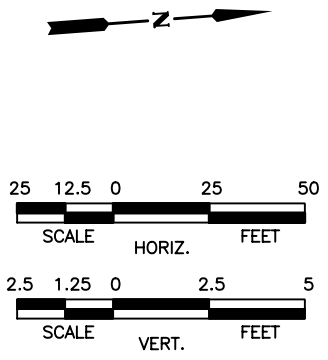
Designed:	CPY	FED. RD. DIST. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
Checked:	CPY	6	TEXAS		US 281
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.
Checked:	CPY	BWD	LAMPASAS	0251	06
					JOB NO.
					036
					SHEET NO.
					128

1/31/2023 3:39:46 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw

pw:/



US 281BUS-2
 PI STATION = 19+60.39
 NORTHING = 10,355,804.0031
 EASTING = 2,970,471.6593
 DELTA = 26° 11' 00" (RT)
 RADIUS = 1675.00'
 D = 3' 25' 14"
 TANGENT = 389.53'
 LENGTH = 765.45'



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED RIPRAP
 - PROPOSED STAMPED CONCRETE RIPRAP
 - PROPOSED RAISED ISLAND
 - DRIVEWAY ID

- NOTES:**
1. ALL STATIONS AND OFFSETS ARE FROM C US 281BUS UNLESS NOTED OTHERWISE.
 2. ALL LINEAR DIMENSIONS ARE TO THE FACE OF CURB.
 3. SEE DRIVEWAY DETAILS SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
 4. SEE MISCELLANEOUS DETAILS SHEETS FOR ADDITIONAL MAILBOX INFORMATION.
 5. SEE DRAINAGE DETAILS FOR ADDITIONAL INFORMATION.
 6. SEE SIDEWALK WALL/RETAINING WALL DETAILS FOR ADDITIONAL INFORMATION.



Kristen L. Perry
 9/2/2022

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741



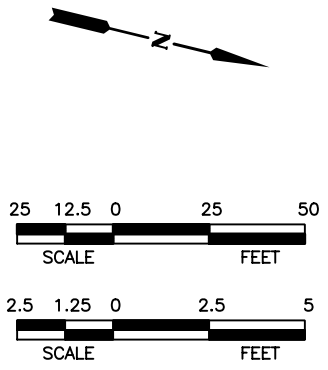
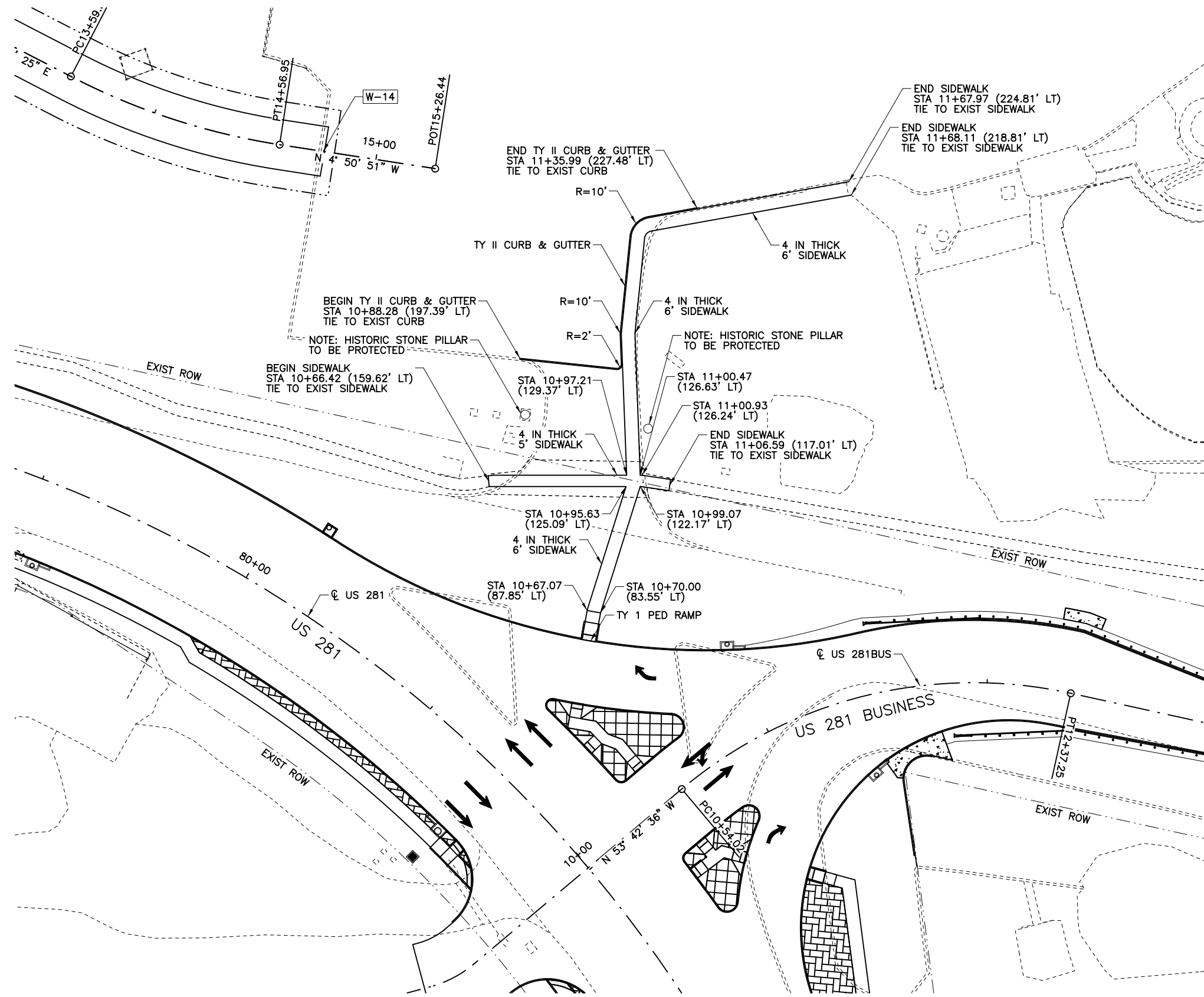
US 281 BUSINESS
CROSS STREET PLAN & PROFILE

US 281 BUSINESS

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	CPY	6	TEXAS		US 281		
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	CPY	BWD	LAMPASAS	0251	06	036	129

9/2/2022 7:38:21 AM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/

PROP. EL.
 EXIST. EL.



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED RIPRAP
 - PROPOSED STAMPED CONCRETE RIPRAP
 - PROPOSED RAISED ISLAND
 - DRIVEWAY ID

- NOTES:**
1. ALL STATIONS AND OFFSETS ARE FROM C US 281BUS UNLESS NOTED OTHERWISE.
 2. ALL LINEAR DIMENSIONS ARE TO THE FACE OF CURB.
 3. SEE DRIVEWAY DETAILS SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
 4. SEE MISCELLANEOUS DETAILS SHEETS FOR ADDITIONAL MAILBOX INFORMATION.
 5. SEE DRAINAGE DETAILS FOR ADDITIONAL INFORMATION.
 6. SEE SIDEWALK WALL/RETAINING WALL DETAILS FOR ADDITIONAL INFORMATION.



9/2/2022

Kristen L. Perry

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

©2022 Texas Department of Transportation

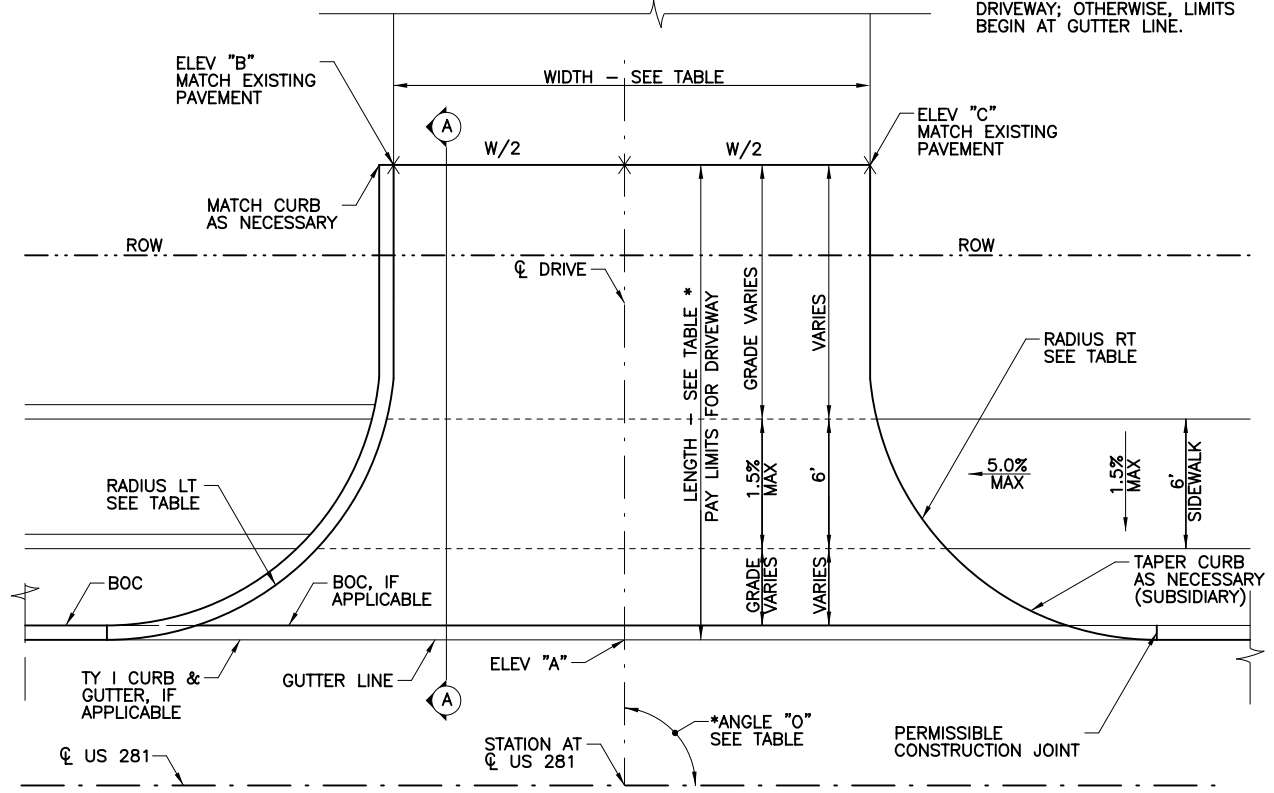
US 281

HANCOCK SPRINGS SIDEWALK DETAILS

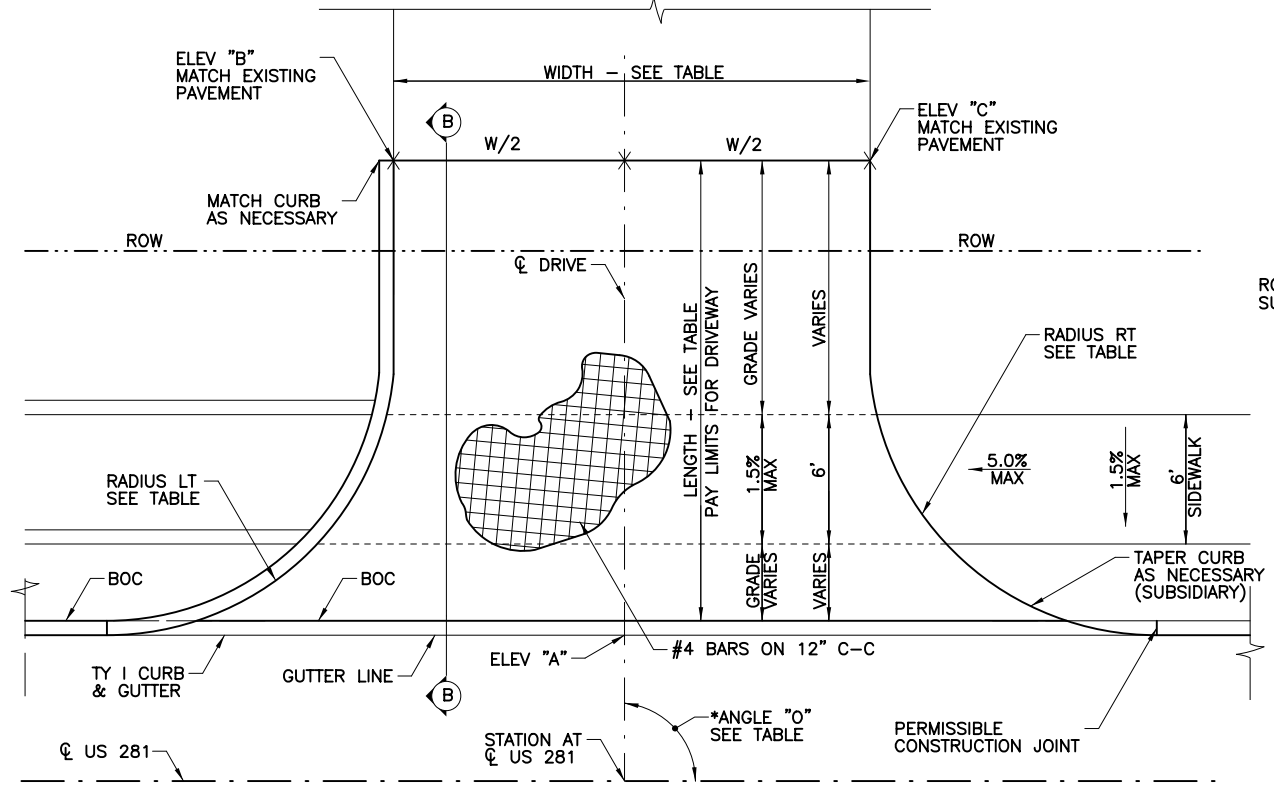
Designed:	CPY	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	CPY	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Drawn:	CPY	JOB NO.	036	SHEET NO.	130				
Checked:	CPY	BWD							

9/2/2022 7:38:29 AM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/

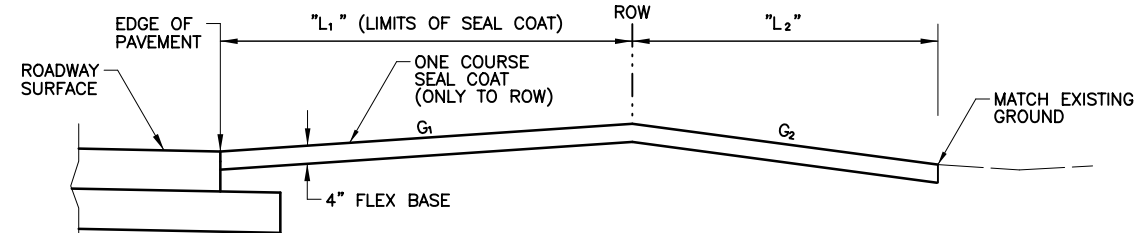
* LIMITS OF LENGTH BEGIN AT BOC IF THERE IS TY I CURB ACROSS THE FRONT OF THE DRIVEWAY; OTHERWISE, LIMITS BEGIN AT GUTTER LINE.



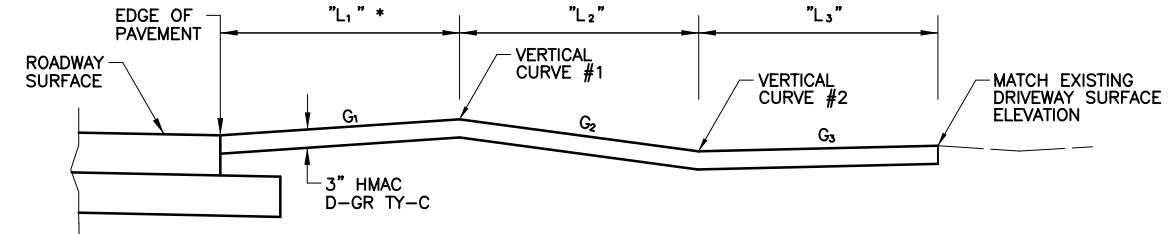
ASPHALT/BASE DRIVEWAY PLAN
SCALE: NTS



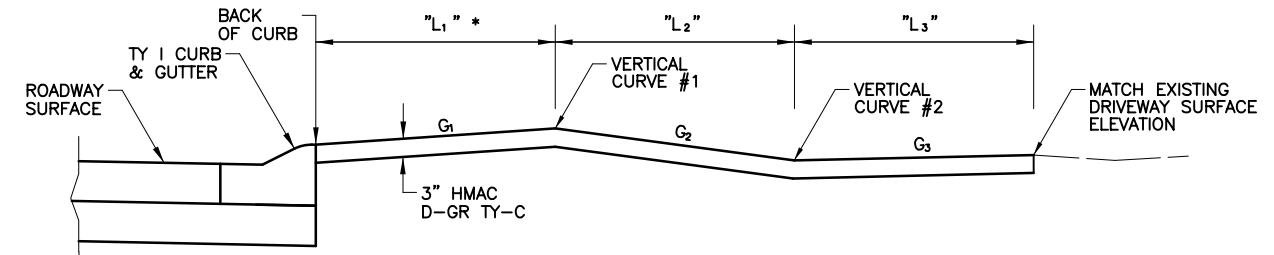
CONCRETE DRIVEWAY PLAN
SCALE: NTS



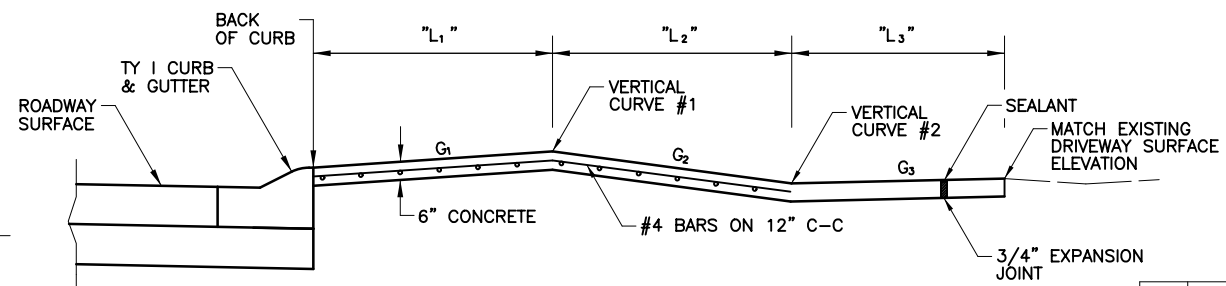
NOTE: CRITERIA WILL VARY WITH EACH DRIVEWAY
BASE DRIVEWAY SECTION "A-A"
SCALE: NTS



NOTE: CRITERIA WILL VARY WITH EACH DRIVEWAY
ASPHALT DRIVEWAY SECTION "A-A"
SCALE: NTS



NOTE: CRITERIA WILL VARY WITH EACH DRIVEWAY
ASPHALT DRIVEWAY SECTION "A-A"
SCALE: NTS



NOTE: CRITERIA WILL VARY WITH EACH DRIVEWAY
CONCRETE DRIVEWAY SECTION "B-B"
SCALE: NTS



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE

CP&Y
TEXAS REGISTERED ENGINEERING FIRM F-1741

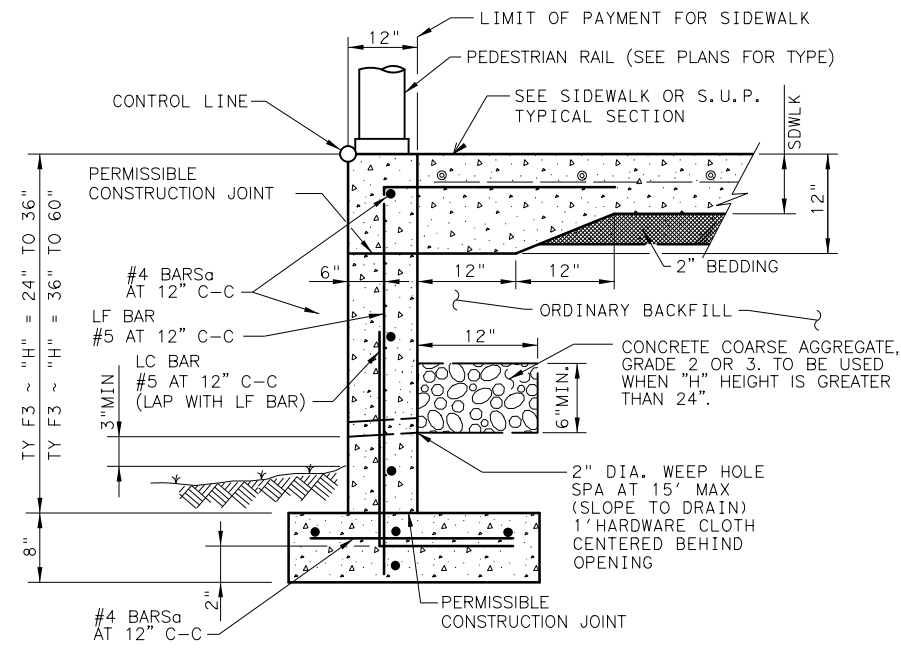
©2023 Texas Department of Transportation

DRIVEWAY DETAILS

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	CPY	6	TEXAS		US 281		
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	CPY	BWD	LAMPASAS	0251	06	036	131

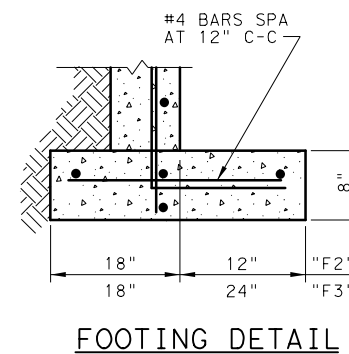
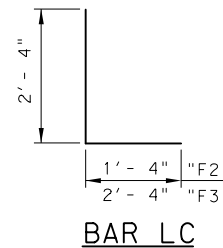
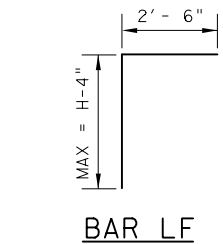
1/31/2023 4:41:41 PM kperry
cpvbw_ANSIB.tbl
cpvpdf_ANSIB.pltcfgr
pw:/

9/2/2022 9:14:30 AM kho
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfq
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.04 Roadway/49304RDsd01.dgn



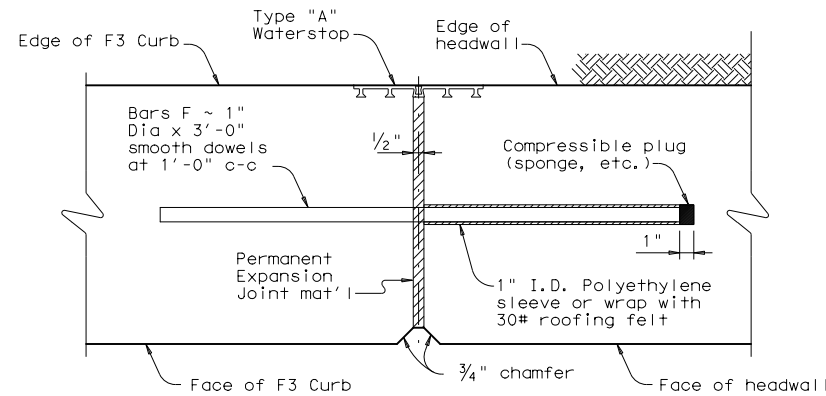
CONC CURB (TY F2 AND F3)

† Until the sidewalk is complete, lateral support for the "F" curbs will be required.

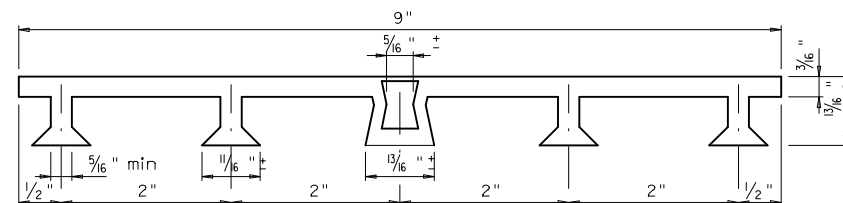


- GENERAL NOTES:
1. ALL CONCRETE INCLUDING SIDEWALK SHALL BE CLASS "C" CONCRETE, $f'c = 3,600$ PSI.
 2. ALL REINFORCING STEEL SHALL BE GRADE 60.
 3. COVER DIMENSIONS ARE CLEAR DIMENSIONS.
 4. REINFORCING BAR DIMENSIONS ARE OUT-TO-OUT BAR.
 5. ALL WORK SHOWN BEYOND TYPICAL SIDEWALK AND PED RAIL IS SUBSIDIARY.

DESIGN SOIL PARAMETERS:
 SOIL UNIT WEIGHT = 120 PCF
 PHI = 30 DEGREES
 COHESION = 50 PSF
 MIN PI = 15
 MAX PI = 30
 SURCHARGE:
 TYPE F CURB $q = 2'$ ADJACENT TO SIDEWALK
 MINIMUM FACTOR OF SAFETY AGAINST SLIDING IS 1.5.
 DESIGNED IN ACCORDANCE WITH CURRENT AASHTO STANDARDS
 AND INTERIM SPECIFICATIONS.



CONC CURB (TY F3) AND PROPOSED HEADWALL INTERFACE



PVC WATERSTOP TYPE "A"

Note: Dimensions and shapes may vary slightly depending on manufacturer.



09/02/2022

NO.	REVISION	BY	DATE
 TEXAS REGISTERED ENGINEERING FIRM F-1741			
 ©2022 Texas Department of Transportation			
US 281			
SIDEWALK WALL DETAILS			
Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.
Checked: CPY			US 281
Drawn: CPY	DIST. COUNTY	CONTROL NO. SECTION NO.	JOB NO. SHEET NO.
Checked: CPY	BWD LAMPASAS	0251 06	036 133

TABLE OF ESTIMATED QUANTITIES

BAR	NO.	SIZE	LENGTH	WEIGHT	
A	6	#4	2'-9"	11	
B	5	#4	5'-0"	17	
L	4	#4	2'-3"	6	
REINFORCING STEEL				LB	34
CLASS "C" CONC (MISC)				CY	0.3

- GENERAL NOTES:
- DESIGNED ACCORDING TO 2017 AASHTO LRFD BRIDGE DESIGN SPECIFICATION (8TH EDITION)(HL93 LOADING).
 - PROVIDE CLASS "C" CONCRETE ($f'_c = 3,600$ PSI).
 - PROVIDE GRADE 60 REINFORCING STEEL.
 - COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE.
- ① AN ESTIMATED QUANTITY OF 0.2 CY FLOWABLE BACKFILL TO BE PAID FOR SUBSIDIARY TO ITEM CLASS C CONC (MISC).
- ② DRILL AND EPOXY 6" MINIMUM INTO EXIST EXISTING SIDEWALK CONCRETE. PROVIDE TYPE III, CLASS C, D, E OR F EPOXY PER DMS-6100, "EPOXIES AND ADHESIVES".

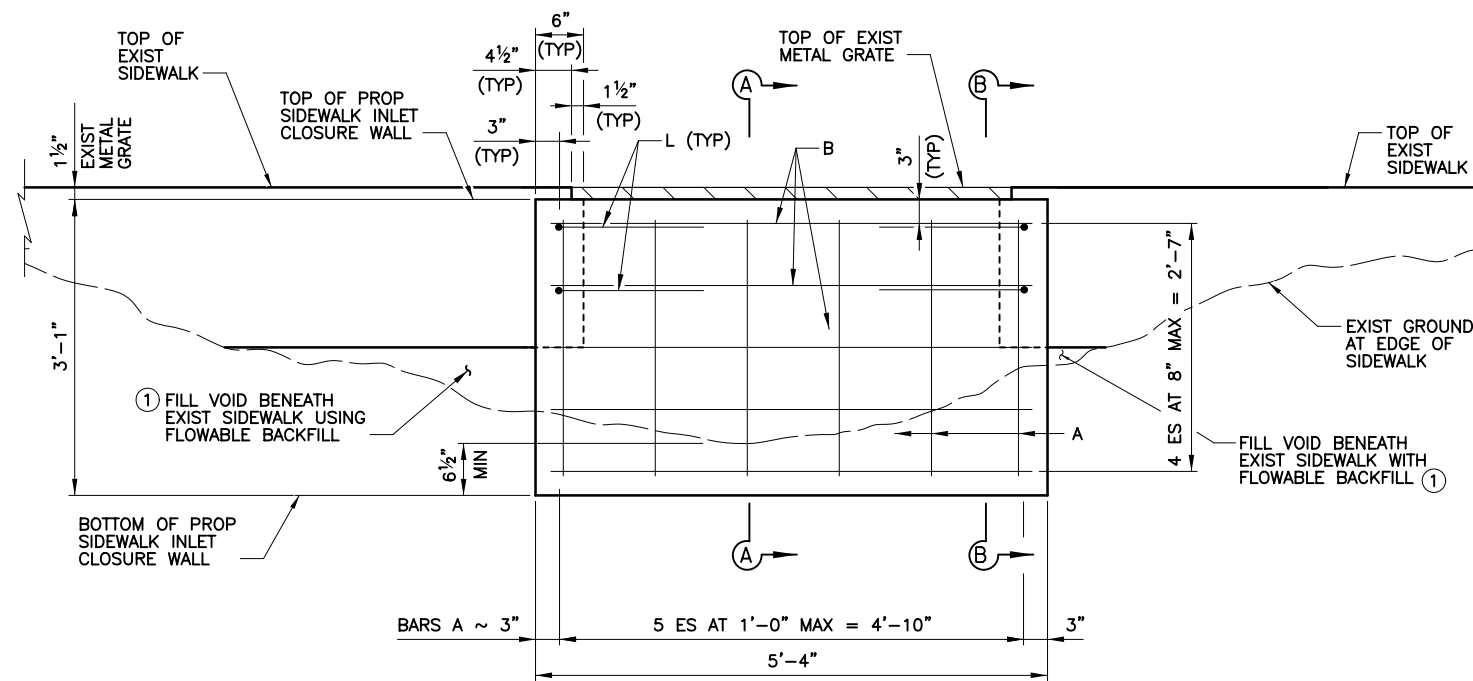
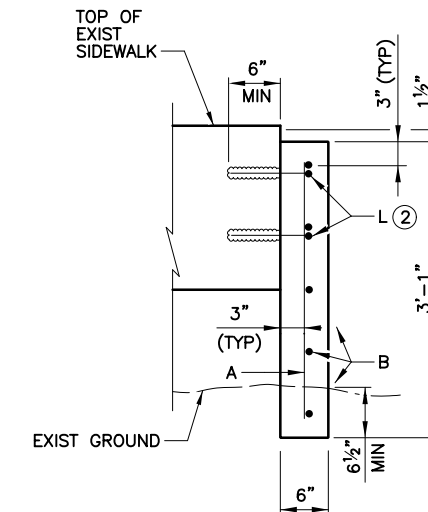
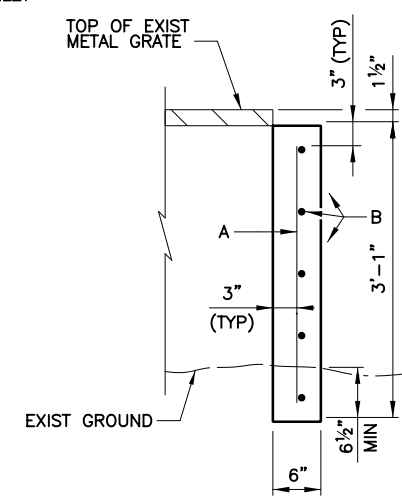
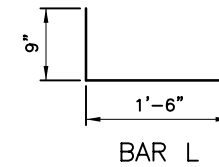
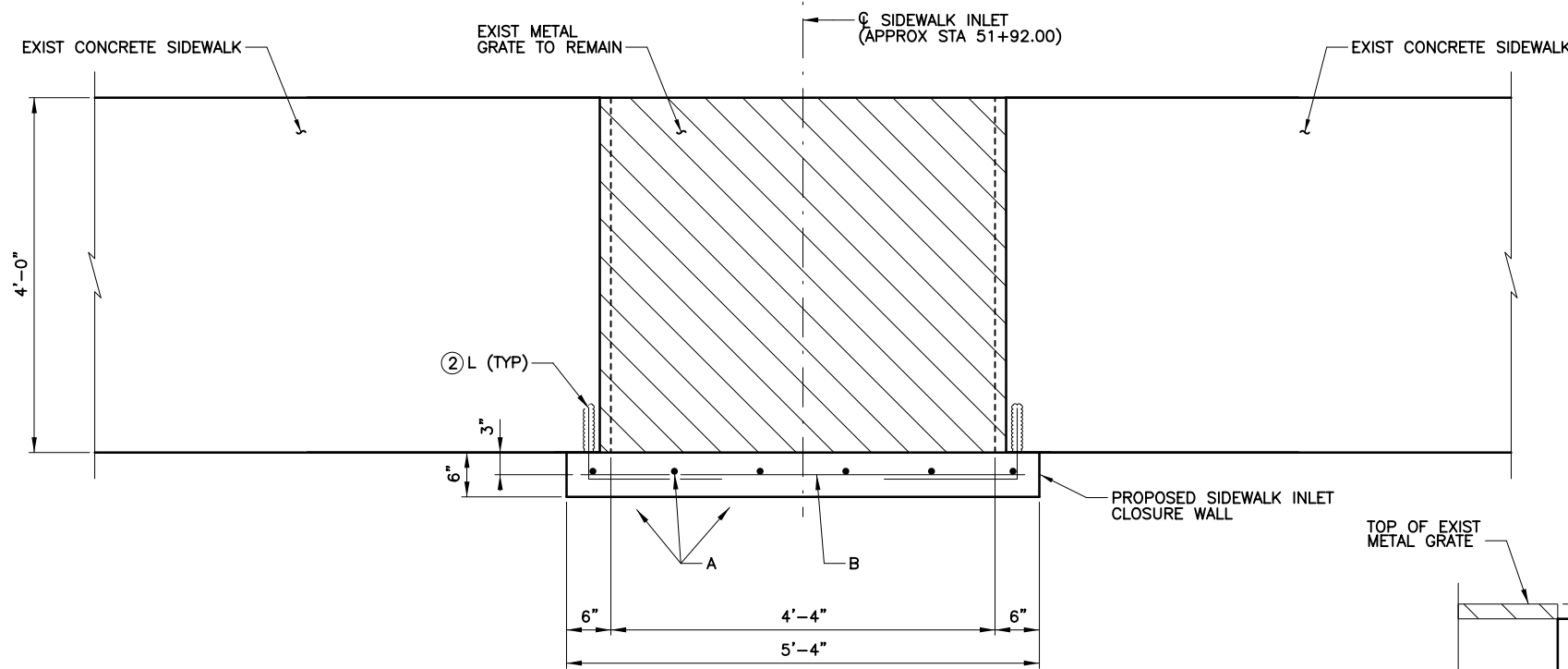


PHOTO OF REPAIR LOCATION

cpybw_ANSIB.tbl
 cpybw_ANSIB.pltcfq
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.05 Walls/49304RW_MISC05.dgn
 9/2/2022 12:09:52 PM k_ho

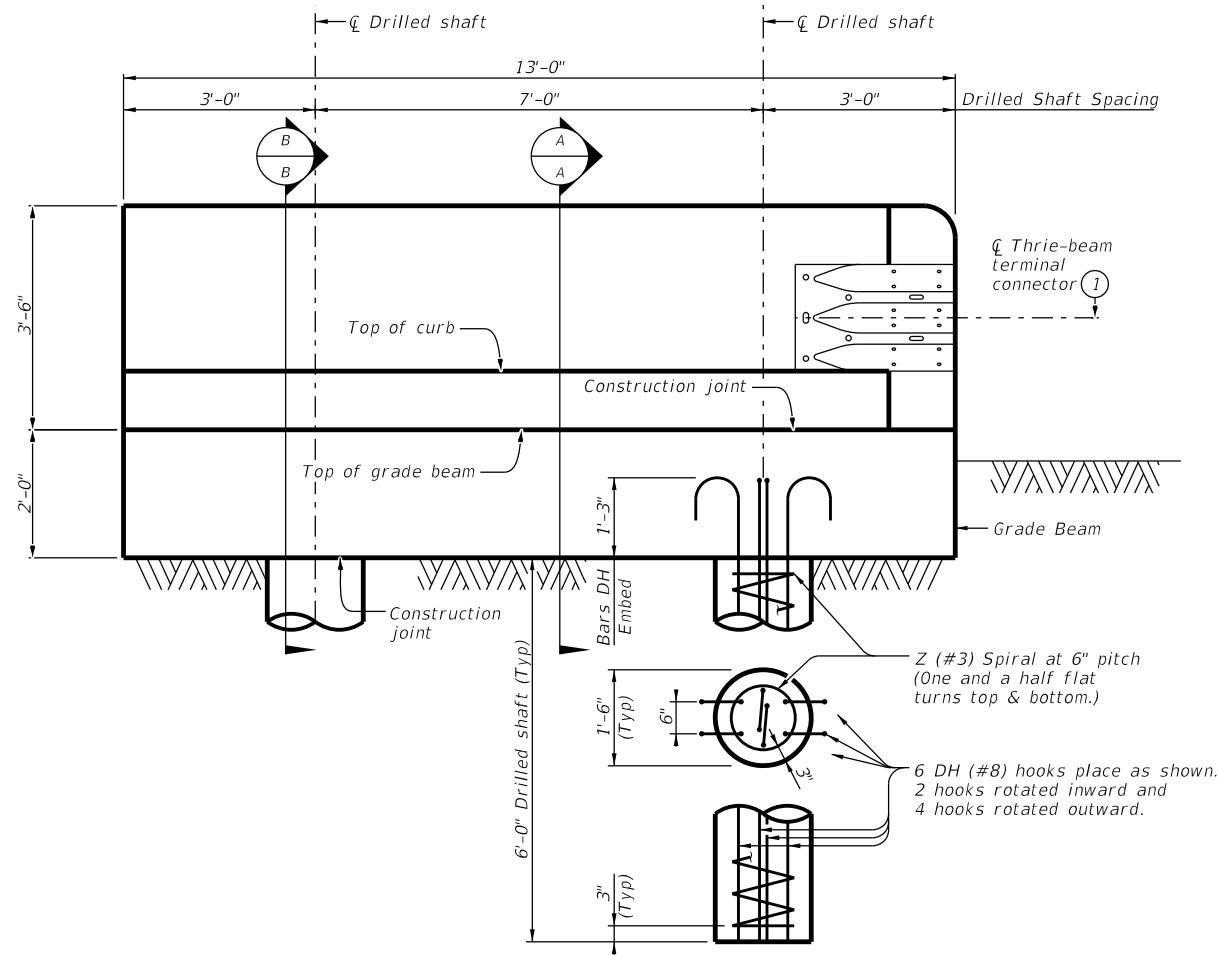
NO.	REVISION	BY	DATE

CP&Y
TEXAS REGISTERED ENGINEERING FIRM F-1741

©2022 **Texas Department of Transportation**
US 281

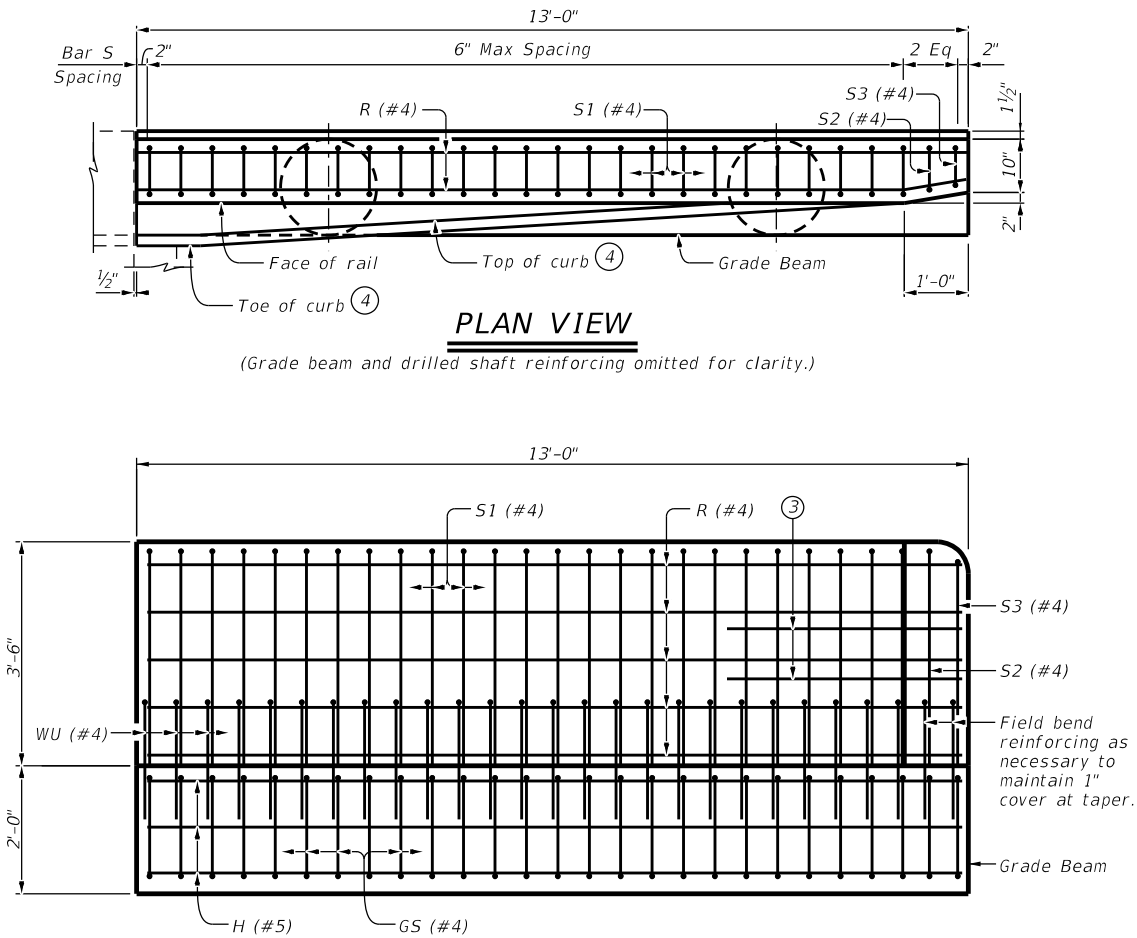
SIDEWALK INLET CLOSURE WALL

Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST.	COUNTY	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	DIST.	COUNTY	JOB NO. 036	SHEET NO. 134
Checked: CPY	BWD	LAMPASAS	0251	06

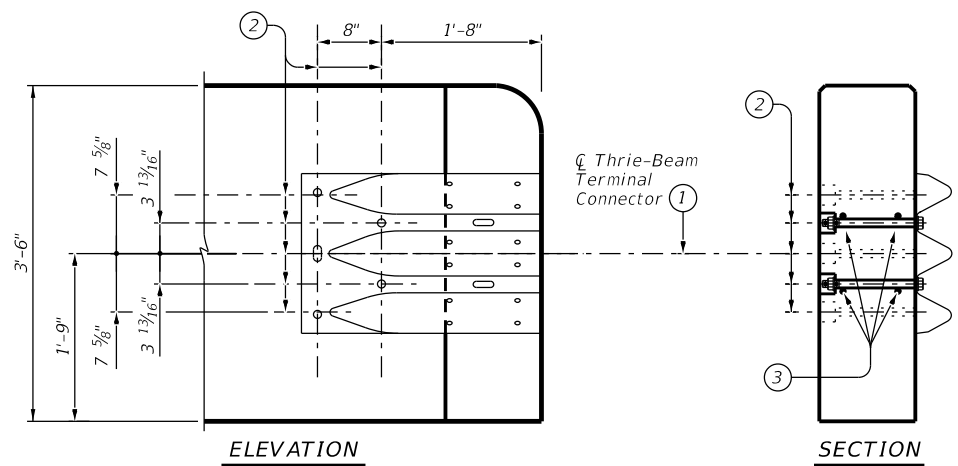


TRANSITION ELEVATION - GRADE BEAM ON DRILLED SHAFTS

(Rail reinforcing omitted for clarity.)



ELEVATION - RAIL AND GRADE BEAM REINFORCEMENT



TERMINAL CONNECTION DETAILS

- ① Terminal Connectors and associated hardware are to be paid for under the Item "Metal Beam Guard Fence." Attach Metal Beam Guard Fence Transitions to bridge rail and extend along embankment unless otherwise shown in plans.
- ② \varnothing 5 ~ 1" dia. holes and 2 1/2" dia. x 2" deep recesses. Form or core holes and recesses. Percussion drilling is not permitted. Adjust placement of reinforcing steel as necessary to avoid bolt holes and recesses. Bolt recesses are only required when pedestrian sidewalks are adjacent to back of rail. Tighten the 5 Terminal Connection Bolts in a well distributed pattern to prevent damage or distortion of the Thrie-Beam Connection and the MGBF Transition. Cut bolts off after installation so as to extend no more than 3/4" beyond nut. Paint ends of cut-off bolts with zinc-rich paint.
- ③ Place 4 additional Bars R (#4) 3'-8" in length inside Bars S (#4) and centered 2'-0" from end of rail. Field bend as needed.
- ④ Match existing curb shape at start of transition and taper to vertical face near terminal connection, as shown.

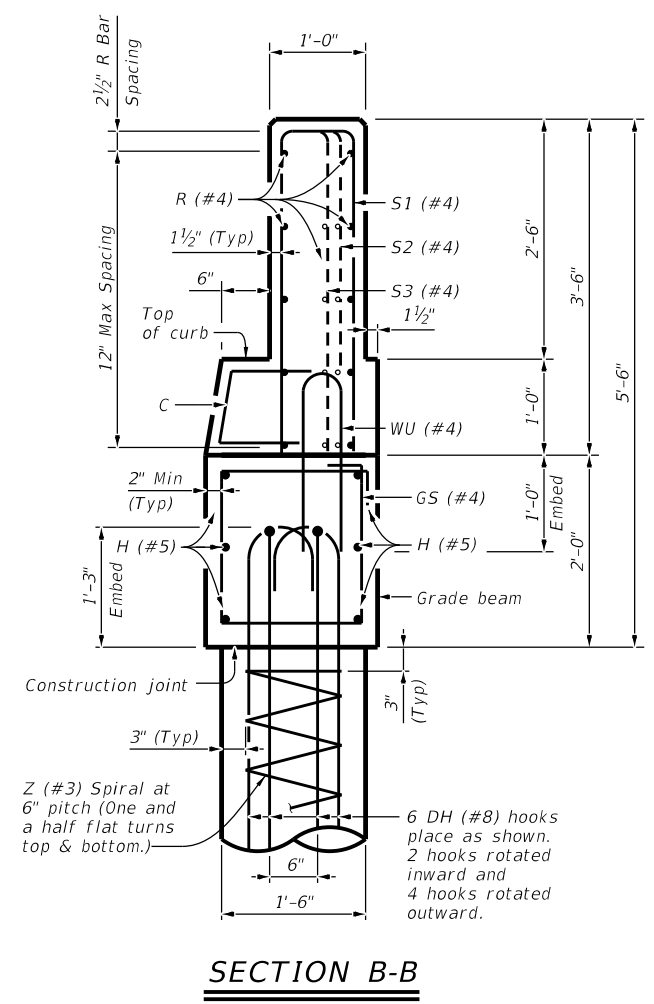
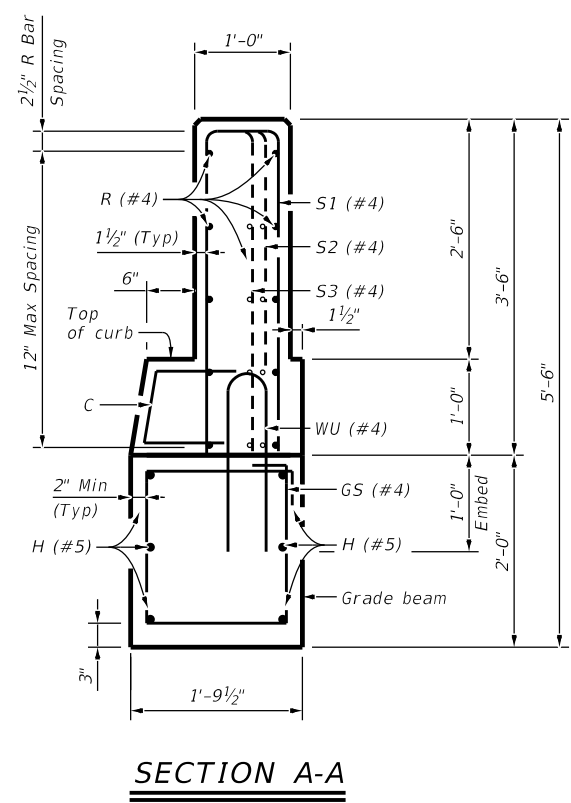


02/28/2022

SHEET 1 OF 2

TRANSITION RAIL DETAILS SULPHUR CREEK BRIDGE at BUSINESS 281 NBI# 23-141-0-0251-06-029				
FILE: r1483.dgn	DN: TAR	CK: RDO	DW: JER	CK: TAR
©TxDOT January 2022	CONT SECT	JOB	HIGHWAY	
REVISIONS	0251 06	036	US 281	
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	135	

DATE: 2/28/2022 10:55:00 AM
 FILE: \\ttdot.projectwiseonline.com:T:\XDOT\Documents\BRG\Design\Projects\RL483\rl483.dgn



CONSTRUCTION NOTES:
 The back of railing must be vertical unless otherwise shown on the plans or approved by the Engineer.
 Chamfer all exposed corners.

MATERIAL NOTES:
 Provide Class C concrete.
 Provide Grade 60 reinforcing steel.

GENERAL NOTES:
 Payment for drilled shafts and grade beam will be by Class C concrete.
 Payment for railing will be as per Item 450-6055, "Rail (Ty T221) (MOD)."
 Excavation will be subsidiary to other Items.

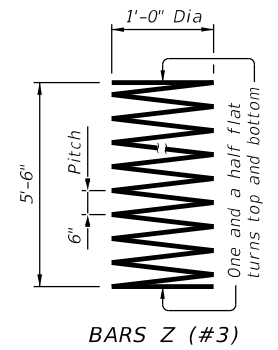
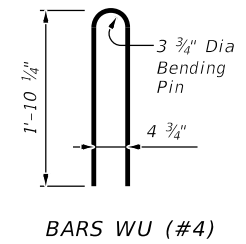
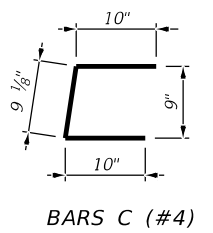
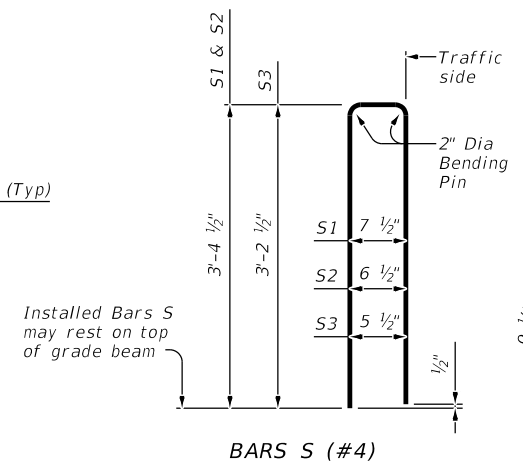
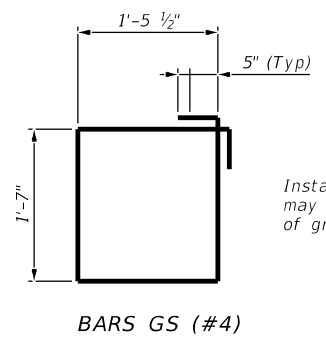
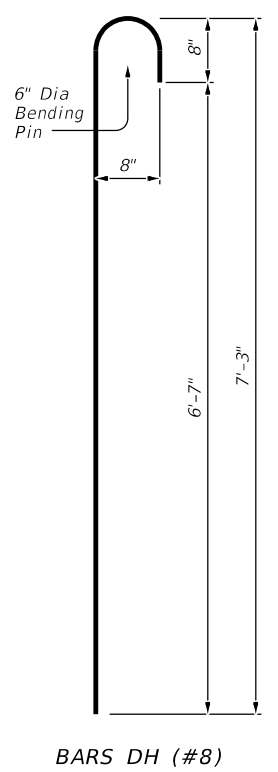
Cover dimensions are clear dimensions, unless noted otherwise.
 Reinforcing bar dimensions shown are out-to-out of bar.

SHEET 2 OF 2

				Bridge Division
TRANSITION RAIL DETAILS SULPHUR CREEK BRIDGE at BUSINESS 281 NBI# 23-141-0-0251-06-029				
FILE: rl483.dgn	DN: TAR	CK: RDO	DW: JER	CK: TAR
©TxDOT January 2022	CONT 0251	SECT 06	JOB 036	HIGHWAY US 281
REVISIONS	DIST BWD	COUNTY LAMPASAS	SHEET NO. 136	



02/28/2022



SECTION A-A

SECTION B-B

BARS DH (#8)

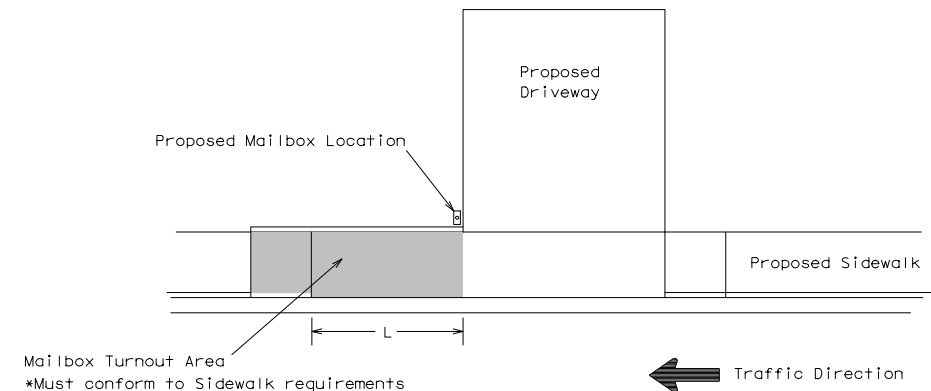
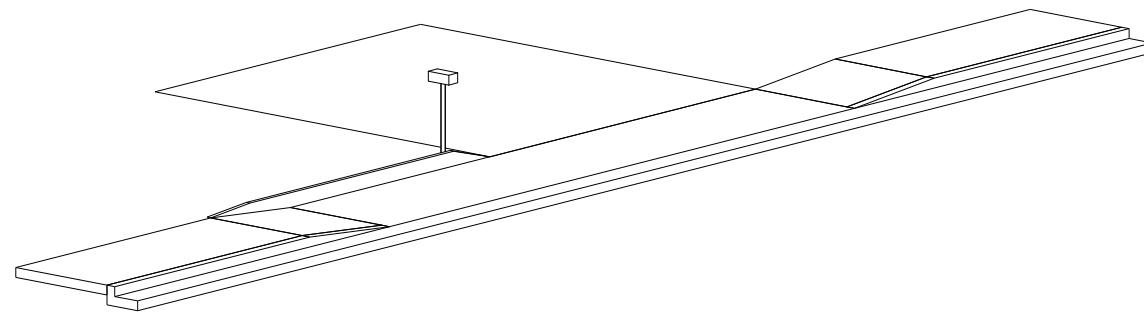
BARS GS (#4)

BARS S (#4)

BARS C (#4)

BARS WU (#4)

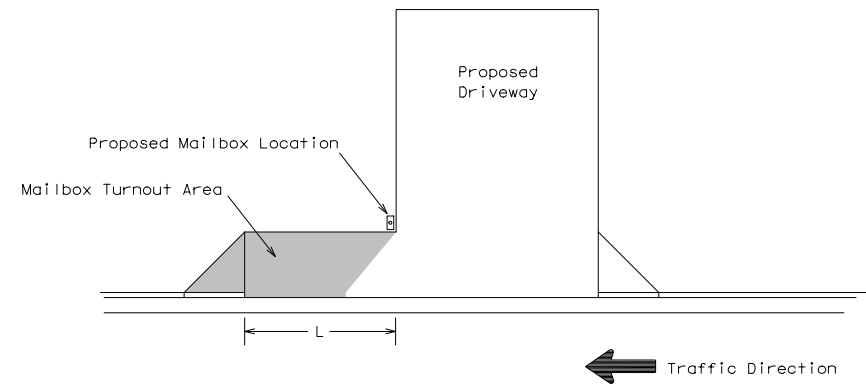
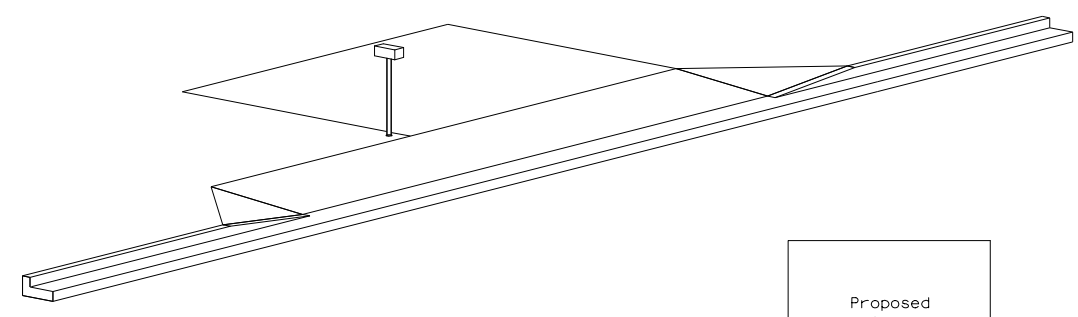
BARS Z (#3)



Mailbox Turnout Type 1

MAILBOXES TURNOUTS TYPE 1						
Station	Lt / Rt	"L" Length Ft.	560 6007 Mailbox (Single) Ea.	560 6008 Mailbox (Double) Ea.	560 6003 Mailbox (Multiple) Ea.	530 6007 Turnouts (Conc) S.Y.
53+32.72	Rt.	19	2			15
71+14.20	Rt.	12			1	9
SUB-TOTAL			2		1	24

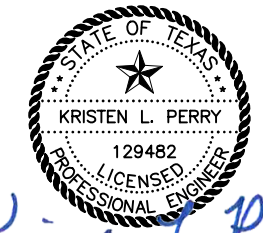
NOTE:
See Txdot Standards MB-11(1) and PED-18.
Typical section of the turnouts shall match the typical section and slopes of the proposed driveways.



Mailbox Turnout Type 2

MAILBOXES TURNOUTS TYPE 2						
Station	Lt / Rt	"L" Length Ft.	560 6007 Mailbox (Single) Ea.	560 6008 Mailbox (Double) Ea.	560 6003 Mailbox (Multiple) Ea.	530 6008 Turnouts (ACP) S.Y.
CR 4016	Lt.	20	1			24
STA 10+83.41						
SUB-TOTAL			1			24

NOTE:
See Txdot Standard MB-11(1).
Typical section of the turnouts shall match the typical section and slopes of the proposed driveways.



Kristen L. Perry

9/2/2022

cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/

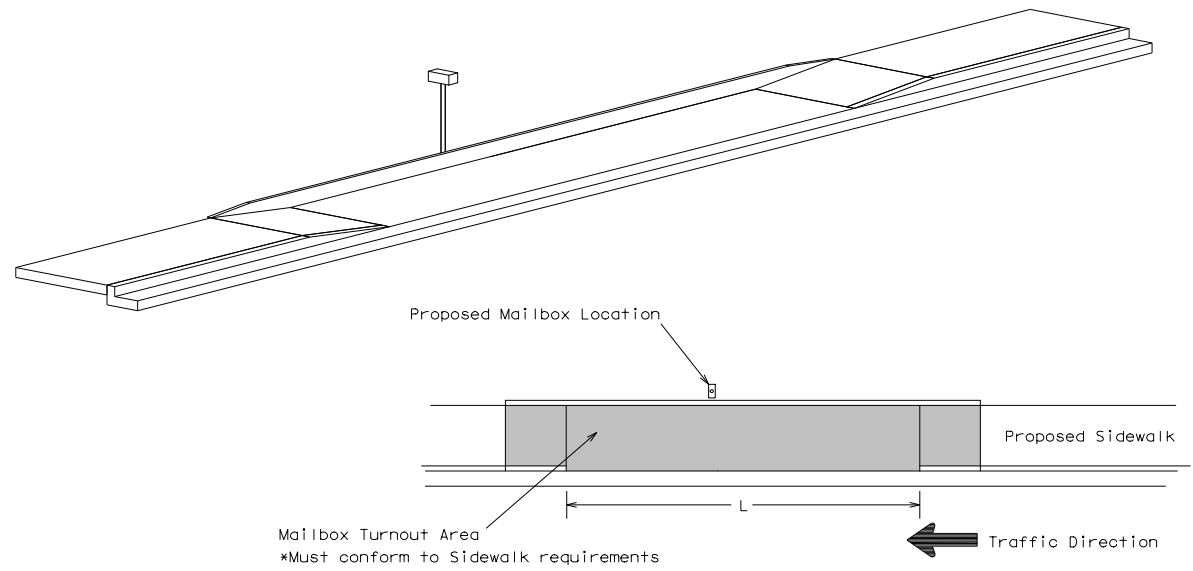
9/2/2022 7:38:45 AM kperry

NO.	REVISION	BY	DATE



MISCELLANEOUS DETAILS

Designed:	CPY	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.	0251 06 036	HIGHWAY NO.	US 281
Checked:	CPY	DIST.	BWD	COUNTY	LAMPASAS	CONTROL NO.	0251	SECTION NO.	06
Drawn:	CPY	JOB NO.	036	SHEET NO.	137				

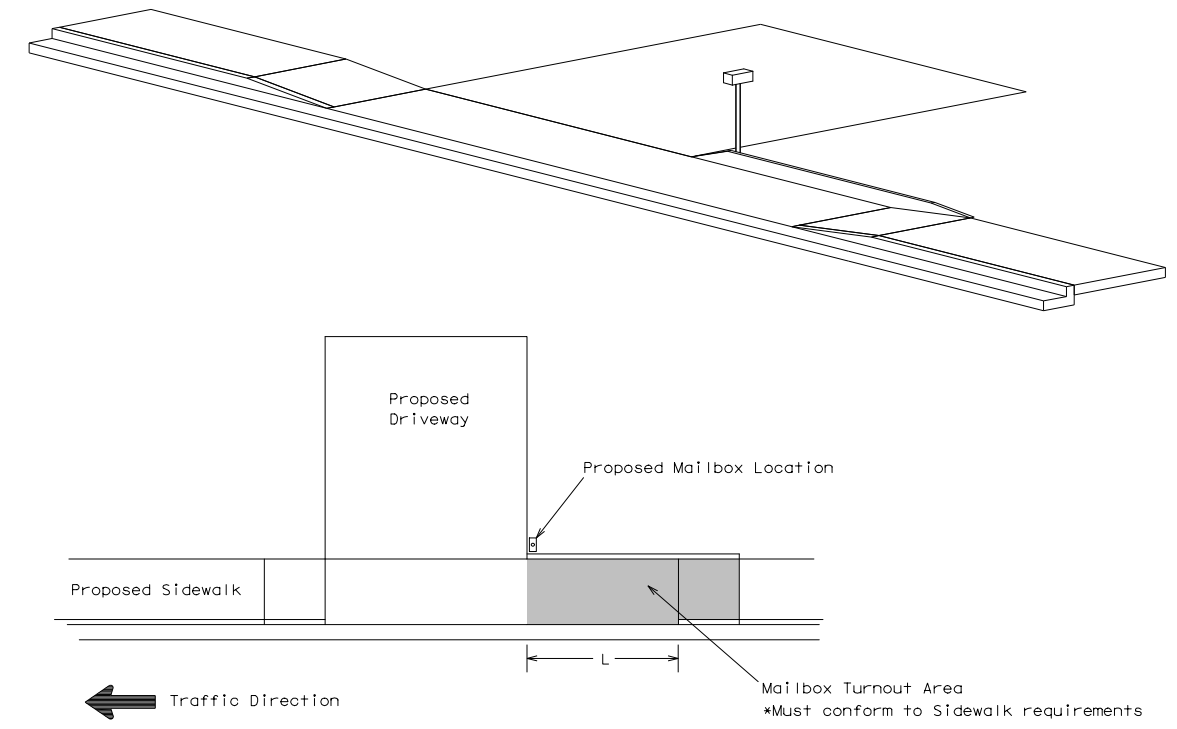


Mailbox Turnout Type 3

MAILBOXES TURNOUTS TYPE 3						
Station	Lt / Rt	"L" Length Ft.	560 6007 Mailbox (Single) Ea.	560 6008 Mailbox (Double) Ea.	560 6003 Mailbox (Multiple) Ea.	530 6007 Turnouts (Conc) S.Y.
46+60.00	Rt.	20	1			22
SUB-TOTAL			1			22

NOTE:
See Txdot Standards MB-11(I) and PED-18.

Typical section of the turnouts shall match the typical section and slopes of the proposed driveways.



Mailbox Turnout Type 4

MAILBOXES TURNOUTS TYPE 4						
Station	Lt / Rt	"L" Length Ft.	560 6007 Mailbox (Single) Ea.	560 6008 Mailbox (Double) Ea.	560 6003 Mailbox (Multiple) Ea.	530 6007 Turnouts (Conc) S.Y.
62+22.22	Lt.	20		1		15
SUB-TOTAL				1		15

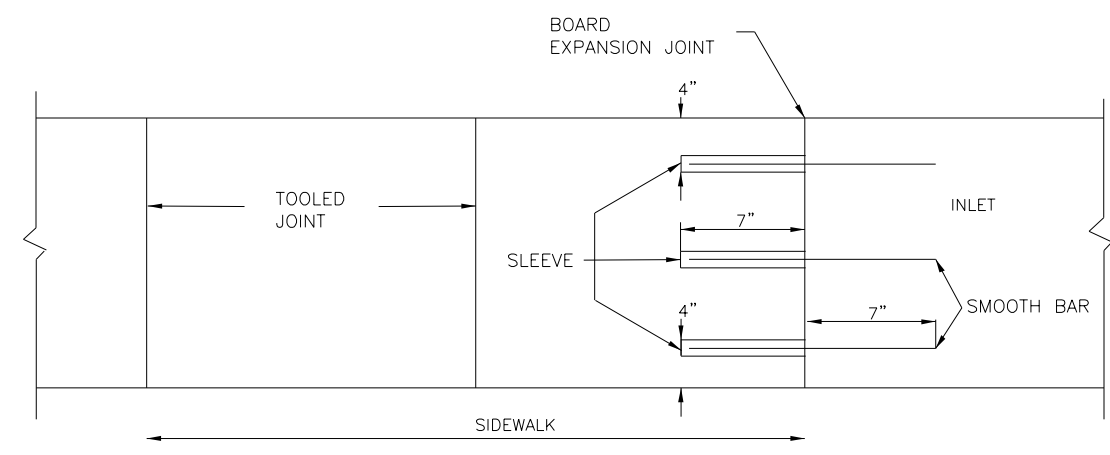
NOTE:
See Txdot Standards MB-11(I) and PED-18.

Typical section of the turnouts shall match the typical section and slopes of the proposed driveways.



9/2/2022

Kristen L. Perry



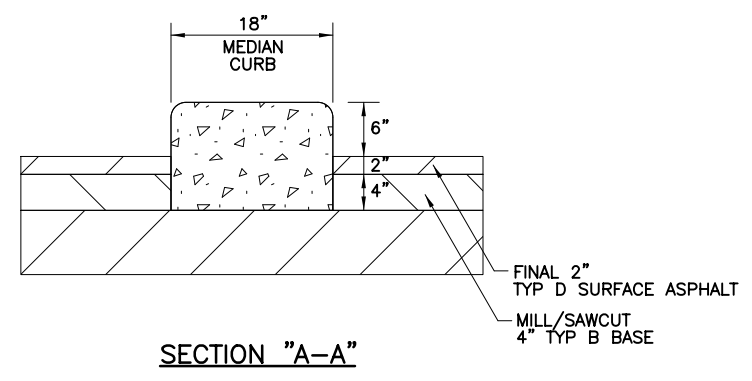
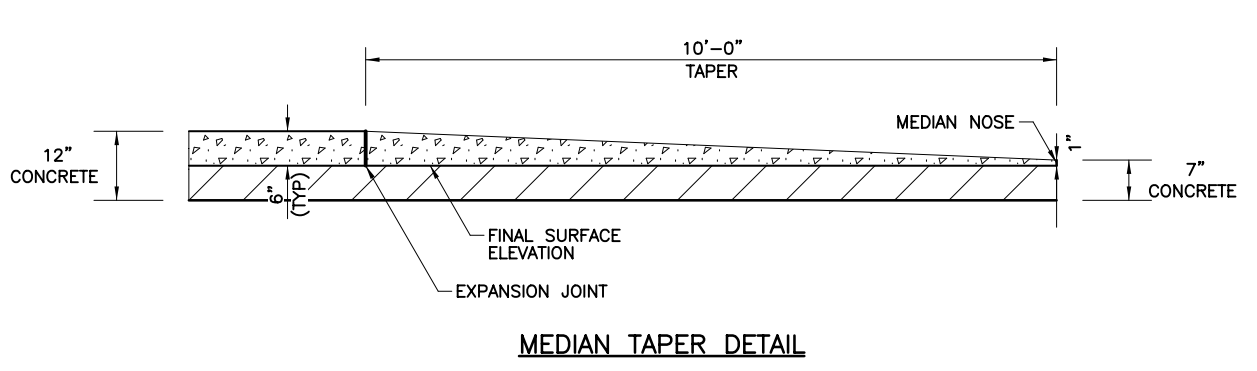
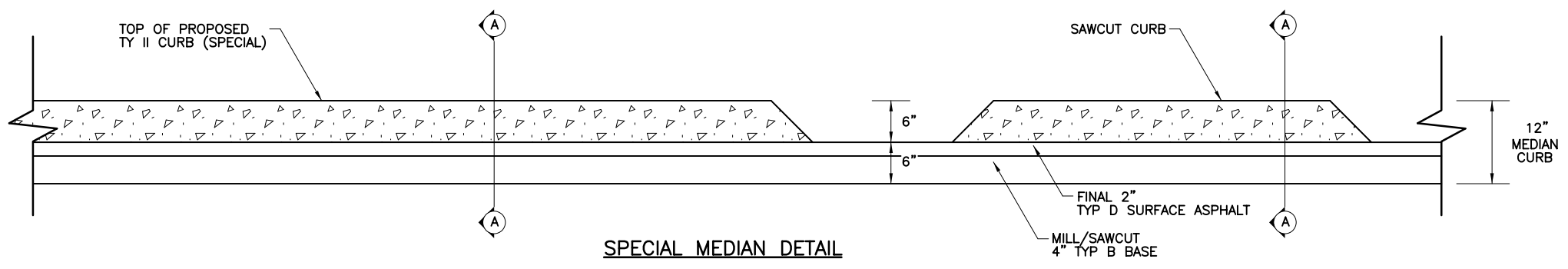
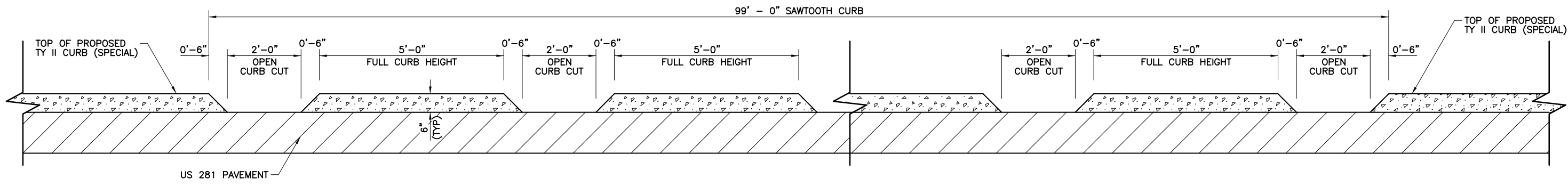
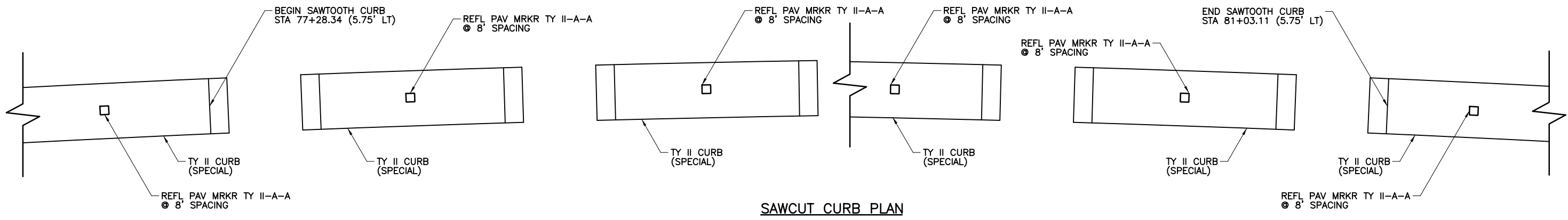
**TRANSVERSE JOINT DETAIL
PROPOSED SIDEWALK TO TOP OF INLET
N.T.S.**

NO.	REVISION	BY	DATE
 TEXAS REGISTERED ENGINEERING FIRM F-1741			
 ©2022 Texas Department of Transportation			
MISCELLANEOUS DETAILS			
Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.
Checked: CPY			US 281
Drawn: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251
Checked: CPY			SECTION NO. 06
			JOB NO. 036
			SHEET NO. 138

cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/

9/2/2022 7:38:49 AM kperry

2/17/2023 3:22:55 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfq
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.04 Roadway/49304RDcd02.dgn

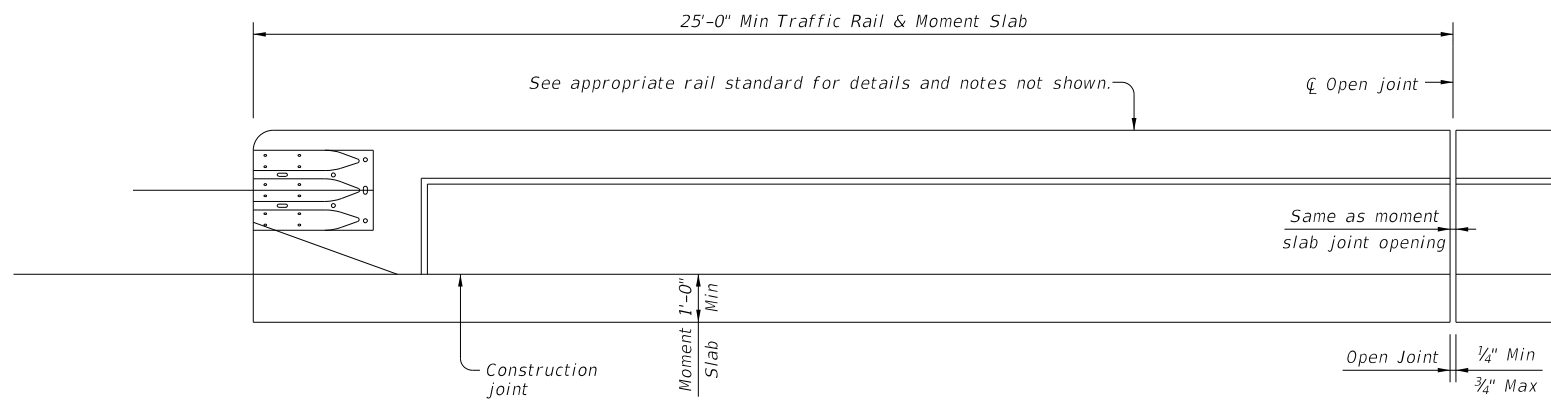


STATE OF TEXAS
 KRISTEN L. PERRY
 129482
 LICENSED PROFESSIONAL ENGINEER
 2/17/2023
Kristen L. Perry

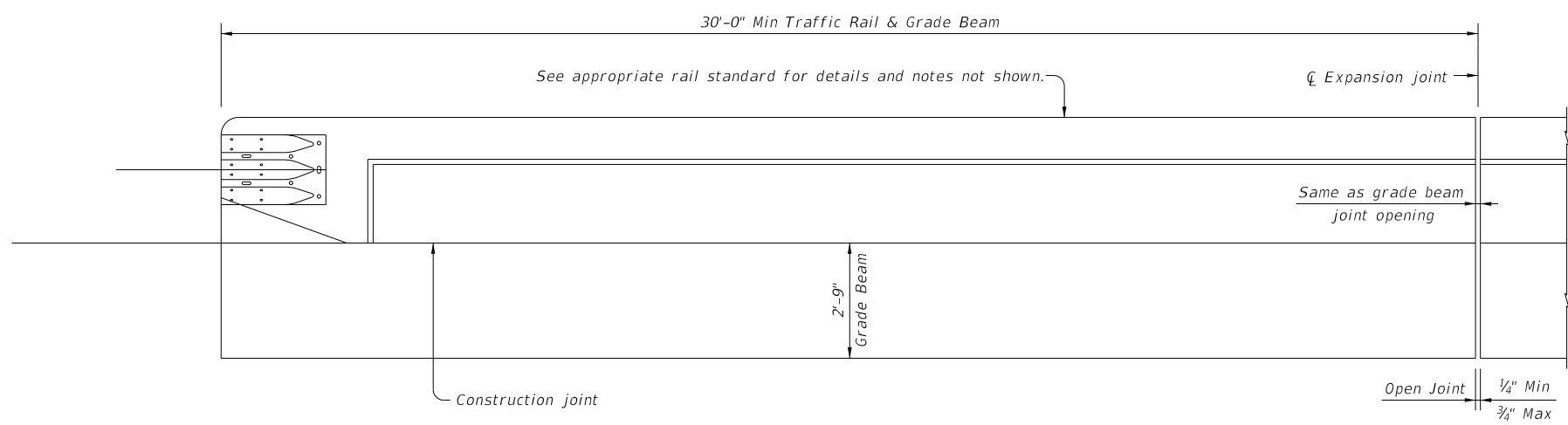
NO.	REVISION	BY	DATE
 TEXAS REGISTERED ENGINEERING FIRM F-1741			
 ©2023 Texas Department of Transportation			
MEDIAN DETAILS			
Designed:	CPY	FED. RD. DIV. NO.	STATE
Checked:	CPY	6	TEXAS
Drawn:	CPY	DIST.	COUNTY
Checked:	CPY	BWD	LAMPASAS
		CONTROL NO.	SECTION NO.
		0251	06
		JOB NO.	SHEET NO.
		036	138A
		FEDERAL AID PROJECT NO.	HIGHWAY NO.
			US 281

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.

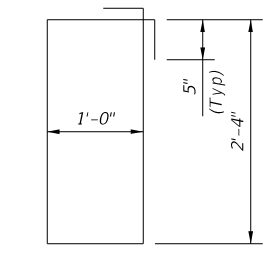
DATE: FILE:



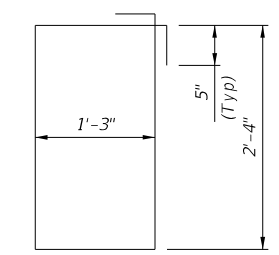
ROADWAY ELEVATION OF TRAFFIC RAIL ON MOMENT SLAB (TRF-MS)
 (Showing SSTR rail other rails are similar. Reinforcing not shown for clarity.)



ROADWAY ELEVATION OF TRAFFIC RAIL ON GRADE BEAM (TRF-GB)
 (Showing SSTR rail other rails are similar. Reinforcing not shown for clarity.)



BARS S1(#4)



BARS S2(#4)

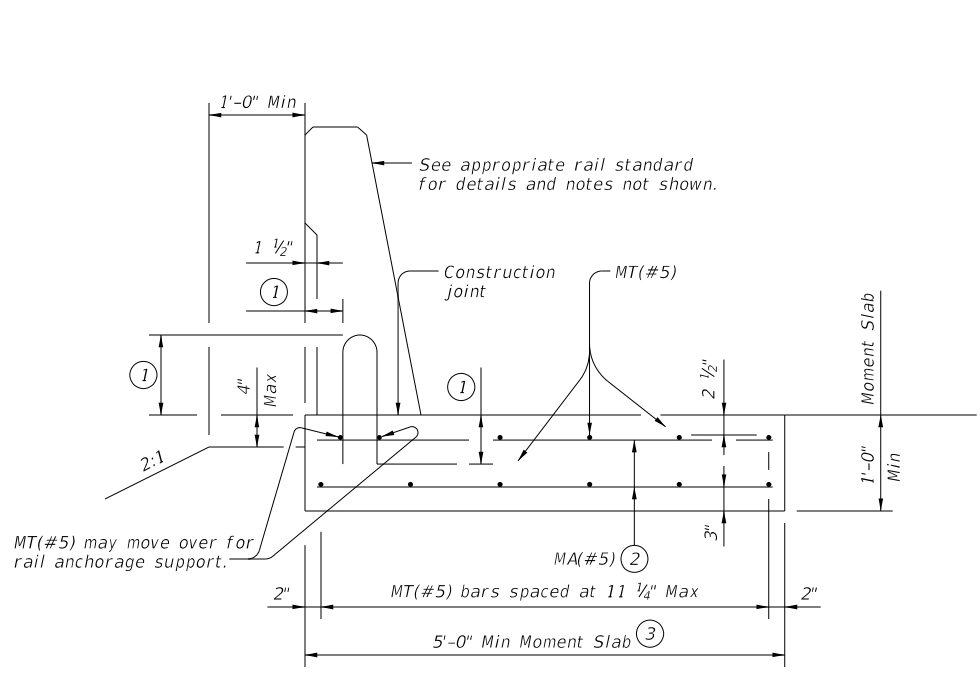
- ① See applicable bridge rail standard.
- ② MA(#5) space longitudinally along moment slab at 12" Max. (Spaced 2 1/2" longitudinally from outside edge of moment slab).
- ③ Approximate moment slab concrete = 0.19 CY/LF and reinforcement = 22.4 LB/LF.
- ④ S1(#4) or S2(#4) spaced longitudinally along grade beam at 8" Max. (Spaced 2 1/2" longitudinally from outside edge of grade beam).
- ⑤ Use bar S1(#4) with 1'-4" grade beam width and bridge rail types: All rails except for T224, C412, T66, C66, T80HT and T80SS. Approximate grade beam concrete = 0.14 CY/LF and reinforcement = 13.8 LB/LF. Use bar S2(#4) with 1'-7" grade beam width and bridge rail types: T66 and C66. Approximate grade beam concrete = 0.16 CY/LF and reinforcement = 14.2 LB/LF.
- ⑥ 1'-6" for bridge rail types: All rails except for T224, C412, T66, C66, T80HT and T80SS. 1'-9" bridge rail types: T66 and C66.
- ⑦ Modify reinforcing on standard bridge rail anchorage if necessary by extending rail anchorage 12" Min, vertically into traffic rail

CONSTRUCTION NOTES:
 Align moment slab (TRF-MS) or grade beam (TRF-GB) open joints with rail open joints maintaining no less than minimum rail length. Provide moment slab (TRF-MS) or grade beam (TRF-GB) with open joints at no greater than 100' spacing unless otherwise shown on the plans or approved by the Engineer.

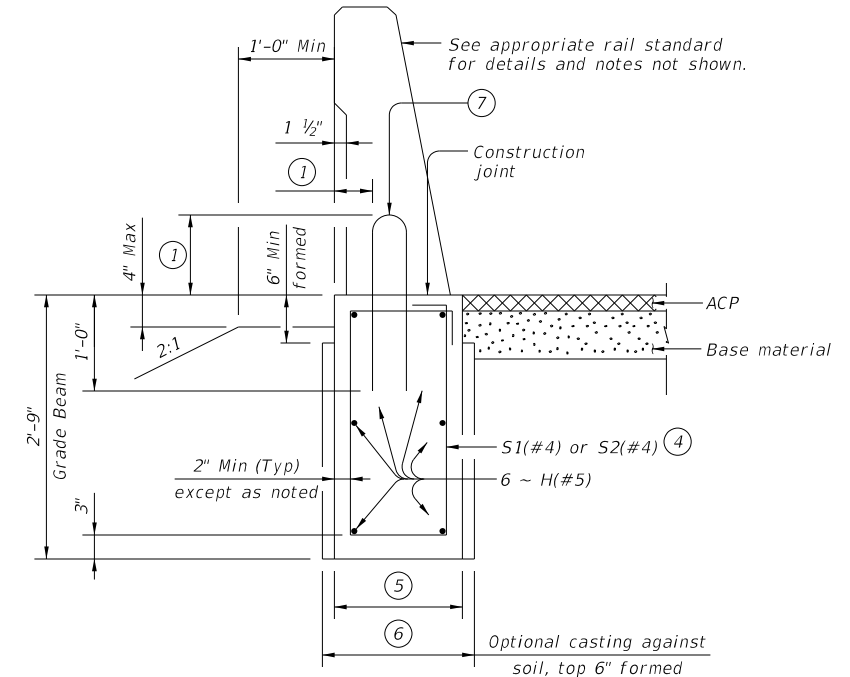
MATERIAL NOTES:
 Provide Class "C" concrete. Provide Class "C" (HPC) if required elsewhere.
 Provide Grade 60 reinforcing steel.
 Epoxy coat or galvanize all reinforcing steel if required elsewhere.
 Deformed Welded Wire Reinforcement (WWR) (ASTM A1064) of equal size and spacing may be substituted for bars S1(#4), S2(#4) and H(#5) unless noted otherwise. Provide the same laps as required for reinforcing bars.
 Provide bar laps, where required, as follows:
 Uncoated or galvanized ~ #5 = 2'-4"
 Epoxy coated ~ #5 = 3'-6"

GENERAL NOTES:
 Use of these details will result in a moment slab (TRF-MS) or grade beam (TRF-GB) foundation that is acceptable for traffic rails which are MASH TL-2, TL-3, or TL-4 compliant.
 See elsewhere in the plans for selected options between moment slab (TRF-MS) and/or grade beam (TRF-GB).
 The foundation design resistance is based on the current AASHTO bridge railing requirements with the assumption of fair to good soil support conditions. Poor soil conditions will require suitably deeper and/or wider foundations.
 See appropriate rail standard for details and notes not shown. This detail is intended for use as a guide to unusual railing anchorage situations but may be included in the plans, modified as necessary to apply to specific installations required on the project.
 Payment for moment slab (TRF-MS) and/or grade beam (TRF-GB) will be by Class "C" concrete or Class "C" (HPC) concrete for rail foundations.
 The associated bridge railing will be paid for by the linear foot which includes the concrete and reinforcement.
 Excavation will be subsidiary to other items.

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



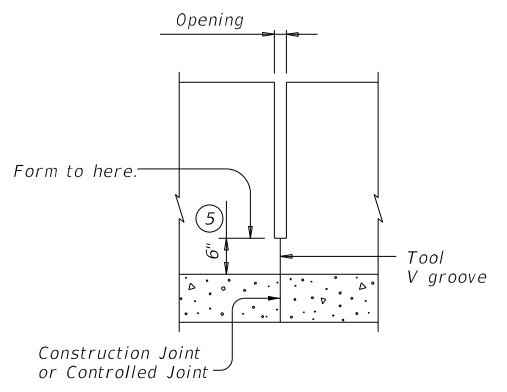
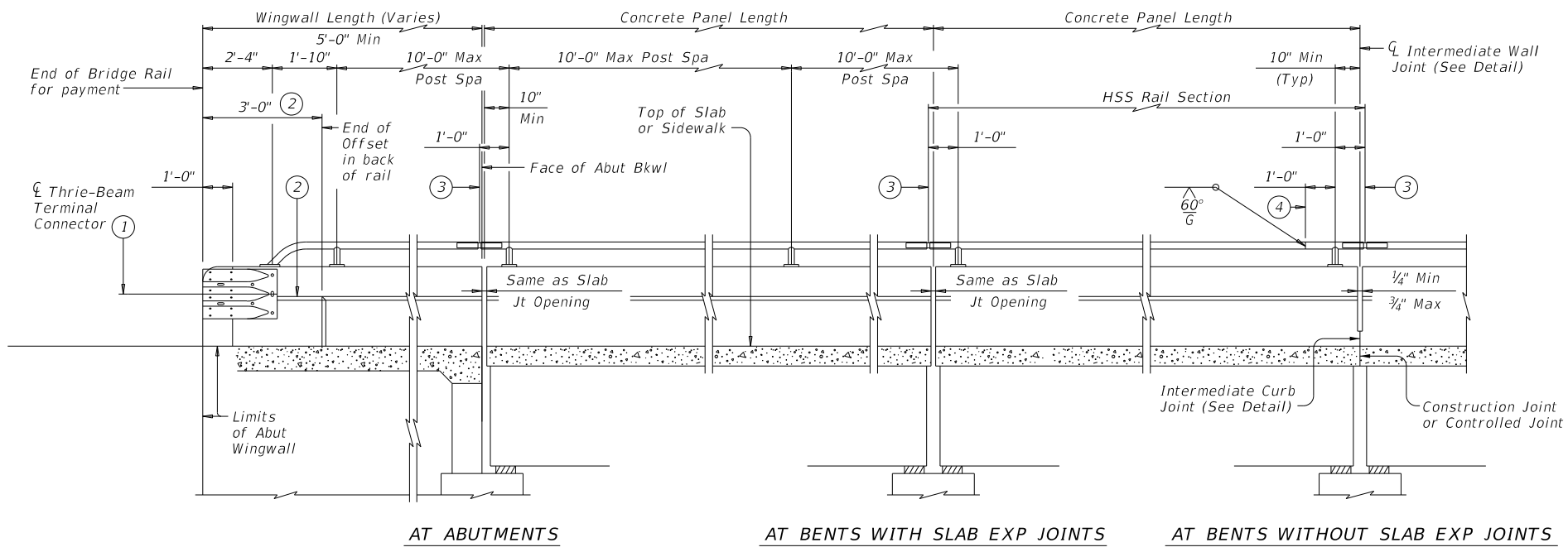
SECTION OF TRAFFIC RAIL ON MOMENT SLAB (TRF-MS)
 (Showing SSTR rail other rails are similar.)



SECTION OF TRAFFIC RAIL ON GRADE BEAM (TRF-GB)
 (Showing SSTR rail other rails are similar.)

		Bridge Division Standard	
TRAFFIC RAIL FOUNDATIONS FOR MASH TL-2, TL-3 & TL-4 BRIDGE RAILS			
TRF			
FILE: r1Std027-20.dgn	DN: TxDOT	CK: MPM	DW: JTR
REV: 0251	SECT: 06	JOB: 036	HIGHWAY: US 281
07-20: Added moment slab with rail foundation lengths.	DIST: BWD	COUNTY: LAMPASAS	SHEET NO: 139

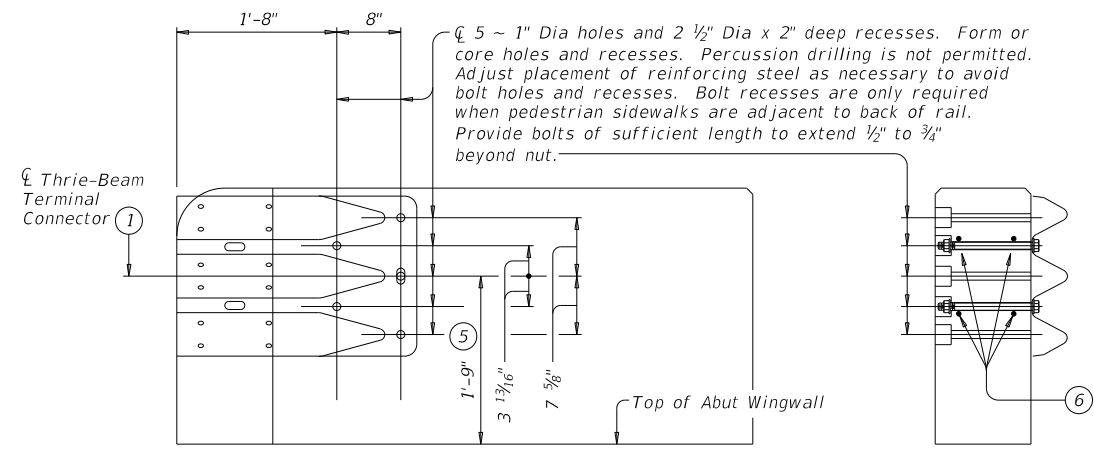
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



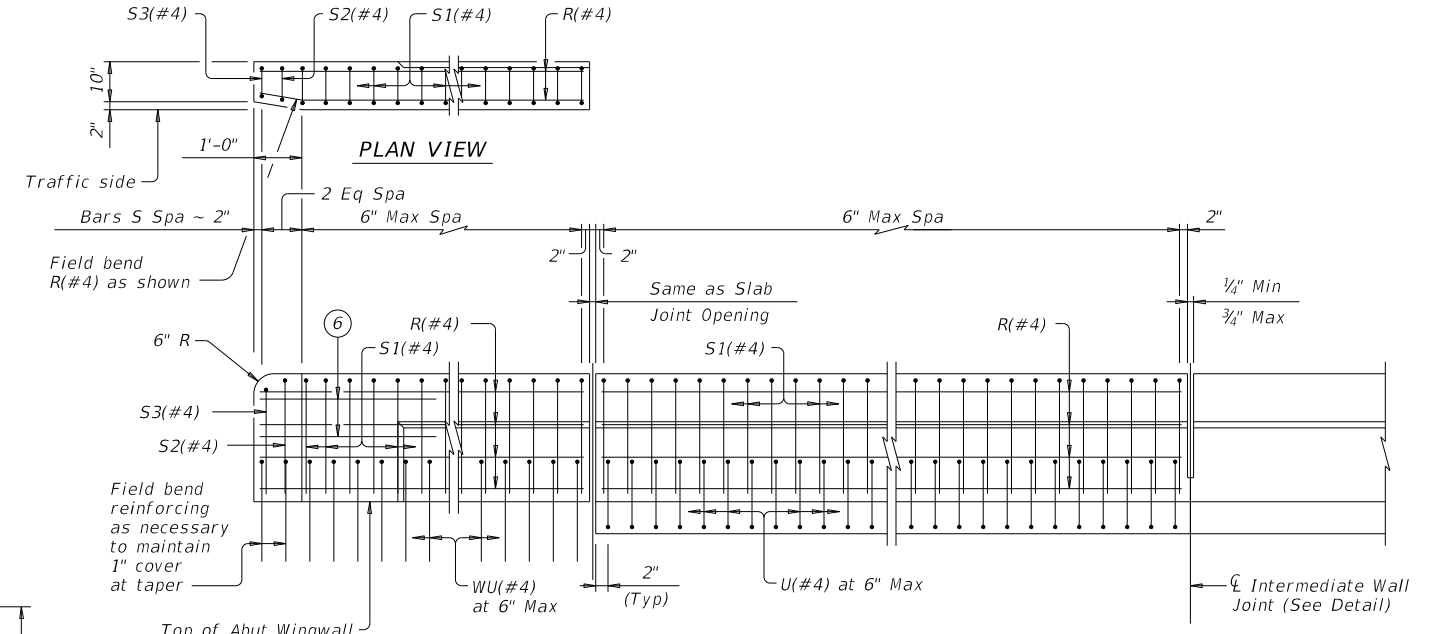
INTERMEDIATE WALL JOINT DETAIL
Provide at all interior bents without slab expansion joints.

- 1 Terminal Connectors and associated hardware are to be paid for under the Item "Metal Beam Guard Fence". Attach Metal Beam Guard Fence Transitions to the bridge rail and extend along the embankment unless otherwise shown in the plans.
- 2 Back of rail offset may, with Engineer's approval, be continued to the end of the railing.
- 3 Exp Joint or Splice Joint as required.
- 4 One shop splice per HSS rail section is permitted with minimum 85 percent penetration. The weld may be square groove, or single vee groove. Grind smooth.
- 5 Increase 2" for structures with overlay.
- 6 Place 4 additional Bars R(#4) 3'-8" in length inside Bars S(#4) and centered 2'-0" from end of rail when Terminal Connections are required. Field bend as needed.
- 7 HSS 2.875 x 0.203
- 8 HSS 2.375 x 0.154
- 9 3/8" Dia Hole in bottom of HSS rail (Minimum 1 hole between posts ~ Typ)

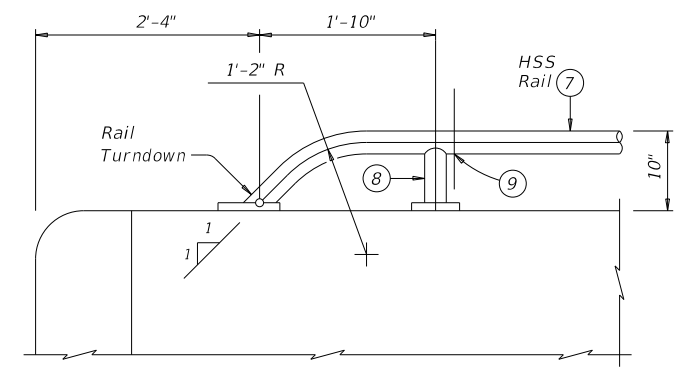
ROADWAY ELEVATION OF RAIL



TERMINAL CONNECTION DETAILS

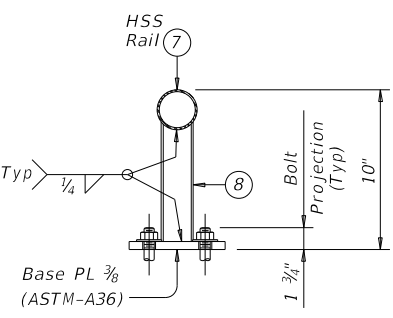


ELEVATION SHOWING TYPICAL REINFORCING PLACEMENT
(Showing without raised sidewalk)

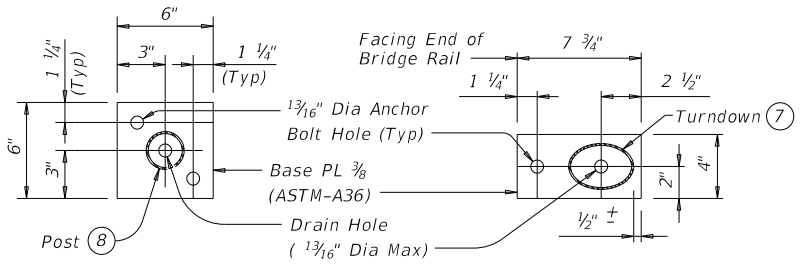


Note that at least two anchor points (as shown) are required for the Bridge Rail on the Abutment Wingwall. Longer Wingwalls may require more than two Rail anchorages.

HSS RAIL TERMINAL DETAIL



TRANSVERSE SECTION



RAIL TURNDOWN BASE PLATE PLAN
POST BASE PLATE PLAN

HSS RAIL DETAILS

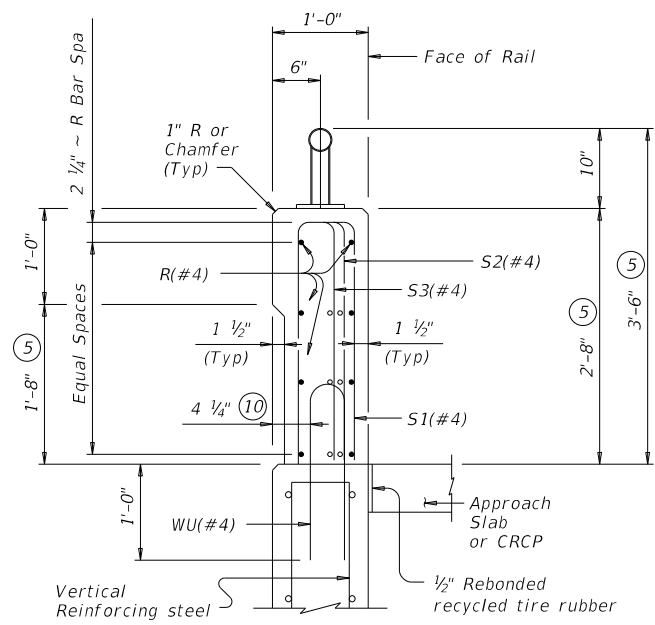
COMBINATION RAIL

TYPE C221

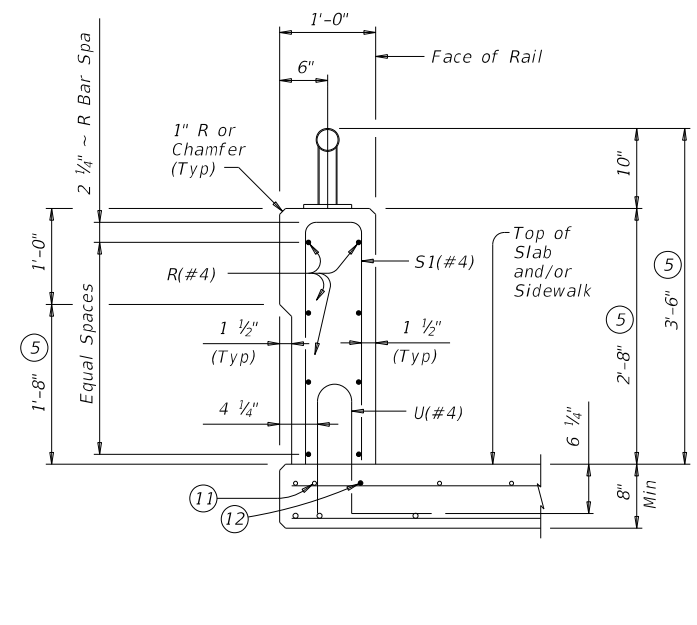
FILE: r1std018-19.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: JMH
©TxDOT September 2019	CONV	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	140	

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.

DATE:
FILE:

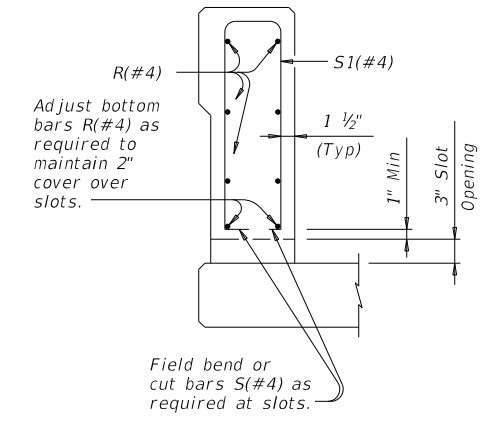


ON ABUTMENT WINGWALLS
OR CIP RETAINING WALLS

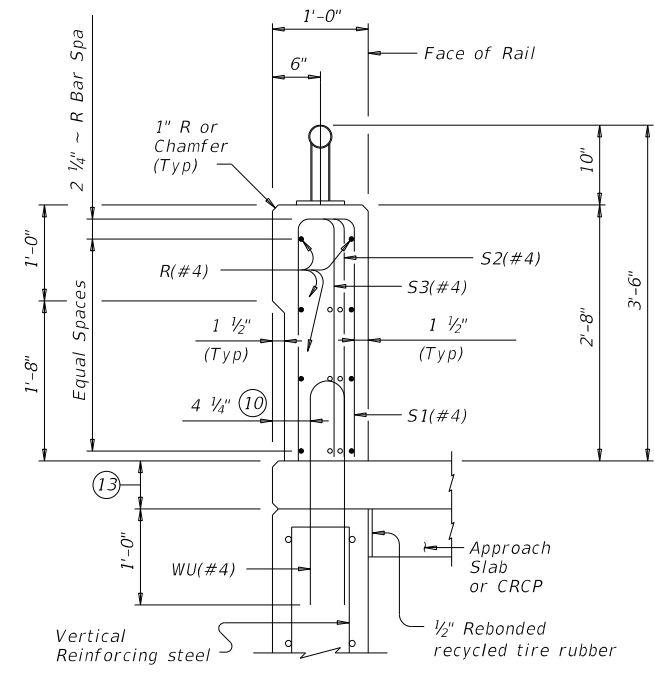


ON BRIDGE SLAB

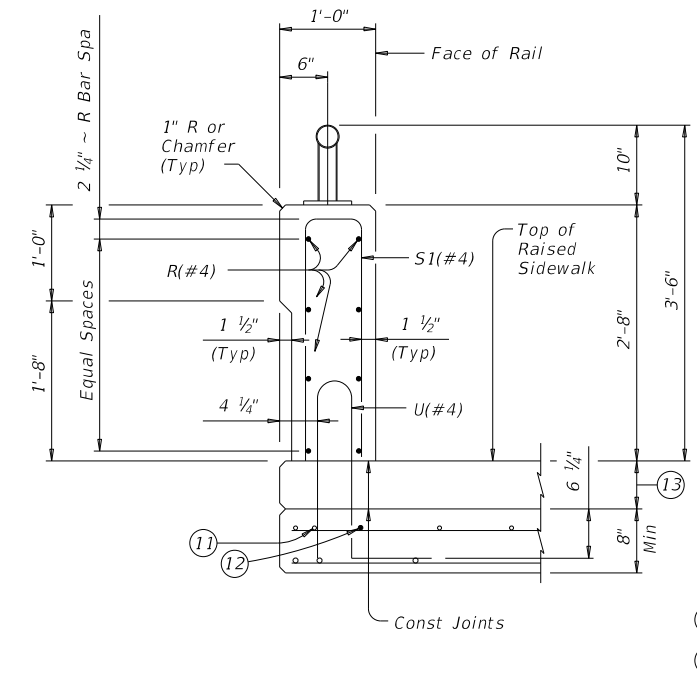
SECTIONS THRU RAIL WITHOUT RAISED SIDEWALK



SECTION THRU
OPTIONAL SIDE SLOT DRAIN

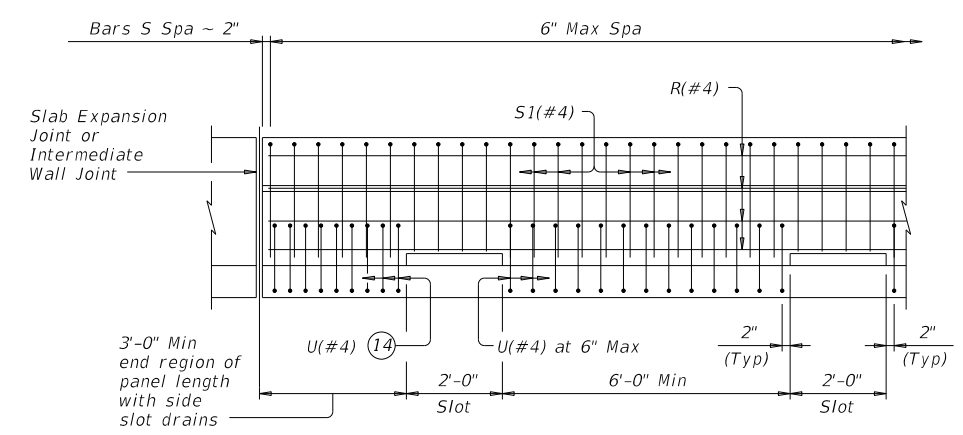


ON ABUTMENT WINGWALLS
OR CIP RETAINING WALLS



ON BRIDGE SLAB

SECTIONS THRU RAIL WITH RAISED SIDEWALK



OPTIONAL SIDE SLOT DRAIN DETAIL

Note: Side Slot Drains may be used where shown elsewhere on the plans or as directed by the Engineer. Drains should not be placed over railroad tracks, lower roadways, or sidewalks. When this rail is used as a separator between a roadway surface and a sidewalk surface, side drain slots will not be permitted.

- ⑤ Increase 2" for structures with overlay.
- ⑩ 5 1/4" when vertical reinforcing has closer clear cover over horizontal reinforcing in abutment wingwalls or retaining walls on traffic side of wall.
- ⑪ As an aid in supporting reinforcement, additional longitudinal bars may be used in the slab with the approval of the Engineer. Such bars must be furnished at the Contractors expense.
- ⑫ Top longitudinal slab bar may be adjusted laterally 3" plus or minus to tie reinforcing.
- ⑬ Raised Sidewalk
- ⑭ Space U(#4) bars at 4" Max when end region of panel length is less than 6'-0" to side slot drain. Space U(#4) bars at 6" Max when end region of panel length is 6'-0" and greater to side slot drain.



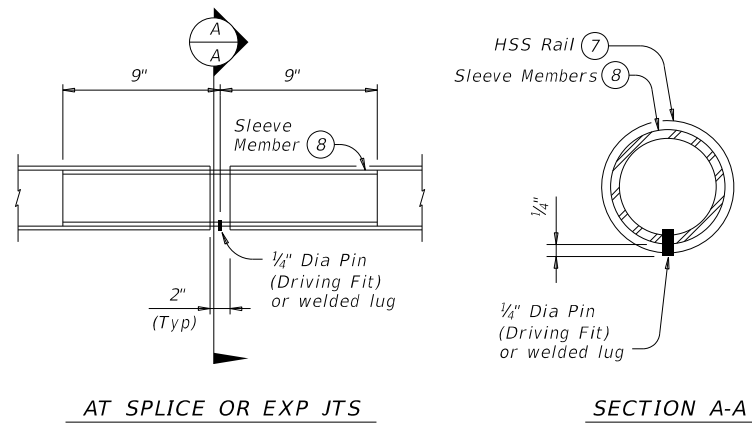
COMBINATION RAIL

TYPE C221

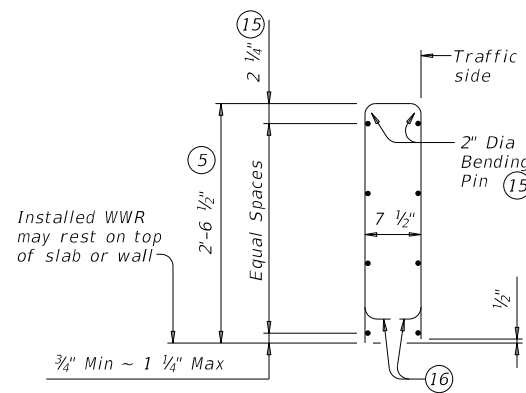
FILE: r1std018-19.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: JMH
©TxDOT September 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
DIST	COUNTY		SHEET NO.	
BWD	LAMPASAS		141	

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.

RAIL DATA FOR HORIZONTAL CURVES			
	RADIUS TO FACE OF RAIL	MAX CHORD LENGTH	CONSTRUCT OR FABRICATE
HSS Rail	Over 2800'	29'-0"	Straight rail panels
	Over 1400' thru 2800'	14'-6"	To required radius or to chords shown
	Over 700' thru 1400'	7'-3"	
	Thru 700'	Zero	To required radius



PIPE SPLICE DETAILS



OPTIONAL WELDED WIRE REINFORCEMENT (WWR)

DESCRIPTION	LONGITUDINAL WIRES	VERTICAL WIRES
Minimum (Cumulative Total) Wire Area	1.067 Sq In.	0.267 Sq In. per Ft
Minimum	No. of Wires 8	Spacing 4"
Maximum	No. of Wires 10	Spacing 8"
Maximum Wire Size Differential	The smaller wire must have an area of 40% or more of the larger wire.	

CONSTRUCTION NOTES:

This railing may be constructed by the slipform process when approved by the Engineer, with equipment approved by the Engineer and when adhesive anchor bolts are used. Slipforming parapet is not allowed if anchor bolts are cast with parapet wall. Provide sensor control for both line and grade. Tack welding to provide bracing for slipform operations is acceptable. Welding may be performed at a minimum spacing of 3 ft between the cage and the anchorage. It is permissible to weld to bars U, WU and S at any location on the cage. If increased bracing is needed, provide additional anchorage devices and weld in the upper two thirds of the cage. Paint welded areas on epoxy coated and/or galvanized reinforcing with an organic zinc rich paint in accordance with Item 445 "Galvanizing".

If rail is slipformed, apply an heavy epoxy bead 1" behind toe of traffic side of rail to concrete deck just prior to slip forming. Provide a 3/8" width x 1/4" tall heavy epoxy bead with Type III, Class C or a Type V epoxy.

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

At the Contractor's option anchor bolts may be cast with the parapet. See "Material Notes".

Face of rail, parapet must be plumb unless otherwise approved by the Engineer. HSS rail posts must be square to the top of parapet. Use epoxy mortar under post base plates if gaps larger than 1/16" exist.

Round or chamfer exposed edges of HSS rail and HSS rail posts to approximately 1/16" by grinding.

HSS rail sections must not include less than two posts, and no more than four (except at Abutments).

Chamfer all parapet exposed corners.

MATERIAL NOTES:

Provide Class "C" concrete. Provide Class "C" (HPC) if required elsewhere.

Provide Grade 60 reinforcing steel.

Epoxy coat or galvanize all reinforcing steel if slab bars are epoxy coated or galvanized.

Provide ASTM A1085 or A500 Gr B or A53 Gr B for all HSS.

Galvanize all metal components of steel rail system. Apply additional coatings when shown elsewhere on the plans. When plans require paint over galvanizing, follow the requirements for painting galvanized steel in Item 445, "Galvanizing" and when field painting, Item 446, "Field Cleaning and Painting Steel". Sleeve members and anchor bolts must receive galvanization prior to installation and only field paint after installation unless directed otherwise by Engineer.

Deformed Welded Wire Reinforcement (WWR) (ASTM A1064) of equal size and spacing may be substituted for Bars U and WU unless noted otherwise. Deformed WWR (ASTM 1064) may be substituted for Bars R and S, as shown. Combinations of reinforcing steel and WWR or configurations of WWR other than that shown are permitted if conditions in the table are satisfied. Provide the same laps as required for reinforcing bars.

Anchor bolts must be 3/8" Dia ASTM A307 Gr A fully threaded rods with one hex nut and one hardened steel washer (ASTM F436) each. Nuts must conform to ASTM A563 requirements. Embed fully threaded rods into parapet wall with a Type III, Class C, D, E, or F anchor adhesive. Minimum adhesive anchor embedment depth is 3". Anchor adhesive chosen must be able to achieve a nominal bond strength in tension of a single anchor, Na, of 5 kips (edge distance must be accounted for). Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing".

Optional cast-in-place anchor bolts must be 3/8" Dia ASTM A307 Gr A bolts (or threaded rods with one tack welded hex nut each) with one hex nut and one hardened steel washer (ASTM F436) at each bolt. Nuts must conform to ASTM A563 requirements.

Provide bar laps, where required, as follows:

Uncoated or galvanized ~ #4 = 1'-7"
Epoxy coated ~ #4 = 2'-5"

GENERAL NOTES:

This rail has been evaluated and accepted to be of equal strength to railings with like geometry, which have been crash tested to meet MASH TL-3 criteria. This rail can be used for speeds of 50 mph and greater when a TL-3 rated guard fence transition is used. When a TL-2 rated guard fence transition is used, this rail can only be used for speeds of 45 mph and less.

Do not use this railing on bridges with expansion joints providing more than 5" movement.

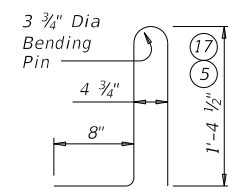
Rail anchorage details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.

Submit erection drawings showing panel lengths, rail post spacing, and anchor bolt setting to the Engineer for approval.

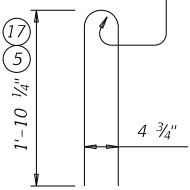
Average weight of railing with no overlay: 380 plf (total)
370 plf (Conc)
10 plf (Steel)

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

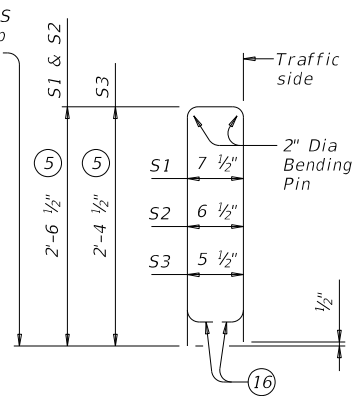
BARS U (#4)



BARS WU (#4)

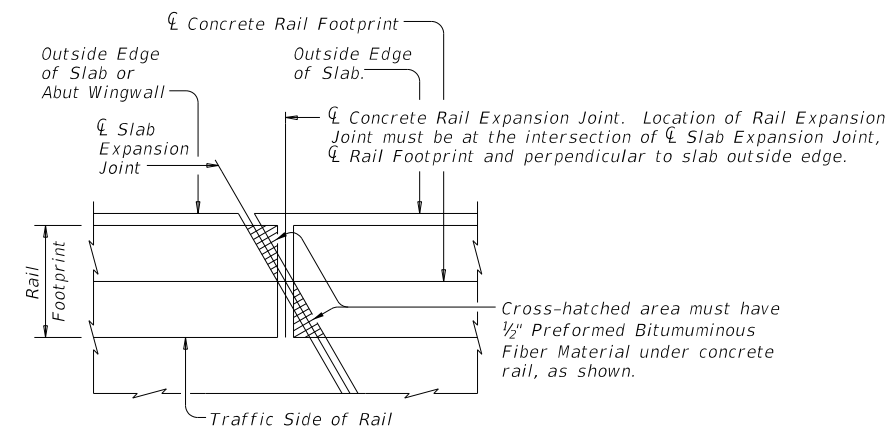
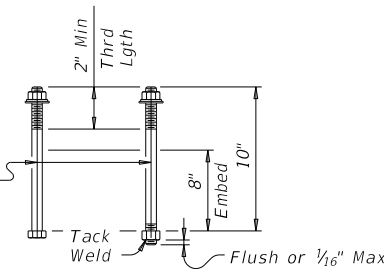


BARS S (#4)



3/8" Dia hex head anchor bolt or threaded rod (ASTM A307 Gr A) with one hardened steel washer (ASTM F436) placed under each hex nut (ASTM A563). One additional hex nut must be furnished and tack welded for each threaded rod.

CAST-IN-PLACE ANCHOR BOLT OPTIONS (18)



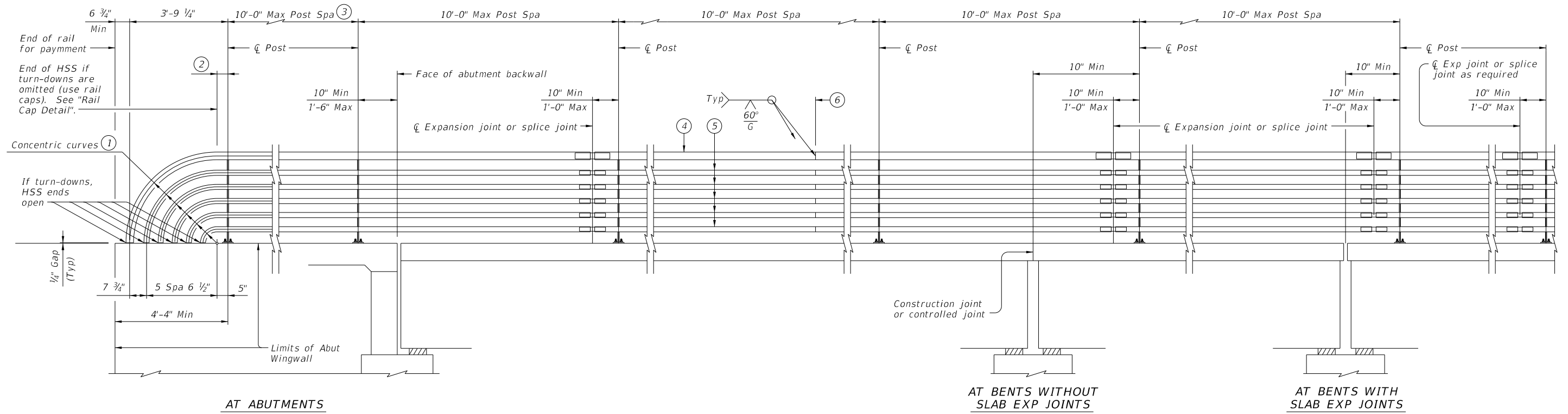
PLAN OF RAIL AT EXPANSION JOINTS

Example showing Slab Expansion Joints without breakbacks.

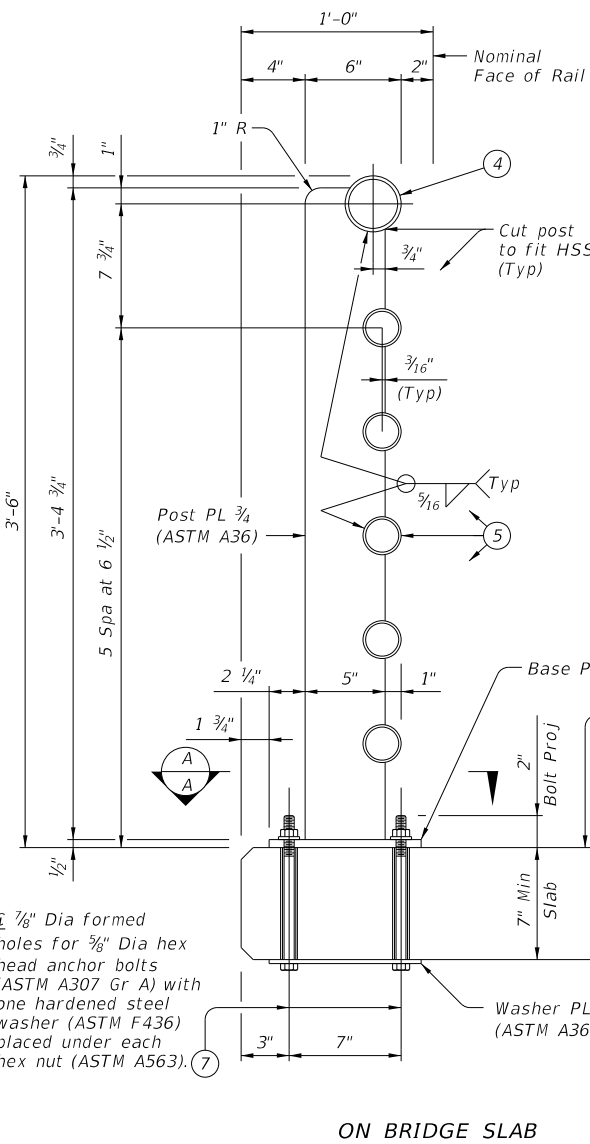
- (5) Increase 2" for structures with overlay.
- (7) HSS 2.875 x 0.203
- (8) HSS 2.375 x 0.154
- (15) No longitudinal wires may be in top center of cage.
- (16) Bend or cut as required to clear drain slots.
- (17) For raised sidewalks, add sidewalk height to total bar height. Use sidewalk height at rail's location.
- (18) See "Material Notes" for anchor bolt information.

		Bridge Division Standard	
<h2>COMBINATION RAIL</h2>			
<h3>TYPE C221</h3>			
FILE: r1std018-19.dgn	DN: TxDOT	CK: TxDOT	DW: JTR
©TxDOT September 2019	CONV	SECT	JOB
REVISIONS	0251	06	036
	DIST	COUNTY	SHEET NO.
	BWD	LAMPASAS	142

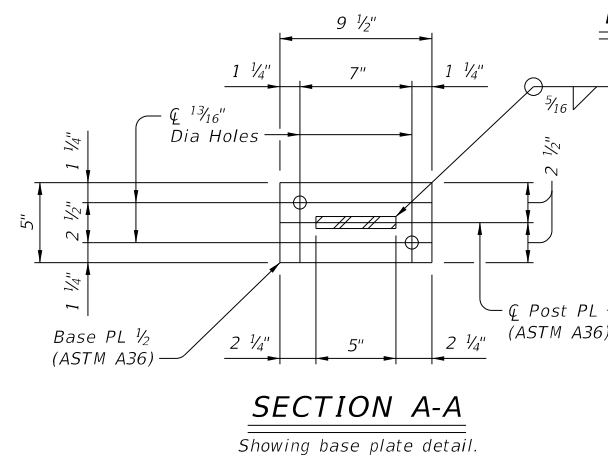
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



ROADWAY ELEVATION OF RAIL

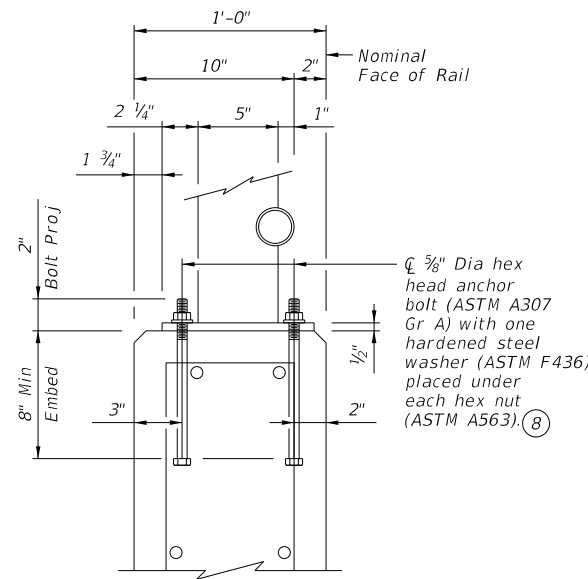


ON BRIDGE SLAB



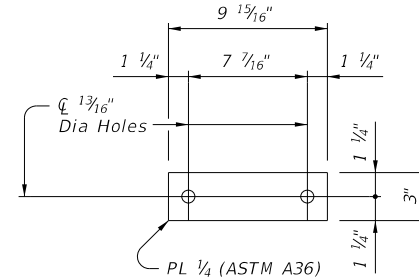
SECTION A-A

Showing base plate detail.

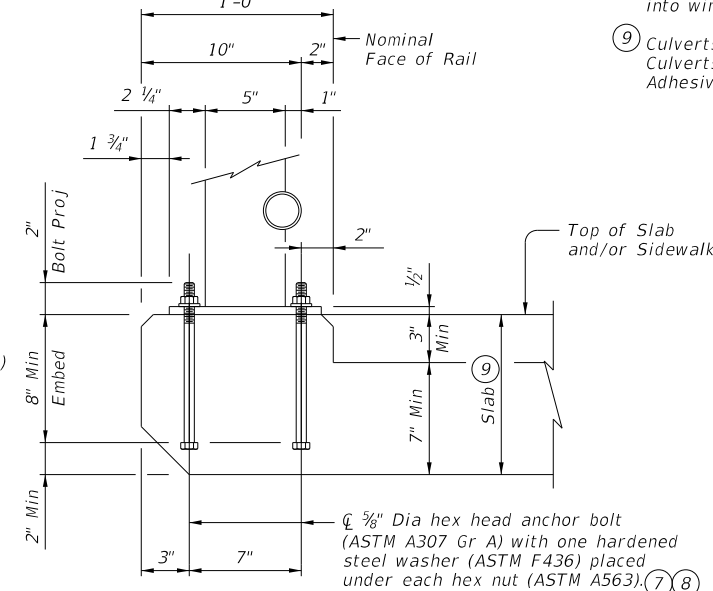


ON ABUTMENT WINGWALLS OR CIP RETAINING WALLS

SECTIONS THRU RAIL



WASHER PLATE DETAIL



ON CULVERTS WITH OR WITHOUT CURBS

Used with 1'-0" Min thick parallel wings on culverts.

- ① Portion of railing with turn-downs to be used or omitted as indicated on Bridge Layout.
- ② 10" Min ~ 1'-6" Max if turn-downs are omitted.
- ③ Min of 2 posts required on wingwall.
- ④ HSS 3.500 x 0.216 (Rail Member)
- ⑤ HSS 2.375 x 0.154 (Rail Member)
- ⑥ One shop splice per panel is permitted (with minimum 85 percent penetration). The weld may be square groove or single vee groove. Grind smooth.
- ⑦ At Contractor's option, adhesive anchors may be used. Adhesive anchors must be 5/8" Dia ASTM A307 Grade A fully threaded rods. Minimum adhesive anchor embedment depth is 5" into slabs or culverts without curbs. See "Material Notes" for adhesive anchor requirements.
- ⑧ At Contractor's option, adhesive anchors may be used. Adhesive anchors must be 5/8" Dia ASTM A307 Grade A fully threaded rods. Minimum adhesive anchor embedment depth is 7" into wingwalls or culverts with curbs. See "Material Notes" for adhesive anchor requirements.
- ⑨ Culverts without curbs for cast-in-place anchor bolts require a 10" Min slab thickness. Culverts with curbs for cast-in-place anchor bolts require a curb plus slab thickness of 10" Min. Adhesive anchors may be used with a 7" Min slab thickness or culverts with curbs.

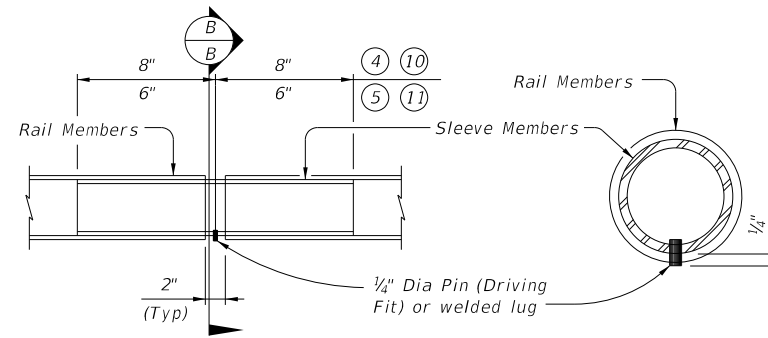
SHEET 1 OF 2

		Bridge Division Standard	
<h1>PEDESTRIAN RAIL</h1>			
<h2>TYPE PR11</h2>			
FILE: r1std028-19.dgn	DN: TAR	CK: TBE	DW: JTR
©TxDOT September 2019	CONTRACT: 0251	SECTION: 06	JOB: 036
REVISIONS	COUNTY: LAMPASAS		SHEET NO: 143

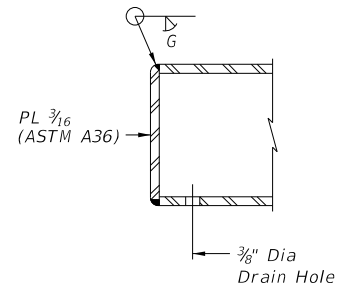
DATE: FILE:

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.

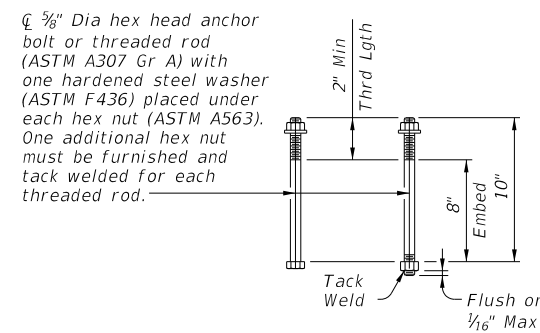
DATE:
FILE:



AT SPLICES OR EXP JTS SECTION B-B
PIPE SPLICE DETAIL



RAIL CAP DETAIL



CAST-IN-PLACE & FORMED HOLE ANCHOR BOLT OPTIONS

- ④ HSS 3.500 x 0.216 (Rail Member)
- ⑤ HSS 2.375 x 0.154 (Rail Member)
- ⑩ HSS 2.875 x 0.203 (Sleeve Member)
- ⑪ HSS 1.900 x 0.145 (Sleeve Member)

CONSTRUCTION NOTES:

Panel lengths of railing must be attached to a minimum of three posts except at abutment wingwalls.
At the Contractor's option anchor bolts may be an adhesive anchorage system. See "Material Notes".
Test adhesive anchors in accordance with Item 450.3.3, "Tests". Test 3 anchors per 100 anchors installed. Perform corrective measures to provide adequate capacity if any of the tests do not meet the required test load. Repair damage from testing as directed.
Face of rail and posts must be vertical transversely unless otherwise approved. Posts must be perpendicular to adjacent roadway grade. Use Type VIII epoxy mortar under post base plates if gaps larger than 1/16" exist.
For curved railing applications, fabricate the HSS rail to the radius when the radius is 600' or less. Submit shop drawings for approval when tubes are required to be fabricated to a radius. Shop drawings must be submitted to the Engineer for approval.
Round or chamfer all exposed edges of steel components 1/16" by grinding prior to galvanizing.

MATERIAL NOTES:

Provide ASTM A500 Gr B, A1085 or A53 Gr B for all HSS.
Galvanize all metal components of steel rail system. Apply additional coatings when shown elsewhere on the plans. When plans require paint over galvanizing, follow the requirements for painting galvanized steel in Item 445, "Galvanizing" and when field painting, Item 446, "Field Cleaning and Painting Steel". Sleeve members and anchor bolts must receive galvanization prior to installation and only field paint after installation unless directed otherwise by Engineer.
Anchor bolts must be 5/8" Dia ASTM A307 Gr A with one hardened steel washer (ASTM F436) placed under each hex nut or ASTM A307 Gr A threaded rods with one tack welded hex nut each and with one hex nut with one hardened steel washer (ASTM F436) each. Nuts must conform to ASTM A563 requirements.
Optional adhesive anchorage system must be 5/8" Dia ASTM A307 Gr A fully threaded rods with one hex nut and one hardened steel washer (ASTM F436). Nuts must conform to ASTM A563 requirements. Embed fully threaded rods into slab, wingwalls, or culvert curbs using a Type III, Class C, D, E, or F anchor adhesive. Anchor adhesive chosen must be able to achieve a nominal bond strength in tension, Na, of a single anchor of 10 kips (edge distance must be accounted for). Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing".

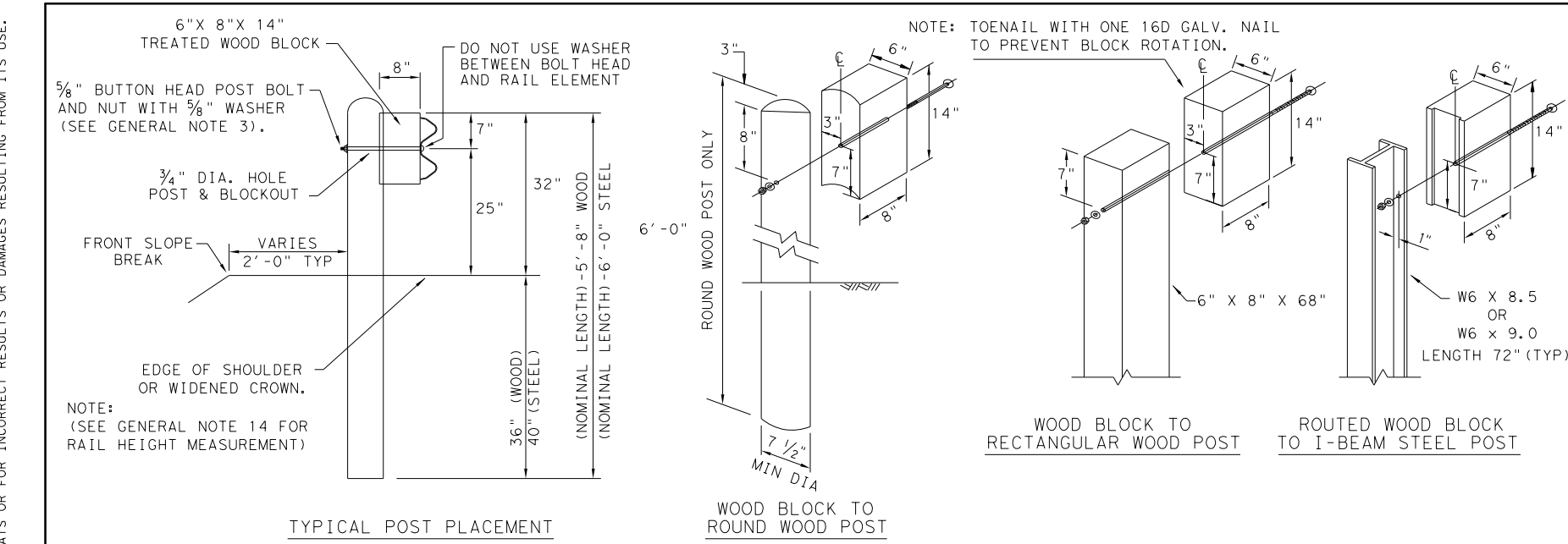
GENERAL NOTES:

Designed according to AASHTO LRFD Specifications.
Do not use this railing on bridges with expansion joints providing more than 5" movement.
Rail anchorage details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.
For all rails, submit erection drawings showing section lengths, splice locations, rail post spacing and anchor bolt setting for approval. Average weight of railing is 30 plf.

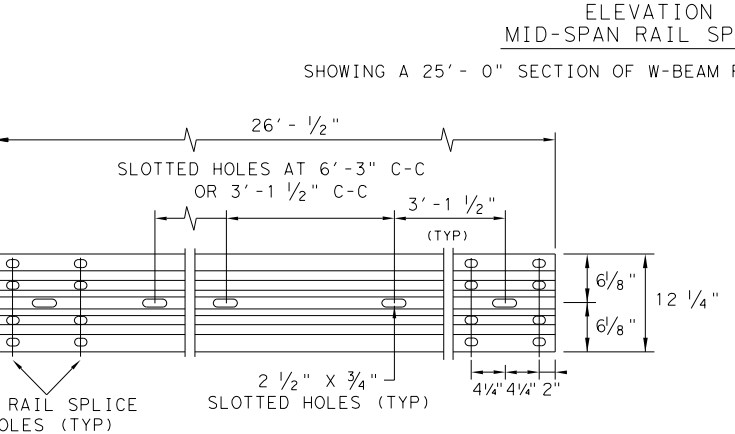
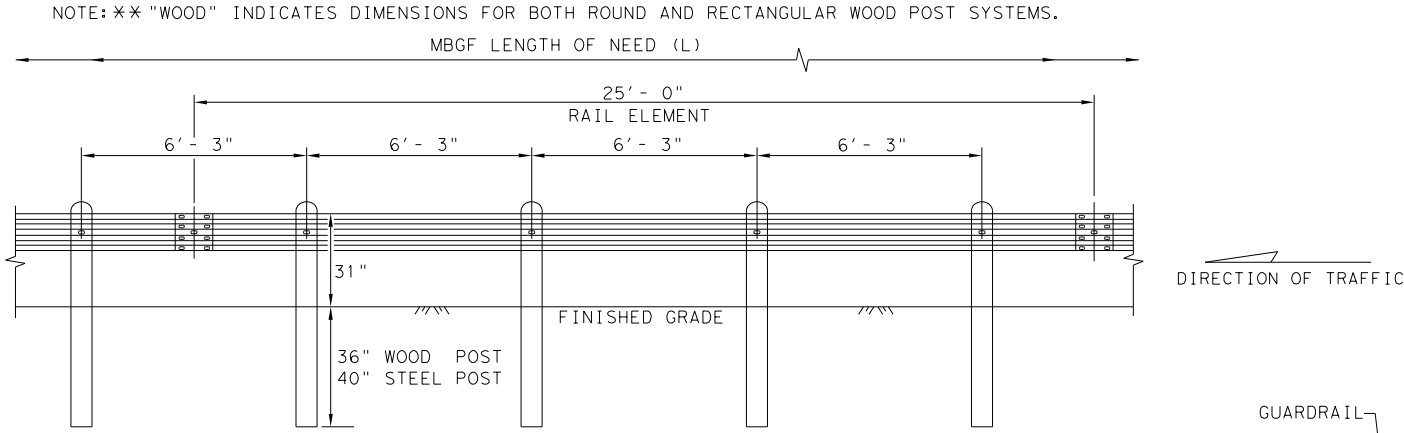
SHEET 2 OF 2

		Bridge Division Standard	
<h2>PEDESTRIAN RAIL</h2>			
<h3>TYPE PR11</h3>			
FILE: r1std028-19.dgn	DN: TAR	CK: TBE	DW: JTR
©TxDOT September 2019	CON: 0251	SECT: 06	JOB: 036
REVISIONS			HIGHWAY: US 281
	DIST: BWD	COUNTY: LAMPASAS	SHEET NO: 144

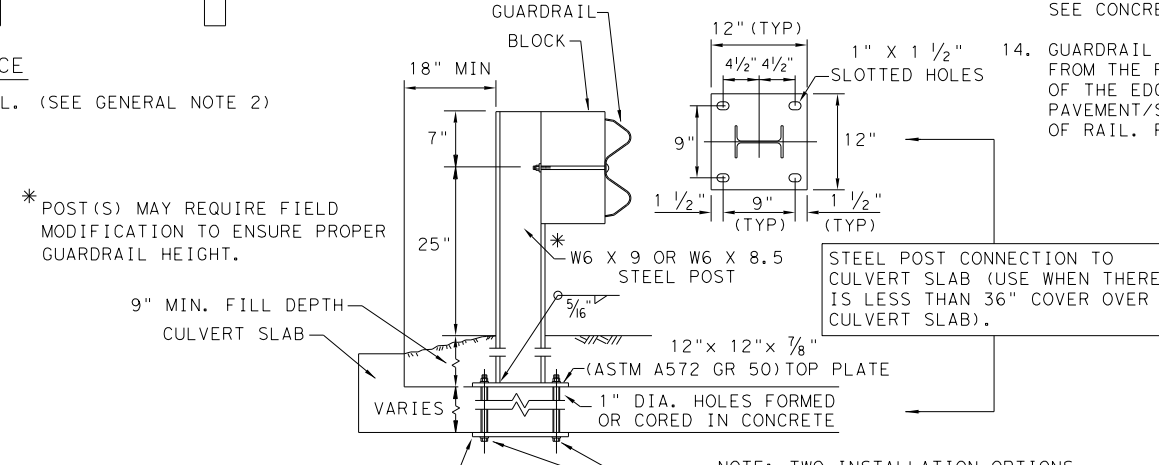
DISCLAIMER: THE USE OF THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TXDOT FOR ANY PURPOSE WHATSOEVER. TXDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.



- ### 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 ELEMENTS SHALL MEET THE REQUIREMENTS OF ITEM 540, "METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED IN THE PLANS. THE CONTRACTOR MAY FURNISH RAIL ELEMENTS OF 25'-0", OR 12'-6" (NOM.) LENGTHS. RAIL ELEMENTS MAY HAVE SLOTTED HOLES AT 3'-1 1/2" C-C OR 6'-3" C-C. A SPECIAL LENGTH OF RAIL MAY BE MANUFACTURED TO ACCOMMODATE THE DOWNSTREAM ANCHOR TERMINAL (DAT) AND THE TRANSITION SECTIONS OF GUARDRAIL.
 3. BUTTON HEAD "POST BOLTS & NUTS" SHALL MEET THE REQUIREMENTS OF (ASTM A307), AND SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND 3/8" WASHER (FWC16g) AND NOT MORE THAN 1" BEYOND IT. TRIM REMAINING BOLT LENGTH TO MEET REQUIRED LENGTH.
 4. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING." FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
 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. APPLICATIONS IN SOLID ROCK ARE ONLY ALLOWED WITH STEEL POSTS. IF SOLID ROCK IS ENCOUNTERED WITHIN 0 TO 18" OF THE FINISHED GRADE, DRILL A 24" DIA. HOLE, 24" INTO THE ROCK. IF SOLID ROCK IS ENCOUNTERED BELOW 18", DRILL A 12" DIA. HOLE, 12" INTO THE ROCK OR TO THE STANDARD EMBEDMENT DEPTH, WHICHEVER MAYBE LESS. ANY EXCESS POST LENGTH, AFTER MEETING THESE DEPTHS, MAY BE FIELD CUT TO ENSURE PROPER GUARDRAIL MOUNTING HEIGHT. BACKFILL WITH COARSE AGGREGATE MATERIAL.
 10. POSTS SHALL NOT BE SET IN CONCRETE, OF ANY DEPTH.
 11. SPECIAL FABRICATION WILL BE REQUIRED AT INSTALLATION LOCATIONS HAVING A CURVATURE OF LESS THAN 150 FT. RADIUS.
 12. UNLESS OTHERWISE SHOWN IN THE PLANS, A COMPOSITE MATERIAL BLOCK THAT MEETS THE REQUIREMENTS OF DMS-7210, "COMPOSITE MATERIAL POSTS AND BLOCKS FOR METAL BEAM GUARD FENCE" MAY BE SUBSTITUTED FOR BLOCKS OF SIMILAR DIMENSIONS. THE CONSTRUCTION DIVISION, TXDOT MAINTAINS A MATERIAL PRODUCER LIST (MPL) FOR PRODUCERS OF MATERIALS CONFORMING TO DMS-7210 ONLY PRODUCERS ON THE MPL MAY FURNISH COMPOSITE MATERIAL BLOCKS.
 13. FOR THE LOW FILL CULVERT OPTION, POSTS LOCATED PARTIALLY OR WHOLLY BETWEEN PRECAST BOX CULVERT UNITS, THE USE OF A CAST-IN-PLACE CONCRETE CLOSURE BETWEEN BOXES IS REQUIRED. THE LENGTH OF THE CAST-IN-PLACE CONCRETE CLOSURE SHALL ACCOMMODATE THE PLACEMENT OF THE LOW FILL CULVERT OPTION. SEE CONCRETE CLOSURE DETAILS ON BRIDGE STANDARD SCP-MD.
 14. GUARDRAIL HEIGHT MEASUREMENT: WHEN THE GUARDRAIL IS LOCATED ABOVE PAVEMENT, MEASURE THE HEIGHT FROM THE PAVEMENT TO THE TOP OF THE W-BEAM RAIL. WHEN THE GUARDRAIL IS LOCATED UP TO 2 FT. OFF OF THE EDGE OF PAVEMENT OR FOR A PAVEMENT OVERLAY, USE A 10-FOOT STRAIGHTEDGE TO EXTEND THE PAVEMENT/SHOULDER SLOPE TO THE BACK OF RAIL, MEASURE FROM THE BOTTOM OF STRAIGHTEDGE TO THE TOP OF RAIL. FOR GUARDRAIL LOCATED DOWN A 10:1 SLOPE, MEASURE FROM THE NOMINAL TERRAIN.

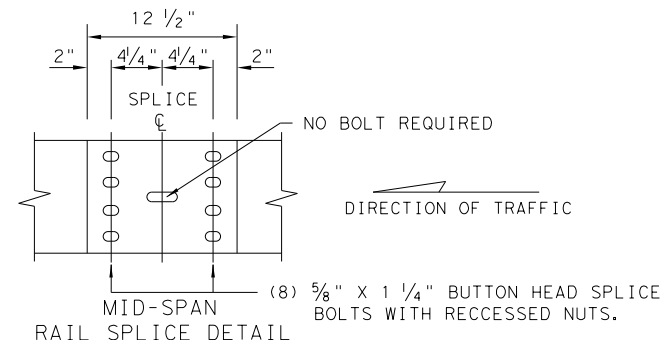
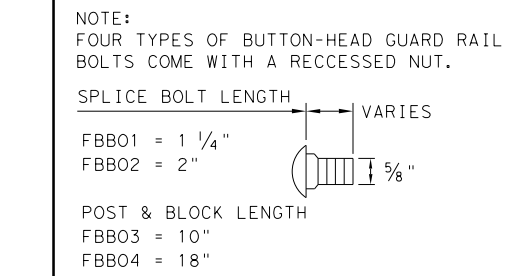


ELEVATION 25'-0" (NOM.) W-BEAM SECTION
 NOTES: SEE GENERAL NOTE 2 FOR ALLOWABLE RAIL TYPES. SEE RAIL SPLICE DETAIL FOR REQUIRED HARDWARE.



LOW FILL CULVERT POST
 NOTE: TWO INSTALLATION OPTIONS.
 1. **BOLT-THROUGH OPTION:** REQUIRES A 6" MIN. SLAB THICKNESS. 7/8" DIA (ASTM A449) HEAVY HEX BOLTS WITH TWO HARDENED WASHER EACH AND HEAVY HEX NUTS. NOTE: BOLT LENGTH = SLAB PLUS 2 1/4" MIN.
 2. **EPOXY ANCHOR OPTION:** THIS OPTION MAY ONLY BE USED IF THE CULVERT SLAB IS 9" 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.

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



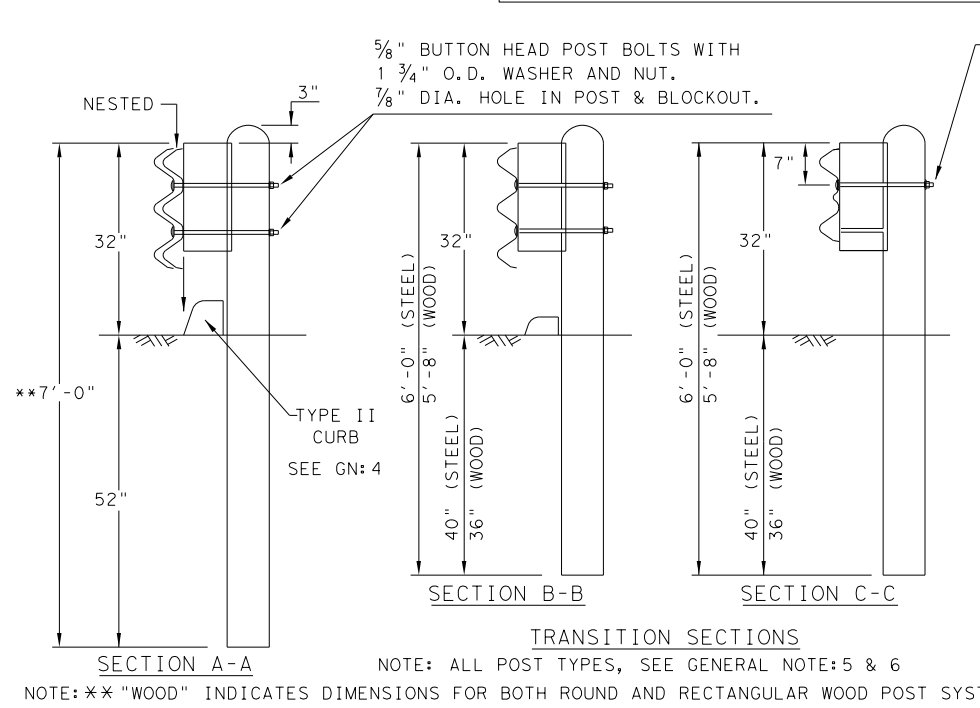
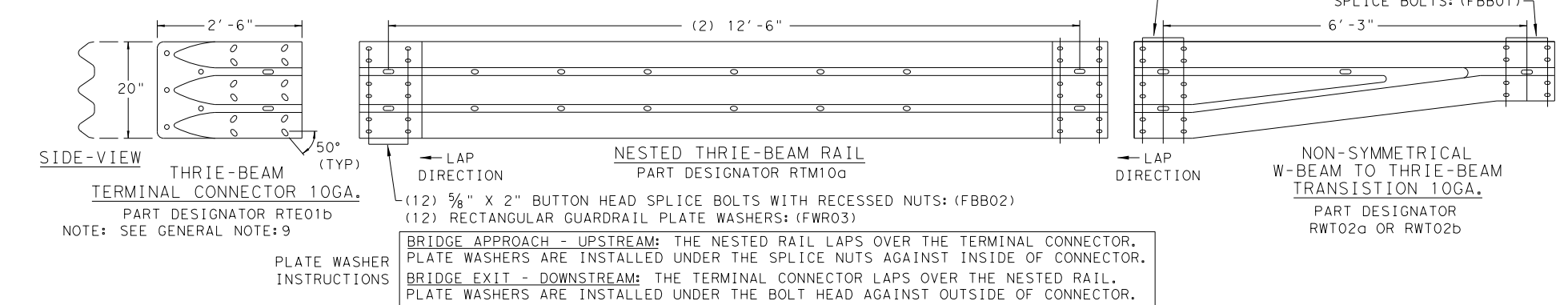
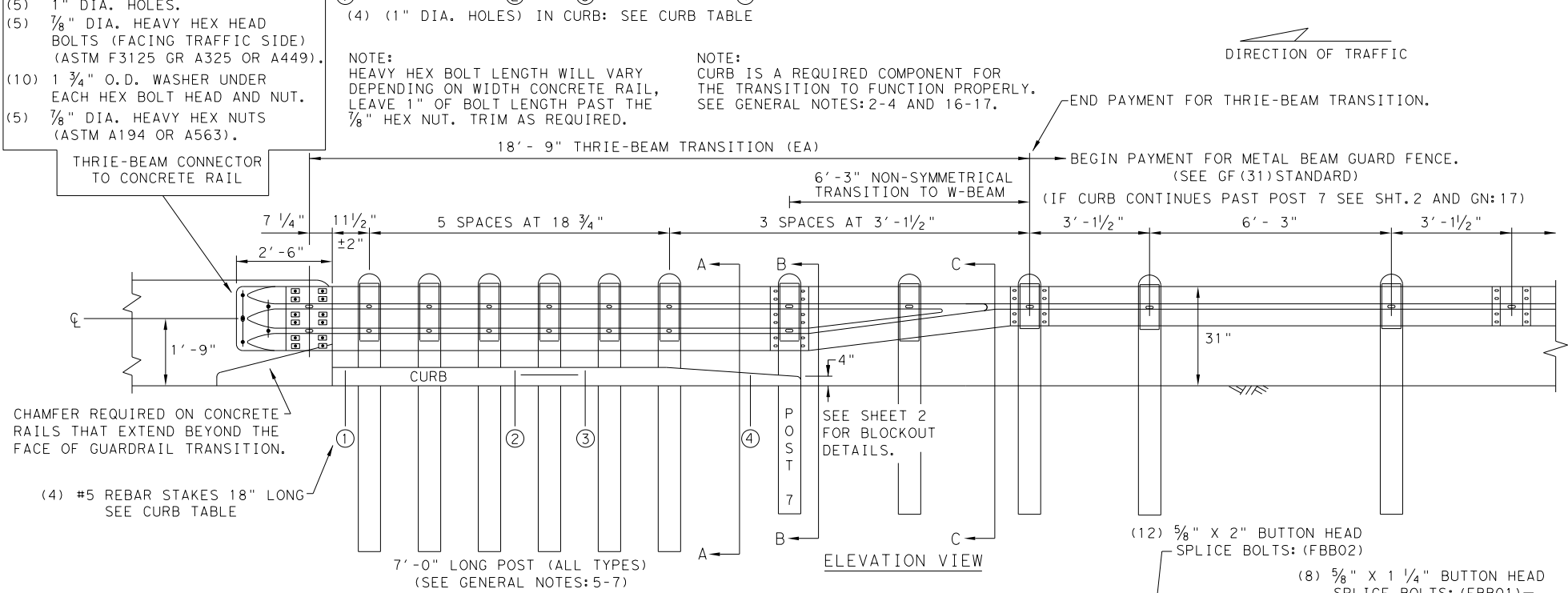
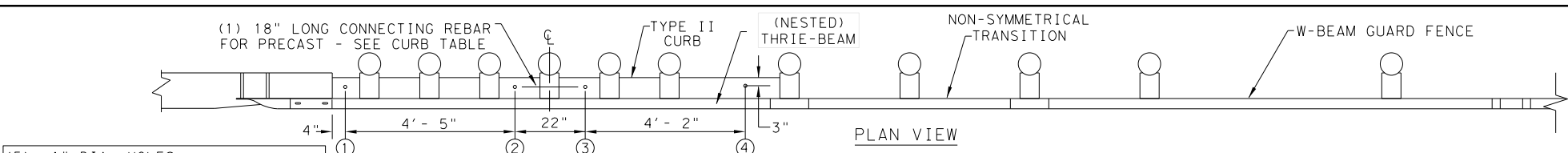
DATE: _____
FILE: _____
 NOTE: SEE GENERAL NOTE 3 FOR SPLICE & POST BOLT DETAILS.

NOTE: GF(31), MID-SPAN RAIL SPLICES ARE REQUIRED WITH 6'-3" POST SPACINGS.

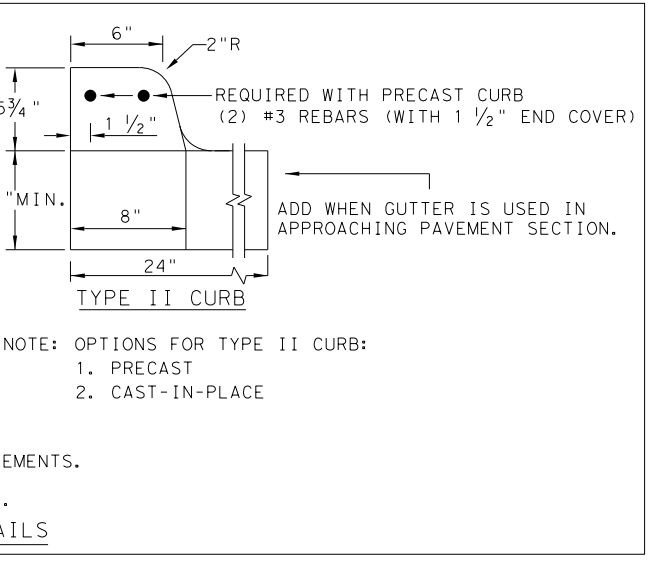
NOTE: CULVERTS OF 25 FT. OR LESS, SEE GF(31)LS STANDARD FOR "LONG SPAN" OPTION.

		Design Division Standard		
				METAL BEAM GUARD FENCE TL-3 MASH COMPLIANT GF(31)-19
FILE: gf3119.dgn	DN: TXDOT	CK: KM	DW: VP	CK: CGL/AG
©TXDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	145	

DATE: 9/1/2022
 FILE: pw:\stv-sw-pw-01\Documents\Active Projects\TXD01600493-04\8.00 Plans and Drawings\8.30 Cut Sheets\8.3.04 RoadwayStandards\gf31tr+1320.dgn
 DISCLAIMER: 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.



THRIE-BEAM TERMINAL - CURB TABLE	
PRECAST CURB FULL LENGTH EQUALS 12'-2"	
THE PRECAST CURB MAY BE FORMED INTO TWO SECTIONS.	
CURB (1)	LENGTH 5'-8"
CURB (2)	LENGTH 6'-6"
TAPER CURB (2) TO A HEIGHT OF 4" AT POST 7	
CONNECTING PRECAST CURB SECTIONS (1) & (2):	
FORM OR CORE	1" DIA. HOLE 9" LONG INTO EACH CURB END.
USE (1)	#5 GR.60 REBAR 18" LONG TO CONNECT BOTH CURBS.
SECURING PRECAST OR CAST-IN-PLACE TO FINISHED GRADE *:	
FORM OR CORE	(4) 1" DIA. HOLES, SEE PLAN AND ELEVATION VIEWS FOR HOLE LOCATIONS. DRIVE (4) #5 GR.60 REBAR STAKES 18" LONG INTO THE GROUND AND 1/2" BELOW TOP OF CURB.
FILL HOLES WITH APPROVED GROUT MIXTURE.	
* NOTES: NOT NEEDED FOR CAST-IN-PLACE. SEE TYPE II CURB DETAIL FOR REBAR AND COVER REQUIREMENTS. PERCUSSION DRILLING IS NOT PERMITTED WITH: TYPE II CURB, BRIDGE RAIL OR CONCRETE TRAFFIC RAIL.	



GENERAL NOTES

- CONTACT THE DESIGN DIVISION FOR DRAINAGE CUT OUT OPTIONS NEEDED WITHIN THE CURB SECTION OF THE THRIE-BEAM TRANSITION. (512) 416-2678
- CONCRETE CURB MAY BE CAST-IN-PLACE OR PRECAST AS SHOWN ON THIS SHEET. WHEN USED IN CONJUNCTION WITH THE THRIE-BEAM TRANSITIONS, CURB SHALL BE TYPE II (5'-3/4" HEIGHT); SEE CURRENT CCG STANDARD SHEET FOR FURTHER DETAILS. IF OTHER CURB HEIGHTS ARE SHOWN IN THE PLANS IN CONJUNCTION WITH THE TRANSITION, THE CURB HEIGHT MAY BE FROM 4" TO 8" WITH A RELATIVELY VERTICAL FACE. CONCRETE CURB SHALL BE CONTINUOUS TO THE SEVENTH POST UNLESS OTHERWISE SHOWN IN THE PLANS. SEE GENERAL NOTE:17 FOR CIRCUMSTANCES WHERE CURB CONTINUES PAST POST 7.
- CONCRETE CURB TYPE II SUBSIDIARY TO "METAL BEAM GUARD FENCE TRANSITION". IF NO ADDITIONAL CURB IS INDICATED BEYOND THE TRANSITION, THEN ANY CURB HEIGHT GREATER THAN 4" WILL BE TAPERED DOWN BEGINNING AT THE LAST 7 FT. POST TO A MAXIMUM HEIGHT OF 4" AT POST 7. IF SHOWN ELSEWHERE IN THE PLANS, ADDITIONAL CURB UNDERNEATH GUARDRAIL WILL BE PAID FOR BY THE LINEAR FOOT.
- UNLESS OTHERWISE SHOWN IN THE PLANS, TRANSITIONS SHALL BE PLACED WITH THE BLOCKOUT FACE IN FRONT OF OR DIRECTLY ABOVE THE CURB FACE. SEE SECTION A-A.
- FOR ROUND WOOD POST SYSTEMS, ALL ROUND WOOD POSTS SHALL BE 7 1/2" DIA. MINIMUM THROUGHOUT THE THRIE-BEAM TRANSITION.
- THE TYPE OF POST (ROUND WOOD POST, RECTANGULAR WOOD POST OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. REFER TO GF (31) STANDARD SHEET.
- THE POST LENGTH SHALL BE MARKED ON ALL 7'-0" LONG POSTS BY THE MANUFACTURER. THE MARK SHALL BE LOCATED WITHIN THE TOP 1 FT. REGION OF THE POST, AT LEAST 5/8" IN HEIGHT, AND VISIBLE AFTER INSTALLATION. WOODEN POSTS SHALL BE MARKED WITH A BRAND, AND STEEL POSTS WITH A STENCIL BEFORE GALVANIZING.
- POSTS SHALL NOT BE SET IN CONCRETE, OF ANY DEPTH.
- RAIL ELEMENTS SHALL MEET THE REQUIREMENTS OF ITEM 540, "METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED ON THE PLANS. THE THRIE-BEAM TERMINAL CONNECTOR AND THE THRIE-BEAM TRANSITION TO W-BEAM SHALL BE OF THE SAME MATERIAL, BUT SHALL NOT BE LESS THAN 10 GAUGE. CONTRACTOR SHALL VERIFY THAT THE LOCATIONS OF BOLT HOLES MATCH THOSE IN THE THRIE-BEAM TERMINAL CONNECTOR PRIOR TO ORDERING MATERIALS.
- BUTTON HEAD "POST BOLTS & NUTS" SHALL MEET THE REQUIREMENTS OF (ASTM A307), AND SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND 5/8" WASHER (FWC16a) AND NOT MORE THAN 1" BEYOND IT. TRIM REMAINING BOLT LENGTH TO MEET REQUIRED LENGTH.
- FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
- CROWN SHALL BE WIDENED TO ACCOMMODATE TRANSITIONS.
- WHERE SOLID ROCK IS ENCOUNTERED, CONTACT THE DESIGN DIVISION FOR ADDITIONAL GUIDANCE. (512) 416-2678
- UNLESS OTHERWISE SHOWN IN THE PLANS, A COMPOSITE MATERIAL BLOCK THAT MEETS THE REQUIREMENTS OF DMS-7210, "COMPOSITE MATERIAL POSTS AND BLOCKS FOR METAL BEAM GUARD FENCE" MAY BE SUBSTITUTED FOR BLOCKS OF SIMILAR DIMENSIONS. TXDOT'S MATERIALS AND TESTS DIVISION MAINTAINS A MATERIAL PRODUCER LIST (MPL) FOR PRODUCERS OF MATERIALS CONFORMING TO DMS-7210. ONLY PRODUCERS ON THE MPL CAN FURNISH COMPOSITE MATERIAL BLOCKS.
- REFER TO GF (31) STANDARD SHEET & BRIDGE RAILING DETAILS FOR ADDITIONAL DETAILS.
- THE INSTALLATION OF THE TYPE II CURB IS CRITICAL FOR THE PERFORMANCE OF THE THRIE-BEAM TRANSITION SYSTEM. THE CURB PREVENTS (VEHICLE WHEEL SNAGGING) AT THE CONCRETE RAIL AND IS REQUIRED TO MEET MASH CRASH TEST CRITERIA.
- IF CURB EXTENDS BEYOND POST 7, 25' OF NESTED W-BEAM GUARDRAIL SHALL BE INSTALLED BEYOND THE PAY LIMITS OF THRIE-BEAM TRANSITION SECTION, (SEE SHT.2). PAYMENT FOR THIS 25' SECTION WILL BE BY LINEAR FOOT, PAY ITEM "0540 6XXX MTL W-BEAM GD FEN (NESTED) (TIM POST)" OR "540 6XXX MTL W-BEAM GD FEN (NESTED) (STEEL POST)" AS APPLICABLE FOR POST TYPE. SEE SHT.2 FOR ADDITIONAL INFORMATION.

HIGH-SPEED TRANSITION
SHEET 1 OF 2

Design Division Standard

METAL BEAM GUARD FENCE
THRIE-BEAM TRANSITION
TL-3 MASH COMPLIANT
GF (31) TR TL3-20

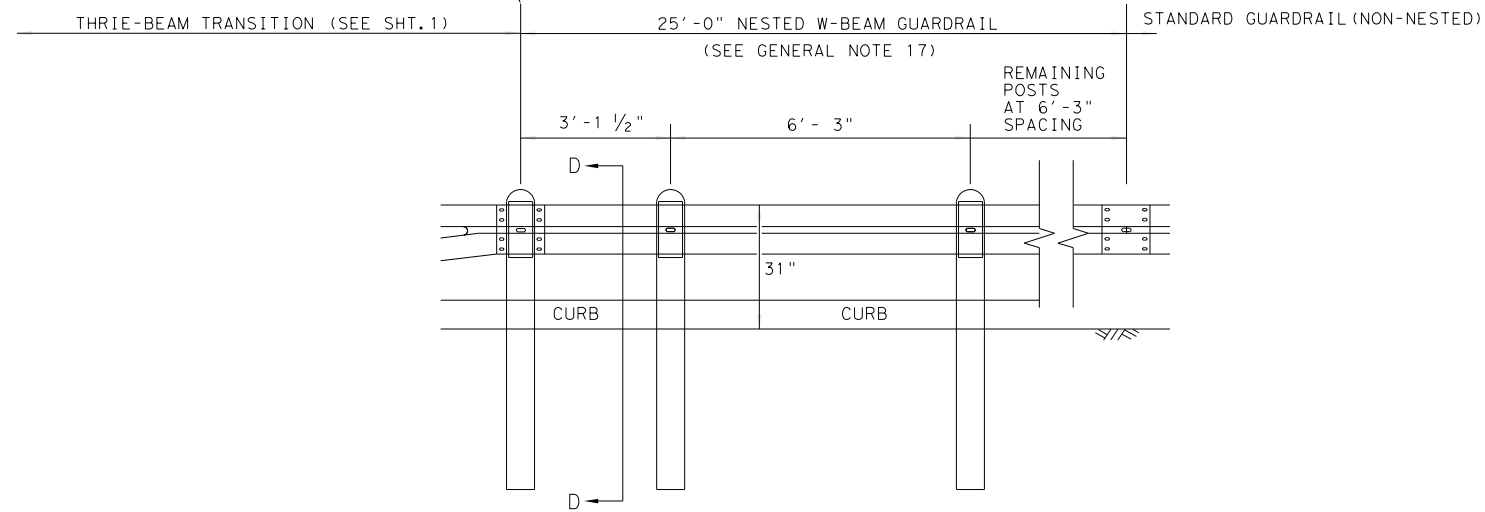
FILE: gf31tr+1320.dgn	DN: TXDOT	CK: KM	DW: VP	CK: CGL/AG
© TXDOT: NOVEMBER 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
DIST	COUNTY		SHEET NO.	
BWD	LAMPASAS		146	

DISCLAIMER: THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TXDOT FOR ANY PURPOSE WHATSOEVER. THE USE OF THIS STANDARD FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE. TXDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.
 DATE: 9/1/2022
 FILE: \\stiv-sw-pw-bent\ey.com\stiv-sw-pw-01\Documents\Active Projects\TXD01600493.00\TXD01600493.04\8.00 Plans and Drawings\8.30 Cut Sheets\8.3.04 Roadway Standards\gf31trtl320.dgn

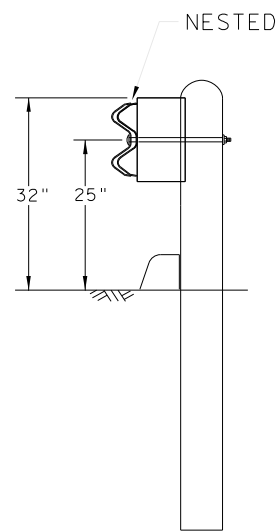
REQUIRED ALTERNATIVE FOR CONTINUOUS CURB EXTENDING PAST POST 7 (SEE SHT. 1 GENERAL NOTE 17)

END PAYMENT FOR METAL BEAM GUARD FENCE TRANSITION.
 BEGIN PAYMENT FOR METAL BEAM GUARD FENCE.

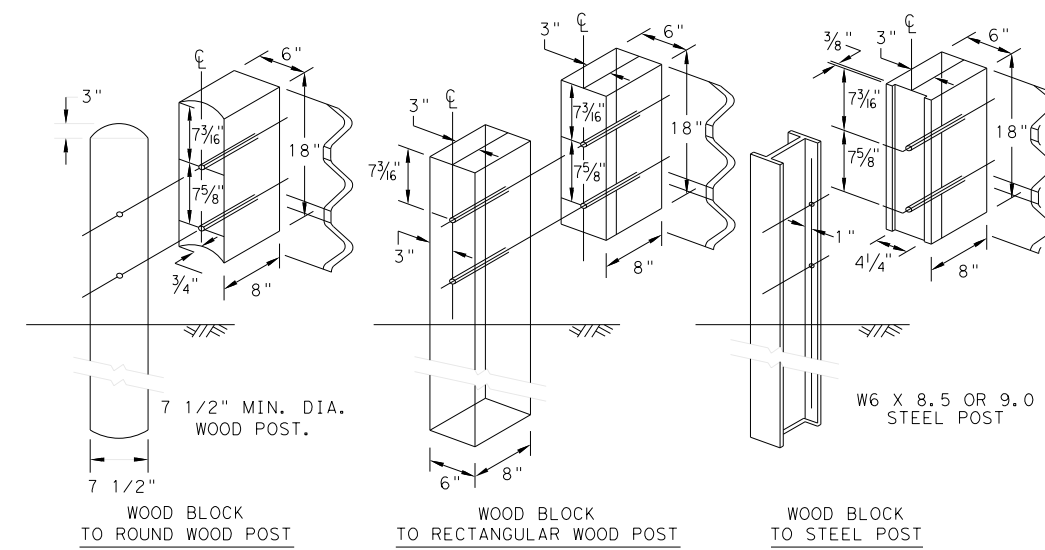
(SEE GF (31) STANDARD SHEET)



ELEVATION VIEW



SECTION D-D



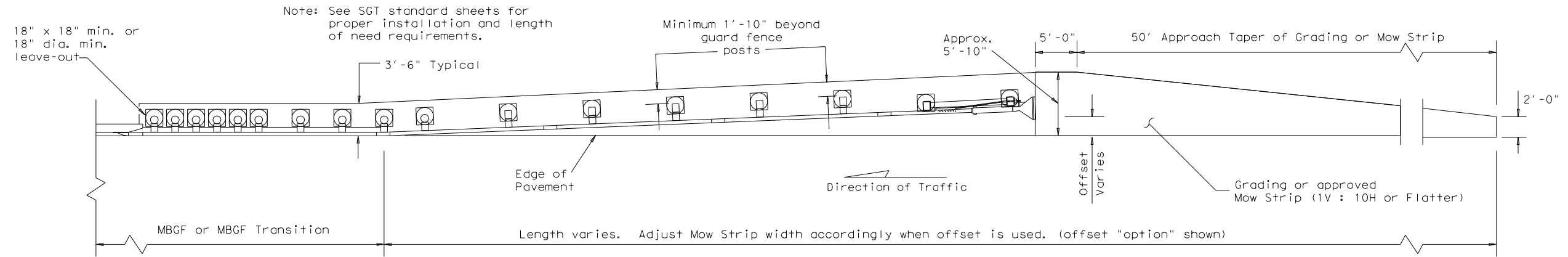
THREE BEAM TRANSITION BLOCKOUT DETAILS

HIGH-SPEED TRANSITION

SHEET 2 OF 2

				Design Division Standard	
METAL BEAM GUARD FENCE THREE-BEAM TRANSITION TL-3 MASH COMPLIANT GF (31) TR TL3-20					
FILE: gf31trtl320.dgn	DN: TXDOT	CK: KM	DW: KM	CK: CGL/AG	
©TXDOT: NOVEMBER 2020	CONT	SECT	JOB	HIGHWAY	
REVISIONS					
	0251	06	036	US 281	
	DIST	COUNTY		SHEET NO.	
	BWD	LAMPASAS		147	

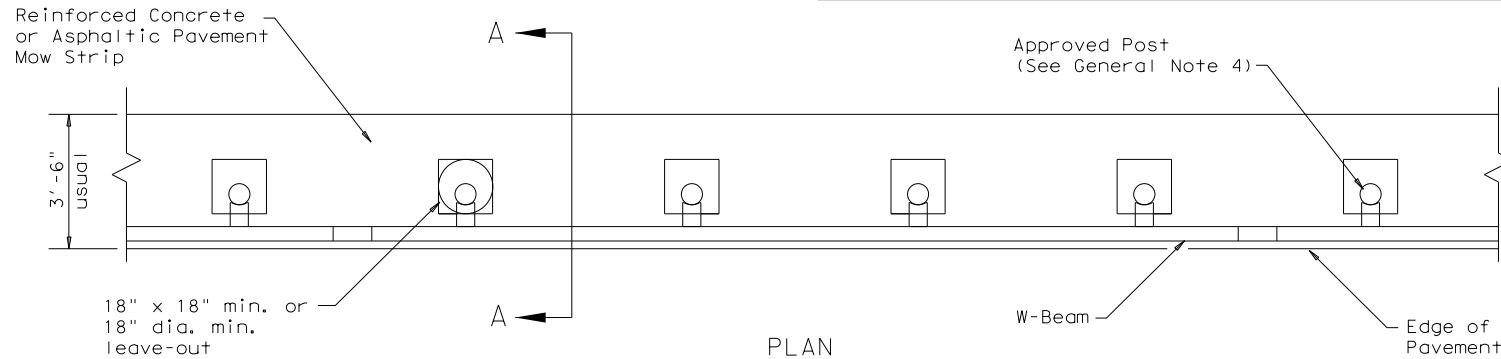
DISCLAIMER: THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TXDOT FOR ANY PURPOSE WHATSOEVER. THE USE OF THIS STANDARD FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE. TXDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.



Note: See SGT standard sheets for proper installation and length of need requirements.

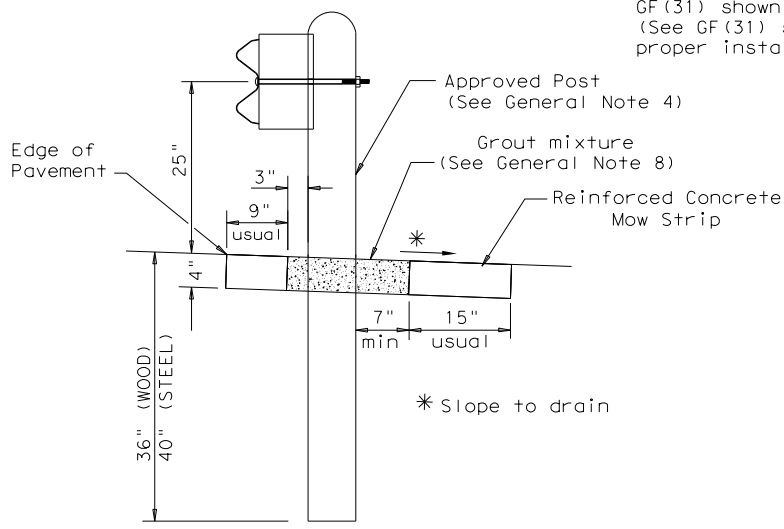
GRADING AND MOW STRIP AT GUARDRAIL END TREATMENTS

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.

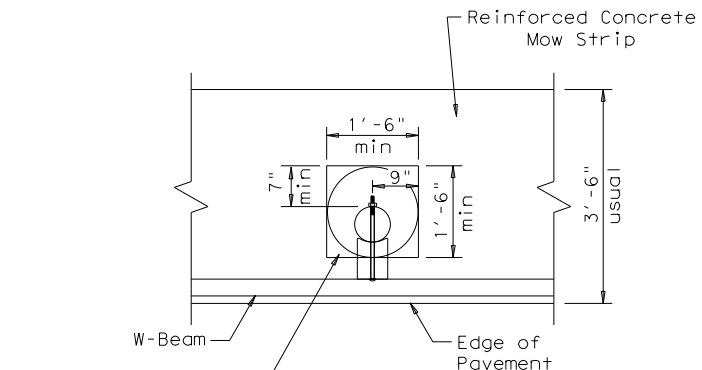


PLAN

GF(31) shown with Mow Strip
 (See GF(31) standard sheet for proper installation)



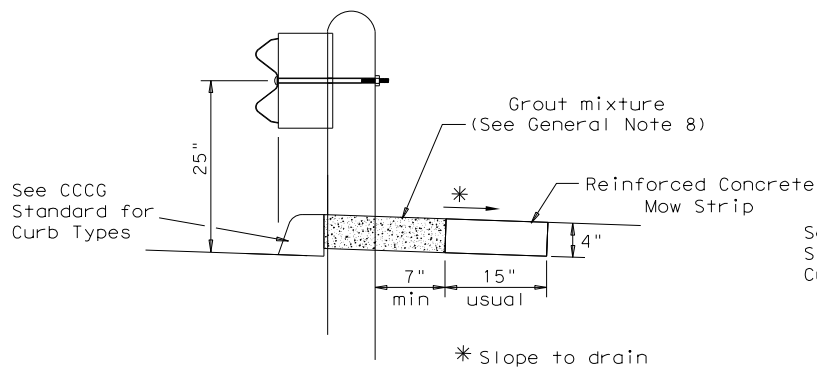
SECTION A-A
 Typical



MOW STRIP DETAIL

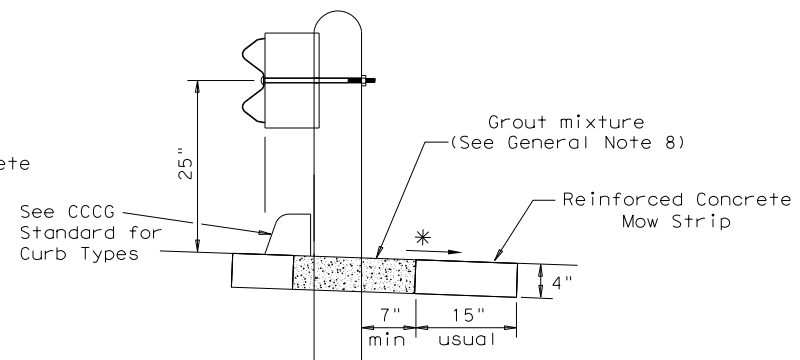
Reinforced Concrete Mow Strip with 18\"/>

- GENERAL NOTES**
1. This mow strip design is for use with metal beam guard fence, guard fence transitions, and guard fence end treatments. See applicable GF(31) MBGF or GF(31) Transition Standard sheet for additional information.
 2. Mow strips shall be reinforced concrete with (wire mesh or synthetic fiber), as shown on the plans and will be paid for under the pertinent bid item. 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. Only steel (W6 x 8.5 or W6 x 9.0), or 7 1/2" Dia. round wood posts are acceptable for use in the mow strip. See GF(31) Standard for additional details.
 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 reinforced concrete will include leave-outs for the posts.
 8. The leave-outs shall be filled with a Grout mixture consisting of: 2719 pounds sand, 188 pounds Type 1 or II cement, and 550 pounds of water per cubic yard, with a 28-day compressive strength of approximately 230 psi or less. Provide grout with a consistency that will flow into and completely fill all voids. Due to auger size, larger leave-out dimensions are acceptable from both an impact performance and maintenance repair standpoint (Suggested Maximum leave-out of 20"). Payment for furnishing and placing the grout mixture will be subsidiary to the pay item of riprap mow strip.



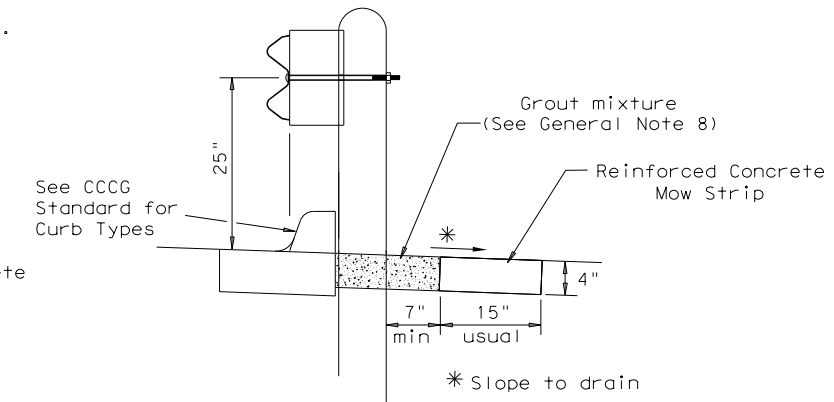
CURB OPTION (1)

This option will increase the post embedment throughout the system.



CURB OPTION (2)

Curb shown on top of mow strip



CURB OPTION (3)

Texas Department of Transportation
 Design Division Standard

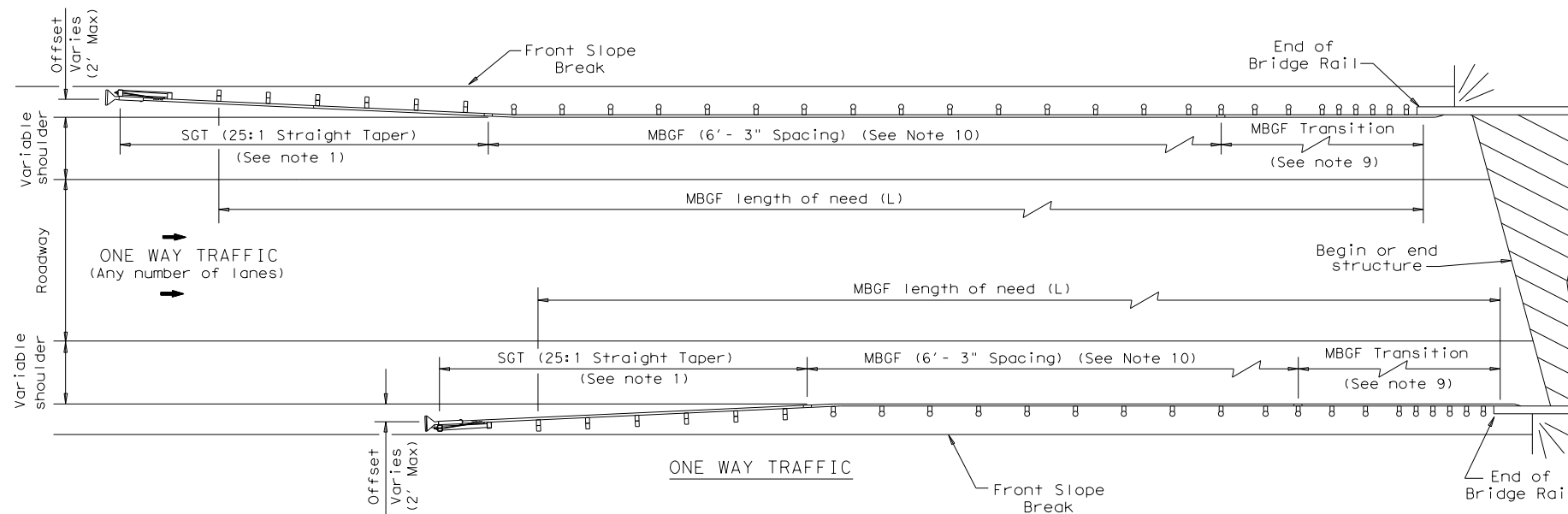
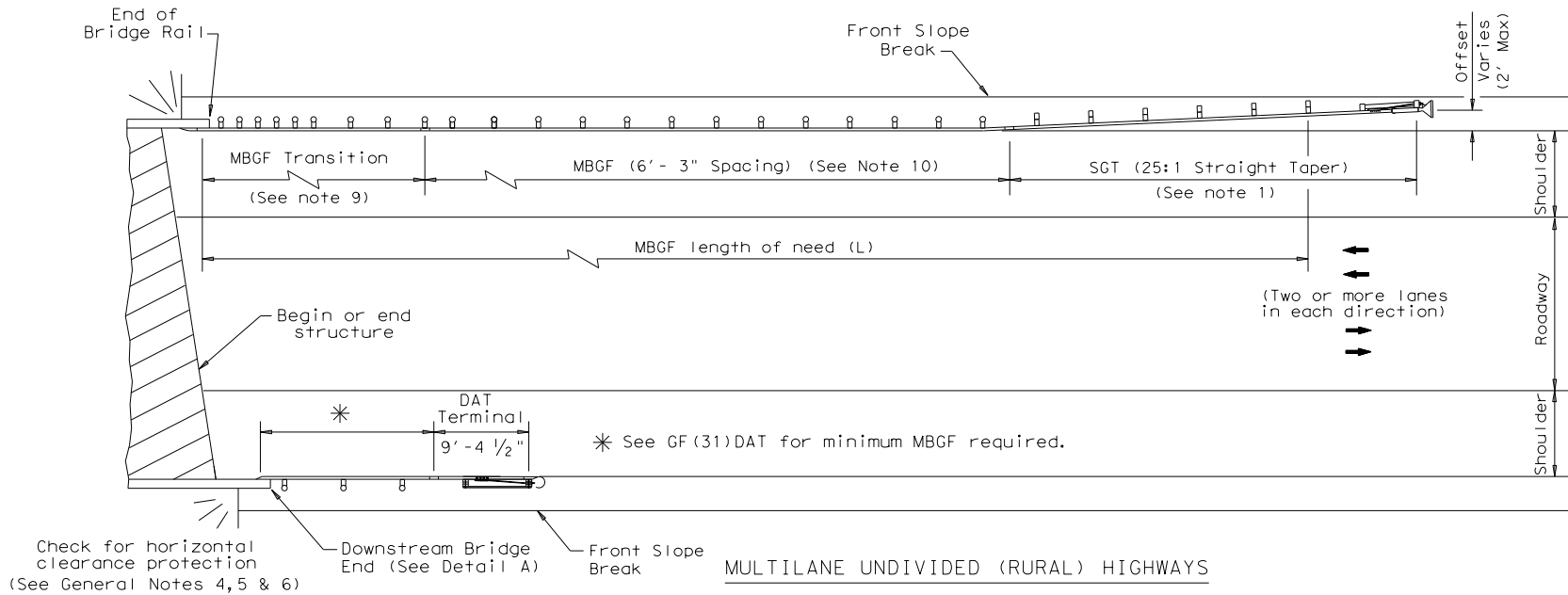
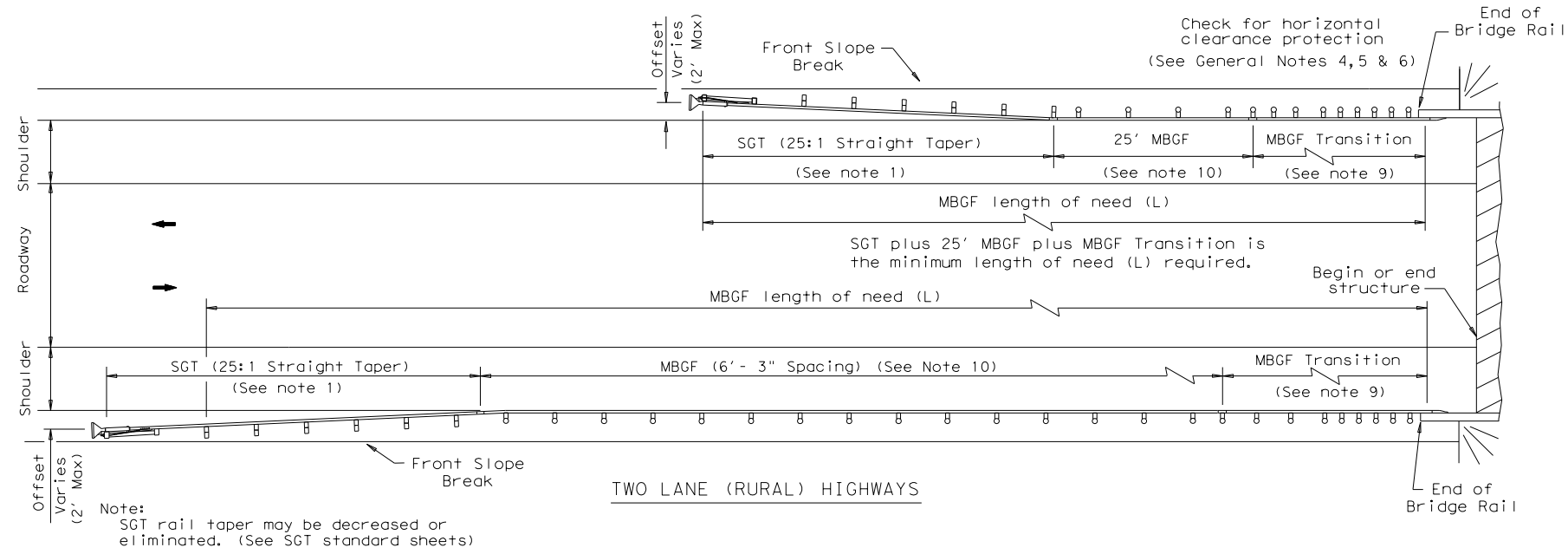
METAL BEAM GUARD FENCE (MOW STRIP)
TL-3 MASH COMPLIANT
GF (31) MS-19

FILE: gf31ms19.dgn	DN:TXDOT	CK: KM	DW: VP	CK:CGL/AG
©TXDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	148	

DATE:
 FILE:

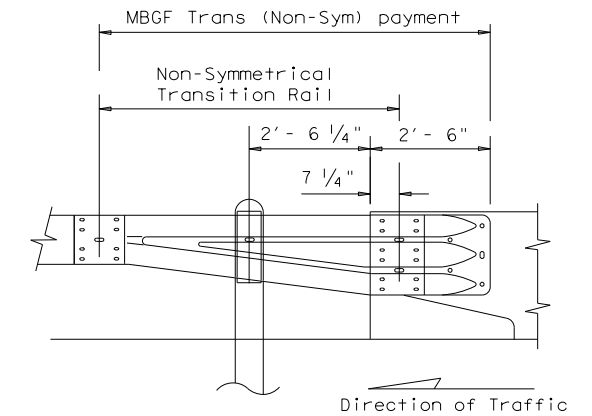
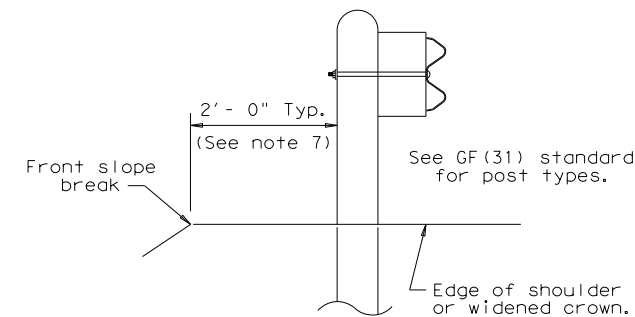
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: FILE:



GENERAL NOTES

1. For more detail: See GF(31), SGT()31, GF(31)TR, and GF(31)TL2 standard sheets.
2. Quantities of metal beam guard fence (MBSG) at individual bridge ends are as shown in the plans.
3. Use average daily traffic (ADT) for the current year to determine MBSG length of need in accordance with the Roadway Design Manual unless otherwise specified. Where significant traffic volume growth is anticipated on low volume (0-750 ADT) highways, use length determinations for the higher volume category.
4. MBSG may not be required to shield departure end of bridge unless other obstacles within the horizontal clearance limits or opposing traffic indicate a MBSG consideration.
5. Downstream anchor terminals (DAT) are only for downstream end anchorage use, outside the horizontal clearance area of opposing traffic.
6. Direct connection of MBSG to concrete rails are only for downstream rail connections outside the horizontal clearance area of opposing traffic. (This requires a minimum of three standard line posts plus the DAT terminal, See Detail A)
7. The crown shall be widened to accommodate MBSG. Typically the "front slope" break should be 2' - 0" from the back of the MBSG post. This applies to new construction on new alignment or where existing roadway cross section is to be widened to increase roadway width. This does not apply to rehabilitation work where existing roadway crown width is to be retained (See Typical Cross Section at MBSG).
8. For restrictive bridge widths: The MBSG should be properly transitioned from the existing bridge rail to the adjoining MBSG (See MBSG Transition Standards). Metal beam guard fence at these bridge location(s) shall be flared at the rate of 25:1 or flatter, and be of the length necessary to locate the terminal end at the 2 ft. "maximum" offset from the shoulder edge in the approach direction.
9. Transition length and post spacing will vary depending on the transition type. Transition type will be shown elsewhere in the plans.
10. A minimum 25' length of MBSG will be required.



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

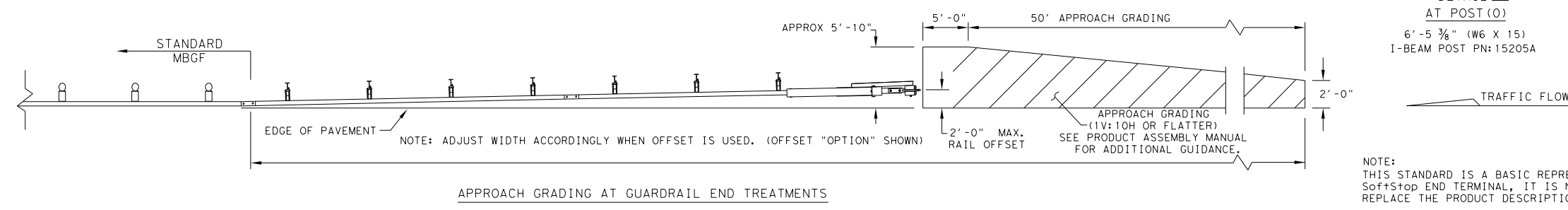
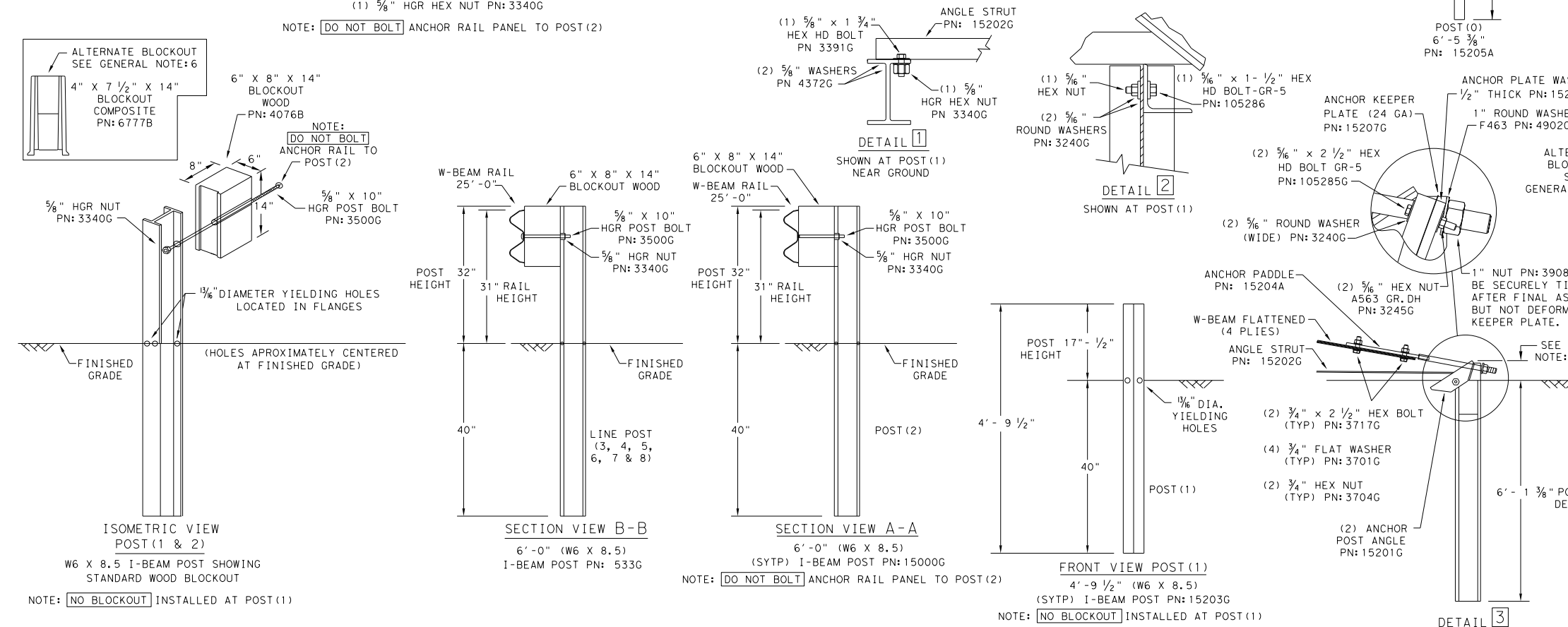
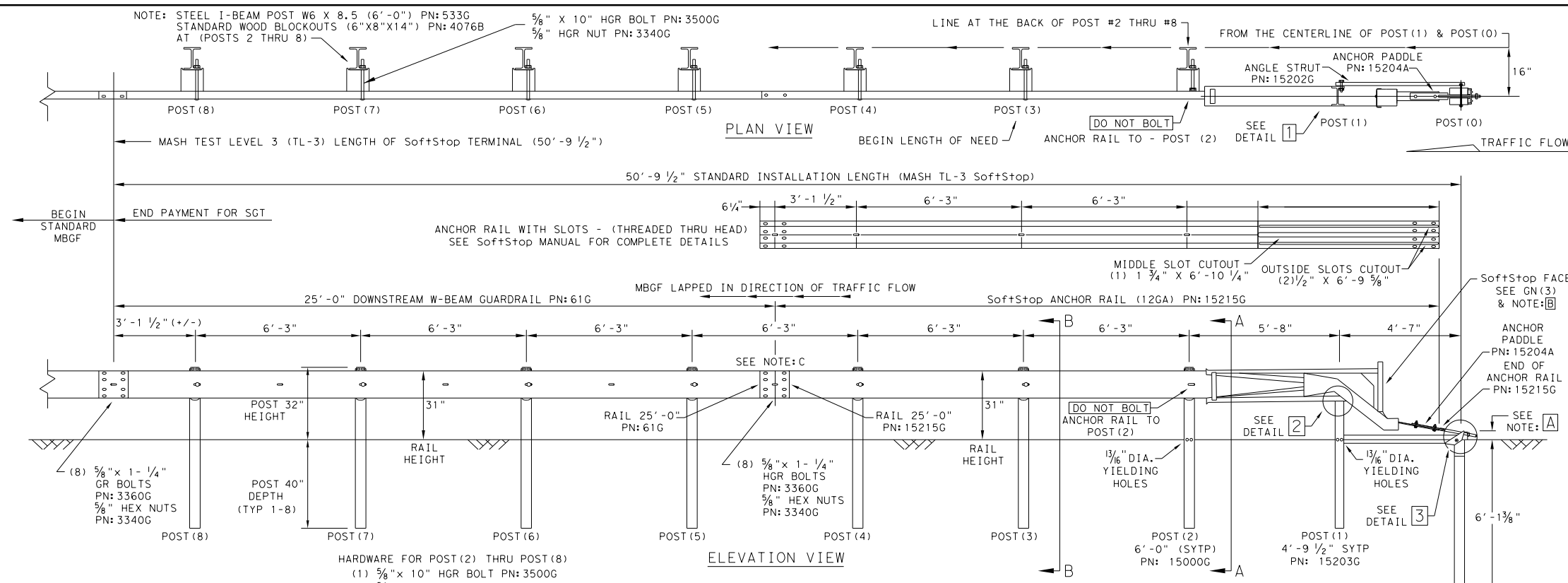
Texas Department of Transportation Design Division Standard

BRIDGE END DETAILS
(METAL BEAM GUARD FENCE APPLICATIONS TO RIGID RAILS)

BED-14

FILE: bed14.dgn	DN: TxDOT	CK: AM	DW: BD/VP	CK: CGL
© TxDOT: December 2011	CONT	SECT	JOB	HIGHWAY
REVISED APRIL 2014 SEE (MEMO 0414)	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	149	

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.



- GENERAL NOTES**
- FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: TRINITY HIGHWAY AT 1(888)323-6374, 2525 N. STEMMONS FREEWAY, DALLAS, TX 75207
 - FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE; SoftStop END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL. PN:620237B
 - APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
 - FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TxDOT'S LATEST ROADWAY MOW STRIP STANDARD.
 - HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
 - A COMPOSITE MATERIAL BLOCKOUT THAT MEETS THE REQUIREMENTS OF DMS-7210, MAY BE SUBSTITUTED FOR BLOCKOUTS OF SIMILAR DIMENSIONS. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.
 - IF SOLID ROCK IS ENCOUNTERED SEE THE MANUFACTURER'S INSTALLATION MANUAL AND REFER TO THE LATEST ROADWAY MGBF STANDARD FOR INSTALLATION GUIDANCE.
 - POSTS SHALL NOT BE SET IN CONCRETE.
 - IT IS ACCEPTABLE TO INSTALL THE SoftStop IMPACT HEAD PARALLEL TO THE GRADE LINE OR WITH AN UPWARD TILT.
 - DO NOT ATTACH THE SoftStop SYSTEM DIRECTLY TO A RIGID BARRIER.
 - UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL WITHIN THE SoftStop SYSTEM BE CURVED.
 - A FLARE RATE OF UP TO 25:1 MAY BE USED TO PREVENT THE TERMINAL HEAD FROM ENCRoaching ON THE SHOULDER. THE FLARE MAY BE DECREASED OR ELIMINATED FOR SPECIFIC INSTALLATIONS, IF DIRECTED BY THE ENGINEER.

NOTE: A THE INSTALLATION HEIGHT OF FULLY ASSEMBLED ANCHOR POST WILL VARY FROM 3-3/4" MIN. TO 4" MAX. ABOVE FINISHED GRADE.

NOTE: B PART PN:5852B RIGHT-SIDE (HIGH INTENSITY REFLECTIVE SHEETING) PART PN:5851B LEFT-SIDE (HIGH INTENSITY REFLECTIVE SHEETING)

NOTE: C W-BEAM SPLICE LOCATED BETWEEN LINE POST (4) AND LINE POST (5) GUARDRAIL PANEL 25'-0" PN:61G ANCHOR RAIL 25'-0" PN:15215G LAP GUARDRAIL IN DIRECTION OF TRAFFIC FLOW.

PART	QTY	MAIN SYSTEM COMPONENTS
620237B	1	PRODUCT DESCRIPTION ASSEMBLY MANUAL (LATEST REV.)
15208A	1	SoftStop HEAD (SEE MANUAL FOR RIGHT-LEFT APPROACH)
15215G	1	SoftStop ANCHOR RAIL (12GA) WITH CUTOUT SLOTS
61G	1	SoftStop DOWNSTREAM W-BEAM RAIL (12GA) (25'-0")
15205A	1	POST #0 - ANCHOR POST (6'-5 3/8")
15203G	1	POST #1 - (SYTP) (4'-9 1/2")
15000G	1	POST #2 - (SYTP) (6'-0")
533G	6	POST #3 THRU #8 - I-BEAM (W6 X 8.5) (6'-0")
4076B	7	BLOCKOUT - WOOD (ROUTED) (6" X 8" X 14")
6777B	7	BLOCKOUT - COMPOSITE (4" X 7 1/2" X 14")
15204A	1	ANCHOR PADDLE
15207G	1	ANCHOR KEEPER PLATE (24 GA)
15206G	1	ANCHOR PLATE WASHER (1/2" THICK)
15201G	2	ANCHOR POST ANGLE (10" LONG)
15202G	1	ANGLE STRUT
HARDWARE		
4902G	1	1" ROUND WASHER F436
3908G	1	1" HEAVY HEX NUT A563 GR.DH
3717G	2	3/4" X 2 1/2" HEX BOLT A325
3701G	4	3/4" ROUND WASHER F436
3704G	2	3/4" HEAVY HEX NUT A563 GR.DH
3360G	16	5/8" X 1 1/4" W-BEAM RAIL SPLICE BOLTS HGR
3340G	25	5/8" W-BEAM RAIL SPLICE NUTS HGR
3500G	7	5/8" X 10" HGR POST BOLT A307
3391G	1	5/8" X 1 3/4" HEX HD BOLT A325
4489G	1	5/8" X 9" HEX HD BOLT A325
4372G	4	5/8" WASHER F436
105285G	2	5/8" X 2 1/2" HEX HD BOLT GR-5
105286G	1	5/8" X 1 1/2" HEX HD BOLT GR-5
3240G	6	5/8" ROUND WASHER (WIDE)
3245G	3	5/8" HEX NUT A563 GR.DH
5852B	1	HIGH INTENSITY REFLECTIVE SHEETING - SEE NOTE: B

Texas Department of Transportation

Design Division Standard

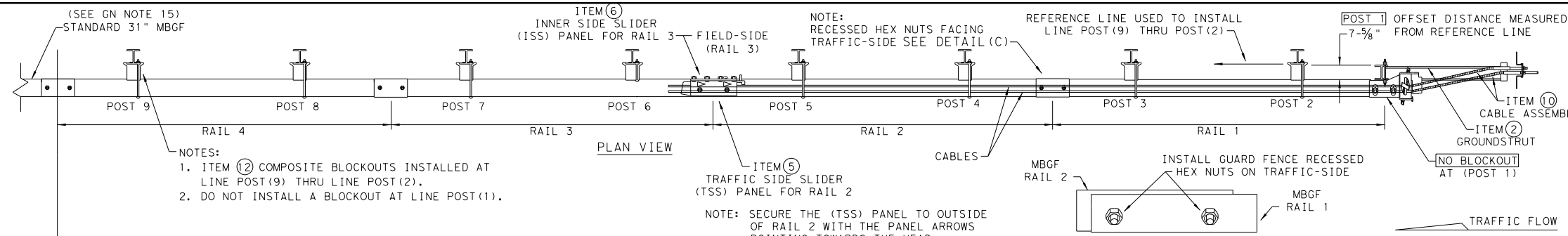
**TRINITY HIGHWAY
SOFTSTOP END TERMINAL
MASH - TL-3
SGT (10S) 31-16**

FILE: sgt10s3116	DN: TxDOT	CK: KM	DW: VP	CK: MB/VP
©TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY		SHEET NO.
	BWD	LAMPASAS		150

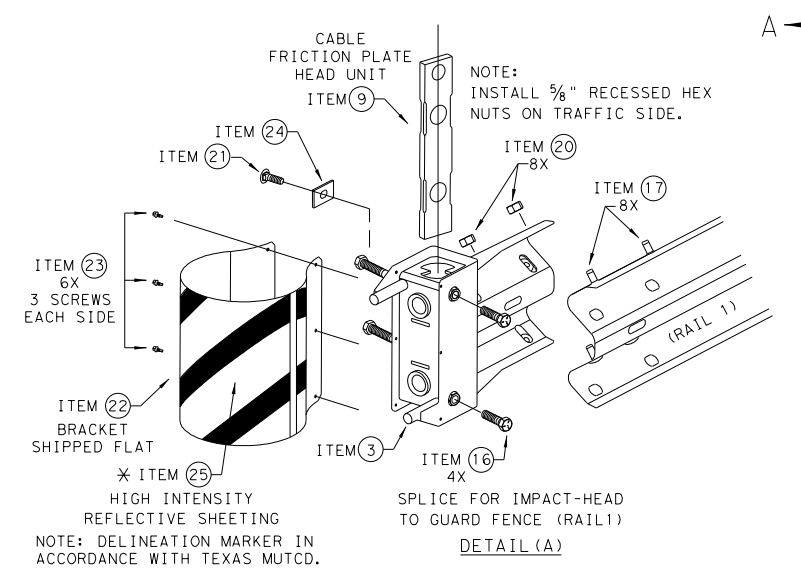
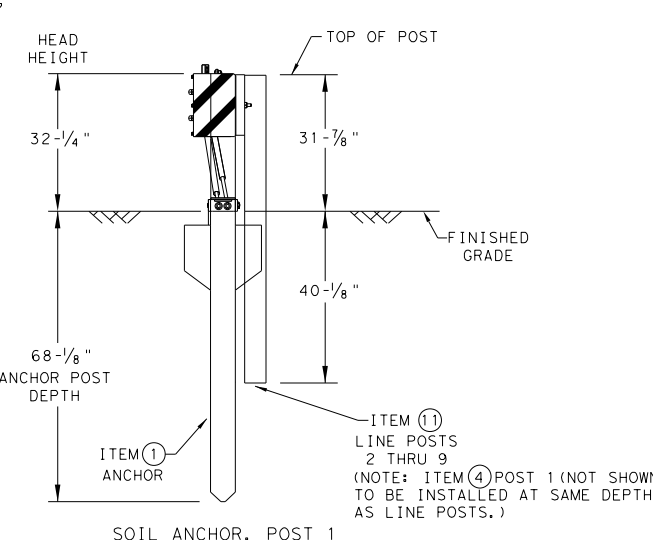
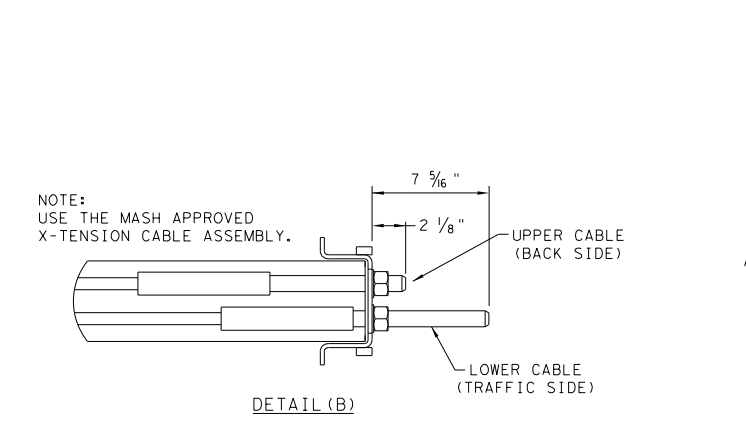
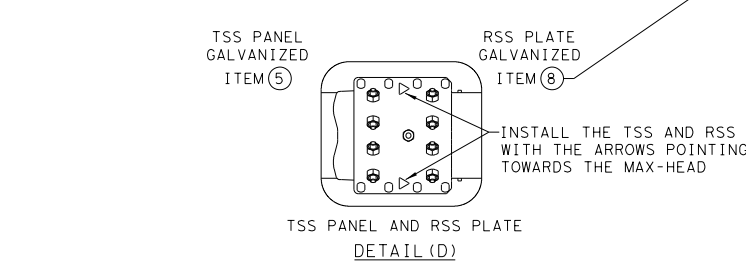
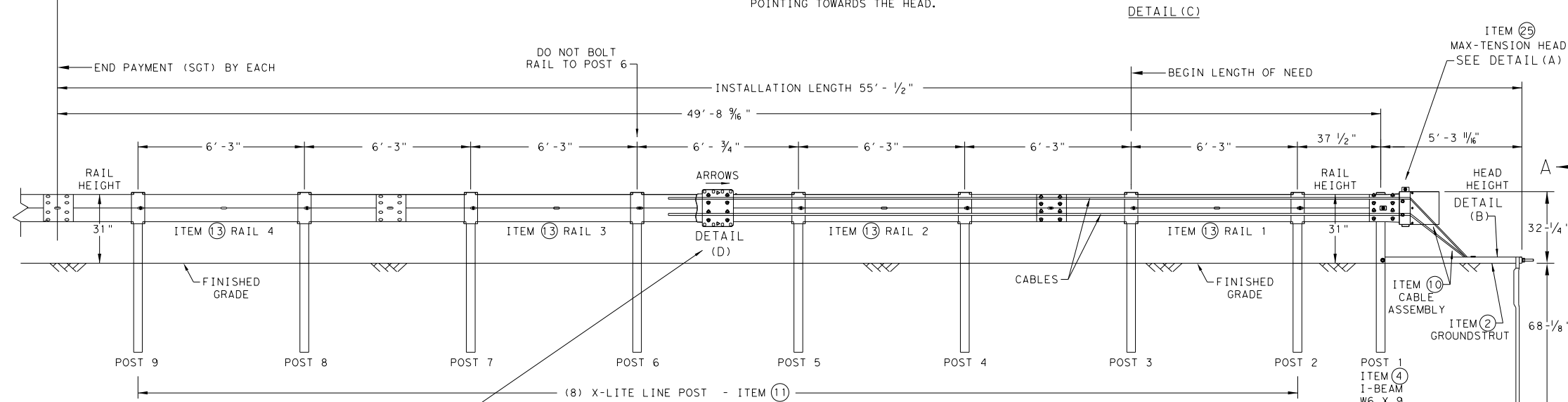
NOTE: THIS STANDARD IS A BASIC REPRESENTATION OF THE SoftStop END TERMINAL, IT IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

DATE: FILE:

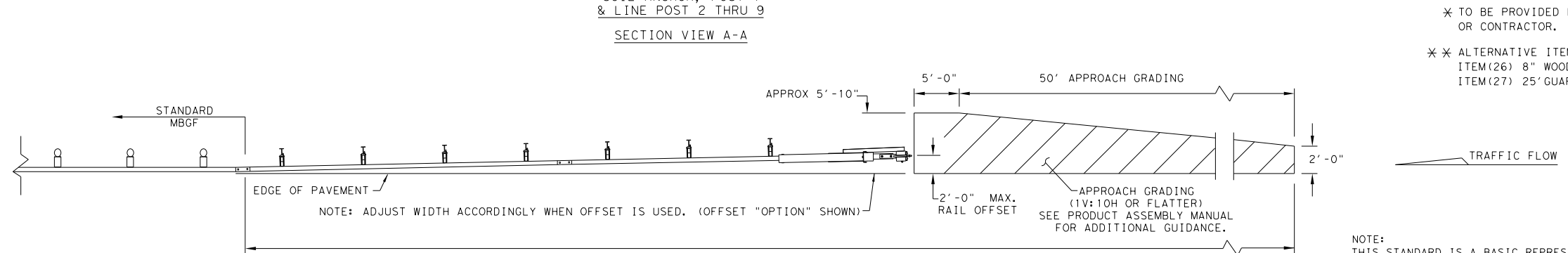
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



- GENERAL NOTES**
- FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: LINDSAY TRANSPORTATION SOLUTIONS (LTS) - BARRIER SYSTEMS, INC. AT (707) 374-6800
 - FOR INSTALLATION, REPAIR, & MAINTENANCE REFER TO THE: MAX-TENSION INSTALLATION INSTRUCTION MANUAL. P/N MANMAX REV D (ECN 3516).
 - APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
 - FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
 - ALL STEEL COMPONENTS ARE GALVANIZED PER ASTM A123 OR EQUIVALENT UNLESS OTHERWISE STATED.
 - SYSTEM SHOWN USING STEEL WIDE FLANGE POST WITH COMPOSITE BLOCKOUTS.
 - COMPOSITE MATERIAL BLOCKOUT THAT MEETS THE REQUIREMENTS OF DMS-7210, MAY BE SUBSTITUTED FOR BLOCKOUTS SIMILAR DIMENSIONS. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.
 - REFER TO INSTALLATION MANUAL FOR SPECIFIC PANEL LAPPING GUIDANCE.
 - IF SOLID ROCK IS ENCOUNTERED SEE THE MANUFACTURER'S INSTALLATION MANUAL FOR INSTALLATION GUIDANCE.
 - POSTS SHALL NOT BE SET IN CONCRETE.
 - A DRIVING CAP WITH A TIMBER OR PLASTIC INSERT SHALL BE USED WHEN DRIVING POST TO PREVENT DAMAGE TO THE GALVANIZING ON TOP OF THE POST.
 - MAX-TENSION SYSTEM SHALL NEVER BE INSTALLED WITHIN A CURVED SECTION OF GUARDRAIL.
 - IF A DELINEATION MARKER IS REQUIRED, MARKER SHALL BE IN ACCORDANCE WITH TEXAS MUTCD.
 - THE SYSTEM IS SHOWN WITH 12'-6" MBGF PANELS, 25'-0" MBGF PANELS ARE ALSO ALLOWED.
 - A MINIMUM OF 12'-6" OF 12GA. MBGF IS REQUIRED IMMEDIATELY DOWNSTREAM OF THE MAX-TENSION SYSTEM.



ITEM#	PART NUMBER	DESCRIPTION	QTY
1	BSI-1610060-00	SOIL ANCHOR - GALVANIZED	1
2	BSI-1610061-00	GROUND STRUT - GALVANIZED	1
3	BSI-1610062-00	MAX-TENSION IMPACT HEAD	1
4	BSI-1610063-00	W6x9 I-BEAM POST 6FT. - GALVANIZED	1
5	BSI-1610064-00	TSS PANEL - TRAFFIC SIDE SLIDER	1
6	BSI-1610065-00	ISS PANEL - INNER SIDE SLIDER	1
7	BSI-1610066-00	TOOTH - GEOMET	1
8	BSI-1610067-00	RSS PLATE - REAR SIDE SLIDER	1
9	B061058	CABLE FRICTION PLATE - HEAD UNIT	1
10	BSI-1610069-00	CABLE ASSEMBLY - MASH X-TENSION	2
11	BSI-1012078-00	X-LITE LINE POST - GALVANIZED	8
12	B090534	8" W-BEAM COMPOSITE-BLOCKOUT XT110	8
13	BSI-4004386	12'-6" W-BEAM GUARD FENCE PANELS 12GA.	4
14	BSI-1102027-00	X-LITE SQUARE WASHER	1
15	BSI-2001886	5/8" X 7" THREAD BOLT HH (GR.5)GEOMET	1
16	BSI-2001885	3/4" X 3" ALL-THREAD BOLT HH (GR.5)GEOMET	4
17	4001115	5/8" X 1 1/4" GUARD FENCE BOLTS (GR.2)MGAL	48
18	2001840	5/8" X 10" GUARD FENCE BOLTS MGAL	8
19	2001636	5/8" WASHER F436 STRUCTURAL MGAL	2
20	4001116	5/8" RECESSED GUARD FENCE NUT (GR.2)MGAL	59
21	BSI-2001888	5/8" X 2" ALL THREAD BOLT (GR.5)GEOMET	1
22	BSI-1701063-00	DELINEATION MOUNTING (BRACKET)	1
23	BSI-2001887	1/4" X 3/4" SCREW SD HH 410SS	7
24	4002051	GUARDRAIL WASHER RECT AASHTO FWRO3	1
25	SEE NOTE BELOW	HIGH INTENSITY REFLECTIVE SHEETING	1
26	4002337	8" W-BEAM TIMBER-BLOCKOUT, PDB01B	8
27	BSI-4004431	25' W-BEAM GUARDRAIL PANEL, 8-SPACE, 12GA.	2
28	MANMAX Rev- (D)	MAX-TENSION INSTALLATION INSTRUCTIONS	1



NOTE: TXDOT GENERIC APPROACH GRADING LAYOUT USED FOR ALL TANGENT TYPE END TREATMENTS.

NOTE: THIS STANDARD IS A BASIC REPRESENTATION OF THE MAX-TENSION END TERMINAL, IT IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

* TO BE PROVIDED BY DISTRIBUTOR OR CONTRACTOR.
 ** ALTERNATIVE ITEMS NOT SHOWN.
 ITEM (26) 8" WOOD-BLOCKOUTS
 ITEM (27) 25' GUARD FENCE PANELS

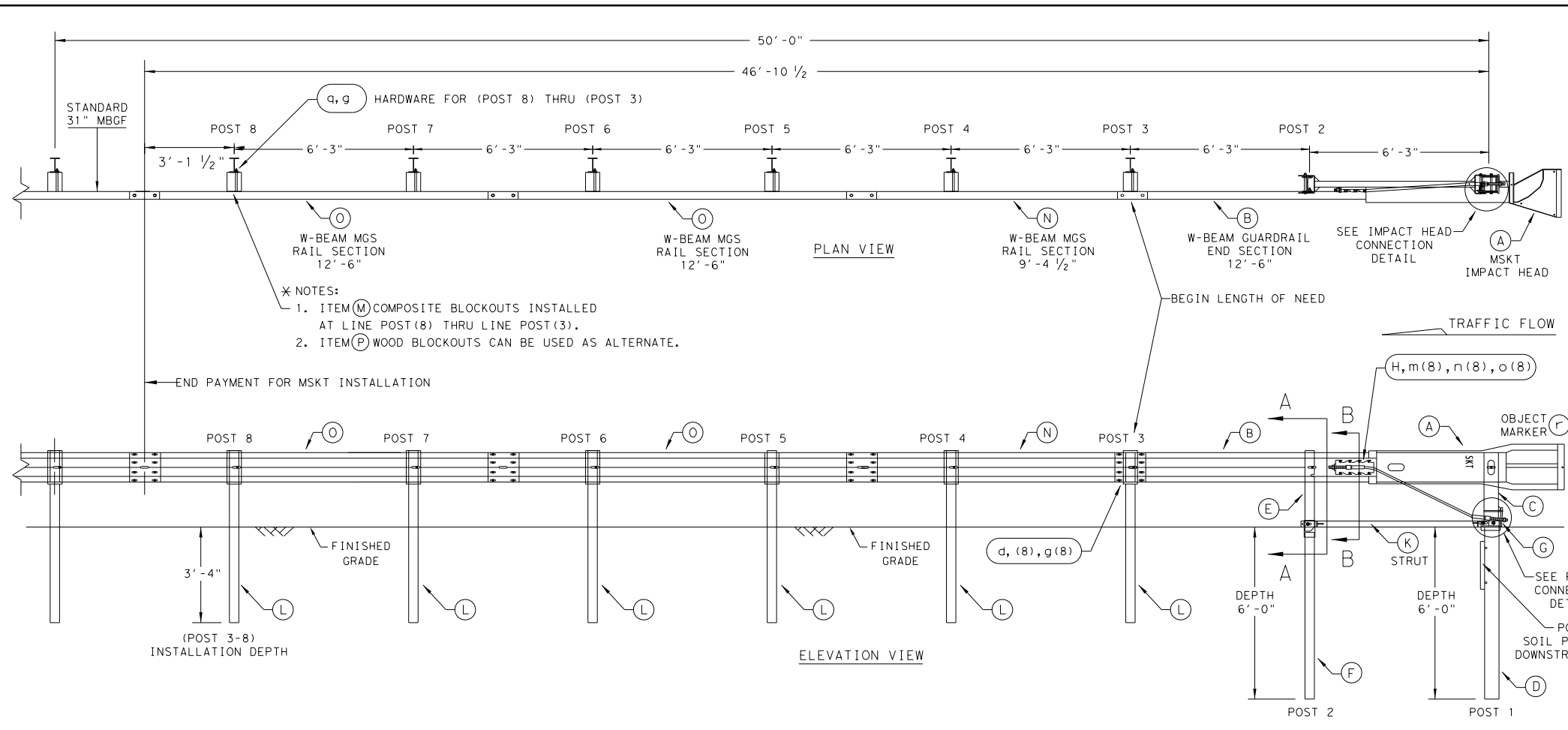
Texas Department of Transportation

Design Division Standard

MAX-TENSION END TERMINAL
 MASH - TL-3
 SGT (11S) 31-18

FILE: sg+11s3118.dgn	DN: TxDOT	CK: KM	DW: TxDOT	CL: CL
© TxDOT: FEBRUARY 2018	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY		SHEET NO.
	BWD	LAMPASAS		151

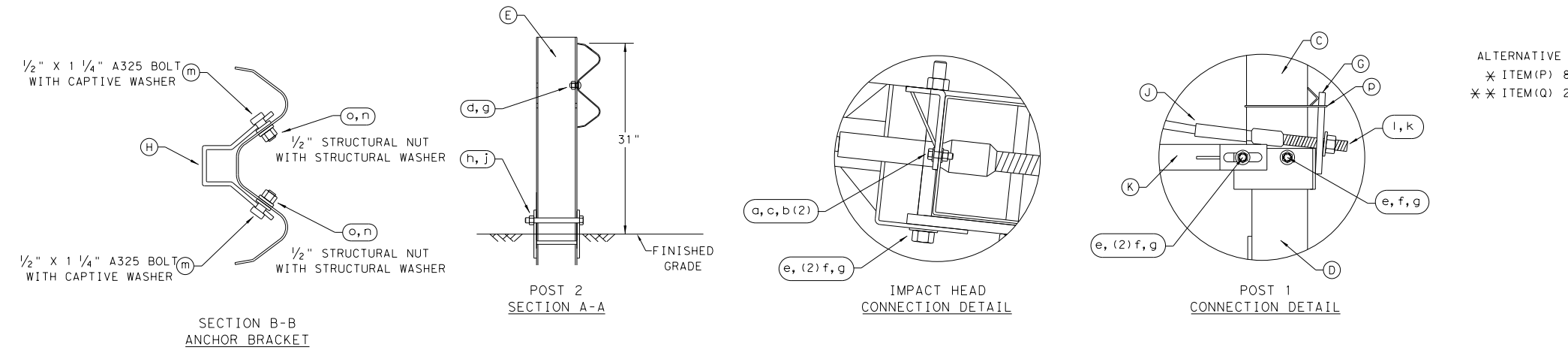
DISCLAIMER: THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TYDOT FOR ANY PURPOSE WHATSOEVER. TYDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.



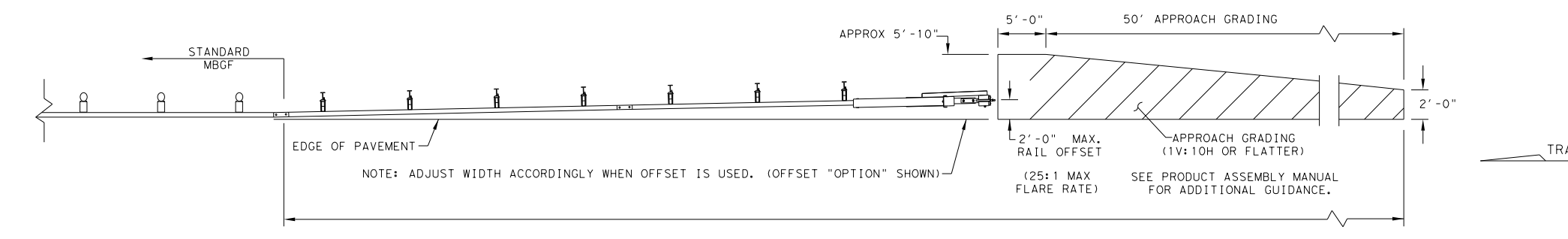
- NOTES:
- ITEM (M) COMPOSITE BLOCKOUTS INSTALLED AT LINE POST (8) THRU LINE POST (3).
 - ITEM (P) WOOD BLOCKOUTS CAN BE USED AS ALTERNATE.

- GENERAL NOTES
- FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: ROAD SYSTEMS, INC. (432)263-2435. 3616 OLD HOWARD COUNTY AIRPORT, BIG SPRING, TX 79720
 - FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE: MSKT END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL (PUBLICATION-062717).
 - APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
 - FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
 - HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
 - SYSTEM SHOWN USING STEEL WIDE FLANGE POSTS WITH COMPOSITE BLOCKOUTS.
 - A COMPOSITE MATERIAL BLOCKOUTS THAT MEETS THE REQUIREMENTS OF DMS-7210, MAY BE SUBSTITUTED FOR BLOCKOUTS OF SIMILAR DIMENSIONS. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.
 - IF SOLID ROCK IS ENCOUNTERED IN THE AREA OF (POST 1) AND / OR (POST 2) CONTACT THE MANUFACTURER, & REFER TO THE LATEST ROADWAY MBGF STANDARD FOR INSTALLATION GUIDANCE.
 - POSTS SHALL NOT BE SET IN CONCRETE.
 - SYSTEM MUST BE ATTACHED TO STANDARD 31" MBGF.
 - UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL WITHIN THE MSKT SYSTEM BE CURVED.
 - A FLARE RATE OF UP TO 25:1 MAY BE USED TO PREVENT THE TERMINAL HEAD FROM ENCROACHING ON THE SHOULDER. THE FLARE MAY BE DECREASED OR ELIMINATED FOR SPECIFIC INSTALLATIONS, IF DIRECTED BY THE ENGINEER.
 - THE SYSTEM IS SHOWN WITH TWO 12'-6" MBGF PANELS, ONE 25'-0" MBGF PANEL IS ALSO ALLOWED IN ITS PLACE.
 - A DRIVING CAP WITH A TIMBER OR PLASTIC INSERT SHALL BE USED WHEN DRIVING POSTS 3-8 TO PREVENT DAMAGE TO THE GALVANIZING ON TOP OF THE POST. SPECIAL DRIVING CAP TO BE USED ON LOWER POSTS 1 & 2 TO PREVENT DAMAGE TO THE WELDED PLATES.

ITEM	QTY	MAIN SYSTEM COMPONENTS	ITEM NUMBERS
A	1	MSKT IMPACT HEAD	MS3000
B	1	W-BEAM GUARDRAIL END SECTION, 12 Ga.	SF1303
C	1	POST 1 - TOP (6" X 6" X 1/8" TUBE)	MTPHP1A
D	1	POST 1 - BOTTOM (6' W6X15)	MTPHP1B
E	1	POST 2 - ASSEMBLY TOP	UHP2A
F	1	POST 2 - ASSEMBLY BOTTOM (6' W6X9)	HP2B
G	1	BEARING PLATE	E750
H	1	CABLE ANCHOR BOX	S760
J	1	BCT CABLE ANCHOR ASSEMBLY	E770
K	1	GROUND STRUT	MS785
L	6	W6X9 OR W6X8.5 STEEL POST	P621
M	6	COMPOSITE BLOCKOUTS	CBSP-14
N	1	W-BEAM MGS RAIL SECTION (9'-4 1/2")	G12025
O	2	W-BEAM MGS RAIL SECTION (12'-6")	G1203A
P	6	WOOD BLOCKOUT 6" X 8" X 14"	P675
Q	1	W-BEAM MGS RAIL SECTION (25'-0")	G1209
SMALL HARDWARE			
a	2	5/8" X 1" HEX BOLT (GRD 5)	B5160104A
b	4	5/8" WASHER	W0516
c	2	5/8" HEX NUT	N0516
d	25	5/8" Dia. x 1 1/4" SPLICE BOLT (POST 2)	B580122
e	2	5/8" Dia. x 9" HEX BOLT (GRD A449)	B580904A
f	3	5/8" WASHER	W050
g	33	5/8" Dia. H.G.R NUT	N050
h	1	3/4" Dia. x 8 1/2" HEX BOLT (GRD A449)	B340854A
j	1	3/4" Dia. HEX NUT	N030
k	2	1 ANCHOR CABLE HEX NUT	N100
l	2	1 ANCHOR CABLE WASHER	W100
m	8	1/2" X 1 1/4" A325 BOLT WITH CAPTIVE WASHER	SB12A
n	8	1/2" STRUCTURAL NUTS	N012A
o	8	1 1/8" O.D. x 3/8" I.D. STRUCTURAL WASHERS	W012A
p	1	BEARING PLATE RETAINER TIE	CT-100ST
q	6	5/8" X 10" H.G.R. BOLT	B581002
r	1	OBJECT MARKER 18" X 18"	E3151



ALTERNATIVE ITEMS NOT SHOWN. * *
 * ITEM (P) 8" WOOD-BLOCKOUT
 * * ITEM (Q) 25' GUARD FENCE PANEL



NOTE: TXDOT GENERIC APPROACH GRADING LAYOUT USED FOR ALL TANGENT TYPE END TREATMENTS.

NOTE: THIS STANDARD IS A BASIC REPRESENTATION OF THE MSKT END TERMINAL, IT IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

Texas Department of Transportation

Design Division Standard

SINGLE GUARDRAIL TERMINAL

MSKT-MASH-TL-3

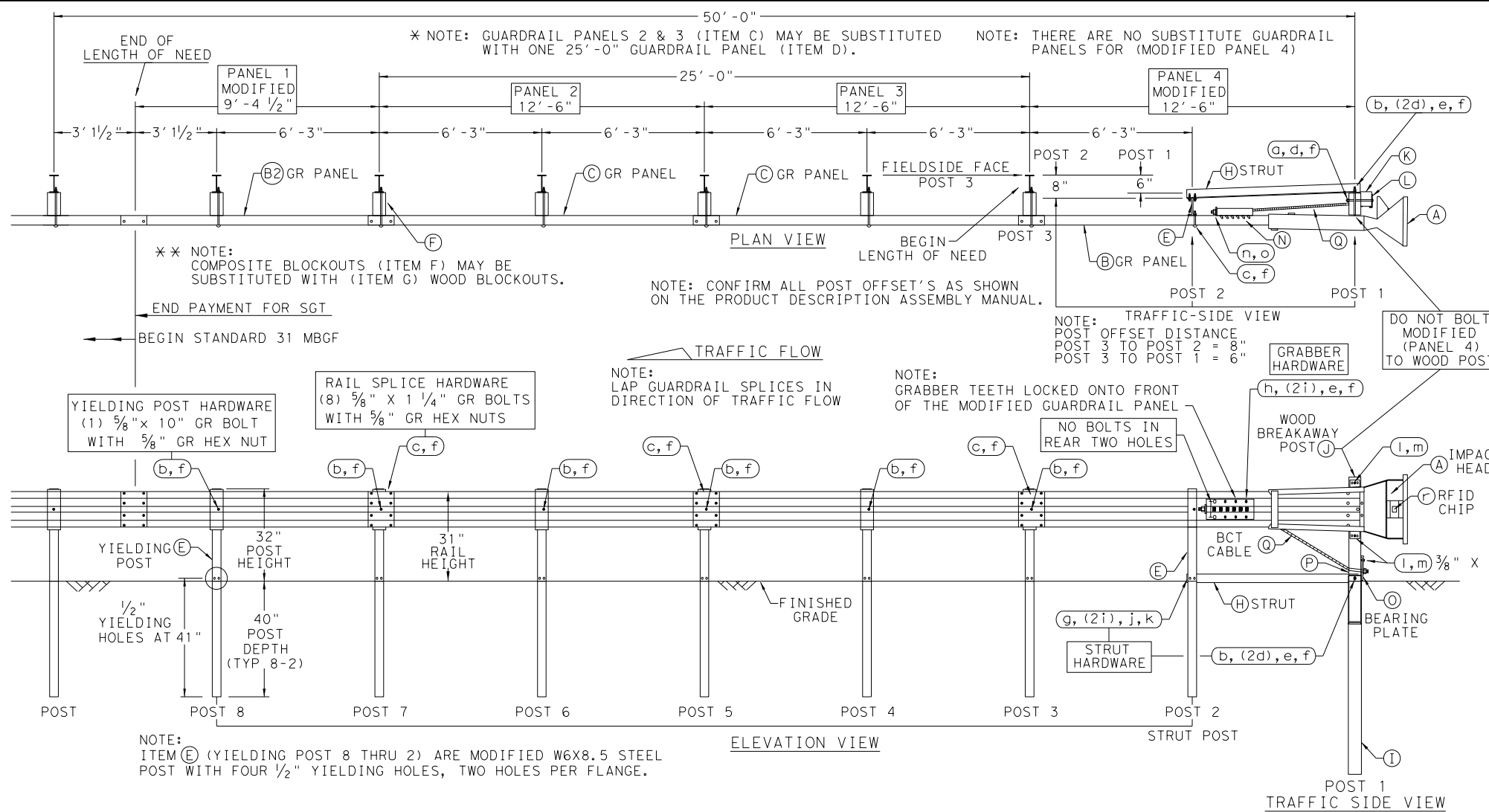
SGT (12S) 31-18

FILE: sgt12s3118.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CL
© TxDOT: APRIL 2018	CONT SECT	JOB	HIGHWAY	
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	152	

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.

DATE: FILE:

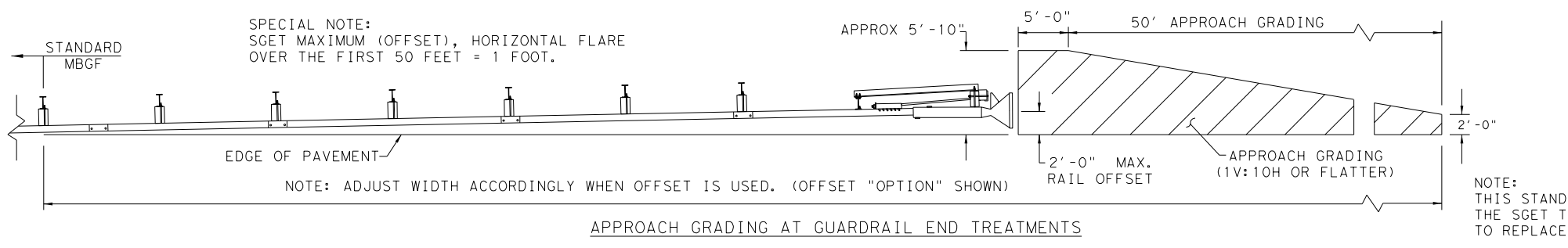
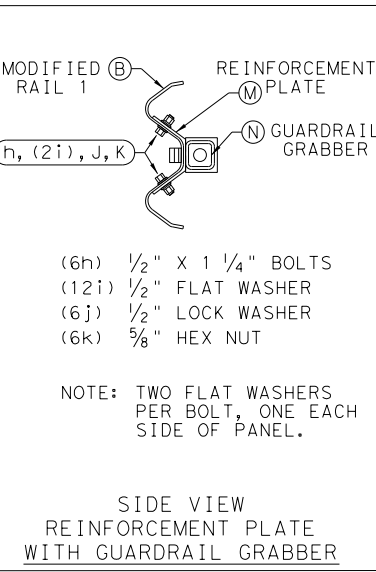
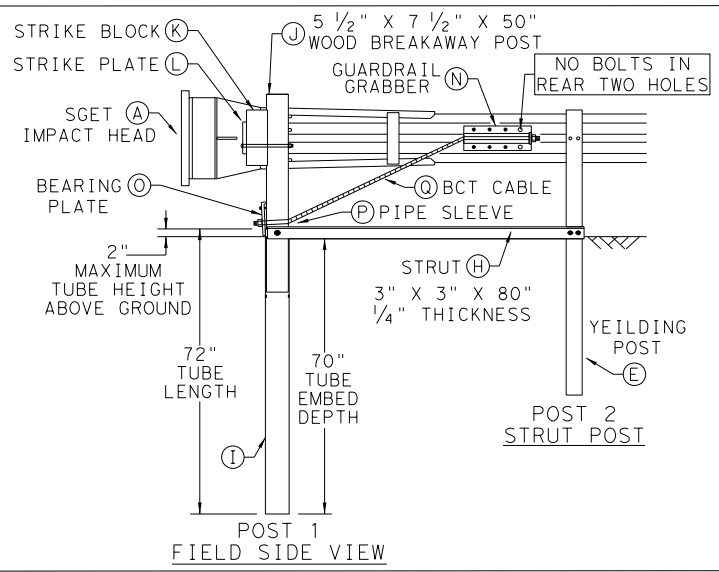
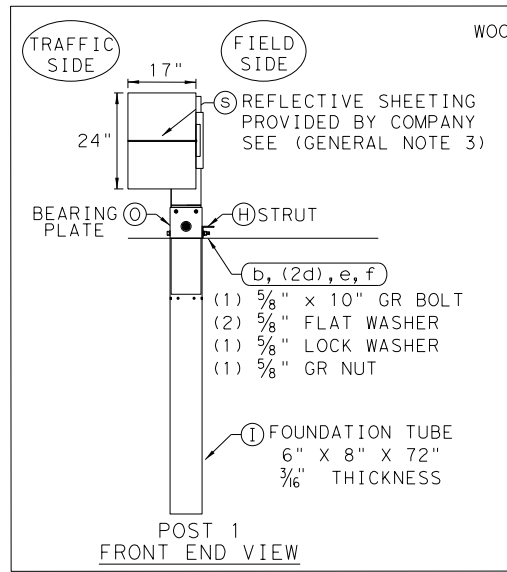
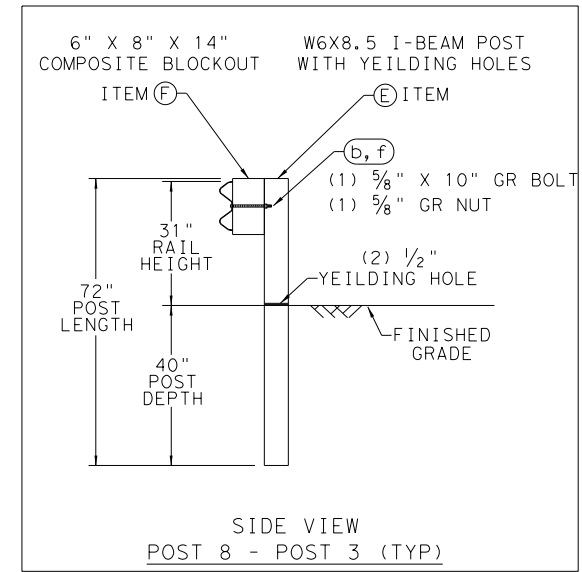


- GENERAL NOTES**
- FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: SPIG INDUSTRY, INC. AT 1(267) 644-9510. 14675 INDUSTRIAL PARK RD; BRISTOL, VA 24202
 - FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE MANUFACTURER'S; SGET END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL.
 - MANUFACTURER WILL APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" TO THE FACE PLATE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. THE OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
 - THE NOMINAL HEIGHT OF THE GUARDRAIL BEAM IS 31 INCHES WITH A TOLERANCE OF +/- ONE INCH.
 - FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TxDOT'S LATEST ROADWAY MOW STRIP STANDARD.
 - (POST 2 THROUGH POST 8) ARE MODIFIED STEEL-YIELDING POSTS WITH YIELDING HOLES AT GROUND LEVEL. THERE ARE NO SUBSTITUTE POSTS.
 - POSTS SHALL NOT BE SET IN CONCRETE.
 - IF SOLID ROCK IS ENCOUNTERED FOR ANY OF THE POSTS IN THE SYSTEM, CONTACT THE MANUFACTURER FOR SPECIFIC INSTALLATION GUIDANCE.
 - HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
 - A COMPOSITE MATERIAL BLOCKOUT THAT MEETS DMS-7210 REQUIREMENTS MAY BE SUBSTITUTED FOR AN APPROVED WOOD BLOCKOUT. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.
 - THE ENTIRE SYSTEM MUST BE INSTALLED IN A STRAIGHT LINE WITHOUT ANY CURVE. HOWEVER, THE SYSTEM CAN BE OFFSET BY TWO FEET AS SHOWN ON THE APPROACH GRADING DETAIL TO HELP OFF-SET THE IMPACT HEAD FROM SHOULDER OF THE ROAD.

ITEM	QTY	MAIN SYSTEM COMPONENTS	ITEM #
A	1	SGET IMPACT HEAD	SIH1A
B	1	MODIFIED GUARDRAIL PANEL 12'-6"	126SPZGP
B2	1	MODIFIED GUARDRAIL PANEL 9'-4 1/2"	GP94
C	2	STANDARD GUARDRAIL PANEL 12'-6"	GP126
D	1	STANDARD GUARDRAIL PANEL 25'-0"	GP25
E	7	MODIFIED YIELDING I-BEAM POST W6x8.5	YP6MOD
F	6	COMPOSITE BLOCKOUT 6" X 8" X 14"	CBO8
G	6	WOOD BLOCKOUT 6" X 8" X 14"	WB08
H	1	STRUT 3" X 3" X 80" X 1/4" A36 ANGLE	STR80
I	1	FOUNDATION TUBE 6" X 8" X 72" X 3/16"	FNDT6
J	1	WOOD BREAKAWAY POST 5 1/2" X 7 1/2" X 50"	WBRK50
K	1	WOOD STRIKE BLOCK	WSBLK14
L	1	STRIKE PLATE 1/4" A36 BENT PLATE	SPLT8
M	1	REINFORCEMENT PLATE 12 GA. GR55	REPLT17
N	1	GUARDRAIL GRABBER 2 1/2" X 2 1/2" X 16 1/2"	GR17
O	1	BEARING PLATE 8" X 8 5/8" X 5/8" A36	BPLT8
P	1	PIPE SLEEVE 4 1/4" X 2 3/8" O.D. (2 1/8" I.D.)	PSLV4
Q	1	BCT CABLE 3/4" X 81" LENGTH	CBL81

SMALL HARDWARE			
a	1	5/8" X 12" GUARDRAIL BOLT 307A HDG	12GRBLT
b	7	5/8" X 10" GUARDRAIL BOLT 307A HDG	10GRBLT
c	33	5/8" X 1 1/4" GR SPlice BOLTS 307A HDG	1GRBLT
d	3	5/8" FLAT WASHER F436 A325 HDG	58FW436
e	1	5/8" LOCK WASHER HDG	58LW
f	39	5/8" GUARDRAIL HEX NUT HDG	58HN563
g	2	1/2" X 2" STRUT BOLT A325 HDG	2BLT
h	6	1/2" X 1 1/4" PLATE BOLT A325 HDG	125BLT
i	16	1/2" FLAT WASHER F436 A325 HDG	12FWF436
j	8	1/2" LOCK WASHER HDG	12LW
k	8	1/2" HEX NUT A563 HDG	12HN563
l	4	3/8" X 3" HEX LAG SCREW GR5 HDG	38LS
m	4	3/8" FLAT WASHER F436 A325 HDG	38FW844
n	2	1" FLAT WASHER F436 A325 HDG	1FWF436
o	2	1" HEX NUT A563HD HDG	1HN563
p	1	18" TO 24" LONG ZIP TIE RATED 175-200LB	ZPT18
q	1	1 1/2" X 4" SCH-40 PVC PIPE	PSPCR4
r	1	RFID CHIP RATED MIL-STD-810F	RFID810F
s	1	IMPACT HEAD REFLECTIVE SHEETING	RS30M

ALTERNATIVE ITEMS
 * X
 * X
 NOTE: SEE PLAN VIEW



NOTE: THIS STANDARD IS A BASIC REPRESENTATION OF THE SGET TERMINAL SYSTEM AND IS NOT INTENDED TO REPLACE THE MANUFACTURER'S ASSEMBLY MANUAL.

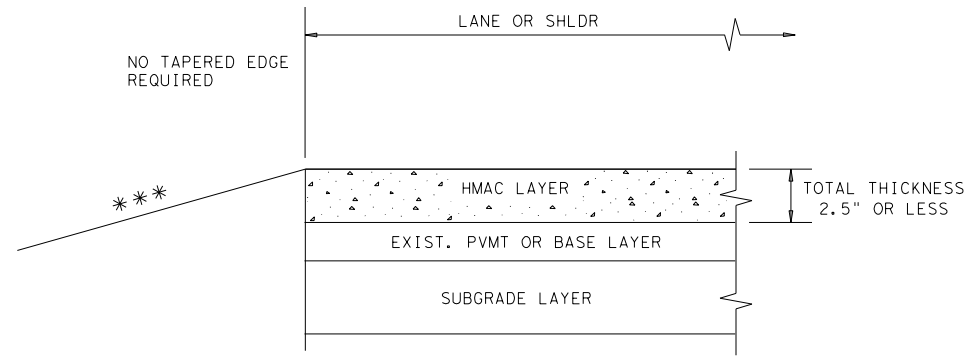
Texas Department of Transportation
 Design Division Standard

SPIG INDUSTRY, LLC
 SINGLE GUARDRAIL TERMINAL
 SGET - TL-3 - MASH
 SGT (15) 31-20

FILE: sg153120.dgn	DN:TxDOT	CK:KM	DW:VP	CK:VP
©TxDOT: APRIL 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	153	

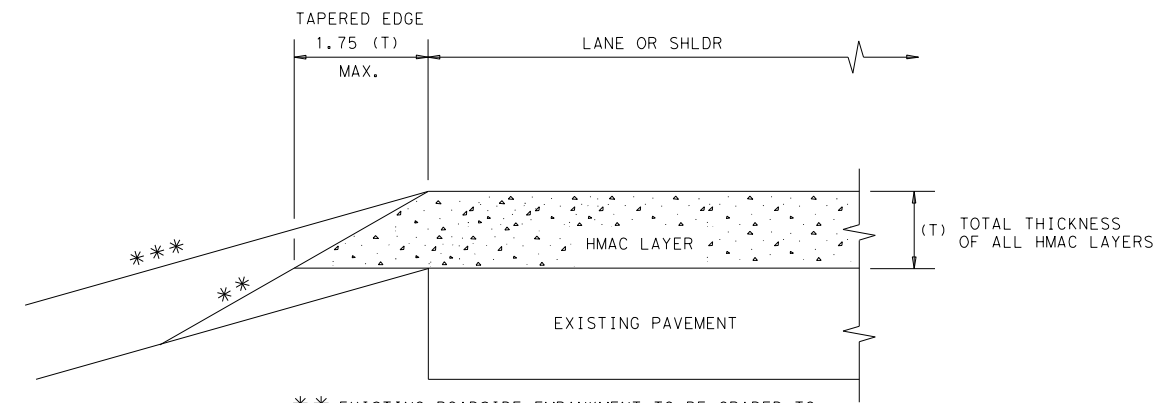
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 9/1/2022
 FILE: pw:\stiv-sw-pw-bentley.com:stiv-sw-pw-01\Documents\Active Projects\TXD01600493.00\TXD01600493.04\8.00 Plans and Drawings\8.30 Cut Sheets\8.3.04 Roadway\Standard\tehmacc11.dgn



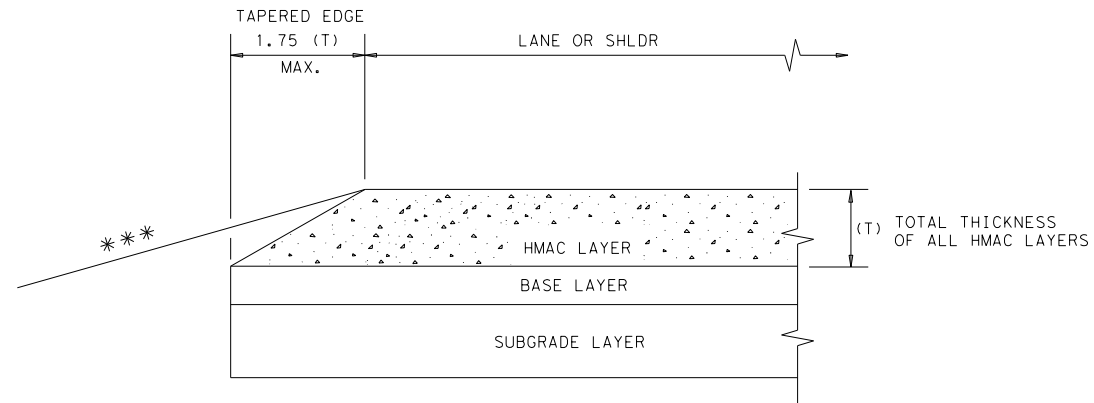
*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 1
 THIN HMAC SURFACES OR HMAC OVERLAY
 WITH THICKNESS OF 2.5" OR LESS



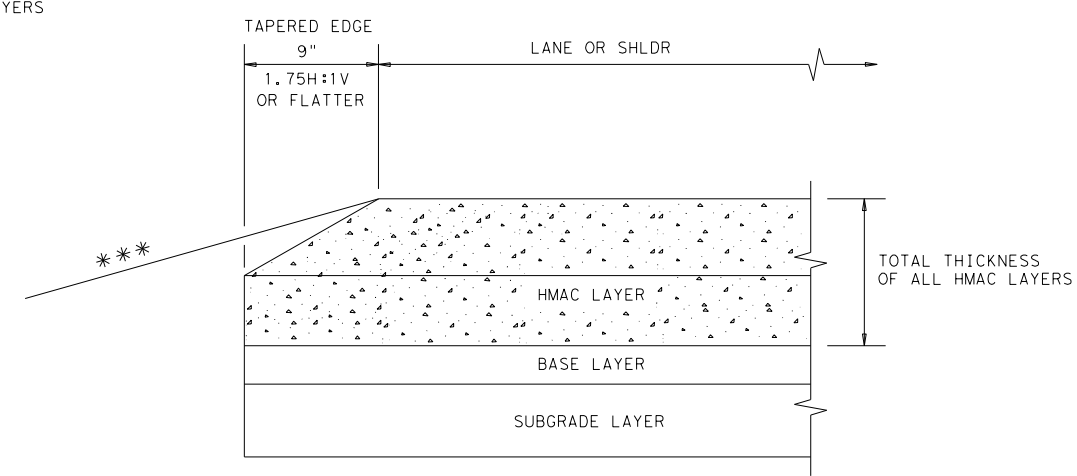
*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 2
 OVERLAY OF EXISTING PAVEMENT
 HMAC THICKNESS 2.5" TO 5"



*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 3
 NEW OR RECONSTRUCTED PAVEMENT
 HMAC THICKNESS 2.5" TO 5"



*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 4
 NEW OR RECONSTRUCTED PAVEMENT
 HMAC THICKNESS 5" OR GREATER

GENERAL NOTES

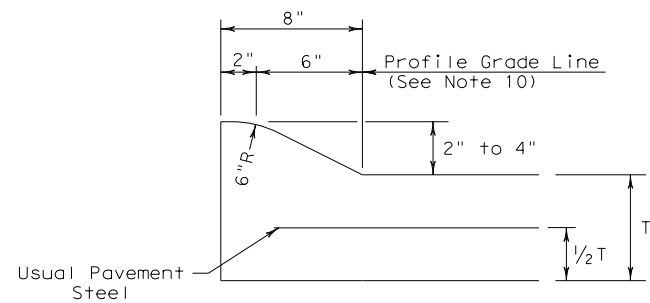
1. UNLESS OTHERWISE SHOWN IN THE PLANS, A VERTICAL EDGE IS PERMISSIBLE FOR HMAC PLACED GREATER THAN 5" BELOW THE EDGE OF PAVEMENT AND FOR THICKNESS OF HMAC LESS THAN 2.5".
2. FOR FURTHER INFORMATION REGARDING THE ROADSIDE AND PAVEMENT DETAILS, SEE TYPICAL SECTIONS.
3. PAYMENT FOR TAPERED EDGE WILL BE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

(NOT TO SCALE)

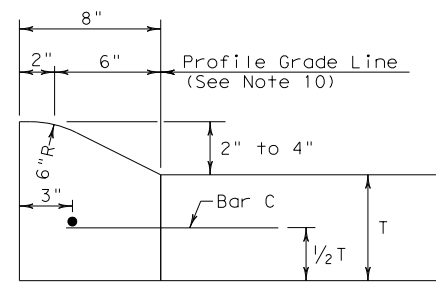
				Design Division Standard	
TAPERED EDGE DETAILS HMAC PAVEMENT					
TE (HMAC) - 11					
FILE: tehmacc11.dgn	DN: TxDOT	CK: RL	DW: KB	CK:	
© TxDOT January 2011	CONT	SECT	JOB	HIGHWAY	
REVISIONS		0251	06	036	US 281
	DIST	COUNTY		SHEET NO.	
	BWD	LAMPASAS		154	

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.

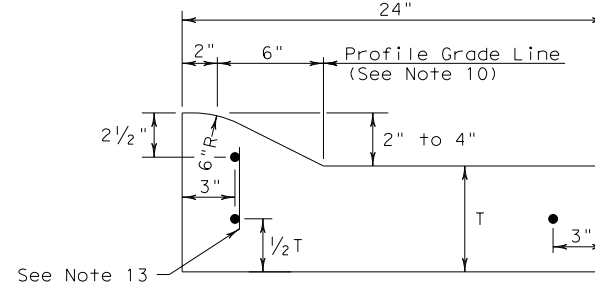
DATE:
FILE:



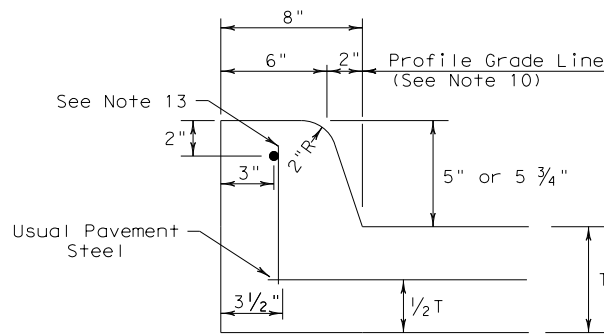
TYPE I CURB (MONOLITHIC)
2" - 4" HEIGHT



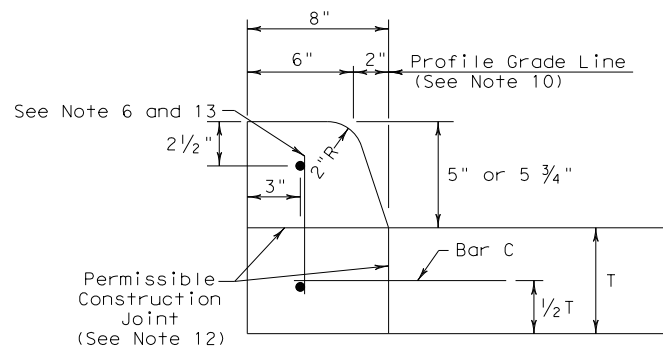
TYPE I CURB
2" - 4" HEIGHT



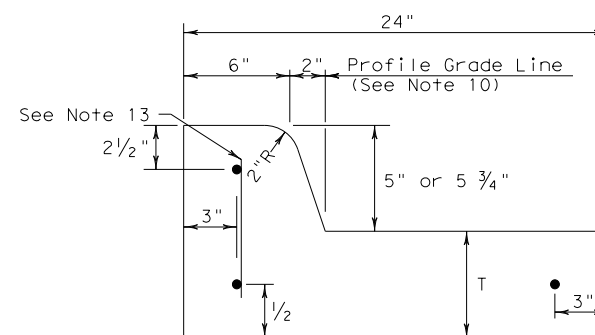
TYPE I CURB AND GUTTER
2" - 4" HEIGHT



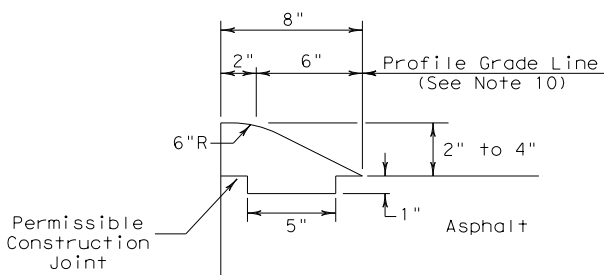
TYPE II CURB (MONOLITHIC)
5" - 5 3/4" HEIGHT



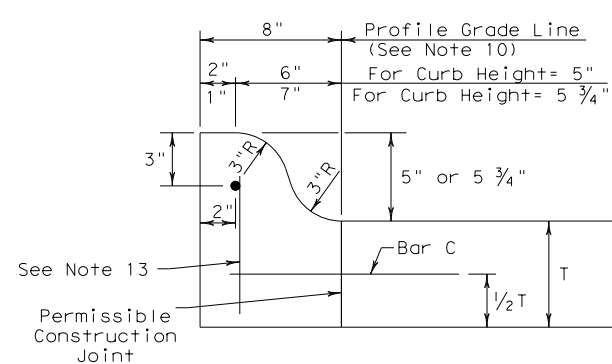
TYPE II CURB
5" - 5 3/4" HEIGHT



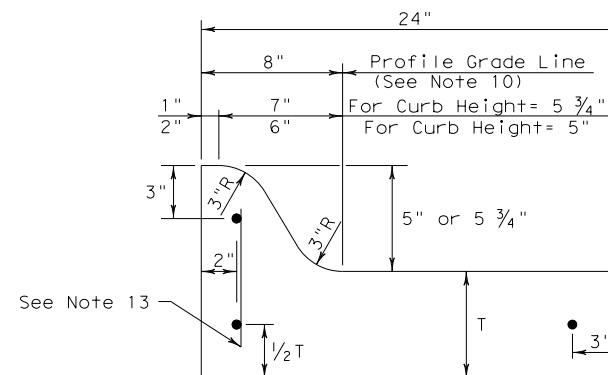
TYPE II CURB AND GUTTER
5" - 5 3/4" HEIGHT



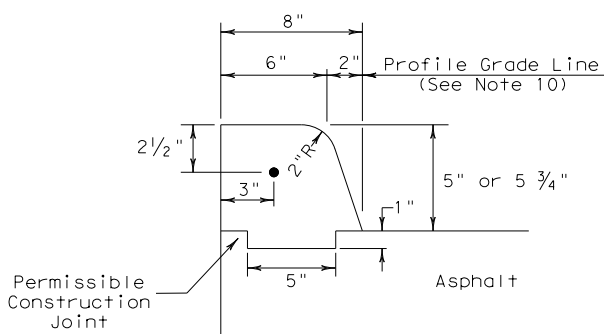
TYPE III CURB (KEYED)
2" - 4" HEIGHT



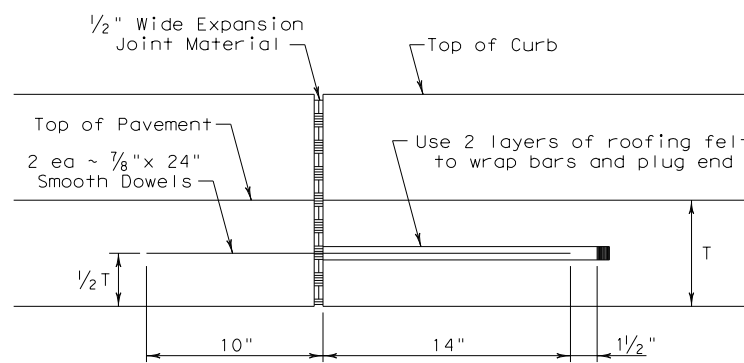
TYPE IIa CURB
5" - 5 3/4" HEIGHT



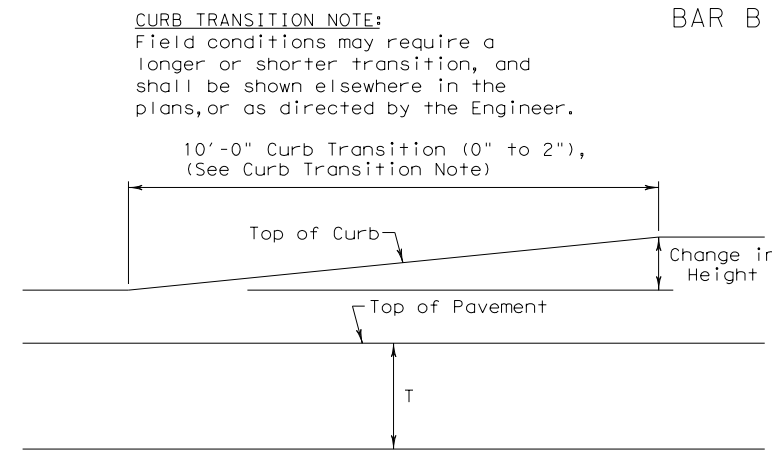
TYPE IIa CURB AND GUTTER
5" - 5 3/4" HEIGHT



TYPE IV CURB (KEYED)
5" - 5 3/4" HEIGHT



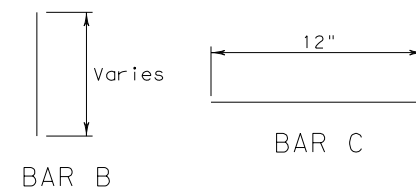
EXPANSION JOINT DETAIL



CURB TRANSITION
Note: To be paid for as Highest Curb

GENERAL NOTES

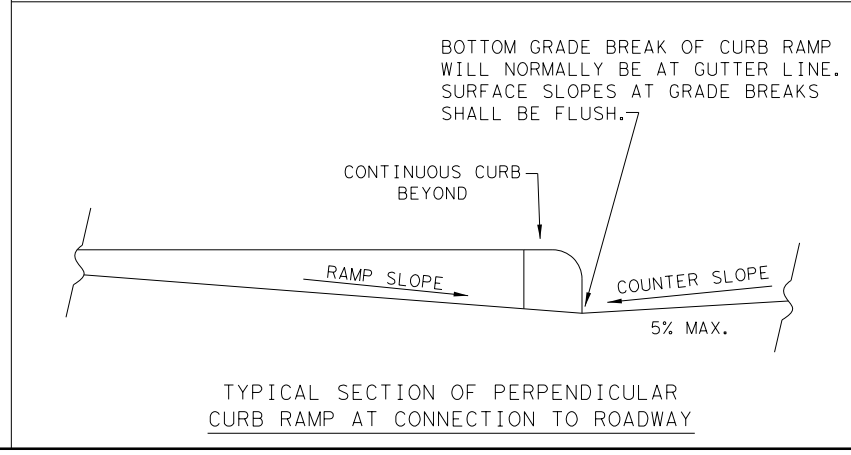
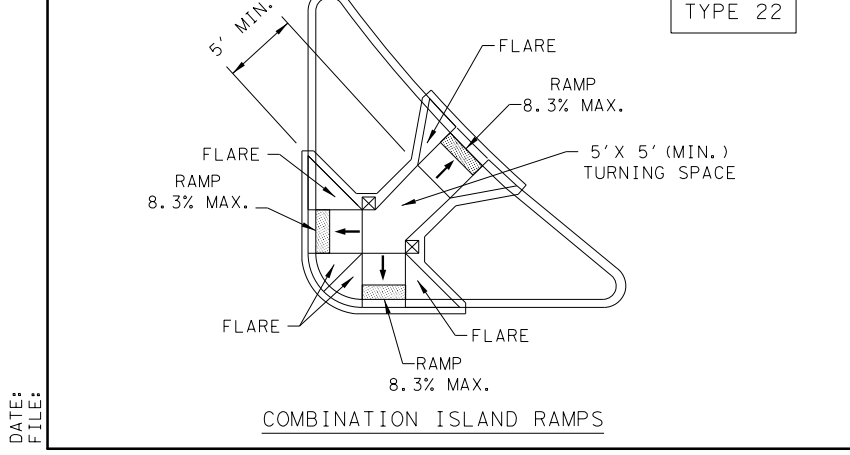
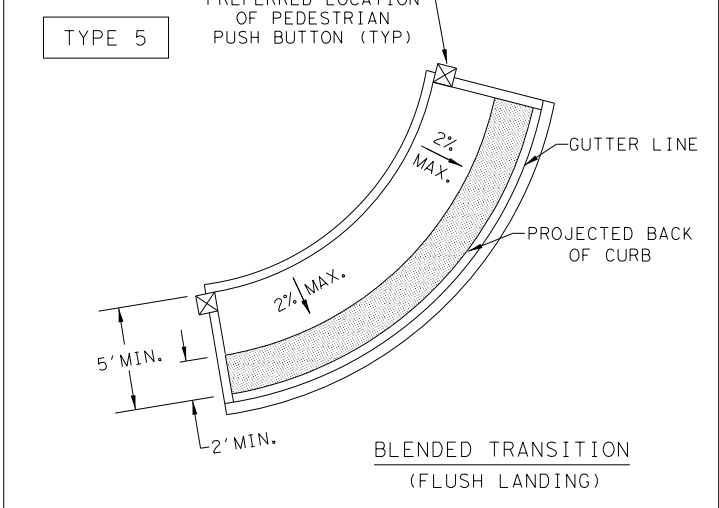
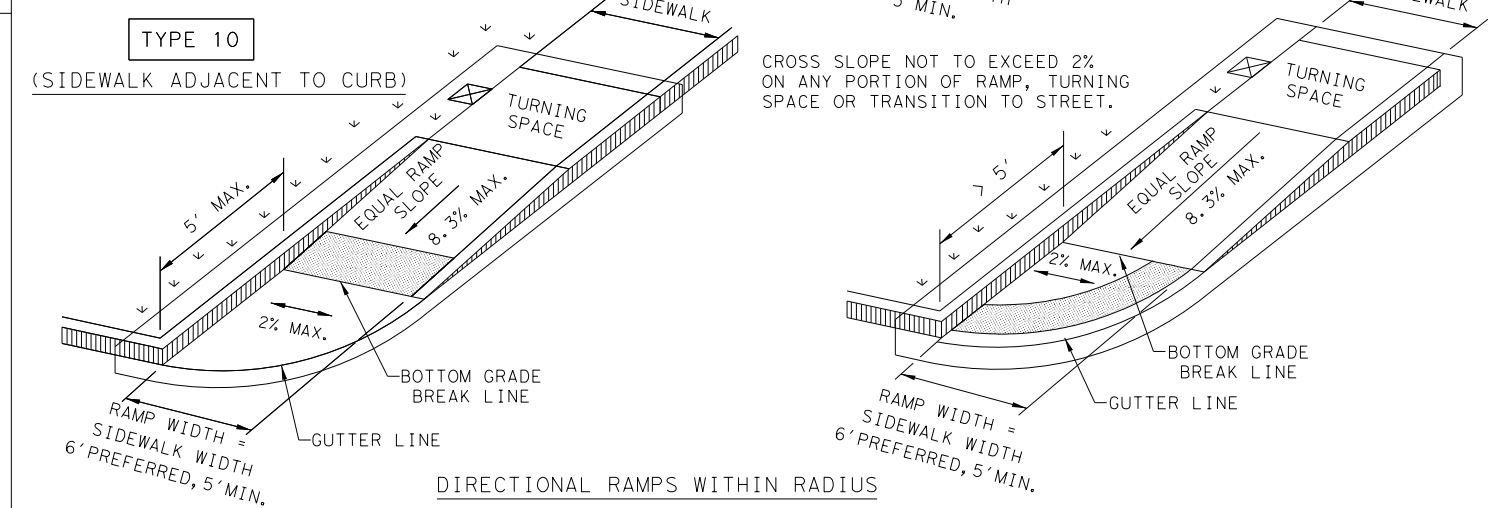
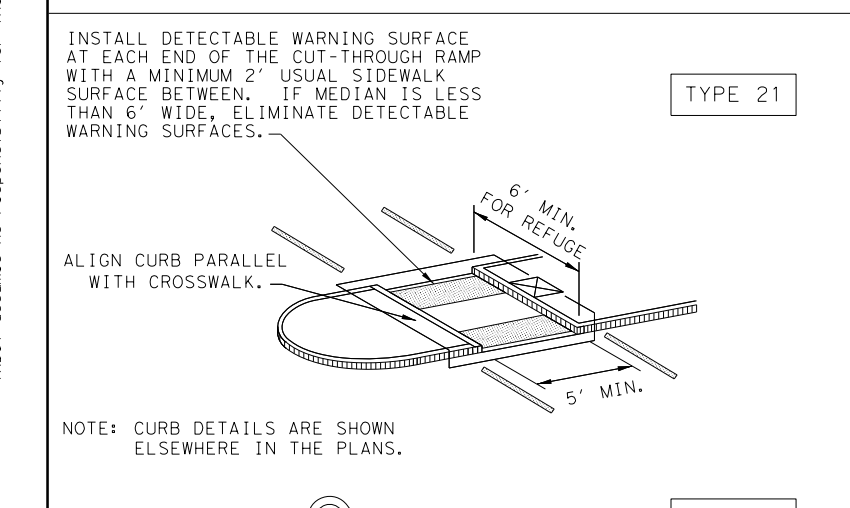
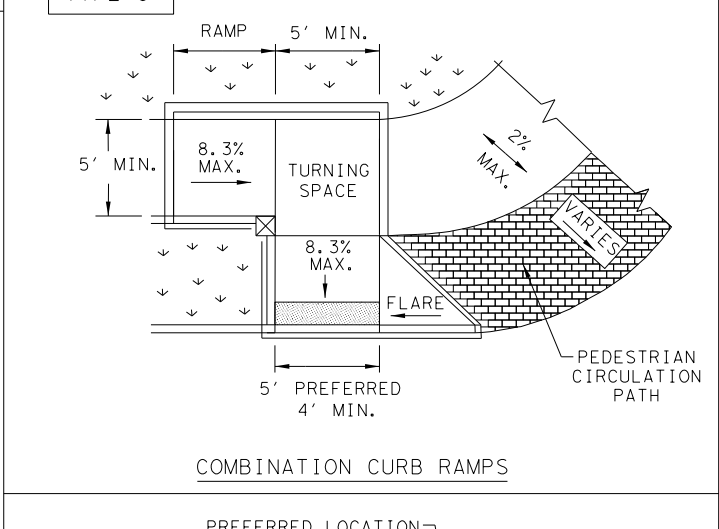
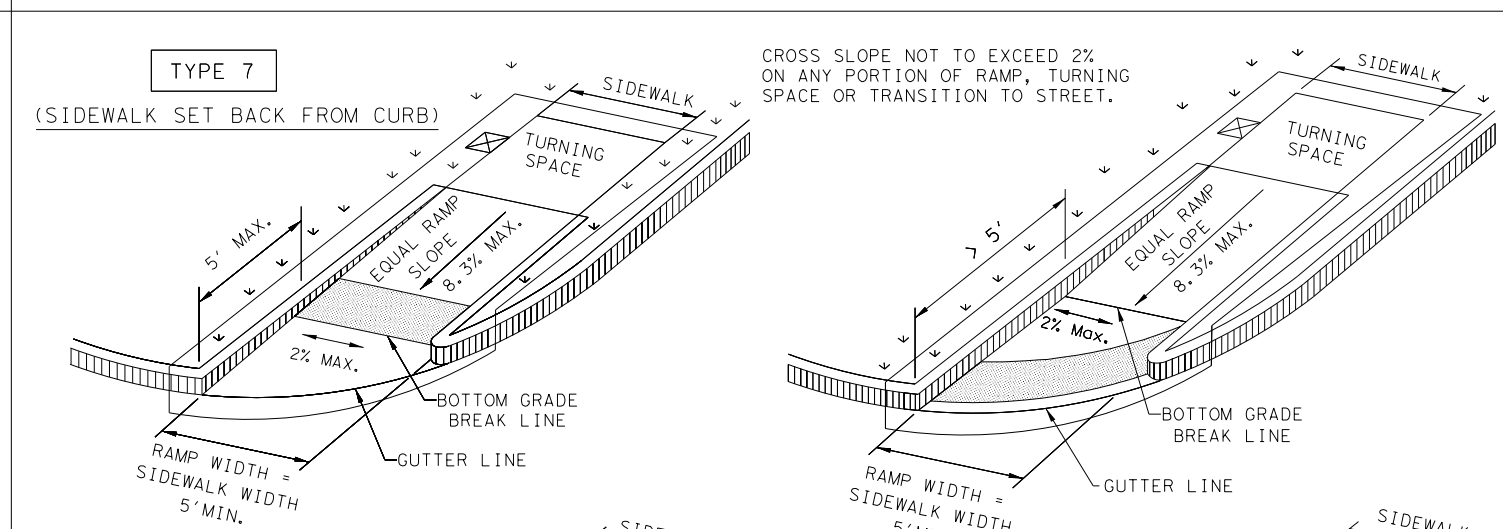
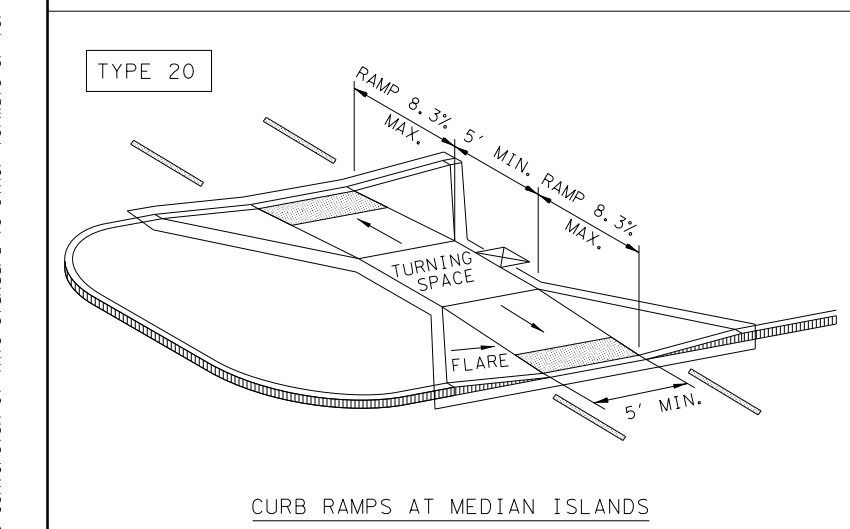
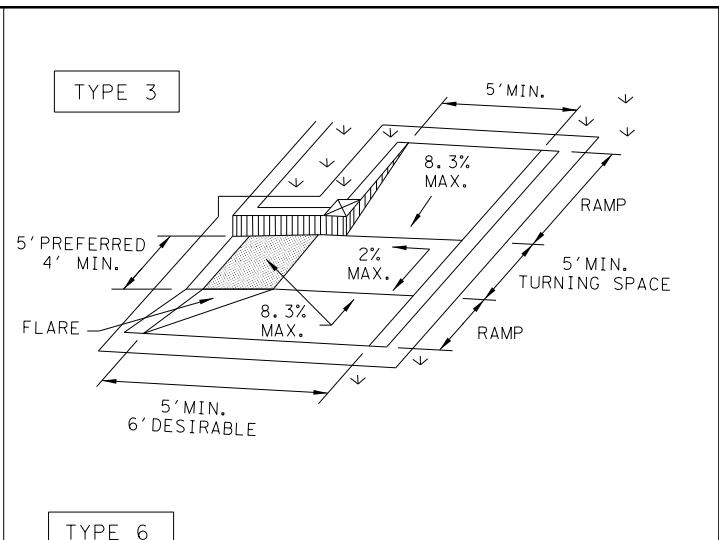
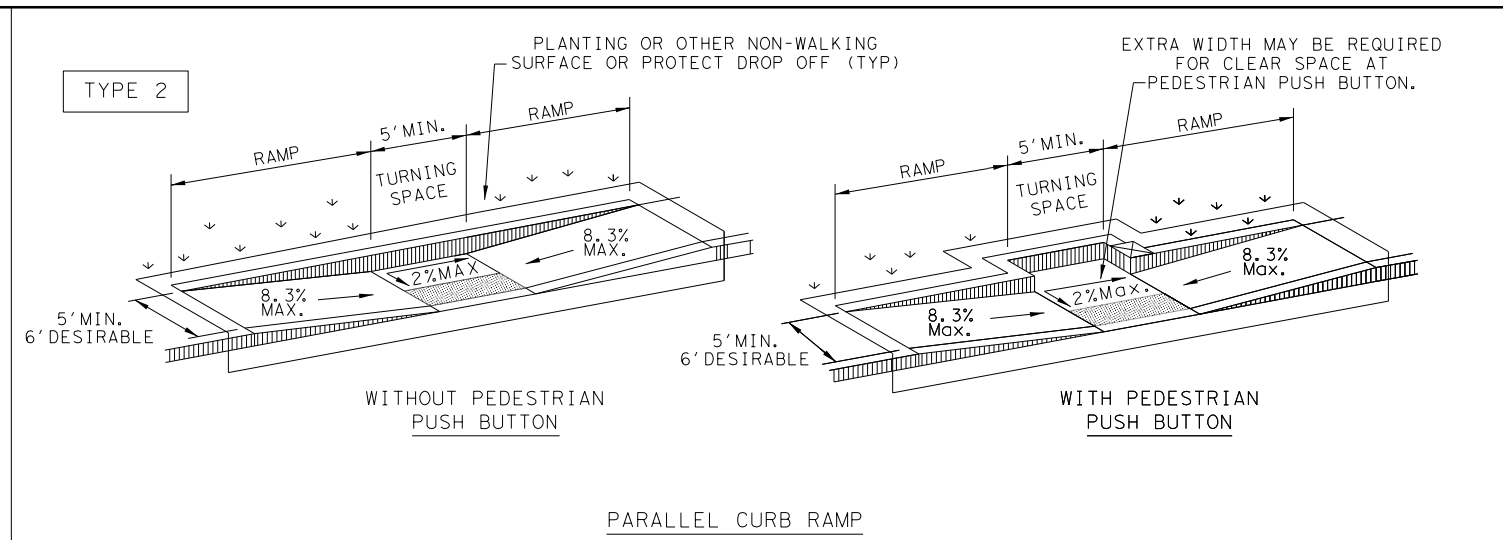
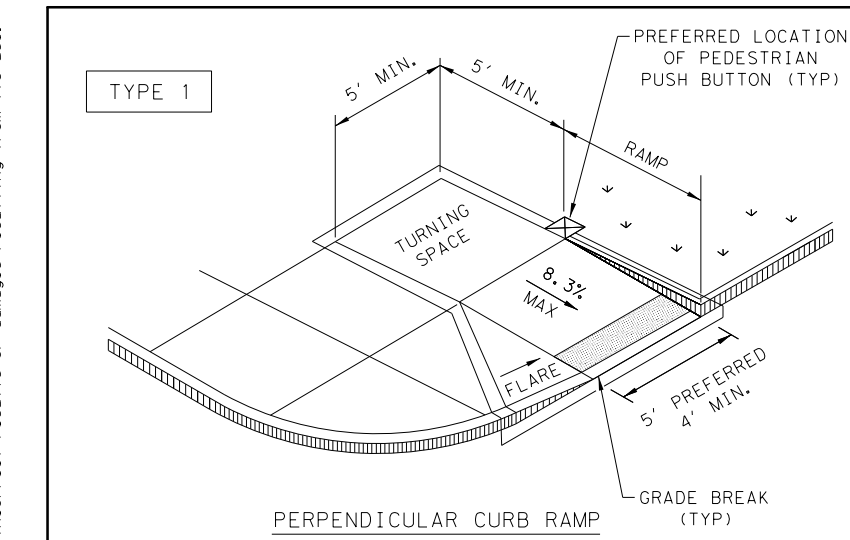
- All materials and construction shall be in accordance with Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."
- Concrete shall be Class A.
- When reinforcing bars are used, they shall be No.4 unless otherwise shown. The use of fiber reinforced concrete in lieu of reinforcing steel is acceptable. Use fibers meeting the requirements of DMS 4550, "Fibers for Concrete," and dose fibers in accordance with Material Producers List (MPL) "Fibers for Class A and B Concrete Applications."
- Round exposed sharp edges with a rounding tool, to a minimum radius of 1/4 inch.
- All existing curbs and driveways to be removed shall be sawed or removed at existing joints.
- Where concrete curb is to be placed on existing concrete pavement, Bar B may be drilled and grouted in place, or may be inserted into fresh concrete.
- Expansion and contraction joints shall be constructed to match pavement joints in all curbs and curb and gutter adjacent to jointed concrete pavement. Where placement of curb or curb and gutter is not adjacent to concrete pavement, expansion joints shall be provided at structures, curb returns at streets, and at locations directed by The Engineer.
- Vertical and horizontal dowel bars and transverse reinforcing bars shall be placed at four feet C-C.
- Dimension 'T' shown is the thickness of concrete pavement. When curb is installed adjacent to flexible pavement dimension 'T' is 8" maximum.
- Usual profile grade line. Refer to typical sections and plan-profile sheets for exact locations.
- One-half inch expansion joint material shall be provided where curb or curb and gutter is adjacent to sidewalk or riprap.
- When horizontal permissible construction joints are used, the longitudinal pavement steel shall be placed in accordance with pavement details shown elsewhere in the plans. Reinforcing steel for curb section shall then conform to that required for concrete curb.
- Bar B placement as needed (typically at four ft. C-C) to support curb reinforcing steel during concrete placement.



CURB TRANSITION NOTE:
Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans, or as directed by the Engineer.

				Design Division Standard
<p>CONCRETE CURB AND GUTTER</p> <p>CCCG-22</p>				
FILE: cccg21.dgn	DN: TxDOT	CK: AN	DW: CS	CK: KM
© TxDOT: JUNE 2022	CONT: 0251	SECT: 06	JOB: 036	HIGHWAY: US 281
REVISTIONS	DIST: BWD	COUNTY: LAMPASAS	SHEET NO. 155	

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.



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.

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

Detectable Warning Surface: [Symbol]

Grade Break: [Symbol]

Ramp Limits of Payment: [Symbol]

Gutter Line: [Symbol]

SHEET 1 OF 4

Texas Department of Transportation
Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS
PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
REVISED 08, 2005	DIST	COUNTY	SHEET NO.	
REVISED 06, 2012	BWD	LAMPASAS	156	
REVISED 01, 2018				

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.

DATE: FILE:

GENERAL NOTES

CURB RAMP

1. Install a curb ramp or blended transition at each pedestrian street crossing.
2. All slopes shown are maximum allowable. Cross slopes of 1.5% and lesser running should be used. Adjust curb ramp length or grade of approach sidewalks as directed.
3. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.
4. 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.
5. Turning Spaces shall be 5' x 5' minimum. Cross slope shall be maximum 2%.
6. Clear 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.
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 latest draft of the Proposed Guidelines for Pedestrian Facilities in the Public Right of Way (PROWAG) as published by the U.S. Architectural and Transportation Barriers Compliance Board (Access Board).
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. Provide curb ramps to connect the pedestrian access route at each pedestrian street crossing. Handrails are not required on curb ramps.
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. Furnish and install No. 3 reinforcing steel bars at 18" o.c. both ways, unless otherwise directed.
16. Provide a smooth transition where the curb ramps connect to the street.
17. 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.
18. Existing features that comply with applicable standards may remain in place unless otherwise shown on the plans.

DETECTABLE WARNING MATERIAL

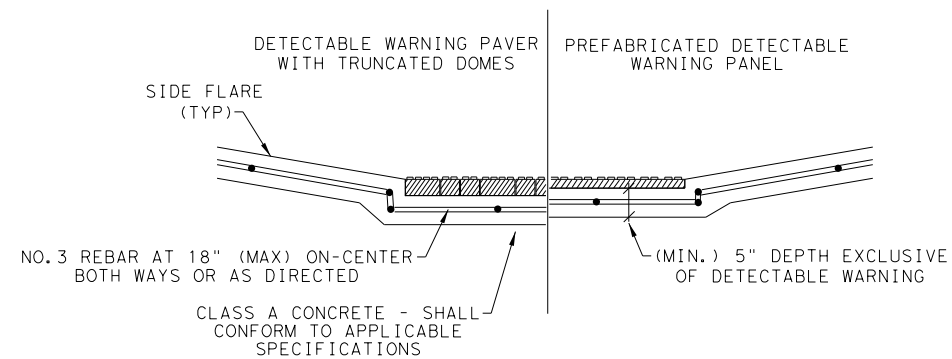
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material adjacent to uncolored concrete, unless specified elsewhere in the plans.
20. 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.
21. Detectable warning surfaces must be firm, stable and slip resistant.
22. Detectable warning surfaces shall be a minimum of 24 inches 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.
23. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb and neither end of that edge is greater than 5 feet from the back of curb. Detectable warning surfaces may be curved along the corner radius.
24. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.

DETECTABLE WARNING PAVERS (IF USED)

25. 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.
26. Lay full-size units first followed by closure units consisting of at least 25 percent (25%) of a full unit. Cut detectable warning paver units using a power saw.

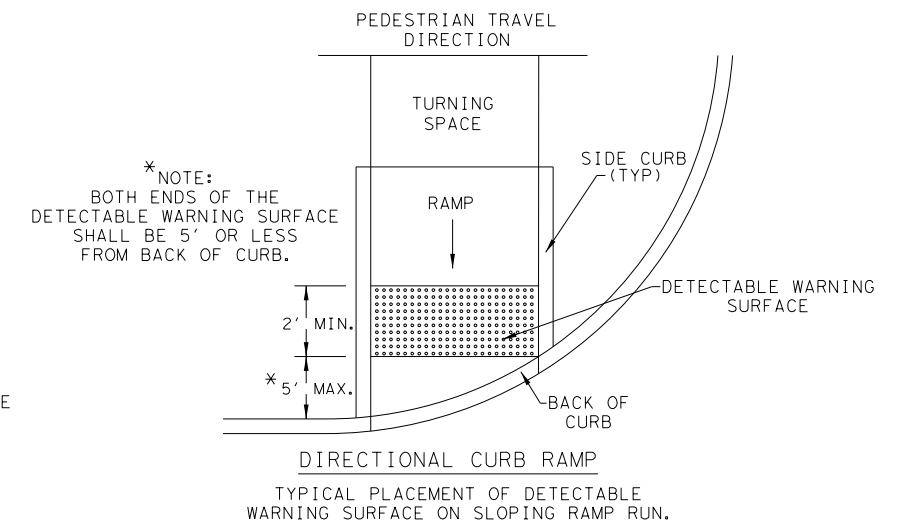
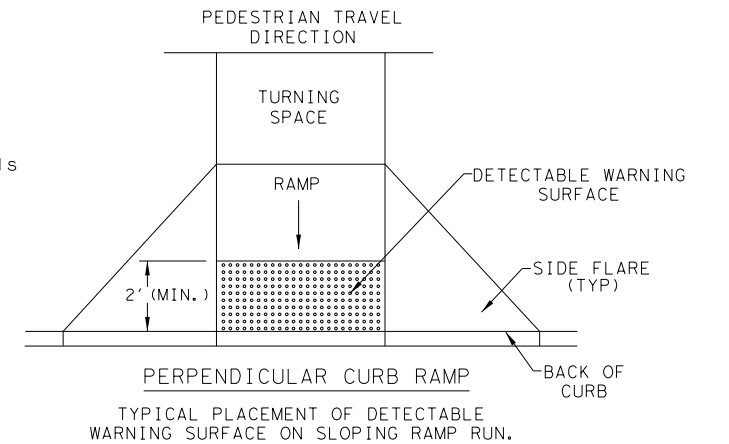
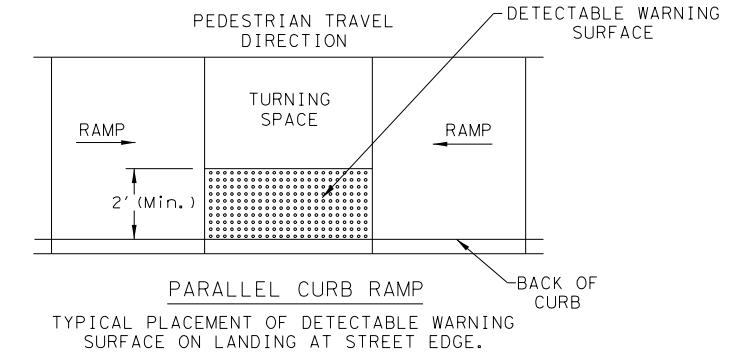
SIDEWALKS

27. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within unobstructed reach range specified in PROWAG section R406.
28. 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.
29. Street grades and cross slopes shall be as shown elsewhere in the plans.
30. Changes in level greater than 1/4 inch are not permitted.
31. 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 five percent (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 PROWAG R409.
32. Handrail extensions shall not protrude into the usable landing area or into intersecting pedestrian routes.
33. 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".
34. Sidewalk details are shown elsewhere in the plans.



SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

DETECTABLE WARNING SURFACE DETAILS

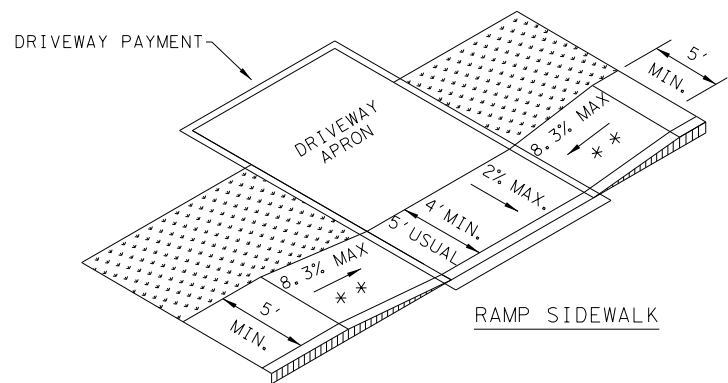
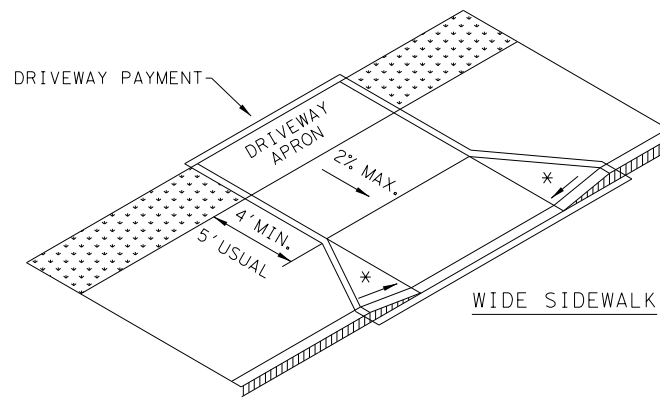
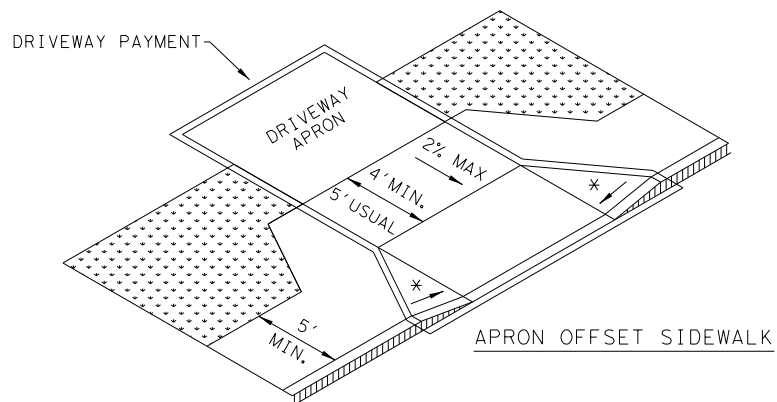
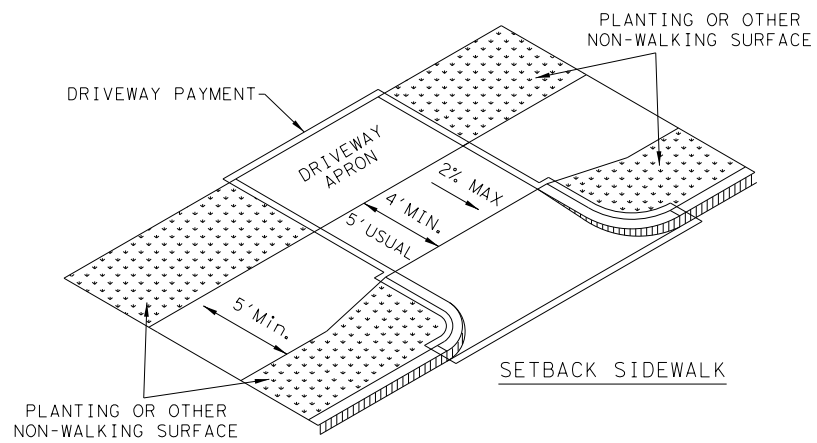


SHEET 2 OF 4

Texas Department of Transportation		Design Division Standard		
PEDESTRIAN FACILITIES CURB RAMPS PED-18				
FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
REVISED 08, 2005	DIST	COUNTY		SHEET NO.
REVISED 06, 2012	BWD	LAMPASAS		157
REVISED 01, 2018				

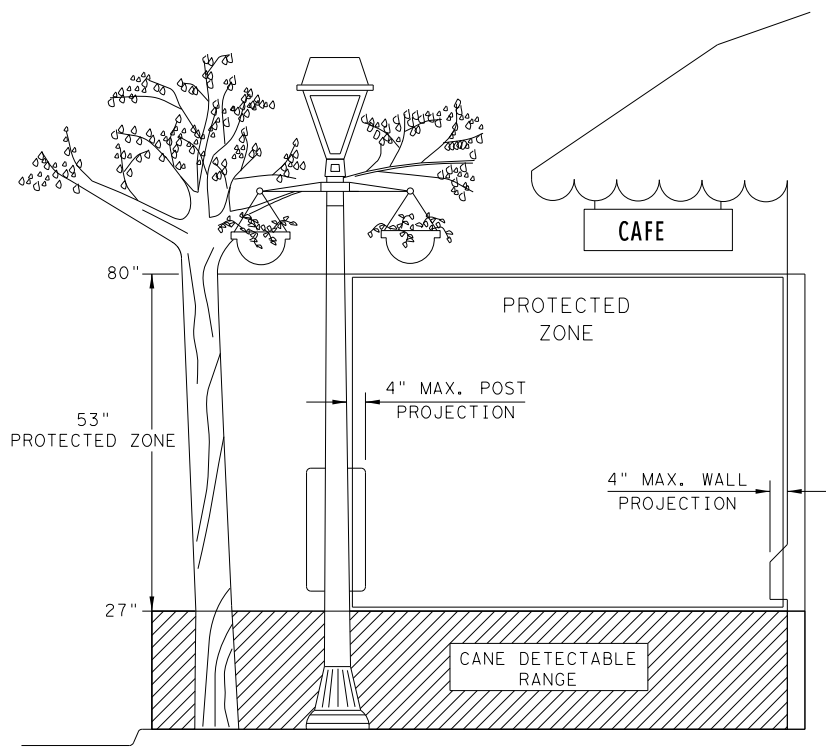
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

SIDEWALK TREATMENT AT DRIVEWAYS



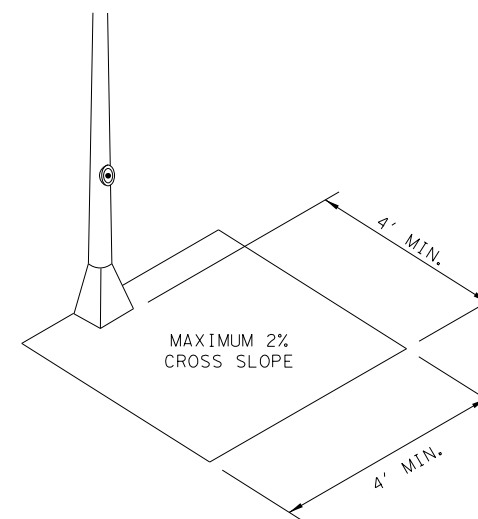
NOTES:

- * WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.
- ** IF CURB HEIGHT IS GREATER THAN 6 INCHES, USE GRADE LESS THAN OR EQUAL TO 5%. HANDRAIL AND DETECTABLE WARNING ARE NOT REQUIRED.

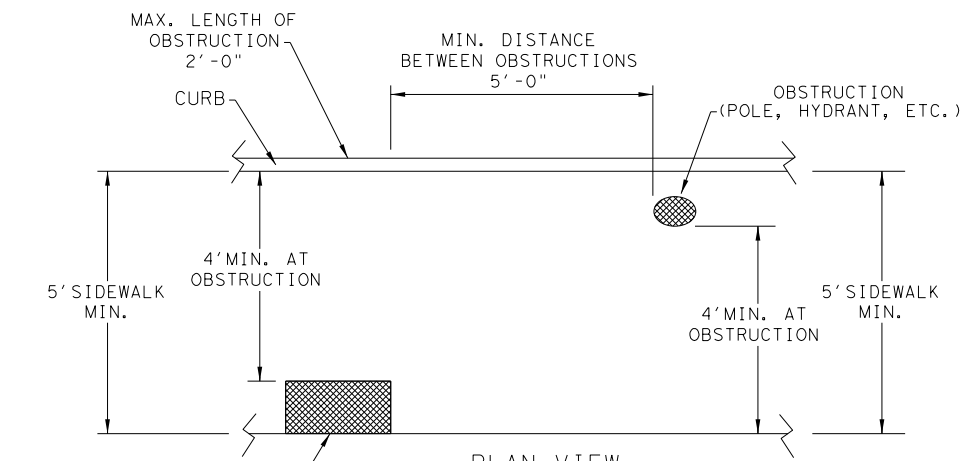


PROTECTED ZONE

NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.

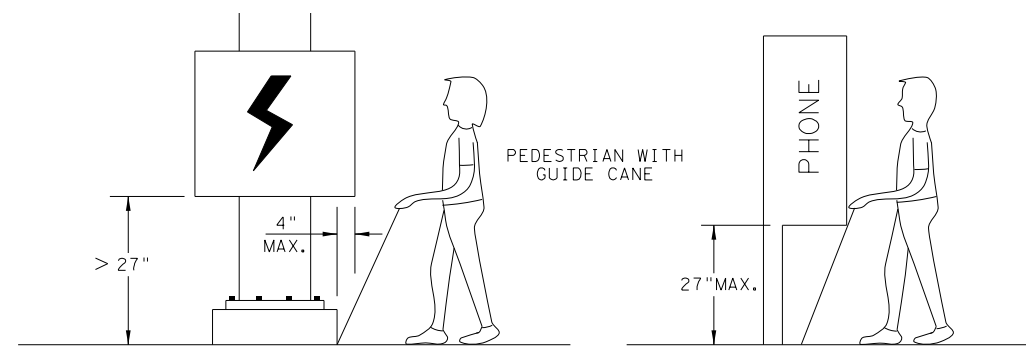


CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



PLAN VIEW
PLACEMENT OF STREET FIXTURES

NOTE: ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' X 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.

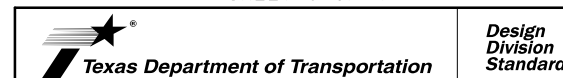


WHEN AN OBSTRUCTION OF A HEIGHT GREATER THAN 27" FROM THE SURFACE WOULD CREATE A PROTRUSION OF MORE THAN 4" INTO THE PEDESTRIAN CIRCULATION AREA, CONSTRUCT ADDITIONAL CURB OR FOUNDATION AT THE BOTTOM TO PROVIDE A MAXIMUM 4" OVERHANG.

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



PEDESTRIAN FACILITIES
CURB RAMPS

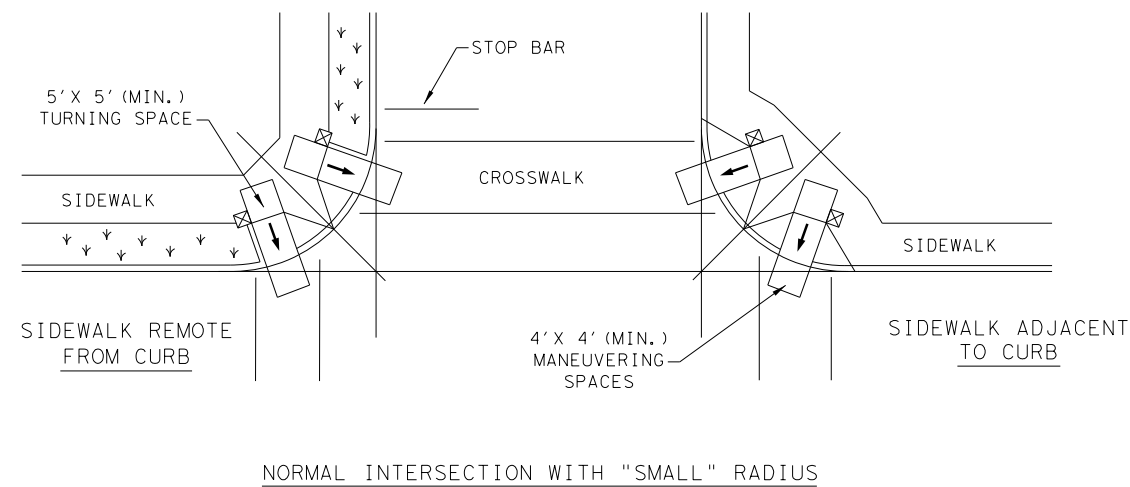
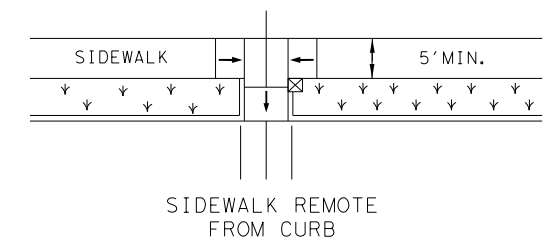
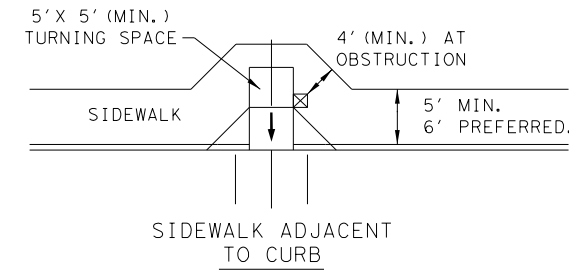
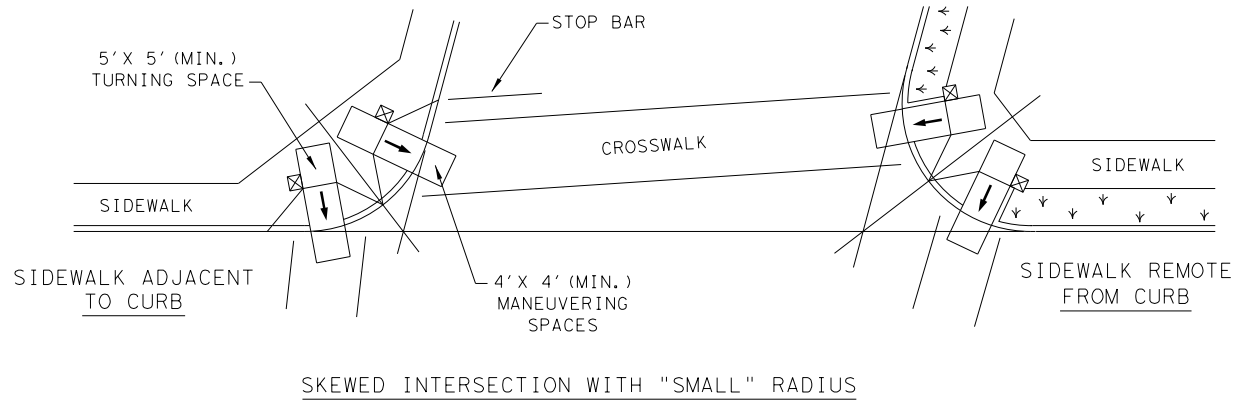
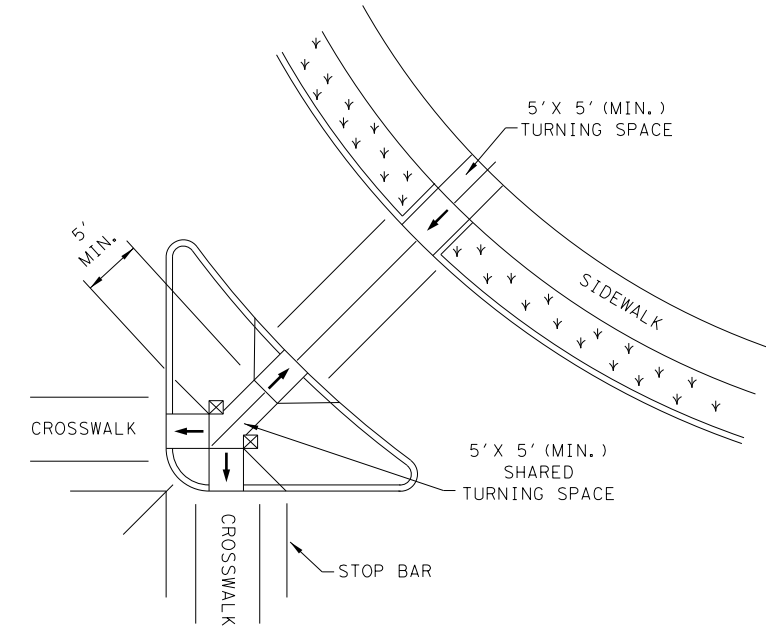
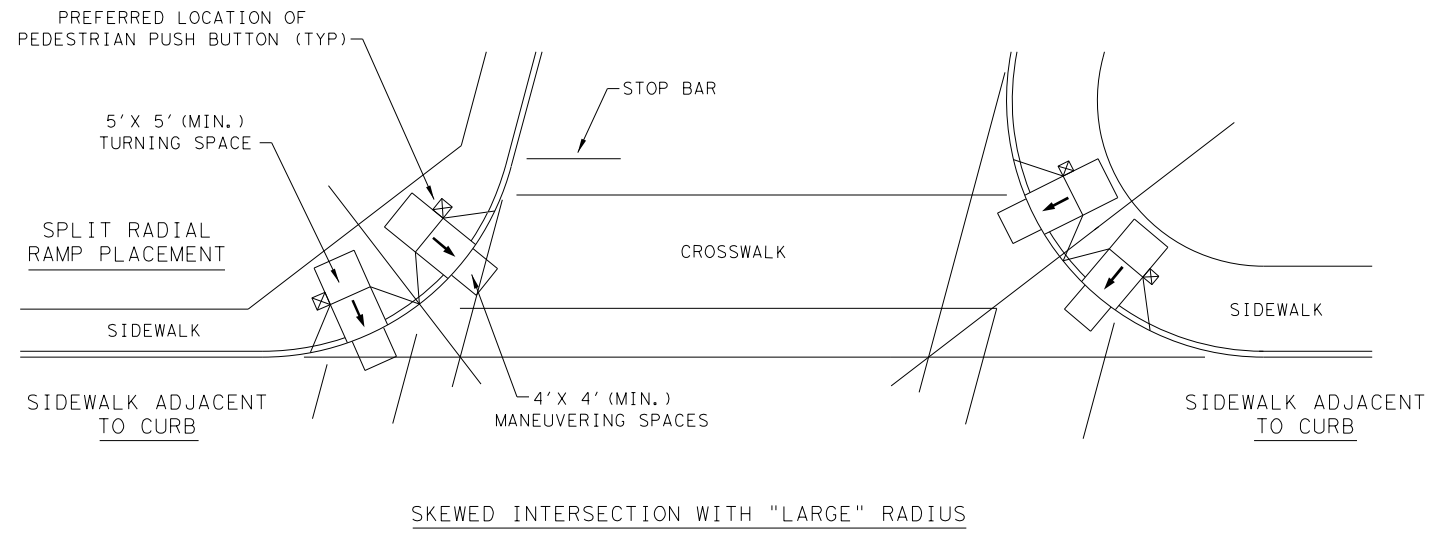
PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
REVISED 08, 2005	DIST	COUNTY	SHEET NO.	
REVISED 06, 2012	BWD	LAMPASAS	158	
REVISED 01, 2018				

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 CROSSING LAYOUTS
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



LEGEND:

- SHOWS DOWNWARD SLOPE. →
- DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON (IF APPLICABLE). ☒
- DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH. ↙ ↘

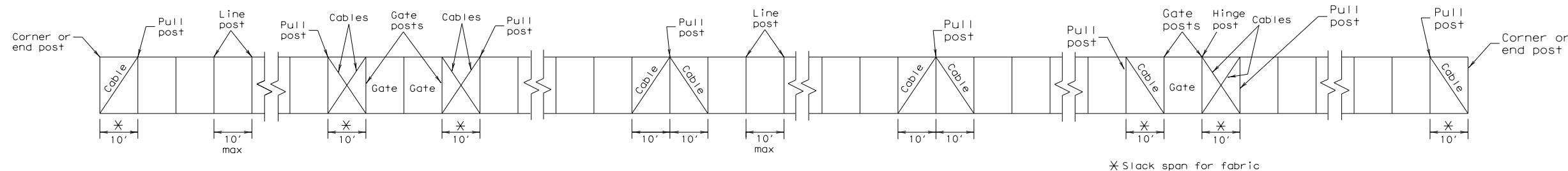
SHEET 4 OF 4

		Design Division Standard	
<h2>PEDESTRIAN FACILITIES CURB RAMPS</h2> <h3>PED-18</h3>			
FILE: ped18	DN: TxDOT	DW: VP	CK: KM
© TxDOT: MARCH, 2002	CON: 0251	SECT: 06	JOB: 036
REVISIONS	DIST: COUNTY		HIGHWAY: US 281
REVISED 08, 2005	BWD		SHEET NO. 159
REVISED 06, 2012	LAMPASAS		
REVISED 01, 2018			

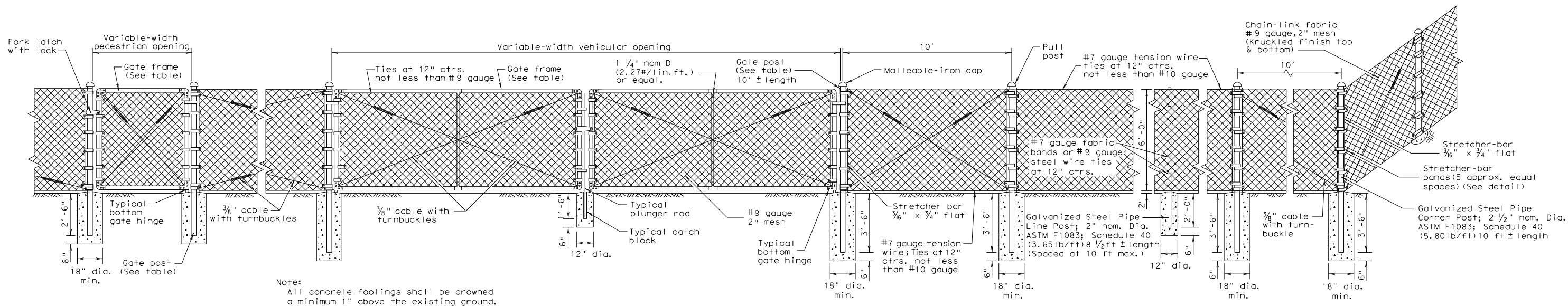
DATE:
FILE:

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.

DATE:
FILE:



TYPICAL CABLE AND POST ARRANGEMENT



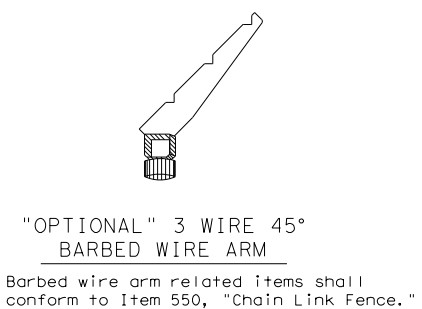
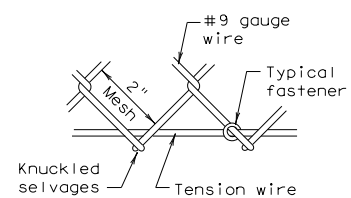
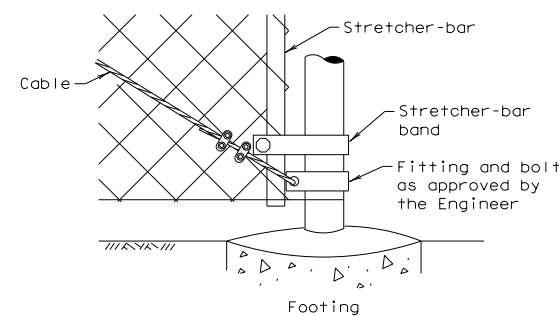
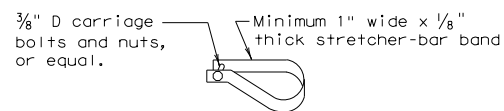
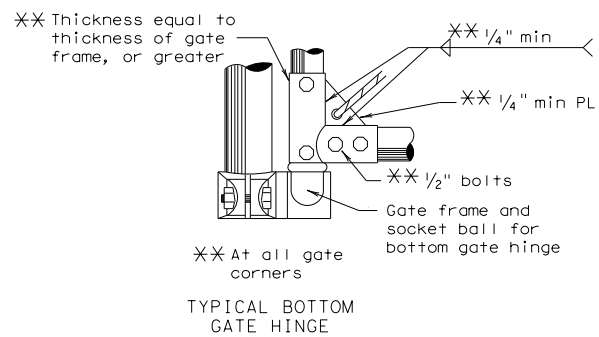
Note:
All concrete footings shall be crowned a minimum 1" above the existing ground.

CHAIN-LINK BARRIER FENCE (6 FT.)

Foundation designs shown are "minimums" for a 6 ft. fence. Taller fences may require larger foundation designs.

GENERAL NOTES

1. Items hereon shall conform to Item 550, "Chain Link Fence."
2. Typical installation plan may vary as shown elsewhere on the plans or as directed by the Engineer. Location of gates shown elsewhere on plans.
3. Gate-frame members shall be bolted, at frame corners, to joint fittings with four 1/2" bolts per joint.
4. All cable connections are to be made with two 3/8" cable clamps.
5. All pull posts and end posts and their foundations shall have the same respective dimensions as those shown for corner post.
6. All pull post shall be furnished with two stretcher bars.
7. One end of each turnbuckle may be attached directly to fittings with a clevis.
8. Concrete footings are to be crowned at the top to shed water.



GATE (TYPES AND SIZES)			
Single Inclusive		Double Inclusive	
Up to 6'		Up to 12'	
Over 6' to 12'		Over 12' to 26'	
Over 12' to 18'		Over 26' to 36'	
Over 18'		Over 36'	
GATE FRAME (WEIGHT)		GATE POST (WEIGHT)	
SIZE	WT./LIN. FT.	SIZE	WT./LIN. FT.
1 1/2" nom dia. or equal	2.72 Lbs.	2 1/2" nom dia. or equal	5.79 Lbs.
		3 1/2" nom dia. or equal	9.11 Lbs.
		6" nom dia.	18.97 Lbs.
		8" nom dia.	24.70 Lbs.

Texas Department of Transportation Design Division Standard

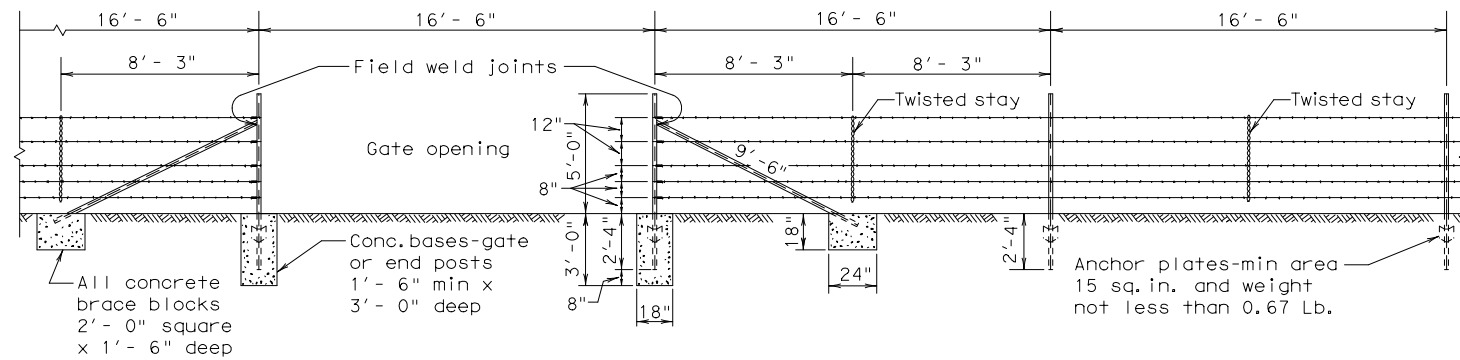
CHAIN LINK FENCE

CLF-10

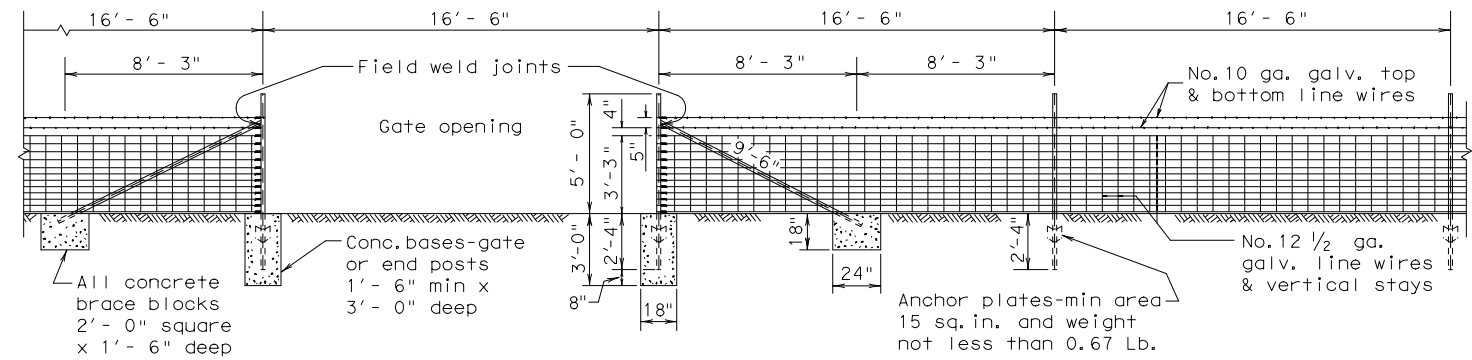
FILE: c1f10.dgn	DN: TxDOT	CK: AM	DW: BD	CK: VP
© TxDOT 1996	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	159A	

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.

DATE:
FILE:



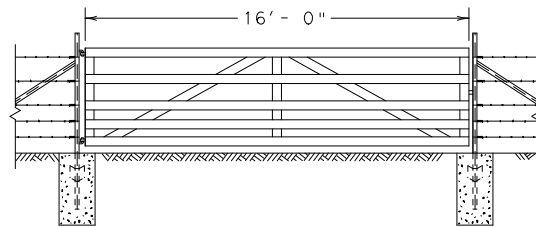
SECTION GALVANIZED BARBED WIRE FENCE WITH METAL POSTS
BRACING DETAIL USED AT ENDS AND GATES
TYPE "C" FENCE
(See General Note 8)



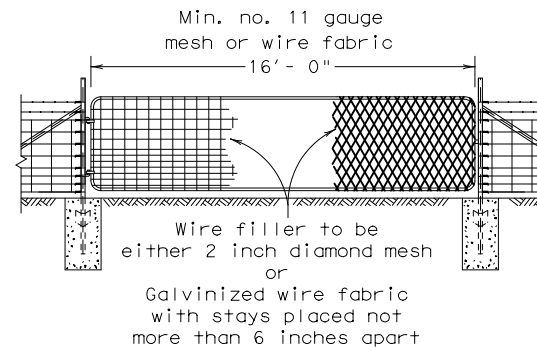
SECTION GALVANIZED WOVEN WIRE FENCE WITH METAL POSTS
BRACING DETAIL USED AT ENDS AND GATES
TYPE "D" FENCE
(See General Note 8)

Note:
For Steel pipe and
T-Post requirements.
(See General Notes 6 & 7)

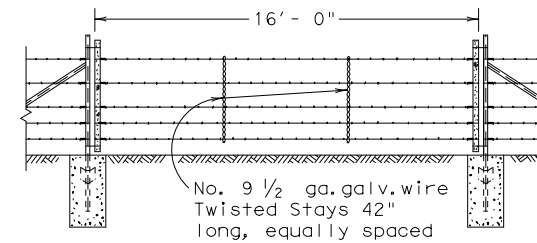
Metal gate shall consist of 5 panels not less than 4'-4" high and shall be aluminum or galvanized metal and of good quality. Gate and hardware shall meet the approval of the engineer.



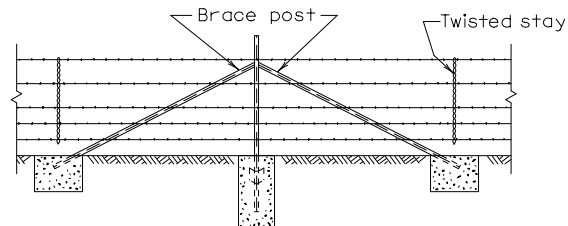
DETAIL TYPE 1 GATE



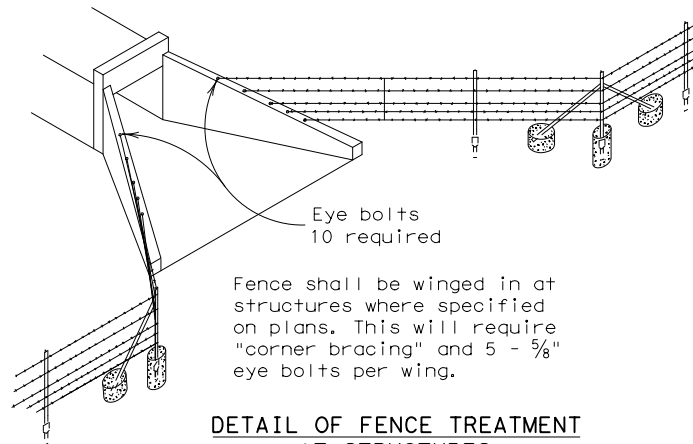
DETAIL TYPE 2 GATE



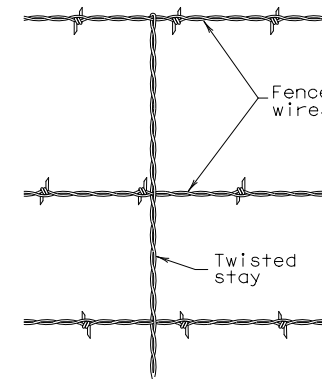
DETAIL TYPE 3 GATE



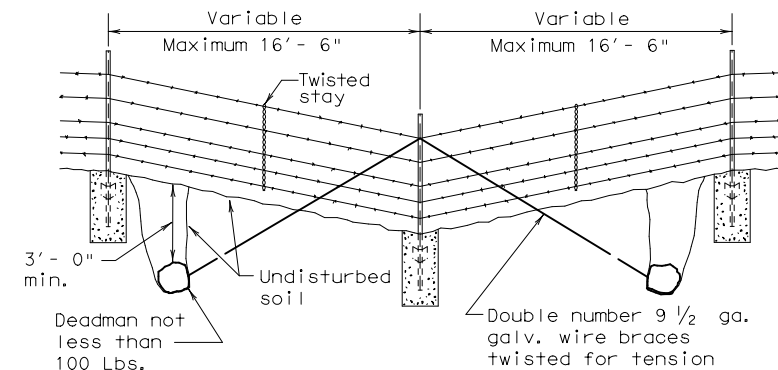
CORNER OR PULL POST ASSEMBLY



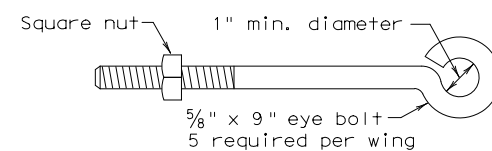
DETAIL OF FENCE TREATMENT AT STRUCTURES



DETAIL OF STAY (Barbed Wire Fence)



DETAIL OF FENCE SAG



DETAIL OF EYE BOLT

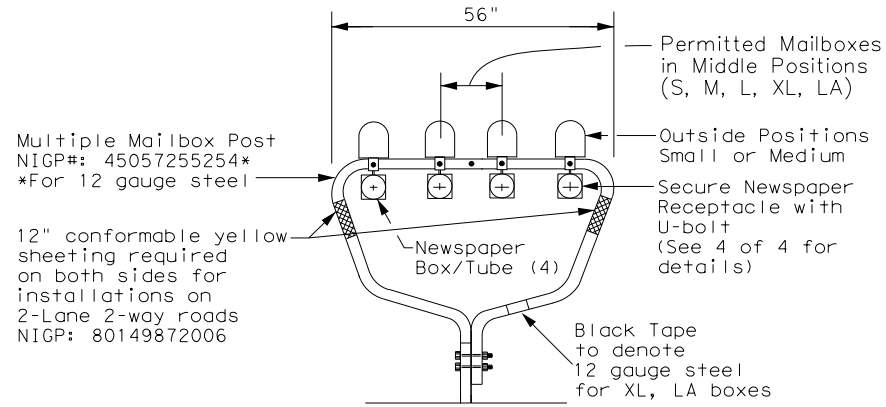
GENERAL NOTES

- Any high point which interferes with the placing of wire mesh shall be excavated to provide a 2 inch clearance.
- Latches for Type 1 and Type 2 gates shall be good commercial quality and design latch of the spring, fork or chain type. All latches shall be suitable to the gate and shall be approved by the Engineer.
- Hinges for Type 2 gates shall be a commercial design approved by the Engineer suitable for post and gate.
- Concrete shall be of the design and consistency approved by the Engineer and shall contain not less than 4 sacks of cement per cubic yard. Concrete footings are to be crowned at the top to shed water.
- Steel anchor plates shall be of a design and thickness sufficient to prevent turning of the post in firm soil.
- Steel pipe end posts, corner and pull posts shall be a minimum of 2" Std. pipe (2.375" O.D., 0.154" wall thickness) with a 1/4" Std. pipe brace (1.660" O.D., 0.140" wall thickness), with a 2"x2"x1/4" angle, or other as approved by the Engineer. Fasteners for securing barbed wire or woven wire fence to metal posts shall be a minimum of 11 gauge galvanized steel wire. Tubular posts shall be fitted with water malleable iron caps.
- If Steel pipe is used for posts and braces, use standard pipe in accordance with ASTM A 53, Class B or A 501. For T-Posts use steel that meets ASTM A 702. Metal line posts shall be not less than 6'-6" in length and shall weigh not less than (1.33 lbs./lin. ft.). These items shall be in accordance with Item 552, "Wire Fence."
- Barbed Wire shall be in accordance with ASTM A 121, Class 1 Design designation 12-2-4-1 4R or 12-2-5-1 4R, or as approved by the Engineer.
- Woven Wire Fence (Type D) shall be in accordance with ASTM A 116, Class 1 No. 12-1/2 Grade 60 (See Table 1 ASTM A 116) to the height and design shown on the plans, or as approved by the Engineer.
- The location of gates and corner posts will be as indicated elsewhere in these plans.

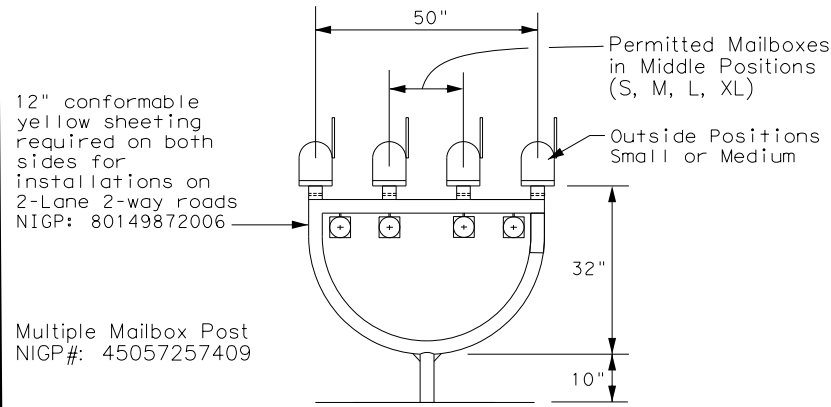
				Design Division Standard	
BARBED WIRE AND WOVEN WIRE FENCE (STEEL POSTS) WF (2) - 10					
FILE:	wf210.dgn	DN:	TxDOT	CK:	AM
© TxDOT 1996	REVISIONS	CONT:	0251	SECT:	06
		JOB:	036	HIGHWAY:	US 281
		DIST:	COUNTY	SHEET NO.:	
		BWD:	LAMPASAS		159B

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.

TYPE 1 - MULTIPLE



TYPE 4 - MULTIPLE



MAILBOX SIZES

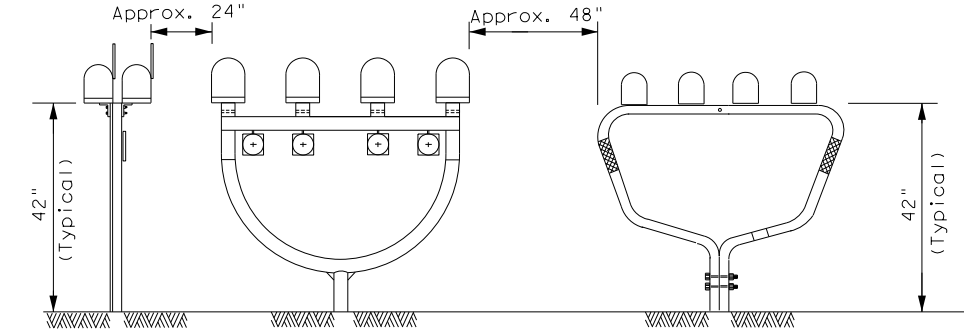
MAILBOX SIZE	TYPICAL DIMENSIONS			MAX **
	LENGTH	WIDTH	HEIGHT	WEIGHT
SMALL	19 1/2"	6"	7"	6 LBS
MEDIUM	22 1/2" *	8" *	11 1/2" *	8 LBS
LARGE	23 1/2"	11 1/2"	13 1/2"	11 LBS
EXTRA LARGE	18"	14"	12"	13 LBS
LOCKABLE	18"	11 1/2"	15"	23 LBS

GENERAL NOTES:

- Dimensions shown (length, width, and height) are typical, not maximums. However, anytime a medium size mailbox is mounted on a single/double mount or on the outside position on a multi mount, the dimensions shown are maximums.
- 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.

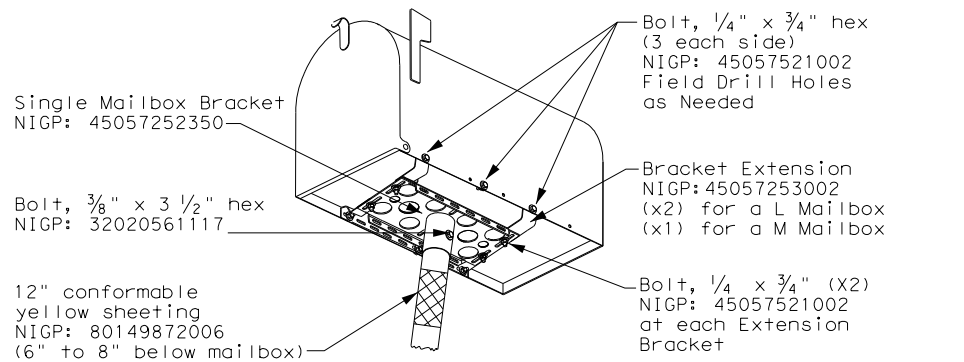
* See Note 1.
** Excluding Molded Plastic on 4 X 4 Post

TYPICAL INSTALLATION MEASUREMENTS

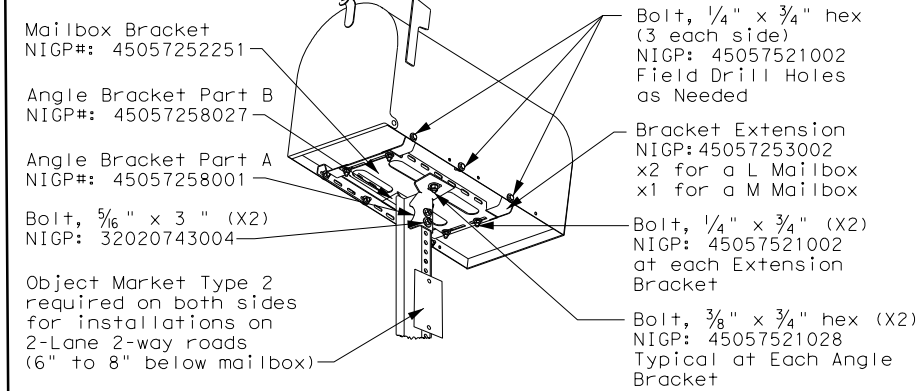


NOTE: Mailbox installations in sidewalk areas shall be in accordance with the latest TxDOT Design Standard sheets PED-Pedestrian Facilities Curb Ramps.

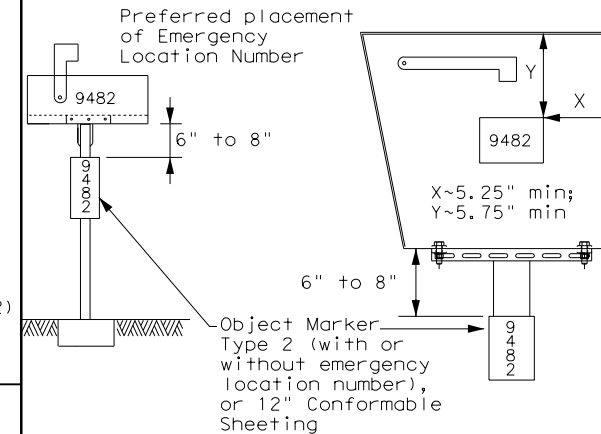
TYPE 2 and 4 - SINGLE/DOUBLE



TYPE 3 - SINGLE/DOUBLE



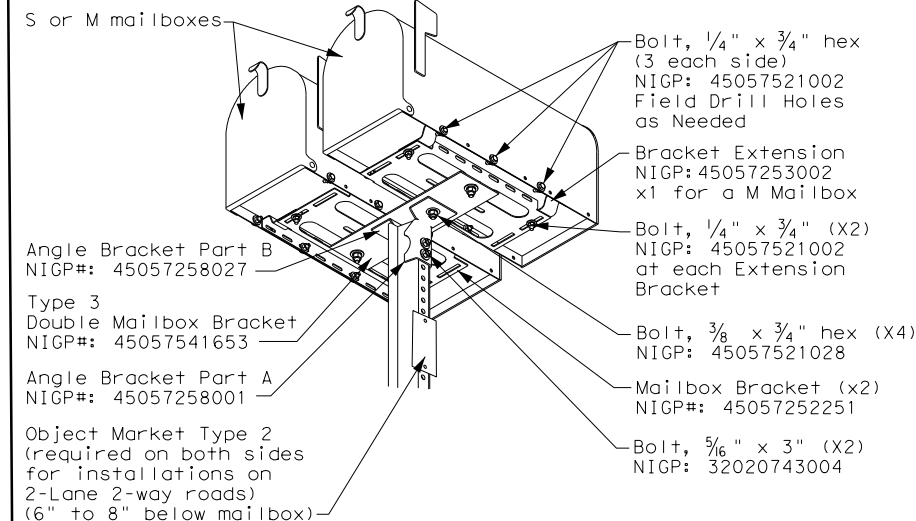
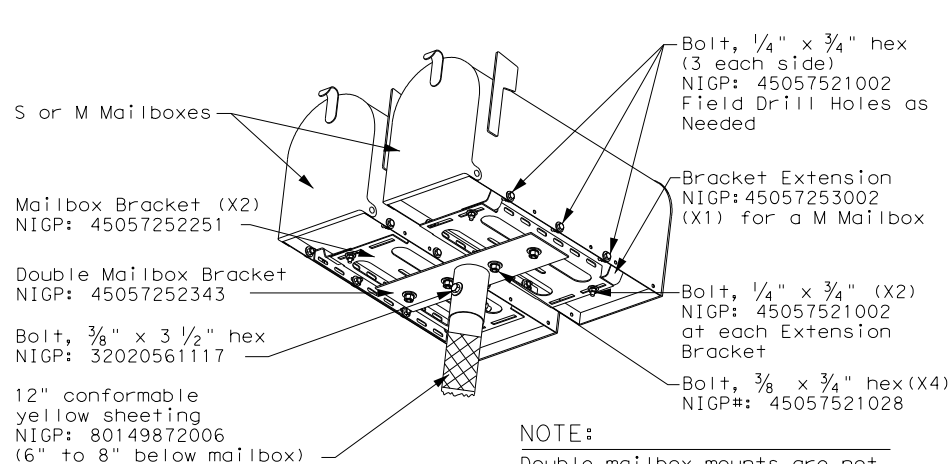
PLACEMENT OF EMERGENCY LOCATION NUMBER



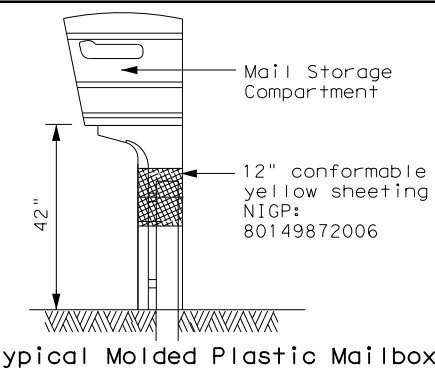
NOTES:

- Location numbers are provided by homeowner. Minimum size 1" height.
- Location number is typically placed on the mailbox in a contrasting color.
- Black numbers may be placed on the Type 2 object marker if the numbers cannot be placed on the mailbox.
- Alternatively, a green or blue plate with white numbers attached may be mounted below the object marker. Other contrasting color configuration, as approved, may be used.
- See 3 of 4 for Foundation details.
- See 4 of 4 for Hardware details.

SHEET 1 OF 4



TYPE 5



Texas Department of Transportation Maintenance Division Standard

MAILBOX MOUNTING AND ASSEMBLY

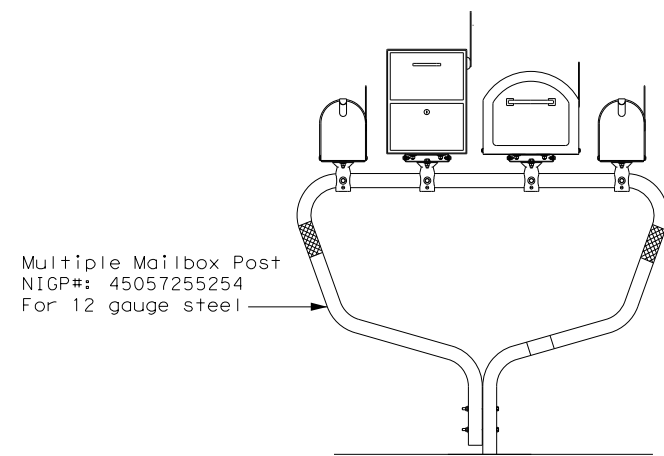
MB(1)-21

FILE: MB-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
2/2005	11/2009	4/2015		
6/2005	1/2011			
11/2006	7/2014			
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	160	

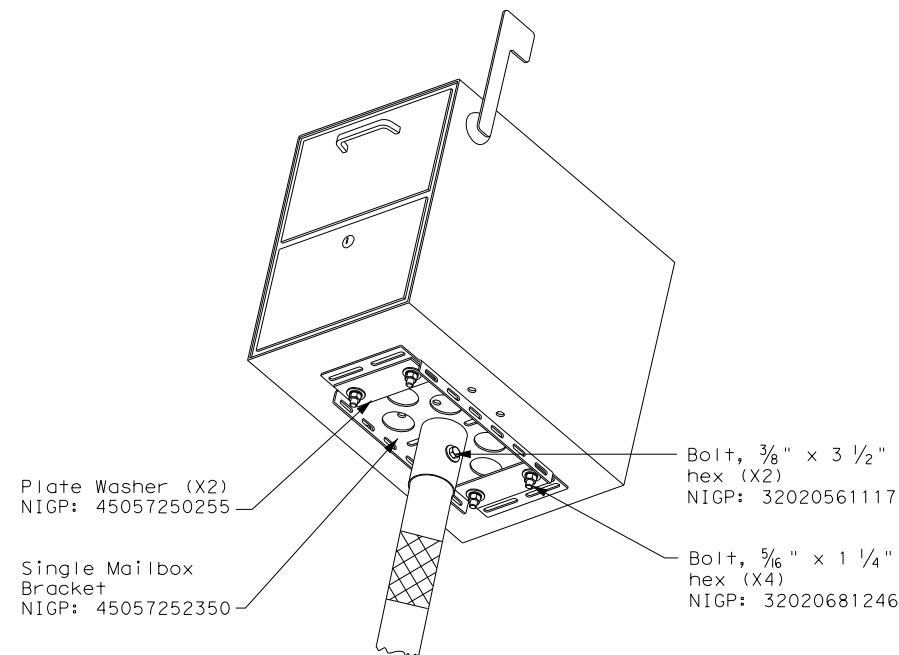
DATE: FILE:

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.

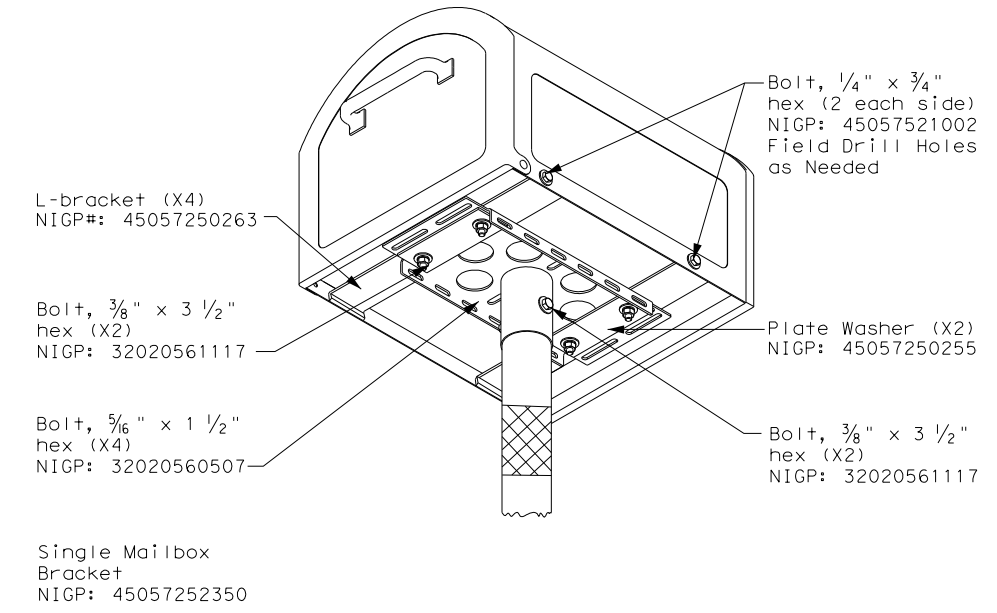
TYPE 1 - MULTI LOCKABLE AND XL MAILBOX



TYPE 2/4 - SINGLE LOCKABLE MAILBOX

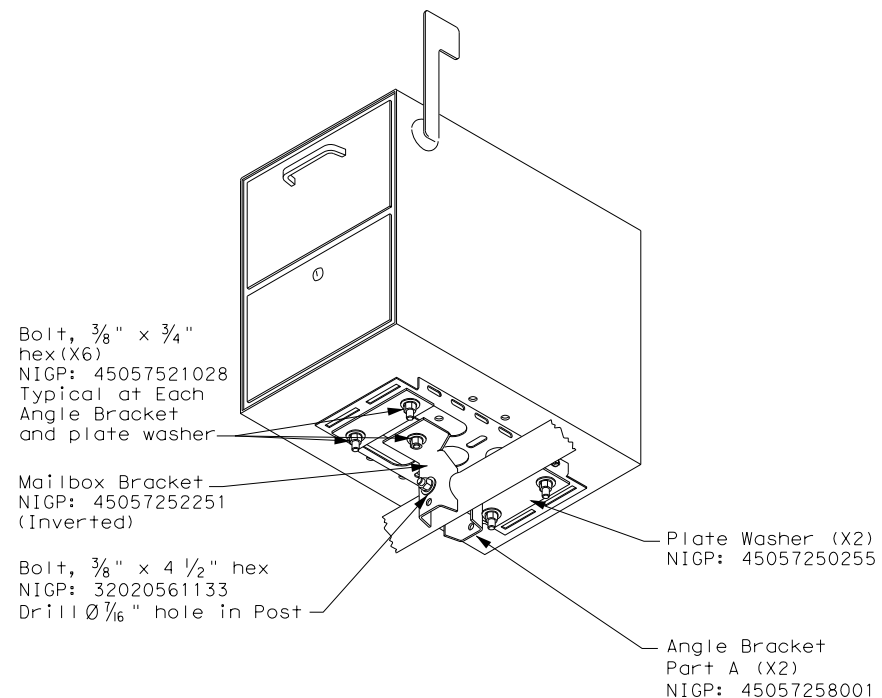


TYPE 2/4 - SINGLE XL MAILBOX

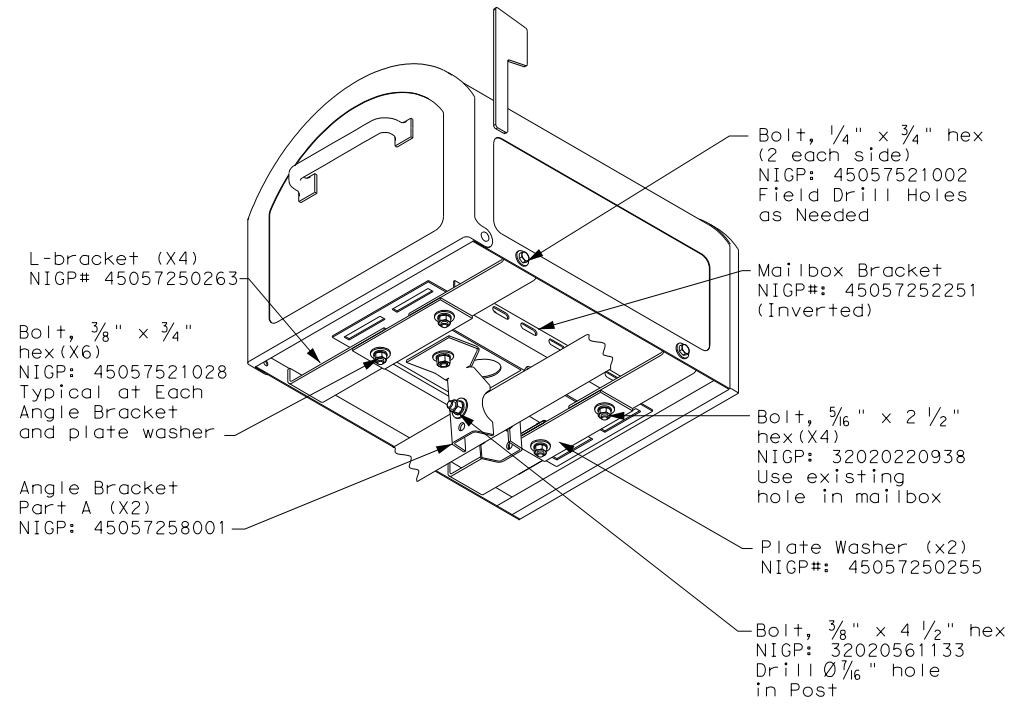


NOTE:
Follow same configuration when mounting an XL mailbox on a Type 4 multi post.

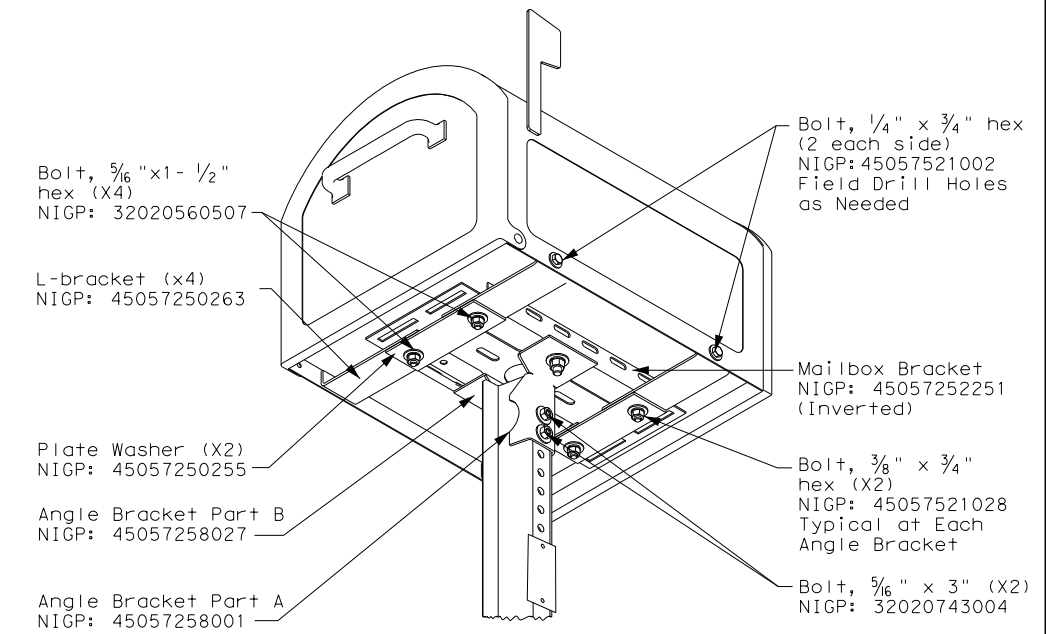
TYPE 1 MULTI - LOCKABLE ARCHITECTURAL (LA)



TYPE 1 MULTI - XL MAILBOX



TYPE 3 - XL MAILBOX MOUNTING



SHEET 2 OF 4

Texas Department of Transportation Maintenance Division Standard

XL AND LOCKABLE ARCHITECTURAL MAILBOX ASSEMBLY MB (2) -21

FILE: MB-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
2/2005	11/2009	4/2015		
6/2005	1/2011			
11/2006	7/2014			
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	161	

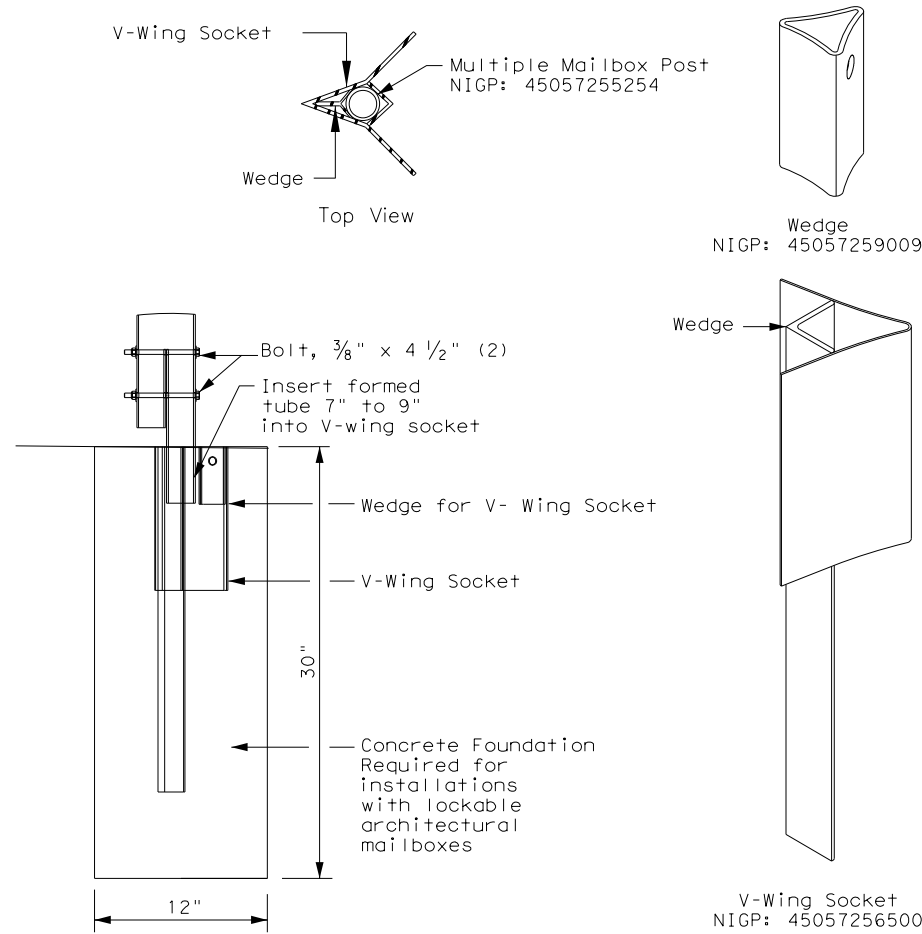
DATE:
FILE:

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.

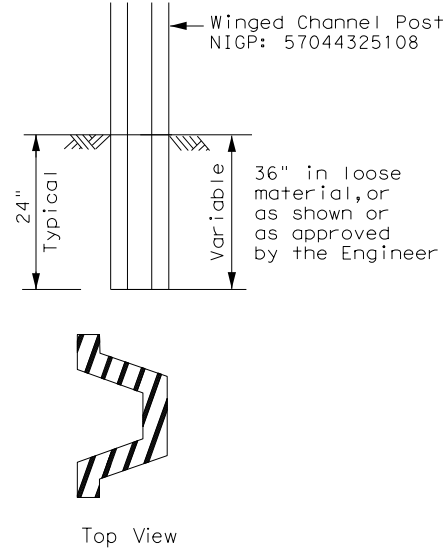
DATE: FILE:

TYPE 1 - SUPPORT/FOUNDATION

Thin Wall Tube w/ V-LOC Anchorage



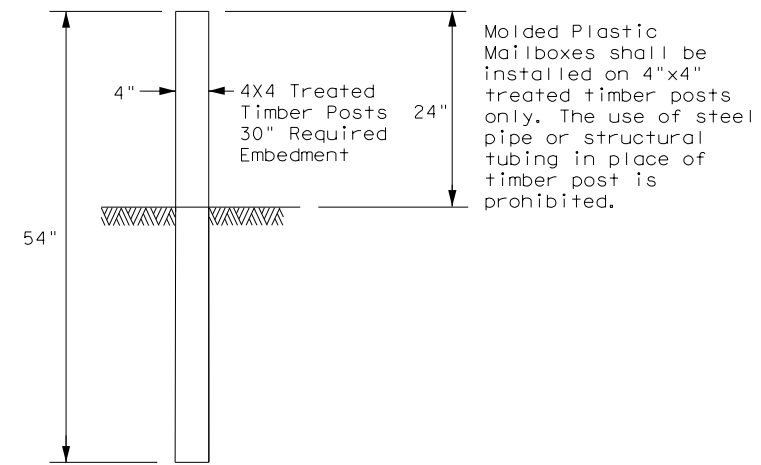
TYPE 3 - SUPPORT/FOUNDATION



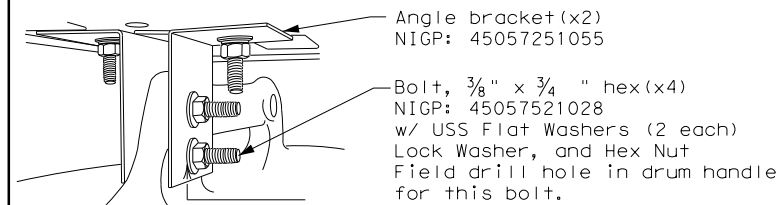
NOTES:

1. Attach Object Marker (OM) facing direction of traffic.
2. OM will also be required on opposite side if installed on a 2-Lane, 2-Way roadway.

TYPE 5 - SUPPORT/FOUNDATION



TYPE 6 - TEMPORARY MAILBOX SUPPORT



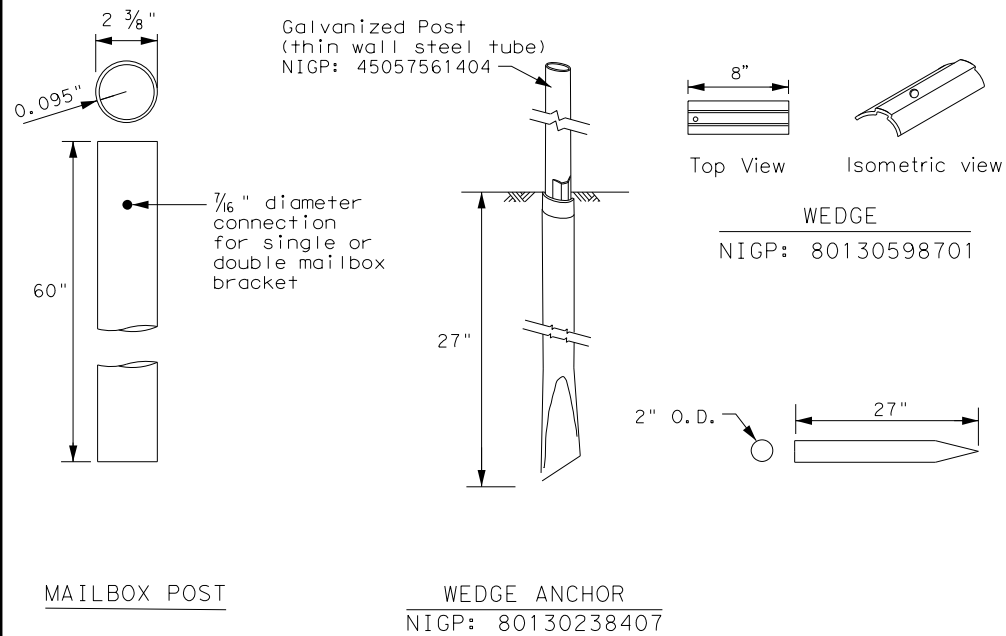
Plastic Drum NIGP: 55093383655
 Rubber Collar NIGP: 55093387102

NOTES:

1. Place on approved plastic drum as shown in the Compliant Work Zone Traffic Control Devices (CWZTCD).
2. Existing attachment hardware shall be used unless damaged. Damaged hardware shall be replaced.

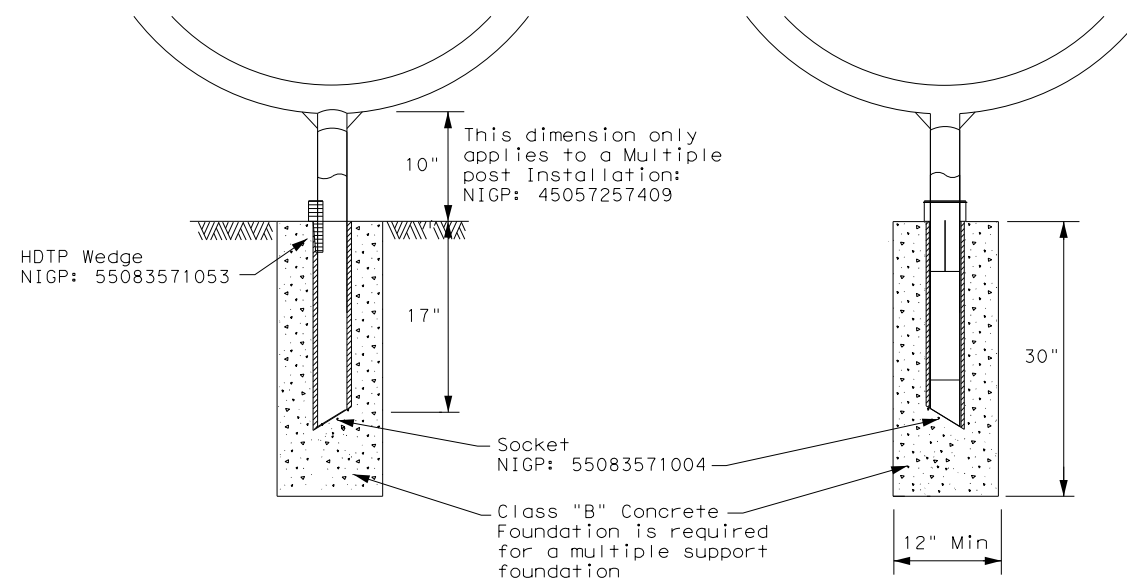
TYPE 2 - SUPPORT/FOUNDATION

Thin Wall Steel Tube w/Wedge Anchor System



TYPE 4 - SUPPORT/FOUNDATION

Whitecoated steel post NIGP: 45057561107
 Multiple post NIGP: 45057257409
 Recycled Rubber post (RR) NIGP: 45057561057



GENERAL NOTES:

1. Erect post plumb or vertical.
2. When galvanized part is required galvanize in accordance with Item 445.
3. 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, only on Type 1, Type 2, and Type 4

SHEET 3 OF 4



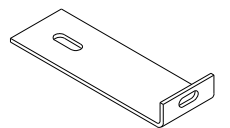
MAILBOX SUPPORT AND FOUNDATION

MB (3) - 21

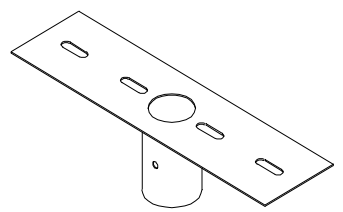
FILE: MB-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
2/2005	11/2009	4/2015		
6/2005	1/2011			
11/2006	7/2014			
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	162	

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.

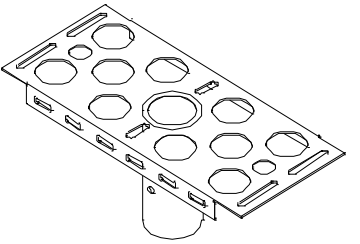
TYPE	TYPE 1	TYPE 2	TYPE 3	TYPE 4	TYPE 5	TYPE 6
Configuration	Multiple	Single or Double	Single or Double	Single	Double	Multiple
Mailbox Size NIGP #	Outside Position: S or M Inside Position: S, M, L, XL, or LA	Single: S, M, L, XL, or LA Double: SS, SM, MM	Single: S, M, L, or XL Double: SS, SM, MM	S, M, L, XL, or LA	SS, SM, or MM	Outside Position: S or M Inside Position: S, M, L, or XL
Mailbox Post NIGP #	45057255254 (Galvanized Multiple)	45057561404 (Thin Walled Gavanize)	57044325108 (Wing Channel Post)	45057561107 (Thin walled white powder coated) 45057561057 (Recycled Rubber Post: S or M only)	45057561107 (Thin Walled White Powder Coated)	45057257409 (White Powder Coated Multiple)
Post and Mailbox Hardware NIGP #	45057259009 (Wedge) 45057256500 (V-Wing Socket) 45057253002 (Bracket Extension) 45057252251 (Mailbox Bracket) 45057258001 (Part A Angle Bracket x2) 45057250255 (Plate Washer for XL/LA x2) 45057250263 (L-Bracket for XL x4)	80130598701 (Wedge) 80130238407 (Wedge Anchor) 45057253002 (Bracket Extension) 45057252343 (Double MB Bracket) 45057252350 (S. Mailbox Bracket) 45057252251 (Mailbox Bracket) 45057250255 (Plate Washer for XL/LA x2) 45057250263 (L-Bracket for XL x4)	45057541653 (Type 3 Double Mailbox Bracket) 45057252251 (Mailbox Bracket) 45057253002 (Bracket Extension) 45057258001 (Part A Angle Bracket) 45057258027 (Part B Angle Bracket) 45057250255 (Plate Washer for XL x2) 45057250263 (L-Bracket for XL x4)	55083571053 (Wedge) 55083571004 (Socket) 45057252350 (Single Mailbox Bracket) 45057253002 (Bracket Extension) 45057250255 (Plate Washer for XL/LA x2) 45057250263 (L-Bracket for XL x4)	55083571053 (Wedge) 55083571004 (Socket) 45057253002 (Bracket Extension) 45057252350 (Single Mount Bracket) 45057250255 (Plate Washer for XL x2) 45057250263 (L-Bracket for XL x4)	45057251055 Angle Bracket (x2)
Foundation Used	Class B Concrete (Required for LA Mailboxes)	Class B Concrete (Required for LA Mailboxes)	None	Class B Concrete (not used with recycled rubber post, required for LA Mailboxes)	Class B Concrete (not required)	Class B Concrete



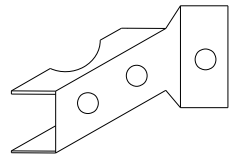
NIGP: 45057250263
L-Bracket x4 for XL sized mailboxes



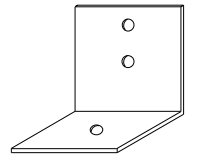
NIGP: 45057252343
Double Mailbox Bracket For Type 2 and Type 4 double mount



NIGP: 45057252350
Single Mailbox Bracket For Type 2 single and for Type 4 single and multi mount



NIGP: 45057258001
Part "A" Angle Bracket For Type 1 multi (2 per mailbox) and Type 3 single and double



NIGP: 45057251055
Type 6 Angle Bracket (2 per mailbox)



NIGP: 45057252251
Mailbox Bracket For Type 1 multi and any double mount (use 2)




NIGP: 45057253002
Bracket Extension Use 1 for a medium Mailbox Use 2 for a Large Mailbox



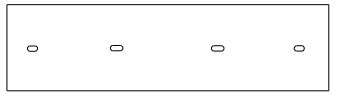
NIGP: 45057258027
Part "B" Angle Bracket For Type 3 single and double



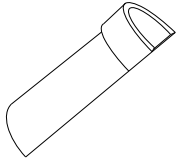
NIGP: 80130598701
Wedge for Type 2



NIGP: 45057250255
Plate Washer for Architecural and XL Mailboxes



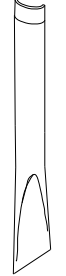
NIGP: 45057541653
Type 3 double mailbox bracket



NIGP: 55083571053
Type 4 Mailbox Wedge



NIGP: 55083571004
Type 4 Mailbox Socket



NIGP: 80130238407
Type 2 Wedge Anchor



NIGP: 45057259009
Wedge for Type 1 V-wing Socket



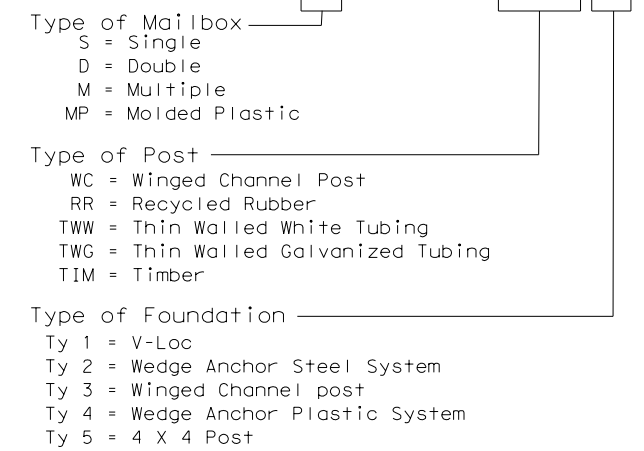
NIGP: 45057256500
V-wing Socket for Type 1 Foundation


NIGP #	OBJECT MARKERS AND CONFORMABLE SHEETING
55008311759	Type 2 OM 4"x4" (3 Needed) for Type 3 Wing Channel Post
55008312906	Type 2 OM 6"x12" (1 needed) for Type 3 Wing Channel Post
80149872006	12" Conformable Reflective Yellow Sheeting for Flexible Posts

NOTES:

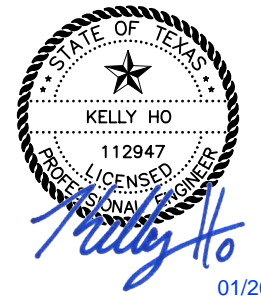
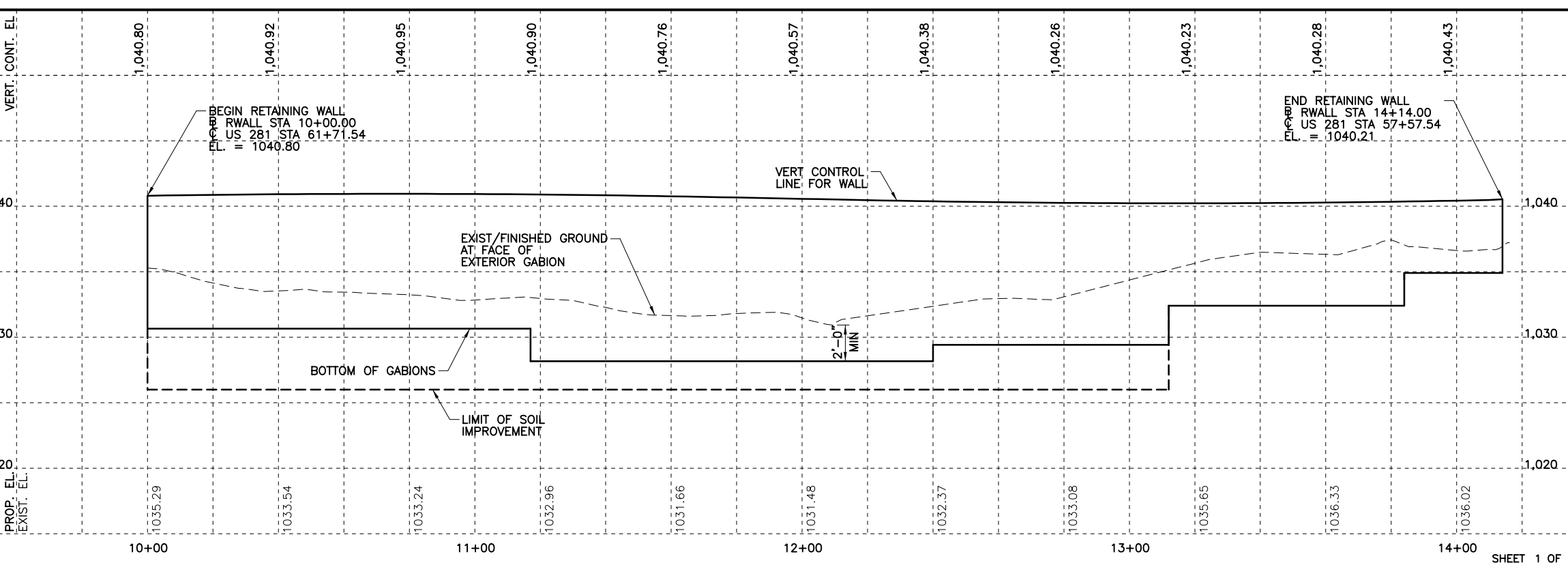
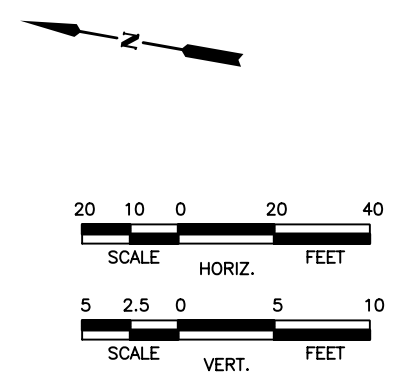
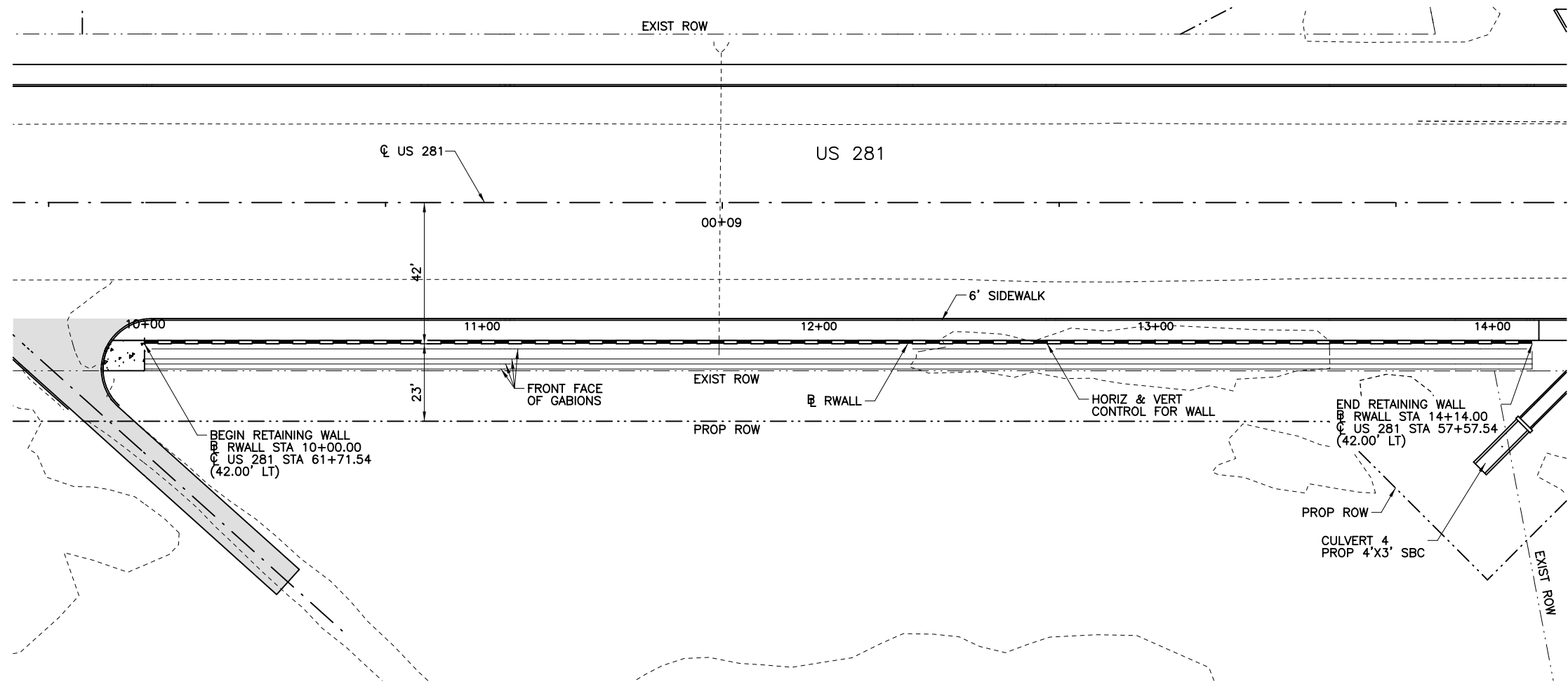
- Type 2 object marker in accordance with Traffic Engineering Standard Delineators & Object Markers.
- A light weight receptacle for newspaper delivery can be attached to mailbox posts if the receptacle does not touch the mailbox, present a hazard to traffic or delivery of the mail, extend beyond the front of the mailbox, or display advertising, except the publication title.

BID CODES FOR CONTRACTS
MB-(X) ASSM TY (XXX) (X)



				Maintenance Division Standard	
NIGP PARTS LIST AND COMPATIBILITY					
MB(4)-21					
FILE: MB-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT	
© TxDOT March 2004	CONT	SECT	JOB	HIGHWAY	
2/2005 6/2005 11/2009 1/2011 4/2015	REVISIONS	0251	06	036	US 281
	DIST	COUNTY		SHEET NO.	
	BWD	LAMPASAS		163	

DATE:
FILE:



01/26/2023

NO.	REVISION	BY	DATE



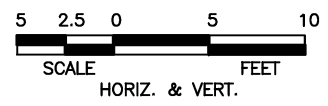
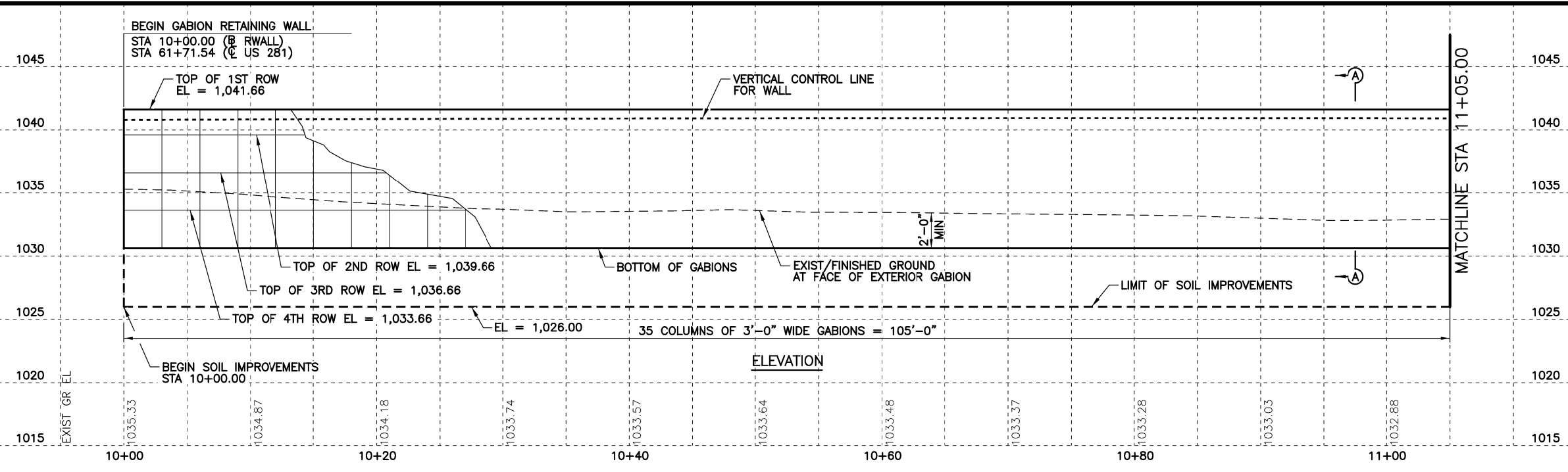
©2023 Texas Department of Transportation
US 281

GABION RETAINING WALL LAYOUT

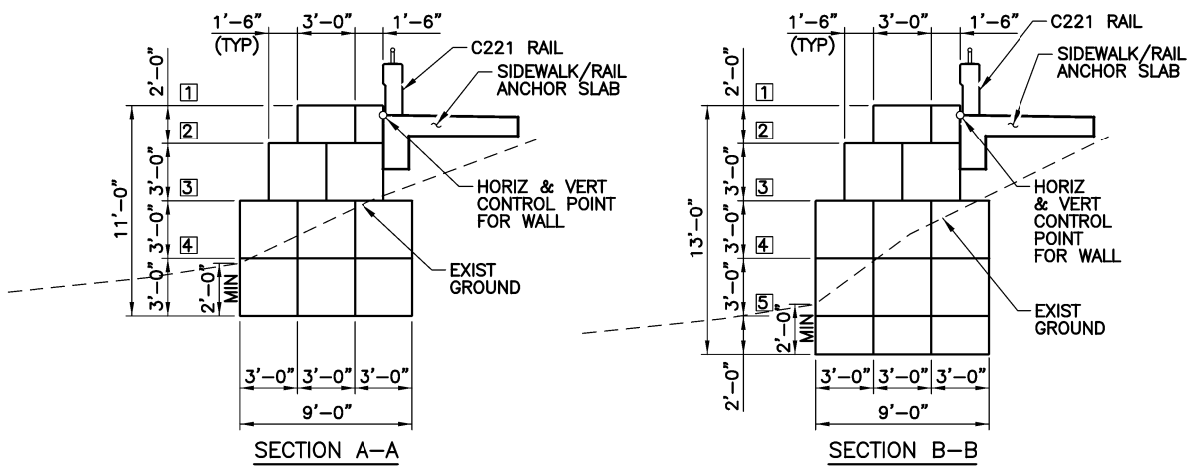
Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 164		

1/23/2023 2:09:11 PM BCANALES cpybw_ANSIB.tbl cpypdf_ANSIB.pltcfp pw:/

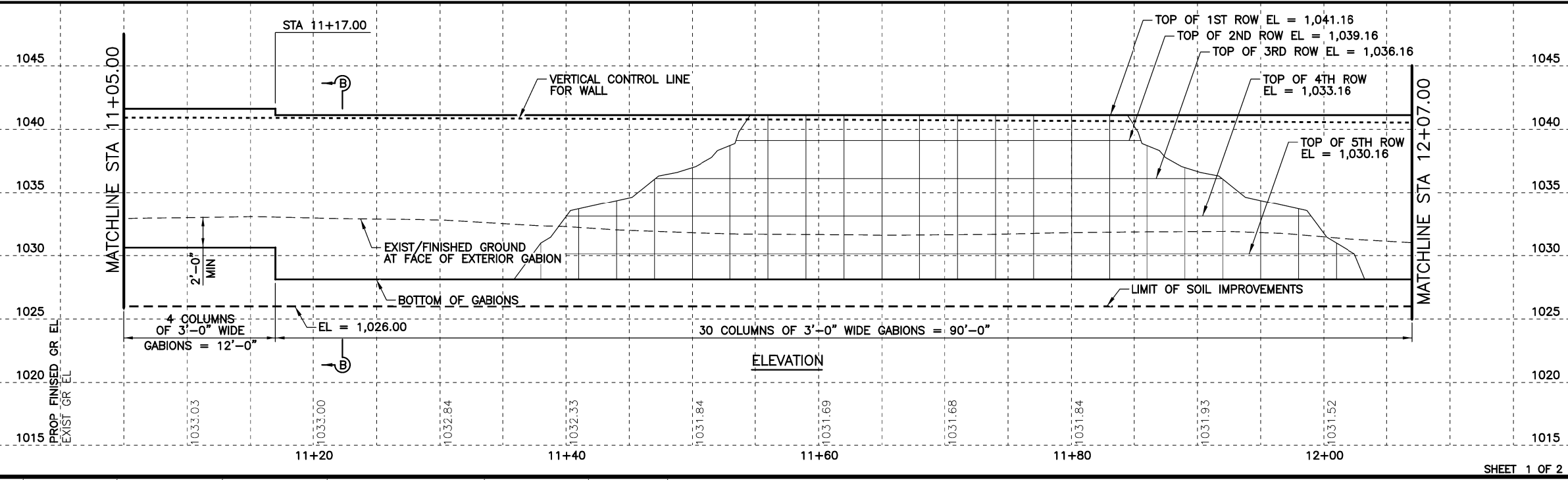
9/2/2022 12:15:03 PM kdetchemendv cpybw_ANSIB.tbl cpybw_ANSIB.plt cfw pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.05 Walls/49304RW_MISC01.dgn



- GENERAL NOTES:**
- SEE GABION CONSTRUCTION DETAILS SHEET FOR CONSTRUCTION AND SOIL IMPROVEMENT DETAILS NOT SHOWN.
 - SEE MISCELLANEOUS WALL DETAILS SHEET FOR SIDEWALK/RAIL ANCHOR SLAB DETAILS NOT SHOWN.



- 1 TOP OF 1ST ROW.
- 2 TOP OF 2ND ROW.
- 3 TOP OF 3RD ROW.
- 4 TOP OF 4TH ROW.
- 5 TOP OF 5TH ROW.

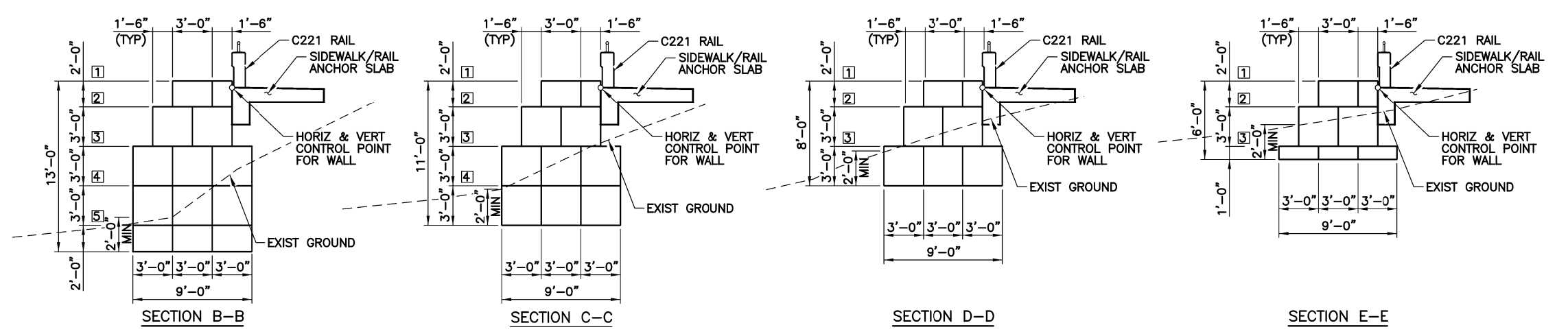
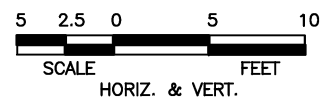
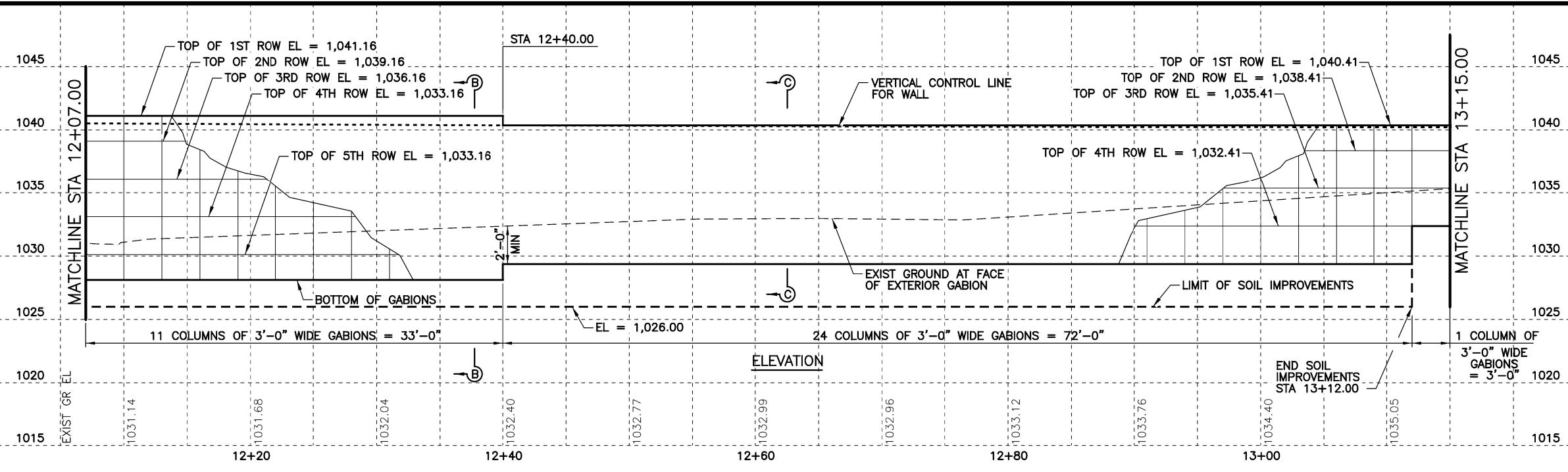


NO.	REVISION	BY	DATE

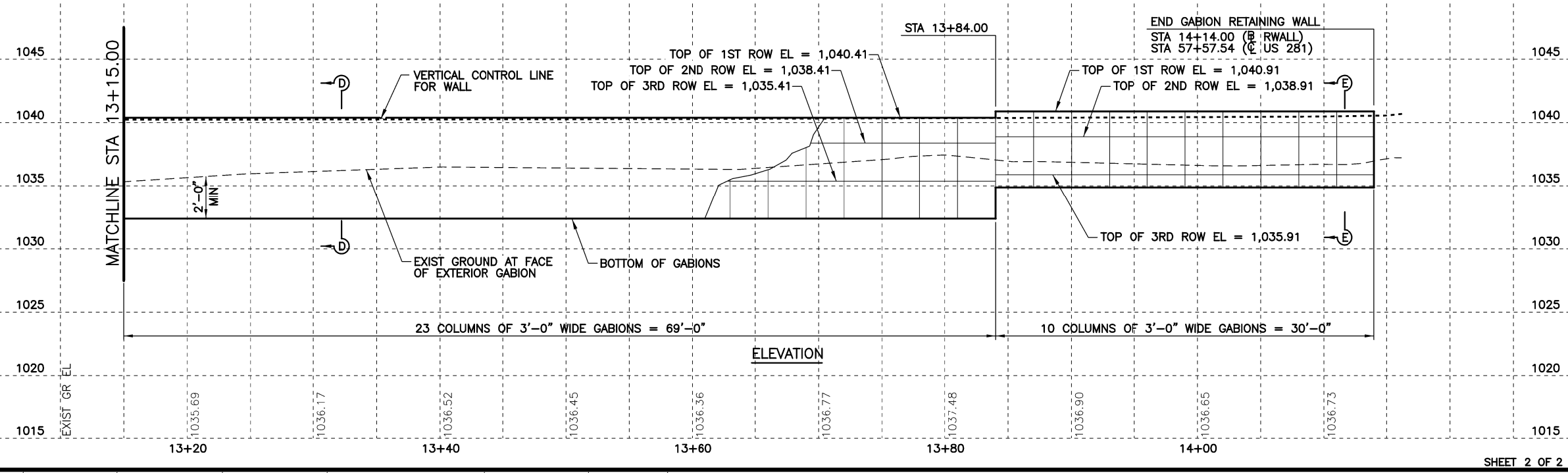
TEXAS REGISTERED ENGINEERING FIRM F-1741
 ©2022 Texas Department of Transportation
 US 281
GABION STRUCTURAL LAYOUT

Designed:	CPY	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	CPY	DIST.		COUNTY		CONTROL NO.	0251	SECTION NO.	06
Drawn:	CPY	DIST.		COUNTY		JOB NO.	036	SHEET NO.	165
Checked:	CPY	BWD		LAMPASAS					

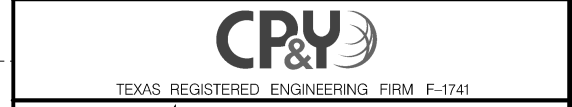
9/2/2022 12:16:55 PM kdetchemendy cpybw_ANSIB.tbl cpybw_ANSIB.plt cfw pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.05 Walls/49304RW_MISC02.dgn



- ① TOP OF 1ST ROW.
- ② TOP OF 2ND ROW.
- ③ TOP OF 3RD ROW.
- ④ TOP OF 4TH ROW.
- ⑤ TOP OF 5TH ROW.

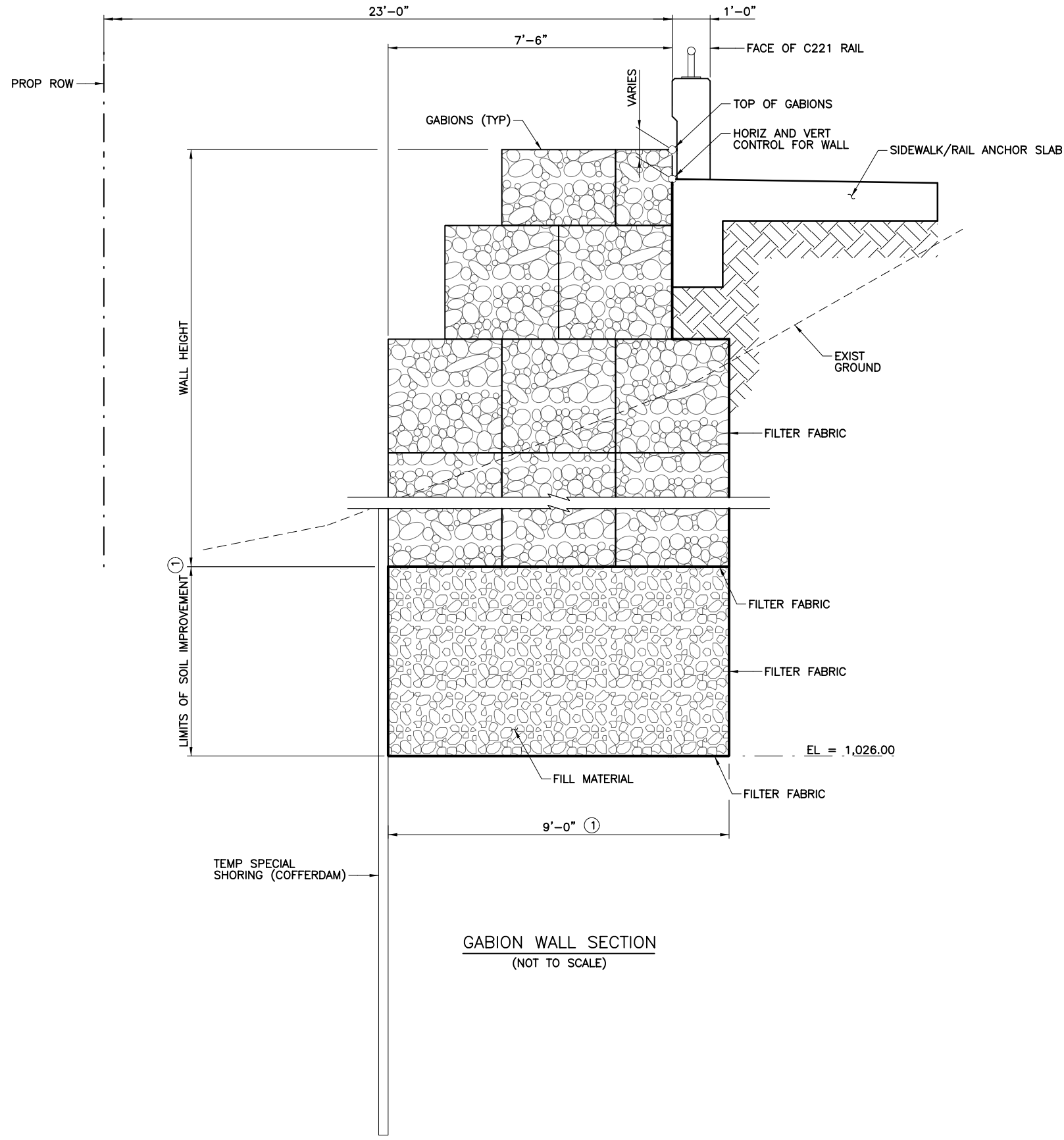


NO.	REVISION	BY	DATE



GABION STRUCTURAL LAYOUT

Designed: CPY	FED. RD. DIST. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 166		



CONSTRUCTION NOTES:

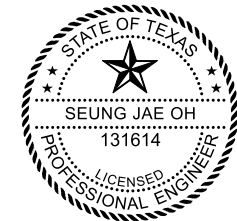
- ALL WORK TO BE PERFORMED IN ACCORDANCE WITH ITEM 459 "GABIONS AND GABION MATTRESSES".
- OVER EXCAVATION OF SUBGRADE SOILS TO AN ELEVATION OF 1,026 REQUIRED FOR LIMITS SHOWN ON GABION STRUCTURAL LAYOUT.
PLACE FILL MATERIAL, CONSISTING OF ITEM 423 TYPE DS MATERIAL, PRIOR TO CONSTRUCTION OF THE GABION RETAINING WALL. COMPACT MATERIAL TO 98 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY TEX-113-E WITHIN 2 PERCENTAGE POINTS OF OPTIMUM MOISTURE CONTENT.
GABION BASKETS OR NO. 57 STONE (ASTM C33) MAY BE USED IN LIEU OF FILL MATERIALS.
DMS-6200 TYPE 2 FILTER TO BE PLACED IN FRONT, UNDER AND BEHIND FILL MATERIAL LOCATED BELOW GABIONS. ALL TYPE 2 FILTER FABRIC TO BE SUBSIDIARY TO PAYMENT OF ITEM 459 "GABIONS".
- CONTRACTOR TO USE TEMPORARY SPECIAL SHORING (COFFERDAM) IN CONJUNCTION WITH A DEWATERING SYSTEM IN ORDER TO CONTROL WATER INTRUSION INTO THE CONSTRUCTION SITE DURING OVER-EXCAVATION.
- BOTTOM-MOST GABION TO BE EMBEDDED A MINIMUM 2'-0" BELOW EXISTING/FINISHED GROUND.

MATERIAL NOTES:

- USE GALVANIZED, 6 GAUGE WIRE GABION BASKETS. SEE SPECIAL PROVISIONS FOR ITEM 459 FOR BASKET SPECIFICATIONS.
- INSTALL DMS-6200 TYPE 2 FILTER FABRIC UNDER AND BEHIND GABIONS. ALL TYPE 2 FILTER FABRIC TO BE SUBSIDIARY TO PAYMENT OF ITEM 459 "GABIONS".
- USE CLEAN, HARD, DURABLE, AND WELL-GRADED GABION ROCK WITH NOMINAL DIAMETER OF 4 TO 8 INCHES. PRIOR TO PLACING THE ROCK, SAMPLES SHALL BE DELIVERED TO SITE AND APPROVED BY THE ENGINEER.

① OVER EXCAVATION AND SOIL IMPROVEMENTS ARE ONLY REQUIRED FROM STA 10+00.00 TO STA 13+12.00.

FOR GABION RETAINING WALL ANALYSIS



Seung Jae Oh
01/27/2023

FOR STRUCTURAL DESIGN OF SIDEWALK/RAIL ANCHOR SLAB



Kelly Ho
01/26/2023

GABION WALL SECTION
(NOT TO SCALE)

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

©2023 Texas Department of Transportation

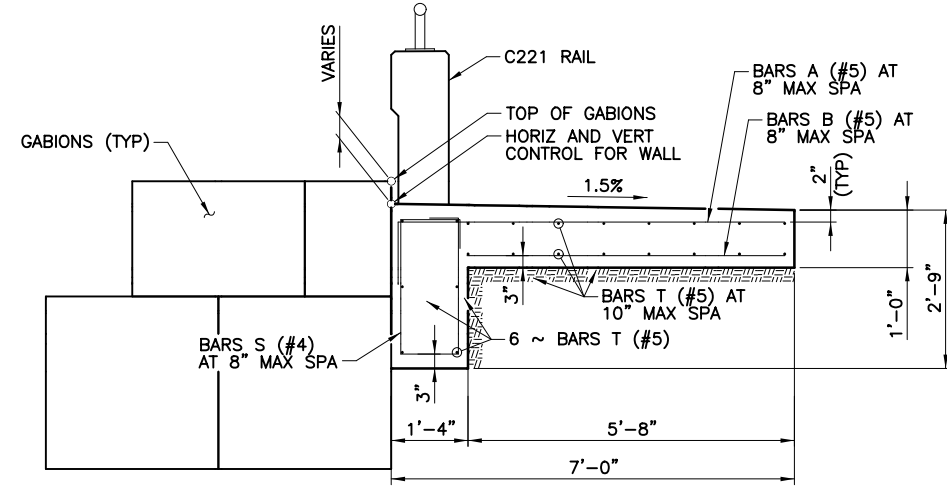
US 281

GABION CONSTRUCTION DETAILS

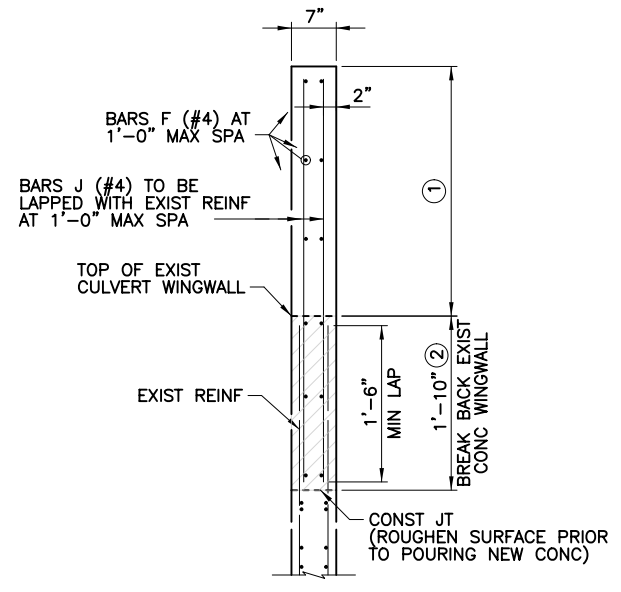
Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
Checked:	CPY	6	TEXAS		US 281
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.
Checked:	CPY	BWD	LAMPASAS	0251	06
					JOB NO.
					036
					SHEET NO.
					167

1/23/2023 2:36:12 PM BCANALES
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/

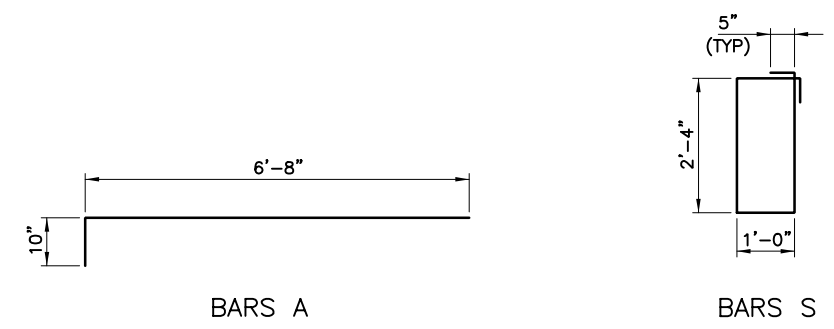
cpybw_ANSIB.tbl
 cpybw_ANSIB.pltcf
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.05 Walls/49304RW_MISC04.dgn
 9/2/2022 12:14:26 PM kko



SIDEWALK/RAIL ANCHOR SLAB DETAILS



CULVERT WINGWALL EXTENSION DETAIL



GENERAL NOTES:

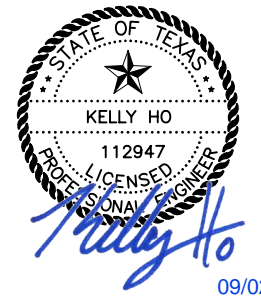
1. DESIGNED ACCORDING TO 2017 AASHTO LRFD BRIDGE DESIGN SPECIFICATION (8TH EDITION) (HL93 LOADING).
2. PROVIDE CLASS "C" CONCRETE ($f'c = 3,600$ PSI).
3. PROVIDE GRADE 60 REINFORCING STEEL.
4. COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE.

- ① PROP WINGWALL EXTENSION:
 CULVERT #1 (EAST) = 3'-3"
 CULVERT #1 (WEST) = 2'-0"
 CULVERT #5 (NORTH) = 4'-7"

- ② CONTRACTOR TO BREAK BACK EXISTING WINGWALL AND AVOID CUTTING OR DAMAGING EXISTING REINFORCEMENT.


ANY REINFORCEMENT THAT IS DAMAGED AND DETERMINED BY THE ENGINEER TO BE IN NEED OF REPLACEMENT WILL BE DONE AT THE CONTRACTOR'S EXPENSE.

CLEAN AND EXTEND EXISTING REINFORCEMENT INTO NEW CONSTRUCTION. LAP BARS J 1'-6" MIN WITH EXISTING REINFORCEMENT.




09/02/2022

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741

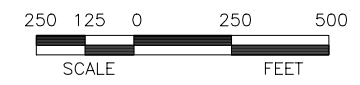
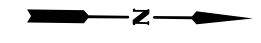
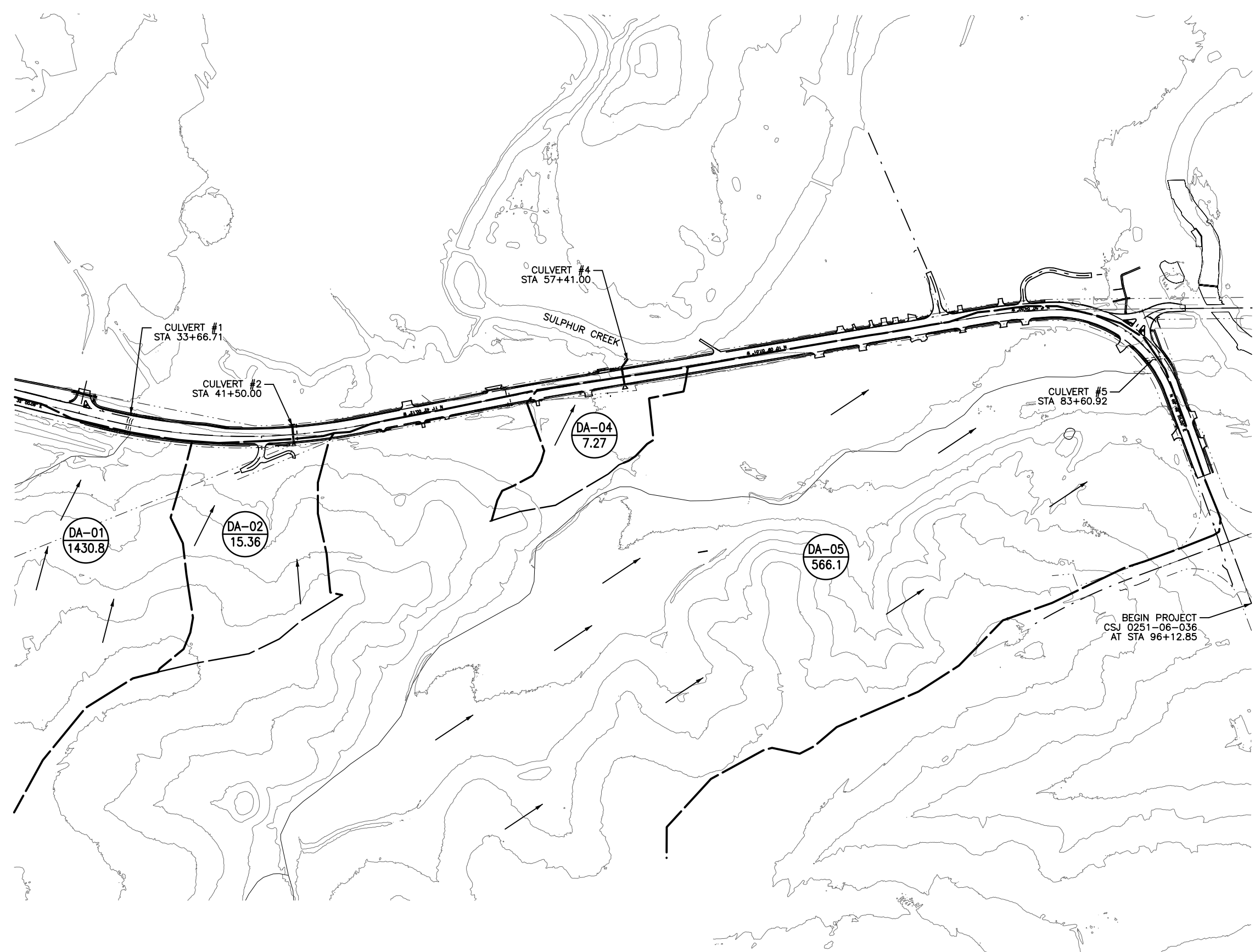


©2022 Texas Department of Transportation
US 281

MISCELLANEOUS WALL DETAILS

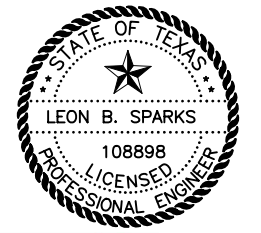
Designed:	CPY	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	CPY	DIST.	BWD	COUNTY	LAMPASAS	CONTROL NO.	0251	SECTION NO.	06
Drawn:	CPY	JOB NO.	036	SHEET NO.	168				

9/2/2022 9:13:06 AM rgarza
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.06 Drainage/WRS/1600493DDA01.dgn



LEGEND	
	DRAINAGE AREA LABEL DRAINAGE AREA (ACRES)
	DRAINAGE AREA BOUNDARY
	2000 CONTOURS
	FLOW DIRECTION

NOTE:
 1. ATLAS 14 RAINFALL INTENSITIES USED FOR ANALYSIS.
 2. TNRIS BANDERA & LAMPASAS COUNTIES LIDAR 2014



Leon B. Sparks 9/2/2022

NO.	REVISION	BY	DATE



© 2022 TEXAS REGISTERED ENGINEERING FIRM F-1741



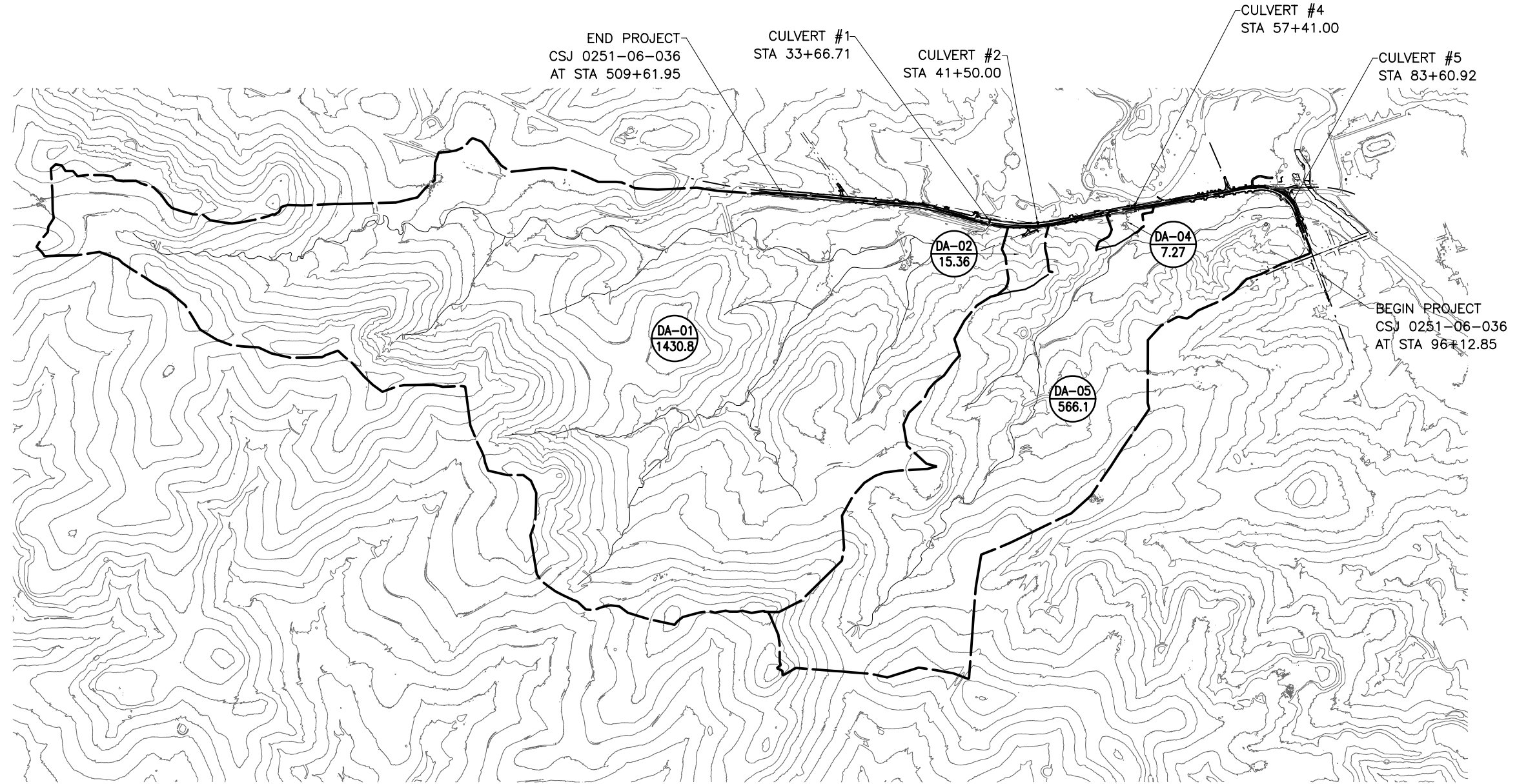
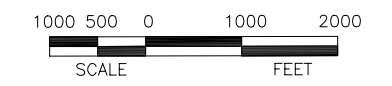
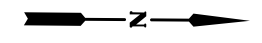
US 281

EXTERIOR DRAINAGE AREA MAP

Designed:	CPY	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	CPY	DIST.		COUNTY	LAMPASAS	CONTROL NO.	0251	SECTION NO.	06
Drawn:	CPY					JOB NO.	036		
Checked:	CPY								169

* Indicates the Flow Rate was calculated using the NRCS curve number method in HEC-HMS 4.5 per the TxDOT Hydraulic Design Manual (September 2019)

9/2/2022 9:13:21 AM rgarza
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.06 Drainage/WRS/1600493DDA02.dgn



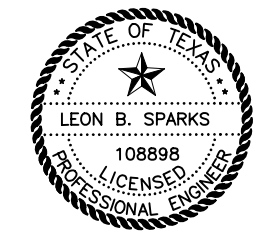
LEGEND

DRAINAGE AREA LABEL
 DRAINAGE AREA (ACRES)

DRAINAGE AREA BOUNDARY

2000 CONTOURS

NOTE:
 1. ATLAS 14 RAINFALL INTENSITIES USED FOR ANALYSIS.
 2. TNRIS BANDERA & LAMPASAS COUNTIES LIDAR 2014



Leon B. Sparks 9/2/2022

NO.	REVISION	BY	DATE

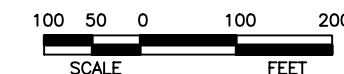
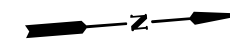


© 2022 TEXAS REGISTERED ENGINEERING FIRM F-1741



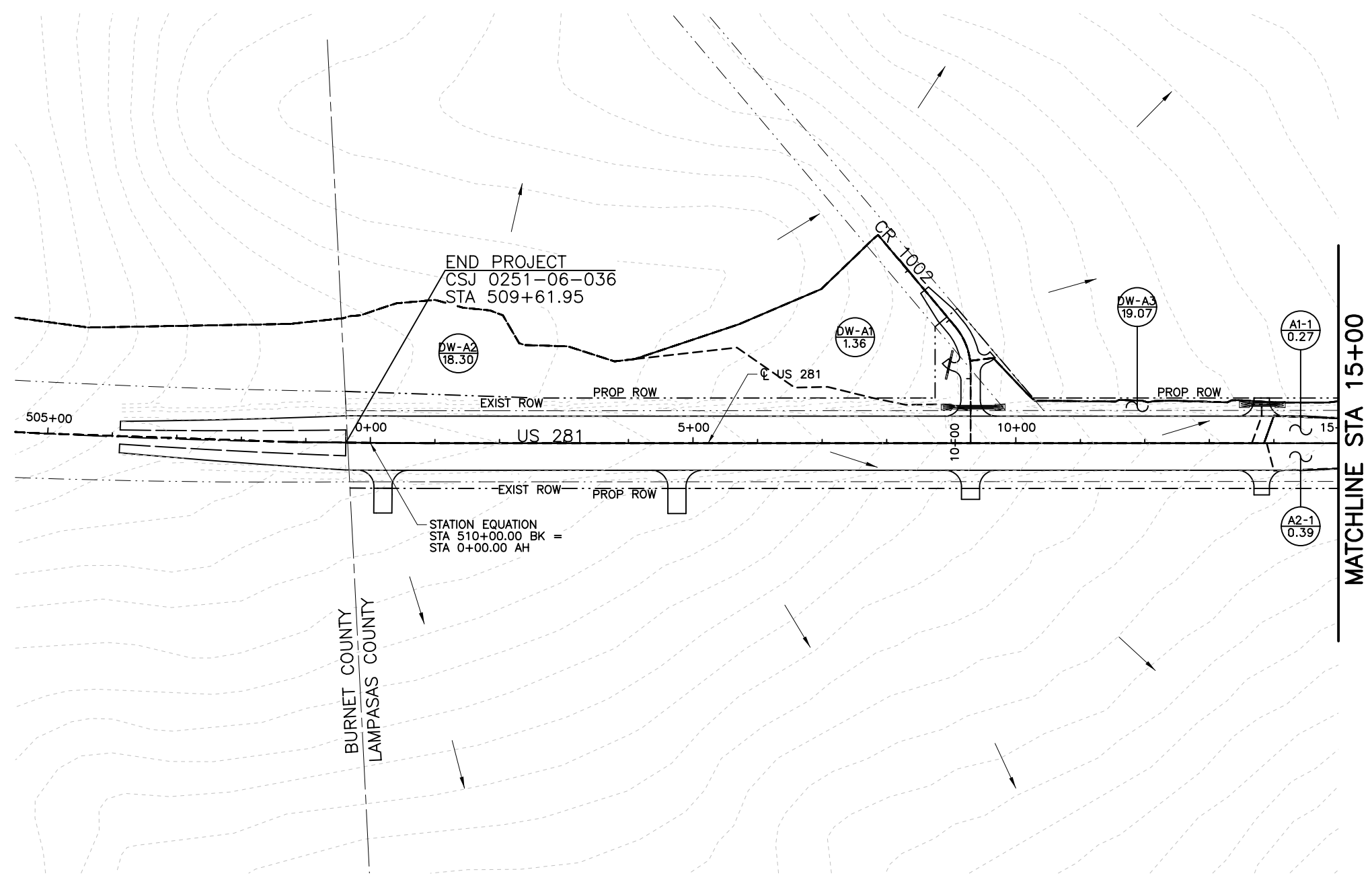
US 281
**OVERALL EXTERIOR DRAINAGE
 AREA MAP**

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
Checked:	CPY	6	TEXAS		US 281
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.
Checked:	CPY	BWD	LAMPASAS	0251	06
				JOB NO.	SHEET NO.
				036	170



LEGEND

- DRAINAGE AREA NUMBER
DRAINAGE AREA (ACRE)
- DRAINAGE FLOW DIRECTION
- DRAINAGE AREA BOUNDARY



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741



US 281

INTERIOR DRAINAGE AREA MAPS

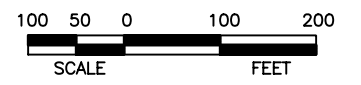
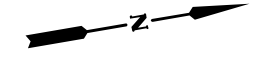
END PROJECT TO STA 15+00

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
Checked:	CPY	6	TEXAS		US 281
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.
Checked:	CPY	BWD	LAMPASAS	0251	06
				JOB NO.	SHEET NO.
				036	171

cpybw_ANSIB.tbl
cpypdf_ANSIB.pltcfgr
pw:/

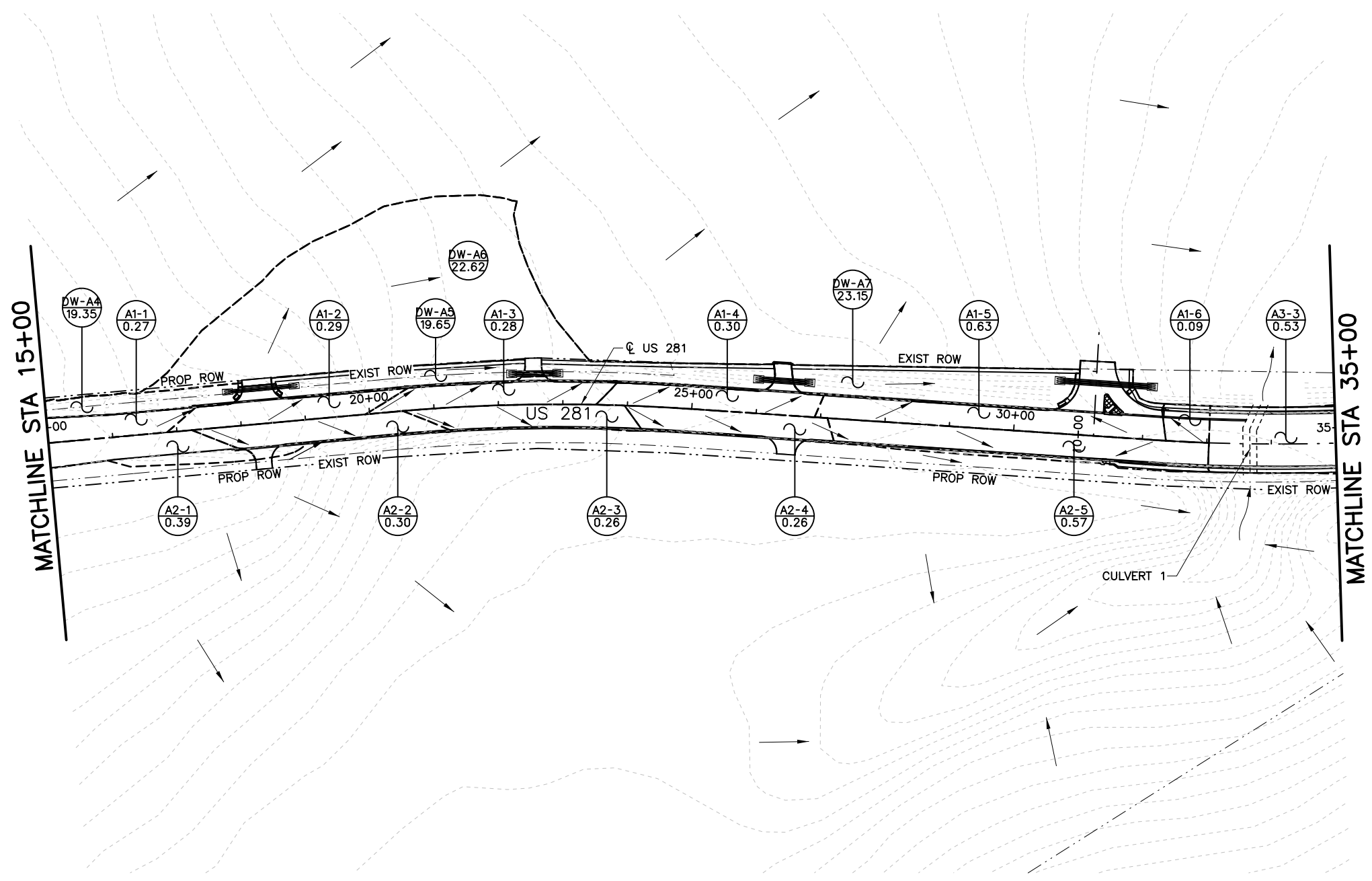
1/31/2023 4:44:16 PM kpererry

pw:/



LEGEND

- DRAINAGE AREA NUMBER
DRAINAGE AREA (ACRE)
- DRAINAGE FLOW DIRECTION
- DRAINAGE AREA BOUNDARY



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741



US 281

INTERIOR DRAINAGE AREA MAPS

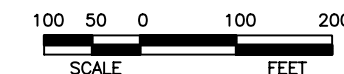
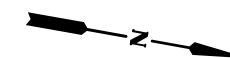
STA 15+00 TO STA 35+00

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
Checked:	CPY	6	TEXAS		US 281
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.
Checked:	CPY	BWD	LAMPASAS	0251	06
				JOB NO.	SHEET NO.
				036	172

cpybw_ANSIB.tbl
cpypdf_ANSIB.pltcfgr
pw:/

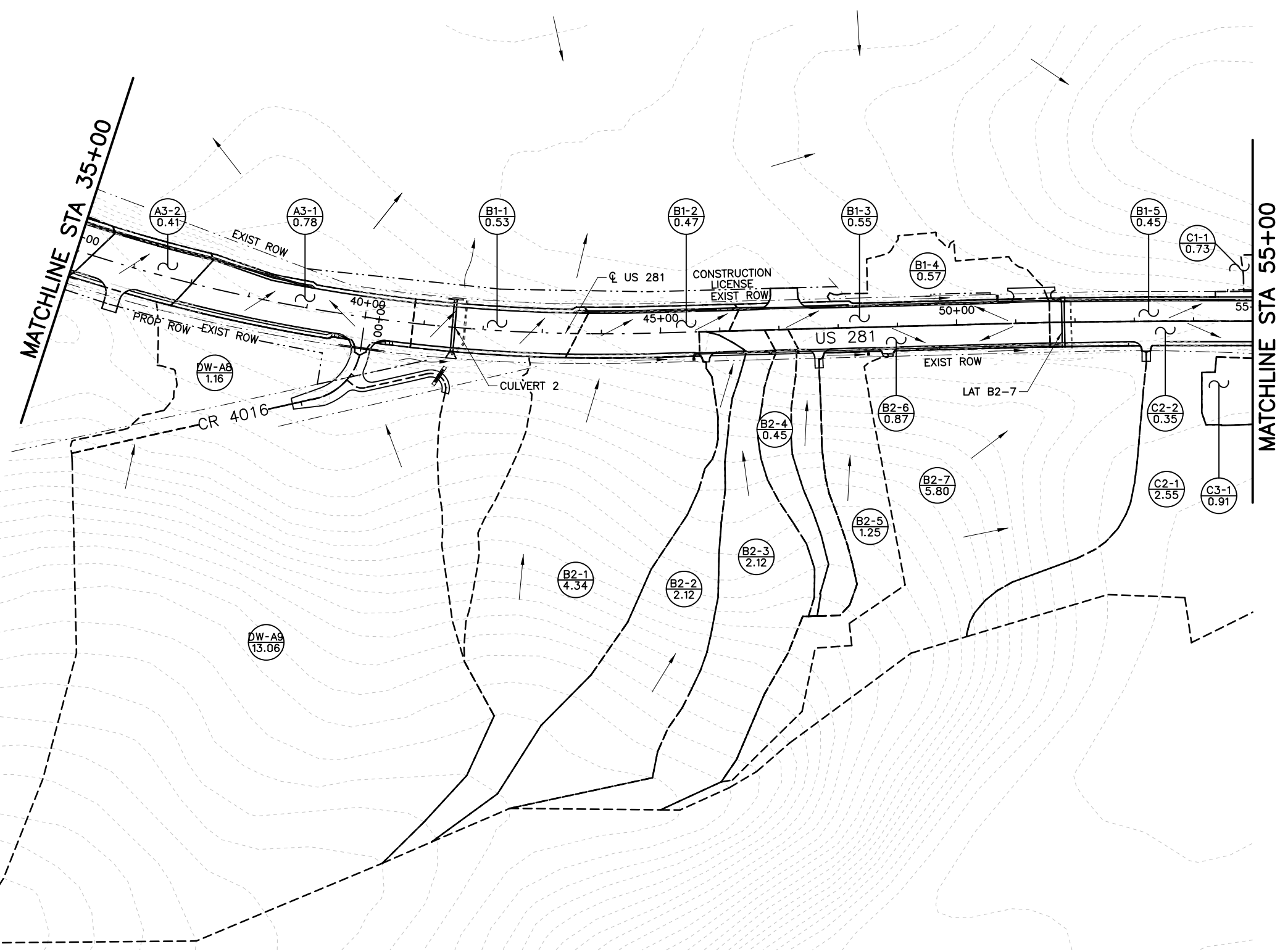
1/31/2023 4:44:23 PM kperry

pw:/



LEGEND

- DRAINAGE AREA NUMBER
DRAINAGE AREA (ACRE)
- DRAINAGE FLOW DIRECTION
- DRAINAGE AREA BOUNDARY



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741



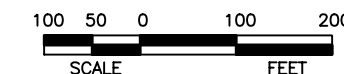
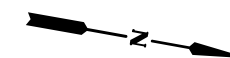
US 281

INTERIOR DRAINAGE AREA MAPS

STA 35+00 TO STA 55+00

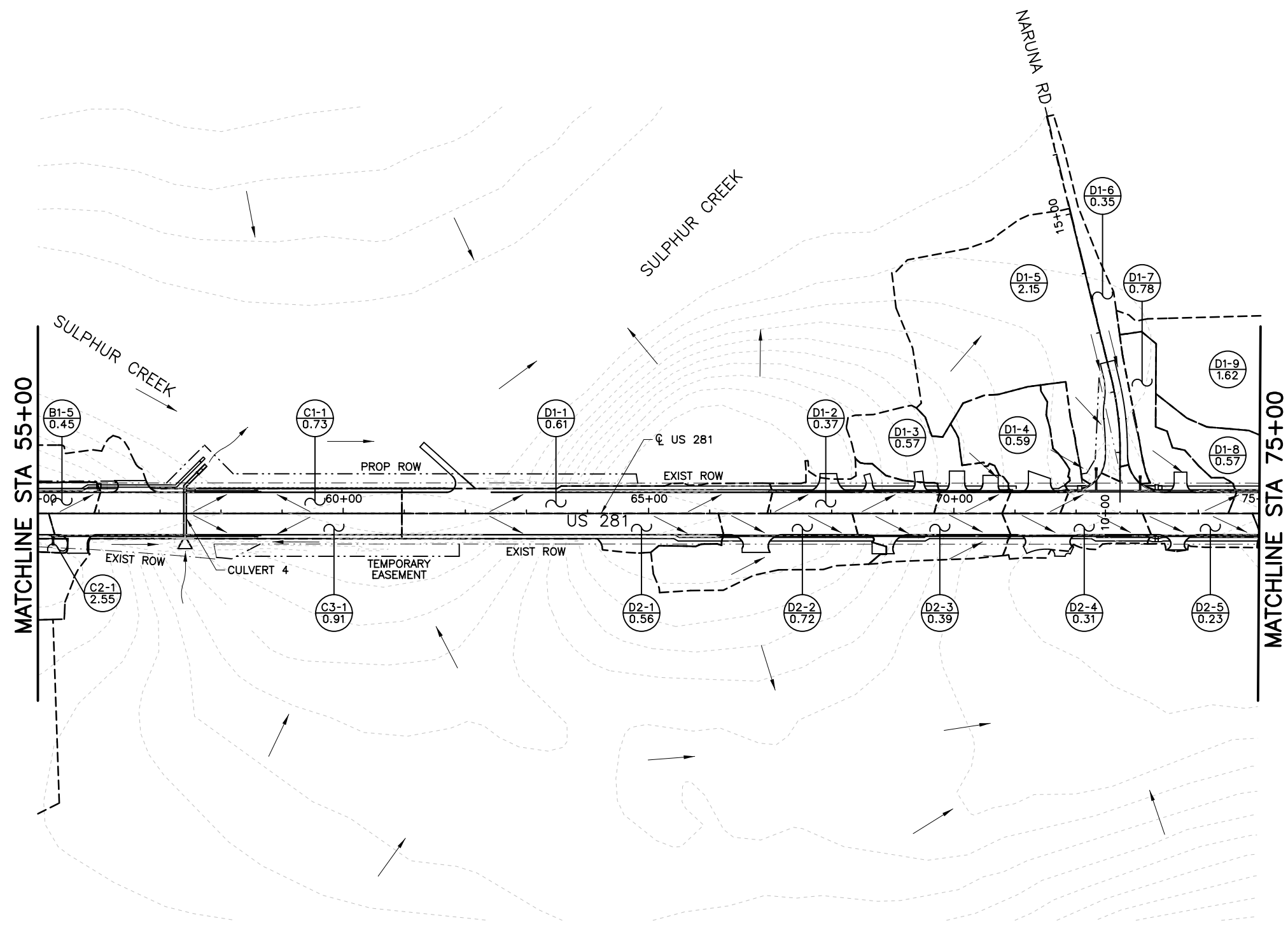
Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
Checked:	CPY	6	TEXAS		US 281
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.
Checked:	CPY	BWD	LAMPASAS	0251	06
				JOB NO.	SHEET NO.
				036	173

1/31/2023 4:44:32 PM kperry
pw:/



LEGEND

- DRAINAGE AREA NUMBER
DRAINAGE AREA (ACRE)
- DRAINAGE FLOW DIRECTION
- DRAINAGE AREA BOUNDARY



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741



US 281

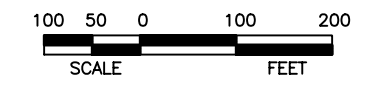
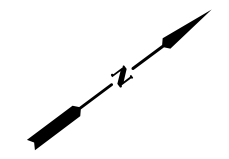
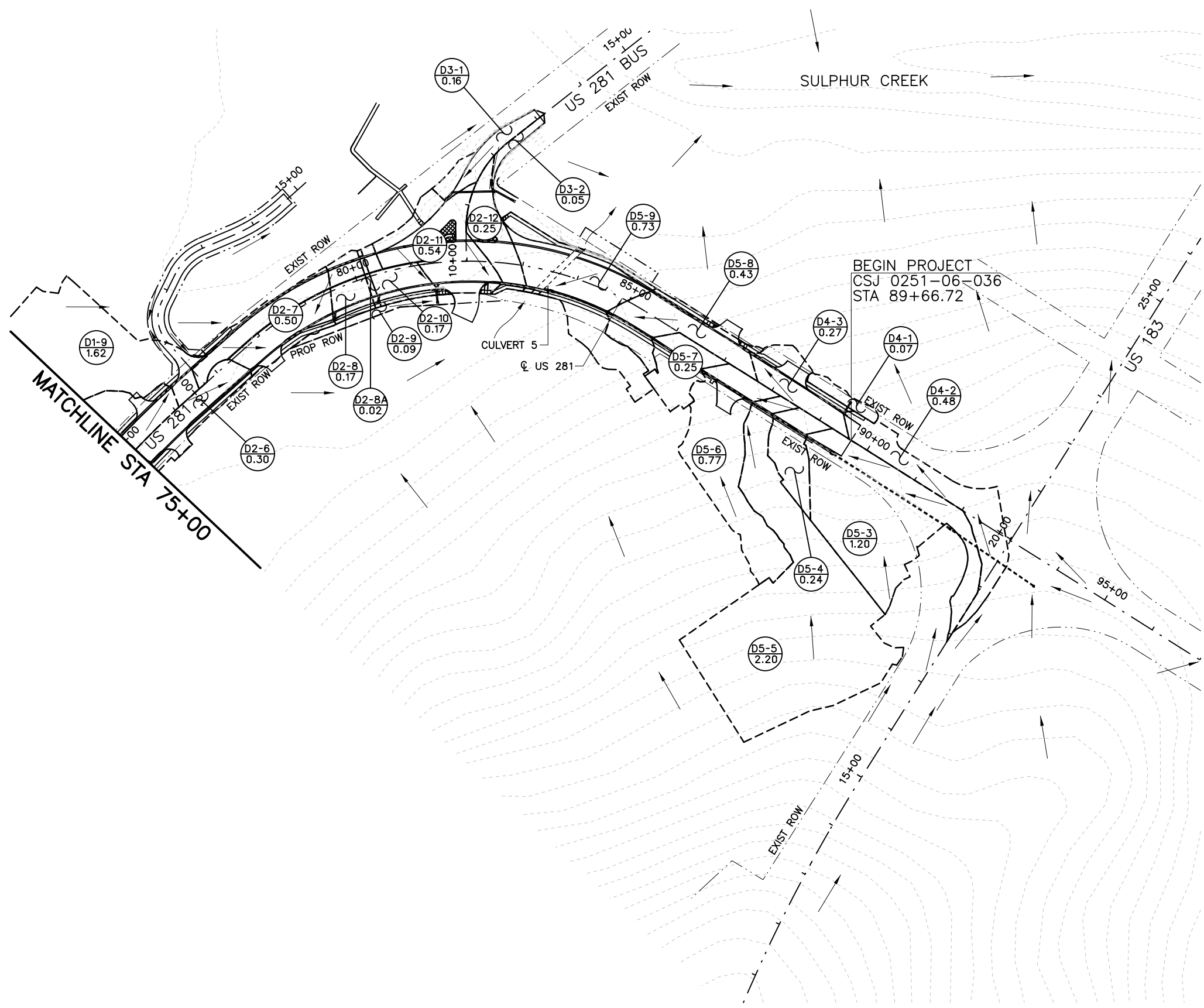
INTERIOR DRAINAGE AREA MAPS

STA 55+00 TO STA 75+00

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
Checked:	CPY	6	TEXAS		US 281
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.
Checked:	CPY	BWD	LAMPASAS	0251	06
				JOB NO.	SHEET NO.
				036	174

cpybw_ANSIB.tbl
cpypdf_ANSIB.pltcfgr
pw:/

1/31/2023 4:44:41 PM kpererry
pw:/



LEGEND

- XXXX
XX.XX DRAINAGE AREA NUMBER
DRAINAGE AREA (ACRE)
- DRAINAGE FLOW DIRECTION
- DRAINAGE AREA BOUNDARY



Kristen L. Perry

1/31/2023

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741



US 281

INTERIOR DRAINAGE AREA MAPS

STA 75+00 TO BEGIN PROJECT

Designed:	CPY	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.	0251-06-036	HIGHWAY NO.	US 281
Checked:	CPY	DIST.	LAMPASAS	COUNTY	LAMPASAS	CONTROL NO.	0251	SECTION NO.	06
Drawn:	CPY	JOB NO.	036	SHEET NO.	175				
Checked:	CPY	BWD	LAMPASAS	0251	06	036	175		

9/2/2022 9:13:33 AM rgarza
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcf
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.06 Drainage/WRS/1600493DH001-1.dgn

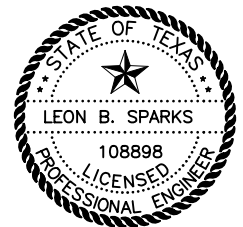
DRAINAGE AREA #	CULVERT STATION	AREA	SHEET DIST	OVERLAND DIST	CHANNELIZED DIST	OVERLAND AVG SLOPE	CHANNELIZED AVG SLOPE	TC	WEIGHTED "C"	INTENSITY (IN/HR)						Q (CFS)					
		(AC)	(FT)	(FT)	(FT)	(FT/FT)	(FT/FT)			2 YR	5 YR	10 YR	25 YR	50 YR	100 YR	2 YR	5 YR	10 YR	25 YR	50 YR	100 YR
DA-02	41+50.00	15.36	98.90	1257.16	-	0.04	-	13.49	0.32	4.1	5.1	6.0	7.2	8.1	9.0	19.7	24.7	29.0	34.8	39.2	43.8
DA-04	57+41.00	7.27	101.13	1137.11	-	0.02	-	15.22	0.47	3.9	4.8	5.7	6.8	7.7	8.6	13.2	16.6	19.4	23.4	26.4	29.5

DRAINAGE AREA #	CULVERT STATION	AREA	SHEET DIST	OVERLAND DIST	CHANNELIZE D DIST	OVERLAND AVG SLOPE	CHANNELIZE D AVG SLOPE	LAG TIME	CURVE NUMBER	100-YR 24 HR RAINFALL DEPTH	Q (CFS)											
		(AC)	(FT)	(FT)	(FT)	(FT/FT)	(FT/FT)	MIN		IN	2 YR	5 YR	10 YR	25 YR	50 YR	100 YR						
DA-01	33+66.74	1431	100	824	18222	0.032	0.011	109.57	69.00	3.58	344.5	602.7	861.8	1268.3	1612.4	2003.2						
DA-05	83+60.93	566	56	1069	12145	0.069	0.011	48.93	69.00	3.58	259.7	441.3	616.5	884.6	1101.6	1342.9						

Flow Rates were calculated using the NRCS curve number method in HEC-HMS 4.5 per the TxDOT Hydraulic Design Manual (September 2019)

NOTES:


1. QS FOR DA 02 - 04 CALCULATED USING RATIONAL METHOD.
2. QS FOR DA 01 AND 05 CALCULATED USING NRCS CN METHOD.
3. TC CALCULATED USING TR-55.
4. ATLAS 14 RAINFALL INTENSITIES USED FOR ANALYSIS.




Leon B. Sparks

9/2/2022

NO.	REVISION	BY	DATE



©2022 TEXAS REGISTERED ENGINEERING FIRM F-1741



©2022 Texas Department of Transportation
US 281

HYDROLOGIC DATA SHEET

Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. COUNTY	CONTROL NO. 0251	SECTION NO. 06	JOB NO. 036
Drawn: CPY	DIST. COUNTY	CONTROL NO. 0251	SECTION NO. 06	JOB NO. 036
Checked: CPY	BWD	LAMPASAS	0251	06 036 176

9/2/2022 9:14:07 AM roarza cpybw_ANSIB.tbl cpypdf_ANSIB.pltcfp pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.06 Drainage/WRS/1600493DHC01-1.dgn

HY-8 EXISTING CULVERT ANALYSIS - US 281 CULVERT 2

1-DES 4X17' CGMPA_US
1-4'X2'X52' BOX CULV
1-DES 4X22' CGMPA_DS

RETURN PERIOD	TOTAL Q (cfs)	CULV Q (cfs)	HW ELEV (ft)	INLET CONT	OUTLET CONT	FLOW TYPE	NORMAL (ft)	CRITICAL (ft)	OUTLET (ft)	TW Depth	OUTLET VEL	TW VEL (ft/s)	TW ELEV (ft)
2 year	18.13	18.13	1045.86	1.86	0.52	7-FF	0.74	1.10	1.85	0.44	4.13	0.92	1043.87
5 year	22.77	22.77	1046.25	2.25	0.93	7-FF	0.85	1.26	1.85	0.48	5.19	1.00	1043.91
10 year	26.64	26.64	1046.63	2.63	1.34	7-FF	0.95	1.37	1.85	0.51	6.07	1.06	1043.94
25 year	31.98	31.98	1047.26	3.26	2.27	7-FF	1.10	1.51	1.85	0.55	7.29	1.14	1043.98
50 year	36.08	36.08	1047.83	3.83	2.86	7-FF	1.21	1.59	1.85	0.57	8.22	1.19	1044.00
100 year	40.27	40.27	1048.48	4.48	3.53	7-FF	1.35	1.66	1.85	0.60	9.18	1.24	1044.03

HY-8 PROPOSED CULVERT ANALYSIS - US 281 CULVERT 2

(1)-4'X2'X83.75' SBC

RETURN PERIOD	TOTAL Q (cfs)	CULV Q (cfs)	HW ELEV (ft)	INLET CONT	OUTLET CONT	FLOW TYPE	NORMAL (ft)	CRITICAL (ft)	OUTLET (ft)	TW Depth	OUTLET VEL	TW VEL (ft/s)	TW ELEV (ft)
2 year	19.71	19.71	1047.78	1.53	0.35	1-S2n	0.66	0.91	0.68	0.21	7.30	4.78	1043.64
5 year	24.75	24.75	1048.03	1.78	0.61	1-S2n	0.77	1.06	0.79	0.23	7.82	4.97	1043.66
10 year	28.95	28.95	1048.24	1.99	0.84	1-S2n	0.86	1.18	0.88	0.24	8.18	5.25	1043.67
25 year	34.76	34.76	1048.52	2.27	1.18	5-S2n	0.97	1.33	1.01	0.25	8.63	5.58	1043.68
50 year	39.21	39.21	1048.75	2.50	1.46	5-S2n	1.06	1.44	1.10	0.26	8.91	5.78	1043.69
100 year	43.77	43.77	1049.00	2.75	1.99	5-S2n	1.14	1.55	1.19	0.27	9.19	5.88	1043.70

HY-8 EXISTING CULVERT ANALYSIS - US 281 CULVERT 4

1-30''X16' CGMP_US
1-3'X3'X57' BOX CULV
1-30''X16' CGMP_DS

RETURN PERIOD	TOTAL Q (cfs)	CULV Q (cfs)	HW ELEV (ft)	INLET CONT	OUTLET CONT	FLOW TYPE	NORMAL (ft)	CRITICAL (ft)	OUTLET (ft)	TW Depth	OUTLET VEL	TW VEL (ft/s)	TW ELEV (ft)
2 year	12.48	12.48	1035.06	1.78	2.06	7-H2c	0.82	1.19	0.71	9.89	10.85	0.00	1029.89
5 year	15.68	15.68	1035.35	2.07	2.35	7-H2c	0.92	1.34	0.80	9.89	11.50	0.00	1029.89
10 year	18.36	18.36	1035.59	2.32	2.59	7-H2c	1.01	1.45	0.88	9.89	11.83	0.00	1029.89
25 year	22.07	22.07	1035.90	2.67	2.90	7-H2c	1.11	1.60	0.99	9.89	12.25	0.00	1029.89
50 year	24.93	24.93	1036.15	2.97	3.15	7-H2c	1.19	1.70	1.06	9.89	12.59	0.00	1029.89
100 year	27.86	27.86	1036.40	3.30	3.40	7-H2c	1.27	1.80	1.14	9.89	12.85	0.00	1029.89

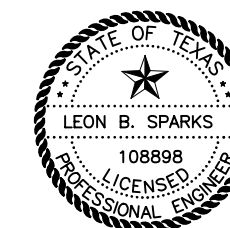
HY-8 PROPOSED CULVERT ANALYSIS - US 281 CULVERT 4

(1)-4'X3'X84' SBC

RETURN PERIOD	TOTAL Q (cfs)	CULV Q (cfs)	HW ELEV (ft)	INLET CONT	OUTLET CONT	FLOW TYPE	NORMAL (ft)	CRITICAL (ft)	OUTLET (ft)	TW Depth	OUTLET VEL	TW VEL (ft/s)	TW ELEV (ft)
2 year	13.20	13.20	1035.49	1.19	0.06	1-S2n	0.49	0.70	0.53	9.89	6.25	0.00	1029.89
5 year	16.59	16.59	1035.68	1.38	0.08	1-S2n	0.57	0.81	0.61	9.89	6.76	0.00	1029.89
10 year	19.43	19.43	1035.83	1.53	0.10	1-S2n	0.64	0.90	0.68	9.89	7.13	0.00	1029.89
25 year	23.35	23.35	1036.03	1.73	0.14	1-S2n	0.72	1.02	0.77	9.89	7.59	0.00	1029.89
50 year	26.37	26.37	1036.17	1.87	0.17	1-S2n	0.78	1.11	0.84	9.89	7.89	0.00	1029.89
100 year	29.48	29.48	1036.31	2.01	0.20	1-S2n	0.85	1.19	-	9.89	0.00	0.00	1029.89

NOTES:

1. CULVERT ANALYSES WITH A DEFINED TAILWATER ELEVATION DO NOT HAVE A CALCULATED TAILWATER VELOCITY.

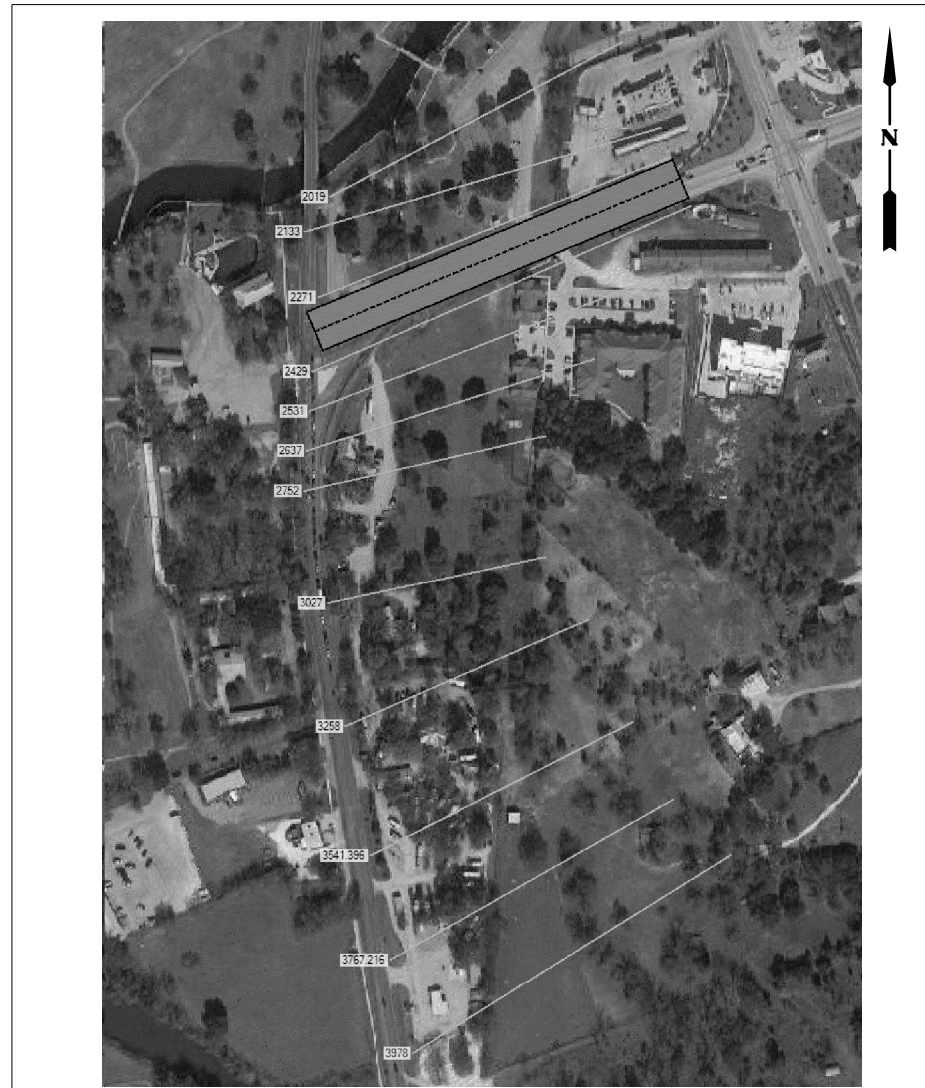


Leon B. Sparks

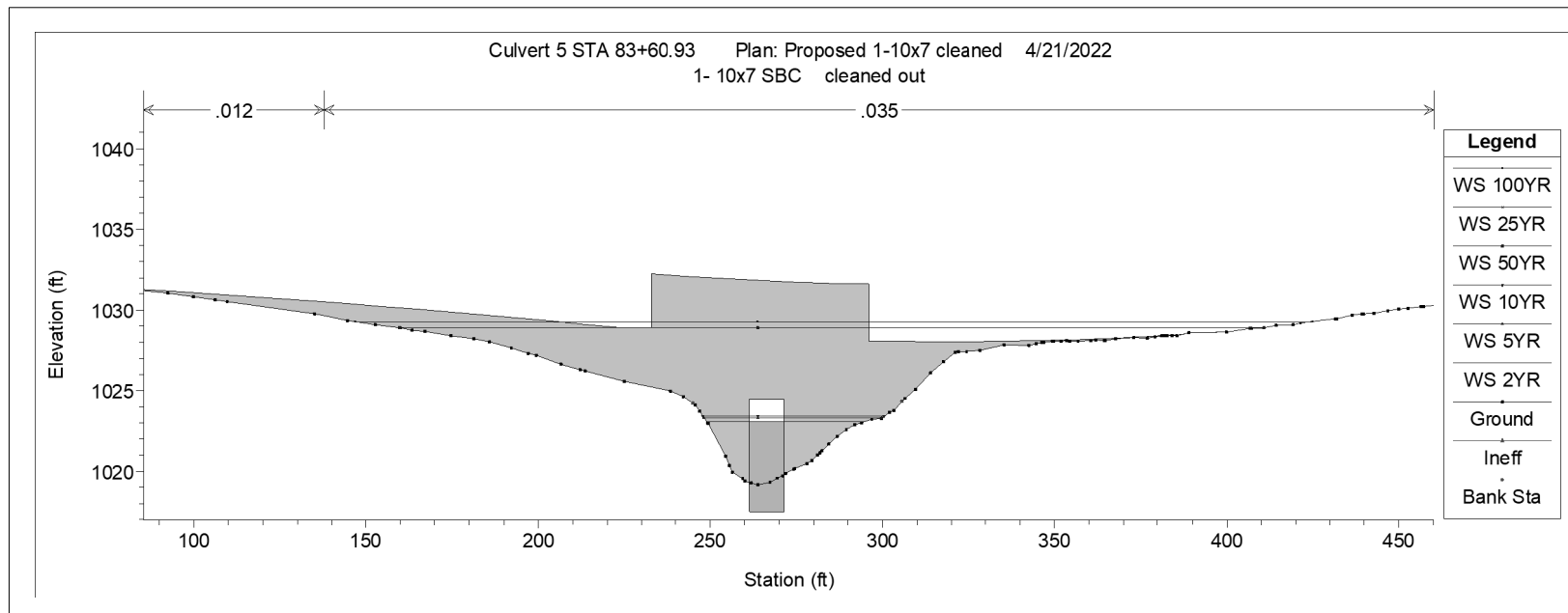
9/2/2022

NO.	REVISION	BY	DATE
 ©2022 TEXAS REGISTERED ENGINEERING FIRM F-1741 ©2022 Texas Department of Transportation US 281 <h3 style="text-align: center;">CULVERTS 2-4 HYDRAULIC DATA</h3>			
Designed:	CPY	FED. RD. DIV. NO. 6	STATE TEXAS
Checked:	CPY	FEDERAL AID PROJECT NO. US 281	
Drawn:	CPY	DIST. COUNTY	CONTROL NO. SECTION
Checked:	CPY	BWD LAMPASAS	0251 06 036 178

9/2/2022 9:14:17 AM rgarza
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.06 Drainage/WRS/1600493HDS_Culvert_05.dgn



HEC-RAS CROSS SECTION LOCATION



HEC-RAS CROSS SECTION PLOT
UPSTREAM CROSS SECTION

25-YR HYDRAULIC RESULTS

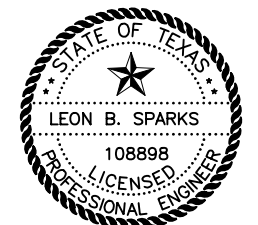
RIVER STATION	EXISTING			PROPOSED		
	Q (cfs)	VEL (fps)	WSEL (ft)	Q (cfs)	VEL (fps)	WSEL (ft)
3978	883.4	5.82	1030.43	884.6	5.83	1030.42
3767	883.4	3.98	1029.44	884.6	3.41	1029.46
3541	883.4	2.09	1029.21	884.6	2.06	1029.24
3258	883.4	1.34	1029.07	884.6	1.32	1029.11
3027	883.4	2.37	1028.89	884.6	2.33	1028.93
2752	883.4	1.59	1028.83	884.6	1.45	1028.88
2637	883.4	0.90	1028.82	884.6	0.93	1028.87
2531	883.4	0.94	1028.80	884.6	1.00	1028.85
2429	883.4	1.65	1028.78	884.6	1.63	1028.83
2350	Culvert			Culvert		
2271	883.4	2.63	1023.86	884.6	2.63	1023.86
2133	883.4	2.19	1023.86	884.6	2.19	1023.86
2019	883.4	3.00	1023.57	884.6	3.00	1023.57

100-YR HYDRAULIC RESULTS

RIVER STATION	EXISTING			PROPOSED		
	Q (cfs)	VEL (fps)	WSEL (ft)	Q (cfs)	VEL (fps)	WSEL (ft)
3978	1341.7	6.45	1030.77	1342.9	6.41	1030.78
3767	1341.7	4.01	1030.03	1342.9	3.31	1030.04
3541	1341.7	2.50	1029.80	1342.9	2.50	1029.81
3258	1341.7	1.61	1029.65	1342.9	1.61	1029.66
3027	1341.7	2.87	1029.43	1342.9	2.86	1029.44
2752	1341.7	1.99	1029.35	1342.9	1.85	1029.36
2637	1341.7	1.11	1029.34	1342.9	1.16	1029.35
2531	1341.7	1.16	1029.32	1342.9	1.24	1029.32
2429	1341.7	2.22	1029.27	1342.9	2.22	1029.28
2350	Culvert			Culvert		
2271	1341.7	3.59	1024.22	1342.9	3.59	1024.23
2133	1341.7	3.07	1024.22	1342.9	3.08	1024.22
2019	1341.7	3.43	1023.84	1342.9	3.43	1023.84

NOTES:

- HEC-RAS VERSION 6.2 WAS USED FOR THE CULVERT ANALYSIS. NORMAL DEPTH WITH SLOPE S = 0.003 FT/FT WAS USED AS THE DOWN STREAM BOUNDARY CONDITION FOR BOTH EXISTING AND PROPOSED CONDITIONS.
- DRAINAGE AREAS WERE DELINEATED USING 2014 LIDAR (LIGHT DETECTION AND RANGING) DATA FROM THE BANDERA & LAMPASAS COUNTIES.
- PEAK FLOWS WERE CALCULATED USING THE NRCS HYDROGRAPH METHOD IN HEC-HMS 4.9 PER TXDOT'S HYDRAULIC DESIGN MANUAL (JANUARY 2022).
- THE EXISTING AND PROPOSED CULVERTS HAVE A 10-YR AND 25-YR LEVEL OF SERVICE, RESPECTIVELY.
- THE PROJECT LOCATION IS IN A ZONE A SPECIAL FLOOD HAZARD AREA PER FEMA FIRM 4804300005b, EFFECTIVE DATE: JUNE 15, 1982.
- CONTACT WITH THE FLOODPLAIN ADMINISTRATOR FOR LAMPASAS COUNTY, WAYNE BOULTINGHOUSE, WAS MADE ON 12/7/20.



Leon B. Sparks /2/2022

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741



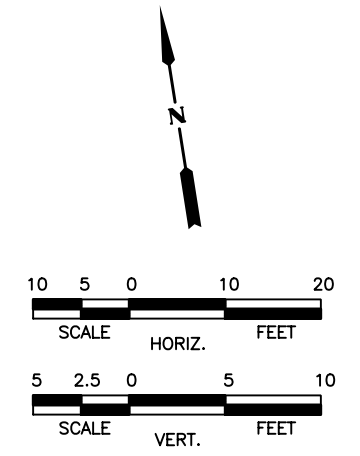
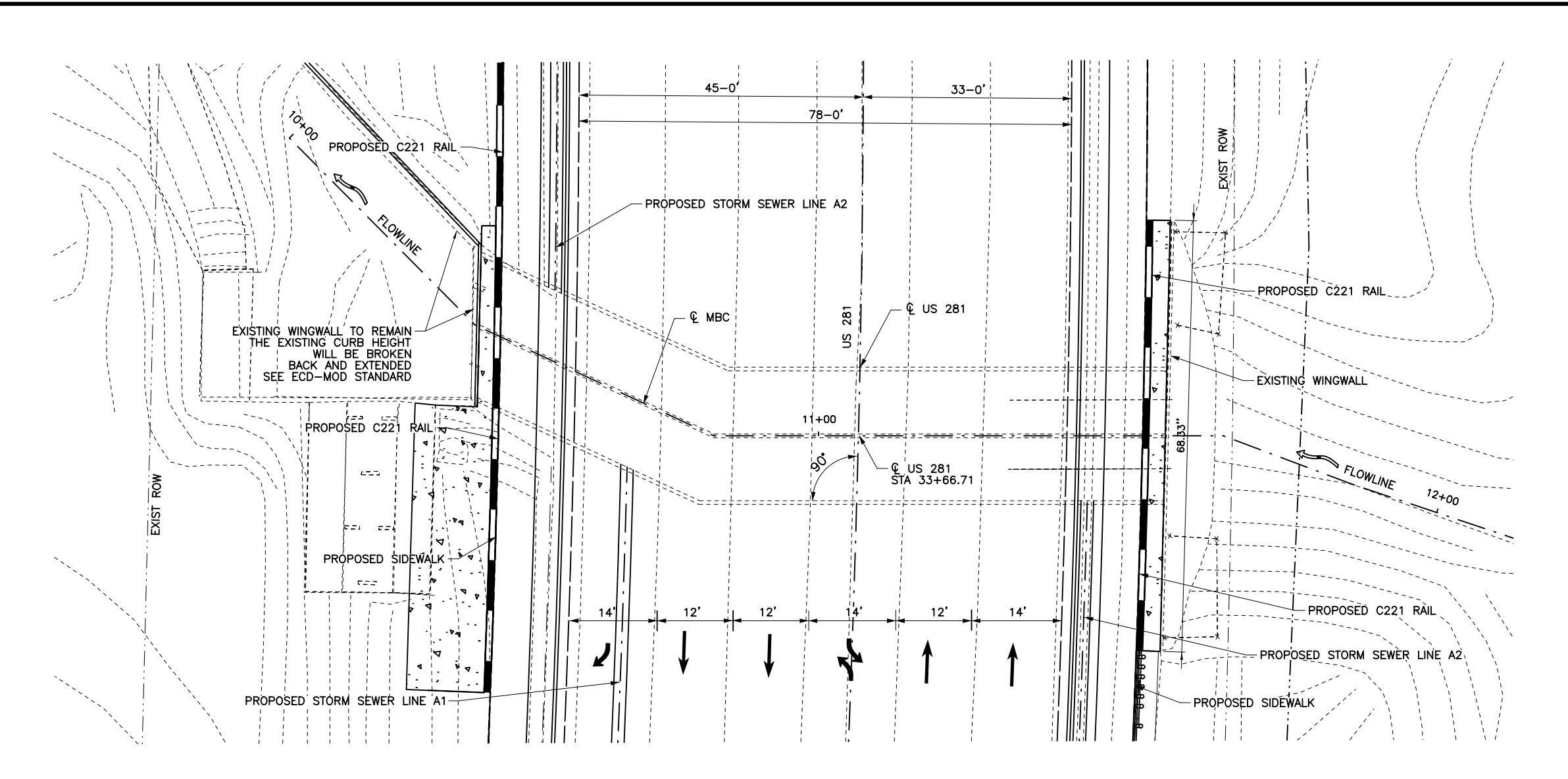
US 281

HYDRAULIC DATA SHEET
CULVERT 5

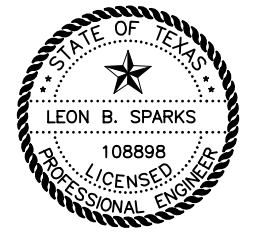
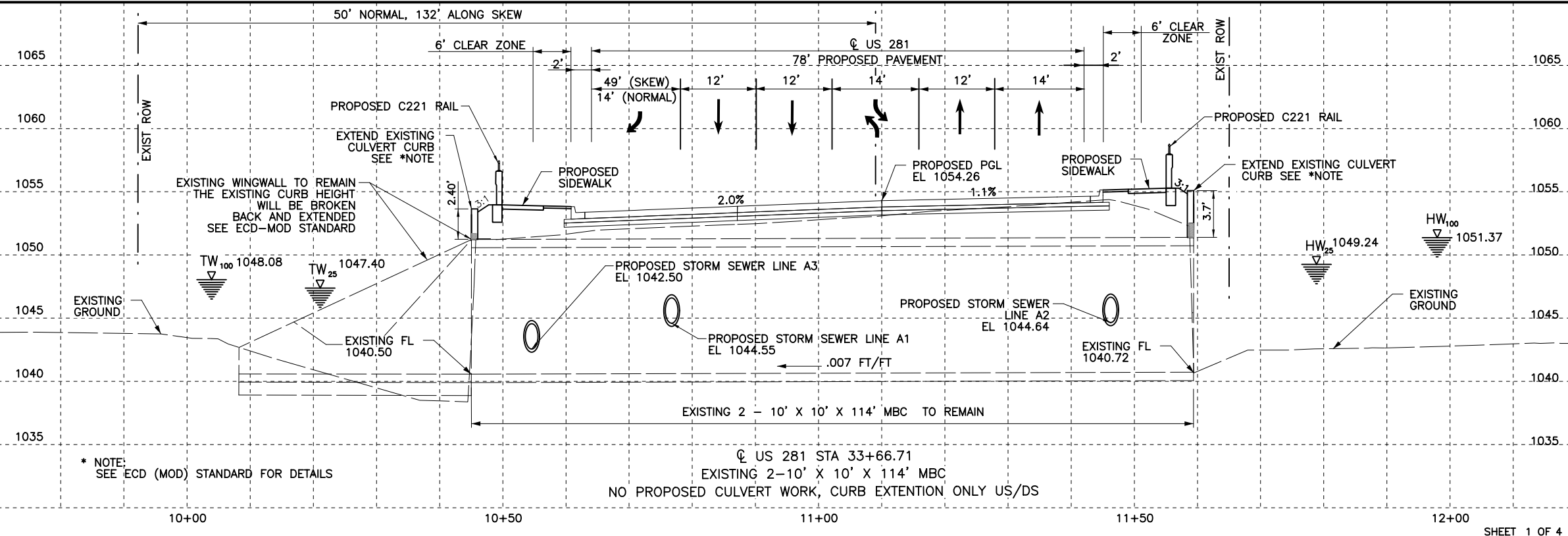
STA. 83+60.93

Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST.	COUNTY	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Checked: CPY			JOB NO. 036	SHEET NO. 179

cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcf
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.06 Drainage/49304DRculv01.dgn
 9/2/2022 9:14:41 AM rgarza



- NOTE:
1. TOPOGRAPHIC SURVEY DOES NOT SHOW POSITIVE D/S DRAINAGE FOR EXISTING CONDITIONS
 2. EXISTING NBI No. 231410025106030



Leon B. Sparks 9/2/2022

NO.	REVISION	BY	DATE

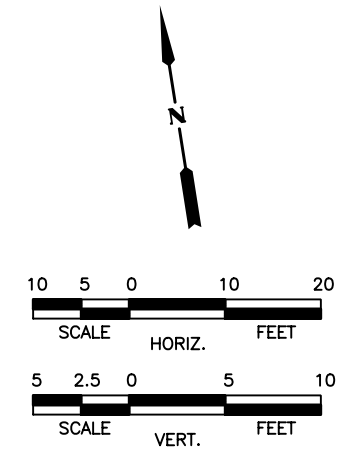
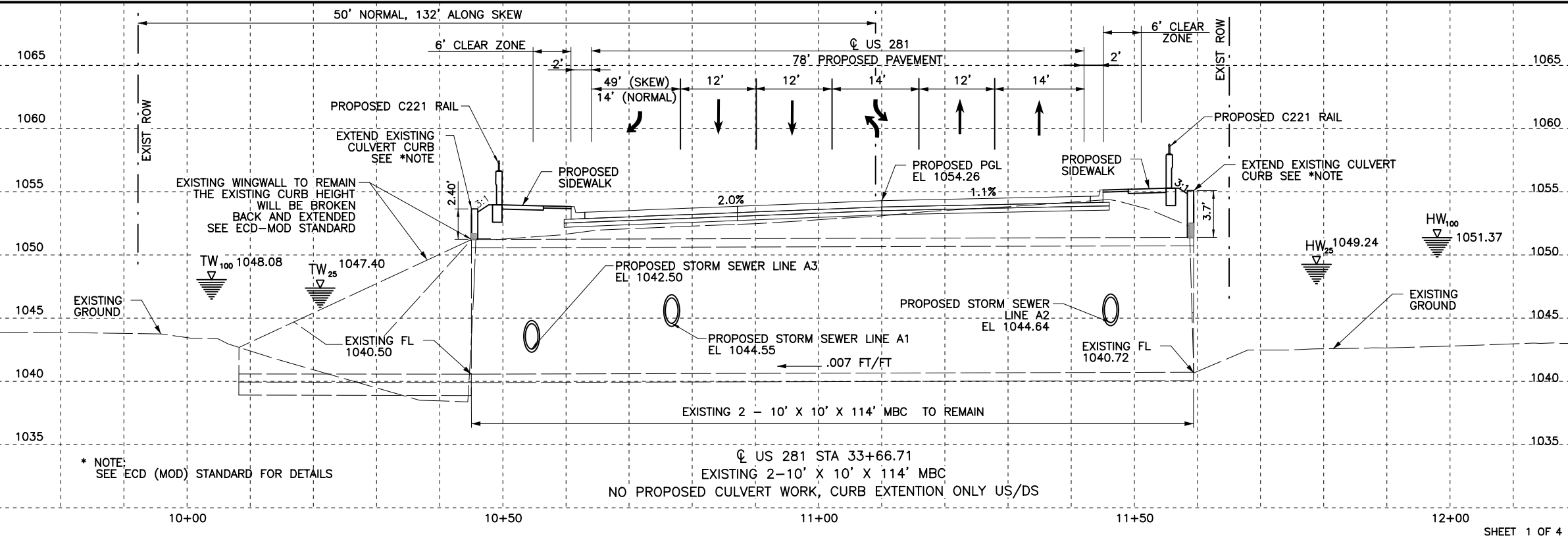
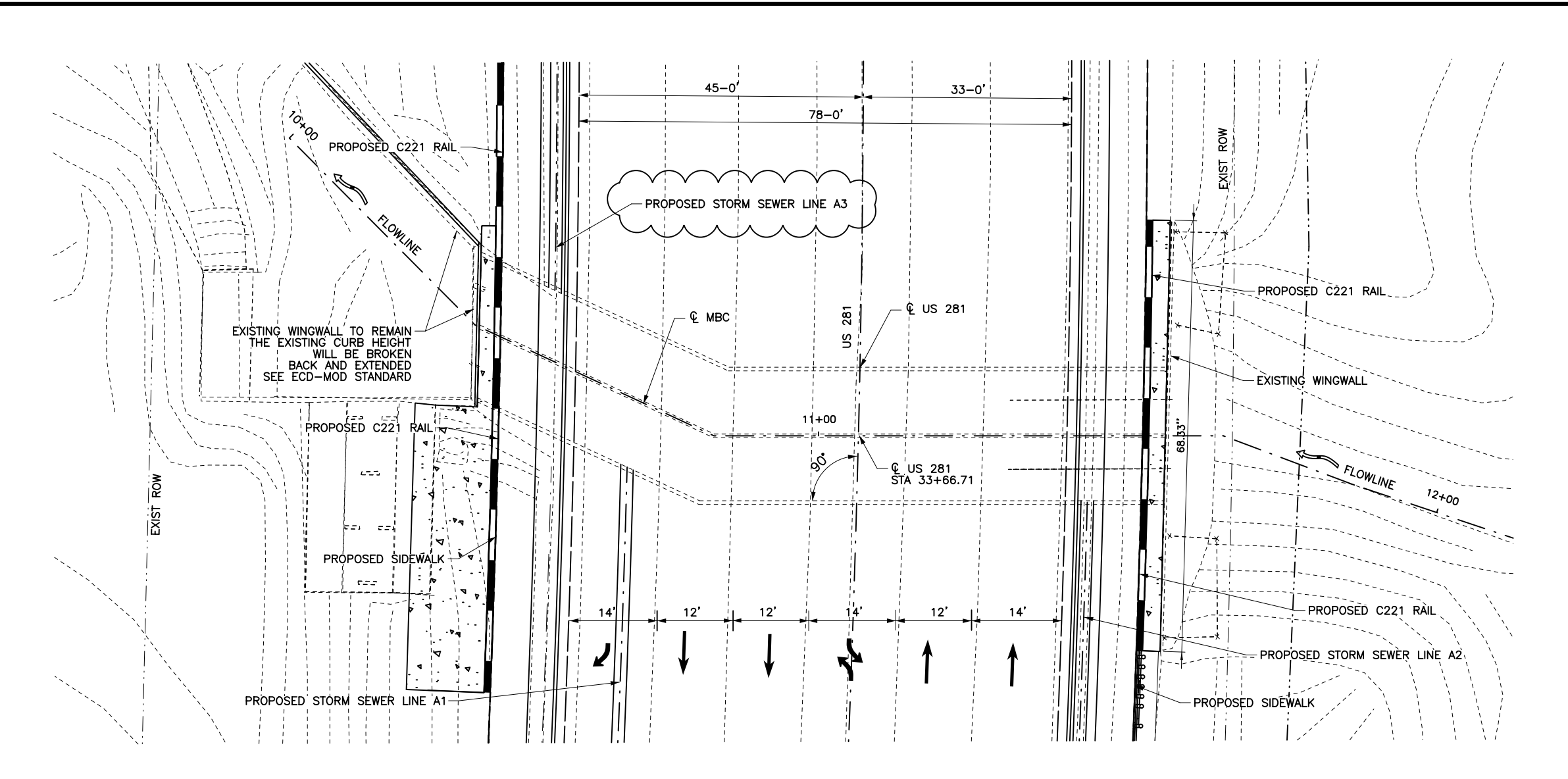


©2022 Texas Department of Transportation

US 281
 BRIDGE CLASS CULVERT LAYOUT
 STRUCTURE #1
 STA 33+66.71

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
Checked:	CPY	6	TEXAS		US 281
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.
Checked:	CPY	BWD	LAMPASAS	0251	06
					JOB NO.
					036
					SHEET NO.
					184

cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.06 Drainage/49304DRculv01.dgn
 2/24/2023 10:08:35 AM kperry



- NOTE:
1. TOPOGRAPHIC SURVEY DOES NOT SHOW POSITIVE D/S DRAINAGE FOR EXISTING CONDITIONS
 2. EXISTING NBI No. 231410025106030

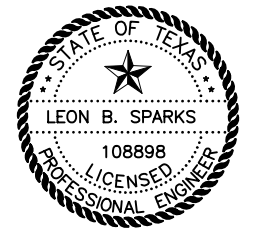
THE SEAL APPEARING ON THIS DOCUMENT WAS ORIGINALLY AUTHORIZED BY LEON B. SPARKS ON SEPTEMBER 2, 2022. THAT DOCUMENT IS HEREBY REVISED AS INDICATED. ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

CORRECTED CALLOUT TO PROPOSED STORM SEWER LINE A3 TO SHOW A3 INSTEAD OF A2.



2/24/2023

Kristen L. Perry



NO.	REVISION	BY	DATE

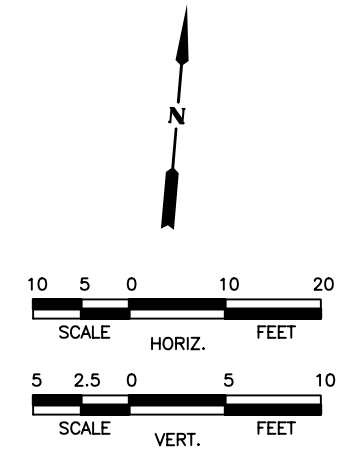
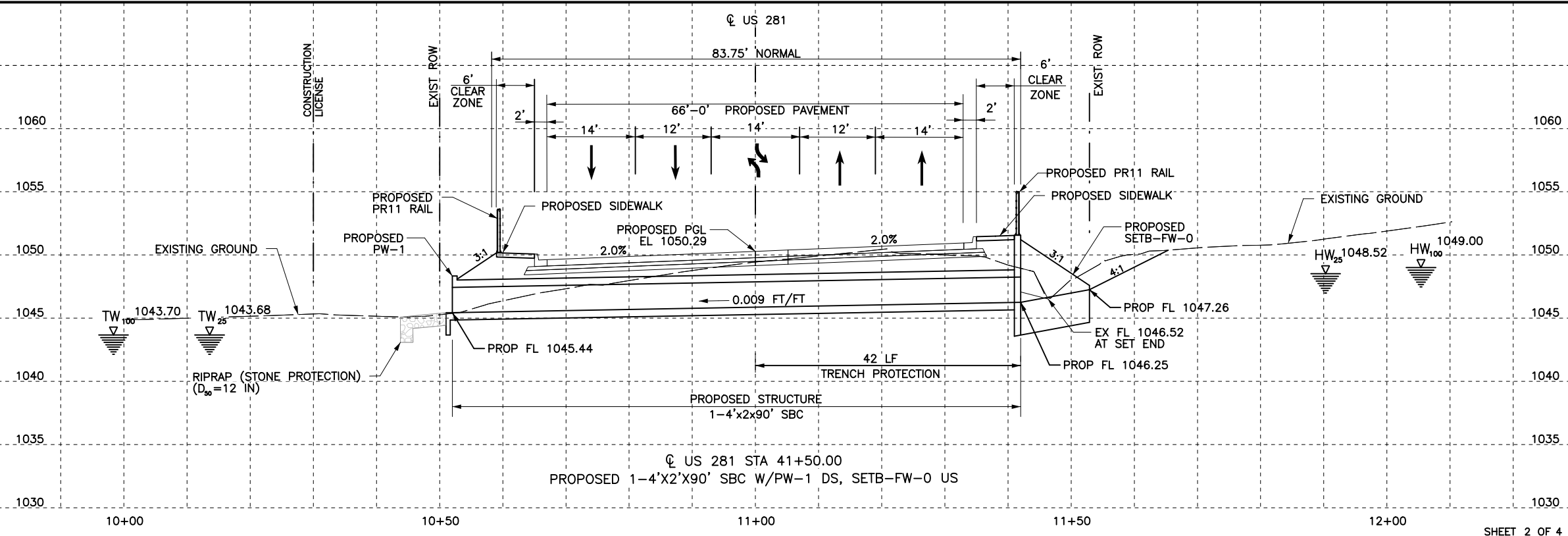
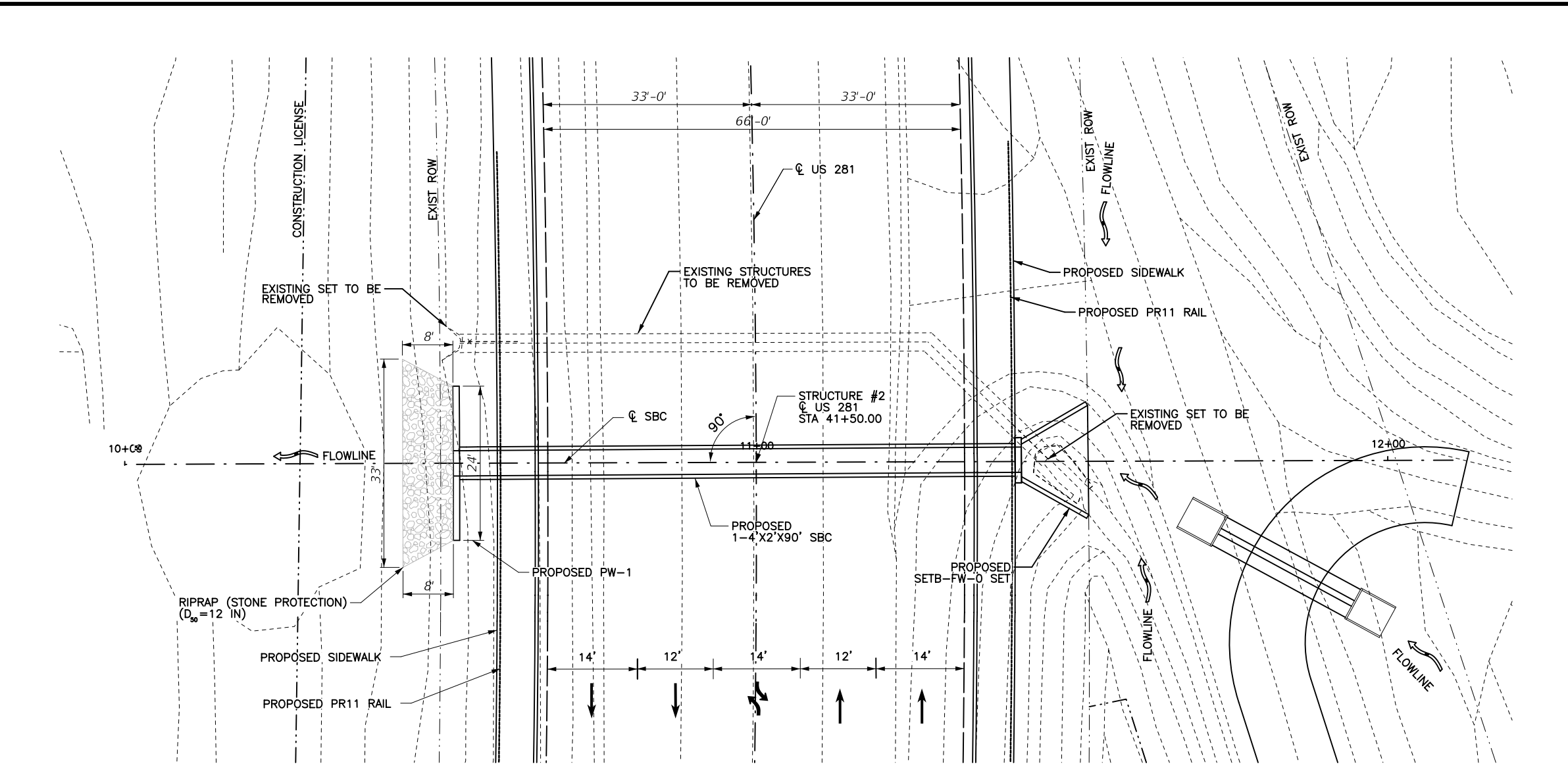


©2023 Texas Department of Transportation

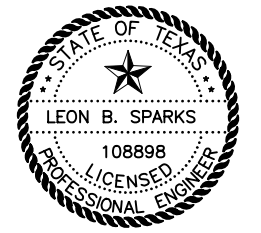
US 281
**BRIDGE CLASS CULVERT LAYOUT
 STRUCTURE #1
 STA 33+66.71**

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
Checked:	CPY	6	TEXAS		US 281
Drawn:	CPY	DIST.	COUNTY	CONTROL SECTION	JOB NO.
Checked:	CPY	BWD	LAMPASAS	0251 06	036
					SHEET NO.
					184

9/2/2022 9:14:52 AM rgarza cpybw_ANSIB.tbl cpybw_ANSIB.pltcf gw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.06 Drainage/49304DRculv02.dgn



- NOTE:
1. TOPOGRAPHIC SURVEY DOES NOT SHOW POSITIVE D/S DRAINAGE FOR EXISTING CONDITIONS
 2. TEMPORARY CONNECTION IS REQUIRED FOR PHASED CONSTRUCTION.



Leon B. Sparks /2/2022

NO.	REVISION	BY	DATE

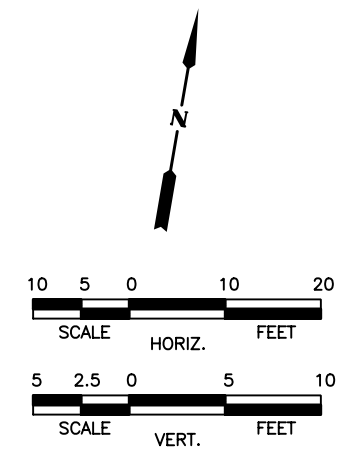
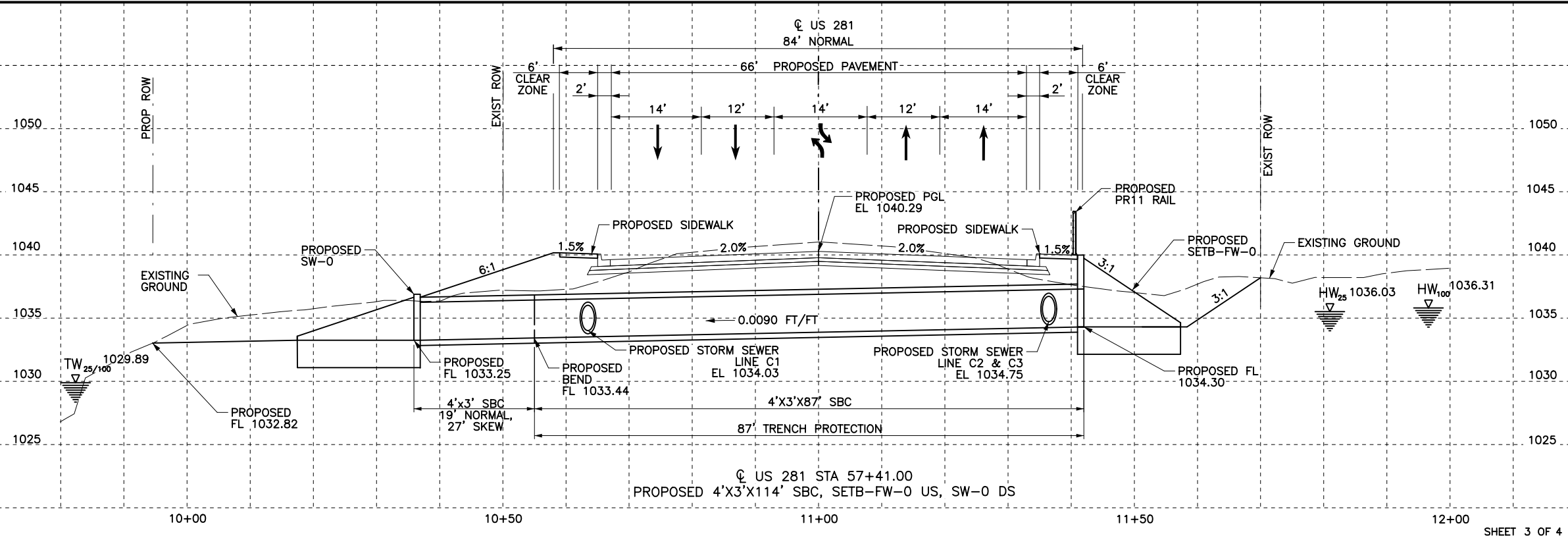
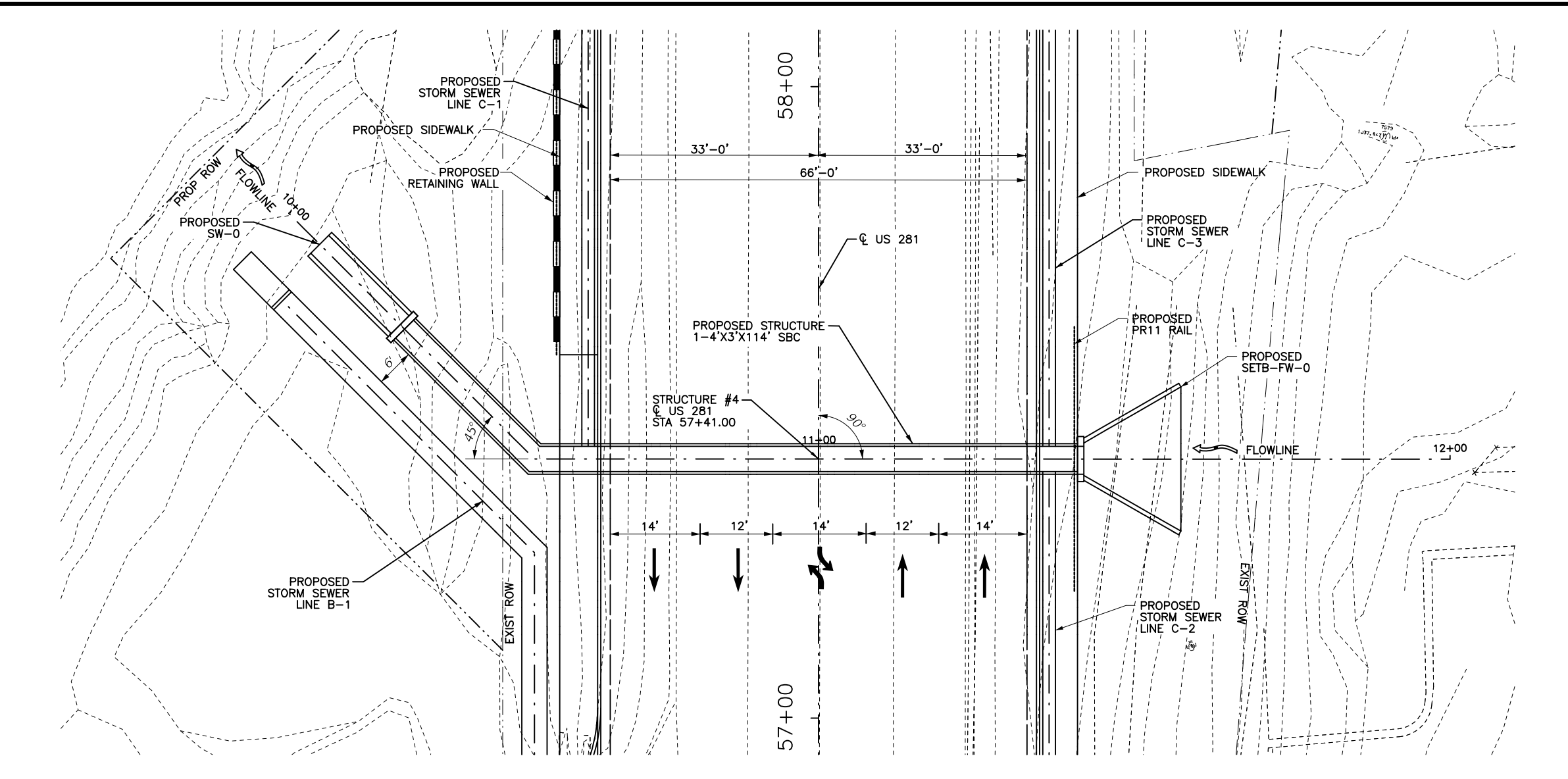


©2022 Texas Department of Transportation

US 281
**CULVERT LAYOUT
 STRUCTURE #2
 STA 41+50.00**

Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 185		

9/2/2022 9:15:10 AM rgarza cpybw_ANSIB.tbl cpypdf_ANSIB.pltcfgrw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.06 Drainage/49304DRculv04.dgn



- NOTE:
1. TOPOGRAPHIC SURVEY DOES NOT SHOW POSITIVE D/S DRAINAGE FOR EXISTING CONDITIONS
 2. TEMPORARY CONNECTION IS REQUIRED FOR PHASED CONSTRUCTION.



Leon B. Sparks 9/2/2022

NO.	REVISION	BY	DATE

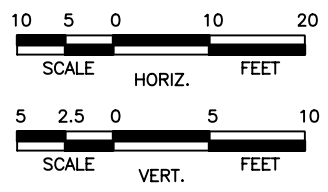
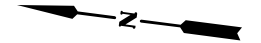
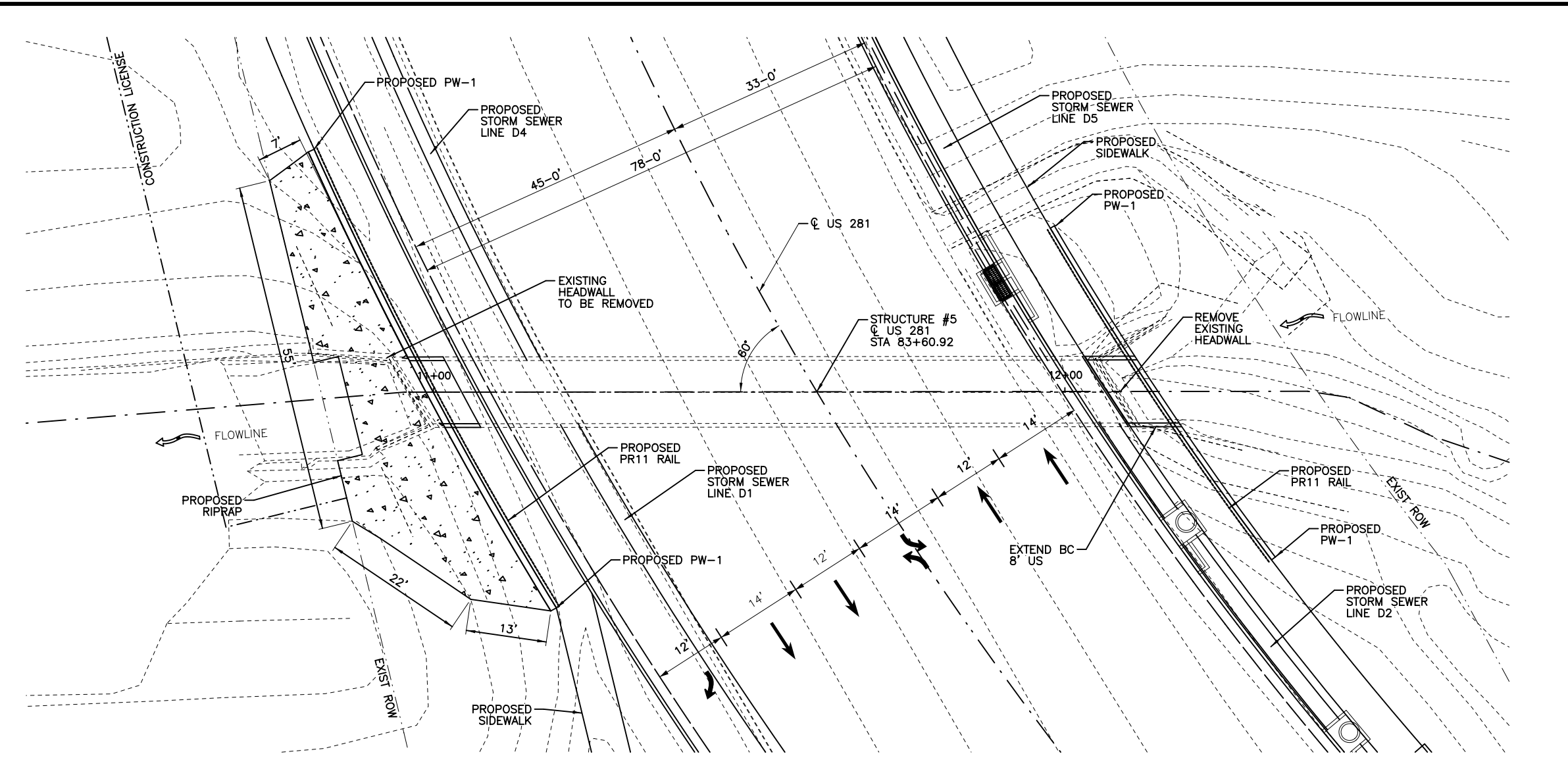


©2022 Texas Department of Transportation

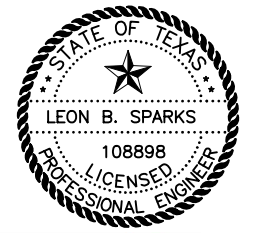
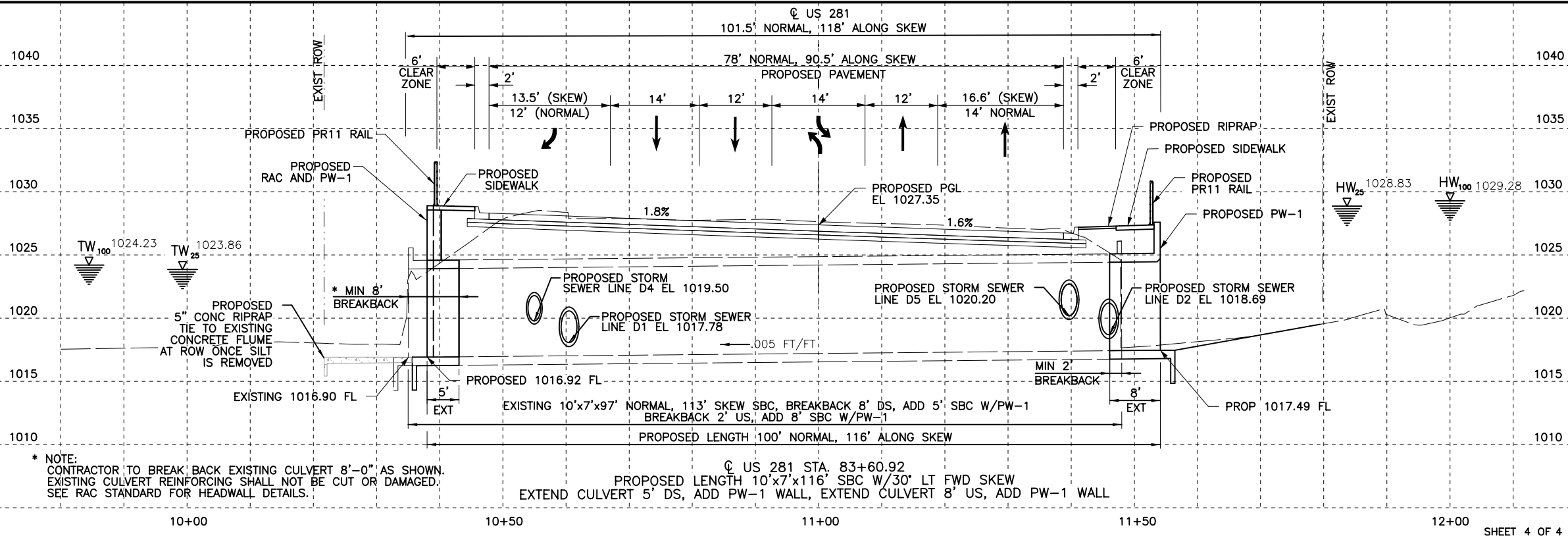
US 281
**CULVERT LAYOUT
 STRUCTURE #4
 STA 57+41.00**

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
Checked:	CPY	6	TEXAS		US 281
Drawn:	CPY	DIST.	COUNTY	CONTROL SECTION	JOB NO.
Checked:	CPY	BWD	LAMPASAS	0251 06	036
					SHEET NO.
					186

9/2/2022 9:15:17 AM rgarza
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.06 Drainage/49304DRculv05.dgn



NOTE:
 1. TOPOGRAPHIC SURVEY DOES NOT SHOW POSITIVE D/S DRAINAGE FOR EXISTING CONDITIONS



Leon B. Sparks 9/2/2022

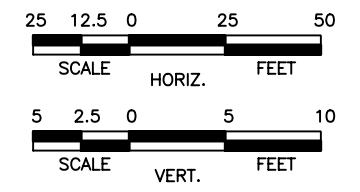
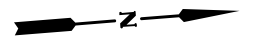
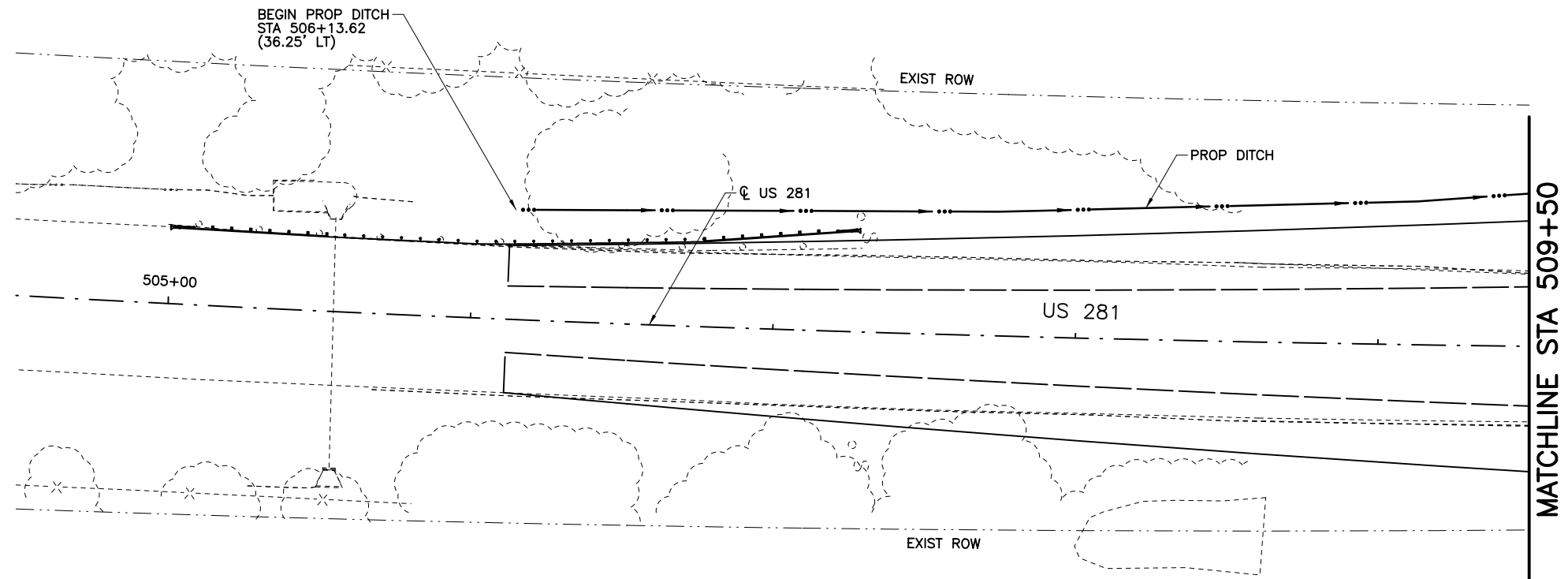
NO.	REVISION	BY	DATE



©2022 Texas Department of Transportation

US 281
CULVERT LAYOUT
STRUCTURE #5
STA 83+60.92

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.	
Checked:	CPY	6	TEXAS		US 281	
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.	
Checked:	CPY	BWD	LAMPASAS	0251	06	JOB NO. 036 SHEET NO. 187



LEGEND

- EXISTING DITCH
- PROPOSED DITCH

NOTES:

1. ALL STATIONS AND OFFSETS ARE FROM CL US 281 UNLESS NOTED OTHERWISE.
2. ALL LOCATIONS AND ELEVATIONS FOR CURB INLETS ARE SHOWN TO THE TOP FACE OF CURB.
3. ALL LOCATIONS FOR DITCH INLETS ARE SHOWN TO CENTER POINT OF INLET UNLESS NOTED OTHERWISE.
4. REFERENCE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL INFORMATION.
5. REFERENCE CULVERT SHEETS FOR ADDITIONAL INFORMATION.
6. REFERENCE DRAINAGE PROFILE SHEETS FOR ADDITIONAL LINE AND LATERAL INFORMATION.
7. REFERENCE CROSS SECTIONS FOR PROPOSED DITCH LOCATIONS.
8. GEOPAK DRAINAGE WAS USED FOR STORM SEWER COMPUTATIONS.
9. ALL PIPE SHALL BE CLASS III UNLESS NOTED OTHERWISE.
10. CONTRACTOR TO VERIFY LOCATIONS OF UTILITIES PRIOR TO LAYING STORMSEWER OR DITCH GRADING.



Kristen L. Perry

1/31/2023

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741



US 281

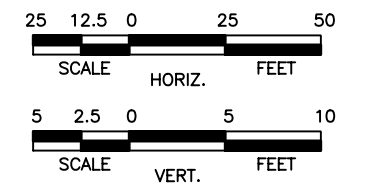
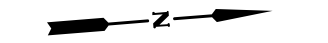
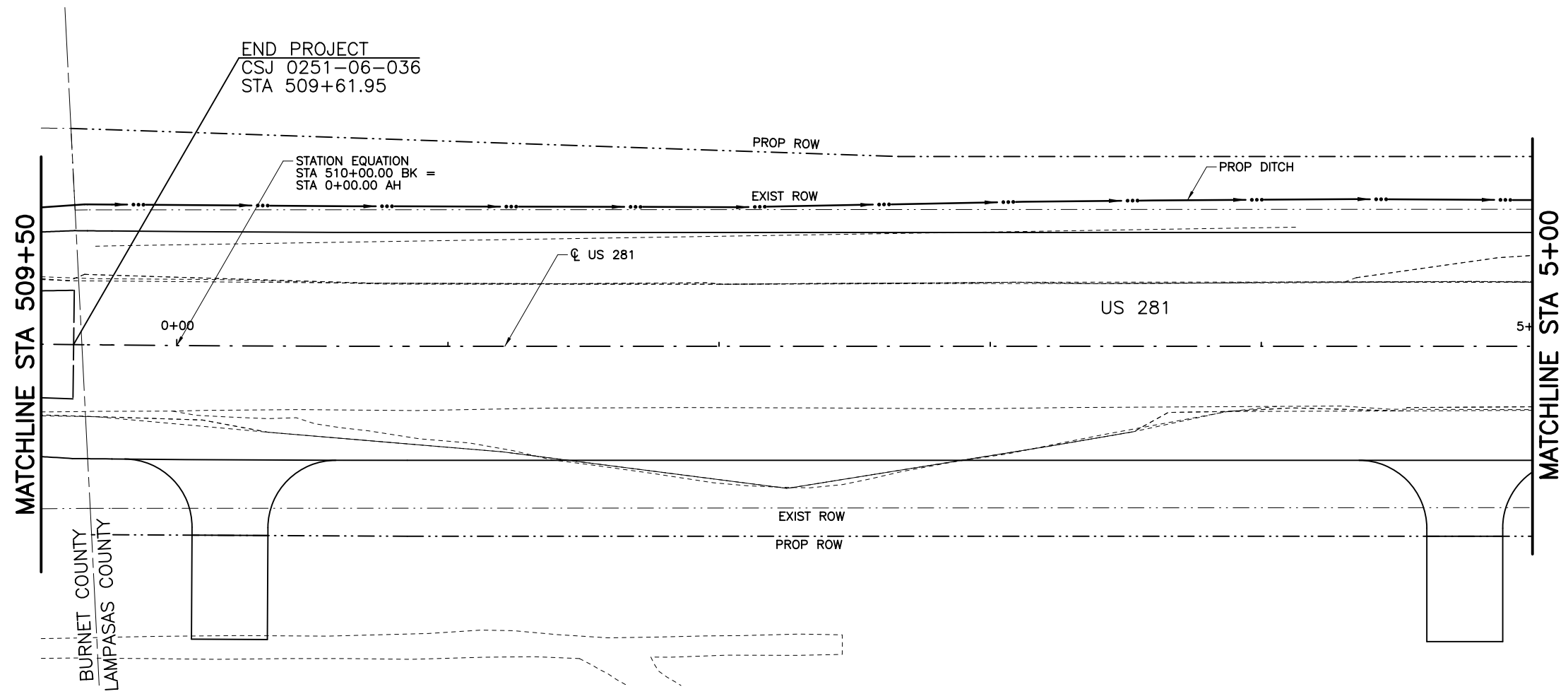
DRAINAGE PLAN & PROFILE

END PROJECT TO STA 509+50

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
Checked:	CPY	6	TEXAS		US 281
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.
Checked:	CPY	BWD	LAMPASAS	0251	06
					JOB NO.
					036
					SHEET NO.
					188

cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/

1/31/2023 4:45:20 PM kperry
 pw:/



LEGEND

- EXISTING DITCH
- PROPOSED DITCH

NOTES:

1. ALL STATIONS AND OFFSETS ARE FROM \odot US 281 UNLESS NOTED OTHERWISE.
2. ALL LOCATIONS AND ELEVATIONS FOR CURB INLETS ARE SHOWN TO THE TOP FACE OF CURB.
3. ALL LOCATIONS FOR DITCH INLETS ARE SHOWN TO CENTER POINT OF INLET UNLESS NOTED OTHERWISE.
4. REFERENCE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL INFORMATION.
5. REFERENCE CULVERT SHEETS FOR ADDITIONAL INFORMATION.
6. REFERENCE DRAINAGE PROFILE SHEETS FOR ADDITIONAL LINE AND LATERAL INFORMATION.
7. REFERENCE CROSS SECTIONS FOR PROPOSED DITCH LOCATIONS.
8. GEOPAK DRAINAGE WAS USED FOR STORM SEWER COMPUTATIONS.
9. ALL PIPE SHALL BE CLASS III UNLESS NOTED OTHERWISE.
10. CONTRACTOR TO VERIFY LOCATIONS OF UTILITIES PRIOR TO LAYING STORMSEWER OR DITCH GRADING.



Kristen L. Perry

1/31/2023

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741



US 281
DRAINAGE PLAN & PROFILE

STA 509+50 TO STA 5+00

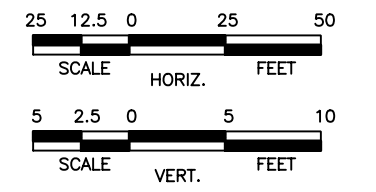
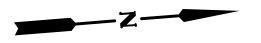
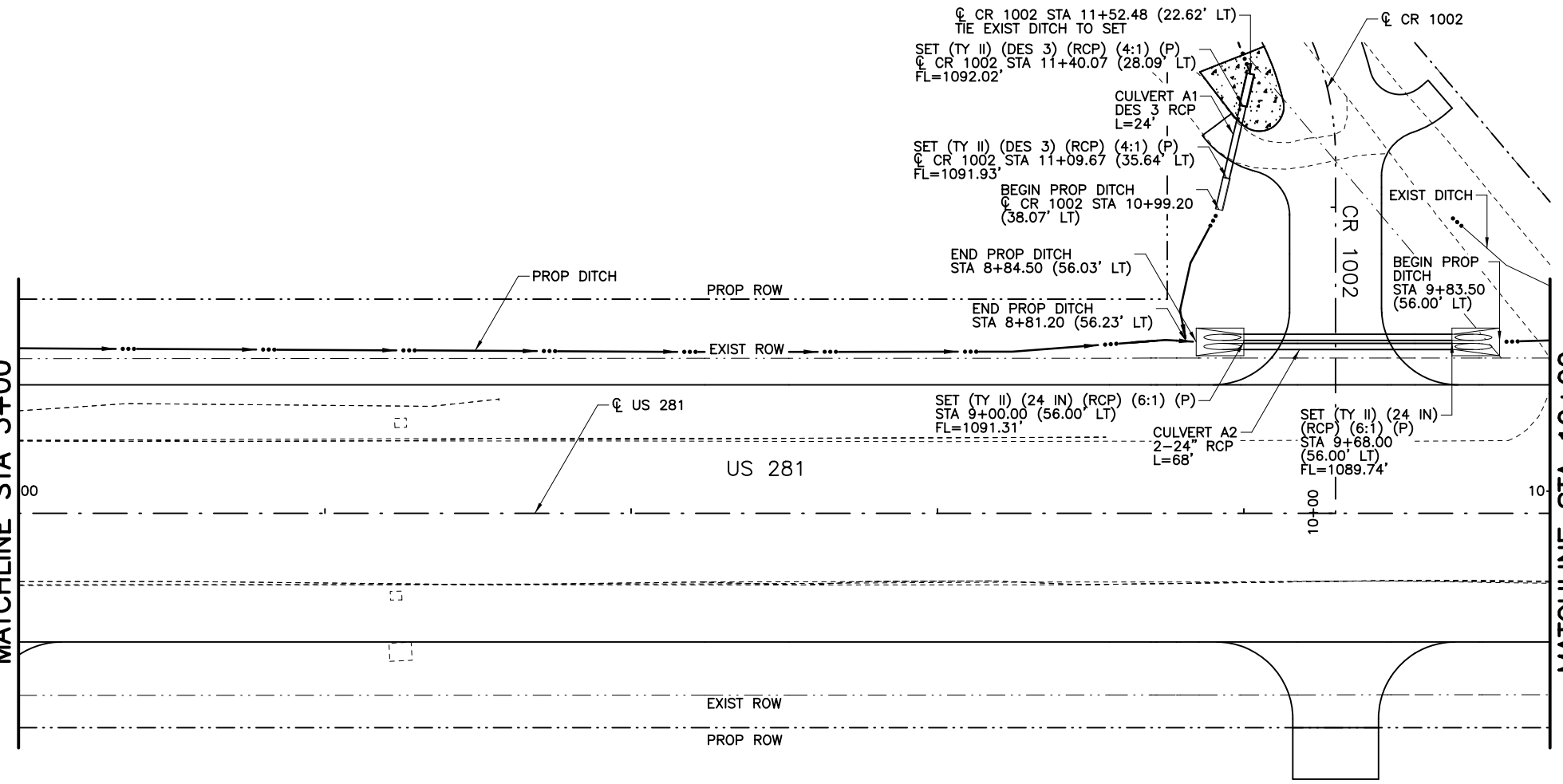
Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
Checked:	CPY	6	TEXAS		US 281
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.
Checked:	CPY	BWD	LAMPASAS	0251	06
					JOB NO.
					036
					SHEET NO.
					189

cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/

1/31/2023 4:45:25 PM kperry
 pw:/

MATCHLINE STA 5+00

MATCHLINE STA 10+00



LEGEND

- EXISTING DITCH
- PROPOSED DITCH

NOTES:

- ALL STATIONS AND OFFSETS ARE FROM CL US 281 UNLESS NOTED OTHERWISE.
- ALL LOCATIONS AND ELEVATIONS FOR CURB INLETS ARE SHOWN TO THE TOP FACE OF CURB.
- ALL LOCATIONS FOR DITCH INLETS ARE SHOWN TO CENTER POINT OF INLET UNLESS NOTED OTHERWISE.
- REFERENCE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL INFORMATION.
- REFERENCE DRAINAGE SHEETS FOR ADDITIONAL INFORMATION.
- REFERENCE DRAINAGE PROFILE SHEETS FOR ADDITIONAL LINE AND LATERAL INFORMATION.
- REFERENCE CROSS SECTIONS FOR PROPOSED DITCH LOCATIONS.
- GEOPAK DRAINAGE WAS USED FOR STORM SEWER COMPUTATIONS.
- ALL PIPE SHALL BE CLASS III UNLESS NOTED OTHERWISE.
- CONTRACTOR TO VERIFY LOCATIONS OF UTILITIES PRIOR TO LAYING STORMSEWER OR DITCH GRADING.



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741

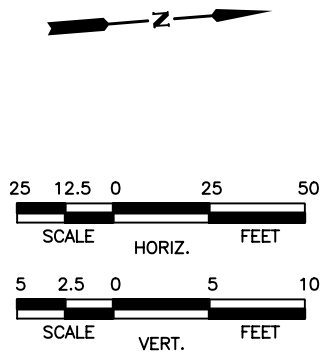
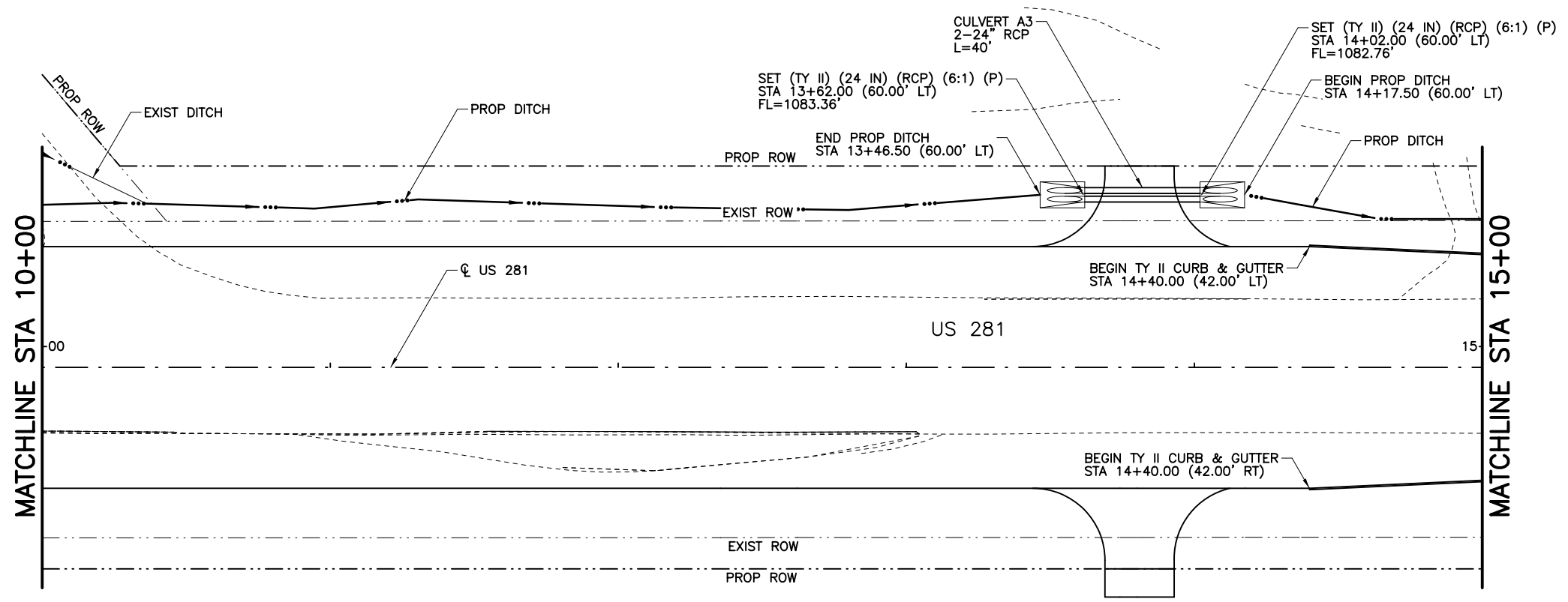


US 281
DRAINAGE PLAN & PROFILE

STA 5+00 TO STA 10+00

Designed:	CPY	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	CPY	DIST.	BWD	COUNTY	LAMPASAS	CONTROL NO.	0251	SECTION NO.	06
Drawn:	CPY	JOB NO.	036	SHEET NO.	190				

1/31/2023 4:45:32 PM kperry
pw:/



LEGEND

- EXISTING DITCH
- PROPOSED DITCH

NOTES:

1. ALL STATIONS AND OFFSETS ARE FROM C US 281 UNLESS NOTED OTHERWISE.
2. ALL LOCATIONS AND ELEVATIONS FOR CURB INLETS ARE SHOWN TO THE TOP FACE OF CURB.
3. ALL LOCATIONS FOR DITCH INLETS ARE SHOWN TO CENTER POINT OF INLET UNLESS NOTED OTHERWISE.
4. REFERENCE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL INFORMATION.
5. REFERENCE CULVERT SHEETS FOR ADDITIONAL INFORMATION.
6. REFERENCE DRAINAGE PROFILE SHEETS FOR ADDITIONAL LINE AND LATERAL INFORMATION.
7. REFERENCE CROSS SECTIONS FOR PROPOSED DITCH LOCATIONS.
8. GEOPAK DRAINAGE WAS USED FOR STORM SEWER COMPUTATIONS.
9. ALL PIPE SHALL BE CLASS III UNLESS NOTED OTHERWISE.
10. CONTRACTOR TO VERIFY LOCATIONS OF UTILITIES PRIOR TO LAYING STORMSEWER OR DITCH GRADING.



Kristen L. Perry

1/31/2023

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741

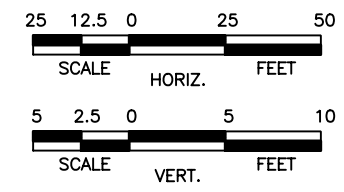
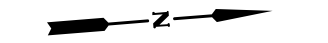
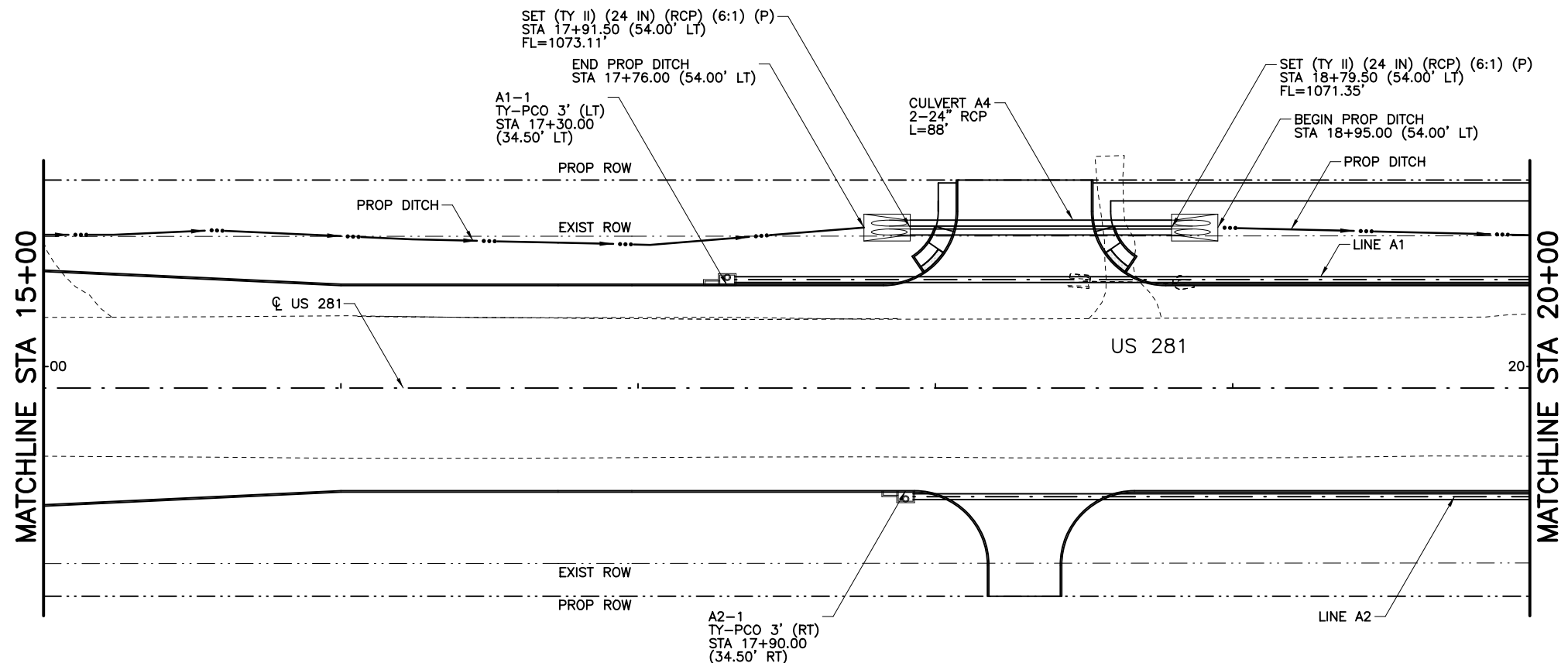


US 281
DRAINAGE PLAN & PROFILE

STA 10+00 TO STA 15+00

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
Checked:	CPY	6	TEXAS		US 281
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.
Checked:	CPY	BWD	LAMPASAS	0251	06
					JOB NO.
					036
					SHEET NO.
					191

1/31/2023 4:45:36 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/



LEGEND

- EXISTING DITCH
- PROPOSED DITCH

NOTES:

1. ALL STATIONS AND OFFSETS ARE FROM C US 281 UNLESS NOTED OTHERWISE.
2. ALL LOCATIONS AND ELEVATIONS FOR CURB INLETS ARE SHOWN TO THE TOP FACE OF CURB.
3. ALL LOCATIONS FOR DITCH INLETS ARE SHOWN TO CENTER POINT OF INLET UNLESS NOTED OTHERWISE.
4. REFERENCE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL INFORMATION.
5. REFERENCE DRAINAGE PROFILE SHEETS FOR ADDITIONAL INFORMATION.
6. REFERENCE DRAINAGE PROFILE SHEETS FOR ADDITIONAL LINE AND LATERAL INFORMATION.
7. REFERENCE CROSS SECTIONS FOR PROPOSED DITCH LOCATIONS.
8. GEOPAK DRAINAGE WAS USED FOR STORM SEWER COMPUTATIONS.
9. ALL PIPE SHALL BE CLASS III UNLESS NOTED OTHERWISE.
10. CONTRACTOR TO VERIFY LOCATIONS OF UTILITIES PRIOR TO LAYING STORMSEWER OR DITCH GRADING.



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741

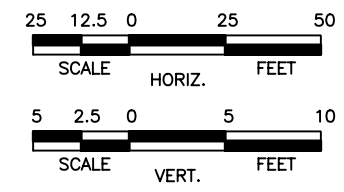
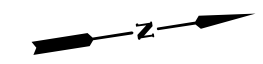
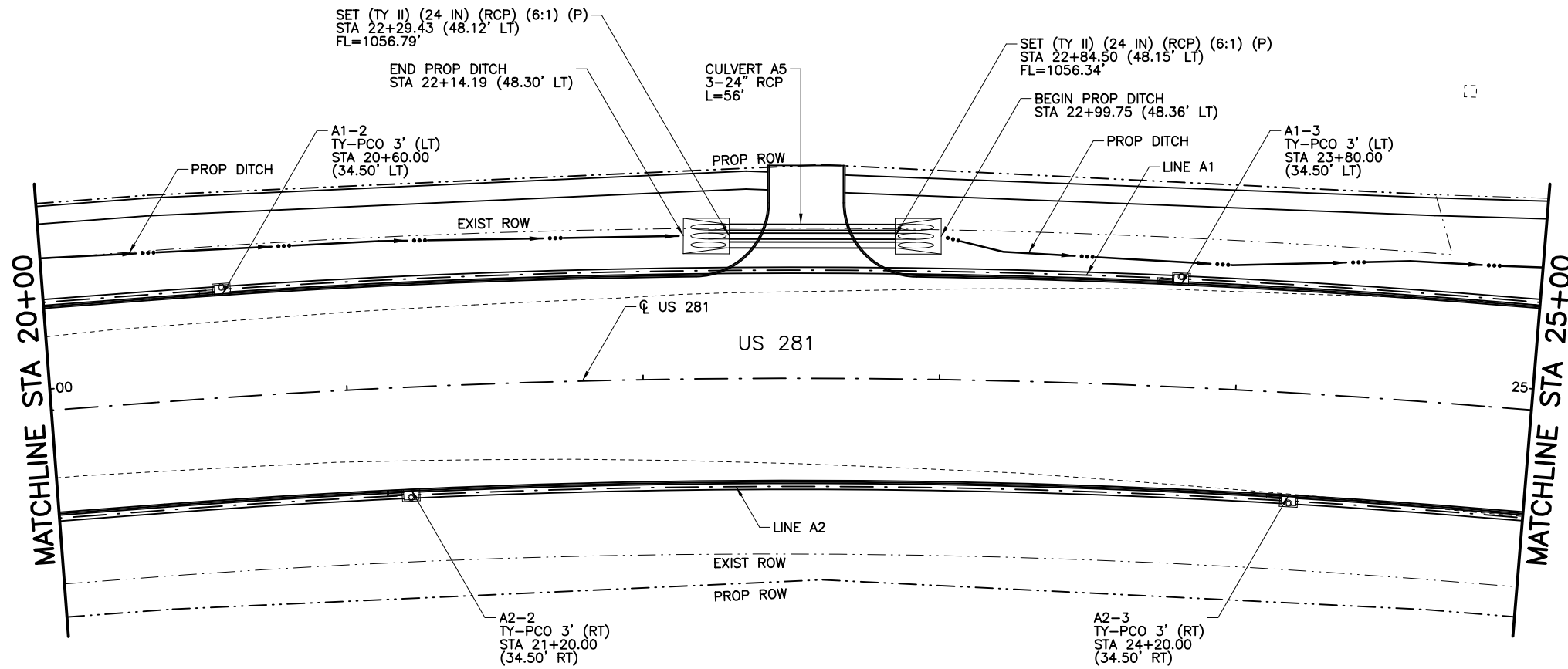


DRAINAGE PLAN & PROFILE

STA 15+00 TO STA 20+00

Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 192		

1/31/2023 4:45:40 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/



LEGEND

- EXISTING DITCH
- - - PROPOSED DITCH

NOTES:

1. ALL STATIONS AND OFFSETS ARE FROM ϕ US 281 UNLESS NOTED OTHERWISE.
2. ALL LOCATIONS AND ELEVATIONS FOR CURB INLETS ARE SHOWN TO THE TOP FACE OF CURB.
3. ALL LOCATIONS FOR DITCH INLETS ARE SHOWN TO CENTER POINT OF INLET UNLESS NOTED OTHERWISE.
4. REFERENCE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL INFORMATION.
5. REFERENCE CULVERT SHEETS FOR ADDITIONAL INFORMATION.
6. REFERENCE DRAINAGE PROFILE SHEETS FOR ADDITIONAL LINE AND LATERAL INFORMATION.
7. REFERENCE CROSS SECTIONS FOR PROPOSED DITCH LOCATIONS.
8. GEOPAK DRAINAGE WAS USED FOR STORM SEWER COMPUTATIONS.
9. ALL PIPE SHALL BE CLASS III UNLESS NOTED OTHERWISE.
10. CONTRACTOR TO VERIFY LOCATIONS OF UTILITIES PRIOR TO LAYING STORMSEWER OR DITCH GRADING.



Kristen L. Perry

1/31/2023

NO.	REVISION	BY	DATE



©2023 Texas Department of Transportation
US 281

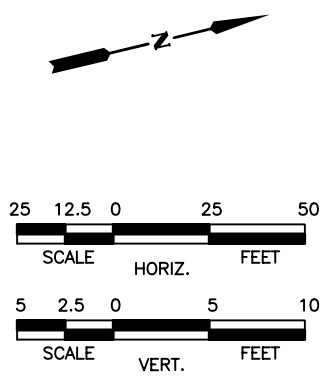
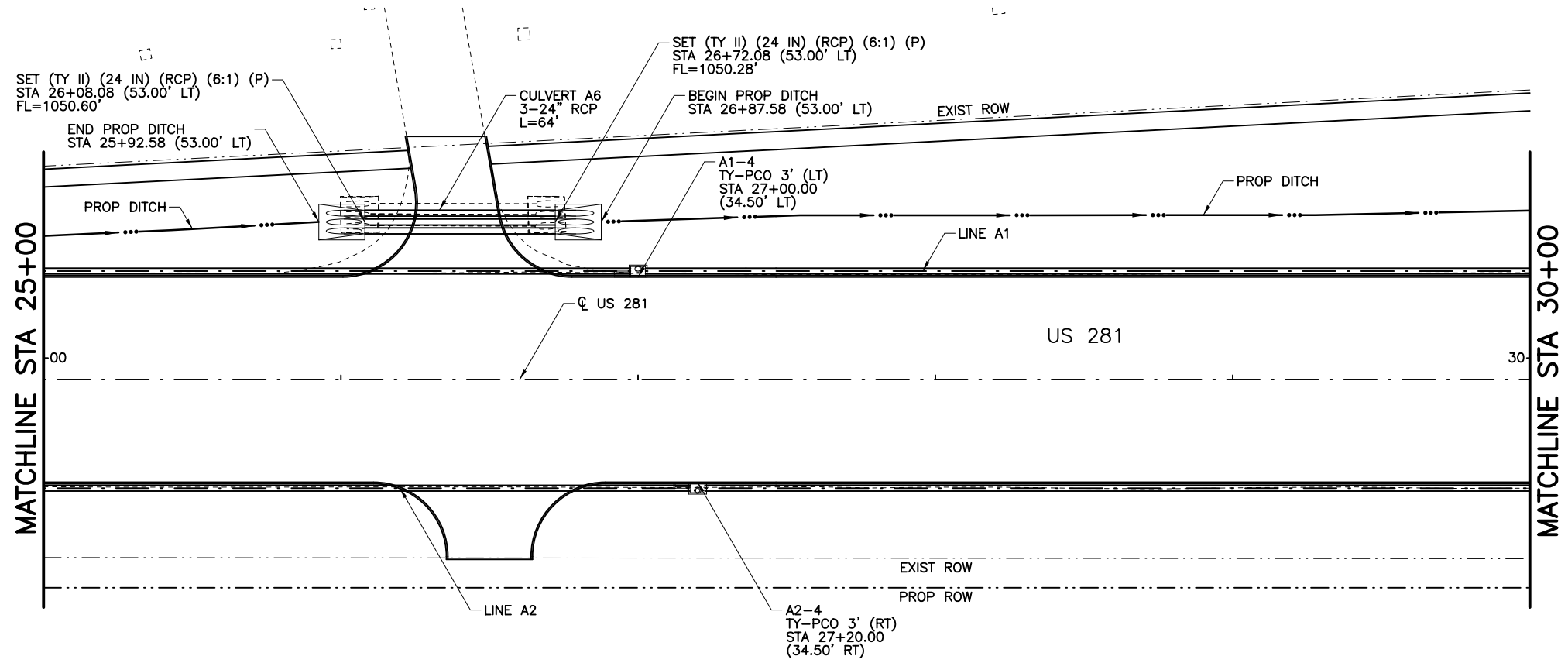
DRAINAGE PLAN & PROFILE

STA 20+00 TO STA 25+00

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
Checked:	CPY	6	TEXAS		US 281
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.
Checked:	CPY	BWD	LAMPASAS	0251	06
					JOB NO.
					036
					SHEET NO.
					193

SHEET 6 OF 19

1/31/2023 4:45:45 PM kpererry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/

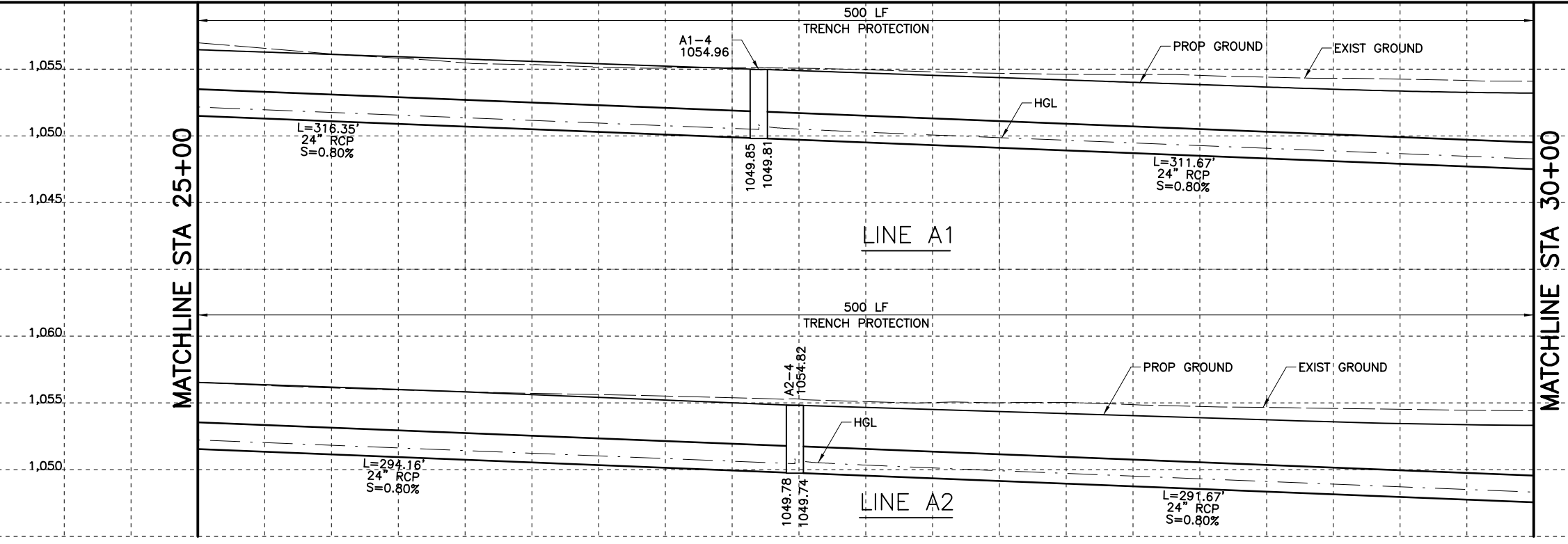


- LEGEND**
- EXISTING DITCH
 - PROPOSED DITCH

- NOTES:**
1. ALL STATIONS AND OFFSETS ARE FROM \odot US 281 UNLESS NOTED OTHERWISE.
 2. ALL LOCATIONS AND ELEVATIONS FOR CURB INLETS ARE SHOWN TO THE TOP FACE OF CURB.
 3. ALL LOCATIONS FOR DITCH INLETS ARE SHOWN TO CENTER POINT OF INLET UNLESS NOTED OTHERWISE.
 4. REFERENCE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL INFORMATION.
 5. REFERENCE CULVERT SHEETS FOR ADDITIONAL INFORMATION.
 6. REFERENCE DRAINAGE PROFILE SHEETS FOR ADDITIONAL LINE AND LATERAL INFORMATION.
 7. REFERENCE CROSS SECTIONS FOR PROPOSED DITCH LOCATIONS.
 8. GEOPAK DRAINAGE WAS USED FOR STORM SEWER COMPUTATIONS.
 9. ALL PIPE SHALL BE CLASS III UNLESS NOTED OTHERWISE.
 10. CONTRACTOR TO VERIFY LOCATIONS OF UTILITIES PRIOR TO LAYING STORMSEWER OR DITCH GRADING.



Kristen L. Perry



NO.	REVISION	BY	DATE



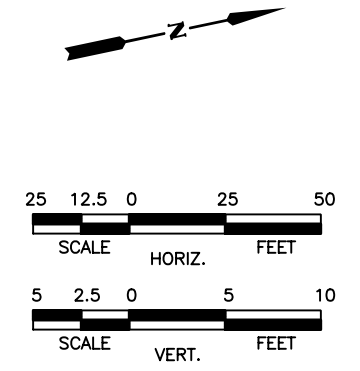
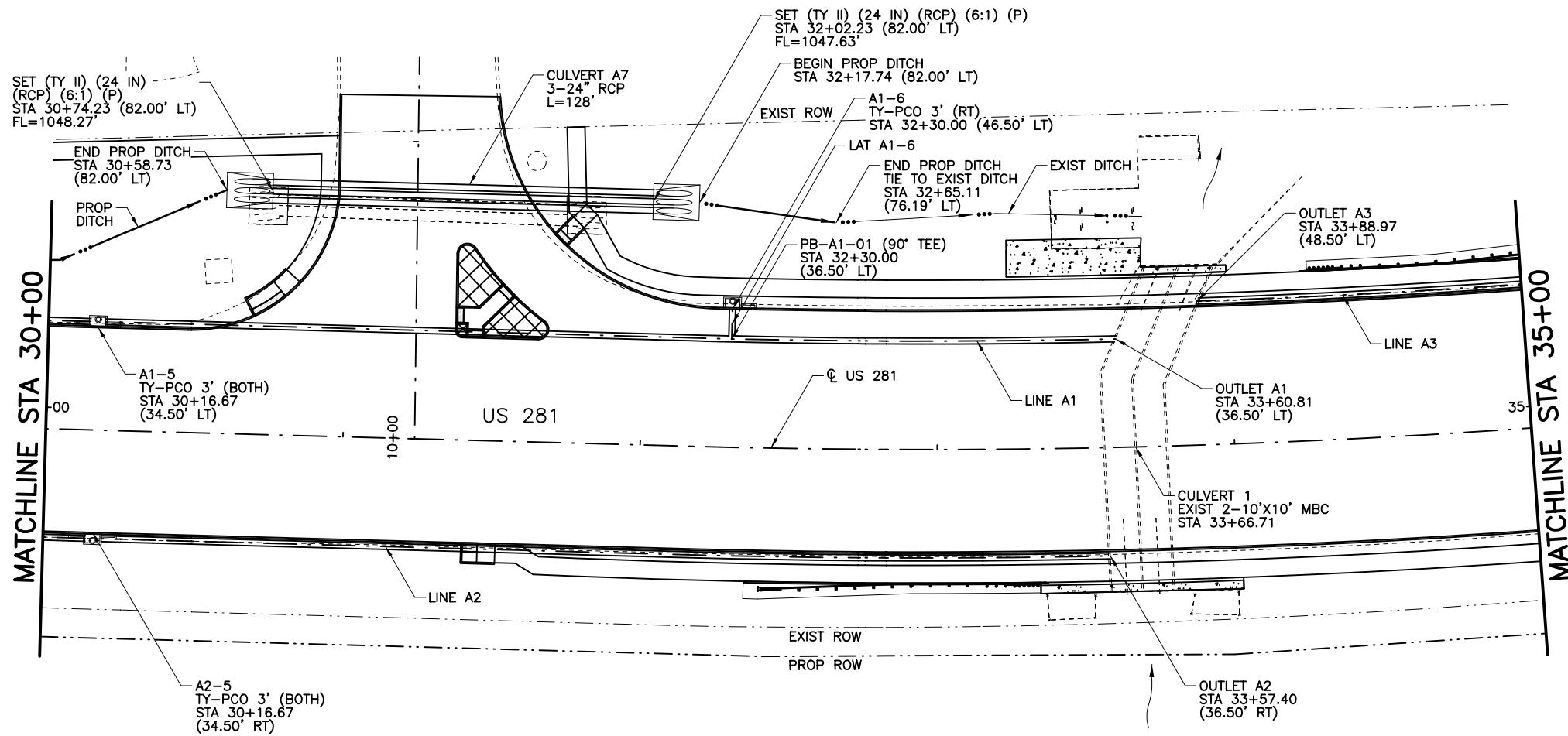
©2023 Texas Department of Transportation
US 281

DRAINAGE PLAN & PROFILE

STA 25+00 TO STA 30+00

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	CPY	6	TEXAS		US 281		
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	CPY	BWD	LAMPASAS	0251	06	036	194

1/31/2023 4:45:49 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/



LEGEND

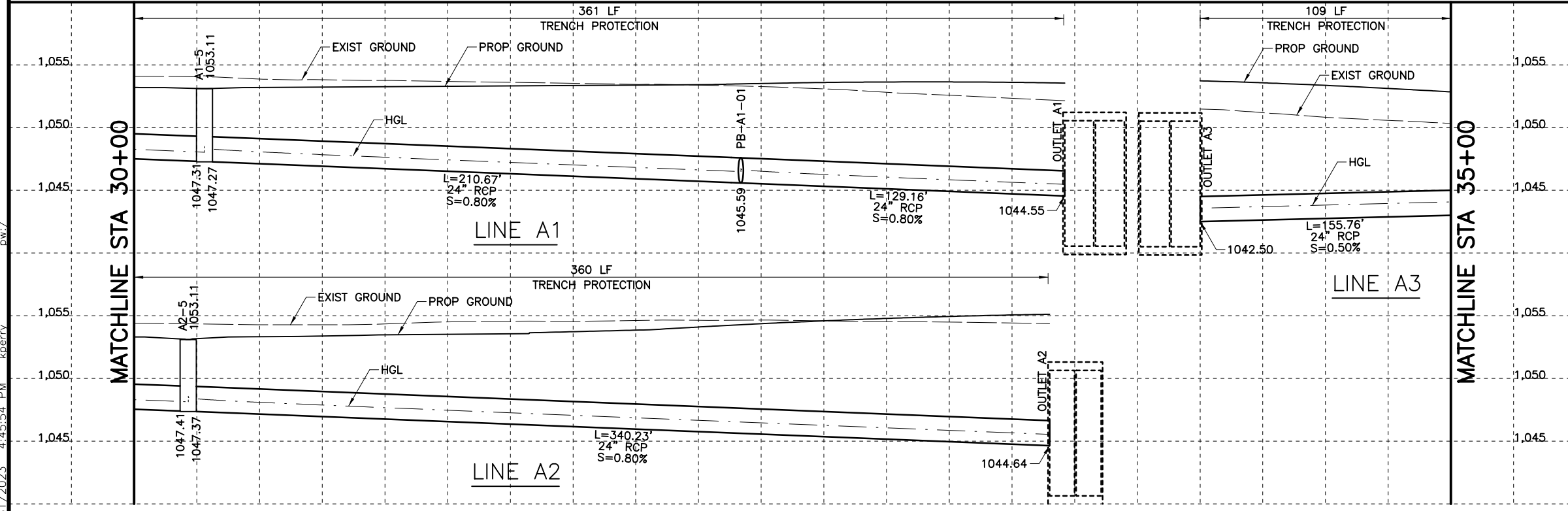
- EXISTING DITCH
- PROPOSED DITCH

NOTES:

1. ALL STATIONS AND OFFSETS ARE FROM $\text{\textcircled{C}}$ US 281 UNLESS NOTED OTHERWISE.
2. ALL LOCATIONS AND ELEVATIONS FOR CURB INLETS ARE SHOWN TO THE TOP FACE OF CURB.
3. ALL LOCATIONS FOR DITCH INLETS ARE SHOWN TO CENTER POINT OF INLET UNLESS NOTED OTHERWISE.
4. REFERENCE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL INFORMATION.
5. REFERENCE CULVERT SHEETS FOR ADDITIONAL INFORMATION.
6. REFERENCE DRAINAGE PROFILE SHEETS FOR ADDITIONAL LINE AND LATERAL INFORMATION.
7. REFERENCE CROSS SECTIONS FOR PROPOSED DITCH LOCATIONS.
8. GEOPAK DRAINAGE WAS USED FOR STORM SEWER COMPUTATIONS.
9. ALL PIPE SHALL BE CLASS III UNLESS NOTED OTHERWISE.
10. CONTRACTOR TO VERIFY LOCATIONS OF UTILITIES PRIOR TO LAYING STORMSEWER OR DITCH GRADING.



Kristen L. Perry



NO.	REVISION	BY	DATE



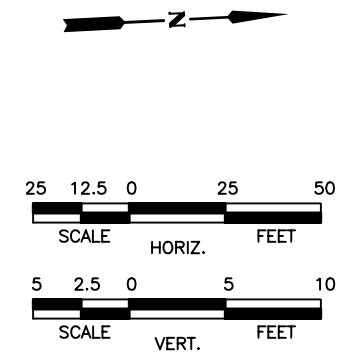
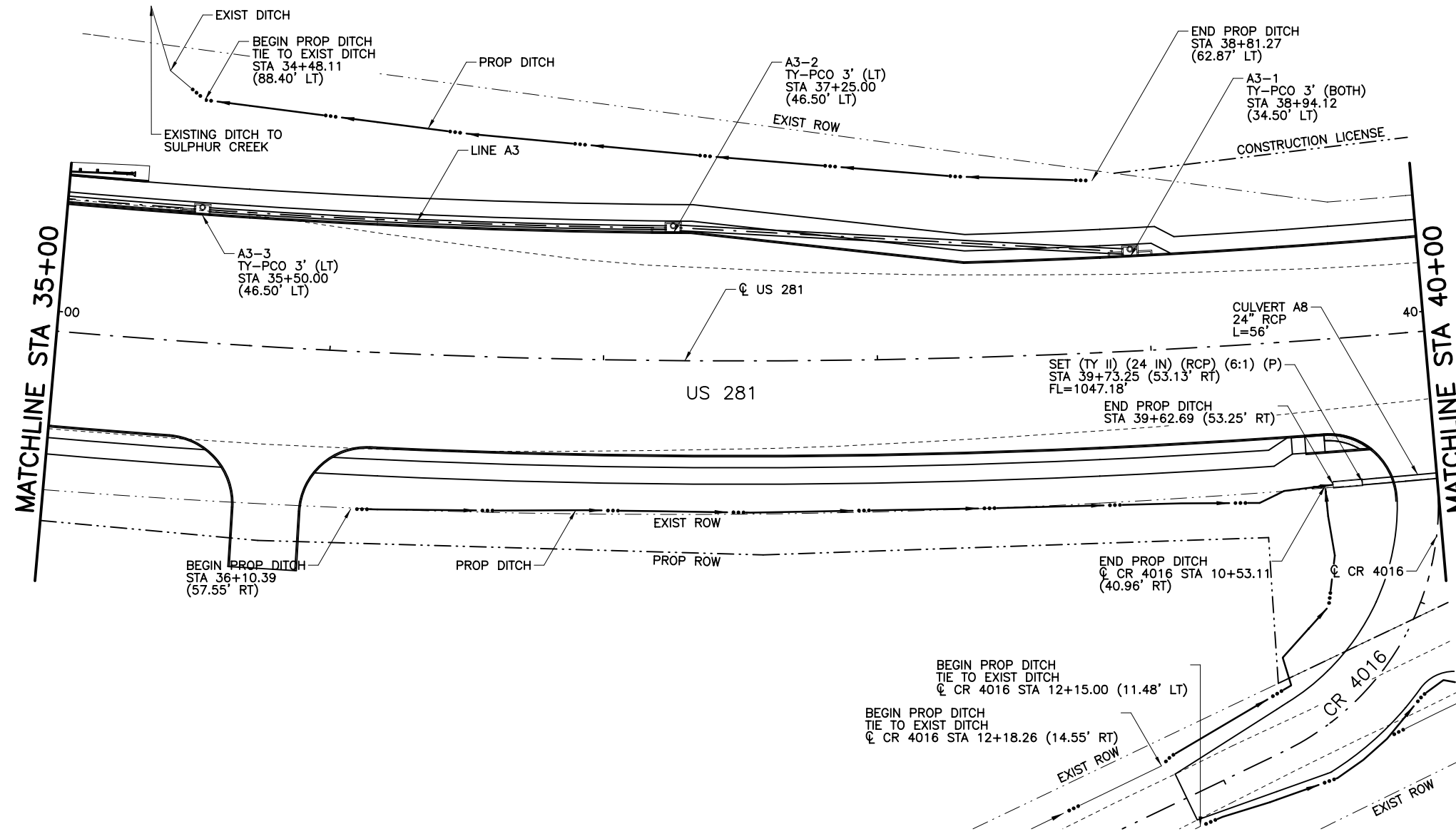
©2023 Texas Department of Transportation
US 281

DRAINAGE PLAN & PROFILE

STA 30+00 TO STA 35+00

Designed:	CPY	FED. RD. DIST. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
Checked:	CPY	6	TEXAS		US 281
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.
Checked:	CPY	BWD	LAMPASAS	0251	06
					JOB NO.
					036
					SHEET NO.
					195

1/31/2023 4:45:54 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/

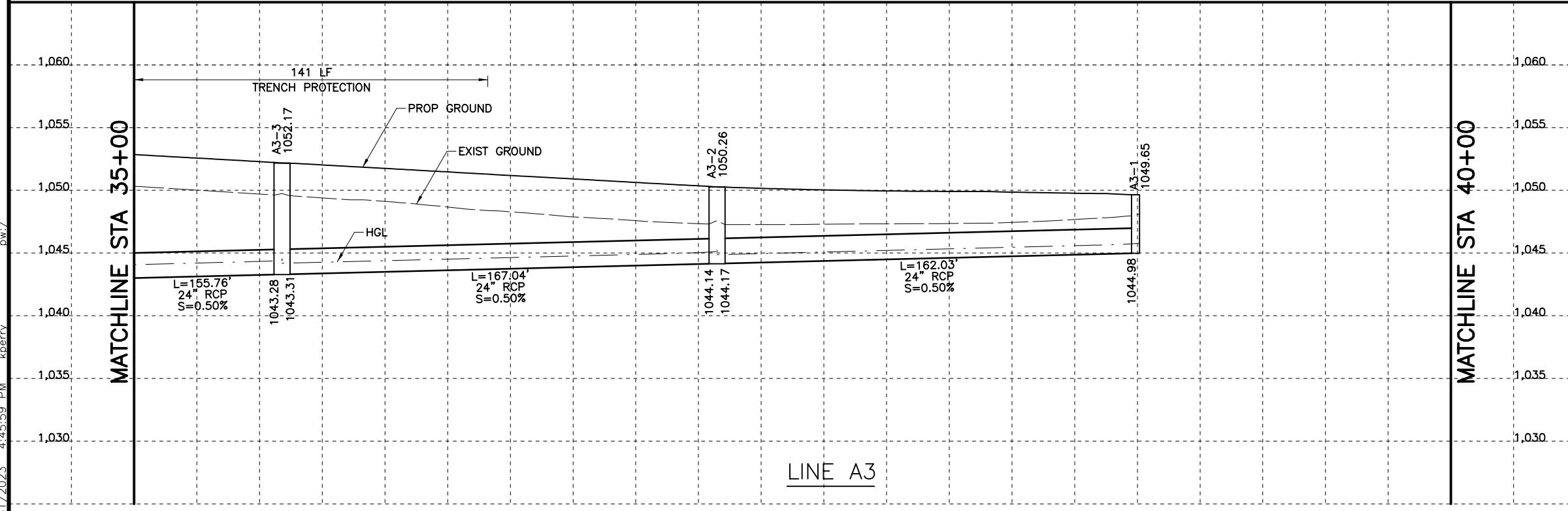


LEGEND

--- EXISTING DITCH

--- PROPOSED DITCH

- NOTES:**
1. ALL STATIONS AND OFFSETS ARE FROM \odot US 281 UNLESS NOTED OTHERWISE.
 2. ALL LOCATIONS AND ELEVATIONS FOR CURB INLETS ARE SHOWN TO THE TOP FACE OF CURB.
 3. ALL LOCATIONS FOR DITCH INLETS ARE SHOWN TO CENTER POINT OF INLET UNLESS NOTED OTHERWISE.
 4. REFERENCE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL INFORMATION.
 5. REFERENCE CULVERT SHEETS FOR ADDITIONAL INFORMATION.
 6. REFERENCE DRAINAGE PROFILE SHEETS FOR ADDITIONAL LINE AND LATERAL INFORMATION.
 7. REFERENCE CROSS SECTIONS FOR PROPOSED DITCH LOCATIONS.
 8. GEOPAK DRAINAGE WAS USED FOR STORM SEWER COMPUTATIONS.
 9. ALL PIPE SHALL BE CLASS III UNLESS NOTED OTHERWISE.
 10. CONTRACTOR TO VERIFY LOCATIONS OF UTILITIES PRIOR TO LAYING STORMSEWER OR DITCH GRADING.



Kristen L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741

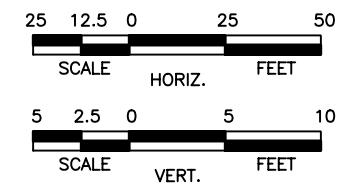
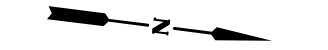
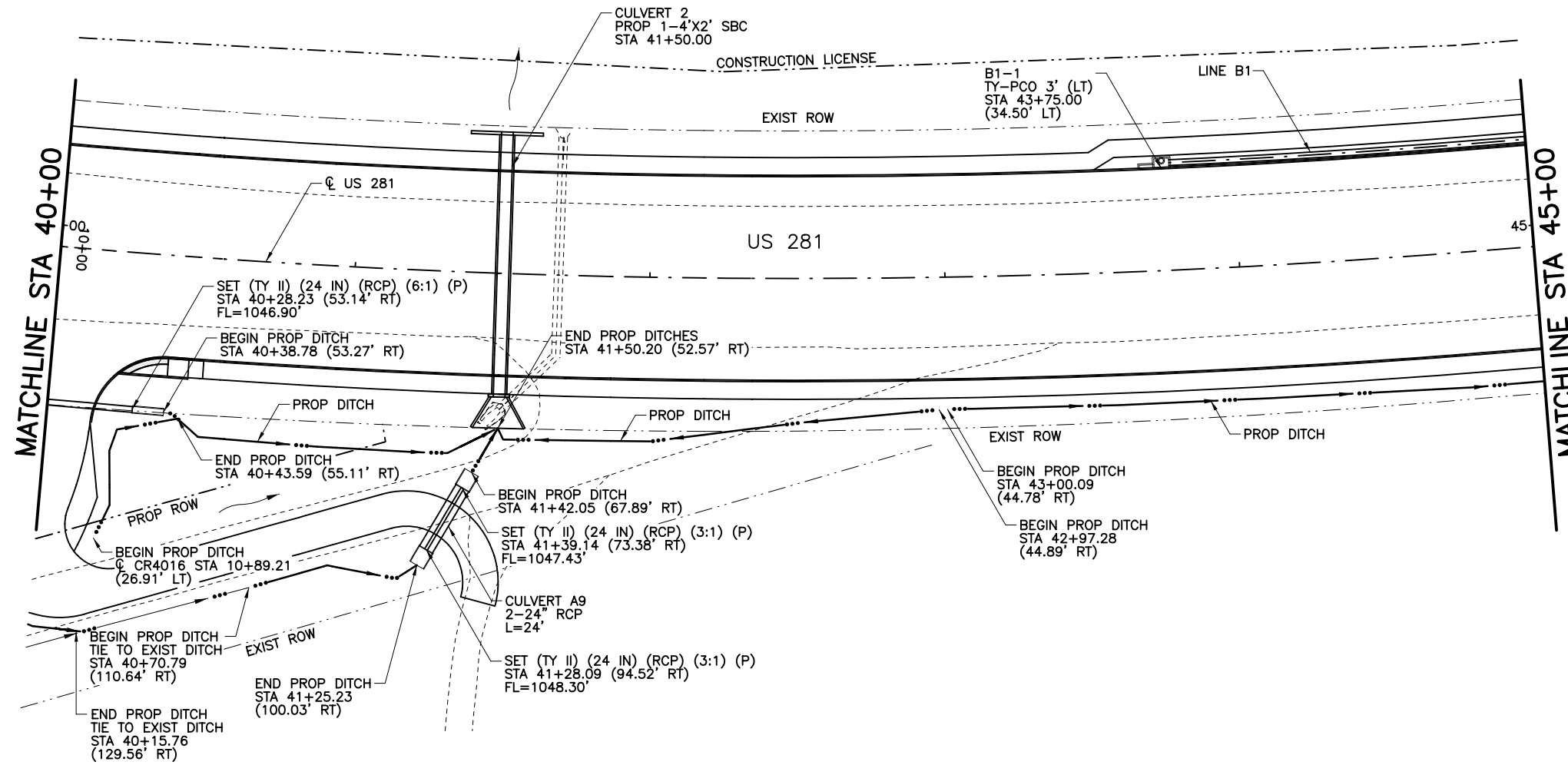


US 281
DRAINAGE PLAN & PROFILE

STA 35+00 TO STA 40+00

Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 196		

1/31/2023 4:45:59 PM kperry
cpw:\pw\perry\129482\ANSIB.tbl
cpw:\pw\perry\129482\ANSIB.plt



LEGEND

- EXISTING DITCH
- PROPOSED DITCH

NOTES:

1. ALL STATIONS AND OFFSETS ARE FROM C US 281 UNLESS NOTED OTHERWISE.
2. ALL LOCATIONS AND ELEVATIONS FOR CURB INLETS ARE SHOWN TO THE TOP FACE OF CURB.
3. ALL LOCATIONS FOR DITCH INLETS ARE SHOWN TO CENTER POINT OF INLET UNLESS NOTED OTHERWISE.
4. REFERENCE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL INFORMATION.
5. REFERENCE DRAINAGE PROFILE SHEETS FOR ADDITIONAL INFORMATION.
6. REFERENCE DRAINAGE PROFILE SHEETS FOR ADDITIONAL LINE AND LATERAL INFORMATION.
7. REFERENCE CROSS SECTIONS FOR PROPOSED DITCH LOCATIONS.
8. GEOPAK DRAINAGE WAS USED FOR STORM SEWER COMPUTATIONS.
9. ALL PIPE SHALL BE CLASS III UNLESS NOTED OTHERWISE.
10. CONTRACTOR TO VERIFY LOCATIONS OF UTILITIES PRIOR TO LAYING STORMSEWER OR DITCH GRADING.



Kristen L. Perry
1/31/2023

NO.	REVISION	BY	DATE



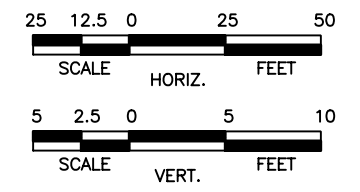
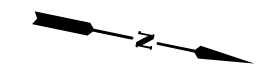
©2023 Texas Department of Transportation
US 281

DRAINAGE PLAN & PROFILE

STA 40+00 TO STA 45+00

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	CPY	6	TEXAS		US 281		
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	CPY	BWD	LAMPASAS	0251	06	036	197

1/31/2023 4:46:03 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/



LEGEND

- EXISTING DITCH
- PROPOSED DITCH

NOTES:

1. ALL STATIONS AND OFFSETS ARE FROM @ US 281 UNLESS NOTED OTHERWISE.
2. ALL LOCATIONS AND ELEVATIONS FOR CURB INLETS ARE SHOWN TO THE TOP FACE OF CURB.
3. ALL LOCATIONS FOR DITCH INLETS ARE SHOWN TO CENTER POINT OF INLET UNLESS NOTED OTHERWISE.
4. REFERENCE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL INFORMATION.
5. REFERENCE CULVERT SHEETS FOR ADDITIONAL INFORMATION.
6. REFERENCE DRAINAGE PROFILE SHEETS FOR ADDITIONAL LINE AND LATERAL INFORMATION.
7. REFERENCE CROSS SECTIONS FOR PROPOSED DITCH LOCATIONS.
8. GEOPAK DRAINAGE WAS USED FOR STORM SEWER COMPUTATIONS.
9. ALL PIPE SHALL BE CLASS III UNLESS NOTED OTHERWISE.
10. CONTRACTOR TO VERIFY LOCATIONS OF UTILITIES PRIOR TO LAYING STORMSEWER OR DITCH GRADING.



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE

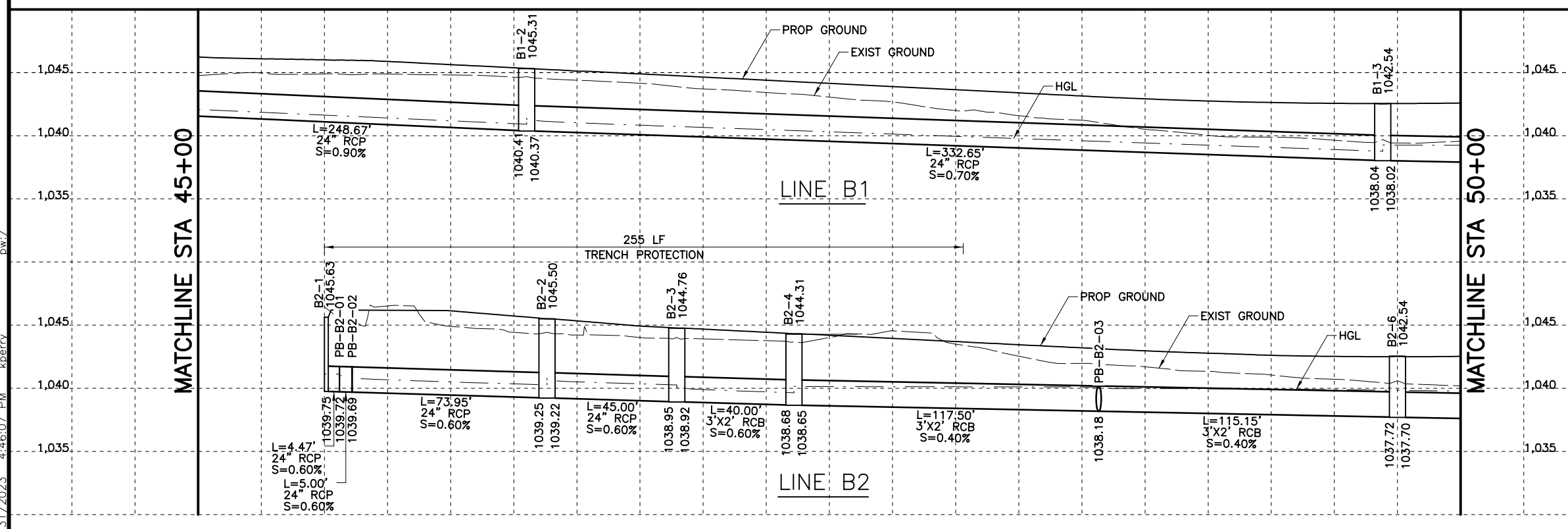
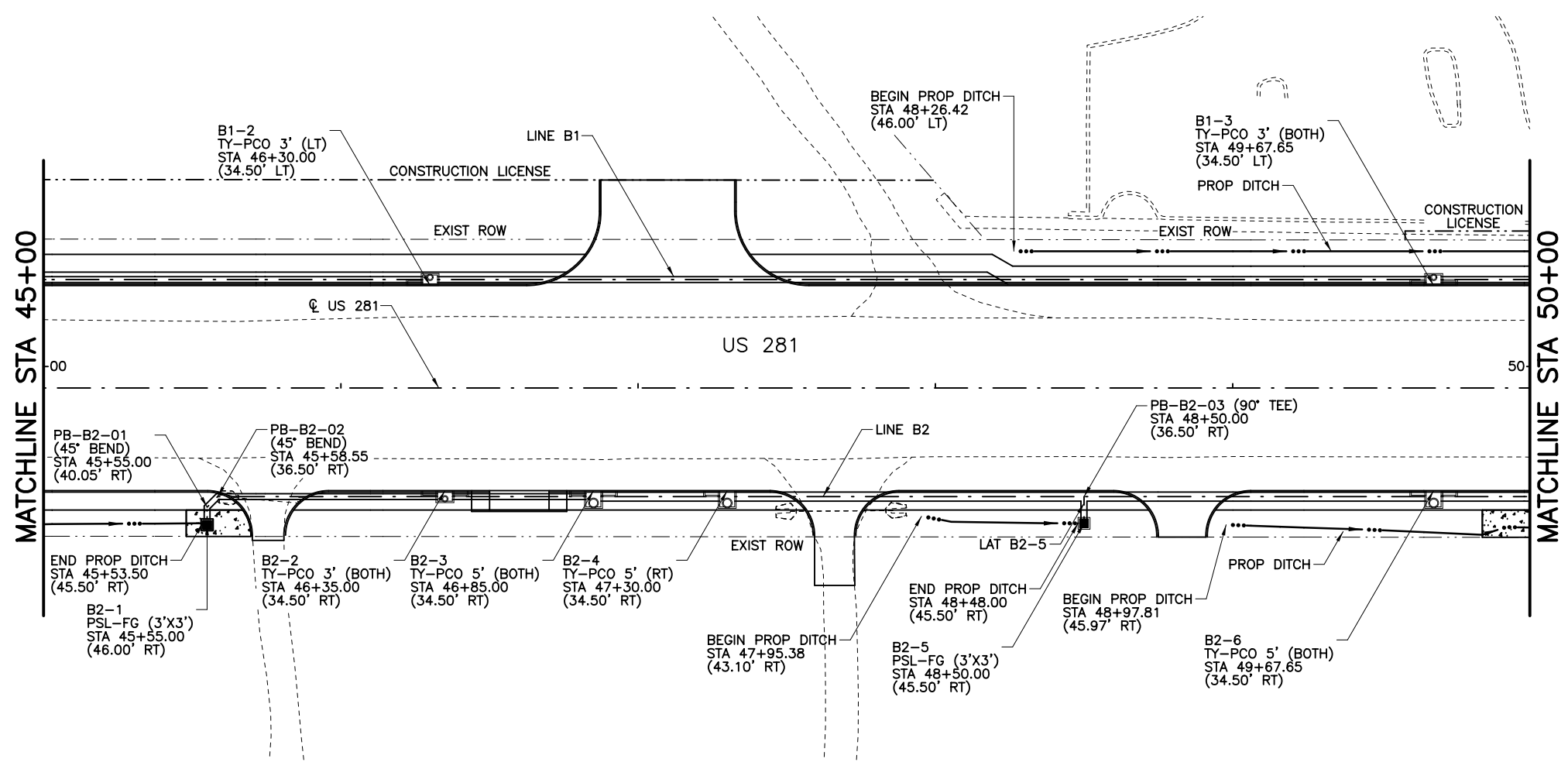


©2023 Texas Department of Transportation
US 281

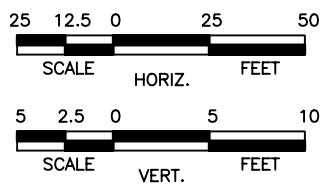
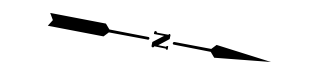
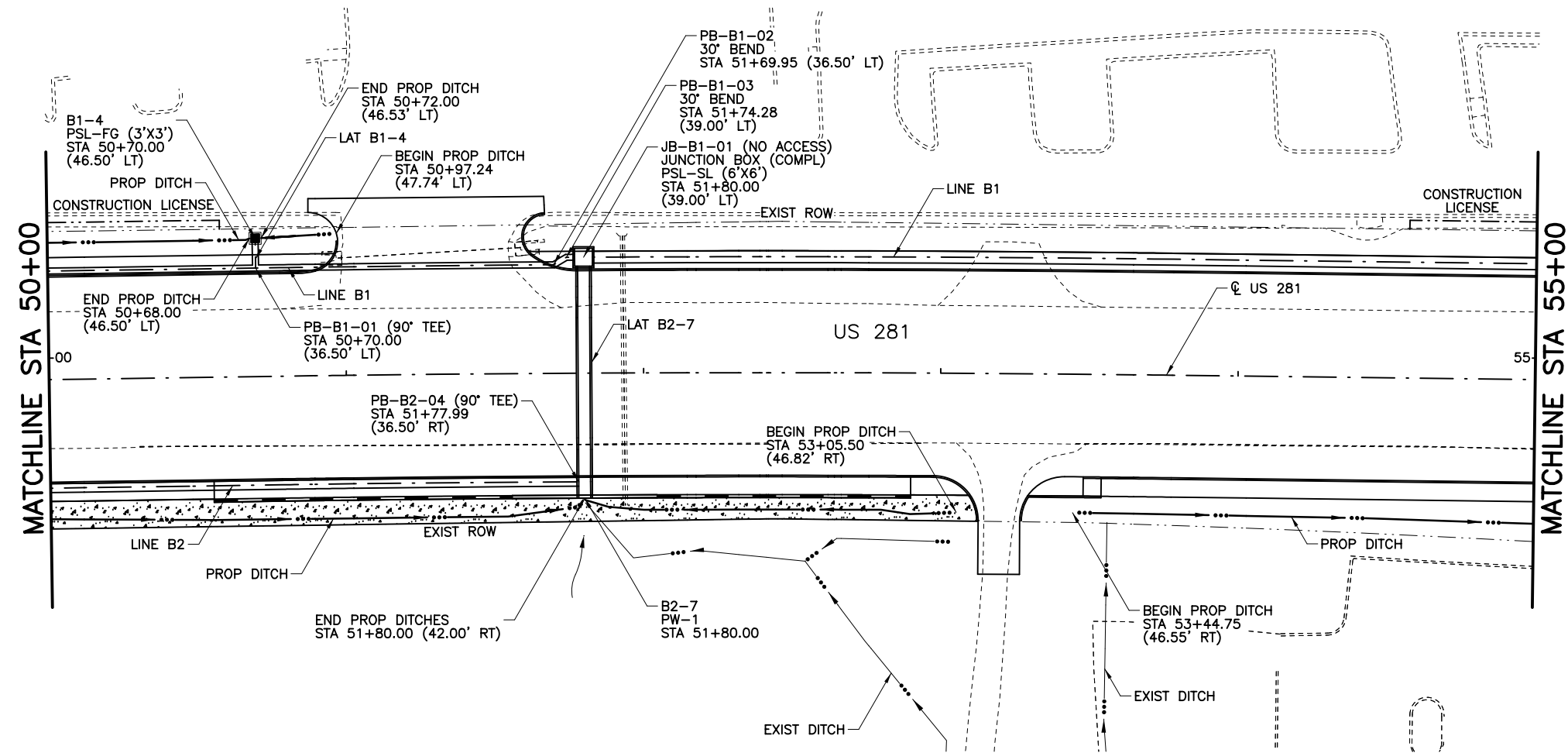
DRAINAGE PLAN & PROFILE

STA 45+00 TO STA 50+00

Designed:	CPY	FED. RD. DIST. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
Checked:	CPY	6	TEXAS		US 281
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.
Checked:	CPY	BWD	LAMPASAS	0251	06
					JOB NO.
					036
					SHEET NO.
					198



1/31/2023 4:46:07 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw

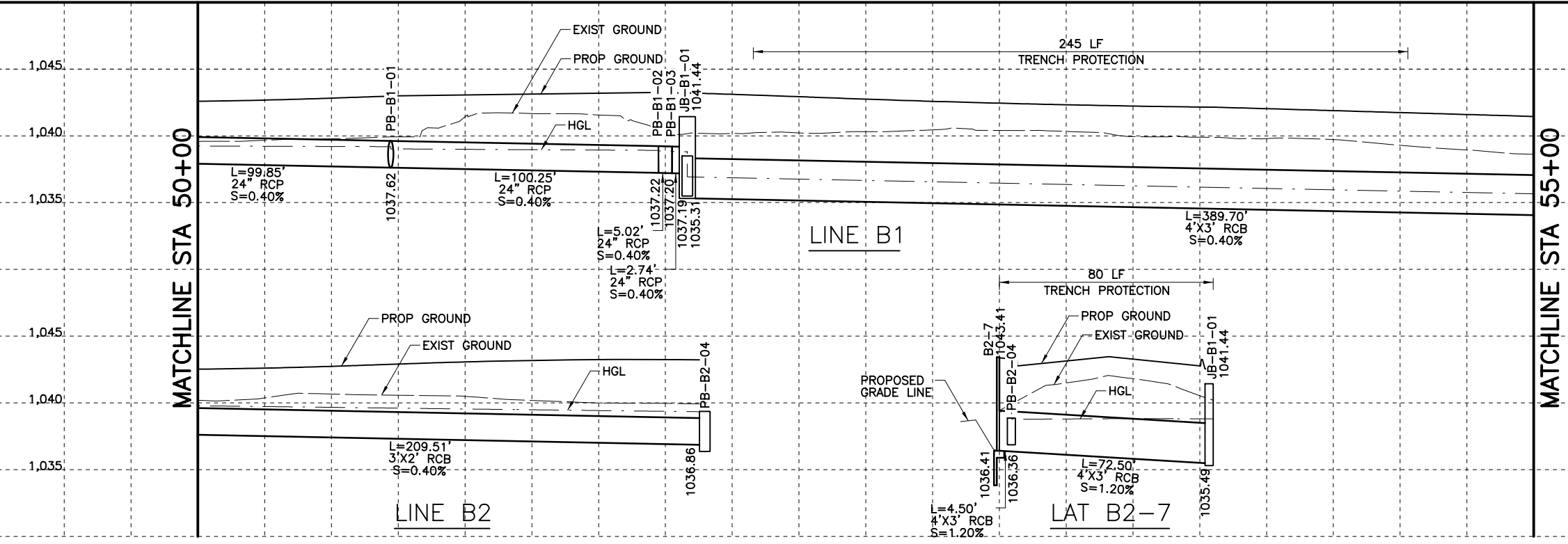


LEGEND

- EXISTING DITCH
- PROPOSED DITCH

NOTES:

1. ALL STATIONS AND OFFSETS ARE FROM @ US 281 UNLESS NOTED OTHERWISE.
2. ALL LOCATIONS AND ELEVATIONS FOR CURB INLETS ARE SHOWN TO THE TOP FACE OF CURB.
3. ALL LOCATIONS FOR DITCH INLETS ARE SHOWN TO CENTER POINT OF INLET UNLESS NOTED OTHERWISE.
4. REFERENCE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL INFORMATION.
5. REFERENCE DRAINAGE PROFILE SHEETS FOR ADDITIONAL INFORMATION.
6. REFERENCE DRAINAGE PROFILE SHEETS FOR ADDITIONAL LINE AND LATERAL INFORMATION.
7. REFERENCE CROSS SECTIONS FOR PROPOSED DITCH LOCATIONS.
8. GEOPAK DRAINAGE WAS USED FOR STORM SEWER COMPUTATIONS.
9. ALL PIPE SHALL BE CLASS III UNLESS NOTED OTHERWISE.
10. CONTRACTOR TO VERIFY LOCATIONS OF UTILITIES PRIOR TO LAYING STORMSEWER OR DITCH GRADING.



Kristen L. Perry

NO.	REVISION	BY	DATE



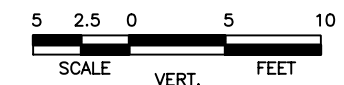
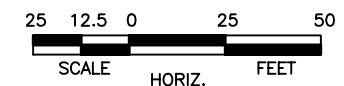
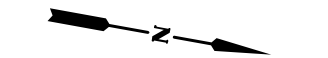
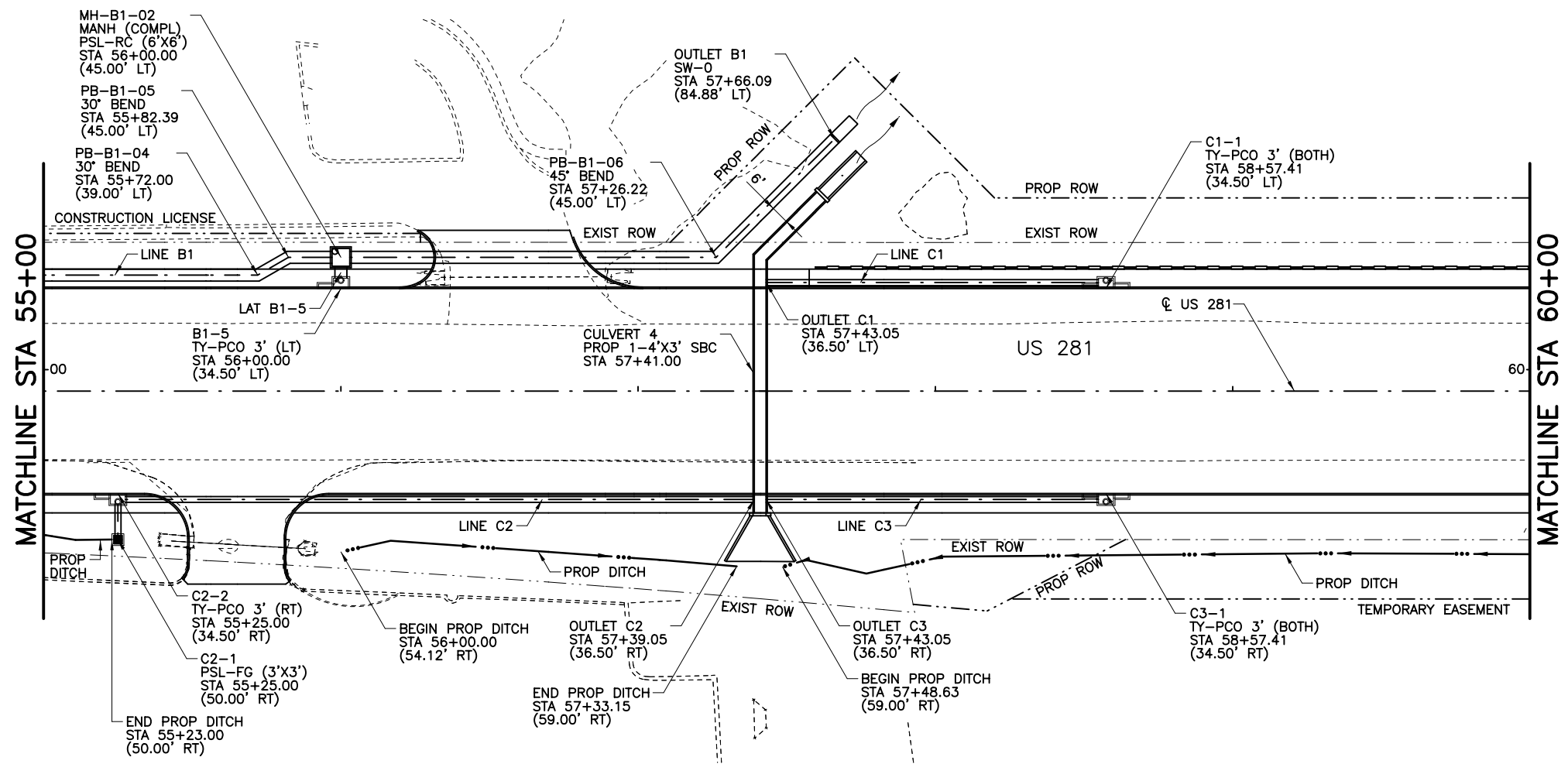
©2023 Texas Department of Transportation
US 281

DRAINAGE PLAN & PROFILE

STA 50+00 TO STA 55+00

Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 199		

1/31/2023 4:46:12 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/



LEGEND

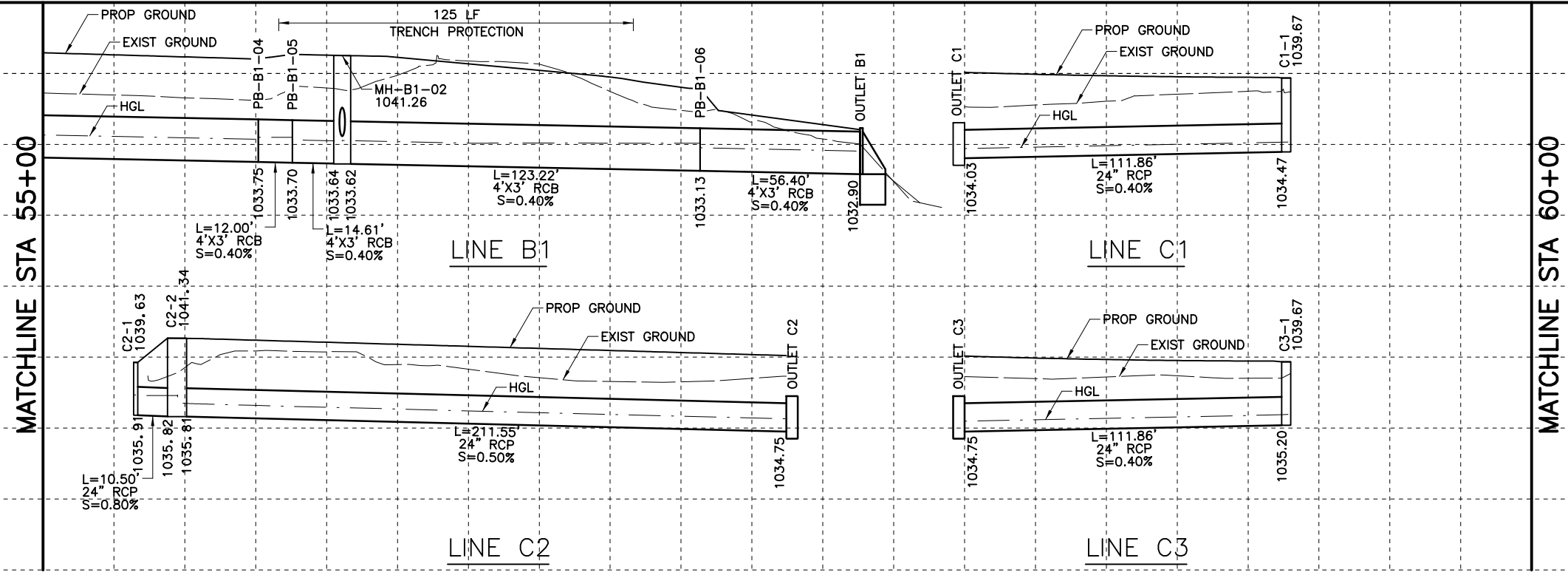
- EXISTING DITCH
- PROPOSED DITCH

- NOTES:**
- ALL STATIONS AND OFFSETS ARE FROM C US 281 UNLESS NOTED OTHERWISE.
 - ALL LOCATIONS AND ELEVATIONS FOR CURB INLETS ARE SHOWN TO THE TOP FACE OF CURB.
 - ALL LOCATIONS FOR DITCH INLETS ARE SHOWN TO CENTER POINT OF INLET UNLESS NOTED OTHERWISE.
 - REFERENCE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL INFORMATION.
 - REFERENCE CULVERT SHEETS FOR ADDITIONAL INFORMATION.
 - REFERENCE DRAINAGE PROFILE SHEETS FOR ADDITIONAL LINE AND LATERAL INFORMATION.
 - REFERENCE CROSS SECTIONS FOR PROPOSED DITCH LOCATIONS.
 - GEOPAK DRAINAGE WAS USED FOR STORM SEWER COMPUTATIONS.
 - ALL PIPE SHALL BE CLASS III UNLESS NOTED OTHERWISE.
 - CONTRACTOR TO VERIFY LOCATIONS OF UTILITIES PRIOR TO LAYING STORMSEWER OR DITCH GRADING.



1/31/2023

Kristen L. Perry



NO.	REVISION	BY	DATE

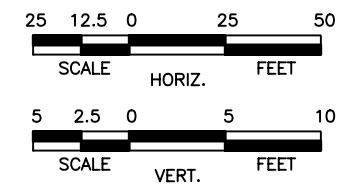
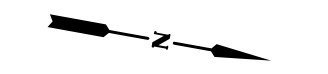
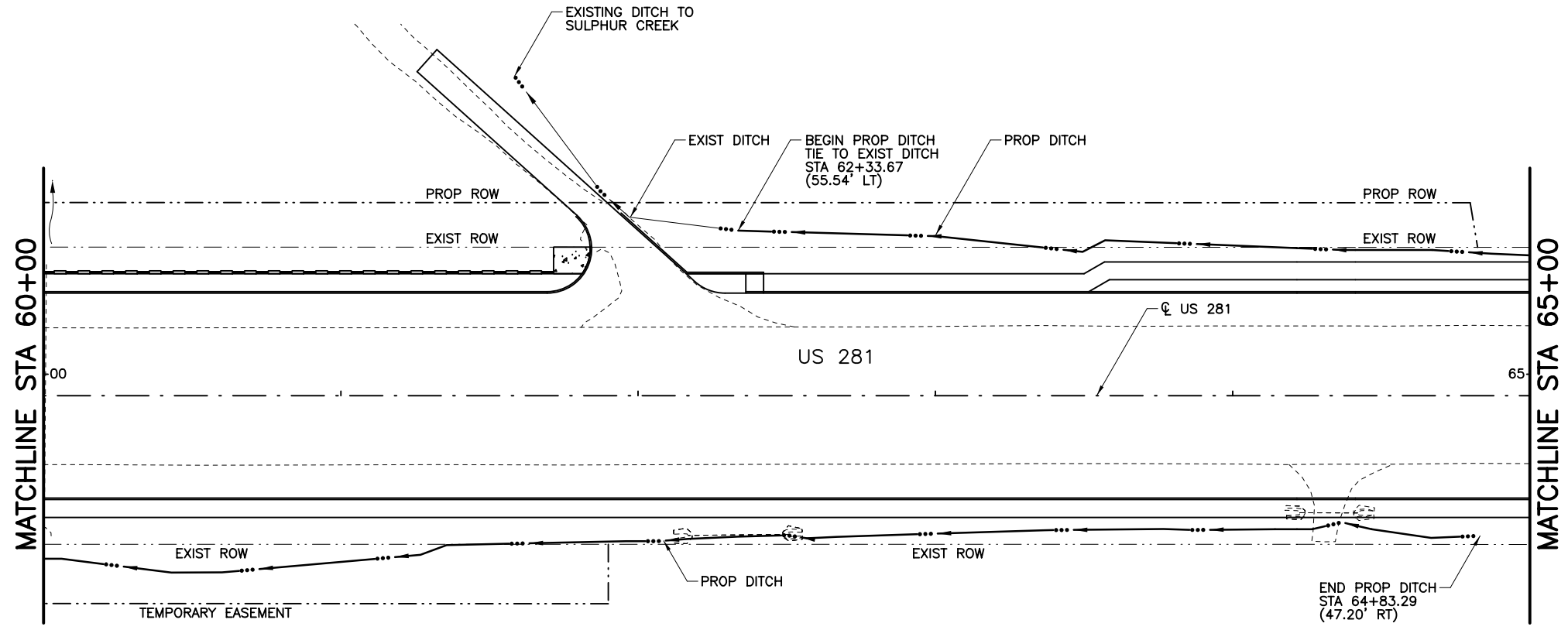


©2023 Texas Department of Transportation
US 281

DRAINAGE PLAN & PROFILE

STA 55+00 TO STA 60+00

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	CPY	6	TEXAS		US 281		
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	CPY	BWD	LAMPASAS	0251	06	036	200



LEGEND

- > EXISTING DITCH
- > PROPOSED DITCH

NOTES:

1. ALL STATIONS AND OFFSETS ARE FROM C US 281 UNLESS NOTED OTHERWISE.
2. ALL LOCATIONS AND ELEVATIONS FOR CURB INLETS ARE SHOWN TO THE TOP FACE OF CURB.
3. ALL LOCATIONS FOR DITCH INLETS ARE SHOWN TO CENTER POINT OF INLET UNLESS NOTED OTHERWISE.
4. REFERENCE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL INFORMATION.
5. REFERENCE CULVERT SHEETS FOR ADDITIONAL INFORMATION.
6. REFERENCE DRAINAGE PROFILE SHEETS FOR ADDITIONAL LINE AND LATERAL INFORMATION.
7. REFERENCE CROSS SECTIONS FOR PROPOSED DITCH LOCATIONS.
8. GEOPAK DRAINAGE WAS USED FOR STORM SEWER COMPUTATIONS.
9. ALL PIPE SHALL BE CLASS III UNLESS NOTED OTHERWISE.
10. CONTRACTOR TO VERIFY LOCATIONS OF UTILITIES PRIOR TO LAYING STORMSEWER OR DITCH GRADING.



Kristen L. Perry

1/31/2023

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741



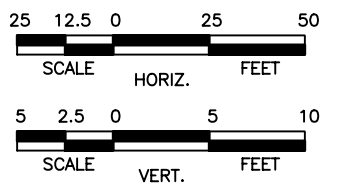
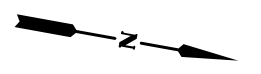
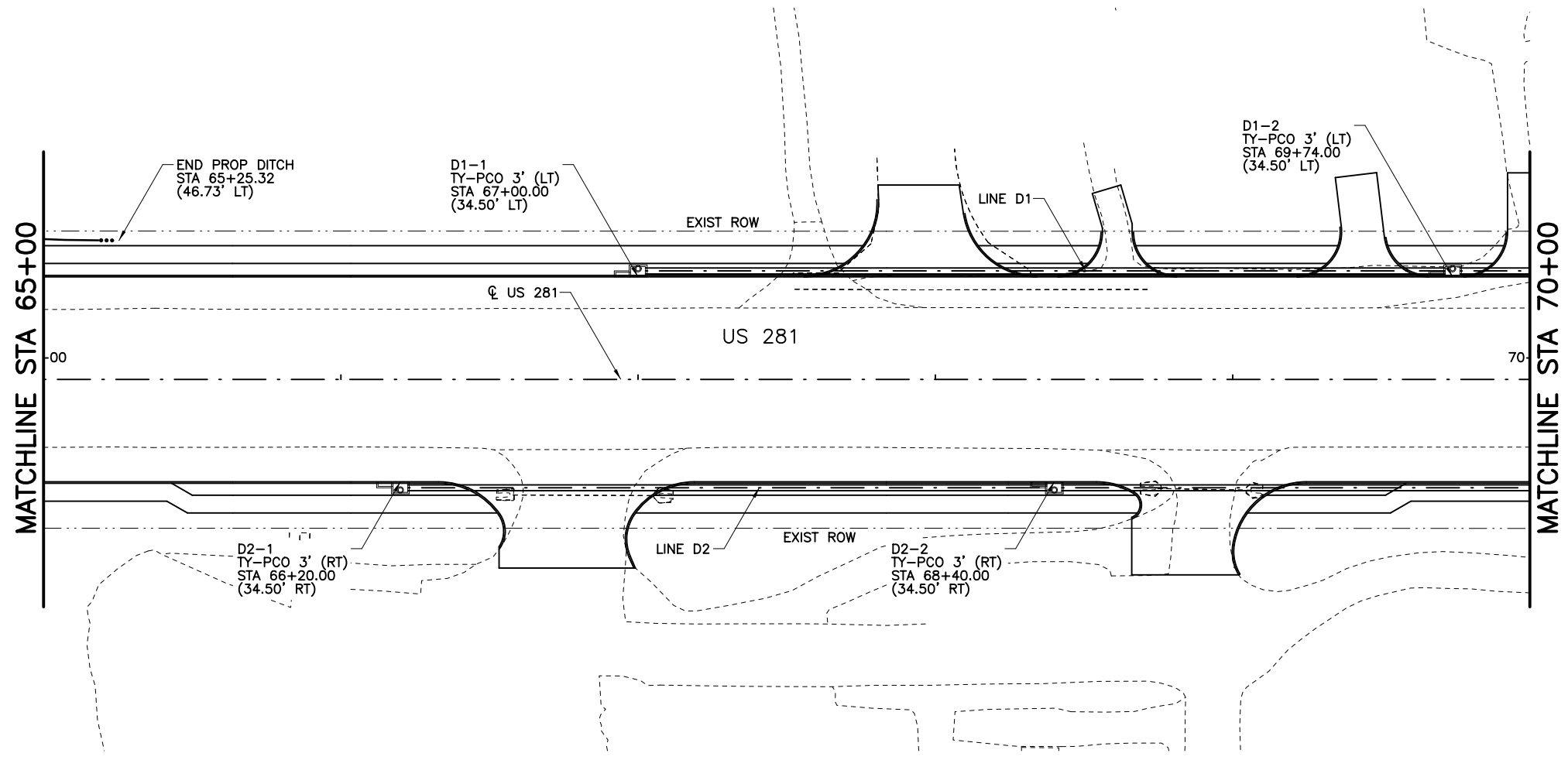
US 281

DRAINAGE PLAN & PROFILE

STA 60+00 TO STA 65+00

Designed:	CPY	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	CPY	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Drawn:	CPY	JOB NO.	036	SHEET NO.	201				

1/31/2023 4:46:21 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/



LEGEND

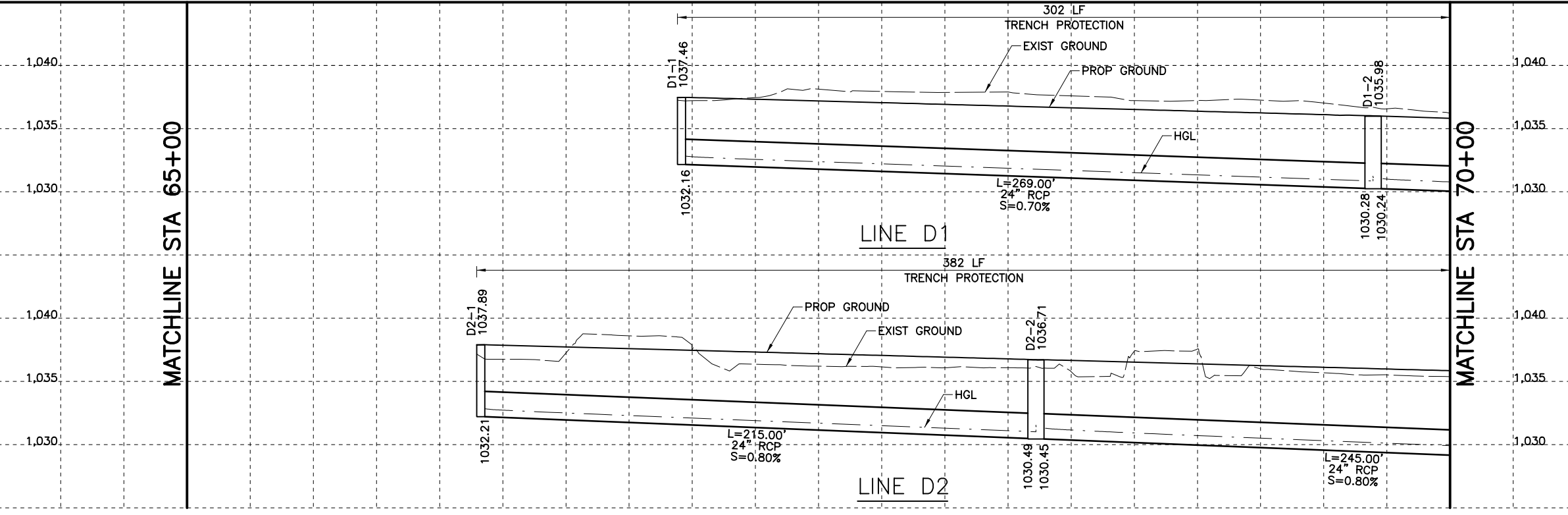
- EXISTING DITCH
- PROPOSED DITCH

NOTES:

1. ALL STATIONS AND OFFSETS ARE FROM C US 281 UNLESS NOTED OTHERWISE.
2. ALL LOCATIONS AND ELEVATIONS FOR CURB INLETS ARE SHOWN TO THE TOP FACE OF CURB.
3. ALL LOCATIONS FOR DITCH INLETS ARE SHOWN TO CENTER POINT OF INLET UNLESS NOTED OTHERWISE.
4. REFERENCE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL INFORMATION.
5. REFERENCE CULVERT SHEETS FOR ADDITIONAL INFORMATION.
6. REFERENCE DRAINAGE PROFILE SHEETS FOR ADDITIONAL LINE AND LATERAL INFORMATION.
7. REFERENCE CROSS SECTIONS FOR PROPOSED DITCH LOCATIONS.
8. GEOPAK DRAINAGE WAS USED FOR STORM SEWER COMPUTATIONS.
9. ALL PIPE SHALL BE CLASS III UNLESS NOTED OTHERWISE.
10. CONTRACTOR TO VERIFY LOCATIONS OF UTILITIES PRIOR TO LAYING STORMSEWER OR DITCH GRADING.



Kristen L. Perry



NO.	REVISION	BY	DATE



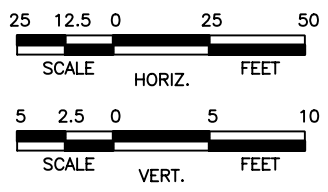
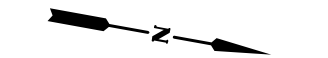
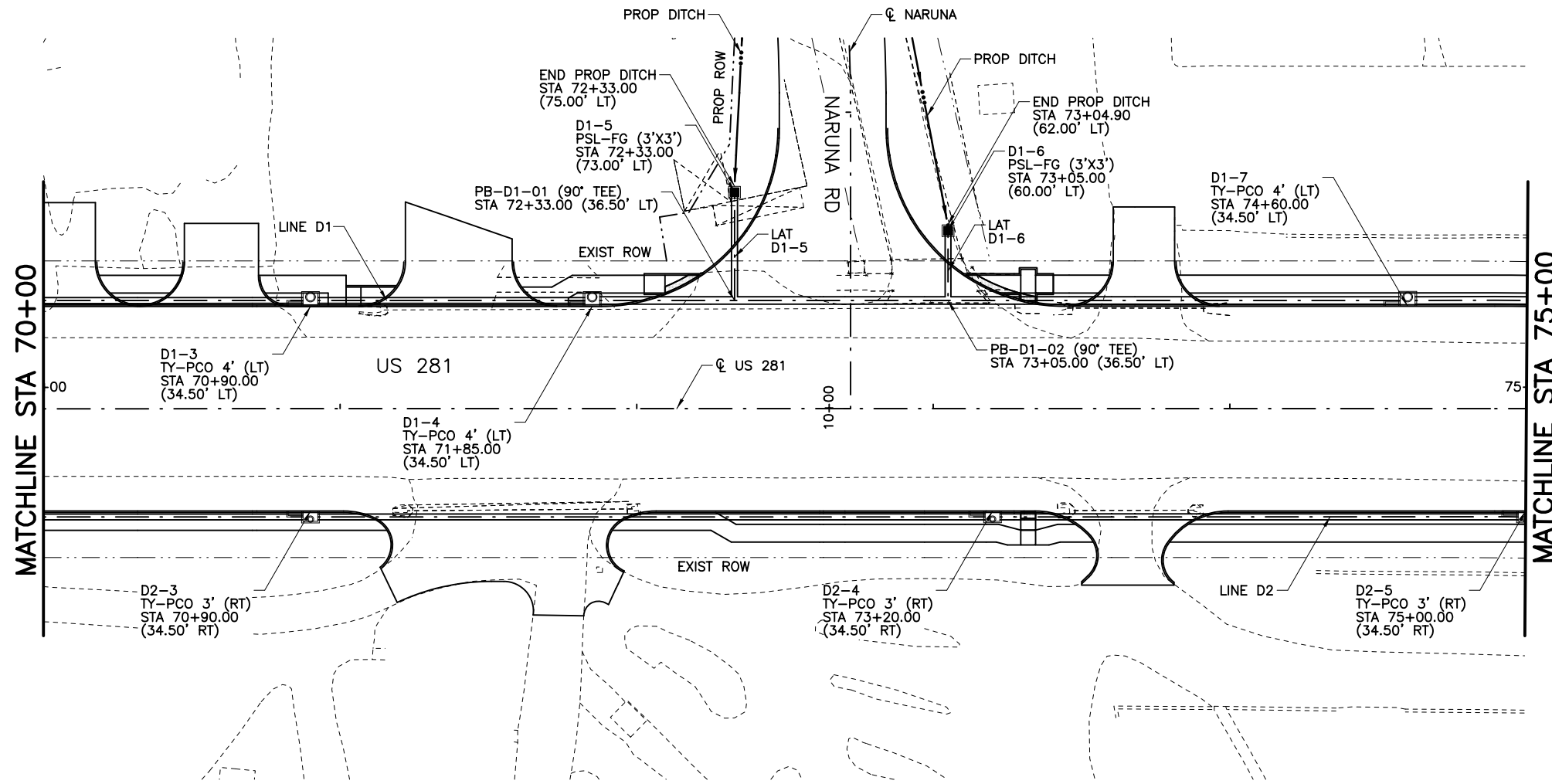
©2023 Texas Department of Transportation
US 281

DRAINAGE PLAN & PROFILE

STA 65+00 TO STA 70+00

Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. LAMPASAS	COUNTY	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 202		

1/31/2023 4:46:25 PM kperry
pw:/



LEGEND

- EXISTING DITCH
- PROPOSED DITCH

NOTES:

1. ALL STATIONS AND OFFSETS ARE FROM C US 281 UNLESS NOTED OTHERWISE.
2. ALL LOCATIONS AND ELEVATIONS FOR CURB INLETS ARE SHOWN TO THE TOP FACE OF CURB.
3. ALL LOCATIONS FOR DITCH INLETS ARE SHOWN TO CENTER POINT OF INLET UNLESS NOTED OTHERWISE.
4. REFERENCE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL INFORMATION.
5. REFERENCE CULVERT SHEETS FOR ADDITIONAL INFORMATION.
6. REFERENCE DRAINAGE PROFILE SHEETS FOR ADDITIONAL LINE AND LATERAL INFORMATION.
7. REFERENCE CROSS SECTIONS FOR PROPOSED DITCH LOCATIONS.
8. GEOPAK DRAINAGE WAS USED FOR STORM SEWER COMPUTATIONS.
9. ALL PIPE SHALL BE CLASS III UNLESS NOTED OTHERWISE.
10. CONTRACTOR TO VERIFY LOCATIONS OF UTILITIES PRIOR TO LAYING STORMSEWER OR DITCH GRADING.



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE



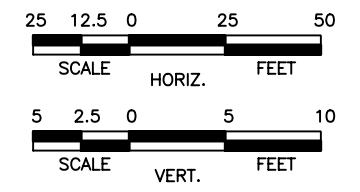
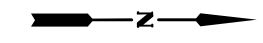
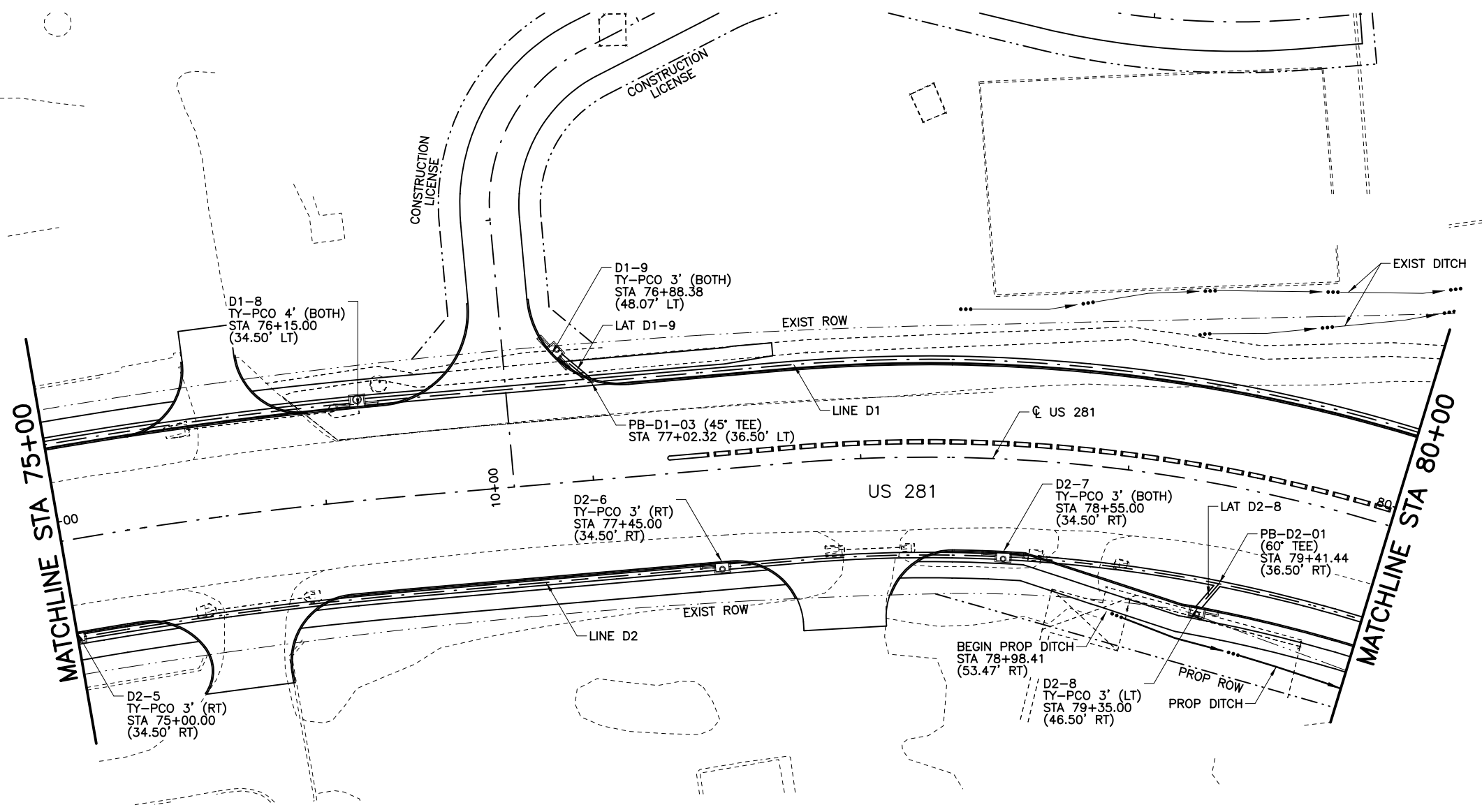
©2023 Texas Department of Transportation

DRAINAGE PLAN & PROFILE

STA 70+00 TO STA 75+00

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
Checked:	CPY	6	TEXAS		US 281
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.
Checked:	CPY	BWD	LAMPASAS	0251	06
					JOB NO.
					036
					SHEET NO.
					203

1/31/2023 4:46:29 PM kperry
 cpybw_ansi.tbl
 cpypdf_ansi.plt
 pw:/



LEGEND

- EXISTING DITCH
- PROPOSED DITCH

NOTES:

1. ALL STATIONS AND OFFSETS ARE FROM C US 281 UNLESS NOTED OTHERWISE.
2. ALL LOCATIONS AND ELEVATIONS FOR CURB INLETS ARE SHOWN TO THE TOP FACE OF CURB.
3. ALL LOCATIONS FOR DITCH INLETS ARE SHOWN TO CENTER POINT OF INLET UNLESS NOTED OTHERWISE.
4. REFERENCE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL INFORMATION.
5. REFERENCE CULVERT SHEETS FOR ADDITIONAL INFORMATION.
6. REFERENCE DRAINAGE PROFILE SHEETS FOR ADDITIONAL LINE AND LATERAL INFORMATION.
7. REFERENCE CROSS SECTIONS FOR PROPOSED DITCH LOCATIONS.
8. GEOPAK DRAINAGE WAS USED FOR STORM SEWER COMPUTATIONS.
9. ALL PIPE SHALL BE CLASS III UNLESS NOTED OTHERWISE.
10. CONTRACTOR TO VERIFY LOCATIONS OF UTILITIES PRIOR TO LAYING STORMSEWER OR DITCH GRADING.



Kristen L. Perry
1/31/2023

NO.	REVISION	BY	DATE

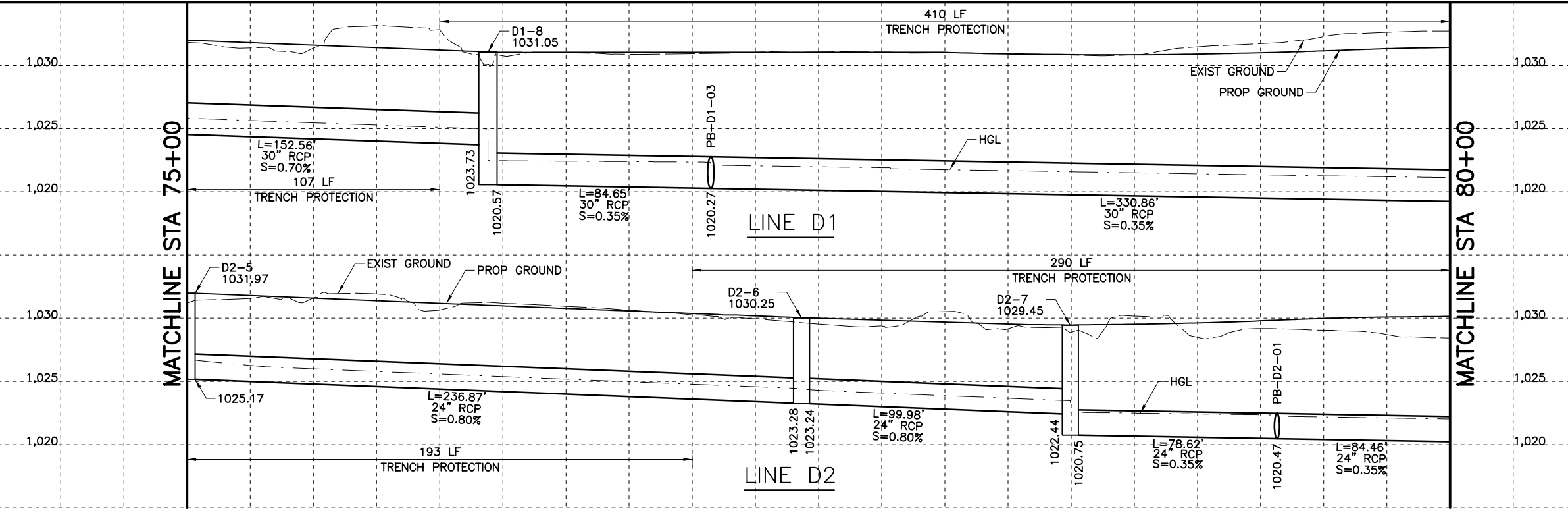


©2023 Texas Department of Transportation
US 281

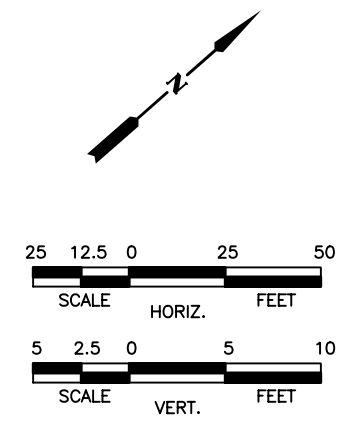
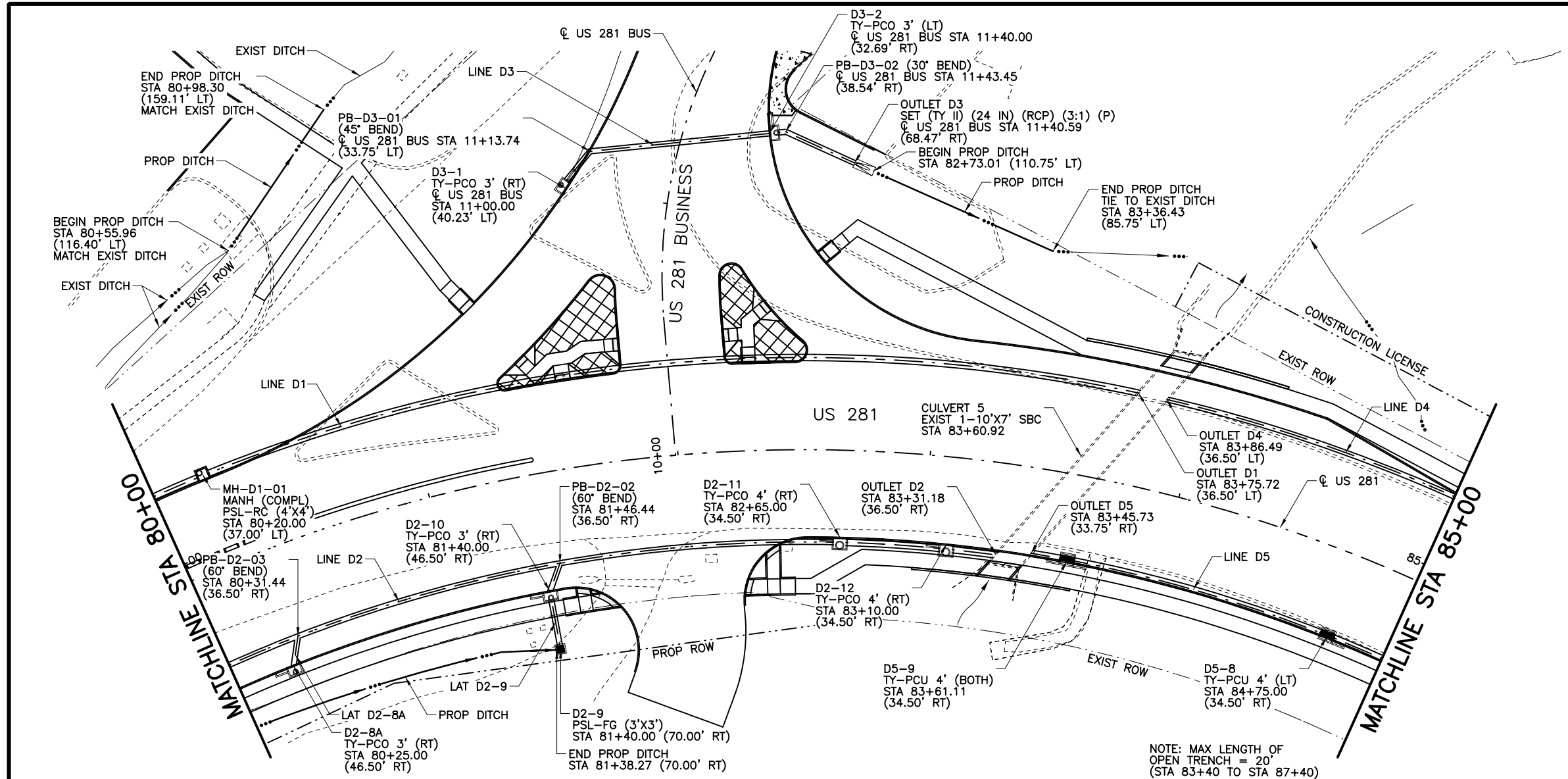
DRAINAGE PLAN & PROFILE

STA 75+00 TO STA 80+00

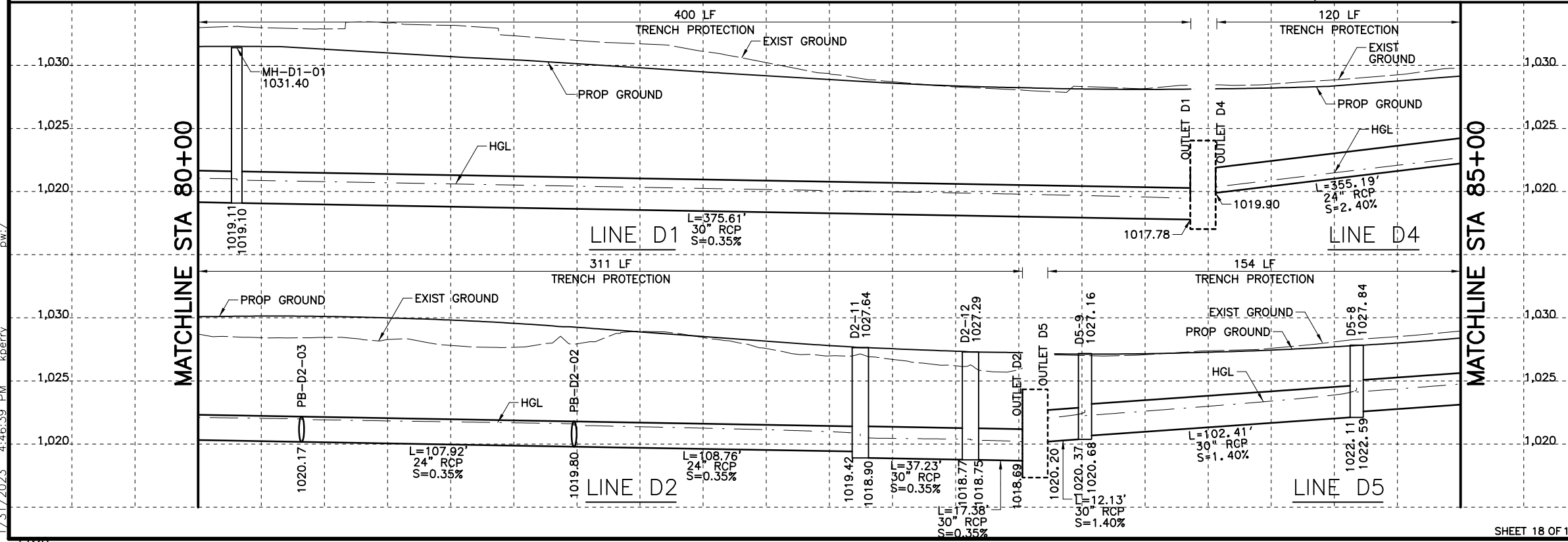
Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 204		



1/31/2023 4:46:34 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:



- LEGEND**
- EXISTING DITCH
 - PROPOSED DITCH
- NOTES:**
1. ALL STATIONS AND OFFSETS ARE FROM C US 281 UNLESS NOTED OTHERWISE.
 2. ALL LOCATIONS AND ELEVATIONS FOR CURB INLETS ARE SHOWN TO THE TOP FACE OF CURB.
 3. ALL LOCATIONS FOR DITCH INLETS ARE SHOWN TO CENTER POINT OF INLET UNLESS NOTED OTHERWISE.
 4. REFERENCE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL INFORMATION.
 5. REFERENCE CULVERT SHEETS FOR ADDITIONAL INFORMATION.
 6. REFERENCE DRAINAGE PROFILE SHEETS FOR ADDITIONAL LINE AND LATERAL INFORMATION.
 7. REFERENCE CROSS SECTIONS FOR PROPOSED DITCH LOCATIONS.
 8. GEOPAK DRAINAGE WAS USED FOR STORM SEWER COMPUTATIONS.
 9. ALL PIPE SHALL BE CLASS III UNLESS NOTED OTHERWISE.
 10. CONTRACTOR TO VERIFY LOCATIONS OF UTILITIES PRIOR TO LAYING STORMSEWER OR DITCH GRADING.



Kristen L. Perry

NO.	REVISION	BY	DATE

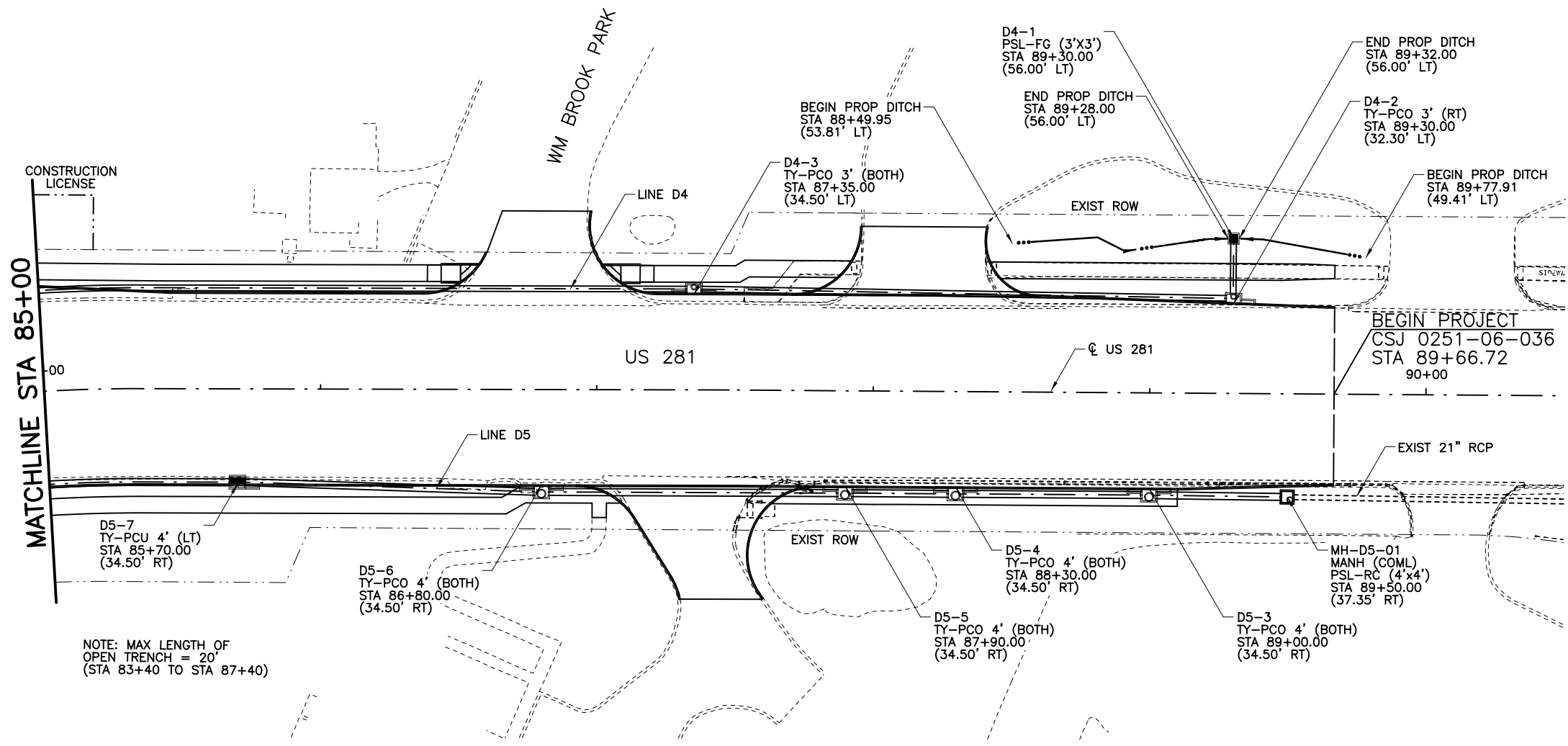
CP&Y
TEXAS REGISTERED ENGINEERING FIRM F-1741

©2023 Texas Department of Transportation
US 281

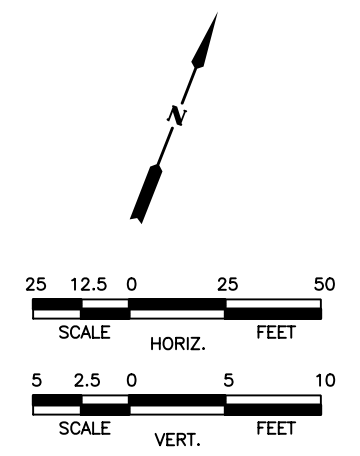
DRAINAGE PLAN & PROFILE
STA 80+00 TO STA 85+00

Designed: CPY	FED. RD. DIST. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 205		

1/31/2023 4:46:39 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 dwg:



NOTE: MAX LENGTH OF OPEN TRENCH = 20' (STA 83+40 TO STA 87+40)



LEGEND

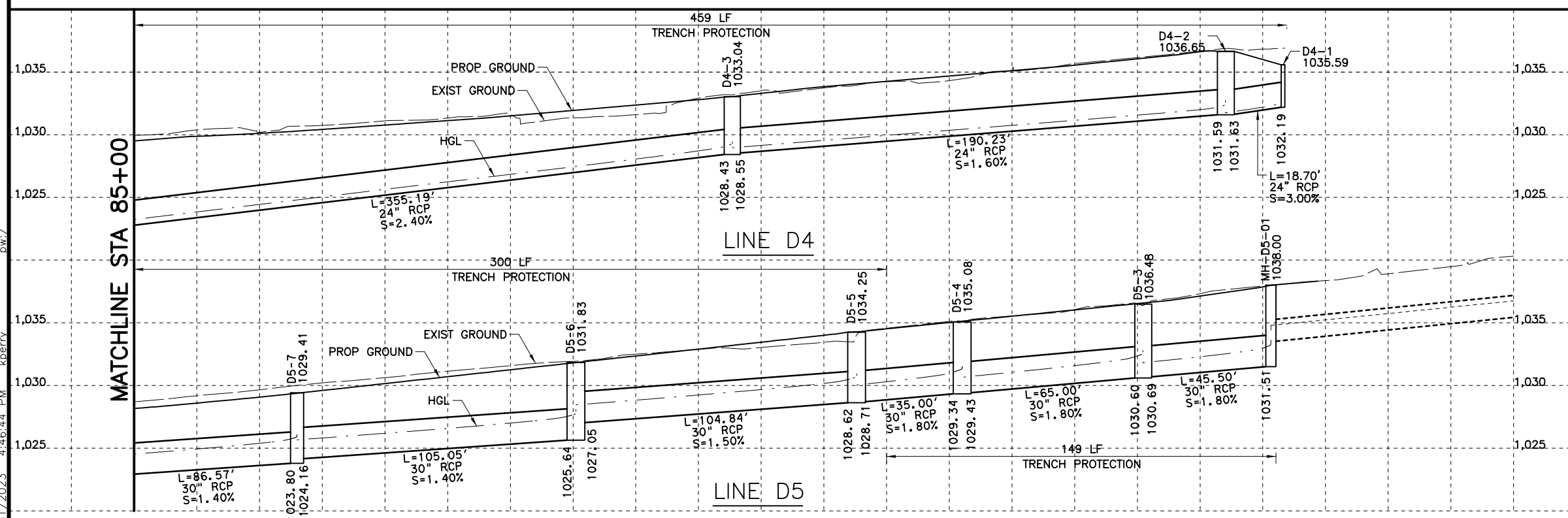
- EXISTING DITCH
- PROPOSED DITCH

NOTES:

1. ALL STATIONS AND OFFSETS ARE FROM ϕ US 281 UNLESS NOTED OTHERWISE.
2. ALL LOCATIONS AND ELEVATIONS FOR CURB INLETS ARE SHOWN TO THE TOP FACE OF CURB.
3. ALL LOCATIONS FOR DITCH INLETS ARE SHOWN TO CENTER POINT OF INLET UNLESS NOTED OTHERWISE.
4. REFERENCE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL INFORMATION.
5. REFERENCE CULVERT SHEETS FOR ADDITIONAL INFORMATION.
6. REFERENCE DRAINAGE PROFILE SHEETS FOR ADDITIONAL LINE AND LATERAL INFORMATION.
7. REFERENCE CROSS SECTIONS FOR PROPOSED DITCH LOCATIONS.
8. GEOPAK DRAINAGE WAS USED FOR STORM SEWER COMPUTATIONS.
9. ALL PIPE SHALL BE CLASS III UNLESS NOTED OTHERWISE.
10. CONTRACTOR TO VERIFY LOCATIONS OF UTILITIES PRIOR TO LAYING STORMSEWER OR DITCH GRADING.



Kristen L. Perry
1/31/2023



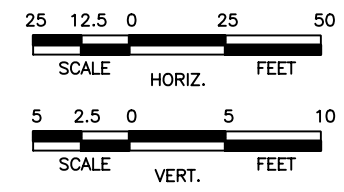
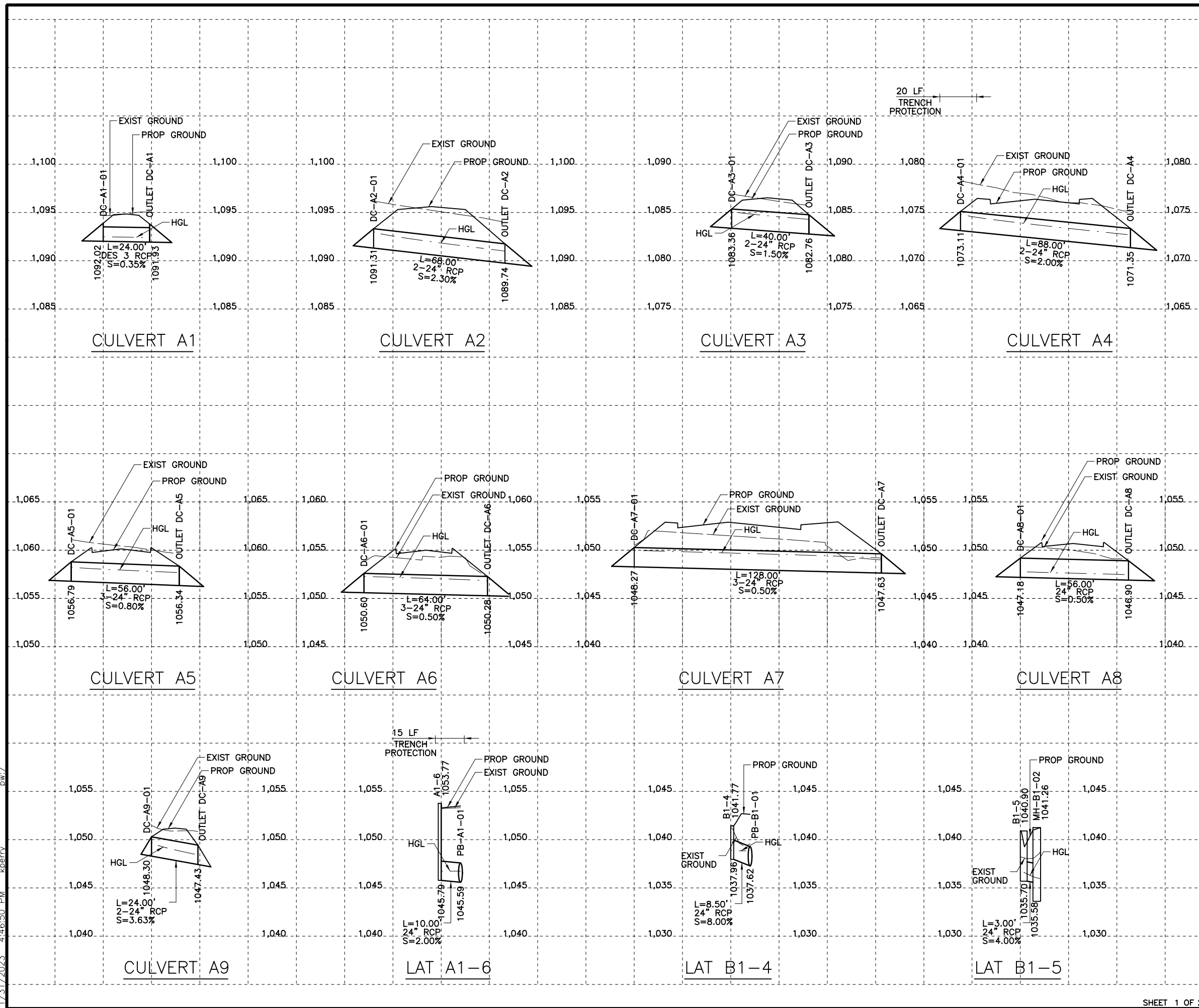
NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741
 ©2023 Texas Department of Transportation
 US 281
DRAINAGE PLAN & PROFILE
STA 85+00 TO BEGIN PROJECT

Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST.	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 206		

1/31/2023 4:46:44 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.plt/cfg
 pw:/

1/31/2023 4:46:50 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/



- NOTES:**
1. ALL STATIONS AND OFFSETS ARE FROM \odot US 281 UNLESS NOTED OTHERWISE.
 2. ALL LOCATIONS AND ELEVATIONS FOR CURB INLETS ARE SHOWN TO THE TOP FACE OF CURB.
 3. ALL LOCATIONS FOR DITCH INLETS ARE SHOWN TO CENTER POINT OF INLET UNLESS NOTED OTHERWISE.
 4. REFERENCE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL INFORMATION.
 5. REFERENCE CULVERT SHEETS FOR ADDITIONAL INFORMATION.
 6. REFERENCE DRAINAGE PROFILE SHEETS FOR ADDITIONAL LINE AND LATERAL INFORMATION.
 7. REFERENCE CROSS SECTIONS FOR PROPOSED DITCH LOCATIONS.
 8. GEOPAK DRAINAGE WAS USED FOR STORM SEWER COMPUTATIONS.
 9. ALL PIPE SHALL BE CLASS III UNLESS NOTED OTHERWISE.
 10. CONTRACTOR TO VERIFY LOCATIONS OF UTILITIES PRIOR TO LAYING STORMSEWER OR DITCH GRADING.



Kristen L. Perry
 1/31/2023

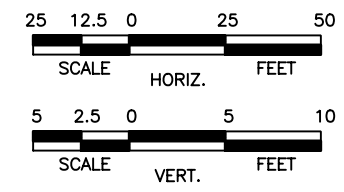
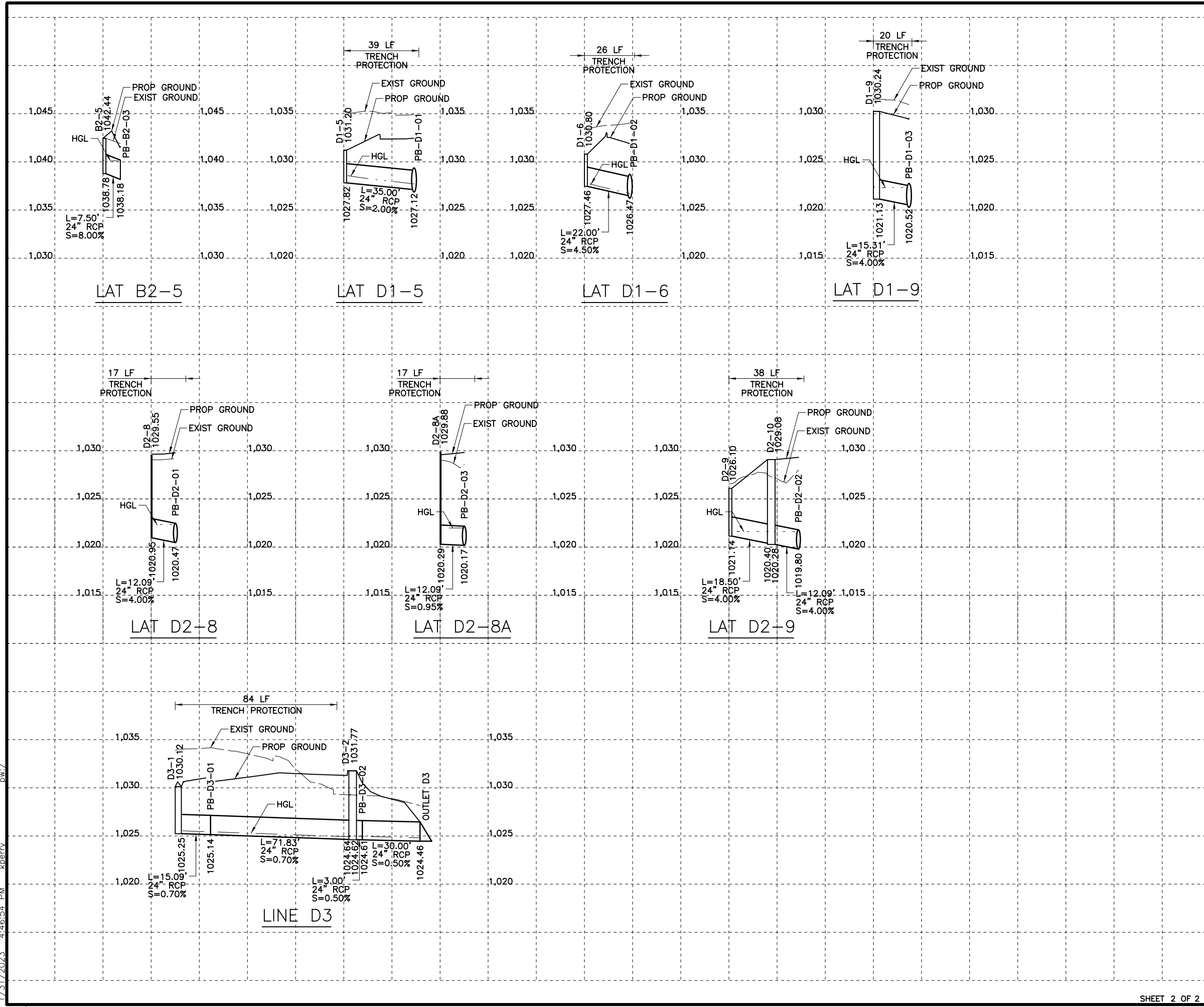
NO.	REVISION	BY	DATE



DRAINAGE PROFILES

Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 207		

1/31/2023 4:46:54 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw://



- NOTES:**
1. ALL STATIONS AND OFFSETS ARE FROM C US 281 UNLESS NOTED OTHERWISE.
 2. ALL LOCATIONS AND ELEVATIONS FOR CURB INLETS ARE SHOWN TO THE TOP FACE OF CURB.
 3. ALL LOCATIONS FOR DITCH INLETS ARE SHOWN TO CENTER POINT OF INLET UNLESS NOTED OTHERWISE.
 4. REFERENCE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL INFORMATION.
 5. REFERENCE CULVERT SHEETS FOR ADDITIONAL INFORMATION.
 6. REFERENCE DRAINAGE PROFILE SHEETS FOR ADDITIONAL LINE AND LATERAL INFORMATION.
 7. REFERENCE CROSS SECTIONS FOR PROPOSED DITCH LOCATIONS.
 8. GEOPAK DRAINAGE WAS USED FOR STORM SEWER COMPUTATIONS.
 9. ALL PIPE SHALL BE CLASS III UNLESS NOTED OTHERWISE.
 10. CONTRACTOR TO VERIFY LOCATIONS OF UTILITIES PRIOR TO LAYING STORMSEWER OR DITCH GRADING.



Kristen L. Perry
 1/31/2023

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741

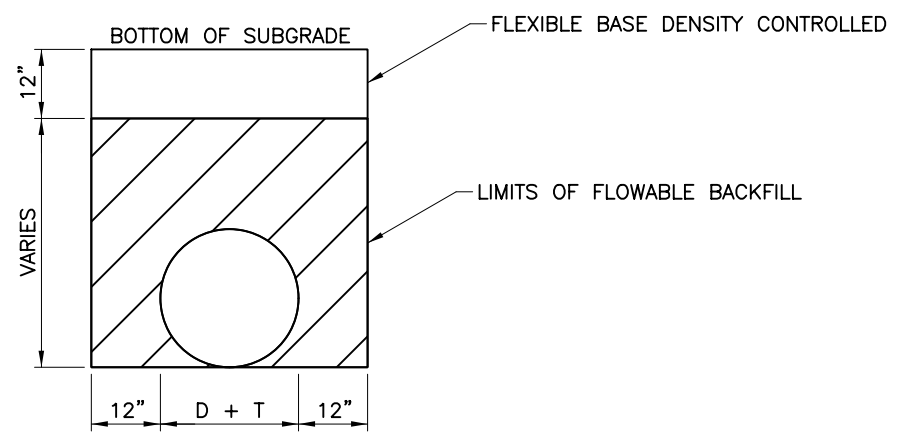
©2023 Texas Department of Transportation

US 281

DRAINAGE PROFILES

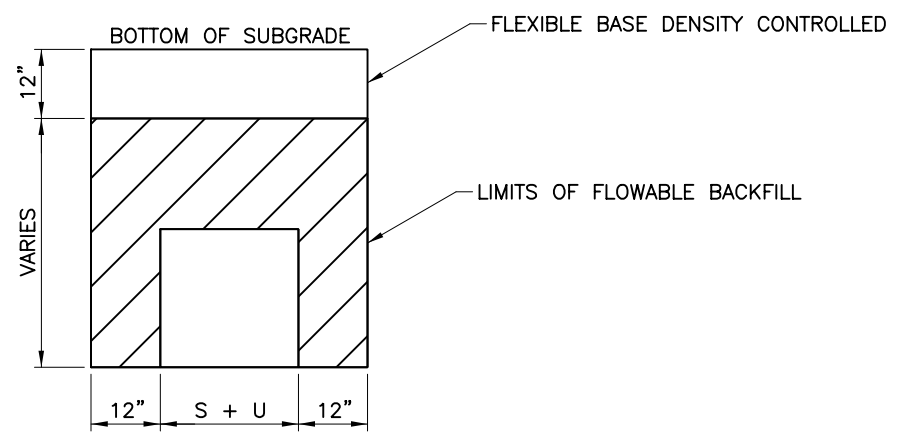
Designed:	CPY	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.	0251 06 036	HIGHWAY NO.	US 281
Checked:	CPY	DIST.	BWD	COUNTY	LAMPASAS	CONTROL NO.	0251	SECTION NO.	06
Drawn:	CPY	JOB NO.	036	SHEET NO.	208				

cpybw_ANSIB.tbl
 cpybw_ANSIB.pltcfgr
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.06 Drainage/49304DRd01.dgn
 9/2/2022 2:10:48 PM kperry



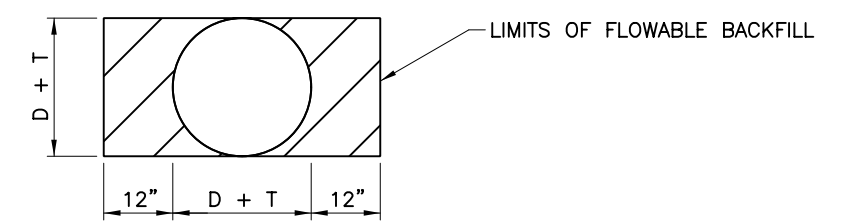
D + T = DIAMETER OF PIPE PLUS WALL THICKNESS

BACKFILL DETAIL
RCP UNDER PAVEMENT
 N.T.S.



S + U = SPAN OF BOX PLUS WALL THICKNESS

BACKFILL DETAIL
BOX CULVERT UNDER PAVEMENT
 N.T.S.



D + T = DIAMETER OF PIPE PLUS WALL THICKNESS

BACKFILL DETAIL
RCP NOT UNDER PAVEMENT
 N.T.S.

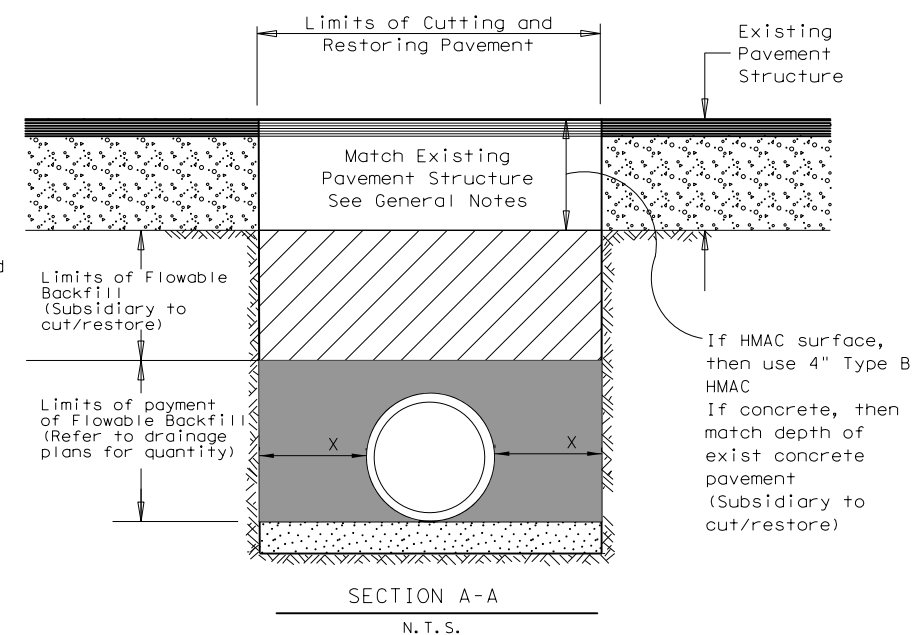
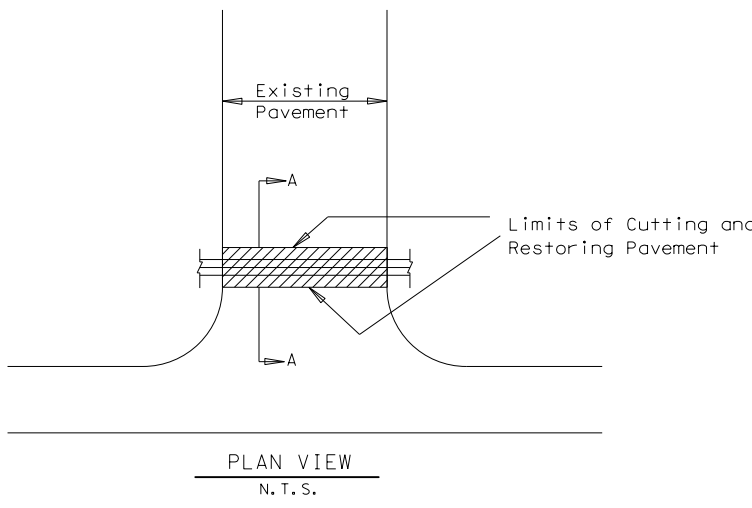


TABLE OF STANDARD EXCAVATION WIDTHS FOR RC PIPE

PIPE		X	WIDTH OF CUTTING AND RESTORING PAVEMENT
ID	OD		
18"	22 1/2"	1'	3.88'
24"	29 1/2"	1'	4.46'
30"	37"	1'	5.08'
36"	44"	1'	5.67'
42"	51"	1'	6.25'
48"	58"	2'	8.83'
54"	65"	2'	9.42'
60"	72"	2'	10.00'
66"	79"	2'	10.58'
72"	86"	2'	11.17'
78"	93"	2'	11.75'
84"	100"	2'	12.33'
96"	114"	2'	13.50'

Provide width of Cutting and Restoring Pavement for installation of storm drain structures as the overall width of the structure plus:

- 2 feet for structures with and inside dimension of 42" or less, or,
- 4 feet for structures with and inside dimension greater than 42".

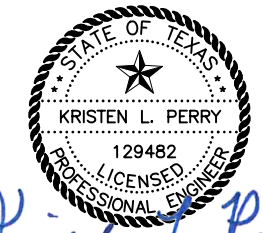
GENERAL NOTES:

Consider any work performed to repair damage to the existing pavement outside the limits shown subsidiary to the pertinent items.

Replacement material will be Flowable Backfill or an equivalent material as directed.

Payment for Cutting and Restoring Pavement as shown shall be made at the unit price bid for "Cutting and Restoring Pavement."

TRAFFIC CONTROL PLAN
CUT AND RESTORE
DETAILS



9/2/2022

Kristen L. Perry

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

©2022

DRAINAGE DETAILS

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	CPY	6	TEXAS		US 281		
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	CPY	BWD	LAMPASAS	0251	06	036	209

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.

Culvert Station and/or Creek Name followed by applicable end (Lt, Rt or Both)	Description of Box Culvert No. Spans ~ Span X Height	Max Fill Height (Ft)	Applicable Box Culvert Standard (4)	Applicable Wingwall or End Treatment Standard	Skew Angle (0°, 15°, 30° or 45°)	Side Slope or Channel Slope Ratio (SL:1)	T Culvert Top Slab Thickness (In)	U Culvert Wall Thickness (In)	C Estimated Curb Height (Ft)	Hw (1) Height of Wingwall (Ft)	A Curb to End of Wingwall (Ft)	B Offset of End of Wingwall (Ft)	Lw Length of Longest Wingwall (Ft)	Ltw Culvert Toewall Length (Ft)	Atw Anchor Toewall Length (Ft)	Riprap Apron (CY)	Class "C" Conc (Curb) (CY) (2)	Class "C" Conc (Wingwall) (CY) (3)	Total Wingwall Area (SF)
CULVERT STR 1 STA 33+66.71 (Lt)	2 ~ 10' X 10'	'	MC-10-7	None	30	3:1	9"	7"	2.396	N/A	N/A	N/A	N/A	N/A	N/A	0.0	2.2	N/A	N/A
CULVERT STR 1 STA 33+66.71 (Rt)	2 ~ 10' X 10'	'	MC-10-7	None	0	3:1	9"	7"	3.708	N/A	N/A	N/A	N/A	N/A	N/A	0.0	3.0	N/A	N/A
CULVERT STR 2 STA 41+50.00 (Lt)	1 ~ 4' X 2'	2.08'	SCC-3&4	PW-1	0	3:1	8"	7"	0.625	3.292	N/A	N/A	9.875	5.167	N/A	0.0	0.1	5.1	65
CULVERT STR 2 STA 41+50.00 (Rt)	1 ~ 4' X 2'	2.74'	SCC-3&4	SETB-FW-0	0	3:1	8"	7"	2.750	5.167	14.500	8.372	16.743	N/A	20.743	2.0	0.5	7.3	N/A
CULVERT STR 4 STA 57+41.00 (Lt)	1 ~ 4' X 3'	3.3025'	SCC-3&4	SW-0	0	6:1	8"	7"	0.250	3.667	N/A	N/A	20.000	N/A	N/A	0.8	0.0	5.7	80
CULVERT STR 4 STA 57+41.00 (Rt)	1 ~ 4' X 3'	2.435'	SCC-3&4	SETB-FW-0	0	3:1	8"	7"	2.292	5.708	16.125	9.310	18.620	N/A	22.620	2.4	0.4	8.3	N/A
CULVERT STR 5 STA 83+60.92 (Lt)	1 ~ 10' X 7'	4.3'	SCC-10	PW-1	30	3:1	8"	7"	4.313	11.979	N/A	N/A	41.497	12.894	N/A	0.0	2.1	68.1	994
CULVERT STR 5 STA 83+60.92 (Rt)	1 ~ 10' X 7'	2.253'	SCC-10	PW-1	30	3:1	8"	7"	2.417	10.083	N/A	N/A	34.930	12.894	N/A	0.0	1.2	44.6	704

NOTES:

Skew = 0° on SW-0, FW-0, SETB-CD, SETB-SW-0, and SETB-FW-0 standard sheets; 30° maximum for safety end treatment

SL:1 = Horizontal : 1 Vertical

- Side slope at culvert for flared or straight wingwalls.
- Channel slope for parallel wingwalls.
- Slope must be 3:1 or flatter for safety end treatments.

T = Box culvert top slab thickness. Dimension can be found on the applicable box culvert standard sheet.

U = Box culvert wall thickness. Dimension can be found on the applicable box culvert standard sheet.

C = Curb height

See applicable wing or end treatment standard sheets for calculations of Hw, A, B, Lw, Ltw, Atw, and Total Wingwall Area.

Hw = Height of wingwall

A = Distance from face of curb to end of wingwall (not applicable to parallel or straight wingwalls)

B = Offset of end of wingwall (not applicable to parallel or straight wingwalls)

Lw = Length of longest wingwall.

Ltw = Length of culvert toewall (not applicable when using riprap apron)

Atw = Length of anchor toewall (applicable to safety end treatment only)

Total Wingwall Area = Wingwall area in sq. ft. for two wingwalls (one structure end) if Lt or Rt. Area for four wingwalls (two structure ends) if Both.

① Round the wall heights shown to the nearest foot for bidding purposes.

② Concrete volume shown is for box culvert curb only. For curbs using the Box Culvert Rail Mounting Details (RAC) standard sheet quantities shown must be increased by a factor of 2.25. If Class S concrete is required for the top slab of the culvert, also provide Class S concrete for the curb. Curb concrete is considered part of the Box Culvert for payment.

③ Concrete volume shown is total of wings, footings, culvert toewall (if any), anchor toewalls (if any) and wingwall toewalls. Riprap aprons, culverts, and curb quantities are not included.

④ Regardless of the type of culvert shown on this sheet, the Contractor has the option of furnishing cast-in-place or precast culverts unless otherwise shown elsewhere on the plans. If the Contractor elects to provide culverts of a different type than those shown on this sheet, it is the Contractor's responsibility to make the necessary adjustments to the dimensions and quantities shown.

SPECIAL NOTE:

This sheet is a supplement to the box culvert standards. It is to be filled out by the culvert specifier and provides dimensions for the construction of the box culvert wingwalls and safety end treatments.

An Excel 2010 spreadsheet to assist in completing this table can be downloaded from the Bridge Standards (English) web page on the TxDOT web site. The completed sheet must be signed, sealed, and dated by a licensed Professional Engineer.

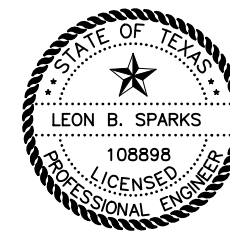


Bridge Division Standard

BOX CULVERT SUPPLEMENT WINGS AND END TREATMENTS

BCS

FILE: bcsstdel-20.dgn	DN: TxDOT	CK: TxDOT	DN: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	210	



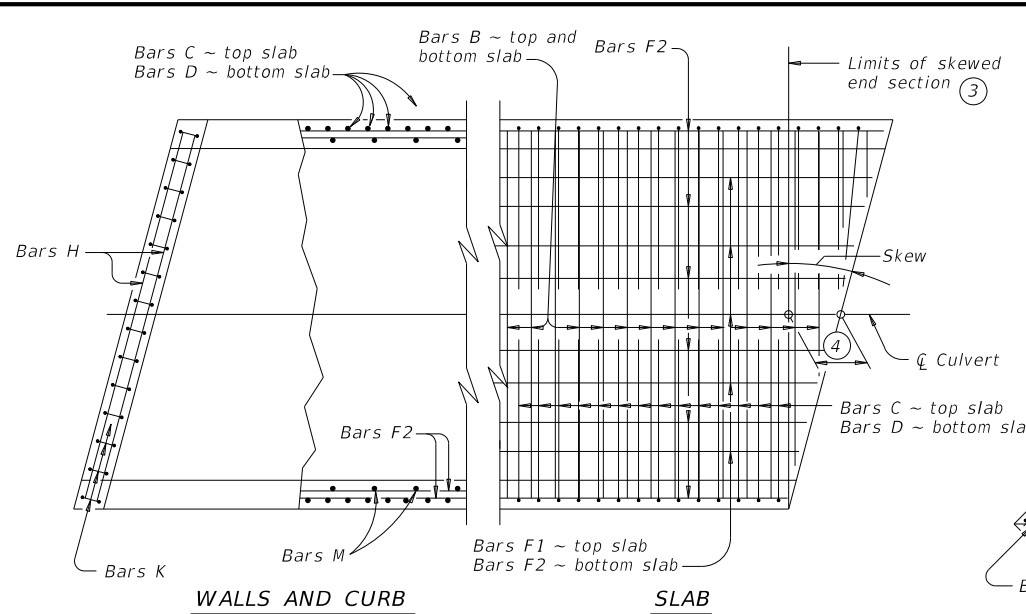
Leon B. Sparks

9/2/2022

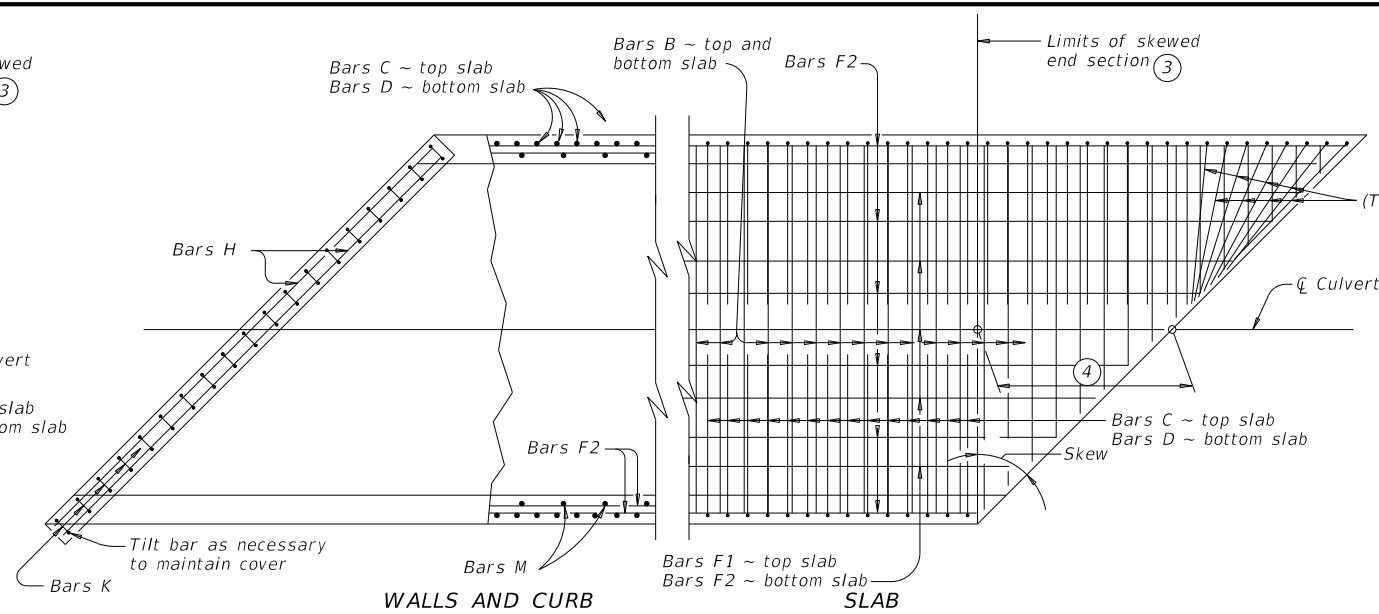
DATE: FILE:

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.

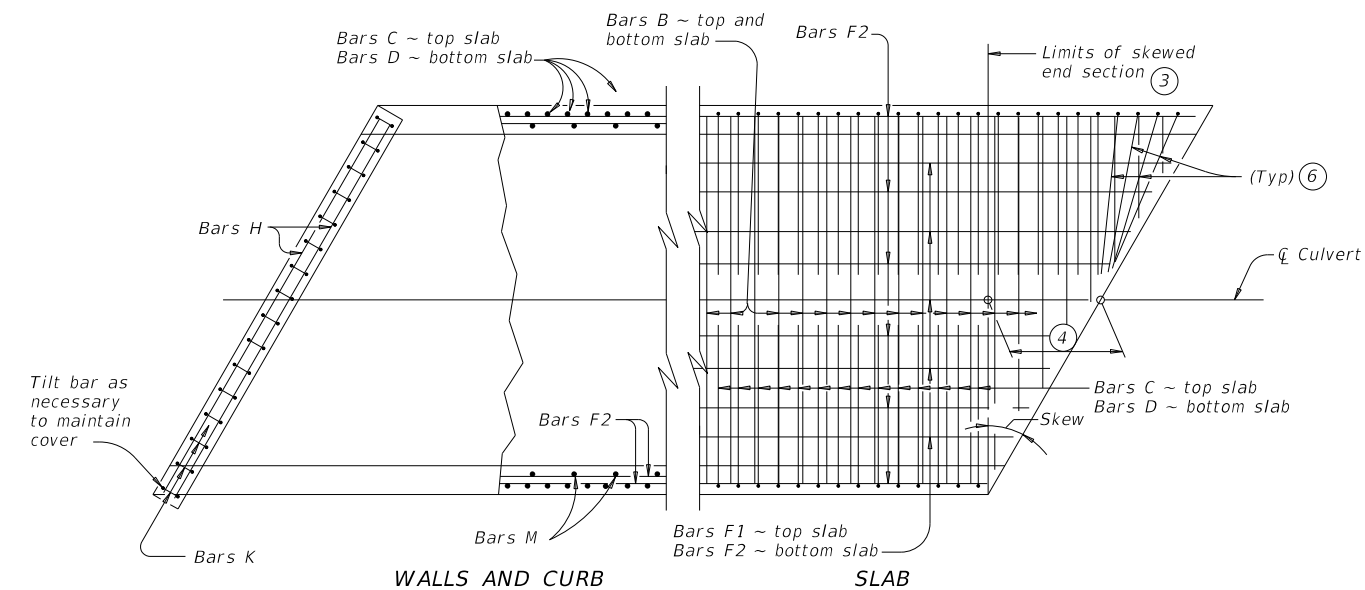
DATE: FILE:



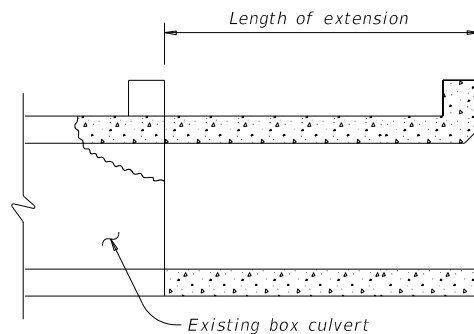
PLAN OF SKEWED ENDS ~ FROM 0° TO 15°



PLAN OF SKEWED ENDS ~ OVER 30° TO 45°



PLAN OF SKEWED ENDS ~ OVER 15° TO 30°



LENGTHENING DETAIL

1 For skewed box culverts with less than 2'-0" of fill, break back the top slab to provide a 1'-10" minimum lap of the existing longitudinal bars with the longitudinal bars in the extension.
 For non-skewed box culverts with less than 2'-0" of fill and for skewed or non-skewed culverts with a fill depth of 2'-0" or greater, break back the top slab to provide a 1'-10" minimum lap of the existing longitudinal bars with the longitudinal bars in the extension. Alternatively, if the box is non-skewed, embed #6 anchor bars with a Type III, C, D, E, or F anchor adhesive into the existing walls, top and bottom slab at 1'-6" center-to-center spacing. Minimum embedment depth is 8". Anchor adhesive chosen must be able to achieve a basic bond strength in tension, Nba, of 26.4 kips. Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing." Test adhesive anchors in accordance with Item 450.3.3, "Tests." Test 3 anchors per 100 anchors installed.
 Break back wings and apron as necessary to install the extension. Clean and extend the exposed wingwall and apron reinforcing into the extension. When lengthening existing box culverts with dimensions different than current standard dimensions, form horizontal and vertical transitions as directed by the Engineer. Match bottom slabs to maintain an uninterrupted flow line. Field bend existing and new reinforcing into transitions and maintain specified cover requirements. For top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface, adjust the "H" dimension to provide a smooth riding surface.

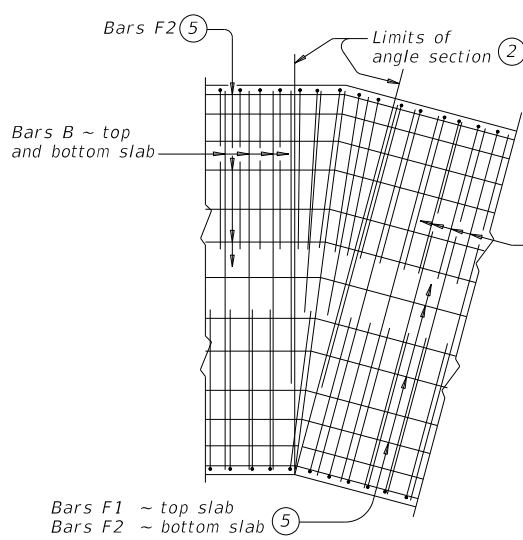
- 2 When the spacing between Bars B becomes less than half of the normal spacing, cut bars to avoid conflict.
- 3 The length of Bars B vary in the skewed end sections.
- 4 $[One\ half\ of\ overall\ width] \times [tangent\ of\ the\ skew\ angle]$
- 5 Place Bars F1 and F2 continuously through the angle section. Bend Bars F1 and F2 to remain parallel to the walls of the box culvert.
- 6 When necessary to avoid conflict in acute corners, shorten the slab extension leg of Bars C and Bars D to a minimum of 1'-6" for skews of 30° thru 45°.
- 7 At the Contractor's option, for skews of 15° or less, place Bars B, C, and D parallel to the skewed end while maintaining spacing along centerline of box. Increase lengths of Bars B shown on the Single Box Culverts Cast-In-Place (SCC) standards sheets to accommodate the skew.

CONSTRUCTION NOTES:
 Do not use permanent forms.
 When required, lap Bars H 1'-8" for uncoated or galvanized bars.
 Provide a minimum of 1 1/2" clear cover.

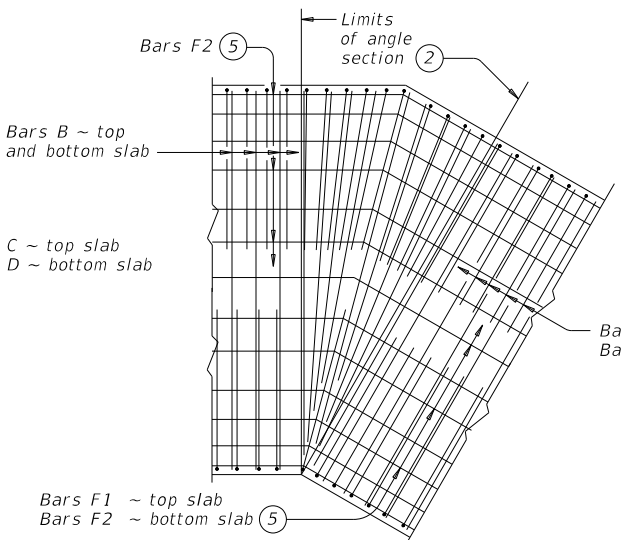
MATERIAL NOTES:
 Provide Grade 60 reinforcing steel.
 Provide galvanized reinforcing steel, if required elsewhere in the plans.
 Provide Class C concrete ($f'c = 3,600$ psi) with these exceptions:
 provide Class S concrete ($f'c = 4,000$ psi) for top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface.

GENERAL NOTES:
 Designed according to AASHTO LRFD Bridge Design Specifications.
 Refer to Single Box Culverts Cast-in-Place (SCC) standard sheets for details of straight sections of culvert.
 For skewed sections and angle sections, refer to Single Box Culverts Cast-in-Place (SCC) standard sheets for slab and wall dimensions, bar sizes, maximum bar spacing, and any other details not shown.
 For skewed ends with curbs, adjust length of Bars H, number of Bars K, curb concrete volume, and reinforcing steel weight by dividing the values shown on the culvert Single Box Culverts Cast-In-Place (SCC) standard sheets by the cosine of the skew angle.

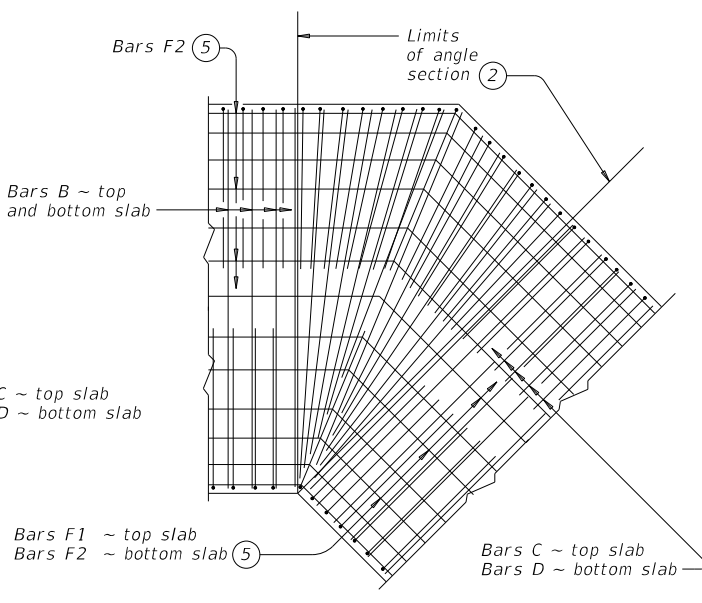
Cover dimensions are clear dimensions, unless noted otherwise.



PLAN OF ANGLE SECTION ~ FROM 0° TO 15°



PLAN OF ANGLE SECTION ~ OVER 15° TO 30°



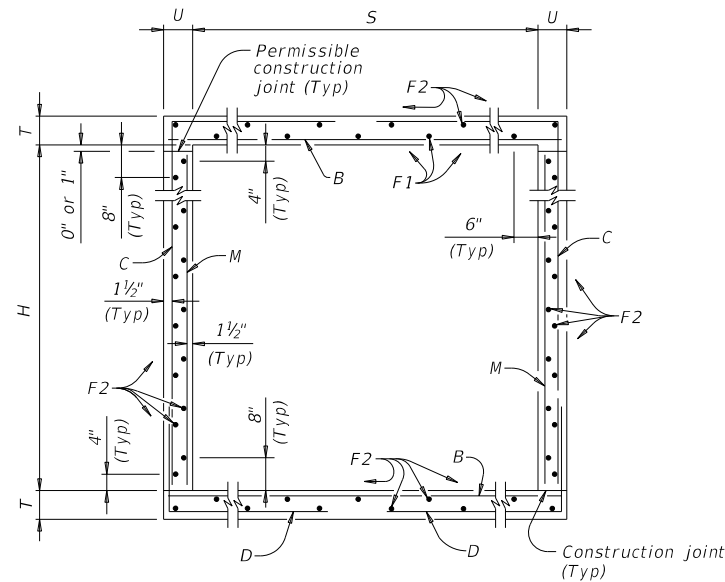
PLAN OF ANGLE SECTION ~ OVER 30° TO 45°

HL93 LOADING

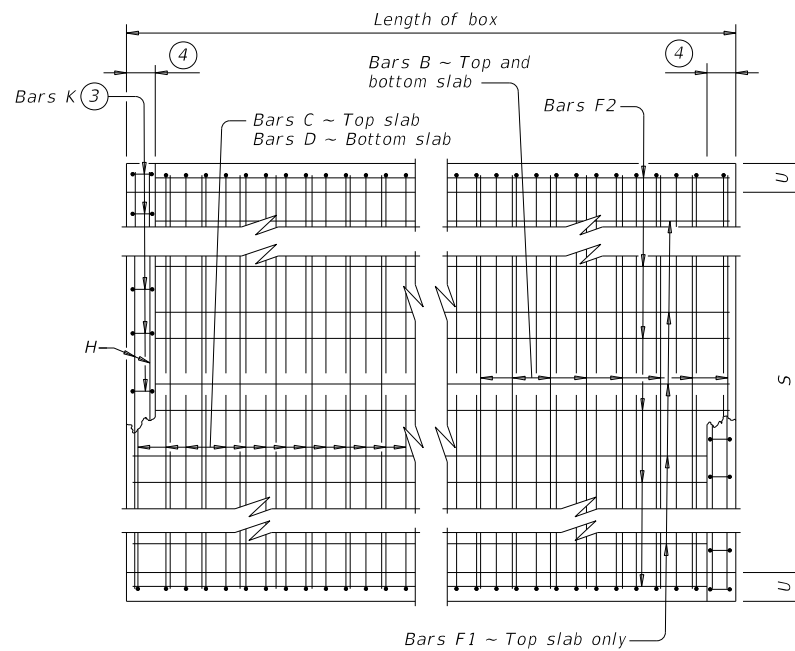
		Bridge Division Standard	
SINGLE BOX CULVERTS CAST-IN-PLACE MISCELLANEOUS DETAILS			
SCC-MD			
FILE: sccmdste-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
©TxDOT February 2020	CONT SECT	JOB	HIGHWAY
REVISIONS	0251 06	036	US 281
DIST	COUNTY	SHEET NO.	
BWD	LAMPASAS	211	

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.

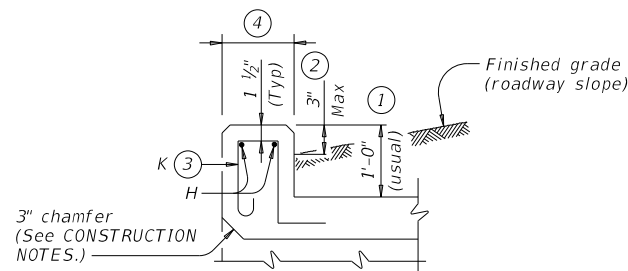
DATE: FILE:



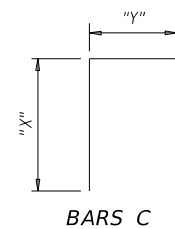
TYPICAL SECTION



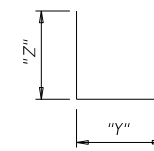
PLAN OF REINF STEEL



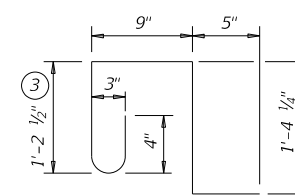
SECTION THRU CURB



BARS C



BARS D



BARS K (#4)
(Spa = 1'-0" Max)
(Length = 4'-2")

- ① 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Rail Anchorage Curb (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
- ② For vehicle safety, the following requirements must be met:
 - For structures without bridge rail, construct curbs no more than 3" above finished grade.
 - For structures with bridge rail, construct curbs flush with finished grade. Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
- ③ For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.
- ④ 1'-0" typical. 2'-3" when the Rail Anchorage Curb (RAC) standard sheet is referred to elsewhere in the plans.

The Contractor may replace Bars B, C, D, E, F1, F2, M, Y, and/or Z with deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes. The lap length required for WWR is never less than the lap length required for uncoated #4 bars.

Example conversion: Replacing No. 6 Gr 60 at 6" Spacing with WWR.
 Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.
 If D30.6 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) x (12 in. per ft.) = 4.86" Max spacing. Required lap length for the provided D30.6 wire is 2'-1" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).

CONSTRUCTION NOTES:

- Do not use permanent forms.
- Chamfer the bottom edge of the top slab 3" at the entrance.
- Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed.

MATERIAL NOTES:

- Provide Grade 60 reinforcing steel.
- Provide galvanized reinforcing steel if required elsewhere in the plans.
- Provide Class C concrete ($f'c = 3,600$ psi) for culvert barrel and curb, with the following exceptions: provide Class S concrete ($f'c = 4,000$ psi) for top slabs of:
 - culverts with overlay,
 - culverts with 1-to-2 course surface treatment, or
 - culverts with the top slab as the final riding surface.
- Provide bar laps, where required, as follows:
 - Uncoated or galvanized ~ #4 = 1'-8" Min
 - Uncoated or galvanized ~ #5 = 2'-1" Min

GENERAL NOTES:

- Designed according to AASHTO LRFD Bridge Design Specifications for the range of fill heights shown.
- See the Single Box Culverts Cast-In-Place Miscellaneous Detail (SCC-MD) standard sheet for details pertaining to skewed ends, angle sections, and lengthening.

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

HL93 LOADING SHEET 1 OF 2

		Bridge Division Standard	
SINGLE BOX CULVERTS CAST-IN-PLACE 0' TO 30' FILL			
SCC-3 & 4			
FILE: scc34ste-21.dgn	DN: TBE	CK: BMP	DW: TxDOT
©TxDOT February 2020	CONT	SECT	JOB
REVISIONS	0251	06	036
04/2021 Updated X values.	DIST	COUNTY	SHEET NO.
	BWD	LAMPASAS	212

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.

DATE: FILE:

SECTION DIMENSIONS				FILL HEIGHT ⁵	BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																									QUANTITIES													
					Bars B					Bars C					Bars D					Bars M ~ #4				Bars F1 ~ #4 at 18" Spa			Bars F2 ~ #4 at 18" Spa			Bars H 4 ~ #4		Bars K		Per Foot of Barrel		Curb		Total					
					S	H	T	U	No.	Size	Spa	Length	Weight	No.	Size	Spa	Length	Weight	" X "	" Y "	No.	Size	Spa	Length	Weight	" Y "	" Z "	No.	Spa	Length	Weight	No.	Length	Wt	No.	Length	Weight	Length	Wt	No.	Wt	Conc (CY)	Reinf (Lb)
3' - 0"	2' - 0"	8"	7"	30'	108	#5	9"	3' - 11"	441	108	#4	9"	5' - 4"	385	2' - 6"	2' - 10"	108	#4	9"	5' - 1"	367	2' - 10"	2' - 3"	108	9"	2' - 0"	144	3	39' - 9"	80	19	39' - 9"	505	3' - 11"	10	10	28	0.292	48.1	0.3	38	12.0	1,960
3' - 0"	3' - 0"	8"	7"	30'	108	#5	9"	3' - 11"	441	108	#4	9"	6' - 4"	457	3' - 6"	2' - 10"	108	#4	9"	5' - 1"	367	2' - 10"	2' - 3"	108	9"	3' - 0"	216	3	39' - 9"	80	23	39' - 9"	611	3' - 11"	10	10	28	0.335	54.3	0.3	38	13.7	2,210
4' - 0"	2' - 0"	8"	7"	30'	108	#5	9"	4' - 11"	554	162	#4	6"	5' - 8"	613	2' - 6"	3' - 2"	162	#4	6"	5' - 5"	586	3' - 2"	2' - 3"	108	9"	2' - 0"	144	3	39' - 9"	80	21	39' - 9"	558	4' - 11"	13	12	33	0.342	63.4	0.4	46	14.1	2,581
4' - 0"	3' - 0"	8"	7"	30'	108	#5	9"	4' - 11"	554	162	#4	6"	6' - 8"	721	3' - 6"	3' - 2"	162	#4	6"	5' - 5"	586	3' - 2"	2' - 3"	108	9"	3' - 0"	216	3	39' - 9"	80	25	39' - 9"	664	4' - 11"	13	12	33	0.385	70.5	0.4	46	15.8	2,867
4' - 0"	4' - 0"	8"	7"	30'	108	#5	9"	4' - 11"	554	162	#4	6"	7' - 8"	830	4' - 6"	3' - 2"	162	#4	6"	5' - 5"	586	3' - 2"	2' - 3"	108	9"	4' - 0"	289	3	39' - 9"	80	25	39' - 9"	664	4' - 11"	13	12	33	0.428	75.1	0.4	46	17.5	3,049

⁵ For direct traffic culverts (fill height ≤ 2 ft.), identify the required box size and select the option with the minimum fill height.



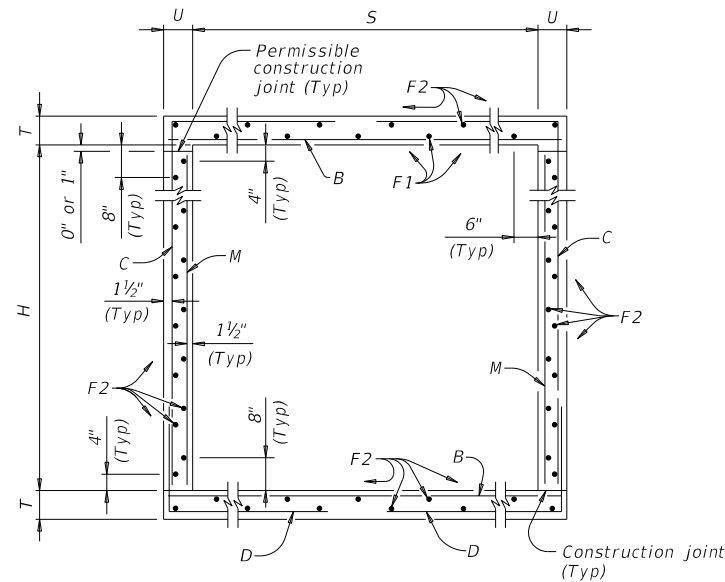
**SINGLE BOX CULVERTS
 CAST-IN-PLACE
 0' TO 30' FILL**

SCC-3 & 4

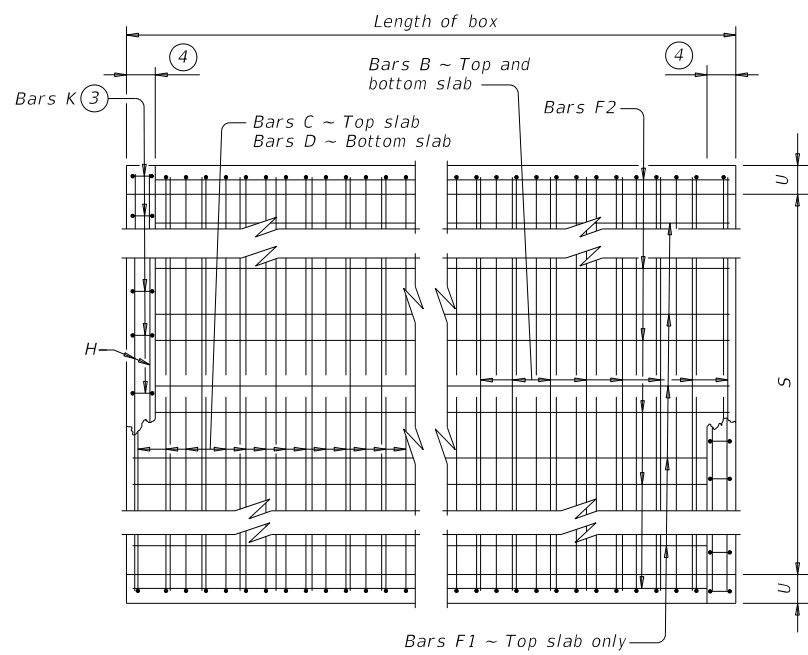
FILE: scc34ste-21.dgn	DN: TBE	ck: BMP	DW: TxDOT	ck: TxDOT
TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
04/2021 Updated X values.	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	213	

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.

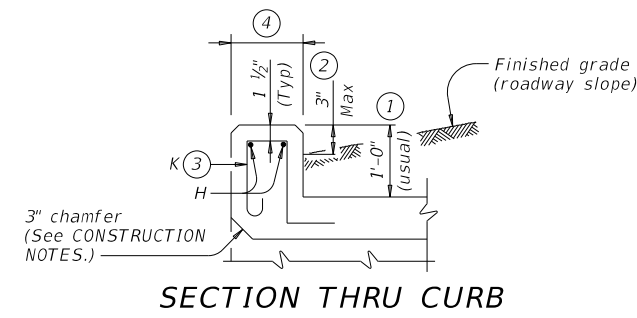
DATE: FILE:



TYPICAL SECTION



PLAN OF REINF STEEL



SECTION THRU CURB

- ① 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Rail Anchorage Curb (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
- ② For vehicle safety, the following requirements must be met:
 - For structures without bridge rail, construct curbs no more than 3" above finished grade.
 - For structures with bridge rail, construct curbs flush with finished grade. Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
- ③ For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.
- ④ 1'-0" typical. 2'-3" when the Rail Anchorage Curb (RAC) standard sheet is referred to elsewhere in the plans.

The Contractor may replace Bars B, C, D, E, F1, F2, M, Y, and/or Z with deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes. The lap length required for WWR is never less than the lap length required for uncoated #4 bars.

Example conversion: Replacing No. 6 Gr 60 at 6" Spacing with WWR.
 Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.
 If D30.6 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) x (12 in. per ft.) = 4.86" Max spacing. Required lap length for the provided D30.6 wire is 2'-1" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).

CONSTRUCTION NOTES:

Do not use permanent forms.
 Chamfer the bottom edge of the top slab 3" at the entrance.
 Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed.

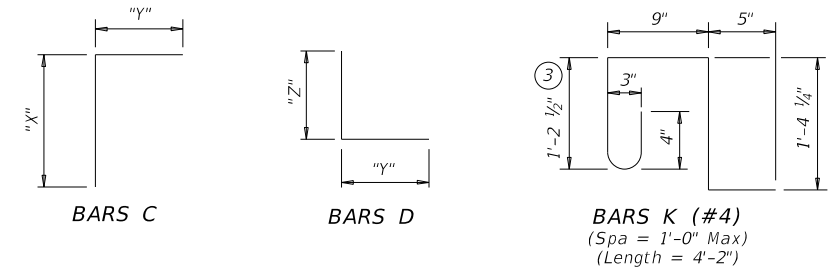
MATERIAL NOTES:

- Provide Grade 60 reinforcing steel.
- Provide galvanized reinforcing steel if required elsewhere in the plans.
- Provide Class C concrete ($f'c = 3,600$ psi) for culvert barrel and curb, with the following exceptions: provide Class S concrete ($f'c = 4,000$ psi) for top slabs of:
 - culverts with overlay,
 - culverts with 1-to-2 course surface treatment, or
 - culverts with the top slab as the final riding surface.
- Provide bar laps, where required, as follows:
 - Uncoated or galvanized ~ #4 = 1'-8" Min
 - Uncoated or galvanized ~ #5 = 2'-1" Min
 - Uncoated or galvanized ~ #6 = 2'-6" Min
 - Uncoated or galvanized ~ #7 = 3'-3" Min

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications for the range of fill heights shown.
 See the Single Box Culverts Cast-In-Place Miscellaneous Detail (SCC-MD) standard sheet for details pertaining to skewed ends, angle sections, and lengthening.

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



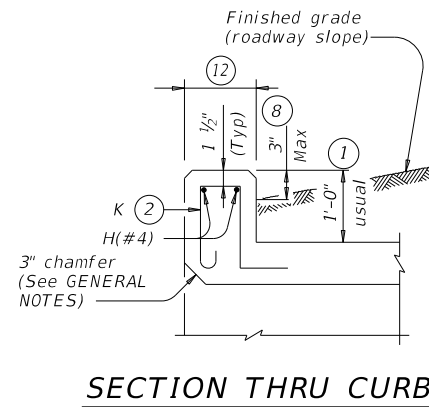
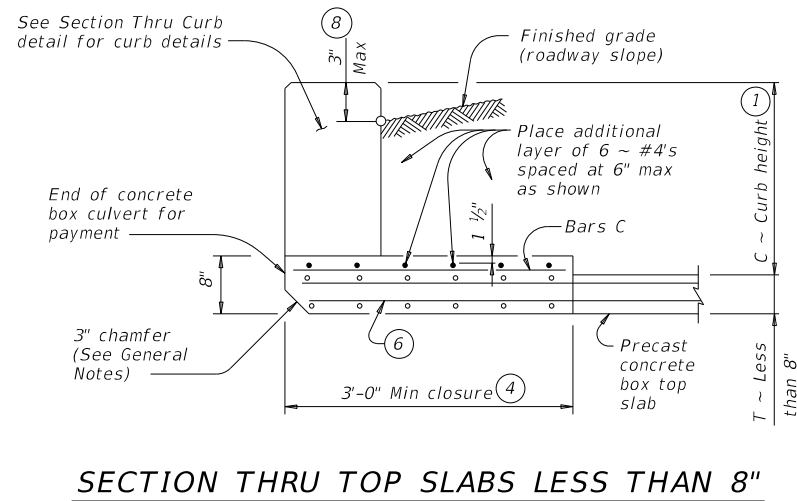
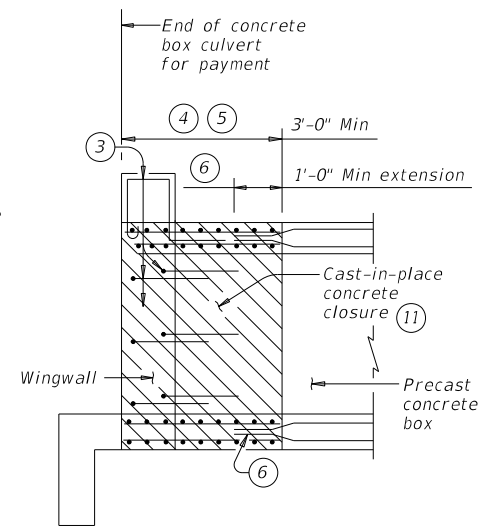
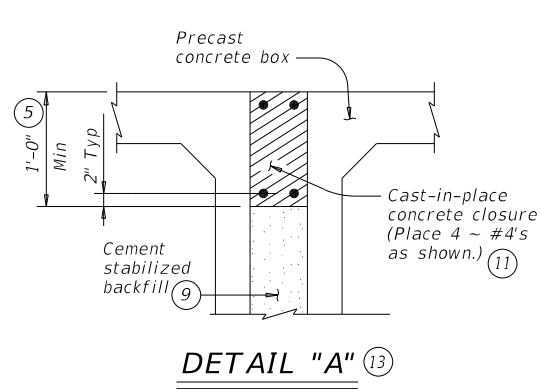
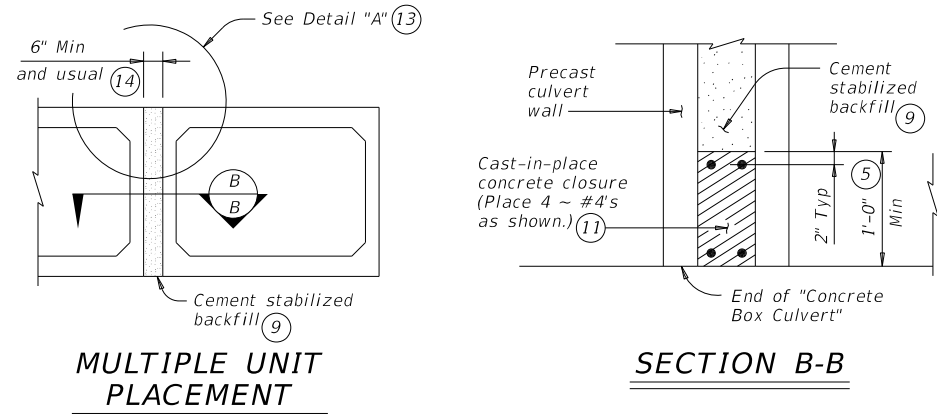
**SINGLE BOX CULVERTS
 CAST-IN-PLACE
 0' TO 30' FILL**

SCC-10

FILE: scc10ste-21.dgn	DN: TBE	CK: BMP	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
04/2021 Updated X values.	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	214	

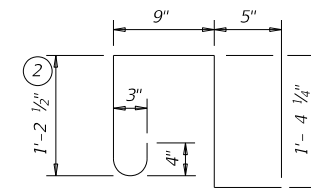
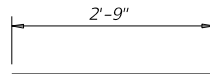
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: FILE:



QUANTITIES PER FOOT OF CURB (10)

Reinforcing Steel	4.12 Lb
Concrete	0.037 CY



- 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail, bicycle rail, or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
- For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.
- Extend curb, wingwall, or safety end treatment reinforcing into concrete closure. Bend or trim, as necessary, any reinforcing that does not fit into closure area.
- Provide a 3'-0" Min cast-in-place concrete closure. Break back boxes in the field or cast boxes short. Provide bands of reinforcing in the closure that are the same size and spacing as in the precast box section. Provide #4 longitudinal reinforcement spaced at 12 inches Max within the closure. Except where shown otherwise, construct the cast-in-place closure flush with the inside and outside faces of the precast box section.
- For multiple unit placements, adjust the length of the closure for the interior walls as necessary. Provide a 3'-0" Min cast-in-place closure in the top slab, bottom slab, and exterior wall. See Section B-B detail when interior walls are cast full length.
- Extend precast box reinforcing a minimum of 1'-0" into concrete closure (Typ).
- Place bands of reinforcing matching the inside and outside face reinforcing in the gaps of the top and bottom slabs. Place a band matching the outside face reinforcing of the wall in the gaps of the walls (placed in the outside face only). Tack weld the bands to the exposed reinforcing at each point of contact.
- For vehicle safety, the following requirements must be met:
 - For structures without bridge rail, construct curbs no more than 3" above finished grade.
 - For structures with bridge rail, construct curbs flush with finished grade. Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
- Cement stabilized backfill between boxes is considered part of the box culvert for payment.
- All curb concrete and reinforcing is considered part of the box culvert for payment.
- Any additional concrete and reinforcing required for the closures will be considered subsidiary to the box culvert for payment.
- 1'-0" typical. 2'-3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.
- For multiple unit placement with overlay, with 1 to 2 course surface treatment, or with the top slab as the final riding surface, provide wall closure as shown in Detail "A".
- This dimension may be increased with approval of the Engineer to allow the precast boxes to be tunneled or jacked in accordance with Item 476, "Jacking, Boring, or Tunneling Pipe or Box". No payment will be made for any additional material in the gap between adjacent boxes.

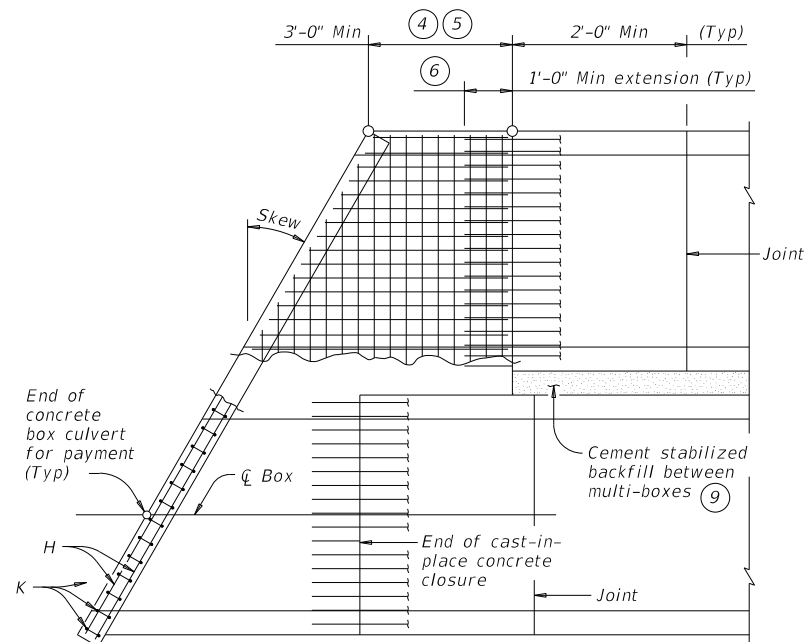
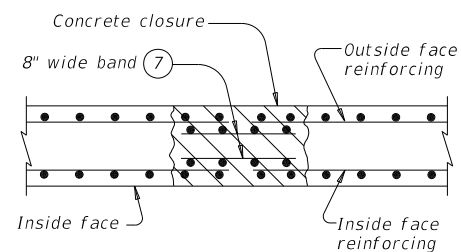
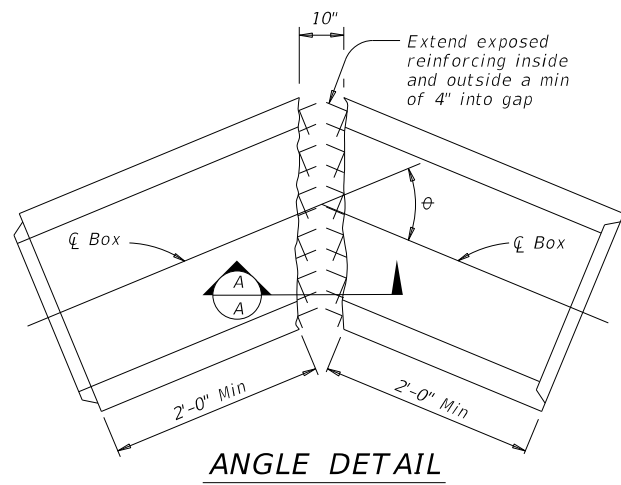
MATERIAL NOTES:

- Provide Grade 60 reinforcing steel.
- Provide ASTM A1064 welded wire reinforcement.
- Provide Class C concrete (f_c = 3,600 psi) for the closures.
- Provide cement stabilized backfill meeting the requirements of Item 400, "Excavation and Backfill for Structures."
- Any additional concrete required for the closures will be considered subsidiary to the box culvert.

GENERAL NOTES:

- Designed according to AASHTO LRFD Bridge Design Specifications.
- Refer to the Single Box Culverts Precast (SCP) standard sheets for details and notes not shown.
- Chamfer the bottom edge of the top slab closure 3 inches at culvert closure ends.

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



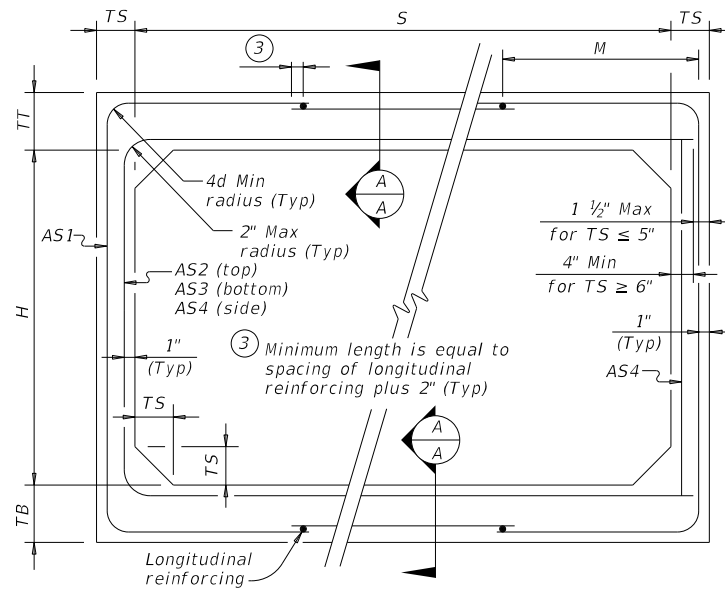
HL93 LOADING

		Bridge Division Standard	
BOX CULVERTS PRECAST MISCELLANEOUS DETAILS			
SCP-MD			
FILE: scpmdsts-20.dgn	DN: GAF	CK: LMW	DW: BWH/TxDOT
©TxDOT February 2020	CONTRACT	SECTION	JOB
REVISIONS	0251	06	036
	DIST	COUNTY	SHEET NO.
	BWD	LAMPASAS	217

BOX DATA

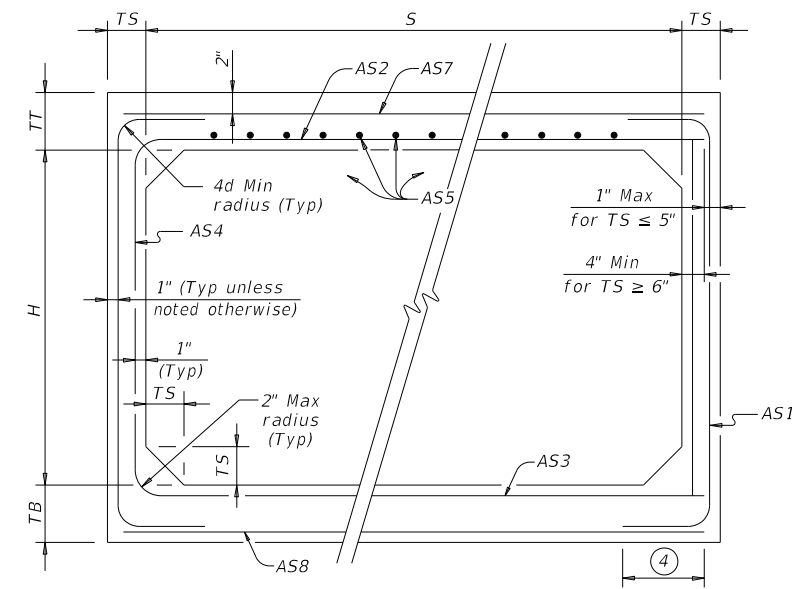
SECTION DIMENSIONS					Fill Height (ft.)	M (Min) (in.)	REINFORCING (sq. in. / ft.) ^②						① Lift Weight (tons)	
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)			AS1	AS2	AS3	AS4	AS5	AS7		AS8
3	2	7	6	4	< 2	-	0.17	0.25	0.16	0.10	0.17	0.17	0.14	3.3
3	2	4	4	4	2 < 3	31	0.13	0.19	0.18	0.10	-	-	-	2.4
3	2	4	4	4	3 - 5	31	0.10	0.11	0.12	0.10	-	-	-	2.4
3	2	4	4	4	10	31	0.10	0.10	0.10	0.10	-	-	-	2.4
3	2	4	4	4	15	31	0.10	0.13	0.13	0.10	-	-	-	2.4
3	2	4	4	4	20	31	0.11	0.17	0.17	0.10	-	-	-	2.4
3	2	4	4	4	25	31	0.14	0.21	0.21	0.10	-	-	-	2.4
3	2	4	4	4	30	31	0.17	0.25	0.25	0.10	-	-	-	2.4
3	2	4	4	4	35	31	0.20	0.29	0.30	0.10	-	-	-	2.4
3	3	7	6	4	< 2	-	0.17	0.27	0.17	0.10	0.17	0.17	0.14	3.7
3	3	4	4	4	2 < 3	31	0.10	0.22	0.21	0.10	-	-	-	2.8
3	3	4	4	4	3 - 5	31	0.10	0.14	0.14	0.10	-	-	-	2.8
3	3	4	4	4	10	31	0.10	0.11	0.11	0.10	-	-	-	2.8
3	3	4	4	4	15	31	0.10	0.14	0.15	0.10	-	-	-	2.8
3	3	4	4	4	20	31	0.10	0.18	0.19	0.10	-	-	-	2.8
3	3	4	4	4	25	31	0.10	0.23	0.23	0.10	-	-	-	2.8
3	3	4	4	4	30	31	0.12	0.27	0.28	0.10	-	-	-	2.8
3	3	4	4	4	35	31	0.14	0.32	0.32	0.10	-	-	-	2.8

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.



CORNER OPTION "A" CORNER OPTION "B"

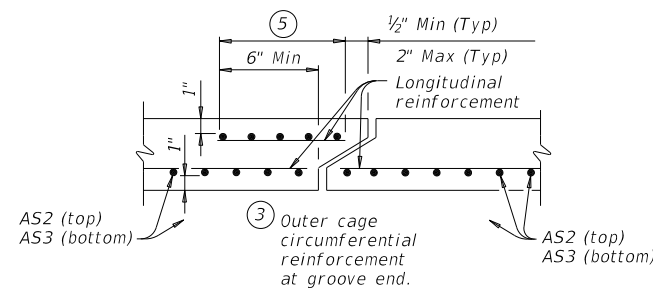
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

④ Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)



SECTION A-A
(Showing top and bottom slab joint reinforcement.)

MATERIAL NOTES:
Provide 0.03 sq. in./ft. minimum longitudinal reinforcing at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.
Provide Class H concrete (*f*'*c* = 5,000 psi).

GENERAL NOTES:
Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.
See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.
In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Submit shop plans for alternate designs in accordance with Item "Precast Concrete Structural Members (Fabrication)".

HL93 LOADING

		Bridge Division Standard	
SINGLE BOX CULVERTS PRECAST 3'-0" SPAN			
SCP-3			
FILE: scp03sts-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
© TxDOT February 2020		CONTRACT NO. 0251	SECTION 06
		JOB NO. 036	HIGHWAY US 281
		DISTRICT BWD	COUNTY LAMPASAS
		SHEET NO. 218	

① For box length = 8'-0"

② AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.

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.

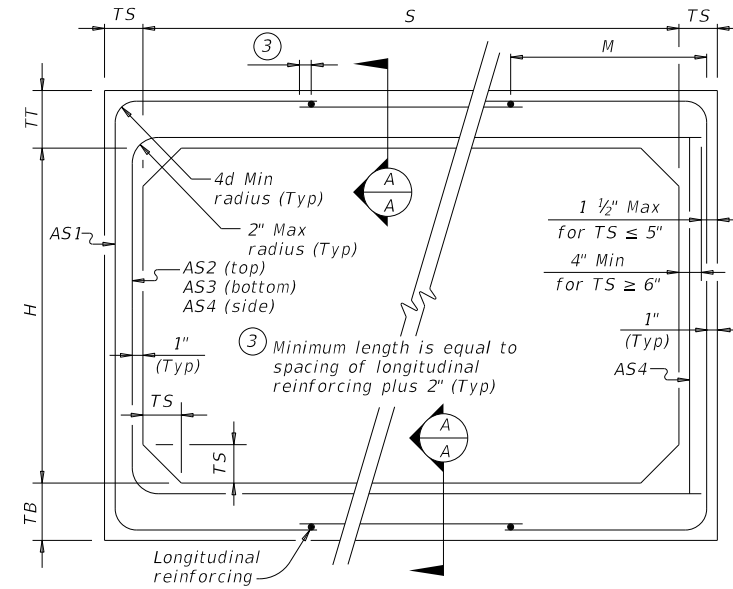
DATE:
FILE:

BOX DATA

SECTION DIMENSIONS					Fill Height (ft.)	M (Min) (in.)	REINFORCING (sq. in. / ft.) ^②							① Lift Weight (tons)
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)			AS1	AS2	AS3	AS4	AS5	AS7	AS8	
4	2	7.5	6	5	< 2	-	0.18	0.27	0.15	0.12	0.18	0.18	0.14	4.5
4	2	5	5	5	2 < 3	38	0.18	0.19	0.17	0.12	-	-	-	3.6
4	2	5	5	5	3 - 5	38	0.13	0.13	0.13	0.12	-	-	-	3.6
4	2	5	5	5	10	38	0.12	0.12	0.12	0.12	-	-	-	3.6
4	2	5	5	5	15	38	0.14	0.16	0.16	0.12	-	-	-	3.6
4	2	5	5	5	20	38	0.18	0.20	0.21	0.12	-	-	-	3.6
4	2	5	5	5	25	38	0.23	0.25	0.25	0.12	-	-	-	3.6
4	2	5	5	5	30	38	0.28	0.30	0.30	0.12	-	-	-	3.6
4	3	7.5	6	5	< 2	-	0.18	0.31	0.18	0.12	0.18	0.18	0.14	5.0
4	3	5	5	5	2 < 3	38	0.15	0.23	0.20	0.12	-	-	-	4.1
4	3	5	5	5	3 - 5	38	0.12	0.16	0.16	0.12	-	-	-	4.1
4	3	5	5	5	10	38	0.12	0.14	0.14	0.12	-	-	-	4.1
4	3	5	5	5	15	38	0.12	0.18	0.18	0.12	-	-	-	4.1
4	3	5	5	5	20	38	0.14	0.23	0.24	0.12	-	-	-	4.1
4	3	5	5	5	25	38	0.17	0.29	0.29	0.12	-	-	-	4.1
4	3	5	5	5	30	38	0.21	0.35	0.35	0.12	-	-	-	4.1
4	4	7.5	6	5	< 2	-	0.18	0.33	0.20	0.12	0.18	0.18	0.14	5.5
4	4	5	5	5	2 < 3	38	0.12	0.26	0.23	0.12	-	-	-	4.6
4	4	5	5	5	3 - 5	38	0.12	0.18	0.18	0.12	-	-	-	4.6
4	4	5	5	5	10	38	0.12	0.15	0.15	0.12	-	-	-	4.6
4	4	5	5	5	15	38	0.12	0.19	0.20	0.12	-	-	-	4.6
4	4	5	5	5	20	38	0.12	0.25	0.25	0.12	-	-	-	4.6
4	4	5	5	5	25	38	0.14	0.31	0.31	0.12	-	-	-	4.6
4	4	5	5	5	30	38	0.17	0.37	0.37	0.12	-	-	-	4.6

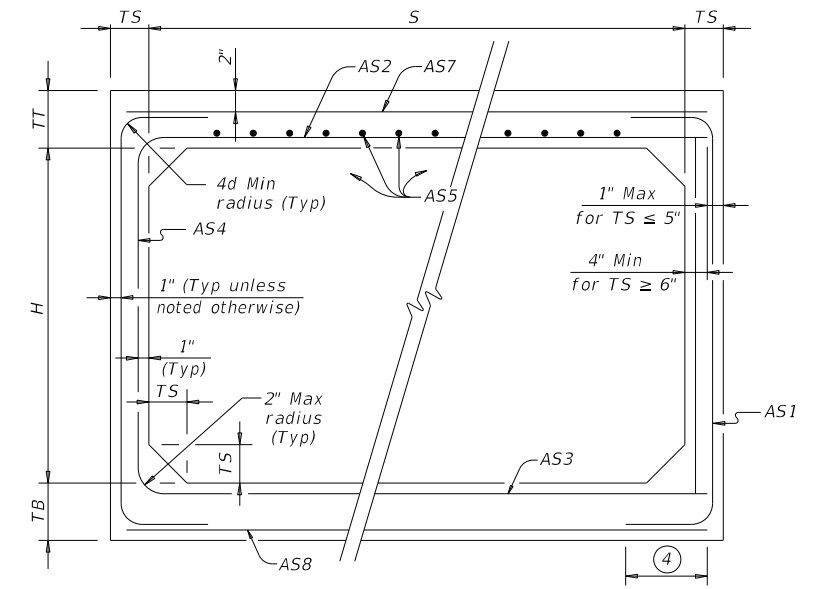
① For box length = 8'-0"

② AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.



CORNER OPTION "A" CORNER OPTION "B"

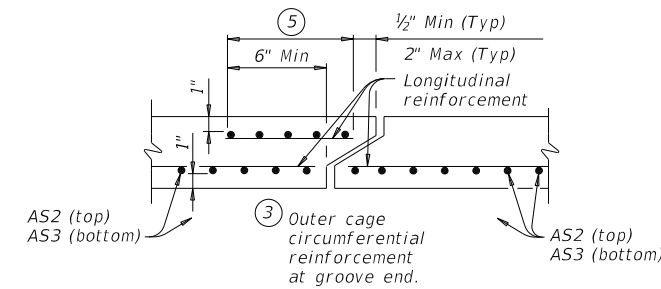
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

④ Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

MATERIAL NOTES:

Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.
Provide Class H concrete (f'c = 5,000 psi).

GENERAL NOTES:

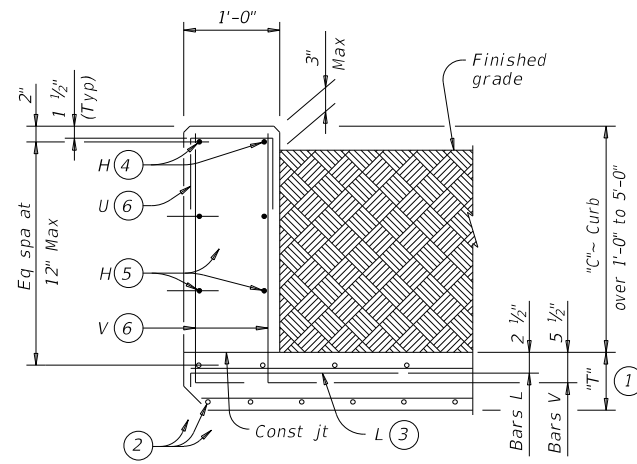
Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.
See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.
In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Submit shop plans for alternate designs in accordance with Item "Precast Concrete Structural Members (Fabrication)".

HL93 LOADING

				Bridge Division Standard	
<h2>SINGLE BOX CULVERTS PRECAST 4'-0" SPAN</h2>					
<h3>SCP-4</h3>					
FILE: scp04sts-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT	
©TxDOT February 2020		CONT	SECT	JOB	HIGHWAY
REVISIONS		0251	06	036	US 281
DIST	COUNTY	SHEET NO.			
BWD	LAMPASAS	219			

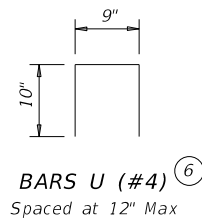
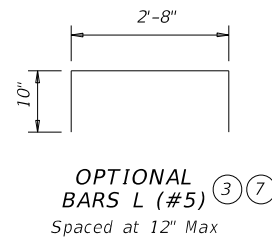
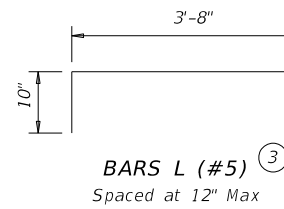
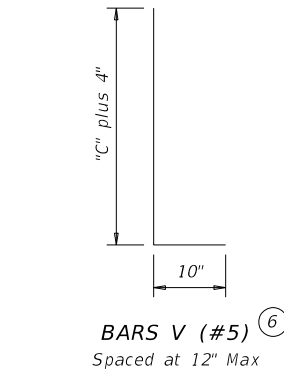
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:



TYPICAL SECTION

Used for curbs over 1'-0" to 5'-0"



- ① "T" is equal to the culvert top slab thickness. For precast boxes with slabs less than 8" thick, see SCP-MD standard for additional details.
- ② Adjust normal culvert slab bars as necessary to clear obstructions.
- ③ Place bars L as shown. Tilt hook as necessary to maintain cover.
- ④ Place normal culvert curb bars H(#4) as shown. Adjust as necessary to clear obstructions.
- ⑤ Additional bars H(#4) as required to maintain 12" Max spacing.
- ⑥ Replace normal culvert curb bars K with one bar U and two bars V as shown spaced at 12" Max. Adjust length of bars V as necessary to maintain clear cover.
- ⑦ Optional bars L are to be used only for precast box culverts with 3'-0" closure pour.
- ⑧ Quantities shown are for Contractor's information only. Quantities are per linear foot of curb length. The value in table can be interpolated for intermediate values of curb height, "C". Quantity includes bars K (when applicable).

Curb Height "C"	Conc (CY/LF)	Reinf Steel (Lb/LF)
1'-0"	0.037	10.4
1'-6"	0.056	14.5
2'-0"	0.074	15.6
2'-6"	0.093	18.0
3'-0"	0.111	19.0
3'-6"	0.130	21.3
4'-0"	0.148	22.4
4'-6"	0.167	24.8
5'-0"	0.185	25.9

CONSTRUCTION NOTES:
Adjust reinforcing steel as necessary to provide 1 1/4" cover.
For vehicle safety, top of the curb must not project more than 3" above the finished grade.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class "C" concrete (f'c = 3,600 psi) minimum for curbs.
Provide bar laps, where required, as follows:
• Uncoated or galvanized ~ #4 = 1'-8" Min

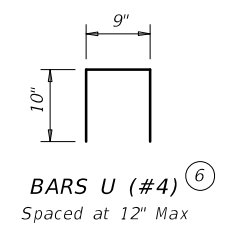
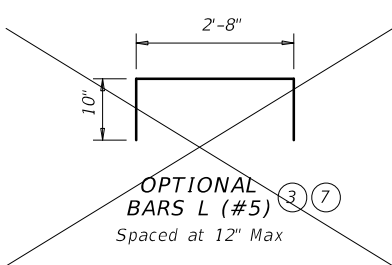
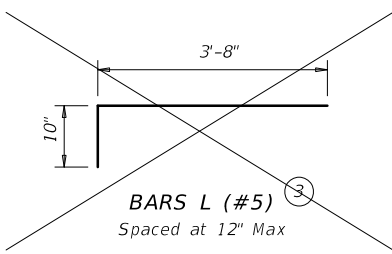
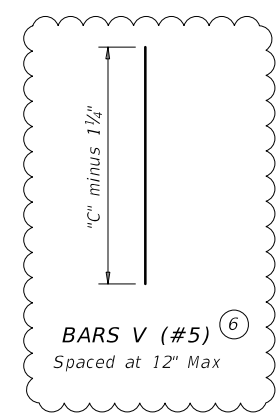
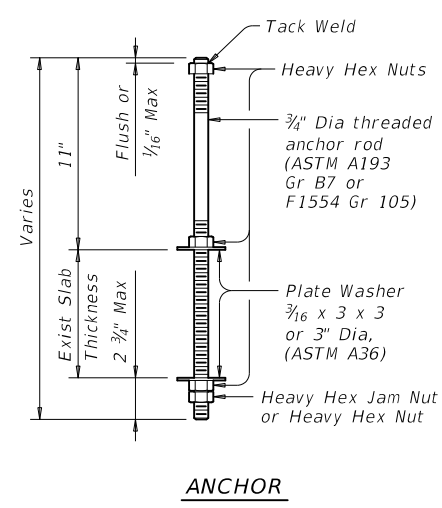
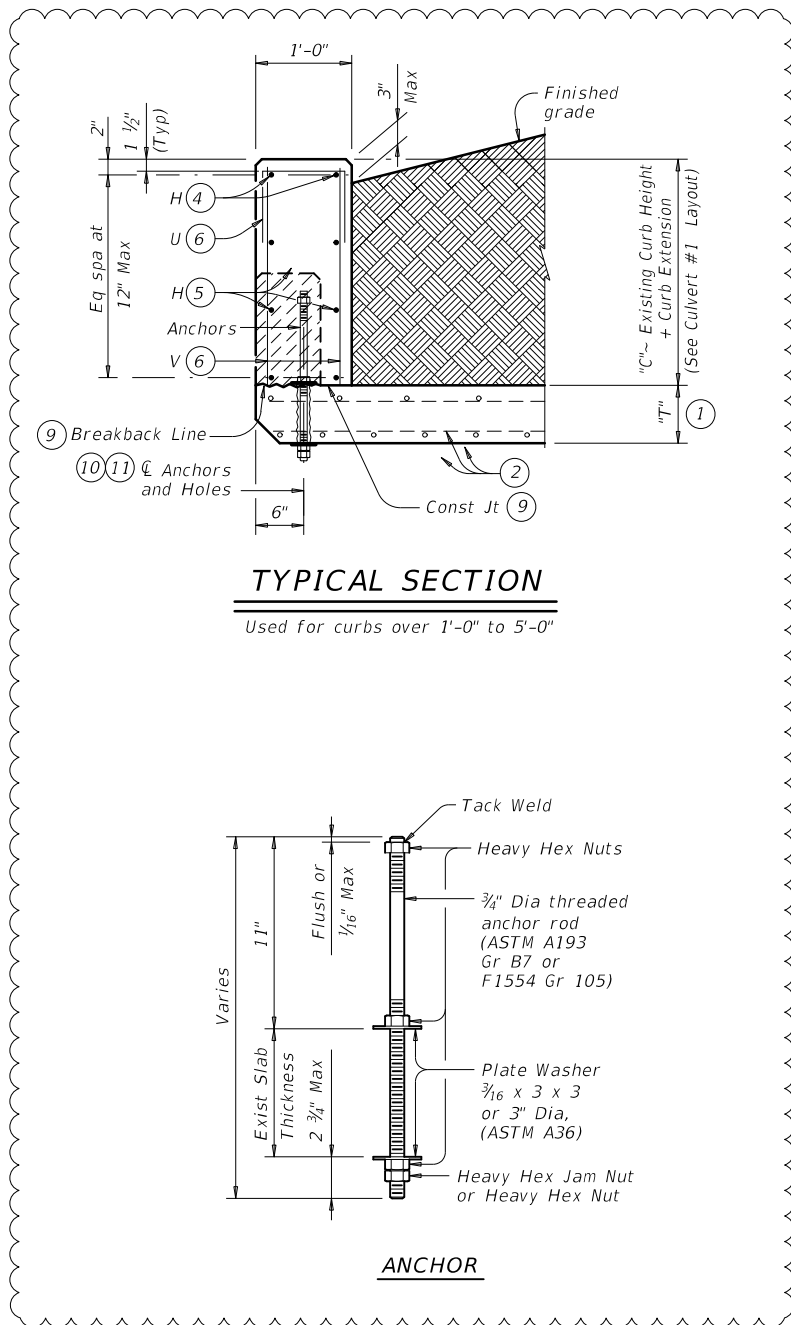
GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
These extended curb details have sufficient strength to allow for future retrofit of Type T631 or T631LS railing. These details are suitable for use with PR11, PR22 and PR3 type rails. These details are not suitable for the mounting of other rail types. For new construction using T631 or T631LS railing, use the T631-CM standard.
This Curb is considered as part of the Box Culvert for payment.

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

		Bridge Division Standard	
EXTENDED CURB DETAILS FOR BOX CULVERTS WITH CURBS OVER 1'-0" TO 5'-0" TALL			
ECD			
FILE: ecdside1-20.dgn	DN: GAF	CK: TxDOT	DW: TxDOT
©TxDOT February 2020	CONT SECT	JOB	HIGHWAY
REVISIONS	0251 06	036	US 281
DIST	COUNTY	SHEET NO.	
BWD	LAMPASAS	221	

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.

DATE:
FILE:



- 1 "T" is equal to the culvert top slab thickness. Contractor to field verify dimensions prior to commencing work and ordering materials.
- 2 Existing culvert top slab reinforcing bars.
- 3 Place bars L as shown. Tilt hook as necessary to maintain cover.
- 4 Place normal culvert curb bars H (#4) as shown. Adjust as necessary to clear obstructions.
- 5 Additional bars H (#4) as required to maintain 12" Max spacing.
- 6 Replace normal culvert curb bars K with one bar U and two bars V as shown spaced at 12" Max. Adjust length of bars V as necessary to maintain clear cover.
- 7 ~~Optional bars L are to be used only for precast box culverts with 3'-0" closure pour.~~
- 8 Quantities shown are for Contractor's information only. Quantities are per linear foot of curb length. The value in table can be interpolated for intermediate values of curb height, "C". Quantity includes bars K (when applicable).
- 9 Saw cut (score) 1" deep flush with top of existing culvert slab, on the field side face of existing curb, if present. After scoring, remove shaded portion of existing concrete to Breakback Line shown. Do not damage existing reinforcing. Clean, bend and incorporate existing reinforcing into new concrete construction. Note that new anchors, as shown in the detail, are required even when existing reinforcing remains in use. Remove existing overlay and/or base material to flush with top of culvert in areas of new construction. Care must be taken to not damage the existing slab. In order to prevent existing asphalt remnants from acting as a bond breaker between the exposed, existing concrete and the retrofitted concrete curb, clean the newly exposed concrete with abrasive blasting or shot blasting. Remove all loose debris prior to placing new anchorage curb.
- 10 Core drill 1" diameter holes through existing slab. Percussion drilling is not permitted. Patch spalls, when directed by the Engineer, in accordance with Item 429, "Concrete Structure Repair", at the Contractor's expense. Tighten nuts snug tight.
- 11 Space anchors at 11" maximum.

Curb Height "C"	Conc (CY/LF)	Reinf Steel (Lb/LF)
1'-0"	0.037	10.4
1'-6"	0.056	14.5
2'-0"	0.074	15.6
2'-6"	0.093	18.0
3'-0"	0.111	19.0
3'-6"	0.130	21.3
4'-0"	0.148	22.4
4'-6"	0.167	24.8
5'-0"	0.185	25.9

CONSTRUCTION NOTES:
Adjust reinforcing steel as necessary to provide 1 1/4" cover. For vehicle safety, top of the curb must not project more than 3" above the finished grade.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class "C" concrete (f'c = 3,600 psi) minimum for curbs. Provide bar laps, where required, as follows:
• Uncoated or galvanized ~ #4 = 1'-8" Min

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
These extended curb details have sufficient strength to allow for future retrofit of Type T631 or T631LS railing. These details are suitable for use with PR11, PR22 and PR3 type rails. These details are not suitable for the mounting of other rail types. For new construction using T631 or T631LS railing, use the T631-CM standard.

Payment for the removal of existing curb, material and incidentals (including excavation) for the proposed Curb will be subsidiary to the bid item Class C Concrete (Headwall).

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



09/02/2022

				Bridge Division Standard	
EXTENDED CURB DETAILS FOR BOX CULVERTS WITH CURBS OVER 1'-0" TO 5'-0" TALL					
ECD (MOD)					
FILE: ecdside1-20.dgn	DN: GAF	CK: TxDOT	OW: TxDOT	CK: GAF	
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0251	06	036	US 281	
DETAILS FOR EXTENDED CURB AT EXISTING CULVERT #1	DIST	COUNTY	SHEET NO.		
-KH 08.10.2022	BWD	LAMPASAS	222		

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 resulting from its use.
 DATE: _____
 FILE: _____

TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for one structure end)

Maximum Wingwall Height Hw	Dimensions				Variable Reinforcing				Estimated Quantities per ft of wing length (2-wings)	
	W	X	Y	Z	Bars J1		Bars J2		Reinf (Lb/Ft)	Conc (CY/Ft)
	Size	Spa	Size	Spa	Size	Spa				
2'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
3'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.07	0.261
3'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.74	0.273
4'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.285
4'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	41.75	0.330
5'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.09	0.343
5'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.75	0.355
6'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	46.42	0.367
7'-0"	3'-8"	1'-9"	1'-3"	7"	#4	1'-0"	#4	1'-0"	52.77	0.414
8'-0"	4'-2"	2'-0"	1'-6"	8"	#5	1'-0"	#4	1'-0"	60.19	0.486
9'-0"	4'-8"	2'-3"	1'-9"	8"	#4	6"	#4	6"	81.49	0.535
10'-0"	5'-2"	2'-6"	2'-0"	8"	#5	6"	#4	6"	97.25	0.584
11'-0"	5'-8"	2'-9"	2'-3"	8"	#6	6"	#5	6"	133.65	0.634
12'-0"	6'-2"	3'-0"	2'-6"	9"	#7	6"	#5	6"	162.29	0.721
13'-0"	6'-8"	3'-3"	2'-9"	11"	#7	6"	#5	6"	178.80	0.856
14'-0"	7'-2"	3'-6"	3'-0"	1'-0"	#8	6"	#5	6"	216.78	0.959
15'-0"	7'-8"	4'-0"	3'-0"	1'-1"	#9	6"	#6	6"	283.06	1.068
16'-0"	8'-2"	4'-6"	3'-0"	1'-3"	#9	6"	#6	6"	297.02	1.234

TABLE OF WINGWALL REINFORCING
(2-wings)

Bar	Size	No.	Spa
D	#5	~	1'-0"
E	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	4	~
M	#4	4	~
P	#4	~	1'-0"
R	#5	6	~
V	#4	~	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

Bar	Size	No.	Spa
L	#4	~	1'-6"
Q	#4	1	~
Reinf (Lb/Ft)			2.45
Conc (CY/Ft)			0.037

WING DIMENSION FORMULAS:

(All values are in feet.)

$H_w = H + T + C - 0.250'$
 $A = (H_w - 0.333') (SL)$
 $B = (A) \tan(30^\circ)$
 $L_w = (A) \div \cosine(30^\circ)$

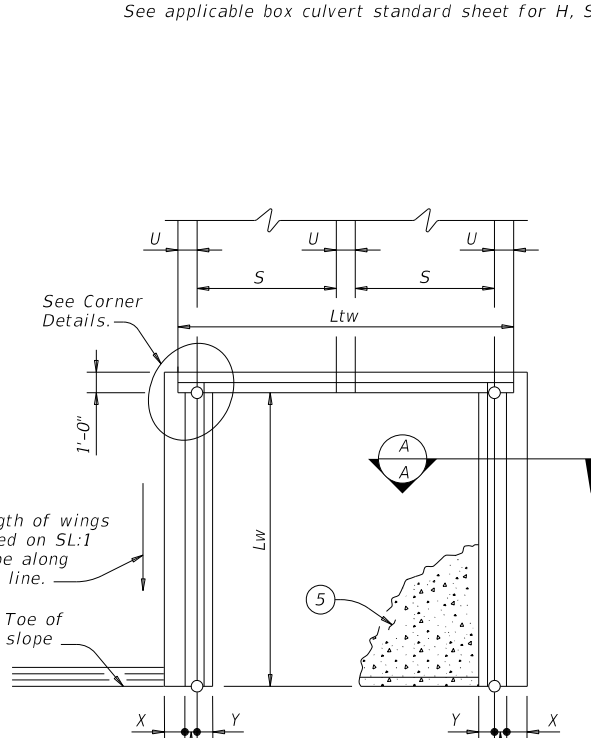
For cast-in-place culverts:
 $L_{tw} = (N)(S) + (N + 1)(U)$

For precast culverts:
 $L_{tw} = (N)(2U + S) + (N - 1)(0.5')$

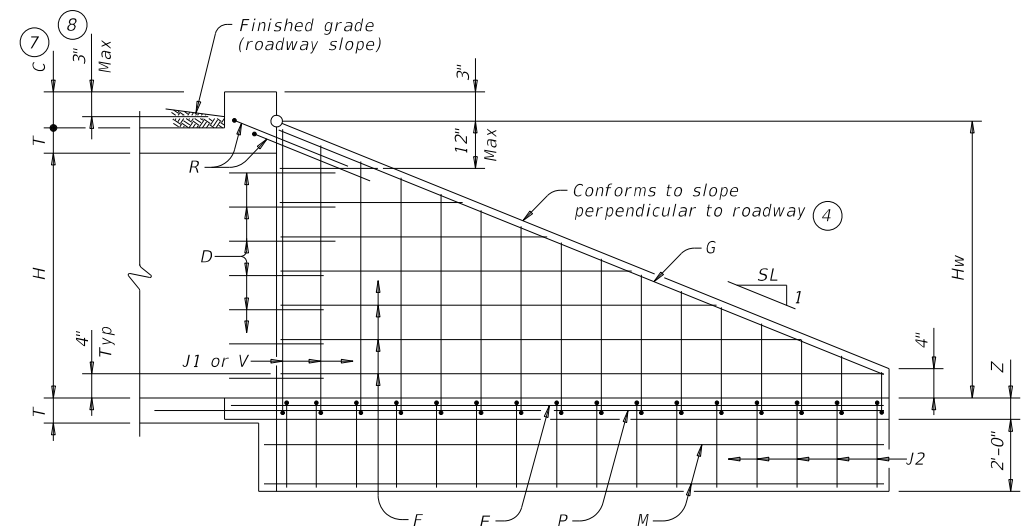
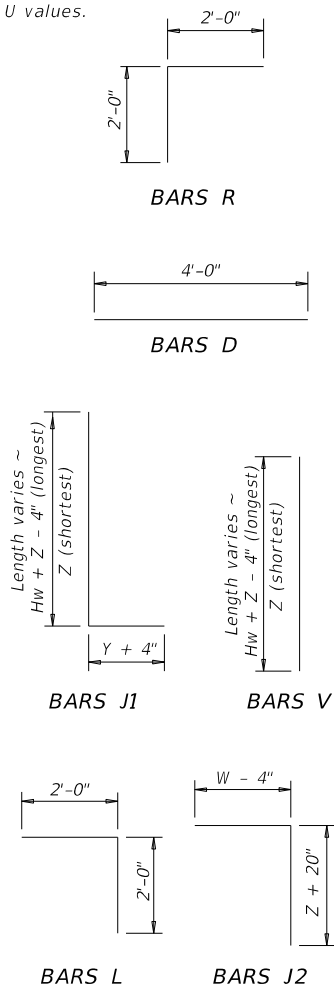
Total Wingwall Area (two wings ~ SF) = $(H_w + 0.333') (L_w)$

Hw = Height of wingwall
 SL:1 = Side slope ratio (horizontal:1 vertical)
 Lw = Length of wingwall
 Lt看 = Culvert toewall length
 N = Number of culvert spans

See applicable box culvert standard sheet for H, S, T, and U values.

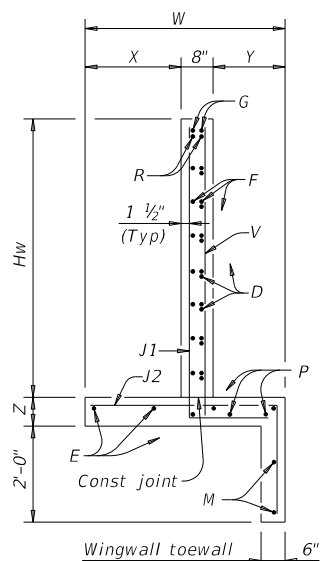


PLAN
(Showing dimensions.)

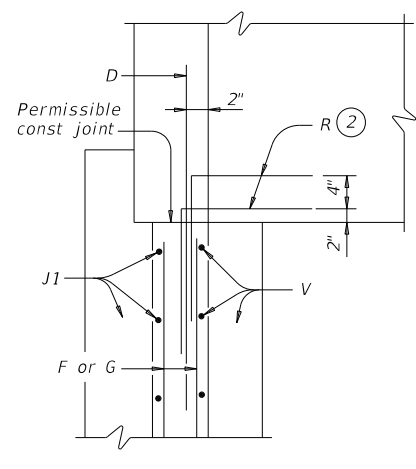


INSIDE ELEVATION

(Showing reinforcing. Culvert and culvert toewall reinforcing not shown for clarity.)

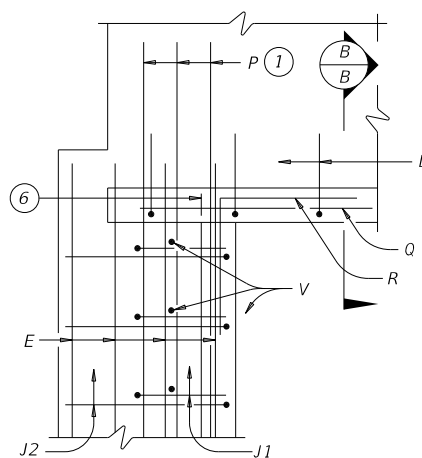


SECTION A-A

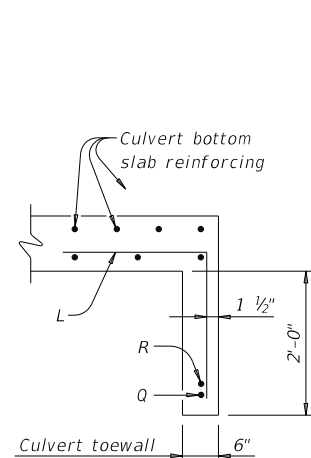


WINGWALL

CORNER DETAILS



FOOTING AND TOEWALL



SECTION B-B

- Extend Bars P 3'-0" minimum into bottom slab of box culvert.
- Adjust as necessary to maintain 1 #2" clear cover and 4" minimum between bars.
- Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings, multiply the tabulated values by Lw.
- Recommended values of side slope are: 2:1, 3:1, 4:1, and 6:1.
- When shown elsewhere on the plans, construct 5" deep concrete riprap. Payment for riprap is as required by Item 432, "Riprap". Unless otherwise shown on the plans or directed by the Engineer, provide a 6" wide by 1'-6" deep reinforced concrete toewall along all edges of the riprap adjacent to natural ground; reinforce the toewall by extending typical riprap reinforcing into the toewall; and extend construction joints or grooved joints oriented in the direction of flow across the full distance of the riprap at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B will not be required.
- At Contractor's option, culvert toewall may be ended flush with wingwall toewall. Adjust reinforcing as needed.
- 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
- For vehicle safety, the following requirements must be met:
 - For structures without bridge rail, construct curbs no more than 3" above finished grade.
 - For structures with bridge rail, construct curbs flush with finished grade.
 Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

MATERIAL NOTES:

Provide Class C concrete ($f'c = 3,600$ psi).
 Provide Grade 60 reinforcing steel.
 Provide galvanized reinforcing steel if required elsewhere in the plans.
 In riprap concrete, synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing unless noted otherwise.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
 When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.
 See Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.
 The quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.

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

Texas Department of Transportation

Bridge Division Standard

CONCRETE WINGWALLS WITH STRAIGHT WINGS FOR 0° SKEW BOX CULVERTS

SW-O

FILE: sw-0std-20.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
REVISONS	CONT	SECT	JOB	HIGHWAY
0251	06	036	US 281	US 281
DIST	COUNTY	SHEET NO.		
BWD	LAMPASAS	223		

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.

DATE:
FILE:

TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for one structure end)

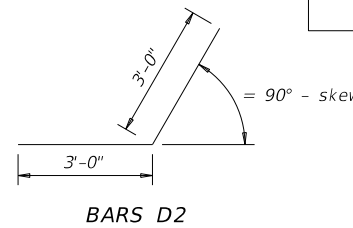
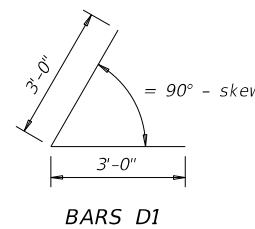
Maximum Wingwall Height Hw	Dimensions				Variable Reinforcing				Estimated Quantities per ft of wing (2-wings)		Estimated Quantities per ft of Toewall (1-toewall)	
	W	X	Y	Z	Bars J1		Bars J2		Reinf (Lb/Ft)	Conc (CY/Ft)	Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	48.64	0.406	6.85	0.071
2'-9"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.31	0.424	6.85	0.071
3'-0"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.98	0.444	6.85	0.071
3'-3"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.32	0.462	6.85	0.071
3'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.98	0.480	6.85	0.071
4'-0"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	55.77	0.532	6.85	0.071
4'-6"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	59.77	0.568	6.85	0.071
5'-0"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	63.45	0.632	6.96	0.075
5'-6"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	67.46	0.668	6.96	0.075
6'-0"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	80.67	0.730	7.07	0.078
6'-6"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	85.05	0.768	7.07	0.078
7'-0"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	92.15	0.864	8.07	0.093
7'-6"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	96.54	0.902	8.07	0.093
8'-0"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	139.04	0.962	8.13	0.095
8'-6"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	144.47	1.000	8.13	0.095
9'-6"	6'-0"	2'-10"	2'-2"	9"	#5	6"	#5	6"	156.93	1.136	8.41	0.110
10'-6"	6'-5"	3'-0"	2'-5"	9"	#6	6"	#5	6"	196.27	1.234	8.57	0.117
11'-6"	7'-2"	3'-6"	2'-8"	11"	#6	6"	#6	6"	230.13	1.438	9.52	0.140
12'-6"	7'-8"	3'-9"	2'-11"	1'-0"	#7	6"	#6	6"	283.41	1.592	9.74	0.157
13'-6"	8'-2"	4'-0"	3'-2"	1'-2"	#8	6"	#6	6"	348.72	1.804	10.02	0.186
14'-6"	8'-10"	4'-5"	3'-5"	1'-4"	#9	6"	#6	6"	432.94	2.046	10.30	0.218
15'-6"	9'-6"	4'-10"	3'-8"	1'-6"	#9	6"	#7	6"	489.52	2.302	11.24	0.253
16'-0"	9'-11"	5'-0"	3'-11"	1'-7"	#9	6"	#7	6"	505.72	2.448	11.47	0.279

TABLE OF WINGWALL REINFORCING
(2-wings)

Bar	Size	No.	Spa
D1	#6	~	1'-0"
D2	#6	~	1'-0"
E1	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	~	8"
M1	#4	4	~
P	#4	~	1'-0"
V	#4	~	1'-0"

TABLE OF TOEWALL REINFORCING

Bar	Size	No.	Spa
J3	#4	~	1'-0"
M2	#4	2	~
E2	#4	~	1'-0"



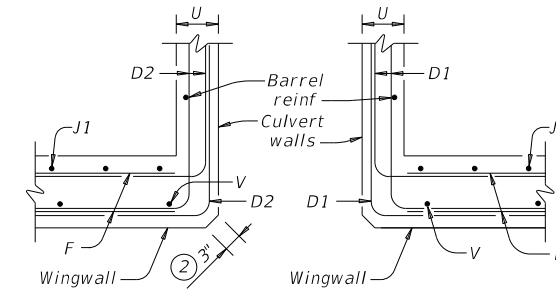
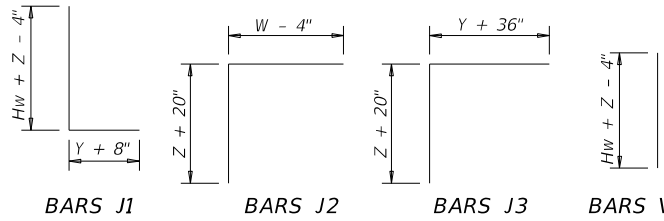
WING DIMENSION FORMULAS:

(All values are in feet.)
 $Hw = H + T + C$
 $Lw = (Hw) (SL) \div \cosine (\theta)$ for Type PW-1
 $Lw = (Hw - 1') (SL) \div \cosine (\theta)$ for Type PW-2 and $Hw \ge 4'$
 $Lw = (Hw - 0.5') (SL) \div \cosine (\theta)$ for Type PW-2 and $Hw < 4'$
For cast-in-place culverts:
 $Ltw = [(N) (S) + (N + 1) (U)] \div \cosine (\theta)$
For precast culverts:
 $Ltw = [(N) (2 U + S) + (N - 1) (0.5')] \div \cosine (\theta)$
Total Wingwall Area (two wings ~ SF)
 $= (2)(Hw)(Lw)$ for Type PW-1
 $= (2)(Hw)(Lw) - 6 SF$ for Type PW-2 and $Hw \ge 4'$
 $= (2)(Hw)(Lw) - 1.5 SF$ for Type PW-2 and $Hw < 4'$

Hw = Height of wingwall
 Lw = Length of wingwall
 Ltw = Culvert toewall length
 N = Number of culvert spans
 $SL:1$ = Channel slope ratio. (horizontal:
1 vertical, usual value is 2:1)
 θ = Culvert skew

See applicable box culvert standard sheet for S, H, T, and U values.

- 1 Skew = 0°
- 2 At discharge end, chamfer may be 3/4" minimum.
- 3 For 15° skew ~ 1"
For 30° skew ~ 2"
For 45° skew ~ 3"
- 4 Quantities shown are for two Type PW-1 wings. Adjust concrete volume for Type PW-2 wings. To determine estimated quantities for two wings, multiply the tabulated values by Lw. Quantities shown do not include weight of Bars D.
- 5 Provide weepholes for Hw = 5'-0" and greater. Fill around weepholes with coarse gravel.
- 6 Extend Bars E2 1'-6" minimum into the wingwall footing.
- 7 Lap Bars M1 1'-6" minimum with Bars M2.
- 8 Place Bars G as shown, equally spaced at 8" maximum. Provide at least two pairs of Bars G per wing.
- 9 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
- 10 For vehicle safety, the following requirements must be met:
 - For structures without bridge rail, construct curbs no more than 3" above finished grade.
 - For structures with bridge rail, construct curbs flush with finished grade.Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
- 11 1'-0" typical. 2'-3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.
- 12 3'-0" for Hw < 4'.
- 13 6" for Hw < 4'.



SECTION C-C - PW-1

SECTION C-C - PW-2

DESIGNER NOTES:

Type PW-1 can be used for all applications and must be used if railing is to be mounted to the wingwall. Type PW-2 can only be used for applications without a railing mounted to the wingwall.

MATERIAL NOTES:

Provide Class C concrete (f'c=3,600 psi). Provide Grade 60 reinforcing steel. Provide galvanized reinforcing steel if required elsewhere in the plans.

GENERAL NOTES:

Designed in accordance with AASHTO LRFD Bridge Design Specifications. Depth of toewalls for wingwalls and culverts may be reduced or eliminated when founded on solid rock, when directed by the Engineer. See Box Culvert Supplement (BCS) standard sheet for wingwall type and additional dimensions and information. Quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for the Contractor's information only.

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

PARTIAL ELEVATION - PW-1

PARTIAL ELEVATION - PW-2

SECTION A-A

SECTION B-B

DETAILS FOR NON-SKEWED BOX CULVERTS

DETAILS FOR SKEWED BOX CULVERTS

Bridge Division Standard
CONCRETE WINGWALLS WITH PARALLEL WINGS FOR BOX CULVERTS TYPES PW-1 AND PW-2
PW
FILE: pwstde01-20.dgn ON: GAF CK: CAT DW: TxDOT CK: TxDOT
©TxDOT February 2020 CONT SECT JOB HIGHWAY
REVISIONS 0251 06 036 US 281
11-10: Reinforcing Quantities DIST COUNTY SHEET NO.
01-12: PW-1 & PW-2 BWD LAMPASAS 224

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.

**TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for One Structure End)**

Maximum Wingwall Height Hw (9)	Dimensions				Variable Reinforcing				Estimated Quantities per ft of wing length (Two-Wings) (3)	
	W	X	Y	Z	Bars J1		Bars J2		Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
3'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.07	0.261
3'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.74	0.273
4'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.285
4'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	41.75	0.330
5'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.09	0.343
5'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.75	0.355
6'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	46.42	0.367
7'-0"	3'-8"	1'-9"	1'-3"	7"	#4	1'-0"	#4	1'-0"	52.77	0.414
8'-0"	4'-2"	2'-0"	1'-6"	8"	#5	1'-0"	#4	1'-0"	60.19	0.486
9'-0"	4'-8"	2'-3"	1'-9"	8"	#4	6"	#4	6"	81.49	0.535
10'-0"	5'-2"	2'-6"	2'-0"	8"	#5	6"	#4	6"	97.25	0.584
11'-0"	5'-8"	2'-9"	2'-3"	8"	#6	6"	#5	6"	133.65	0.634
12'-0"	6'-2"	3'-0"	2'-6"	9"	#7	6"	#5	6"	162.29	0.721

TABLE OF WING WALL REINFORCING (Two-Wings)

Bar	Size	No.	Spa
D	#5	~	1'-0"
E	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	4	~
M	#4	4	~
P	#4	~	1'-0"
R	#5	6	~
V	#4	~	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

Bar	Size	No.	Spa
L	#4	~	1'-6"
Q	#4	1	~
Reinf (Lb/Ft)		2.45	
Conc (CY/Ft)		0.037	

TABLE OF ESTIMATED ANCHOR TOEWALL QUANTITIES

Bar	Size	No.	Spa
K	#4	~	1'-0"
N	#5	6	~
OL	#4	6	~
Reinf (Lb/Ft)		9.82	
Conc (CY/Ft)		0.074	

- Extend Bars P 3'-0" Min into bottom slab of box culvert.
- Adjust to fit as necessary to maintain 1 1/2" clear cover and 4" Min between bars.
- Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings multiply the tabulated values by Lw.
- Recommended values of slope are: 3:1, 4:1, and 6:1. Provide 3:1 or flatter slope.
- When shown elsewhere on the plans, construct 5" deep concrete riprap. Payment for riprap is as required by Item 432, "Riprap". Unless otherwise shown on the plans or directed by the Engineer, extend construction joints or grooved joints, oriented in the direction of flow, across the full distance of the riprap, at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B is not required.
- At Contractor's option, end the culvert toewall flush with wingwall toewall. Adjust reinforcing as needed.
- 3" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures without railing and curbs taller than 1'-0", refer to the Extend Curb Details (ECD) standard sheet.
- For vehicle safety, reduce curb heights, if necessary, to provide a maximum 3" projection above finished grade. No changes will be made in quantities and no additional compensation will be allowed for this work.
- See Table of Maximum Wing Heights for various slopes. Height is limited based on a 33'-6" maximum safety pipe runner length.

TABLE OF MAXIMUM WING HEIGHTS (9)

Side Slope	Hw Max
3:1	11'-5"
4:1	8'-10"
6:1	6'-1"

WING DIMENSION CALCULATIONS:

$$H_w = H + T + C - 0.250' \text{ (9)}$$

$$A = (H_w - 0.333') (SL)$$

$$B = (A) (\tan (30^\circ))$$

$$L_w = (A) / \cos (30^\circ)$$

For cast-in-place culverts:
 $L_{tw} = (N) (S) + (N + 1) (U)$

For precast culverts:
 $L_{tw} = (N) (2U + S) + (N - 1) (0.500')$

$$L_c = (L_{tw}) - (2U)$$

$$Atw = (L_c) + (2B)$$

Total Wingwall Area (two wings ~ SF)
 $= (H_w + 0.333') (L_w)$

Hw = Height of wingwall (feet)
 Atw = Anchor toewall length (feet)
 Lw = Length of wingwall (feet)
 N = Number of culvert barrels
 SL:1 = Side slope ratio (horizontal : 1 vertical)
 Ltw = Culvert toewall length (feet)
 Lc = Culvert curb between wings (feet)

See applicable box culvert standard for H, S, T, and U values. See Table of Maximum Wall Heights for limits on Hw.

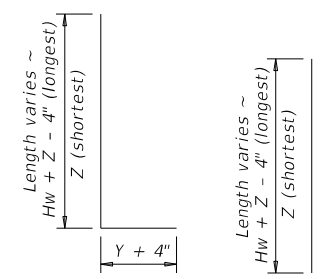
MATERIAL NOTES:

Provide Grade 60 reinforcing steel.
 Provide galvanized reinforcing steel if required elsewhere in the plans. Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.
 Provide Class "C" concrete (f'c = 3,600 psi).
 Adjust reinforcing as necessary to provide a minimum clear cover of 1 1/2".
 Provide pipe runners and anchor pipes meeting the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 Gr B, or API 5LX52.
 Provide ASTM A307 bolts and nuts.
 Provide ASTM A36 steel plates.
 Galvanize all steel components, except reinforcing unless required elsewhere in the plans, after fabrication.
 Repair galvanizing damaged during transport or construction in accordance with the Item 445, "Galvanizing".
 For optional adhesive anchors, install adhesive anchorages in accordance with the manufacturer's instructions including hole size, drilling equipment and method, hole cleaning equipment and method, mixing and dispensing adhesive, and anchor insertion. Do not alter the manufacturer's mixing nozzle or dispenser. Provide anchorage rods that are clean and free of grease, oil, or any other foreign material. Demonstrate hole cleaning method to the Engineer for approval and continue the approved process for all anchorage locations. Test adhesive anchors in accordance with Item 450.3.3, "Tests." Test 3 anchors per 100 anchors installed.

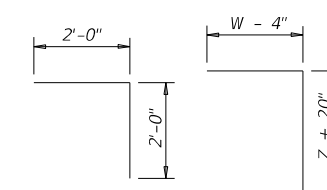
GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
 The safety end treatments shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the pipe runners.
 Pipe runners are designed for a traversing load of 1,800 pounds at yield as recommended by Research Report 280-1, "Safety Treatment of Roadside Cross-Drainage Structures", Texas Transportation Institute, March 1981.
 When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.
 All bolts, nuts, washers, brackets, angles, and pipe runners are considered parts of the safety end treatment for payment.
 The quantities for pipe runners, reinforcing steel, and concrete, resulting from the formulas given herein are for Contractor's information only.
 See the Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.

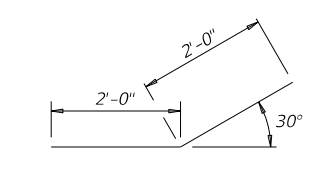
Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.



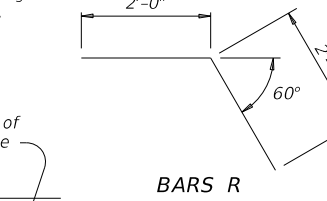
BARS J1 BARS V



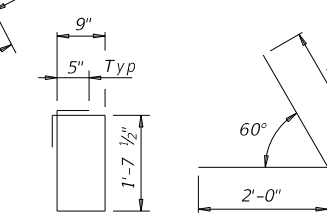
BARS L BARS J2



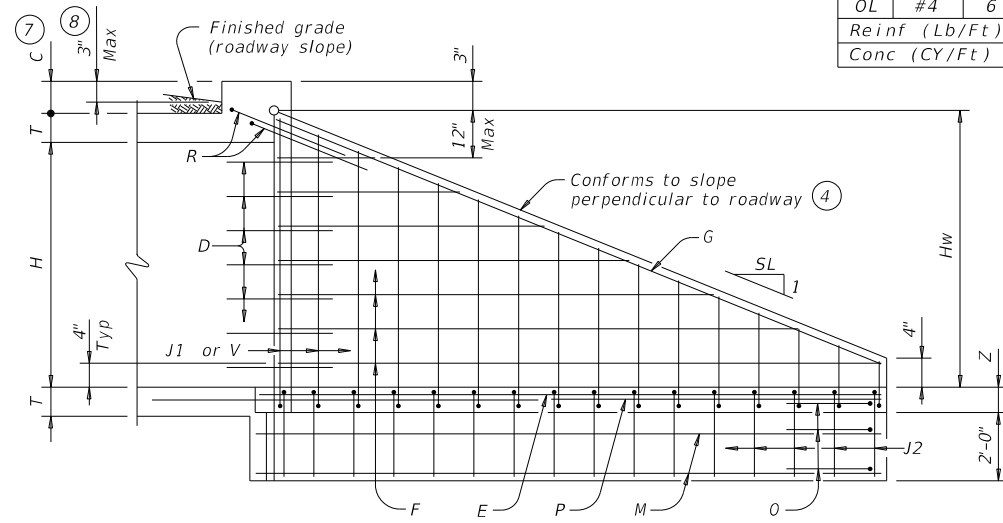
BARS D



BARS R

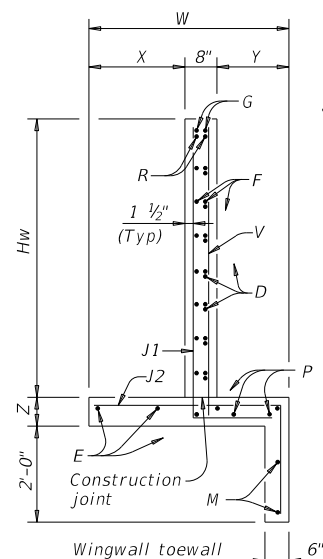


BARS K (Length = 5'-5") BARS OL

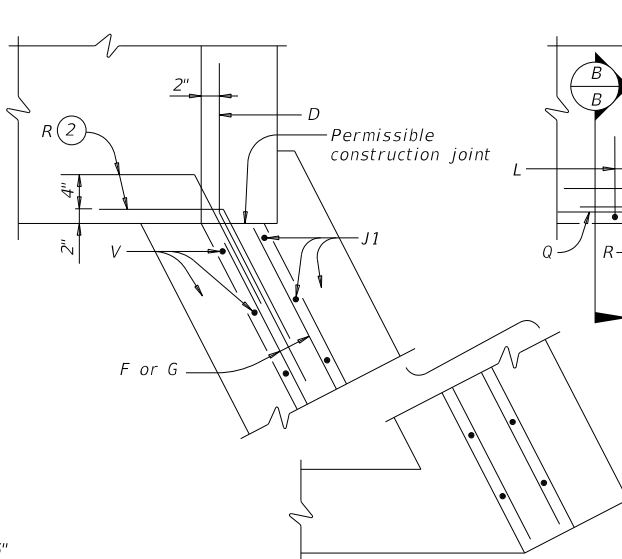


INSIDE ELEVATION OF WINGWALL

(Showing reinforcing. Culvert and culvert toewall reinforcing not shown for clarity.)



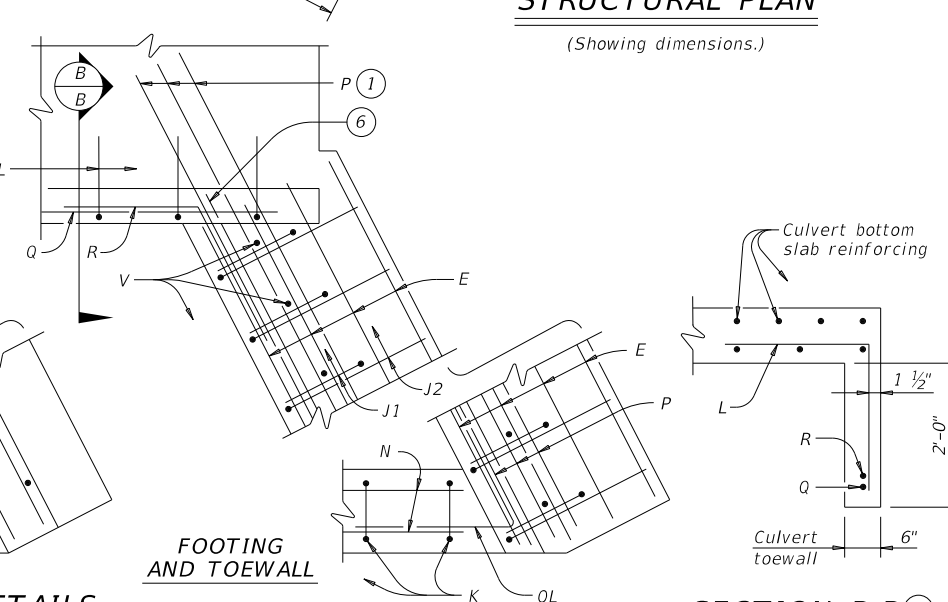
SECTION A-A



CORNER DETAILS

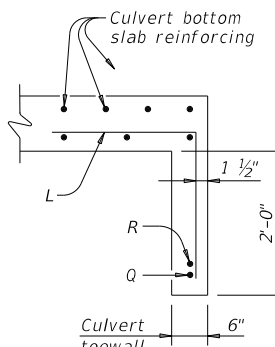
(Culvert and culvert toewall reinforcing not shown for clarity.)

FOOTING AND TOEWALL

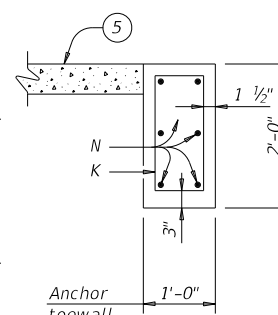


STRUCTURAL PLAN

(Showing dimensions.)



SECTION B-B (5)

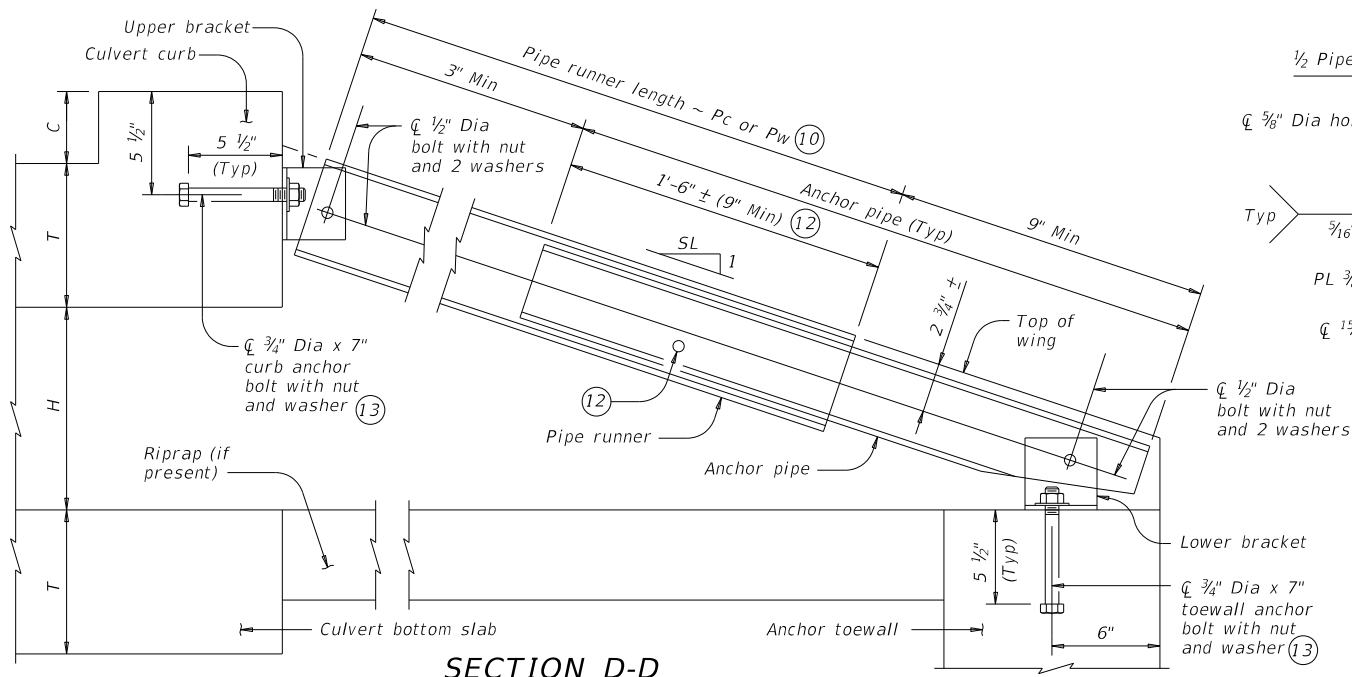


SECTION C-C

SHEET 1 OF 3

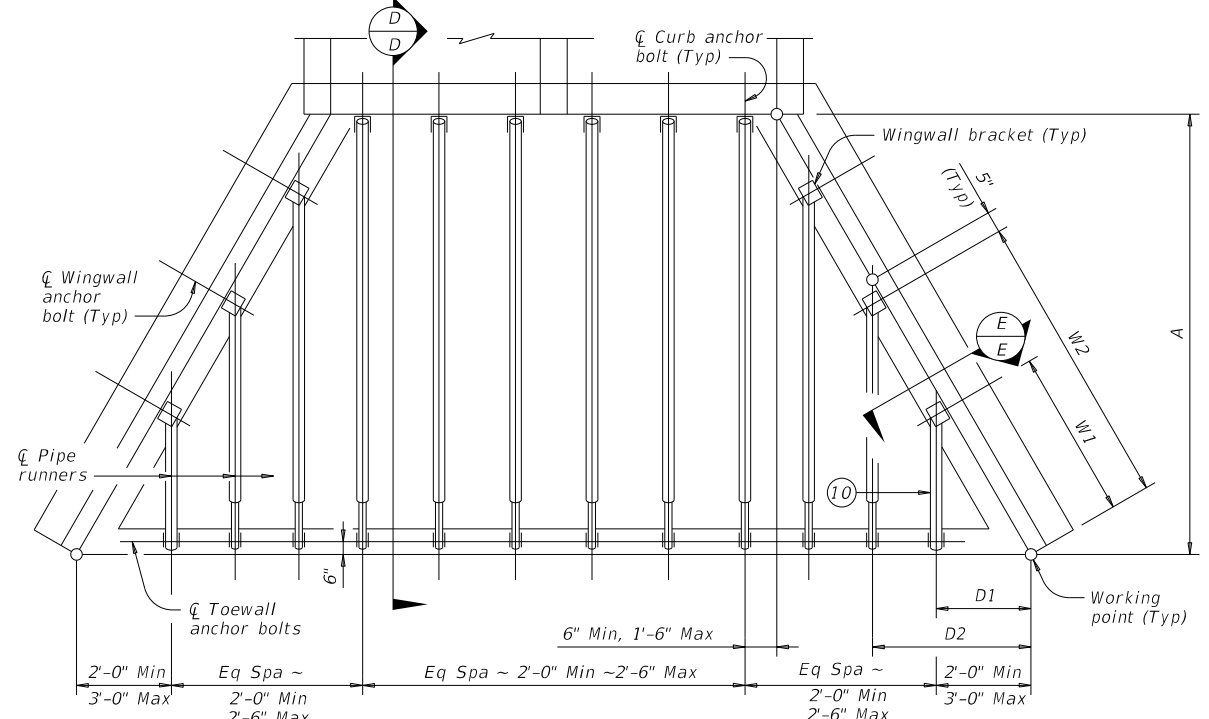
Texas Department of Transportation		Bridge Division Standard	
SAFETY END TREATMENT WITH FLARED WINGS			
FOR 0° SKEW BOX CULVERTS TYPE I ~ CROSS DRAINAGE			
SETB-FW-0			
FILE: setbf0se-20.dgn	DN: GAF	CK: CAT	DW: TxDOT
©TxDOT February 2020	CON: 0251	SECT: 06	JOB: 036
REVISIONS	DIST: BWD	COUNTY: LAMPASAS	US 281
SHEET NO. 225			

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.

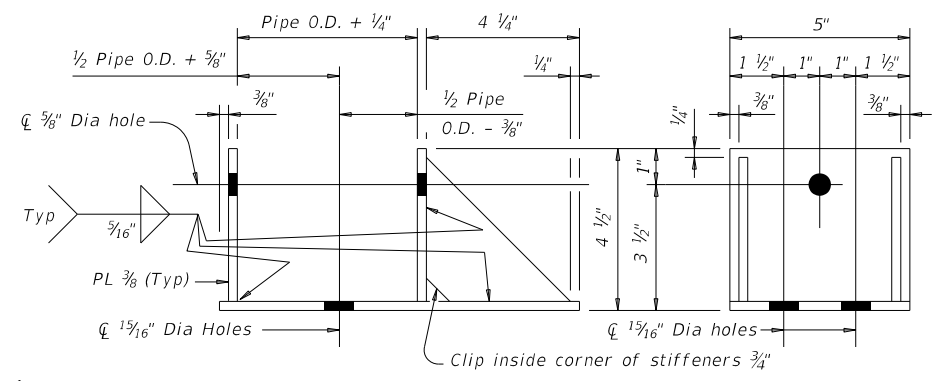


SECTION D-D

(Showing curb pipe runner. Except for upper bracket, wingwall pipe runners are similar.)

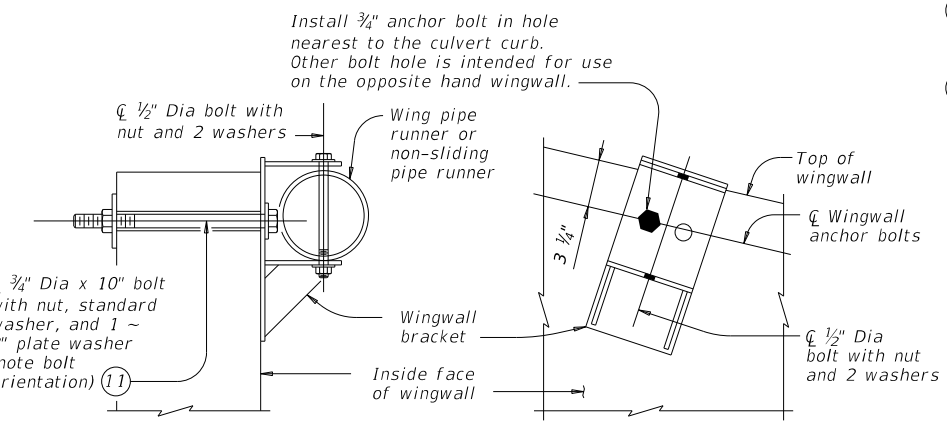


PIPE RUNNER PLAN



ELEVATION

SIDE VIEW



SECTION E-E

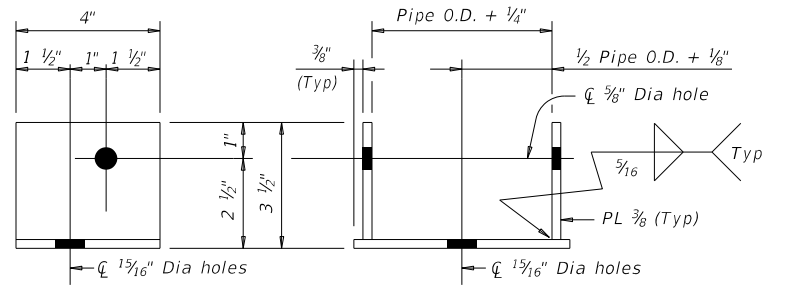
ELEVATION

(Showing installed bracket.)

(Showing installed bracket normal to wall. Pipe not shown for clarity.)

Note: Match wingwall bracket to the upper curb bracket size.

WINGWALL BRACKET DETAILS

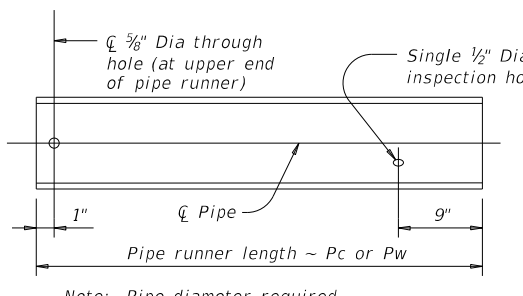


SIDE VIEW

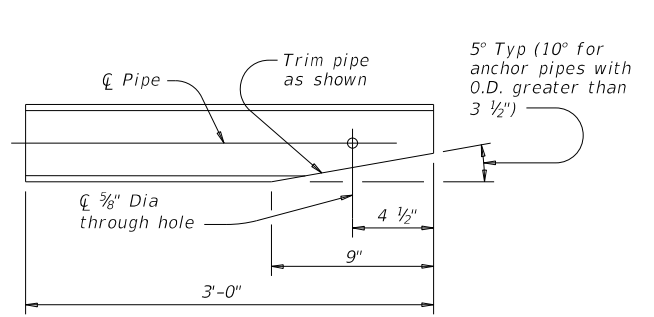
ELEVATION

Note: Match upper and lower brackets, except for the brackets used with non-sliding pipe runners, to the required pipe diameters as shown in the table.

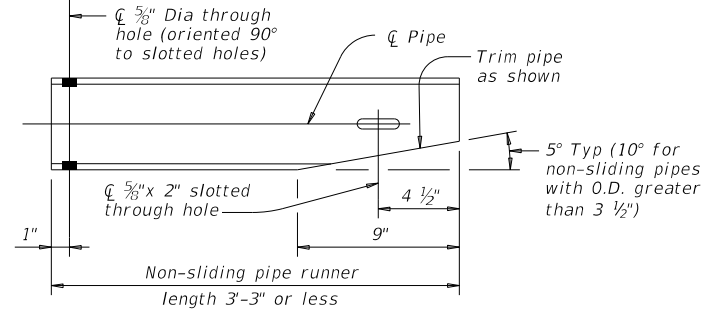
UPPER AND LOWER BRACKET DETAILS



PIPE RUNNER DETAILS



ANCHOR PIPE DETAILS



Note: Pipe size is the same as required for curb pipe runner. Adjust the corresponding lower bracket accordingly.

NON-SLIDING PIPE RUNNER DETAILS

MAXIMUM PIPE RUNNER LENGTHS AND REQUIRED PIPE RUNNER SIZES

Maximum Pipe Runner Length (Pc or Pw)	Required Pipe Runner Size			Required Anchor Pipe Size		
	Pipe Size	Pipe O.D.	Pipe I.D.	Pipe Size	Pipe O.D.	Pipe I.D.
9'-4"	3" STD	3.500"	3.068"	2" STD	2.375"	2.067"
19'-0"	4" STD	4.500"	4.026"	3" STD	3.500"	3.068"
33'-6"	5" STD	5.563"	5.047"	4" STD	4.500"	4.026"

- 10 If pipe runner length (Pw) is 1'-9" or less replace the normal pipe runner and anchor pipe with a single non-sliding pipe runner. See Non-Sliding Pipe Runner Details for additional information.
- 11 At Contractor's option, 7/8" diameter hole may be formed or cored drilled. Percussion drilling is not permitted. Adjust placement of reinforcing steel as necessary to avoid bolt holes.
- 12 After installation of pipe runner, use the 1/2" inspection hole to ensure that the lap of the anchor pipe with the pipe runner is adequate.
- 13 At Contractor's option, an adhesive anchor may be used. Provide 3/4" Dia adhesive anchors that meet the requirements of ASTM A307 Gr A fully threaded rods. Embed threaded rods into curb, wingwalls, and toewall using a Type III, Class C, D, E, or F anchor adhesive. Minimum embedment depth is 5 1/2". Provide anchor adhesive able to achieve a basic bond strength in tension, Nba, of 20 kips. Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use.

PIPE RUNNER DIMENSION CALCULATIONS:

$$Wn = (2.000)(Dn) - (0.416')$$

$$Pwn = (Dn)(K2) - (2.063')$$

$$Pw1 \text{ Non-Sliding Pipe Runner (If required)} = (D1)(K2) - (0.563')$$

$$Pc = (A)(K1) - (1.688')$$

Wn = Distance from working point to centerline anchor bolt measured along bottom inside face of wing (feet)
 Dn = Distance from working point to centerline pipe runner measured along outside face of anchor toewall (feet)
 Pw = Wingwall pipe runner length (feet)
 Pc = Curb pipe runner length (feet)
 K = Constant values for use in formulas
 Slope SL:1 $K1$ $K2$
 3:1 ~ 1.054 ~ 1.826
 4:1 ~ 1.031 ~ 1.785
 6:1 ~ 1.014 ~ 1.756
 n = Wing pipe runner number

SHEET 2 OF 3

Bridge Division Standard

SAFETY END TREATMENT WITH FLARED WINGS

FOR 0° SKEW BOX CULVERTS
TYPE I ~ CROSS DRAINAGE

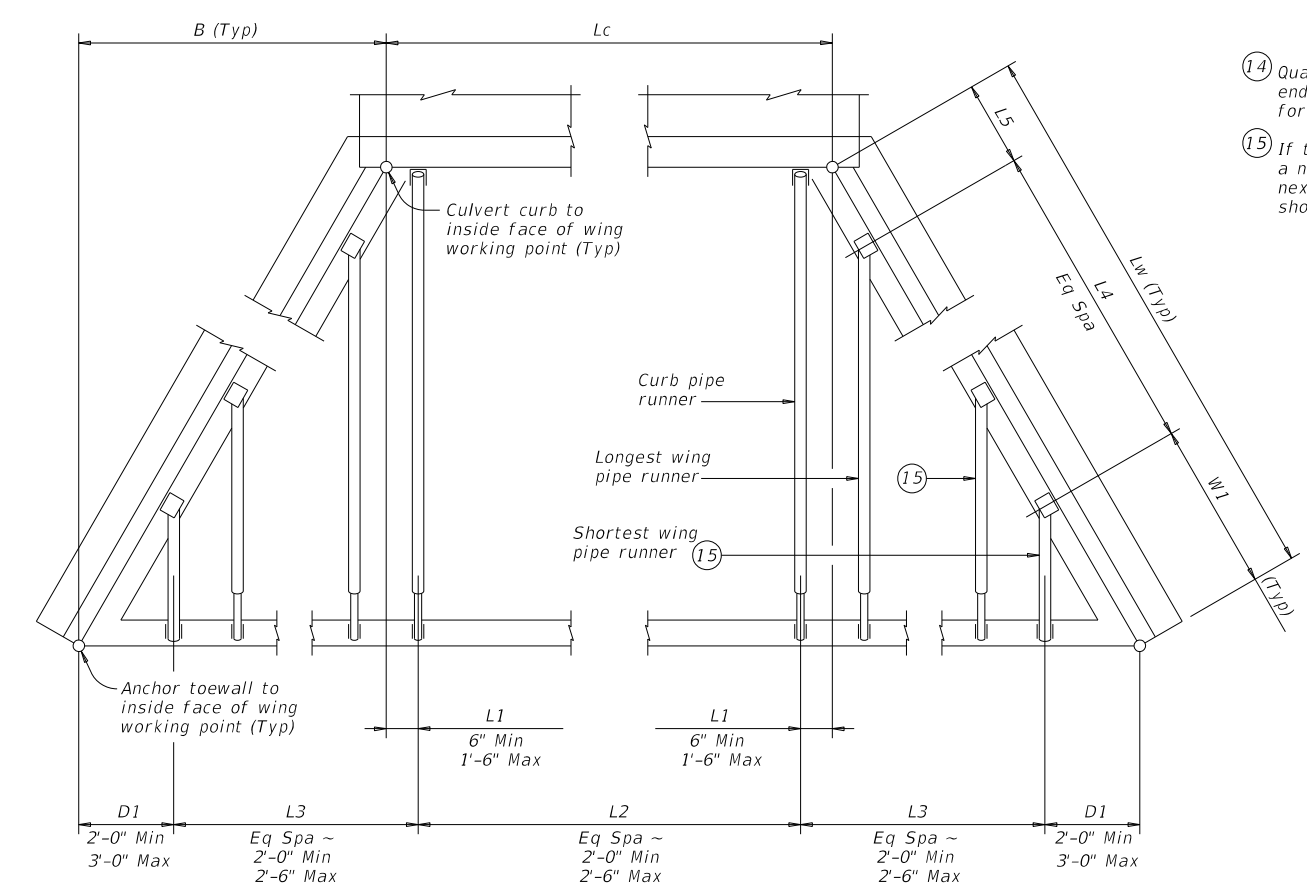
SETB-FW-0

FILE: setbf0se-20.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT REVISIONS	REV	DATE	BY	DESCRIPTION
	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	226	

DATE: FILE:

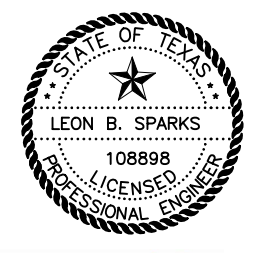
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

Culvert Station and/or Creek name followed by applicable end (Lt, Rt or Both) (14)	Lc (Ft)	L1 (Ft)	L2			D1 (Ft)	L3			W1 (Ft)	L4			L5 (Ft)	Curb Pipe Runner (Pc)		Longest Wing Pipe Runner (Pw) (Ft)	Shortest Wing Pipe Runner (Pw) (Ft)	Non-Sliding Wing Pipe Runner (if applicable) (Ft)	Curb, Wing, and/or Non-Sliding Pipe Runners		3'-0" Anchor Pipe	
			No. Spa	Spa at (Ft)	Overall Length (Ft)		No. Spa	Spa at (Ft)	Overall Length (Ft)		No. Spa	Spa at (Ft)	Overall Length (Ft)		No.	Length (Ft)				Size (3", 4" or 5")	Total Length (Ft) (14)	Size (2", 3" or 4")	Total Length (Ft) (14)
CULVERT STR 2 STA 41+50.00 (Rt)	4.000	0.500	2	1.500	3.000	3.000	3	1.957	5.872	NG	NG	NG	NG	NG	NG	NG	NG	N/A	NG	NG	NG	NG	
CULVERT STR 4 STA 57+41.00 (Rt)	4.000	0.500	2	1.500	3.000	3.000	3	2.270	6.810	NG	NG	NG	NG	NG	NG	NG	NG	N/A	NG	NG	NG	NG	



(14) Quantities shown are for one structure end if Lt or Rt. Quantities shown are for two structure ends if Both.
 (15) If the outermost wing pipe runner is a non-sliding pipe runner, consider the next outermost wing pipe runner as the shortest.

SPECIAL NOTE:
 This tabular sheet is to be filled out by the culvert specifier and provides information for the construction details and quantities of pipe runners.
 An Excel 2010 spreadsheet to assist in completing this table can be downloaded from the Bridge Standards (English) web page on the TxDOT web site. The completed sheet must be signed, sealed, and dated by a licensed Professional Engineer.
 Note that the tabular quantities are given for estimating purposes only. It is likely that these quantities will change due to field conditions. Therefore, all dimensions must be verified by the Contractor in the field prior to fabrication of the safety end treatment components.

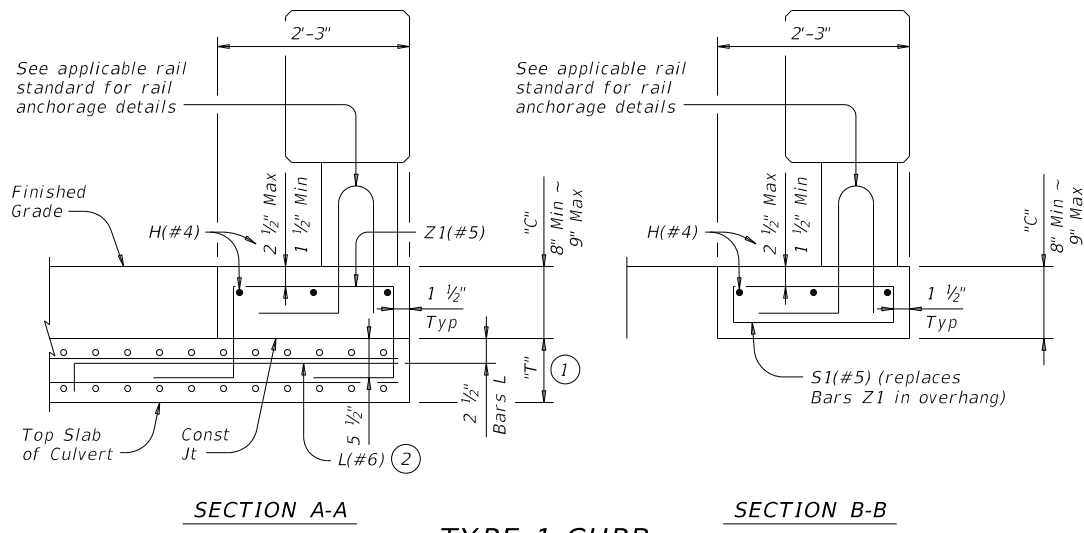


Leon B. Sparks
 9/2/2022

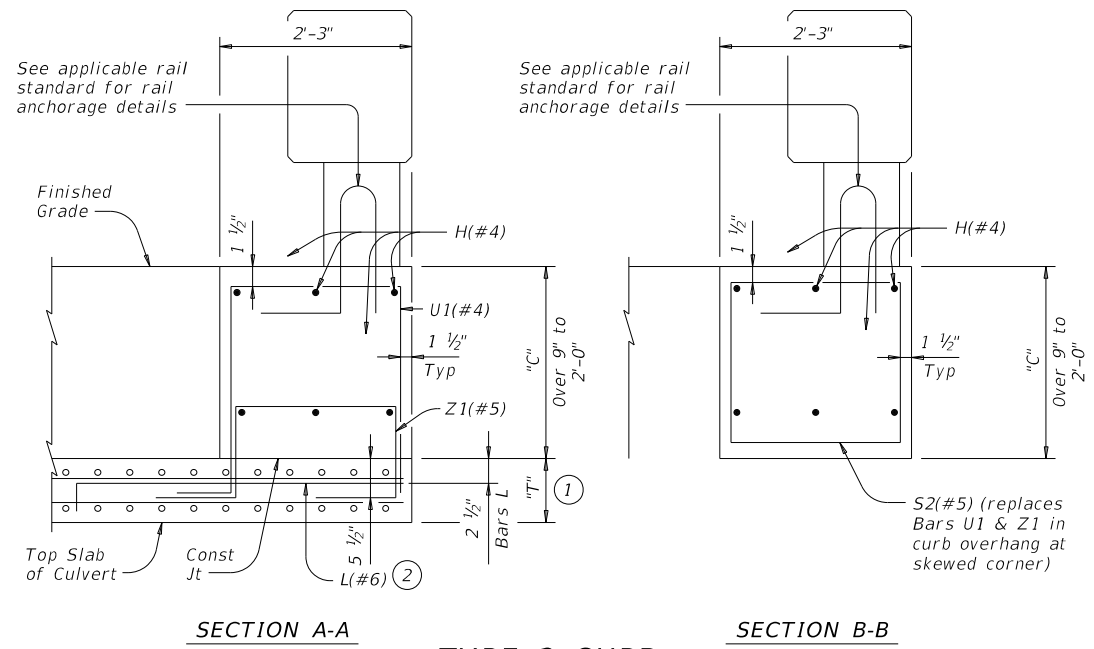
		Bridge Division Standard	
SAFETY END TREATMENT WITH FLARED WINGS FOR 0° SKEW BOX CULVERTS TYPE I ~ CROSS DRAINAGE			
SETB-FW-0			
FILE: setbf0se-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
©TxDOT February 2020	CONT	SECT	JOB
REVISIONS	0251	06	036
	DIST	COUNTY	SHEET NO.
	BWD	LAMPASAS	227

DATE:
 FILE:

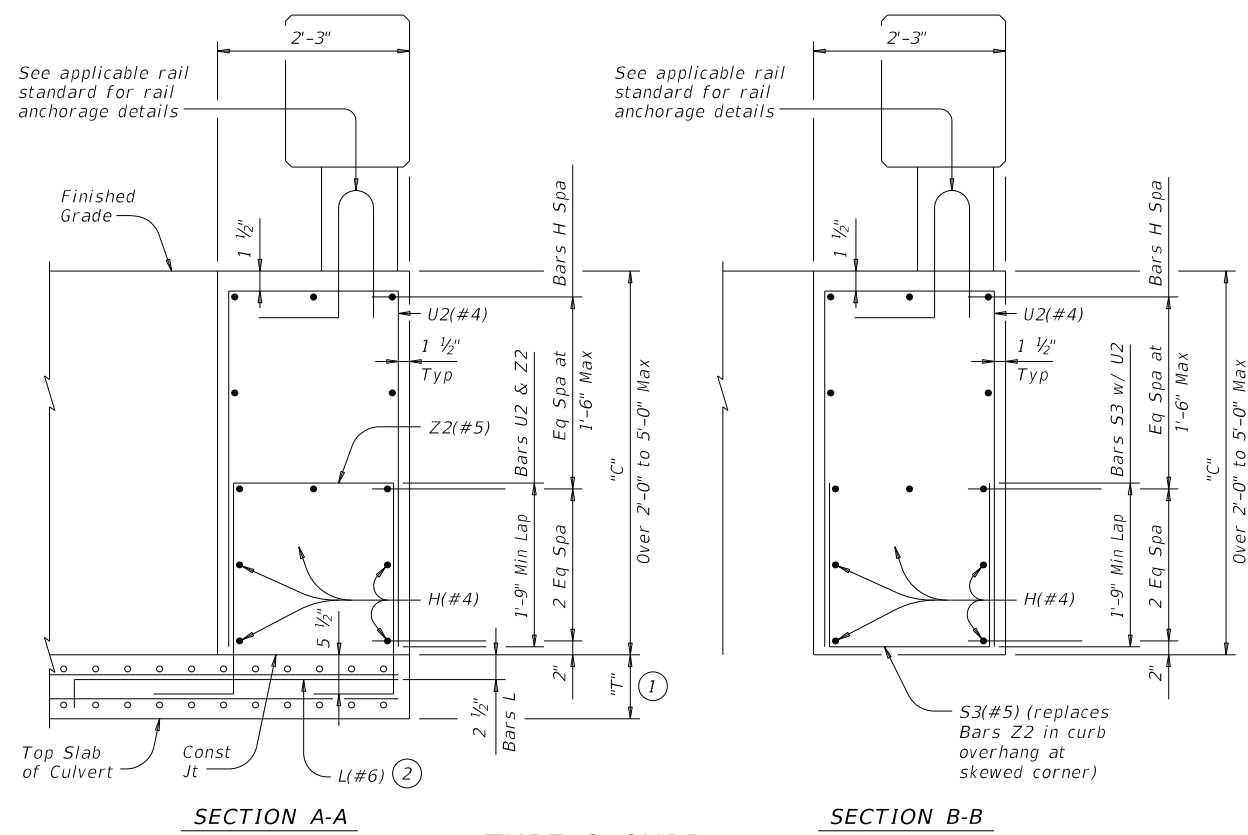
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



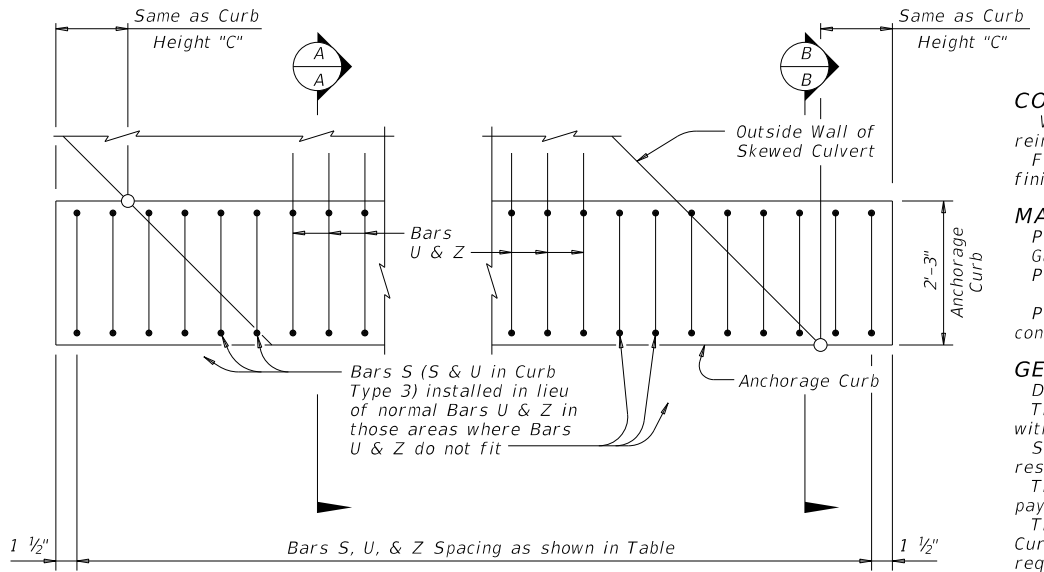
SECTION A-A
SECTION B-B
TYPE 1 CURB
Used for curbs from 8" to 9" (Showing "C" = 9"). Showing T223 Rail, other rails similar. (Bars L(#5) on T223 and C223 Rails are not used for this structure). Bars RH(#5) required on standards T80HT, T80SS and T224 are not required when used with the RAC standard.



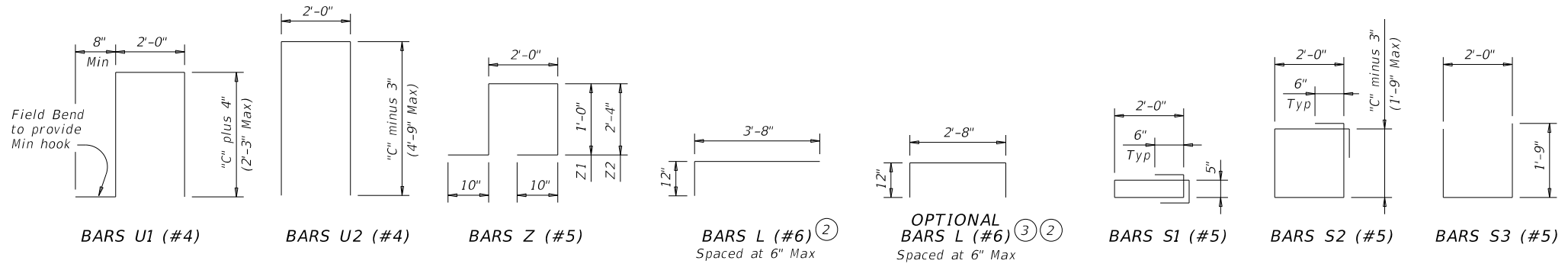
SECTION A-A
SECTION B-B
TYPE 2 CURB
Used for curbs over 9" to 2'-0" (Showing "C" = 2'-0"). Showing T223 Rail, other rails similar. (Bars L(#5) on T223 and C223 Rails are not used for this structure). Bars RH(#5) required on standards T80HT, T80SS and T224 are not required when used with the RAC standard.



SECTION A-A
SECTION B-B
TYPE 3 CURB
Used for curbs over 2'-0" to 5'-0" (Showing "C" = 4'-0"). Showing T223 Rail, other rails similar. (Bars L(#5) on T223 and C223 Rails are not used for this structure). Bars RH(#5) required on standards T80HT, T80SS and T224 are not required when used with the RAC standard.



TYPICAL CURB PLAN
Showing typical installation on skewed culvert. (Bars L(#5) on T223 and C223 Rails are not used for this structure). Bars RH(#5) required on standards T80HT, T80SS and T224 are not required when used with the RAC standard.



Curb Height "C"	Section Type	Bars S, U, & Z Spa
8" to 9"	1	12"
Over 9" to 2'-0"	2	9"
Over 2'-0" to 3'-0"	3	7"
Over 3'-0" to 5'-0"	3	5"

Curb Height "C"	Section Type	Reinf Steel (Lb/LF)	Class "C" Concrete (CY/LF)
8"	1	21.5	0.056
9"	1	21.5	0.063
1'-0"	2	29.7	0.083
1'-6"	2	30.6	0.125
2'-0"	2	31.5	0.167
3'-0"	3	44.6	0.250
4'-0"	3	56.8	0.333
5'-0"	3	60.0	0.417

- ① "T" is equal to the culvert top slab thickness. For Precast Boxes with slabs less than 8" thick, see SCP-MD Standard for additional details.
- ② Tilt Bars L hook as necessary to maintain cover.
- ③ Optional Bars L are to be used only for Precast Box Culverts with 3'-0" closure pours.
- ④ Quantities shown are for Contractor's information only. Quantities are per Linear Foot of curb length. The values for each section type in table can be interpolated for intermediate values of Curb Height, "C".

CONSTRUCTION NOTES:
When using this anchorage curb, omit normal culvert curb reinforcing bars K and H shown on the culvert standard sheets. For vehicle safety, the top of the curb must be flush with the finished grade.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel. Galvanize all reinforcing steel if required elsewhere. Provide bar laps, where required, as follows:
Uncoated or galvanized ~ #4 = 1'-11"
Provide Class "C" concrete (f'c=3,600 psi). Provide Class "C" (HPC) concrete if shown elsewhere in the plans.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications. The rail anchorage curb details have sufficient strength for use with all standard rail types. See appropriate rail standard for approved design speed restrictions, notes and details not shown. This anchorage curb is considered part of the Box Culvert for payment. These details are for use with curbs that are 8" to 5'-0" tall only. Curb heights that are less than or greater than those shown will require special design.
Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing bar dimensions shown are out-to-out of bar.

Bridge Division Standard

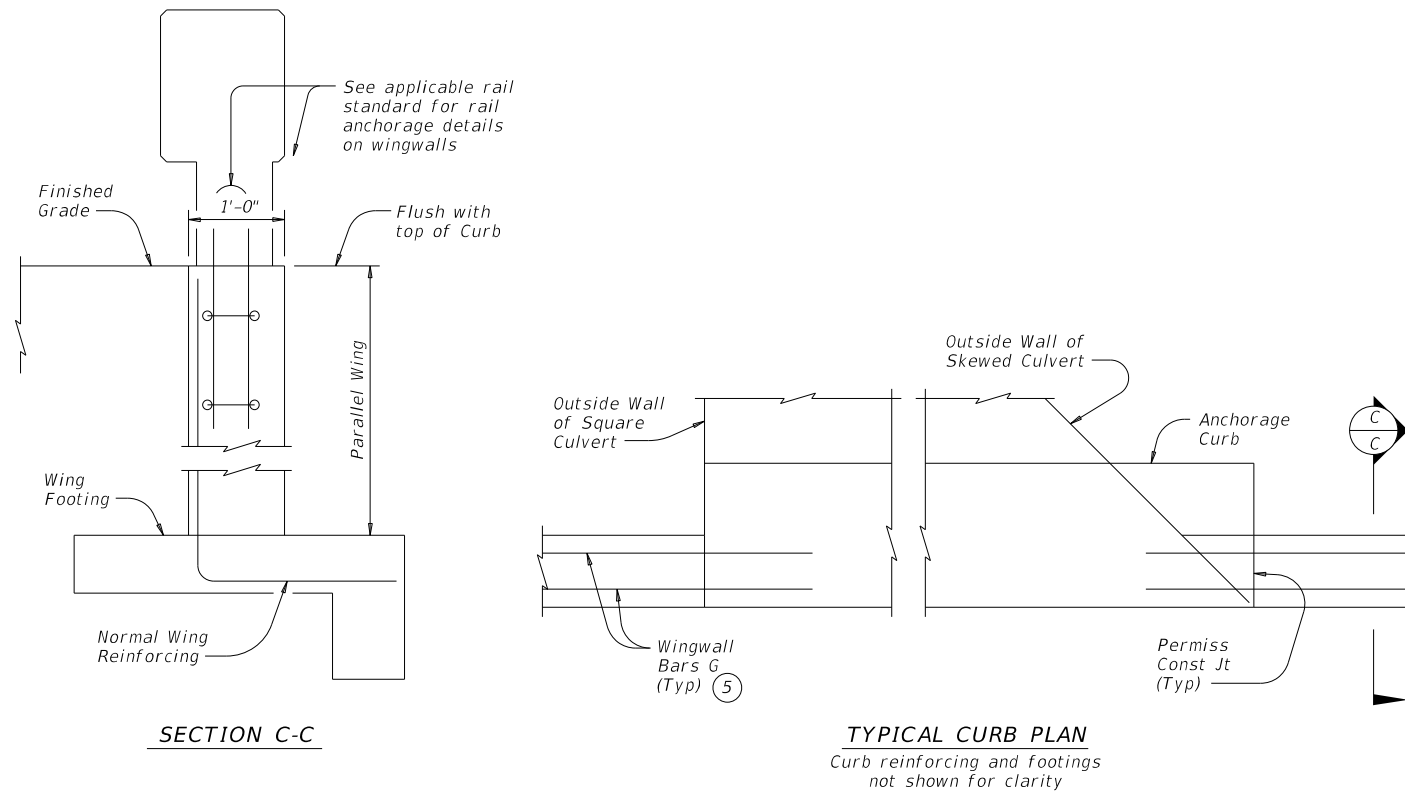
RAIL ANCHORAGE CURB BOX CULVERT RAIL MOUNTING DETAILS (CURBS 8" TO 5'-0" TALL ONLY)

RAC

FILE: racste01-20.dgn	DN: GAF	CK: TxDOT	DW: TxDOT	CK: GAF
DATE: February 2020	CONT: 0251	SECT: 06	JOB: 036	US 281
REVISIONS	DIST: BWD	COUNTY: LAMPASAS	SHEET NO:	228

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.

DATE:
 FILE:



SECTION C-C

TYPICAL CURB PLAN
 Curb reinforcing and Footings
 not shown for clarity

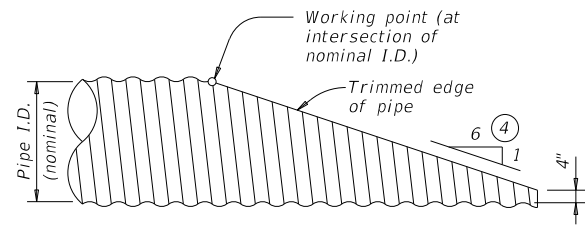
INSTALLATION AT PARALLEL CULVERT WINGWALLS

See culvert wingwall standard for bars and details not shown.

(5) Bars G (#5), as identified on the PARALLEL WINGS PW standard sheet, must extend 1'-6" into the Anchorage Curb similar to that shown for a normal culvert curb.

		Bridge Division Standard	
RAIL ANCHORAGE CURB BOX CULVERT RAIL MOUNTING DETAILS (CURBS 8" TO 5'-0" TALL ONLY)			
RAC			
FILE: racste01-20.dgn	DN: GAF	CK: TxDOT	DW: TxDOT
©TxDOT February 2020	CONT	SECT	HIGHWAY
REVISIONS	0251	06	036 US 281
	DIST	COUNTY	SHEET NO.
	BWD	LAMPASAS	229

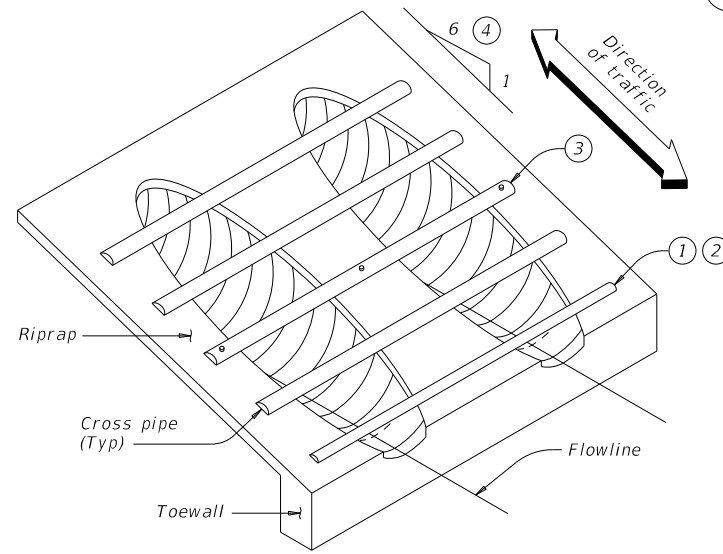
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



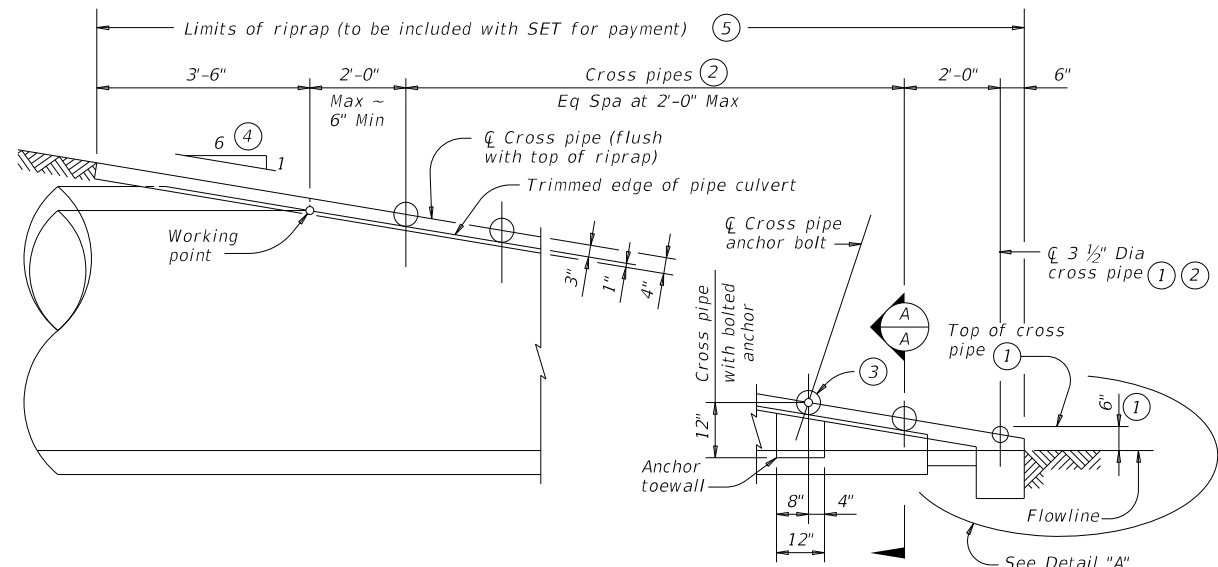
NOTE: All cross pipes, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

(Showing corrugated metal pipe (CMP) culvert. Details at reinforced concrete pipe (RCP) culvert are similar.)

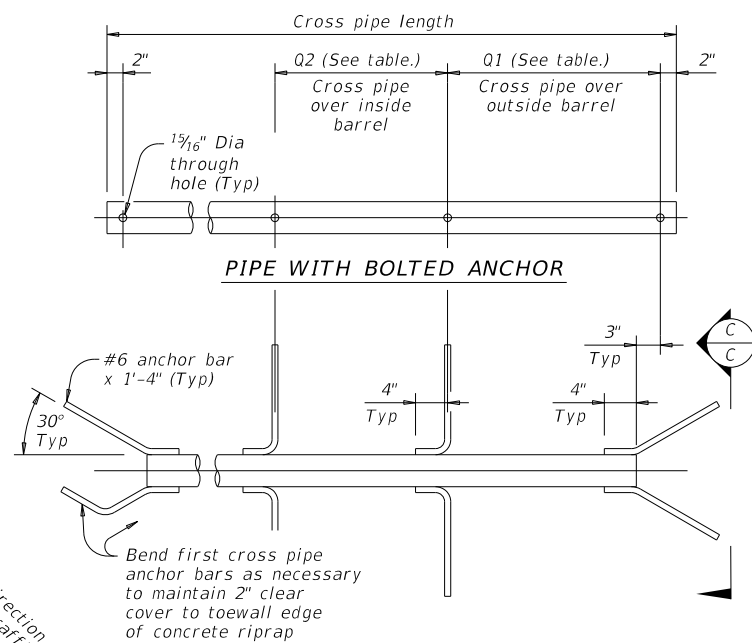


ISOMETRIC VIEW OF TYPICAL INSTALLATION

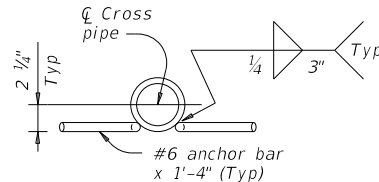


SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

(Showing reinforced concrete pipe (RCP) culvert. Details at corrugated metal pipe (CMP) culvert are similar.)



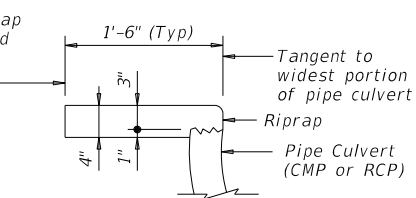
PIPE WITH ANCHOR BARS



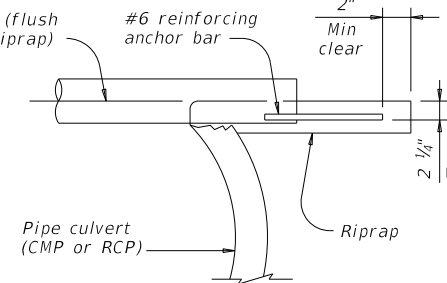
SECTION C-C

CROSS PIPE DETAILS

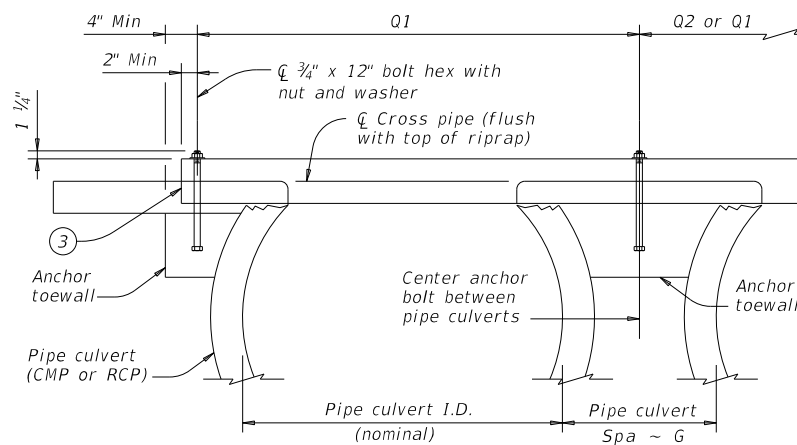
Limits of riprap (to be included with SET for payment) ⑤



SHOWING TYPICAL PIPE CULVERT AND RIPRAP



SHOWING CROSS PIPE WITH ANCHOR BAR

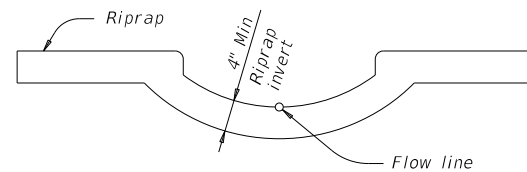


SHOWING CROSS PIPE WITH BOLTED ANCHOR

SECTION A-A

DETAIL "A"

(Showing invert with corrugated metal pipe (CMP) culvert. Reinforced concrete pipe (RCP) culvert details are similar. Cross pipes not shown for clarity.)



SECTION B-B

(Cross pipes not shown for clarity.)

CROSS PIPE LENGTHS, REQUIRED PIPE SIZES, AND RIPRAP QUANTITIES

Nominal Culvert I.D.	Conc Riprap (CY) ⑥	Pipe Culvert Spa ~ G	Single Barrel ~ Q1	Multi-Barrel ~ Q1	Q2	Conditions for Use of Cross Pipes	Cross Pipe Sizes
12"	0.6	0' - 9"	N/A	2' - 1"	1' - 9"	3 or more pipe culverts	3" Std (3.500" O.D.)
15"	0.7	0' - 11"	N/A	2' - 5"	2' - 2"		
18"	0.8	1' - 2"	N/A	2' - 10"	2' - 8"		
21"	0.9	1' - 4"	N/A	3' - 2"	3' - 1"		
24"	0.9	1' - 7"	N/A	3' - 6"	3' - 7"	3 or more pipe culverts	3 1/2" Std (4.000" O.D.)
27"	1.0	1' - 8"	N/A	3' - 10"	3' - 11"		
30"	1.1	1' - 10"	N/A	4' - 2"	4' - 4"	2 or more pipe culverts	4" Std (4.500" O.D.)
33"	1.2	1' - 11"	4' - 2"	4' - 5"	4' - 8"	All pipe culverts	
36"	1.3	2' - 1"	4' - 5"	4' - 9"	5' - 1"	All pipe culverts	4" Std (4.500" O.D.)
42"	1.5	2' - 4"	4' - 11"	5' - 5"	5' - 10"		
48"	1.7	2' - 7"	5' - 5"	6' - 0"	6' - 7"	All pipe culverts	5" Std (5.563" O.D.)
54"	2.0	3' - 0"	5' - 11"	6' - 9"	7' - 6"		
60"	2.2	3' - 3"	6' - 5"	7' - 4"	8' - 3"		
66"	2.4	3' - 3"	6' - 11"	7' - 10"	8' - 9"		
72"	2.7	3' - 4"	7' - 5"	8' - 5"	9' - 4"		

- The proper installation of the first cross pipe is critical for vehicle safety. Place the top of the first cross pipe no more than 6" above the flowline.
- Provide cross pipes, except the first bottom pipe, of the size shown in the table. Provide a 3 1/2" standard pipe (4" O.D.) for the first bottom pipe.
- Install the third cross pipe from the bottom of the culvert using a bolted connection. Ensure that riprap concrete does not flow into the cross pipe so as to permit disassembly of the bolted connection to allow cleanout access. At the Contractor's option, install all other cross pipes using the bolted connection details.
- Match cross slope as shown elsewhere in the plans. Cross slope of 6:1 or flatter is required for vehicle safety.
- Riprap placed beyond the limits shown will be paid for as concrete riprap in accordance with Item 432, "Riprap".
- Quantities shown are for one end of one reinforced concrete pipe (RCP) culvert. For multiple pipe culverts or for corrugated metal pipe (CMP) culverts, quantities will need to be adjusted. Riprap quantities are for contractor's information only.

MATERIAL NOTES:

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise. Provide cross pipes that meet the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 (Gr B), or API 5LX52. Provide ASTM A307 bolts and nuts. Galvanize all steel components, except concrete reinforcing, after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

GENERAL NOTES:

Cross pipes are designed for a traversing load of 10,000 pounds at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981. Safety end treatments (SET) shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the cross pipes. Construct concrete riprap and all necessary inverts in accordance with the requirements of Item 432, "Riprap". Payment for riprap and toewall is included in the Price Bid for each Safety End Treatment.

Bridge Division Standard

SAFETY END TREATMENT FOR 12" DIA TO 72" DIA PIPE CULVERTS TYPE II ~ PARALLEL DRAINAGE

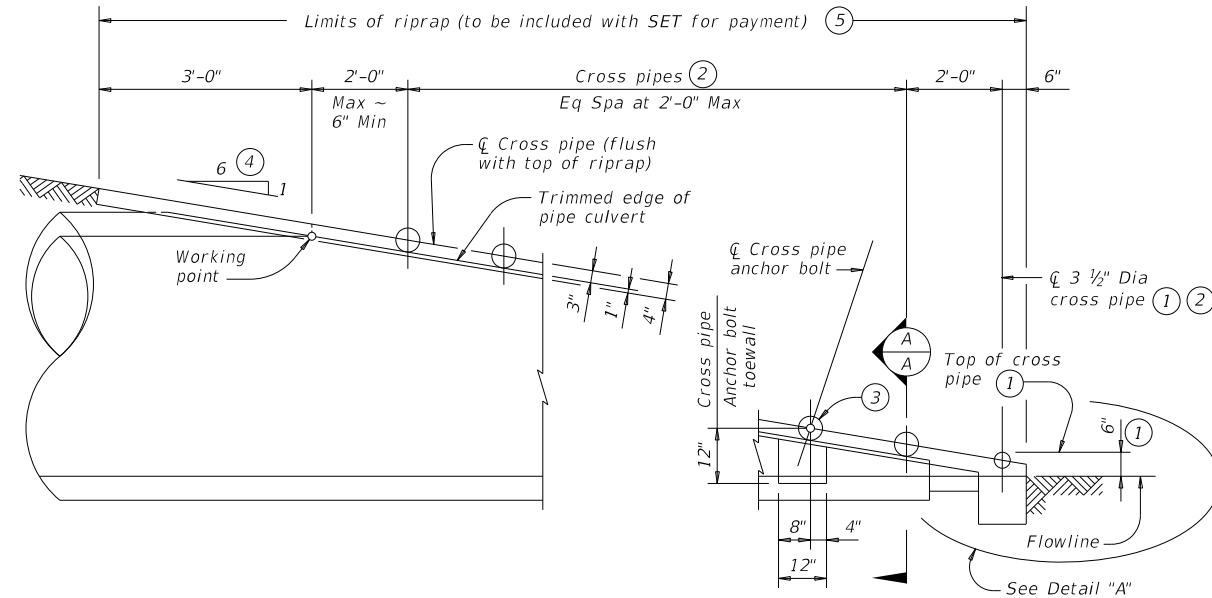
SETP-PD

FILE: setppdse-20.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF
©TxDOT February 2020	CONTRACT NO. 0251	SECTION 06	JOB NO. 036	HIGHWAY US 281
	DIST. BWD	COUNTY LAMPASAS	SHEET NO. 230	

DATE: FILE:

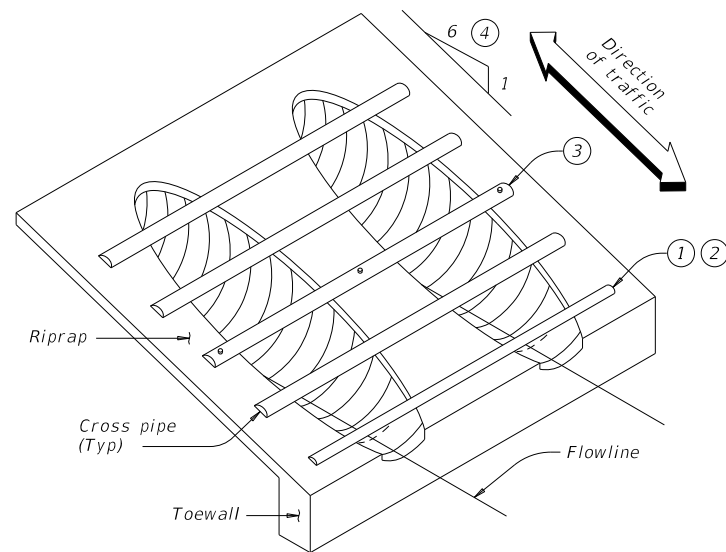
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: FILE:

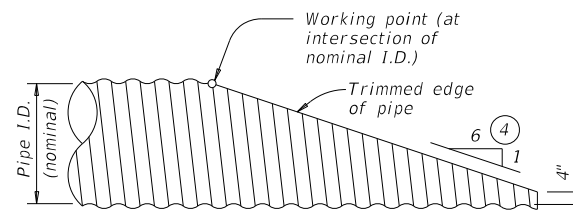


SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

(Showing reinforced concrete pipe (RCP) culvert. Details of corrugated metal pipe (CMP) culvert are similar. pipe runners not shown for clarity.)



ISOMETRIC VIEW OF TYPICAL INSTALLATION



NOTE: All cross pipes, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

(Showing corrugated metal pipe (CMP) culvert. Details of reinforced concrete pipe (RCP) culvert are similar.)

- ① The proper installation of the first cross pipe is critical for vehicle safety. Place the top of the first cross pipe no more than 6" above the flow line.
- ② Provide cross pipes, except the first bottom pipe, of the size shown in the table. Provide a 3 #2" standard pipe (4" O.D.) for the first bottom pipe.
- ③ Install the third Cross Pipe from the bottom of the culvert using a bolted connection. Ensure that riprap concrete does not flow into the cross pipe so as to permit disassembly of the bolted connection to allow cleanout access. At the Contractor's option, install all other cross pipes using the bolted connection details.
- ④ Match cross slope as shown elsewhere in the plans. Cross slope of 6:1 or flatter is required for vehicle safety.
- ⑤ Riprap placed beyond the limits shown will be paid as concrete riprap in accordance with Item 432, "Riprap".
- ⑥ Quantities shown are for one end of one pipe culvert. For multiple Pipe Culverts, quantities will need to be adjusted. Riprap quantities are for Contractor's information only.

CROSS PIPE LENGTHS AND REQUIRED PIPE SIZES ②

Corrugated Metal Pipe (CMP) Culverts									
Design	Conc Riprap (CY) ⑥	Pipe Culvert Span	Pipe Culvert Rise	Pipe Culvert Spa ~ G	Single Barrel ~ Q1	Multi-Barrel ~ Q1	Q2	Conditions for Use of Cross Pipes	Cross Pipe Sizes
1	0.6	17"	13"	1' - 0"	N/A	2' - 8"	2' - 5"	3 or more pipe culverts	3" Std (3.500" O.D.)
2	0.7	21"	15"	1' - 2"	N/A	3' - 1"	2' - 11"		
3	0.9	28"	20"	1' - 5"	N/A	3' - 9"	3' - 9"		
4	1.0	35"	24"	1' - 8"	4' - 4"	4' - 6"	4' - 7"	All pipe culverts	4" Std (4.500" O.D.)
5	1.2	42"	29"	1' - 11"	4' - 11"	5' - 2"	5' - 5"		
6	1.4	49"	33"	2' - 2"	5' - 6"	5' - 11"	6' - 3"		
7	1.6	57"	38"	2' - 5"	6' - 2"	6' - 8"	7' - 2"	All pipe culverts	5" Std (5.563" O.D.)
8	1.8	64"	43"	2' - 10"	6' - 9"	7' - 6"	8' - 2"		
9	1.9	71"	47"	3' - 2"	7' - 4"	8' - 3"	9' - 1"		
Reinforced Concrete Pipe (RCP) Culverts									
Design	Conc Riprap (CY) ⑥	Pipe Culvert Span	Pipe Culvert Rise	Pipe Culvert Spa ~ G	Single Barrel ~ Q1	Multi-Barrel ~ Q1	Q2	Conditions for Use of Cross Pipes	Cross Pipe Sizes
1	0.6	22"	13 1/2"	1' - 0"	N/A	3' - 1"	2' - 10"	3 or more pipe culverts	3" Std (3.500" O.D.)
2	0.7	26"	15 1/2"	1' - 2"	N/A	3' - 6"	3' - 4"		
3	0.9	28 1/2"	18"	1' - 5"	N/A	3' - 10"	3' - 9 1/2"		
4	1.0	36 1/4"	22 1/2"	1' - 8"	4' - 5"	4' - 7"	4' - 8 1/4"	All pipe culverts	4" Std (4.500" O.D.)
5	1.2	43 3/4"	26 5/8"	1' - 11"	5' - 1"	5' - 4"	5' - 6 3/4"		
6	1.4	51 1/8"	31 5/16"	2' - 2"	5' - 8"	6' - 1"	6' - 5 1/4"		
7	1.6	58 1/2"	36"	2' - 5"	6' - 4"	6' - 10"	7' - 3 1/2"	All pipe culverts	5" Std (5.563" O.D.)
8	1.8	65"	40"	2' - 10"	6' - 10"	7' - 7"	8' - 3"		
9	1.9	73"	45"	3' - 2"	7' - 6"	8' - 5"	9' - 3"		

MATERIAL NOTES:

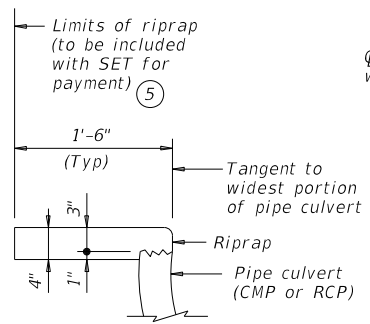
Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.
 Provide cross pipes that meet the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 Gr B, or API 5LX52.
 Provide ASTM A307 bolts and nuts.
 Galvanize all steel components, except concrete reinforcing, after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

GENERAL NOTES:

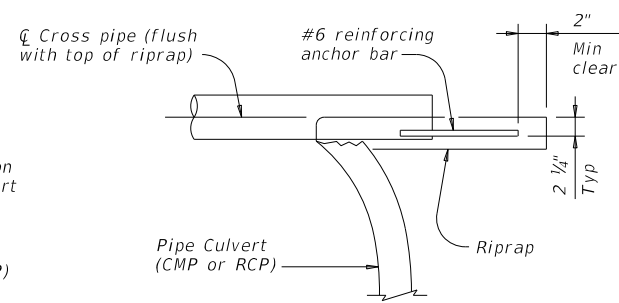
Pipe runners are designed for a traversing load of 10,000 pounds at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.
 Safety end treatments (SET) shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the Pipe Runners.
 Construct concrete riprap and all necessary inverts in accordance with the requirements of Item 432, "Riprap".
 Payment for riprap and toewall is included in the price bid for each safety end treatment.

SAFETY END TREATMENT FOR DESIGN 1 TO 9 ARCH PIPE CULVERTS TYPE II ~ PARALLEL DRAINAGE			
SETP-PD-A			
FILE: setppase-20.dgn	DN: GAF	CK: TxDOT	DW: JRP
©TxDOT February 2020	CONT: 0251	SECT: 06	JOB: 036
	DIST: BWD	COUNTY: LAMPASAS	SHEET NO.: 231

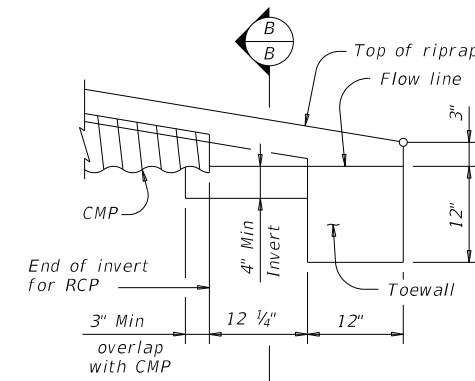
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



SHOWING TYPICAL PIPE CULVERT AND RIPRAP

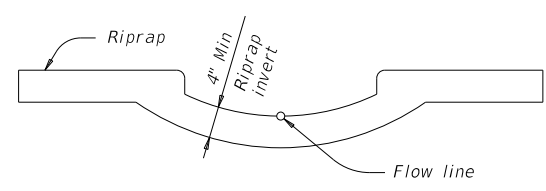


SHOWING CROSS PIPE WITH ANCHOR BAR



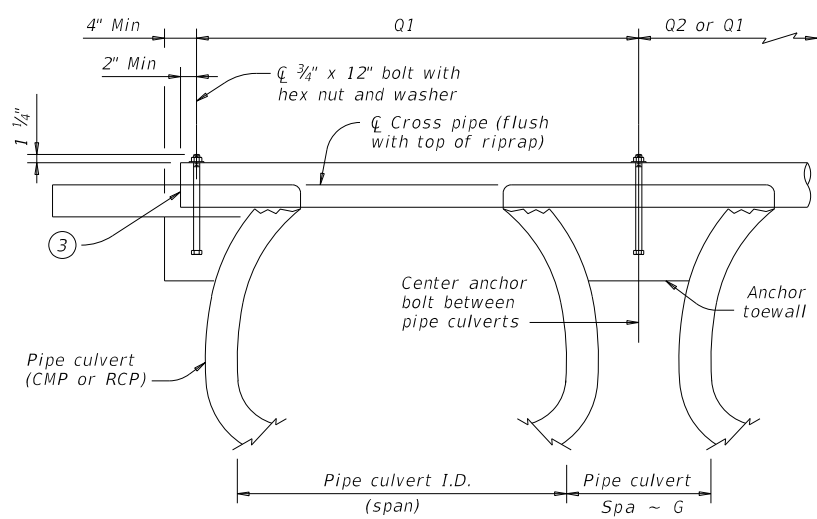
DETAIL "A"

(Showing invert with corrugated metal pipe (CMP) culvert. Reinforced concrete pipe (RCP) culvert details are similar. Cross pipes not shown for clarity.)



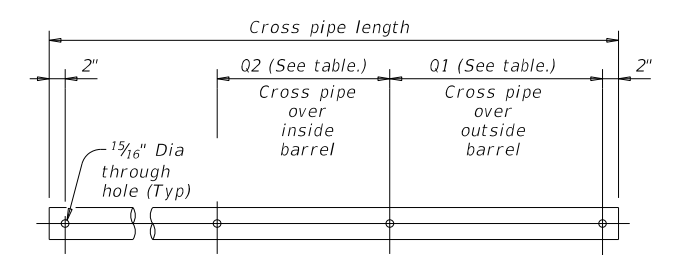
SECTION B-B

(Cross pipes not shown for clarity.)

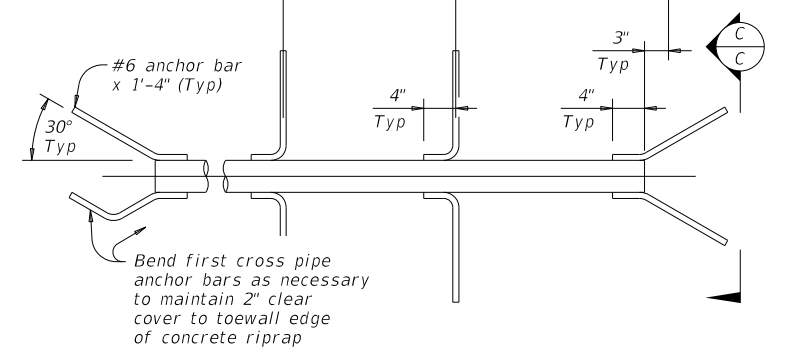


SHOWING CROSS PIPE WITH BOLTED ANCHOR

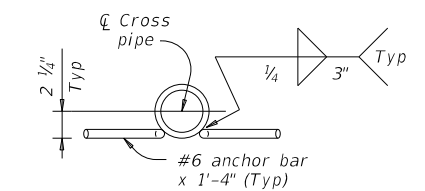
SECTION A-A



PIPE WITH BOLTED ANCHOR



PIPE WITH ANCHOR BARS



SECTION C-C

CROSS PIPE DETAILS

SAFETY END TREATMENT FOR DESIGN 1 TO 9 ARCH PIPE CULVERTS TYPE II ~ PARALLEL DRAINAGE

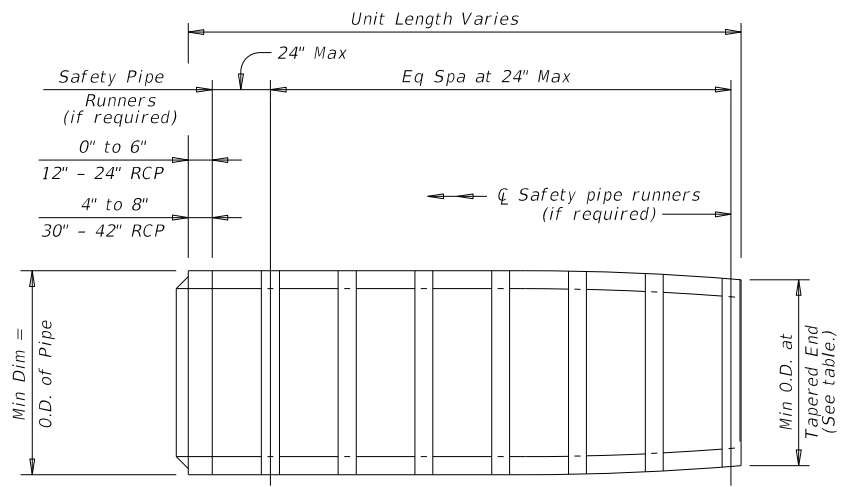
SETP-PD-A

FILE: setppase-20.dgn	DN: GAF	CK: TxDOT	DW: JRP	CK: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	232	

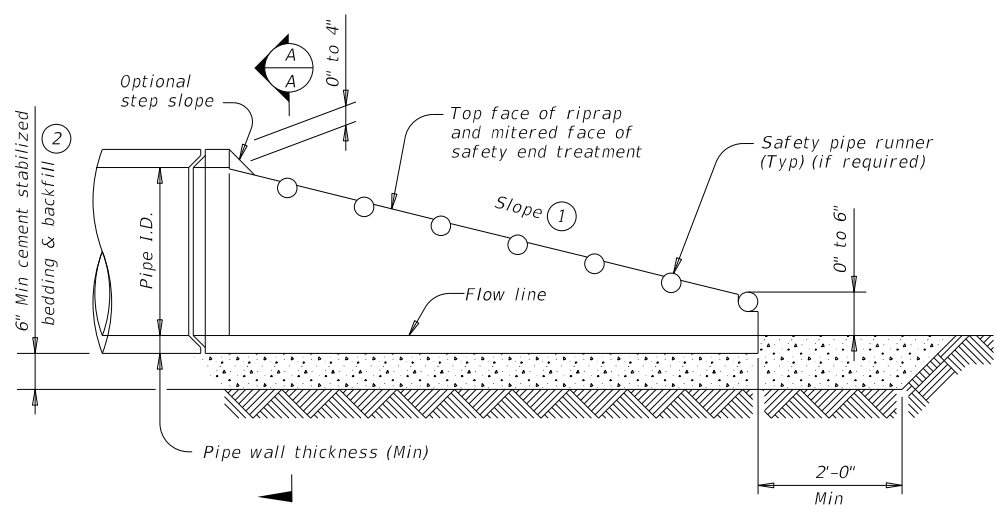
DATE: FILE:

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.

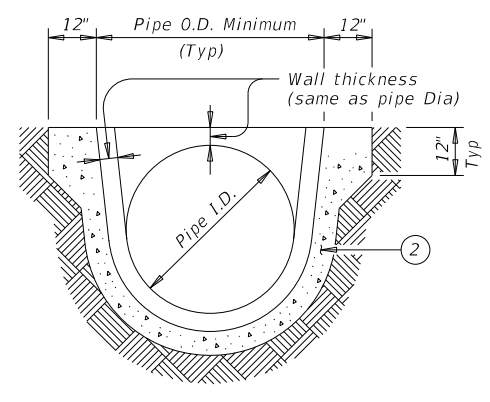
DATE: FILE:



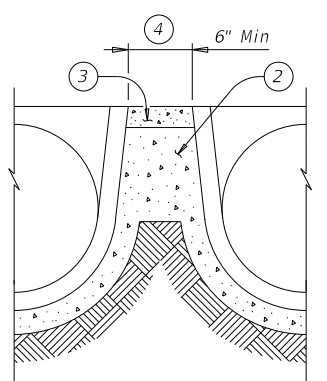
PLAN VIEW - 12" THRU 24"
(Showing spigot end connection.)



LONGITUDINAL ELEVATION - 12" THRU 24"
(Showing spigot end connection.)

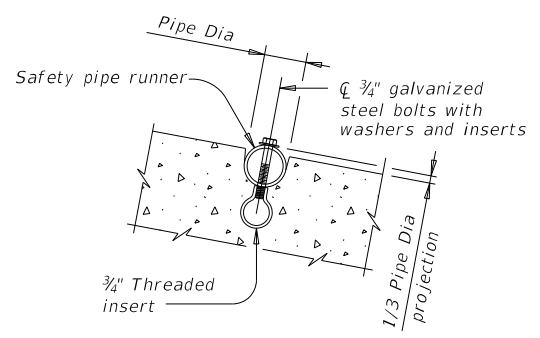


SECTION A-A

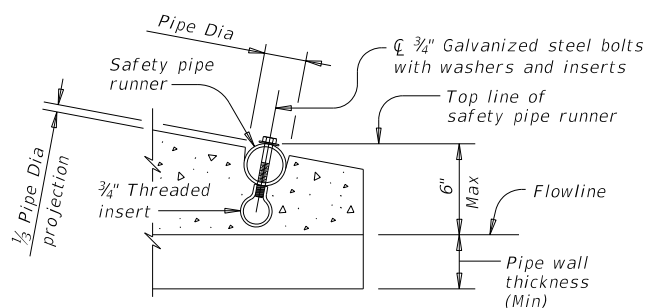


MULTIPLE PIPE INSTALLATION

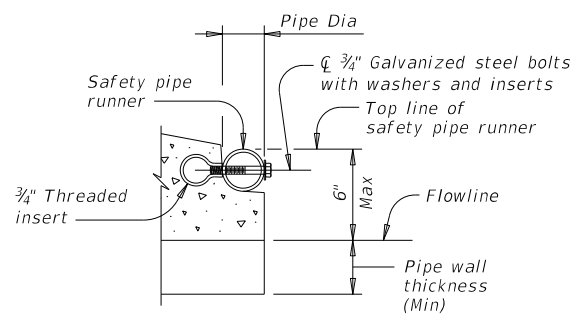
- ① Slope as shown elsewhere in the plans. Slope of 6:1 or flatter is required for vehicle safety.
Provide cement stabilized bedding and backfill in accordance with the Item, "Excavation and Backfill for Structures". Bedding and backfill is considered subsidiary to the Item 467, "Safety End Treatment". When concrete riprap is specified around the safety end treatment, backfill as directed by Engineer.
- ③ Fill the top 4" of void between precast end treatments with concrete riprap. Concrete riprap is considered subsidiary to the Item 467, "Safety End Treatment".
- ④ Adjust clear distance between pipes to provide for the minimum distance between safety end treatments.
- ⑤ Safety pipe runners are required for multiple pipe culverts with more than two pipes.



INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS
(If required)



OPTION A



OPTION B

END DETAILS FOR INSTALLATION OF SAFETY PIPE RUNNERS
(If required)

REQUIREMENTS FOR CULVERT PIPES AND SAFETY PIPE RUNNERS

Pipe I.D.	Min Wall Thickness	Min O.D.	Min O.D. at Tapered End	Min Reinf Requirements (sq. in. per ft. of Pipe)	Max Slope	Min Length of Unit	Pipe Runner Requirements		Required Pipe Runner Sizes		
							Single Pipe	Multiple Pipe	Nominal Dia	O.D.	I.D.
12"	2"	16"	16"	0.07 Circ.	6:1	4'-0"	No	⑤	3" STD	3.500"	3.068"
15"	2 1/4"	19 1/2"	19"	0.07 Circ.	6:1	5'-8"	No	⑤	3" STD	3.500"	3.068"
18"	2 1/2"	23"	21 1/2"	0.07 Circ.	6:1	7'-3"	No	⑤	3" STD	3.500"	3.068"
24"	3"	30"	27"	0.07 Circ.	6:1	10'-6"	No	⑤	3" STD	3.500"	3.068"
30"	3 1/2"	37"	31"	0.18 Circ.	6:1	12'-1"	No	Yes	4" STD	4.500"	4.026"
36"	4"	44"	36"	0.19 Ellip.	6:1	15'-4"	Yes	Yes	4" STD	4.500"	4.026"
42"	4 1/2"	51"	41 1/2"	0.23 Ellip.	6:1	18'-7"	Yes	Yes	4" STD	4.500"	4.026"

MATERIAL NOTES:

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.
Provide pipe runners meeting the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 Gr B, or API 5LX52.
Galvanize steel components except reinforcing steel after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe (RCP) may be used for TYPE II end treatment as specified in Item 467, "Safety End Treatment".
When precast safety end treatment is used as a Contractor's alternate to mitered RCP, riprap will not be required unless noted otherwise on the plans.
Manufacture precast concrete end sections in accordance with Item 464, "Reinforced Concrete Pipe" and in accordance with ASTM Specification C-76, Class III, Wall B for circular pipe.
Provide precast concrete end sections with a spigot or bell end for compatibility to upstream or downstream end conditions with sufficient annular space to allow for grout, mortar, cold applied asphalt joint compound or pre-formed plastic gasket material.
Methods of lifting shall be provided by the manufacturer for ease of loading, unloading and installation.
Pipe runners are designed for a traversing load of 10,000 Lbs at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

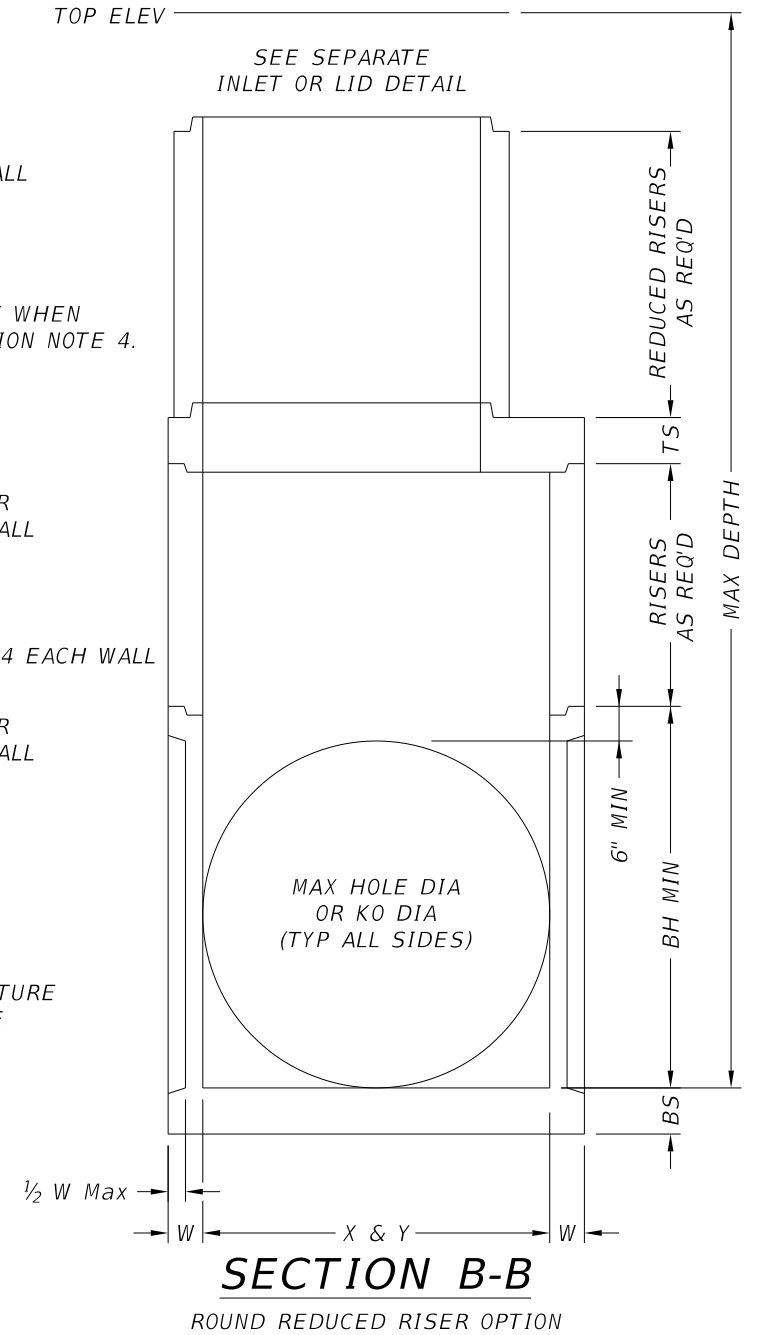
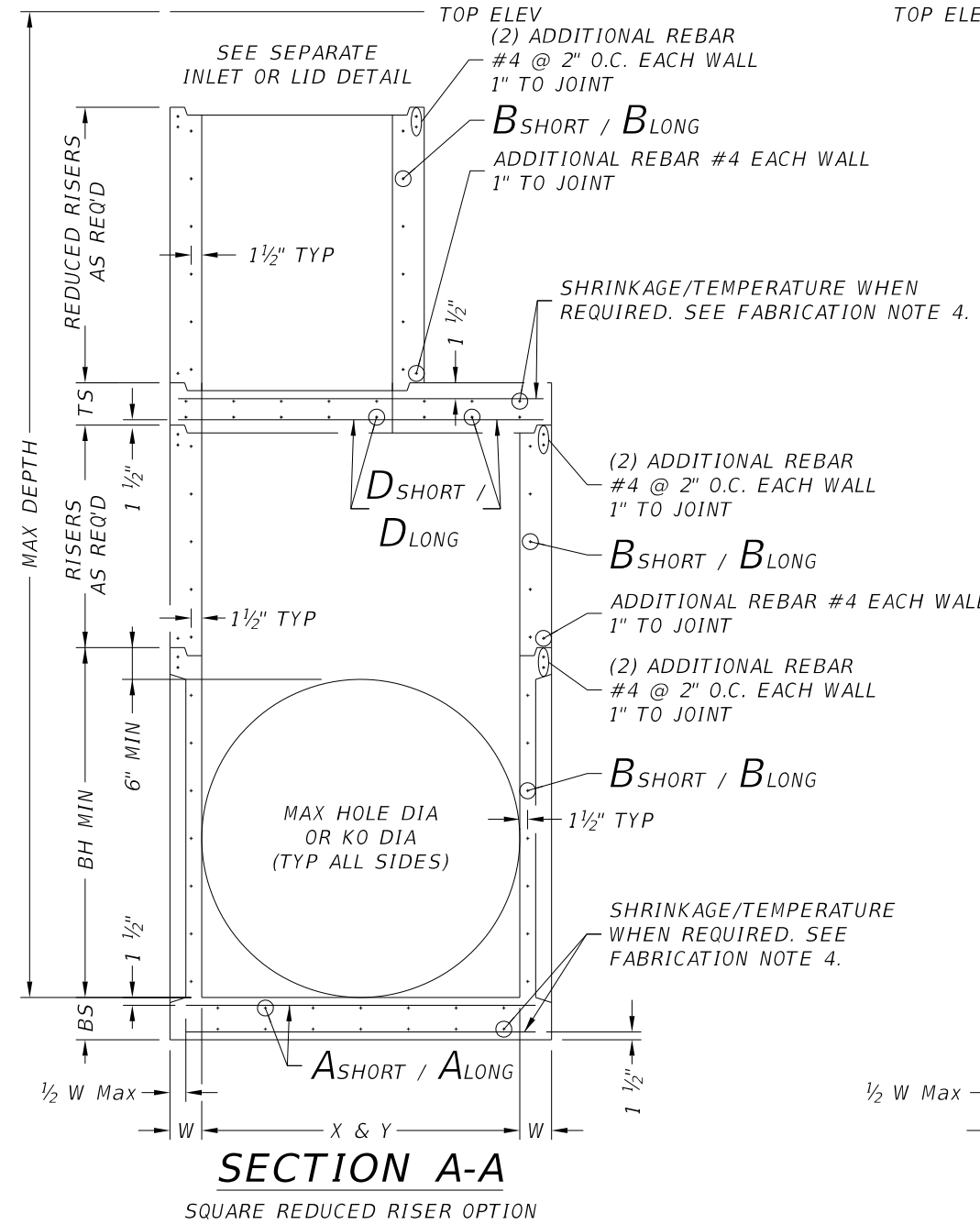
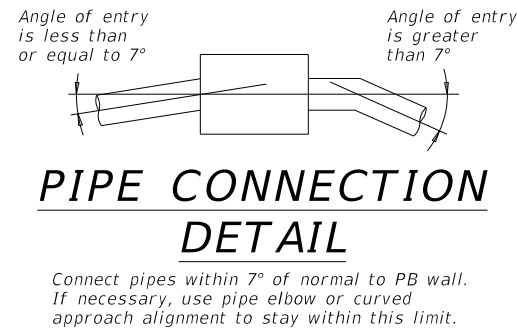
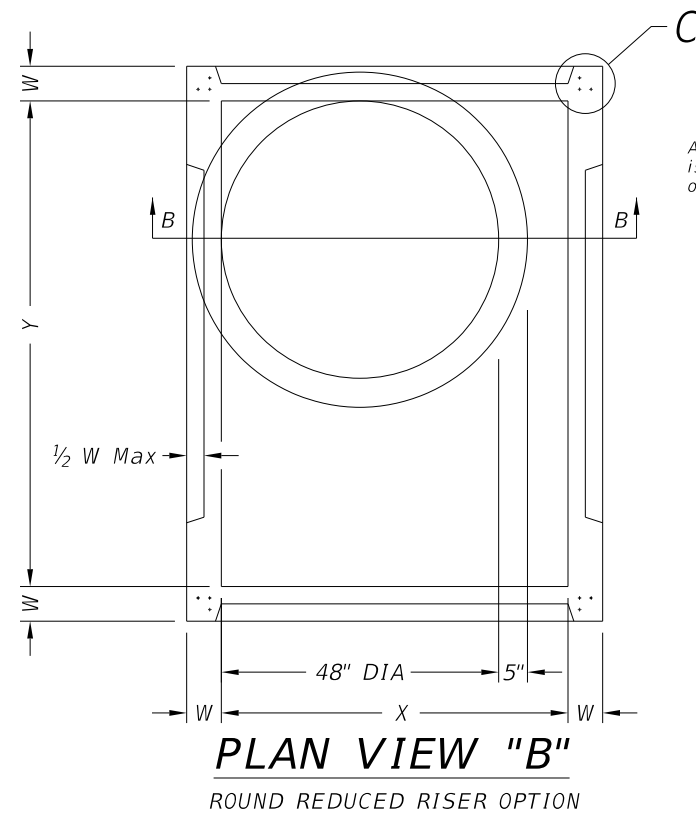
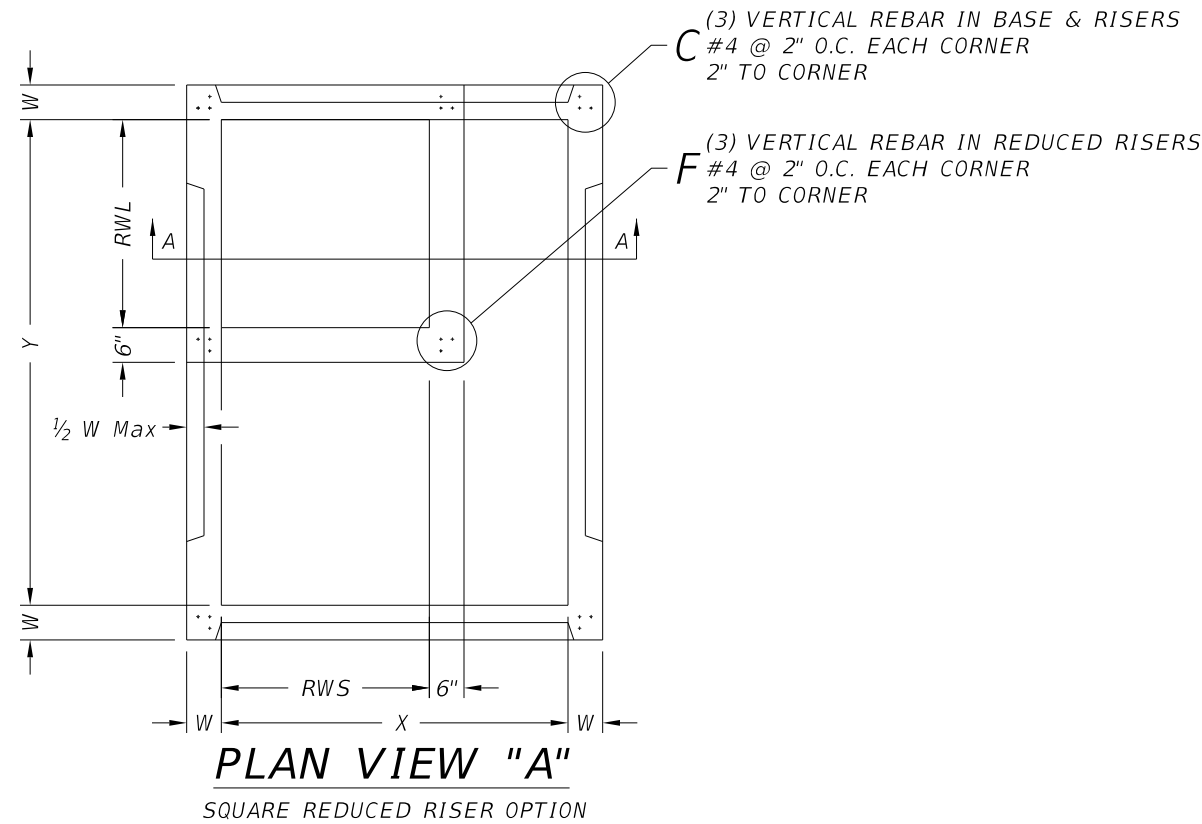


PRECAST SAFETY END TREATMENT
TYPE II ~ PARALLEL DRAINAGE

PSET-RP

FILE: psetrpss-20.dgn	DN: RLW	CK: KLR	DW: JTR	CK: GAF
©TxDOT February 2020	CONTRACT	SECTION	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	233	

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.



FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide typical clear cover of 1 1/2" to reinforcing steel at interior or exterior walls.
4. Walls or slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing steel. Provide steel area = 0.11 in²/ft each way.
5. No substitution is allowed for vertical and horizontal #4 bars in corners.
6. Manufacture base and risers to nearest 3" increment.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is 3/4".
8. Provide lifting devices in conformance with Manufacturer's recommendations.
9. See sheet PDD for sizes, dimensions, and reinforcing steel not shown.

INSTALLATION NOTES:

1. If required elsewhere. Inverts (benching) to be provided by Contractor. Concrete or mortar used for invert is subsidiary to specified inlet or manhole.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or 1/2 the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. For rigid pipe, cut hole in thin wall panel (KO) 4" Max, 2" Min larger than pipe OD.
5. For flexible pipe, consult boot/seal Manufacturer's specification for placement tolerance and hole size. Center pipe in hole and install boot/seal per Manufacturer's specification.

GENERAL NOTES:

1. Precast Base consists of base slab, base unit, risers (as required), reducing slab (as required), and reduced risers (as required). See sheet PDD for sizes.
2. Designed according to ASTM C913.
3. Payment for precast base is subsidiary to the specified inlet, per Item 465, "Junction Boxes, Manholes, and Inlets."

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING



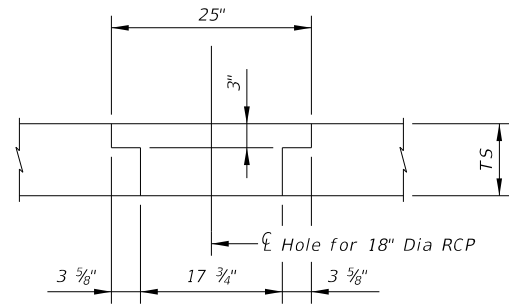
PRECAST BASE

PB

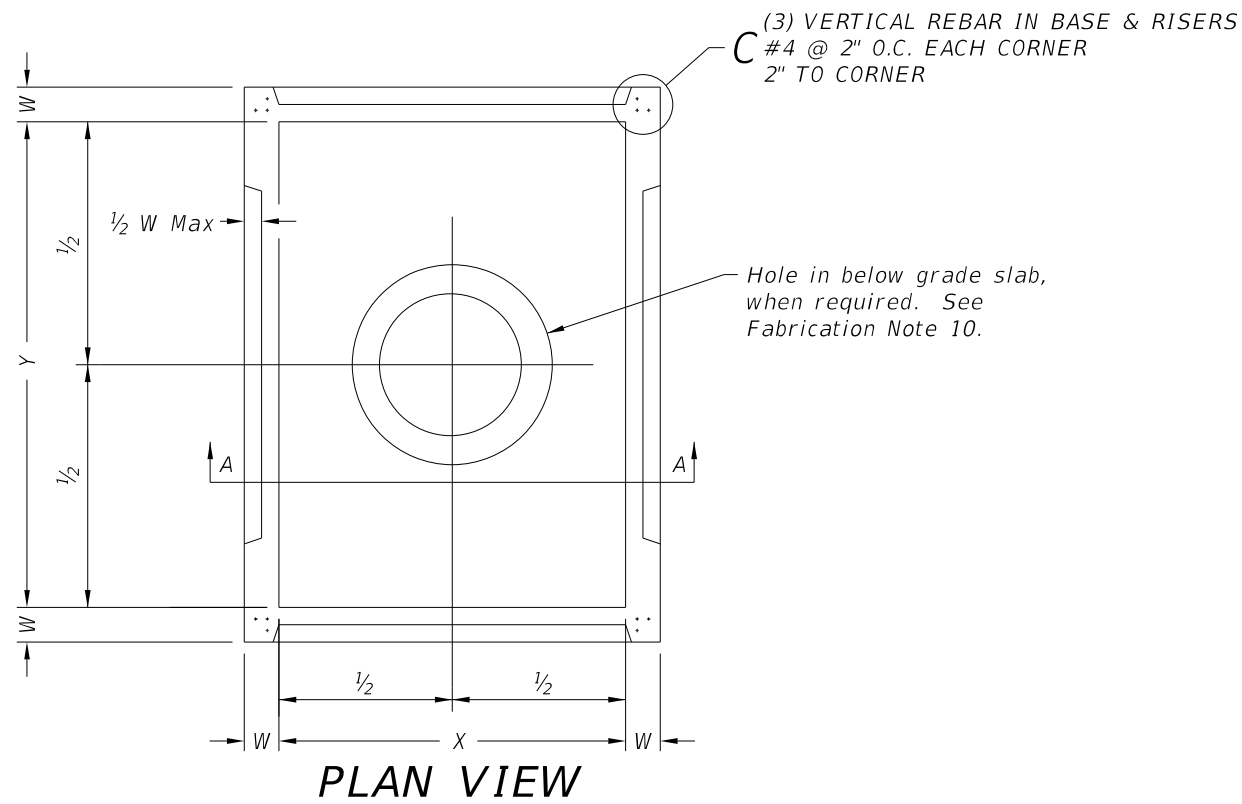
FILE: prest01-20.dgn	DN: TxDOT	CK: TxDOT	OW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	234	

DATE:
FILE:

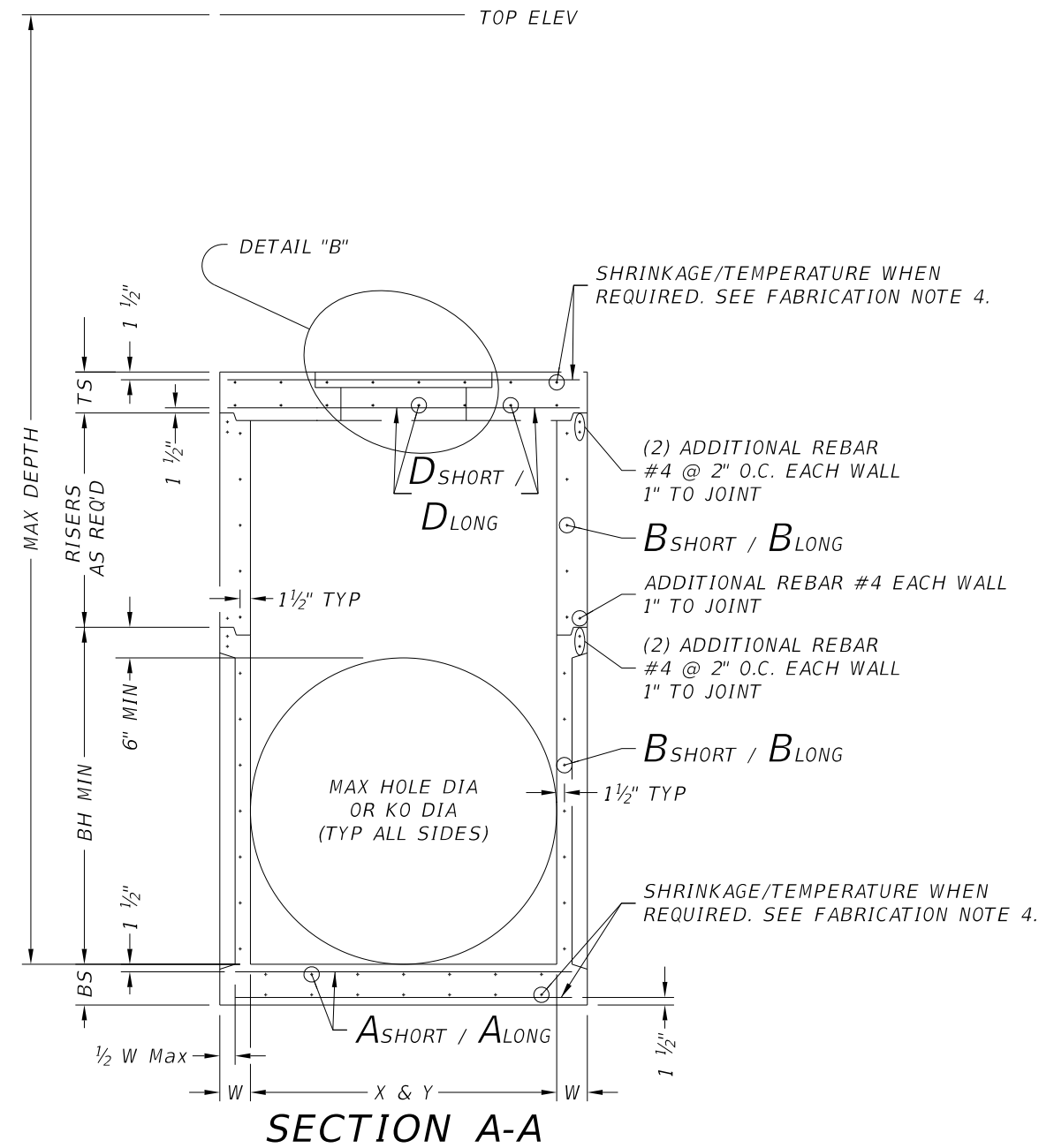
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



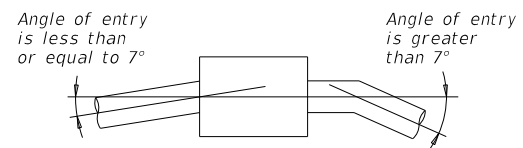
DETAIL "B"



PLAN VIEW



SECTION A-A



PIPE CONNECTION DETAIL

Connect pipes within 7° of normal to PJB wall. If necessary, use pipe elbow or curved approach alignment to stay within this limit.

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide typical clear cover of 1 1/2" to reinforcing steel at interior or exterior walls.
4. Walls or slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing steel. Provide steel area = 0.11 in²/ft each way.
5. No substitution is allowed for vertical and horizontal #4 bars in corners.
6. Manufacture base and risers to nearest 3" increment.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is 3/4".
8. Provide lifting devices in conformance with Manufacturer's recommendations.
9. See sheet PDD for sizes, dimensions, and reinforcing steel not shown.
10. Provide hole in below grade slab only when PJB is installed with inlet type POD.

INSTALLATION NOTES:

1. Inverts (benching) to be provided by Contractor. Concrete or mortar used for invert is subsidiary to junction box.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or 1/2 the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. For rigid pipe, cut hole in thin wall panel (KO) 4" Max, 2" Min larger than pipe OD.
5. For flexible pipe, consult boot/seal Manufacturer's specification for placement tolerance and hole size. Center pipe in hole and install boot/seal per Manufacturer's specification.

GENERAL NOTES:

1. Precast Junction Box consists of base slab, base unit, risers (as required), and below grade slab. See sheet PDD for sizes.
2. Designed according to ASTM C913.
3. Payment for junction box is per Item 465 "Junction Boxes, Manholes, and Inlets" by type and size.

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING



PRECAST JUNCTION BOX

PJB

FILE: prest09-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	235	

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.

DATE:
FILE:

Size	MAX DEPTH = 15 ft. to top of BASE SLAB											MAX DEPTH = 25 ft. to top of BASE SLAB											Min Height (See Gen Note 3)	Max HOLE DIA (See Fab Note 2)	Max KO DIA (See Fab Note 2)
	Base Slab			Base Unit or Riser Walls			Below Grade Slab (w/PJB) Reducing Slab (w/PB)					Base Slab			Base Unit or Riser Walls			Below Grade Slab (w/PJB) Reducing Slab (w/PB)							
	Short Span Reinf. Steel Area	Long Span Reinf. Steel Area	Thickness	Short Span Reinf. Steel Area	Long Span Reinf. Steel Area	Thickness	Reduced Riser Size	Short Span Reinf. Steel Area	Long Span Reinf. Steel Area	Thickness	RWSxRWL or ID	Short Span Reinf. Steel Area	Long Span Reinf. Steel Area	Thickness	Short Span Reinf. Steel Area	Long Span Reinf. Steel Area	Thickness	Reduced Riser Size	Short Span Reinf. Steel Area	Long Span Reinf. Steel Area	Thickness				
X x Y	Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS	Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS	BH MIN	HOLE DIA	KO DIA		
ft.	in ² /ft	in ² /ft	in.	in ² /ft	in ² /ft	in.	ft. **	in ² /ft	in ² /ft	in.	in ² /ft	in ² /ft	in.	in ² /ft	in ² /ft	in.	ft. **	in ² /ft	in ² /ft	in.	ft.	in.	in.		
Precast Junction Box (PJB)	3x3	0.23	0.23	6	0.19	0.19	6	N/A	0.37	0.37	9	0.29	0.29	6	0.24	0.24	6	N/A	0.37	0.37	9	3.5	36	36	
	4x4	0.29	0.29	6	0.24	0.24	6	N/A	0.41	0.41	9	0.47	0.47	6	0.38	0.38	6	N/A	0.41	0.41	9	4.5	48	48	
	3x5	0.29	0.18	6	0.19	0.35	6	N/A	0.48	0.48	9	0.39	0.18	6	0.23	0.59	6	N/A	0.48	0.48	9	3.5	36/60	36/60	
	4x5	0.36	0.18	6	0.22	0.34	6	N/A	0.42	0.42	9	0.53	0.26	6	0.39	0.59	6	N/A	0.42	0.42	9	4.5	48/60	48/60	
	5x5	0.36	0.36	6	0.34	0.34	6	N/A	0.43	0.43	9	0.62	0.62	6	0.59	0.59	6	N/A	0.43	0.43	9	5.5	60	60	
	5x6	0.27	0.27	9	0.34	0.45	6	N/A	0.48	0.48	9	0.47	0.45	9	0.38	0.54	8	N/A	0.48	0.48	9	5.5	60/72	60/72	
	6x6	0.27	0.27	9	0.45	0.45	6	N/A	0.56	0.56	9	0.52	0.52	9	0.54	0.54	8	N/A	0.56	0.56	9	6.5	72	72	
	8x8	0.46	0.46	9	0.51	0.51	8	N/A	0.45	0.45	12	0.87	0.87	9	0.59	0.59	10	N/A	0.45	0.45	12	8.5	96	72	
Precast Base (PB)	3x3	0.23	0.23	6	0.19	0.19	6	N/A	N/A	N/A	N/A	0.29	0.29	6	0.24	0.24	6	N/A	N/A	N/A	N/A	3.5	36	36	
	4x4	0.29	0.29	6	0.24	0.24	6	N/A	N/A	N/A	N/A	0.47	0.47	6	0.38	0.38	6	N/A	N/A	N/A	N/A	4.5	48	48	
	3x5	0.29	0.18	6	0.19	0.35	6	3x3	0.30	0.34	9	0.39	0.18	6	0.23	0.59	6	3x3	0.40	0.40	9	3.5	36/60	36/60	
	4x5	0.36	0.18	6	0.22	0.34	6	3x3	0.30	0.30	9	0.53	0.26	6	0.39	0.59	6	3x3	0.46	0.37	9	4.5	48/60	48/60	
	4x5	0.36	0.18	6	0.22	0.34	6	4x4	0.30	0.30	9	0.53	0.26	6	0.39	0.59	6	4x4	0.39	0.39	9	4.5	48/60	48/60	
	4x5	0.36	0.18	6	0.22	0.34	6	48"	0.39	0.39	9	0.53	0.26	6	0.39	0.59	6	48"	0.47	0.47	9	4.5	48/60	48/60	
	4x5	0.36	0.18	6	0.22	0.34	6	3x5	0.33	0.40	9	0.53	0.26	6	0.39	0.59	6	3x5	0.48	0.48	9	4.5	48/60	48/60	
	5x5	0.36	0.36	6	0.34	0.34	6	3x3	0.34	0.34	9	0.62	0.62	6	0.59	0.59	6	3x3	0.53	0.53	9	5.5	60	60	
	5x5	0.36	0.36	6	0.34	0.34	6	4x4	0.36	0.36	9	0.62	0.62	6	0.59	0.59	6	4x4	0.64	0.64	9	5.5	60	60	
	5x5	0.38	0.38	6	0.34	0.34	6	48"	0.36	0.36	9	0.62	0.62	6	0.59	0.59	6	48"	0.64	0.64	9	5.5	60	60	
	5x5	0.36	0.36	6	0.34	0.34	6	3x5	0.34	0.40	9	0.62	0.62	6	0.59	0.59	6	3x5	0.53	0.53	9	5.5	60	60	
	5x6	0.31	0.31	9	0.34	0.45	6	3x3	0.34	0.34	9	0.47	0.45	9	0.38	0.54	8	3x3	0.61	0.50	9	5.5	60/72	60/72	
	5x6	0.27	0.27	9	0.34	0.45	6	4x4	0.36	0.45	9	0.47	0.45	9	0.38	0.54	8	4x4	0.74	0.57	9	5.5	60/72	60/72	
	5x6	0.29	0.29	9	0.34	0.45	6	48"	0.36	0.45	9	0.47	0.45	9	0.38	0.54	8	48"	0.74	0.57	9	5.5	60/72	60/72	
	5x6	0.29	0.29	9	0.34	0.45	6	3x5	0.45	0.45	9	0.47	0.45	9	0.38	0.54	8	3x5	0.61	0.61	9	5.5	60/72	60/72	
	6x6	0.29	0.29	9	0.45	0.45	6	3x3	0.41	0.41	9	0.52	0.52	9	0.54	0.54	8	3x3	0.74	0.74	9	6.5	72	72	
	6x6	0.27	0.27	9	0.45	0.45	6	4x4	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	4x4	0.87	0.87	9	6.5	72	72	
	6x6	0.29	0.29	9	0.45	0.45	6	48"	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	48"	0.87	0.87	9	6.5	72	72	
	6x6	0.29	0.29	9	0.45	0.45	6	3x5	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	3x5	0.87	0.87	9	6.5	72	72	
	8x8	0.52	0.52	9	0.51	0.51	8	3x3	0.61	0.61	12	0.91	0.91	9	0.70	0.70	10	3x3	0.85	0.85	12	8.5	96	72	
8x8	0.52	0.52	9	0.51	0.51	8	4x4	0.70	0.70	12	0.87	0.87	9	0.70	0.70	10	4x4	1.01	1.01	12	8.5	96	72		
8x8	0.52	0.52	9	0.51	0.51	8	48"	0.70	0.70	12	0.87	0.87	9	0.70	0.70	10	48"	1.01	1.01	12	8.5	96	72		
8x8	0.52	0.52	9	0.51	0.51	8	3x5	0.70	0.85	12	0.87	0.87	9	0.70	0.70	10	3x5	1.01	1.01	12	8.5	96	72		

** Unless otherwise indicated.

FABRICATION NOTES:

1. Maximum spacing of reinforcement is 8".
2. At manufacturer's option, provide cast or cored holes or thin wall panels (KO) to the maximum diameter shown for each. When no penetration is required, it is acceptable to provide a wall with no sectional reduction.

GENERAL NOTES:

1. Precast Junction Box consists of base slab, base unit, risers (as required), and below grade slab. See sheet PJB for details.
2. Precast Base consists of base slab, base unit, risers (as required), reducing slab (as required), and reduced risers (as required). See sheet PB for details.
3. Min Height shown is for stock base units. Use stock base units whenever practical. Smaller height base units can be used in special installation circumstances, when noted elsewhere in the plans. Absolute minimum height of base units is 2'-6".

HL93 LOADING



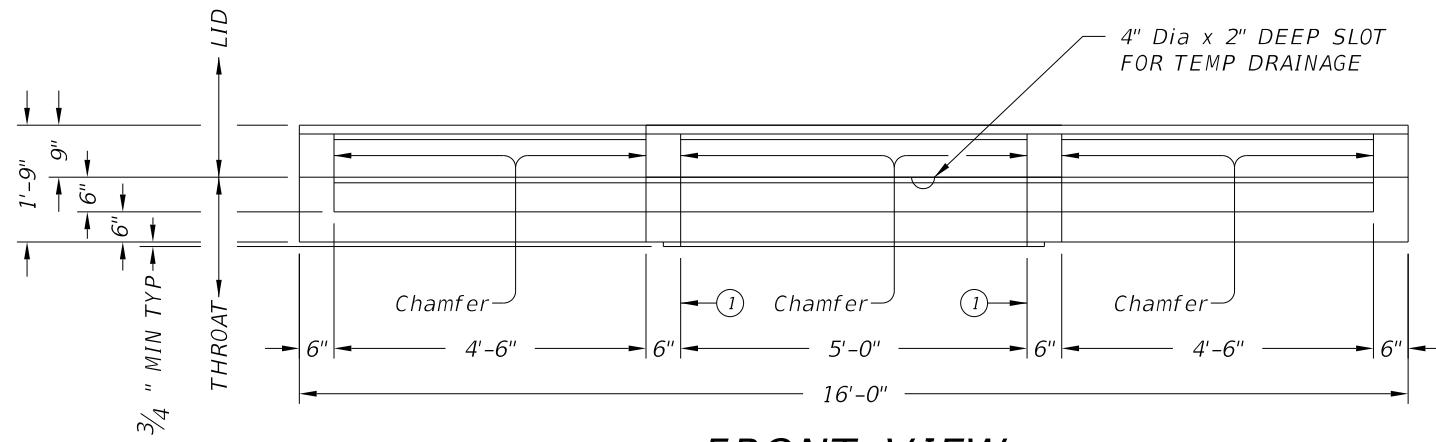
DESIGN DATA FOR PRECAST BASE AND JUNCTION BOX

PDD

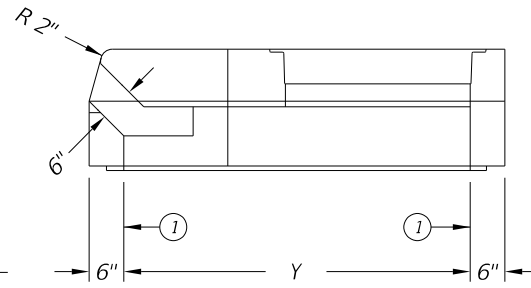
FILE: prestd10-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	236	

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.

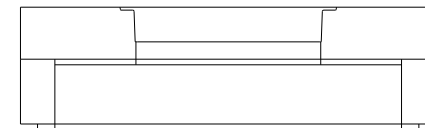
DATE:
FILE:



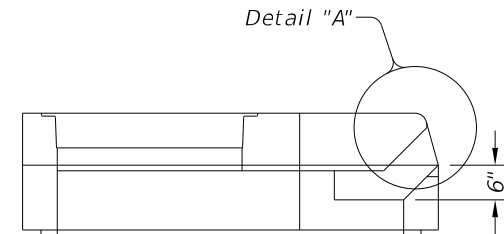
FRONT VIEW
(SHOWING LEFT AND RIGHT EXTENSIONS)



RIGHT VIEW

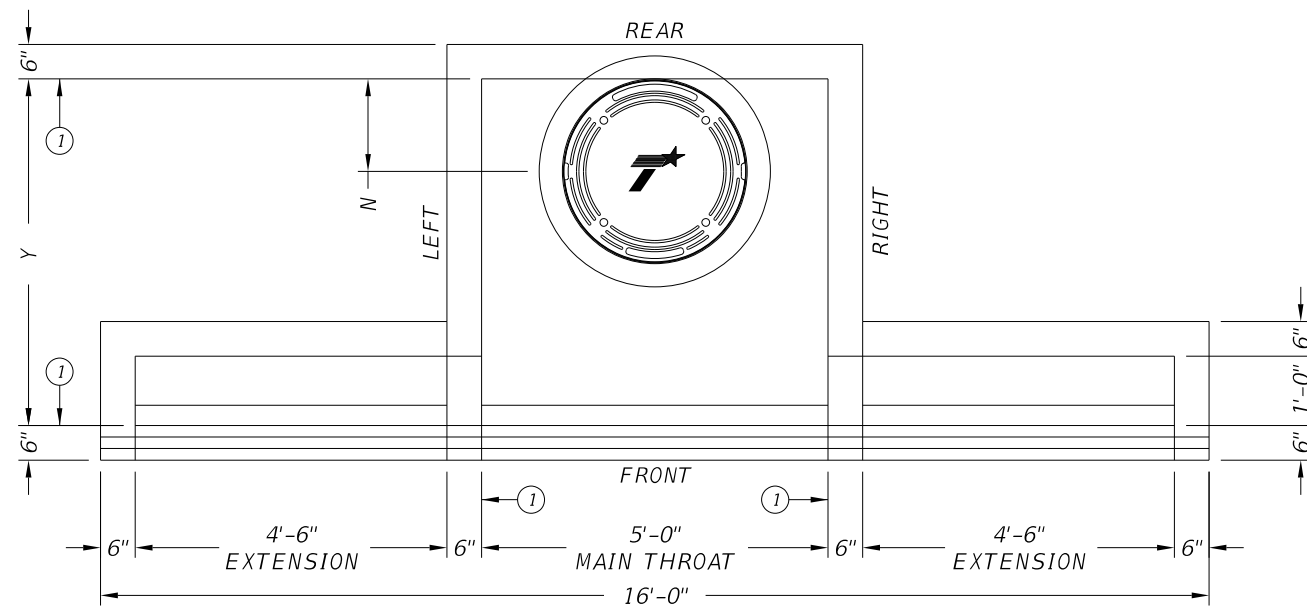


REAR VIEW
(EXTENSIONS NOT SHOWN)

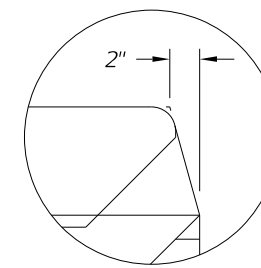


LEFT VIEW

① Matches inside face of wall of precast base or riser below inlet.



PLAN VIEW
(SHOWING LEFT AND RIGHT EXTENSIONS)



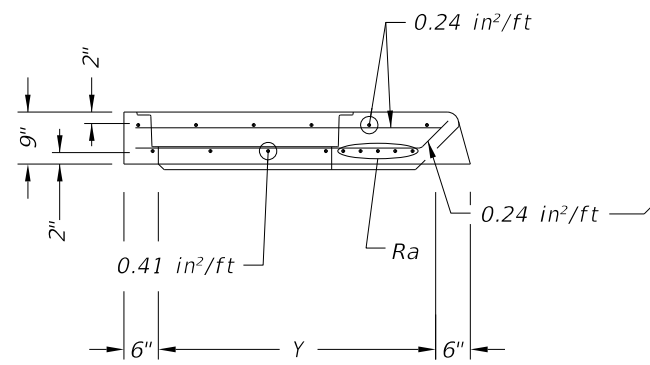
DETAIL "A"

**PRECAST CURB INLET
OUTSIDE ROADWAY**

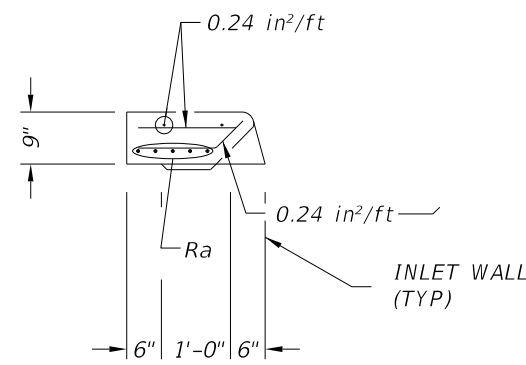
PCO

FILE: prest03-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	237	

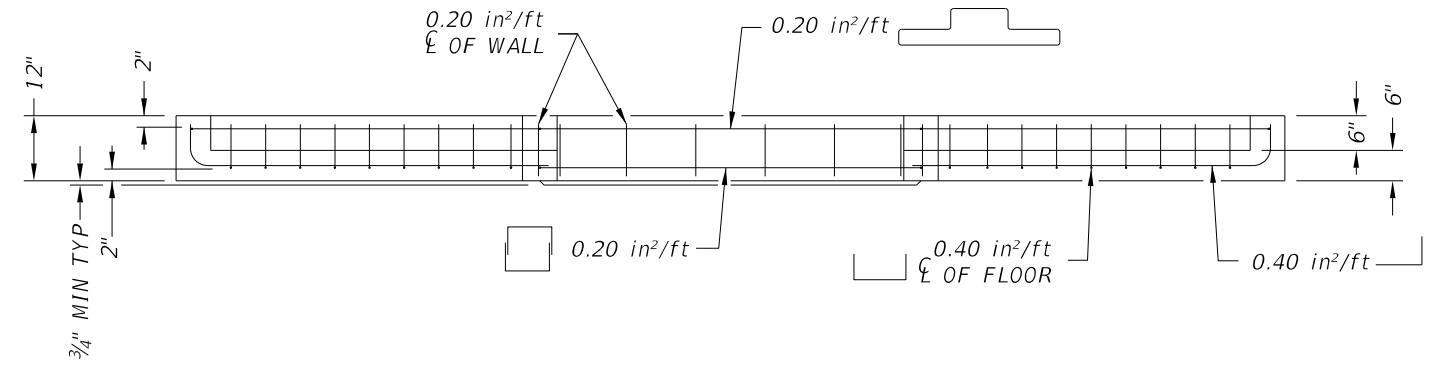
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



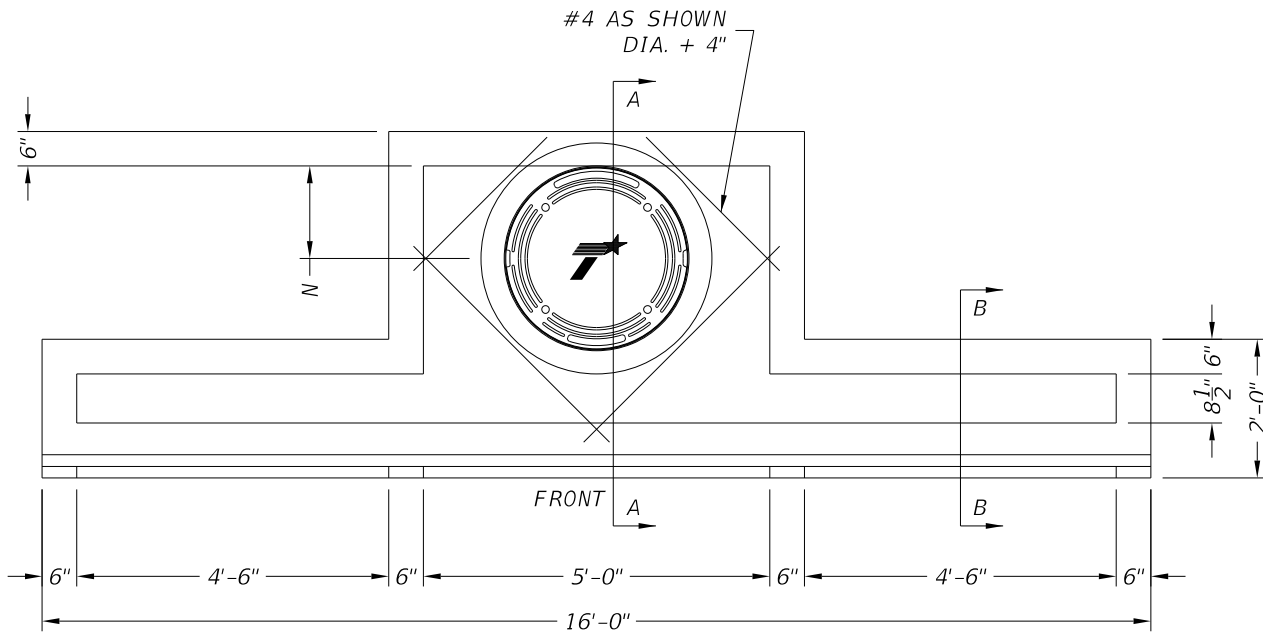
LID SECTION A-A



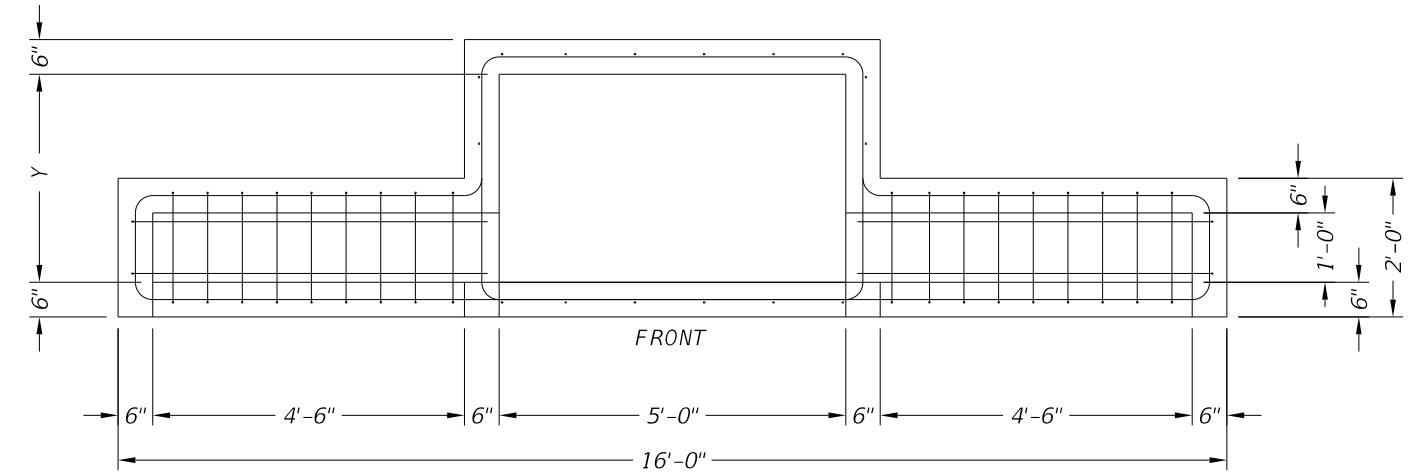
LID SECTION B-B



THROAT ELEVATION VIEW
(SHOWING LEFT AND RIGHT EXTENSIONS)



LID PLAN VIEW
(SHOWING LEFT AND RIGHT EXTENSIONS)



THROAT PLAN VIEW
(SHOWING LEFT AND RIGHT EXTENSIONS)

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Extensions may be right, left, both or none. Provide extensions as specified elsewhere in the plans.
4. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is 3/4". Lid may employ a butt joint with dowels at the Contractor's option.
5. Provide lifting devices in conformance with Manufacturer's recommendations.
6. Provide cast iron solid cover, unless noted otherwise elsewhere in the plans.
7. Chamfer vertical edges of inlet lid 3/4" as shown in Front View, sheet 1.

INSTALLATION NOTES:

1. Inlet throat and lid are not intended for direct traffic. Do not place in roadway.
2. Seal tongue and groove joints and butt joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or 1/2 the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.

GENERAL NOTES:

1. Designed according to ASTM C913.
2. Open area of main throat = 360 sq in. Open area of one extension throat = 324 sq in.
3. Payment for inlet is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, size, and extension placement. Extensions are subsidiary to inlet.

Cover dimensions are clear dimensions, unless noted otherwise.

SIZE (Y)	N	MH DIA*	Ra
3'	9"	18"	(4) #5 Additional
4'	16"	32"	(4) #5 Additional
5'	16"	32"	(4) #5 Additional
6'	16"	32"	(4) #5 Additional

*Nominal ring and cover size.

HS20 LOADING SHEET 2 OF 2



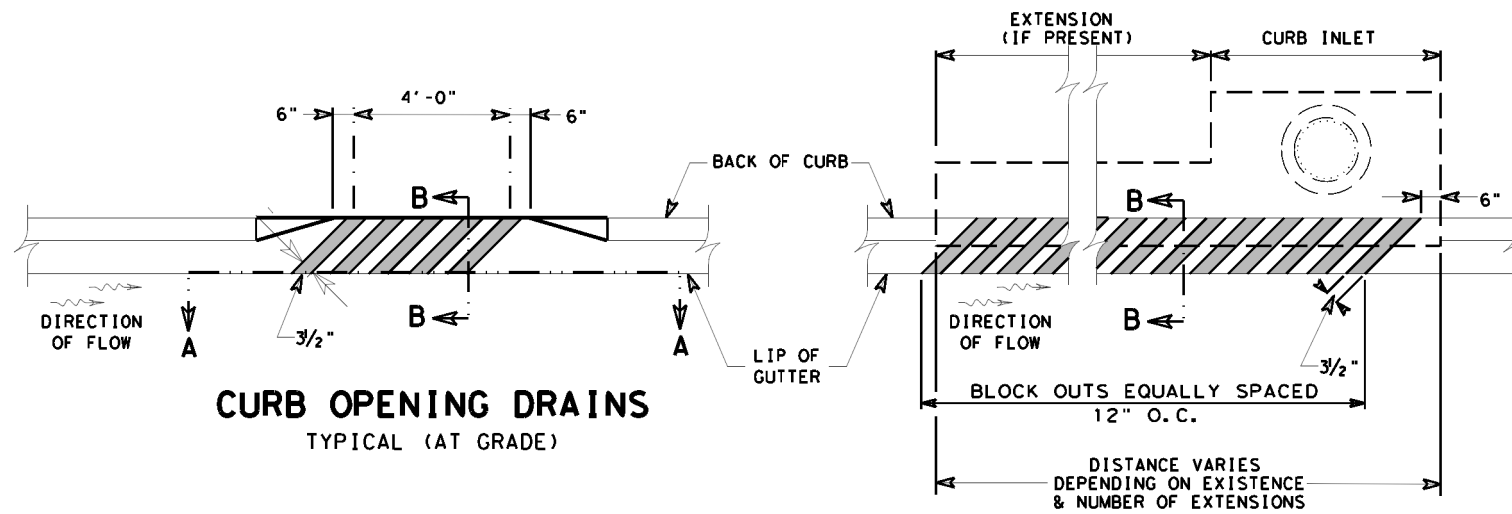
**PRECAST CURB INLET
OUTSIDE ROADWAY**

PCO

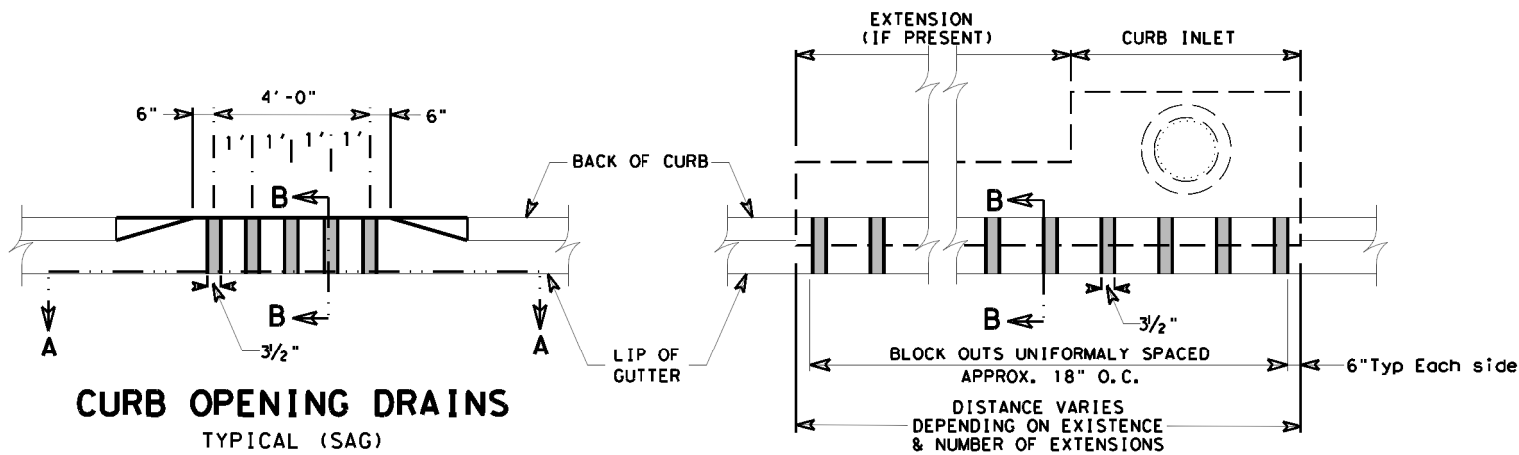
FILE: prest03-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	238	

DATE:
FILE:

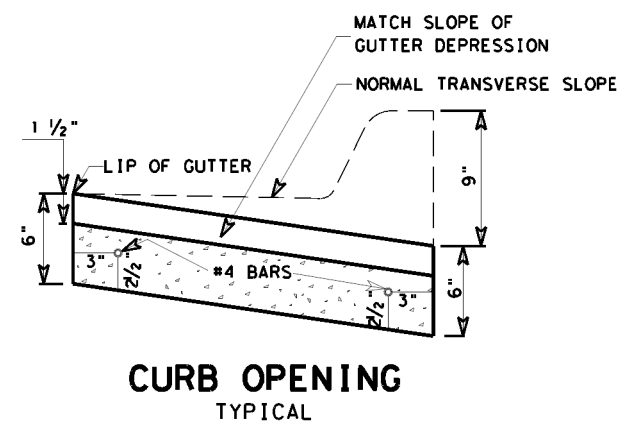
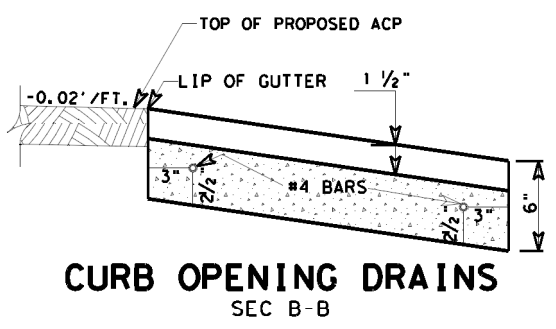
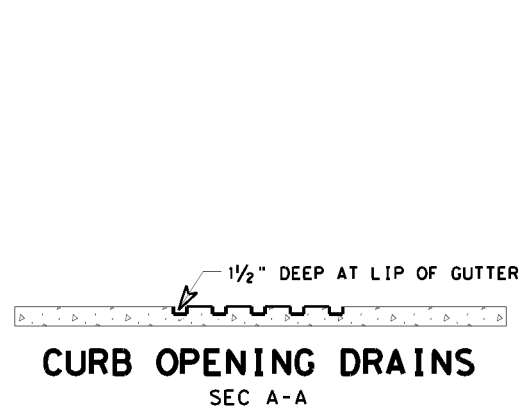
DATE: 10/04/19 3:41PM
 FILE: I:\BWDSD\TEAM\Design Projects\www BWD District Standards



CURB INLET OPENING DRAINS TYPICAL (AT GRADE)



CURB INLET OPENING DRAINS TYPICAL (SAG)



CURB AND GUTTER NOTES:

REINFORCING STEEL SHALL BE LAPPED A MINIMUM OF 15" AND SHALL NOT CROSS EXPANSION JOINTS. STEEL SHALL BE TERMINATED 3" PLUS OR MINUS 1" FROM FACE OF THE JOINT.

SEE CURB INLET STANDARDS AND CURB AND GUTTER STANDARDS FOR MORE INFORMATION AND DETAILS.

CONTRACTION JOINTS ARE NOT REQUIRED.

EXPANSION JOINTS CONSISTING OF 1/2" PREMOLDED EXPANSION JOINT MATERIAL SHALL BE PLACED AT POINTS OF CURVATURE AND AT INTERVALS TO MATCH PAVEMENT JOINTS AND AT STRUCTURES SUCH AS BRIDGES, BOX CULVERTS, CURB INLETS, ETC. ONE-HALF INCH EXPANSION JOINT MATERIAL SHALL BE PROVIDED WHERE CURB AND GUTTER IS ADJACENT TO SIDEWALK OR RIPRAP.

3/2" WIDE CURB BLOCK OUTS SHALL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS. BLOCK OUT OPENINGS SHALL BE KEPT CLEAN AT ALL TIMES DURING CONSTRUCTION. THIS WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS.

BLOCK OUTS WILL BE FILLED WITH AN EPOXY GROUT TYPE VIII CLASS B UPON COMPLETION OF THE PLACEMENT OF THE ROADWAY SURFACE MATERIAL. THIS REPAIR NOT BE PAID FOR DIRECTLY, BUT WILL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS.

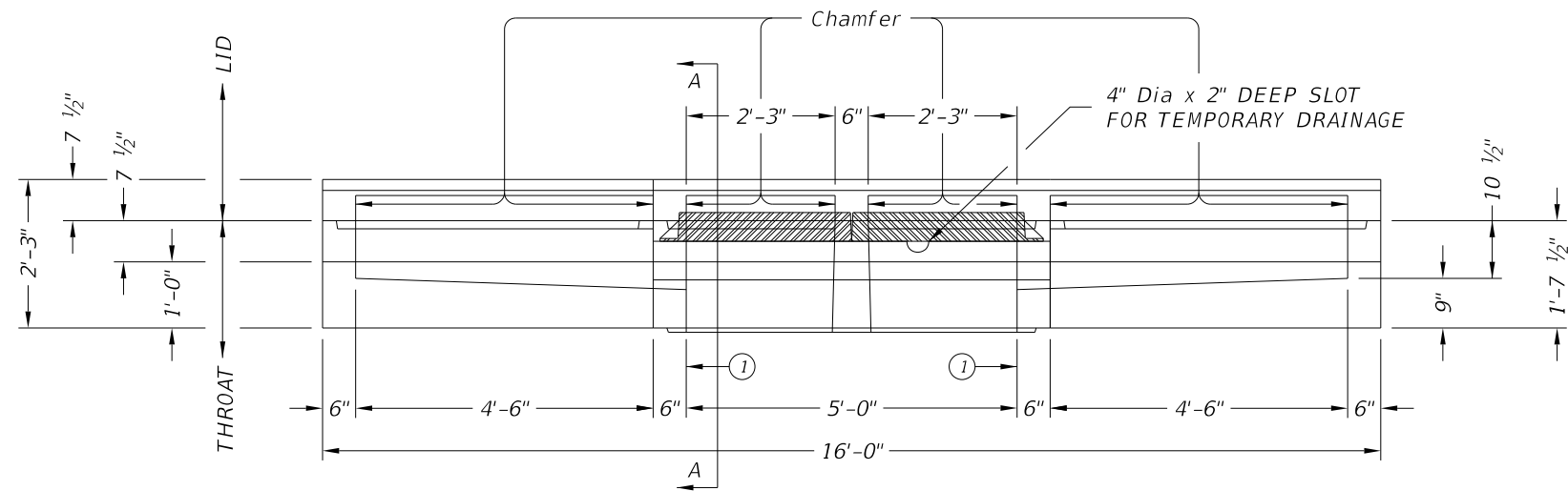
US 281 CURB, GUTTER AND INLET DETAILS

© 2023 BWD District Standard
 Texas Department of Transportation

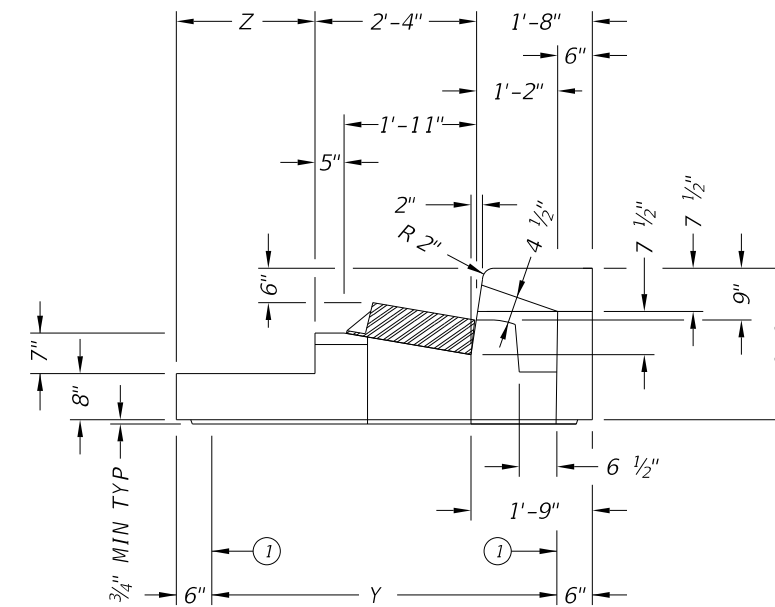
CONT	SECT	JOB	HIGHWAY
0251	06	036	US 281
DIST	COUNTY	SHEET NO.	
BWD	LAMPASAS	238A	

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.

DATE:
FILE:

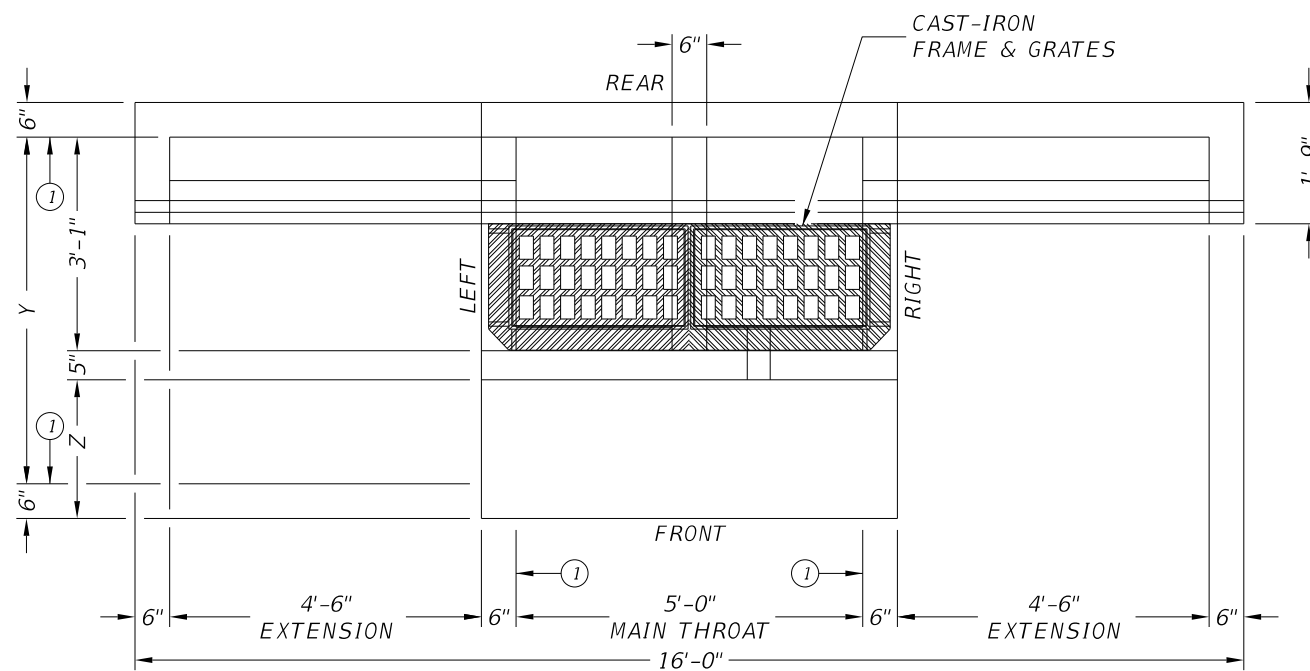


FRONT VIEW
(SHOWING LEFT AND RIGHT EXTENSIONS)



SECTION A-A

① Matches inside face of wall of precast base or riser below inlet.



PLAN VIEW
(SHOWING LEFT AND RIGHT EXTENSIONS)

HS20 LOADING SHEET 1 OF 2

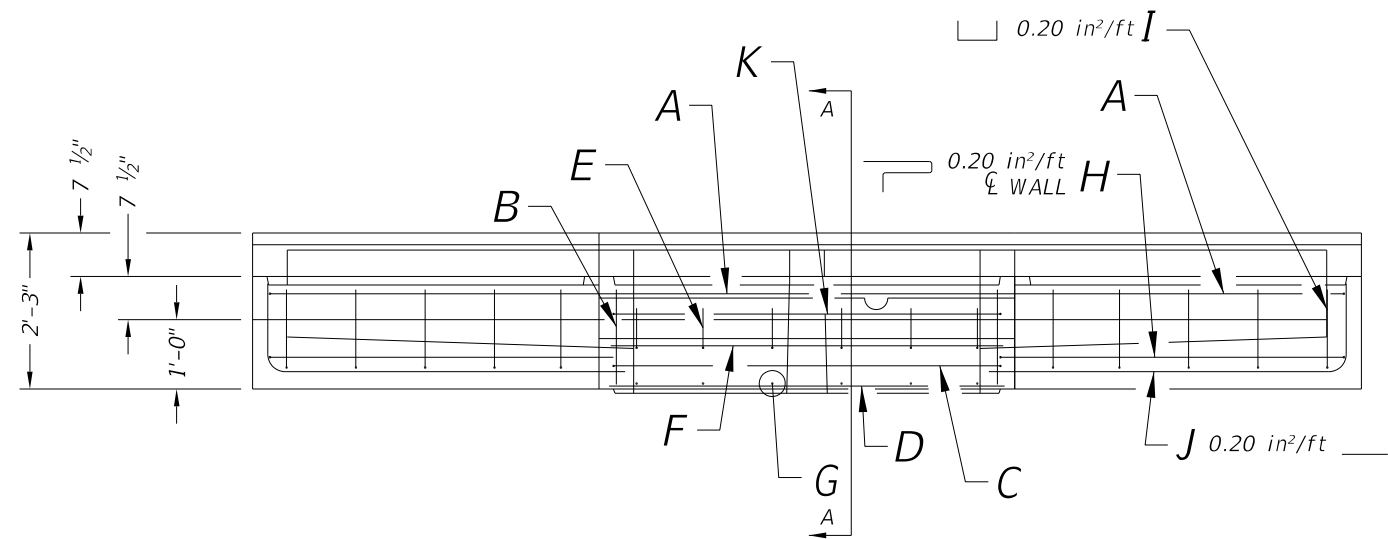


**PRECAST CURB INLET
UNDER ROADWAY**

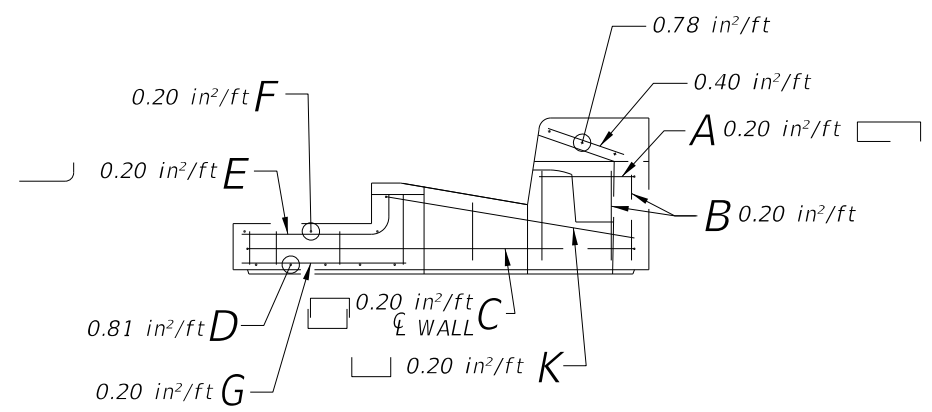
PCU

FILE: prest04-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	239	

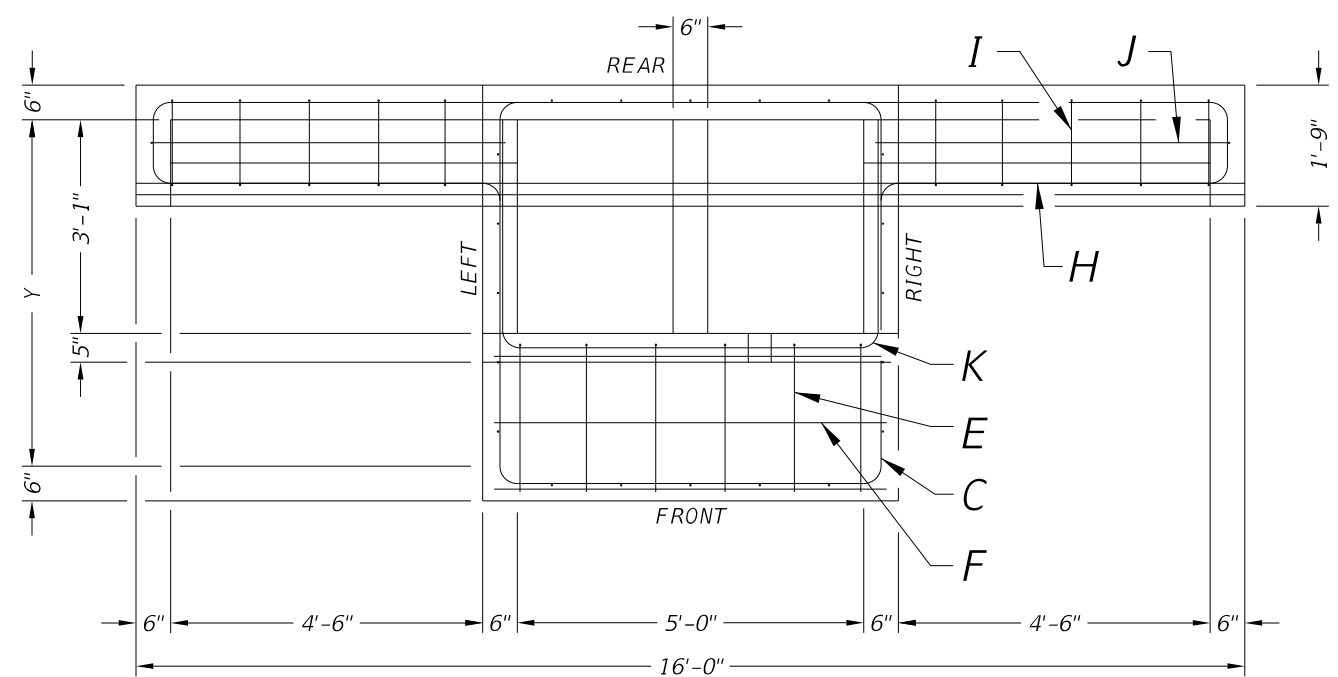
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



FRONT VIEW
(SHOWING LEFT AND RIGHT EXTENSIONS)



SECTION A-A



PLAN VIEW
(SHOWING LEFT AND RIGHT EXTENSIONS)

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide typical clear cover of 1 1/2" to reinforcing steel from surface of concrete or lower outside shoulder.
4. Extensions may be right, left, both or none. Provide extensions as specified elsewhere in plans.
5. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is 3/4". Top slab may employ a butt joint with dowels at the Contractor's option.
6. Provide lifting devices in conformance with Manufacturer's recommendations.
7. Chamfer vertical edges on inlet lid 3/4" as shown in Front View, sheet 1.

INSTALLATION NOTES:

1. Inlet throat is placed under roadway and intended for direct traffic. Inlet lid is not for direct traffic. Do not place Inlet lid in roadway.
2. Seal tongue and groove joints and butt joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or 1/2 the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.

GENERAL NOTES:

1. Designed according to ASTM C913.
2. Open area of main throat = 324 sq in. Open area of one extension throat = 324 sq in.
3. Payment for inlet is per Item 465, "Junction Boxes, Manholes and Inlets" by type, size and extension placement. Extensions are subsidiary to inlet.

SIZE (Y)	Z
3'	0'
4'	1'
5'	2'
6'	3'



**PRECAST CURB INLET
UNDER ROADWAY**

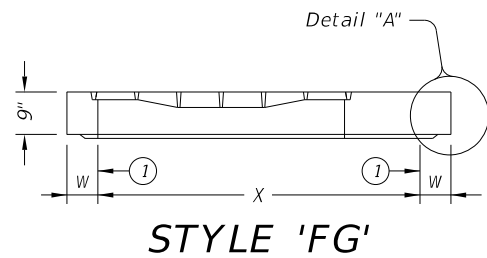
PCU

FILE: prest04-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	240	

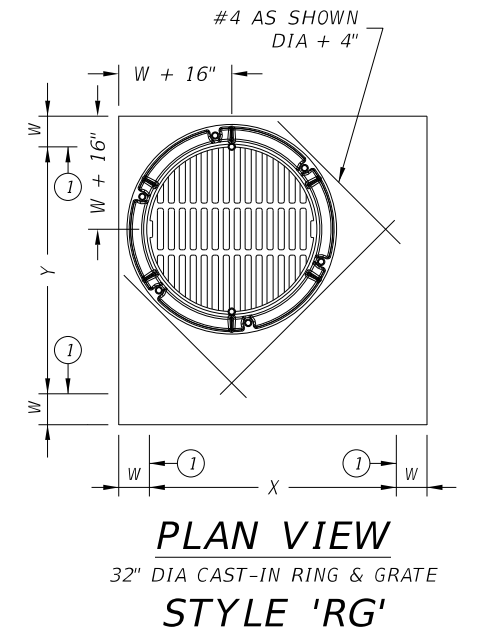
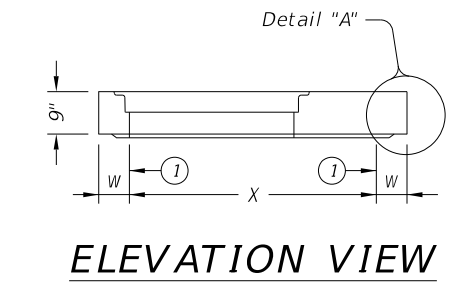
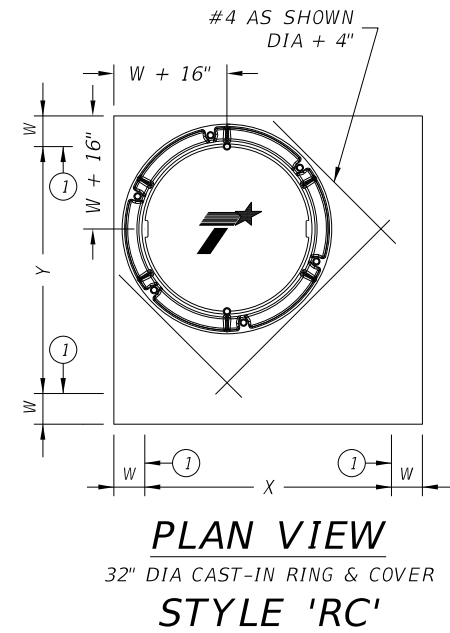
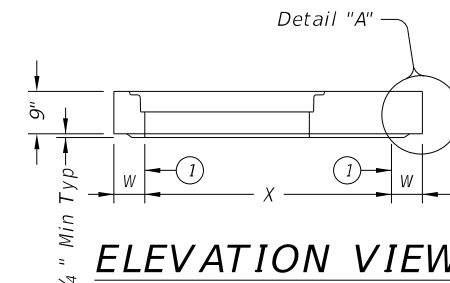
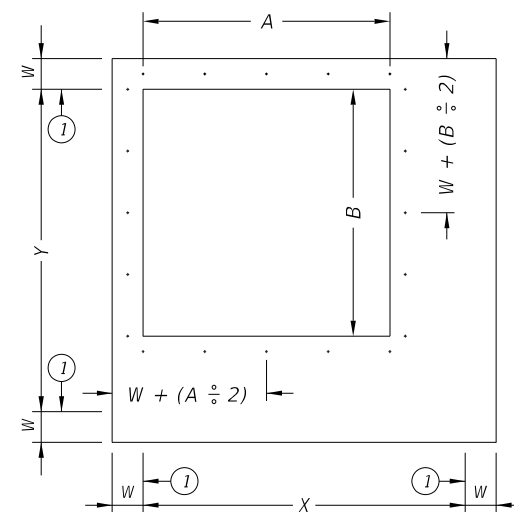
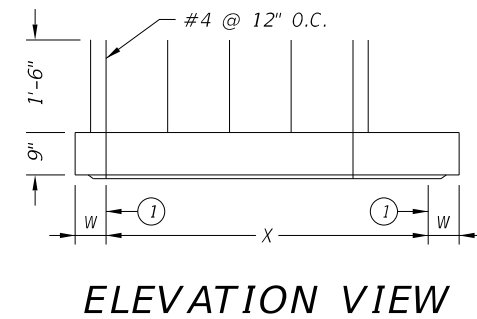
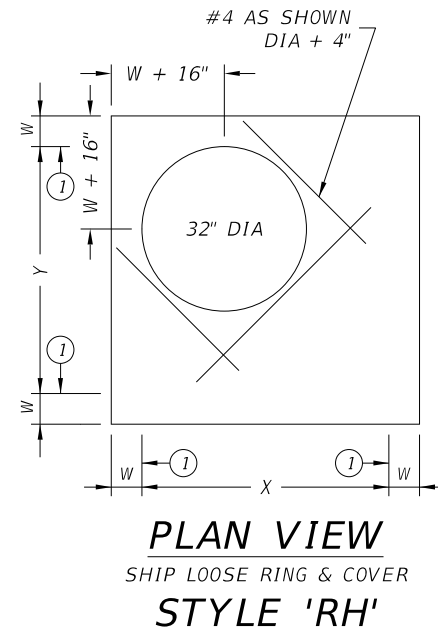
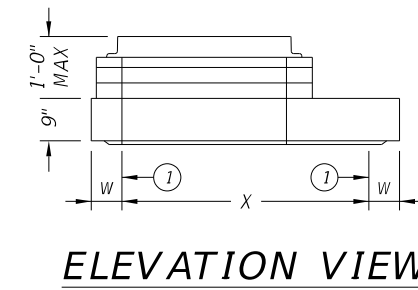
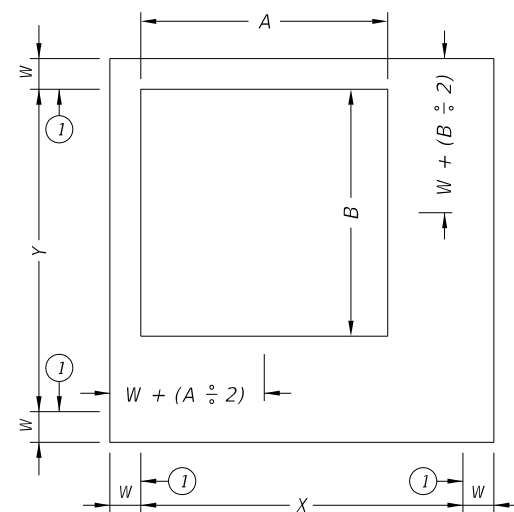
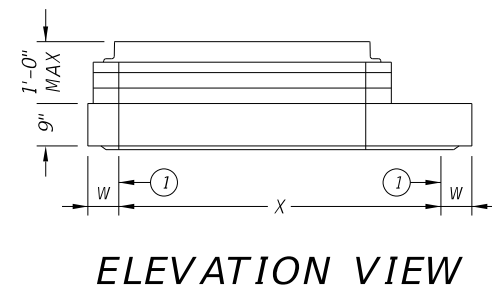
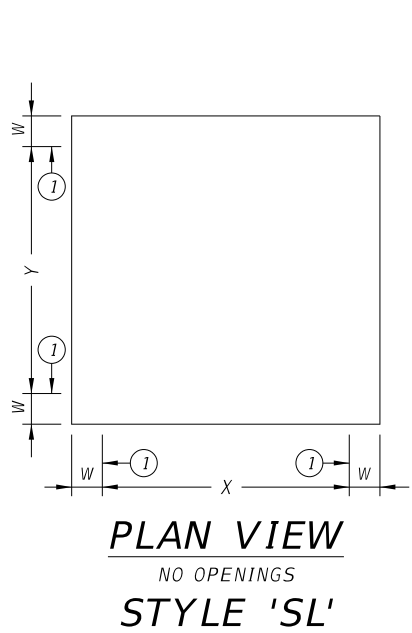
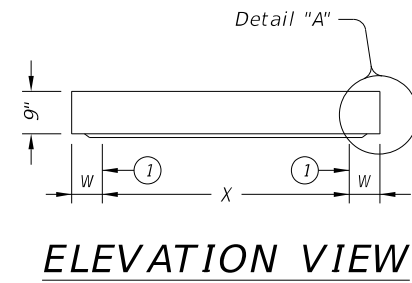
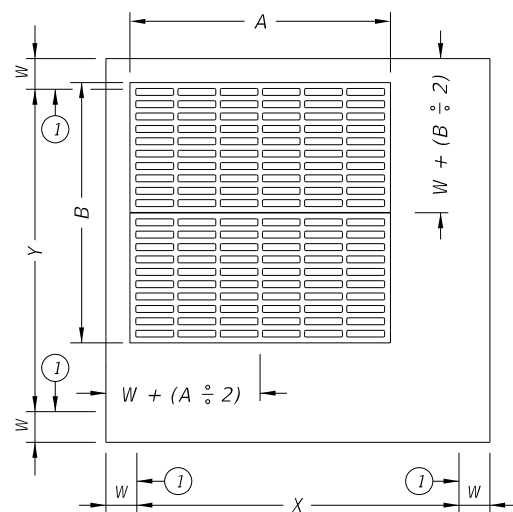
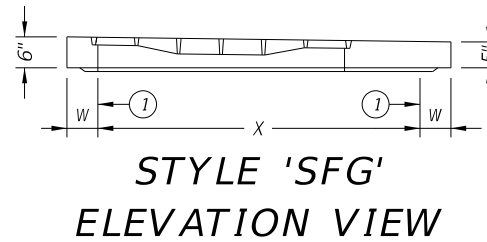
DATE:
FILE:

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.

DATE: FILE:



ORIENT TAPER TO CORRESPOND WITH ROADWAY CROSS-SLOPE.



① Matches inside face of wall of precast base or riser below inlet.

HL93 LOADING SHEET 1 OF 2



PRECAST SLAB LID

PSL

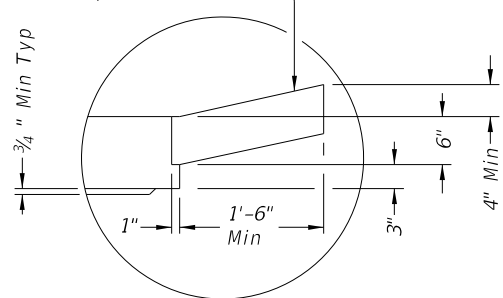
FILE: prest05-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	241	

DISCLAIMER:
 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.

Style	Size (X x Y)	W ②	A x B (nominal)	Short Span Reinf Steel Area	Long Span Reinf Steel Area
SL	3'x3'	6"	n/a	0.37 in ² /ft	0.37 in ² /ft
RH,RC,RG,SH,S1,FG	3'x3'	6"	3'x3' or 32" Dia	0.37 in ² /ft	0.37 in ² /ft
SFG	3'x3'	6"	3'x3'	0.32 in ² /ft	0.32 in ² /ft
SL	4'x4'	6"	n/a	0.34 in ² /ft	0.34 in ² /ft
RH,RC,RG,SH,S1,FG	4'x4'	6"	3'x3' or 32" Dia	0.41 in ² /ft	0.41 in ² /ft
SH,S1,FG	4'x4'	6"	4'x4'	0.41 in ² /ft	0.41 in ² /ft
SFG	4'x4'	6"	4'x4'	0.32 in ² /ft	0.32 in ² /ft
SL	3'x5'	6"	n/a	0.39 in ² /ft	0.39 in ² /ft
RH,RC,RG,SH,S1,FG	3'x5'	6"	3'x3' or 32" Dia	0.48 in ² /ft	0.48 in ² /ft
SH,S1,FG	3'x5'	6"	3'x5'	0.48 in ² /ft	0.48 in ² /ft
SFG	3'x5'	6"	3'x5'	0.32 in ² /ft	0.32 in ² /ft
SL	4'x5'	6"	n/a	0.42 in ² /ft	0.42 in ² /ft
RH,RC,RG,SH,S1,FG	4'x5'	6"	3'x3' or 32" Dia	0.42 in ² /ft	0.42 in ² /ft
SH,S1,FG	4'x5'	6"	4'x4'	0.63 in ² /ft	0.63 in ² /ft
SH,S1,FG	4'x5'	6"	3'x5'	0.66 in ² /ft	0.66 in ² /ft
SL	5'x5'	6"	n/a	0.36 in ² /ft	0.36 in ² /ft
RH,RC,RG,SH,S1,FG	5'x5'	6"	3'x3' or 32" Dia	0.43 in ² /ft	0.43 in ² /ft
SH,S1,FG	5'x5'	6"	4'x4'	0.63 in ² /ft	0.63 in ² /ft
SH,S1,FG	5'x5'	6"	3'x5'	0.63 in ² /ft	0.63 in ² /ft
SL	5'x6'	6"/8"	n/a	0.48 in ² /ft	0.48 in ² /ft
RH,RC,RG,SH,S1,FG	5'x6'	6"/8"	3'x3' or 32" Dia	0.48 in ² /ft	0.48 in ² /ft
SH,S1,FG	5'x6'	6"/8"	4'x4'	0.60 in ² /ft	0.60 in ² /ft
SH,S1,FG	5'x6'	6"/8"	3'x5'	0.60 in ² /ft	0.60 in ² /ft
SL	6'x6'	6"/8"	n/a	0.43 in ² /ft	0.43 in ² /ft
RH,RC,RG,SH,S1,FG	6'x6'	6"/8"	3'x3' or 32" Dia	0.56 in ² /ft	0.56 in ² /ft
SH,S1,FG	6'x6'	6"/8"	4'x4'	0.56 in ² /ft	0.56 in ² /ft
SH,S1,FG	6'x6'	6"/8"	3'x5'	0.59 in ² /ft	0.59 in ² /ft
SL	8'x8'	8"/10"	n/a	0.45 in ² /ft	0.45 in ² /ft
RH,RC,RG,SH,S1,FG	8'x8'	8"/10"	3'x3' or 32" Dia	0.45 in ² /ft	0.45 in ² /ft
SH,S1,FG	8'x8'	8"/10"	4'x4'	0.45 in ² /ft	0.45 in ² /ft
SH,S1,FG	8'x8'	8"/10"	3'x5'	0.45 in ² /ft	0.45 in ² /ft

② See sheet PDD for corresponding wall thickness (W) of base unit or riser.

Construct cast-in-place reinforced concrete apron, when shown elsewhere in plans. Use Class "A" concrete. Apron is subsidiary to PSL. Apron is 1'-6" Min width around precast zone drain.



DETAIL "A"

(Reinforcing not shown for clarity)
 When an apron is to be cast around PSL, use detail above to create an apron ledge on all 4 sides.

FABRICATION NOTES:

1. Locate penetration (Style 'RH'), ring and cover (Style 'RC'), ring and grate (Style 'RG'), and frame and grate (Style 'FG') in a corner. Only one penetration is allowed per slab lid.
2. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
3. Provide Grade 60 reinforcing steel or equivalent area of WWR.
4. Provide clear cover of 3/4" to reinforcing from lower outside shoulder of slab for structural reinforcement, and 2" from top of slab for shrinkage and temperature reinforcement. Place short span reinforcing closest to surface.
5. Slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing. Provide steel area = 0.11 in²/ft each way.
6. No substitution is allowed for diagonal #4 bars around openings.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is 3/4".
8. Provide lifting devices in conformance with Manufacturer's recommendations.

INSTALLATION NOTES:

1. Precast slab lids are intended for direct traffic and may be placed in roadway.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or 1/2 the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. Initial installation of grade adjustment rings for Styles 'RH' and 'SH' is limited to 1'-0" Max as shown.
5. Grade adjustment rings for Styles 'RH' and 'SH' may be increased to 2'-0" Max when future construction affects final grade of structure. Make adjustments greater than 2'-0" with additional risers. Adjustments can be made up to Max depth shown on sheet PDD. Structure must be evaluated if Max depth will be exceeded.
6. Orient long dimension of grate slots perpendicular to traffic, unless noted otherwise on plans.

GENERAL NOTES:

1. Designed according to ASTM C913.
2. Payment for lid is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, style, size, and opening size (when applicable).

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING

SHEET 2 OF 2



Bridge Division Standard

PRECAST SLAB LID

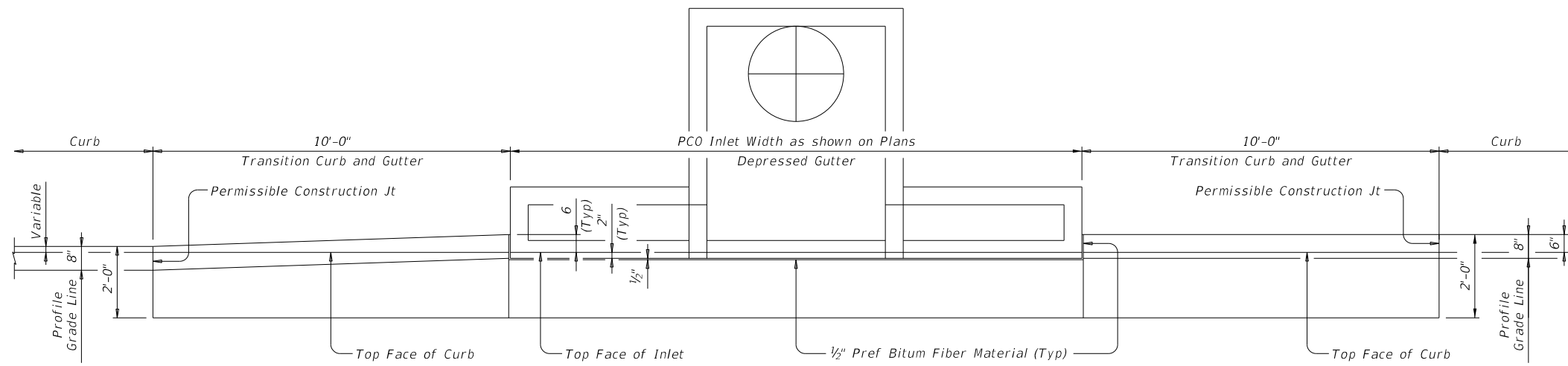
PSL

FILE: prest05-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
BWD	LAMPASAS	242		

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.

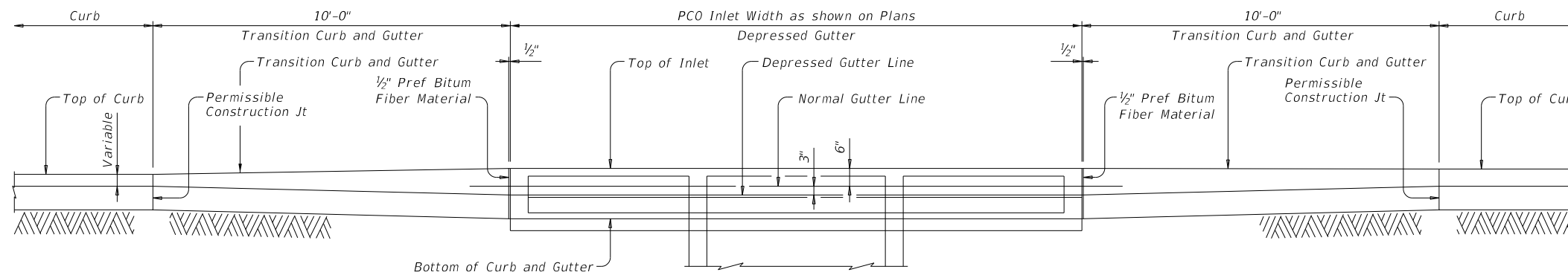
DATE:
FILE:



SHOWING TYPE I, IIa & III Curb and Gutter

SHOWING TYPE II & IV Curb and Gutter

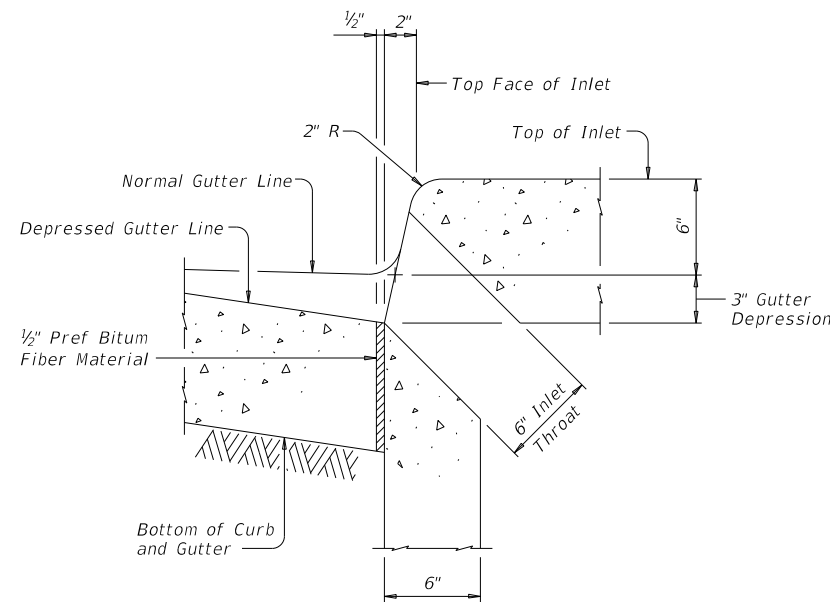
PLAN



SHOWING TYPE I, IIa & III Curb and Gutter

SHOWING TYPE II & IV Curb and Gutter

ELEVATION



SECTION AT GUTTER AND INLET

Reinforcing steel not shown for clarity.

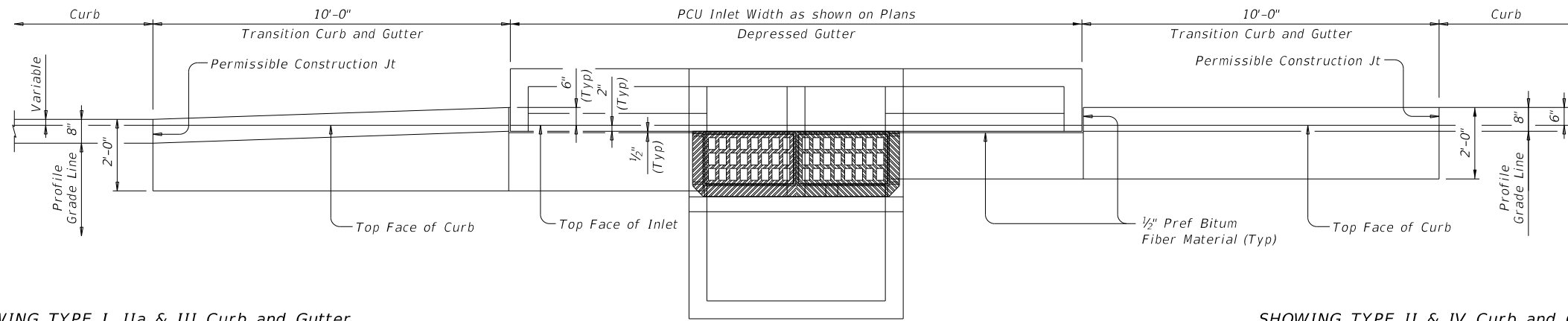
CONSTRUCTION NOTES:
Align top face of curb with PCO Inlet as shown.

MATERIAL NOTES:
Provide 1/2" Preformed Bituminous Fiber Material.

GENERAL NOTES:
See Precast Curb Inlet Outside Roadway (PCO) standard for details and notes not shown.
See Concrete Curb and Curb and Gutter (CCCG-12) standard for details and notes not shown.
Curb and Gutter Transitions is paid for and in accordance with Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."
Preformed Bituminous Fiber Material is subsidiary to PCO Inlet.

				Bridge Division Standard	
CURB AND GUTTER TRANSITION DETAILS FOR PCO INLET					
CGT-PCO					
FILE: prest13-20.dgn	DN: TxDOT	CK: AES	DW: JTR	CK: AES	
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0251	06	036	US 281	
	DIST	COUNTY	SHEET NO.		
	BWD	LAMPASAS	243		

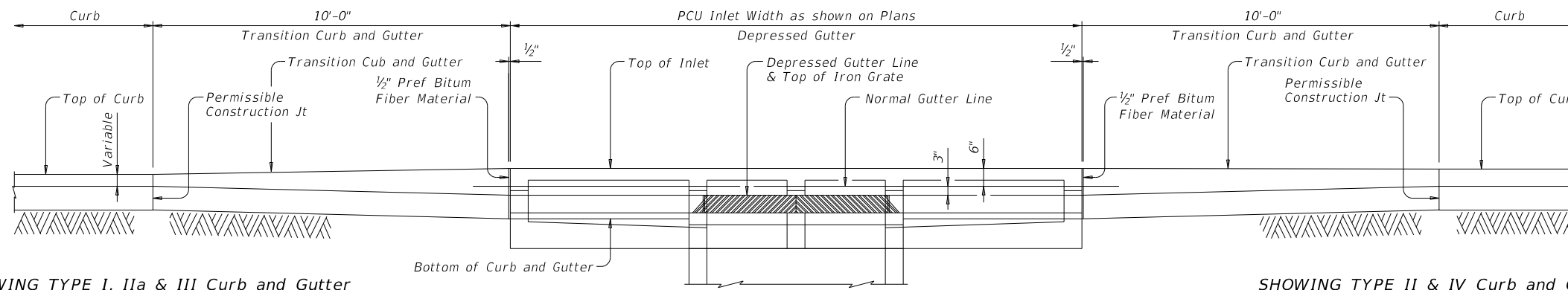
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



SHOWING TYPE I, IIa & III Curb and Gutter

SHOWING TYPE II & IV Curb and Gutter

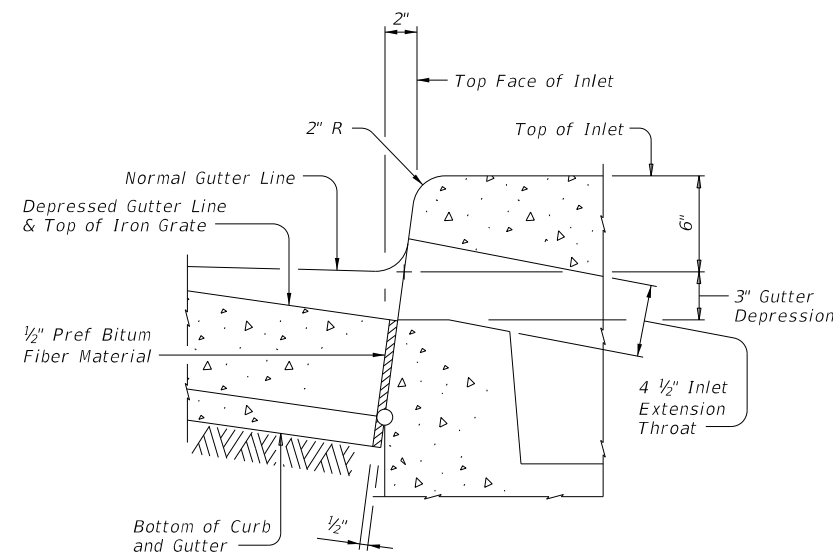
PLAN



SHOWING TYPE I, IIa & III Curb and Gutter

SHOWING TYPE II & IV Curb and Gutter

ELEVATION



SECTION AT GUTTER AND INLET

Reinforcing steel not shown for clarity.

- CONSTRUCTION NOTES:**
Align top face of curb with PCU Inlet as shown.
- MATERIAL NOTES:**
Provide 1/2" Preformed Bituminous Fiber Material.
- GENERAL NOTES:**
See Precast Curb Inlet Under Roadway standard PCU for details and notes not shown.
See Concrete Curb and Curb and Gutter standard CCCG-12 for details and notes not shown.
Curb and Gutter Transitions is paid for and in accordance with Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."
Preformed Bituminous Fiber Material is subsidiary to PCU Inlet.

				Bridge Division Standard	
CURB AND GUTTER TRANSITION DETAILS FOR PCU INLET					
CGT-PCU					
FILE: prest14-20.dgn	DN: TxDOT	CK: AES	DW: JTR	CK: AES	
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0251	06	036	US 281	
	DIST	COUNTY	SHEET NO.		
	BWD	LAMPASAS	244		

DATE:
FILE:

US 281 Lamposas_SUE_color.tbl
 L:\Resources\Bentley\Microstation\WorkSpace\Standards\TxDOT\plotdrv\printer_TxDOT_PDF.pltcfgr
 L:\Projects\B200040.04 - CPY - US 281 - Lamposas\CAD\Engineering\Sheets\US281_Lamposas_LSE_SUE_01.dgn
 9/2/2022 7:38:53 AM Dakota.Smith

UTILITY QUALITY LEVELS

(OBTAINED FROM ASCE PUBLICATION CI/ASCE STANDARD 38-02)

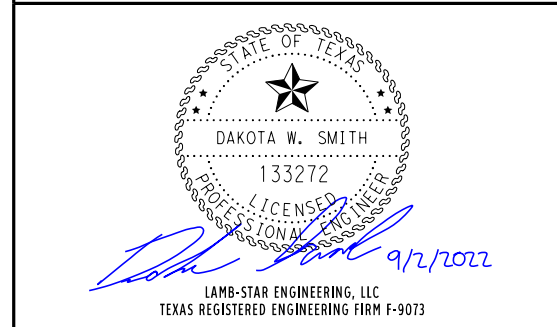
- UTILITY QUALITY LEVEL D (QL-D): INFORMATION DERIVED FROM EXISTING RECORDS OR ORAL RECOLLECTIONS.
- UTILITY QUALITY LEVEL C (QL-C): INFORMATION OBTAINED BY SURVEYING AND PLOTTING VISIBLE ABOVE-GROUND UTILITY FEATURES AND BY USING PROFESSIONAL JUDGEMENT IN CORRELATING THIS INFORMATION TO QUALITY LEVEL D INFORMATION.
- UTILITY QUALITY LEVEL B (QL-B): INFORMATION OBTAINED THROUGH THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL METHODS TO DETERMINE THE EXISTENCE AND APPROXIMATE HORIZONTAL POSITION OF SUBSURFACE UTILITIES. QUALITY LEVEL B DATA SHOULD BE REPRODUCIBLE BY SURFACE GEOPHYSICS AT ANY POINT OF THEIR DEPICTION. THIS INFORMATION IS SURVEYED TO APPLICABLE TOLERANCES DEFINED BY THE PROJECT AND REDUCED ONTO PLAN DOCUMENTS.
- UTILITY QUALITY LEVEL A (QL-A): PRECISE HORIZONTAL AND VERTICAL LOCATION OF UTILITIES OBTAINED BY THE ACTUAL EXPOSURE (OR VERIFICATION OF PREVIOUSLY EXPOSED AND SURVEYED UTILITIES) AND SUBSEQUENT MEASUREMENT OF SUBSURFACE UTILITIES, USUALLY AT A SPECIFIC POINT. MINIMALLY INTRUSIVE EXCAVATION EQUIPMENT IS TYPICALLY USED TO MINIMIZE THE POTENTIAL FOR UTILITY DAMAGE. A PRECISE HORIZONTAL AND VERTICAL LOCATION, AS WELL AS OTHER UTILITY ATTRIBUTES, IS SHOWN ON PLAN DOCUMENTS. ACCURACY IS TYPICALLY SET TO 15-MM VERTICAL AND TO APPLICABLE HORIZONTAL SURVEY AND MAPPING ACCURACY AS DEFINED OR EXPECTED BY THE PROJECT OWNER.

GENERAL NOTES

- THE UTILITIES DEPICTED WERE INVESTIGATED BY LAMB-STAR ENGINEERING. ALL OTHER PLAN INFORMATION, NOTABLY THE BACKGROUND INFORMATION WAS PROVIDED BY OTHERS AND LAMB-STAR ENGINEERING DISCLAIMS REPSONSIBILITY FOR ITS ACCURACY.
- EXISTING SUBSURFACE UTILITY INVESTIGATIONS WERE COMPLETED ON 09/1/2020. QL- A TEST HOLES WERE COMPLETED ON 05/06/2021. LAMB-STAR ENGINEERING EXPRESSLY DISCLAIMS ANY AND ALL RESPONSIBILITY FOR NEW UTILITY INSTALLATIONS OR MODIFICATIONS, AND ADJUSTMENTS TO EXISTING UTILITIES AFTER THE COMPLETION DATE.
- UTILITY LOCATIONS ON THESE DRAWINGS ARE INTENDED FOR DESIGN PURPOSES AND NOT CONSTRUCTION. THEY REFLECT SUBSURFACE UTILITIES AT THE TIME SURVEYED. CALL TEXAS ONE CALL SYSTEM (800) 245-4545 FOR UTILITY LOCATIONS 48-HOURS PRIOR TO ANY WORK.
- UTILITIES ON THESE DRAWINGS HAVE BEEN IDENTIFIED TO ASCE STANDARD 38-02. QUALITY LEVEL D INFORMATION IS SHOWN AS NOTED IN THE LEGEND.
- UTILITIES ON THESE DRAWINGS HAVE BEEN IDENTIFIED TO ASCE STANDARD 38-02. QUALITY LEVEL C INFORMATION IS SHOWN AS NOTED IN THE LEGEND.
- UTILITIES ON THESE DRAWINGS HAVE BEEN IDENTIFIED TO ASCE STANDARD 38-02. QUALITY LEVEL B INFORMATION IS SHOWN AS NOTED IN THE LEGEND.
- UTILITIES ON THESE DRAWINGS HAVE BEEN IDENTIFIED TO ASCE STANDARD 38.02. QUALITY LEVEL A INFORMATION IS SHOWN AS NOTED IN PLANS.
- UTILITY LINES WERE DESIGNATED WHERE POSSIBLE. HOWEVER, SOME LINES ARE CONSTRUCTED OF NON-CONDUCTIVE MATERIAL AND UTILITY COMPANY DRAWINGS DO NOT SHOW ALL LINE LOCATIONS. THEREFORE, NOT ALL LINES MAY BE SHOWN.

LEGEND OF UTILITY TYPES

GENERAL	
UTILITY CONTINUES	
UTILITY TERMINATES	
QL-B SIGNAL LOST	
COMMUNICATIONS	
FIBER - AT&T (QL-D)	
FIBER - FIBERLIGHT (QL-D)	
OH FIBER - FIBERLIGHT	
OH FIBER - AT&T	
TELEPHONE - AT&T (QL-D)	
TELEPHONE - AT&T (QL-D)	
OH TELEPHONE - AT&T	
ELECTRIC	
ELECTRIC - LAMPASAS (QL-B)	
OH ELECTRIC - LAMPASAS	
OH ELECTRIC - PEDERNALES	
ELECTRIC - TXDOT (QL-B)	
ELECTRIC - TXDOT (QL-D)	
GAS	
GAS - ATMOS (QL-B)	
GAS - ATMOS (QL-D)	
WATER	
WATER - LAMPASAS (QL-D)	
WASTEWATER	
WASTEWATER - LAMPASAS (QL-D)	
STORM SEWER	
STORM SEWER - LAMPASAS (QL-C)	
ELECTRIC	
ELECTRIC POLE	
ELECTRIC PULL BOX	
ELECTRIC PEDESTAL	
ELECTRIC METER	
FIBER	
FIBER UNDERGROUND MARKER	
GAS	
GAS METER	
GAS VENT	
GAS TEST VALVE	
GAS VALVE	
GAS UNDERGROUND MARKER	
TELEPHONE	
TELEPHONE PEDESTAL	
TELEPHONE MANHOLE	
TELEPHONE UNDERGROUND MARKER	
TRAFFIC	
TRAFFIC SIGNAL POLE TRAFFIC LIGHT	
TRAFFIC CONTROL CABINET	
TRAFFIC PEDESTRIAN SIGNAL BOX	
TRAFFIC SIGNAL POLE	
ILLUMINATION	
ILLUMINATION LIGHT POLE	
ILLUMINATION SOLAR PANEL	
STORM SEWER	
STORM SEWER GRATE INLET	
WATER	
WATER METER	
WATER VALVE	
WATER FIRE HYDRANT	
WASTE WATER	
WASTE WATER CLEANOUT	
WASTE WATER MANHOLE	



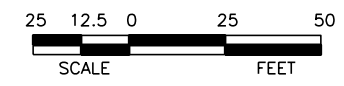
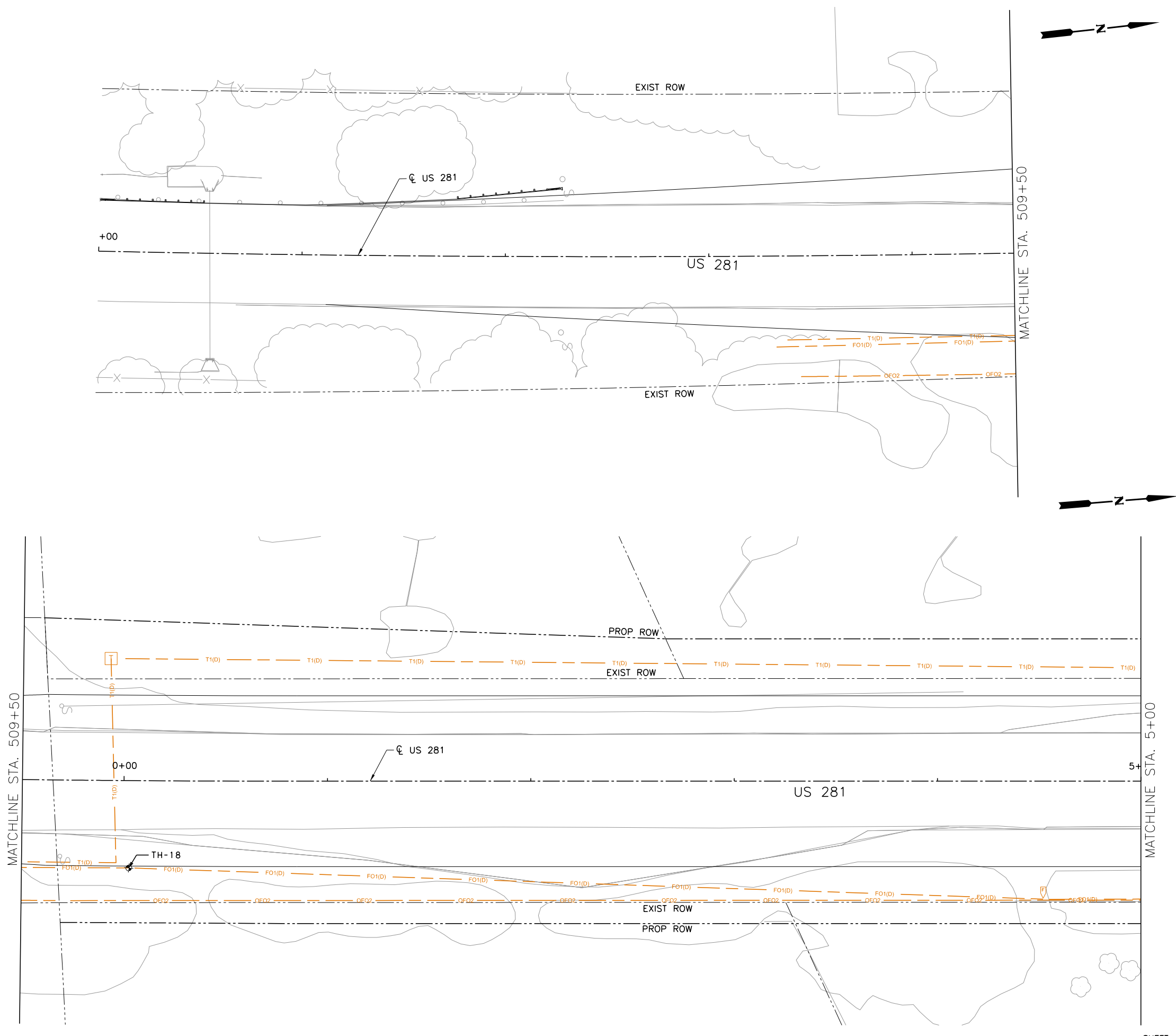
LAMB-STAR ENGINEERING, L.L.C.
 5700 W. PLANO PARKWAY, SUITE 1000
 PLANO, TEXAS 75093 (214) 440-3600
 TEXAS REGISTERED ENGINEERING FIRM F-9073

©2022 Texas Department of Transportation
 US 281

EXISTING UTILITY NOTES

Designed:	RFL	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
Checked:	DWS	6	TEXAS		US 281
Drawn:	RFL	DIST.	COUNTY	CONTROL NO.	SECTION NO.
Checked:	DWS	BWD	LAMPASAS	0251	06
				JOB NO.	SHEET NO.
				036	245

US 281_Lampasas_SUE_color.tbl
 L:\Resources\Bentley\Microstation\Workspace\Standards\TxDOT\plotdrv_printer_TxDOT_PDF.pltcfgr
 L:\Projects\B200040.04 - CPY - US 281 - Lampasas\CAD\Engineering\Sheets\US281_Lampasas_LSE_SUE_02.dgn
 9/2/2022 7:38:56 AM Dakota.Smith



DAKOTA W. SMITH
 133272
 LICENSED PROFESSIONAL ENGINEER
 LAMB-STAR ENGINEERING, LLC
 TEXAS REGISTERED ENGINEERING FIRM F-9073

NO.	REVISION	BY	DATE

LAMB-STAR ENGINEERING, L.L.C.
 5700 W. PLANO PARKWAY, SUITE 1000
 PLANO, TEXAS 75093 (214) 440-3600
 TEXAS REGISTERED ENGINEERING FIRM F-9073

©2022 Texas Department of Transportation

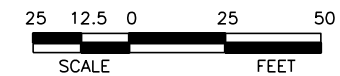
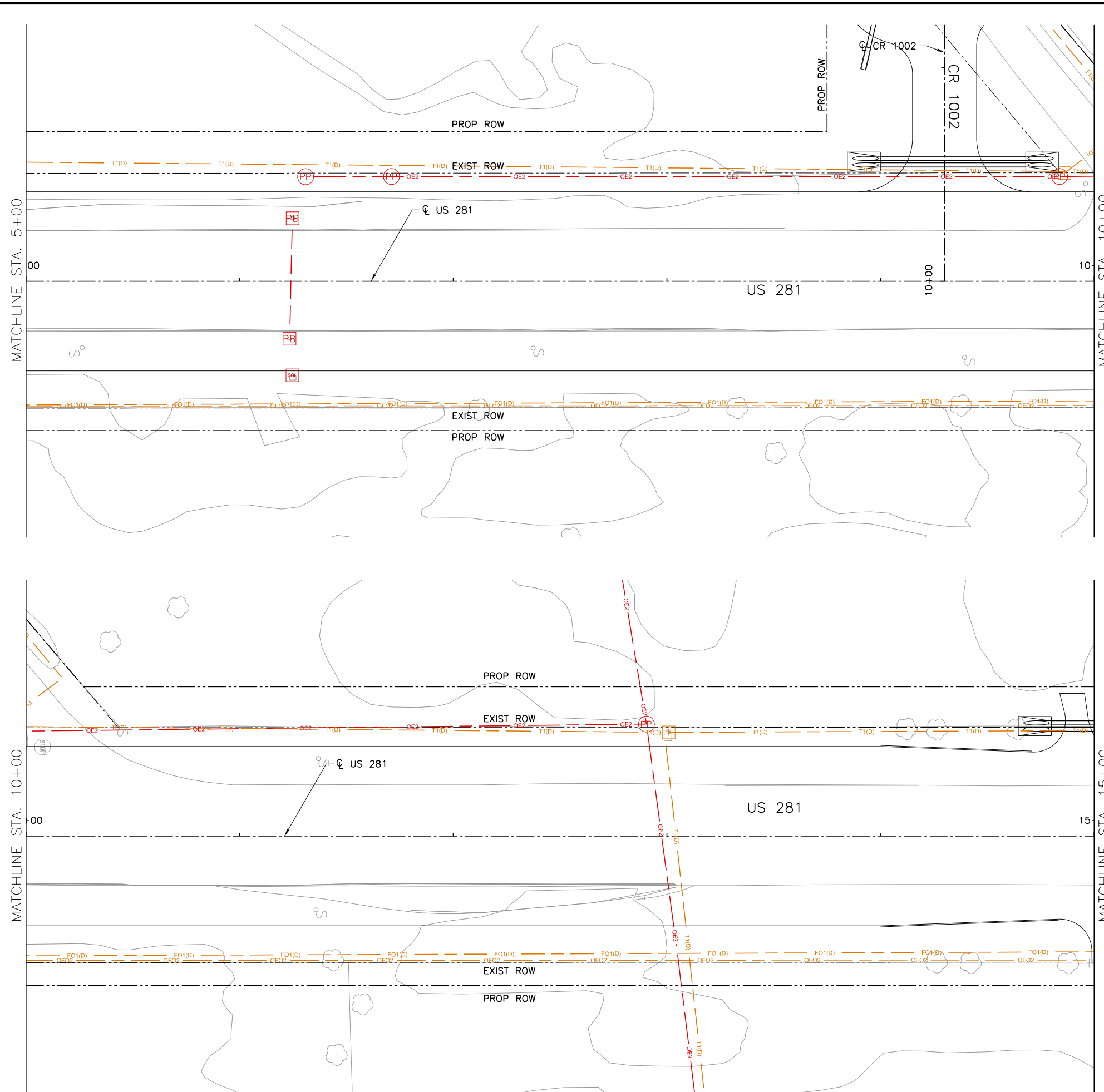
US 281
 EXISTING UTILITY LAYOUTS
 END PROJECT TO STA. 5+00

Designed:	RFL	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
Checked:	DWS	6	TEXAS		US 281
Drawn:	RFL	DIST.	COUNTY	CONTROL NO.	SECTION NO.
Checked:	DWS	BWD	LAMPASAS	0251	06
				JOB NO.	SHEET NO.
				036	246

US 281_Lampasas_SUE_color.tbl
 L:\Resources\Bentley\Microstation\Workspace\Standards\TxDOT\plotdrv_printer_TxDOT_PDF.pltcfgr
 L:\Projects\B200040.04 - CPY - US 281 - Lampasas\CAD\Engineering\Sheets\US281_Lampasas_LSE_SUE_03.dgn

Dakota.Smith

9/2/2022 7:38:58 AM



STATE OF TEXAS
 DAKOTA W. SMITH
 133272
 LICENSED PROFESSIONAL ENGINEER
Dakota Smith 9/2/2022
 LAMB-STAR ENGINEERING, LLC
 TEXAS REGISTERED ENGINEERING FIRM F-9073

NO.	REVISION	BY	DATE

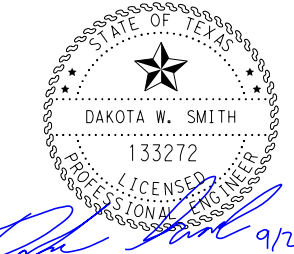
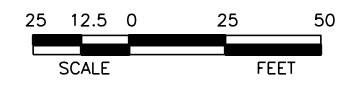
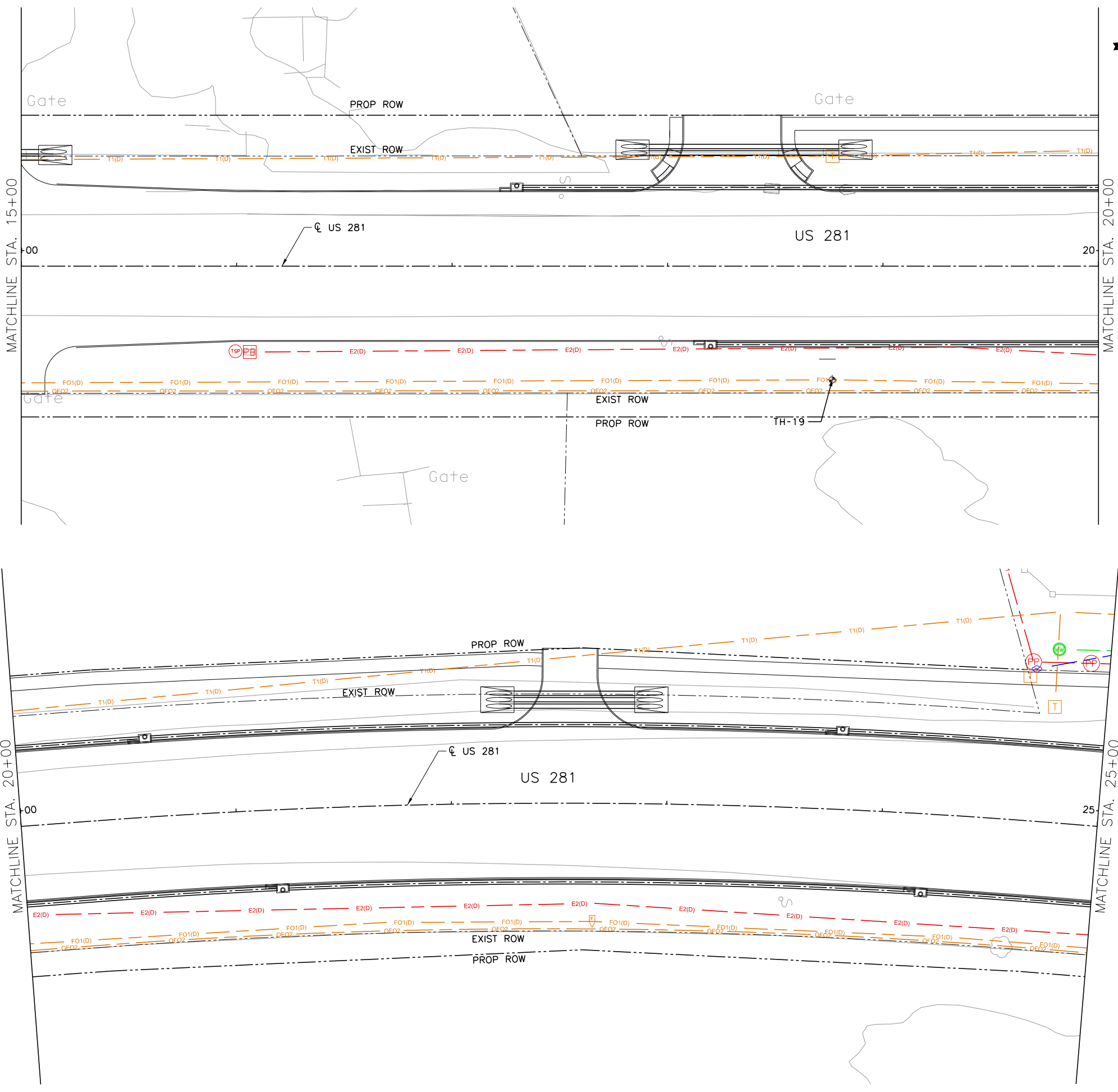
LAMB-STAR ENGINEERING, L.L.C.
 5700 W. PLANO PARKWAY, SUITE 1000
 PLANO, TEXAS 75093 (214) 440-3600
 TEXAS REGISTERED ENGINEERING FIRM F-9073

©2022 Texas Department of Transportation
 US 281
 EXISTING UTILITY LAYOUTS
 STA. 5+00 TO STA. 15+00

Designed:	RFL	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
Checked:	DWS	6	TEXAS		US 281
Drawn:	RFL	DIST.	COUNTY	CONTROL NO.	SECTION NO.
Checked:	DWS	BWD	LAMPASAS	0251	06
					JOB NO.
					036
					SHEET NO.
					247

US 281_Lampasas_SUE_color.tbl
 L:\Resources\Bentley\Microstation\Workspace\Standards\TXDOT\plotdrv_printer_TXDOT_PDF.pltcfgr
 L:\Projects\B200040.04 - CPY - US 281 - Lampasas\CAD\Engineering\Sheets\US281_Lampasas_LSE_SUE_04.dgn

9/2/2022 7:38:59 AM Dakota.Smith



NO.	REVISION	BY	DATE

LAMB-STAR ENGINEERING, L.L.C.
 5700 W. PLANO PARKWAY, SUITE 1000
 PLANO, TEXAS 75093 (214) 440-3600
 TEXAS REGISTERED ENGINEERING FIRM F-9073

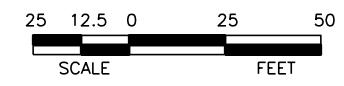
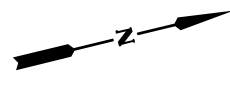
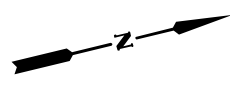
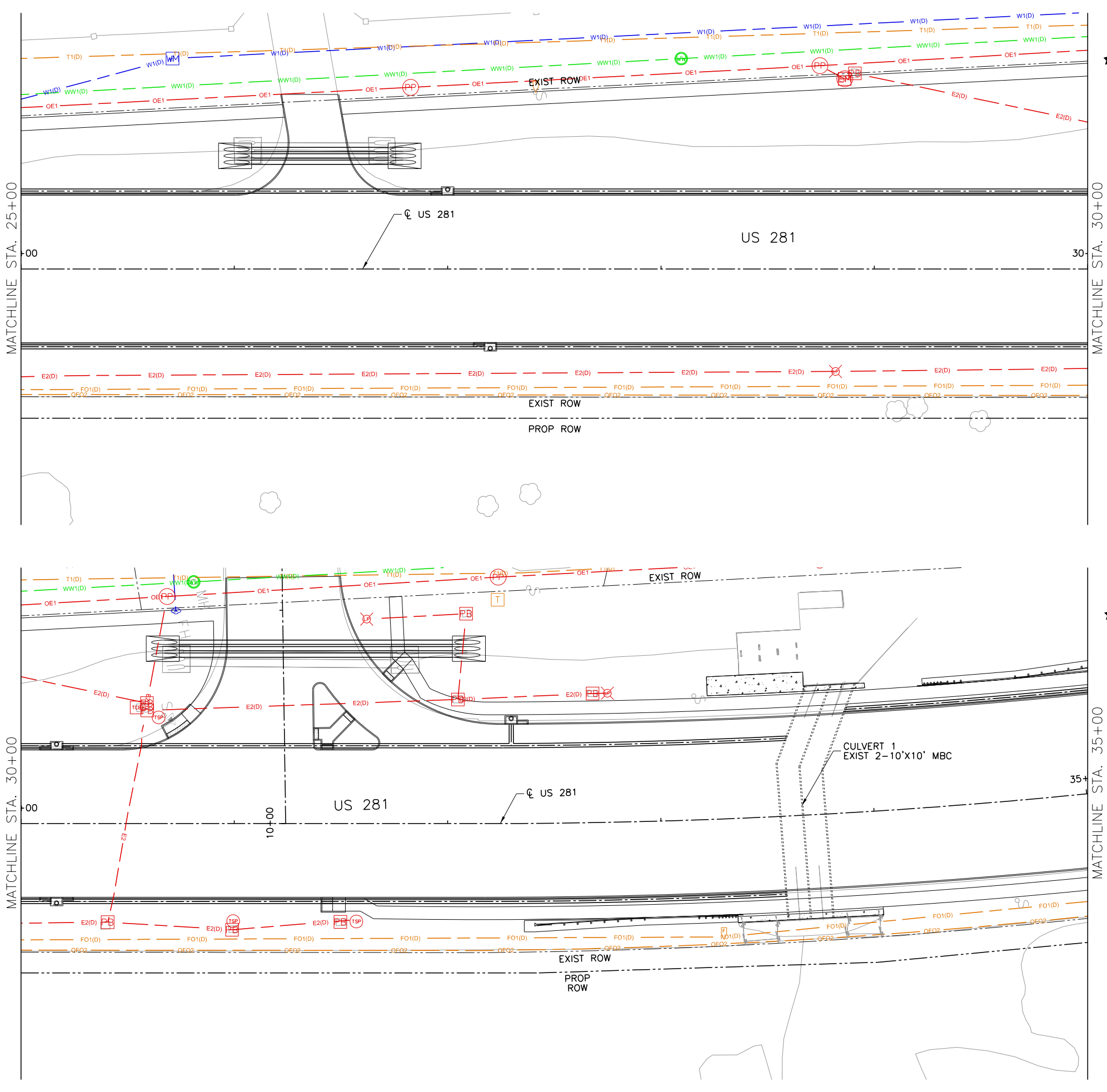
©2022 **Texas Department of Transportation**
 US 281

EXISTING UTILITY LAYOUTS

STA. 15+00 TO STA. 25+00

Designed:	RFL	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	DWS	6	TEXAS		US 281		
Drawn:	RFL	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	DWS	BWD	LAMPASAS	0251	06	036	248

US 281_Lampasas_SUE_color.tbl
 L:\Resources\Bentley\Microstation\Workspace\Standards\TXDOT\plotdrv_printer_TXDOT_PDF.pltcfgr
 L:\Projects\B200040.04 - CPY - US 281 - Lampasas\CAD\Engineering\Sheets\US281_Lampasas_LSE_SUE_05.dgn
 9/2/2022 7:39:00 AM Dakota.Smith



STATE OF TEXAS
 DAKOTA W. SMITH
 133272
 LICENSED PROFESSIONAL ENGINEER
Dakota Smith 9/2/2022
 LAMB-STAR ENGINEERING, L.L.C.
 TEXAS REGISTERED ENGINEERING FIRM F-9073

NO.	REVISION	BY	DATE

LAMB-STAR ENGINEERING, L.L.C.
 5700 W. PLANO PARKWAY, SUITE 1000
 PLANO, TEXAS 75093 (214) 440-3600
 TEXAS REGISTERED ENGINEERING FIRM F-9073

©2022 Texas Department of Transportation

US 281

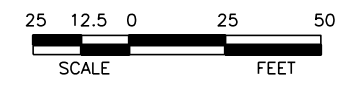
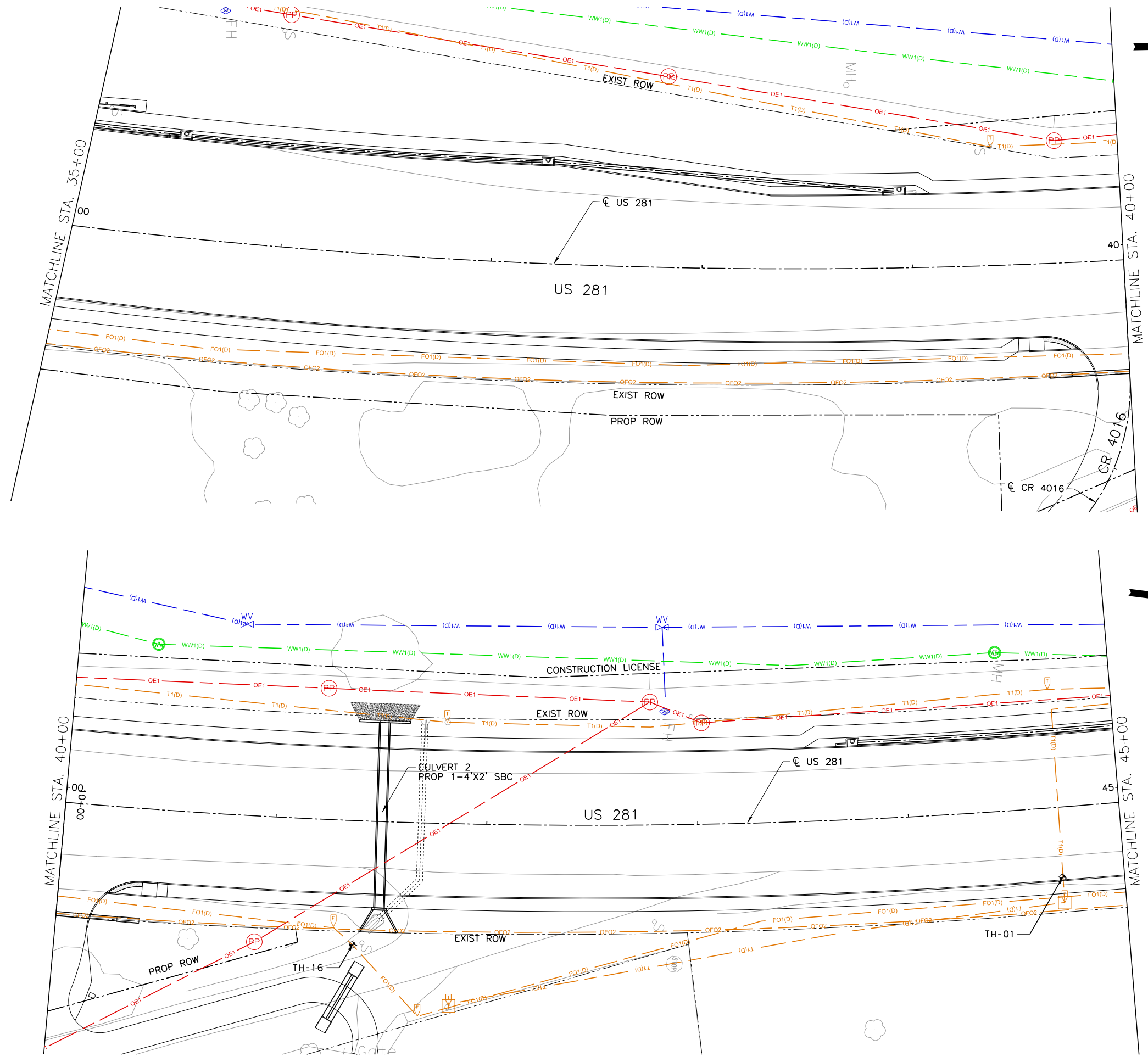
EXISTING UTILITY LAYOUTS

STA. 25+00 TO STA. 35+00

Designed:	RFL	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	DWS	6	TEXAS		US 281		
Drawn:	RFL	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	DWS	BWD	LAMPASAS	0251	06	036	249

US 281_Lampasas_SUE_color.tbl
 L:\Resources\Bentley\Microstation\Workspace\Standards\TXDOT\plotdrv_printer_TXDOT_PDF.pltcfgr
 L:\Projects\B200040.04 - CPY - US 281 - Lampasas\CAD\Engineering\Sheets\US281_Lampasas_LSE_SUE_06.dgn

9/2/2022 7:39:02 AM Dakota.Smith



STATE OF TEXAS
 DAKOTA W. SMITH
 133272
 LICENSED PROFESSIONAL ENGINEER
Dakota Smith 9/2/2022
 LAMB-STAR ENGINEERING, LLC
 TEXAS REGISTERED ENGINEERING FIRM F-9073

NO.	REVISION	BY	DATE

LAMB-STAR ENGINEERING, L.L.C.
 5700 W. PLANO PARKWAY, SUITE 1000
 PLANO, TEXAS 75093 (214) 440-3600
 TEXAS REGISTERED ENGINEERING FIRM F-9073

©2022 Texas Department of Transportation

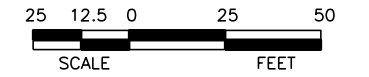
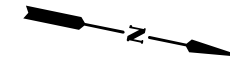
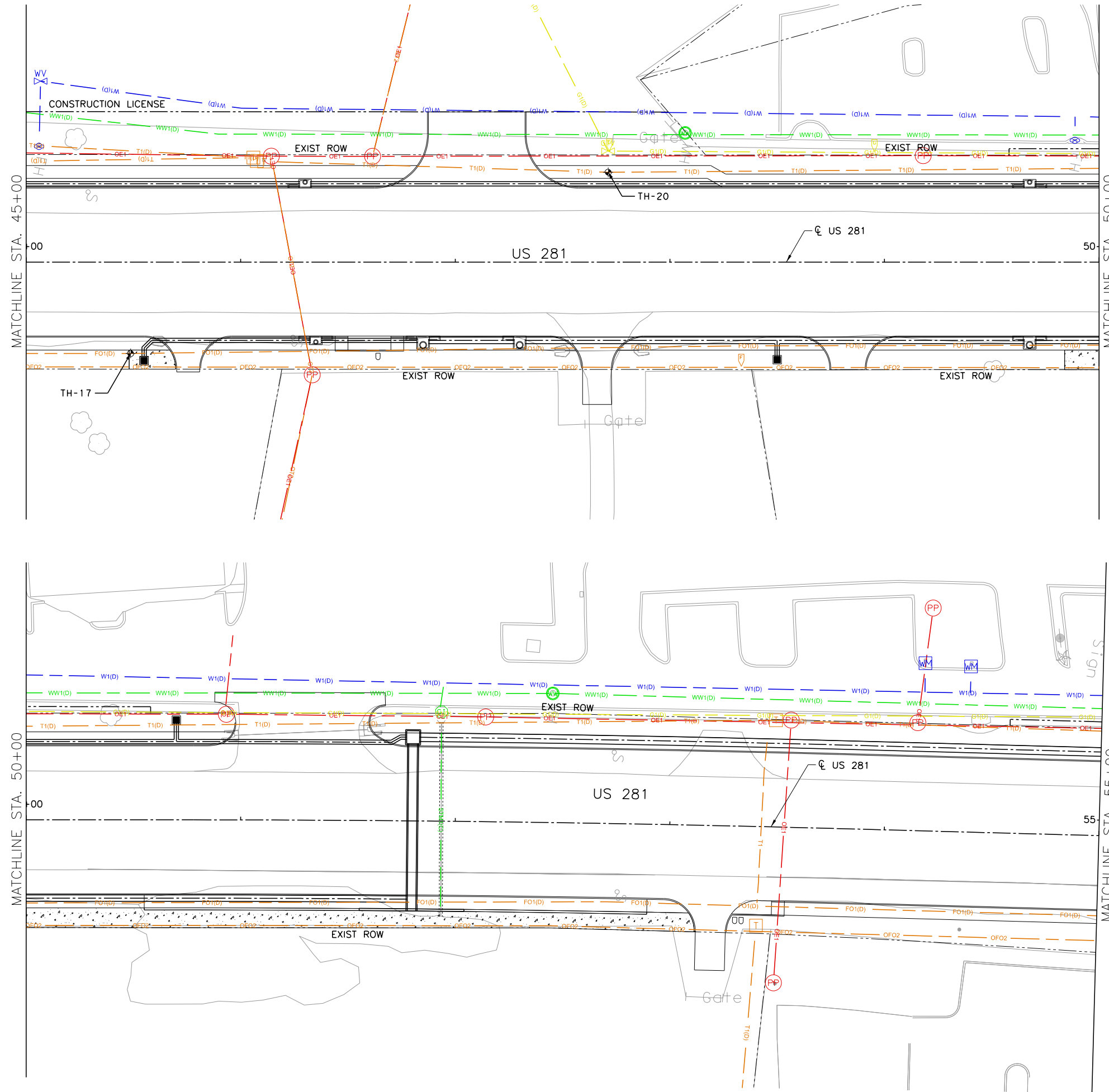
US 281
 EXISTING UTILITY LAYOUTS

STA. 35+00 TO STA. 45+00

Designed:	RFL	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	DWS	6	TEXAS		US 281		
Drawn:	RFL	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	DWS	BWD	LAMPASAS	0251	06	036	250

US 281_Lampasas_SUE_color.tbl
 L:\Resources\Bentley\Microstation\Workspace\Standards\TXDOT\plotdrv_printer_TXDOT_PDF.pltcfgr
 L:\Projects\B200040.04 - CPY - US 281 - Lampasas\CAD\Engineering\Sheets\US281_Lampasas_LSE_SUE_07.dgn

9/2/2022 7:39:03 AM Dakota.Smith



STATE OF TEXAS
 DAKOTA W. SMITH
 133272
 LICENSED PROFESSIONAL ENGINEER
Dakota Smith 9/2/2022
 LAMB-STAR ENGINEERING, LLC
 TEXAS REGISTERED ENGINEERING FIRM F-9073

NO.	REVISION	BY	DATE

LAMB-STAR ENGINEERING, L.L.C.
 5700 W. PLANO PARKWAY, SUITE 1000
 PLANO, TEXAS 75093 (214) 440-3600
 TEXAS REGISTERED ENGINEERING FIRM F-9073

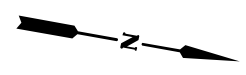
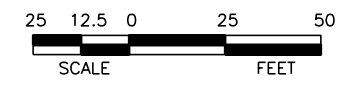
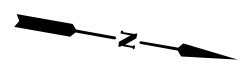
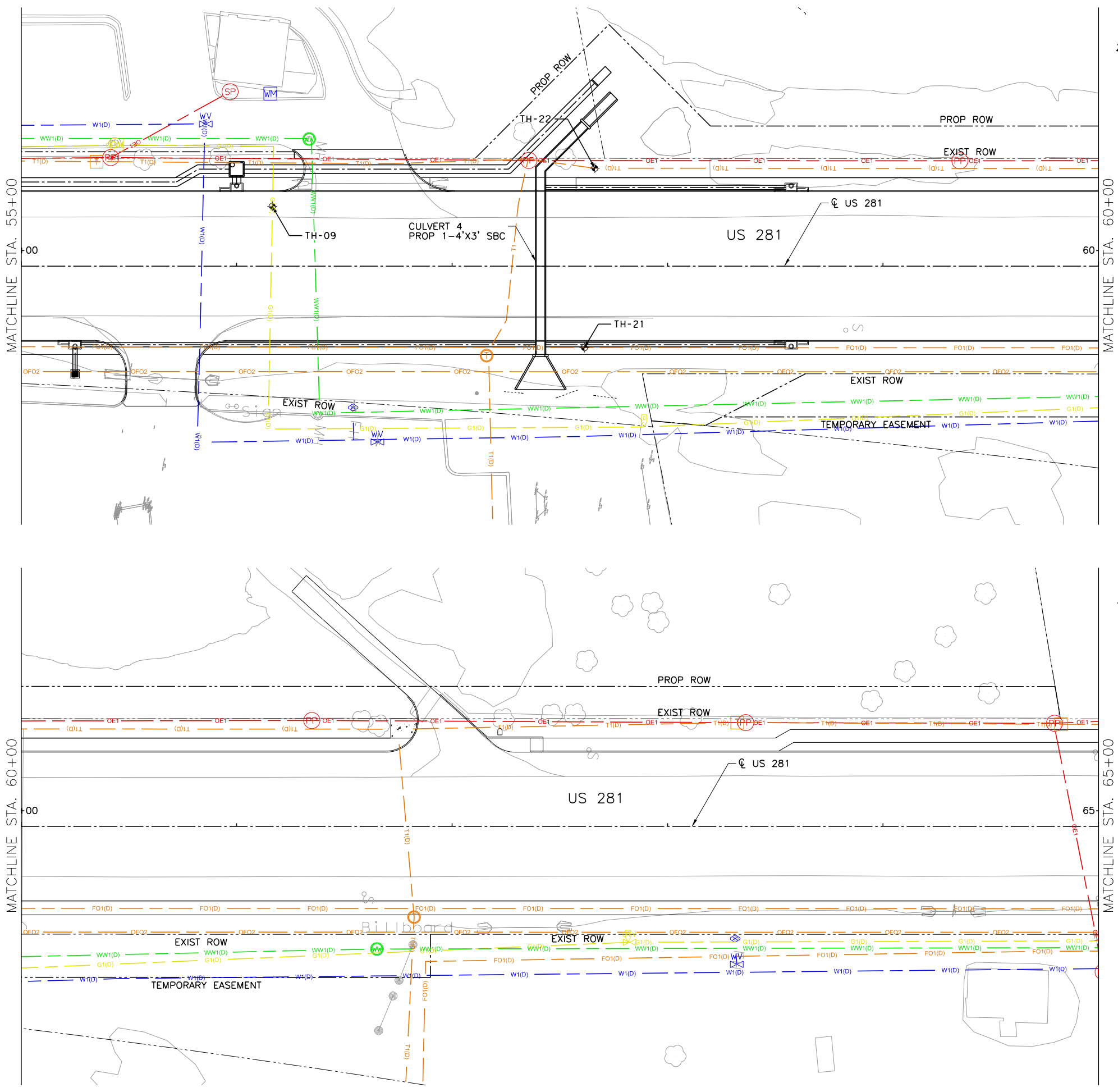
©2022 Texas Department of Transportation
 US 281

EXISTING UTILITY LAYOUTS
 STA. 45+00 TO STA. 55+00

Designed:	RFL	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	DWS	DIST.	BWD	COUNTY	LAMPASAS	CONTROL NO.	0251	SECTION NO.	06
Drawn:	RFL	JOB NO.	036	SHEET NO.	251				
Checked:	DWS								

US 281_Lampasas_SUE_color.tbl
 L:\Resources\Bentley\Microstation\Workspace\Standards\TxDOT\plotdrv_printer_TxDOT_PDF.pltcfgr
 L:\Projects\B200040.04 - CPY - US 281 - Lampasas\CAD\Engineering\Sheets\US281_Lampasas_LSE_SUE_08.dgn

9/2/2022 7:39:04 AM Dakota.Smith



Professional Engineer Seal for Dakota W. Smith, License No. 133272, State of Texas. The seal is circular with a star in the center and the text 'STATE OF TEXAS' around the top and 'DAKOTA W. SMITH 133272 LICENSED PROFESSIONAL ENGINEER' around the bottom. A signature and date '9/2/2022' are written over the seal.

LAMB-STAR ENGINEERING, LLC
 TEXAS REGISTERED ENGINEERING FIRM F-9073

NO.	REVISION	BY	DATE

LAMB-STAR ENGINEERING, L.L.C.
 5700 W. PLANO PARKWAY, SUITE 1000
 PLANO, TEXAS 75093 (214) 440-3600
 TEXAS REGISTERED ENGINEERING FIRM F-9073

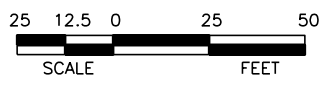
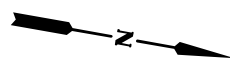
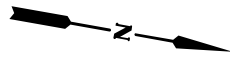
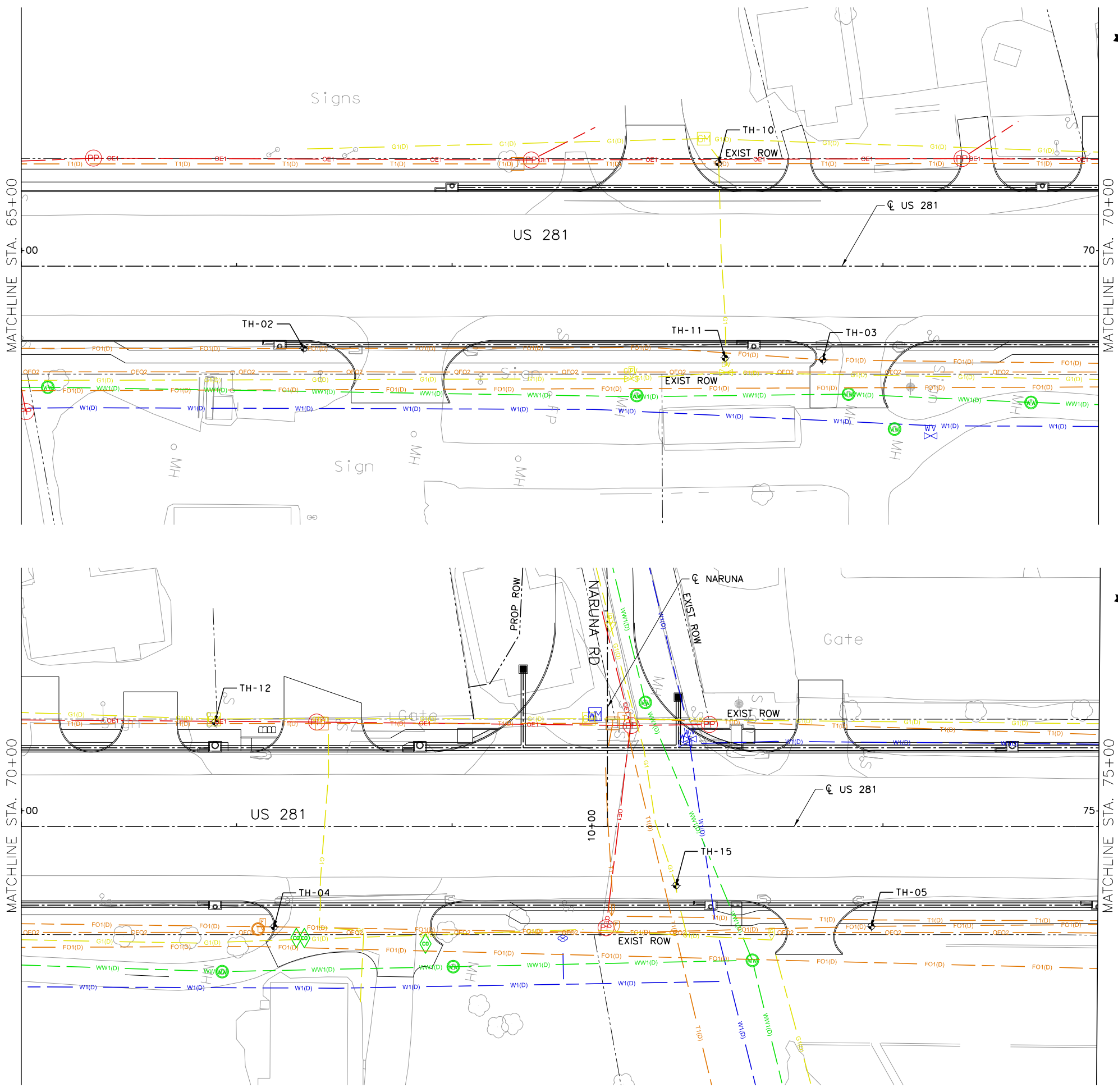
©2022 Texas Department of Transportation

US 281
 EXISTING UTILITY LAYOUTS
 STA. 55+00 TO STA. 65+00

Designed:	RFL	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	DWS	6	TEXAS		US 281		
Drawn:	RFL	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	DWS	BWD	LAMPASAS	0251	06	036	252

US 281_Lampasas_SUE_color.tbl
 L:\Resources\Bentley\Microstation\Workspace\Standards\TxDOT\plotdrv\printer_TxDOT_PDF.pltcfgr
 L:\Projects\B200040.04 - CPY - US 281 - Lampasas\CAD\Engineering\Sheets\US281_Lampasas_LSE_SUE_09.dgn

9/2/2022 7:39:06 AM Dakota.Smith



STATE OF TEXAS
 DAKOTA W. SMITH
 133272
 LICENSED PROFESSIONAL ENGINEER
Dakota Smith 9/2/2022
 LAMB-STAR ENGINEERING, LLC
 TEXAS REGISTERED ENGINEERING FIRM F-9073

NO.	REVISION	BY	DATE

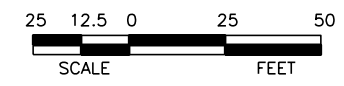
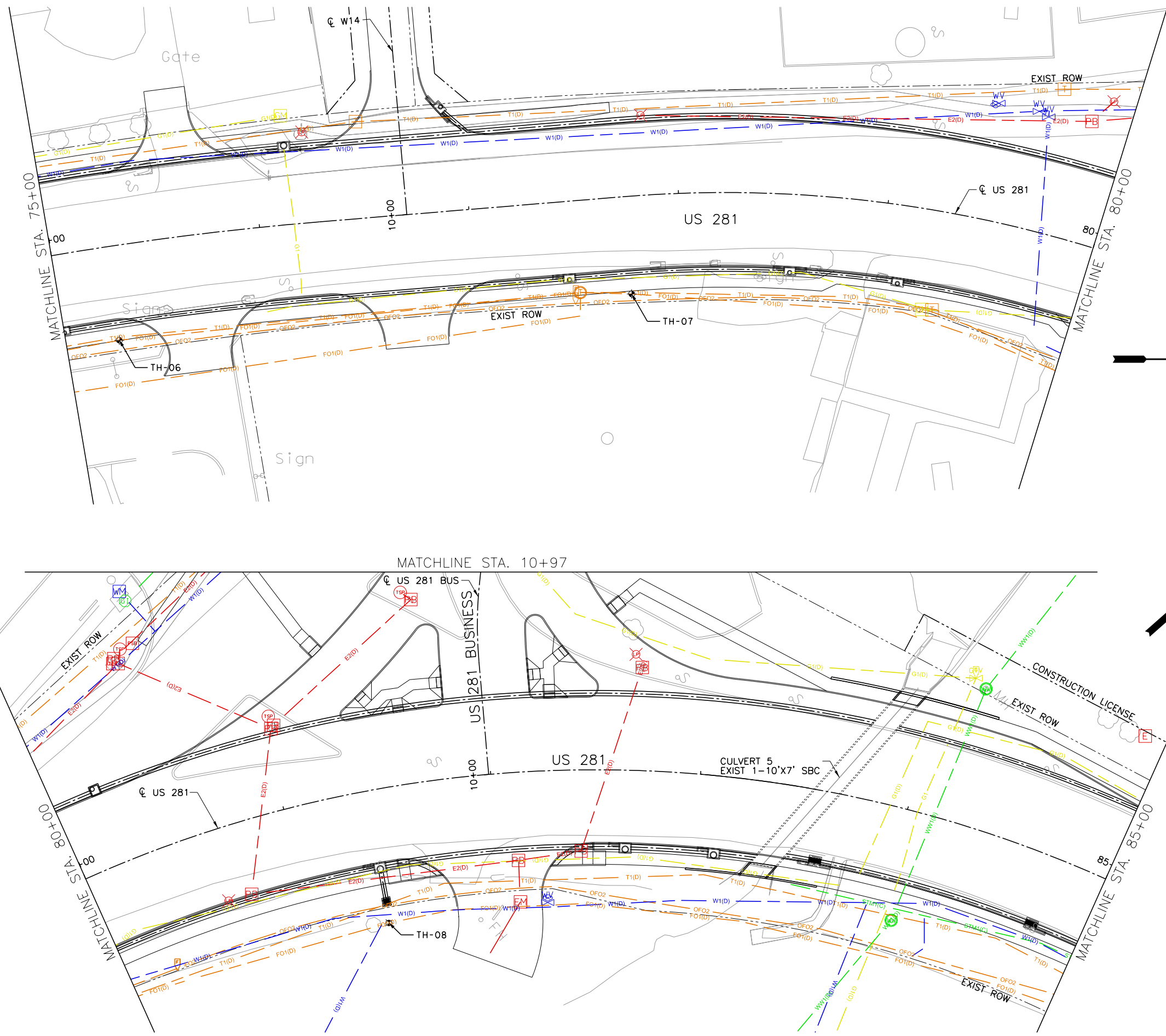
LAMB-STAR ENGINEERING, L.L.C.
 5700 W. PLANO PARKWAY, SUITE 1000
 PLANO, TEXAS 75093 (214) 440-3600
 TEXAS REGISTERED ENGINEERING FIRM F-9073

©2022 Texas Department of Transportation
 US 281

EXISTING UTILITY LAYOUTS
 STA. 65+00 TO STA. 75+00

Designed:	RFL	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	DWS	6	TEXAS		US 281		
Drawn:	RFL	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	DWS	BWD	LAMPASAS	0251	06	036	253

US 281_Lampasas_SUE_color.tbl
 L:\Resources\Bentley\Microstation\Txdot\plotdrv_printer_TxDOT_PDF.pltcfgr
 L:\Projects\B200040.04 - CPY - US 281 - Lampasas\CAD\Engineering\Sheets\US281_Lampasas_LSE_SUE_10.dgn
 9/2/2022 7:39:07 AM Dakota.Smith



STATE OF TEXAS
 DAKOTA W. SMITH
 133272
 LICENSED PROFESSIONAL ENGINEER
Dakota Smith 9/2/2022
 LAMB-STAR ENGINEERING, LLC
 TEXAS REGISTERED ENGINEERING FIRM F-9073

NO.	REVISION	BY	DATE

LAMB-STAR ENGINEERING, L.L.C.
 5700 W. PLANO PARKWAY, SUITE 1000
 PLANO, TEXAS 75093 (214) 440-3600
 TEXAS REGISTERED ENGINEERING FIRM F-9073

©2022 Texas Department of Transportation
 US 281

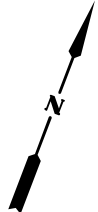
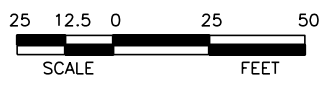
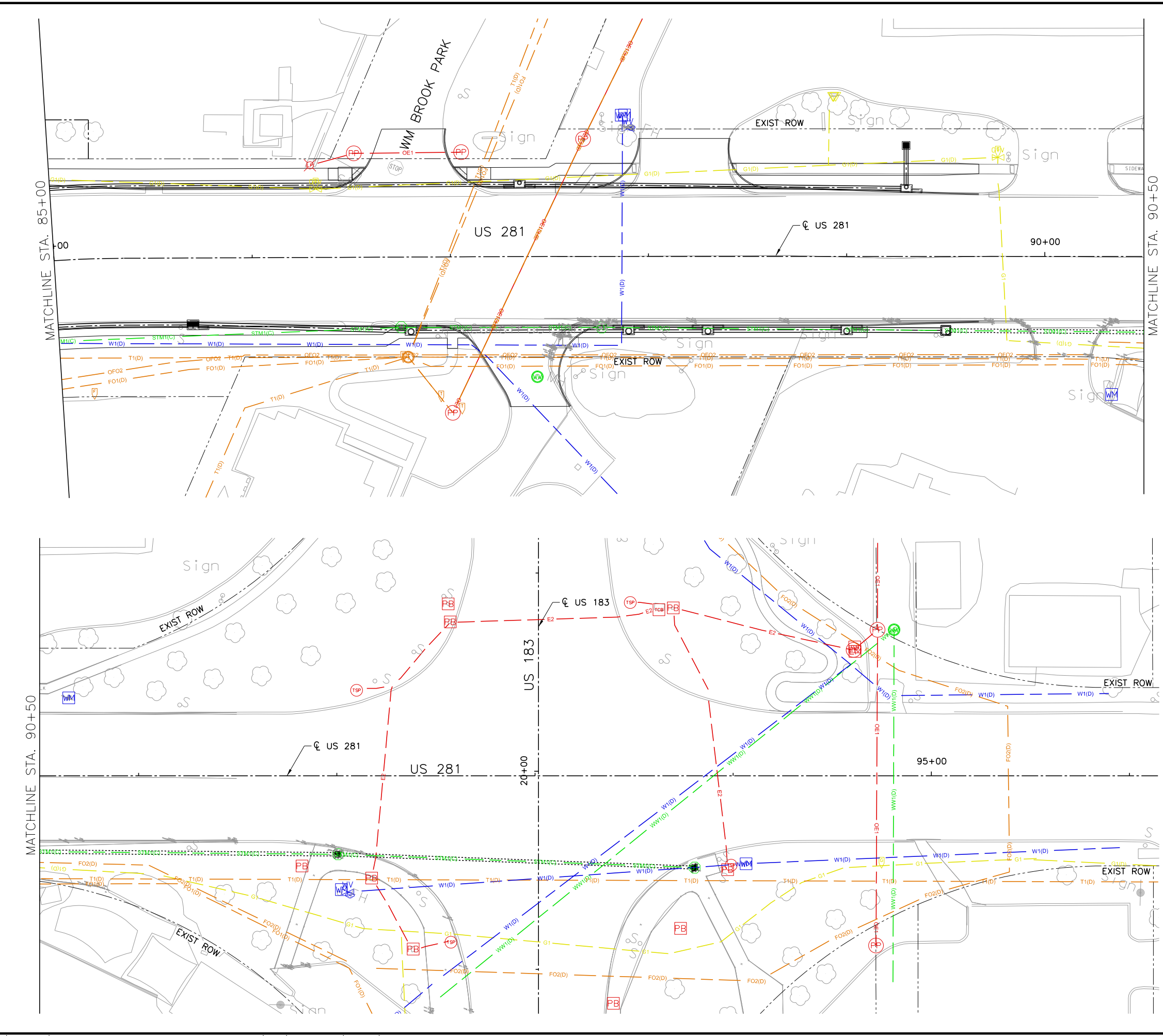
EXISTING UTILITY LAYOUTS

STA. 75+00 TO STA. 85+00

Designed:	RFL	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	DWS	6	TEXAS		US 281		
Drawn:	RFL	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	DWS	BWD	LAMPASAS	0251	06	036	254

US 281_Lampasas_SUE_color.tbl
 L:\Resources\Bentley\Microstation\Txdot\plotdrv_printer_TXDOT_PDF.pltcfgr
 L:\Projects\B200040.04 - CPY - US 281 - Lampasas\CAD\Engineering\Sheets\US281_Lampasas_LSE_SUE_11.dgn

9/2/2022 7:39:09 AM Dakota.Smith



STATE OF TEXAS
 DAKOTA W. SMITH
 133272
 LICENSED PROFESSIONAL ENGINEER
Dakota Smith 9/2/2022
 LAMB-STAR ENGINEERING, LLC
 TEXAS REGISTERED ENGINEERING FIRM F-9073

NO.	REVISION	BY	DATE

LAMB-STAR ENGINEERING, L.L.C.
 5700 W. PLANO PARKWAY, SUITE 1000
 PLANO, TEXAS 75093 (214) 440-3600
 TEXAS REGISTERED ENGINEERING FIRM F-9073

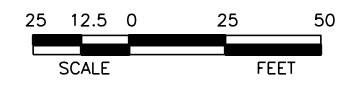
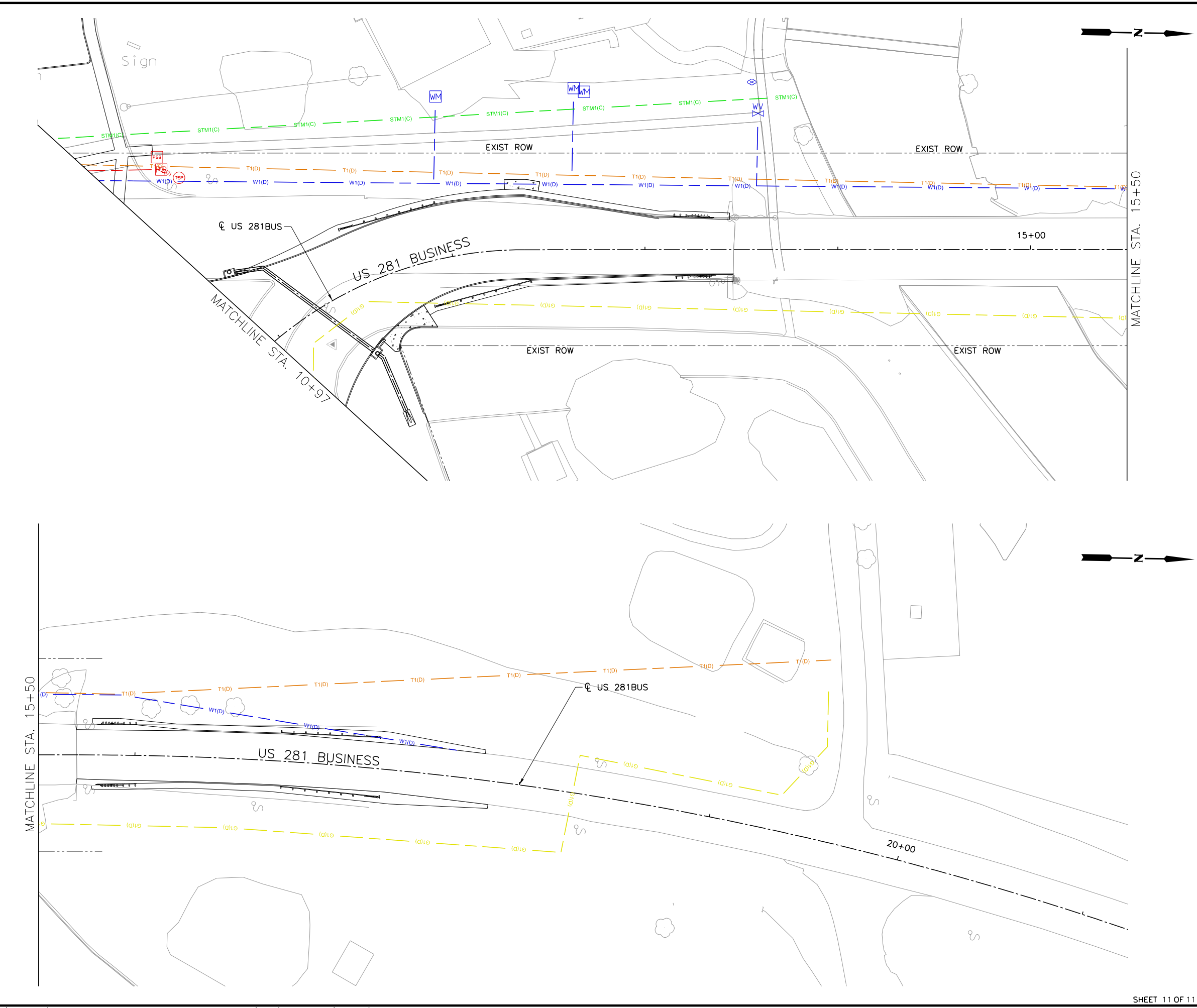
©2022 Texas Department of Transportation
 US 281

EXISTING UTILITY LAYOUTS
 STA. 85+00 TO BEGIN PROJECT

Designed:	RFL	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	DWS								
Drawn:	RFL	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Checked:	DWS	BWD				JOB NO.	036	SHEET NO.	255

US 281_Lampasas_SUE_color.tbl
 L:\Resources\Bentley\Microstation\Workspace\TxDOT\plotdrv_printer_TXDOT_PDF.pltcfgr
 L:\Projects\B200040.04 - CPY - US 281 - Lampasas\CAD\Engineering\Sheets\US281_Lampasas_LSE_SUE_12.dgn

9/2/2022 7:39:11 AM Dakota.Smith



STATE OF TEXAS
 DAKOTA W. SMITH
 133272
 LICENSED PROFESSIONAL ENGINEER
Dakota Smith 9/2/2022
 LAMB-STAR ENGINEERING, LLC
 TEXAS REGISTERED ENGINEERING FIRM F-9073

NO.	REVISION	BY	DATE

LAMB-STAR ENGINEERING, L.L.C.
 5700 W. PLANO PARKWAY, SUITE 1000
 PLANO, TEXAS 75093 (214) 440-3600
 TEXAS REGISTERED ENGINEERING FIRM F-9073

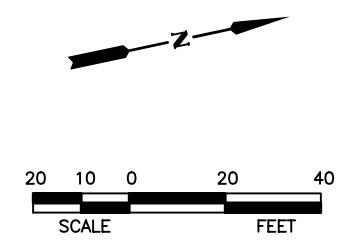
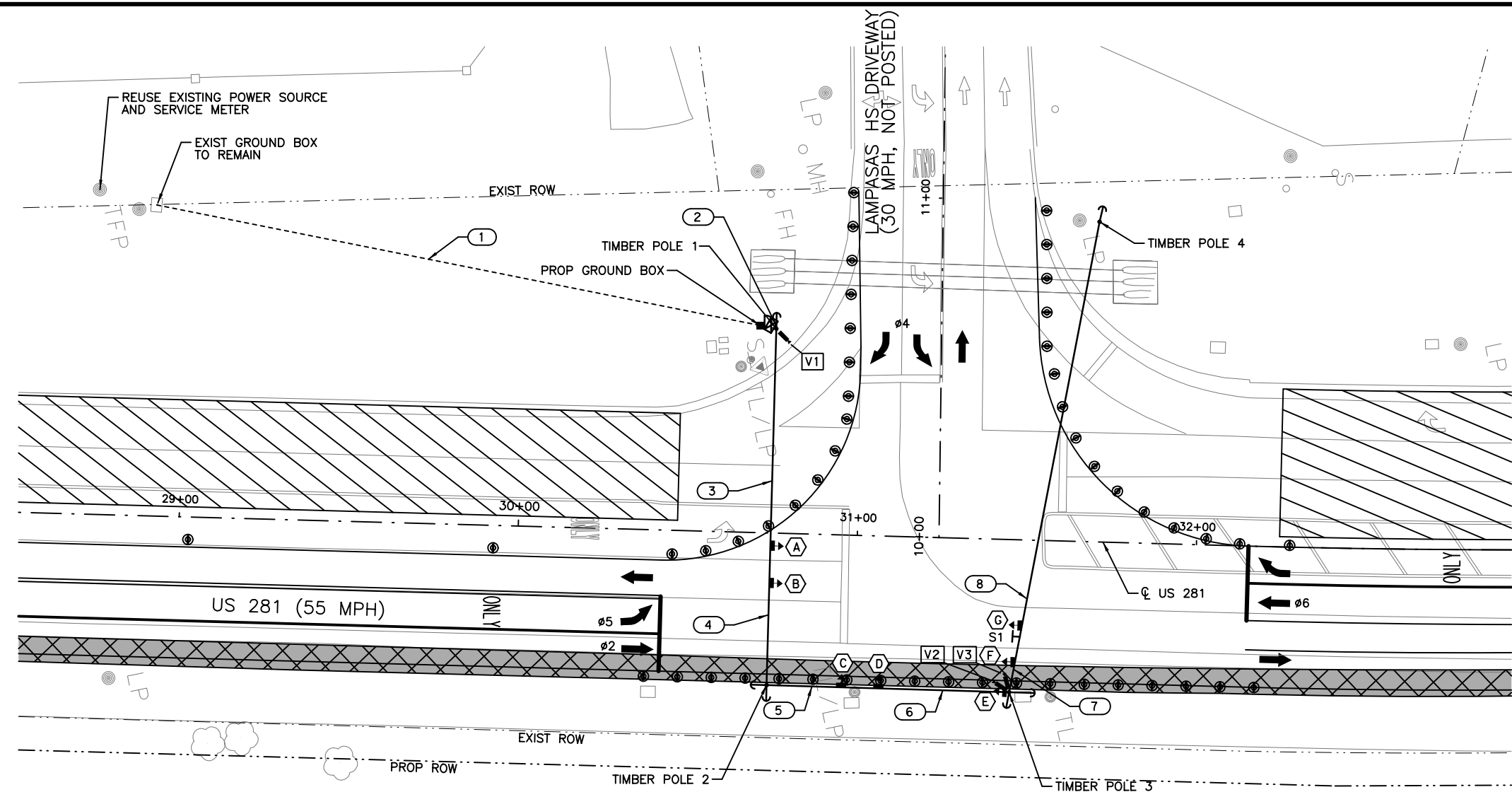
©2022 Texas Department of Transportation
 US 281

EXISTING UTILITY LAYOUTS

STA. 10+97 TO STA. 15+50

Designed:	RFL	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
Checked:	DWS	6	TEXAS		US 281
Drawn:	RFL	DIST.	COUNTY	CONTROL NO.	SECTION NO.
Checked:	DWS	BWD	LAMPASAS	0251	06
				JOB NO.	SHEET NO.
				036	256

1/28/2023 10:45:00 AM zstone
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.xx Signals/49304RDt01_PH1.dgn

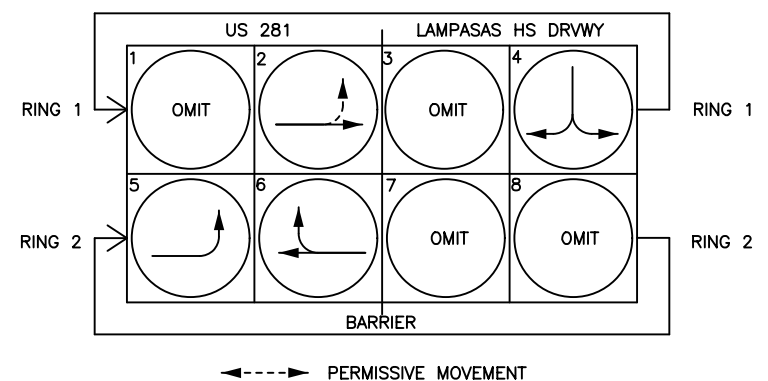


- LEGEND**
- TIMBER POLE W/ DOWN GUYS
 - TEMP SPAN AND TETHER WIRE
 - LUMINAIRE
 - TEMP SIGNAL HEAD
 - OVERHEAD SIGN
 - TEMP VIVDS CAMERA
 - TYPE D GROUND BOX
 - CONDUIT (TRENCH)
 - CONDUIT (BORE)
 - TEMP SERVICE POLE
 - TEMP POLE MOUNTED CONTROLLER
 - DIRECTION OF TRAFFIC
 - EXIST RIGHT OF WAY
 - PROP RIGHT OF WAY
 - PORTABLE CONCRETE TRAFFIC BARRIER
 - CRASH CUSHION ATTENUATOR
 - CONSTRUCTION THIS PHASE
 - PREVIOUS PHASE CONSTRUCTION
 - SIGNAL HEAD IDENTIFIER
 - CONDUIT/SPAN IDENTIFIER

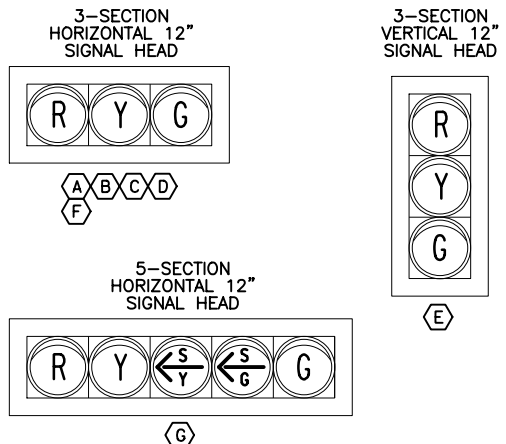


Zach Stone
01/28/2023

PHASING DIAGRAM
PHASE 1



PROPOSED SIGNAL HEADS



PROPOSED SIGNS

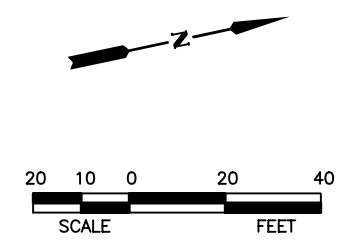
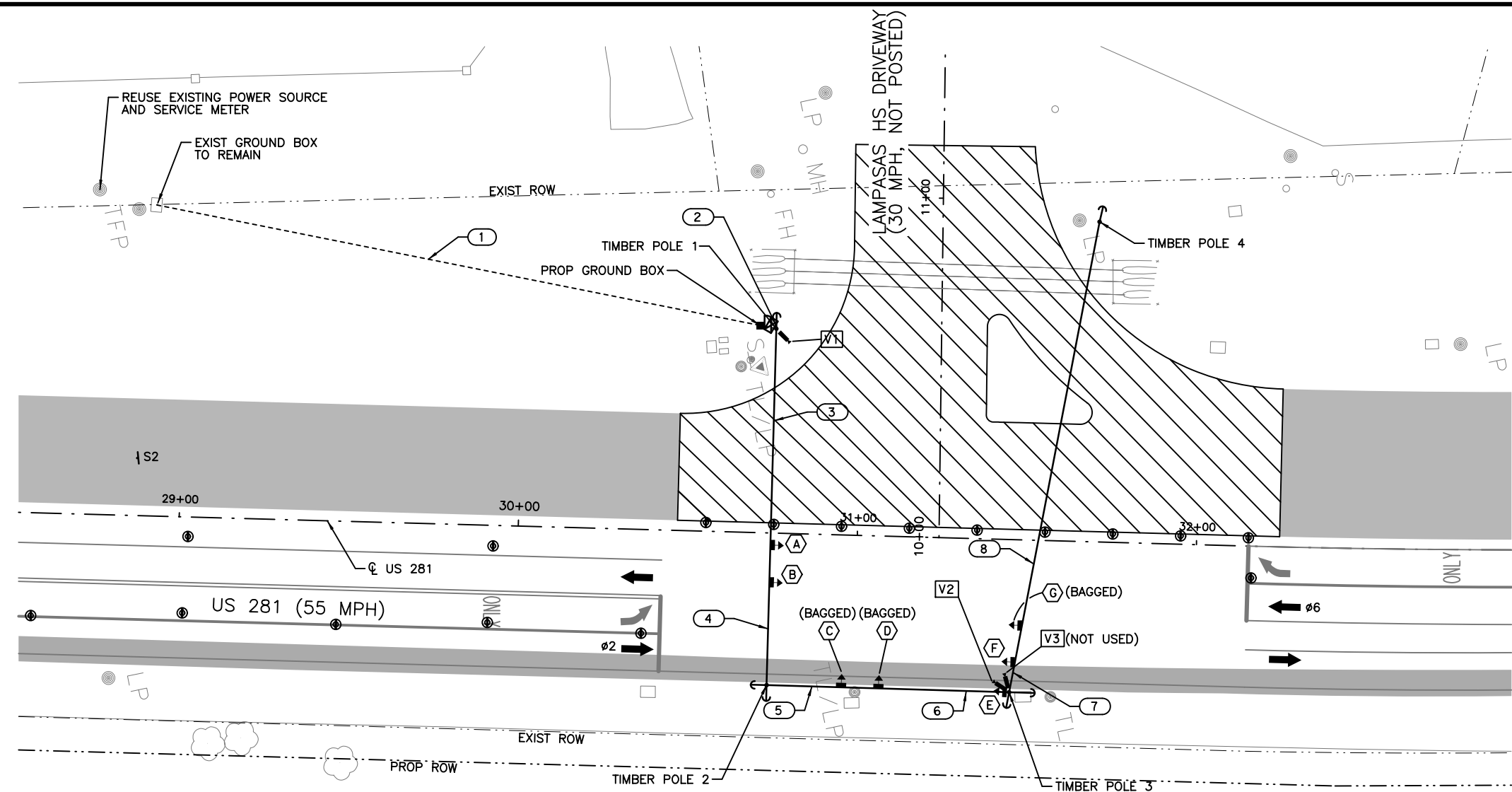


NOTES

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO IDENTIFY LOCATIONS OF POLES, SIGNAL HEADS, ETC. TEMPORARY TRAFFIC CONTROLS ARE APPROXIMATE AND EXACT LOCATION SHALL BE APPROVED BY FIELD ENGINEER.
2. REFER TO TRAFFIC CONTROL PLANS FOR SIGNING/PAVEMENT MARKING LOCATIONS AND DETAILS.
3. TEMPORARY SIGNAL POLES SHALL BE INSTALLED PRIOR TO PHASE 1 OF CONSTRUCTION AND REMAIN IN PLACE FOR ALL FOLLOWING PHASES OF CONSTRUCTION UNLESS OTHERWISE DENOTED IN THE PLANS.
4. REFER TO TEMPORARY SIGNAL DETAILS FOR DESIGN NARRATIVE OF DIFFERENT TCP PHASES.
5. REUSE EXISTING ELECTRICAL SERVICE AND GROUND BOX. INSTALL CONDUIT, GROUND BOX, AND CONDUCTORS SHOWN TO PROVIDE POWER TO TEMPORARY SIGNAL.
6. EXISTING LUMINAIRES SHALL REMAIN IN SERVICE DURING OPERATION OF THE TEMPORARY TRAFFIC SIGNAL.

NO.	REVISION	BY	DATE
TEXAS REGISTERED ENGINEERING FIRM F-1741 			
US 281 TEMPORARY SIGNAL LAYOUT (PH. 1) US 281 AT LAMPASAS HIGH SCHOOL			
Designed:	CPY	FED. RD. DIV. NO.	STATE
Checked:	CPY	6	TEXAS
Drawn:	CPY	DIST.	COUNTY
Checked:	CPY	BWD	LAMPASAS
		CONTROL NO.	SECTION NO.
		0251	06
		JOB NO.	SHEET NO.
		036	257

1/28/2023 10:46:37 AM zstone
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.xx Signals/49304RDt01_PH1AB.dgn



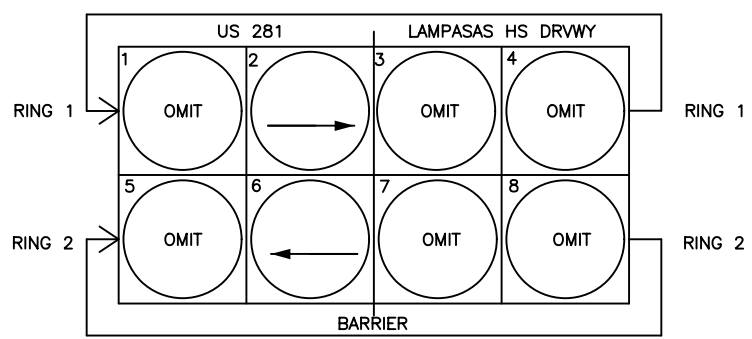
- LEGEND**
- TIMBER POLE W/ DOWN GUYS
 - TEMP SPAN AND TETHER WIRE
 - LUMINAIRE
 - TEMP SIGNAL HEAD
 - OVERHEAD SIGN
 - TEMP VIVDS CAMERA
 - TYPE D GROUND BOX
 - CONDUIT (TRENCH)
 - CONDUIT (BORE)
 - TEMP SERVICE POLE
 - TEMP POLE MOUNTED CONTROLLER
 - DIRECTION OF TRAFFIC
 - EXIST RIGHT OF WAY
 - PROP RIGHT OF WAY
 - PORTABLE CONCRETE TRAFFIC BARRIER
 - CRASH CUSHION ATTENUATOR
 - CONSTRUCTION THIS PHASE
 - PREVIOUS PHASE CONSTRUCTION
 - SIGNAL HEAD IDENTIFIER
 - CONDUIT/SPAN IDENTIFIER



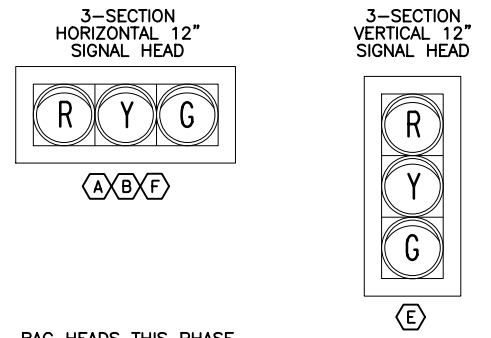
Zach Stone
01/28/2023

PHASING DIAGRAM
PHASE 1A/1B

SIGNAL SHALL DWELL IN GREEN FOR #2 AND #6



PROPOSED SIGNAL HEADS



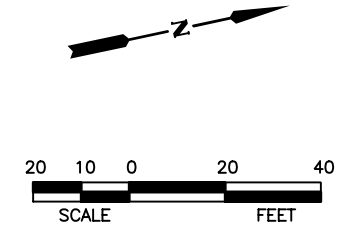
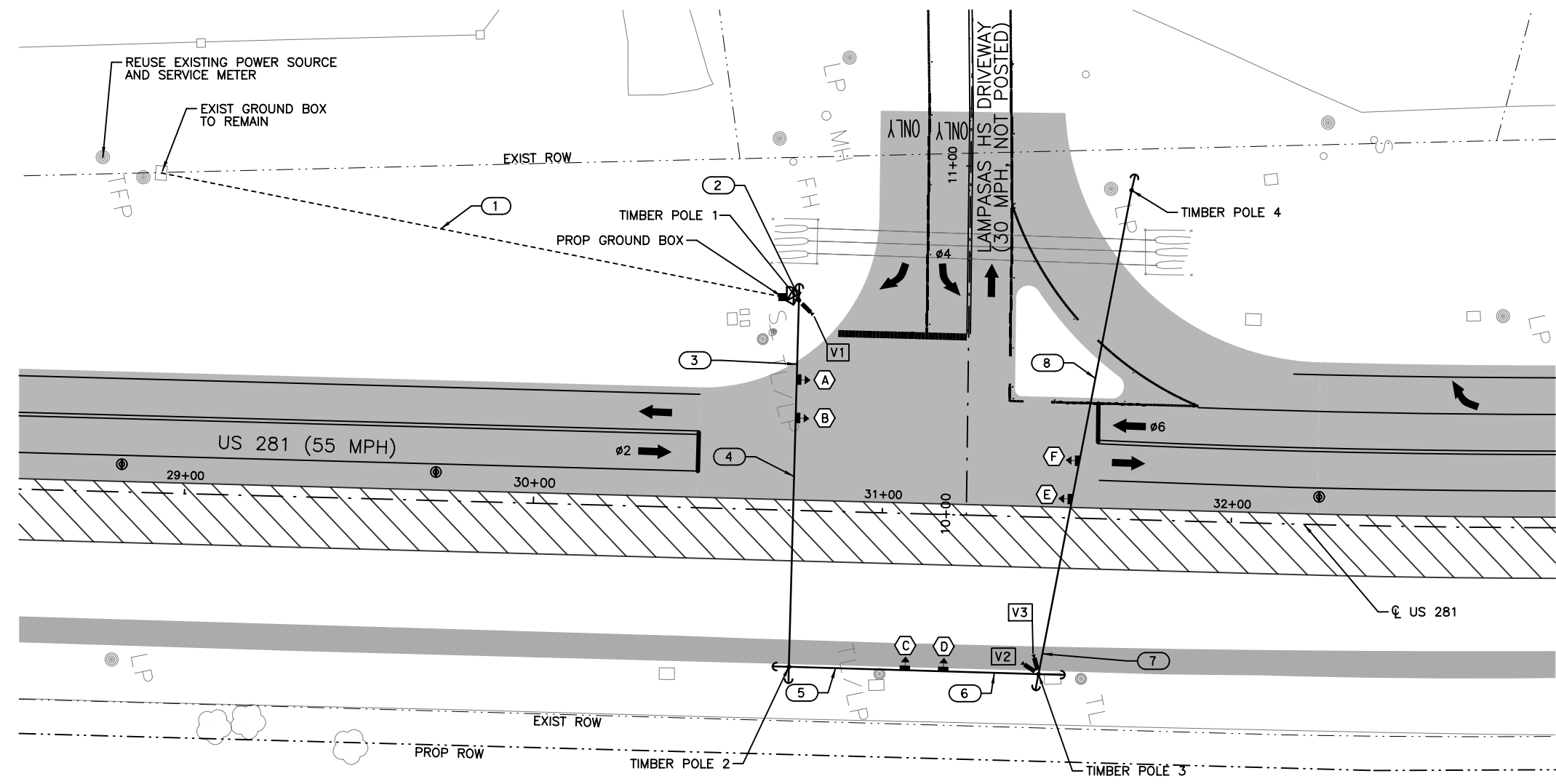
BAG HEADS THIS PHASE
C D G

NOTES

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO IDENTIFY LOCATIONS OF POLES, SIGNAL HEADS, ETC. TEMPORARY TRAFFIC CONTROLS ARE APPROXIMATE AND EXACT LOCATION SHALL BE APPROVED BY FIELD ENGINEER.
2. REFER TO TRAFFIC CONTROL PLANS FOR SIGNING/PAVEMENT MARKING LOCATIONS AND DETAILS.
3. TEMPORARY SIGNAL POLES SHALL BE INSTALLED PRIOR TO PHASE 1 OF CONSTRUCTION AND REMAIN IN PLACE FOR ALL FOLLOWING PHASES OF CONSTRUCTION UNLESS OTHERWISE DENOTED IN THE PLANS.
4. TEMPORARY SIGNAL HEAD LOCATION SHALL BE ADJUSTED FROM PHASE 1 TO THE LOCATION SHOWN ON THIS SHEET. PHASE 1A TRAFFIC CONTROL CONFIGURATION IS SHOWN. TEMPORARY SIGNAL HEAD LOCATION FOR PHASE 1B SHALL REMAIN AS SHOWN ON THIS SHEET.
5. REFER TO TEMPORARY SIGNAL DETAILS FOR DESIGN NARRATIVE OF DIFFERENT TCP PHASES.
6. EXISTING LUMINAIRES SHALL REMAIN IN SERVICE DURING OPERATION OF THE TEMPORARY TRAFFIC SIGNAL.

NO.	REVISION	BY	DATE
TEXAS REGISTERED ENGINEERING FIRM F-1741			
US 281 TEMPORARY SIGNAL LAYOUT (PH. 1A/1B)			
US 281 AT LAMPASAS HIGH SCHOOL			
Designed:	CPY	FED. RD. DIV. NO. 6	STATE TEXAS
Checked:	CPY	FEDERAL AID PROJECT NO. US 281	
Drawn:	CPY	DIST. COUNTY	CONTROL NO. SECTION NO. JOB NO. SHEET NO.
Checked:	CPY	BWD LAMPASAS	0251 06 036 258

1/28/2023 11:29:30 AM zstone
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.xx Signals/49304RDt01_PH2A.dgn

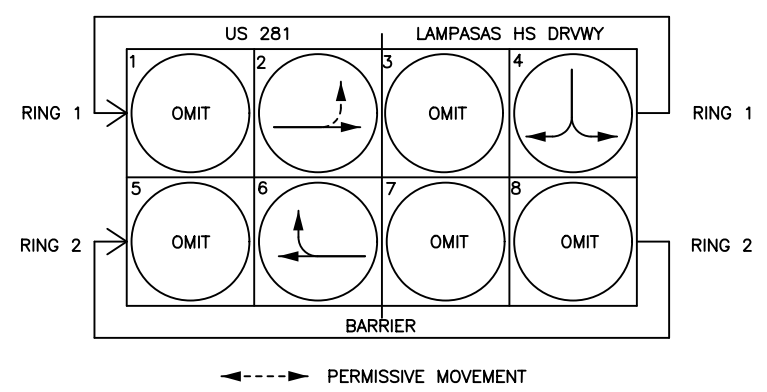


- LEGEND**
- TIMBER POLE W/ DOWN GUYS
 - TEMP SPAN AND TETHER WIRE
 - LUMINAIRE
 - TEMP SIGNAL HEAD
 - OVERHEAD SIGN
 - TEMP VIVDS CAMERA
 - TYPE D GROUND BOX
 - CONDUIT (TRENCH)
 - CONDUIT (BORE)
 - TEMP SERVICE POLE
 - TEMP POLE MOUNTED CONTROLLER
 - DIRECTION OF TRAFFIC
 - EXIST RIGHT OF WAY
 - PROP RIGHT OF WAY
 - PORTABLE CONCRETE TRAFFIC BARRIER
 - CRASH CUSHION ATTENUATOR
 - CONSTRUCTION THIS PHASE
 - PREVIOUS PHASE CONSTRUCTION
 - SIGNAL HEAD IDENTIFIER
 - CONDUIT/SPAN IDENTIFIER

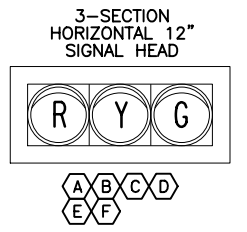


Zach Stone
01/28/2023

PHASING DIAGRAM
PHASE 2A



PROPOSED SIGNAL HEADS

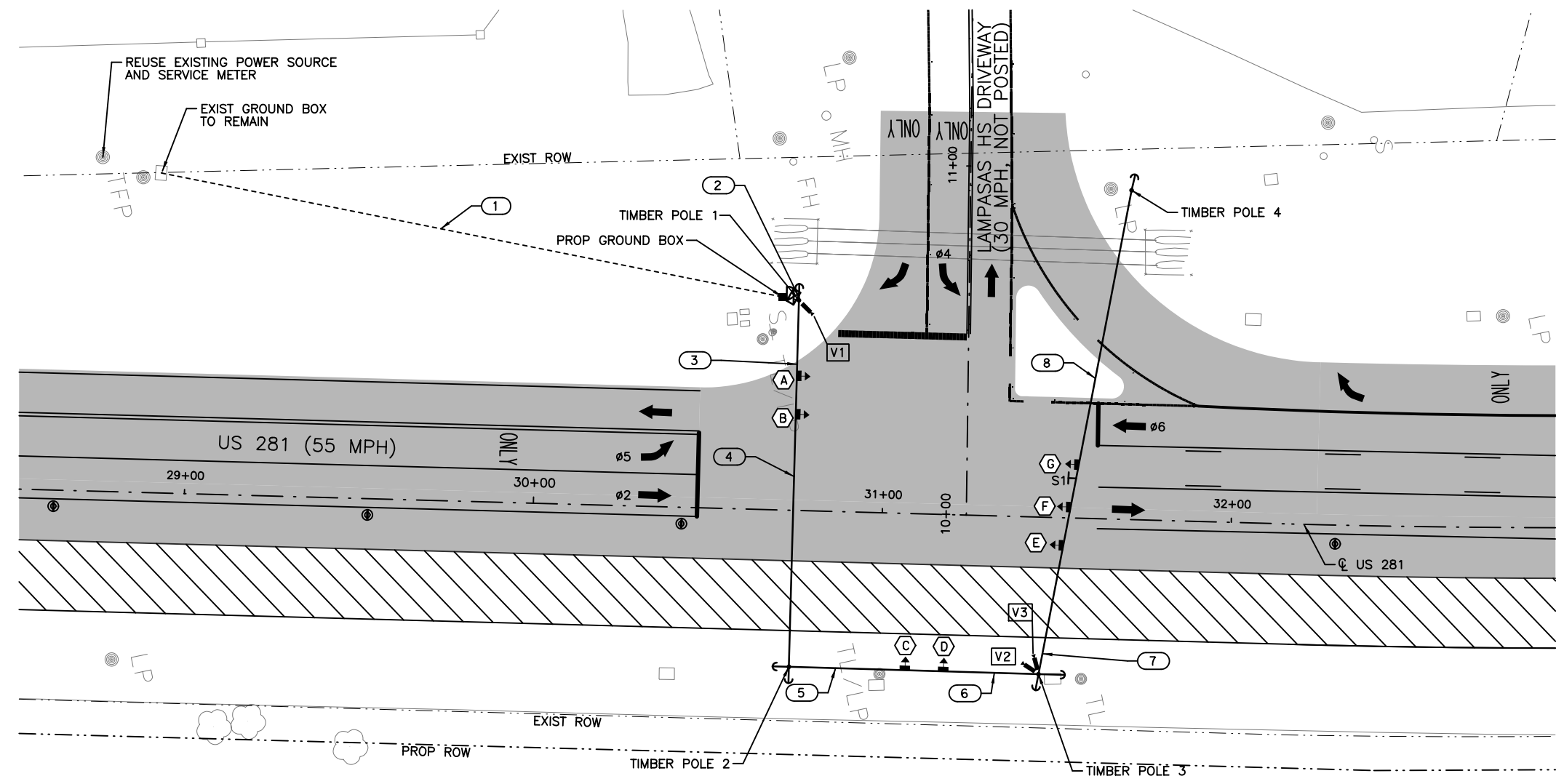


NOTES

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO IDENTIFY LOCATIONS OF POLES, SIGNAL HEADS, ETC. TEMPORARY TRAFFIC CONTROLS ARE APPROXIMATE AND EXACT LOCATION SHALL BE APPROVED BY FIELD ENGINEER.
2. REFER TO TRAFFIC CONTROL PLANS FOR SIGNING/PAVEMENT MARKING LOCATIONS AND DETAILS.
3. TEMPORARY SIGNAL POLES SHALL BE INSTALLED PRIOR TO PHASE 1 OF CONSTRUCTION AND REMAIN IN PLACE FOR ALL FOLLOWING PHASES OF CONSTRUCTION UNLESS OTHERWISE DENOTED IN THE PLANS.
4. TEMPORARY SIGNAL HEAD LOCATION SHALL BE ADJUSTED FROM PHASE 1A/B TO THE LOCATION FOR PHASE 2A SHOWN ON THIS SHEET.
5. REFER TO TEMPORARY SIGNAL DETAILS FOR DESIGN NARRATIVE OF DIFFERENT TCP PHASES.
6. EXISTING LUMINAIRES SHALL REMAIN IN SERVICE DURING OPERATION OF THE TEMPORARY TRAFFIC SIGNAL.

NO.	REVISION	BY	DATE
 TEXAS REGISTERED ENGINEERING FIRM F-1741			
 ©2023 Texas Department of Transportation			
US 281 TEMPORARY SIGNAL LAYOUT (PH. 2A)			
US 281 AT LAMPASAS HIGH SCHOOL			
Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.
Checked: CPY	DIST.	COUNTY	SECTION
Drawn: CPY	NO.	NO.	JOB NO.
Checked: CPY	BWD	LAMPASAS	0251 06 036
			HIGHWAY NO. US 281
			SHEET NO. 259

1/28/2023 11:20:01 AM zstone
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.xx Signals/49304RDt01_PH2B.dgn



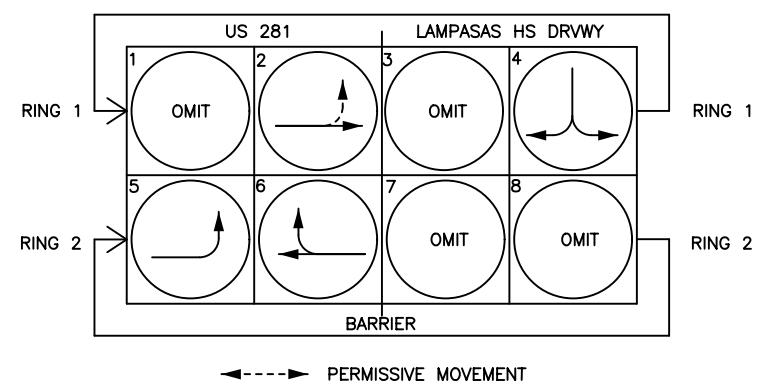
LEGEND

- TIMBER POLE W/ DOWN GUYS
- TEMP SPAN AND TETHER WIRE
- LUMINAIRE
- TEMP SIGNAL HEAD
- OVERHEAD SIGN
- TEMP VIVDS CAMERA
- TYPE D GROUND BOX
- CONDUIT (TRENCH)
- CONDUIT (BORE)
- TEMP SERVICE POLE
- TEMP POLE MOUNTED CONTROLLER
- DIRECTION OF TRAFFIC
- EXIST RIGHT OF WAY
- PROP RIGHT OF WAY
- PORTABLE CONCRETE TRAFFIC BARRIER
- CRASH CUSHION ATTENUATOR
- CONSTRUCTION THIS PHASE
- PREVIOUS PHASE CONSTRUCTION
- SIGNAL HEAD IDENTIFIER
- CONDUIT/SPAN IDENTIFIER

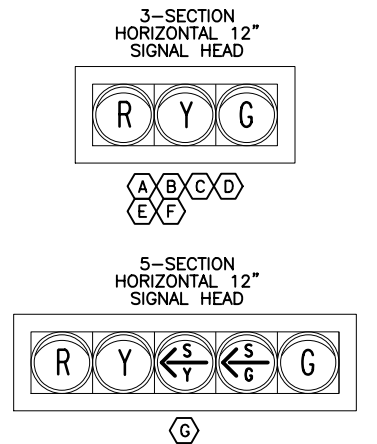


Zach Stone
01/28/2023

PHASING DIAGRAM
PHASE 2B



PROPOSED SIGNAL HEADS



PROPOSED SIGNS



NOTES

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO IDENTIFY LOCATIONS OF POLES, SIGNAL HEADS, ETC. TEMPORARY TRAFFIC CONTROLS ARE APPROXIMATE AND EXACT LOCATION SHALL BE APPROVED BY FIELD ENGINEER.
2. REFER TO TRAFFIC CONTROL PLANS FOR SIGNING/PAVEMENT MARKING LOCATIONS AND DETAILS.
3. TEMPORARY SIGNAL POLES SHALL BE INSTALLED PRIOR TO PHASE 1 OF CONSTRUCTION AND REMAIN IN PLACE FOR ALL FOLLOWING PHASES OF CONSTRUCTION UNLESS OTHERWISE DENOTED IN THE PLANS.
4. TEMPORARY SIGNAL HEAD LOCATION SHALL BE ADJUSTED FROM PHASE 2A TO THE LOCATION FOR PHASE 2B SHOWN ON THIS SHEET. TEMPORARY SIGNAL MAY BE REMOVED WHEN PROPOSED SIGNAL MODIFICATION IS COMPLETE AND TRAFFIC IS MOVED TO FINAL LANE CONFIGURATION.
5. REFER TO TEMPORARY SIGNAL DETAILS FOR DESIGN NARRATIVE OF DIFFERENT TCP PHASES.
6. EXISTING LUMINAIRES SHALL REMAIN IN SERVICE DURING OPERATION OF THE TEMPORARY TRAFFIC SIGNAL.

NO.	REVISION	BY	DATE
TEXAS REGISTERED ENGINEERING FIRM F-1741 			
©2023 US 281 TEMPORARY SIGNAL LAYOUT (PH. 2B) US 281 AT LAMPASAS HIGH SCHOOL			
Designed:	CPY	FED. RD. DIV. NO. 6	STATE TEXAS
Checked:	CPY	DIST. LAMPASAS	COUNTY 0251
Drawn:	CPY	SECTION 06	JOB NO. 036
Checked:	CPY	BWD	SHEET NO. 259A

1/28/2023 11:43:43 AM zstone
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfq
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.xx Signals/49304RDtd01.dgn

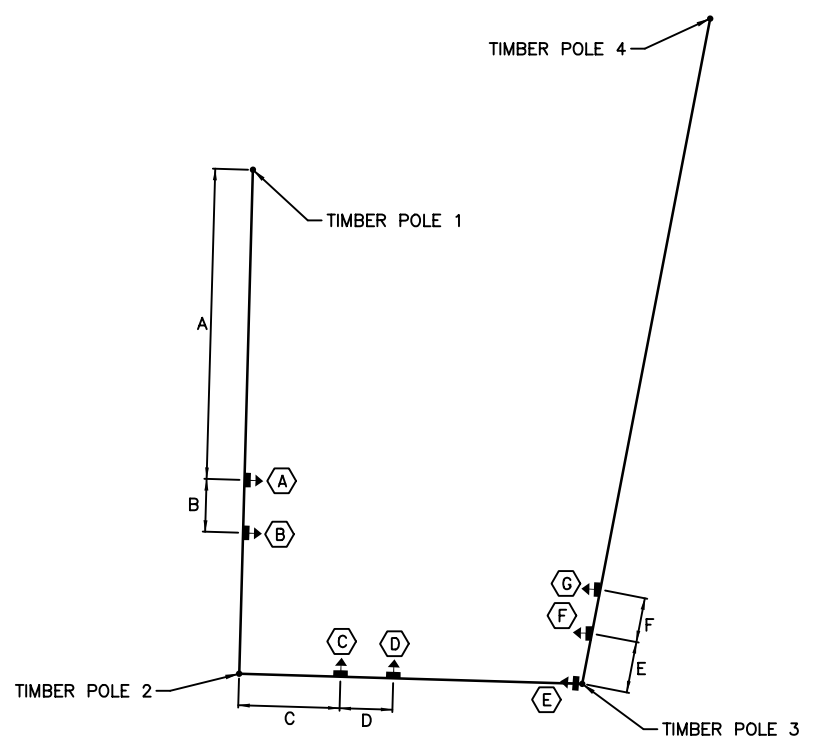
ELECTRICAL SERVICE DATA										
ELECTRICAL SERVICE NO.	ELECTRICAL SERVICE DESCRIPTION (SEE ED(5)-14)	SERVICE CONDUIT SIZE (RMC)	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN DISCONNECT CKT. BRK. POLE/AMP	TWO-POLE CONTACTOR AMPS	PANELBD./LOADCENTER AMP RATING (MIN)	CIRCUIT NO.	BRANCH CKT. BRK. POLE/AMPS	KVA LOAD
EXISTING										

CONDUCTOR AND CONDUIT SCHEDULE								
CONDUIT/ SPAN RUN NUMBER	1	2	3	4	5	6	7	8
NUMBER OF CONDUITS	1	1						
CONDUIT SIZE IN INCHES	3	3						
*CONDUIT/ SPAN LENGTH (LF)	190	20	76	29	32	39	22	119
RUN TYPE (PVC, SW = SPAN WIRE, RM = RIGID METAL)	PVC	RM	SW	SW	SW	SW	SW	SW
CABLE	CIRCUIT		NUMBER OF CONDUCTORS					
#6 XHHW	120 POWER HOT & COMMON		3					
BARE BOND GROUND	(POWER) BARE #6		1					
	(CONDUIT) BARE #8		1					
SIGNAL	7/C - #12 CABLE		7	7	5	5	3	2
**SPAN WIRE (WIRE STRAND)	1/4"			1	1	1	1	1
	3/8"			1	1	1	1	1
#16/3C (VIVDS)	TIMBER POLE 1 - VIVDS Ø6		1					
	TIMBER POLE 3 - VIVDS Ø5, Ø2		1	1	1	1	1	
	TIMBER POLE 3 - VIVDS Ø4		1	1	1	1	1	
R-59 COAX (VIVDS)	TIMBER POLE 1 - VIVDS Ø6		1					
	TIMBER POLE 3 - VIVDS Ø5, Ø2		1	1	1	1	1	
	TIMBER POLE 3 - VIVDS Ø4		1	1	1	1	1	
4/C - #12 TRAY CABLE (LUMINAIRE)								

* LENGTHS ARE SHOWN FOR PHASE 1. SEE SIGNAL HEAD PLACEMENT SCHEDULE FOR OTHER PHASES.
 ** SPAN WIRE LENGTHS DO NOT INCLUDE GUY WIRES.

TEMPORARY POLE SCHEDULE				
TIMBER POLE	1	2	3	4
LOCATION	STA 30+74.5 61' LT	STA 30+74.5 45' RT	STA 31+46.0 45' RT	STA 31+69.0 95' LT
ATTACHMENTS	CONTROLLER, V1	NONE	V2,V3	NONE

VIDEO DETECTION ZONE DETAILS			
CAMERA	APPROACH	TYPE	LOCATION
V1	SOUTHBOUND	PRESENCE	TIMBER POLE 1
V2	NORTHBOUND	PRESENCE	TIMBER POLE 3
V3	EASTBOUND	PRESENCE	TIMBER POLE 3



SIGNAL HEAD PLACEMENT SCHEDULE				
SPAN/DIMENSION (LF)	PHASE 1	PHASE 1A/1B	PHASE 2A	PHASE 2B
T.P. 1 - T.P. 2				
A	64	64	23	22
B	11	11	11	11
T.P. 2 - T.P. 3				
C	22	BAGGED	33	33
D	11	BAGGED	11	11
T.P. 3 - T.P. 4				
E	POLE	POLE	POLE	38
F	9	9	51	11
G	11	BAGGED	11	12

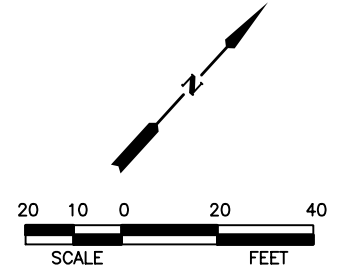
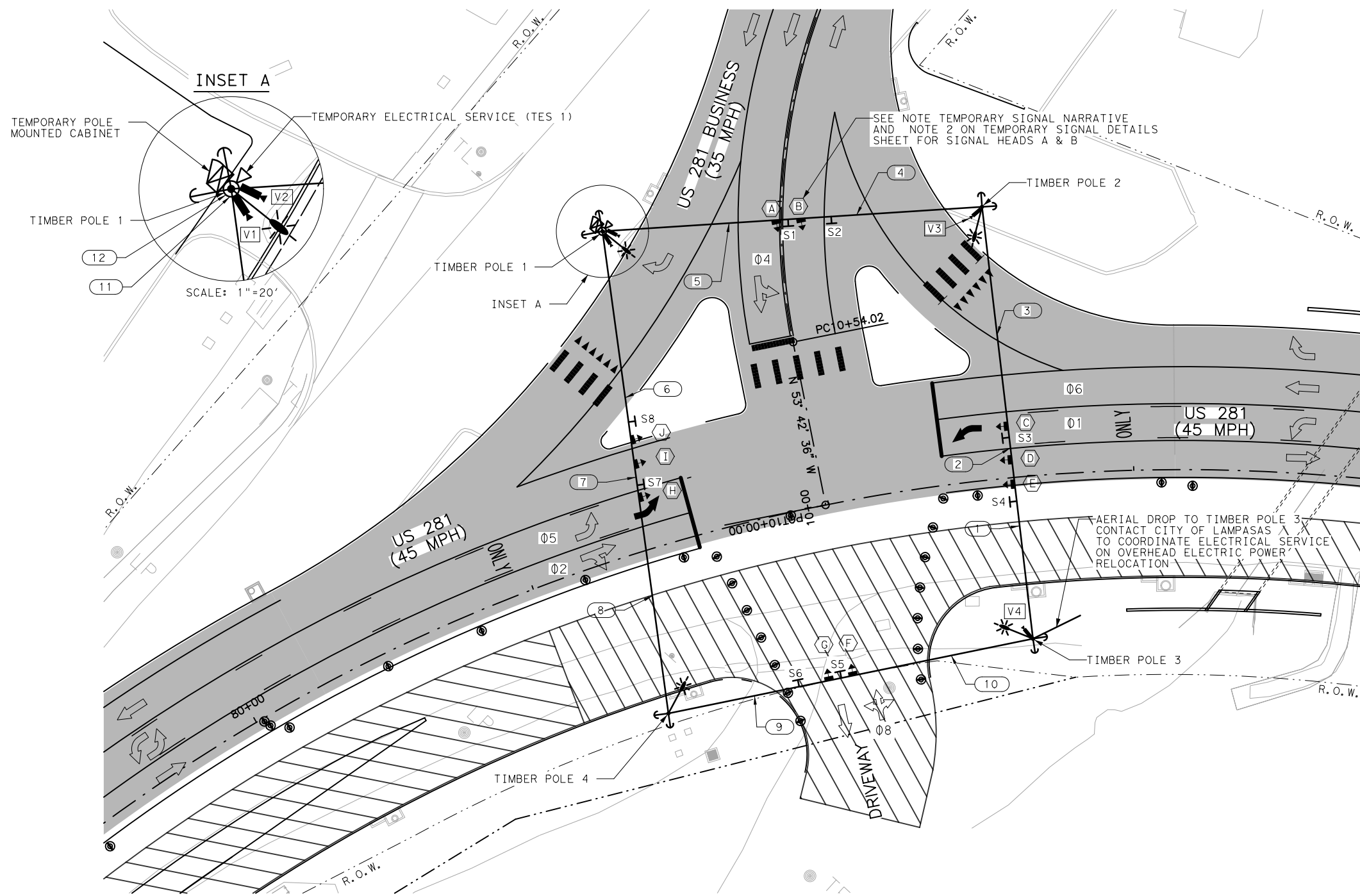
- TEMPORARY SIGNAL NARRATIVE**
- PHASE 1: INSTALL TEMPORARY TRAFFIC SIGNAL AS SHOWN ON PHASE 1 TEMPORARY TRAFFIC SIGNAL LAYOUT SHEET. TURN ON TEMPORARY TRAFFIC SIGNAL.
 - PHASE 1A: ADJUST TEMPORARY SIGNAL HEAD LOCATION AS SHOWN ON PHASE 1A/AB TEMPORARY TRAFFIC SIGNAL LAYOUT SHEET AND THE SIGNAL HEAD PLACEMENT TABLE ON THIS SHEET. BAG HEADS FOR Ø4 AND Ø5. SIGNAL SHALL DWELL IN GREEN FOR Ø2 AND Ø6.
 - PHASE 1B: MAINTAIN TEMPORARY SIGNAL HEAD LOCATION AND OPERATION FROM PHASE 1A.
 - PHASE 2A: ADJUST TEMPORARY SIGNAL HEAD LOCATION AS SHOWN ON PHASE 2A TEMPORARY TRAFFIC SIGNAL LAYOUT SHEET AND THE SIGNAL HEAD PLACEMENT TABLE ON THIS SHEET.
 - PHASE 2B: ADJUST TEMPORARY SIGNAL HEAD LOCATION AS SHOWN ON PHASE 2B TEMPORARY TRAFFIC SIGNAL LAYOUT SHEET AND THE SIGNAL HEAD PLACEMENT TABLE ON THIS SHEET.
 - FINAL: TEMPORARY SIGNAL MAY BE REMOVED WHEN PROPOSED SIGNAL MODIFICATION IS COMPLETE AND TRAFFIC IS MOVED TO FINAL LANE CONFIGURATION.

- TEMPORARY SIGNAL NOTES**
- SIGNAL HEADS, SIGNS, AND VEHICLE DETECTION TO BE ADJUSTED PER PHASE BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.
 - CONTRACTOR TO CONNECT TEMPORARY SIGNAL WIRING AT CONTROLLER DURING OFF-PEAK HOURS. PROVIDE A POLICE OFFICER AS NEEDED FOR TRAFFIC CONTROL.
 - THE LOCATION SHOWN FOR THE TRAFFIC SIGNAL CONTROLLER, SIGNAL POLES, CONDUIT RUNS AND GROUND BOXES IS SUBJECT TO ADJUSTMENTS DUE TO FIELD CONDITIONS, WITH THE APPROVAL OF THE ENGINEER IN THE FIELD.
 - THERE WILL BE NO PEDESTRIAN ACCESS DURING CONSTRUCTION.
 - ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR SHOULD CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAINAGE, ILLUMINATION, DUCT BANK, AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR SHOULD BE FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.



Zach Stone
01/28/2023

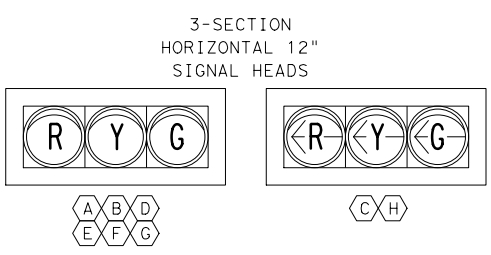
NO.	REVISION	BY	DATE
TEXAS REGISTERED ENGINEERING FIRM F-1741			
©2023			
US 281 TEMPORARY SIGNAL DETAILS			
US 281 AT LAMPASAS HIGH SCHOOL			
Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.
Checked: CPY	DIST.	COUNTY	CONTROL NO. SECTION NO. JOB NO.
Drawn: CPY	DIST.	COUNTY	CONTROL NO. SECTION NO. JOB NO.
Checked: CPY	BWD	LAMPASAS	0251 06 036
			HIGHWAY NO. US 281 SHEET NO. 260



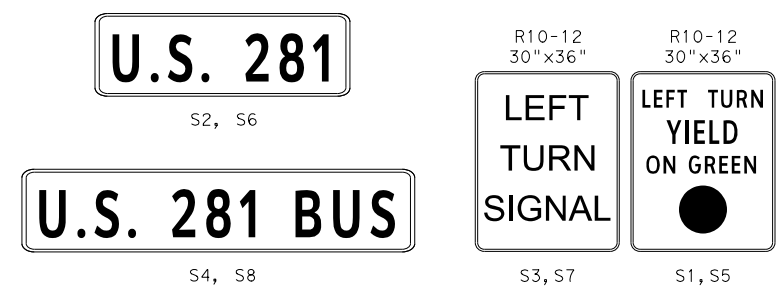
LEGEND

- TIMBER POLE W/ DOWN GUYS
- LUMINAIRE
- TEMP SIGNAL HEAD
- OVERHEAD SIGN
- TEMP VIVDS CAMERA
- TYPE D GROUND BOX
- CONDUIT (TRENCH)
- CONDUIT (BORE)
- TEMP SERVICE POLE
- TEMP POLE MOUNTED CONTROLLER
- DIRECTION OF TRAFFIC
- RIGHT OF WAY (R.O.W.)

TEMPORARY SIGNAL HEADS



TEMPORARY SIGNS



NOTES

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO IDENTIFY LOCATIONS OF POLES, SIGNAL HEADS, ETC. TEMPORARY TRAFFIC CONTROLS ARE APPROXIMATE AND EXACT LOCATION SHALL BE APPROVED BY FIELD ENGINEER.
2. REFER TO TRAFFIC CONTROL PLANS FOR SIGNING/PAVEMENT MARKING LOCATIONS AND DETAILS.
3. TEMPORARY SIGNAL POLES SHALL BE INSTALLED PRIOR TO PHASE 2 OF CONSTRUCTION AND REMAIN IN PLACE FOR ALL FOLLOWING PHASES OF CONSTRUCTION UNLESS OTHERWISE DENOTED IN THE PLANS.
4. REFER TO TEMPORARY SIGNAL DETAILS FOR DESIGN NARRATIVE OF DIFFERENT TCP PHASES.

Scott Schmidt
 1/30/2023

NO.	REVISION	BY	DATE
Kimley»Horn F-928			
©2023 Texas Department of Transportation			
US 281 TEMPORARY SIGNAL LAYOUT (PH. 2)			
US 281 AT PLUM STREET (US 281 BUSINESS)			
Designed:	KHA	FED. RD. DIV. NO. 6	STATE TEXAS
Checked:	KHA	DIST.	COUNTY
Drawn:	KHA	FEDERAL AID PROJECT NO. 0251	SECTION NO. 06
Checked:	KHA	BWD	JOB NO. 036
			CONTROL NO.
			SECTION NO.
			JOB NO.
			SHEET NO. 261

1/30/2023 13:04:42 Justin.Kinne
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/

1/30/2023 13:47:01 Justin.Kinne
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.35 KHA Cut Sheets/49304_TRF_SIGNAL_211.dgn

CONDUITOR AND CONDUIT SCHEDULE														
CONDUIT/ SPAN RUN NUMBER	1	2	3	4	5	6	7	8	9	10	11	12		
NUMBER OF CONDUITS											1	1		
CONDUIT SIZE IN INCHES											3.0	3.0		
CONDUIT/ SPAN LENGTH (LF)	55	20	75	60	65	80	15	75	65	60	20	5		
RUN TYPE (SW = SPAN WIRE, RM = RIGID METAL)	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	RM	RM		
CABLE	CIRCUIT		NUMBER OF CONDUCTORS											
#6 XHHW	120 POWER HOT & COMMON (POWER) BARE #6												3	
BARE BOND GROUND	(CONDUIT) BARE #8													1
7/C - #12 (TY A) CABLE	7/C - #12 (TY A) CABLE (SIGNAL)		1	2	2	3	3	2	1	1				
SPAN WIRE (WIRE STRAND)	1/4" GUY		1	1	1	1	1	1	1	1	1	1		
	3/8" GUY		1	1	1	1	1	1	1	1	1	1		
#16/3C (VIVDS)	TIMBER POLE 1 - VIVDS Ø6+Ø1												1	
	TIMBER POLE 1 - VIVDS Ø8													1
	TIMBER POLE 2 - VIVDS Ø2+Ø5				1	1								
R-59 COAX (VIVDS)	TIMBER POLE 3 - VIVDS Ø4						1	1	1	1	1			
	TIMBER POLE 1 - VIVDS Ø6+Ø1												1	
	TIMBER POLE 1 - VIVDS Ø8													1
	TIMBER POLE 2 - VIVDS Ø2+Ø5				1	1								
4/C - #12 TRAY CABLE (LUMINAIRE)	TIMBER POLE 3 - VIVDS Ø4						1	1	1	1	1			
	TIMBER POLE 1 - LUMINAIRE													1
	TIMBER POLE 2 - LUMINAIRE					1	1							1
	TIMBER POLE 3 - LUMINAIRE		1	1	1	1	1							1
	TIMBER POLE 4 - LUMINAIRE						1	1	1					1

TEMPORARY SIGNAL NARRATIVE

- PHASE 1: NO ACCESS. SIGNAL NOT NEEDED.
- PHASE 1A: NO ACCESS. SIGNAL NOT NEEDED.
- PHASE 1B: INSTALL TEMPORARY TRAFFIC SIGNAL AS SHOWN ON PREVIOUS SHEET PRIOR TO OPENING PHASE 2.
- PHASE 2: TURN ON TEMPORARY TRAFFIC SIGNAL.
- PHASE 2B: SHIFT AS TEMPORARY SIGNAL HEADS A & B AS REQUIRED TO ALIGN WITH DRIVEWAY APPROACH. INSTALL AND TURN ON PERMANENT TRAFFIC SIGNAL AS SHOWN IN PROPOSED TRAFFIC SIGNAL PLANS AT THE COMPLETION OF PHASE 2B.

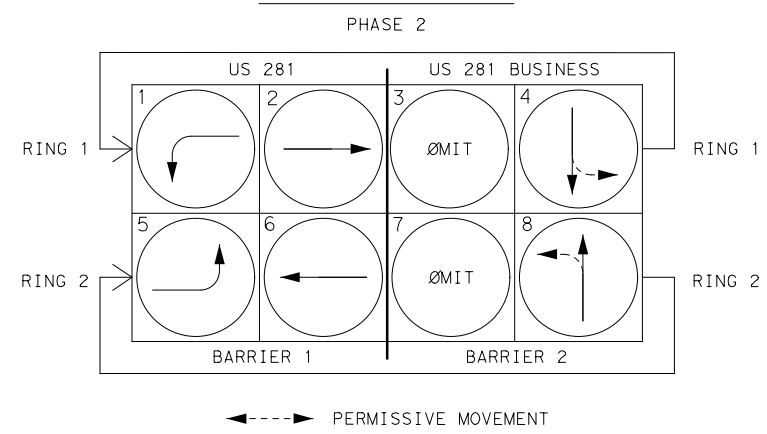
NOTES

- EXISTING SIGNAL HEADS AND SIGNS MAY BE USED WITH THE APPROVAL OF THE ENGINEER IN THE FIELD.
- ONLY ONE PHASE SHOWN PER INTERSECTION. SIGNAL HEADS, SIGNS, AND VEHICLE DETECTION TO BE ADJUSTED PER PHASE BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.
- CONTRACTOR TO CONNECT TEMP SIGNAL WIRING AT CONTROLLER DURING OFF-PEAK HOURS. PROVIDE A POLICE OFFICER AS NEEDED FOR TRAFFIC CONTROL.
- THE LOCATION SHOWN FOR THE TRAFFIC SIGNAL CONTROLLER, SIGNAL POLES, CONDUIT RUNS AND GROUND BOXES IS SUBJECT TO ADJUSTMENTS DUE TO FIELD CONDITIONS, WITH THE APPROVAL OF THE ENGINEER IN THE FIELD.
- THERE WILL BE NO PEDESTRIAN ACCESS DURING CONSTRUCTION.
- ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR SHOULD CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAINAGE, ILLUMINATION, DUCT BANK, AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR SHOULD BE FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.
- REFER TO TRAFFIC CONTROL PLANS FOR SIGNING/PAVEMENT MARKING LOCATIONS AND DETAILS.
- TEMPORARY SIGNAL POLES SHALL REMAIN IN PLACE FOR ALL PHASES OF CONSTRUCTION UNLESS NOTED OTHERWISE IN THE PLANS.

VIDEO DETECTION ZONE DETAILS			
CAMERA	APPROACH	TYPE	LOCATION
V1	NORTHBOUND	PRESENCE	TIMBER POLE 1
V2	WESTBOUND	PRESENCE	TIMBER POLE 1
V3	EASTBOUND	PRESENCE	TIMBER POLE 2
V4	SOUTHBOUND	PRESENCE	TIMBER POLE 3

TEMPORARY POLE SCHEDULE				
TIMBER POLE	1	2	3	4
ATTACHMENTS	LUMINAIRE, V1, V2, CONTROLLER, TEMP. ELECTRICAL SERVICE (TES 1)	LUMINAIRE, V3	LUMINAIRE, V4	LUMINAIRE

PHASING DIAGRAM



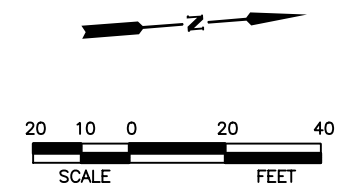
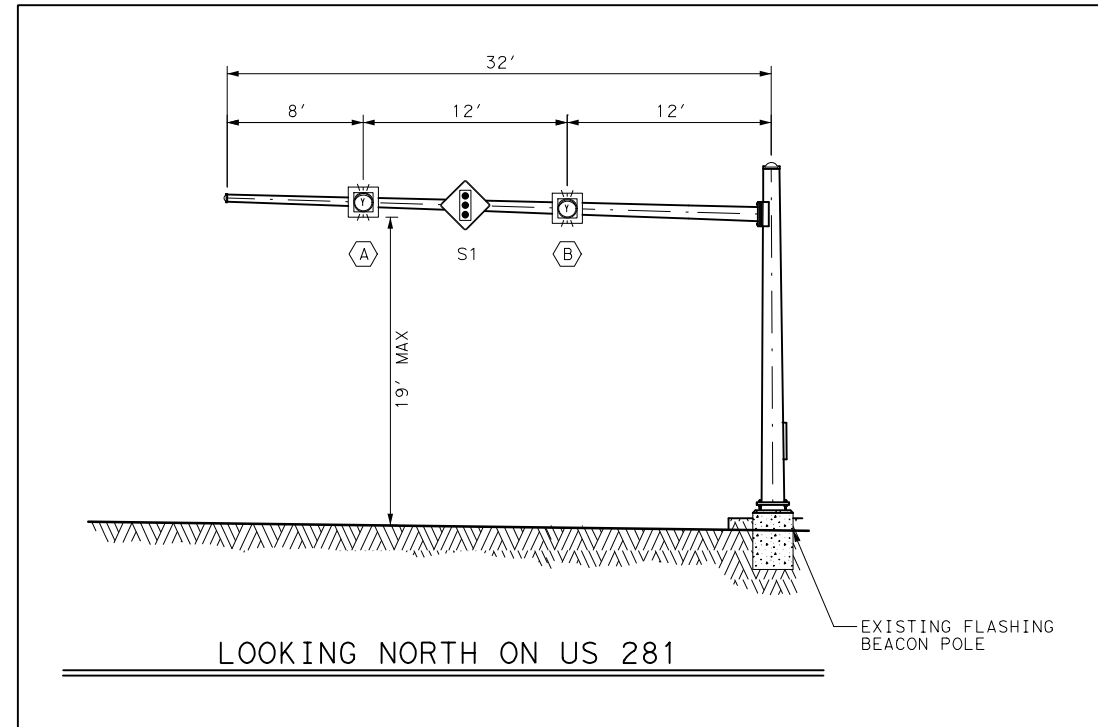
ELECTRICAL SERVICE DATA										
ELECTRICAL SERVICE NO.	ELECTRICAL SERVICE DESCRIPTION (SEE ED(5)-14)	SERVICE CONDUIT SIZE (RMC)	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN DISCONNECT CKT. BRK. POLE/AMP	TWO-POLE CONTACTOR AMPS	PANELBD./LOADCENTER AMP RATING (MIN)	CIRCUIT NO.	BRANCH CKT. BRK. POLE/AMPS	KVA LOAD
TES 1	EXISTING									

NO.		REVISION		BY		DATE		
©2023 Texas Department of Transportation US 281 TEMPORARY SIGNAL DETAILS (PH. 2) US 281 AT PLUM STREET (US 281 BUSINESS)								
Designed:	KHA	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		
Checked:	KHA	DIST.	LAMPASAS	COUNTY	LAMPASAS	CONTROL NO.	0251	
Drawn:	KHA	DIST.	LAMPASAS	COUNTY	LAMPASAS	SECTION NO.	06	
Checked:	KHA	DIST.	LAMPASAS	COUNTY	LAMPASAS	JOB NO.	036	
							HIGHWAY NO.	US 281
							SHEET NO.	262

NOTES

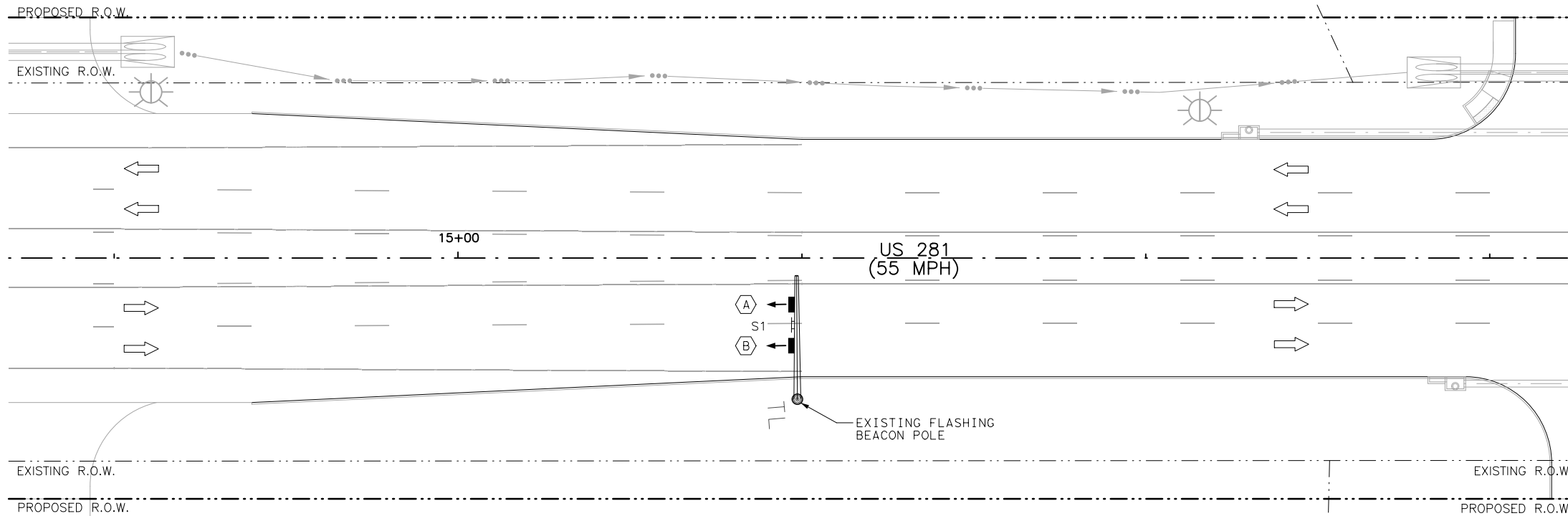
1. THE LOCATION OF UNDERGROUND AND ABOVE GROUND UTILITIES SHOWN ARE APPROXIMATE.
2. THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATION OF UTILITIES PRIOR TO CONSTRUCTION.
3. THE CONTRACTOR SHALL CALL UTILITY LOCATOR SERVICE AT LEAST 48 HOURS PRIOR TO COMMENCING WORK. TEXAS "ONE-CALL" SYSTEM: 1-800-245-4545
4. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY THE FAILURE TO LOCATE AND PRESERVE THE UNDERGROUND FACILITIES.

FLASHING BEACON ELEVATION VIEW



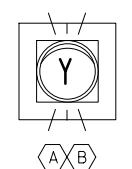
LEGEND

- EX. SIGNAL POLE W/ MAST ARM
- PROPOSED HORIZONTAL SIGNAL HEAD
- PROPOSED OVERHEAD SIGN
- DIRECTION OF TRAFFIC
- RIGHT OF WAY (R.O.W.)

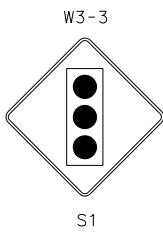


PROPOSED SIGNAL HEADS

1-SECTION FLASHING BEACON
12" SIGNAL HEAD



PROPOSED SIGNS



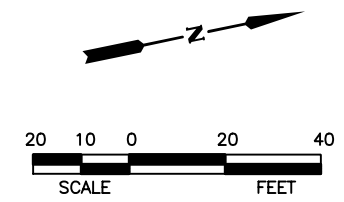
Signature: *Scott Schmidt*
 1/30/2023
 STATE OF TEXAS
 SCOTT G. SCHMIDT
 105151
 LICENSED PROFESSIONAL ENGINEER

NO.	REVISION	BY	DATE

Kimley»Horn F-928
 ©2023 Texas Department of Transportation
 US 281
PROPOSED FLASHING BEACON MODIFICATION
 US 281 AT STA 16+00

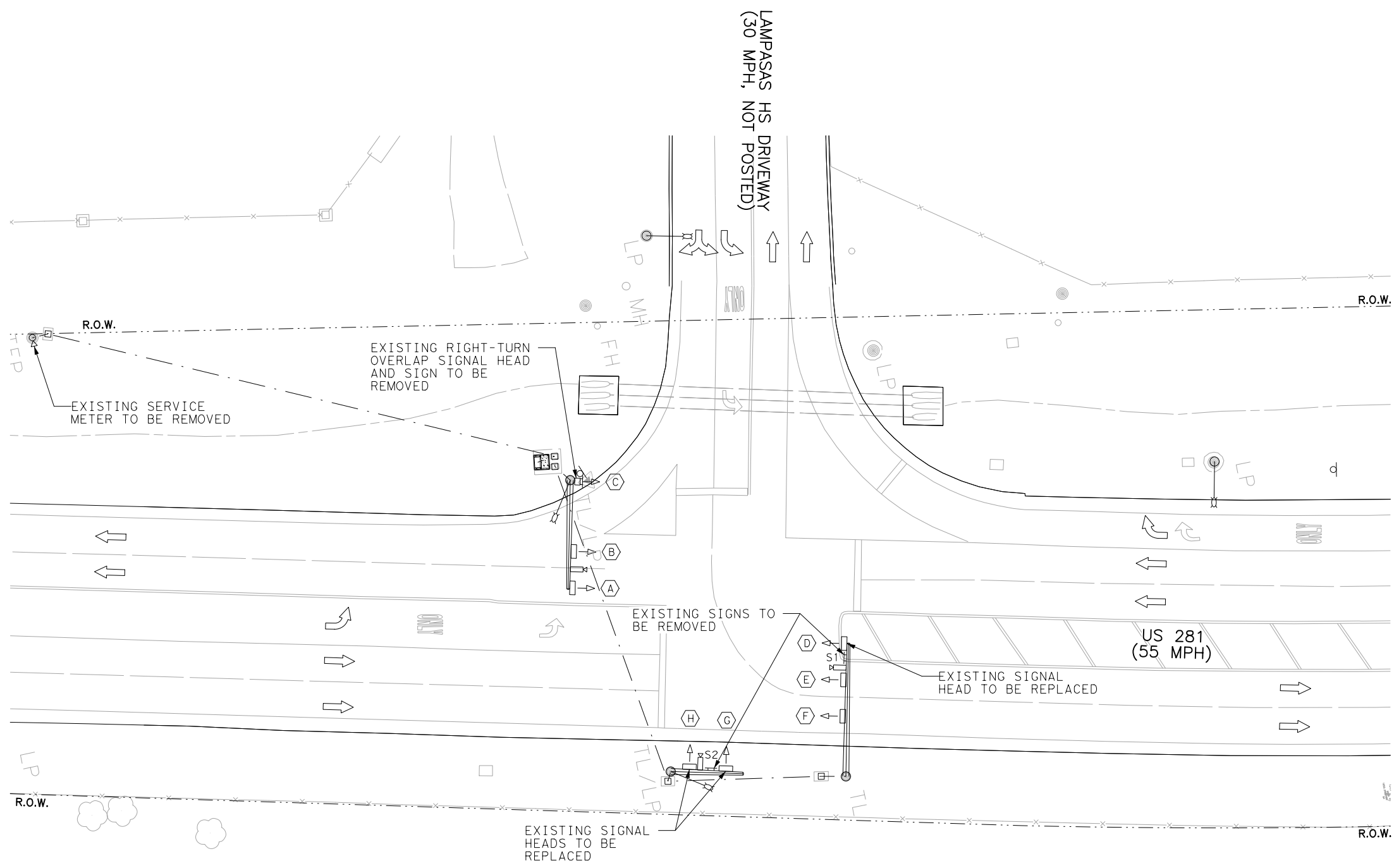
Designed: KHA	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO. US 281
Checked: KHA	DIST. BWD	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06	JOB NO. 036
Drawn: KHA	SHEET NO. 263				

cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/
 Justin.Kinne
 1/30/2023 13:05:05
 pw:/

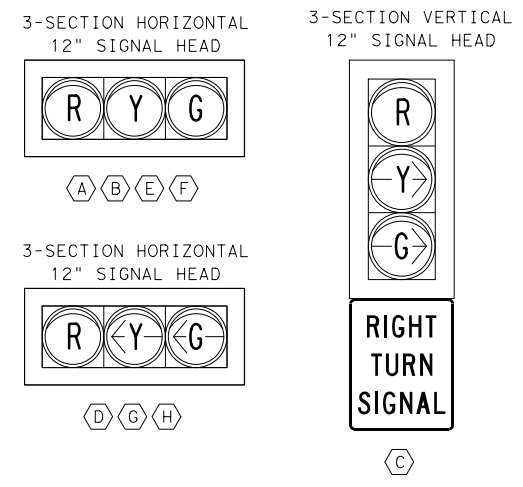


LEGEND

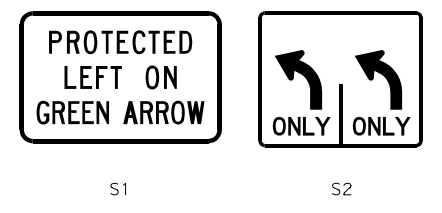
- SIGNAL POLE W/ MAST ARM
- LUMINAIRE
- HORIZONTAL SIGNAL HEAD
- VERTICAL SIGNAL HEAD
- OVERHEAD SIGN
- PED POLE W/ SIGNAL HEAD
- PED PUSH BUTTON
- VIVDS DETECTION DEVICE
- TYPE D GROUND BOX
- CONDUIT
- SERVICE METER AND DISCONNECT
- GROUND MOUNTED CONTROLLER CABINET
- SIGN ON POST
- DIRECTION OF TRAFFIC
- RIGHT OF WAY (R.O.W.)



EXISTING SIGNAL HEADS



EXISTING SIGNS



NOTES

1. EXISTING RIGHT-TURN OVERLAP SIGNAL HEAD (C) AND SIGN TO BE REMOVED.
2. EXISTING SIGNAL HEADS D, G, AND H TO BE REPLACED.
3. EXISTING SIGNS S1 AND S2 TO BE REMOVED.

Scott Schmidt

 1/30/2023

NO.	REVISION	BY	DATE

©2023 Texas Department of Transportation

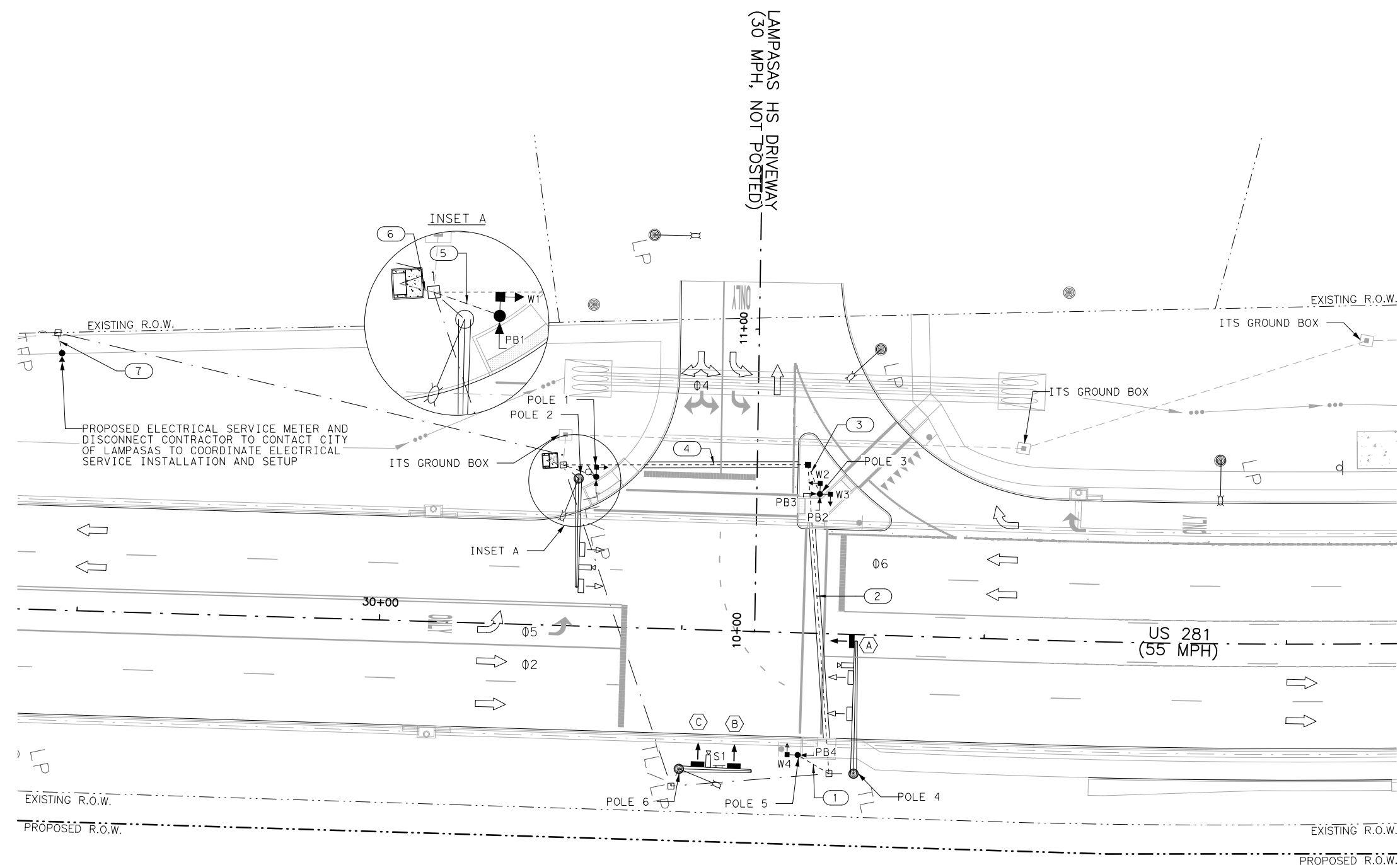
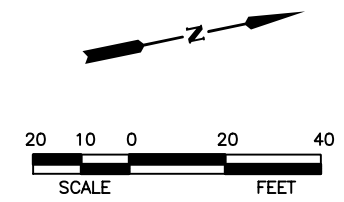
 US 281

 EXISTING CONDITIONS

 US 281 AT LAMPASAS HIGH SCHOOL

Designed: KHA	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: KHA	DIST.	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: KHA	JOB NO. 036	SHEET NO. 264		

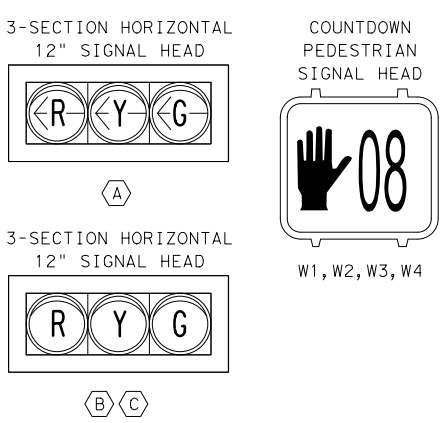
1/30/2023 13:05:14 Justin.Kinne pw:/



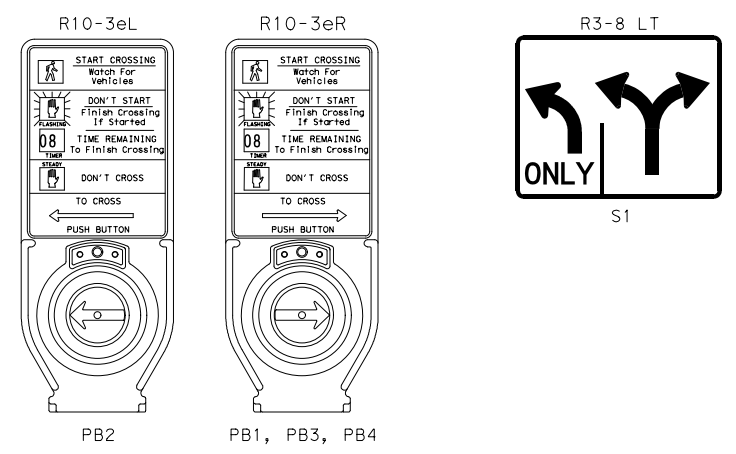
LEGEND

- EX. SIGNAL POLE W/ MAST ARM
- EX. LUMINAIRE
- EX. HORIZONTAL SIGNAL HEAD
- EX. VERTICAL SIGNAL HEAD
- EX. OVERHEAD SIGN
- EX. VIVDS DETECTION DEVICE
- EX. TYPE D GROUND BOX
- EX. CONDUIT
- EX. SERVICE METER AND DISCONNECT
- EX. GROUND MOUNTED CONTROLLER CABINET
- PROPOSED HORIZONTAL SIGNAL HEAD
- PROPOSED OVERHEAD SIGN
- PROPOSED PED POLE W/ SIGNAL HEAD
- PROPOSED PED PUSH BUTTON
- PROPOSED TYPE D GROUND BOX
- PROPOSED CONDUIT (TRENCH)
- PROPOSED CONDUIT (BORE)
- PROPOSED SERVICE METER AND DISCONNECT
- PROPOSED SIGN ON POST
- DIRECTION OF TRAFFIC
- RIGHT OF WAY (R.O.W.)

PROPOSED SIGNAL HEADS



PROPOSED SIGNS



NOTES

1. THE LOCATION OF UNDERGROUND AND ABOVE GROUND UTILITIES SHOWN ARE APPROXIMATE.
2. THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATION OF UTILITIES PRIOR TO CONSTRUCTION.
3. THE CONTRACTOR SHALL CALL UTILITY LOCATOR SERVICE AT LEAST 48 HOURS PRIOR TO COMMENCING WORK. TEXAS "ONE-CALL" SYSTEM: 1-800-245-4545
4. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY THE FAILURE TO LOCATE AND PRESERVE THE UNDERGROUND FACILITIES.
5. VERIFY SIGNAL POLE FOUNDATION LOCATIONS WITH DESIGN ENGINEER PRIOR TO INSTALLATION.
6. SIGNAL HEADS A, B, AND C SHOULD BE REWIRED USING EXISTING CONDUCTORS.

1/30/2023

NO.	REVISION	BY	DATE		
Kimley»Horn F-928					
 ©2023 Texas Department of Transportation US 281 PROPOSED SIGNAL MODIFICATION					
US 281 AT LAMPASAS HIGH SCHOOL					
Designed:	KHA	FED. RD. DIV. NO.	6	STATE	TEXAS
Checked:	KHA	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Drawn:	KHA	DIST.	LAMPASAS	COUNTY	LAMPASAS
Checked:	KHA	DIST.	LAMPASAS	CONTROL NO.	0251
				SECTION NO.	06
				JOB NO.	036
				SHEET NO.	265

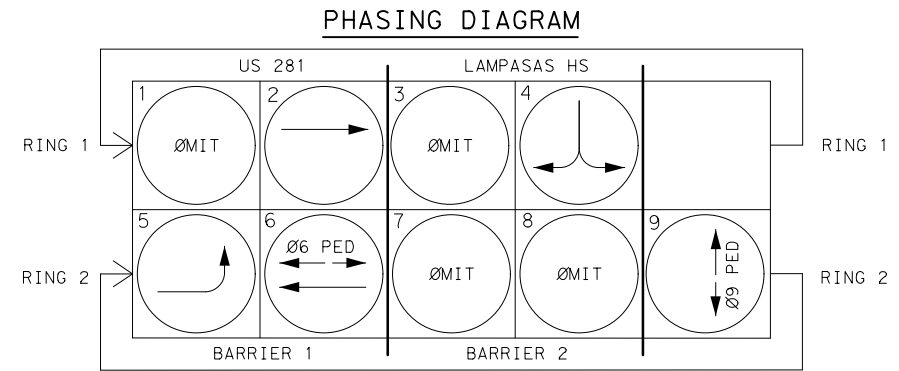
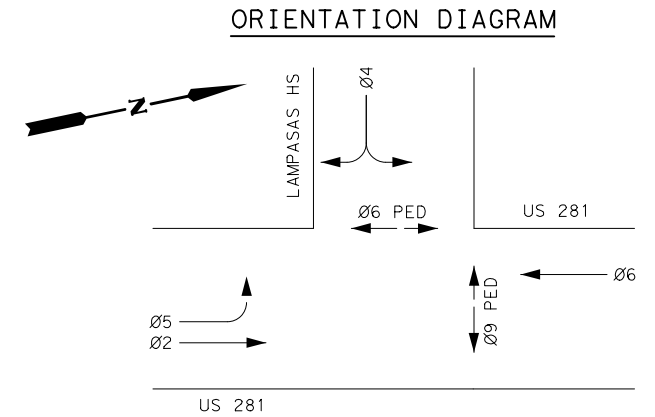
cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/

Justin.Kinne
 1/30/2023 13:05:23
 pw:/

CONDUIT AND CONDUIT SCHEDULE							
CONDUIT/ SPAN RUN NUMBER	1	2	3	4	5	6	7
NUMBER OF CONDUITS	1	1	1	1	1	1	1
CONDUIT SIZE IN INCHES	2.0	3.0	2.0	3.0	2.0	3.0	2.0
CONDUIT/ SPAN LENGTH (LF)	15	105	15	85	15	10	10
RUN TYPE (T=TRENCH, B=BORE)	T	B	T	B	T	T	T
CABLE	CIRCUIT		NUMBER OF CONDUCTORS				
#6 XHHW	120 POWER HOT & COMMON (POWER) BARE #6						2
BARE BOND GROUND	(CONDUIT) BARE #6						1
	(CONDUIT) BARE #8		1	1	1	1	
4/C - #12 (TY A) CABLE (PED SIGNAL)	POLE 1 - Ø6					1	1
	POLE 3 - Ø6 + Ø9			2	2		2
	POLE 5 - Ø9		1	1	1		1
2/C - #14 (TY C) CABLE (PED PUSH BUTTONS-APS)	POLE 1 - Ø6					1	1
	POLE 3 - Ø6 + Ø9			2	2		2
	POLE 5 - Ø9		1	1	1		1

TRAFFIC POLE SCHEDULE						
POLE	1	2	3	4	5	6
FOUNDATION	24-A	EXISTING	24-A	EXISTING	24-A	EXISTING
MOUNTING HEIGHT	10'	EXISTING	10'	EXISTING	10'	EXISTING
ATTACHMENTS	PEDESTRIAN POLE W1, PB1	EXISTING	PEDESTRIAN POLE W2, W3, PB2, PB3	S1	PEDESTRIAN POLE W4, PB4	EXISTING

ELECTRICAL SERVICE DATA									
ELECTRICAL SERVICE DESCRIPTION (SEE ED(5)-14)	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 D (120/240) 060 (NS) SS (E) SP (0)	1/4	3/#6	N/A	2P/60	30	100	T. S. ILLUMINATION	1P/40 1P/20	<7.1



Scott Schmidt

 1/30/2023

NO.	REVISION	BY	DATE

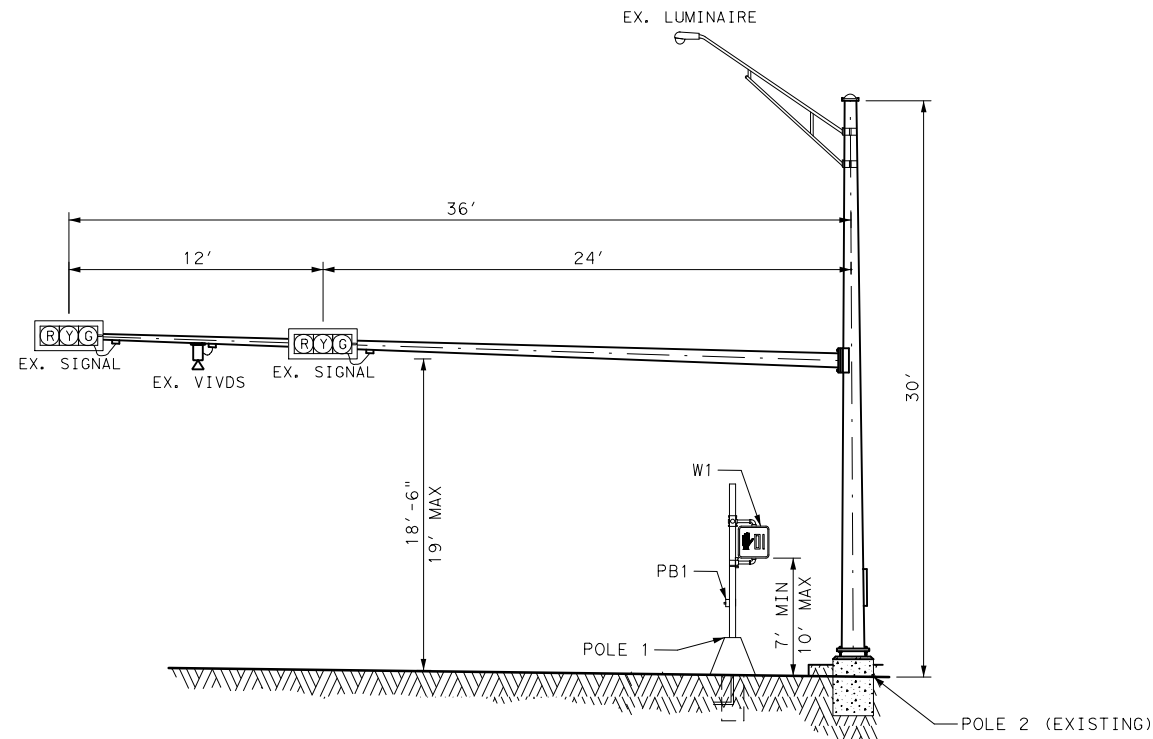
Kimley»Horn F-928

©2023 Texas Department of Transportation

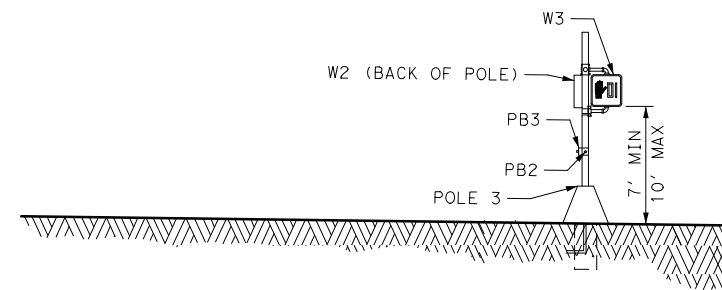
US 281
PROPOSED SIGNAL DETAILS
US 281 AT LAMPASAS HIGH SCHOOL

Designed:	KHA	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	KHA	DIST.	LAMPASAS	COUNTY	LAMPASAS	CONTROL NO.	0251	SECTION NO.	06
Drawn:	KHA	JOB NO.	036	SHEET NO.	266				

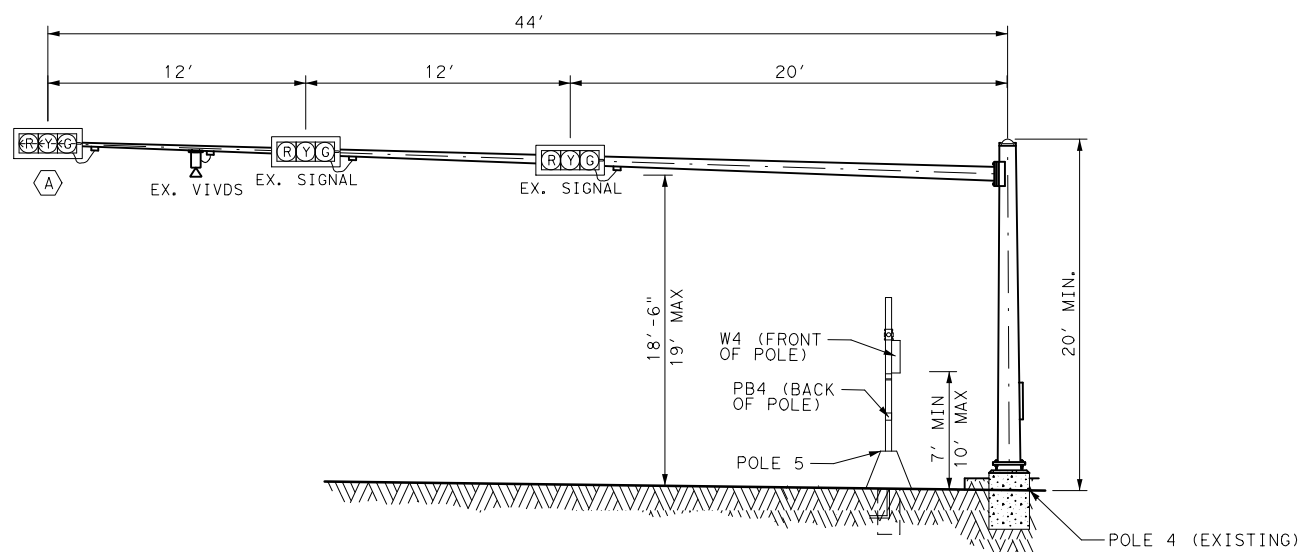
1/30/2023 13:05:29
 Justin.Kinne
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/



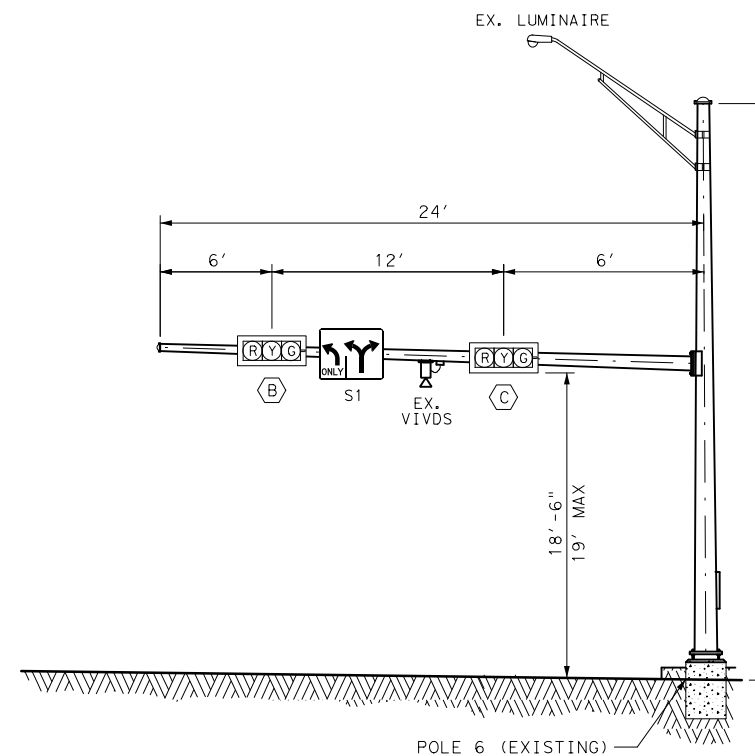
LOOKING SOUTH ON US 281



LOOKING WEST ON LAMPASAS HS DRIVEWAY

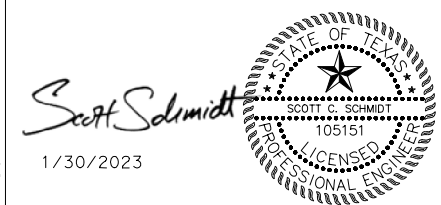


LOOKING NORTH ON US 281



LOOKING EAST ON LAMPASAS HS DRIVEWAY

SCALE: N. T. S.



NO.	REVISION	BY	DATE

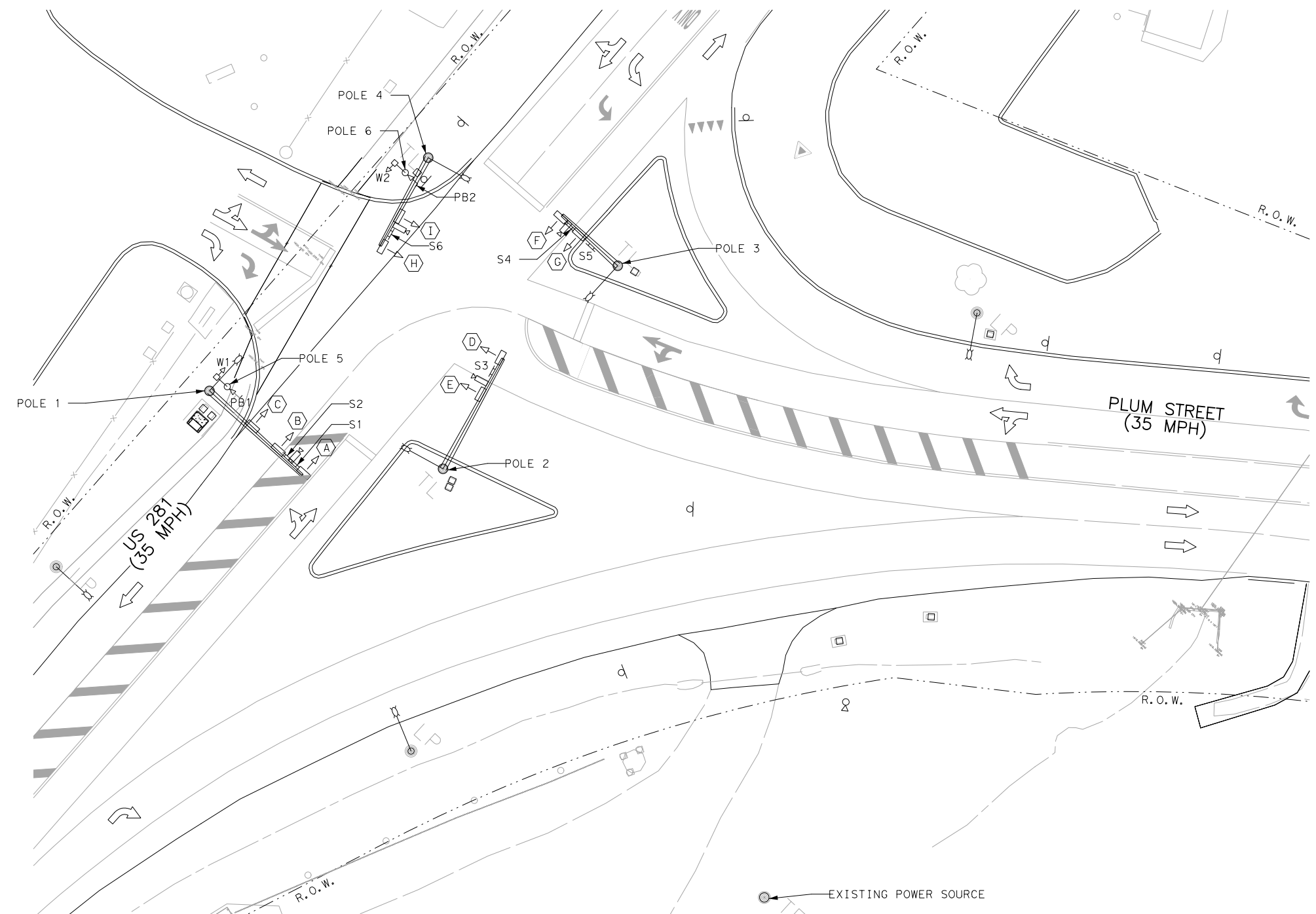
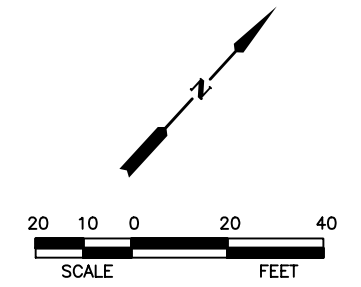
Kimley»Horn F-928

©2023 Texas Department of Transportation

US 281
PROPOSED SIGNAL ELEVATIONS

US 281 AT LAMPASAS HIGH SCHOOL

Designed:	KHA	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	KHA	DIST.	LAMPASAS	COUNTY	LAMPASAS	CONTROL NO.	0251	SECTION NO.	06
Drawn:	KHA	JOB NO.	036	SHEET NO.	267				
Checked:	KHA	BWD							



LEGEND

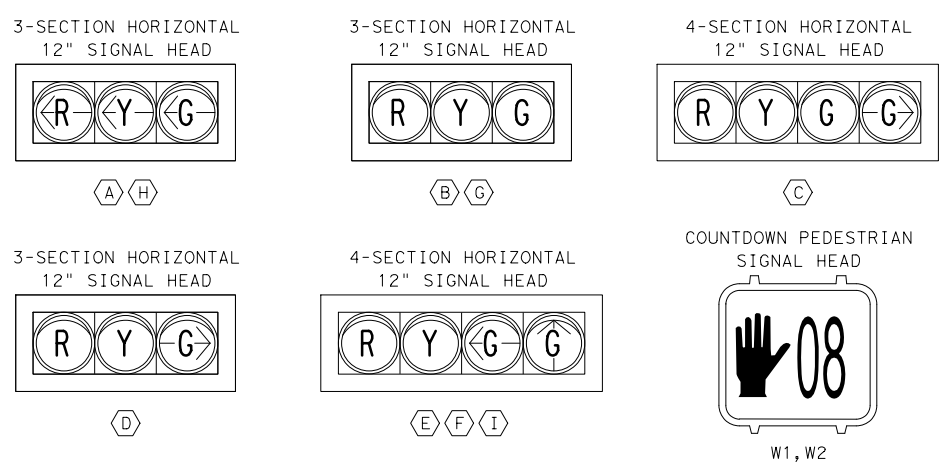
- SIGNAL POLE W/ MAST ARM
- LUMINAIRE
- HORIZONTAL SIGNAL HEAD
- VERTICAL SIGNAL HEAD
- OVERHEAD SIGN
- PED POLE W/ SIGNAL HEAD
- PED PUSH BUTTON
- VIVDS DETECTION DEVICE
- TYPE D GROUND BOX
- CONDUIT
- SERVICE METER AND DISCONNECT
- GROUND MOUNTED CONTROLLER CABINET
- SIGN ON POST
- DIRECTION OF TRAFFIC
- RIGHT OF WAY (R.O.W.)

NOTES

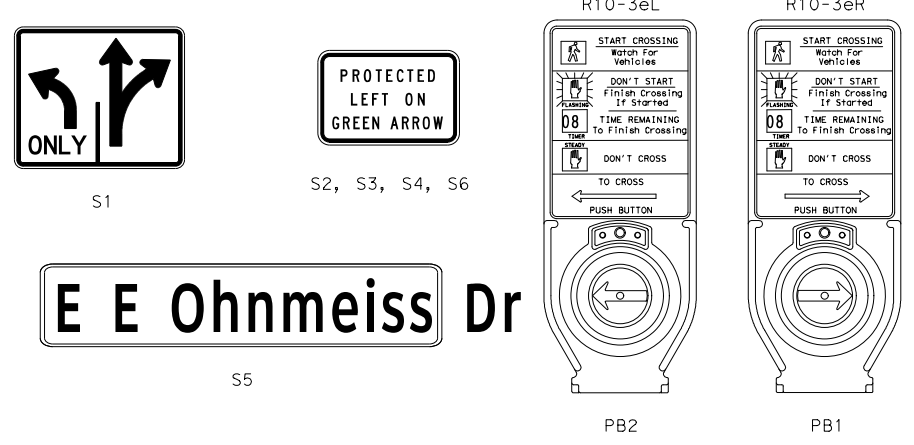
1. ALL EXISTING SIGNAL ELEMENTS TO BE REMOVED.



EXISTING TRAFFIC SIGNAL HEADS



EXISTING SIGNS



1/30/2023 13:05:50
 Justin.Kinne
 pw:/
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfp

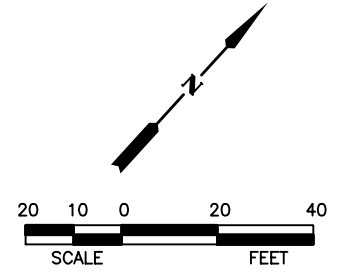
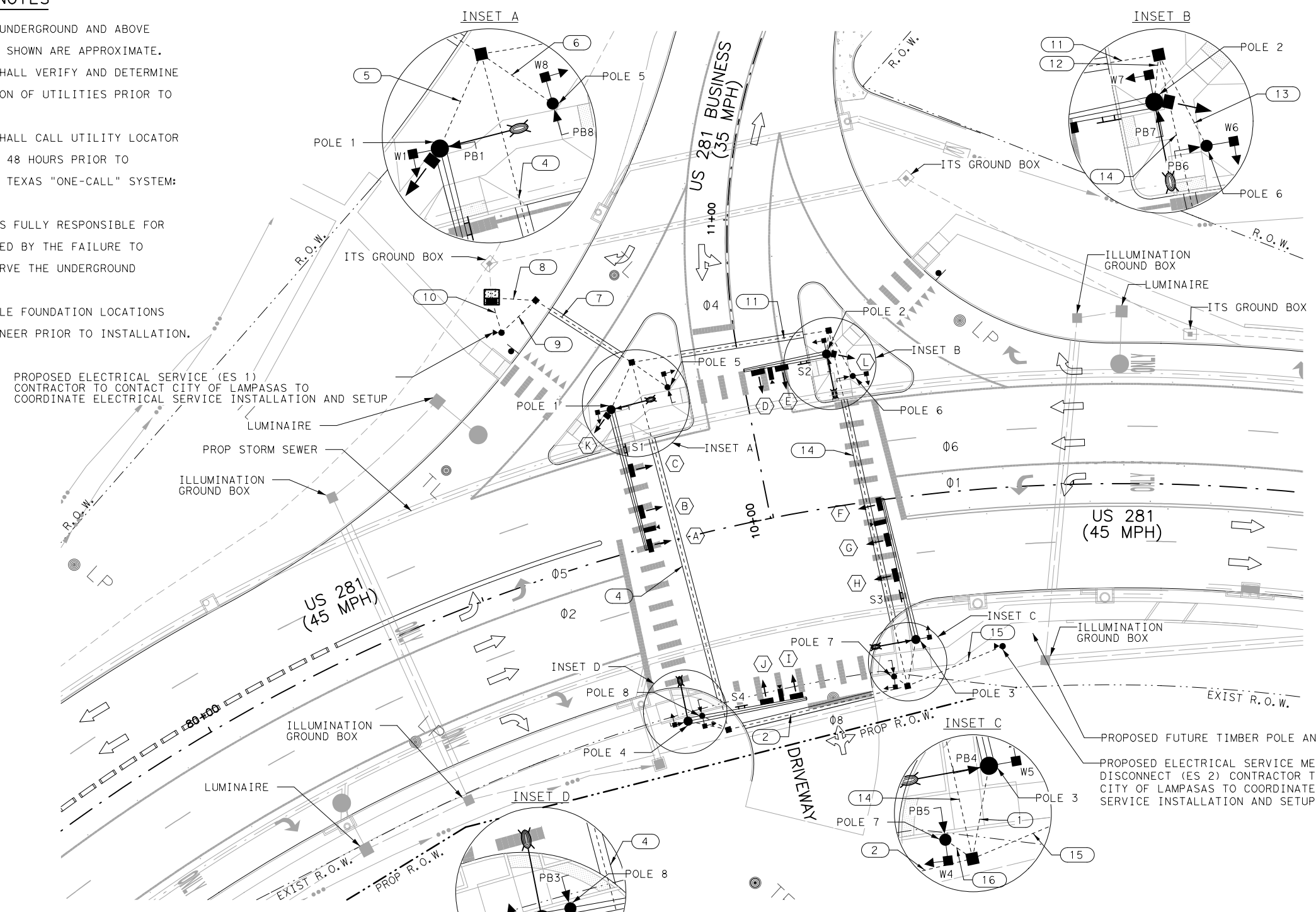
NO.	REVISION	BY	DATE		
Kimley»Horn F-928					
US 281 EXISTING SIGNAL LAYOUT US 281 AT PLUM STREET (US 281 BUSINESS)					
Designed:	KHA	FED. RD. DIV. NO.	6	STATE	TEXAS
Checked:	KHA	DIST.	LAMPASAS	COUNTY	CONTROL NO.
Drawn:	KHA	DIST.	LAMPASAS	SECTION NO.	0251 06
Checked:	KHA	DIST.	LAMPASAS	JOB NO.	036
				HIGHWAY NO.	US 281
				SHEET NO.	268

NOTES

1. THE LOCATION OF UNDERGROUND AND ABOVE GROUND UTILITIES SHOWN ARE APPROXIMATE.
2. THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATION OF UTILITIES PRIOR TO CONSTRUCTION.
3. THE CONTRACTOR SHALL CALL UTILITY LOCATOR SERVICE AT LEAST 48 HOURS PRIOR TO COMMENCING WORK. TEXAS "ONE-CALL" SYSTEM: 1-800-245-4545
4. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY THE FAILURE TO LOCATE AND PRESERVE THE UNDERGROUND FACILITIES.
5. VERIFY SIGNAL POLE FOUNDATION LOCATIONS WITH DESIGN ENGINEER PRIOR TO INSTALLATION.

PROPOSED ELECTRICAL SERVICE (ES 1)
CONTRACTOR TO CONTACT CITY OF LAMPASAS TO
COORDINATE ELECTRICAL SERVICE INSTALLATION AND SETUP

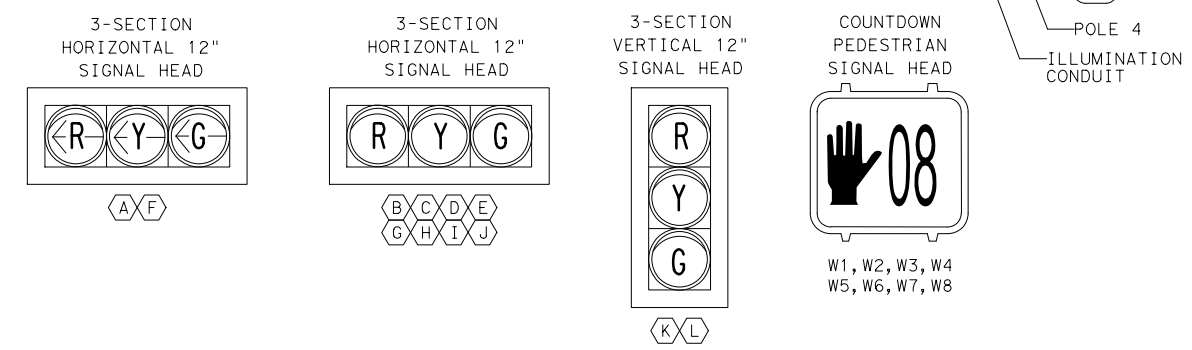
PROPOSED ELECTRICAL SERVICE METER AND
DISCONNECT (ES 2) CONTRACTOR TO CONTACT
CITY OF LAMPASAS TO COORDINATE ELECTRICAL
SERVICE INSTALLATION AND SETUP



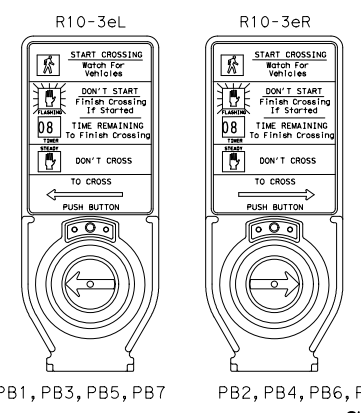
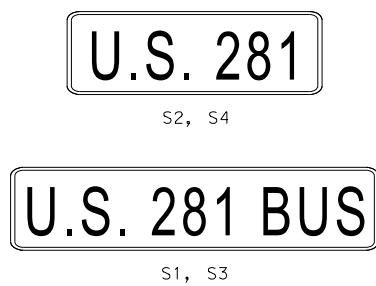
LEGEND

- SIGNAL POLE W/ MAST ARM
- LUMINAIRE ON MAST ARM
- HORIZONTAL SIGNAL HEAD
- VERTICAL SIGNAL HEAD
- OVERHEAD SIGN
- PED POLE W/ SIGNAL HEAD
- PED PUSH BUTTON
- VIVDS DETECTION DEVICE
- TYPE D GROUND BOX
- CONDUIT (TRENCH)
- CONDUIT (BORE)
- SERVICE METER AND DISCONNECT
- GROUND MOUNTED CONTROLLER CABINET
- SIGN ON POST
- DIRECTION OF TRAFFIC
- RIGHT OF WAY (R.O.W.)
- LUMINAIRE FROM ILLUMINATION LAYOUT

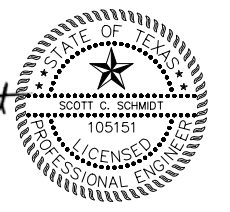
PROPOSED SIGNAL HEADS



PROPOSED SIGNS



Scott Schmidt
1/30/2023

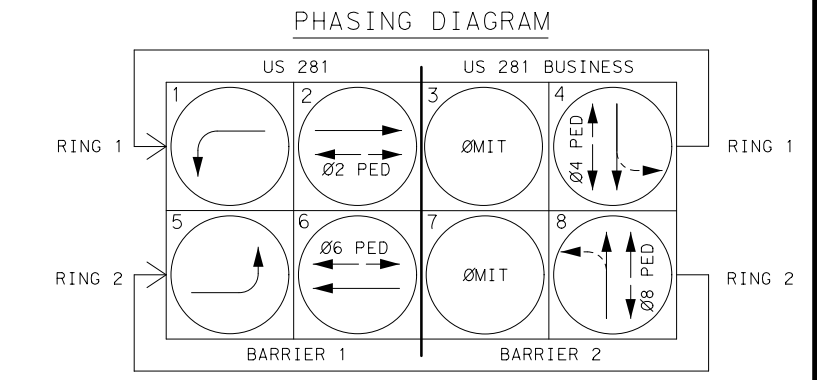
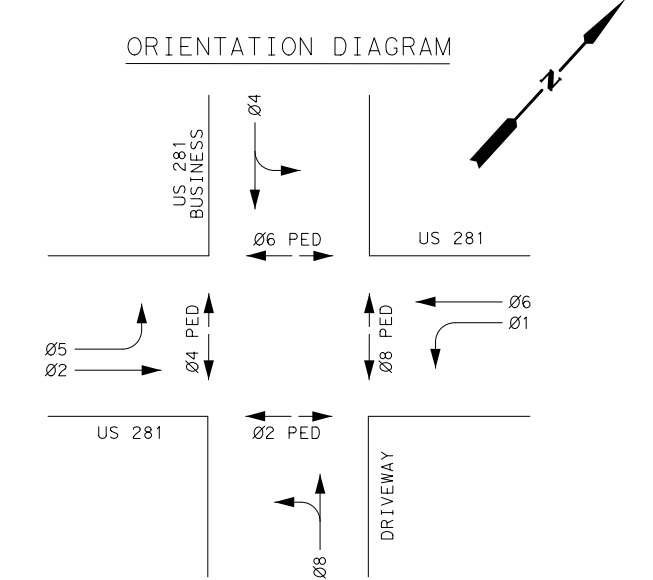


NO.	REVISION	BY	DATE
Kimley»Horn F-928			
©2023 Texas Department of Transportation			
US 281 PROPOSED SIGNAL LAYOUT US 281 AT PLUM STREET (US 281 BUSINESS)			
Designed:	KHA	FED. RD. DIST. NO. 6	STATE TEXAS
Checked:	KHA	DIST. COUNTY	FEDERAL AID PROJECT NO.
Drawn:	KHA	CONTROL NO. 0251	SECTION NO. 06
Checked:	KHA	JOB NO. 036	HIGHWAY NO. US 281
			SHEET NO. 269

cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.35 KHA Cut Sheets/49304_TRF_SIGNAL_202.dgn
 Justin.Kinne
 1/30/2023 13:15:31
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.35 KHA Cut Sheets/49304_TRF_SIGNAL_202.dgn

cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcf
 pw:/Active Projects/TXDO1600493.00/TXD01600493.04/8.00 Plans and Drawings/8.35 KHA Cut Sheets/49304_TRF_SIGNAL_203.dgn
 Justin.Kinne
 1/30/2023 13:16:47

CONDUCTOR AND CONDUIT SCHEDULE																											
CONDUIT/ SPAN RUN NUMBER	1	1	2	2	3	3	4	4	5	5	6	7	7	8	9	10	11	11	12	12	13	14	14	15	16	17	
NUMBER OF CONDUITS	2	1	2	1	2	1	2	1	2	1	2	1	2	1	5	1	1	2	1	2	1	1	2	1	1	1	
CONDUIT SIZE IN INCHES	3.0	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	2.0	15	20	15	70	70	10	10	20	125	125	35	10	2.0
CONDUIT/ SPAN LENGTH (LF)	20	20	65	65	20	20	130	130	20	20	15	40	40	15	20	15	70	70	10	10	20	125	125	35	10	10	
RUN TYPE (T=TRENCH, B=BORE)	T	T	B	B	T	T	B	B	T	T	T	B	B	T	T	T	B	B	T	T	T	B	B	T	T	T	
CABLE	NUMBER OF CONDUCTORS																										
#6 XHHW 120 POWER HOT & COMMON (POWER) BARE #6				3				3						3		3	2									3	
BARE BOND GROUND (CONDUIT) BARE #8				1				1						1		1	1									1	
7/C - #12 (TY A) CABLE (SIGNAL)	POLE 1 - Ø1 + Ø6 + Ø2																										
	POLE 2 - Ø8 + Ø6																										
	POLE 3 - Ø2 + Ø5																										
4/C - #12 (TY A) CABLE (PED SIGNAL)	POLE 4 - Ø4																										
	POLE 1 - Ø4																										
	POLE 2 - Ø6																										
	POLE 3 - Ø8																										
	POLE 4 - Ø4																										
	POLE 5 - Ø6																										
	POLE 6 - Ø8																										
	POLE 7 - Ø2																										
2/C - #14 (TY C) CABLE (PED PUSH BUTTONS-APS)	POLE 8 - Ø2																										
	POLE 1 - Ø4																										
	POLE 2 - Ø6																										
	POLE 3 - Ø8																										
	POLE 4 - Ø4																										
	POLE 5 - Ø6																										
	POLE 6 - Ø8																										
	POLE 7 - Ø2																										
6-CONDUCTOR DATA & POWER CABLE (VIVDS)	POLE 8 - Ø2																										
	POLE 1 - Ø1 + Ø6																										
	POLE 2 - Ø8																										
	POLE 3 - Ø2 + Ø5																										
4/C - #12 TRAY CABLE (LUMINAIRE)	POLE 4 - Ø4																										
	POLE 1 - LUMINAIRE																										
	POLE 2 - LUMINAIRE																										
	POLE 3 - LUMINAIRE																										
POLE 4 - LUMINAIRE																											



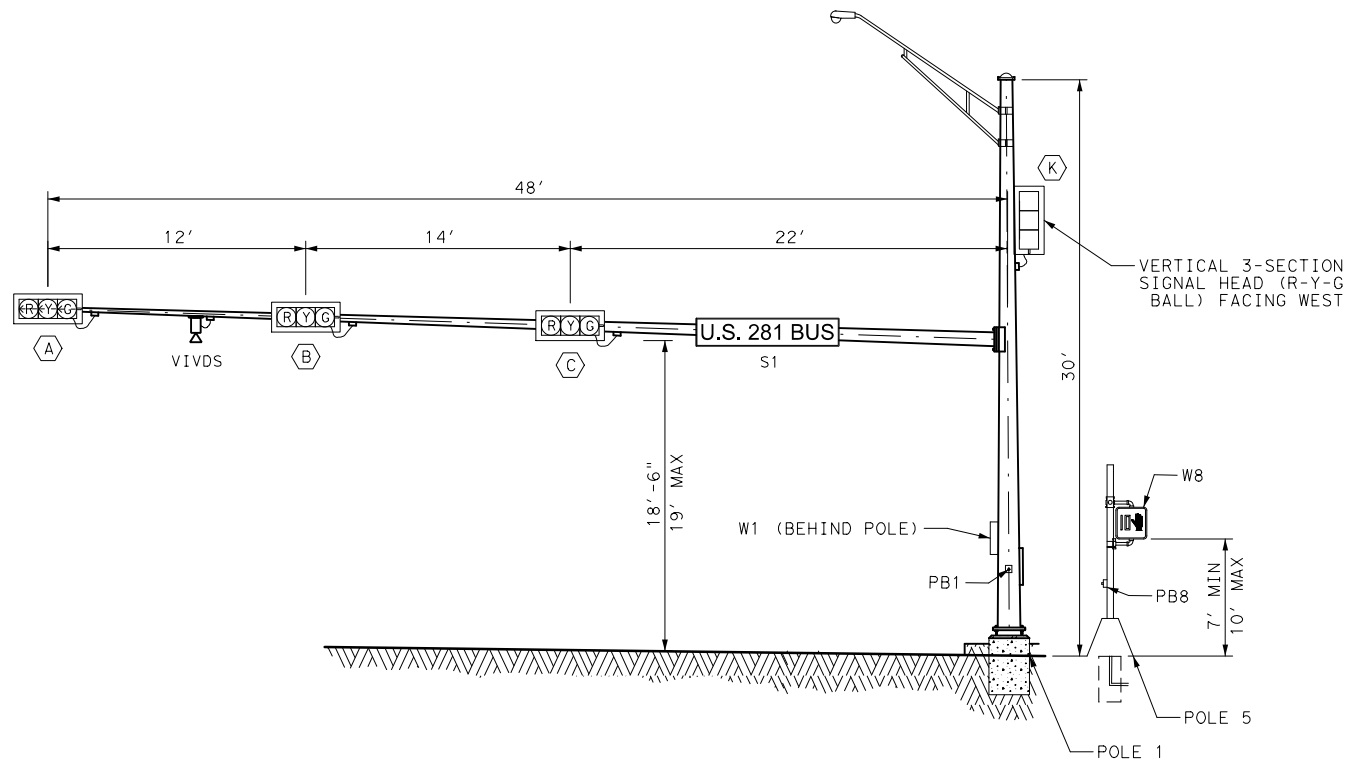
← → PEDESTRIAN MOVEMENT
 ← - - - → PERMISSIVE MOVEMENT

TRAFFIC POLE SCHEDULE								
POLE	1	2	3	4	5	6	7	8
FOUNDATION	36-A	30-A	36-A	30-A	24-A	24-A	24-A	24-A
MOUNTING HEIGHT	30'	30'	30'	30'	10'	10'	10'	10'
ATTACHMENTS	48' MAST ARM, W1, PB1, VIVD, LUMINAIRE	28' MAST ARM, W7, PB7, VIVD, LUMINAIRE	48' MAST ARM, W4, W5, PB4, PB5, VIVD, LUMINAIRE	40' MAST ARM, W2, PB2, VIVD, LUMINAIRE	PEDESTRIAN POLE W8, PB8	PEDESTRIAN POLE W6, PB6	PEDESTRIAN POLE W4, PB4	PEDESTRIAN POLE W3, PB3

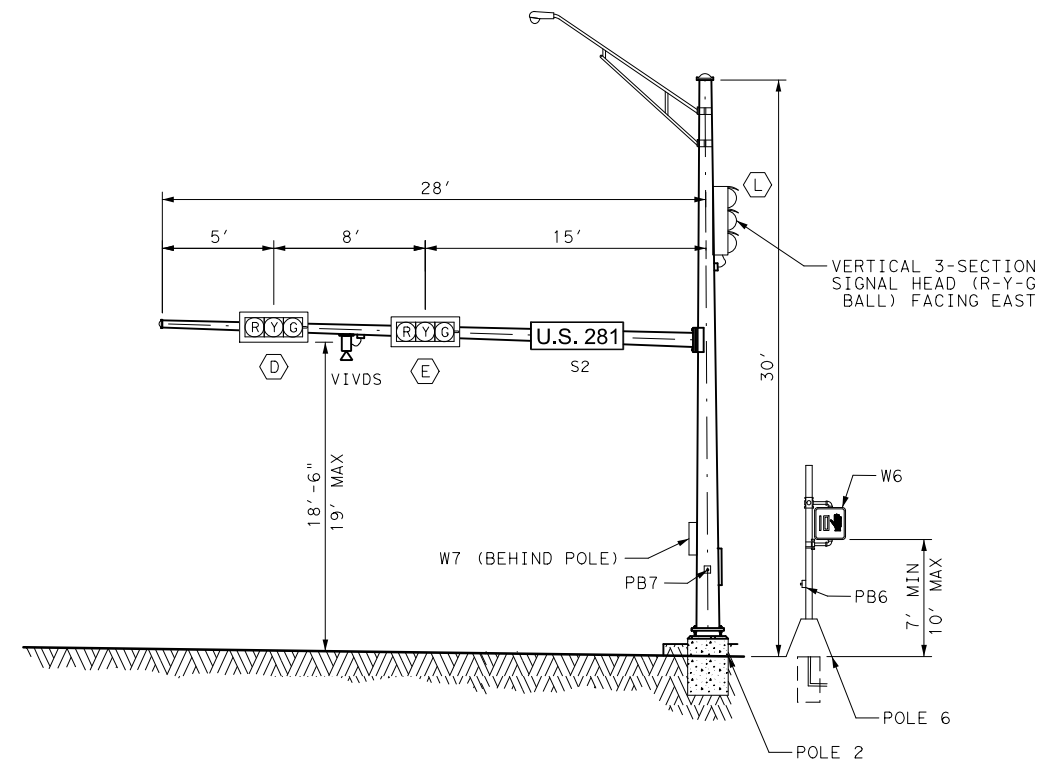
ELECTRICAL SERVICE DATA										
ELECTRICAL SERVICE NO.	ELECTRICAL SERVICE DESCRIPTION (SEE ED(5)-14)	SERVICE CONDUIT SIZE (RMC)	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN DISCONNECT CKT. BRK. POLE/AMP	TWO-POLE CONTACTOR AMPS	PANELBD. / LOADCENTER AMP RATING (MIN)	CIRCUIT NO.	BRANCH CKT. BRK. POLE/AMPS	KVA LOAD
ES1	TY D (120/240) 060 (NS) SS (E) SP (U)	1/4	3/#6	N/A	2P/60	30	100	T. S. ILLUMINATION	1P/40 1P/20	<7.1
ES2	TY T (120/240) 000 (NS) GS (N) SP (O)	1/4	3/#6	N/A	N/A	N/A	N/A	N/A	N/A	<7.1

Scott Schmidt
 1/30/2023

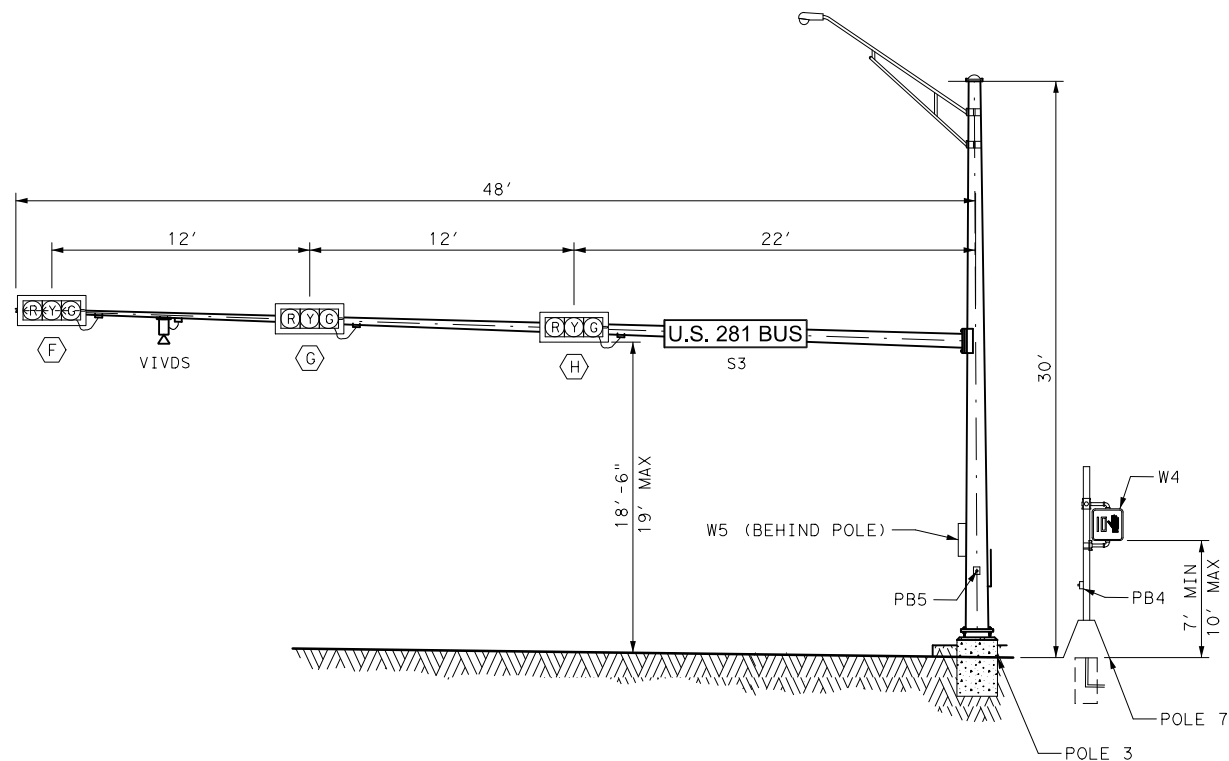
NO.		REVISION		BY		DATE	
F-928							
US 281 PROPOSED SIGNAL DETAILS US 281 AT PLUM STREET (US 281 BUSINESS)							
Designed: KHA	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.			HIGHWAY NO. US 281	
Checked: KHA	DIST. COUNTY	CONTROL NO. 0251	SECTION NO. 06	JOB NO. 036	SHEET NO. 270		
Drawn: KHA	BWD	LAMPASAS					



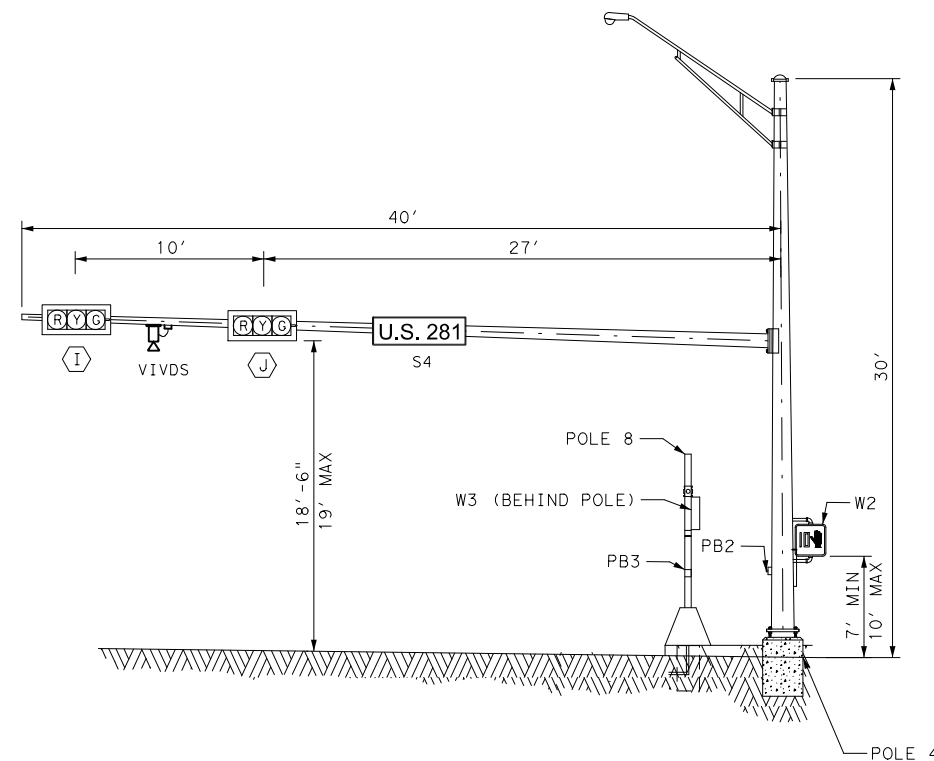
LOOKING WEST ON US 281



LOOKING NORTH ON US 281 BUSINESS



LOOKING EAST ON US 281



LOOKING SOUTH ON US 281 BUSINESS

SCALE: N. T. S.

Scott Schmidt
 1/30/2023
 STATE OF TEXAS
 SCOTT G. SCHMIDT
 105151
 LICENSED PROFESSIONAL ENGINEER

NO.	REVISION	BY	DATE

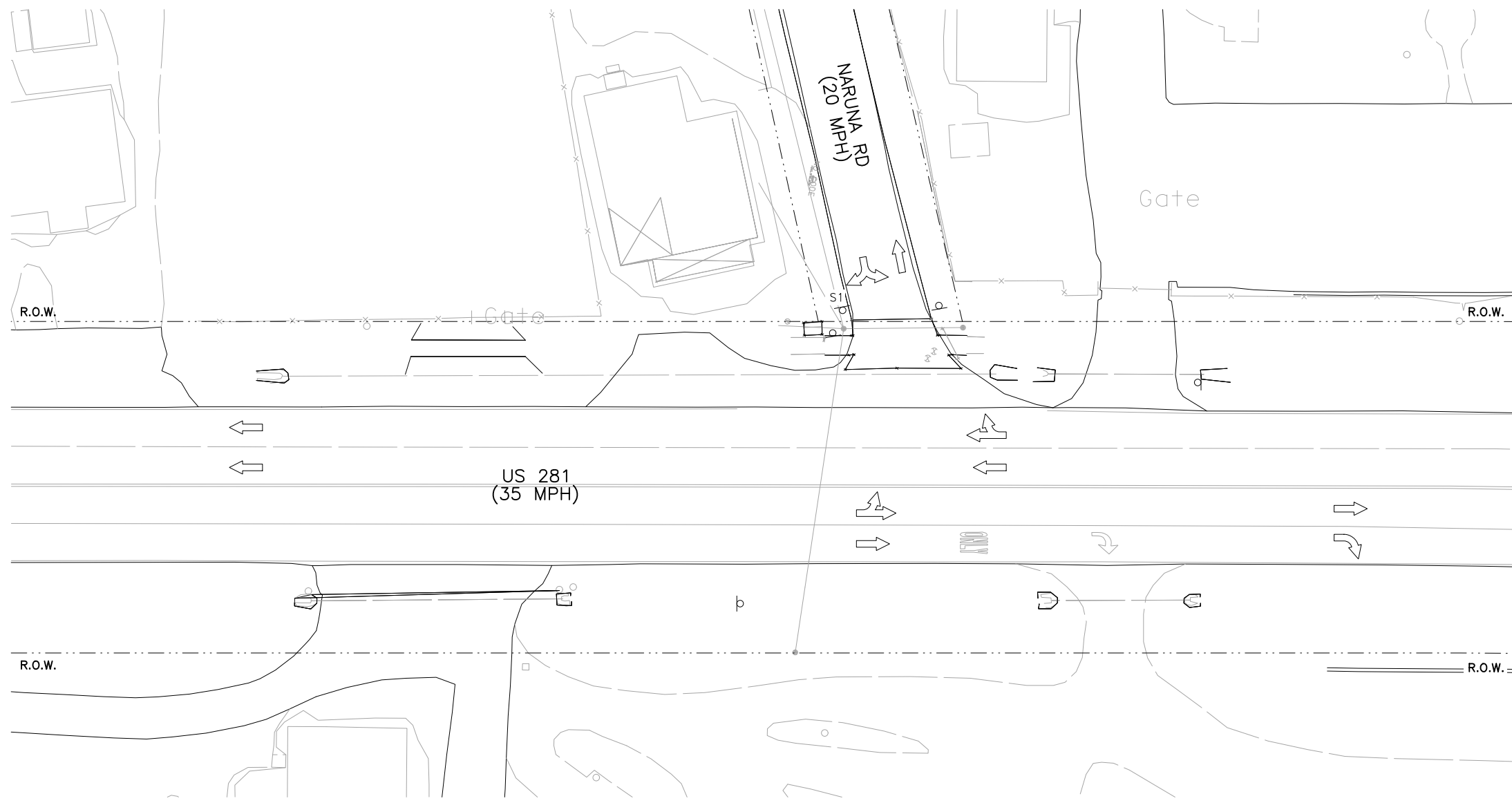
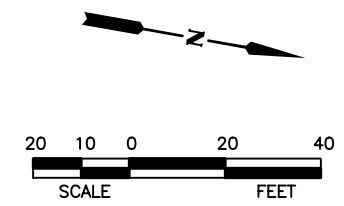
Kimley»Horn F-928

©2023 Texas Department of Transportation

US 281
 PROPOSED SIGNAL ELEVATIONS
 US 281 AT PLUM STREET
 (US 281 BUSINESS)

Designed: KHA	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: KHA	DIST. LAMPASAS	COUNTY	CONTROL NO. 0251	SECTION NO. 06
Drawn: KHA	JOB NO. 036	SHEET NO. 271		
Checked: KHA	BWD			

cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 Justin.Kinne
 1/30/2023 13:06:18
 pw:/



LEGEND

- SIGNAL POLE W/ MAST ARM
- LUMINAIRE
- HORIZONTAL SIGNAL HEAD
- VERTICAL SIGNAL HEAD
- OVERHEAD SIGN
- PED POLE W/ SIGNAL HEAD
- PED PUSH BUTTON
- VIVDS DETECTION DEVICE
- TYPE D GROUND BOX
- CONDUIT
- SERVICE METER AND DISCONNECT
- GROUND MOUNTED CONTROLLER CABINET
- SIGN ON POST
- DIRECTION OF TRAFFIC
- RIGHT OF WAY (R.O.W.)

EXISTING SIGNS



S1

NOTES

1. EXISTING SIGN S1 TO BE REMOVED.

Scott Schmidt
 1/30/2023

NO.	REVISION	BY	DATE

Kimley»Horn F-928

©2023 Texas Department of Transportation

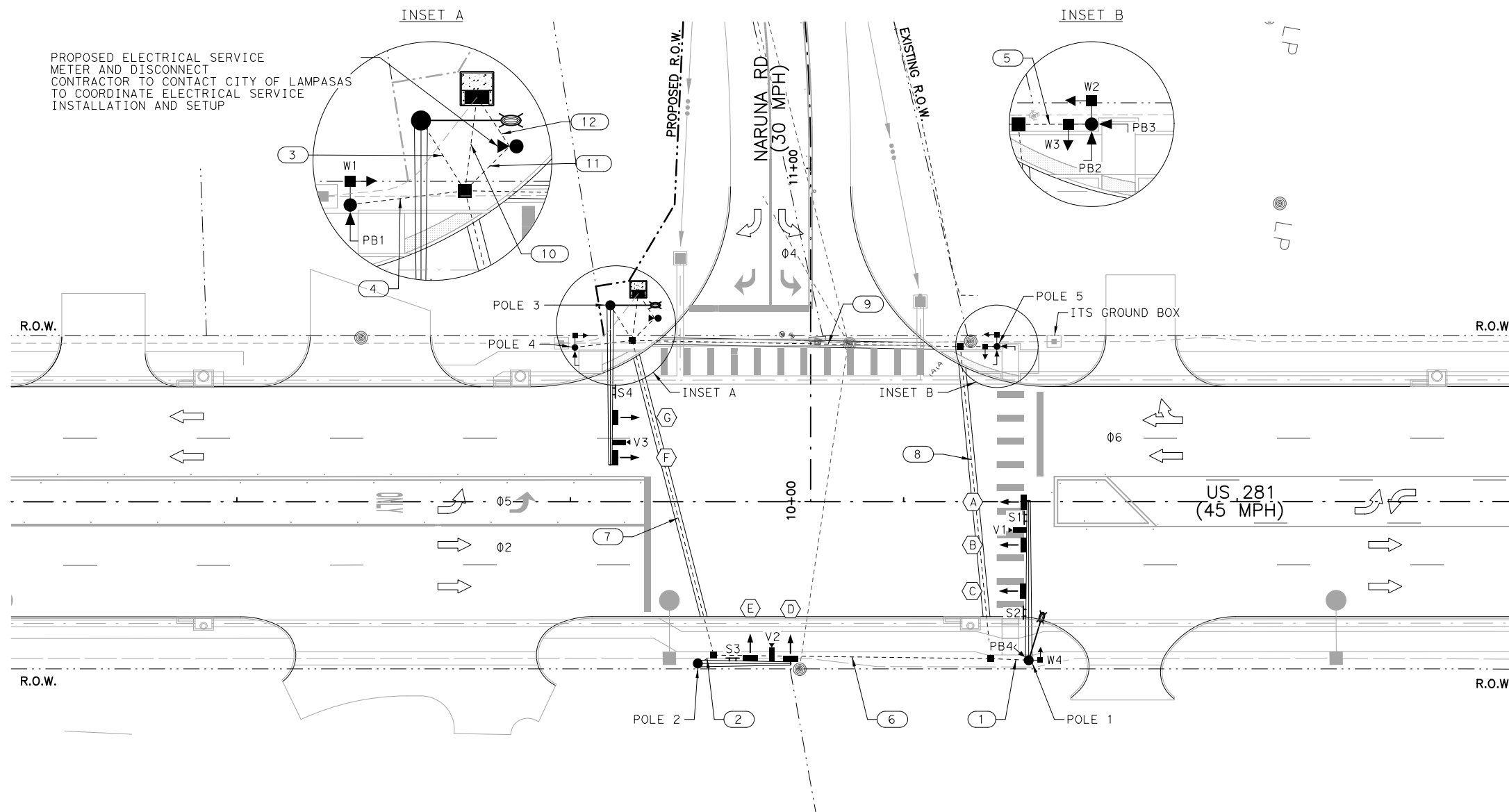
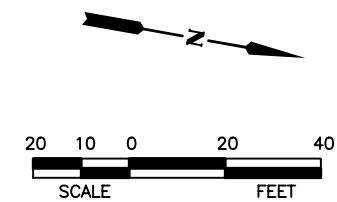
US 281
 EXISTING CONDITIONS

US 281 AT NARUNA ROAD

Designed:	KHA	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	KHA	6	TEXAS		US 281		
Drawn:	KHA	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	KHA	BWD	LAMPASAS	0251	06	036	272

1/30/2023 13:06:24 Justin.Kinne
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/

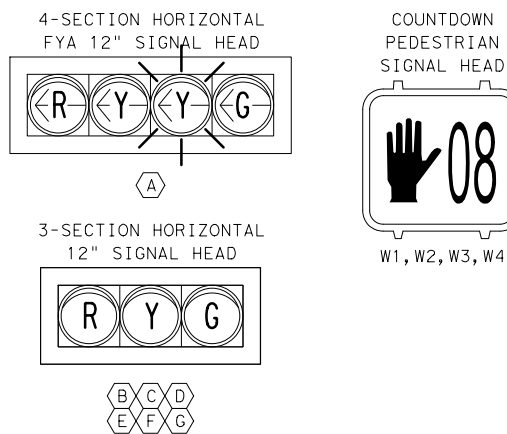
PROPOSED ELECTRICAL SERVICE METER AND DISCONNECT CONTRACTOR TO CONTACT CITY OF LAMPASAS TO COORDINATE ELECTRICAL SERVICE INSTALLATION AND SETUP



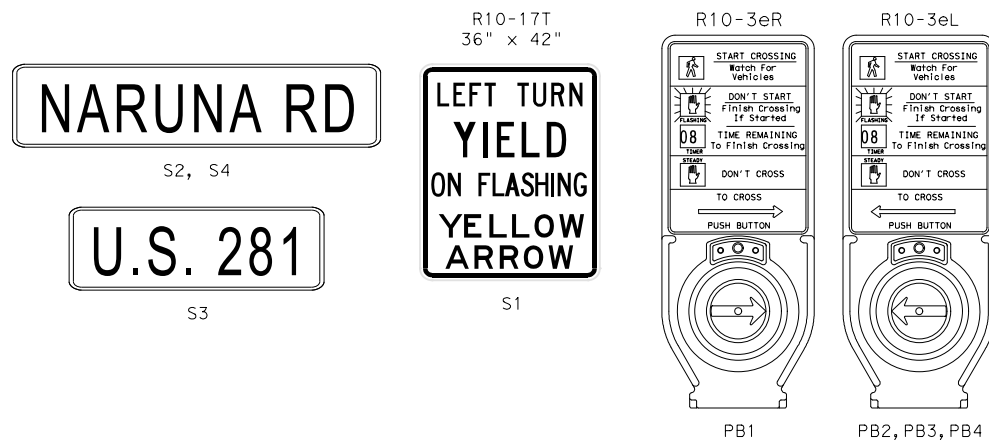
LEGEND

- SIGNAL POLE W/ MAST ARM
- LUMINAIRE ON MAST ARM
- HORIZONTAL SIGNAL HEAD
- VERTICAL SIGNAL HEAD
- OVERHEAD SIGN
- PED POLE W/ SIGNAL HEAD
- PED PUSH BUTTON
- VIVDS DETECTION DEVICE
- TYPE D GROUND BOX
- CONDUIT (TRENCH)
- CONDUIT (BORE)
- SERVICE METER AND DISCONNECT
- GROUND MOUNTED CONTROLLER CABINET
- SIGN ON POST
- DIRECTION OF TRAFFIC
- RIGHT OF WAY (R.O.W.)
- LUMINAIRE FROM ILLUMINATION LAYOUT

PROPOSED SIGNAL HEADS



PROPOSED SIGNS



NOTES

1. THE LOCATION OF UNDERGROUND AND ABOVE GROUND UTILITIES SHOWN ARE APPROXIMATE.
2. THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATION OF UTILITIES PRIOR TO CONSTRUCTION.
3. THE CONTRACTOR SHALL CALL UTILITY LOCATOR SERVICE AT LEAST 48 HOURS PRIOR TO COMMENCING WORK. TEXAS "ONE-CALL" SYSTEM: 1-800-245-4545
4. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY THE FAILURE TO LOCATE AND PRESERVE THE UNDERGROUND FACILITIES.
5. VERIFY SIGNAL POLE FOUNDATION LOCATIONS WITH DESIGN ENGINEER PRIOR TO INSTALLATION.
6. SEE ILLUMINATION LAYOUT SHEETS FOR ILLUMINATION POLES ALONG US 281.

1/30/2023

NO.	REVISION	BY	DATE
Kimley»Horn F-928			
©2023 Texas Department of Transportation			
US 281 PROPOSED SIGNAL LAYOUT			
US 281 AT NARUNA ROAD			
Designed:	KHA	FED. RD. DIV. NO.	STATE
Checked:	KHA	6	TEXAS
Drawn:	KHA	DIST.	COUNTY
Checked:	KHA	BWD	LAMPASAS
		CONTROL NO.	FEDERAL AID PROJECT NO.
		0251	06
		SECTION NO.	HIGHWAY NO.
		06	US 281
		JOB NO.	SHEET NO.
		036	273

1/30/2023 13:06:33 Justin.Kinne
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/

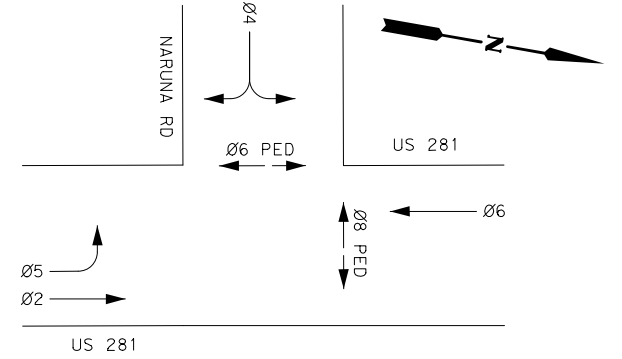
1/30/2023 13:27:18 Justin.Kinne
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.35 KHA Cut Sheets/49304_TRF_SIGNAL_403.dgn

CONDUIT AND CONDUIT SCHEDULE																
CONDUIT/ SPAN RUN NUMBER	1	1	2	3	3	4	5	6	6	7	7	8	9	10	11	12
NUMBER OF CONDUITS	2	1	2	1	1	1	1	2	1	2	1	2	2	5	1	1
CONDUIT SIZE IN INCHES	3.0	2.0	3.0	3.0	2.0	2.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0	3.0	2.0	2.0
CONDUIT/ SPAN LENGTH (LF)	10	10	5	10	10	20	5	90	90	100	100	100	110	15	15	15
RUN TYPE (T=TRENCH, B=BORE)	T	T	T	T	T	T	T	T	T	B	B	B	B	T	T	T
CABLE		NUMBER OF CONDUCTORS														
#6 XHHW	120 POWER HOT & COMMON (POWER) BARE #6															2
BARE BOND GROUND	(CONDUIT) BARE #8															1
7/C - #12 (TY A) CABLE (SIGNAL)	POLE 1 - Ø2 + Ø5	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1
	POLE 2 - Ø4			1						1					1	
	POLE 3 - Ø6				1										1	
4/C - #12 (TY A) CABLE (PED SIGNAL)	POLE 1 - Ø8	1						1		1				1		
	POLE 4 - Ø6					1								1		
	POLE 5 - Ø6 + Ø8						2						2	2		
2/C - #14 (TY C) CABLE (PED PUSH BUTTONS-APS)	POLE 1 - Ø8	1						1		1				1		
	POLE 4 - Ø6					1								1		
	POLE 5 - Ø6 + Ø8						2						2	2		
6-CONDUCTOR DATA & POWER CABLE (VIVDS)	POLE 1 - Ø2 + Ø5	1						1		1				1		
	POLE 2 - Ø4			1						1				1		
	POLE 3 - Ø6				1									1		
4/C - #12 TRAY CABLE (LUMINAIRE)	POLE 1 - LUMINAIRE		1						1		1				1	
	POLE 3 - LUMINAIRE					1									1	

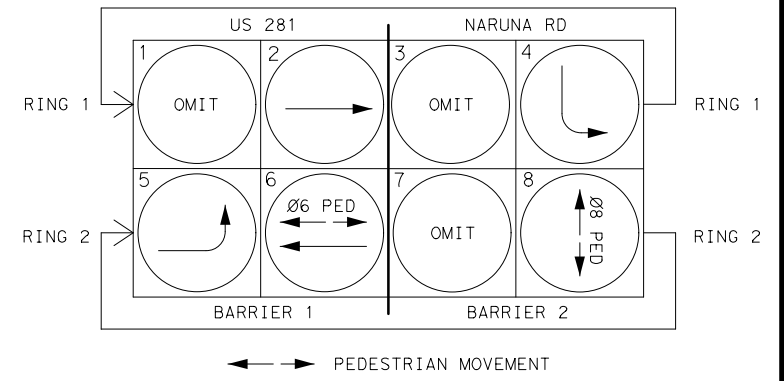
TRAFFIC POLE SCHEDULE					
POLE	1	2	3	4	5
FOUNDATION	36-A	30-A	36-A	24-A	24-A
MOUNTING HEIGHT	30'	19'	30'	10'	10'
ATTACHMENTS	48' MAST ARM, V1 (VIVD), W4, PB4, LUMINAIRE	28' MAST ARM, V2 (VIVD)	48' MAST ARM, V3 (VIVD), LUMINAIRE	PEDESTRIAN POLE W1, PB1	PEDESTRIAN POLE W2, PB2, W3, PB3

ELECTRICAL SERVICE DATA									
ELECTRICAL SERVICE DESCRIPTION (SEE ED(5)-14)	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 D (120/240)060 (NS)SS (E)SP (O)	1/4	3/#6	N/A	2P/60	30	100	T. S. ILLUMINATION	1P/40 1P/20	<7.1

ORIENTATION DIAGRAM

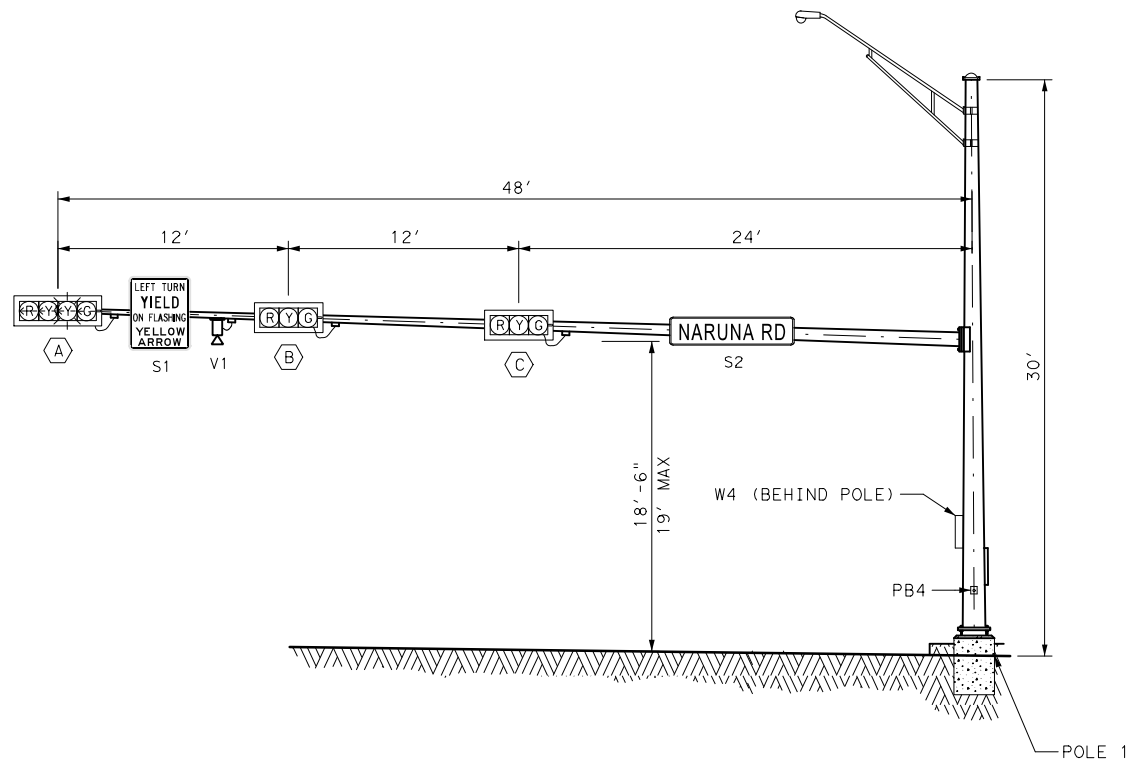


PHASING DIAGRAM

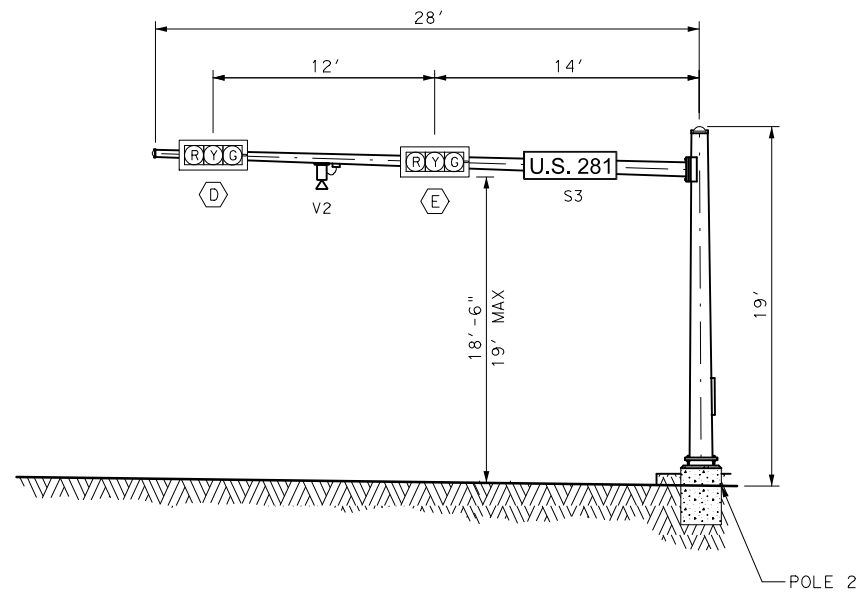


Scott Schmidt
 1/30/2023

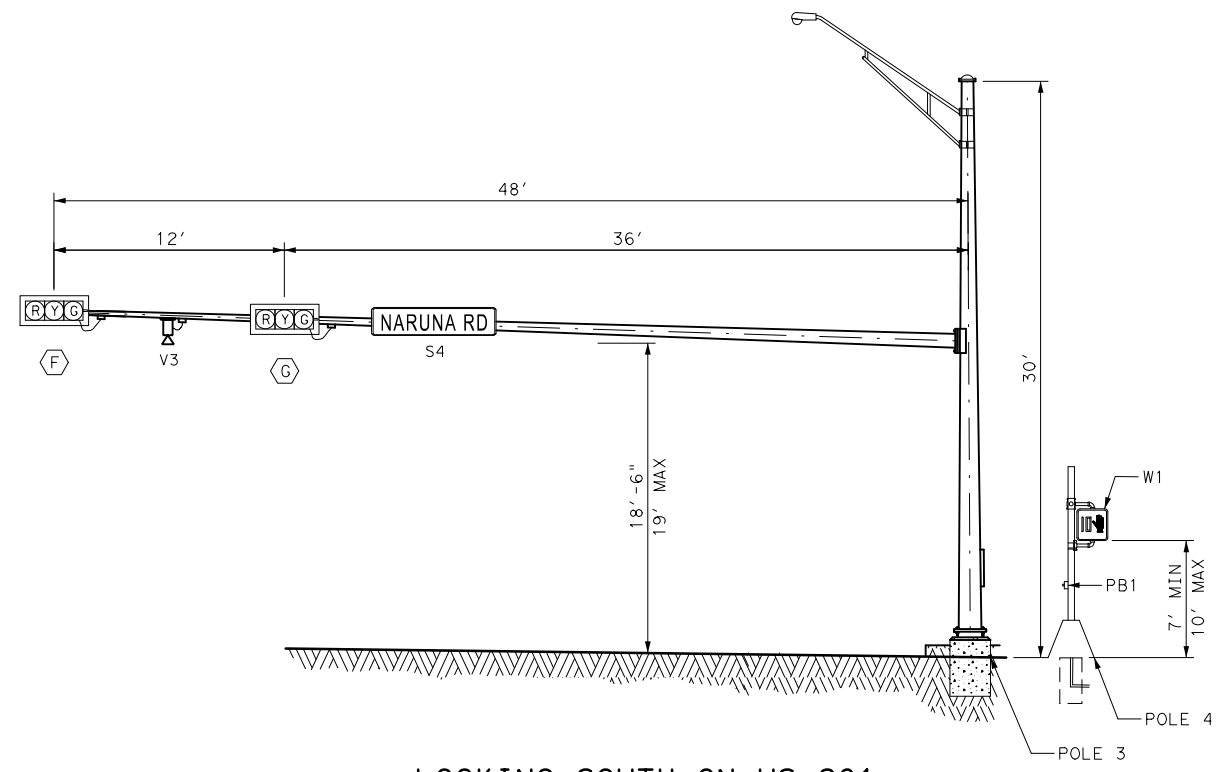
NO.	REVISION	BY	DATE
US 281 PROPOSED SIGNAL DETAILS US 281 AT NARUNA ROAD			
Designed:	KHA	FED. RD. DIV. NO.	STATE
Checked:	KHA	6	TEXAS
Drawn:	KHA	DIST.	COUNTY
Checked:	KHA	BWD	LAMPASAS
		CONTROL NO.	SECTION NO.
		0251	06
		JOB NO.	SHEET NO.
		036	274



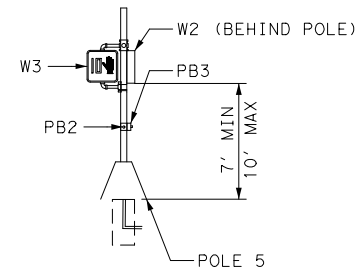
LOOKING NORTH ON US 281



LOOKING EAST ON NARUNA RD



LOOKING SOUTH ON US 281



LOOKING WEST TOWARDS NARUNA RD

SCALE: N. T. S.

1/30/2023

Scott Schmidt

NO.	REVISION	BY	DATE

Kimley»Horn F-928

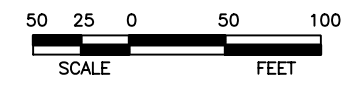
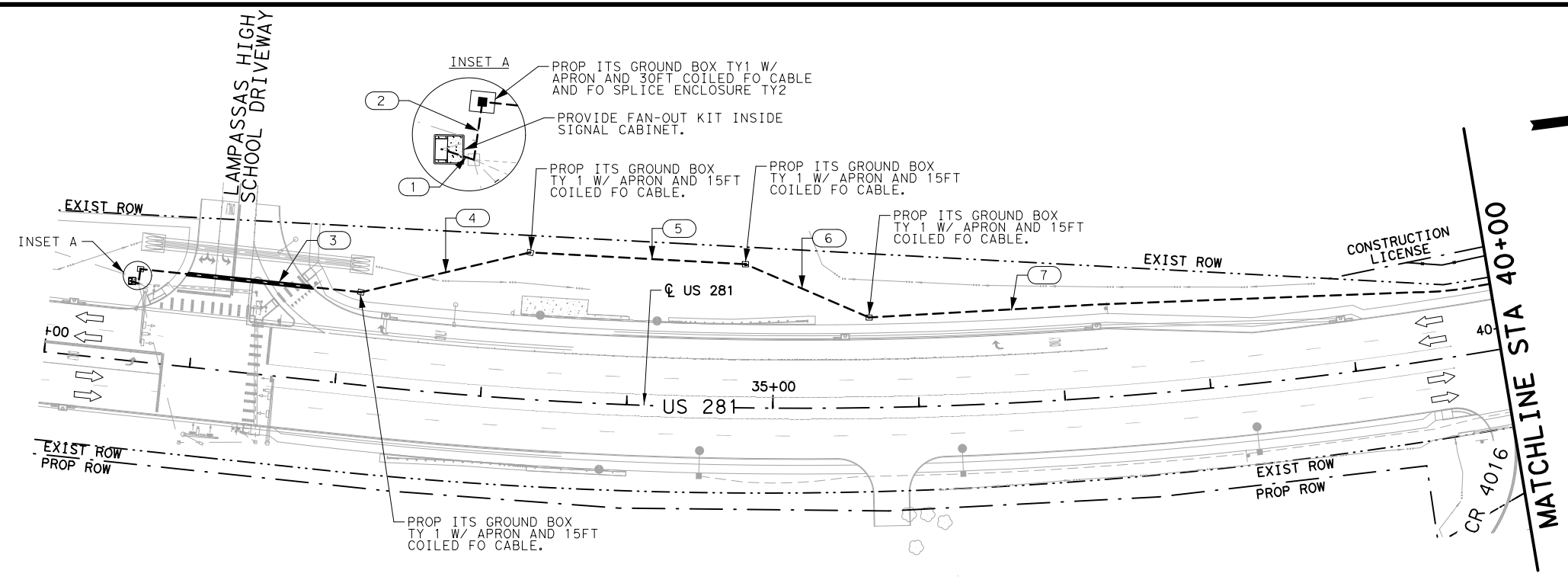
©2023 Texas Department of Transportation

US 281
PROPOSED SIGNAL ELEVATIONS

US 281 AT NARUNA ROAD

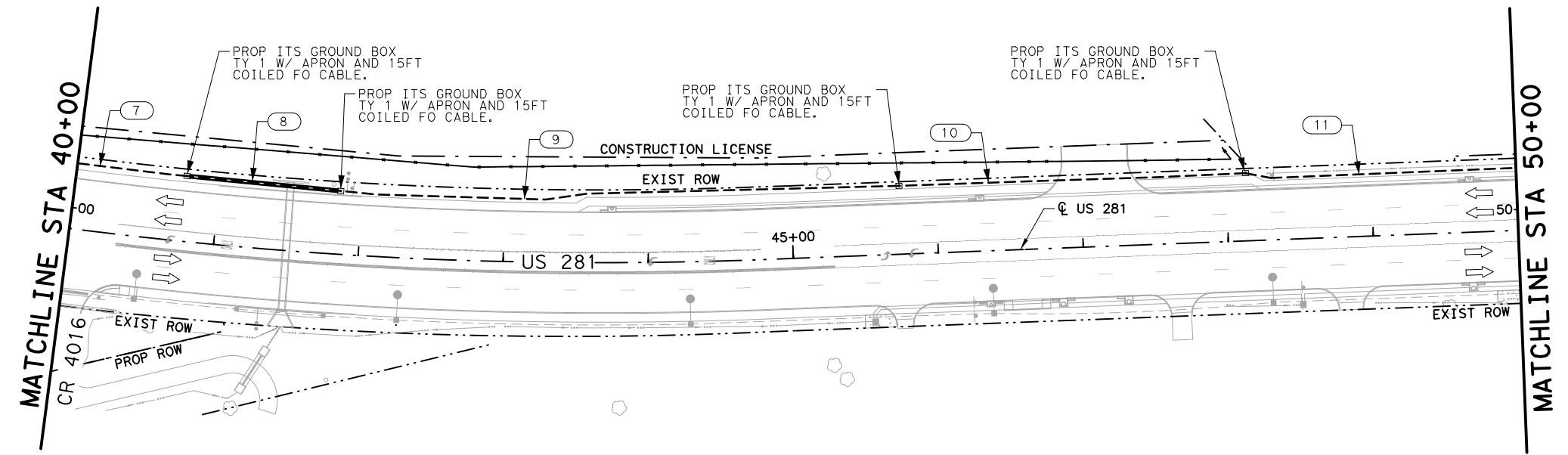
Designed:	KHA	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	KHA	6	TEXAS		US 281		
Drawn:	KHA	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	KHA	BWD	LAMPASAS	0251	06	036	275

1/30/2023 13:06:49
 Justin Kinne
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/



- FIBER LEGEND:**
- EXISTING SIGNAL CABINET
 - PROPOSED SIGNAL CABINET
 - PROPOSED ITS GROUND BOX TYPE 1
 - PROPOSED 3" PVC CONDUIT (TRENCH)
 - PROPOSED 3" PVC CONDUIT (BORE)
 - PROPOSED ITS MULTI-DUCT CONDUIT (RMC)
 - EXISTING DITCH LINE
 - CONDUIT RUN NUMBER
 - DIRECTION OF TRAVEL
 - RIGHT-OF-WAY (R. O. W.)
 - CONSTRUCTION LICENSE

CONDUCTOR AND CONDUIT SCHEDULE													
CONDUIT/ SPAN RUN NUMBER	1	2	3	4	5	6	7	8	9	10	11	TOTALS	
NUMBER OF CONDUITS	1	1	1	1	1	1	1	1	1	1	1	-	
CONDUIT/ SPAN LENGTH (LF)	10	10	155	120	150	95	500	110	385	240	190	-	
3" PVC (SCH 40) (TRENCH)	1	1		1	1	1	1	1	1	1	1	1700	
3" PVC (SCH 40) (BORE)			1					1				265	
CABLE		CIRCUIT		NUMBER OF CONDUCTORS									
TRACER WIRE	ELEC CONDR (NO. 14) INSULATED		1	1	1	1	1	1	1	1	1	1	1965
FIBER OPTIC CABLE	SINGLE MODE (12 FIBER)		1	1									20
	SINGLE MODE (36 FIBER)				1	1	1	1	1	1	1		1755



Santiago A. Araque Rojas
 1/30/2023

NO.	REVISION	BY	DATE

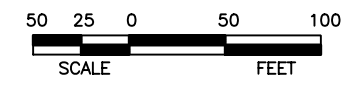
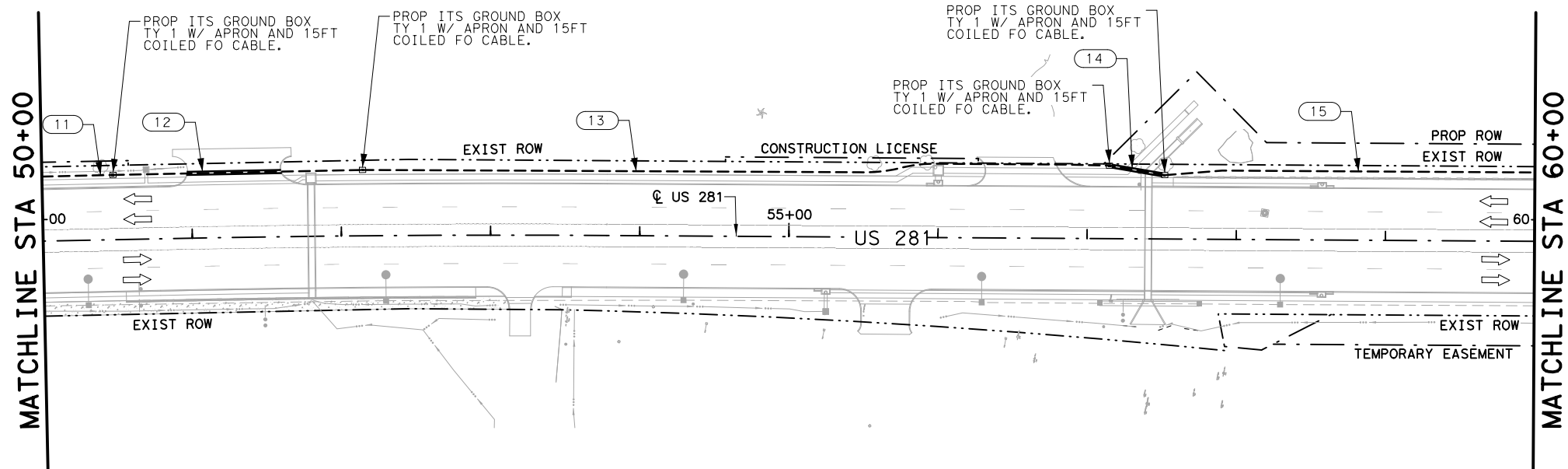
Kimley»Horn F-928

©2023 Texas Department of Transportation

US 281
FIBER LAYOUT
 BEGIN TO 50+00

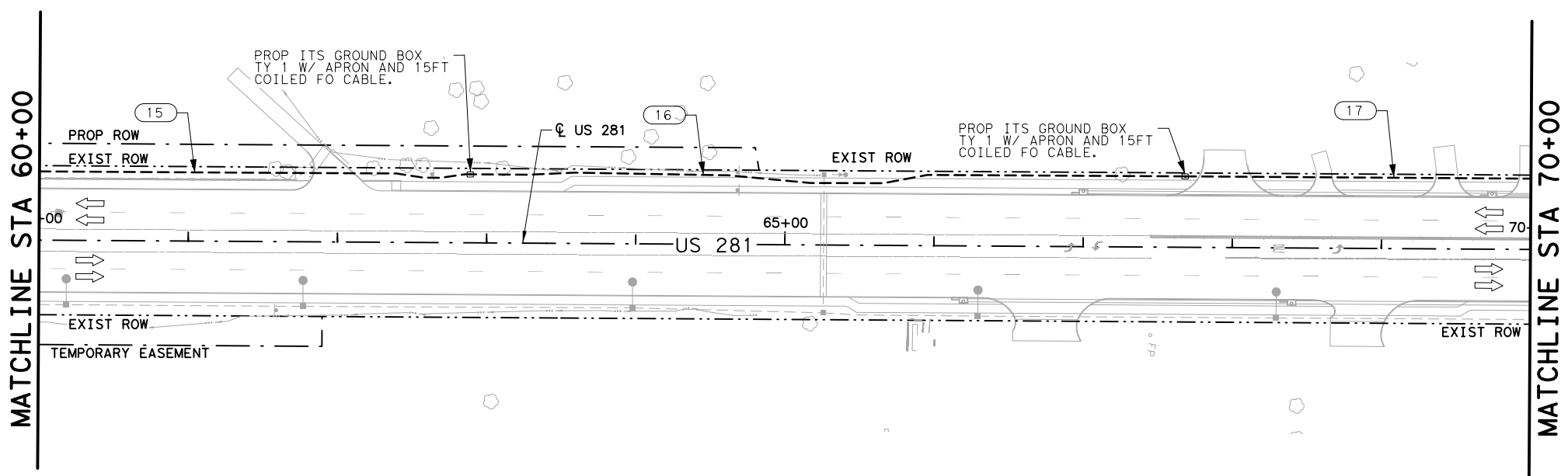
Designed: KHA	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: KHA	DIST.	COUNTY LAMPASAS	CONTROL NO. 0251	SECTION NO. 06
Drawn: KHA	JOB NO. 036	SHEET NO. 276		

1/30/2023 13:07:02
 Justin Kinne
 pw:/



- FIBER LEGEND:**
- EXISTING SIGNAL CABINET
 - PROPOSED SIGNAL CABINET
 - PROPOSED ITS GROUND BOX TYPE 1
 - PROPOSED 3" PVC CONDUIT (TRENCH)
 - PROPOSED 3" PVC CONDUIT (BORE)
 - PROPOSED ITS MULTI-DUCT CONDUIT (RMC)
 - EXISTING DITCH LINE
 - CONDUIT RUN NUMBER
 - DIRECTION OF TRAVEL
 - RIGHT-OF-WAY (R. O. W.)
 - CONSTRUCTION LICENSE

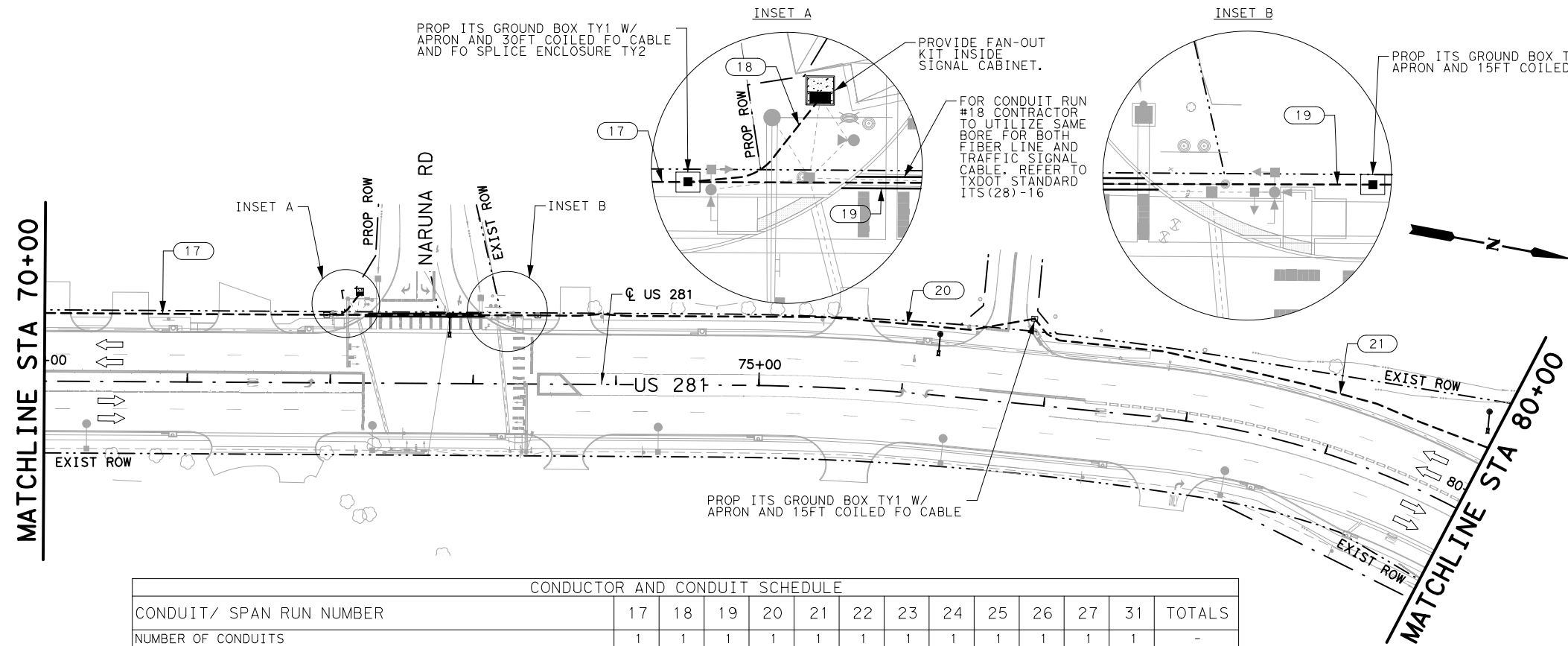
CONDUCTOR AND CONDUIT SCHEDULE								
CONDUIT/ SPAN RUN NUMBER	11	12	13	14	15	16	17	TOTALS
NUMBER OF CONDUITS	1	1	1	1	1	1	1	-
CONDUIT/ SPAN LENGTH (LF)	50	170	500	40	540	480	235	-
3" PVC (SCH 40) (TRENCH)	1		1		1	1	1	1805
3" PVC (SCH 40) (BORE)		1		1				210
CABLE		CIRCUIT		NUMBER OF CONDUCTORS				
TRACER WIRE	ELEC CONDR (NO. 14) INSULATED	1	1	1	1	1	1	2015
FIBER OPTIC CABLE	SINGLE MODE (12 FIBER)							0
	SINGLE MODE (36 FIBER)	1	1	1	1	1	1	2015



Santiago A. Araque Rojas
 1/30/2023

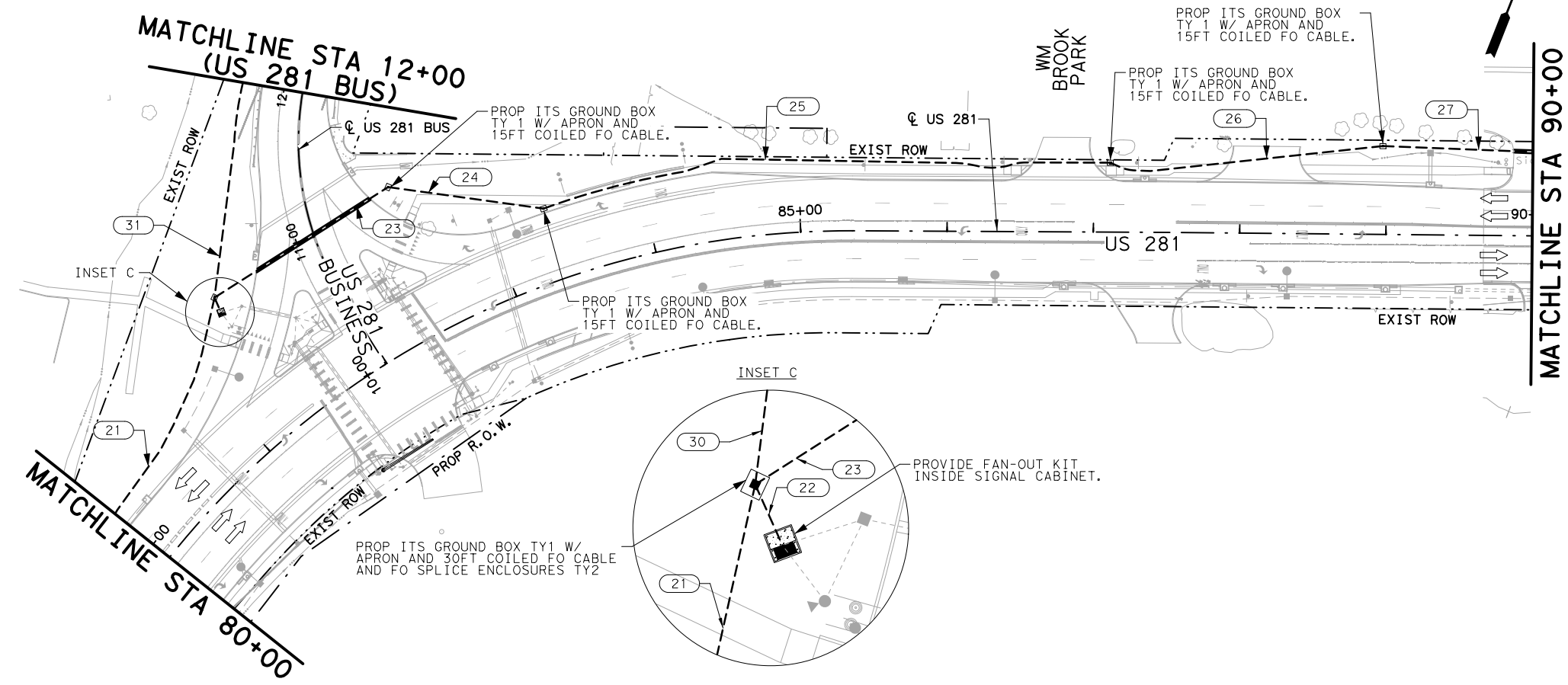
NO.	REVISION	BY	DATE
Kimley»Horn F-928			
 ©2023 Texas Department of Transportation US 281 FIBER LAYOUT STA 50+00 TO 70+00			
Designed:	KHA	FED. RD. DIV. NO.	STATE
Checked:	KHA	6	TEXAS
Drawn:	KHA	DIST.	COUNTY
Checked:	KHA	BWD	LAMPASAS
		CONTROL NO.	SECTION NO.
		0251	06
		JOB NO.	SHEET NO.
		036	277

cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 Justin.Kinne
 1/30/2023 13:07:10
 pw:/



CONDUIT AND CONDUIT SCHEDULE														
CONDUIT/ SPAN RUN NUMBER		17	18	19	20	21	22	23	24	25	26	27	31	TOTALS
NUMBER OF CONDUITS		1	1	1	1	1	1	1	1	1	1	1	1	-
CONDUIT/ SPAN LENGTH (LF)		200	30	150	350	500	15	145	110	395	190	105	150	-
3" PVC (SCH 40) (TRENCH)		1	1	1	1	1	1	1	1	1	1	1	1	1940
3" PVC (SCH 40) (BORE)				1				1			1			400
CABLE		NUMBER OF CONDUCTORS												
TRACER WIRE	ELEC CONDR (NO. 14) INSULATED	1	1	1	1	1	1	1	1	1	1	1	1	2340
FIBER OPTIC CABLE	SINGLE MODE (12 FIBER)													960
	SINGLE MODE (36 FIBER)	1	1	1	1	1							1	1380

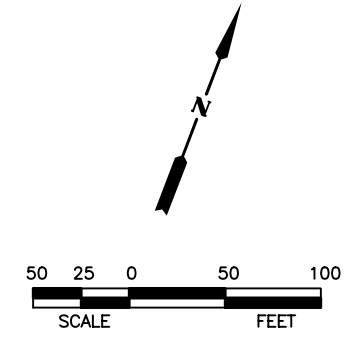
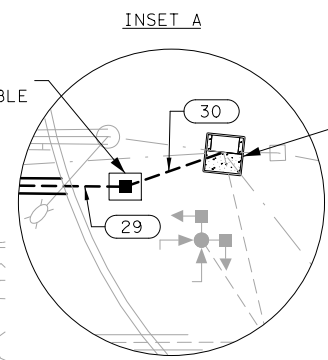
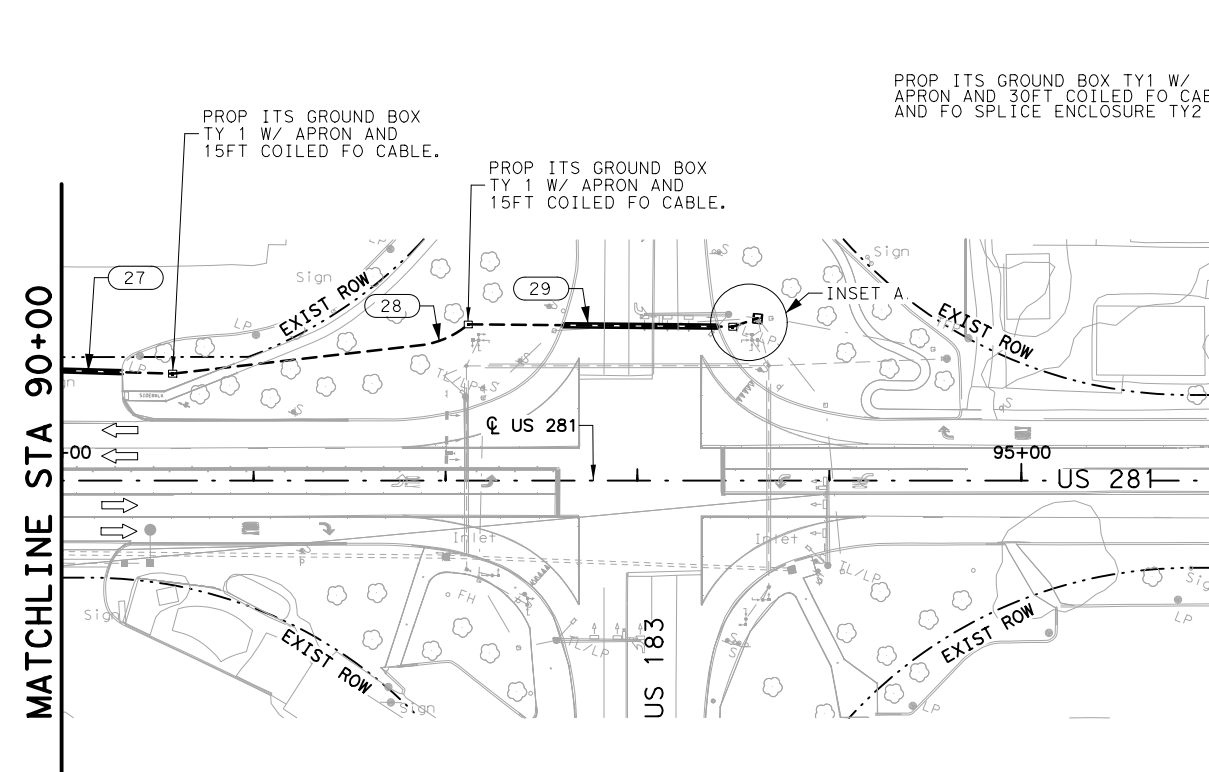
- FIBER LEGEND:**
- EXISTING SIGNAL CABINET
 - PROPOSED SIGNAL CABINET
 - PROPOSED ITS GROUND BOX TYPE 1
 - PROPOSED 3" PVC CONDUIT (TRENCH)
 - PROPOSED 3" PVC CONDUIT (BORE)
 - PROPOSED ITS MULTI-DUCT CONDUIT (RMC)
 - EXISTING DITCH LINE
 - CONDUIT RUN NUMBER
 - DIRECTION OF TRAVEL
 - RIGHT-OF-WAY (R.O.W.)
 - CONSTRUCTION LICENSE



Santiago A. Araque Rojas
 1/30/2023

NO.	REVISION	BY	DATE
Kimley»Horn F-928			
©2023 Texas Department of Transportation			
US 281 FIBER LAYOUT			
STA 70+00 TO 90+00			
Designed:	KHA	FED. RD. DIV. NO.	STATE
Checked:	KHA	6	TEXAS
Drawn:	KHA	DIST.	COUNTY
Checked:	KHA	BWD	LAMPASAS
		CONTROL NO.	SECTION NO.
		0251	06
		JOB NO.	SHEET NO.
		036	278

1/30/2023 13:07:22 Justin Kinne
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfp
 pw:/



- FIBER LEGEND:**
- EXISTING SIGNAL CABINET
 - PROPOSED SIGNAL CABINET
 - PROPOSED ITS GROUND BOX TYPE 1
 - PROPOSED 3" PVC CONDUIT (TRENCH)
 - PROPOSED 3" PVC CONDUIT (BORE)
 - PROPOSED ITS MULTI-DUCT CONDUIT (RMC)
 - EXISTING DITCH LINE
 - CONDUIT RUN NUMBER
 - DIRECTION OF TRAVEL
 - RIGHT-OF-WAY (R. O. W.)
 - CONSTRUCTION LICENSE

CONDUCTOR AND CONDUIT SCHEDULE						
CONDUIT/ SPAN RUN NUMBER	27	28	29	30	TOTALS	
NUMBER OF CONDUITS	1	1	1	1	-	
CONDUIT/ SPAN LENGTH (LF)	60	160	140	15	-	
3" PVC (SCH 40) (TRENCH)		1		1	175	
3" PVC (SCH 40) (BORE)	1		1		200	
CABLE		CIRCUIT		NUMBER OF CONDUCTORS		
TRACER WIRE	ELEC CONDR (NO. 14) INSULATED	1	1	1	1	375
FIBER OPTIC CABLE	SINGLE MODE (12 FIBER)	1	1	1	1	375
	SINGLE MODE (36 FIBER)					0

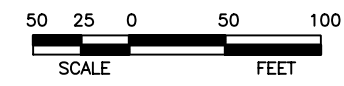
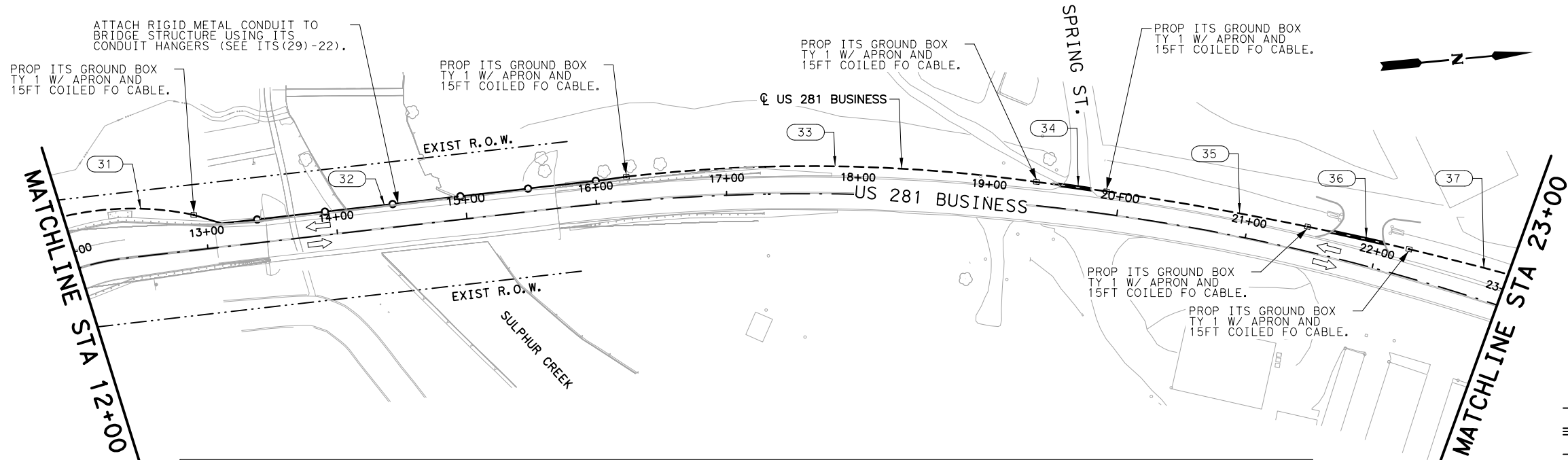
Santiago A. Araque Rojas

1/30/2023

cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/

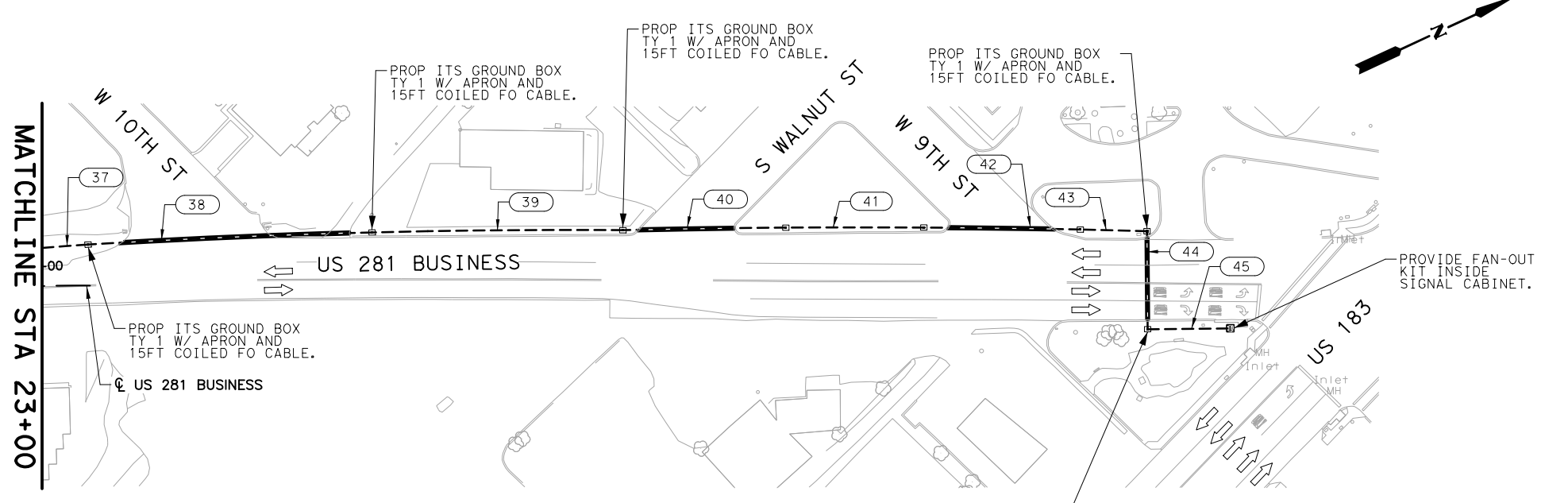
Justin.Kinne
 1/30/2023 13:07:33

NO.	REVISION	BY	DATE
US 281 FIBER LAYOUT STA 90+00 TO END			
Designed:	KHA	FED. RD. DIV. NO.	STATE
Checked:	KHA	6	TEXAS
Drawn:	KHA	DIST.	COUNTY
Checked:	KHA	BWD	LAMPASAS
		CONTROL NO.	SECTION NO.
		0251	06
		JOB NO.	SHEET NO.
		036	279



- FIBER LEGEND:**
- EXISTING SIGNAL CABINET
 - PROPOSED SIGNAL CABINET
 - PROPOSED ITS GROUND BOX TYPE 1
 - PROPOSED 3" PVC CONDUIT (TRENCH)
 - PROPOSED 3" PVC CONDUIT (BORE)
 - PROPOSED ITS MULTI-DUCT CONDUIT (RMC)
 - EXISTING DITCH LINE
 - CONDUIT RUN NUMBER
 - DIRECTION OF TRAVEL
 - RIGHT-OF-WAY (R.O.W.)
 - CONSTRUCTION LICENSE

CONDUCTOR AND CONDUIT SCHEDULE																
CONDUIT/ SPAN RUN NUMBER	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	TOTALS
NUMBER OF CONDUITS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-
CONDUIT/ SPAN LENGTH (LF)	105	335	320	60	160	80	110	190	165	110	95	105	45	65	55	-
3" PVC (SCH 40) (TRENCH)	1		1		1		1		1		1		1		1	1055
3" PVC (SCH 40) (BORE)				1		1		1		1		1		1		610
ITS MULTI-DUCT CND (RMC)		1														335
CABLE		NUMBER OF CONDUCTORS														
TRACER WIRE	ELEC CONDR (NO. 14) INSULATED		1	1	1	1	1	1	1	1	1	1	1	1	1	2000
FIBER OPTIC CABLE	SINGLE MODE (12 FIBER)														1	55
	SINGLE MODE (36 FIBER)		1	1	1	1	1	1	1	1	1	1	1	1	1	1945



Santiago A. Araque Rojas
1/30/2023

NO.	REVISION	BY	DATE

Kimley»Horn F-928

©2023 Texas Department of Transportation

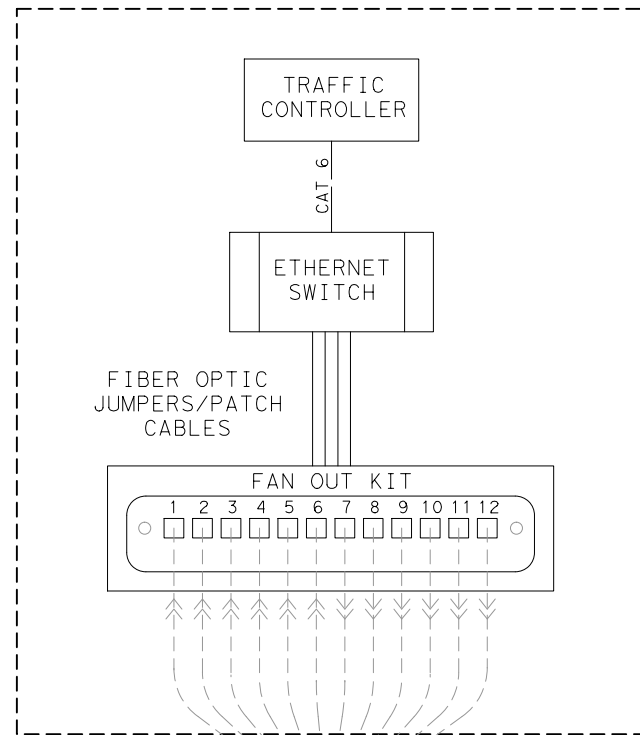
US 281
FIBER LAYOUT

US 281 BUSINESS

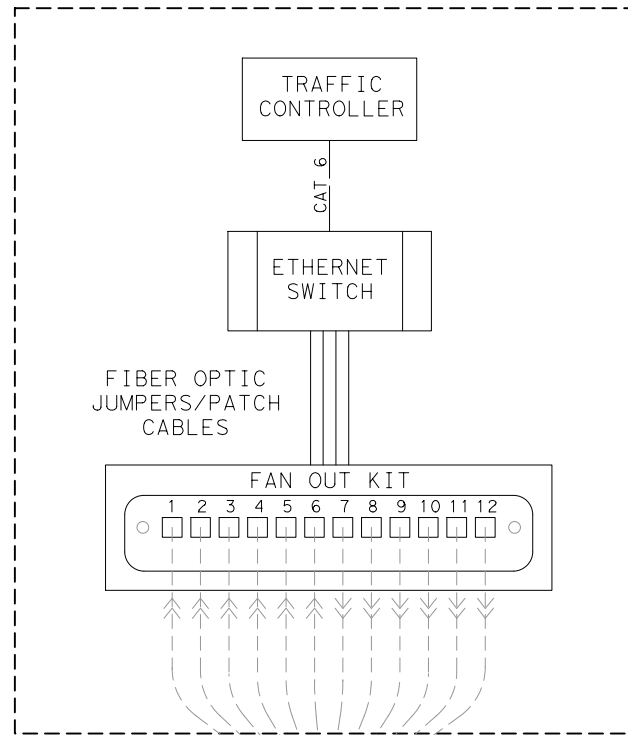
Designed:	KHA	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	KHA	DIST.	LAMPASAS	COUNTY	LAMPASAS	CONTROL NO.	0251	SECTION NO.	06
Drawn:	KHA	JOB NO.	036	SHEET NO.	280				
Checked:	KHA	BWD							

cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:
 Justin.Kinne
 1/30/2023 13:07:46
 pw:/

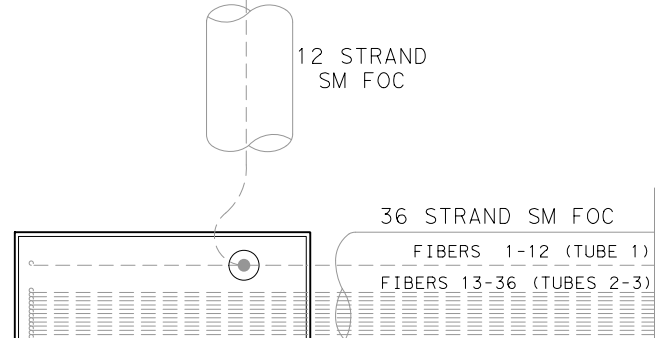
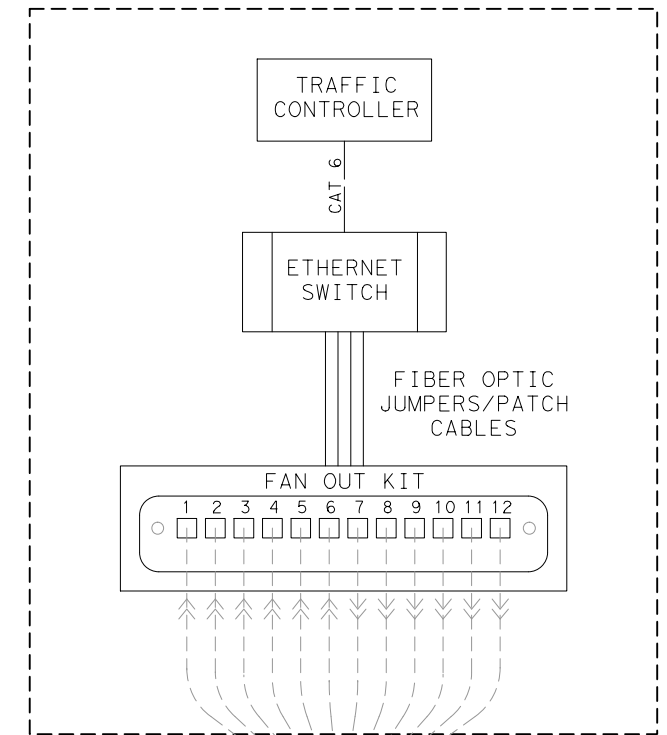
US 281 AT LAMPASAS HIGH SCHOOL SIGNAL CABINET (BEGIN INTERSECTION)



TRAFFIC SIGNAL CABINETS AT US 281 AT NARUNA RD
US 281 AT US 281 BUSINESS
US 281 AT US 183



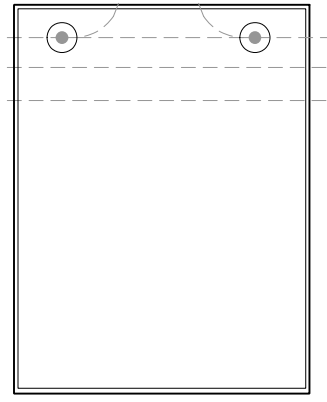
US 281 BUSINESS AT US 183 (END INTERSECTION)



US 281 AT LAMPASAS HIGH SCHOOL FIBER OPTIC ENCLOSURE INSTALLED IN GROUND BOX (BEGIN INTERSECTION)

36 STRAND SM FOC

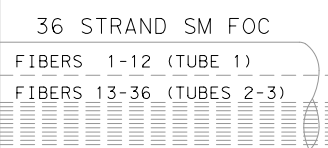
36 STRAND SM FOC
FIBERS 1-12 (TUBE 1)
FIBERS 13-24 (TUBE 2)
FIBERS 25-36 (TUBE 3)



TYPICAL FIBER OPTIC ENCLOSURE INSTALLED IN GROUND BOX

36 STRAND SM FOC
FIBERS 1-12 (TUBE 1)
FIBERS 13-24 (TUBE 2)
FIBERS 25-36 (TUBE 3)

36 STRAND SM FOC



US 281 AT US 183 FIBER OPTIC ENCLOSURE INSTALLED IN GROUND BOX (END INTERSECTION)

cpybw_ANSIB.tbl
cpypdf_ANSIB.pltcf
pw:/

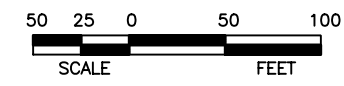
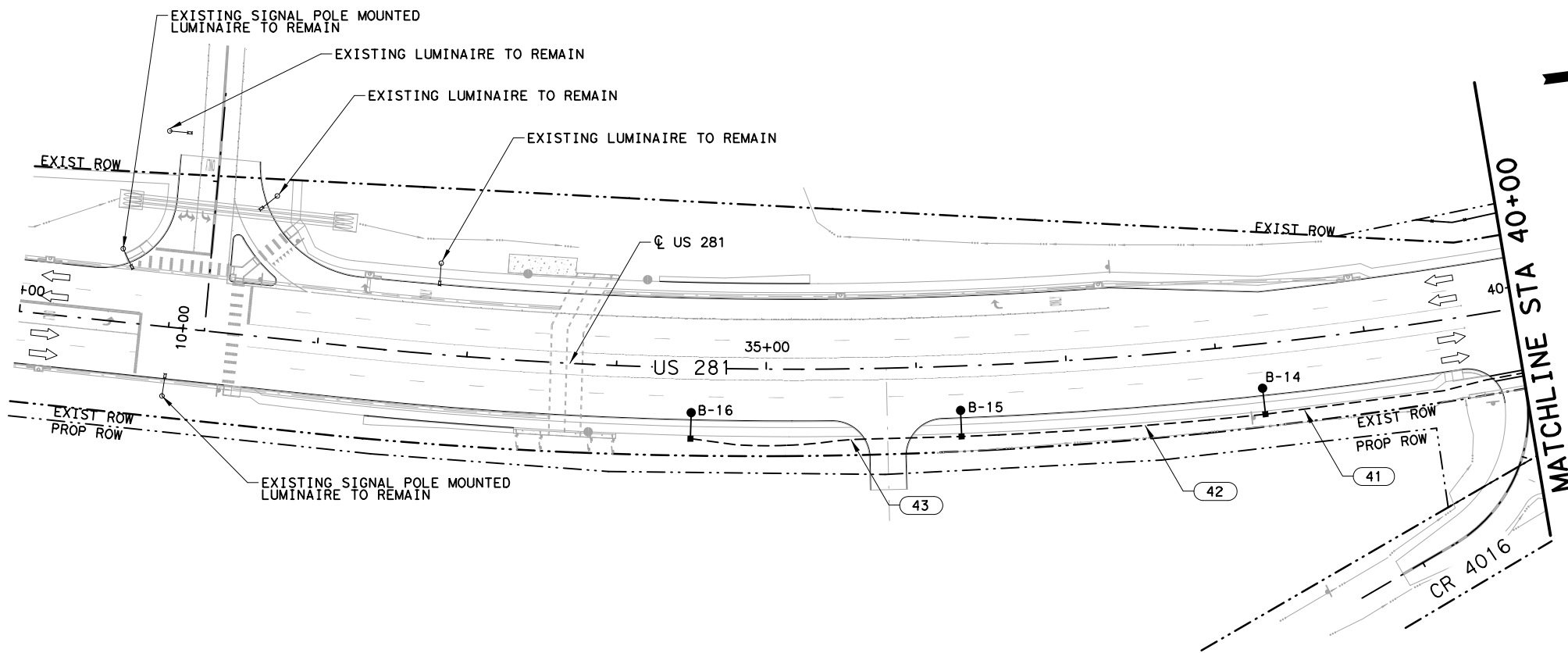
Justin Kinne

1/30/2023 13:07:52

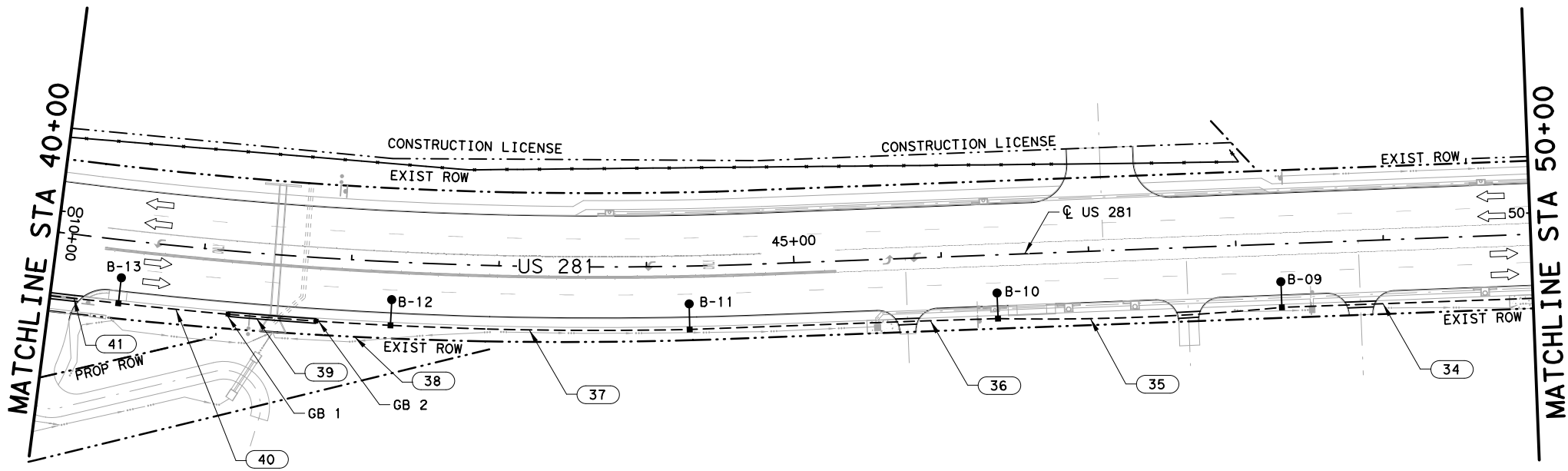
Santiago A. Arague Rojas
1/30/2023



NO.	REVISION	BY	DATE
<h1>Kimley»Horn</h1> <p>F-928</p> <p>©2023 Texas Department of Transportation</p> <p>US 281</p> <h2>FIBER OPTIC CABLE SPLICING DETAILS</h2>			
Designed:	KHA	FED. RD. DIV. NO. 6	STATE TEXAS
Checked:	KHA	DIST. COUNTY	FEDERAL AID PROJECT NO. US 281
Drawn:	KHA	CONTROL NO. 0251	SECTION NO. 06
Checked:	KHA	JOB NO. 036	SHEET NO. 281



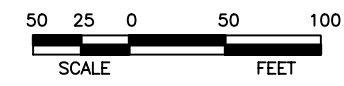
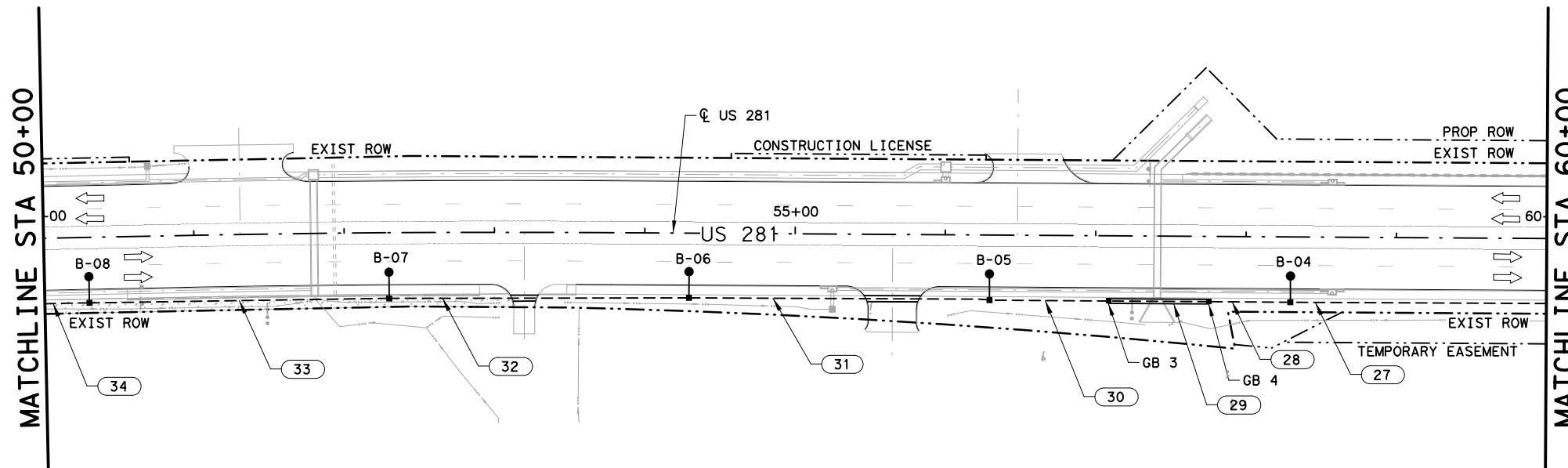
- ILLUMINATION LEGEND:**
- PROPOSED ILLUM (TY SA)50T-12(400W EQ)LED
 - ⊙ PROPOSED SIGNAL POLE MOUNTED LUMINAIRE
 - EXISTING LUMINAIRE TO REMAIN
 - ⊖ EXISTING LUMINAIRE TO BE REMOVED
 - ⚡ PROPOSED ELECTRICAL SERVICE
 - PROPOSED TY A GROUND BOX
 - - - PROPOSED 2" CONDUIT (TRENCH)
 - ≡≡≡ PROPOSED 2" CONDUIT (BORE)
 - ⓧ XX ELECTRICAL RUN NUMBER
 - X-## ILLUMINATION ASSEMBLY IDENTIFICATION
X - CIRCUIT
- POLE NUMBER
 - ← DIRECTION OF TRAVEL



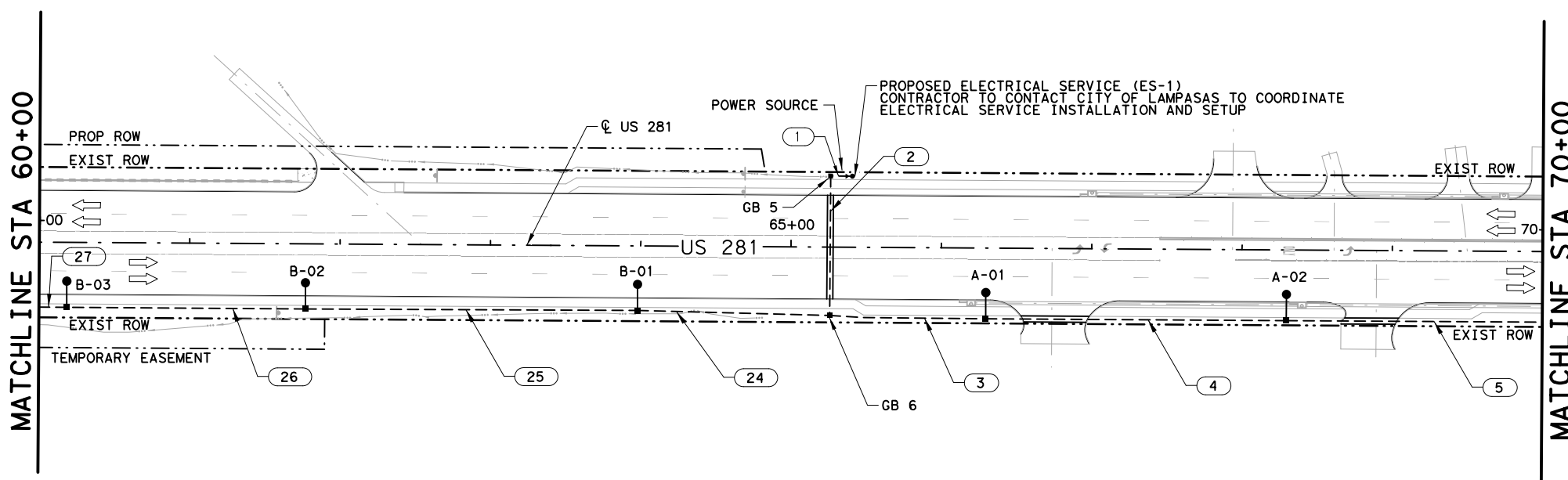
Scott Schmidt
 2/27/2023

NO.	REVISION	BY	DATE
Kimley»Horn F-928			
©2023 Texas Department of Transportation			
US 281 ILLUMINATION LAYOUT			
END TO 50+00			
Designed:	KHA	FED. RD. DIV. NO. 6	STATE TEXAS
Checked:	KHA	FEDERAL AID PROJECT NO. US 281	
Drawn:	KHA	DIST. COUNTY	CONTROL NO. SECTION
Checked:	KHA	BWD LAMPASAS	0251 06
			JOB NO. 036
			SHEET NO. 282

2/27/2023 17:27:42
 Justin Kinne
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/



- ILLUMINATION LEGEND:
- PROPOSED ILLUM (TY SA)50T-12(400W EQ)LED
 - ⊙ PROPOSED SIGNAL POLE MOUNTED LUMINAIRE
 - ⊙ EXISTING LUMINAIRE TO REMAIN
 - ⊙ EXISTING LUMINAIRE TO BE REMOVED
 - ⊙ PROPOSED ELECTRICAL SERVICE
 - PROPOSED TY A GROUND BOX
 - PROPOSED 2" CONDUIT (TRENCH)
 - === PROPOSED 2" CONDUIT (BORE)
 - (XX) ELECTRICAL RUN NUMBER
 - X-## ILLUMINATION ASSEMBLY IDENTIFICATION
 - X - CIRCUIT
 - # - POLE NUMBER
 - ← DIRECTION OF TRAVEL

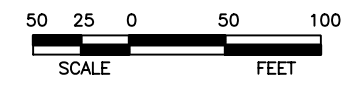
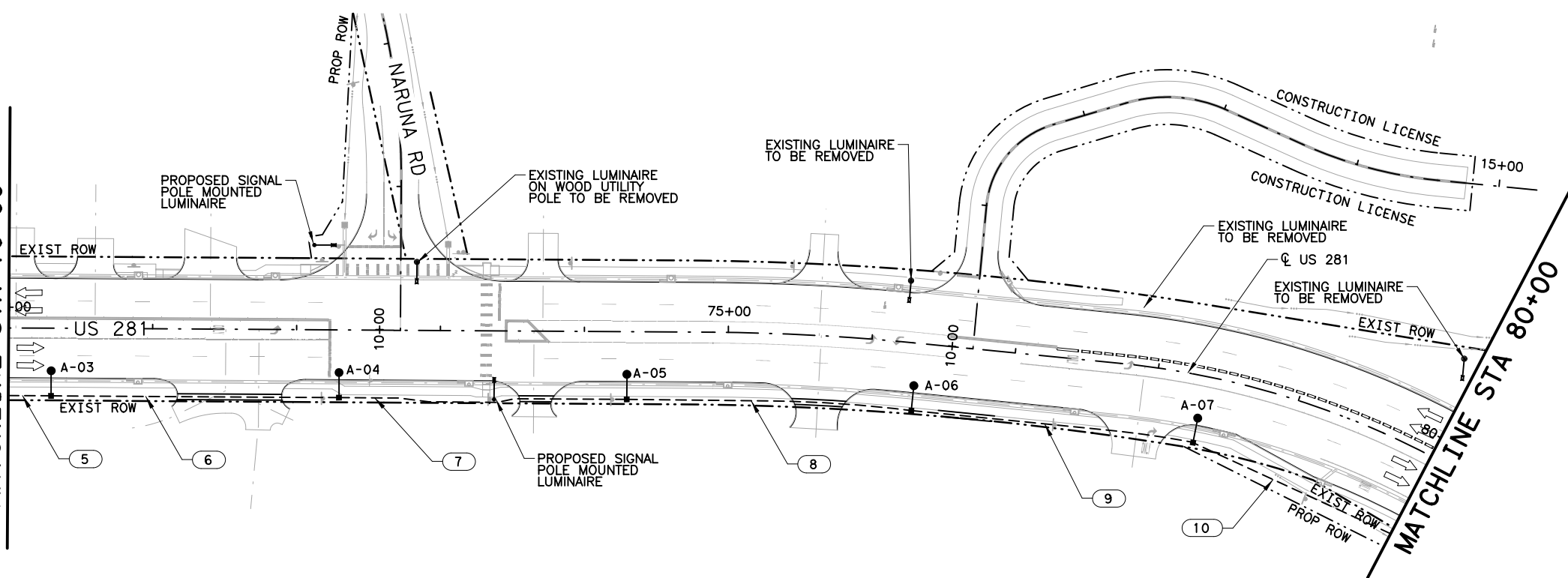


Scott Schmidt
 1/30/2023

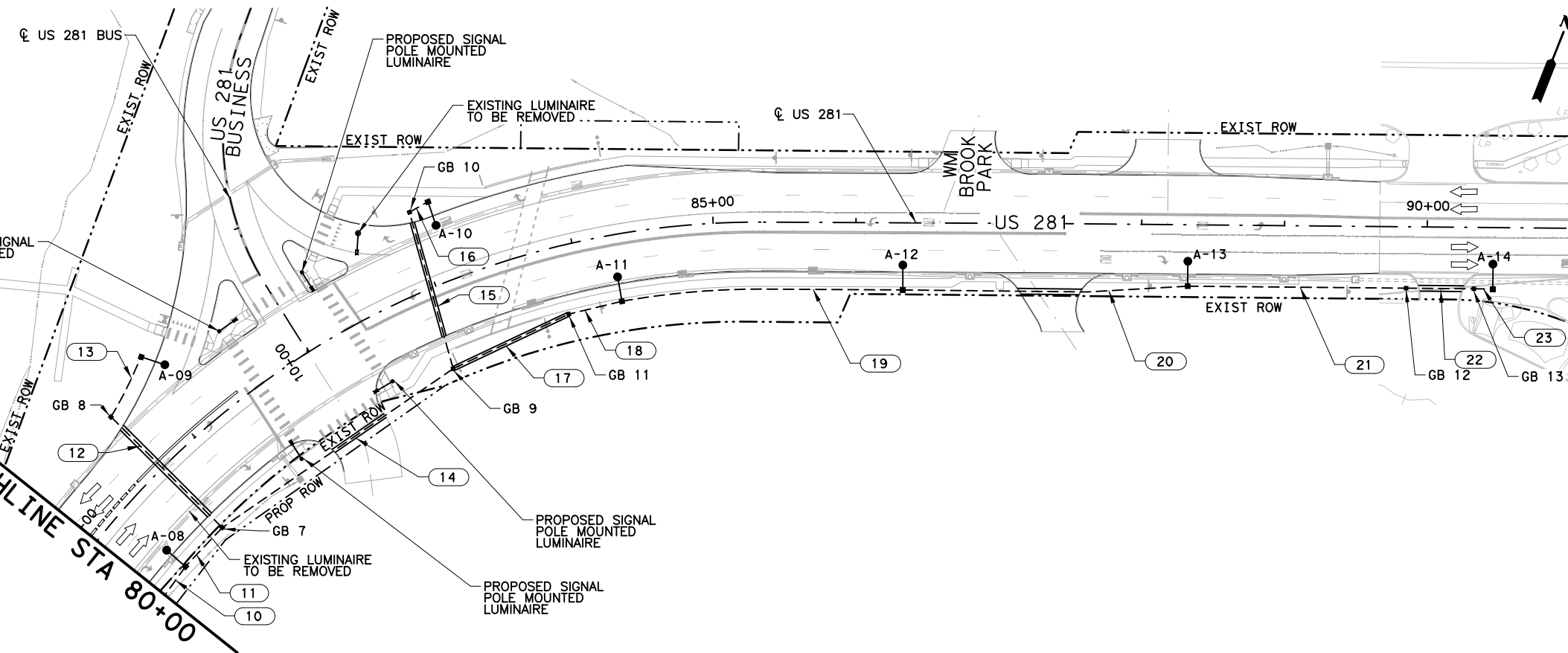

NO.	REVISION	BY	DATE
Kimley»Horn F-928			
©2023 Texas Department of Transportation			
US 281 ILLUMINATION LAYOUT			
STA 50+00 TO 70+00			
Designed:	KHA	FED. RD. DIV. NO.	STATE
Checked:	KHA	6	TEXAS
Drawn:	KHA	DIST.	COUNTY
Checked:	KHA	BWD	LAMPASAS
		CONTROL NO.	SECTION NO.
		0251	06
		JOB NO.	SHEET NO.
		036	283

cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 Justin.Kinne
 1/30/2023 13:08:07
 pw:/

MATCHLINE STA 70+00



- ILLUMINATION LEGEND:
- PROPOSED ILLUM (TY SA)50T-12(400W EQ)LED
 - ⊙ PROPOSED SIGNAL POLE MOUNTED LUMINAIRE
 - EXISTING LUMINAIRE TO REMAIN
 - ⊖ EXISTING LUMINAIRE TO BE REMOVED
 - ⋯ PROPOSED ELECTRICAL SERVICE
 - PROPOSED TY A GROUND BOX
 - - - PROPOSED 2" CONDUIT (TRENCH)
 - ≡≡≡ PROPOSED 2" CONDUIT (BORE)
 - ⓧ XX ELECTRICAL RUN NUMBER
 - X-## ILLUMINATION ASSEMBLY IDENTIFICATION
X - CIRCUIT
- POLE NUMBER
 - ← DIRECTION OF TRAVEL



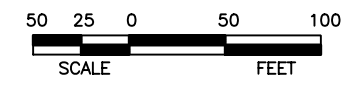
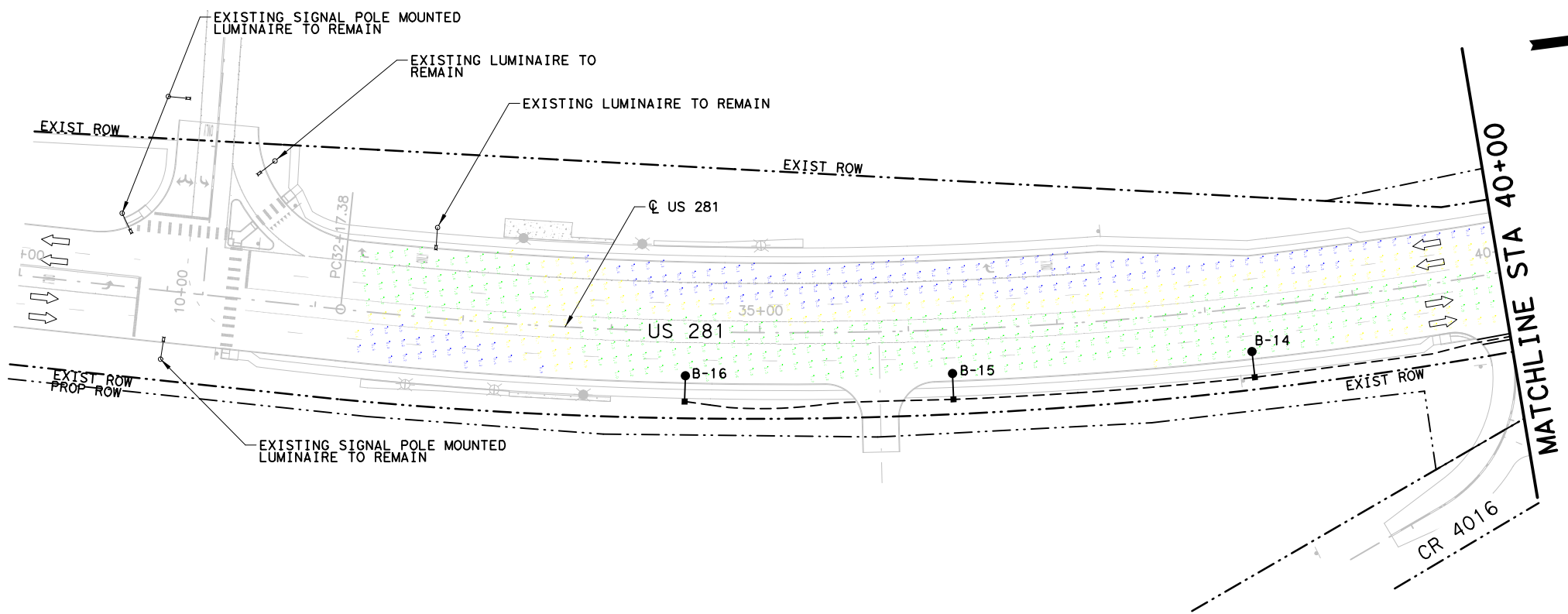
Scott Schmidt
 1/30/2023
 STATE OF TEXAS
 SCOTT G. SCHMIDT
 105151
 LICENSED PROFESSIONAL ENGINEER

1/30/2023 13:08:15 Justin.Kinne
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:

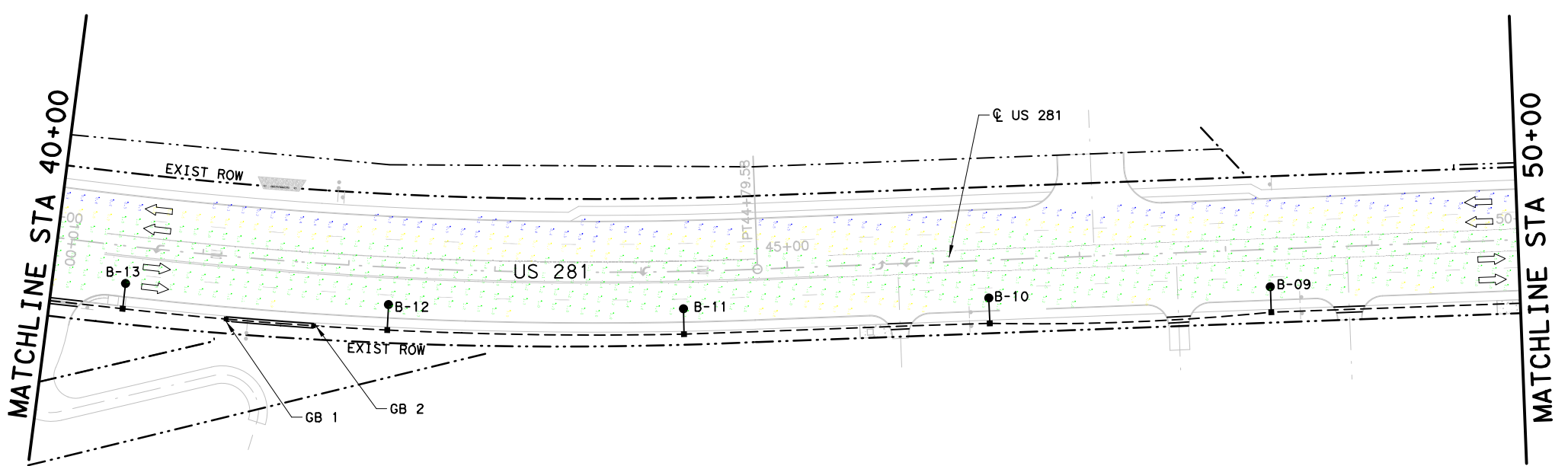
pw:/

SHEET 3 OF 3

NO.	REVISION	BY	DATE
<h1>Kimley»Horn</h1>			
©2023 Texas Department of Transportation US 281 ILLUMINATION LAYOUT STA 70+00 TO BEGIN			
Designed:	KHA	FED. RD. DIV. NO.	STATE
Checked:	KHA	6	TEXAS
Drawn:	KHA	DIST.	COUNTY
Checked:	KHA	BWD	LAMPASAS
		CONTROL NO.	SECTION NO.
		0251	06
		JOB NO.	SHEET NO.
		036	284



- ILLUMINATION LEGEND:
- PROP ILLUM (TY SA) 50T-12 (400W EQ) LED
- ILLUMINANCE VALUES FOOTCANDLES:
- 0.00 TO 0.19
 - 0.20 TO 0.59
 - 0.60 TO 0.99
 - 1.00 TO 1.99
 - 2.00 TO 20.0



1/30/2023

1/30/2023 13:48:31 Justin.Kinne
 cpybw_ANSIB_PHOTO.tbl
 cpypdf_ANSIB.pltcfgrw:/

NO.	REVISION	BY	DATE

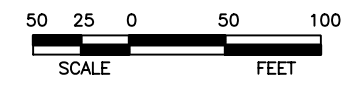
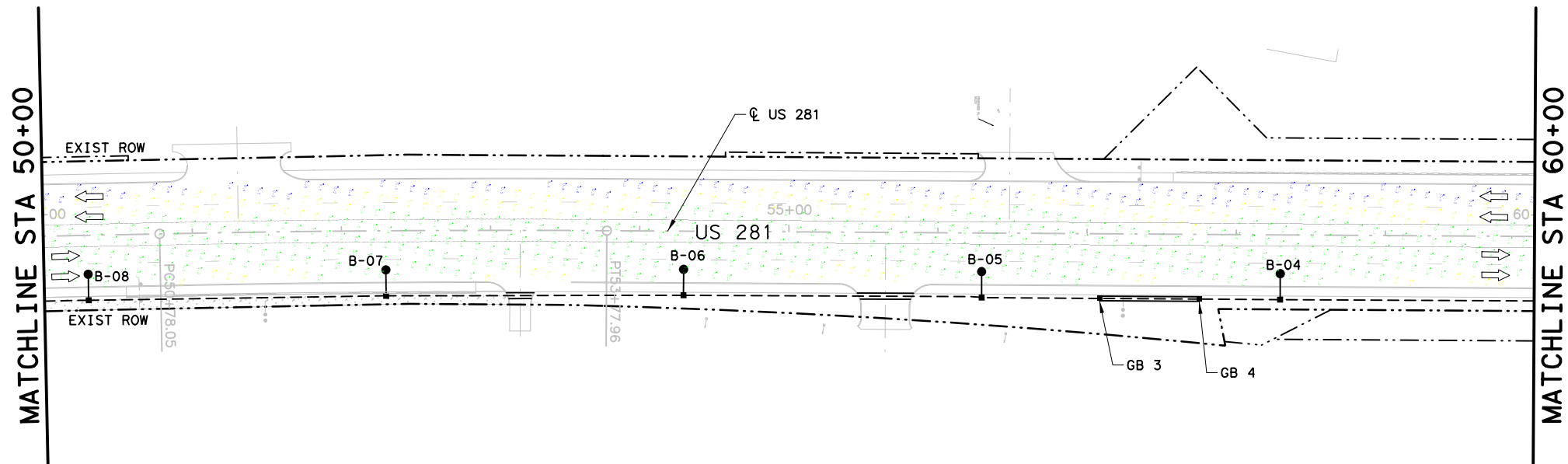
Kimley»Horn F-928

©2023 Texas Department of Transportation

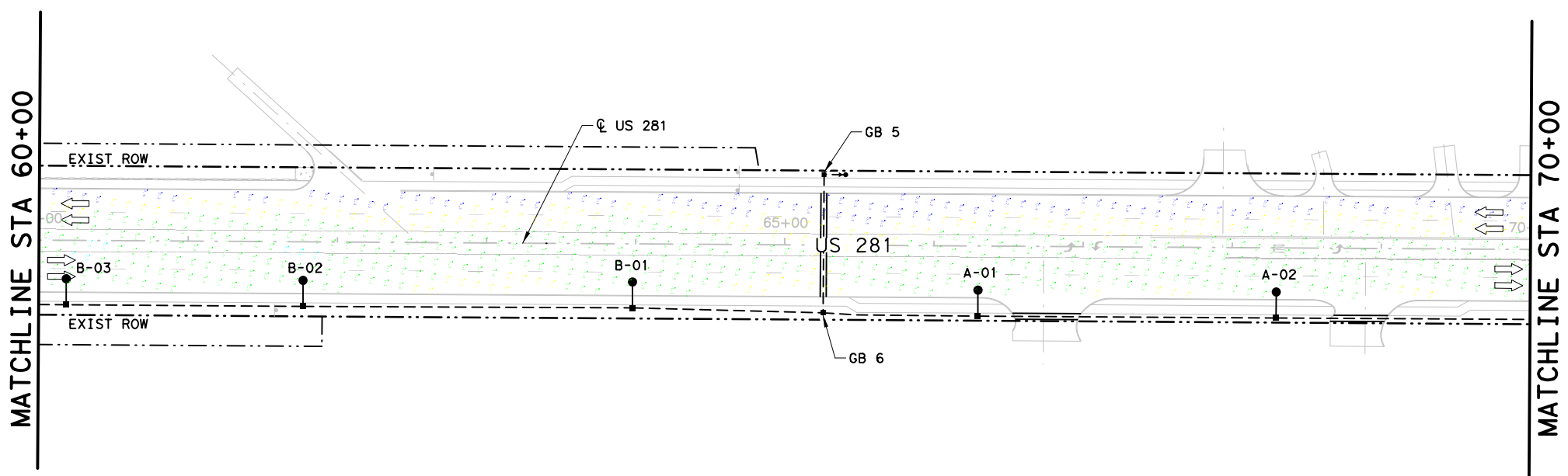
US 281
PHOTOMETRIC LAYOUT

END TO 50+00

Designed:	KHA	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	KHA	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Drawn:	KHA	JOB NO.	036	SHEET NO.	285				
Checked:	KHA	BWD							



- ILLUMINATION LEGEND:
- PROP ILLUM (TY SA) 50T-12 (400W EQ) LED
- ILLUMINANCE VALUES FOOTCANDLES:
- 0.00 TO 0.19
 - 0.20 TO 0.59
 - 0.60 TO 0.99
 - 1.00 TO 1.99
 - 2.00 TO 20.0



1/30/2023

NO.	REVISION	BY	DATE

Kimley»Horn F-928

©2023 Texas Department of Transportation

US 281
PHOTOMETRIC LAYOUT
STA 50+00 TO 70+00

Designed:	KHA	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	KHA	DIST.	LAMPASAS	COUNTY	LAMPASAS	CONTROL NO.	0251	SECTION NO.	06
Drawn:	KHA	JOB NO.	036	SHEET NO.	286				
Checked:	KHA	BWD							

1/30/2023 13:08:30 Justin.Kinne
 cpybw_ANSIB_PHOTO.tbi
 cpypdf_ANSIB.pltcf
 pw:/

MATCHLINE STA 70+00

US 281

NARUNA RD

EXISTING LUMINAIRE ON WOOD UTILITY POLE TO BE REMOVED

EXIST ROW

EXISTING LUMINAIRE TO BE REMOVED

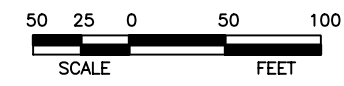
EXISTING LUMINAIRE TO BE REMOVED

US 281

EXISTING LUMINAIRE TO BE REMOVED

15+00

MATCHLINE STA 80+00



ILLUMINATION LEGEND:

● PROP ILLUM (TY SA) 50T-12 (400W EQ) LED

ILLUMINANCE VALUES FOOTCANDLES:

- 0.00 TO 0.19
- 0.20 TO 0.59
- 0.60 TO 0.99
- 1.00 TO 1.99
- 2.00 TO 20.0

A-03

A-04

A-05

A-06

A-07

75+00

EXIST ROW

PC74+89.36

PC77+73.39

US 281 BUS

US 281 BUSINESS

PROPOSED SIGNAL POLE MOUNTED LUMINAIRE

EXISTING LUMINAIRE TO BE REMOVED

US 281

WM BROOK PARK

US 281

90+00

PROPOSED SIGNAL POLE MOUNTED LUMINAIRE

GB 10

A-10

A-11

A-12

A-13

A-14

85+00

EXIST ROW

GB 8

A-09

GB 9

GB 11

GB 12

GB 13

MATCHLINE STA 80+00

EXIST ROW

A-08

GB 7

PROPOSED SIGNAL POLE MOUNTED LUMINAIRE

EXISTING LUMINAIRE TO BE REMOVED

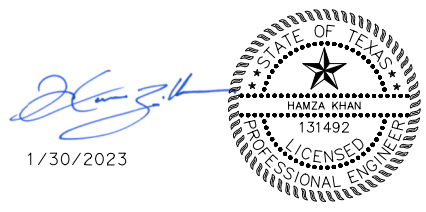
PROPOSED SIGNAL POLE MOUNTED LUMINAIRE

cpybw_ANSIB_PHOTO.tbi
cpypdf_ANSIB.pltcfp
pw:/

Justin.Kinne

1/30/2023 13:08:37

pw:/



1/30/2023

NO.	REVISION	BY	DATE

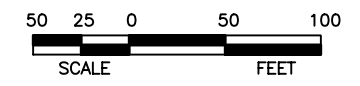
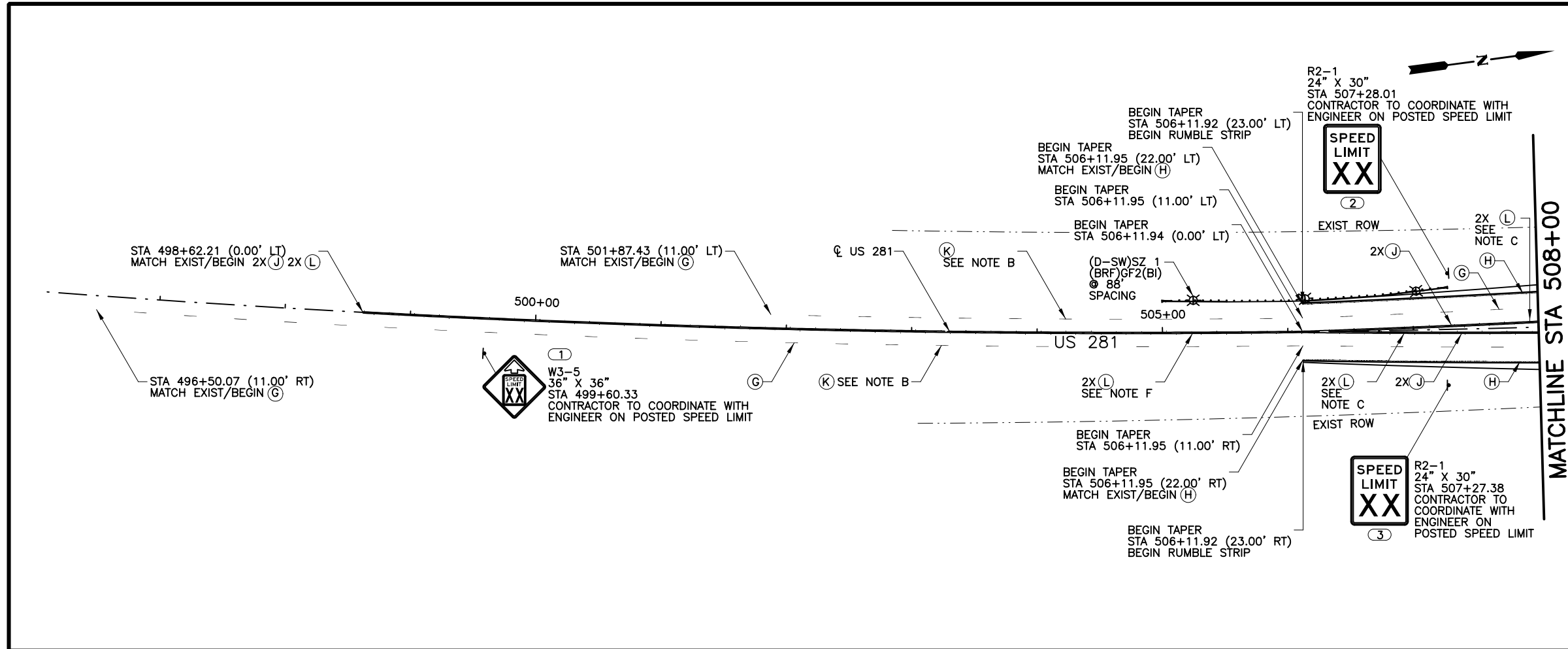
Kimley»Horn F-928

©2023 Texas Department of Transportation

US 281
PHOTOMETRIC LAYOUT
STA 70+00 TO BEGIN

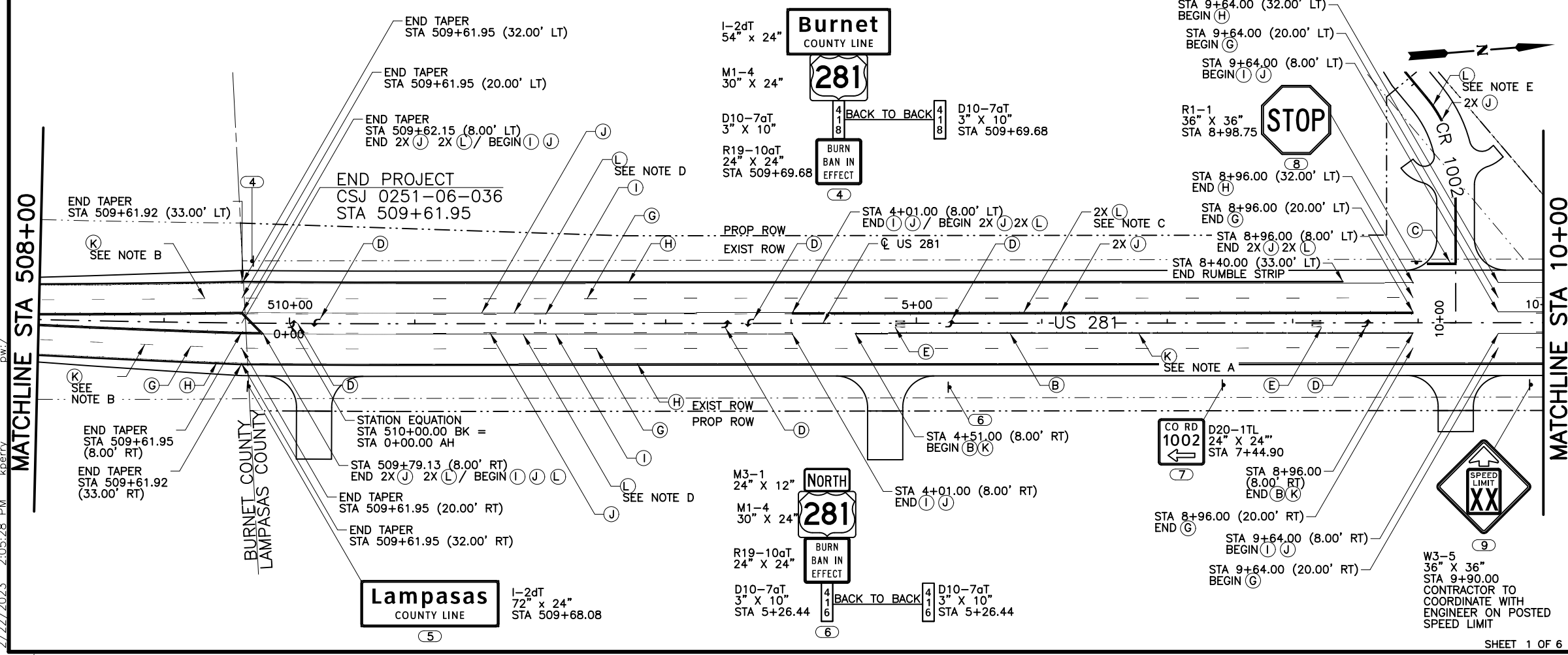
Designed:	KHA	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	KHA	6	TEXAS		US 281		
Drawn:	KHA	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	KHA	BWD	LAMPASAS	0251	06	036	287

2/22/2023 2:05:28 PM kpercy
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:



- LEGEND**
- (A) REFL PAV MRK TY I (W) (6") (DOT)
 - (B) REFL PAV MRK TY I (W) (8") (SLD)
 - (C) REFL PAV MRK TY I (W) (24") (SLD)
 - (D) PREFAB PAV MRK TY C (W) (ARROW)
 - (E) PREFAB PAV MRK TY C (W) (WORD)
 - (F) PREFAB PAV MRK TY C (W) 36" (YLD TRI)
 - (G) RE PM W/RET REQ TY I (W) (6") (BRK)
 - (H) RE PM W/RET REQ TY I (W) (6") (SLD)
 - (I) RE PM W/RET REQ TY I (Y) (6") (BRK)
 - (J) RE PM W/RET REQ TY I (Y) (6") (SLD)
 - (K) REFL PAV MRKR TY I-C
 - (L) REFL PAV MRKR TY II-A-A
 - (M) PROPOSED SMALL SIGN
 - (N) RELOCATED SMALL SIGN
 - (O) EXISTING SIGN TO REMAIN
 - (P) (D-SW)SZ (BRF)CTB(BI)
 - (Q) (D-SW)SZ 1(BRF)GF2(BI)
 - (R) (D-SW)SZ 1(FX)GND
 - (S) (D-SW)SZ 1(FX)GND(BI)
 - (T) OM-2Z (FLX)GND

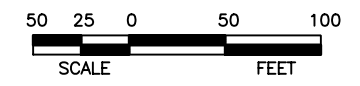
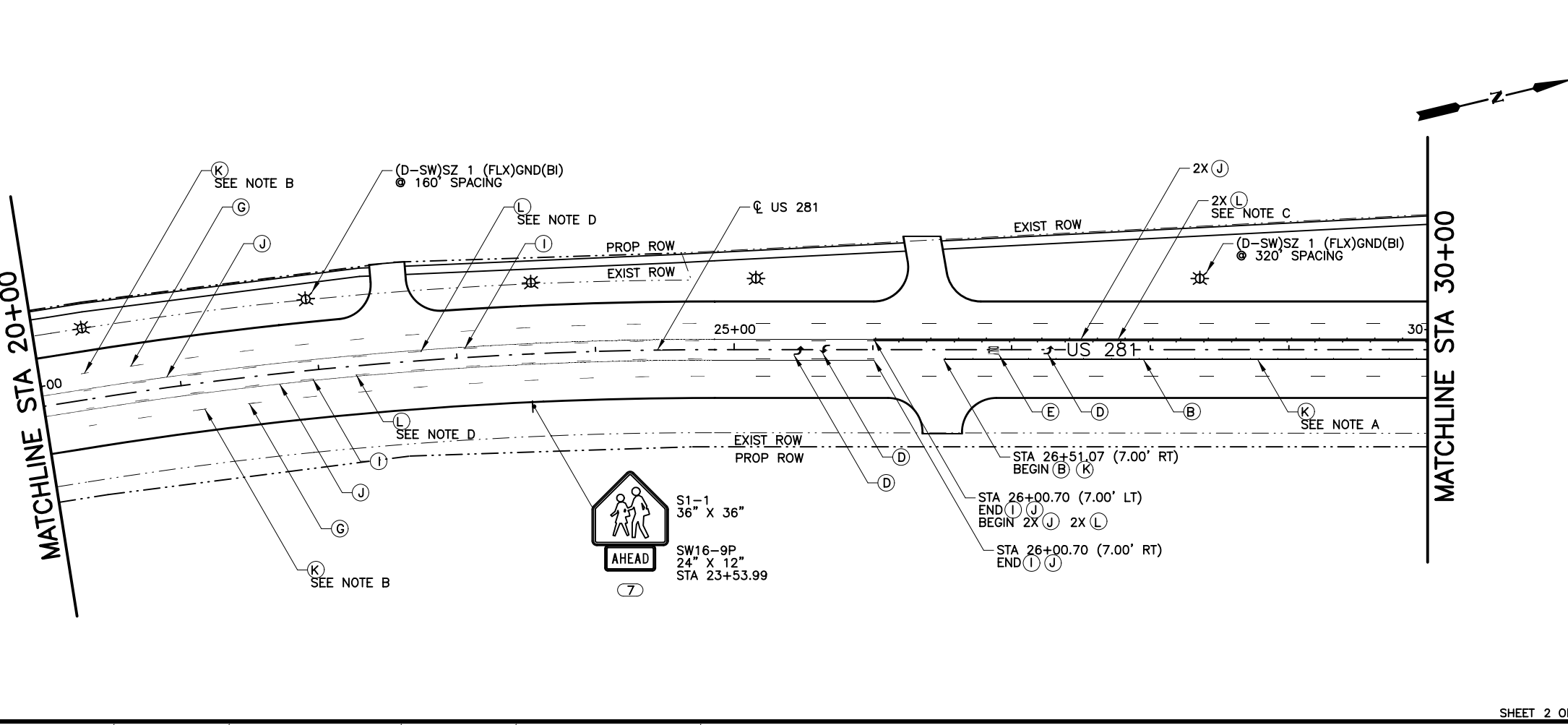
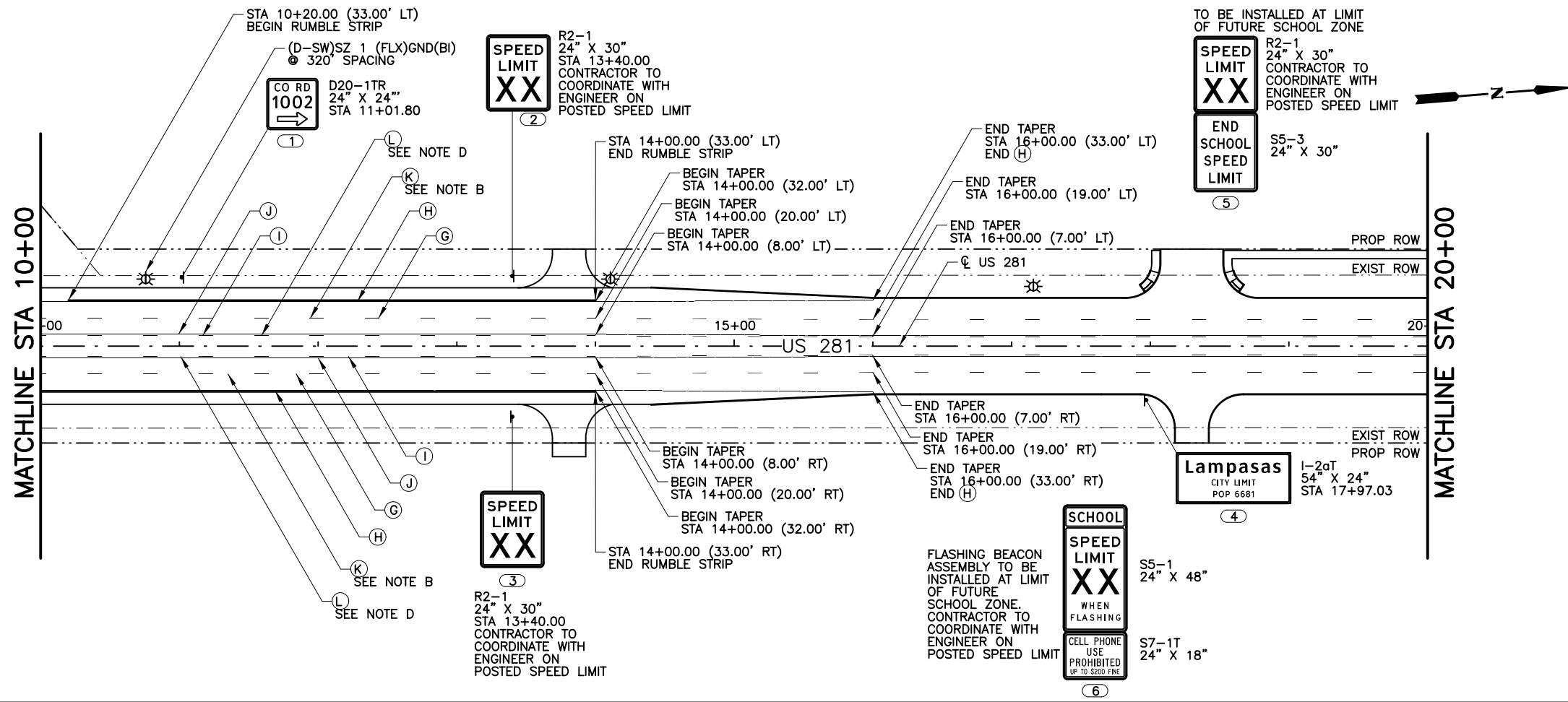
- NOTES:**
- A. (K) AT 20' SPACING
 - B. (K) AT 80' SPACING
 - C. 2X (L) AT 20' SPACING
 - D. (L) AT 40' SPACING
 - E. (L) AT 80' SPACING
 - F. 2X (L) AT 80' SPACING
 - G. ALL STATIONS ARE FROM C US 281 UNLESS NOTED OTHERWISE.



STATE OF TEXAS
 KRISTEN L. PERRY
 129482
 PROFESSIONAL ENGINEER
 2/22/2023

NO.	REVISION	BY	DATE
 TEXAS REGISTERED ENGINEERING FIRM F-1741			
 US 281			
SIGNING & STRIPING LAYOUT			
END PROJECT TO STA 10+00			
Designed:	CPY	FED. RD. DIST. NO.:	6
Checked:	CPY	STATE:	TEXAS
Drawn:	CPY	FEDERAL AID PROJECT NO.:	
Checked:	CPY	HIGHWAY NO.:	US 281
	DIST.:	COUNTY:	LAMPASAS
	CONTROL NO.:	SECTION NO.:	0251 06
	JOB NO.:	SHEET NO.:	036 288

2/22/2023 2:35:57 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfq
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.xx Signing and Striping/49304Tcpl02.dgn



- LEGEND**
- ⊗ REFL PAV MRK TY I (W) (6") (DOT)
 - ⊗ REFL PAV MRK TY I (W) (8") (SLD)
 - ⊗ REFL PAV MRK TY I (W) (24") (SLD)
 - ⊗ PREFAB PAV MRK TY C (W) (ARROW)
 - ⊗ PREFAB PAV MRK TY C (W) (WORD)
 - ⊗ PREFAB PAV MRK TY C (W) 36" (YLD TRI)
 - ⊗ RE PM W/RET REQ TY I (W) (6") (BRK)
 - ⊗ RE PM W/RET REQ TY I (W) (6") (SLD)
 - ⊗ RE PM W/RET REQ TY I (Y) (6") (BRK)
 - ⊗ RE PM W/RET REQ TY I (Y) (6") (SLD)
 - ⊗ REFL PAV MRKR TY I-C
 - ⊗ REFL PAV MRKR TY II-A-A
 - ⊗ PROPOSED SMALL SIGN
 - ⊗ RELOCATED SMALL SIGN
 - ⊗ EXISTING SIGN TO REMAIN
 - ⊗ (D-SW)SZ (BRF)CTB(BI)
 - ⊗ (D-SW)SZ 1(BRF)GF2(BI)
 - ⊗ (D-SW)SZ 1(FLX)GND
 - ⊗ (D-SW)SZ 1(FLX)GND(BI)
 - ⊗ OM-2Z (FLX)GND

- NOTES:**
- A. ⊗ AT 20' SPACING
 - B. ⊗ AT 80' SPACING
 - C. 2X ⊗ AT 20' SPACING
 - D. ⊗ AT 40' SPACING
 - E. ⊗ AT 80' SPACING
 - F. 2X ⊗ AT 80' SPACING
 - G. ALL STATIONS ARE FROM Ⓞ US 281 UNLESS NOTED OTHERWISE.



Kristen L. Perry

2/22/2023

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741

©2023 Texas Department of Transportation

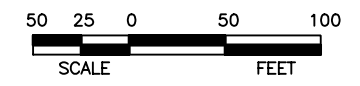
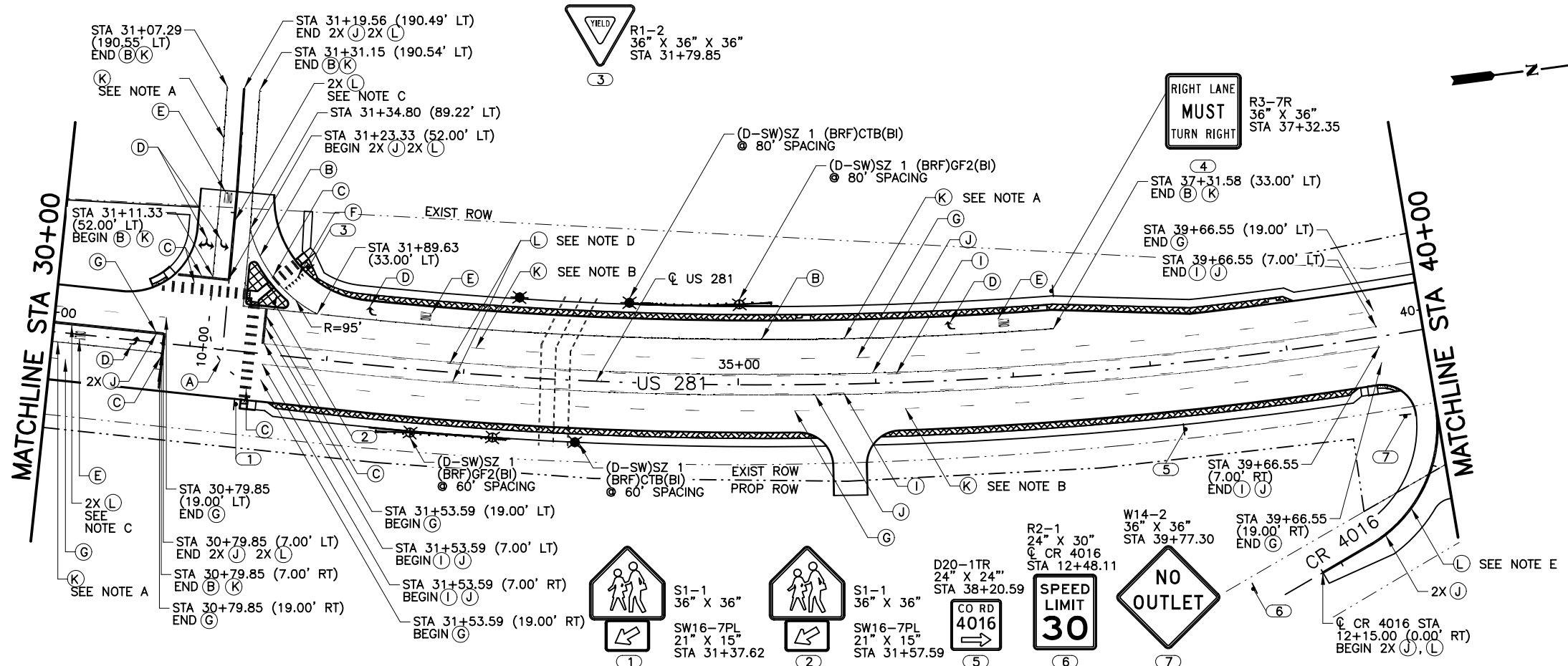
US 281

SIGNING & STRIPING LAYOUT

STA 10+00 TO 30+00

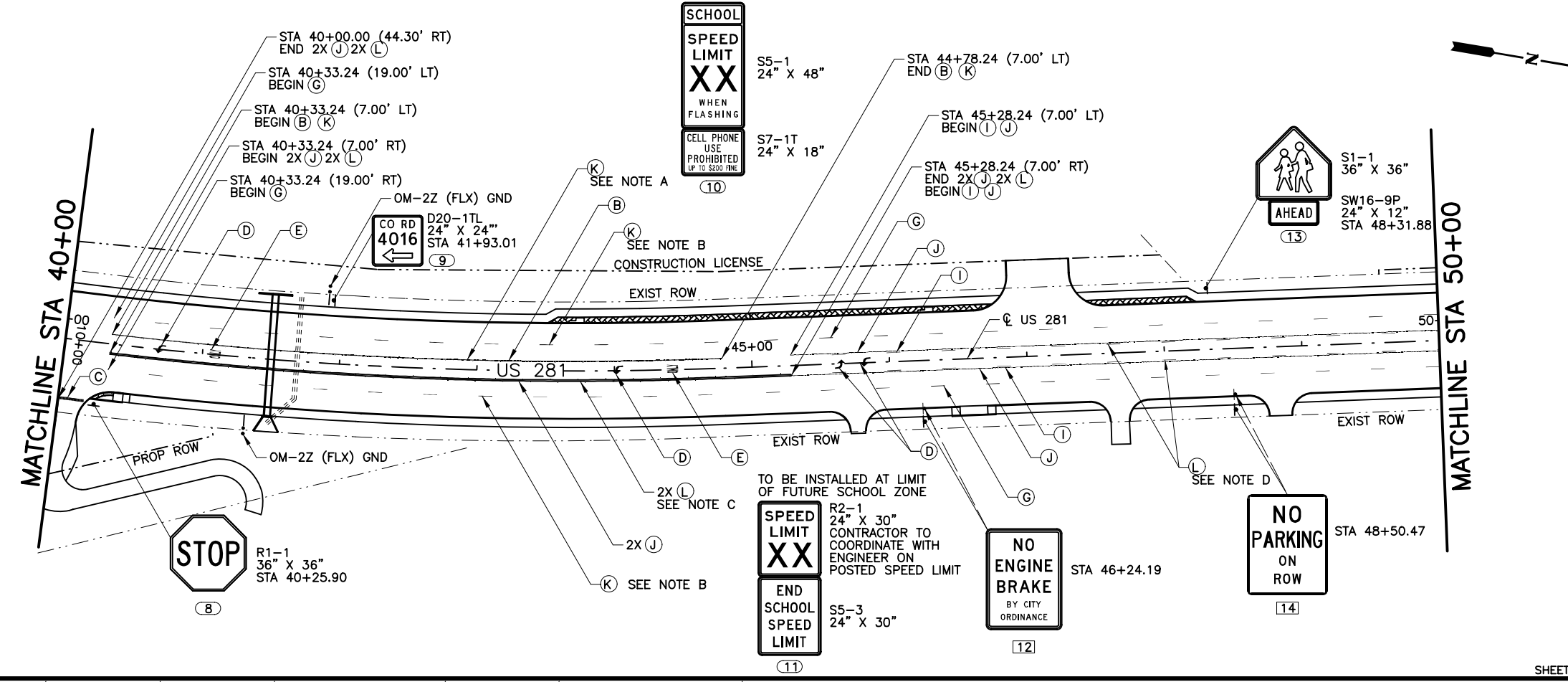
Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	CPY	6	TEXAS		US 281		
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	CPY	BWD	LAMPASAS	0251	06	036	289

2/22/2023 2:37:12 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/Active Projects/TXD01600493.00/TXD01600493.04/8.00 Plans and Drawings/8.30 Cut Sheets/8.3.xx Signing and Striping/49304Tcpl03.dgn



- LEGEND**
- (A) REFL PAV MRK TY I (W) (6") (DOT)
 - (B) REFL PAV MRK TY I (W) (8") (SLD)
 - (C) REFL PAV MRK TY I (W) (24") (SLD)
 - (D) PREFAB PAV MRK TY C (W) (ARROW)
 - (E) PREFAB PAV MRK TY C (W) (WORD)
 - (F) PREFAB PAV MRK TY C (W) 36" (YLD TRI)
 - (G) RE PM W/RET REQ TY I (W) (6") (BRK)
 - (H) RE PM W/RET REQ TY I (W) (6") (SLD)
 - (I) RE PM W/RET REQ TY I (Y) (6") (BRK)
 - (J) RE PM W/RET REQ TY I (Y) (6") (SLD)
 - (K) REFL PAV MRKR TY I-C
 - (L) REFL PAV MRKR TY II-A-A
 - (M) PROPOSED SMALL SIGN
 - (N) RELOCATED SMALL SIGN
 - (O) EXISTING SIGN TO REMAIN
 - (D-SW)SZ 1 (BRF)CTB(BI)
 - (D-SW)SZ 1 (BRF)GF2(BI)
 - (D-SW)SZ 1 (FLX)GND
 - (D-SW)SZ 1 (FLX)GND(BI)
 - OM-2Z (FLX)GND
- NOTES:**
- A. (A) AT 20' SPACING
 - B. (B) AT 80' SPACING
 - C. 2X (C) AT 20' SPACING
 - D. (D) AT 40' SPACING
 - E. (E) AT 80' SPACING
 - F. 2X (F) AT 80' SPACING
 - G. ALL STATIONS ARE FROM C US 281 UNLESS NOTED OTHERWISE.

FLASHING BEACON ASSEMBLY TO BE INSTALLED AT LIMIT OF FUTURE SCHOOL ZONE. CONTRACTOR TO COORDINATE WITH ENGINEER ON POSTED SPEED LIMIT



2/22/2023

Kristin L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741

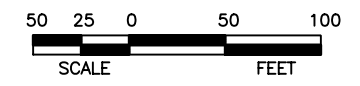
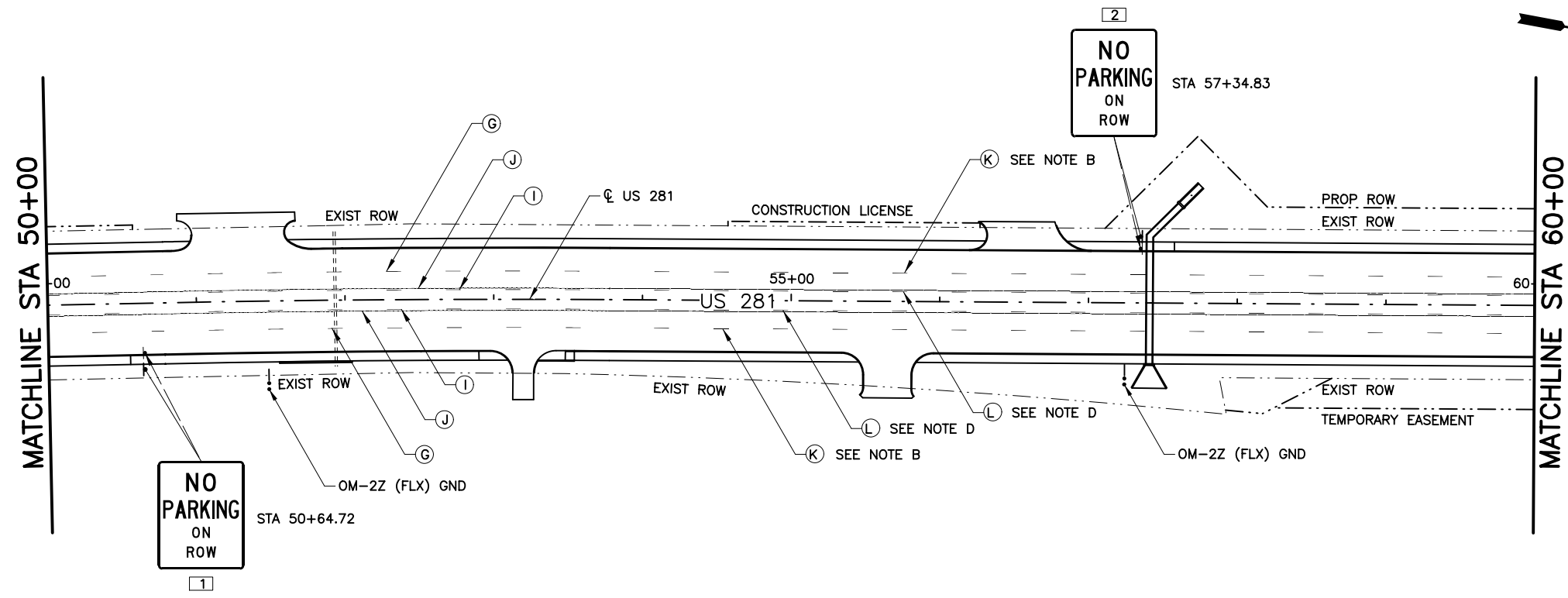
©2023 Texas Department of Transportation

US 281

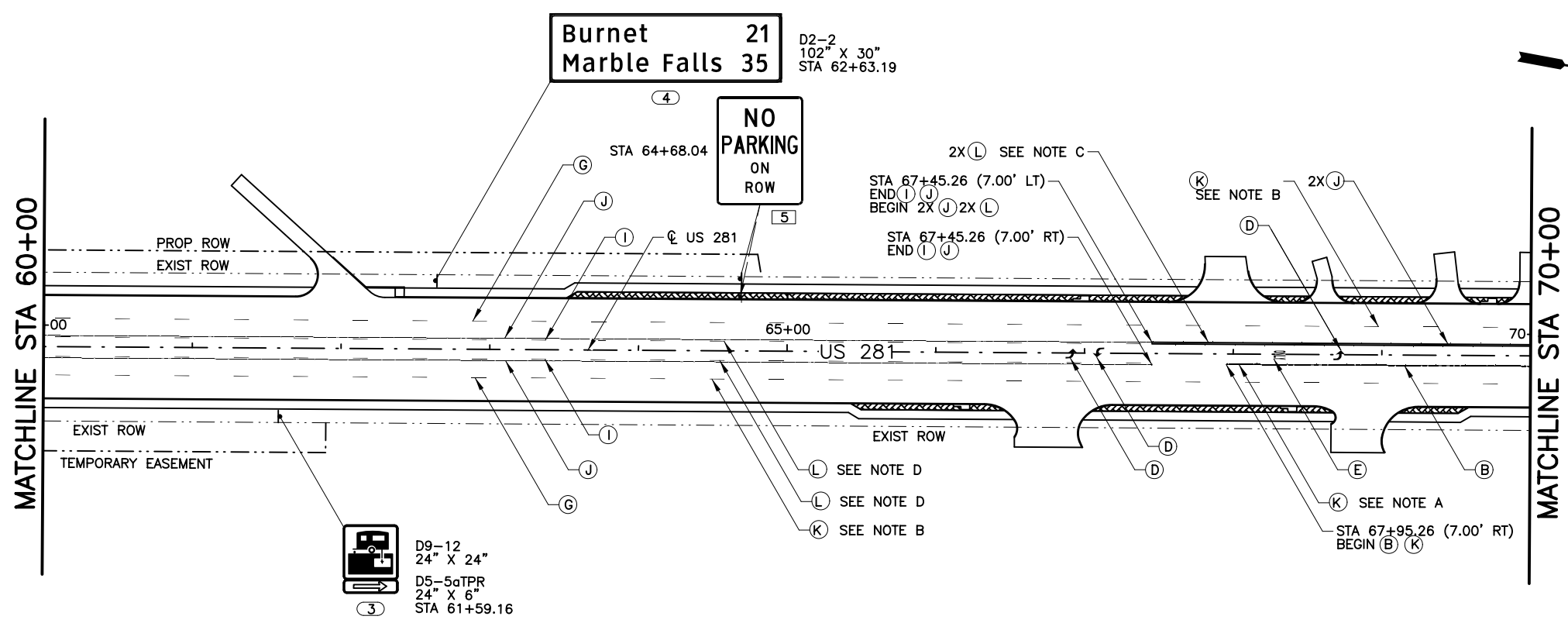
SIGNING & STRIPING LAYOUT

STA 30+00 TO 50+00

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
Checked:	CPY	6	TEXAS		US 281
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.
Checked:	CPY	BWD	LAMPASAS	0251	06
					JOB NO.
					036
					SHEET NO.
					290



- LEGEND**
- Ⓐ REFL PAV MRK TY I (W) (6") (DOT)
 - Ⓑ REFL PAV MRK TY I (W) (8") (SLD)
 - Ⓒ REFL PAV MRK TY I (W) (24") (SLD)
 - Ⓓ PREFAB PAV MRK TY C (W) (ARROW)
 - Ⓔ PREFAB PAV MRK TY C (W) (WORD)
 - Ⓕ PREFAB PAV MRK TY C (W) 36" (YLD TRI)
 - Ⓖ RE PM W/RET REQ TY I (W) (6") (BRK)
 - Ⓗ RE PM W/RET REQ TY I (W) (6") (SLD)
 - Ⓘ RE PM W/RET REQ TY I (Y) (6") (BRK)
 - Ⓚ RE PM W/RET REQ TY I (Y) (6") (SLD)
 - Ⓛ REFL PAV MRKR TY I-C
 - Ⓜ REFL PAV MRKR TY II-A-A
 - Ⓝ PROPOSED SMALL SIGN
 - Ⓟ RELOCATED SMALL SIGN
 - Ⓡ EXISTING SIGN TO REMAIN
 - Ⓢ (D-SW)SZ (BRF)CTB(BI)
 - Ⓣ (D-SW)SZ 1(BRF)GF2(BI)
 - Ⓤ (D-SW)SZ 1(FLX)GND
 - ⓖ (D-SW)SZ 1(FLX)GND(BI)
 - ⓗ OM-2Z (FLX)GND
- NOTES:**
- A. Ⓚ AT 20' SPACING
 - B. Ⓛ AT 80' SPACING
 - C. 2X Ⓛ AT 20' SPACING
 - D. Ⓛ AT 40' SPACING
 - E. Ⓛ AT 80' SPACING
 - F. 2X Ⓛ AT 80' SPACING
 - G. ALL STATIONS ARE FROM Ⓞ US 281 UNLESS NOTED OTHERWISE.



NO.	REVISION	BY	DATE

CP&Y
TEXAS REGISTERED ENGINEERING FIRM F-1741

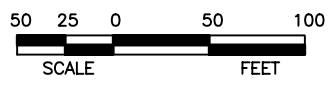
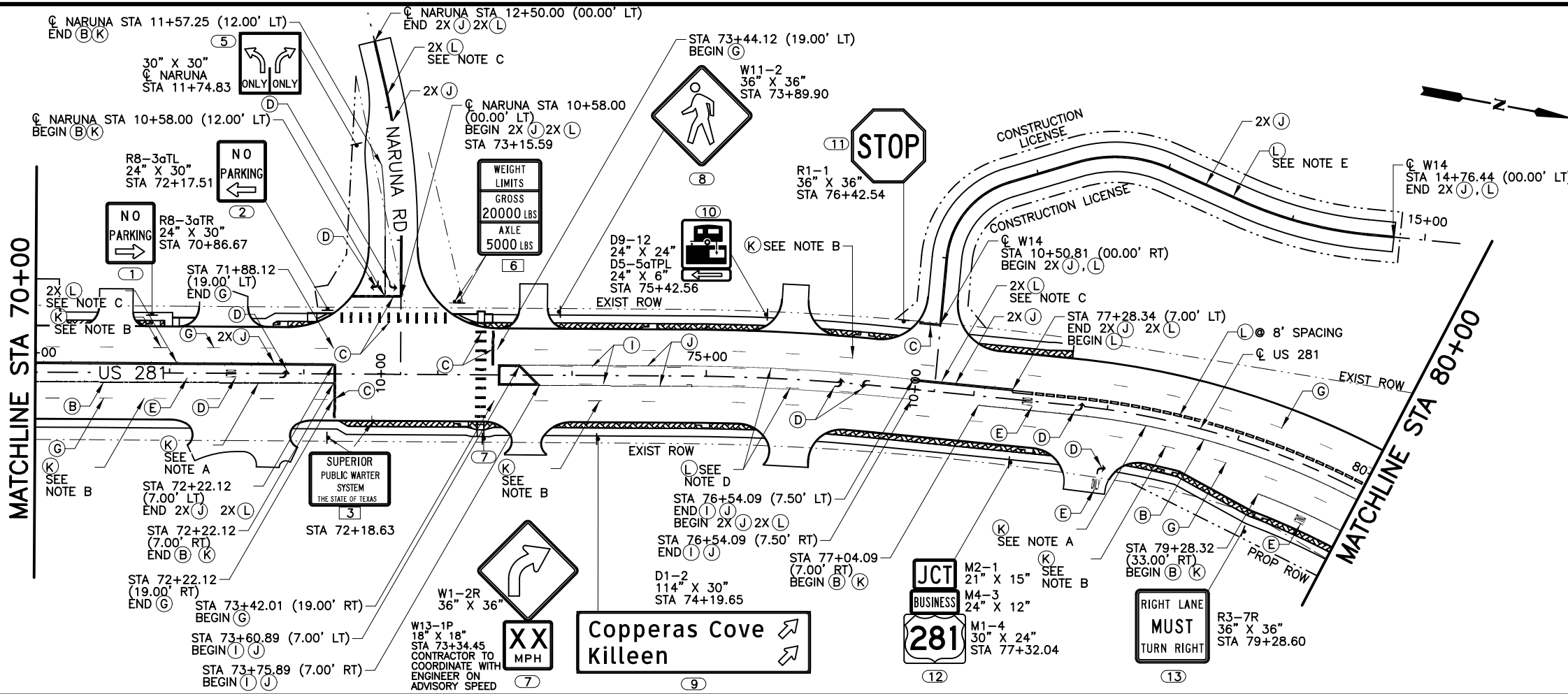
©2023 Texas Department of Transportation
US 281

SIGNING & STRIPING LAYOUT

STA 50+00 TO 70+00

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	CPY	6	TEXAS		US 281		
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	CPY	BWD	LAMPASAS	0251	06	036	291

2/22/2023 2:05:42 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgrw:/



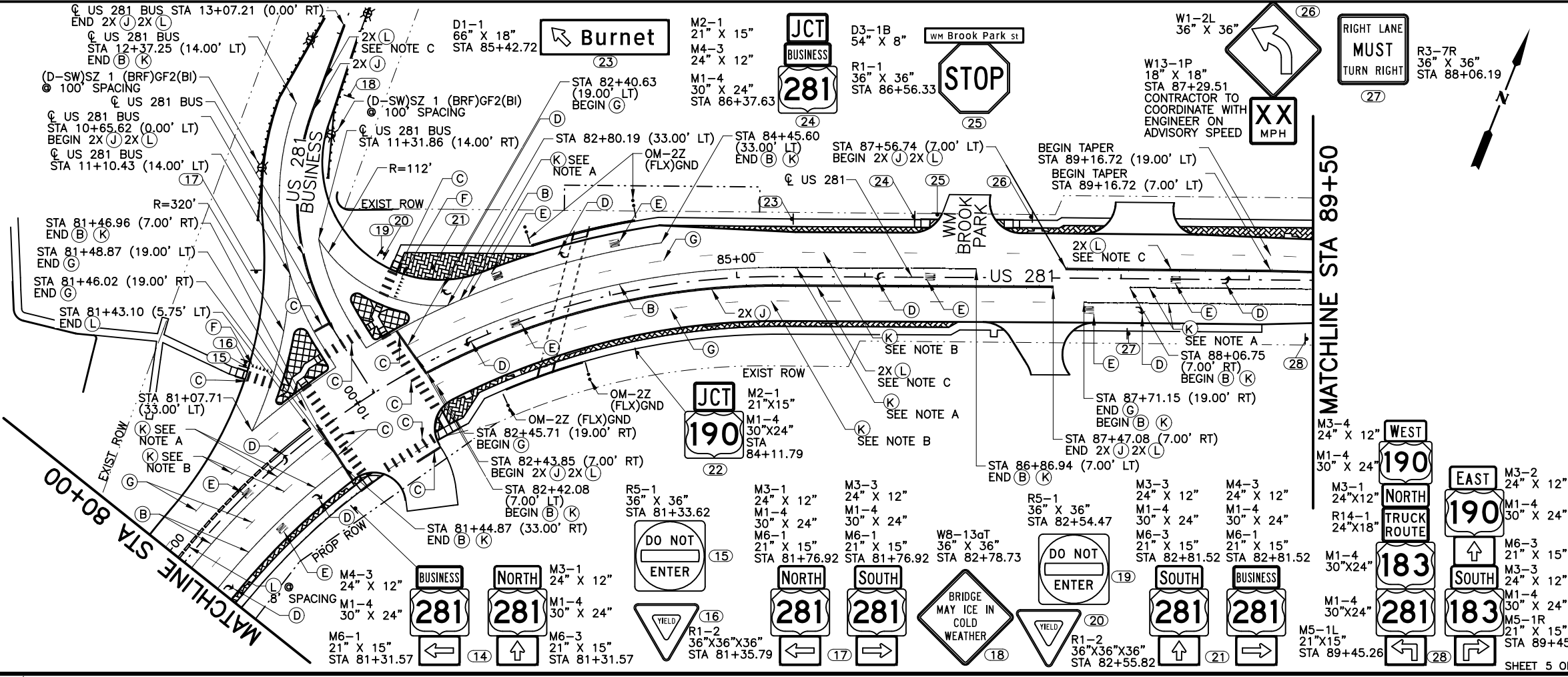
- LEGEND**
- Ⓐ REFL PAV MRK TY I (W) (6") (DOT)
 - Ⓑ REFL PAV MRK TY I (W) (8") (SLD)
 - Ⓒ REFL PAV MRK TY I (W) (24") (SLD)
 - Ⓓ PREFAB PAV MRK TY C (W) (ARROW)
 - Ⓔ PREFAB PAV MRK TY C (W) (WORD)
 - Ⓕ PREFAB PAV MRK TY C (W) 36" (YLD TRI)
 - Ⓖ RE PM W/RET REQ TY I (W) (6") (BRK)
 - Ⓗ RE PM W/RET REQ TY I (W) (6") (SLD)
 - Ⓘ RE PM W/RET REQ TY I (Y) (6") (BRK)
 - Ⓝ RE PM W/RET REQ TY I (Y) (6") (SLD)
 - Ⓚ REFL PAV MRKR TY I-C
 - Ⓛ REFL PAV MRKR TY II-A-A
 - Ⓜ PROPOSED SMALL SIGN
 - Ⓨ RELOCATED SMALL SIGN
 - Ⓩ EXISTING SIGN TO REMAIN
 - Ⓟ (D-SW)SZ (BRF)CTB(BI)
 - Ⓠ (D-SW)SZ 1(BRF)GF2(BI)
 - Ⓡ (D-SW)SZ 1(FLX)GND
 - Ⓢ (D-SW)SZ 1(FLX)GND(BI)
 - Ⓣ OM-2Z (FLX)GND

- NOTES:**
- A. Ⓚ AT 20' SPACING
 - B. Ⓛ AT 80' SPACING
 - C. 2X Ⓝ AT 20' SPACING
 - D. Ⓝ AT 40' SPACING
 - E. Ⓝ AT 80' SPACING
 - F. 2X Ⓝ AT 80' SPACING
 - G. ALL STATIONS ARE FROM Ⓞ US 281 UNLESS NOTED OTHERWISE.



2/22/2023

Kristin L. Perry



NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741

©2023 Texas Department of Transportation

SIGNING & STRIPING LAYOUT

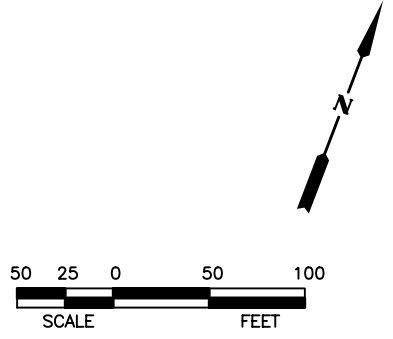
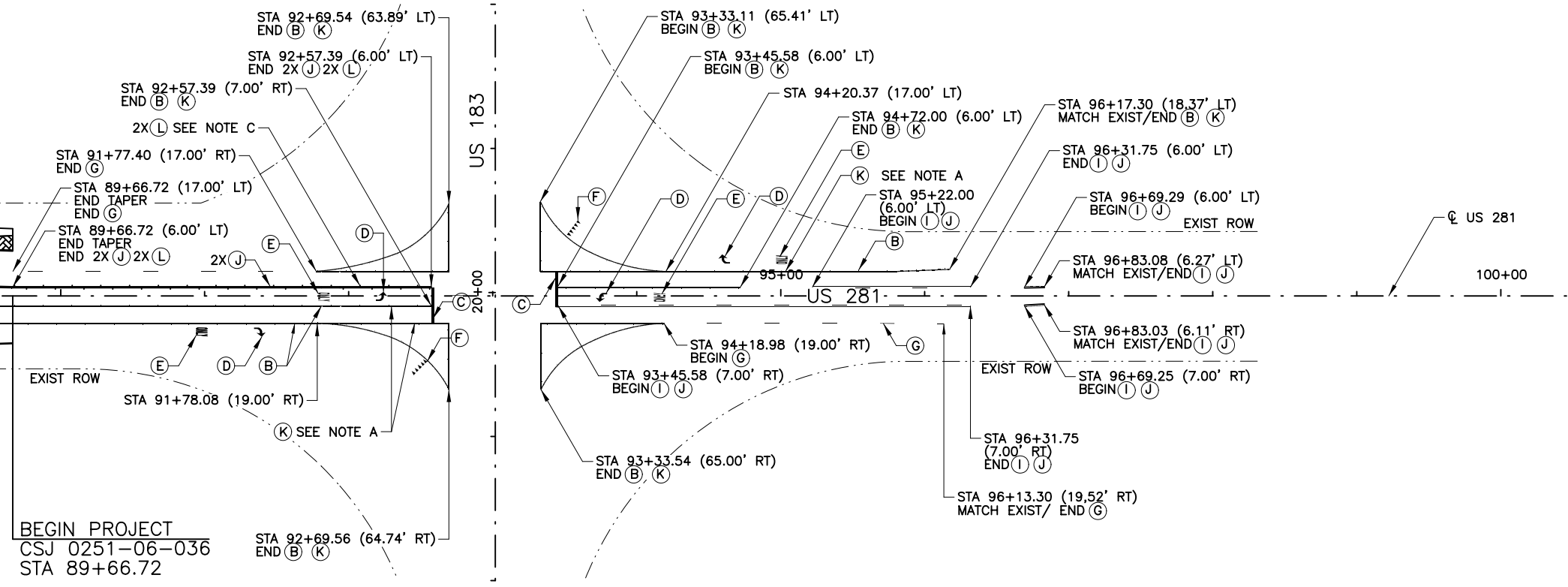
US 281

STA 70+00 TO 89+50

Designed:	CPY	FED. RD. DIST. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.	
Checked:	CPY	6	TEXAS		US 281	
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.	
Checked:	CPY	BWD	LAMPASAS	0251	06	036
						292

2/22/2023 2:05:47 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcf
 DWG

MATCHLINE US 281 STA 89+50



- LEGEND**
- (A) REFL PAV MRK TY I (W) (6") (DOT)
 - (B) REFL PAV MRK TY I (W) (8") (SLD)
 - (C) REFL PAV MRK TY I (W) (24") (SLD)
 - (D) PREFAB PAV MRK TY C (W) (ARROW)
 - (E) PREFAB PAV MRK TY C (W) (WORD)
 - (F) PREFAB PAV MRK TY C (W) 36" (YLD TRI)
 - (G) RE PM W/RET REQ TY I (W) (6") (BRK)
 - (H) RE PM W/RET REQ TY I (W) (6") (SLD)
 - (I) RE PM W/RET REQ TY I (Y) (6") (BRK)
 - (J) RE PM W/RET REQ TY I (Y) (6") (SLD)
 - (K) REFL PAV MRKR TY I-C
 - (L) REFL PAV MRKR TY II-A-A
 - (M) PROPOSED SMALL SIGN
 - (N) RELOCATED SMALL SIGN
 - (O) EXISTING SIGN TO REMAIN
 - (P) (D-SW)SZ (BRF)CTB(BI)
 - (Q) (D-SW)SZ 1(BRF)GF2(BI)
 - (R) (D-SW)SZ 1(FX)GND
 - (S) (D-SW)SZ 1(FX)GND(BI)
 - (T) OM-2Z (FLX)GND
- NOTES:**
- A. (K) AT 20' SPACING
 - B. (K) AT 80' SPACING
 - C. 2X (L) AT 20' SPACING
 - D. (L) AT 40' SPACING
 - E. (L) AT 80' SPACING
 - F. 2X (L) AT 80' SPACING
 - G. ALL STATIONS ARE FROM C US 281 UNLESS NOTED OTHERWISE.



Kristen L. Perry

2/22/2023

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741

©2023 Texas Department of Transportation

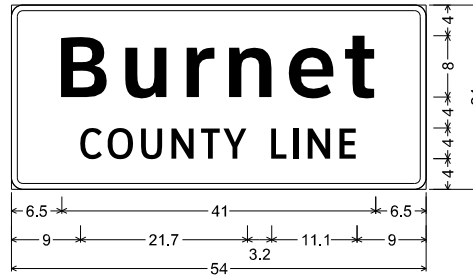
US 281

SIGNING & STRIPING LAYOUT

STA 89+50 TO END PROJECT

Designed:	CPY	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.	0251-06-036	HIGHWAY NO.	US 281
Checked:	CPY	DIST.	LAMPASAS	COUNTY	LAMPASAS	CONTROL NO.	0251	SECTION NO.	06
Drawn:	CPY	JOB NO.	036	SHEET NO.	293				

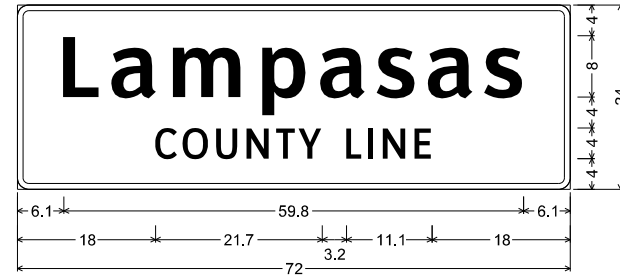
2/22/2023 2:05:52 PM kperry



I-2dT 8in;
 1.5" Radius, 0.8" Border, White on, Green;
 "Burnet", ClearviewHwy-5-W-R;
 "COUNTY LINE", ClearviewHwy-3-W;

Table of widths and spaces

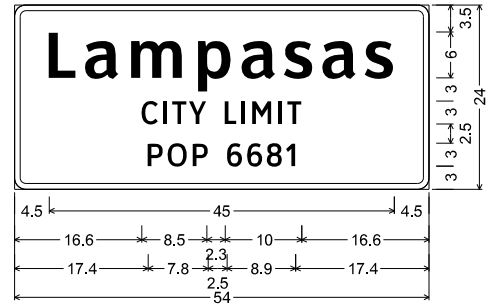
B	6.5	6.1	2.3	u	5.4	2.6	r	3.7	1.8	n	5.5	2.3	e	5.9	1.4	t	4.0	6.5
C	9.0	2.9	0.7	O	3.3	1.0	U	2.8	1.2	N	2.9	0.9	T	2.5	0.4	Y	3.1	
L	3.2	2.0	0.9	I	0.7	1.1	N	3.0	1.2	E	2.2	9.0						



I-2dT 8in;
 1.5" Radius, 0.8" Border, White on, Green;
 "Lampasas", ClearviewHwy-5-W-R;
 "COUNTY LINE", ClearviewHwy-3-W;

Table of widths and spaces

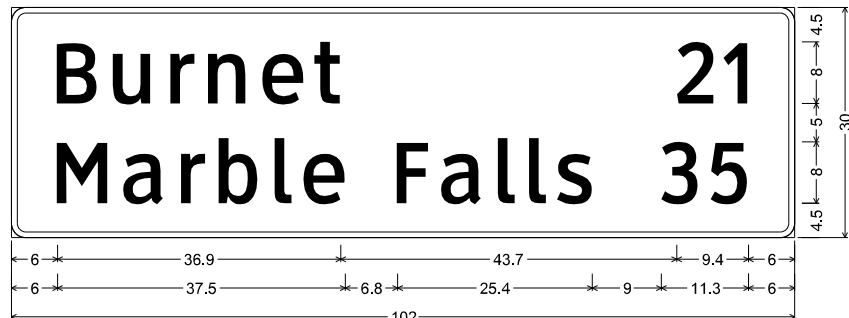
L	6.1	4.7	1.4	a	6.0	2.1	m	9.0	2.6	p	5.8	1.8	a	5.9	1.4	s	5.1	1.6	a	5.9	1.4	s	5.1	6.1	
C	18.0	2.9	0.7	O	3.3	1.0	U	2.8	1.2	N	2.9	0.9	T	2.5	0.4	Y	3.1								
L	3.2	2.0	0.9	I	0.7	1.1	N	3.0	1.2	E	2.2	18.0													



I-2aT 6in;
 1.5" Radius, 0.8" Border, White on, Green;
 "Lampasas", ClearviewHwy-5-W-R;
 "CITY LIMIT", ClearviewHwy-3-W;
 "POP 6681", ClearviewHwy-3-W;

Table of widths and spaces

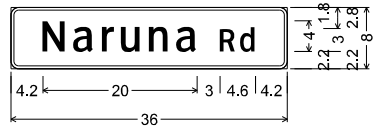
L	4.5	3.6	1.1	a	4.5	1.5	m	6.8	1.9	p	4.4	1.3	a	4.5	1.0	s	3.8	1.2	a	4.5	1.0	s	3.9	4.5
C	16.6	2.2	0.6	I	0.6	0.5	T	1.9	0.4	Y	2.3													
L	2.3	1.6	0.6	I	0.5	0.9	M	2.5	0.9	I	0.5	0.6	T	1.9	16.6									
P	17.4	1.9	0.7	O	2.5	0.8	P	1.9																
L	2.5	2.0	0.6	6	2.0	0.6	8	2.0	0.5	1	1.2	17.4												



D2-2 8in;
 1.9" Radius, 0.8" Border, White on, Green;
 "Burnet", ClearviewHwy-3-W; "21", ClearviewHwy-3-W; "Marble Falls", ClearviewHwy-3-W;
 "35", ClearviewHwy-3-W;

Table of widths and spaces

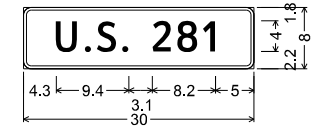
B	6.0	5.5	1.8	u	5.0	2.3	r	3.3	1.8	n	5.1	2.0	e	5.3	1.3	t	3.5	43.7	2	5.0	1.2	1	3.2	6.0						
M	6.0	6.6	2.0	a	5.4	2.0	r	3.3	1.8	b	5.3	2.0	l	2.2	1.5	e	5.4	6.8	F	4.2	1.5	a	5.4	2.0	l	2.3	1.8	2.3	1.2	4.7
L	9.0	4.9	1.6	5	4.8	6.0																								



D3-1B(3) 4in;
 1.0" Radius, 0.4" Border, White on, Blue;
 "Naruna", ClearviewHwy-3-W;
 "Rd", ClearviewHwy-3-W;

Table of widths and spaces

N	4.2	2.9	1.0	a	2.7	1.0	r	1.7	0.9	u	2.5	1.1	n	2.6	1.0	a	2.6
R	3.0	2.1	0.6	d	1.9	4.2											



D3-1B(3) 4in;
 1.0" Radius, 0.4" Border, White on, Blue;
 "U.S. 281", ClearviewHwy-3-W;

Table of widths and spaces

U	4.3	2.7	1.0	0.9	0.6	S	2.6	0.8	0.8
L	3.1	2.4	0.9	2.7	0.6	1	1.6	5.0	

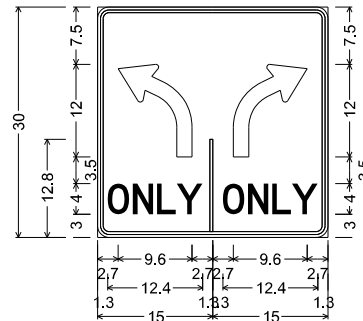


Kristen L. Perry

9/2/2022

NO.	REVISION	BY	DATE				
CP&Y TEXAS REGISTERED ENGINEERING FIRM F-1741							
©2022 Texas Department of Transportation US 281							
SMALL SIGN DETAILS							
Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	CPY	6	TEXAS		US 281		
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	CPY	BWD	LAMPASAS	0251	06	036	294

9/2/2022 7:52:37 AM kperry
 cp/bw_ANSIB.tbl
 cp/pdf_ANSIB.pltcfgr
 pw:/



1.5" Radius, 0.4" Border, 0.4" Indent, LaneMarker height: 12.0 LaneMarker width: 0.4Black on, White;
A2L lr=4.5, s=2;
"ONLY", D 50% spacing;

1.5" Radius, 0.4" Border, 0.4" Indent, LaneMarker height: 12.0 LaneMarker width: 0.4Black on, White;
A2R lr=4.5, s=2;
"ONLY", D 50% spacing;

Table of widths and spaces

2.7	9.6	2.7										
1.3	O	2.8	0.5	N	2.7	0.5	L	2.4	0.1	Y	3.4	1.3
2.7	9.6	2.7										
1.3	O	2.8	0.5	N	2.7	0.5	L	2.4	0.1	Y	3.4	1.3

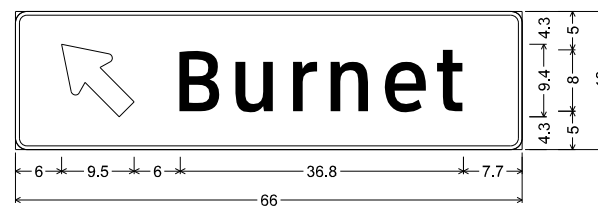


D1-2 8In 45RT-45RT;

1.9" Radius, 0.8" Border, White on, Green;
"Copperas Cove", ClearviewHwy-3-W; Standard Arrow Custom 12.0" X 7.1" 45"; "Killeen", ClearviewHwy-3-W;
Standard Arrow Custom 12.0" X 7.1" 45";

Table of widths and spaces

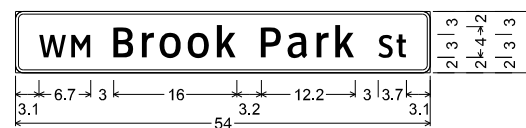
6.0	C	5.8	1.4	O	5.6	2.0	P	5.3	2.0	P	5.2	1.8	E	5.3	2.0	R	3.3	1.5	A	5.4	1.4	S	4.7	6.3	C	5.8	1.4	O	5.6	1.3	V	5.5	1.3	E	5.3	7.3	9.5	6.0
6.0	K	5.5	1.5	I	1.7	2.1	L	2.3	1.8	L	2.3	1.5	E	5.3	1.7	E	5.4	2.0	N	5.0	54.4	9.5	6.0															



D1-1 8in 45 LT;
1.5" Radius, 0.5" Border, White on, Green;
Standard Arrow Custom 12.0" X 7.1" 135";
"Burnet", ClearviewHwy-3-W;

Table of widths and spaces

6.0	B	6.0	5.4	1.9	U	5.0	2.3	R	3.3	1.8	N	5.0	2.0	E	5.3	1.4	T	3.4	7.7
-----	---	-----	-----	-----	---	-----	-----	---	-----	-----	---	-----	-----	---	-----	-----	---	-----	-----

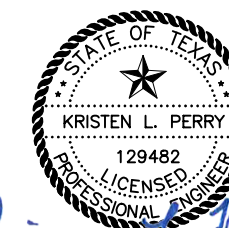


D3-1B(1) 4in;

1.0" Radius, 0.4" Border, White on, Blue;
"WM", ClearviewHwy-3-W;
"Brook Park", ClearviewHwy-3-W;
"St", ClearviewHwy-3-W;

Table of widths and spaces

3.1	W	3.5	0.7	M	2.5									
3.0	B	2.7	0.9	R	1.7	0.7	O	2.8	0.9	O	2.8	1.0	K	2.5
3.2	P	2.6	0.9	A	2.7	1.0	R	1.6	0.9	K	2.5			
3.0	S	2.0	0.4	T	1.3	3.1								



9/2/2022

Kristen L. Perry

NO.	REVISION	BY	DATE
-----	----------	----	------



TEXAS REGISTERED ENGINEERING FIRM F-1741



US 281

SMALL SIGN DETAILS

Designed:	CPY	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281				
Checked:	CPY	DIST.	BWD	COUNTY	LAMPASAS	CONTROL NO.	0251	SECTION NO.	06	JOB NO.	036	SHEET NO.	295

GENERAL NOTES FOR ALL ELECTRICAL WORK

1. The location of all conduits, junction boxes, ground boxes, and electrical services is diagrammatic and may be shifted to accommodate field conditions.
2. Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electrical Code (NEC), TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA), and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as Canadian Standard Association (CSA), Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Where reference is made to NEMA listed devices, International Electrotechnical Commission (IEC) listed devices will not be considered an acceptable equal to a NEMA listed device. Acceptable devices may have both a NEMA and IEC listing. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection. Replace or reinstall rejected material or equipment at no additional cost to the Department.
3. Miscellaneous nuts, bolts and hardware, except for high strength bolts, may be stainless steel when plans specify galvanized, provided the bolt size is 1/2 in. or less in diameter.
4. Provide the following test equipment as required by the Engineer to confirm compliance with the contract and the NEC: voltmeter, ammeter, megohm meter (1000 volt DC), ground resistance tester, torque wrenches, and torque screwdrivers. Ensure all equipment has been properly calibrated within the last year. Provide calibration certification to the Engineer upon request. Operate test equipment during inspection as requested by the Engineer.
5. Install grounding as shown on the plans and in accordance with the NEC. Ensure all metallic conduits; metal poles; luminaires; and metal enclosures are bonded to the equipment grounding conductor. Provide stranded bare copper or green insulated grounding conductors. Ground rods, connectors, and bonding jumpers are subsidiary to the various bid items.
6. When required by the Engineer, notify the Department in writing of materials from the Material Producers List (MPL) intended for use on each project. Prequalified materials are listed on the MPL on TxDOT's website under "Roadway Illumination and Electrical Supplies." No substitutions will be allowed for materials on this list.

CONDUIT

A. MATERIALS

1. Provide conduit, junction boxes, fittings, and hardware as per TxDOT Departmental Material Specification (DMS) 11030 "Conduit" and Item 618 "Conduit" of TxDOT's "Standard Specifications For Construction And Maintenance Of Highways, Streets, And Bridges," latest edition. Provide conduits listed under Item 618 on the MPL under "Roadway Illumination and Electrical Supplies." Provide conduit types according to the descriptive code or as shown on the plans. Do not substitute other types of conduits for those shown. Provide liquidtight flexible metal conduit (LFMC) when flexible conduit is called for on galvanized steel rigid metallic conduit (RMC) systems. Provide liquidtight flexible nonmetallic conduit (LFNC) when flexible conduit is called for on polyvinyl chloride (PVC) systems.
2. Provide galvanized steel RMC for all exposed conduits, unless otherwise shown on the plans. Properly bond all metal conduits.
3. Unless otherwise shown on the plans, provide junction boxes with a minimum size as shown in 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 is present, count the conductors as if all are of the larger size. For situations not applicable to the table, size junction boxes in accordance with NEC.

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"

4. Junction boxes with an internal volume of less than 100 cu. in. and supported by entering raceways must have threaded entries or hubs identified for the intended purpose and supported by connection of two or more rigid metal conduits. Secure conduit within 3 ft. of the enclosure or within 18 in. of the enclosure if all conduit entries are on the same side. Mechanically secure all junction boxes with an internal volume greater than 100 cu. inches.
5. Provide hot dipped galvanized cast iron or sand cast aluminum outlet boxes for junction boxes containing only 10 AWG or 12 AWG conductors. Do not use die cast aluminum boxes. Size outlet boxes according to the NEC.
6. Do not use intermediate metal conduit (IMC) or electrical metallic tubing (EMT) unless specifically required by the plan sheets. When EMT is called for, provide junction boxes made from galvanized steel sheeting, listed and approved for outdoor use, unless otherwise noted on the plans. Size all galvanized steel junction boxes in accordance with the NEC. Provide junction boxes for IMC conduit systems that meet the same requirements for junction boxes used with RMC systems.
7. Provide PVC junction boxes intended for outdoor use on PVC conduit systems, unless otherwise noted on the plans.


8. Provide PVC elbows in PVC conduit systems, unless otherwise shown on the plans. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the PVC conduit system. When galvanized steel RMC elbows are specifically called for in the plans and any portion of the RMC elbow is buried less than 18 in., ground the RMC elbow by means of a grounding bushing on a rigid metal extension. Grounding of the rigid metal elbow is not required if the entire RMC elbow is encased in a minimum of 2 in. of concrete. PVC extensions are allowed on these concrete encased rigid metal elbows. RMC or PVC elbows are subsidiary to various bid items.
9. When required, provide High-Density Polyethylene (HDPE) conduit with factory installed internal conductors according to Item 622 "Duct Cable." At the Contractor's request and with approval by the Engineer, substitute HDPE conduit with no conductors for bored schedule 40 or schedule 80 PVC conduit bid under Item 618. Ensure bored HDPE substituted for PVC is schedule 40 and of the same size PVC called for in the plans. Ensure the substituted HDPE meets the requirements of Item 622, except that the conduit is supplied without factory-installed conductors. Make the transition of the HDPE conduit to PVC (or RMC elbow when required) at the bore pit. Provide conduit of the size and schedule as shown on the plans. Do not extend substituted conduit into ground boxes or foundations. Provide PVC or galvanized steel RMC elbows as called for at all ground boxes and foundations.
10. Use two-hole straps when supporting 2 in. and larger conduits. On electrical service poles, properly sized stainless steel or hot dipped galvanized one-hole standoff straps are allowed on the service riser conduit.

B. CONSTRUCTION METHODS

1. Provide and install expansion joint conduit fittings on all structure-mounted conduits at the structure's expansion joints to allow for movement of the conduit. In addition, provide and install expansion joint fittings on all continuous runs of galvanized steel RMC conduit externally exposed on structures such as bridges at maximum intervals of 150 ft. When requested by the project Engineer, supply manufacturer's specification sheet for expansion joint conduit fittings. Repair or replace expansion joint fittings that do not allow for movement at no additional cost to the Department. Provide the method of determining the amount of expansion to the Engineer upon request. Do not use LFMC or LFNC as a substitute for the required expansion conduit fittings.
2. Space all conduit supports at maximum intervals of 5 ft. Install conduit spacers when attaching metal conduit to surface of concrete structures. See "Conduit Mounting Options" on ED(2). Install conduit support within 3 ft. of all enclosures and conduit terminations.
3. Do not attach conduit supports directly to pre-stressed concrete beams except as shown specifically in the plans or as approved by the Engineer.
4. Unless otherwise shown on the plans, jack or bore conduit placed beneath existing roadways, driveways, sidewalks, or after the base or surfacing operation has begun. Backfill and compact the bore pits below the conduit per Item 476 "Jacking, Boring, or Tunneling Pipe or Box" prior to installing conduit or duct cable to prevent bending of the connections.
5. When placing conduit in the sub-grade of new roadways, backfill all trenches with excavated material unless otherwise noted on the plans. When placing conduit in the sub-base of new roadways, backfill all trenches with cement-stabilized base as per requirements of Items 110 "Excavation", 400 "Excavation and Backfill for Structures", 401 "Flowable Backfill", 402 "Trench Excavation Protection", and 403 "Temporary Special Shoring."
6. Provide and place warning tape approximately 10 in. above all trenched conduit as per Item 618.
7. During construction, temporarily cap or plug open ends of all conduit and raceways immediately after installation to prevent entry of dirt, debris and animals. Temporary caps constructed of durable duct tape are allowed. Tightly fix the tape to the conduit opening. Clean out the conduit and prove it clear in accordance with Item 618 prior to installing any conductors.
8. Ensure conduit entry into the top of any enclosure is waterproof by installing conduit sealing hubs or using boxes with threaded bosses. This includes surface mounted safety switches, meter cans, service enclosures, auxiliary enclosures and junction boxes. Grounding bushings on water tight sealing hubs are not required.
9. Fit the ends of all PVC conduit terminations with bushings or bell end fittings. Provide and install a grounding type bushing on all metal conduit terminations.
10. Install a bonding jumper from each grounding bushing to the nearest ground rod, grounding lug, or equipment grounding conductor. Ensure all bonding jumpers are the same size as the equipment grounding conductor. Bonding of conduit used as a casing under roadways for duct cable is not required, if the duct extends the full length through the casing.
11. At all electrical services, install a 6 AWG solid copper grounding electrode conductor.
12. Place conduits entering ground boxes so that the conduit openings are between 3 in. and 6 in. from the bottom of the box. See the ground box detail on sheet ED(4).
13. Seal ends of all conduits with duct seal, expandable foam, or by other methods approved by the Engineer. Seal conduit immediately after completion of conductor installation and pull tests. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a conduit sealant.
14. File smooth the cut ends of all mounting strut and conduit. Before installing, paint the field cut ends of all mounting strut and RMC (threaded or non-threaded) with zinc rich paint (94% or more zinc content) to alleviate overspray. Use zinc rich paint to touch up galvanized material as allowed under Item 445 "Galvanizing." Do not paint non-galvanized material with a zinc rich paint as an alternative for materials required to be galvanized.

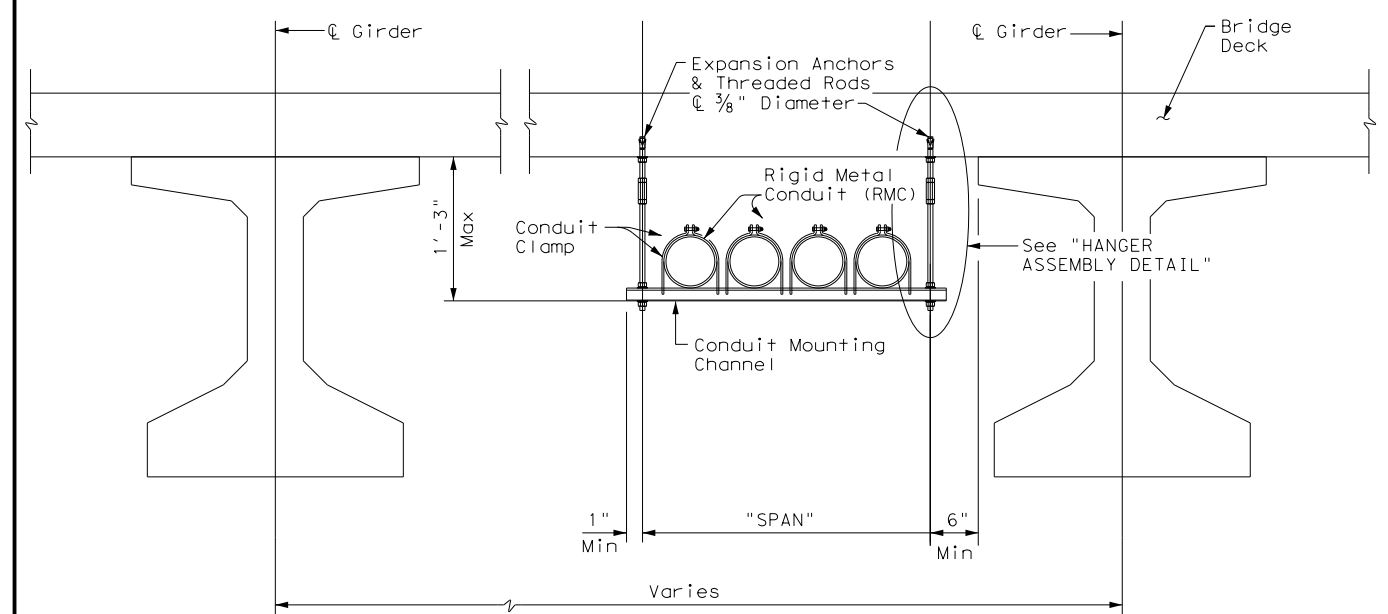
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

PLOTTED: \$\$\$\$DATE\$\$\$ \$\$\$SYTIME\$\$\$ \$\$\$SCALE\$\$\$ BY: \$USERS\$ FILENAME: \$\$\$\$\$\$\$\$\$\$DGN\$SPEC\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$

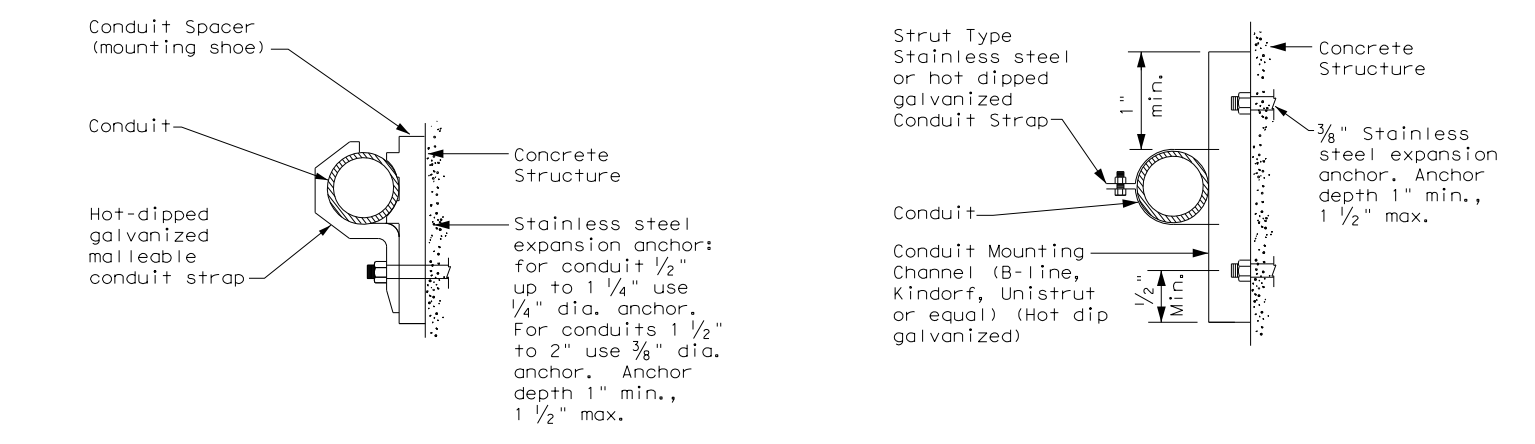
				Traffic Operations Division Standard	
<h1>ELECTRICAL DETAILS CONDUITS & NOTES</h1>					
<h2>ED(1)-14</h2>					
FILE:	ed1-14.dgn	DN:	CK:	DW:	CK:
© TxDOT	October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS		0251	06	036	US 281
	DIST	COUNTY		SHEET NO.	
	BWD	LAMPASAS		296	

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.

PLOTTED: \$\$\$DATE\$\$\$ \$\$\$SYTIME\$\$\$ \$\$\$SCALE\$\$\$ BY: \$USERS\$
 FILENAME: \$\$\$DGN\$\$\$SPEC\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$



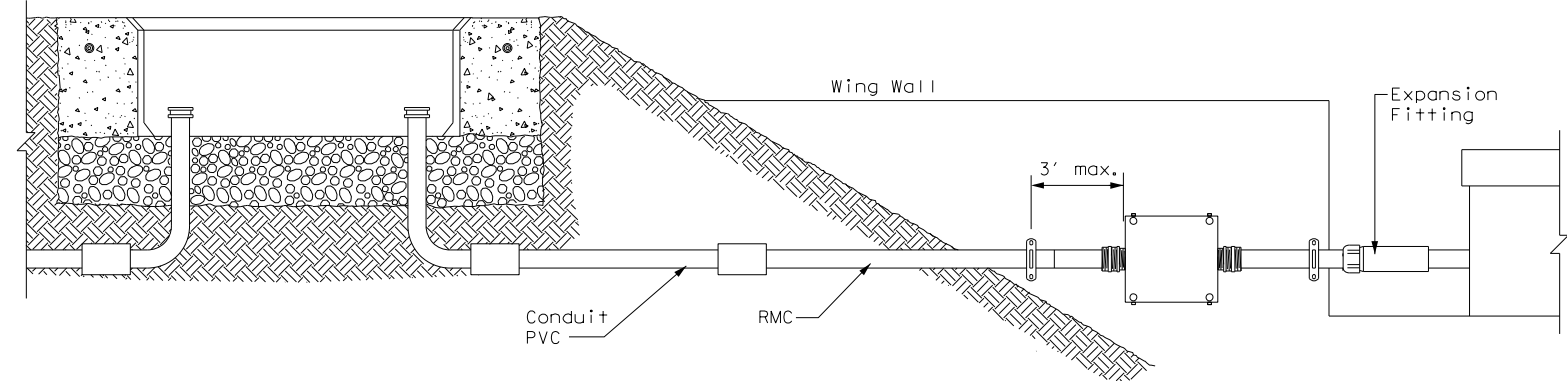
CONDUIT HANGING DETAIL



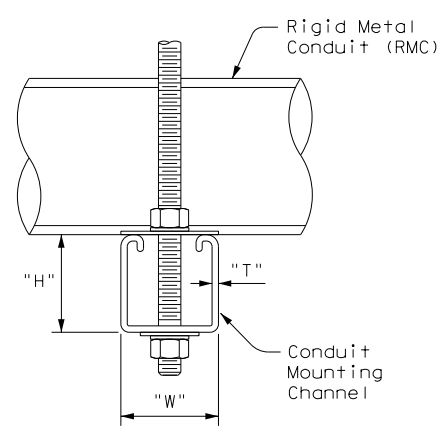
CONDUIT MOUNTING OPTIONS
 Attachment to concrete surfaces
 See ED(1)B.2

CONDUIT MOUNTING CHANNEL		
"SPAN"	"W" x "H"	"T"
less than 2'	1 5/8" x 1 3/8"	12 Ga.
2'-0" to 2'-6"	1 5/8" x 1 5/8"	12 Ga.
>2'-6" to 3'-0"	1 5/8" x 2 7/16"	12 Ga.

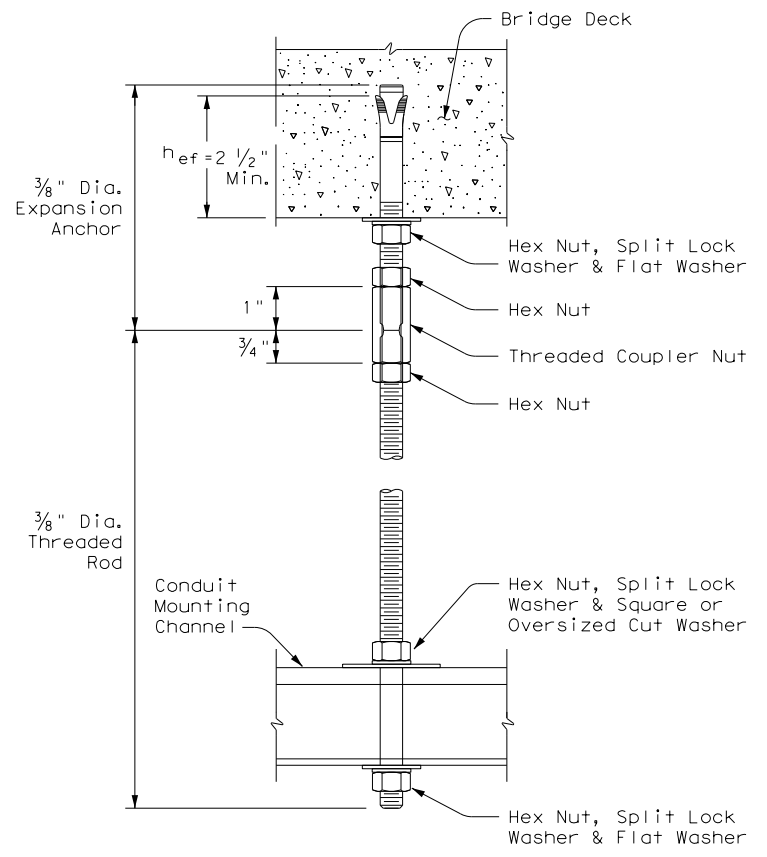
Channels with round or short slotted hole patterns are allowed, if the load carrying capacity is not reduced by more than 15%.



TYPICAL CONDUIT ENTRY TO BRIDGE STRUCTURE DETAIL



HANGER ASSEMBLY DETAIL



ELECTRIC CONDUIT TO BRIDGE DECK ATTACHMENT

EXPANSION ANCHOR NOTES FOR BRIDGE DECK ATTACHMENT

1. Use torque controlled mechanical expansion anchors that are approved for use in cracked concrete by the International Code Council, Evaluation Service (ICC-ES). The chosen anchor product shall have a designated ICC-ES Evaluation Report number, and its approval status shall be maintained on the ICC-ES website under Division 031600 for Concrete Anchors.
2. Unless otherwise approved by the Engineer: do not use adhesive anchors; do not use expansion anchors that are not included in the ICC-ES approval list; and do not use expansion anchors that are only approved for use in uncracked concrete.
3. Use anchors manufactured with stainless steel expansion wedges. Anchors manufactured with carbon steel expansion wedges are not allowed. Anchor bodies can be either zinc-plated carbon steel or stainless steel. For application in marine environment, both the anchor body and expansion wedge shall be stainless steel.
4. Install anchors as shown on the plans and in accordance with the anchor manufacturer's published installation instructions. Arrange a field demonstration test to evaluate the procedures and tools. The test shall be witnessed and approved by the Engineer prior to furnishing anchors on the structure.
5. Prior to hole drilling, use rebar locator to ensure clearing of existing deck strands or reinforcement. Install anchors to ensure a minimum effective embedment depth, (h_{ef}), as shown. Increase (h_{ef}) as needed to ensure sufficient thread length for proper torquing and tightening of anchors.
6. Use anchors of minimum 1600 Lbs tensile capacity (minimum of steel, concrete breakout, and concrete pullout strengths as determined by ACI 318 Appendix D) at the required minimum embedment depth (h_{ef}). No lateral loads shall be introduced after conduit installation.

		Traffic Operations Division Standard	
<h2>ELECTRICAL DETAILS CONDUIT SUPPORTS</h2>			
<h3>ED(2)-14</h3>			
FILE: ed2-14.dgn	DWG: TxDOT	CHK: TxDOT	DWG: TxDOT
©TxDOT October 2014	CONT: 0251	SECT: 06	JOB: 036
REVISIONS		HIGHWAY: US 281	
DIST: BWD	COUNTY: LAMPASAS	SHEET NO.: 297	

ELECTRICAL CONDUCTORS

A. MATERIAL INFORMATION

1. Provide Type XHHW insulated conductors in accordance with Departmental Material Specification (DMS)11040 "Conductors" and Item 620 "Electrical Conductors." Provide conductors as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 620. Color code insulated conductors in conformance with the NEC. Identify grounded (neutral) conductors with white insulation. Identify grounding conductors (ground wires) with green insulation or bare conductors. Identify ungrounded (hot) conductors with any color insulation except green, white, or gray. Keep color scheme consistent throughout the wiring system. Identify conductors 6 American Wire Gauge (AWG) and smaller by continuous color jacket. Identify electrical conductors 4 AWG and larger by continuous color jacket or by colored tape. When identifying conductors with colored tape, mark at least 6 in. of the conductor's insulation with half laps of tape.
2. Provide a solid copper 6 AWG grounding electrode conductor to bond the electrical service equipment to the concrete encased grounding electrode or the ground rod at the service location. Connect the grounding electrode conductor to the ground rod with a UL listed connector in accordance with DMS 11040. Connect the grounding electrode conductor to the concrete encased grounding electrode as shown in the plans.
3. Where two or more circuits are present in one conduit or enclosure, permanently identify the conductors of each branch circuit by attaching a non-metallic tag around both circuit conductors at each accessible location. Provide tags with two straps, large enough to indicate circuit number, letter, or other identification as shown in the plans. Print circuit identification on the tag with a permanent marker.
4. Use listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors for splicing as specified in DMS 11040. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Provide UL listed gel-filled insulating splice covers. Splicing materials, insulating materials, breakaway disconnects, splice covers, and fuse holders are subsidiary to various bid items.

B. CONSTRUCTION METHODS

1. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the conduit system. After installing conductors in conduit, perform conductor pull test. If a conductor cannot be freely pulled, make any needed alterations or repairs at no additional cost to the department. Perform insulation resistance tests in accordance with Item 620. Coordinate with the Engineer to witness the tests.
2. Leave 2 ft. minimum, 3 ft. maximum length for each conductor up to the splice in ground boxes. Leave 3 ft. minimum, 4 ft. maximum length of conductor in ground boxes when pulled through with no splice. Leave 1 ft. minimum, 1.5 ft. maximum length of conductor at enclosures, weatherheads and pole bases.
3. Make splices only in junction boxes, ground boxes, pole bases, or electrical enclosures and use only listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors. Insulate splices with heavy wall heat shrink tubing or gel-filled insulating splice covers to provide a watertight splice. Overlap conductor insulation with heat shrink tubing a minimum of 2 in. past 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, increase the diameter of the conductor insulation using hot melt adhesive tape to provide a watertight seal between the individual conductors and the heat shrink tubing. Ensure the tape extends past the heat shrink tubing. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Heat shrink tubing that appears to have been burned, or overheated, is considered defective and must be replaced.
4. Size and install gel-filled insulating splice covers according to manufacturer's specifications when used in place of heat shrink tubing.
5. Wire nuts with factory applied waterproof sealant may be used for 8 AWG or smaller conductors in above ground junction boxes, but not in pole bases or ground boxes. Install wire nuts in an upright position to prevent the accumulation of water.
6. Support conductors in illumination poles with a J-hook at the top of the pole.
7. When terminating conductors, remove the insulation and jacketing material without nicking the individual strands of the conductor. Conductors with nicked individual conductor strands or removed strands will be considered damaged.
8. Replace conductors and cables that are damaged beyond repair or that fail an insulation resistance test at no additional cost to the department.
9. Do not repair damaged conductors with duct tape, electrical tape, or wire nuts. Use only approved splicing methods.
10. Do not terminate more than one conductor under a single connector, unless the connector is rated for multiple conductors. Do not exceed the pressure connector's listing for maximum number and size of conductors allowed.
11. Install breakaway connectors on conductors bid under Item 620 whenever those conductors pass through a breakaway support device. Follow manufacturer's instructions when terminating conductors to breakaway connectors. Properly torque threaded connections. Proper terminations are critical to the safe operation of breakaway devices. Trim waterproofing boots on breakaway connectors to fit snugly around the conductor to ensure waterproof connection. Only one conductor may enter a single opening in a boot. Provide waterproof boots with the correct number of openings. Leave unused openings factory sealed. Use prequalified breakaway connectors as shown on the MPL.

12. Provide and install a separate stranded equipment grounding conductor (EGC) in all conduits that contain circuit wiring of 50 volts or more. Unless shown elsewhere, size the EGC to be the same size as the largest current carrying conductor contained in the conduit. Ensure all EGCs are bonded together at every accessible location. For traffic signal installations, provide a minimum size 8 AWG EGC. The EGC is paid for under Item 620.

C. TEMPORARY WIRING

1. Install temporary conductors and electrical equipment in accordance with the NEC article "Temporary Installations" and Department standard sheets.
2. Provide a ground fault circuit interrupter (GFCI) for power outlets for portable electrical equipment, power tools, ice machines, ice storage bins and refrigerators located outdoors at grade. GFCI may be any one of the following: molded cord and plug set, receptacle, or circuit breaker type.
3. Use listed wire nuts with factory applied sealant for temporary wiring where approved.
4. Enclose conductor splices within a listed enclosure or ground box, or ensure the splices are more than 10 ft. above grade vertically and more than 5 ft. horizontally from any metal structure. Where installing temporary conductors in areas subject to vehicle traffic or mobile construction equipment, ensure the vertical clearance to ground is at least 18 ft. when measured at the lowest point. Ground messenger wires that support power conductors in conformance with the NEC.
5. Protect and when necessary repair any existing electrical conduits uncovered during the construction process in a timely manner and in conformance with the NEC.

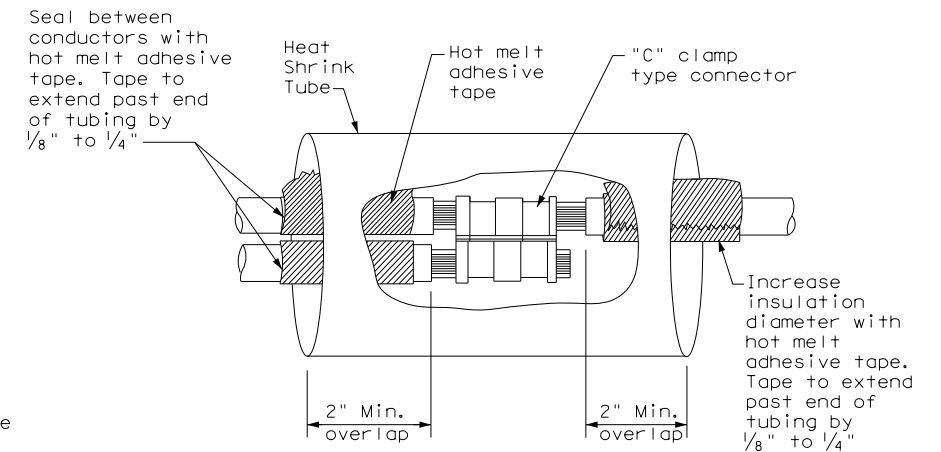
GROUND RODS & GROUNDING ELECTRODES

A. MATERIAL INFORMATION

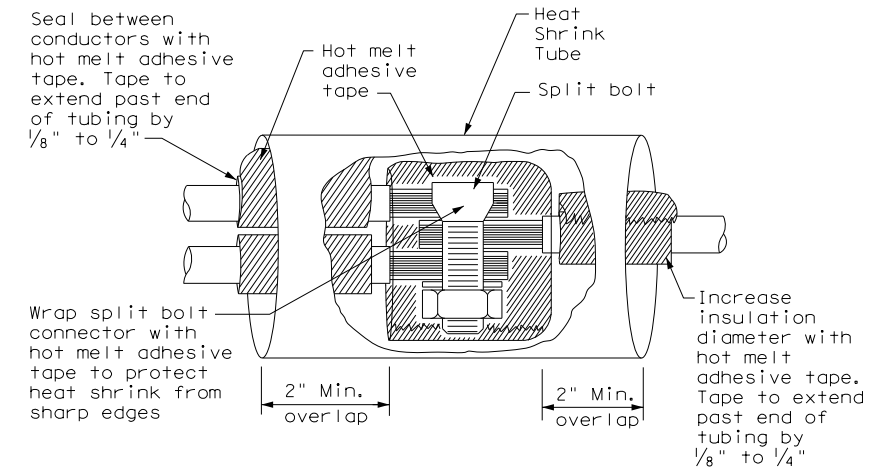
1. Provide and install a grounding electrode at electrical services. Provide ground rods according to DMS 11040 and the plans. Larger diameter or longer length rods may be called for in some specific locations, see the individual plans sheets. Concrete encased grounding electrodes may be called for in specific locations including electrical service, see individual plan sheets.

B. CONSTRUCTION METHODS

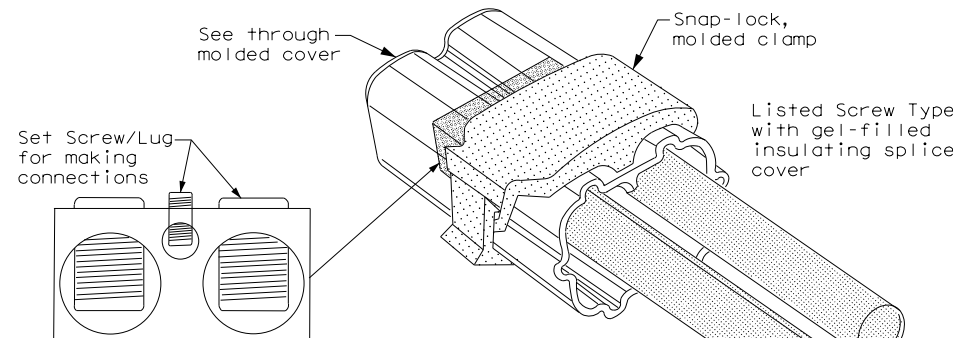
1. Furnish auxiliary ground rods for lightning protection and install in soil, concrete, or both, as called for in the plans. For ground rods installed in concrete, ensure the connection of the conductor to the ground rod is readily accessible for inspection or repairs. For ground rods installed in soil, ensure that the upper end is between 2 to 4 in. below finished grade.
2. Do not place ground rods in the same drilled hole as a timber pole.
3. Install ground rods so the imprinted part number is at the upper end of the rod.
4. Remove all non-conductive coatings such as concrete splatter from the rod at the clamp location.
5. Route all conductors as short and straight as possible for connection to lightning protection ground rods. When a bend is required, ensure a minimum radius bend of four inches for these conductors.
6. Unless otherwise called for in the plans, protect grounding electrode conductors with non-metallic conduit. When protecting grounding electrode conductors with metal conduit, provide and install a grounding type bushing and properly sized bonding jumper on each end of the metal conduit.
7. Written authorization is required before installing a ground rod in a horizontal trench for rocky soil or a solid rock bottom.



SPLICE OPTION 1
Compression Type



SPLICE OPTION 2
Split Bolt Type



SPLICE OPTION 3
Listed Screw Type

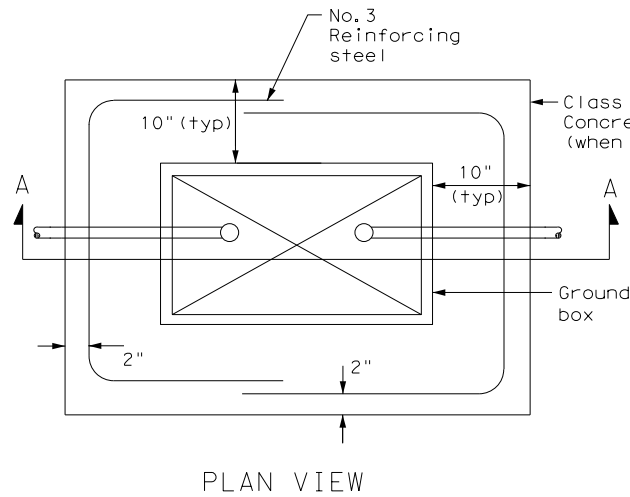
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

PLOTTED: \$\$\$DATE\$\$\$ \$\$\$SYTIME\$\$\$ \$\$\$SCALE\$\$\$ BY: \$USERS\$
FILENAME: \$\$\$\$\$\$DGN\$SPEC\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$

		Traffic Operations Division Standard			
<h2>ELECTRICAL DETAILS CONDUCTORS</h2> <h3>ED(3)-14</h3>					
FILE: ed3-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT	
© TxDOT October 2014		CONT	SECT	HIGHWAY	
REVISIONS		0251	06	036	US 281
		DIST	COUNTY	SHEET NO.	
		BWD	LAMPASAS	298	

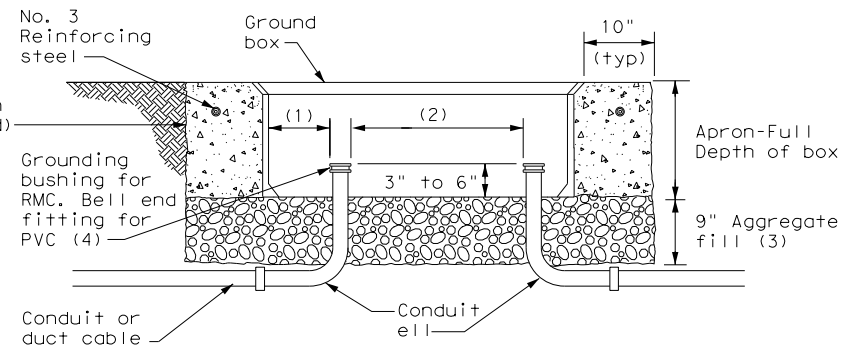
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

PLOTTED: \$\$\$DATE\$\$\$ \$\$\$SYTIME\$\$\$ \$\$\$SCALE\$\$\$ BY: \$USER\$ FILENAME: \$\$\$DGN\$SPEC\$\$\$\$\$\$\$\$\$



PLAN VIEW

APRON FOR GROUND BOX

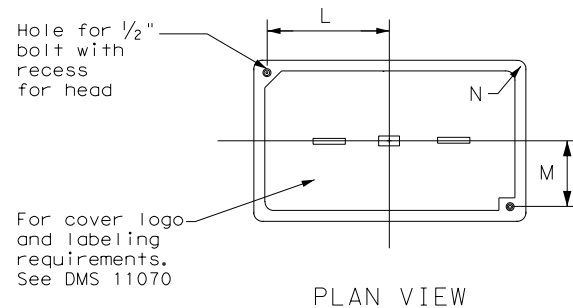


SECTION A - A

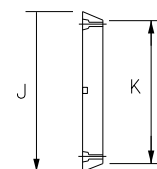
- (1) Uniformly space ends of conduits within the ground box. Position ends of conduits so that ground box walls do not interfere with the installation of grounding bushings or bell end fittings.
- (2) Maintain sufficient space between conduits to allow for proper installation of bushings.
- (3) Place aggregate under the box, not in the box. Aggregate should not encroach on the interior volume of the box.
- (4) Install a grounding bushing on the upper end of all RMC terminating in a ground box. Ground RMC elbows when any part of the elbow is less than 18 in. below the bottom of the ground box. Install a PVC bushing or bell end fitting on the upper end of all PVC conduits terminating in a ground box.

GROUND BOX DIMENSIONS	
TYPE	OUTSIDE DIMENSIONS (INCHES) (Width x Length X Depth)
A	12 X 23 X 11
B	12 X 23 X 22
C	16 X 29 X 11
D	16 X 29 X 22
E	12 X 23 X 17

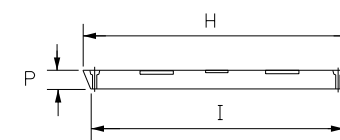
GROUND BOX COVER DIMENSIONS								
TYPE	DIMENSIONS (INCHES)							
	H	I	J	K	L	M	N	P
A, B & E	23 1/4	23	13 3/4	13 1/2	9 7/8	5 1/8	1 3/8	2
C & D	30 1/2	30 1/4	17 1/2	17 1/4	13 1/4	6 3/4	1 3/8	2



PLAN VIEW



END



SIDE

GROUND BOX COVER

GROUND BOXES

A. MATERIALS

1. Provide polymer concrete ground boxes measuring 16x30x24 in. (WxLxD) or smaller in accordance with Departmental Material Specification (DMS) 11070 "Ground Boxes" and Item 624 "Ground Boxes."
2. Provide Type A, B, C, D, and E ground boxes as shown in the plans, and as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 624.

3. Ensure ground box cover is correctly labeled in accordance with DMS 11070.

4. Provide larger ground boxes in accordance with Item 624 and as shown in the plans.

B. CONSTRUCTION METHODS

1. Remove all gravel and dirt from conduit. Cap all conduits prior to placing aggregate and setting ground box. Provide Grade 3 or 4 coarse aggregate as shown in Table 2 of Item 302 "Aggregates for Surface Treatments." Ensure aggregate bed is in place and at least 9 inches deep, prior to setting the ground box. Install ground box on top of aggregate.
2. Cast ground box aprons in place. Reinforcing steel may be field bent. Ensure the depth of concrete for the apron extends from finished grade to the top of the aggregate bed under the box. Ground box aprons, including concrete and reinforcing steel, are subsidiary to ground boxes when called for by descriptive code.
3. Keep bolt holes in the box clear of dirt. Bolt covers down when not working in ground boxes.
4. Install all conduits and ells in a neat and workmanlike manner. Uniformly space conduits so grounding bushings and bell end fittings can easily be installed.
5. Temporarily seal all conduits in the ground box until conductors are installed.
6. Permanently seal conduits immediately after the completion of conductor installation and pull tests. Permanently seal the ends of all conduits with duct seal, expandable foam, or other method as approved. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a sealant.
7. When a ground rod is present in a ground box, bond all equipment grounding conductors together and to the ground rod with listed connectors.
8. When a type B or D ground box is stacked to meet volume requirements, it is allowable to cut an appropriately sized hole for conduit entry in the side wall at least 18 inches below grade.
9. If an existing ground box in the contract has a metal cover, bond the cover to the equipment grounding conductor with a 3 ft. long stranded bonding jumper the same size as the grounding conductor. The bonding jumper is subsidiary to various bid items. Verify existing ground boxes with metal covers are shown on the plans, with notes fully describing the work required.
10. If other ground boxes with metal covers are within the project limits but are not part of the contract, the Engineer may direct the Contractor to bond the metal covers, identifying the specific boxes in writing. This work will be paid for separately.
11. Bond metal ground box covers to the grounding conductor with a tank ground type lug.

				Traffic Operations Division Standard	
<h2>ELECTRICAL DETAILS</h2> <h3>GROUND BOXES</h3> <h4>ED(4)-14</h4>					
FILE:	ed4-14.dgn	DN:	TxDOT	CK:	TxDOT
© TxDOT	October 2014	CONT:	0251	SECT:	06
REVISIONS		JOB:	036	HIGHWAY:	US 281
		DIST:	COUNTY:		SHEET NO.
		BWD:	LAMPASAS		299

ELECTRICAL SERVICES NOTES

- Provide new materials. Ensure installation and materials comply with the applicable provisions of the National Electrical Code (NEC) and National Electrical Manufacturers Association (NEMA) standards. Ensure material is Underwriters Laboratories (UL) listed. Provide and install electrical service conduits, conductors, disconnects, contactors, circuit breaker panels, and branch circuit breakers as shown on the Electrical Service Data chart in the plans. Faulty fabrication or poor workmanship in material, equipment, or installation is justification for rejection. Where manufacturers provide warranties and guarantees as a customary trade practice, furnish these to the State.
- Provide electrical services in accordance with Electrical Details standard sheets, Departmental Material Specification (DMS) 11080 "Electrical Services," DMS 11081 "Electrical Services-Type A," DMS 11082 "Electrical Services-Type C," DMS 11083 "Electrical Services-Type D," DMS 11084 "Electrical Services-Type T," DMS 11085 "Electrical Services-Pedestal (PS)", and Item 628 "Electrical Services" of the Standard Specifications. Provide electrical service types A, C, and D, as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 628. Provide other service types as detailed on the plans.
- Provide all work, materials, services, and any incidentals needed to install a complete electrical service as specified in the plans.
- Coordinate with the Engineer and the utility provider for metering and compliance with utility requirements. Primary line extensions, connection charges, meter charges, and other charges by the utility company to provide power to the location are paid for in accordance with Item 628. Get approval for the costs associated with these charges prior to engaging the utility company to do the work. Consult with the utility provider to determine costs and requirements, and coordinate the work as approved.
- The enclosure manufacturer will provide Master Lock Type 2 with brass tumblers keyed #2195 for all custom electrical enclosures. Installing Contractor is to provide Master Lock #2195 Type 2 with brass tumblers for "off the shelf" enclosures. Master Lock #2195 keys and locks become property of the State. Unless otherwise approved, do not energize electrical service equipment until locks are installed.
- Enclosures with external disconnects that de-energize all equipment inside the enclosure do not need a dead front trim. Protect incoming line terminations from incidental contact as required by the NEC.
- When galvanized is specified for nuts, screws, bolts or miscellaneous hardware, stainless steel may be used.
- Provide wiring and electrical components rated for 75°C. Provide red, black, and white colored XHHW service entrance conductors of minimum size 6 American Wire Gauge (AWG). Identify size 6 AWG conductors by continuous color jacket. Identify electrical conductors sized 4 AWG and larger by continuous color jacket or by colored tape. Mark at least 6 inches of the conductor's insulation with half laps of colored tape, when identifying conductors. Ensure each service entrance conductor exits through a separately bushed non-metallic opening in the weatherhead. The lengths of the conductors outside the weatherhead are to be 12 inches minimum, 18 inches maximum, or as required by utility.
- All electrical service conduit and conductors attached to the electrical service including the riser or the elbow below ground are subsidiary to the electrical service. For an underground utility feed, all service conduit and conductors after the elbow, including service conduit and conductors for the utility pole riser when furnished by the Contractor, will be paid for separately.
- Provide rigid metal conduit (RMC) for all conduits on service, except for the 1/2 in. PVC conduit containing the electrical service grounding electrode conductor. Size the service entrance conduit as shown in the plans. Ensure conduit for branch circuit entry to enclosure is the same size as that shown on the layout sheets for branch circuit conduit. Extend all rigid metal conduits a minimum of 6 inches underground and then couple to the type and schedule of the conduit shown on the layout for that particular branch circuit. Install a grounding bushing on the RMC where it terminates in the service enclosure.
- Use of liquidtight flexible metal conduit (LFMC) is allowed between the meter and service enclosure when they are mounted 90 to 180 degrees to each other. Size the LFMC the same size as service entrance conduit. LFMC must not exceed 3 feet in length. Strap LFMC within 1 foot of each end. LFMC less than 12 inches in length need not be strapped. Each end of LFMC must have a grounding bushing or be terminated with a grounding fitting. The LFMC must contain a grounded (neutral) conductor. Ensure any bend in LFMC never exceeds 180 degrees. A pull test is required on all installed conductors, with at least six inches of free conductor movement demonstrated to the satisfaction of the Engineer.
- Ensure all mounting hardware and installation details of services conform to utility company specifications.
- For all electrical service enclosures listed under Item 628 on the MPL, the UL 508 enclosure manufacturers will prepare and submit a schematic drawing unique to each service. Before shipment to the job site, place the applicable laminated schematic drawings and the laminated plan sheet showing the electrical service data chart used to build the enclosure in the enclosure's data pocket. The installing contractor will copy and laminate the actual project plan sheets detailing all equipment and branch circuits supplied by that service. The laminated plan sheets are to be placed in the service enclosure's document pocket. Reduce 11 in. x 17 in. plan sheets to 8 1/2 in. x 11 in. before laminating. If the installation differs from the plan sheets, the installing contractor is to redline plan sheets before laminating.
- When providing an "Off The Shelf" Type D or Type T service, provide laminated plan sheets detailing equipment and branch circuits supplied by that service. Reduce 11 in. x 17 in. plan sheets to 8 1/2 in. x 11 in before laminating. Deliver these drawings before completion of the work to the Engineer, instead of placing in enclosure that has no door pocket.
- Do not install conduit in the back wall of a service enclosure where it would penetrate the equipment mounting panel inside the enclosure. Provide grounding bushings on all metal conduits, and terminate bonding jumpers to grounding bus. Grounding bushings are not required when the end of the metal conduit is fitted with a conduit sealing hub or threaded boss, such as a meter base hub.

SERVICE ASSEMBLY ENCLOSURE

- Provide threaded hub for all conduit entries into the top of enclosure.
- Type galvanized steel (GS) enclosures may be used for Type C panelboards and for Type D and T services that do not use an enclosure mounted photocell or lighting contactor. Provide GS enclosures in accordance with DMS 11080, 11082, 11083, and 11084.
- Provide aluminum (AL) and stainless steel (SS) enclosures for Types A, C, and D in accordance with DMS 11080, 11081, 11082, 11083, and 11084. Do not paint stainless steel.
- Provide pedestal service (PS) enclosures in accordance with ED(9) and DMS 11080 and 11085. Do not provide GS pedestal services. If GS is shown in the PS descriptive code, provide an AL enclosure.

MAIN DISCONNECT & BRANCH CIRCUIT BREAKERS

- Field drill flange-mounted remote operator handle if needed, to ensure handle is lockable in both the "On" and "Off" positions.
- When the utility company provides a transformer larger than 50 KVA, verify that the available fault current is less than the circuit breaker's ampere interrupting capacity (AIC) rating and provide documentation from the electric utility provider to the Engineer.

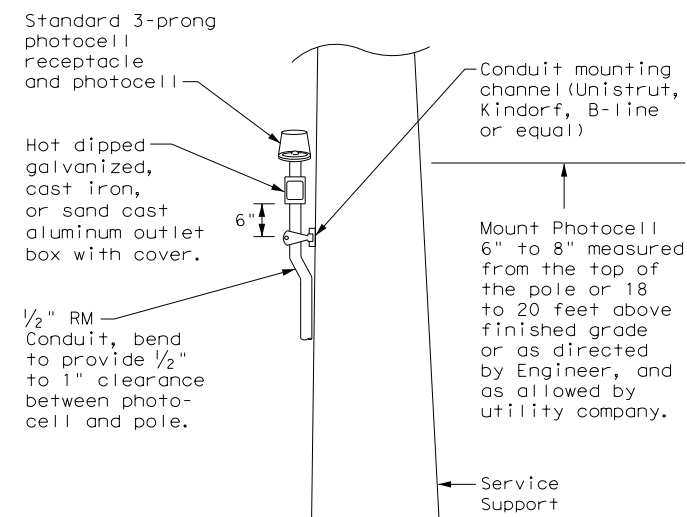
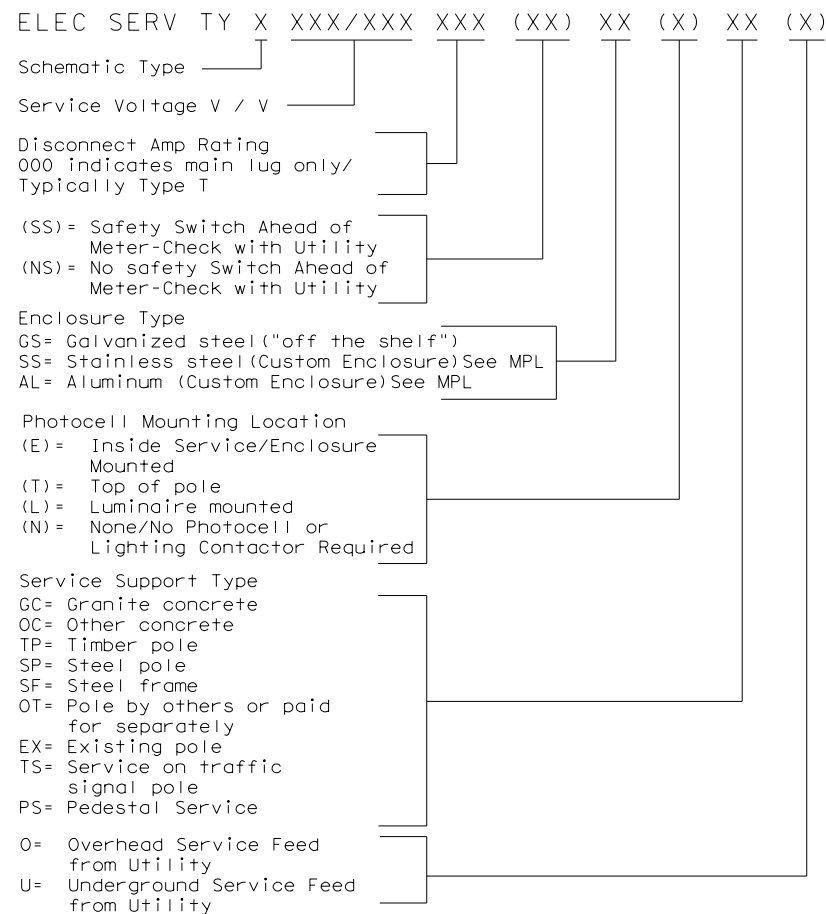
PHOTOELECTRIC CONTROL

- Provide photocell as listed on the MPL. Move, adjust, or shield the photocell from stray or ambient night time light to ensure proper operation. Mount photocell facing north when practical. Mount top of pole photocells as shown on Top Mounted Photocell Detail.

* ELECTRICAL SERVICE DATA												
Elec. Service ID	Plan Sheet Number	Electrical Service Description	Service Conduit *xSize	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole/Amps	Two-Pole Contractor Amps	Panelbd/ Loadcenter Amp Rating	Branch Circuit ID	Branch Ckt. Bkr. Pole/Amps	Branch Circuit Amps	KVA Load
SB 183	289	ELC SRV TY A 240/480 100(SS)AL(E)SF(U)	2"	3/#2	100	2P/100	100	N/A	Lighting NB	2P/40	26	28.1
									Lighting SB	2P/40	25	
									Underpass	1P/20	15	
NB Access	30	ELC SRV TY D 120/240 060(NS)SS(E)TS(O)	1 1/4"	3/#6	N/A	2P/60		100	Sig. Controller	1P/30	23	5.3
							30		Luminaires	2P/20	9	
									CCTV	1P/20	3	
2nd & Main	58	ELC SRV TY T 120/240 000(NS)GS(N)SP(O)	1 1/4"	3/#6	N/A	N/A	N/A	70	Flashing Beacon 1	1P/20	4	1.0
									Flashing Beacon 2	1P/20	4	

* Example only, not for construction. All new electrical services must have electrical service data chart specific to that service as shown in the plans.
 ** Verify service conduit size with utility. Size may change due to utility meter requirements. Ensure conduit size meets the National Electrical Code.

EXPLANATION OF ELECTRICAL SERVICE DESCRIPTIVE CODE



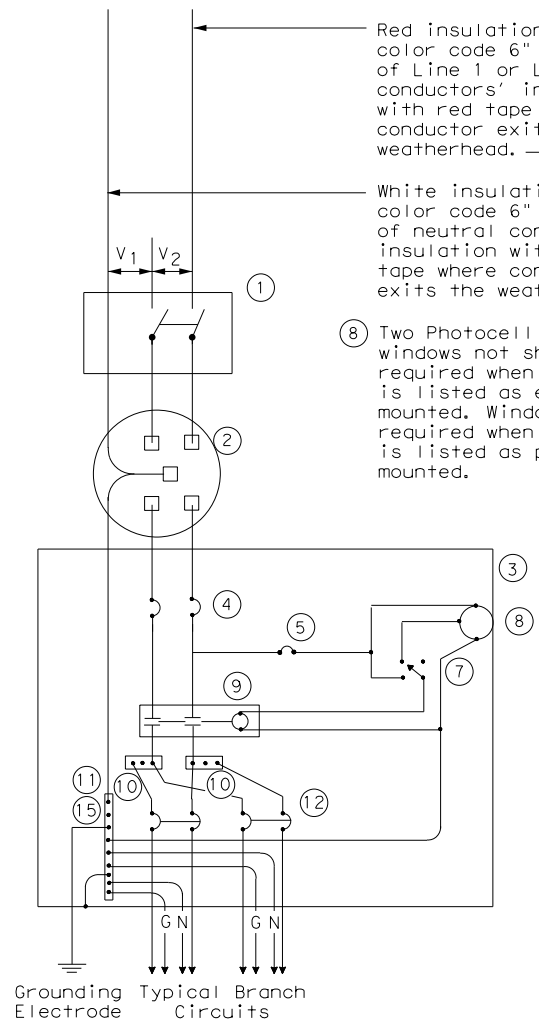
TOP MOUNTED PHOTOCELL

Install conduit strap maximum 3 feet from box. 5 foot maximum spacing between straps supporting conduit.

		Traffic Operations Division Standard	
<h2>ELECTRICAL DETAILS SERVICE NOTES & DATA</h2>			
<h3>ED(5) - 14</h3>			
FILE: ed5-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
©TxDOT October 2014	CONT	SECT	JOB
REVISIONS		0251	06
		036	US 281
DIST		COUNTY	
BWD		LAMPASAS	
		SHEET NO.	
		300	

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.
 PLOTTED: \$\$\$DATE\$\$\$ BY: \$USERS\$
 FILENAME: \$\$\$SYTIME\$\$\$ \$\$\$SCALE\$\$\$ \$\$\$DGN\$SPEC\$\$\$
 \$\$\$DATE\$\$\$ \$\$\$SYTIME\$\$\$ \$\$\$SCALE\$\$\$ \$\$\$DGN\$SPEC\$\$\$

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.

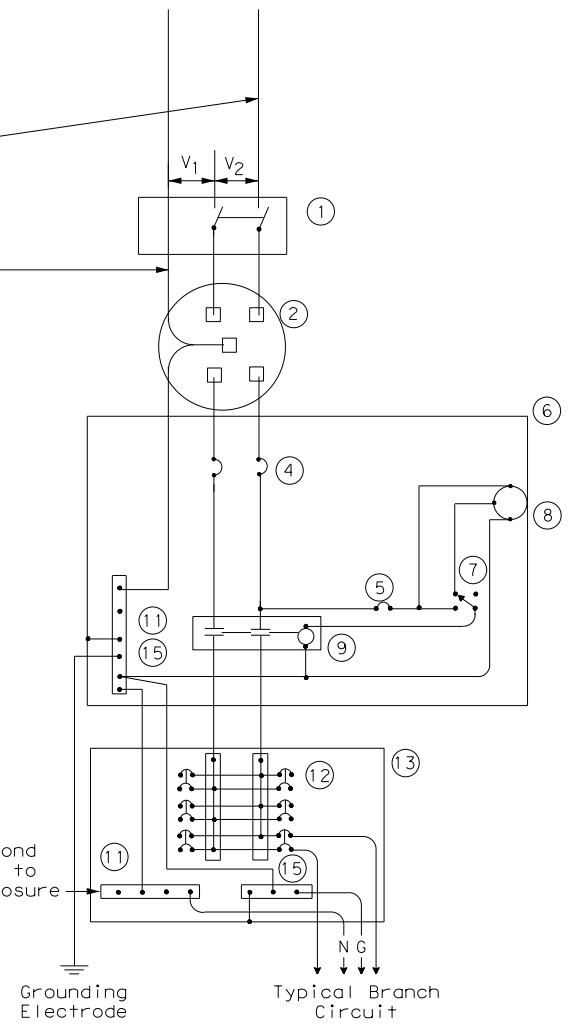


SCHEMATIC TYPE A
THREE WIRE

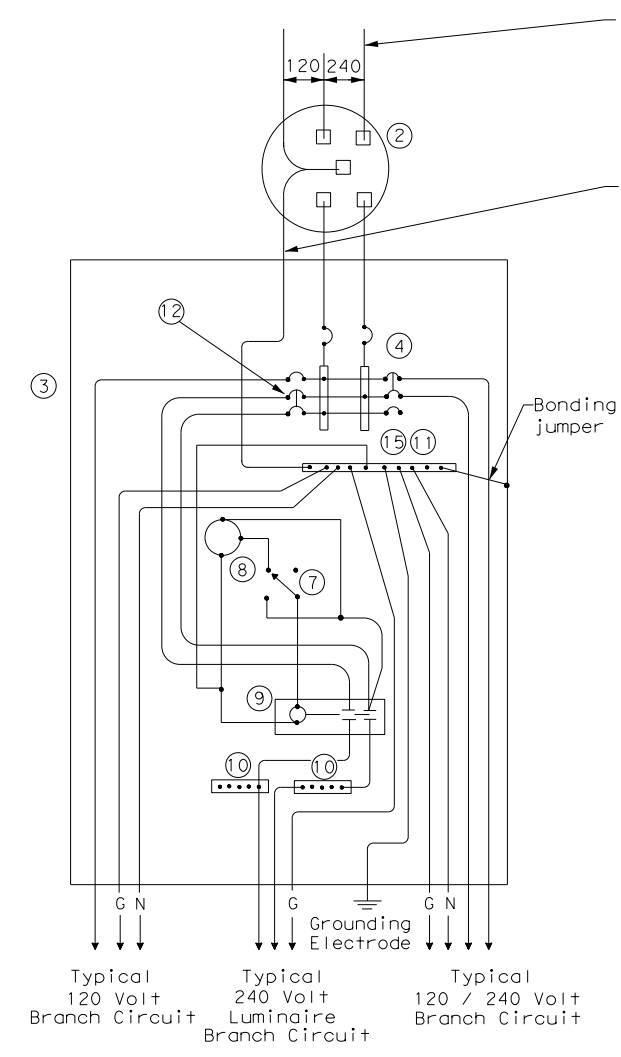
Red insulation or color code 6" length of Line 1 or Line 2 conductors' insulation with red tape where conductor exits the weatherhead.

White insulation or color code 6" length of neutral conductors' insulation with white tape where conductor exits the weatherhead.

8 Two Photocell viewing windows not shown but required when photocell is listed as enclosure mounted. Windows not required when photocell is listed as pole top mounted.



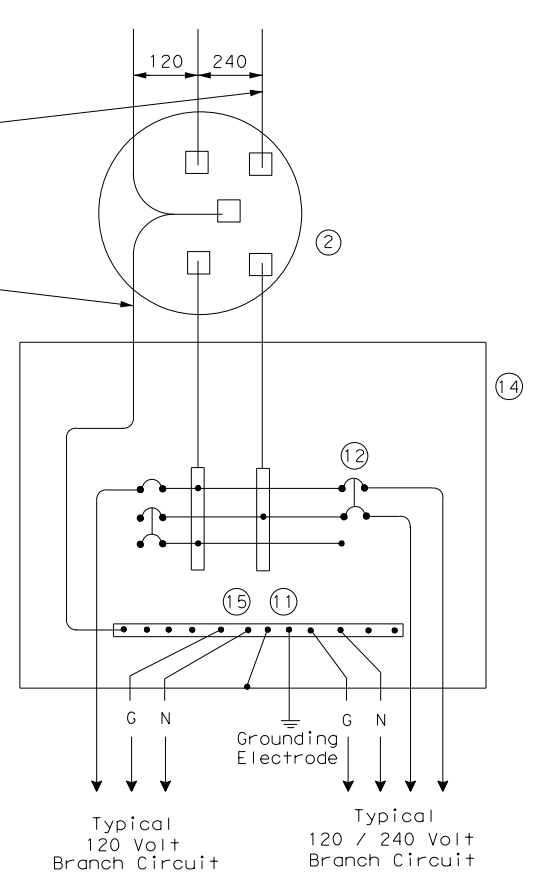
SCHEMATIC TYPE C
THREE WIRE



SCHEMATIC TYPE D - CUSTOM
120/240 VOLTS - THREE WIRE

Red insulation or color code 6" length of Line 1 or Line 2 conductors' insulation with red tape where conductor exits the weatherhead.

White insulation or color code 6" length of neutral conductors' insulation with white tape where conductor exits the weatherhead.



SCHEMATIC TYPE T
120/240 VOLTS - THREE WIRE
Galvanized steel - "Buy Off The Shelf" only. When required install photocell top of the pole or on luminaire only, no lighting contractor will be installed.

WIRING LEGEND	
—	Power Wiring
—	Control Wiring
—N—	Neutral Conductor
—G—	Equipment grounding conductor-always required

SCHEMATIC LEGEND	
1	Safety Switch (when required)
2	Meter (when required-verify with electric utility provider)
3	Service Assembly Enclosure
4	Main Disconnect Breaker (See Electrical Service Data)
5	Circuit Breaker, 15 Amp (Control Circuit)
6	Auxiliary Enclosure
7	Control Station ("H-O-A" Switch)
8	Photo Electric Control (enclosure-mounted shown)
9	Lighting Contactor
10	Power Distribution Terminal Blocks
11	Neutral Bus
12	Branch Circuit Breaker (See Electrical Service Data)
13	Separate Circuit Breaker Panelboard
14	Load Center
15	Ground Bus

PLOTTED: \$\$\$DATE\$\$\$ \$\$\$SYTIME\$\$\$ \$\$\$SCALE\$\$\$ BY: \$USER\$
FILENAME: \$\$\$DGN\$\$\$SPEC\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$

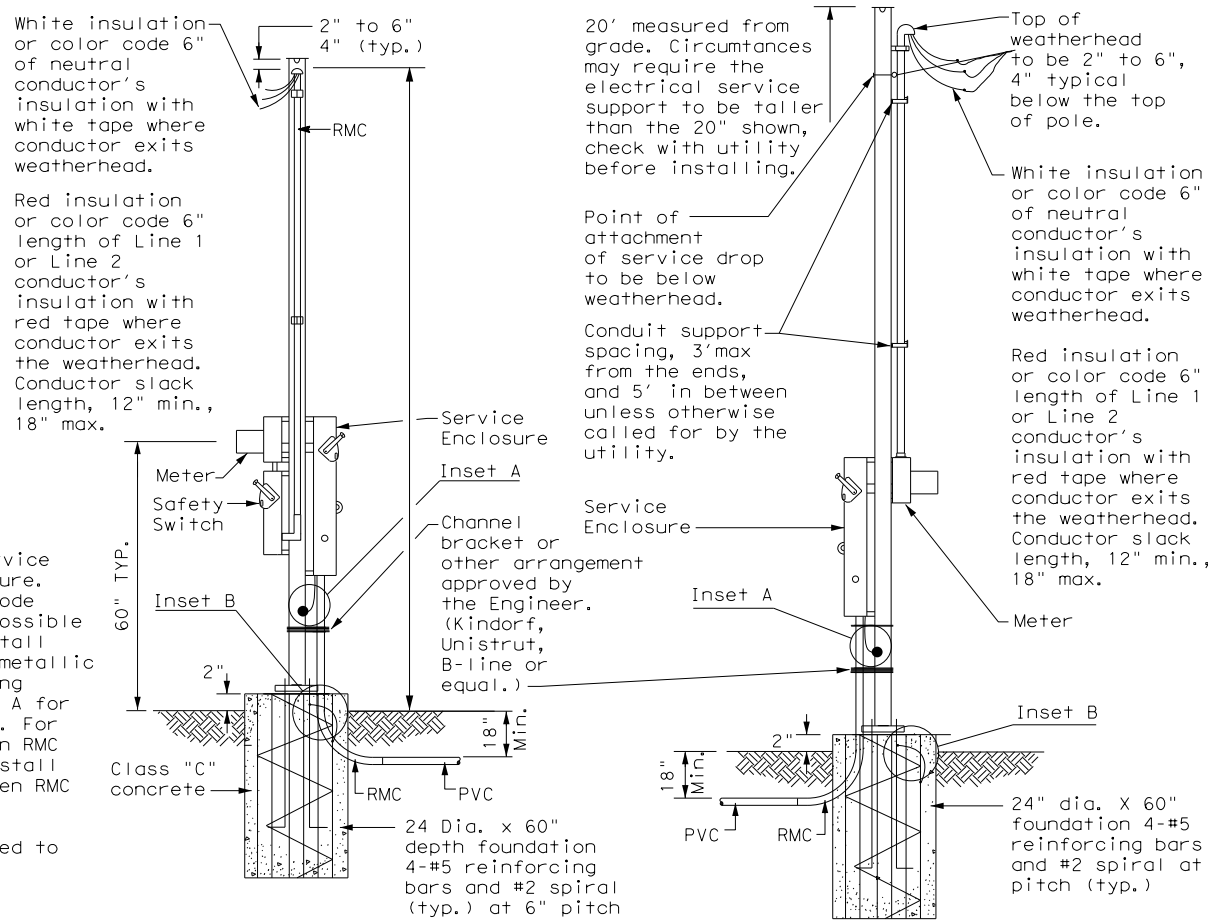
				Traffic Operations Division Standard	
ELECTRICAL DETAILS SERVICE ENCLOSURE AND NOTES					
ED(6)-14					
FILE:	ed6-14.dgn	DN:	TxDOT	CK:	TxDOT
©TxDOT	October 2014	CON:	0251	SECT:	06
REVISIONS		JOB:	036	HIGHWAY:	US 281
DIST:	BWD	COUNTY:	LAMPASAS	SHEET NO.:	301

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.

DATE: 1/30/2023 13:09:18
 FILE: c:\pwworking\cpw\pw\brandon_smi\tn\d0799555\ED(7)-14.dgn

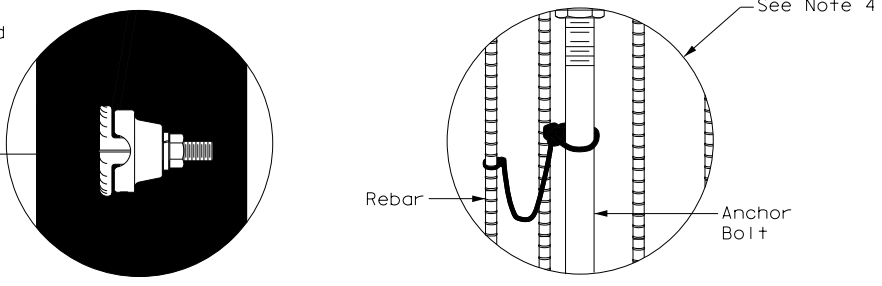
SUPPORT TYPE STEEL POLE (SP) AND STEEL FRAME (SF)

1. Provide steel pole and steel frame supports as per TxDOT Departmental Material Specification (DMS)11080 "Electrical Services." Mount all equipment and conduit on 12 gauge galvanized steel or stainless steel channel strut, 1 1/2 in. or 1 3/8 in. wide by 1 in. up to 3 3/4 in. deep Unistrut, Kindorf, B-line or equal. Bolt or weld all channel and hardware to vertical members as approved. Do not stack channel. File smooth and paint field cut ends of all channel with zinc-rich paint before installing.
2. Provide poles for overhead service with an eyebolt or similar fitting for attachment of the service drop to the pole in conformance with the electric utility provider's specifications.
3. Provide and install galvanized 3/4 in. x 18 in. x 4 in. (dia. x length x hook length) anchor bolts for underground service supports. Provide and install galvanized 3/4 in. x 56 in. x 4 in. anchor bolts for overhead service supports. Ensure anchor bolts have 3 in of thread, with 3 1/4 in. to 3 1/2 in. of the exposed anchor bolt projecting above finished foundation. Provide and install leveling nuts for all anchor bolts.
4. Bond one of the anchor bolts to the rebar cage with 6 AWG bare stranded copper conductor. Use listed mechanical connectors rated for embedment in concrete. See Inset B.
5. Furnish and install rigid metallic ells in all steel pole and steel frame foundations for all conduits entering the service from underground.
6. Use class C concrete for foundations. Ensure reinforcing steel is Grade 60 with 3" of unobstructed concrete cover.
7. Drill and tap steel poles and frames for 1/2 in. X 13 UNC tank ground fitting. For steel pole service supports, provide and install tank ground fitting 4 in. to 6 in. below electrical service enclosure. Provide properly sized hole through the bottom of the enclosure for the service grounding electrode conductor. Ensure electrical service grounding electrode conductor is as short and straight as possible from the enclosure to the tank ground fitting. For steel frame service supports, provide and install tank ground fitting on steel frame post. Install service grounding electrode conductor in a non-metallic conduit or tubing from the enclosure to the steel frame post. Connect electrical service grounding electrode conductor to the tank ground fitting. See steel frame and steel pole details and Inset A for more information. Size service entrance conduit and branch circuit conduit as shown in the plans. For underground conduit runs from the electrical service, extend RMC from the service enclosure to an RMC elbow, and then connect the schedule type and size of conduit shown in the plans. Provide and install grounding bushings where RMC terminates in the enclosure. Grounding bushings are not required when RMC is fitted into a sealing hub or threaded boss.
8. If Steel pole or frame is painted, bond each separate painted piece with a bonding jumper attached to a tapped hole.
9. Provide 1/4" - 20 machine screws for bonding. Do not use sheet metal screws. Remove all non-conductive material at contact points. Terminate bonding jumpers with listed devices. Install minimum size 6 AWG stranded copper bonding jumpers. Make up all threaded bonding connections wrench tight.
10. Avoid contact of the service drop and service entrance conductors with the metal pole to prevent abrasion of the insulated conductors.
11. Shop drawings are not required for service support structure unless specifically stated elsewhere or directed by the Engineer.

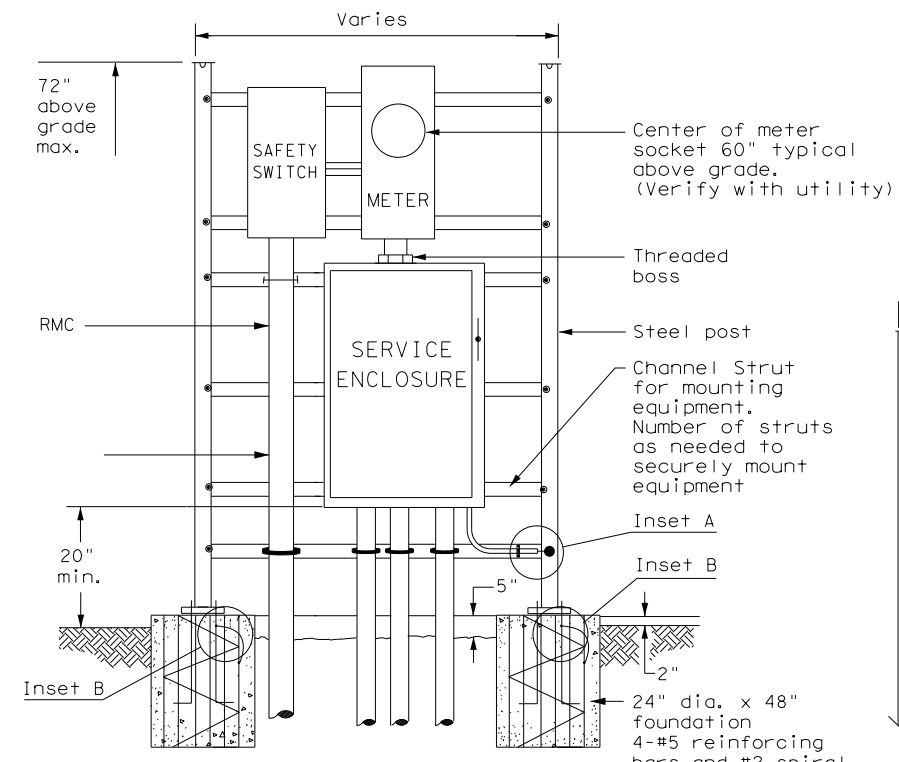


WITH SAFETY SWITCH WITHOUT SAFETY SWITCH
 SERVICE SUPPORT TYPE SP (O) - OVERHEAD SERVICE

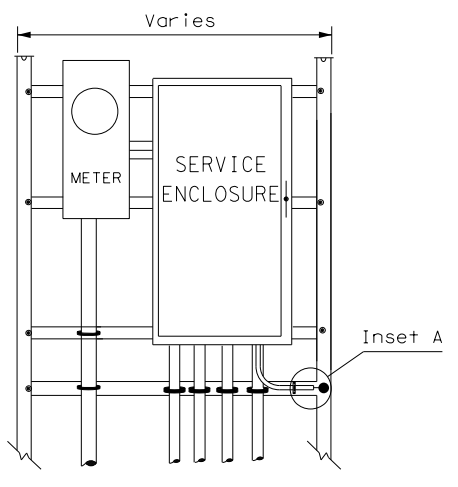
Drill, tap, and thread 1/2" X 13 UNC. Install tank ground fitting, connect electrical service grounding electrode conductor. See Note 7.



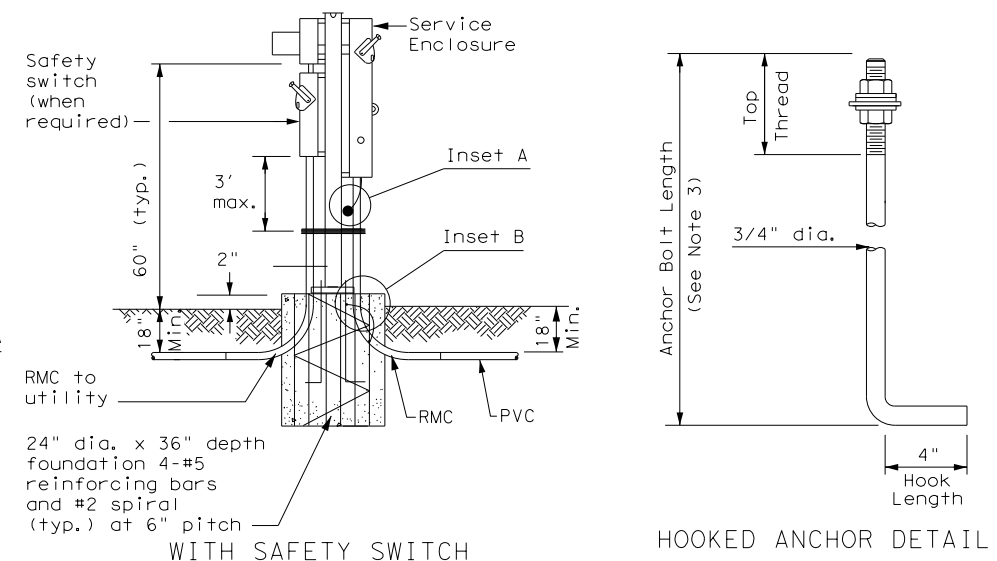
FRONT VIEW INSET A INSET B



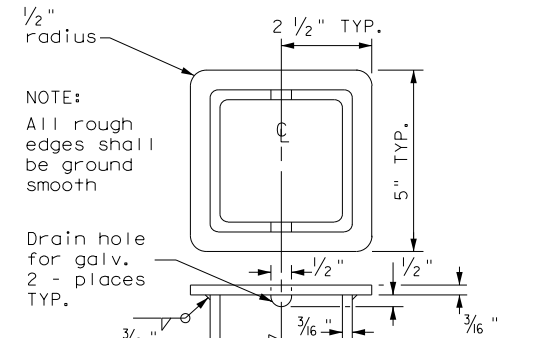
WITH SAFETY SWITCH FRONT VIEW
 SERVICE SUPPORT TYPE SF (U) - UNDERGROUND SERVICE



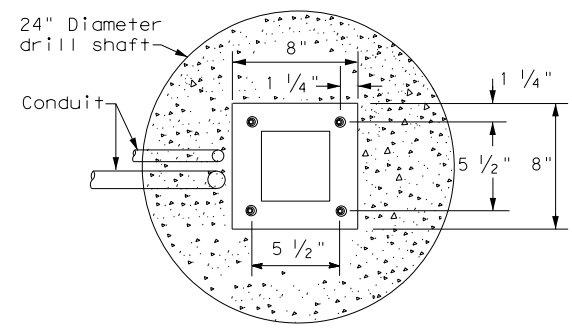
WITHOUT SAFETY SWITCH



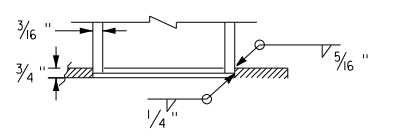
WITH SAFETY SWITCH HOOKED ANCHOR DETAIL
 SERVICE SUPPORT TYPE SP (U) - UNDERGROUND SERVICE



POLE TOP PLATE

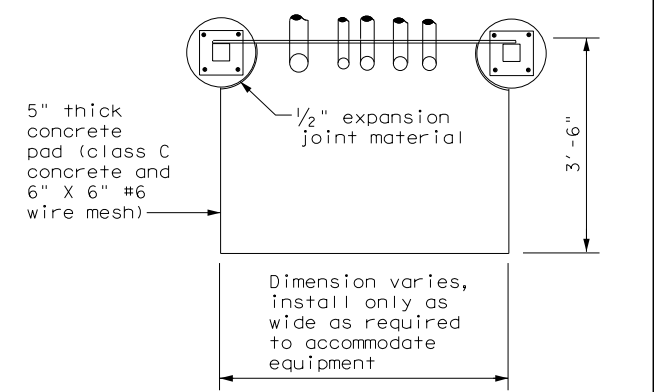


BASE PLATE DETAIL



BOTTOM OF POLE

SERVICE SUPPORT TYPE SF & SP



TOP VIEW

SERVICE SUPPORT TYPE SF (O) & SF (U)



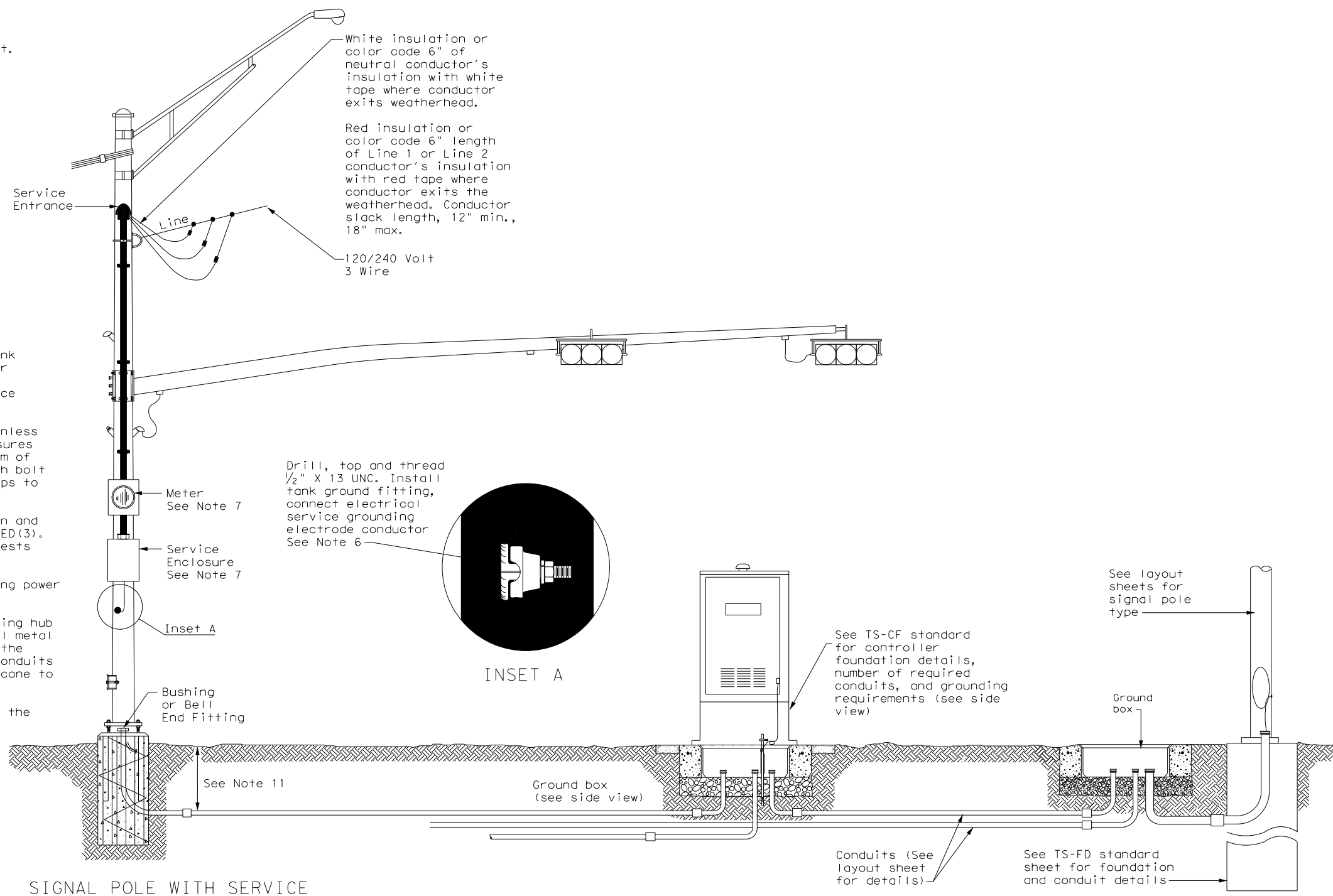
**ELECTRICAL DETAILS
 SERVICE SUPPORT
 TYPES SF & SP
 ED(7)-14**

FILE: ed7-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	302	

TRAFFIC SIGNAL NOTES

1. Do not pass luminaire conductors through the signal controller cabinet.
2. Include an equipment grounding conductor in all conduits throughout the electrical system. Bond all exposed metal parts to the grounding conductor.
3. Provide roadway luminaires, when required, in accordance with the material and construction sections of Item 610, "Roadway Illumination Assemblies," except for performance testing of luminaires. Test installed roadway luminaires for proper operation as a part of the associated traffic signal system test.
4. If internally illuminated street name signs are approved for use, ground the fixture to the pole with a 12 AWG green XHHW conductor.
5. Bond anchor bolts to rebar cage in two locations using #3 bars or 6 AWG stranded copper conductors. Use listed mechanical connectors rated for embedment in concrete. See TXDOT standard TS-FD for further details.
6. Drill and tap signal poles for 1/2 in. X 13 UNC tank ground fitting. Provide and install tank ground fitting 4 in. to 6 in. directly below electrical service enclosure. Provide properly sized hole through the bottom of the enclosure for the service grounding electrode conductor. Connect the electrical service grounding electrode conductor to the tank ground fitting. Ensure electrical service grounding electrode conductor is as short and straight as possible from the enclosure to the tank ground fitting. See Inset A detail for further information. Size service entrance conduit and branch circuit conduit as shown in the plans.
7. Mount electrical service enclosure and meter to signal pole with stainless steel bands. Ensure bands are a minimum width of 3/4 in. Secure enclosures to bands using two-bolt brackets. Install brackets near top and bottom of each enclosure. Install properly sized stainless steel washers on each bolt in the enclosure. Band or drill and tap properly sized stand-off straps to signal pole for attaching conduit.
8. Conduct pull tests and insulation resistance tests on all illumination and power conductors as required in Item 620 "Electrical Conductors" and ED(3). To prevent electronics damage, do not conduct insulation resistance tests on traffic signal cables after termination.
9. Lock all enclosures and bolt down all ground box covers before applying power to the signal installation.
10. Terminate conduits entering the top of enclosures with a conduit-sealing hub or threaded boss such as meter hub. Install a grounding bushing on all metal conduits not connected to conduit-sealing hub or threaded boss. Bond the grounding bushing to the ground bus with a bonding jumper. Seal all conduits entering enclosures with duct seal or expanding foam. Do not use silicone to seal conduit ends.
11. For all conduits, ensure the burial depth is a minimum of 18". Ensure the minimum burial depth for conduit placed under a roadway is 24".

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.

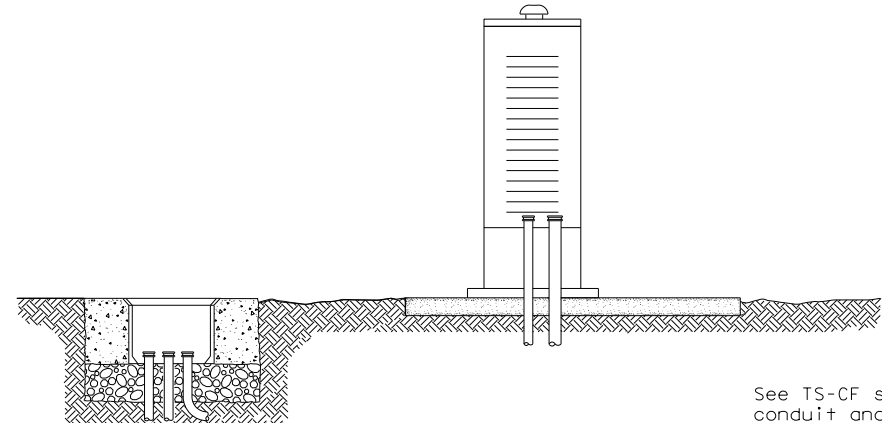


SIGNAL POLE WITH SERVICE

Type T electrical service mounted on signal pole shown as an example. See electrical details, layout sheets, and electrical service data chart for additional details.

SIGNAL CONTROLLER FRONT VIEW

SIGNAL POLE



SIGNAL CONTROLLER SIDE VIEW

See TS-CF standard for conduit and grounding requirements. See layout sheets for ground box locations and any additional conduits that are required.

ELECTRICAL DETAILS TYPICAL TRAFFIC SIGNAL SYSTEM DETAILS

ED(8)-14

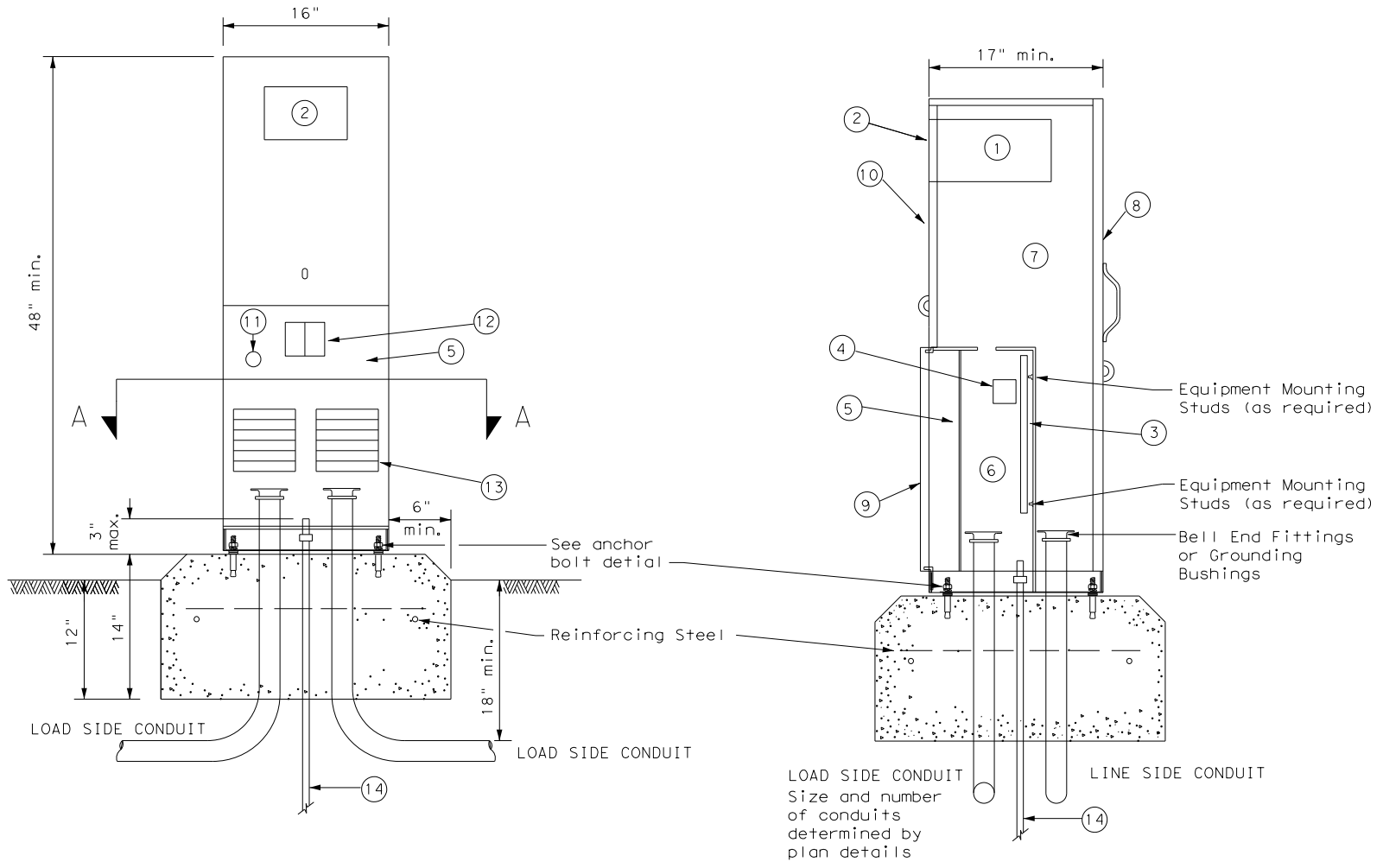
FILE: ed8-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	303	

PLOTTED: \$\$\$DATE\$\$\$ \$\$\$SYTIME\$\$\$ \$\$\$SCALE\$\$\$ BY: \$USERS\$
 FILENAME: \$\$\$DGN\$SPEC\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$

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.

PEDESTAL SERVICE NOTES

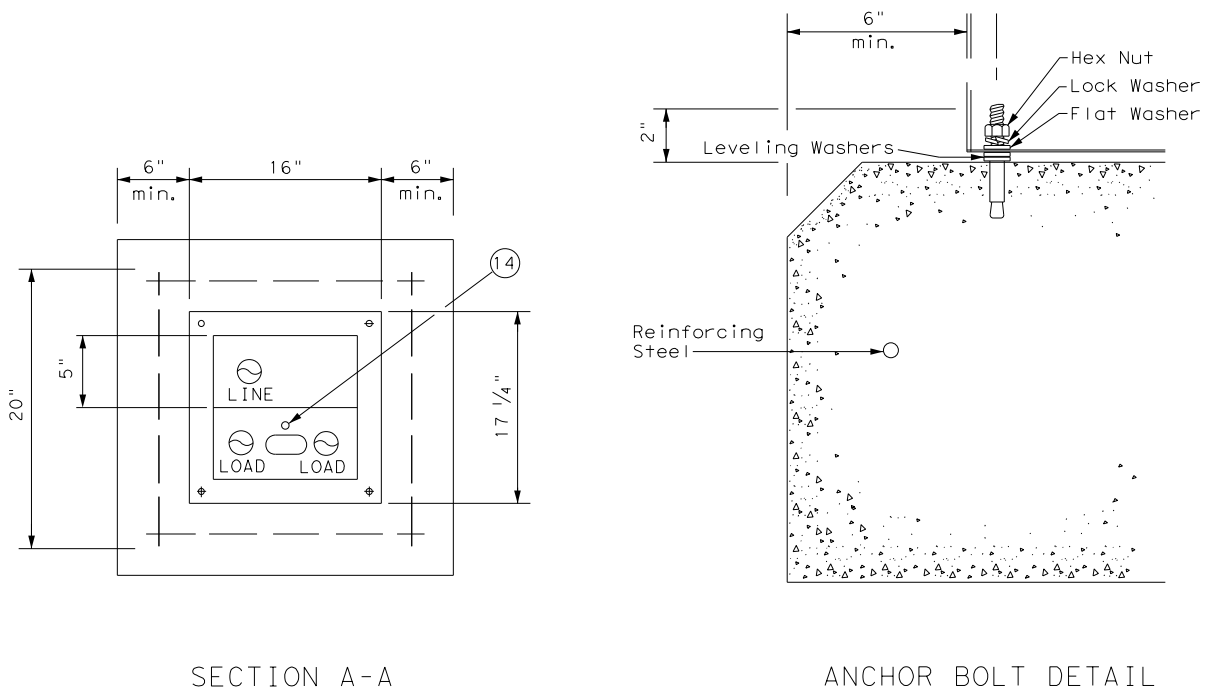
1. Manufacture pedestal electrical services in accordance with Departmental Material Specifications (DMS)11080 "Electrical Services", 11085 "Electrical Services-Pedestal (PS)" and Item 628 "Electrical Services." Provide pedestal electrical services as listed on the Material Producers List (MPL) on the Department's web site under "Roadway Illumination and Electrical Supplies," Item 628. Ensure all mounting hardware and installation details of services meet utility company specifications. Contact the local utility company for approval of pedestal details prior to installing the electrical pedestal service. Submit any changes required by the utility company prior to manufacturing the pedestal enclosure.
2. When a meter socket is required, provide a socket with a minimum 100 amp rating that complies with local utility requirements.
3. Provide Class A or C concrete for pedestal service foundations in accordance with Item 420, "Concrete Substructures," except that concrete will not be paid for directly but is considered subsidiary to Item 628.
4. Provide #4 reinforcing steel for foundations in accordance with Item 440, "Reinforcement for Concrete."
5. Install 1/2 in. X 2 1/6 in. minimum length concrete single expansion type anchors for mounting pedestal enclosure to foundation. Anchor location to match mounting holes in each corner of enclosure. Secure each of the four corners of the pedestal enclosure to the anchors in the foundation with a 1/2 in. galvanized or stainless steel machine thread bolt, a properly sized locknut and a flat washer.
6. Finish top of concrete foundation in a neat and workmanlike manner. If leveling washers are used, ensure no more than 1/8 in. gap at any corner. Do not exceed a maximum dip or rise in the foundation of 1/8 in. per foot. When properly installed, ensure the top of the service enclosure is level front to back and side to side within 1/4 in. Repair rocking or movement of the service enclosure at no additional cost to the department.
7. Do not use liquidtight flexible metal conduit (LFMC) on pedestal type services.
8. Ensure all elbows in the foundation are sized as per utility provider's conduit requirements for underground conduit and feeders. PVC extensions may be installed provided the ends of the rigid metal conduits are more than 2 in. below the top of the concrete foundation. Where extension conduits are metal, grounding bushings must be installed with a bonding jumper properly terminated.



FRONT VIEW

SIDE VIEW

TYPE C shown, TYPE A similar except that TYPE A shall have individual circuit breakers (CB) mounted on an equipment mounting panel. CB Handles shall protrude through hinged deadfront trim.



SECTION A-A

ANCHOR BOLT DETAIL

LEGEND	
1	Meter Socket, (when required)
2	Meter Socket Window, (when required)
3	Equipment Mounting Panel
4	Photo Electric Control Window, (When required)
5	Hinged Deadfront Trim
6	Load Side Conduit Trim
7	Line Side Conduit Area
8	Utility Access Door, with handle
9	Pedestal Door
10	Hinged Meter Access
11	Control Station (H-O-A Switch)
12	Main Disconnect
13	Branch Circuit Breakers
14	Copper Clad Ground Rod - 5/8" X 10'



**ELECTRICAL DETAILS
ELECTRICAL SERVICE SUPPORT
PEDESTAL SERVICE TYPE PS**

ED(9) - 14

FILE:	ed9-14.dgn	DN:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
© TxDOT	October 2014	CON:	0251	SECT:	06	JOB:	036	HIGHWAY:	US 281
REVISIONS		DIST:	BWD	COUNTY:	LAMPASAS	SHEET NO.		304	

PLOTTED: \$\$\$DATE\$\$\$ \$\$\$SYTIME\$\$\$ \$\$\$SCALE\$\$\$ BY: \$USERS\$
 FILENAME: \$\$\$DGN\$\$\$SPEC\$\$\$

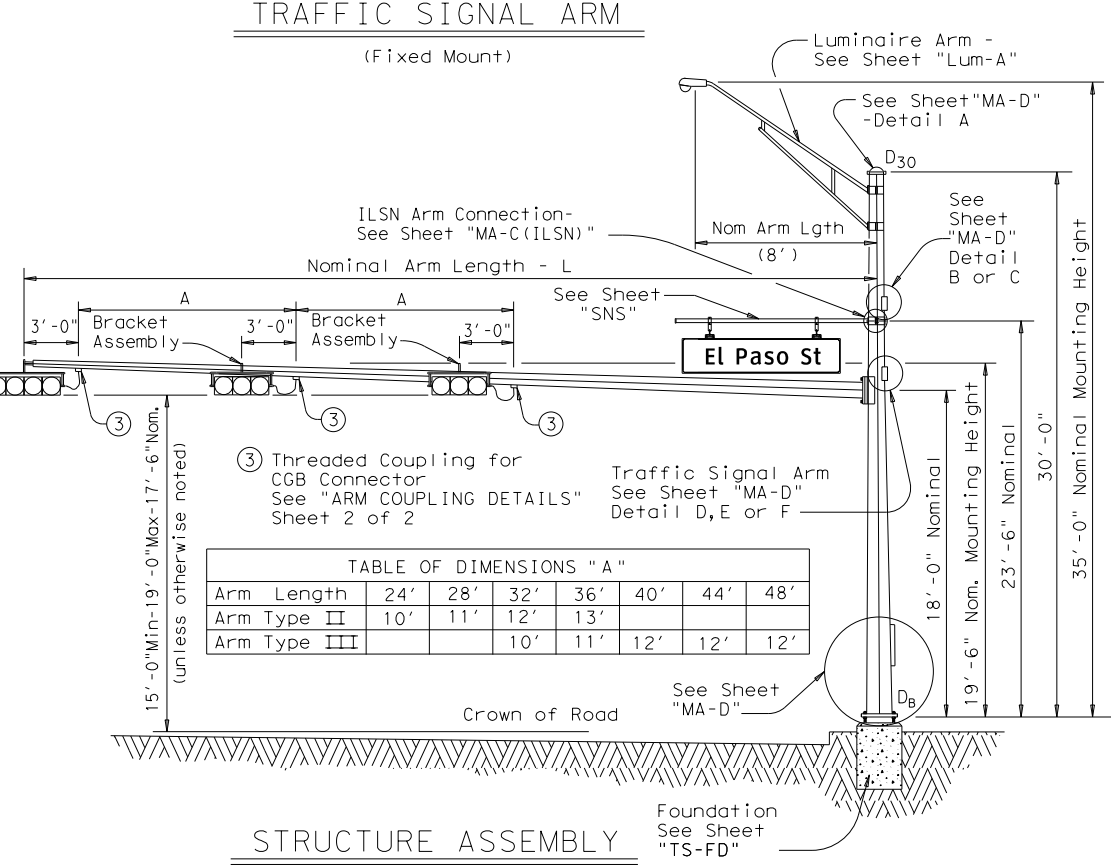
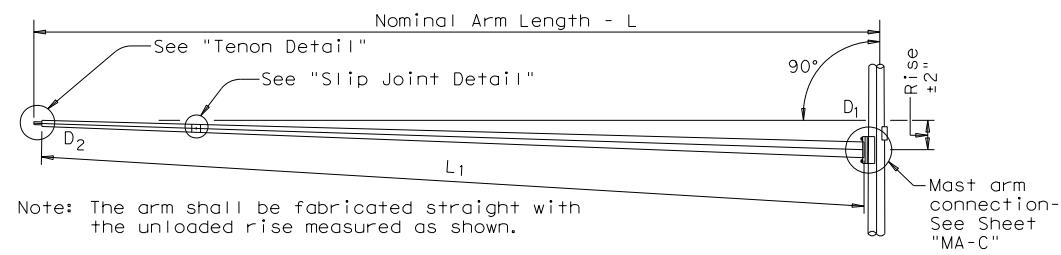
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 1/30/2023 13:09:33
 FILE: c:\pwworking\cpw_cpw\paw_\brandon.smi\h\d0799555\sma-80.dgn

Arm Length	ROUND POLES					POLYGONAL POLES					Foundation Type
	D _B	D ₁₉	D ₂₄	D ₃₀	① thk	D _B	D ₁₉	D ₂₄	D ₃₀	① thk	
ft.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	
20	10.5	7.8	7.1	6.3	.179	11.5	8.5	7.7	6.8	.179	30-A
24	11.0	8.3	7.6	6.8	.179	12.0	9.0	8.2	7.3	.179	30-A
28	11.5	8.8	8.1	7.3	.179	12.5	9.5	8.7	7.8	.179	30-A
32	12.5	9.8	9.1	8.3	.179	12.0	9.0	8.2	7.3	.239	30-A
36	12.0	9.3	8.6	7.8	.239	12.5	9.5	8.7	7.8	.239	36-A
40	12.0	9.3	8.6	7.8	.239	13.5	10.5	9.7	8.8	.239	36-A
44	12.5	9.8	9.1	8.3	.239	14.0	11.0	10.2	9.3	.239	36-A
48	13.0	10.3	9.6	8.8	.239	15.0	12.0	11.2	10.3	.239	36-A

Arm Length	ROUND ARMS					POLYGONAL ARMS				
	L ₁	D ₁	D ₂	① thk	Rise	L ₁	D ₁	② D ₂	① thk	Rise
ft.	ft.	in.	in.	in.		ft.	in.	in.	in.	
20	19.1	6.5	3.8	.179	1'-9"	19.1	7.0	3.5	.179	1'-8"
24	23.1	7.5	4.3	.179	1'-10"	23.1	7.5	3.5	.179	1'-9"
28	27.1	8.0	4.2	.179	1'-11"	27.1	8.0	3.5	.179	1'-10"
32	31.0	9.0	4.7	.179	2'-1"	31.0	9.0	3.5	.179	2'-0"
36	35.0	9.5	4.6	.179	2'-4"	35.0	10.0	3.5	.179	2'-1"
40	39.0	9.5	4.1	.239	2'-8"	39.0	9.5	3.5	.239	2'-3"
44	43.0	10.0	4.1	.239	2'-11"	43.0	10.0	3.5	.239	2'-6"
48	47.0	10.5	4.1	.239	3'-4"	47.0	11.0	3.5	.239	2'-9"

- D_B = Pole Base O.D.
 D₁₉ = Pole Top O.D. with no Luminaire and no ILSN
 D₂₄ = Pole Top O.D. with ILSN w/out Luminaire
 D₃₀ = Pole Top O.D. with Luminaire
 D₁ = Arm Base O.D.
 D₂ = Arm End O.D.
 L₁ = Shaft Length
 L = Nominal Arm Length
- ① Thickness shown are minimums, thicker materials may be used.
 ② D₂ may be increased by up to 1" for polygonal arms.



SHIPPING PARTS LIST

Ship each pole with the following attached: enlarged hand hole, pole cap, fixed-arm connection bolts and washers and any additional hardware listed in the table.

Nominal Arm Length	30' Poles With Luminaire		24' Poles With ILSN		19' Poles With No Luminaire and No ILSN	
	Designation	Quantity	Designation	Quantity	Designation	Quantity
ft						
20	20L-80		20S-80		20-80	
24	24L-80		24S-80		24-80	
28	28L-80	1	28S-80		28-80	1
32	32L-80		32S-80		32-80	
36	36L-80		36S-80		36-80	
40	40L-80	1	40S-80		40-80	
44	44L-80		44S-80		44-80	
48	48L-80	4	48S-80		48-80	

Traffic Signal Arms (1 per Pole) Ship each arm with the listed equipment attached

Nominal Arm Length	Type I Arm (1 Signal)		Type II Arm (2 Signals)		Type III Arm (3 Signals)	
	Designation	Quantity	Designation	Quantity	Designation	Quantity
ft						
20	20I-80					
24	24I-80		24II-80			
28	28I-80		28II-80	2		
32			32II-80		32III-80	
36			36II-80		36III-80	
40					40III-80	1
44					44III-80	
48					48III-80	4

Luminaire Arms (1 per 30' pole)

Nominal Arm Length	Quantity
8' Arm	5

ILSN Arm (Max. 2 per pole) Ship with clamps, bolts and washers

Nominal Arm Length	Quantity
7' Arm	
9' Arm	

Anchor Bolt Assemblies (1 per pole)

Anchor Bolt Diameter	Anchor Bolt Length	Quantity
1 1/2"	3'-4"	2
1 3/4"	3'-10"	5

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".

Templates may be removed for shipment.

Scott Schmidt

1/30/2023

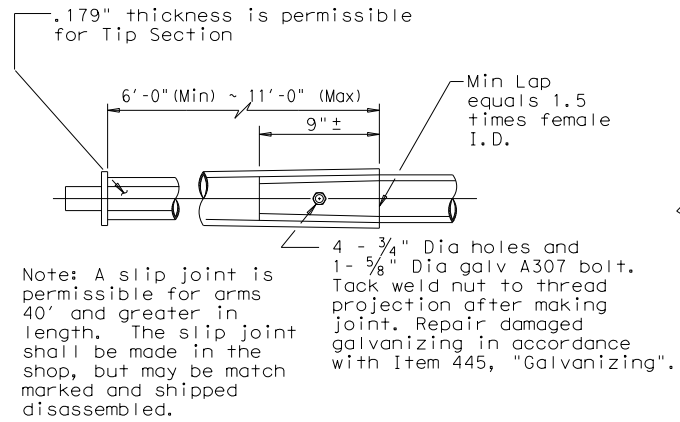


TRAFFIC SIGNAL SUPPORT STRUCTURES
 SINGLE MAST ARM ASSEMBLY
 (80 MPH WIND ZONE)
 SMA-80(1)-12

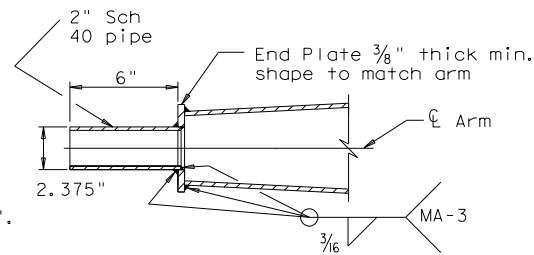
REVISIONS		DN: MS	CK: JSY	DW: MMF	CK: JSY
5-96		CON	SECT	JOB	HIGHWAY
11-99		0251	06	036	US 281
1-12		DIST	COUNTY		SHEET NO.
		BWD	LAMPASAS		305

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.

DATE: 1/30/2023 13:09:35
 FILE: c:\pwworking\cpx\pw_cpj\brandon.smi\th\0799555\sma-80.dgn



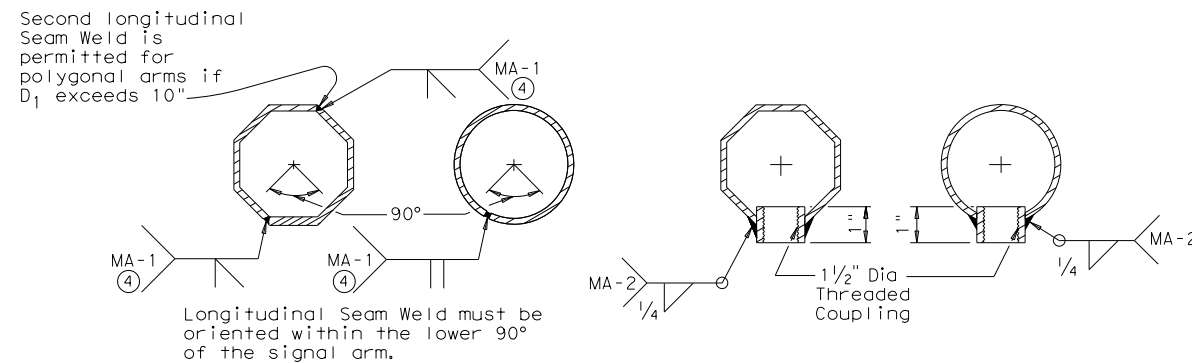
SLIP JOINT DETAIL



TENON DETAIL

Stainless steel bands (or Cables) and cast bracket as in "Astro-Brac", "Sky Bracket" or "Easy Bracket" with 1 1/2" Dia Threaded Coupling.

BRACKET ASSEMBLY



ARM WELD DETAIL

ARM COUPLING DETAILS

④ 60% Min. penetration
 100% penetration within 6" of circumferential base welds.

VIBRATION WARNING

Mast Arms of SMA and DMA structures and clamp-on Arms of LMA structures of approximately 40 ft or longer are subject to harmonic vertical vibrations in light wind conditions due to the aeroelastic characteristics of a few of the myriads of possible combinations of the following: signal numbers, weights and positions; existence/solidity of backplates; presence of additional attachments to the arm, such as signs and cameras; arm-wind orientation; and arm-pole stiffness.

Such vibrations may cause fatigue damage to the structure and may lead to galloping in moderate wind conditions which may further damage the structure and alarm the public. Tests have indicated that when wind is blowing toward the back side of signal heads having un-vented backplates attached the probability of unacceptable harmonic vibration and/or galloping is rather high.

If backplates are not required for improved visibility they should not be applied to the signal heads or, if they must be applied, they should be vented as a first and inexpensive measure to mitigate vibrations.

The traffic signal mast arms shall be visually inspected in 5 to 20 mph wind conditions after installation of signal heads and any attachments, including any required backplates. If vertical movements with a total excursion (maximum upward excursion to maximum downward excursion) of more than approximately 8" are observed at the arm tip, a damping plate shall be fitted to the arm. See "Damping Plate Mounting Details" on standard sheet, MA-DP-10.

This visual inspection shall be repeated after each modification of the structure that could affect its aeroelastic response. Excessive vibrations shall not be allowed to continue for more than two days.

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 80 mph plus a 1.3 gust factor.

Poles are designed to support one 8'-0" luminaire arm, one 9'-0" internally lighted street name sign and one traffic signal arm with a length as tabulated. The specified luminaire load applied at the end of the luminaire arm equals 60 lbs vertical dead load plus the horizontal wind load on an effective projected area of 1.6 sq ft. The specified internally lighted street name sign load applied 4.5 ft from the centerline of the pole equals 85 lbs vertical dead load plus horizontal wind load on an effective projected area of 11.5 sq ft. The specified signal load applied at the end of the traffic signal arm equals 180 lbs vertical dead load plus the horizontal wind load on an effective projected area of 32.4 sq ft (actual area times drag coefficient).

See Standard Sheet "MA-D" for pole details, "MA-C" for traffic signal arm connection details, "MA-C (ILSN)" for internally lighted street name sign arm connection details, "LUM-A" for luminaire arm and connection details, "SNS" for internally lighted street name sign details, and "TS-FD" for anchor bolt and foundation details. See "MA-C" for material specifications.

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.



TRAFFIC SIGNAL SUPPORT STRUCTURES SINGLE MAST ARM ASSEMBLY (80 MPH WIND ZONE)

SMA-80(2)-12

© TxDOT August 1995		DN: MS	CK: JSY	DW: MMF	CK: JSY
REVISIONS		CONT	SECT	JOB	HIGHWAY
5-96	0251	06	036	US 281	
1-12		DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS		306	

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 incorrect results or damages resulting from its use.

DATE: 1/30/2023 13:09:40
FILE: c:\pwworking\cpw\pw_\paw_\brandon.smi\th\d0799555\ts-fd.dgn

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- #9	#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- #9	#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- #9	#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- #9	#3 at 6"	17.4	15.6	11.9	2 1/4"	55	23"	2	271	9	Mast arm assembly. (see Selection Table)

NOTES:

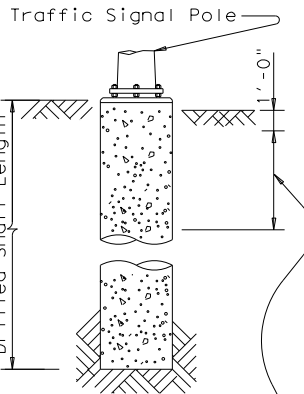
- ① Anchor bolt design develops the foundation capacity given under Foundation Design Loads.
- ② Foundation Design Loads are the allowable moments and shears at the base of the structure.
- ③ Foundations may be listed separately or grouped according to similarity of location and type. Quantities are 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 (6) (FEET)				
				24-A	30-A	36-A	36-B	42-A
US 281 AT LAMPASAS HIGH SCHOOL								
POLES 1,3,5	10	24-A	3	18				
US 281 AT PLUM STREET								
POLES 1,3,4	10	36-A	2			39		
POLE 2	10	30-A	1		11			
POLES 5,6,7,8	10	24-A	4	24				
US 281 AT NARUNA RD								
POLES 1,3	10	36-A	2			26		
POLE 2	10	30-A	1		11			
POLES 4,5	10	24-A	2	12				
TOTAL DRILLED SHAFT LENGTHS				54	22	65		

FOUNDATION SELECTION TABLE FOR STANDARD MAST ARM PLUS ILSN SUPPORT ASSEMBLIES (ft)

80 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH	FDN 30-A	FDN 36-A	FDN 36-B	FDN 42-A
		24' X 24'			
MAXIMUM DOUBLE ARM LENGTH COMBINATIONS	28' X 28'				
	32' X 28'				
	36' X 36'				
	40' X 36'				
	44' X 28'				
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'			
40' X 24'					

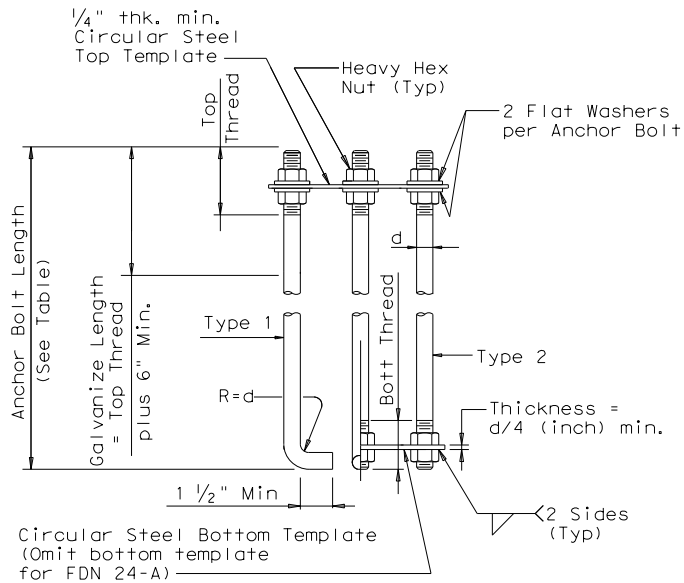


ANCHOR BOLT & TEMPLATE SIZES						
BOLT DIA IN.	(7) BOLT LENGTH	TOP THREAD	BOTTOM THREAD	BOLT CIRCLE	R2	R1
3/4"	1'-6"	3"	—	12 3/4"	7 1/8"	5 5/8"
1 1/2"	3'-4"	6"	4"	17"	10"	7"
1 3/4"	3'-10"	7"	4 1/2"	19"	11 1/4"	7 3/4"
2"	4'-3"	8"	5"	21"	12 1/2"	8 1/2"
2 1/4"	4'-9"	9"	5 1/2"	23"	13 3/4"	9 1/4"

⑦ Min dimensions given, longer bolts are acceptable.

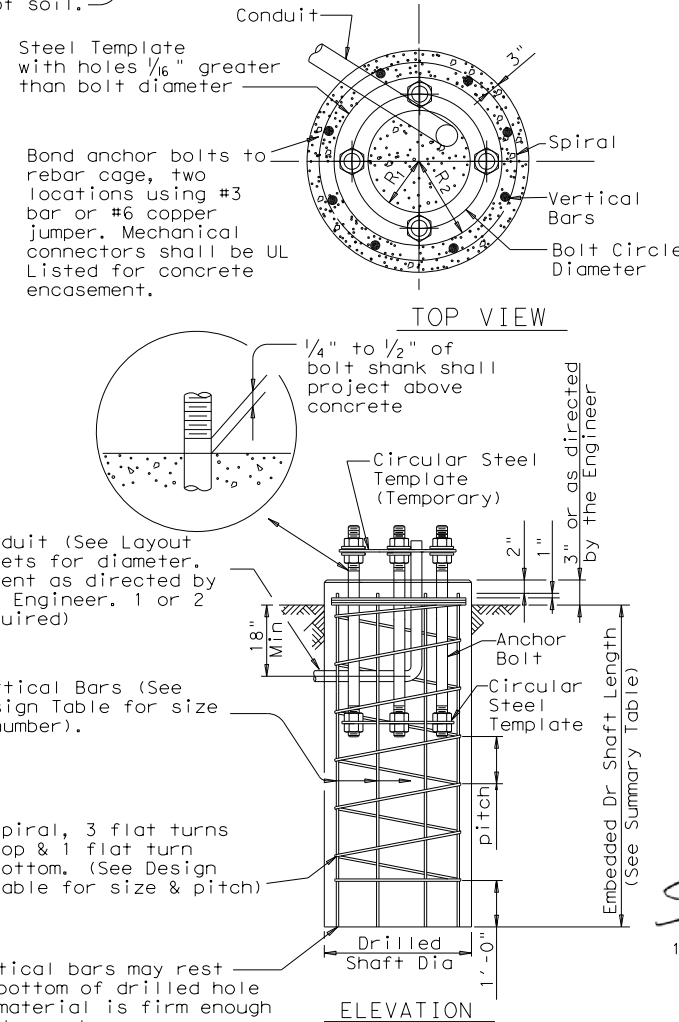
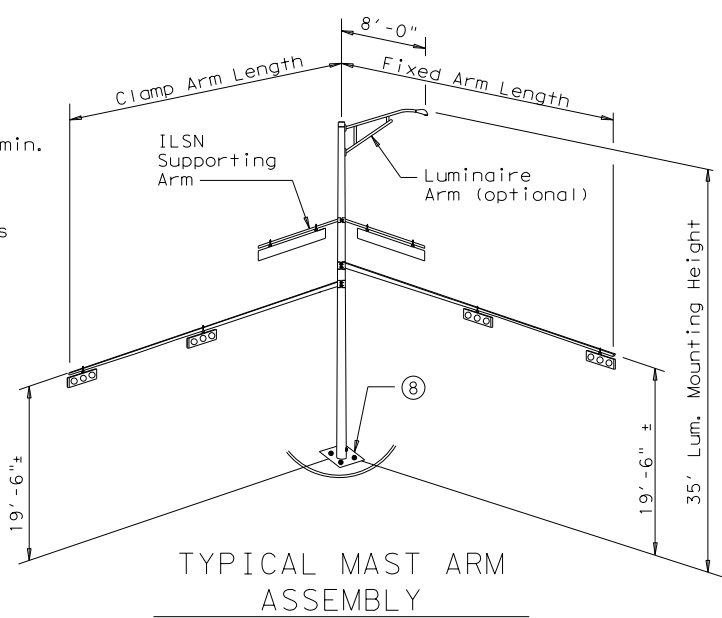
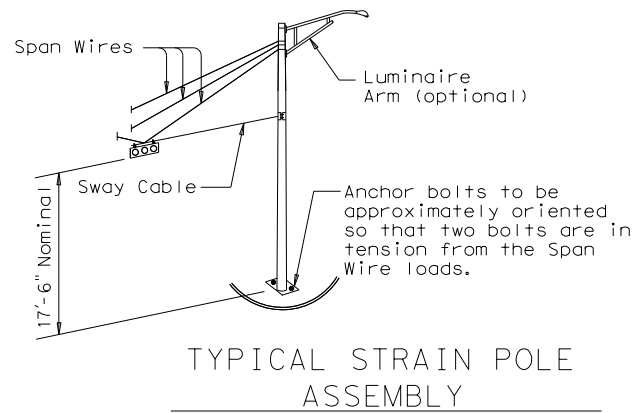
EXAMPLE:

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.

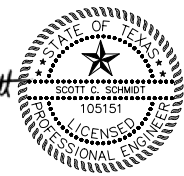


ANCHOR BOLT ASSEMBLY

⑧ Orient anchor bolts orthogonal with the fixed arm direction to ensure that two bolts are in tension under dead load.



Scott Schmidt
1/30/2023



GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminares 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".

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL POLE FOUNDATION

TS-FD-12

© TxDOT August 1995		DN: MS	CK: JSY	DW: MAO/MMF	CK: JSY/TEB
REVISIONS		CONT	SECT	JOB	HIGHWAY
		0251	06	036	US 281
		DIST	COUNTY	SHEET NO.	
		BWD	LAMPASAS	307	

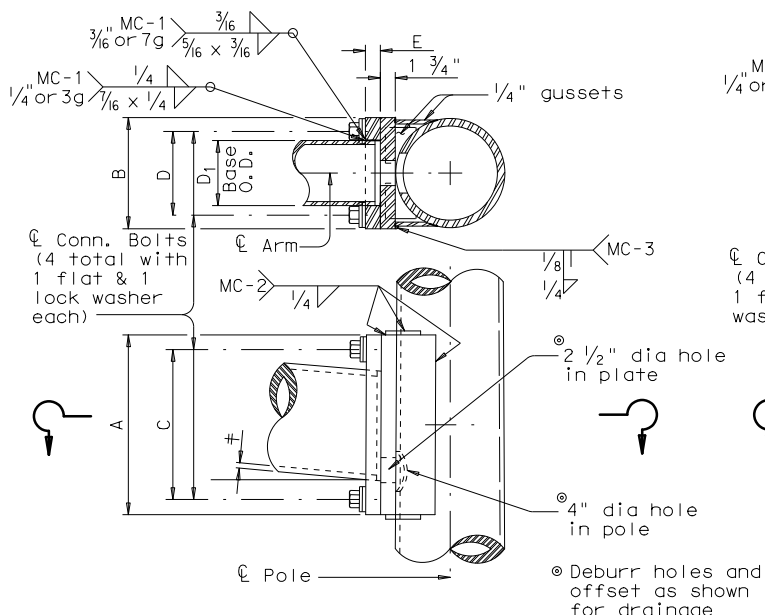
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 1/30/2023 13:09:45

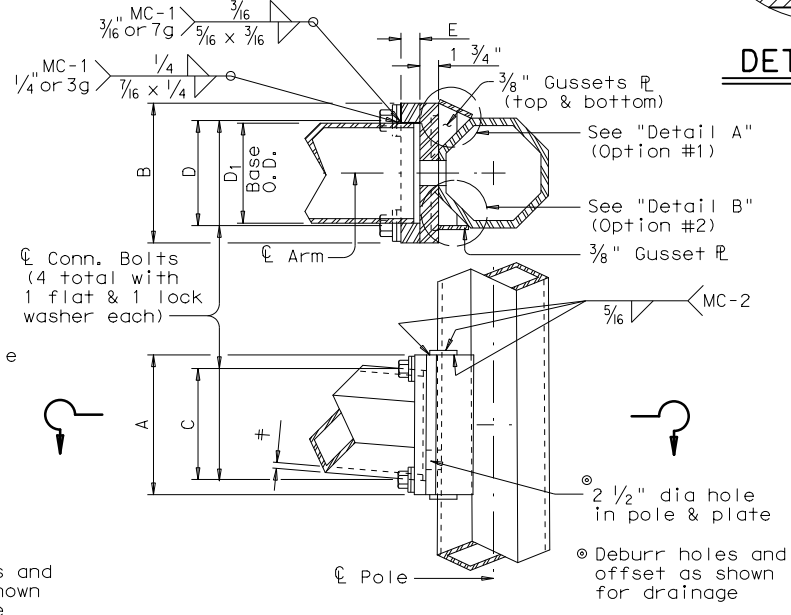
FILE: c:\pwworking\pwy\pw_cpy\brandon.smi.th\0799555\MA-C-12.DGN

ARM SIZE		A	B	C	D	E	CONN. BOLT DIA
D ₁	ϕ	in.	in.	in.	in.	in.	in.
6.5	.179	12	9	9	6	1 3/4	1
7.5	.179	13	9	10	6	1 3/4	1
8.0	.179	14	10	11	7	2	1 1/4
9.0	.179	16	11	13	8	2	1 1/4
9.5	.179	17	12	14	9	2	1 1/4
9.5	.239	18	12	15	9	2	1 1/4
10.0	.239	18	12	15	9	2	1 1/4
10.5	.239	18	13	15	10	3	1 1/2
11.0	.239	18	13	15	10	3	1 1/2

ARM SIZE		A	B	C	D	E	CONN. BOLT DIA
D ₁	ϕ	in.	in.	in.	in.	in.	in.
7.0	.179	11	11	8	8	1 3/4	1 1/4
7.5	.179	11	11	8	8	1 3/4	1 1/4
8.0	.179	11	11	8	8	2	1 1/4
9.0	.179	13	13	10	10	2	1 1/4
10.0	.179	13	13	10	10	2	1 1/4
9.5	.239	13	13	10	10	2	1 1/4
10.0	.239	14	14	11	11	2	1 1/2
11.0	.239	14	14	11	11	3	1 1/2
11.5	.239	14	14	11	11	3	1 1/2



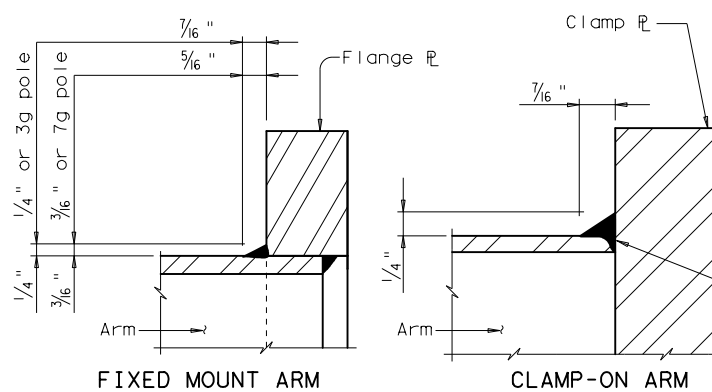
FIXED MOUNT DETAIL 1



FIXED MOUNT DETAIL 2

DETAIL A

DETAIL B

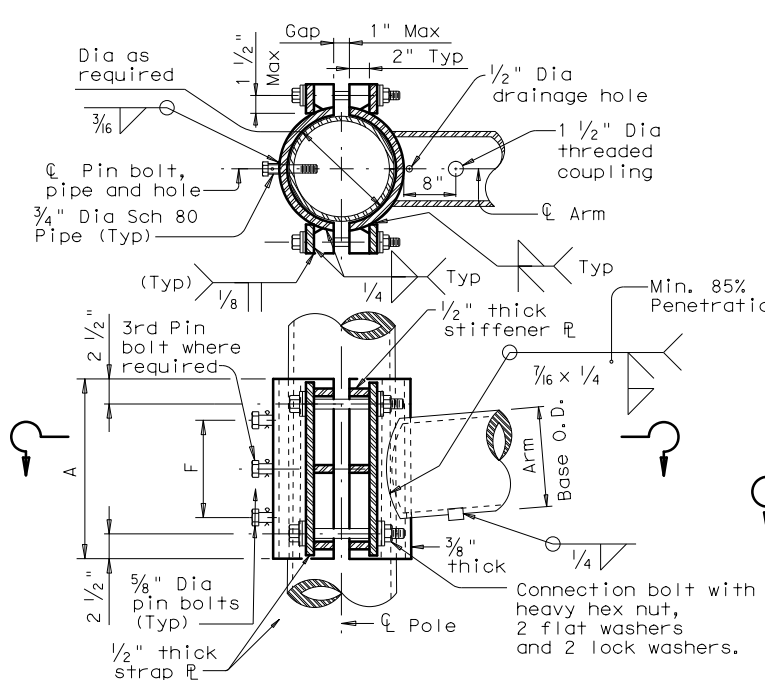


ARM BASE WELD DETAILS

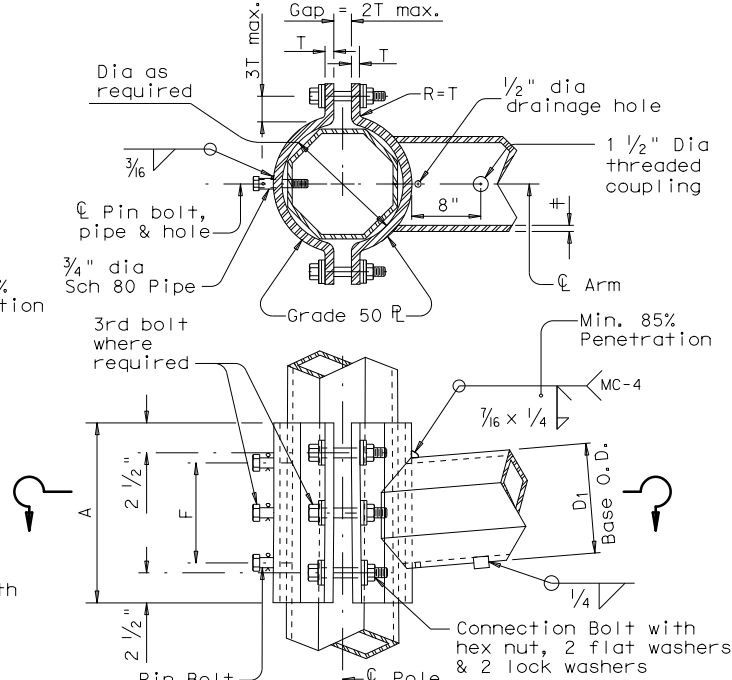
ARM SIZE		A	F	CONN. BOLTS	PIN BOLTS
D ₁	ϕ	in.	in.	No. Dia	No. Dia
6.5	.179	12	6	4 1/2	2 5/8
7.5	.179	14	8	4 1/2	2 5/8
8.0	.179	14	8	4 1/2	2 5/8
9.0	.179	16	10	4 1/2	2 5/8
9.5	.179	18	12	4 1/4	3 5/8
9.5	.239	18	12	4 1/4	3 5/8
10.0	.239	18	12	4 1/4	3 5/8

ARM SIZE		A	F	T	CONN. BOLTS	PIN BOLTS
D ₁	ϕ	in.	in.	in.	No. Dia	No. Dia
7.0	.179	12	6	3/4	4 3/4	2 5/8
7.5	.179	14	8	3/4	4 3/4	2 5/8
8.0	.179	14	8	3/4	4 3/4	2 5/8
9.0	.179	16	10	7/8	4 1/2	2 5/8
10.0	.179	18	10	7/8	4 1/2	2 5/8
9.5	.239	18	10	1	6 1/2	3 5/8
10.0	.239	18	10	1	6 1/2	3 5/8

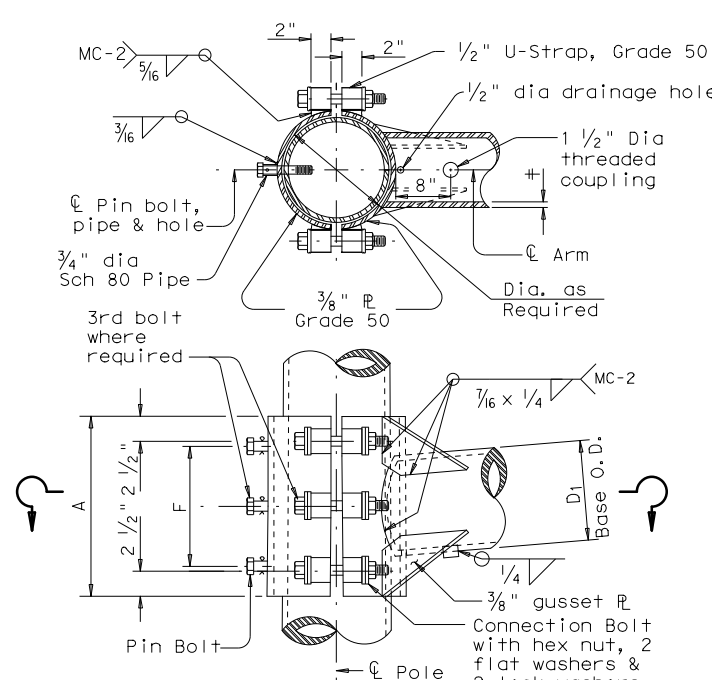
ARM SIZE		A	F	CONN. BOLTS	PIN BOLTS
D ₁	ϕ	in.	in.	No. Dia	No. Dia
6.5	.179	12	6	4 1/2	2 5/8
7.5	.179	14	8	4 1/2	2 5/8
8.0	.179	14	8	4 1/2	2 5/8
9.0	.179	16	10	4 1/2	2 5/8
9.5	.179	18	12	6 1/2	3 5/8
9.5	.239	18	12	6 1/2	3 5/8
10.0	.239	18	12	6 1/2	3 5/8



CLAMP-ON DETAIL 1



CLAMP-ON DETAIL 2



CLAMP-ON DETAIL 3

MATERIALS	
Round Shafts or Polygonal Shafts ^①	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 ^②
Plates ^①	ASTM A36, A588, or A572 Gr.50
Connection Bolts	ASTM A325 or A449, except where noted
Pin Bolts	ASTM A325
Pipe ^①	ASTM A53 Gr.B, A501, A1008 HSLAS-F Gr.50, A1011 HSLAS-F Gr.50
Misc. Hardware	Galvanized steel or stainless steel or as noted

- ① 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.
- ② ASTM A1011 SS Gr.50 material 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:

Clamp-on details are used for the second arm on dual mast arm assemblies. A Maximum 1 1/2" wide vertical slotted hole shall be cut in the front clamp plate to facilitate drainage during galvanizing. The slot shall be centered behind the arm and shall be no longer than the arm diameter minus 1"

Fixed mount details are used for single mast arm assemblies and for the first arm on dual mast arm assemblies.

Where duplicate parts occur on a detail, welds shown for one part shall apply to all similar parts on the detail.

Pin bolts are required to prevent rotation of clamp-on arms under design wind forces.

NOTE:

Pin bolts shall be A325 with threads excluded from the shear plane. Pin bolt and 3/4" dia pipe shall have 3/16" dia holes for a 1/8" dia galvanized cotter pin. Back clamp plate shall be furnished with a 3/4" dia hole for each pin bolt. An 1/16" dia hole for each pin bolt shall be field drilled through the pole after arm orientations have been approved by the Engineer.

Texas Department of Transportation
Traffic Operations Division

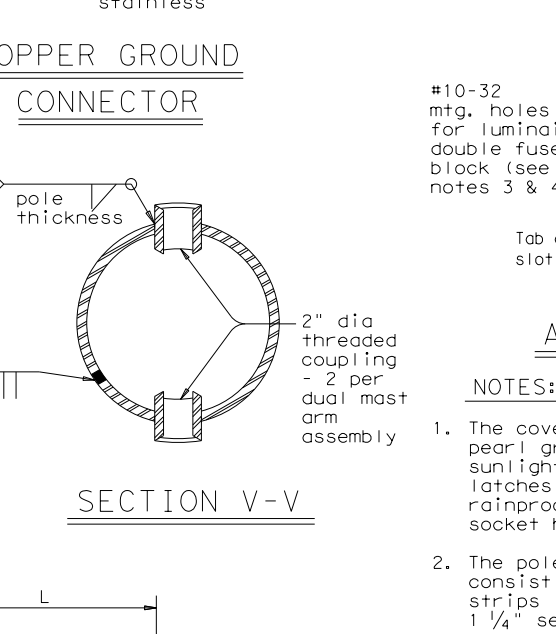
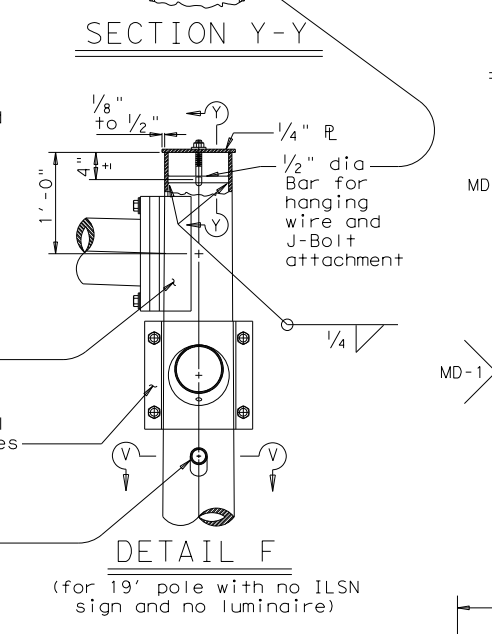
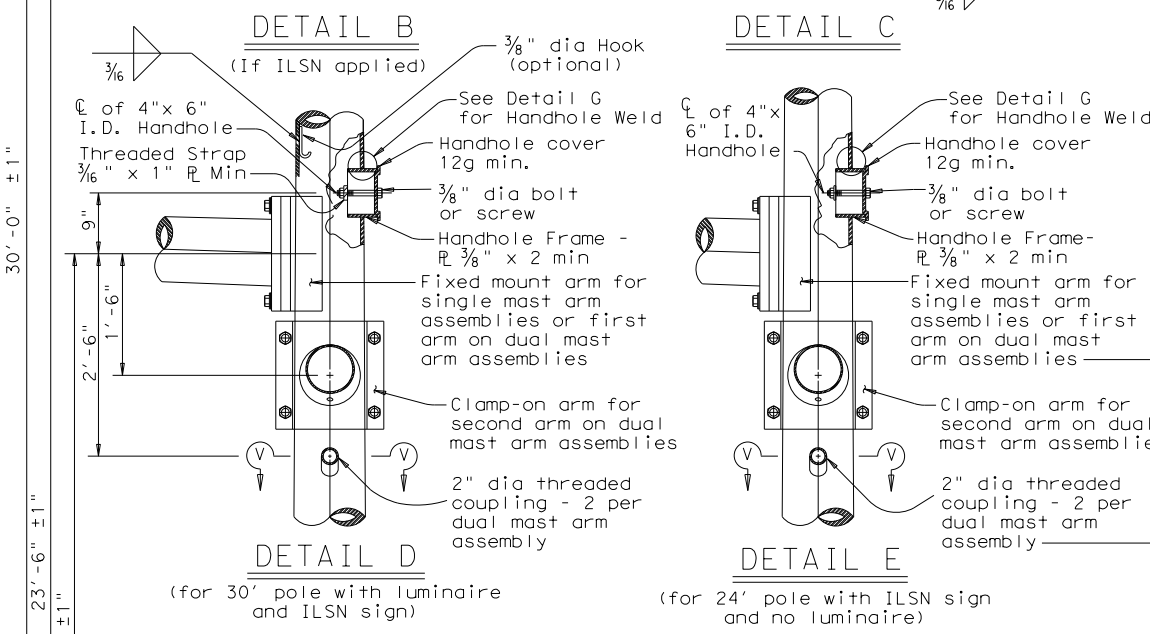
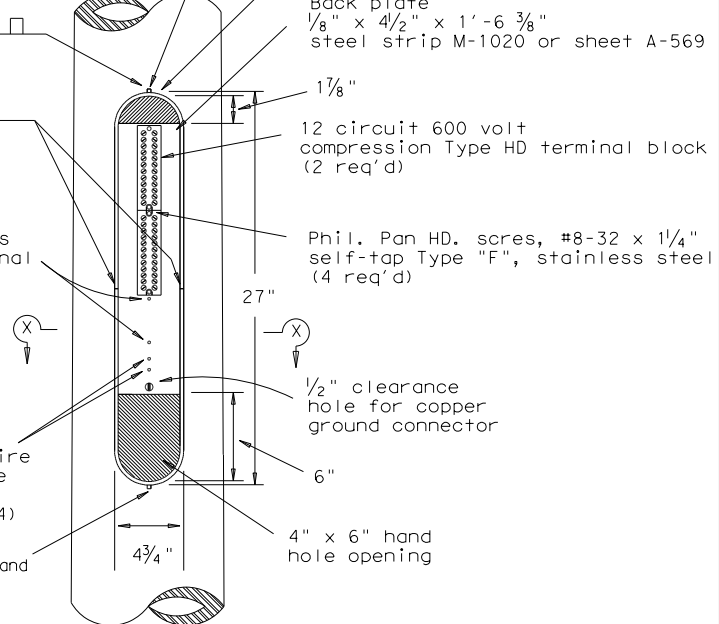
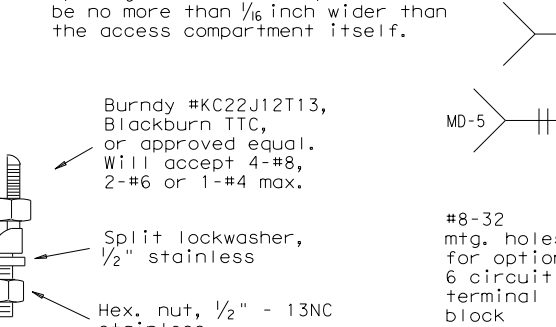
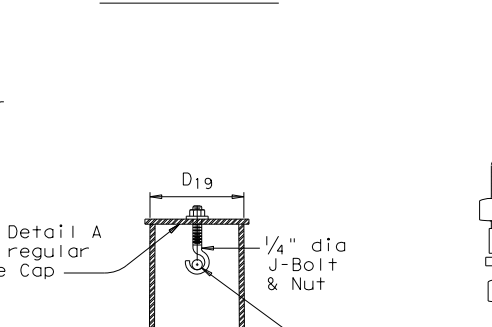
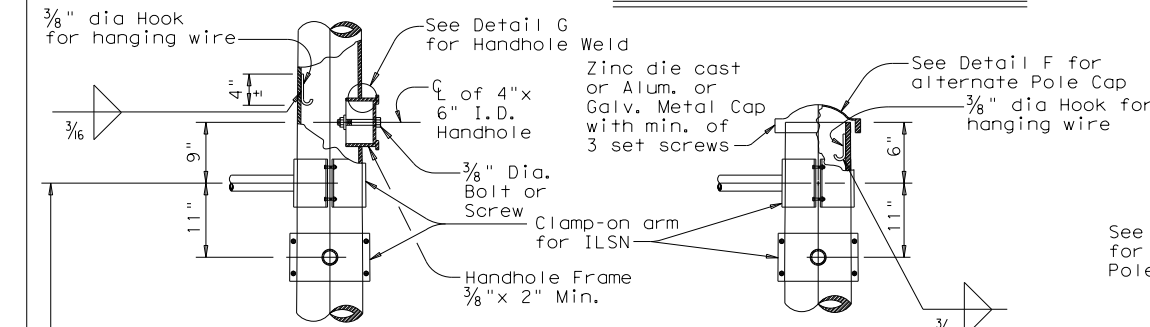
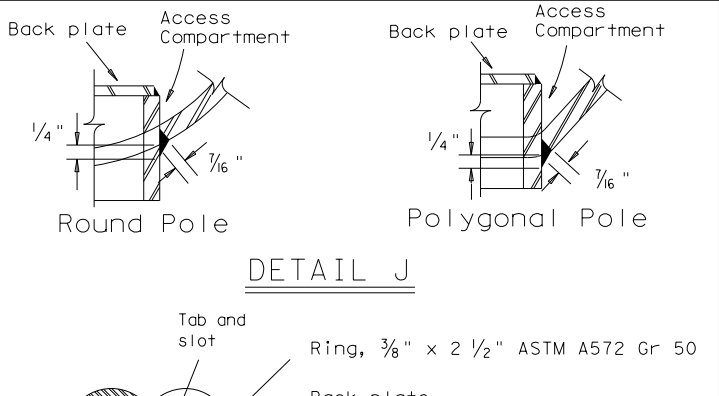
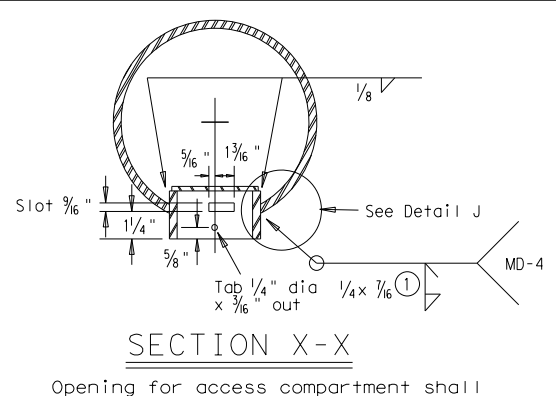
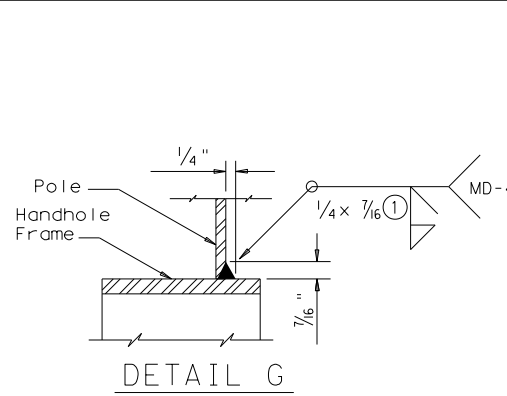
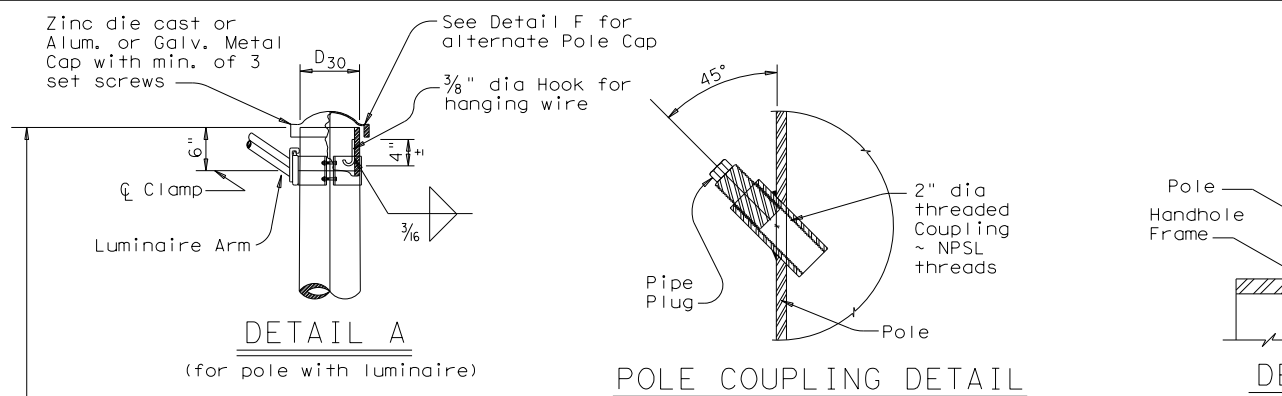
**STANDARD ASSEMBLY
FOR TRAFFIC SIGNAL
SUPPORT STRUCTURES
MAST ARM CONNECTIONS
MA-C-12**

© TxDOT August 1995		DN: MS	CK: JSY	DW: MMF	CK: JSY
REVISIONS		CONT	SECT	JOB	HIGHWAY
5-96	0251	06	036	US	281
5-09					
1-12					
DIST	COUNTY		SHEET NO.		
BWD	LAMPASAS		308		

126A

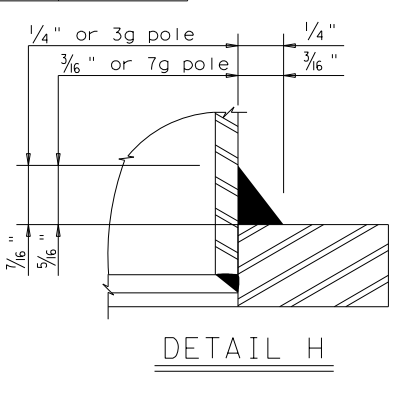
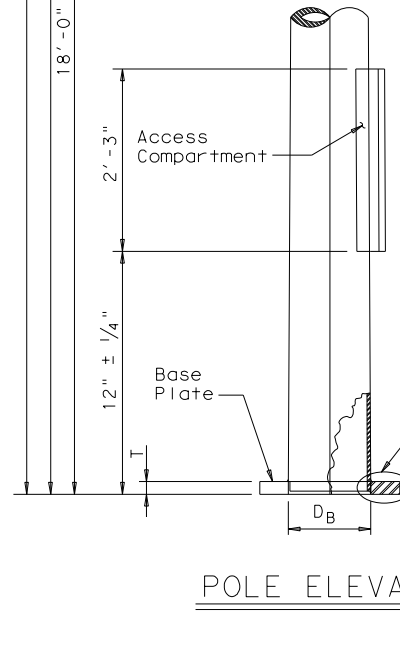
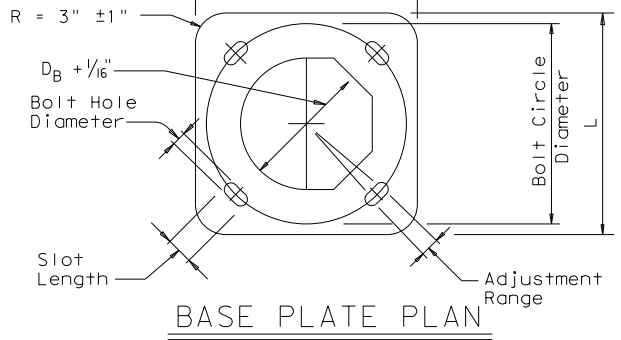
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for incorrect results or damages resulting from its use.

DATE: 1/30/2023 13:09:50
 FILE: c:\pwworking\cpx\pw_cp\brandon.smi\th\0799555\MA-D-12.DGN



- NOTES:**
- The cover shall be one piece formed from ABS plastic, shall be a pearl gray color, and shall be suitable for exposure to harsh sunlight and extreme weather. Cover shall latch with two screw latches and shall fit tightly to the enclosure ring to create a rainproof seal. Latch screws shall be 1/4-20 stainless flat socket head screws with tamper proof feature.
 - The pole manufacturer shall provide with each pole a separate kit consisting of: one cover with two latching assemblies, two terminal strips (Marathon #985GP12CU or approved equal), four #8-32 x 1 1/4" self tapping type "F" stainless steel pan head screws, and one ground connector (Blackburn TTC, Burndy KC22J12T13, or IlSCO SSS-5). The traffic signal contractor shall install the kit items in the field.
 - The screw hole spacing on the enclosure back plate shall be for two Marathon #985GP12 terminal strips, one Marathon #985GP06CU terminal strip, and one Bussmann #BM6032B fuse block.
 - Install one Bussmann #BM6032B, Littelfuse #L60030M-2C, or Ferraz-Shawmut #30352 fuse block for poles where luminaires are to be installed.

Anchor Bolt Diameter	Bolt Hole Diameter	Slot Length	Bolt Circle Diameter	Base R Dim. L x T	Adjust. Range
1 1/2"	1 3/4"	3 1/2"	17"	18" x 1 1/2"	13.4°
1 3/4"	2"	4"	19"	20" x 1 3/4"	13.5°
2"	2 1/4"	4 1/2"	21"	22" x 2"	13.6°
2 1/4"	2 1/2"	5"	23"	24" x 2 1/4"	13.7°



- 85% Min. penetration
- 60% Min. penetration
 100% penetration within 6" of circumferential base welds.

Texas Department of Transportation
 Traffic Operations Division

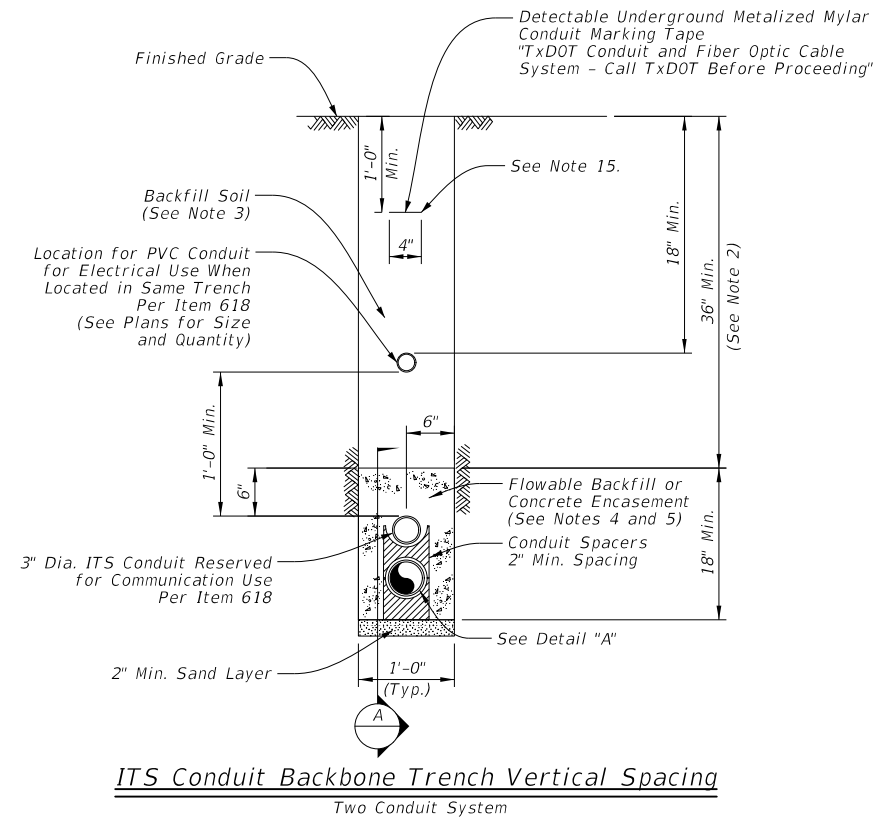
TRAFFIC SIGNAL
 SUPPORT STRUCTURES
 MAST ARM POLE DETAILS

MA-D-12

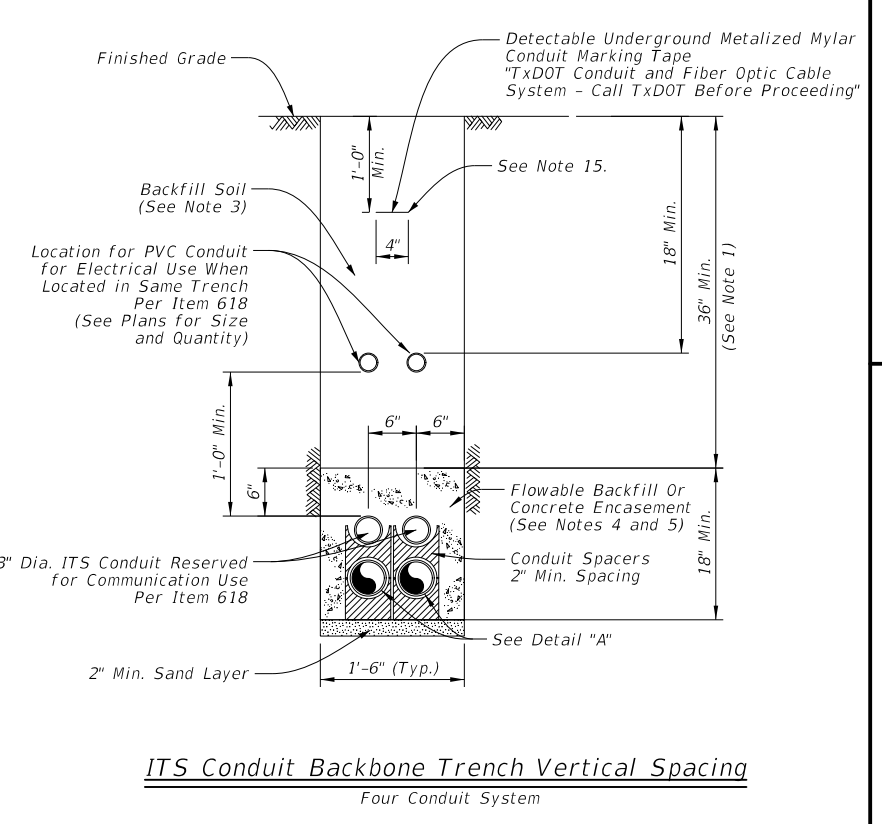
© TxDOT August 1995	DN: MS	CK: JSY	DW: FDN	CK: CAL
REVISIONS	CONT	SECT	JOB	HIGHWAY
8-99 1-12	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	309	

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.

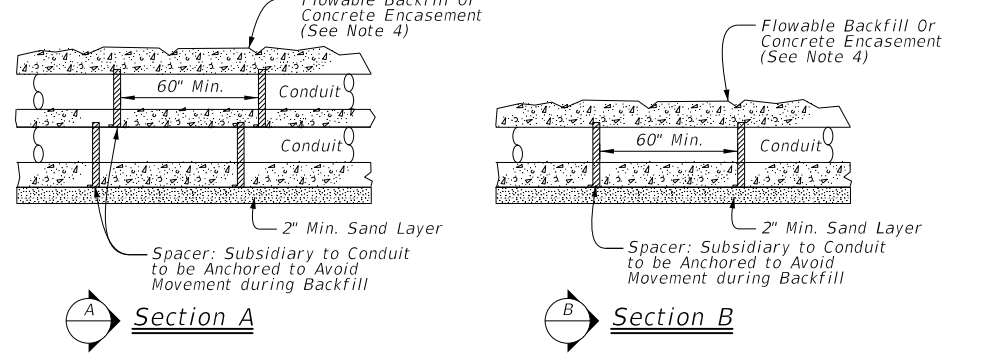
DATE: 1/30/2023 13:09:56
 FILE: c:\pwworking\pdp\pdp\brandon.smi\td0799555\its(27)-16.dgn



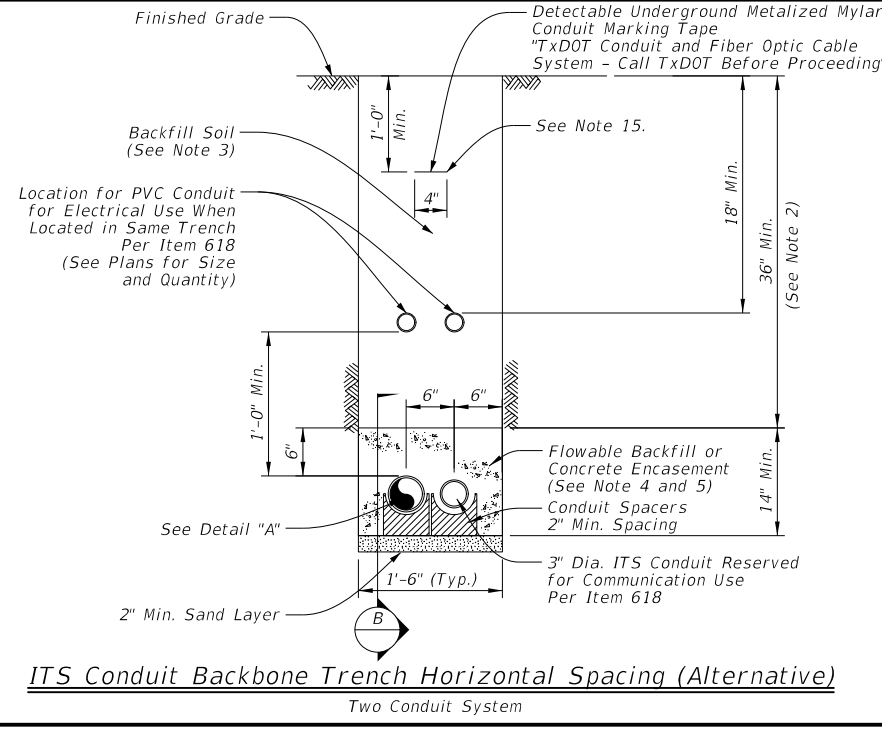
ITS Conduit Backbone Trench Vertical Spacing
Two Conduit System



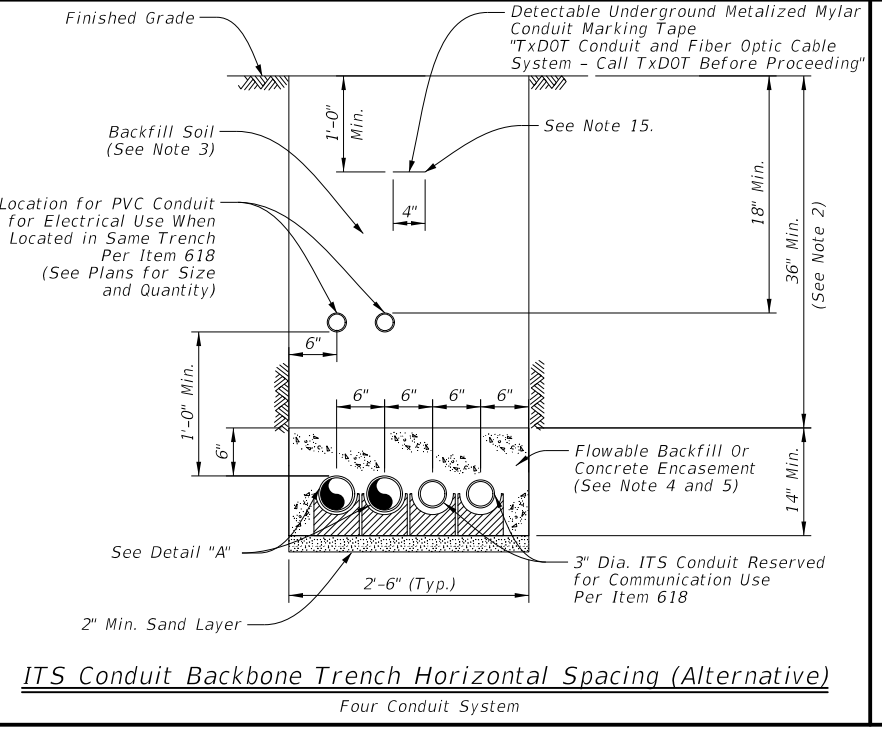
ITS Conduit Backbone Trench Vertical Spacing
Four Conduit System



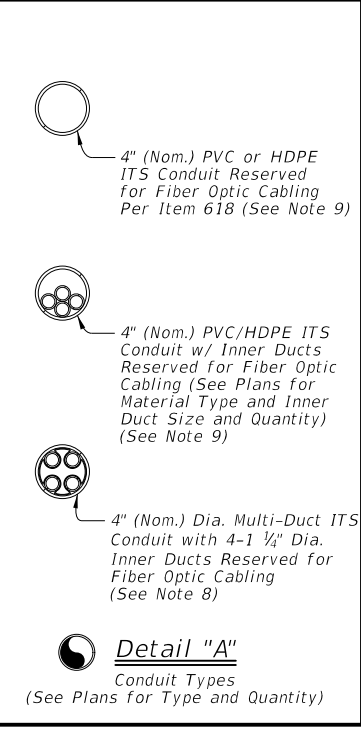
Open Cut Trenching Details



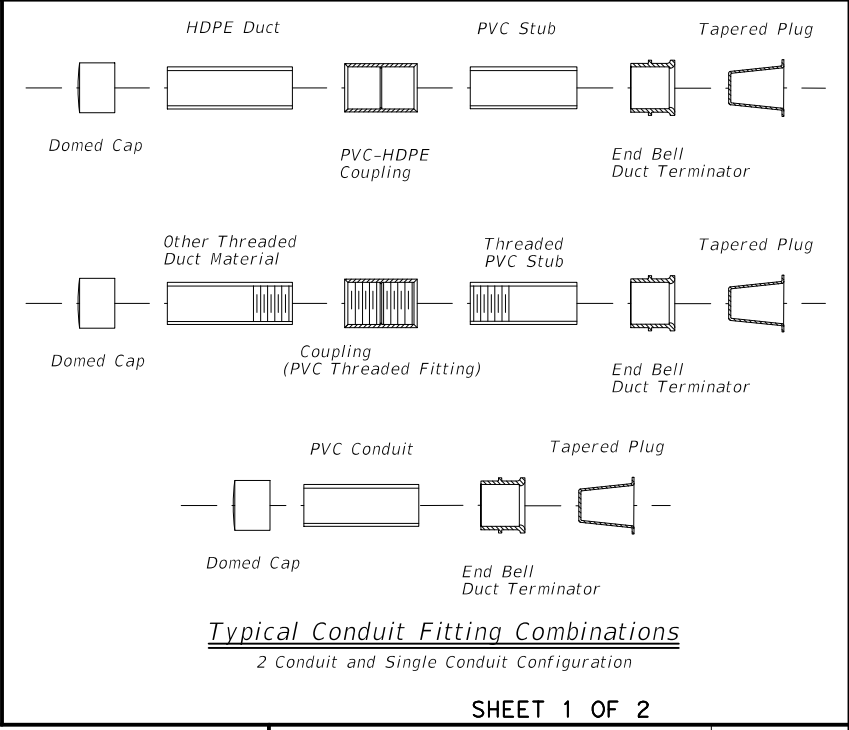
ITS Conduit Backbone Trench Horizontal Spacing (Alternative)
Two Conduit System



ITS Conduit Backbone Trench Horizontal Spacing (Alternative)
Four Conduit System



Detail "A"
Conduit Types
(See Plans for Type and Quantity)



Typical Conduit Fitting Combinations
2 Conduit and Single Conduit Configuration

General Notes:

- Construct the ITS conduit backbone system by vertically spacing conduit, unless field constraints, obstructions, or utility conflicts require horizontal spacing of conduits. Both vertical and horizontal spacing configurations have been detailed for contractor information for construction.
- Install ITS conduit backbone system a minimum of 42 inches from finished grade to the top of the conduit unless otherwise directed or to avoid conflicts or field conditions such as utilities or obstructions. Vary depth of the trench in order to pass over/under any existing utilities. Refer to ITS Conduit Obstruction Crossing Standard ITS(35) for further detail.
- Perform trench excavation and backfilling in accordance with Item 400, "Excavation and Backfill for Structures."
- When a trench depth greater than 24 inches can be achieved from the finished grade to the top of ITS conduit, encase the conduits with flowable backfill in accordance with Item 401, "Flowable Backfill." Use Class B concrete as a substitute in accordance with Item 421, "Hydraulic Cement Concrete" at the discretion of the Engineer.
- When a trench depth of less than 24 inches is required due to field conditions, encase the conduits in Class B concrete in accordance with Item 421, "Hydraulic Cement Concrete."
- Concrete encasement will be paid for under Special Specification "ITS Multi-Duct Conduit" or as shown on the plans.
- Provide ITS PVC conduit identified for electrical and communication use in accordance with Item 618, "Conduit."
- Provide ITS multi-duct conduit identified for fiber optic communication use in accordance with Special Specification "ITS Multi-Duct Conduit."
- Conduit per Item 618, "Conduit" (See Plans for Material Type and Quantity).
- Provide a single 1/8 inch #14 insulated wire in conduit runs which have been identified in the plans to carry fiber optic cable. Provide UL listed solid copper wire with orange color low density polyethylene insulation suitable for conduit installation rated for temperature range -20 C to 60 C and a voltage rating of 600V. This wire will serve as a tracer, or locate, wire for locating underground conduit containing fiber optic cabling and will be paid for under Item 620, "Electrical Conductors."
- Provide a flat pull cord in all empty conduits and innerducts. Provide a pull cord with a tensile strength of 1,250 Lbs. minimum and have foot markings to determine length installed. Pull cord and installation to be subsidiary to various bid items.
- Remove saw cut width to accommodate conduit installation.
- Replace rebar as necessary, lapped and tied a minimum of 3 inches to existing rebar.
- Replace broken pavement materials with similar materials to exact shape, and thickness of existing.
- Place marking tape a minimum of 1 foot - 0 inches below grade when no other electrical marking tape required, or 8 inches below electrical marking tape when provisioned under Item 618.
- Provide a 1/8 inch #8 insulated grounding conductor within one inner duct of a pre-assembled multi-duct when no other grounding conductor is provisioned for in the plans.

Sheet Details
Not to Scale

SHEET 1 OF 2

Texas Department of Transportation
Traffic Operations Division Standard

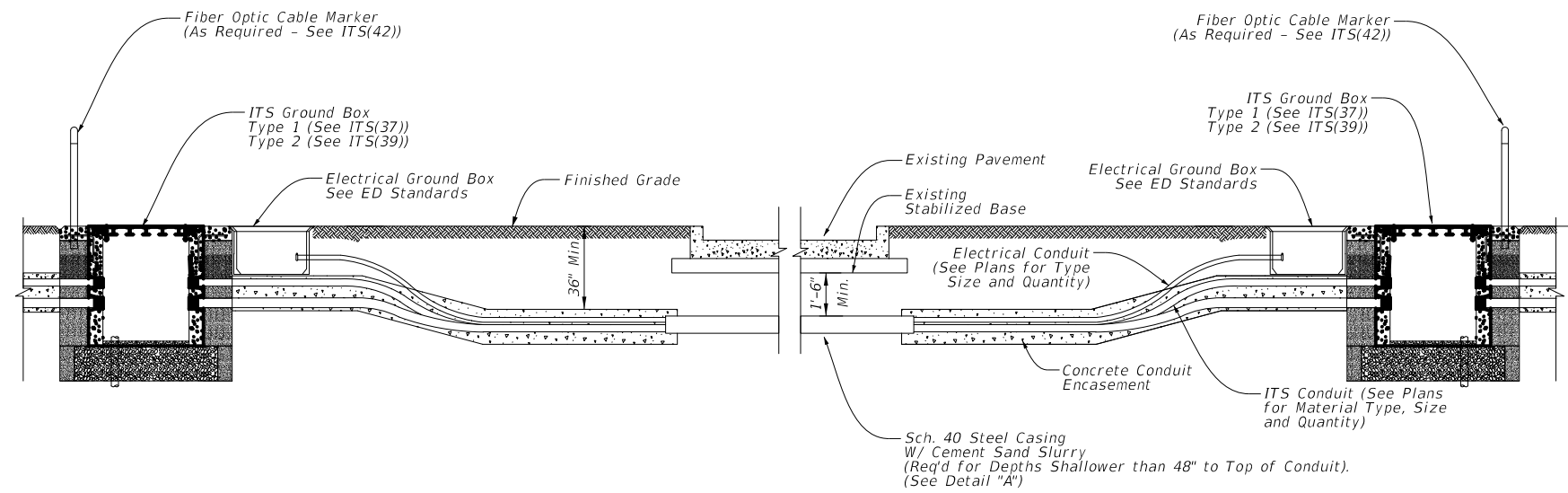
ITS CONDUIT TRENCH DETAILS

ITS(27)-16

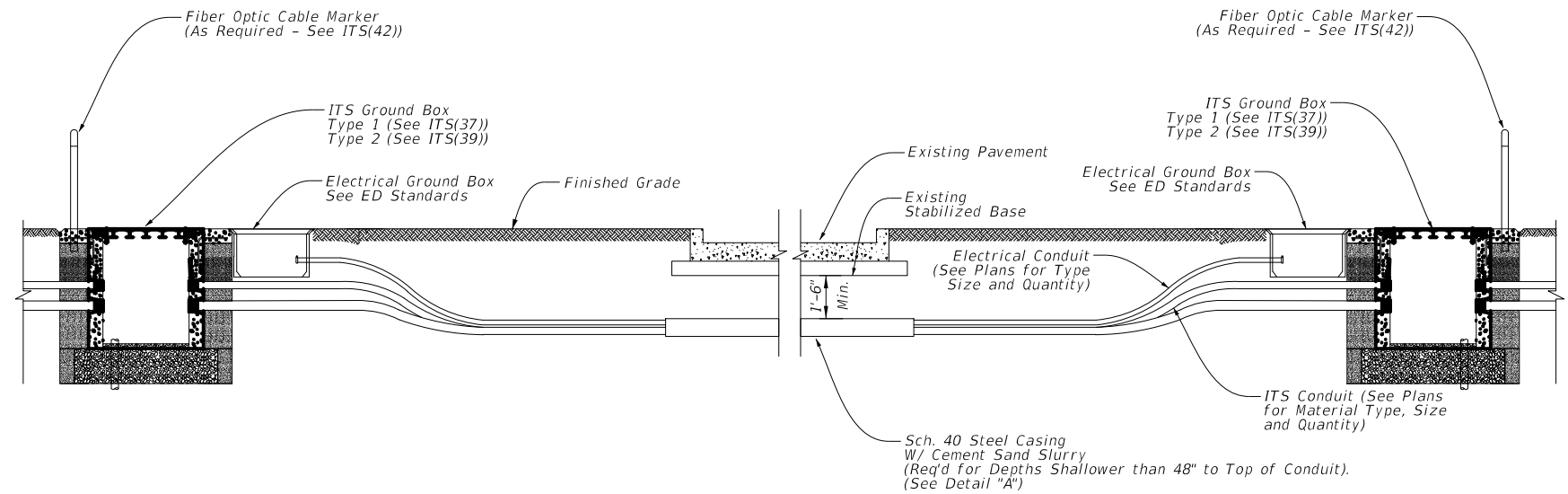
FILE: its(27)-16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT FEBRUARY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	310	

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.

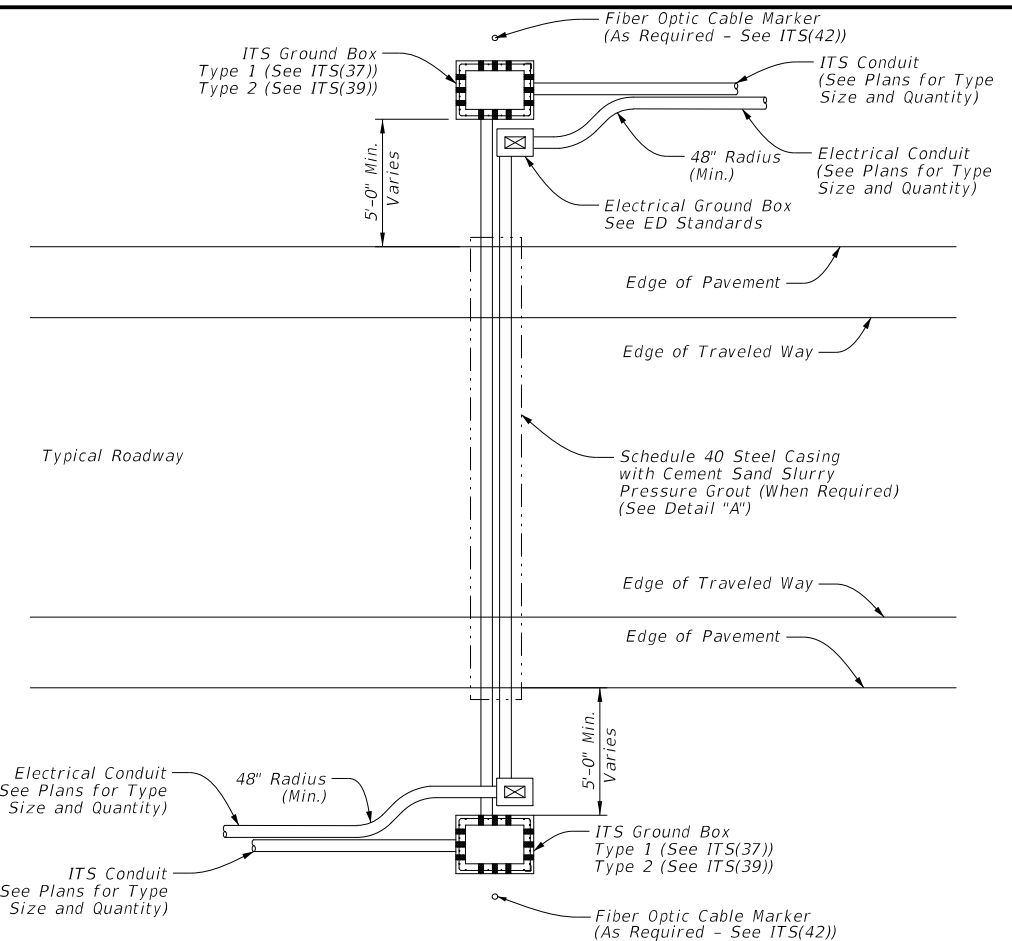
DATE: 1/30/2023 13:10:02
 FILE: c:\pwworking\pwy\pwy_brandon.smi\h\0799555\its(28)-16.dgn



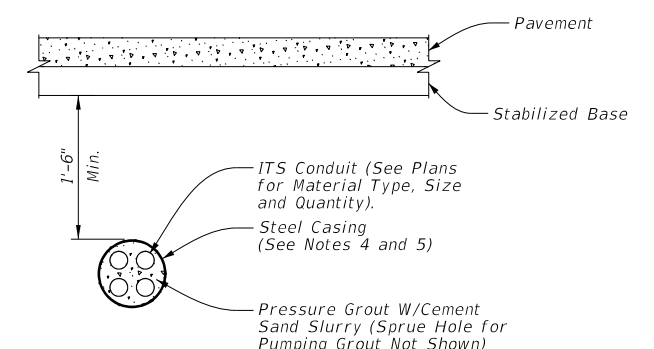
Typical Conduit Installation Jacking or Boring Beneath Existing Roadway



Typical Conduit Installation Jacking or Boring Beneath Existing Roadway (Where Concrete Encasement Not Required)



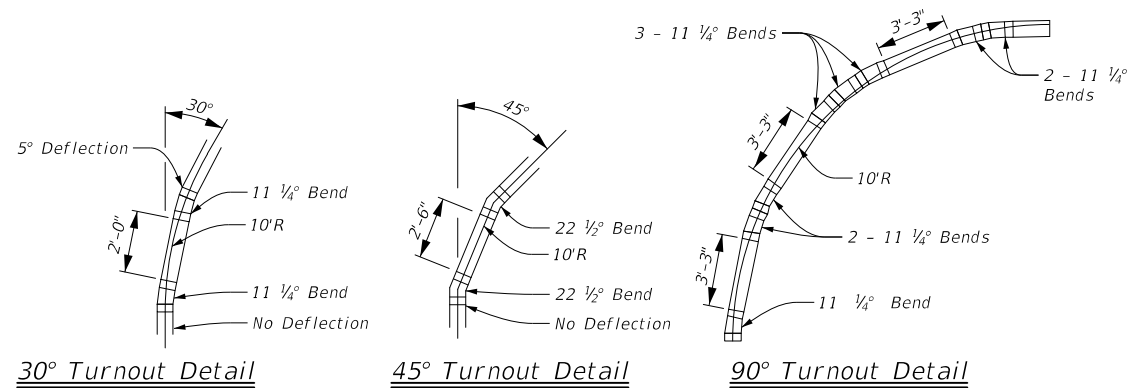
Bore Under Pavement



Steel Casing Detail "A"

General Notes:

1. Typical conduit installation details for jacking or boring beneath existing roadway is diagrammatic in nature. Roadway cross-slopes may vary for each crossing.
2. Jack or bore in accordance with Item 476, "Jacking, Boring, or Tunneling Pipe or Box" except for measurement and payment.
3. Furnishing and installation of pressure grouting will not be paid for directly but considered incidental to Special Specification "ITS Multi-Duct Conduit" or Item 618, "Conduit."
4. When boring under pavement shallower than 48 inches from finished grade to top of conduit, provide Schedule 40 steel casing under pavement to encase the conduit system. Provide steel casing of a size to accommodate ITS conduit and electrical conduit as shown in the plans. Provide a minimum 20 percent void space around all conduits. Steel casing will not be paid for directly but considered incidental to Special Specification, "ITS Multi-Duct Conduit" or Item 618, "Conduit."
5. When a depth greater than 48 inches can be achieved from finished grade to top of conduit, provide Schedule 80 PVC. No steel casing required unless otherwise directed.
6. Ensure all conduit bends are in conformance with the latest edition of the National Electrical Code.
7. Provide GPS coordinate points to the District for all ground boxes installed, and shifts or deviations of the conduit alignment from the plans required to avoid obstructions or utilities. Take GPS coordinate points at the start of the transition, at the point of curvature, and at the end of the transition at the point of tangency. Document the turnout radius and installed depth. Provide GPS coordinate points in NAD83 coordinate system and be accurate to 5 feet.



30° Turnout Detail

45° Turnout Detail

90° Turnout Detail

Provide this arrangement of conduit and fittings or approved equal at all 30°, 45°, and 90° bends, horizontal and vertical, to achieve a nominal 10' conduit radius for pre-assembled multi-duct conduit. See Note 7.

Sheet Details
 Not to Scale

SHEET 2 OF 2



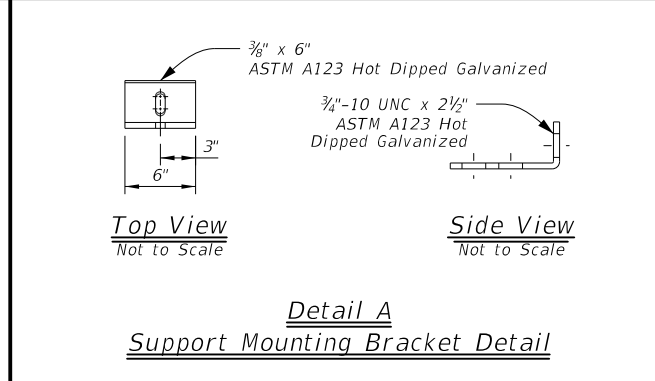
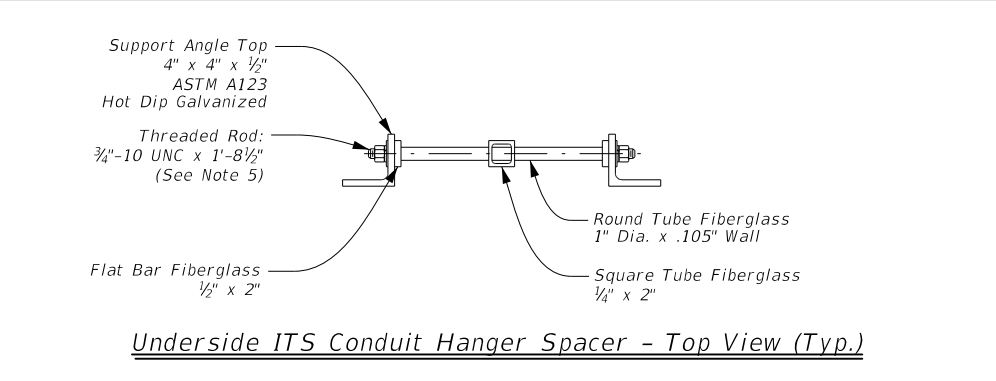
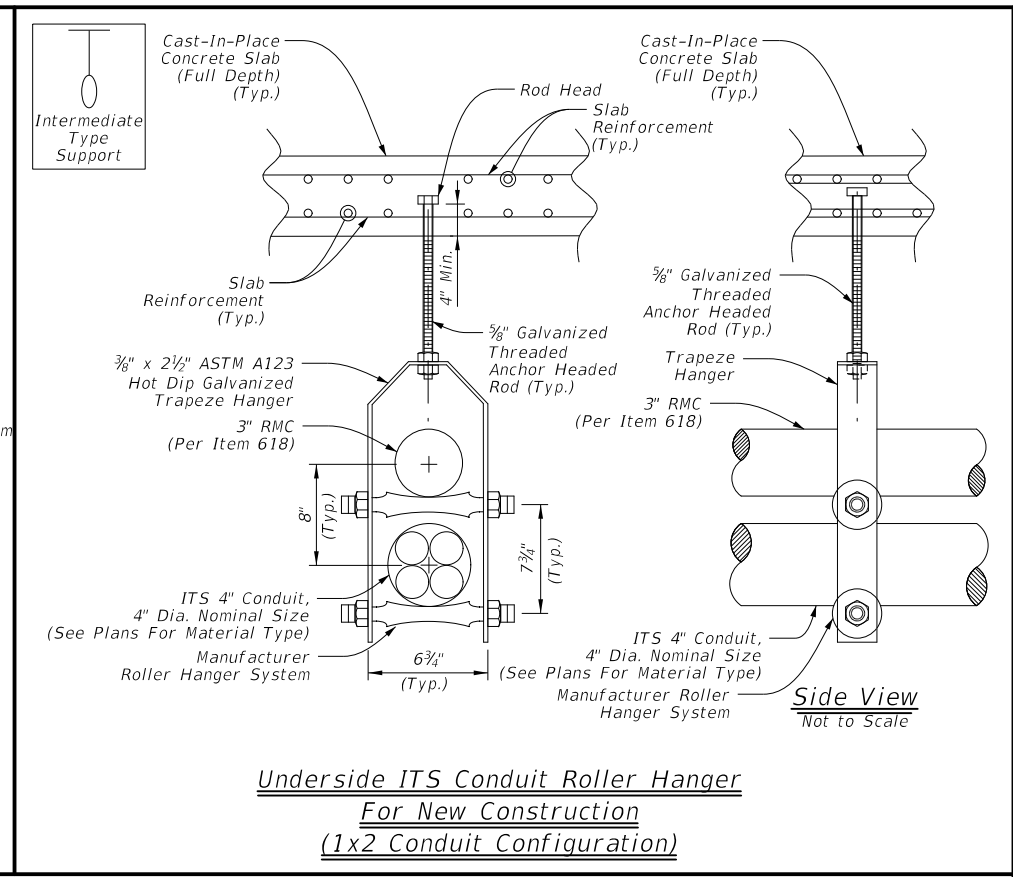
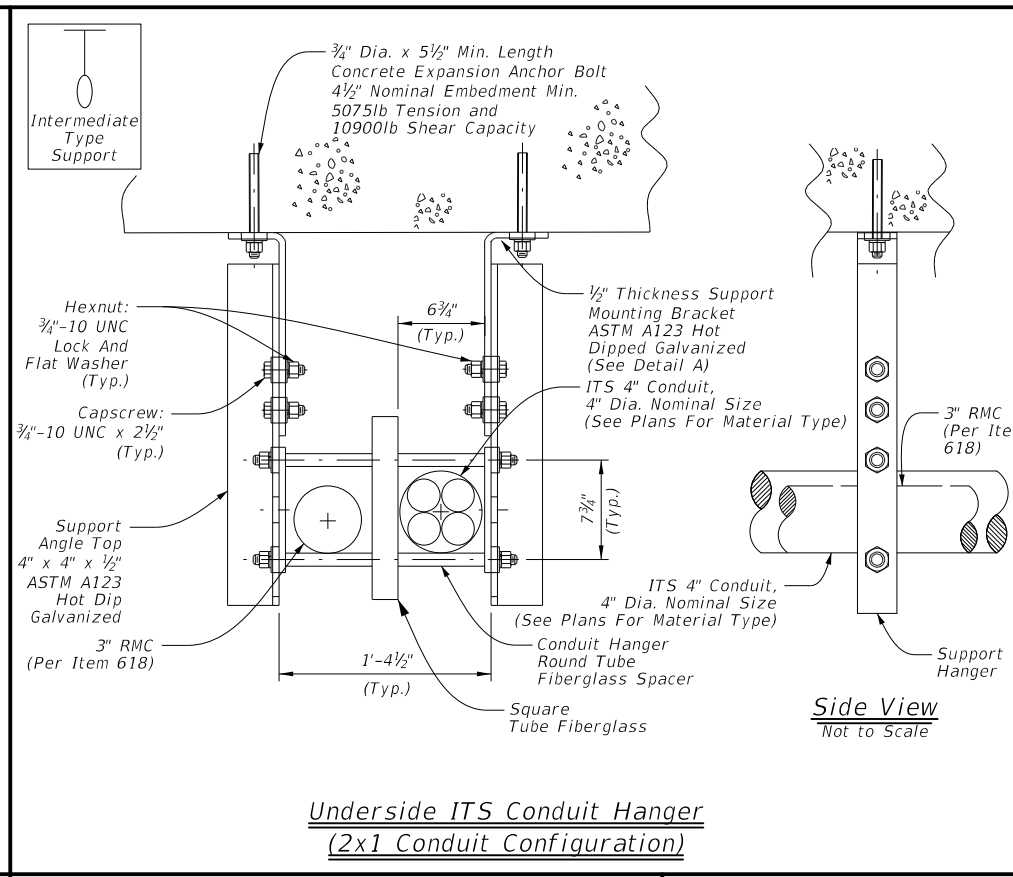
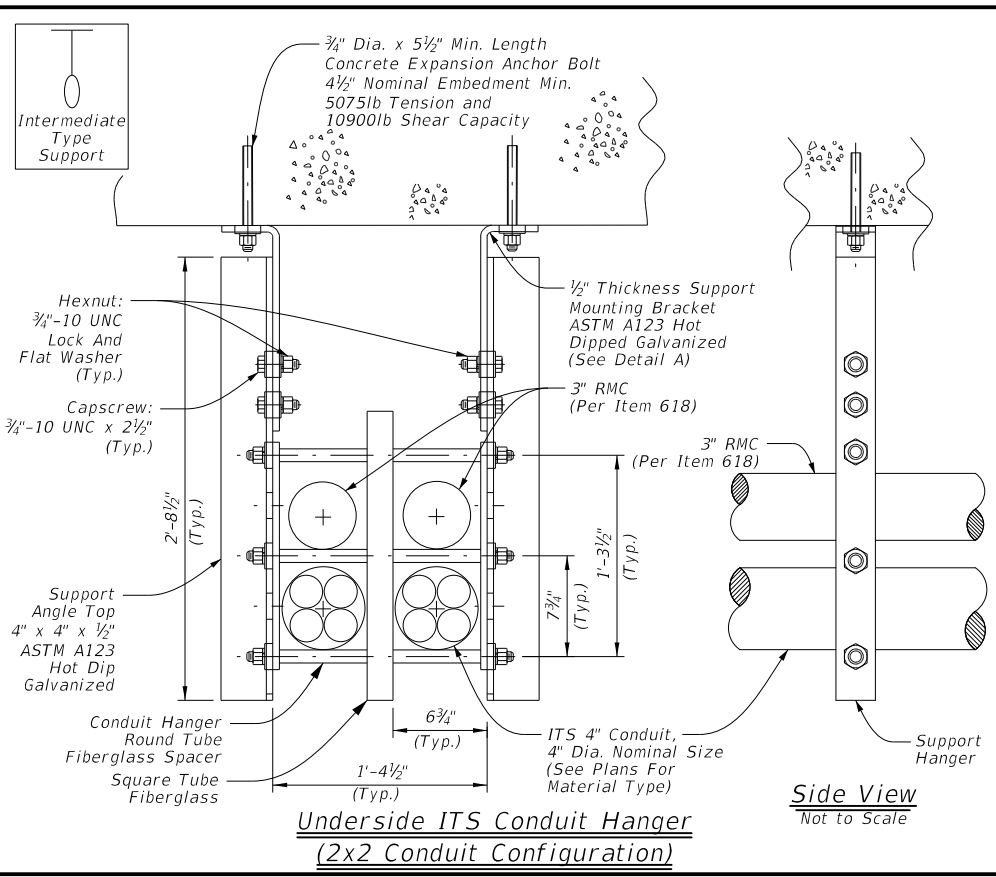
ITS CONDUIT BORE AND STEEL CASING DETAILS

ITS(28)-16

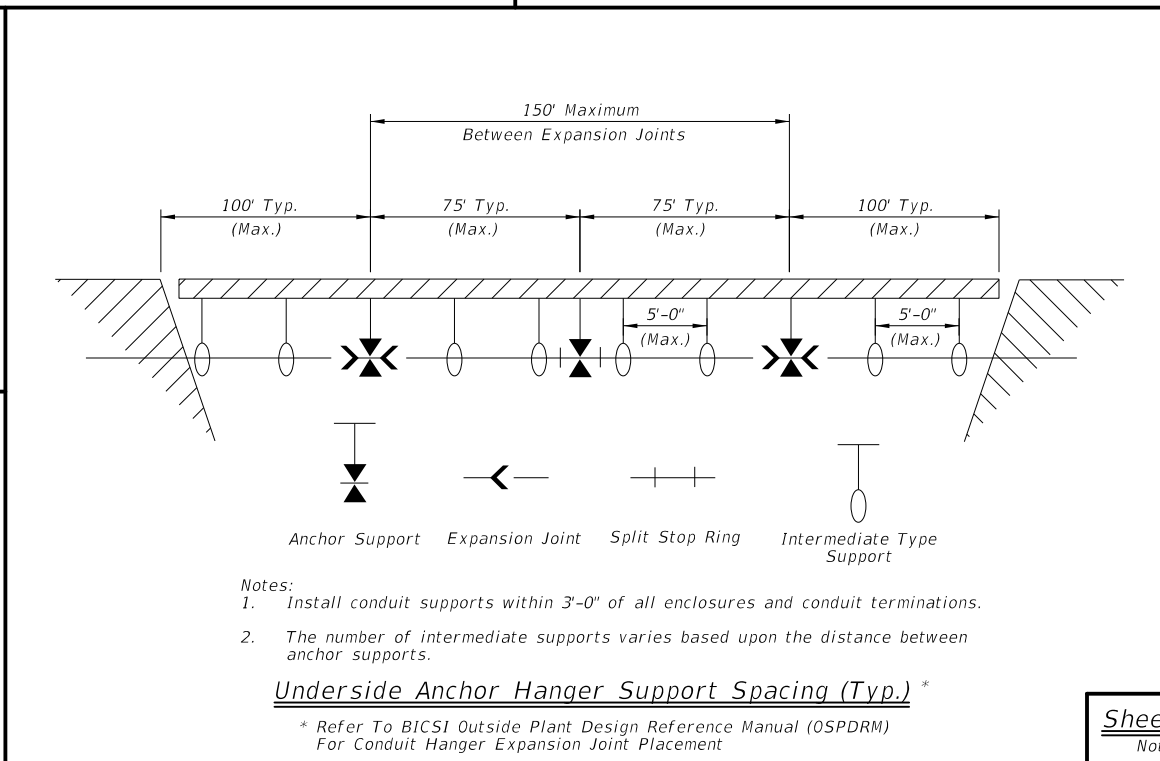
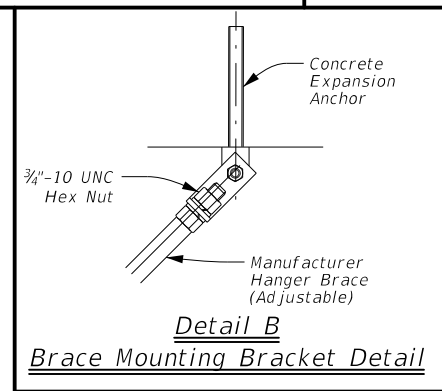
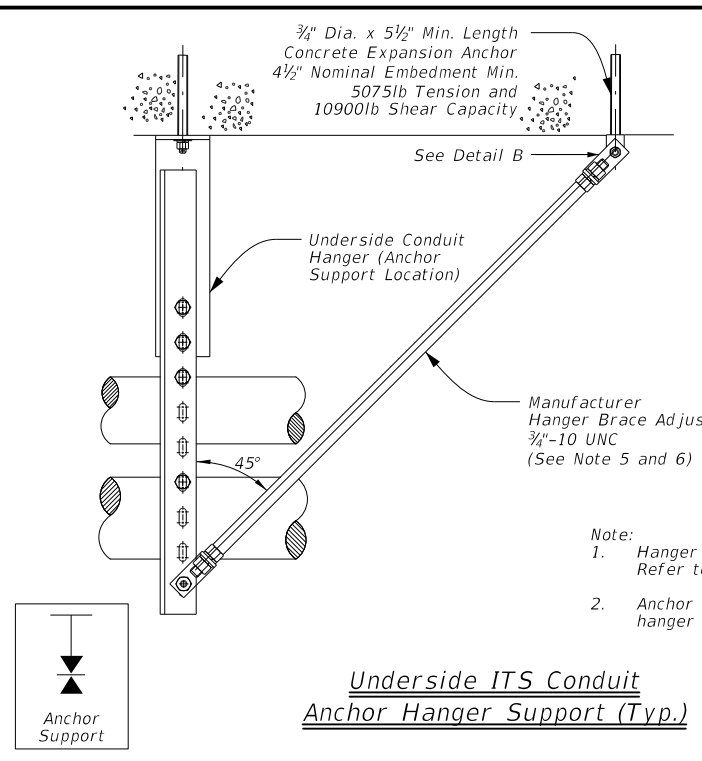
FILE: its(28)-16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT FEBRUARY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	311	

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.

DATE: 1/30/2023 13:10:08
 FILE: c:\pwworking\pwy\pw_cpwy_brandon_smi\h\0799555\its(29)-22.dgn



- General Notes:**
- Use commercially designed multiple conduit support hangers as an alternative to the hanger details on this sheet, or standard sheet ED(2)-14 may be used. Verify sufficient tension and shear capacity before proposed substitution. Submit hanger details and specifications to the Engineer for approval prior to using on project.
 - Refer to the contract plans for conduit design and hanger configuration requirements. For two (2) conduit configurations, use the typical underside hanger or roller hanger system.
 - Maximum spacing of intermediate conduit hangers is 5'-0" C-C.
 - Hangers vary in length, but do not allow conduit to hang below bridge beams. Refer to ITS(30) for minimum clearance requirement below bridge deck.
 - Ensure all conduit hanger steel shapes conform to ASTM A36 and expansion anchors conform to ASTM A307 and are supplied with minimum of one nut and washer per bolt. Galvanize all steel plate, shapes, and hardware per Item 445, "Galvanizing".
 - Use angle bracing on both sides of conduit support for conduit anchor point hangers.
 - Refer to ITS(32) for expansion-deflection joint details.
 - Provide a minimum of two (2) expansion joints at all bridges. Ensure expansion joint spacing does not exceed manufacturer recommendations.
 - Select conduit lengths so that couplings do not coincide with conduit hanger locations.
 - Allowable types of outer duct material for above ground ITS conduit include rigid metallic conduit (RMC) and fiberglass.
 - Refer to ITS(30) for anchor details through pre-stressed concrete panels.
 - Bond all external structure conduit throughout entire length of run and ground at ground box locations according to ITS(38).



- Note:**
- Hanger support shown is a typical configuration. Refer to General Note 1 on this sheet.
 - Anchor supports are required for all conduit hanger configurations.

- Notes:**
- Install conduit supports within 3'-0" of all enclosures and conduit terminations.
 - The number of intermediate supports varies based upon the distance between anchor supports.

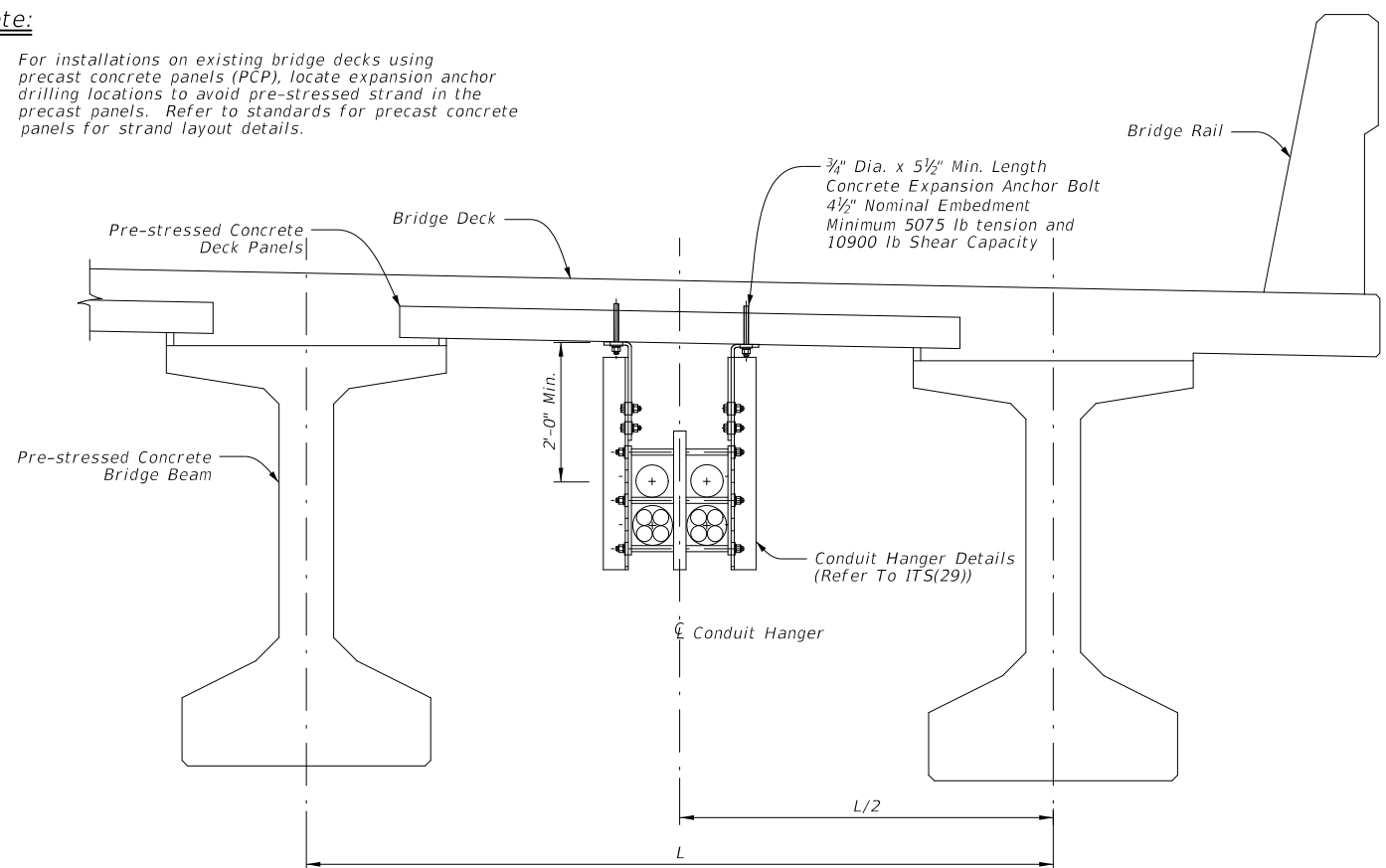
		Traffic Safety Division Standard	
<h2>ITS CONDUIT HANGER DETAILS</h2> <h3>ITS (29) - 22</h3>			
FILE: its(29)-22.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
© TxDOT FEBRUARY 2016	CON: 0251	SECT: 06	JOB: 036
REVISIONS	DIST: BWD	COUNTY: LAMPASAS	SHEET NO.: 312
05-22	Sheet Details Not to Scale		

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.

DATE: 1/30/2023 13:10:14
 FILE: c:\pwworking\cpx\pw_cp\brandon.smi\h\d0799555\its(30)-16.dgn

Note:

- For installations on existing bridge decks using precast concrete panels (PCP), locate expansion anchor drilling locations to avoid pre-stressed strand in the precast panels. Refer to standards for precast concrete panels for strand layout details.

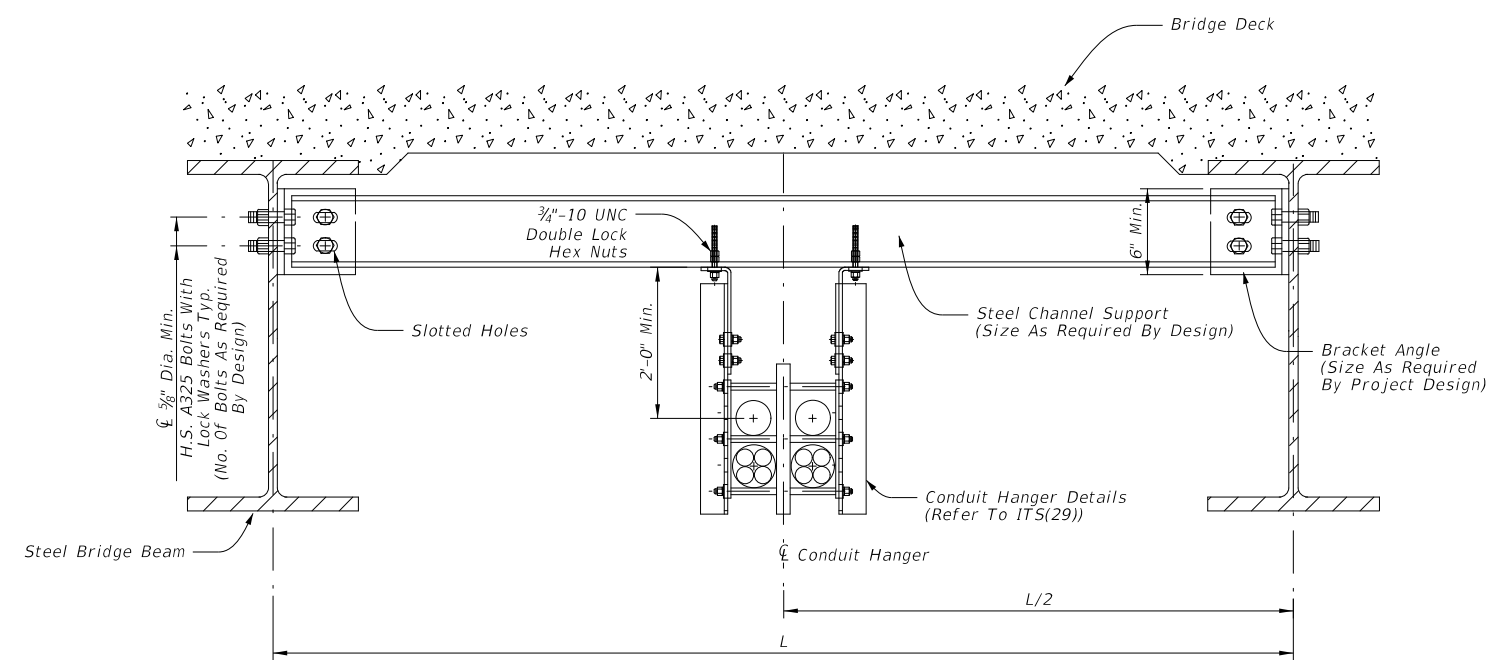


Structure Mounted ITS Conduit - Concrete Bridge Deck With Precast Panels

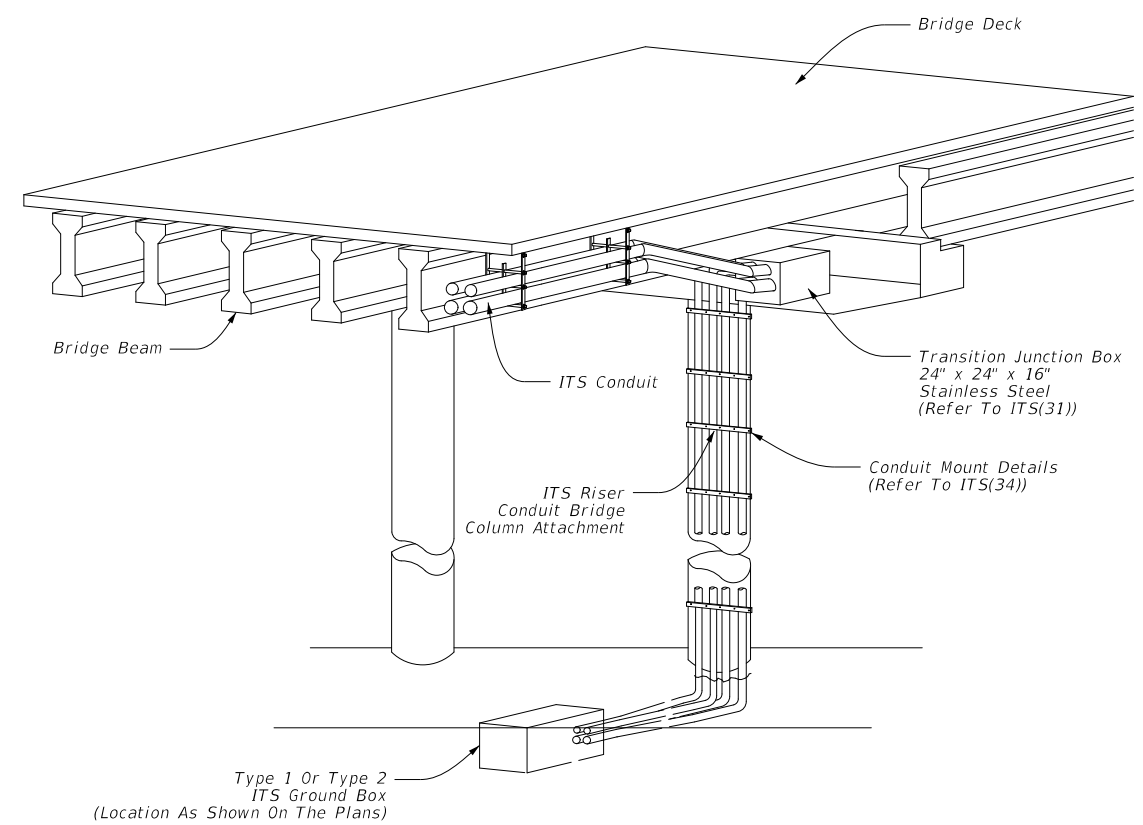
Refer To ITS(29) For General Notes

Note:

- Position conduit hanger height to avoid conflicts with diaphragms in the conduit runs.



Typical Alternate Conduit Hanger Support (Steel I-Beam Mount)



Underside Conduit Hanger Transition Detail

General Notes:

- The alternative mounting conduit hanger support mounting detail for steel I-Beam structures as shown is a suggested detail for steel structures. Submit details for the configuration shown on this sheet via shop drawings and include structural load analysis, support member and connection design. Seal all calculations and shop drawings by a Texas P.E.
- Conduit hanger support mounting details for concrete bridge deck with precast panels as shown are a suggested method for pre-stressed concrete beam structures. Submit any deviation from these details via shop drawing and include structural load analysis, support member, and connection design. Seal all calculations and shop drawings by a Texas P.E.
- Locate auxiliary conduit hanger supports for steel structures at a maximum 5'-0" spacing.
- For conduit loads located between beams exceeding 5 lbs per ft, furnish structural load analysis calculations for adjacent beams in the shop drawing submission.
- Submit design details for structure with cathodic protection in the shop drawing submission.
- Do not extend conduit hangers below the bottom of the bridge beams (any exceptions at end spans are subject to approval).
- Drilling in pre-stressed beams or field welding of steel beams is not permitted. Submit any exceptions on a case by case basis for evaluation and approval by the Engineer.
- Ensure all conduit hanger assemblies are furnished and supplied by the conduit hanger manufacturer.
- Galvanize all hardware and structural steel that is not stainless steel. Ensure all bolt hardware used to secure hangers to steel structures conforms to ASTM A325 for high strength. Ensure all expansion anchors conform to ASTM A307. Separate dissimilar materials for use of galvanized hardware with weathering steel girders.
- Select conduit lengths so that couplings do not coincide with conduit hanger locations.
- Refer to Special Specification, "ITS Multi-Duct Conduit" or Item 618 "Conduit", for details on conduit mandreling and other testing required upon conduit installation.
- Provide a flat pull cord in each conduit and inner duct to allow for installation of future cables to match 1250 lbs-ft tension. Refer to ITS(27) for additional conduit details.
- Provide a transition junction box for conduit access located outside the abutments for bridge spans < 800 ft. For bridge spans > 800 ft., locate an additional junction box for conduit access near the mid-span/pier.
- Provide ITS conduit of the type and configuration shown on the plans in accordance with Special Specification, "ITS Multi-Duct Conduit" or Item 618 "Conduit". Ensure all other conduit is in accordance with Item 618 "Conduit" and as shown on the plans.
- Bond all external structure mounted conduit throughout entire length of run and ground the run at ground box locations according to ITS(37) and ITS(39).



STRUCTURE MOUNTED ITS CONDUIT

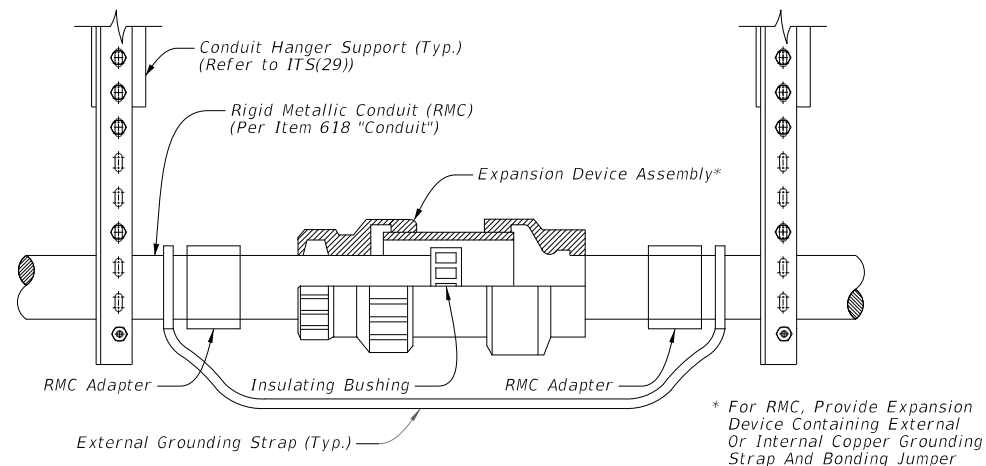
ITS (30) - 16

FILE: ifs(30)-16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT FEBRUARY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	313	

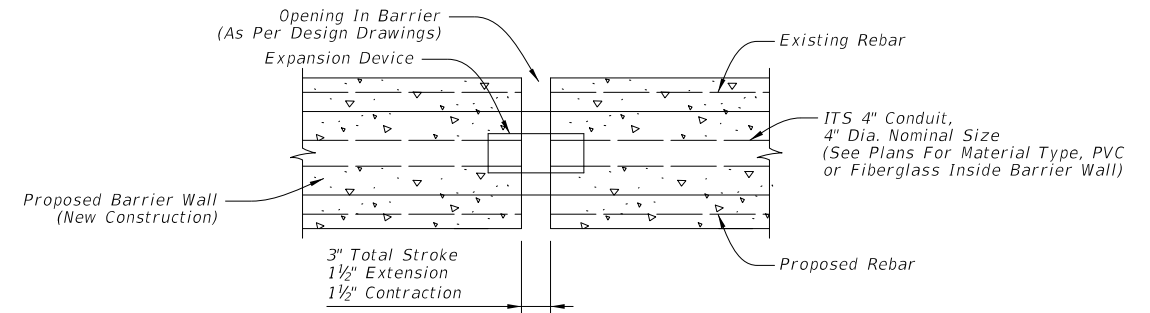
Sheet Details
Not to Scale

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.

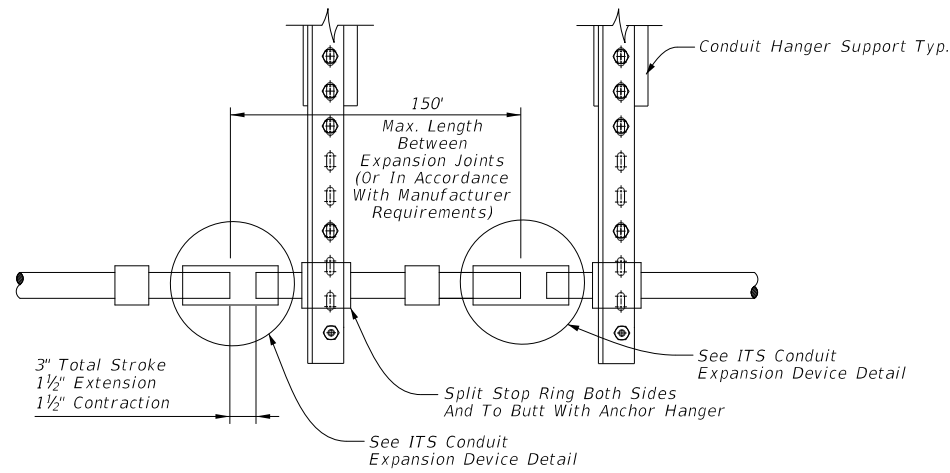
DATE: 1/30/2023 13:10:19
 FILE: c:\pwworking\pwy\pw_\brandon.smi\h\d0799555\its(32)-16.dgn



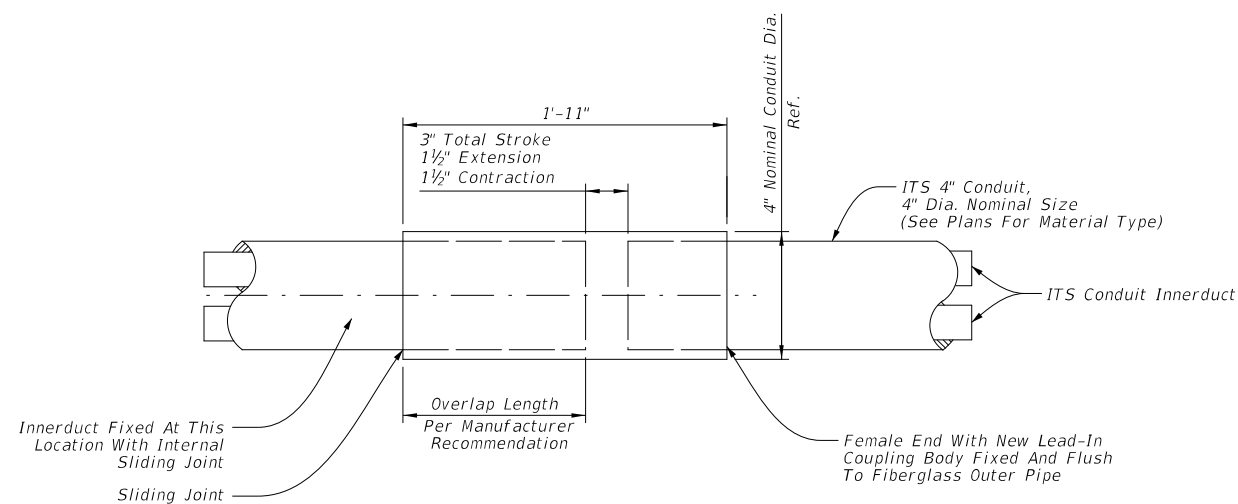
RMC Conduit Expansion Device Detail (Typ.)



ITS Conduit In New Construction Barrier Wall Expansion And Deflection Joint Fitting (Typ.)



ITS Conduit Expansion Device Placement (Typ.)



ITS Conduit Expansion Device Detail

General Notes:

1. Install expansion device at all open joints, at each end of bridge abutments and between bridge bents, allowing for 3" movement.
2. Provide a minimum of two (2) expansion joints at all bridges. Ensure expansion joint spacing does not exceed manufacturer recommendations.
3. Ensure conduit lengths are selected so that couplings do not coincide with hanger locations.
4. Ensure all rigid metallic conduit (RMC) expansion devices are constructed per manufacturer specifications.
5. Bond all external structure mounted conduit throughout entire length of run and ground the run at ground box locations according to ITS(37) and ITS(39).



EXPANSION / DEFLECTION JOINT

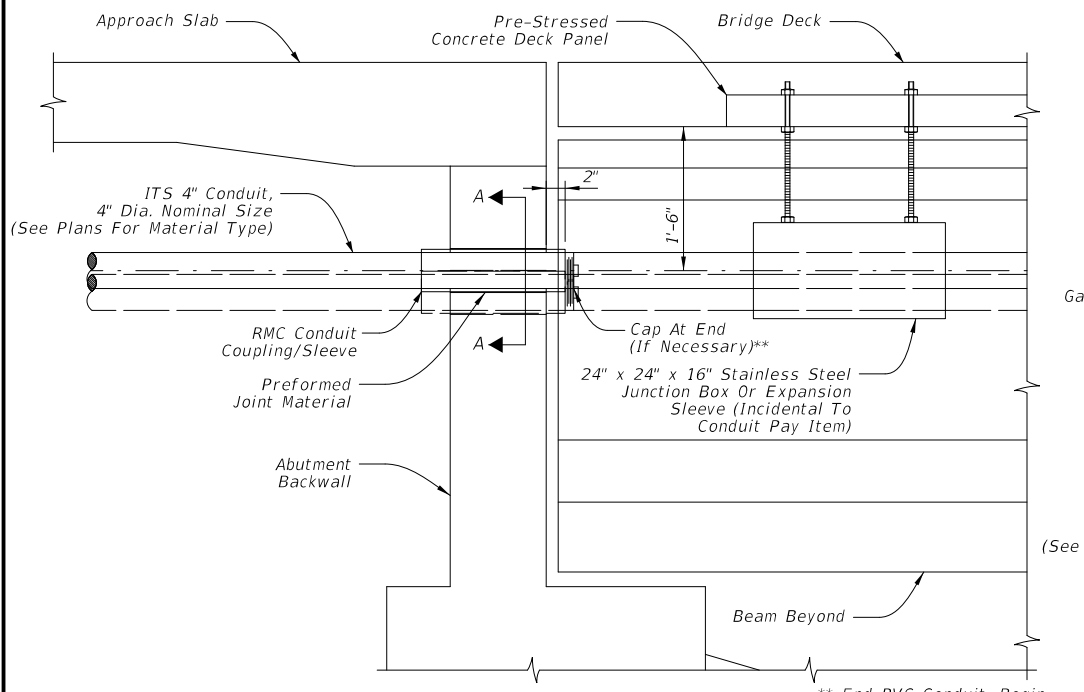
ITS(32)-16

FILE: ifs(32)-16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT FEBRUARY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	314	

Sheet Details
 Not to Scale

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.

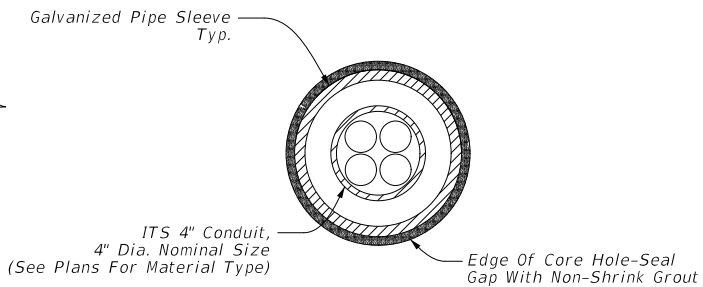
DATE: 1/30/2023 13:10:25
 FILE: c:\pwworking\pwy\pwy_brd\andon_smi\h\0799555\its(33)-16.dgn



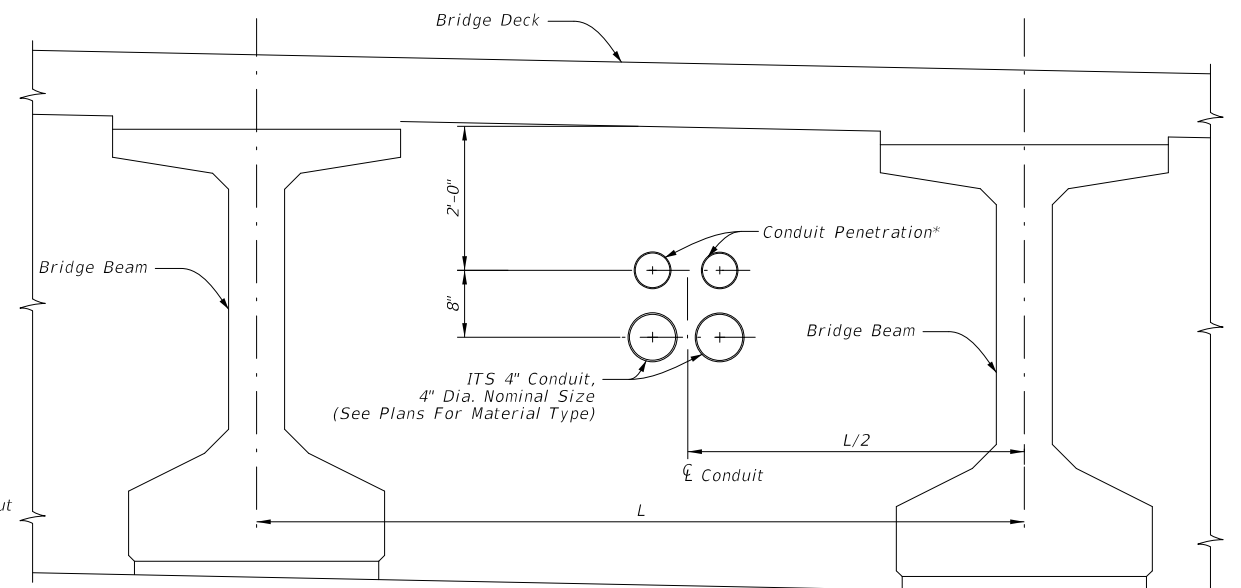
Section Through New Construction Abutment Backwall

Standard Notes:

1. If constant conduit elevation is maintained from the abutment backwall to the underside conduit hangers, provide an expansion joint sleeve (same size as conduit) with one travel overlap. If conduit elevation varies from the abutment backwall to the underside conduit hangers, provide an abutment wall mounted transition junction box (NEMA 3R rated).
2. Provide separate pipe sleeve for each conduit through abutment backwall. Size sleeve per manufacturer recommendations.

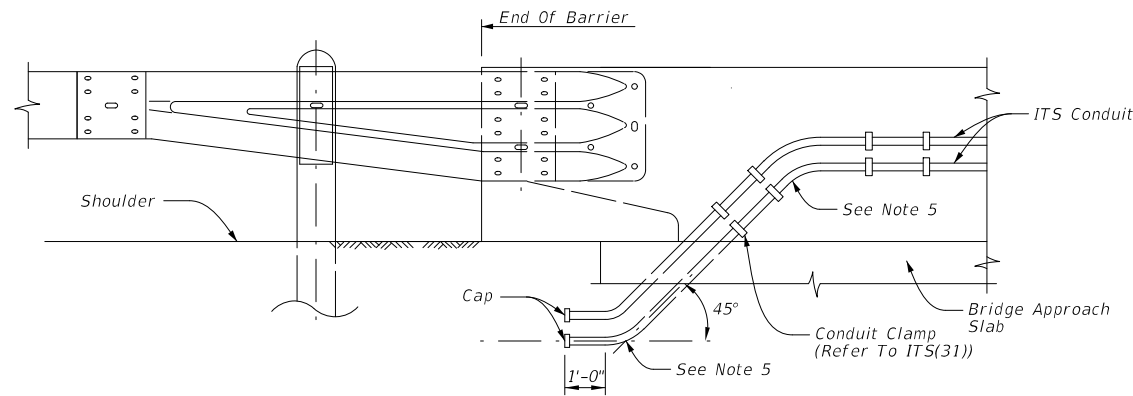


Section A-A (Typical Pipe Sleeve)

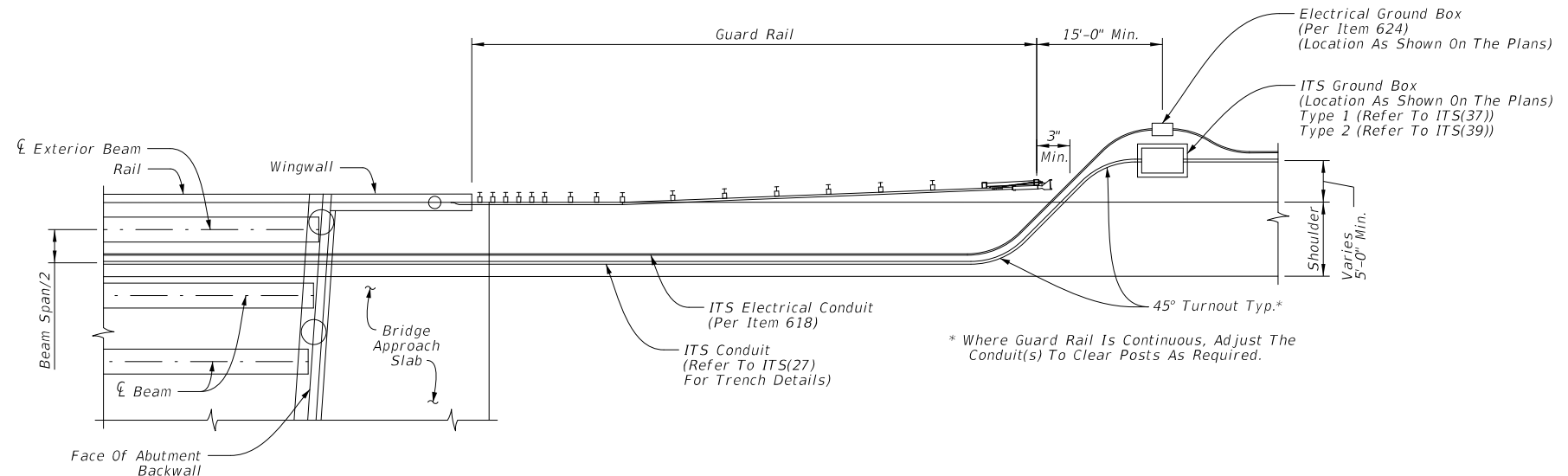


Abutment Elevation

ITS Conduit Transition At Bridge Abutment Detail



Parapet Mounted Conduit Transition To Ground Detail



Conduit Through Abutment Backwall Transition To Ground Box Detail

General Notes:

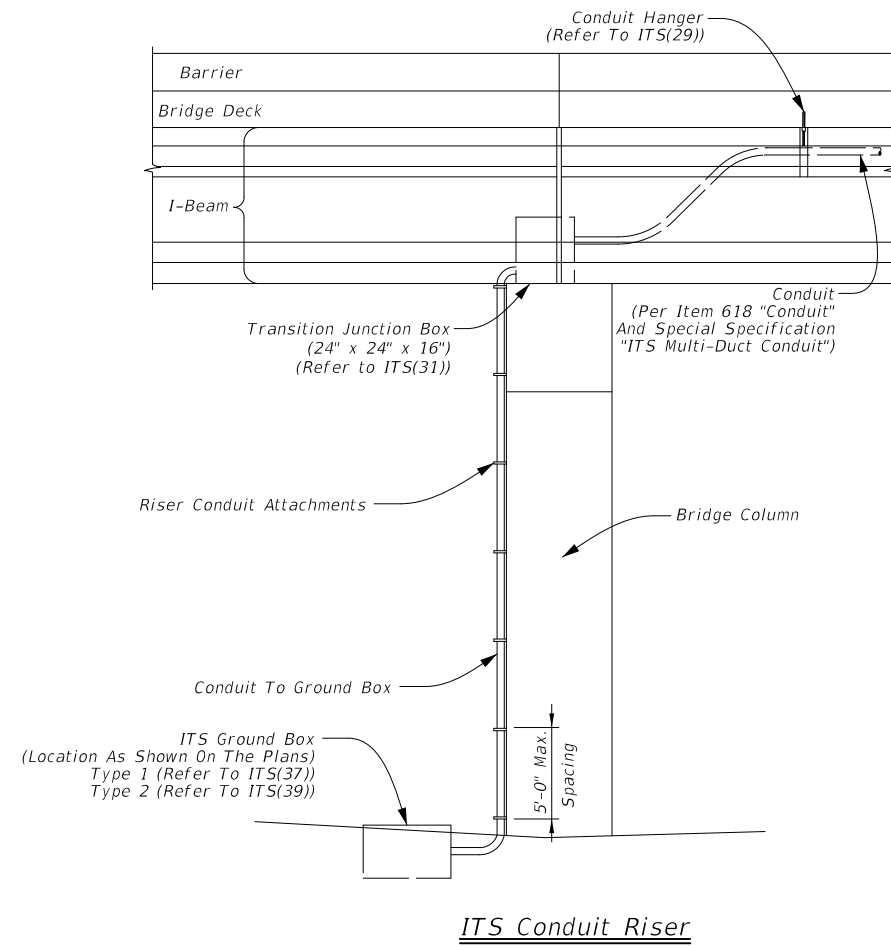
1. An alternative option to conduit mountings shown is conduit encased within parapet or bridge structure at crossings. Submit shop drawings and specifications to the engineer for approval.
2. Install expansion sleeves at bridge expansion joints and per manufacturer recommendations.
3. For conduit crossings over bridges, provide ITS communications junction boxes at 1000' maximum spacing and electrical junction boxes at 450' maximum spacing.
4. Keep all junction boxes sufficiently clear of guard rail or other obstructions to maintain clear access.
5. Install conduit sweep at an angle that accommodates cable bend radius. Do not exceed 45 degrees to the shoulder line. Refer to ITS(28) for conduit turn-out details.
6. Do not install junction boxes within paved shoulder area.
7. Ensure all work is in compliance with the latest edition of NFPA 70, National Electrical Code.
8. Junction boxes and associated appurtenances are incidental to ITS conduit.
9. For installation requiring ITS conduit transition within mechanically stabilized earth (MSE) walls with select fill, locate conduit to avoid reinforced straps. Refer to retaining wall standards for further details.
10. Bond all external structure mounted conduit throughout entire length of run and ground the run at ground box locations according to ITS(37) and ITS(39).

Sheet Details
 Not to Scale

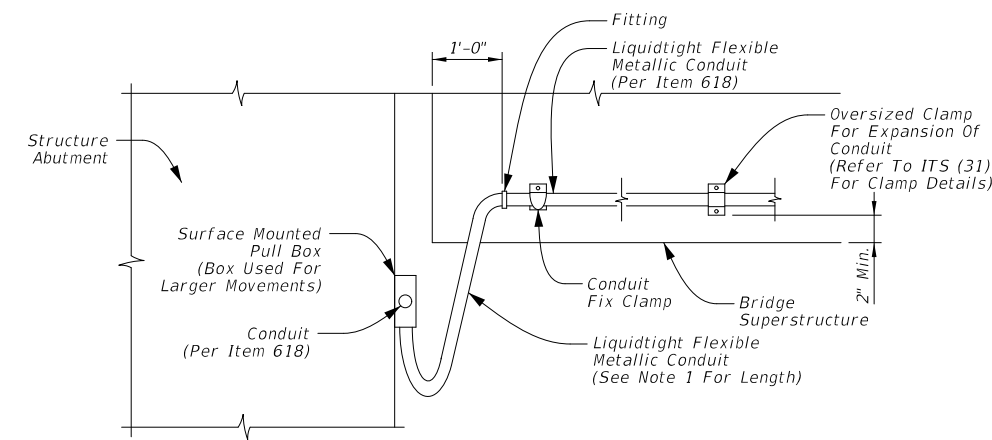
		Traffic Operations Division Standard	
<h2>ITS CONDUIT TRANSITION AT ABUTMENT</h2>			
<h3>ITS(33)-16</h3>			
FILE: its(33)-16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
©TxDOT FEBRUARY 2016	CONT	SECT	JOB
REVISIONS	0251	06	036
DIST	COUNTY		SHEET NO.
BWD	LAMPASAS		315

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.

DATE: 1/30/2023 13:10:38
 FILE: c:\pwworking\pwy\pw_cp\brandon.smi\th\0799555\its(34)-16.dgn



ITS Conduit Riser



Exposed Conduit Connections At Expansion Joints

Notes:

- Bond all external structure mounted conduit throughout entire length of run and ground the run at ground box locations according to ITS(37) and ITS(39).
- The detail shown applies to conduit connections for conduit per Item 618 and is not intended for conduit for fiber optic cable applications.

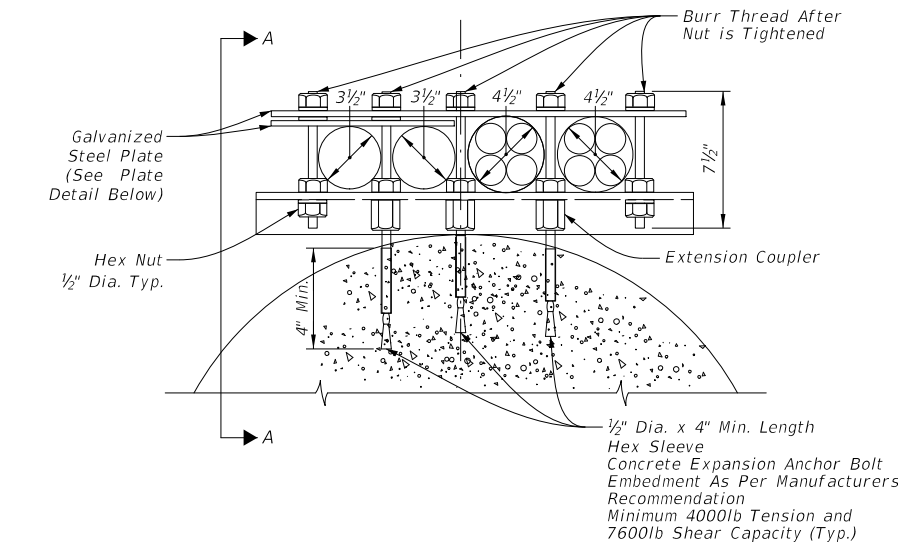
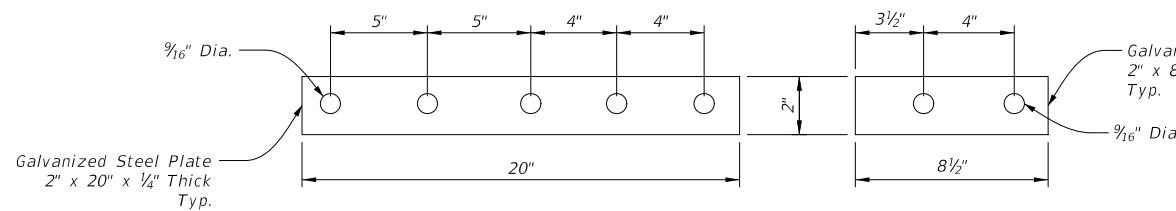
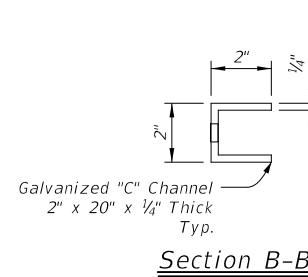


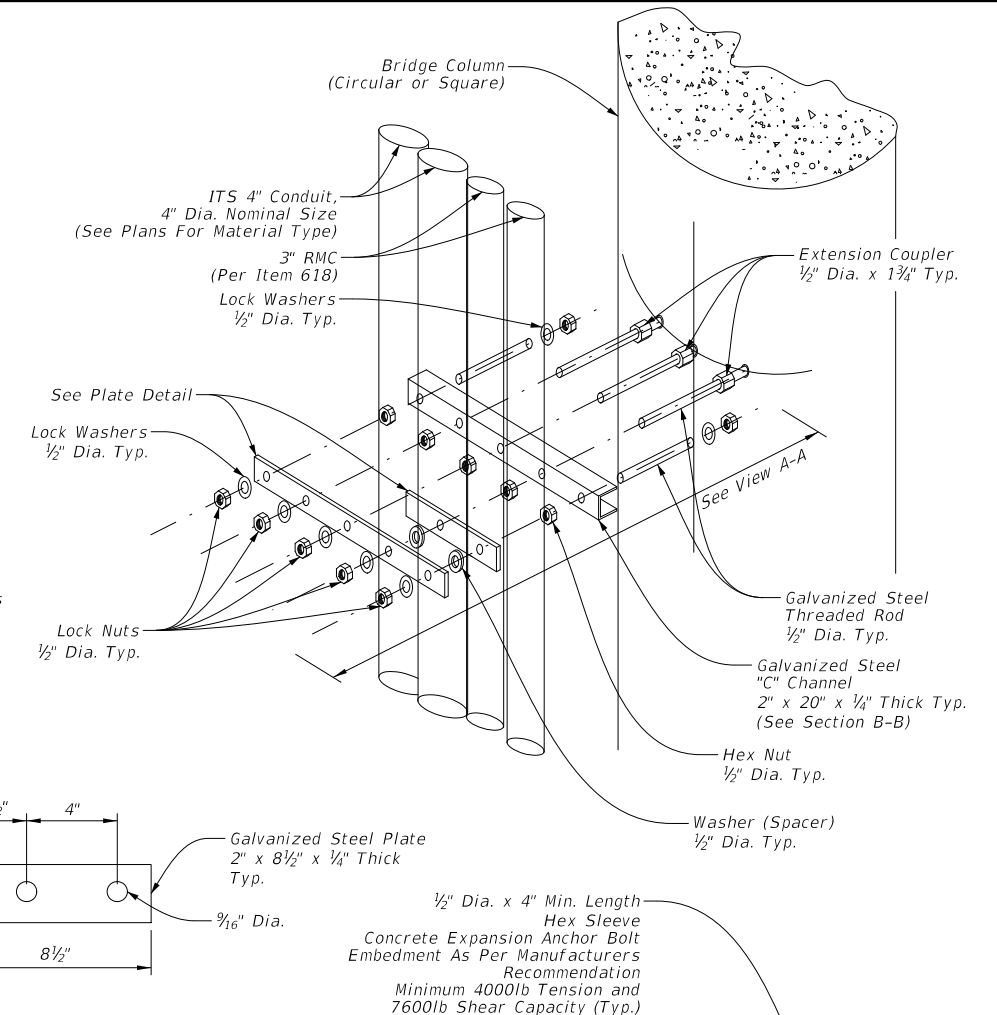
Plate Detail



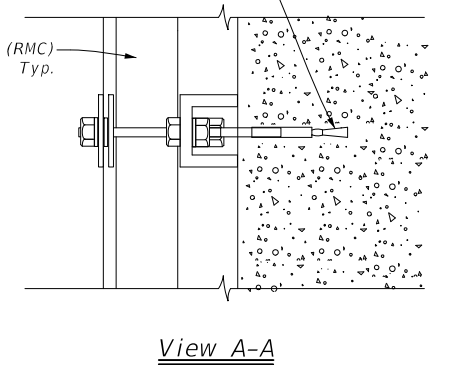
C Channel Detail



Section B-B



ITS Riser Conduit Bridge Column Attachment



View A-A

General Notes:

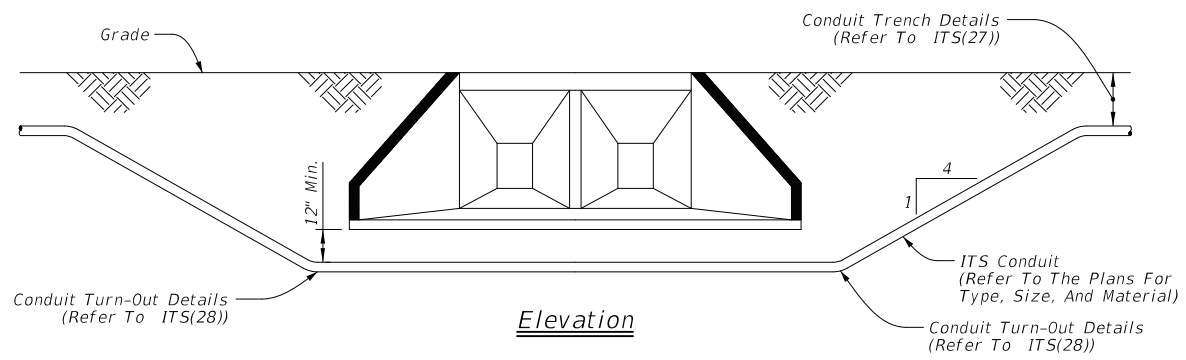
- Utilize an approximate length of flexible conduit at exposed connections of 2 times anticipated movement or 4'-0" minimum.
- Size all transition boxes and surface mounted pull boxes per National Electrical Code Article 314 boxes and fittings.
- For under bridge locations, ensure all junction boxes are kept inaccessible from general public and placed a minimum 10'-0" above surrounding ground.
- Refer to ED standard sheets for additional notes and attachment details for riser conduit.
- See plan sheets for number and size of conduit(s) to be installed.
- Refer to ITS(33) for details involving conduit passing through the abutment.
- Ensure maximum spacing between ITS riser conduit attachments is 5'-0" C-C.
- Install conduit supports within 3'-0" of all enclosures and conduit terminations.
- Ground all rigid metallic conduit (RMC) hangers per manufacturer recommendations when electrical conductors present.
- Ensure all expansion anchors conform to ASTM A307.
- Allowable types of outer duct material for above ground ITS conduit include rigid metallic conduit (RMC) and fiberglass.

Sheet Details
 Not to Scale

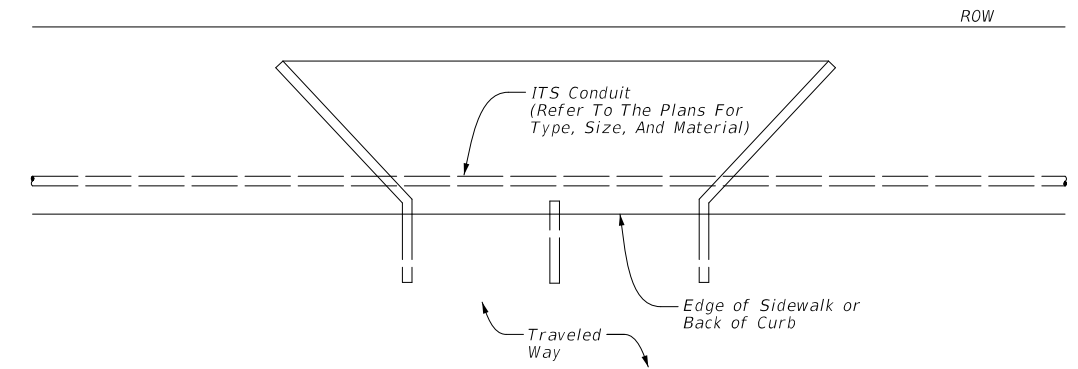
		Traffic Operations Division Standard	
<h1>ITS CONDUIT RISER</h1>			
<h2>ITS(34)-16</h2>			
FILE: ifs(34)-16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
© TxDOT FEBRUARY 2016	CONT	SECT	JOB
REVISIONS	0251	06	036
DIST	COUNTY		SHEET NO.
BWD	LAMPASAS		316

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.

DATE: 1/30/2023 13:10:51
 FILE: c:\pwworking\pwy\pw_cpy_brandon.smi\h\0799555\its(35)-16.dgn

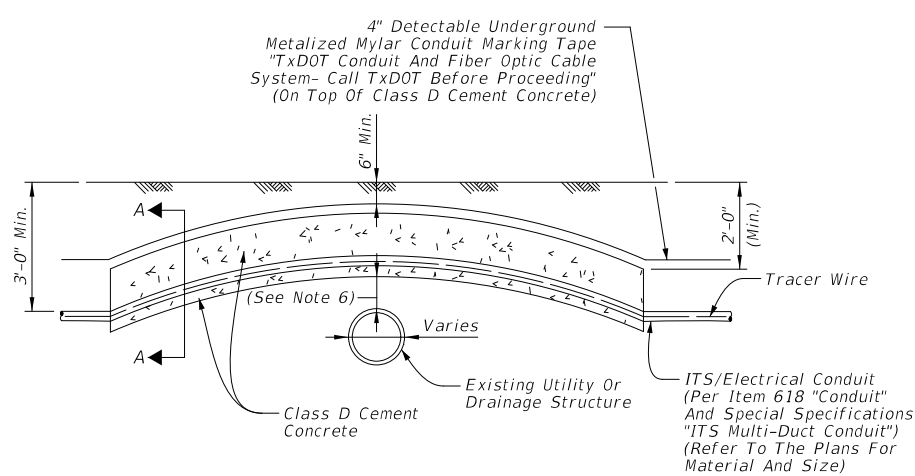


Elevation



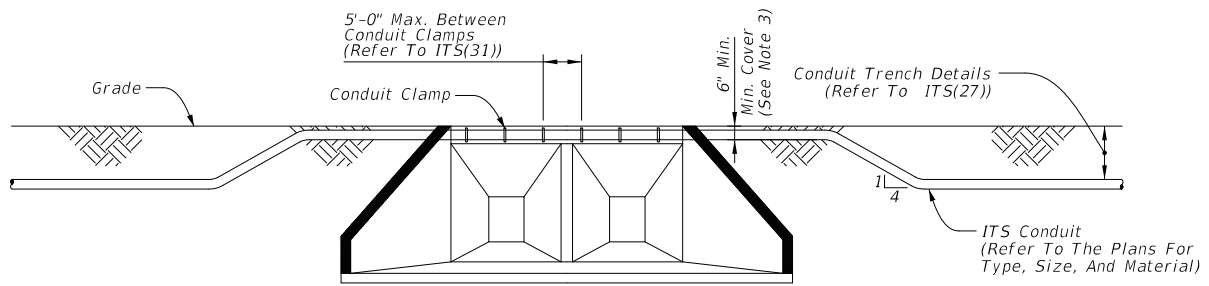
Plan View

Conduit Bored Under Culvert

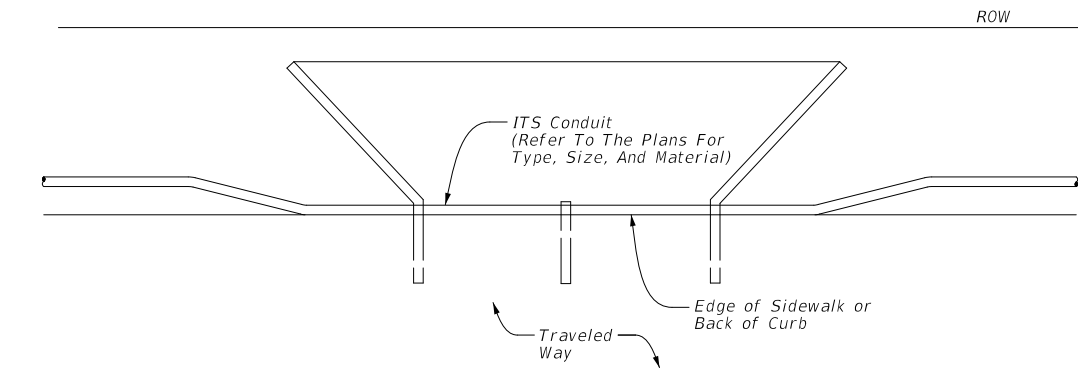


Section A-A

Conduit Installation Detail Above Existing Drain Pipes Or Utilities

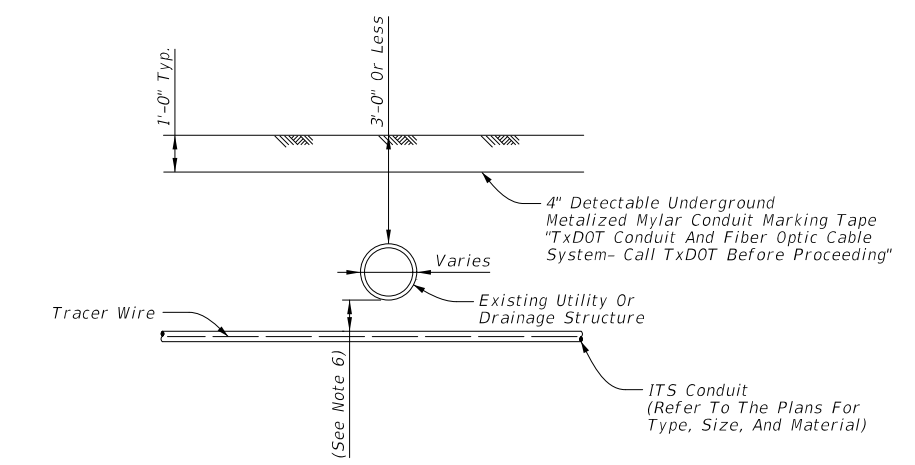


Elevation



Plan View

Conduit Attached To Culvert Headwall



Conduit Installation Detail Below Existing Drain Pipes Or Utilities

General Notes:

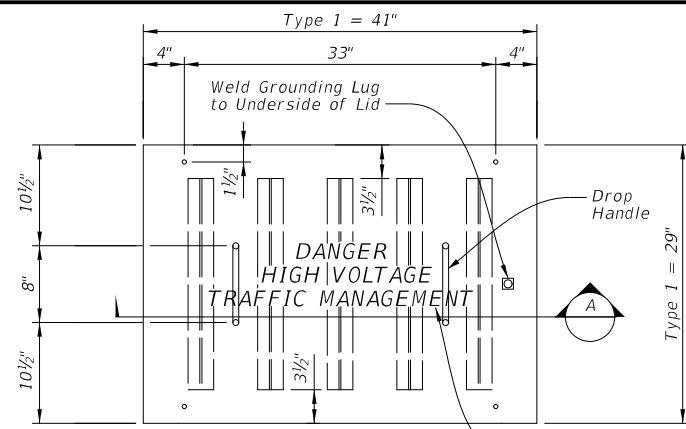
1. With approval from the field engineer adjust the final burial depth of conduit(s) in circumstances requiring traversal of non-movable object conflicts.
2. Where conduits are to be installed over existing underground infrastructure (i.e., existing utility or drainage structure) which are less than 3'-0" deep, encase conduit in Class D cement concrete in accordance with Item 421, "Hydraulic Cement Concrete", for the entire length of the conduit that is installed at a depth of less than 3'-0".
3. If depth of cover over encasement is less than 6", install the conduit to pass beneath the underground infrastructure.
4. Refer to the plans for type, size and configuration of all conduits. Refer to ITS(27) and ITS(28) for further installation details.
5. It is the responsibility of the contractor to verify all existing underground infrastructure. The contractor is responsible for any damage to any underground infrastructure during construction. Verify all utility locations at least 100' in advance of trenches, plowing or boring, and make changes in conduit placement in the event of conflict.
6. If proposed conduit is crossing or in close proximity to an existing underground utility, maintain a minimum clearance of 1'-6" vertical, 1'-6" horizontal or a clearance dictated by municipal code and or utility owner.
7. Install underground warning tape directly above all conduits per ITS(27) standard.
8. Do not install communications and electric cables in the same conduit. Separate conduits installed within the same trench based on NFPA 70, National Electrical Code. Refer to ITS(27) for additional conduit installation details.
9. Ensure all work is in compliance with the latest edition of NFPA 70, National Electrical Code.
10. Utilize PVC conduit for all underground applications as required by design. Transition with a conduit coupling to RMC conduit or other as required by design that is approved for above ground applications.
11. Do not exceed a rise:run ratio of 1:4 for conduit sloped through increases or decreases in elevation.

Sheet Details
 Not to Scale

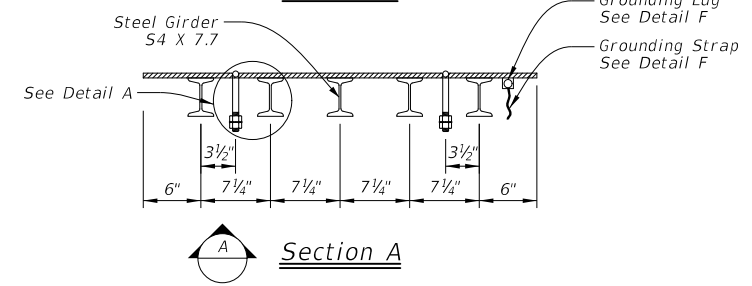
		Traffic Operations Division Standard	
<h2>ITS CONDUIT OBSTRUCTION CROSSING</h2>			
<h3>ITS(35)-16</h3>			
FILE: its(35)-16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
© TxDOT FEBRUARY 2016	CON: 0251	SECT: 06	JOB: 036
REVISIONS	DIST: BWD	COUNTY: LAMPASAS	HIGHWAY: US 281
			SHEET NO.: 317

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.

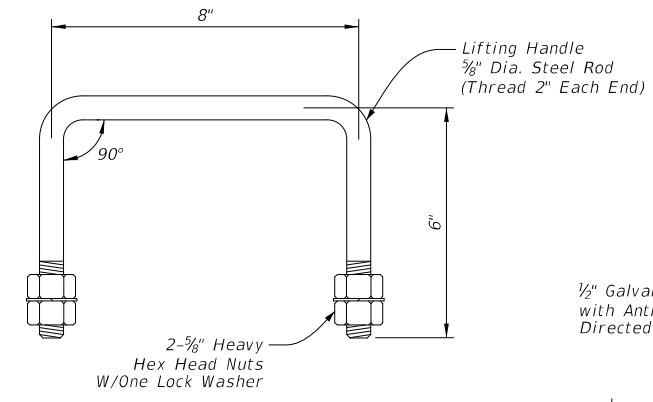
DATE: 1/30/2023 13:11:17
 FILE: c:\pwworking\pdx\pdx\brandon.smi\th\0799555\its(38)-17.dgn



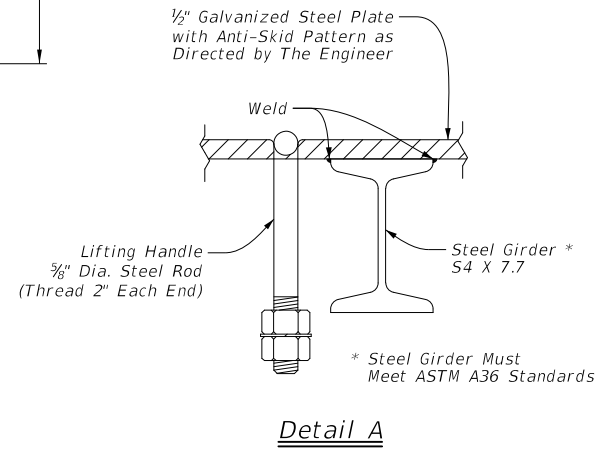
Type 1 Steel Cover Details
 Top View



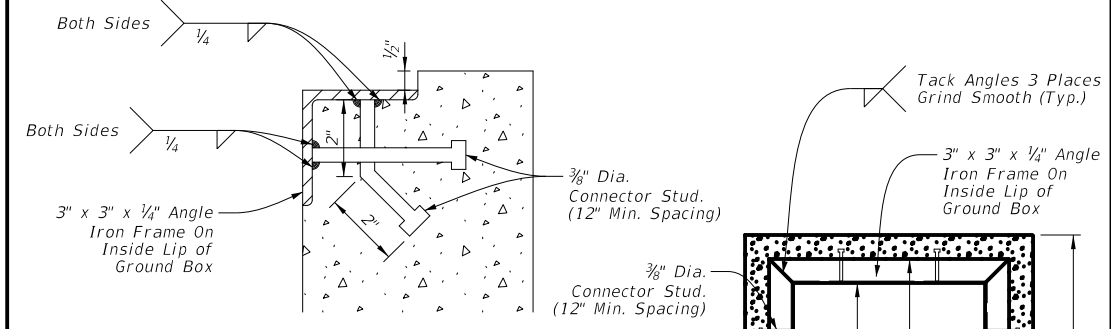
Section A



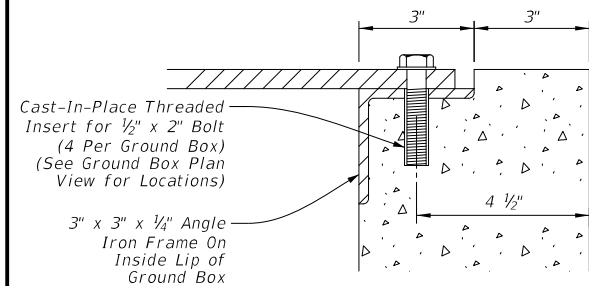
Drop Handle Detail



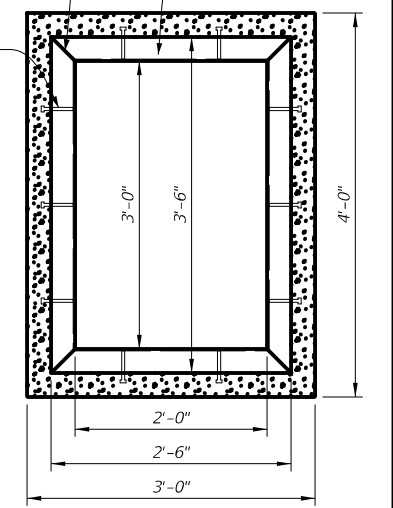
Detail A



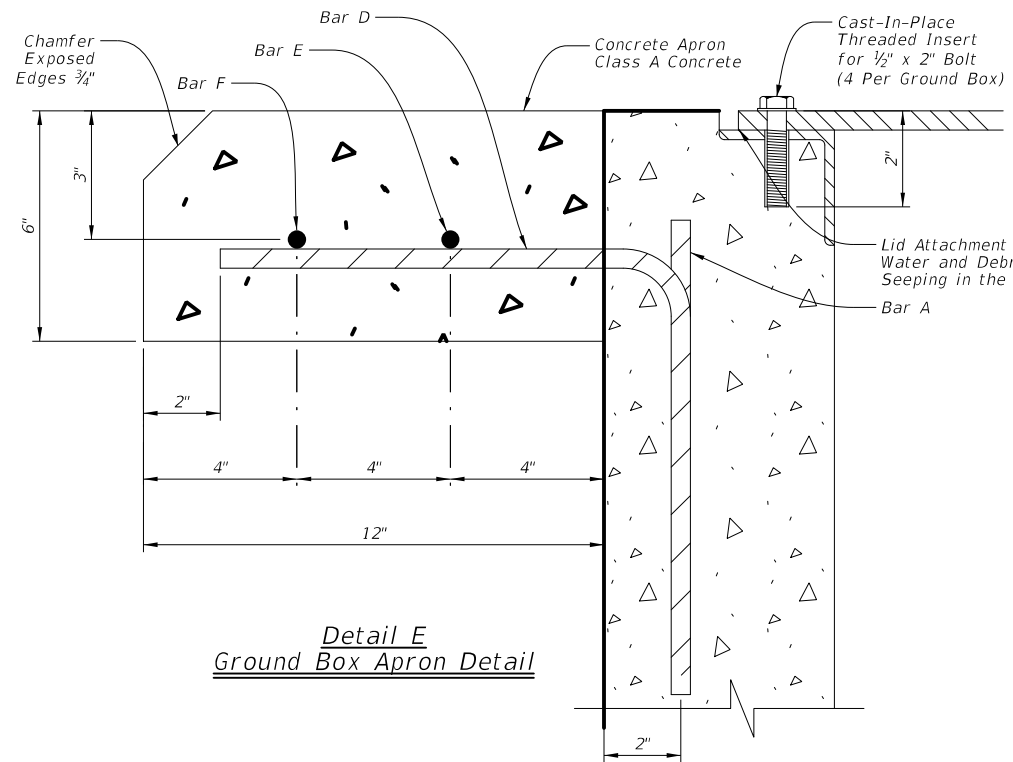
Detail B



Detail C
 Lid Attachment Detail



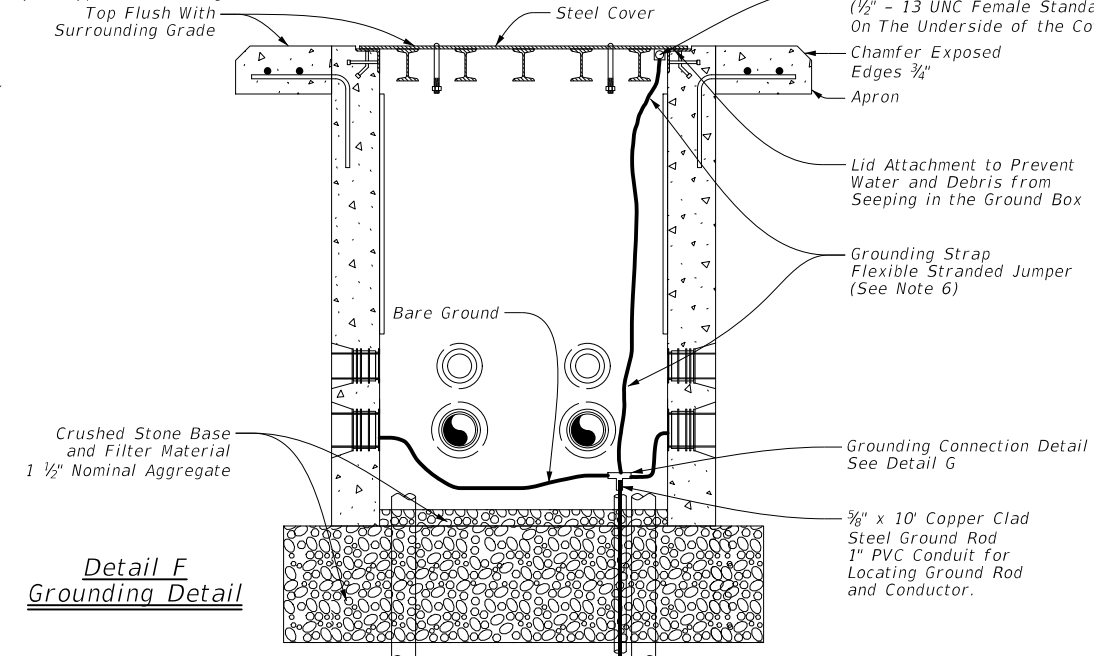
Detail D



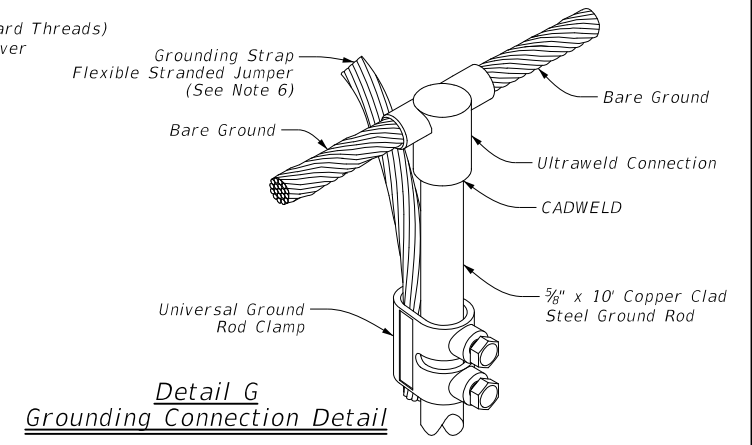
Detail E
 Ground Box Apron Detail

Ground Box Type 1	BAR A					BAR B					BAR D					BAR E					BAR F					TOTALS	
	No.	Size	Ty.	Length	Weight	No.	Size	Ty.	Length	Weight	No.	Size	Ty.	Length	Weight	No.	Size	Ty.	Length	Weight	No.	Size	Ty.	Length	Weight	Steel * LBS.	Conc. * CY
36" Depth	22	#4	St.	2'-8"	39.3	5	#4	Bt.	13'-2"	44.1	8	#4	Bt.	2'-0"	10.7	1	#3	Bt.	17'-2"	6.5	1	#3	Bt.	19'-10"	7.5	108.1	.67
48" Depth	22	#4	St.	3'-8"	54.0	7	#4	Bt.	13'-2"	61.8	8	#4	Bt.	2'-0"	10.7	1	#3	Bt.	17'-2"	6.5	1	#3	Bt.	19'-10"	7.5	140.5	.89
60" Depth	22	#4	St.	4'-8"	68.8	8	#4	Bt.	13'-2"	70.6	8	#4	Bt.	2'-0"	10.7	1	#3	Bt.	17'-2"	6.5	1	#3	Bt.	19'-10"	7.5	164.1	1.11

* - For Contractors Information Only. Incidental to "ITS Ground Box".
 Legend: Ty. = Type, St. = Straight, Bt. = Bent



Detail F
 Grounding Detail



Detail G
 Grounding Connection Detail

Note - All grounding connections to be CADWELD or approved equal. This work will not be paid for directly, but is considered incidental to ITS ground box.

General Notes:

- See ITS(37) for additional Type "1" ground box details.
- Hot-dip galvanized steel covers after all welds are made.
- Label top of cover with the words "DANGER HIGH VOLTAGE TRAFFIC MANAGEMENT" using template-guided, hand-welded lettering at a height of 2 inches to ensure neatness.
- Provide all Type "1" ground boxes with a securable, tamper-proof cover equipped with a bolting system that positively secures the cover in place.
- Ground steel covers in accordance with the National Electrical Code.
- Ground covers to the grounding cable using a split-bolt kearney clamp, and a minimum 8-foot long flexible stranded jumper the same size as the grounding conductor. Terminate to metal ground box cover with a tank ground type lug as approved and directed by the Engineer.
- Provide Type "1" ground box and cover designed for heavy duty loading in accordance with AASHTO H20 loading when located where the box may experience deliberate, continuous vehicular traffic, such as near the shoulder or an auxiliary lane, or immediately adjacent to the unprotected edge of pavement.
- Provide a Type "1" ground box and cover tested by a laboratory independent of the manufacturer certifying loading requirements are met. Provide certification of such tests to the Engineer for approval.
- Provide a steel or cast iron cover in accordance with Item 471, Article 471.2, "Frames, Grates, Rings, and Covers." Provide covers with the number of drop handles shown. Provide Class "A" concrete for ground box construction and aprons.
- Fabricate cover so to fits properly on the ground box, and no undue noise results when traffic contacts the cover.

Sheet Details
 Not to Scale

SHEET 2 OF 2

Texas Department of Transportation
 Traffic Operations Division Standard

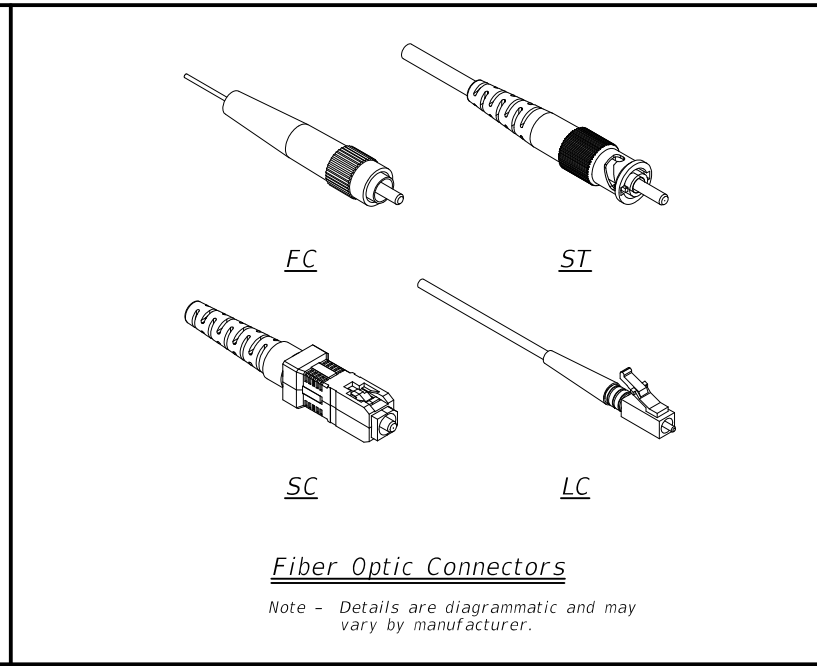
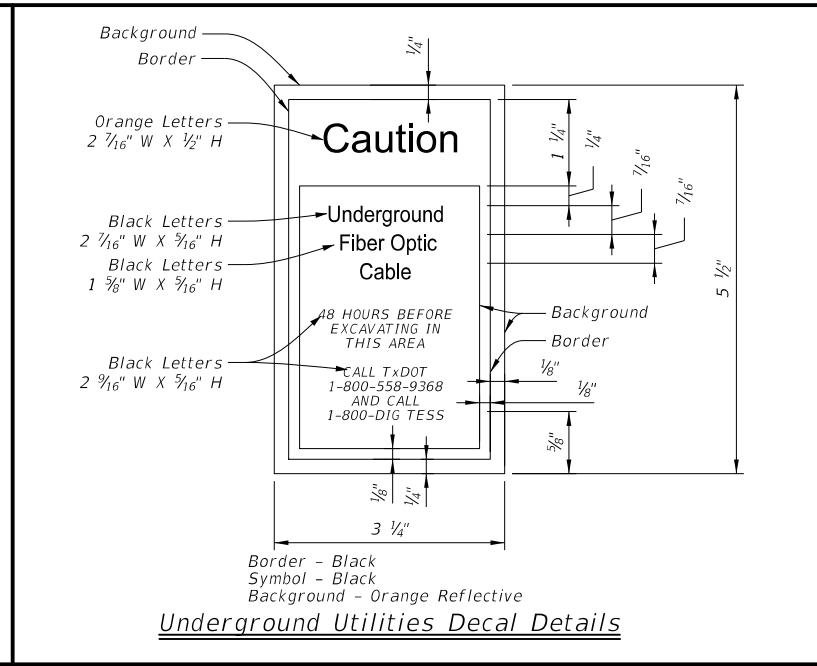
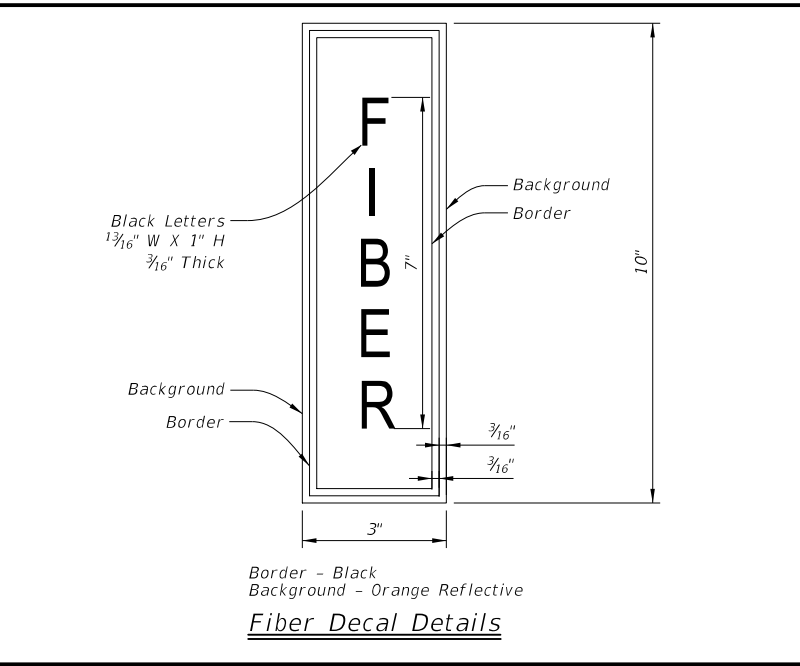
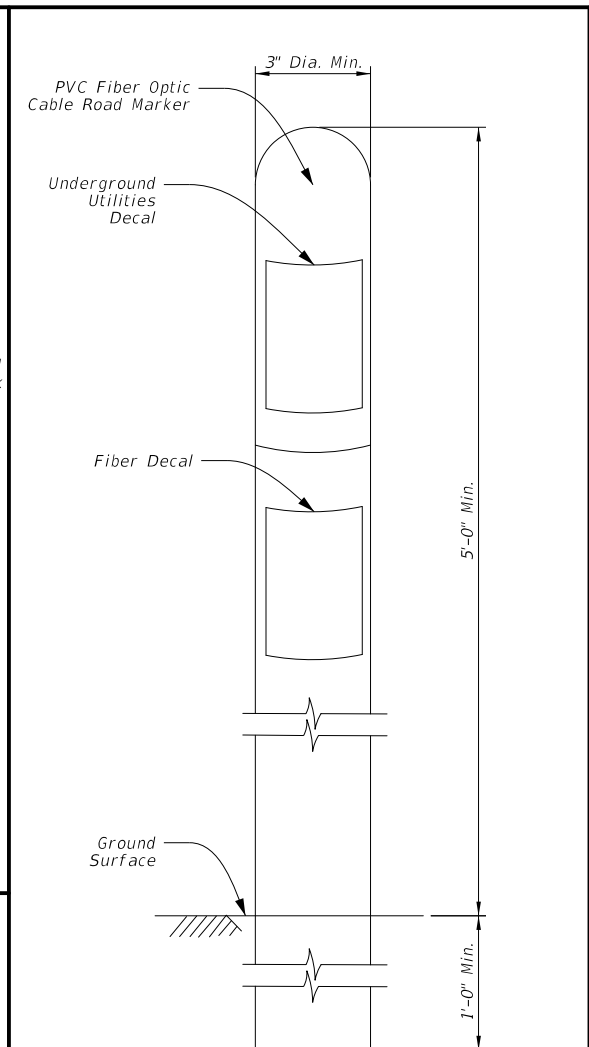
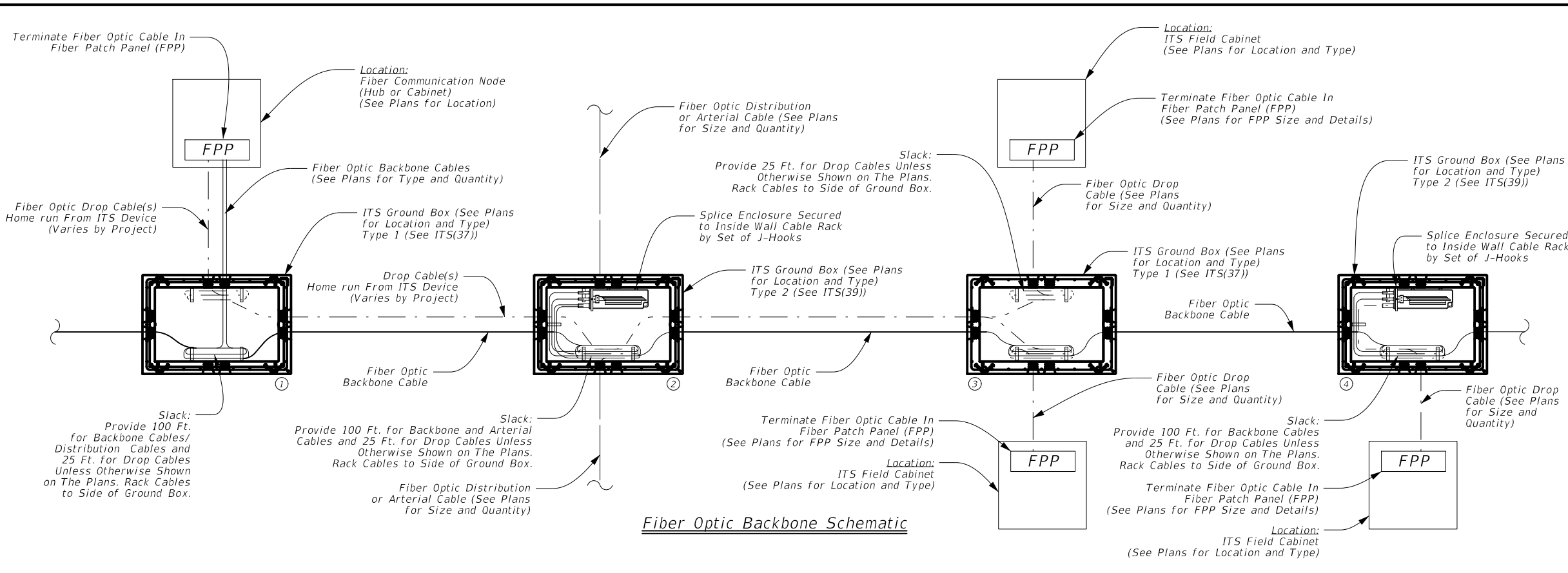
ITS GROUND BOX DETAILS
 TYPE "1" WITH STEEL COVER

ITS(38)-17

FILE: its(38)-17.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT FEBRUARY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
5-17	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	319	

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.

DATE: 1/30/2023 13:11:23
 FILE: c:\pwworking\pwy\pw_\brandon.smi\h\0799555\its(42)-16.dgn



General Notes:

1. The fiber optic backbone schematic shown is diagrammatic only and intended to represent the various fiber optic communication architectures seen across the state and may not show all configurations seen. Connection of ITS field equipment to ITS communication nodes or hubs is achieved through home run drop cables or spliced to the backbone in a splice enclosure. Refer to fiber communication schematic details and fiber termination information shown on the plans for further information.
2. Install a flat pull cord in all empty conduits and inner-ducts identified for communication use. The pull cord must have a tensile strength of 1,250 lbs minimum and have foot markings to determine length installed. Furnish and installation of pull cord will be subsidiary to special specification "ITS Fiber Optic Cable".
3. Color code each type of fiber optic cable to identify the cable as a "backbone" (green or blue), "distribution" (red), or "drop" (orange or yellow).
4. Terminate fibers at fiber patch panel (FPP), also referred to as patch panel, with SC connectors for new installations. When connecting to existing FPP, terminate with FC or ST connectors as shown on the plans. Provide connector adaptors as required to accommodate existing equipment if information is not provided in the plans.
5. Provide a list showing cable number assignments and highway or facility that the cable services.
6. Provide a single 1/8" #14 insulated wire in conduit runs which have been identified in the plans to carry fiber optic cable. Provide UL listed solid copper wire with orange color low density polyethylene insulation suitable for conduit installation rated for temperature range -20 C to 60 C and a voltage rating of 600V. This wire will serve as a tracer, or locate, wire for locating underground conduit containing fiber optic cabling and will be paid for under Item 620, "Electrical Conductors."
7. Ensure each cable is marked on the outer jacket with a label detailing the manufacturer's name, the date of manufacturer (month/year), the fiber count (Example: 48F 5M or 48 SMF), and sequential length markings at maximum 3 FT increments.

Reference Notes:

- ① Fiber architecture at communication node.
- ② Fiber architecture for splicing arterial distribution cables.
- ③ Fiber architecture for home run of drop cables from ITS field equipment cabinets to communication node.
- ④ Fiber architecture for splicing drop cable from ITS field equipment cabinet.

Sheet Details
Not to Scale

SHEET 1 OF 2

Texas Department of Transportation

Traffic Operations Division Standard

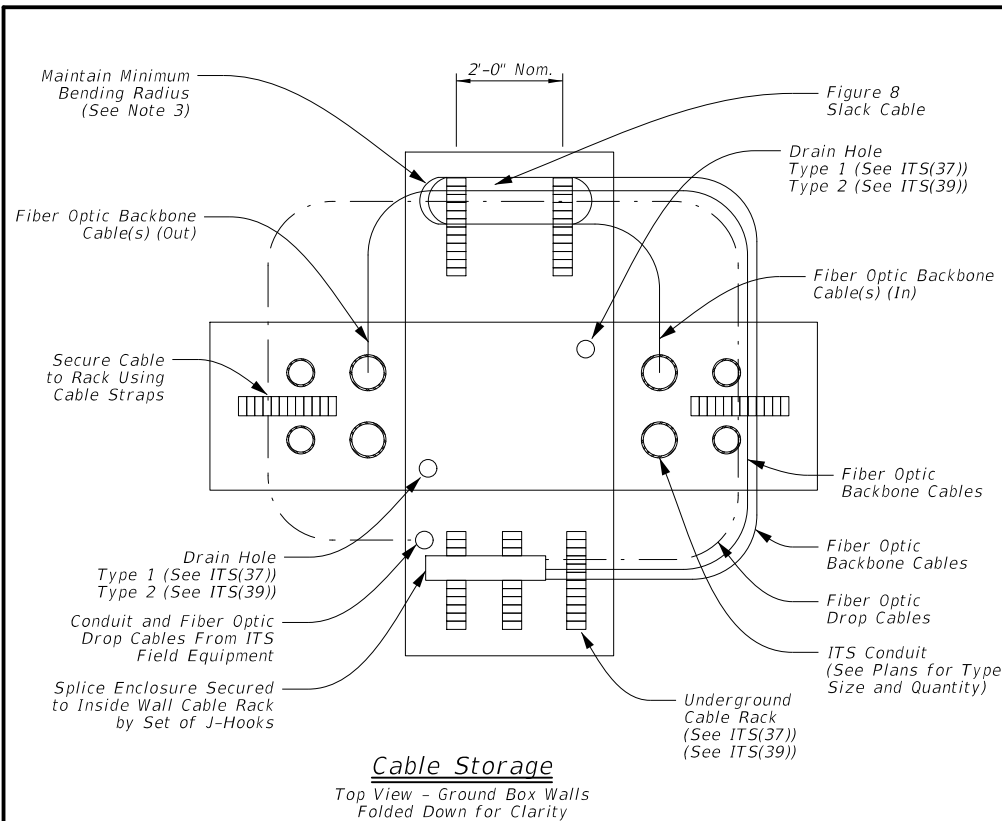
ITS FIBER OPTIC CABLE MISCELLANEOUS DETAILS

ITS(42)-16

FILE: its(42)-16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT FEBRUARY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	320	

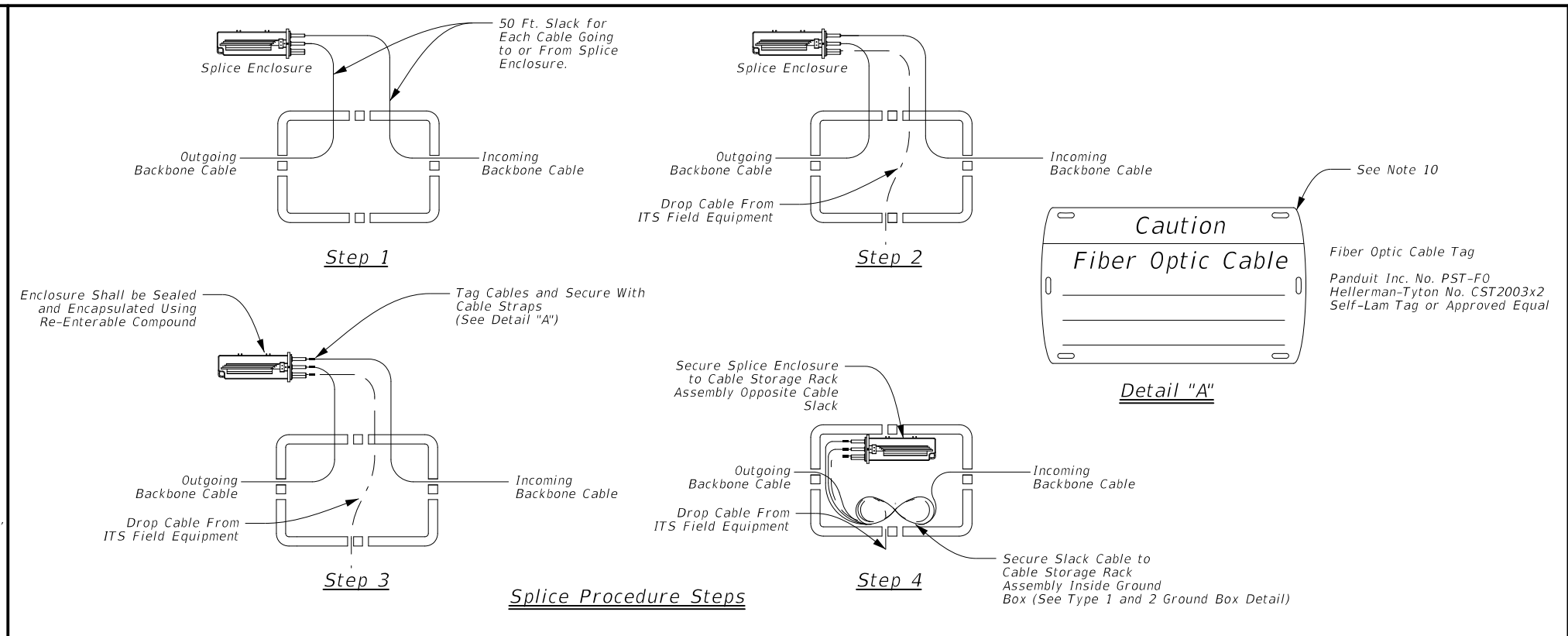
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 1/30/2023 13:11:28
 FILE: c:\pwworking\pdp\pdp\brandon.smi\h\0799555\its(43)-16.dgn

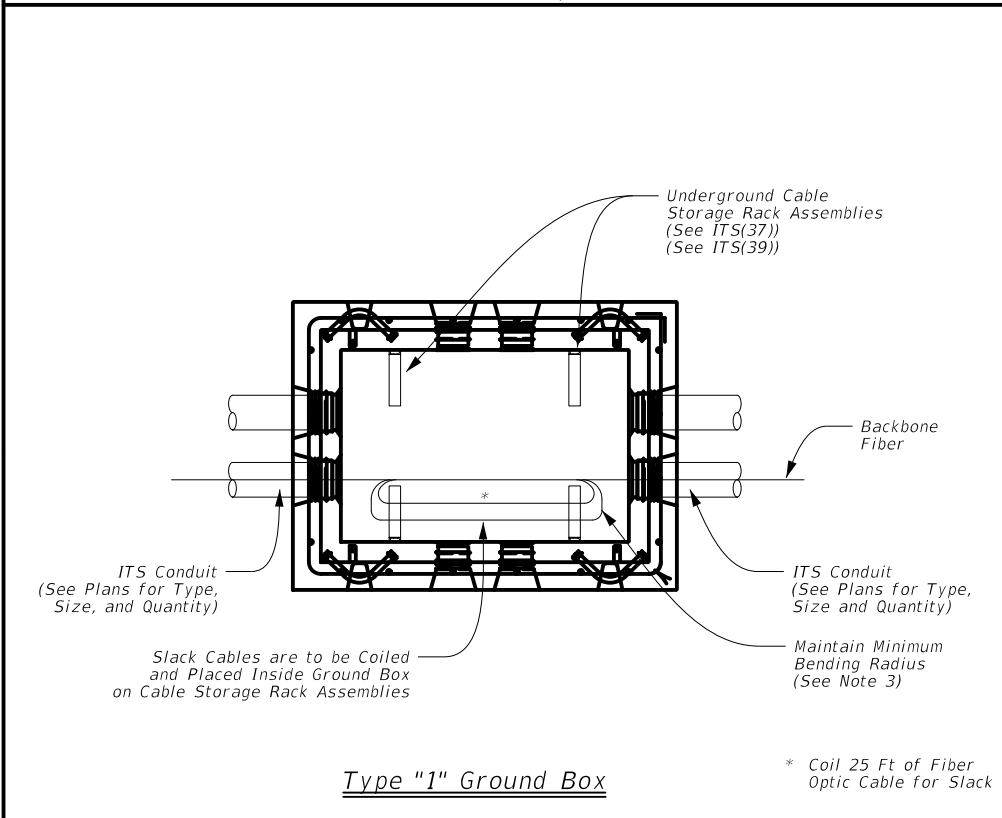


Cable Storage

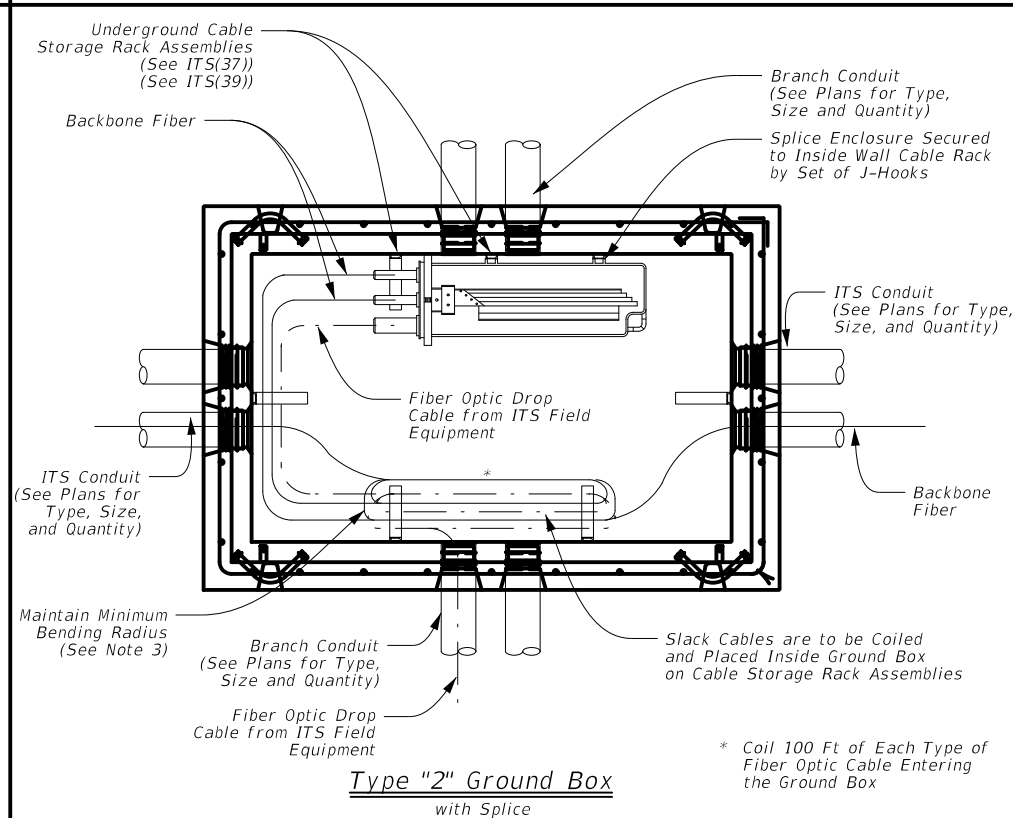
Top View - Ground Box Walls Folded Down for Clarity



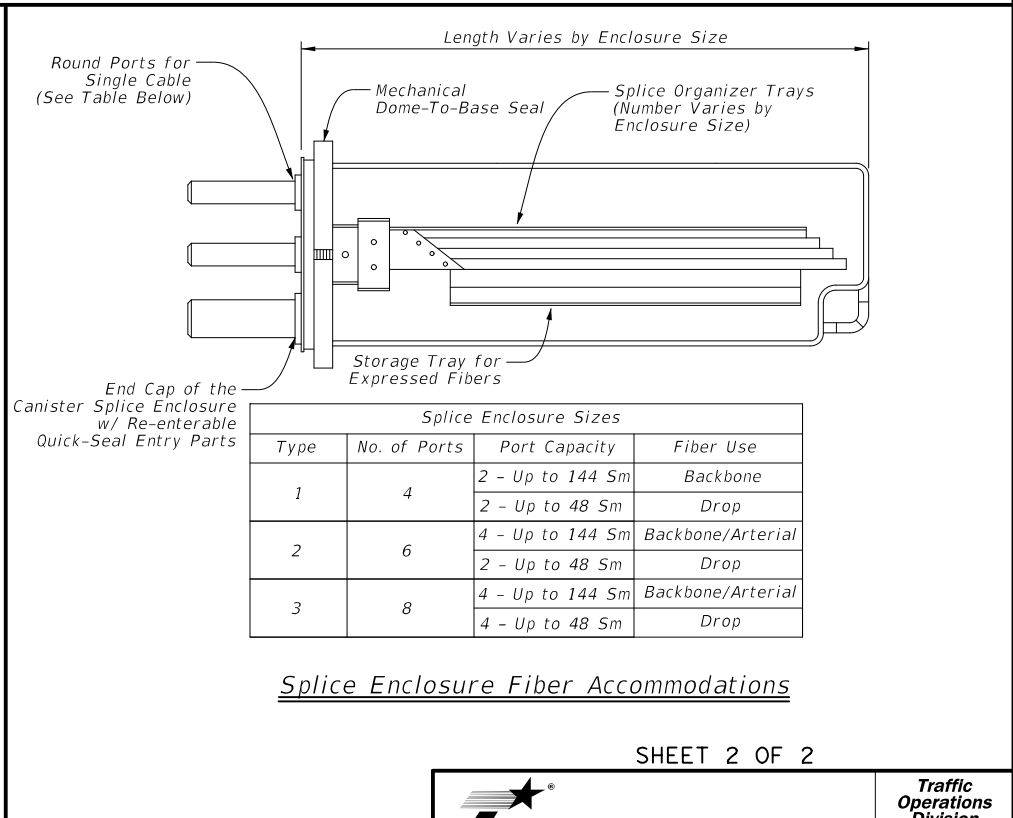
Splice Procedure Steps



Type "1" Ground Box



Type "2" Ground Box with Splice



Splice Enclosure Fiber Accommodations

General Notes:

1. Conduit entry points to the Type 1 and Type 2 ground boxes are diagrammatic. Refer to ITS ground box standards, ITS(37) and ITS(39), for more information. Additional conduits may be required as shown on the plans.
2. Type 2 ground boxes are to be used, as shown on the plans, when splice enclosures are required.
3. Maintain a minimum bend radius of 20 times the fiber optic cable diameter during installation, relocation, and removal and a minimum of 10 times the fiber optic cable diameter when in operation.
4. Caulk all conduit around the top of the cable ducts with an engineer approved caulking compound to seal clearance between the cables and ducts. Place conduit plugs in all vacant conduits or inner-ducts.
5. Provide cable straps that will withstand ultra-violet exposure and do not damage cables when tightening.
6. All incidental equipment necessary for the cable installation and mounting of splice enclosure within the ground box will be incidental to Special Specification, "ITS Fiber Optic Cable."
7. Submit all splice locations to the field engineer for approval before beginning work.

8. Provide splice enclosures designed to seal, bond, anchor, and protect fiber optic cable splices. Provide splice enclosures designed to handle mechanical and fusion type splices. Provide splice enclosures with port configurations for the sizes detailed above.
9. Provide splice enclosures designed for underground placement with a sealing system preventing water penetration when submerged under 10 ft. of water.
10. Furnish, install, and secure fiber optic cable tags for each fiber optic cable entering a ground box, ITS field equipment cabinet (ground and pole), and hub building or communication node as detailed above. Provide information including fiber optic type, count, origin, and destination on the cable tag. Use UV resistant tie-wraps for securing the tag to the cable. Provide tie-wraps that do not damage fiber when securing to cable.

Sheet Details
 Not to Scale

SHEET 2 OF 2

Texas Department of Transportation
 Traffic Operations Division Standard

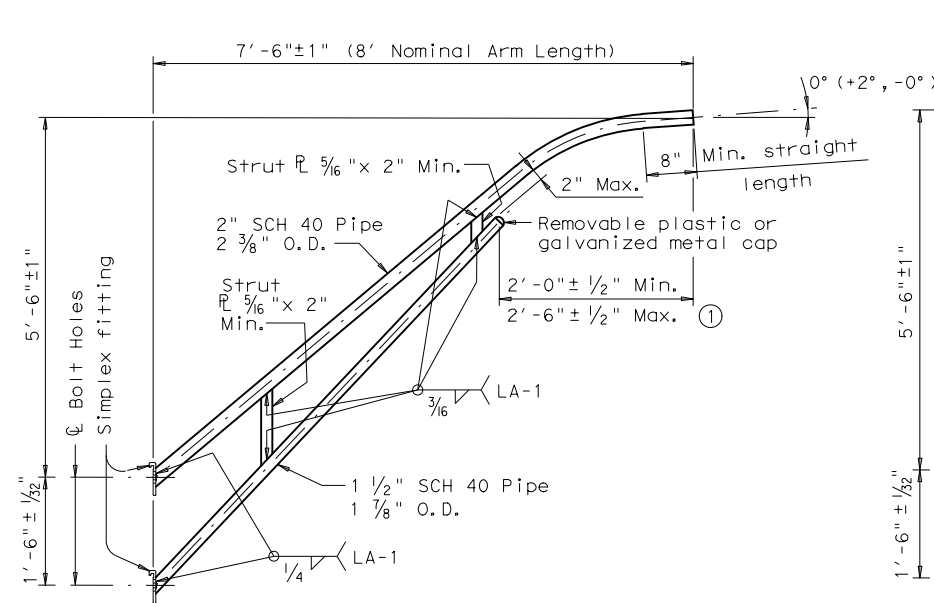
ITS FIBER OPTIC CABLE MISCELLANEOUS DETAILS

ITS(43)-16

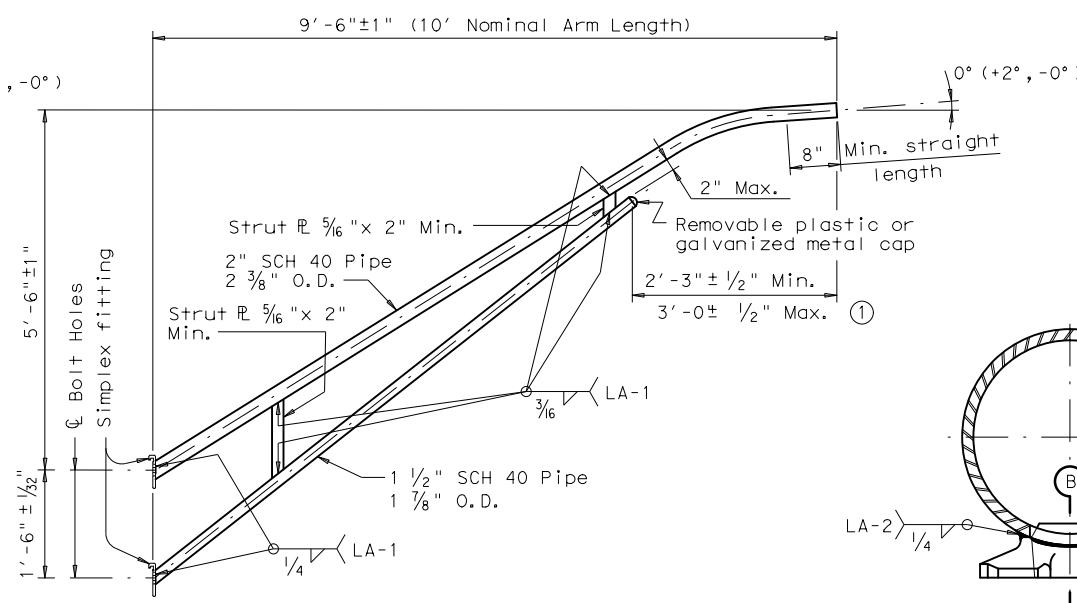
FILE: its(43)-16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT FEBRUARY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	321	

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.

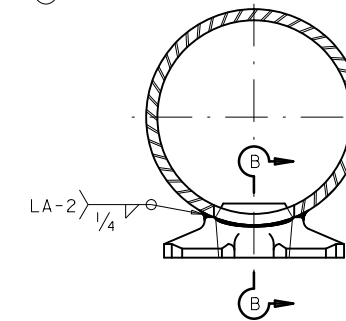
DATE: 1/30/2023 13:11:38
 FILE: c:\pwworking\pwy\pwy_brandon.smi\th\0799555\LUM-A-12.DGN



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.

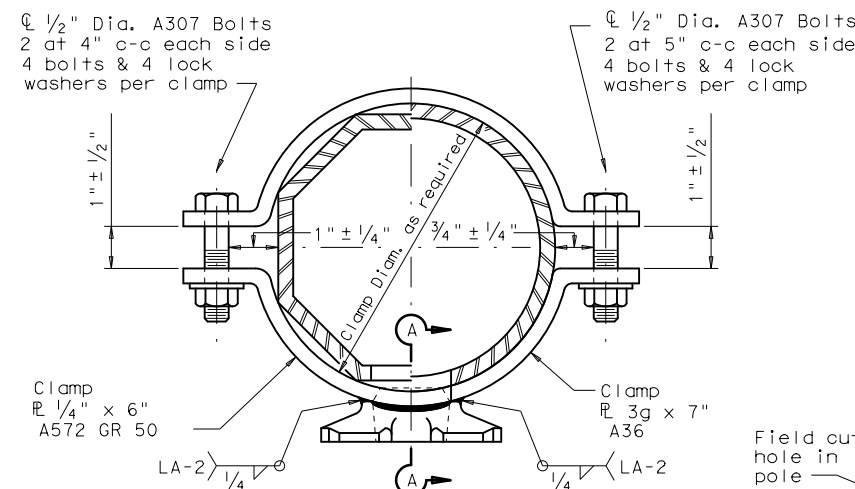
Materials and fabrication shall be in accordance with Item 686, "Traffic Signal Pole Assemblies (Steel)" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. In the absence of specified Fabricator 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.

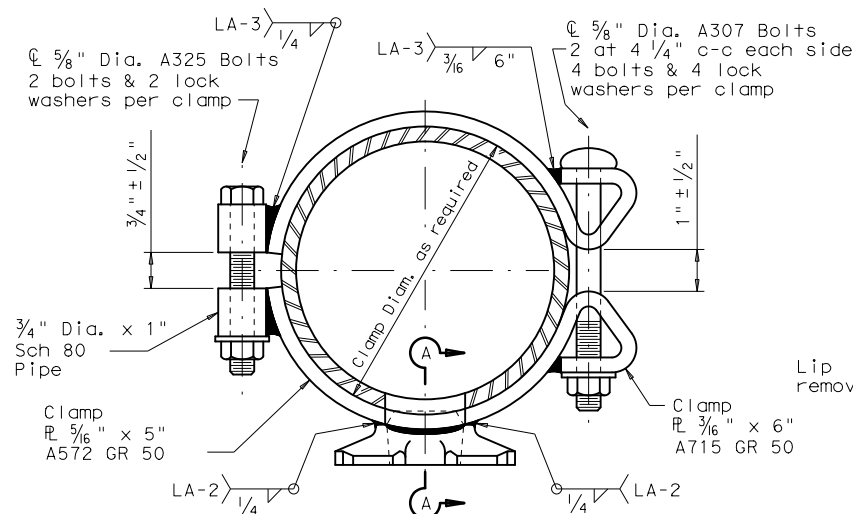
Each pole simplex fitting shall be supplied with 2 ASTM A325 bolts and 2 lock washers of the size specified. The bolts and lock washers shall be secured to the pole with the other hardware items called for in the plans. When clamp attachment is specified, the Fabricator shall ship the clamp assembly 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.



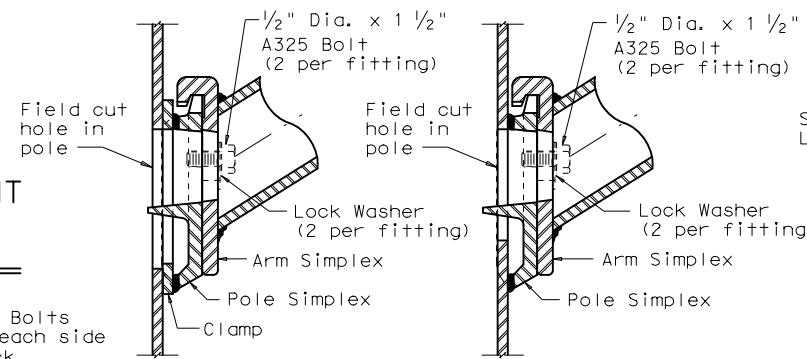
CLAMP ATTACHMENT DETAIL NO. 1 (HALF SECTION)

CLAMP ATTACHMENT DETAIL NO. 2 (HALF SECTION)



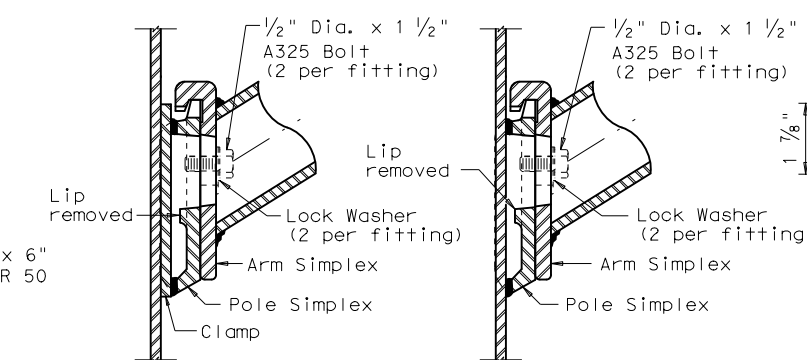
CLAMP ATTACHMENT DETAIL NO. 3 (HALF SECTION)

CLAMP ATTACHMENT DETAIL NO. 4 (HALF SECTION)



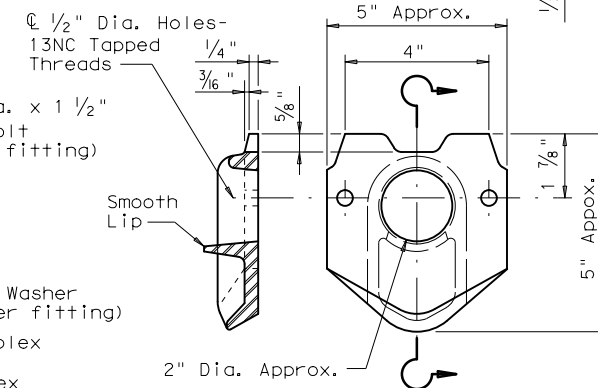
UPPER SIMPLEX FITTING

UPPER SIMPLEX FITTING

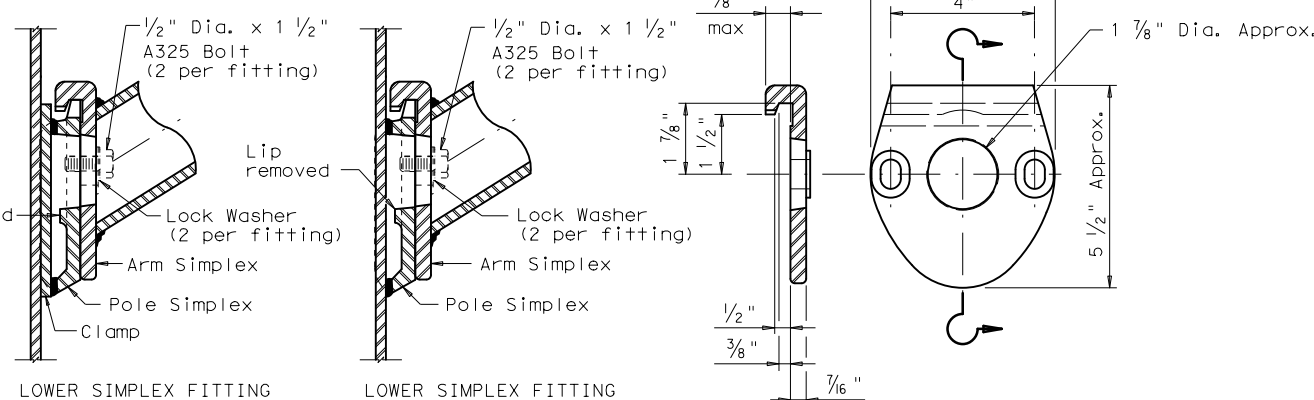


LOWER SIMPLEX FITTING

LOWER SIMPLEX FITTING

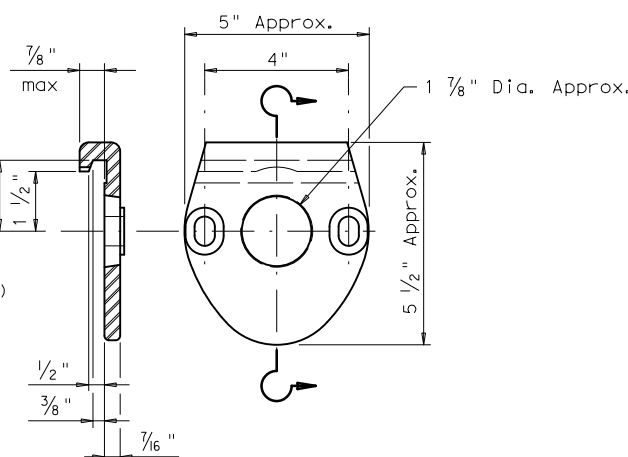


POLE SIMPLEX DETAIL



SECTION A-A

SECTION B-B



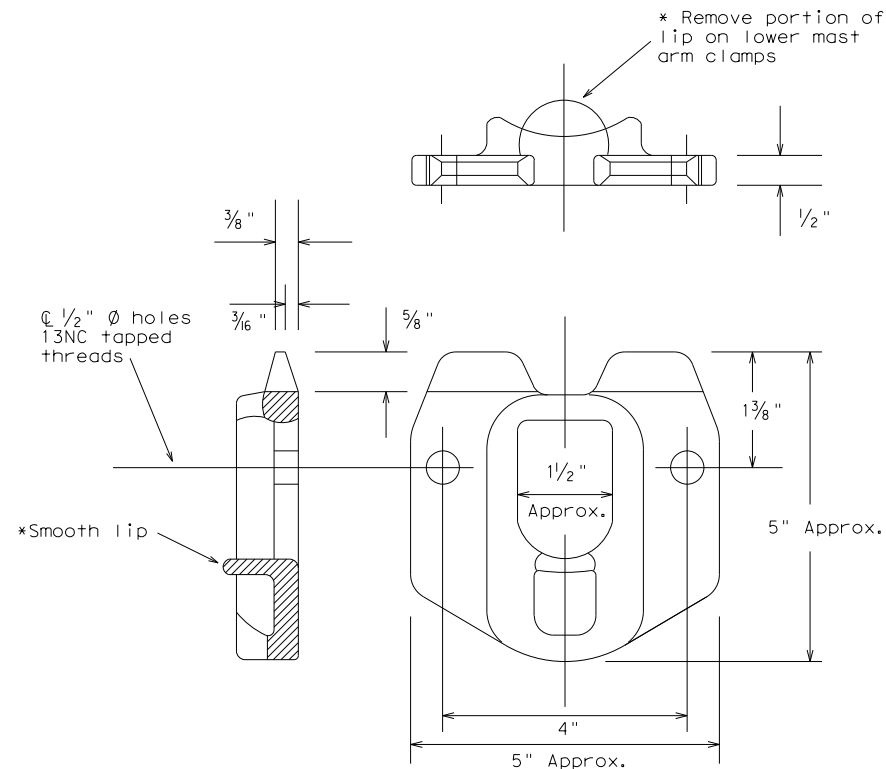
ARM SIMPLEX DETAIL

Texas Department of Transportation
 Traffic Operations Division
STANDARD ASSEMBLY DRAWINGS FOR LUMINAIRE SUPPORT STRUCTURES
 ARM DETAILS
LUM-A-12

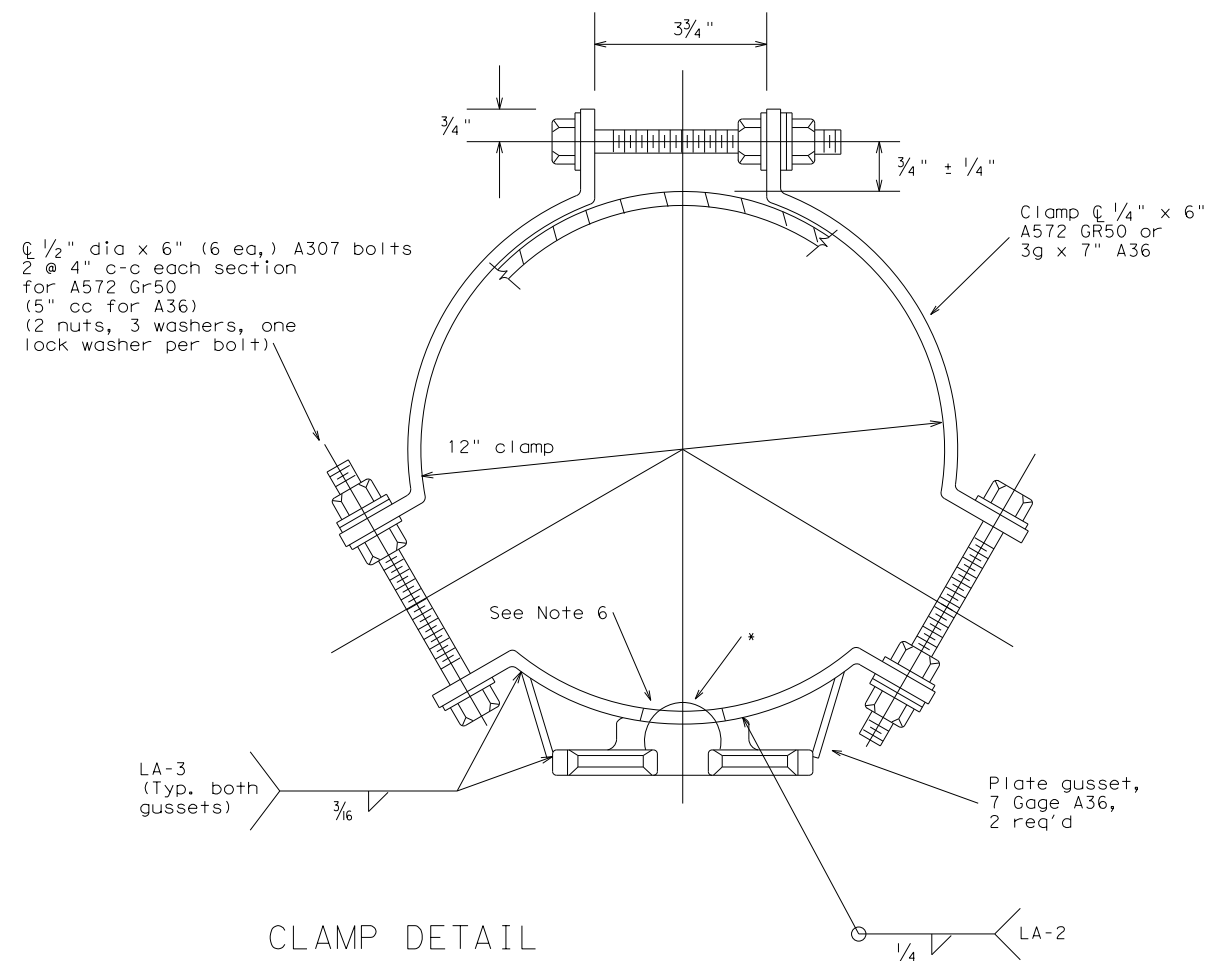
© TxDOT August 1995		DN: LEH	CK: JSY	DW: LTT	CK: TEB
5-96	REVISIONS	CONT	SECT	JOB	HIGHWAY
1-99		0251	06	036	US 281
1-12		DIST	COUNTY		SHEET NO.
		BWD	LAMPASAS		322

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.

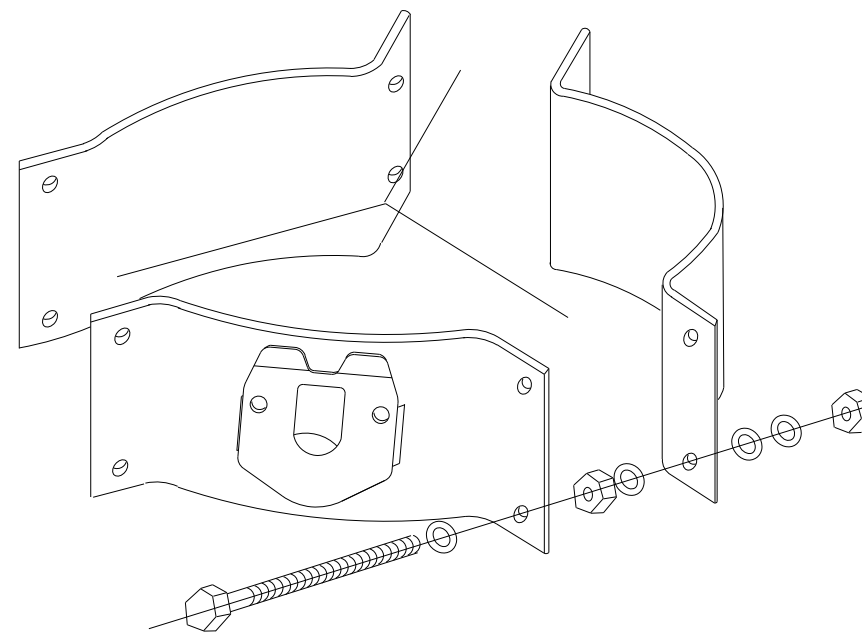
DATE: 1/30/2023 13:11:44
 FILE: c:\pwworking\copy\pw_cp\brandon.smi\th\d0799555\CFA-12.dgn



POLE SIMPLEX DETAILS



CLAMP DETAIL



PROJECTION

For 8.9 - 12 inch diameter Signal Poles
 (Two req'd for each mast arm)

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, 1/2 in. X 1 1/2 in. 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.



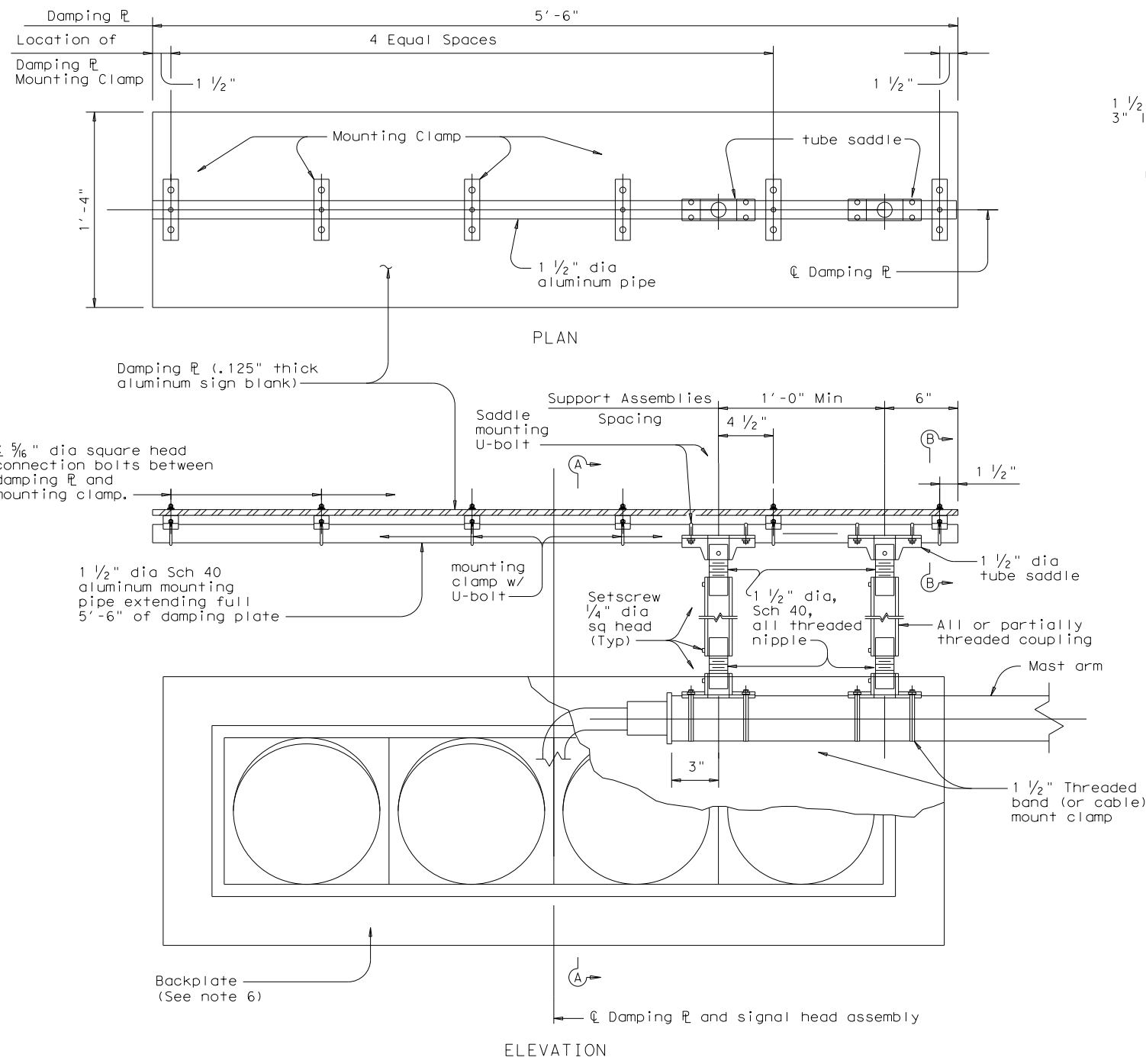
CLAMP ON FITTING ASSEMBLY FOR LUMINAIRE MAST ARM

CFA-12

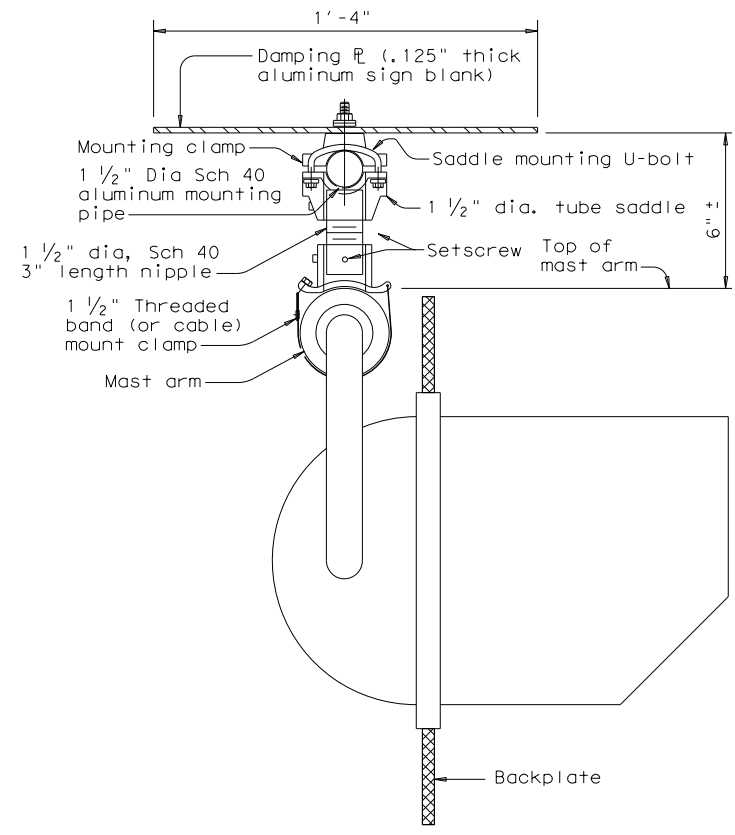
© TxDOT		DN: KAB	CK: RES	DW: FDN	CK: CAL
REVISIONS		CONT	SECT	JOB	HIGHWAY
11-99		0251	06	036	US 281
1-12		DIST	COUNTY		SHEET NO.
		BWD	LAMPASAS		323

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.

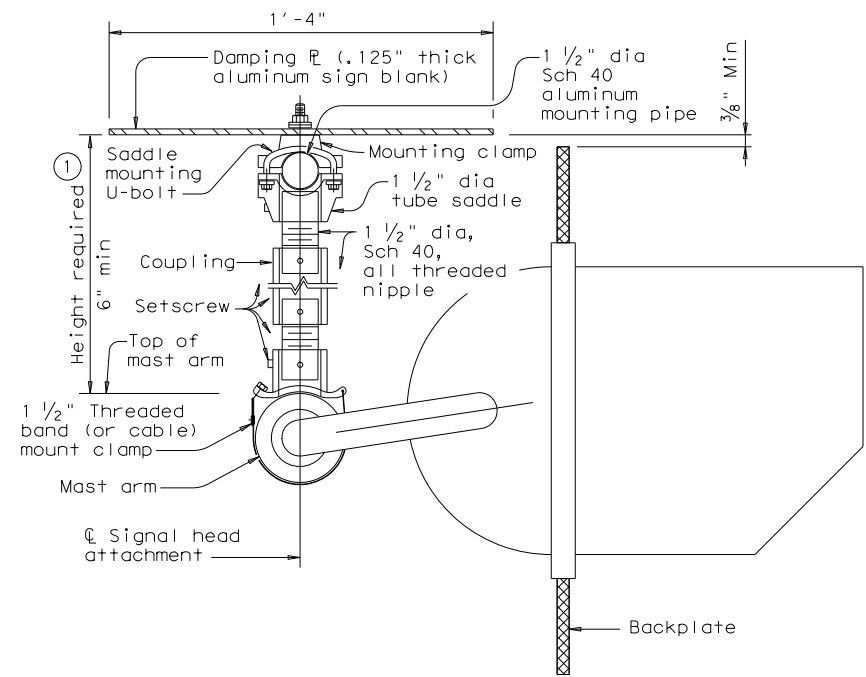
DATE: 1/30/2023 13:11:48
 FILE: c:\pwworking\copy\brandon_smi\th\td0799555\MA-DPD-20.dgn



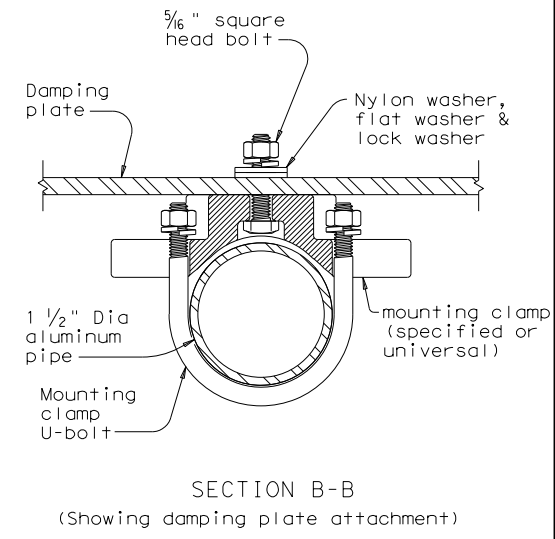
DAMPING PLATE MOUNTING DETAILS
 (Showing alternate placement of signal head)



SECTION A-A
 (Showing standard placement of signal head)
 (Mounting clamp U-bolt is not shown for clarity)



SECTION A-A
 (Showing alternate placement of signal head)
 (Mounting clamp U-bolt is not shown for clarity)



SECTION B-B
 (Showing damping plate attachment)

GENERAL NOTES:

- In accordance with the findings of TxDOT sponsored research, the installation of a damping plate in accordance with the details shown here at the end of signal mast arms of SMA and DMA standard structures reduces excessive harmonic vertical vibration, and thus fatigue damage. Any deviation from these details may reduce the effectiveness of this damping device.
- Aluminum sign blank for damping plate will conform to Departmental Material Specifications DMS-7110. Materials for mast arm mounting clamp and tube saddle will be aluminum castings or aluminum alloys as in accordance with manufacturers' stipulations. Mounting pipe, pipe nipple and coupling will be aluminum alloy 6061-T6 or 6063-T6. Damping plate mounting clamp and u-bolt assemblies will conform to Standard sheet SMD(GEN). U-bolts for saddle mounting will have a minimum yield strength of 36 ksi.
- Damping plate will be mounted horizontally. Position centerline of damping plate to align with centerline of mast arm or horizontal signal head assembly. Vertical clearance between signal head (with or without backing plate) and bottom of damping plate will be maintained as shown. The attachments shown here are examples only, other supporting details which meet both alignment and vertical clearance requirements are also acceptable.
- Unless stipulated by the manufacturers, all steel parts will be galvanized finish in accordance with Standard Specification Item 445, "Galvanizing".
- Contractor will verify applicable field dimensions before the installation.
- Backplates are optional for traffic signals. When backplates are used, Backplates will have a 2-inch fluorescent yellow AASHTO Type BFL or CFL retroreflective border conforming to TxDOT DMS-8300 "Sign Face Materials." See Sheet TS-BP-20 for backplate details.

① Recommended supporting assemblies to achieve required height for horizontal section heads

Height required	One nipple each length	Two nipples each length plus One coupling each length	
6"-6 3/4"	3"	-	-
7"-8 1/2"	4"	-	-
9"-10 1/2"	6"	-	-
11"-15 1/2"	-	4"	5"
16"-24"	-	6"	10"

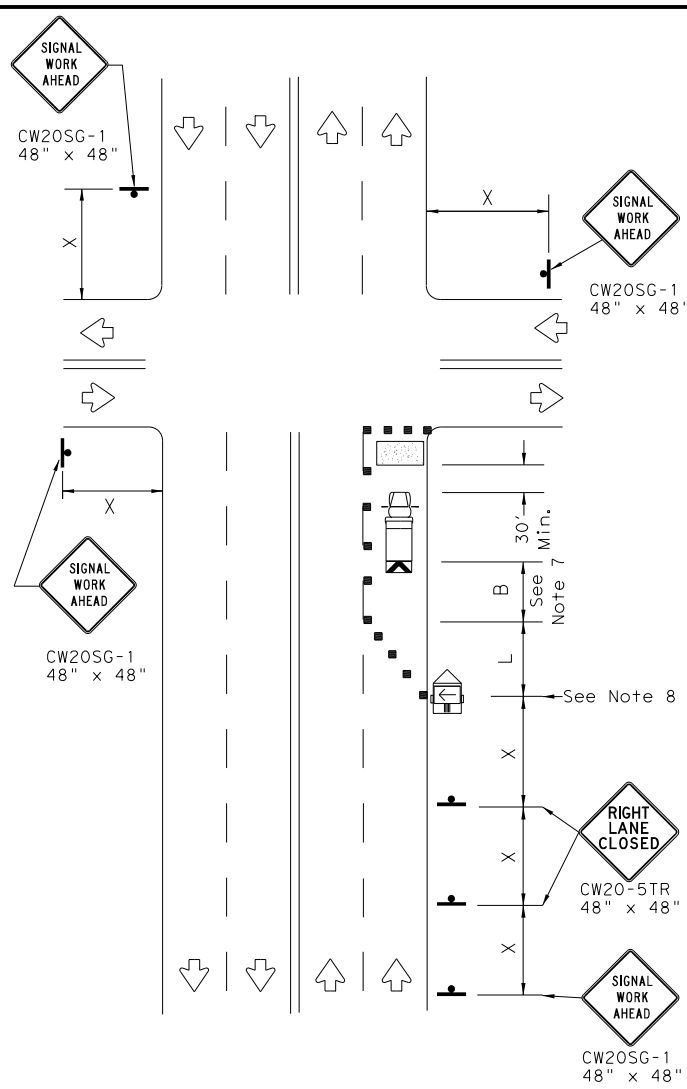
Texas Department of Transportation
 Traffic Safety Division Standard

MAST ARM DAMPING PLATE DETAILS
MA-DPD-20

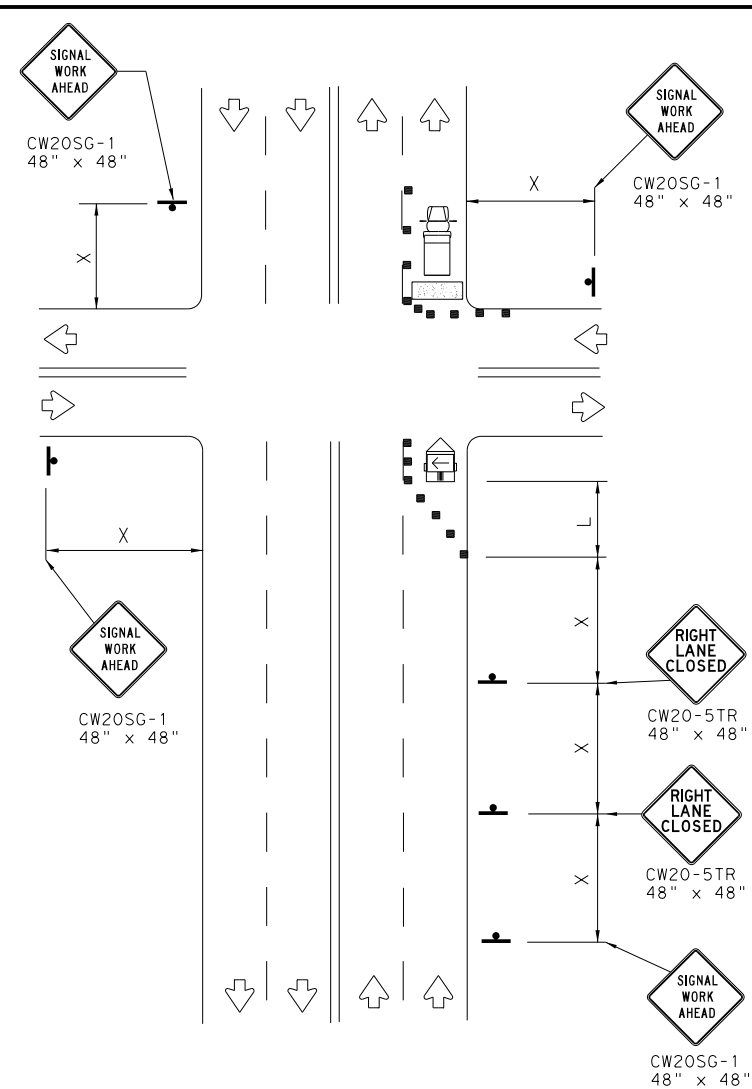
FILE: ma-dpd-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT January 2012	CON: 0251	SECT: 06	JOB: 036	HIGHWAY: US 281
6-20	REVISIONS		DIST: BWD	COUNTY: LAMPASAS
				SHEET NO.: 324

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.

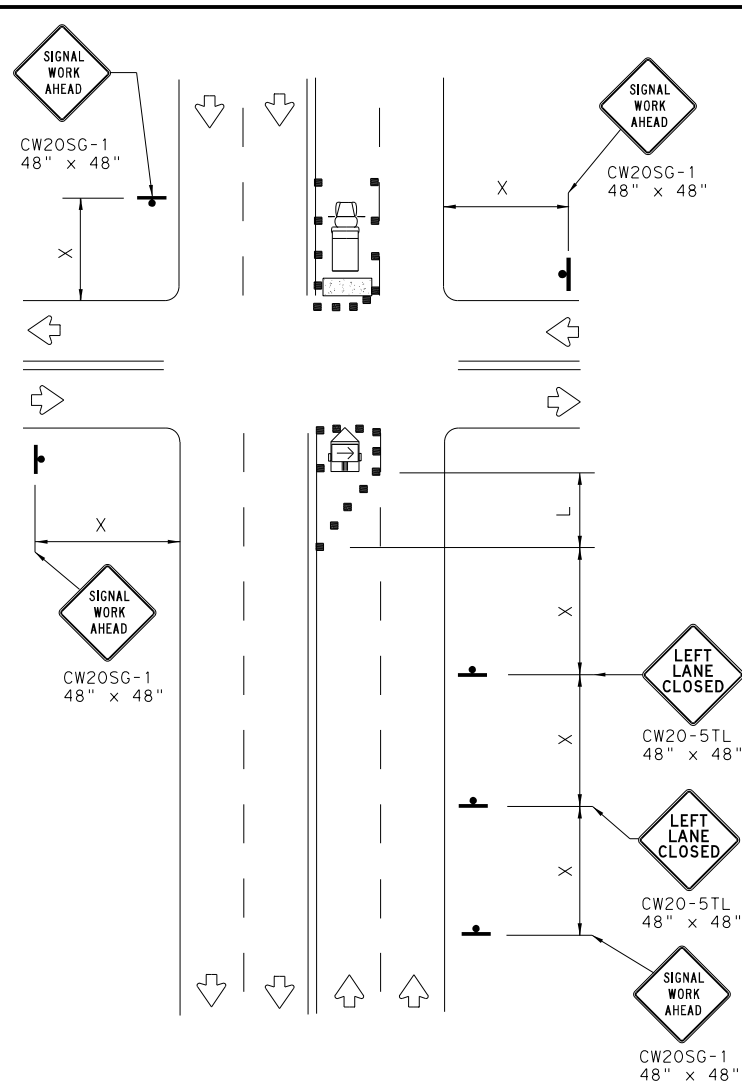
DATE: 1/30/2023 13:11:54
 FILE: c:\pwworking\pwworking\brandon.smi\tn\d0799555\WZ-BTS(1)-13.dgn



NEAR SIDE LANE CLOSURE
 SHORT DURATION OR SHORT TERM STATIONARY



FAR SIDE RIGHT LANE CLOSURE
 SHORT DURATION OR SHORT TERM STATIONARY



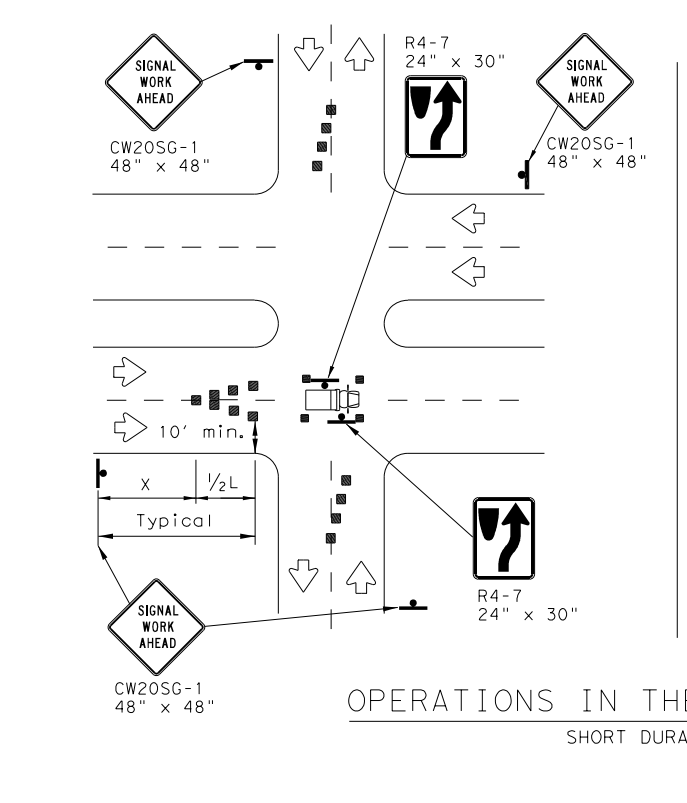
FAR SIDE LEFT LANE CLOSURE
 SHORT DURATION OR SHORT TERM STATIONARY

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

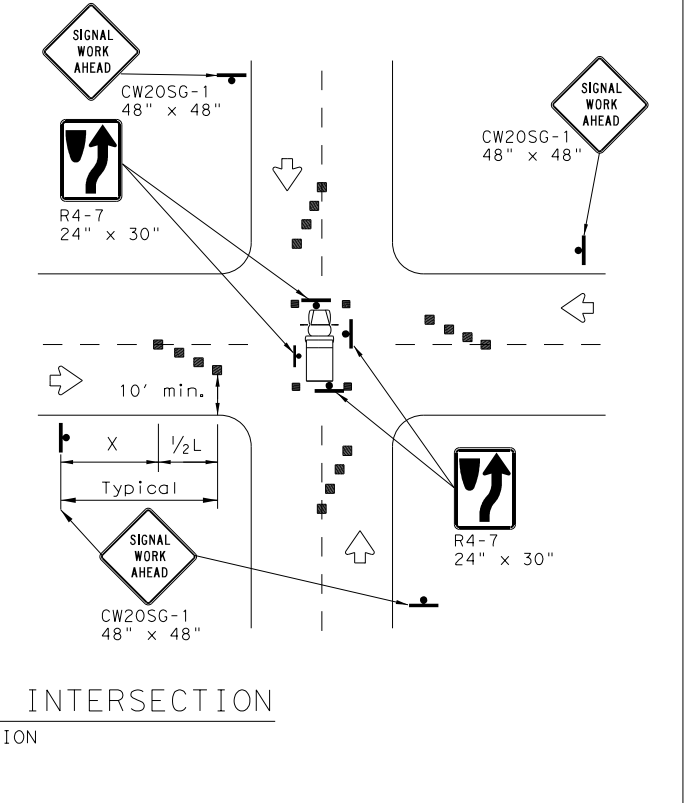
Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
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

- 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.
- Obstructions or hazards at the work area shall be clearly marked and delineated at all times.
- Flaggers and Flagger Symbol (CW20-7) signs may be required according to field conditions.
- Vehicles parked in roadway shall be equipped with at least two high intensity rotating, flashing, oscillating or strobe type lights.
- High level warning devices (flag trees) may be used at corners of the vehicle.
- 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.
- 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.
- 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.
- 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.

Texas Department of Transportation
 Traffic Operations Division Standard

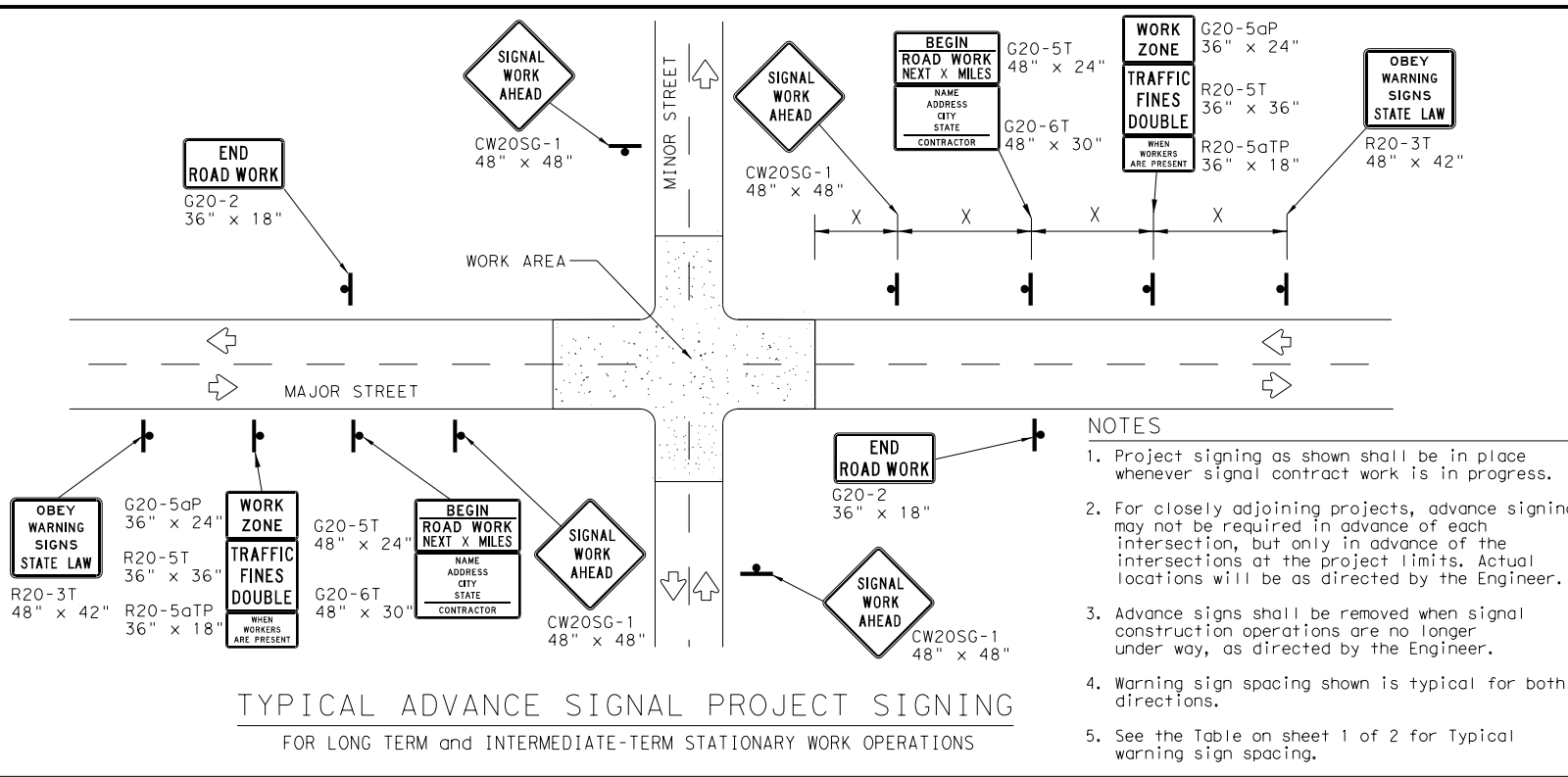
TRAFFIC SIGNAL WORK
 TYPICAL DETAILS

WZ(BTS-1)-13

FILE: wzbts-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
2-98 10-99 7-13	DIST	COUNTY	SHEET NO.	
4-98 3-03	BWD	LAMPASAS	325	

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.

DATE: 1/30/2023 13:11:59
 FILE: c:\pwworking\copy\pw_cpy\brandon_smi\th\0799555\WZ-BTS (2) -13.dgn



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 backfilled 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

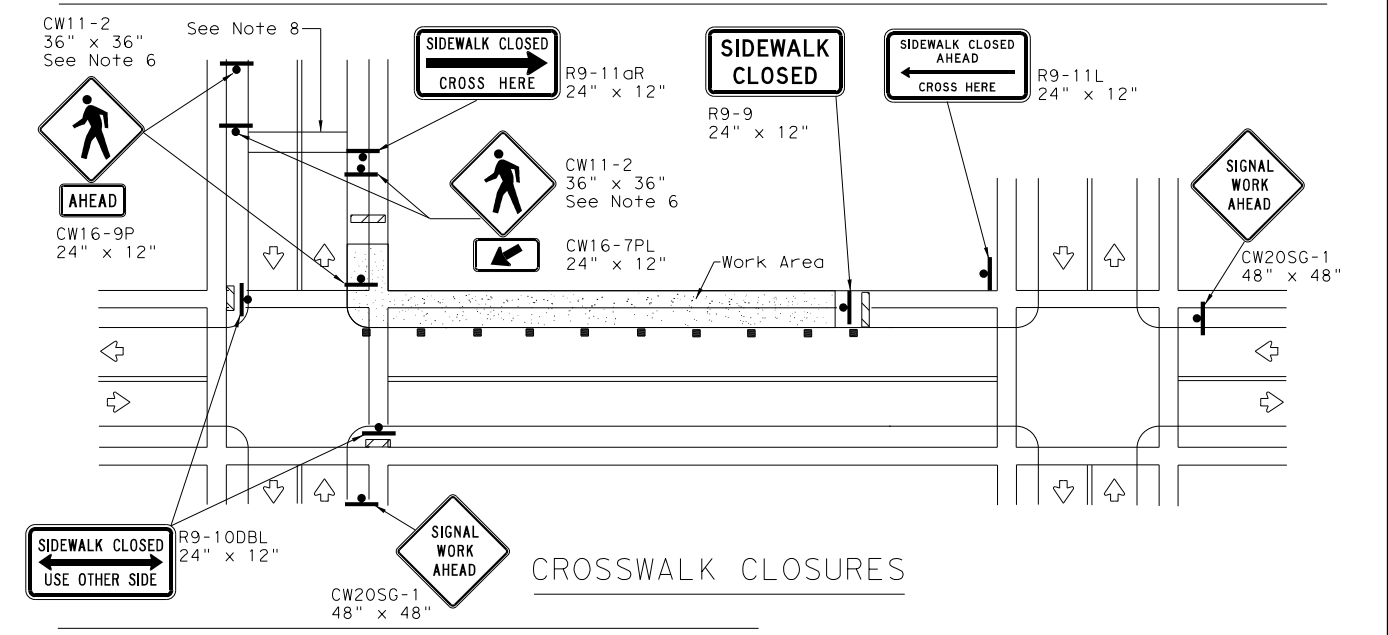
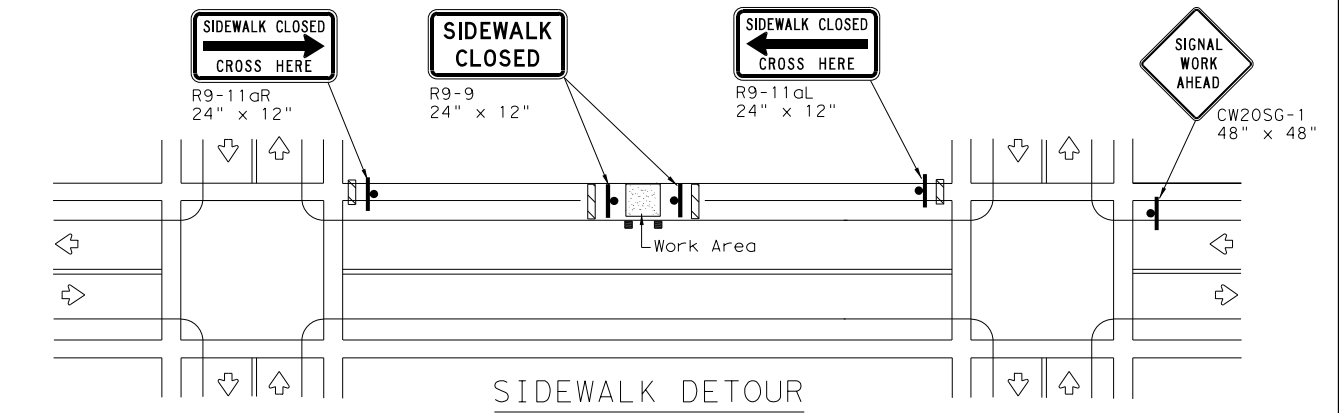
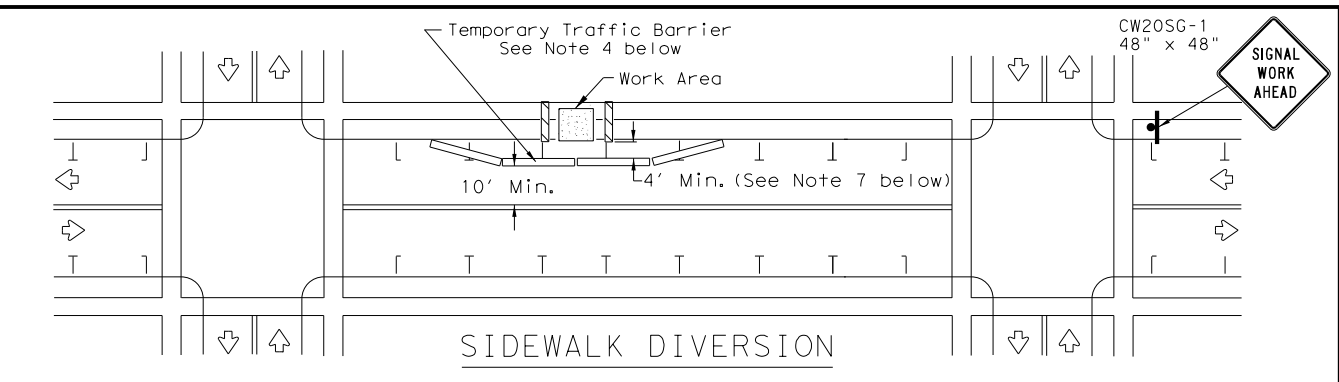
1. Weights used to keep signs from turning over should be sandbags filled with dry, cohesionless material.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects will not be permitted for use as sign support 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 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.

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



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.

SHEET 2 OF 2

		Traffic Operations Division Standard	
TRAFFIC SIGNAL WORK BARRICADES AND SIGNS			
WZ (BTS-2) - 13			
FILE: wzbts-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
© TxDOT April 1992	CONT	SECT	JOB
REVISIONS	0251	06	036
2-98 10-99 7-13	DIST	COUNTY	SHEET NO.
4-98 3-03	BWD	LAMPASAS	326

ROADWAY ILLUMINATION ASSEMBLY NOTES

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.

DATE: 1/30/2023 3:12:04
 FILE: c:\pwworking\cpw\pw_cpy\brandon_smi\th\d0799555\RID(1)-20.dgn

1. Details apply to roadway lighting installations bid or referenced under Item 610, "Roadway Illumination Assemblies." Provide, furnish, and install all other materials not shown on the plans which may be necessary for complete and proper construction. Where manufacturers provide warranties or guarantees as a customary trade practice, furnish to the State such warranties or guarantees.
2. The locations of poles and fixtures may be shifted by the Engineer to accommodate local conditions. Install or remove poles and luminaires located near overhead electrical lines using established industry and utility safety practices and in accordance with laws governing such work. Consult with the appropriate utility company prior to beginning such work.
3. Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electrical Code (NEC), TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA), and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as Canadian Standard Association, Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection.
4. Provide Roadway Illumination Light Fixtures as per TxDOT Departmental Material Specification (DMS) 11010, Item 610, and as shown on the Material Producers List (MPL) for Roadway Illumination and Electrical Supplies.
5. Fabricate steel roadway illumination poles in accordance with Roadway Illumination Poles (RIP) standards and Item 610. Poles fabricated according to RIP standards do not require shop drawing submittals.
 - a. Alternate designs to RIP standards or the use of aluminum to fabricate poles will require the submission of shop drawings electronically. For instructions on submitting shop drawings electronically see "Guide to Electronic Shop Drawing Submittal" on the TxDOT web site.
 - b. Limitations on use of the RIP standard: The RIP standard details were developed for installations in locations where the 3-second gust basic maximum wind speed is 110 mph, and where the elevation of the base of the pole is less than (i.e. not more than) 25' above the elevation of the surrounding terrain, in accordance with the "AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals," 6th Edition (2013) of the AASHTO Design Specifications. For poles to be installed in regions where the maximum basic wind speed exceeds 110 mph or to be mounted more than 25' above the surrounding terrain, provide poles meeting the following requirements:
 - i. Submittals. Following the electronic shop drawing submittal process (see Guide to Electronic Shop Drawing Submittal on the TxDOT web site), submit to the Engineer for approval fabrication drawings and calculations for the poles, sealed by a Texas licensed professional engineer (P.E.).
 - ii. Luminaire Structural Support Requirements. Provide light poles, arms, and anchor bolt assemblies with a 25 year design life to safely resist dead loads, ice loads and the required basic wind speeds at the location of installation in accordance with the 6th edition (2013) of the AASHTO Design Specifications. For transformer base poles, include transformer base and connecting hardware in calculations and shop drawing submittals. Structurally test all transformer bases to resist the theoretical plastic moment capacity of the pole. Submit certification of the plastic moment load test and FHWA breakaway requirement test of the model of base being furnished with the shop drawings. Show breakaway base model number, manufacturer's name, and logo on shop drawings. Include on manufacturer's shop drawings the ASTM designations for all materials to be used.
6. For both transformer and shoe-base type illumination poles, provide and install double-pole breakaway fuse holders as specified by DMS-11040. Breakaway fuse holders are listed on the MPL for Roadway Illumination and Electrical Supplies under Items 610 & 620. Provide 10 amp time delay fuses for breakaway connectors in light poles, or inside the light fixture for underpass luminaires. In each pole, connect luminaires to the breakaway connector with continuous stranded 12 AWG copper conductors as listed on the MPL. Bond all equipment grounding conductors together and to the ground lug in the transformer base or hand hole.
7. Tighten anchor bolts for shoe base, concrete traffic barrier base, and bridge mount roadway illumination poles, in accordance with Item 449.
8. Install T-Base with following procedure:
 - a. Anchor Bolt Tightening.
 - i. Coat the threads of the anchor bolts with electrically conductive lubricant.
 - ii. Place the T-base over the anchor bolts. Foundation must be level and flat. The maximum permissible gap under any one corner of the T-base is 1/8" before nuts are tightened.
 - iii. Coat the bearing surfaces of the nuts and washers with electrically conductive lubricant. Install (1) 1/2" hold down washer, (1) lock washer, and (1) nut on each anchor bolt. Turn the nuts onto the bolts so that each is hand-tight against the washer.
 - iv. Using a torque wrench, tighten each nut to 150 ft-lb. Uniform contact is required between the foundation and the T-base in the corner regions of the T-base, and all corner gaps must be closed after applying torque. If a gap still exists after torquing to 150 ft-lbs, continue torquing each bolt incrementally until gap is closed or maximum allowable torque of 250 ft. pound is reached, whichever comes first. If 250 ft-lbs is not enough to close the gap the foundation must be leveled. Gaps along the straight sides of the T-bases and the foundation are permissible. Ensure that no high point of contact occurs between the straight sides of the T-base and the foundation.
 - v. Check top of T-base for level. If not level then foundation must be leveled.
 - b. Top Bolt Procedure
 - i. Erect pole over T-base with crane. Coat bolts, nuts, washers, and lock washers with electrically conductive lubricant.

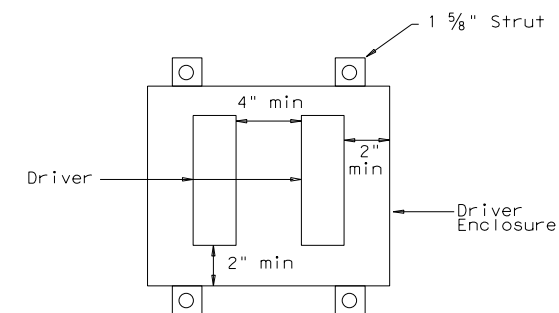
- ii. Install bolts and 1/2" connecting washers from the inside of the T-base, thread up through the pole base. Install flat washers, lock washers and nuts snug tight according to Item 447, "Structural Bolting."
- iii. Tighten each nut to 150 ft-lb. using a torque wrench.
- c. Level and Plumb
 - i. Ensure pole is plumb and mast arm is perpendicular to the roadway according to plans to within 5 degrees.
9. Construct luminaire pole foundations in accordance with Item 416, "Drilled Shaft Foundations," and TxDOT standard sheet RID(2).
10. Provide and install underpass luminaires in accordance with Item 610, DMS-11010, and TxDOT standard sheet RID(3). Typical luminaire size for underpass luminaires is 150W HPS or 150W EQ LED.
11. Mount luminaires on arms level as shown by the luminaire level indicator.
12. Orient luminaires perpendicular to the roadway intended to be lit unless otherwise shown on the plans.

Wiring Diagram Notes:

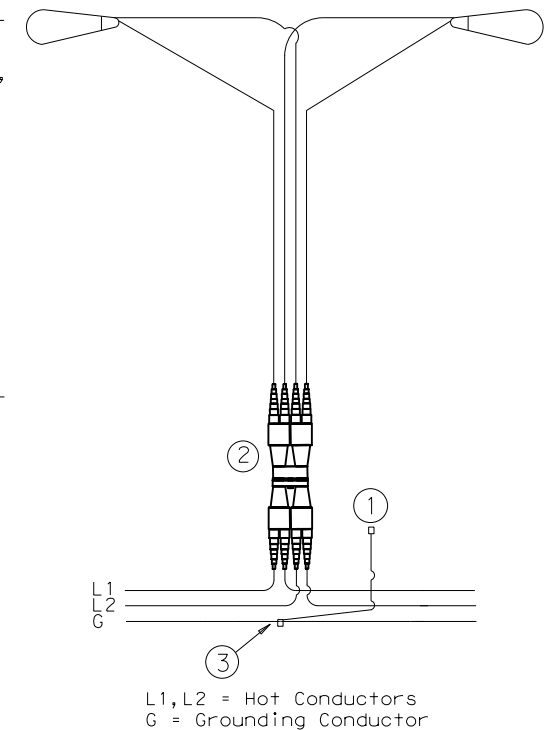
- ① Use 1/2 in. -13 UNC threaded, copper or tin-plated copper, pole bonding connector, sized appropriately for conductors, bonded to T-base, or use ground lug in handhole as available.
- ② Use pre-qualified two-pole breakaway connectors for all luminaire pole installations. For luminaires fed by a circuit with a neutral conductor, use double pole breakaway connectors with the neutral side unfused and marked white.
- ③ Split Bolt or other connector.

Decorative LED Lighting Notes:

1. LED Drivers in Remote Outdoor enclosures (for drivers that do not include an enclosure as part of a factory assembly):
 - a. Provide NEMA 3R outdoor enclosure or as approved.
 - b. Install enclosure at least 12" above ground or other horizontal surface. Mount vertically or on ceiling, and avoid direct sun where possible.
 - c. Install drivers with at least 2 inches of space from enclosure walls.
 - d. For multiple drivers in an enclosure, provide at least 4 inches side to side and 1 inch end to end from other drivers or electronic equipment
 - e. For drivers mounted on back wall of enclosure, mount enclosure on 1 5/8" strut or other standoff to dissipate heat, or mount driver to side of the enclosure or to the metal cover.
 - f. Provide remote drivers with a maximum of 100 watts
 - g. Provide drivers with documentation of 100,000 hr lifetime at Tcase of 65C or higher.



Driver Spacing In Remote Enclosure



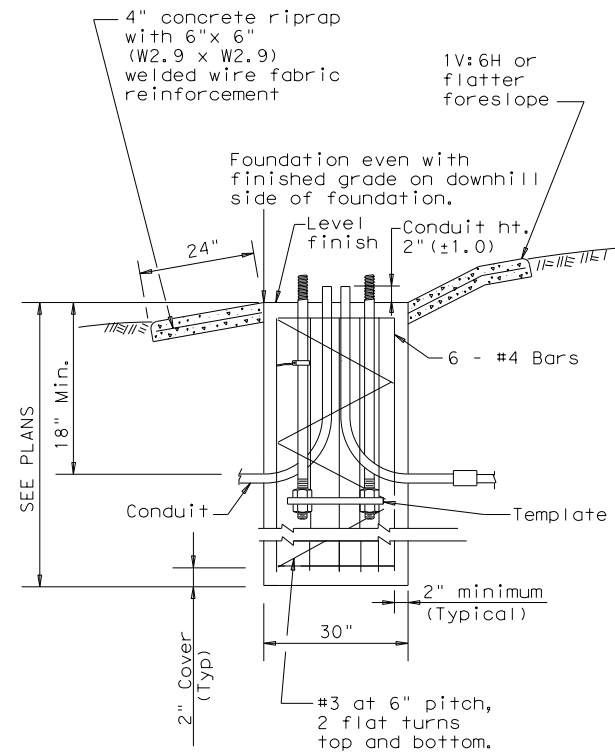
TYPICAL WIRING DIAGRAM

LUMINAIRES SERVED AT 480V ON 240/480 VOLT SERVICE OR LUMINAIRES SERVED AT 240V FOR 120/240 VOLT SERVICE.

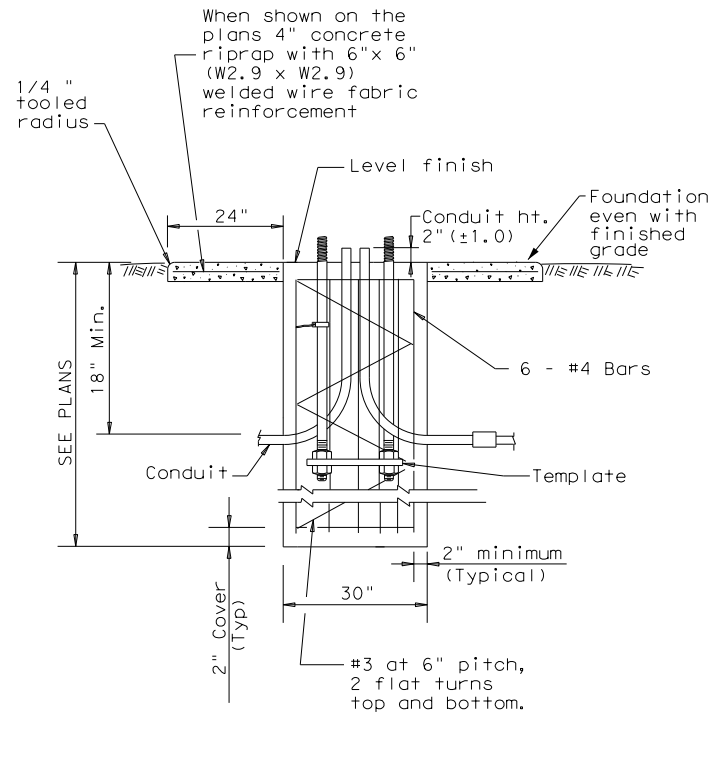
<h3>ROADWAY ILLUMINATION DETAILS</h3> <h3>RID(1)-20</h3>				
FILE: rid1-20.dgn	DN:	CK:	DW:	CK:
© TxDOT January 2007	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
7-17	DIST	COUNTY		SHEET NO.
12-20	BWD	LAMPASAS		327

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.

DATE: 1/30/2023 13:12:10
 FILE: c:\pwworking\cpw\pw_\cpw_\brandon.smi\th\0799555\RID(2)-20.dgn



SECTION A-A
SHOWING SLOPED GRADE



SECTION A-A
SHOWING CONSTANT GRADE

TABLE 1

ANCHOR BOLTS

POLE MOUNTING HEIGHT	BOLT CIRCLE		ANCHOR BOLT SIZE
	Shoe Base	T-Base	
<40 ft.	13 in.	14 in.	1 in. x 30 in.
40-50 ft.	15 in.	17 1/4 in.	1 1/4 in. x 30 in.

TABLE 2

RECOMMENDED FOUNDATION LENGTHS (See note 1)

MOUNTING HEIGHT	TEXAS CONE PENETROMETER N Blows/ft		
	10	15	40
≤20 ft.	6'	6'	6'
>20 ft. to 30 ft.	8'	6'	6'
>30 ft. to 40 ft.	8'	8'	6'
>40 ft. to 50 ft.	10'	8'	6'

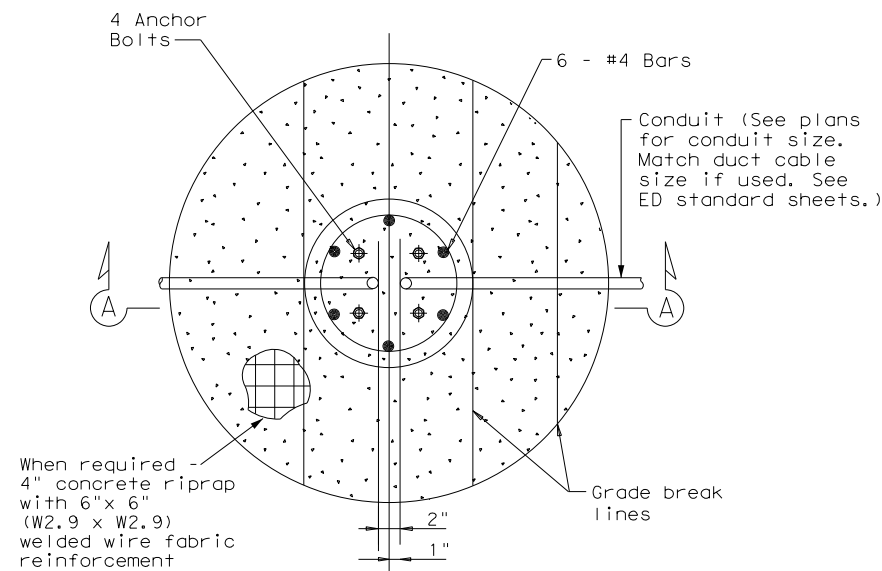
TABLE 3

PAY QUANTITY OF RIPRAP PER FOUNDATION (Install only when shown on the plans)

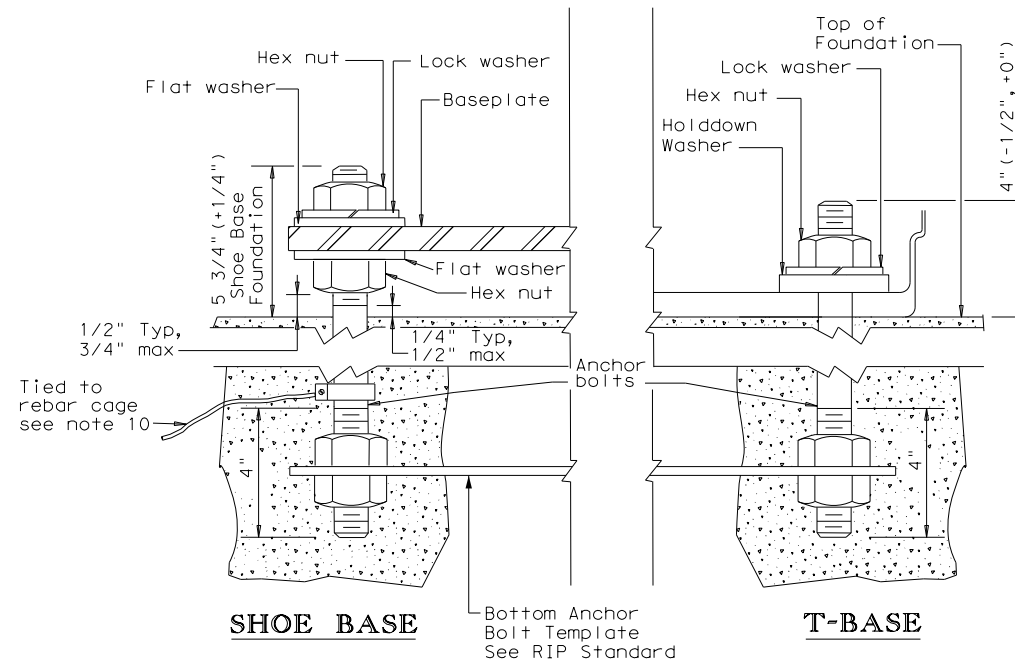
Foundation Diameter	RIPRAP DIAMETER	RIPRAP (CONC) (CL B)
30 in.	78 in.	0.35 CY

GENERAL NOTES:

- "Recommended Foundation Lengths" table is for information purposes only. Foundation lengths shall be as shown on the plans, or as directed by the Engineer. Foundations will be paid for under Item 416, "Drilled Shaft Foundations," unless otherwise shown on the plans.
- Erect roadway illumination assembly poles plumb and true. Form and level the top 6" of the foundation so the pole will be plumb. Use leveling nuts to plumb shoe base poles. Do not use shims or leveling nuts under transformer bases. Do not grout between baseplate and the foundation.
- Ensure Class 2A and 2B fit for anchor bolts and nuts. Tap and chase nuts after galvanizing. Anchor bolt body with rolled threads need not be full size.
- Use appropriate class of concrete as specified in Items 416 and 432. Concrete for riprap may be upgraded to Class C at no extra cost to the Department.
- Place riprap around the foundation when called for elsewhere in the plans. Riprap will be paid for under Item 432.
- Locate breakaway roadway illumination assemblies as shown in the placement table, unless otherwise dimensioned on the plans. Protect non-breakaway illumination assemblies from vehicular impact (i.e. 2.5 ft. behind guard rail or mounted on traffic barrier), or located outside the clear zone, except that 2.5 ft. from curb face is minimum desired for light poles on city streets, 45 mph or less. See Roadway Design Manual for further information.
- Use 4 hold down and 4 connecting washers on transformer base poles as recommended by the manufacturer and supplied with base.
- Install a minimum of 2 conduits in each foundation. See lighting layout sheets for locations of foundations with more than 2 conduits. Cap unused conduits in foundations on both ends.
- Conduit location in foundations is critical for breakaway devices. Place conduits 2 in. apart on centerline as shown.
- Bond anchor bolt to rebar cage with #6 bare stranded copper conductor. Use listed mechanical connectors rated for embedment in concrete. The bonded steel in the foundation creates a concrete encased grounding electrode which replaces the ground rod.
- Grade earthwork around T-base foundations even with the finished grade as shown in Section A-A to ensure proper function of the breakaway device. Use riprap on T-base foundations that are located on sloped grades, and as shown on the plans for level grades.



FOUNDATION DETAIL



ANCHOR BOLT DETAIL

TABLE 4

BREAKAWAY POLE PLACEMENT (See note 6)

ROADWAY FUNCTIONAL CLASSIFICATION	** POLE OFFSET (DISTANCE TO FACE OF TRANSFORMER BASE)
Freeway Mainlanes (roadway with full control of access)	15 ft. (minimum and typical) from lane edge
All curbed, 45 mph or less design speed	2.5 ft. minimum (15 ft. desirable) from curb face
All others	10 ft. minimum*(15 ft. desirable) from lane edge

* or as close to ROW line as is practical

** provide 2/5 of the luminaire mounting height behind the pole for "falling area" to prevent encroachment on the other travel lanes. See design guidelines.

Texas Department of Transportation
 Traffic Safety Division Standard

ROADWAY ILLUMINATION DETAILS (RDWY ILLUM FOUNDATIONS) RID(2)-20

FILE: rid2-20.dgn	DN:	CK:	DW:	CK:
© TxDOT January 2007	CON: 0251	SECT: 06	JOB: 036	HIGHWAY: US 281
1-11	REVISIONS		DIST: BWD	COUNTY: LAMPASAS
7-17				SHEET NO. 328
12-20				

72B

SHIPPING PARTS LIST - POLES AND LUMINAIRE ARMS

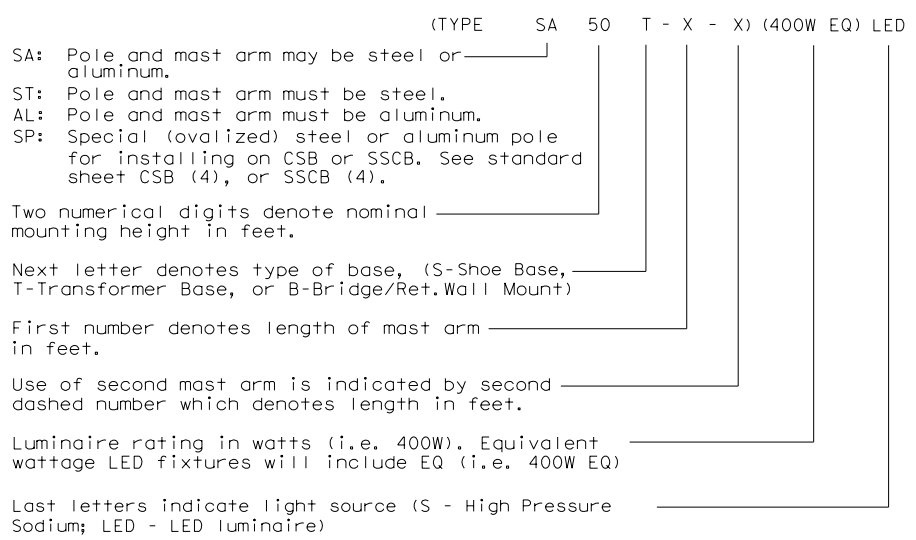
Nominal Mounting Ht. (ft)	Shoe Base				Quantity	T-Base				Quantity	CSB/SSCB Mounted				Quantity
	Designation					Designation					Designation				
	Pole	A1	A2	Luminaire		Pole	A1	A2	Luminaire		Pole	A1	A2	Luminaire	
20	(Type SA 20 S - 4)			(150W EQ) LED		(Type SA 20 T - 4)			(150W EQ) LED						
	(Type SA 20 S - 4 - 4)			(150W EQ) LED		(Type SA 20 T - 4 - 4)			(150W EQ) LED						
30	(Type SA 30 S - 4)			(250W EQ) LED		(Type SA 30 T - 4)			(250W EQ) LED		(Type SP 28 S - 4)		(250W EQ) LED		
	(Type SA 30 S - 4 - 4)			(250W EQ) LED		(Type SA 30 T - 4 - 4)			(250W EQ) LED		(Type SP 28 S - 4 - 4)		(250W EQ) LED		
40	(Type SA 30 S - 8)			(250W EQ) LED		(Type SA 30 T - 8)			(250W EQ) LED		(Type SP 28 S - 8)		(250W EQ) LED		
	(Type SA 30 S - 8 - 8)			(250W EQ) LED		(Type SA 30 T - 8 - 8)			(250W EQ) LED		(Type SP 28 S - 8 - 8)		(250W EQ) LED		
	(Type SA 40 S - 4)			(250W EQ) LED		(Type SA 40 T - 4)			(250W EQ) LED		(Type SP 38 S - 4)		(250W EQ) LED		
	(Type SA 40 S - 4 - 4)			(250W EQ) LED		(Type SA 40 T - 4 - 4)			(250W EQ) LED		(Type SP 38 S - 4 - 4)		(250W EQ) LED		
	(Type SA 40 S - 8)			(250W EQ) LED		(Type SA 40 T - 8)			(250W EQ) LED		(Type SP 38 S - 8)		(250W EQ) LED		
	(Type SA 40 S - 8 - 8)			(250W EQ) LED		(Type SA 40 T - 8 - 8)			(250W EQ) LED		(Type SP 38 S - 8 - 8)		(250W EQ) LED		
	(Type SA 40 S - 10)			(250W EQ) LED		(Type SA 40 T - 10)			(250W EQ) LED		(Type SP 38 S - 10)		(250W EQ) LED		
	(Type SA 40 S - 10 - 10)			(250W EQ) LED		(Type SA 40 T - 10 - 10)			(250W EQ) LED		(Type SP 38 S - 10 - 10)		(250W EQ) LED		
50	(Type SA 40 S - 12)			(250W EQ) LED		(Type SA 40 T - 12)			(250W EQ) LED		(Type SP 38 S - 12)		(250W EQ) LED		
	(Type SA 40 S - 12 - 12)			(250W EQ) LED		(Type SA 40 T - 12 - 12)			(250W EQ) LED		(Type SP 38 S - 12 - 12)		(250W EQ) LED		
	(Type SA 50 S - 4)			(400W EQ) LED		(Type SA 50 T - 4)			(400W EQ) LED		(Type SP 48 S - 4)		(400W EQ) LED		
	(Type SA 50 S - 4 - 4)			(400W EQ) LED		(Type SA 50 T - 4 - 4)			(400W EQ) LED		(Type SP 48 S - 4 - 4)		(400W EQ) LED		
	(Type SA 50 S - 8)			(400W EQ) LED		(Type SA 50 T - 8)			(400W EQ) LED		(Type SP 48 S - 8)		(400W EQ) LED		
	(Type SA 50 S - 8 - 8)			(400W EQ) LED		(Type SA 50 T - 8 - 8)			(400W EQ) LED		(Type SP 48 S - 8 - 8)		(400W EQ) LED		
	(Type SA 50 S - 10)			(400W EQ) LED		(Type SA 50 T - 10)			(400W EQ) LED		(Type SP 48 S - 10)		(400W EQ) LED		
	(Type SA 50 S - 10 - 10)			(400W EQ) LED		(Type SA 50 T - 10 - 10)			(400W EQ) LED		(Type SP 48 S - 10 - 10)		(400W EQ) LED		
	(Type SA 50 S - 12)			(400W EQ) LED		(Type SA 50 T - 12)			(400W EQ) LED	30	(Type SP 48 S - 12)		(400W EQ) LED		
	(Type SA 50 S - 12 - 12)			(400W EQ) LED		(Type SA 50 T - 12 - 12)			(400W EQ) LED		(Type SP 48 S - 12 - 12)		(400W EQ) LED		

OTHER				
Designation				Quantity
Pole	A1	A2	Luminaire	

GENERAL NOTES:

- All work, materials and services not shown on the plans which may be necessary for complete and proper construction shall be performed, furnished and installed by the Contractor. Faulty fabrication or poor workmanship in any material, equipment or installation will be considered justification for rejection. Where manufacturers provide warranties or guarantees as a customary trade practice, furnish to the Department such warranties or guarantees.
- The location of poles and fixtures are diagrammatic only and may be shifted by the Engineer to accommodate local conditions. Install or remove poles and luminaires located near overhead electrical lines using established industry and utility safety practices and in accordance with laws governing such work. Consult with the appropriate utility company prior to beginning such work.
- Standard Steel Pole Designs. Steel poles fabricated in accordance with the details and dimensions shown herein, shall be considered standard designs. Submission of shop drawings and design calculations for standard designs is not required.
- Optional Steel Pole Designs. Multi-sided steel poles may be allowed as optional designs, if steel poles are permitted or required, pending approval by the Department as outlined below.
 - Shop Drawings. Optional designs require submission of shop drawings and design calculations bearing the seal of an engineer licensed in the State of Texas, in accordance with Item 441, "Steel Structures." The Department may elect to pre-approve some shop drawings for optionally designed poles. Submission of shop drawings and design calculations is not required for structures fabricated in accordance with the details of shop drawings on the pre-approved list maintained by the TxDOT Traffic Operations Division. Any deviation from the pre-approved shop drawings will require submission of shop drawings of the complete assembly and design calculations as described above.
 - Structural Support Design for Luminaires. Lighting support structures shall be designed for a 25 year design life in accordance with the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 6th Edition (2013) and Interim Revisions thereto. All poles shall be designed for 110 mph 3-second gust wind speeds. The Gust Factor, G, and Wind Importance Factor, Ir, shall be applied as per the AASHTO Specifications assuming a 25-year design life. The design wind pressure for hurricane wind velocities greater than 100 mph shall not be less than the design wind pressure using 100 mph with the non-hurricane Wind Importance Factor, Ir, value. For transformer base poles, fabricator shall include transformer base and connecting hardware in design calculations and shop drawing submittals. All transformer bases shall have been structurally tested to resist the theoretical plastic moment capacity of the pole. Certification of the plastic moment load test and FHWA breakaway requirement test of the model of base being furnished shall be submitted with the shop drawings. Shop drawings shall show breakaway base model number, and manufacturer's name and logo. Manufacturer's shop drawings shall include the ASTM designations for all materials to be used.
 - Mast Arm Attachments. All poles and attachments shall be structurally designed to support two 12-foot mast arms and luminaires. Poles shall be supplied with mast arm combinations as shown in the plans. All mast arms shall be designed for a 60-pound luminaire having an effective projected area of 1.6 square feet.
 - Anchor Bolt Assembly. Anchor bolt assemblies for optionally designed poles shall be the same as those shown herein.
- Aluminum Pole Designs. Aluminum pole designs may be allowed, if aluminum poles are permitted or required, pending approval by the Department as outlined below.
 - Meet all of the requirements stated above for optional steel pole designs and the following:
 - Aluminum poles shall be fabricated in accordance with "Structural Welding Code-Aluminum" AWS D1.2.
 - Aluminum pole designs shall use the same anchor bolt assembly and be subject to the same geometric restraints and other requirements for steel poles specified herein.
 - Aluminum poles shall be equipped with vibration mitigation devices, as approved by the engineer.
 - Pole components shall be constructed using the following material:
 - Shaft: ASTM B221 or B241 Alloy 6063-T6, ASTM B209 Alloy 5086-H34, ASTM B221 Alloy 6005-T5.
 - Base Flange: ASTM B26 Alloy 356.0-T6 or ASTM B108 Alloy 356.0-T6 (Yield strength test required).
 - Mast Arm Fitting: ASTM B209 Alloy 6061-T6 or ASTM B221 Alloy 6005-T5.
 - Mast Arms: ASTM B241 Alloy 6061-T6 or Alloy 6063-T6.
 - Pole Cap: ASTM B209 Alloy 5086-H32 or ASTM B108 or B26 Alloy 356.0-T6.
 - Bolts: Stainless Steel AISI 300 series. Bolts threading into aluminum threads shall be treated with anti-seize compound, Never-Seez Compound, Permatex 133K or equal.
- Special Designs. Poles with architectural treatments shall meet the requirements shown elsewhere in the plans.
- Luminaire Mounting Height. Actual luminaire mounting height shall be the nominal mounting height given on RIP(2) for all pole-arm combinations except for poles with 4 ft. luminaire arms, which shall be 3'-0" lower than the nominal height, unless otherwise shown or directed.

EXPLANATION OF ROADWAY ILLUMINATION ASSEMBLY DESIGNATIONS

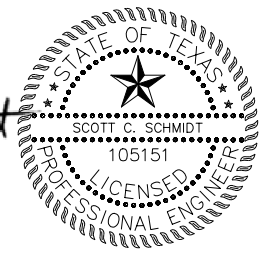


DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.
 DATE: 1/30/2023 13:12:16
 FILE: c:\pwworking\cpw\pwworking\brandon_smi\th\0799555\RIIP(1-4)-19.dgn



ROADWAY ILLUMINATION POLES
RIP(1)-19

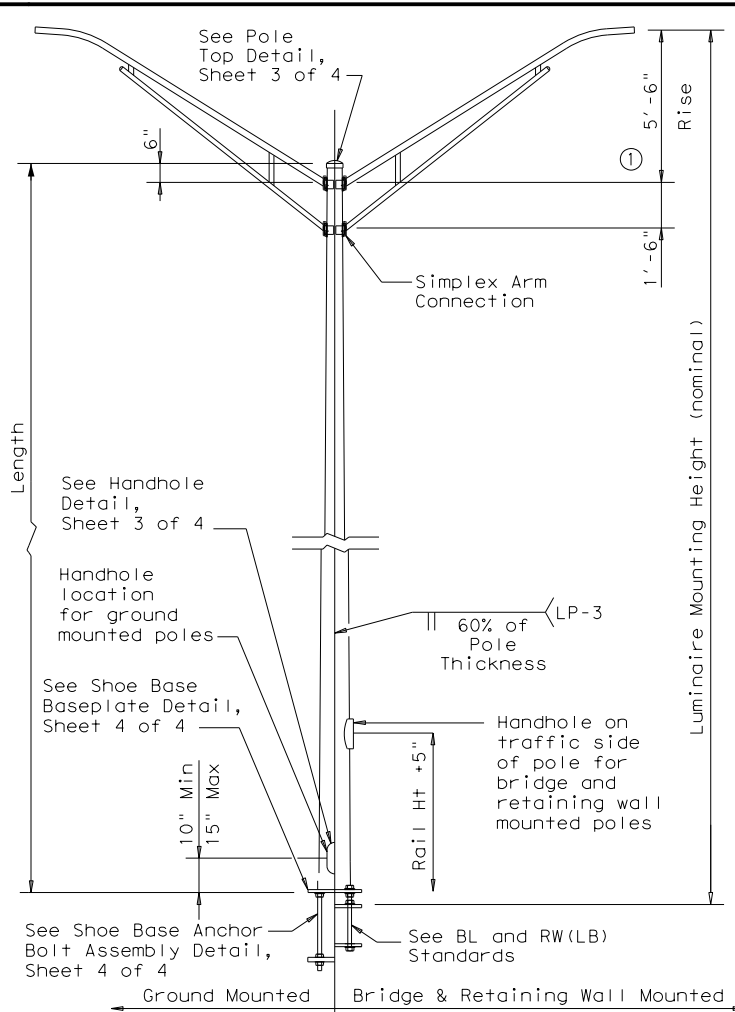
FILE: rip-19.dgn	DN:	CK:	DW:	CK:
©TxDOT January 2007	CON:	SECT:	JOB:	HIGHWAY:
7-17	0251	06	036	US 281
12-19	DIST:	COUNTY:	SHEET NO.	
	BWD	LAMPASAS	329	



Scott Schmidt
 1/30/2023

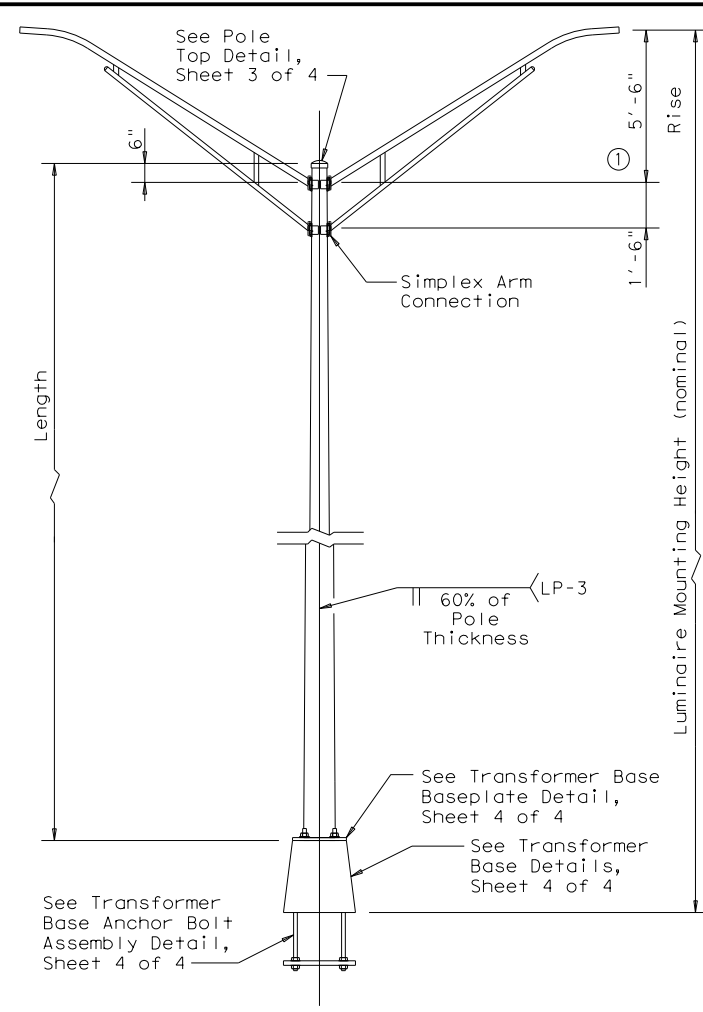
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 1/30/2023 13:12:18
 FILE: c:\pwworking\cpw\pw_cpy\brandon_smi\tn\d0799555\RIP(1-4)-19.dgn



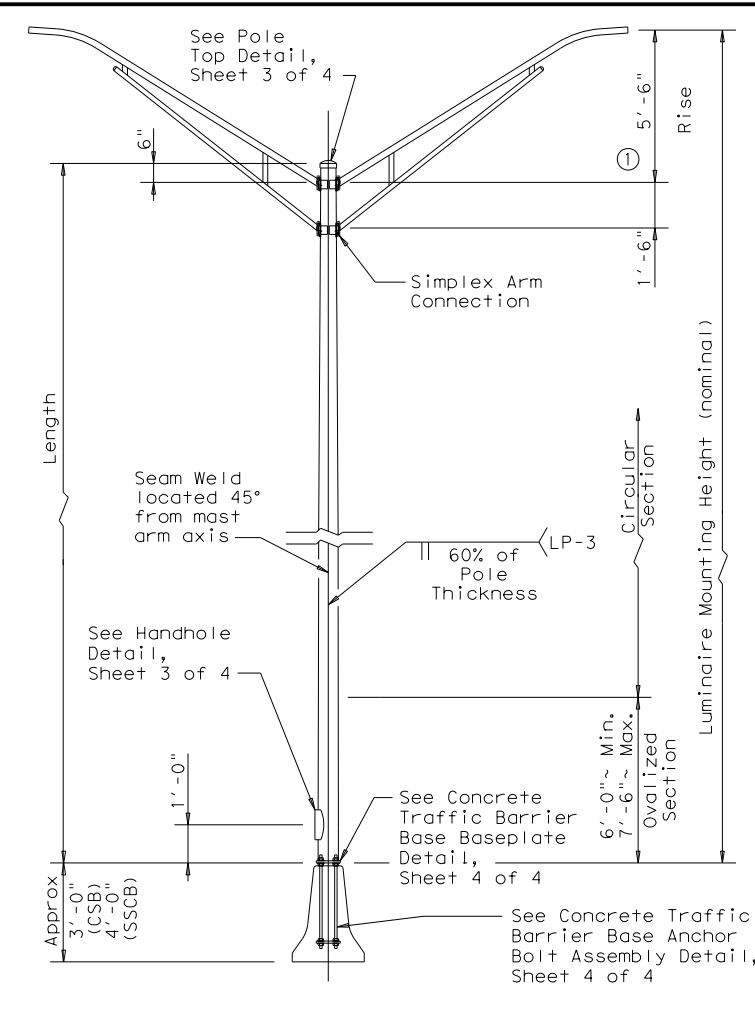
SHOE BASE POLE

SHOE BASE POLE					
Luminaire Mounting Height (Nominal) (ft)	Base Diameter (in)	Top Diameter (in)	Length (ft)	Pole Thickness (in)	Design Moment (K-ft)
20.00	7.00	4.90	15.00	0.1196	7.1
30.00	7.50	4.00	25.00	0.1196	13.2
31.00-39.00	8.00	4.36-3.24	26.00-34.00	0.1196	20.7
40.00	8.50	3.60	35.00	0.1196	20.7
50.00	10.50	4.20	45.00	0.1196	30.3



TRANSFORMER BASE POLE

TRANSFORMER BASE POLE					
Luminaire Mounting Height (Nominal) (ft)	Base Diameter (in)	Top Diameter (in)	Length (ft)	Pole Thickness (in)	Design Moment (K-ft)
20.00	7.00	5.11	13.50	0.1196	7.1
30.00	7.50	4.21	23.50	0.1196	13.2
31.00-39.00	8.00	4.57-3.45	24.50-32.50	0.1196	20.7
40.00	8.50	3.81	33.50	0.1196	20.7
50.00	10.00	3.91	43.50	0.1196	30.3



CONCRETE TRAFFIC BARRIER BASE POLE

CONCRETE TRAFFIC BARRIER BASE POLE (CSB/SSCB)						
Luminaire Mounting Height (Nominal) (ft)	Base Diameter (in)	Top Diameter (in)	Length (ft)	Pole Thickness (in)	Design Moment (K-ft)	
					About of Rail	Perp. to Rail
28.00	9.00	5.78	23.00	0.1196	10.3	13.2
38.00	9.00	4.38	33.00	0.1196	16.6	20.8
48.00	10.50	4.48	43.00	0.1345	25.1	30.5

MATERIAL DATA

COMPONENT	ASTM DESIGNATION	MIN. YIELD (ksi)
Pole Shaft (0.14"/ft. Taper)	A572 Gr 50, A595 Gr A, A1011 HSLAS Gr 50 Cl 2 ③, or A1008 HSLAS Gr 50 Cl 2	50
Base Plate and Handhole Frame	A572 Gr.50, or A36	36
T-Base Connecting Bolts	F3125 Gr A325	92
Anchor Bolts		
Anchor Bolt Templates	A36	36
Heavy Hex (H.H.) Nuts	A194 Gr 2H, or A563 Gr DH	
Flat Washers	F436	

NOTES:

- 2'-6" rise for 4 ft. luminaire arms.
- Before ovalized as shown on Concrete Traffic Barrier Base Baseplate details, Sheet 4 of 4.
- A1011 SS Gr 50 may be used instead of HSLAS, provided the material meets the elongation requirements for HSLAS.

POLE ASSEMBLY FABRICATION TOLERANCES TABLE

DIMENSION	TOLERANCE
Shaft length	+1"
I.D. of outside piece of slip fitting pieces	+1/8", -1/16"
O.D. of inside piece of slip fitting pieces	+1/32", -1/8"
Shaft diameter: other	+3/16"
Out of "round"	1/4"
Straightness of shaft	±1/4" in 10 ft
Twist in multi-sided shaft	4° in 50 ft
Perpendicular to baseplate	1/8" in 24"
Pole centered on baseplate	±1/4"
Location of Attachments	±1/4"
Bolt hole spacing	±1/16"

SHEET 2 OF 4



ROADWAY ILLUMINATION POLES

RIP(2)-19

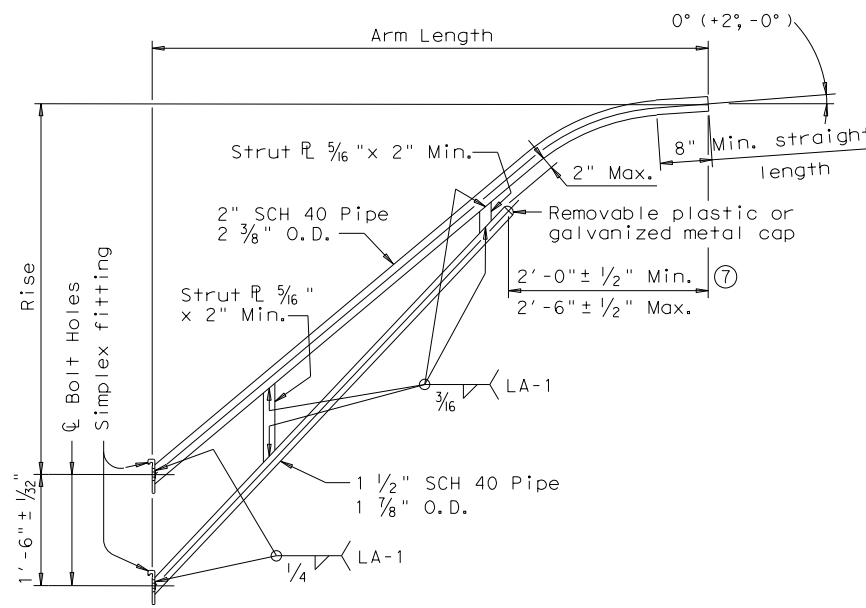
FILE: rip-19.dgn	DN:	CK:	DW:	CK:
© TxDOT January 2007	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
7-17	DIST	COUNTY	SHEET NO.	
12-19	BWD	LAMPASAS	330	

GENERAL NOTES:

- Designs conform to AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 6th Edition (2013) and Interim Revisions thereto. Design 3-Second Gust Wind Speed equals 110 mph with a 1.14 gust factor. A wind importance factor of 0.80 is applied to adjust the wind speed to a 25 year recurrence interval. Design moments listed in tables assume base of pole is 25' above natural ground level.
- Structures are designed to support two 12' luminaire mast arms and luminaires. Mast arms are designed to support a 60-pound luminaire having an effective projected area of 1.6 square feet.
- Fabrication shall be in accordance with the Specifications and with the details, dimensions, and weld procedures shown herein. Do not submit shop drawings for roadway illumination pole assemblies fabricated in accordance 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 these sheets and the Specifications. In the absence of specified fabrication tolerances, dimensions shall be within the tolerances generally obtainable in normal fabrication practice.
- For mounting heights between values shown in the tables, use base diameter and thickness values for the larger height.
- Unless otherwise noted, all steel parts shall be galvanized in accordance with Item 445, "Galvanizing."
- Steel poles shall be fabricated in accordance with Item 441, "Steel Structures." Longitudinal seam welds for pole sections shall have 60% minimum penetration. All welding shall be in accordance with AWS D1.1, Structural Welding Code-Steel.
- Two-section poles joined by circumferential welds will not be permitted, unless otherwise shown on the plans. Poles may be fabricated in two sections and field-assembled by the lap-joint method. The two sections shall telescope together with a lap length of not less than 1-1/2 times the shaft diameter at the lap joint.
- Alternate material equal to or better than material specified may be substituted with the approval of the Engineer.
- Lubricate and tighten anchor bolts, when erecting shoe base poles and concrete traffic barrier base poles, in accordance with Item 449, "Anchor Bolts."
- All poles, except Transformer Base Poles, shall have hand holes with reinforcing frames and covers. For ground mounted shoe base poles, hand holes shall be placed 90 degrees to mast arm unless otherwise noted on the plans. For poles mounted on a concrete traffic barrier with one luminaire arm, hand holes shall be located 180 degrees from luminaire arm. For poles mounted on a concrete traffic barrier with two luminaire arms, all hand holes shall be on the same side of the barrier. For poles mounted on a bridge lighting bracket or a retaining wall lighting bracket, hand hole shall be on traffic side of the pole, at a height that will clear the barrier.
- The finished pole shall have a smooth, uniform finish free of pits, blisters, or other defects. Scratched, chipped, and other damaged galvanized areas on poles and mast arms shall be repaired in accordance with Item 445, "Galvanizing."
- Pole length is based on a 5'-6" luminaire arm rise. 4 ft. luminaire arms have a 2'-6" rise. A pole with 4 ft. luminaire arms will have an actual mounting height 3'-0" less than the nominal mounting height. Increasing the pole length to meet the nominal mounting height is allowed, but unnecessary unless otherwise directed by the engineer.
- Erect transformer base poles in accordance with sheet RID(1).

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.

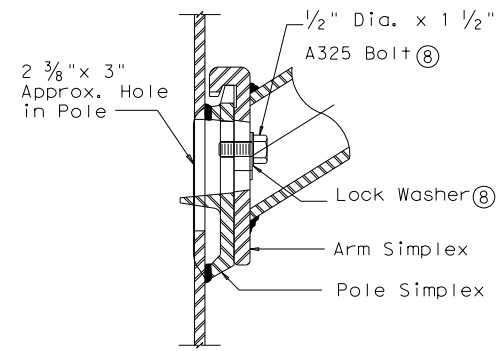
DATE: 1/30/2023 13:12:18
 FILE: c:\pwworking\cpw\pw_brandon_smi\h\d0799555\RIP(1-4)-19.dgn



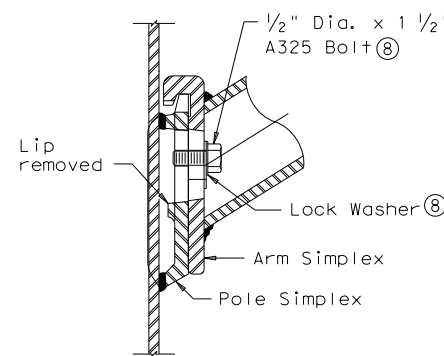
LUMINAIRE ARM

LUMINAIRE ARM DIMENSIONS		
Nominal Arm Length	Arm Length	Rise
4'-0"	3'-6"	2'-6"
6'-0"	5'-6"	5'-6"
8'-0"	7'-6"	5'-6"
10'-0"	9'-6"	5'-6"
12'-0"	11'-6"	5'-6"

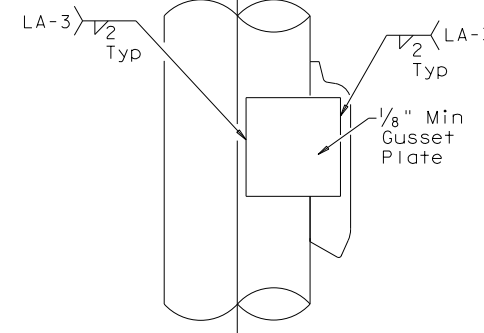
ARM ASSEMBLY FABRICATION TOLERANCES TABLE	
DIMENSION	TOLERANCE
Arm Length	±1"
Arm Rise	±1"
Deviation from flat	1/8" in 12"
Spacing between holes	±1/32"



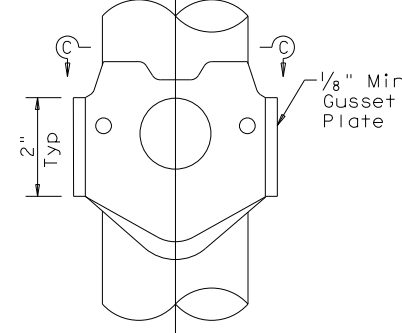
UPPER SIMPLEX FITTING
(Gusset not shown for clarity)



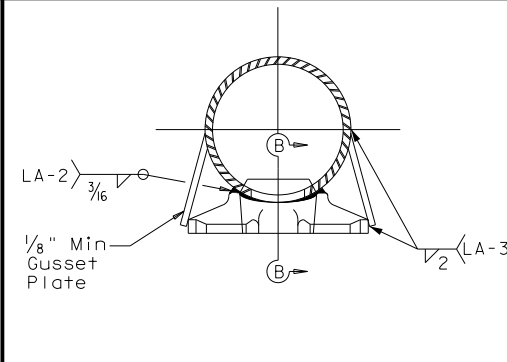
LOWER SIMPLEX FITTING
(Gusset not shown for clarity)



SIDE

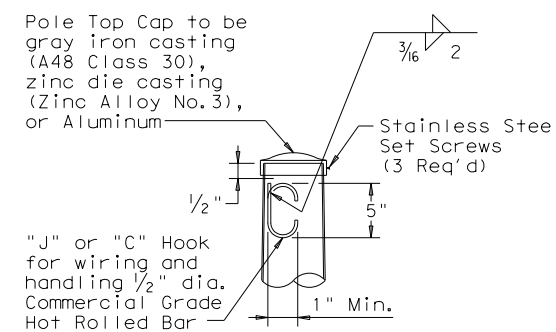


ELEVATION

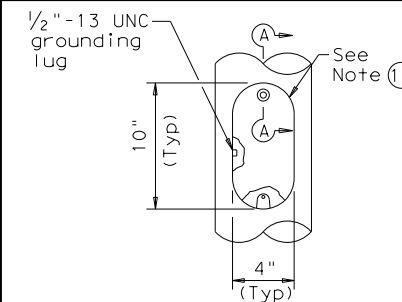


SECTION C-C

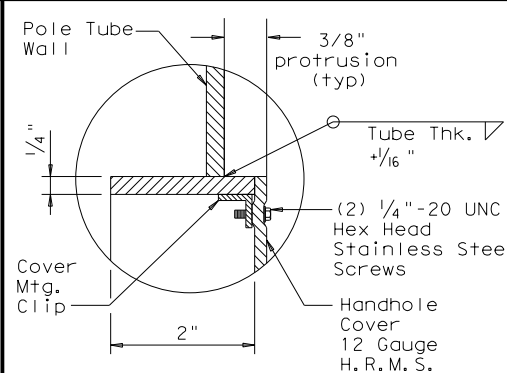
SIMPLEX ATTACHMENT DETAIL



POLE TOP

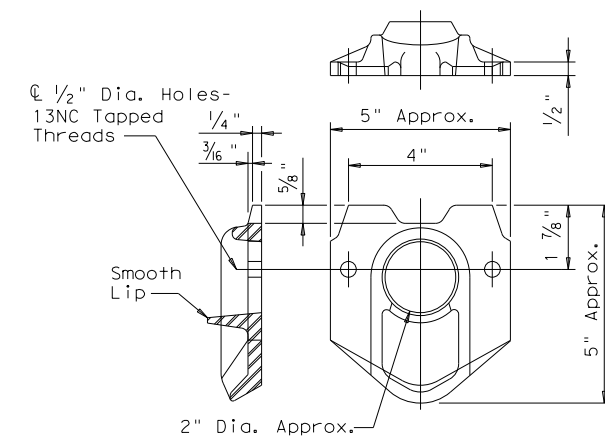


ELEVATION

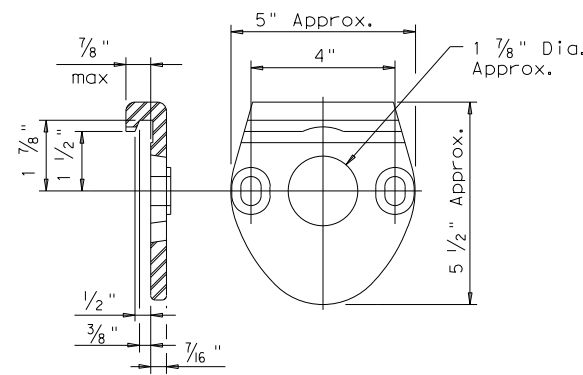


SECTION A-A

HANDHOLE



POLE SIMPLEX DETAIL



ARM SIMPLEX DETAIL

NOTES:

- ④ Any of the materials listed for plates may be used where the drawings do not specify a particular ASTM designation.
- ⑤ 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.
- ⑥ A572, A1008 HSLAS-F, and A1011 HSLAS-F materials may have higher yield strengths but shall not have less elongation than the grade indicated.
- ⑦ 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.
- ⑧ Each pole simplex fitting shall be supplied with 2 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.
- ⑨ Proposed deviations in arm simplex dimensions or materials must be submitted to the Department for approval.
- ⑩ A welded handhole frame is permissible. Maximum of two (2) CJP weld splices is allowed.

MATERIALS

Pole or Arm Simplex	ASTM A27 Gr 65-35 or Gr 70-36, A148 Gr 80-50, A576 Gr 1021 ⑤, or A36 (Arm only)
Arm Pipes	ASTM A53 Gr A or B, A500 Gr B, A501, A 1008 HSLAS-F Gr 50 ⑥, or A1011 HSLAS-F Gr 50 ⑥
Arm Struts and Gusset Plates ④	ASTM A36, A572 Gr 50 ⑥, or A588
Misc.	ASTM designations as noted

SHEET 3 OF 4



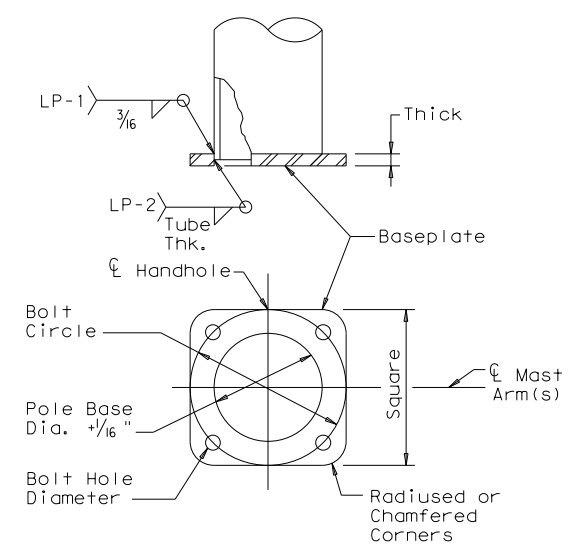
ROADWAY ILLUMINATION POLES

RIP(3)-19

FILE: rip-19.dgn	DN:	CK:	DW:	CK:
©TxDOT January 2007	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
7-17	DIST	COUNTY	SHEET NO.	
12-19	BWD	LAMPASAS	331	

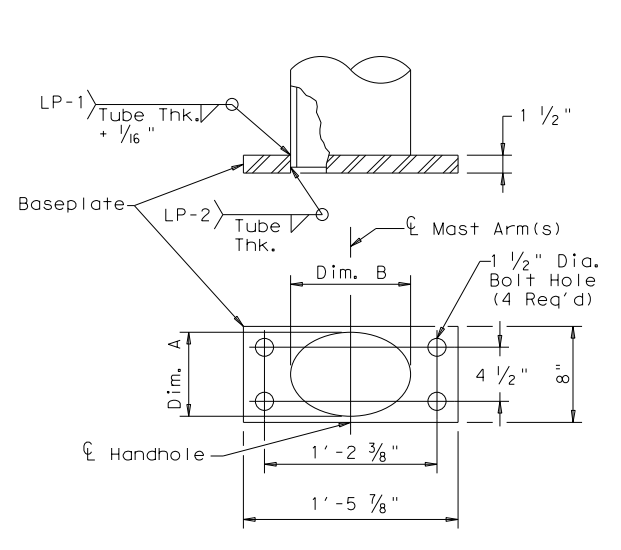
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 1/30/2023 13:12:19
 FILE: c:\pwworking\cpw\pw_cpy\brandon_smi\h\d0799555\RIP(1-4)-19.dgn



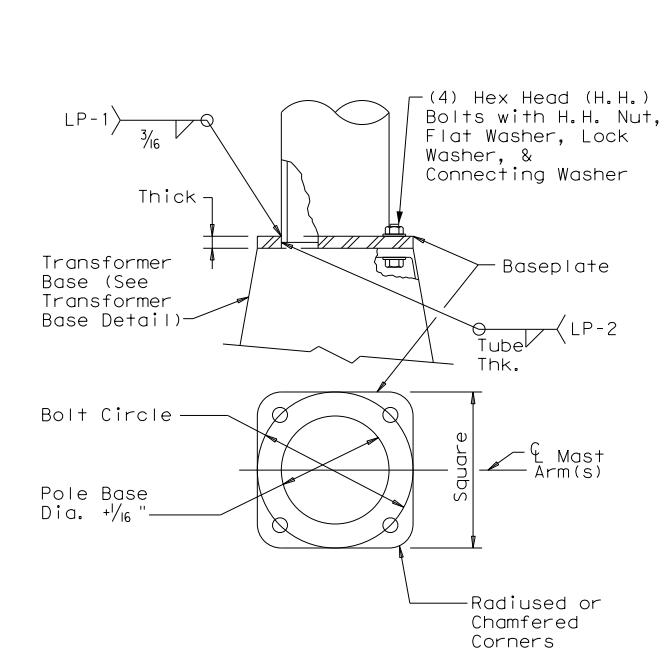
SHOE BASE BASEPLATE

SHOE BASE BASEPLATE TABLE				
MOUNTING HEIGHTS (nominal)	BOLT CIRCLE	SQUARE	THICK	BOLT HOLE DIAMETER
20' - 39'	13"	13"	1 1/4"	1 1/4"
40'	15"	15"	1 1/4"	1 1/2"
50'	15"	15"	1 1/2"	1 1/2"



CONCRETE TRAFFIC BARRIER BASE BASEPLATE

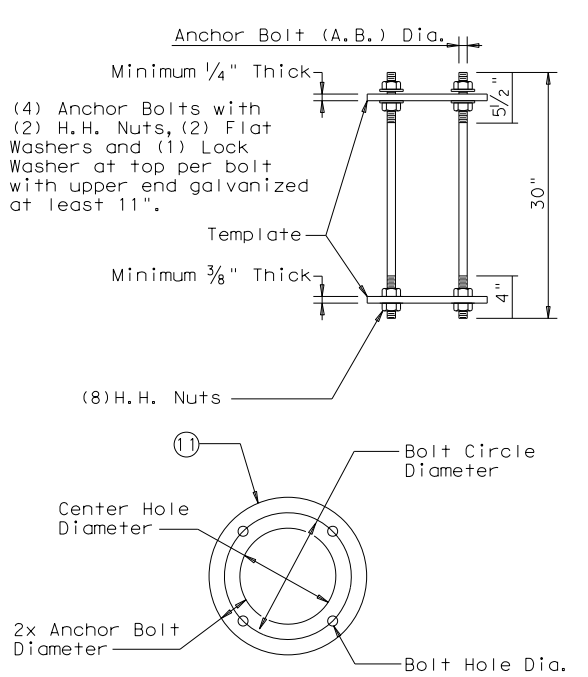
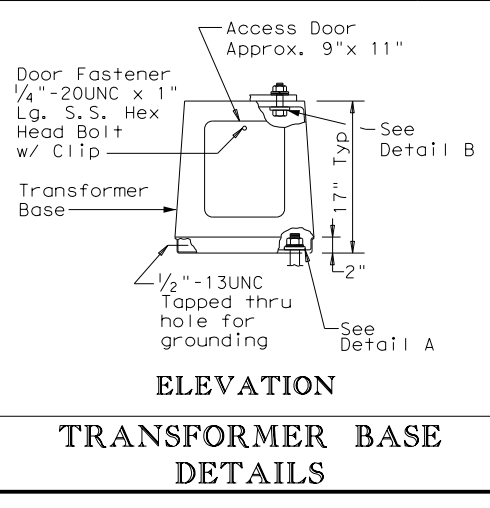
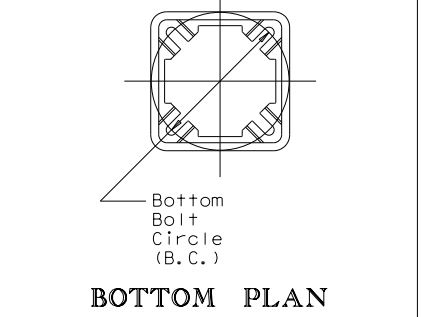
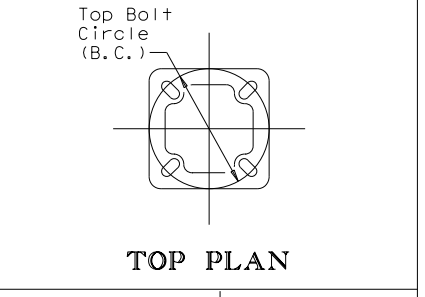
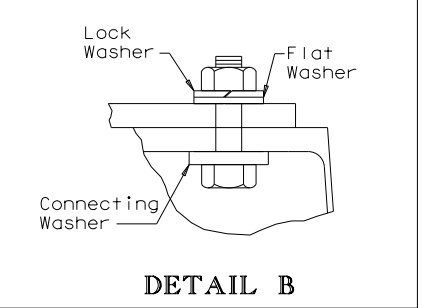
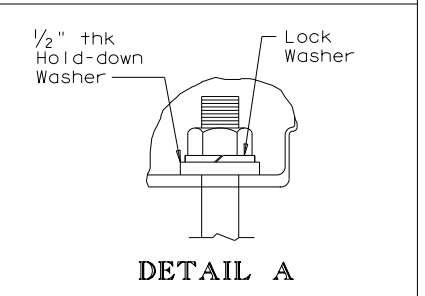
CONCRETE TRAFFIC BARRIER BASE BASEPLATE TABLE			
MOUNTING HEIGHTS (nominal)	POLE DIA. (12)	DIM. A	DIM. B
28' - 38'	9"	7" ± 1/4"	10" ± 1/4"
48'	10 1/2"	7" ± 1/4"	13" ± 1/4"



TRANSFORMER BASE BASEPLATE

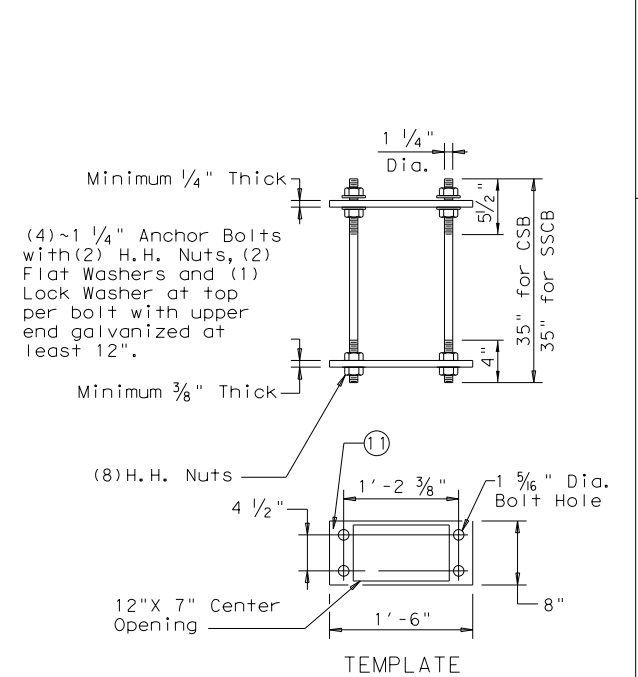
TRANSFORMER BASE BASEPLATE TABLE						
MOUNTING HEIGHTS (nominal)	BOLT CIRCLE	SQUARE	THICK	CONNECTING BOLT DIA.	BOLT HOLE DIAMETER	TRANSFORMER BASE TYPE
20' - 39'	13"	13"	1 1/4"	1"	1 1/4"	A
40'	15"	15"	1 1/4"	1 1/4"	1 1/2"	B
50'	15"	15"	1 1/2"	1 1/4"	1 1/2"	B

TRANSFORMER BASE TABLE		
TYPE	TOP B.C.	BTM. B.C.
A	13"	14"
B	15"	17 1/4"



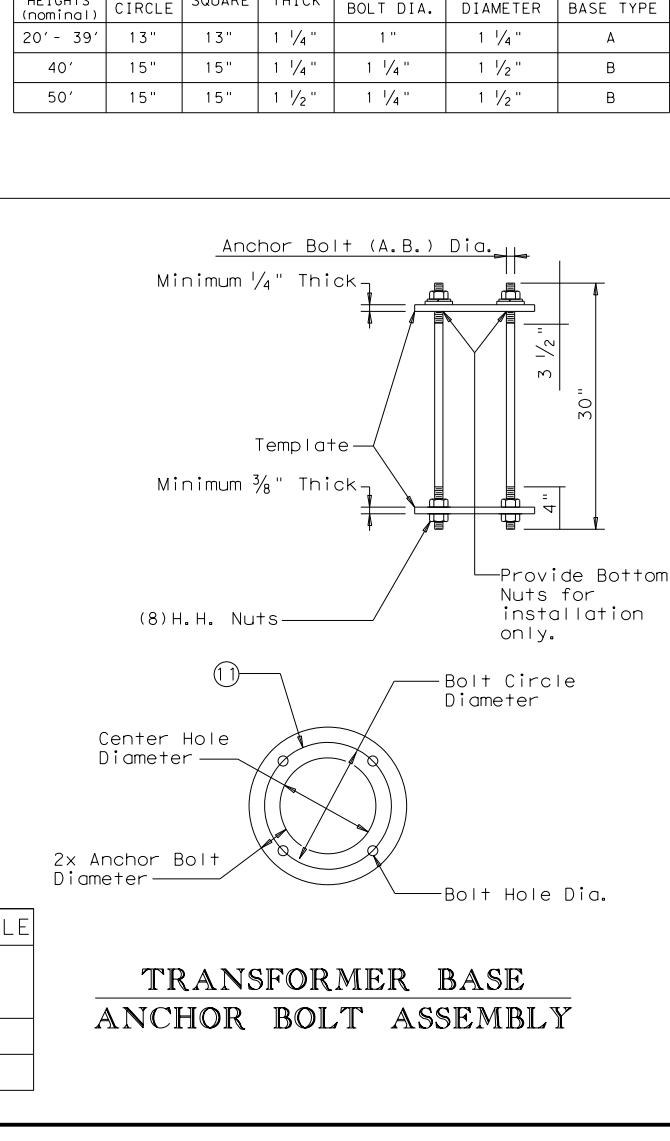
SHOE BASE ANCHOR BOLT ASSEMBLY

SHOE BASE ANCHOR BOLT ASSEMBLY TABLE				
MOUNTING HEIGHTS (nominal)	A.B. Dia.	BOLT CIRCLE DIAMETER	CTR. HOLE DIAMETER	BOLT HOLE DIAMETER
20' - 39'	1"	13"	11"	1 1/16"
40' - 50'	1 1/4"	15"	12 1/2"	1 5/16"



CONCRETE TRAFFIC BARRIER BASE ANCHOR BOLT ASSEMBLY

TRANSFORMER BASE ANCHOR BOLT ASSEMBLY TABLE				
MOUNTING HEIGHTS (nominal)	A.B. Dia.	BOLT CIRCLE DIAMETER	CTR. HOLE DIAMETER	BOLT HOLE DIAMETER
20' - 39'	1"	14"	12"	1 1/16"
40' - 50'	1 1/4"	17 1/4"	14 3/4"	1 5/16"



TRANSFORMER BASE ANCHOR BOLT ASSEMBLY

GENERAL NOTES:

- For mounting heights between those shown in the table, use the values in the table for the larger mounting height.
- All breakaway bases shall meet the breakaway requirements of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 6th Edition (2013) and Interim Revisions thereto, and shall have been tested by FHWA-approved methods. All bases shall have been structurally tested to resist 150% of the design moment.
- Transformer bases shall be cast from aluminum, ASTM B108 or B26 Alloy 356.0-T6, or other material approved by the Engineer. Four Hex Head (H.H.) bolts with four H.H. nuts, four lock washers, four flat washers, and connecting and hold-down washers as recommended by the manufacturer, galvanized to ASTM A153 Class C or D, or B695 Class 50, shall be provided with each transformer base for connecting the pole. Bolts shall be ASTM A325 or approved equal. Nuts shall be ASTM A563 grade DH galvanized.
- Bases shall be stamped, incised or by other approved permanent means, marked to show fabricator's name or logo, and model number. Such information shall be placed in a readily seen location, inside or outside the base, but shall not be placed on the door.
- Doors for transformer bases shall be made of plastic, fiberglass or other non-metallic material approved by the Engineer and shall be attached with stainless steel screws or bolts. Transformer bases shall be cleaned by grit blast cleaning after heat treatment. Certification by the manufacturer of heat treatment shall be furnished with transformer bases. The certification shall show the metal alloy and temper and that the base meets those requirements, chemical and physical. The certification shall also show the material ASTM specification. Transformer bases shall be cast with a removable tab bar for material testing. Some bars may have been removed by the manufacturer for testing.

NOTES:

- Anchor Bolt Templates do not need to be galvanized.
- Pole diameter before ovalized.

ANCHOR BOLT FABRICATION TOLERANCES TABLE	
DIMENSION	TOLERANCE
Length	± 1/2"
Threaded length	± 1/2"
Galvanized length (if required)	- 1/4"

SHEET 4 OF 4

Texas Department of Transportation

Traffic Safety Division Standard

ROADWAY ILLUMINATION POLES

RIP(4)-19

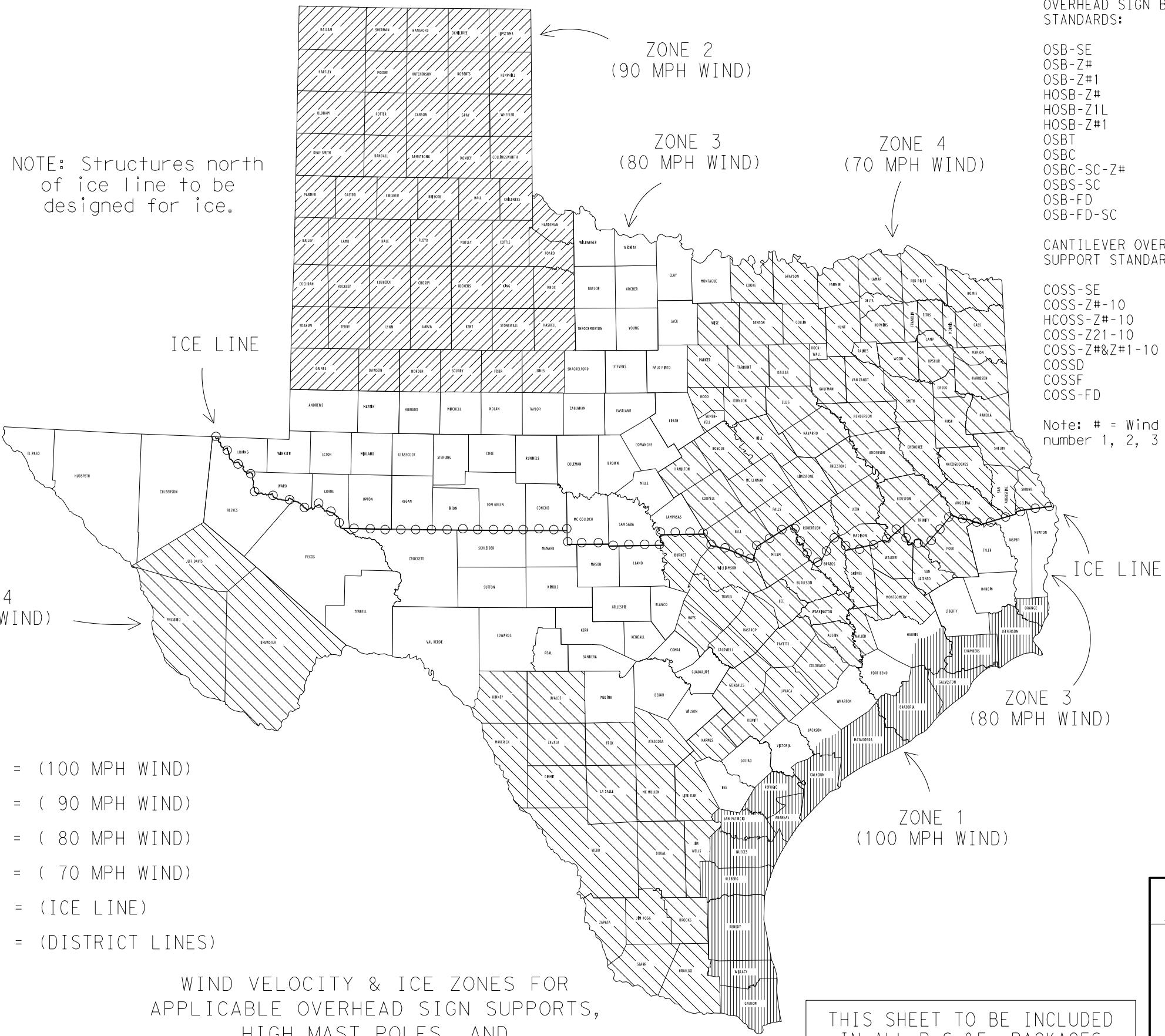
FILE: rip-19.dgn	DN:	CK:	DW:	CK:
©TxDOT January 2007	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
7-17 12-19	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	332	

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.

DATE: 1/30/2023 13:12:25
 FILE: c:\pwworking\pwy\pw_cpy_brandon.smi\h\079955\WV & IZ-14.dgn

APPLICABLE STANDARDS SHEETS

- OVERHEAD SIGN BRIDGE STANDARDS:
 OSB-SE
 OSB-Z#
 OSB-Z#1
 HOSB-Z#
 HOSB-Z1L
 HOSB-Z#1
 OSBT
 OSBC
 OSBC-SC-Z#
 OSBS-SC
 OSB-FD
 OSB-FD-SC
- HIGH MAST ILLUMINATION POLE STANDARDS:
 HMIP-98
 HMIF-98
- WALKWAYS AND BRACKETS STANDARDS:
 SWW
 SB(SWL-1)
- TRAFFIC SIGNAL POLE STANDARDS:
 SP-80
 SP-100
 SMA-80
 SMA-100
 DMA-80
 DMA-100
 MA-C
 MAC (ILSN)
 MAD-D
 TS-FD
 LUM-A
 CFA
 LMA
 TS-C
 MA-DPD
- CANTILEVER OVERHEAD SIGN SUPPORT STANDARDS:
 COSS-SE
 COSS-Z#-10
 HCOSS-Z#-10
 COSS-Z21-10
 COSS-Z#&Z#1-10
 COSSD
 COSSF
 COSS-FD
- Note: # = Wind Zone number 1, 2, 3 or 4



NOTE: Structures north of ice line to be designed for ice.

LEGEND

- ZONE 1 - [diagonal lines] = (100 MPH WIND)
- ZONE 2 - [diagonal lines] = (90 MPH WIND)
- ZONE 3 - [white box] = (80 MPH WIND)
- ZONE 4 - [diagonal lines] = (70 MPH WIND)
- ○ ○ ○ = (ICE LINE)
- = (DISTRICT LINES)

WIND VELOCITY & ICE ZONES FOR APPLICABLE OVERHEAD SIGN SUPPORTS, HIGH MAST POLES, AND TRAFFIC SIGNAL POLES
 Based on 50 Year Mean Recurrence Interval of Fastest Mile Wind Velocity at 33 feet height.

THIS SHEET TO BE INCLUDED IN ALL P.S.&E. PACKAGES CONTAINING ONE OR MORE OF THE APPLICABLE STANDARD SHEETS LISTED HEREON

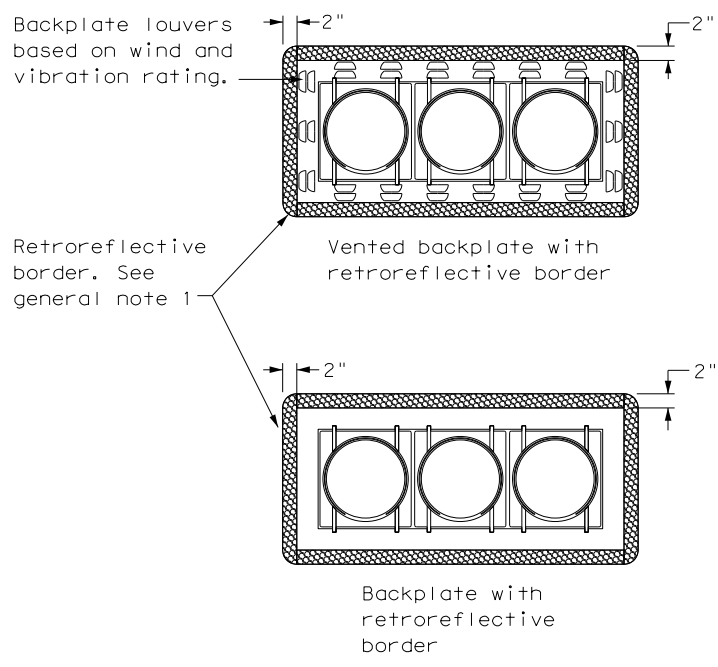
FOR HARRIS CO. ONLY
 Zone line is just North of US 90, around on the North, West and South sides of IH 610 and down the West side of SH 288.

FOR JACKSON CO. ONLY
 Zone line is just North of SH 616.

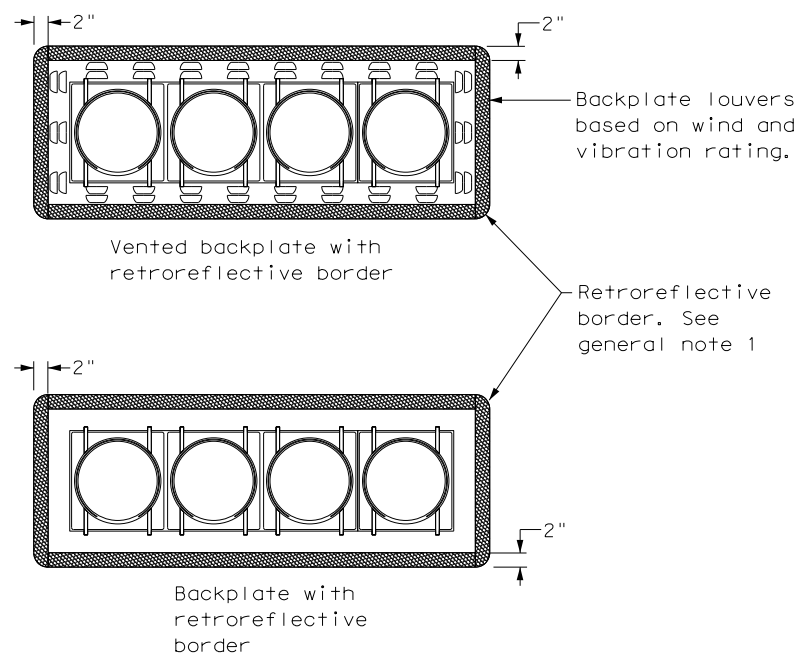
		Traffic Operations Division Standard	
<h2>WIND VELOCITY AND ICE ZONES</h2> <h3>WV & IZ-14</h3>			
FILE:	windice.dgn	DN: TxDOT	CK: TxDOT
© TxDOT	April 1996	CON: 0251	SECT: 06
REVISIONS 8-14-Added list of applicable standards, restricting use to structures designed for Fastest Mile wind speeds.		JOB: 036	HIGHWAY: US 281
DIST:	BWD	COUNTY: LAMPASAS	SHEET NO.: 333

DISCLAIMER: 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.

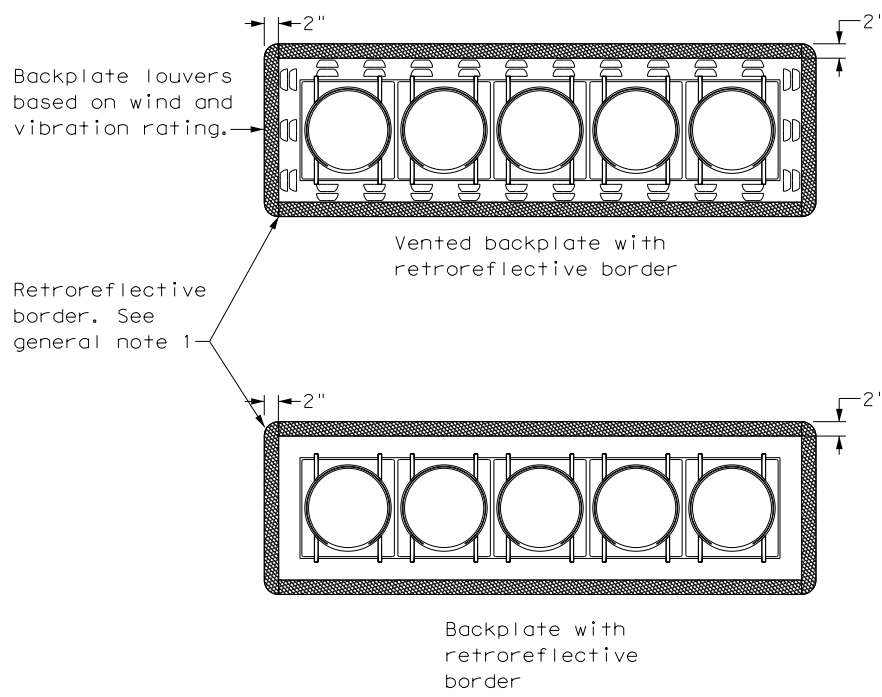
DATE: 1/30/2023 13:12:30
 FILE: c:\pwworking\copy\pw_cpy\brandon_smi.tn\d0799555\TS-BP-20.dgn



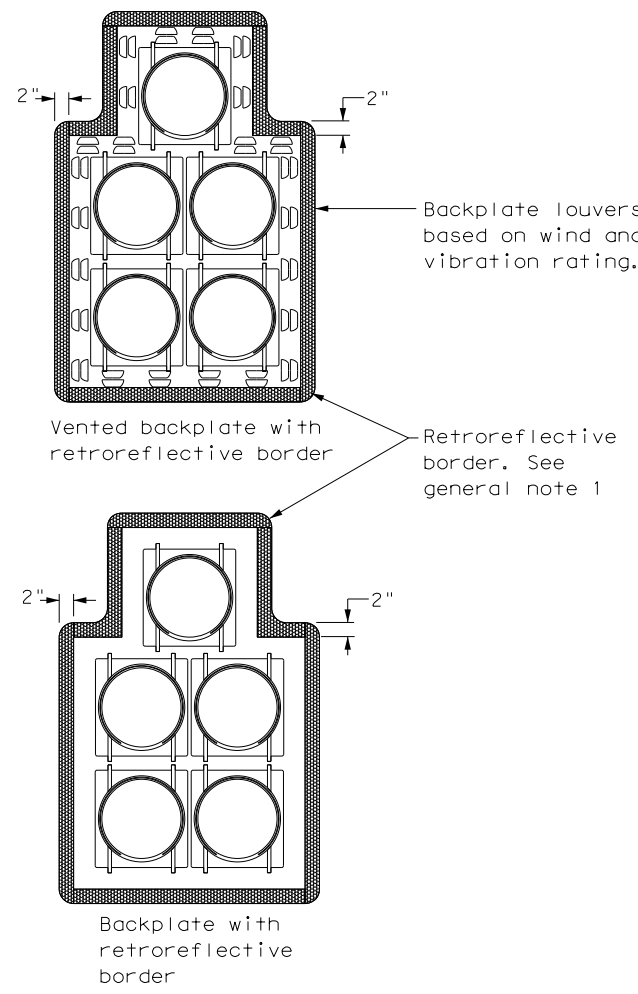
THREE-SECTION HEAD
 HORIZONTAL OR VERTICAL



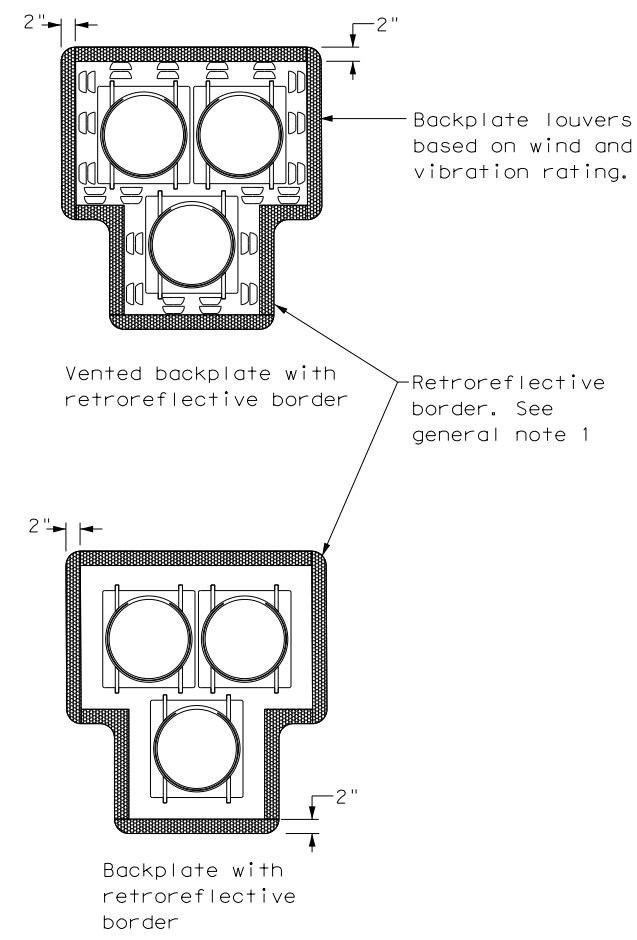
FOUR-SECTION HEAD
 HORIZONTAL OR VERTICAL



FIVE-SECTION HEAD
 HORIZONTAL OR VERTICAL



FIVE-SECTION HEAD
 CLUSTER



PEDESTRIAN HYBRID
 BEACON

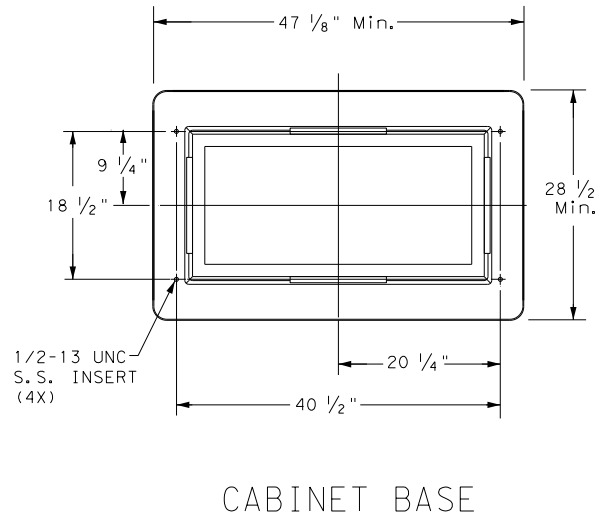
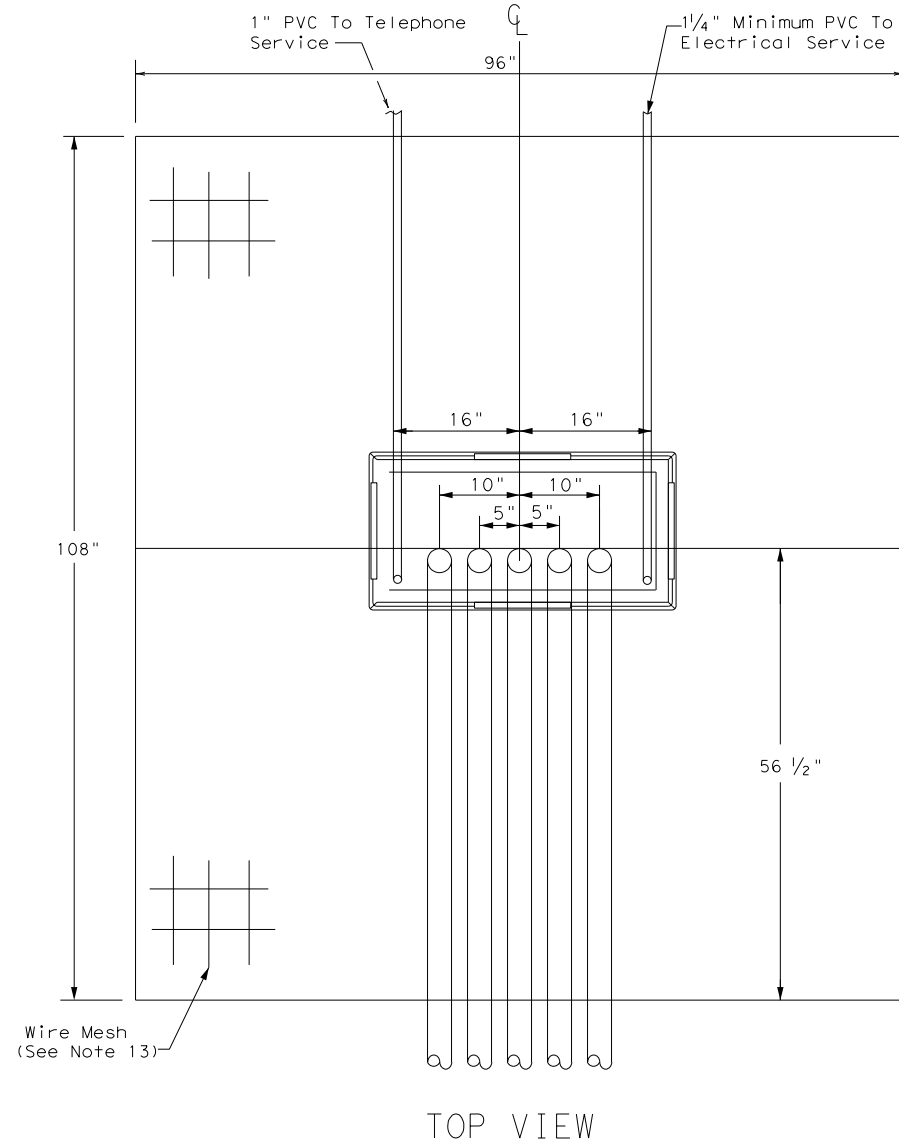
GENERAL NOTES:

1. Backplates are optional for traffic signals and pedestrian hybrid beacons. When backplates are used, a 2-inch wide fluorescent yellow AASHTO Type B_{FL} or C_{FL} retroreflective border conforming to TxDOT DMS-8300 is required. Place on all approaches when used.
2. Signal head and backplate compatibility must be verified by the contractor prior to installation.
3. When using backplates on signal heads, venting is preferred to reduce cyclic vibration stress.
4. When a vented backplate is used, the retroreflective border must not be placed over the louvers.
5. This standard sheet applies to all signal heads with backplates, including but not limited to:
 - Pole mounted
 - Overhead mounted
 - Span wire mounted
 - Mast arm mounted
 - Vertical signal heads
 - Horizontal signal heads
 - Clustered signal heads
 - Pedestrian hybrid beacons

		Traffic Safety Division Standard	
<h2>TRAFFIC SIGNAL HEAD WITH BACKPLATE</h2> <h3>TS-BP-20</h3>			
FILE: ts-bp-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
© TxDOT June 2020	CONT: 0251	SECT: 06	JOB: 036
REVISIONS		HIGHWAY: US 281	
DIST: BWD	COUNTY: LAMPASAS	SHEET NO.: 334	

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.

DATE: 1/30/2023
 FILE: c:\pwworking\king\copy\pw_cpy\brandon.smi\th\0799555\TS-CF-21.dgn



TRAFFIC SIGNAL CONTROLLER BASE:

1. Provide a traffic signal controller base (cabinet base) manufactured of polymer concrete material consisting of calcareous and siliceous stone; glass fibers and thermoset polyester resin. The polymer concrete cabinet base must be reinforced on the inside of the cabinet base with fiberglass matting. Provide one of the following bases: Armorcast Part # A6001848X24, Quazite Model # PG3048Z709, or other as approved by TxDOT Traffic Safety Division.
2. The polymer concrete material must have a minimum compressive strength of 10,300 pounds per square inch (psi), minimum flexural strength of 3600 psi, and minimum shear strength of 3600 psi.
3. The polymer concrete cabinet base must conform to the dimensions shown and must accommodate a standard TxDOT basemount cabinet.
4. Supply the cabinet base with four 1#2"-13 UNC stainless steel inserts for attachment of the cabinet to the base. Inserts must withstand a minimum torque of 50 ft-lb and a minimum straight pull out strength of 750 lbs.
5. Provide the cabinet base with 4 cable racks mounted one on each side of the base 2" to 7" from the top edge of the base. Unless approved otherwise, cable racks must be 1-1/2 x 9#16x 3#16inch steel channel with eight T-slots spaced at 1-1/2 inches. The cable racks must easily accommodate the insertion of tie wraps to attach field wiring to the racks to serve as strain relief. Secure cable racks to the base using 1#2"-13 UNC stainless steel screws and inserts.
6. The cabinet base, when secured to the concrete slab with controller cabinet attached, must withstand a minimum wind load of 125 mph or a 850 lb force applied at 49" above the bottom of the base without causing the base or cabinet to come out of their anchored position or cause any permanent deformation. The manufacturer must supply certification by an independent testing laboratory or sealed by a Texas Licensed Professional Engineer. Provide the cabinet base with hardware for attachment to a concrete slab.
7. The traffic signal base must be permanently marked either by impress or by permanent ink with the manufacturer's model number and name or logo.
8. Seal the base to the concrete with a silicone caulk bead and fastened to the slab per manufacturer's instructions.

CONCRETE SLAB:

9. Traffic signal controller pad must be a portland cement concrete slab poured in place, must conform to the dimensions shown, and must be level.
10. Grade earthwork such that it is flush with the concrete pad on all four sides, unless otherwise shown on the plans. Subsidiary to ITEM 680, four inch rip rap may be used in lieu of earthwork. Slopes shall gradually contour to match plans.
11. Bond a #8 AWG copper ground wire and an 8 ft ground rod bonded to the reinforcing mesh by a suitable UL Listed clamp and terminated to the cabinet grounding bus for the purpose of providing a local ground for the electrical grounding conductor. The electrical grounding conductor specified in Item 680-3.A.4 is required and must be terminated to the cabinet ground bus.
12. Install a PVC sleeve to prevent the ground rod from direct embedment in the slab.
13. Provide welded wire mesh 6X6-W2.9 X W2.9 for reinforcement. Provide joints and splices in the mesh with a minimum 6-inch overlap. Center the mesh between top and bottom and provide a minimum 3 inch cover on the edges.
14. Provide Class B concrete minimum for the slab in accordance with Item 421. Construct the slab in accordance with Item 531.

CONDUITS:

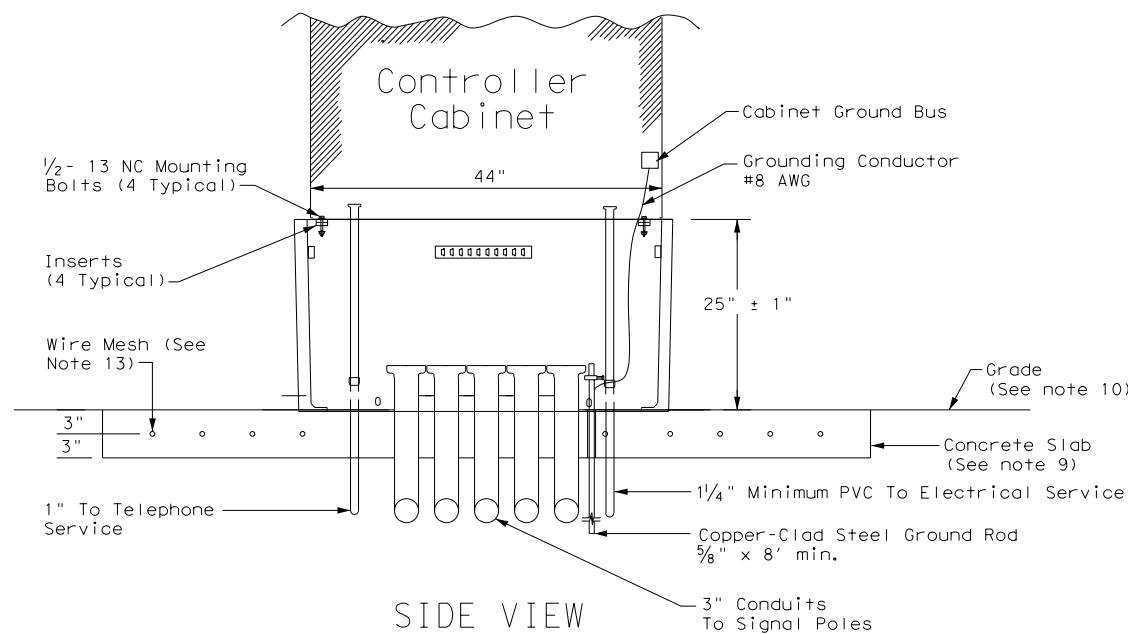
15. Stub up and run 3-inch conduits through the slab to the various traffic signal poles and ground boxes as shown on the layouts. Install the number of conduits as shown on layouts plus two additional 3 inch conduits for future use. Terminate the conduits with a bushing between 2 and 4-inches above the slab.
16. Extend conduits for future use at least 18-inches from the edge of the slab, terminate underground with a coupling, and cap and seal so that the seal can be removed without damaging the coupling. This must also apply to unused telephone conduit.
17. Stub up two separate conduits through the slab from the electrical and telephone services. Run the conduit for the electrical feed directly to the electrical service enclosure. Run the conduit for the telephone line directly to the telephone service, usually located on the same pole as the electrical service. Telephone must not under any circumstance share a conduit with any other function.
18. Terminate electric and telephone conduits above the slab with a coupling. After the base is installed, extend the conduits above the top of the base and secure to the base using a steel one-hole strap or similar suitable substitute.

CONTROLLER CABINET:

19. Anchor the controller cabinet to the base using four stainless steel 1/2-13 NC bolts.
20. The silicone caulk bead specified in Item 680.3.B must be RTV 133.

PAYMENT:

21. Bid TS-CF as subsidiary to Item 680.



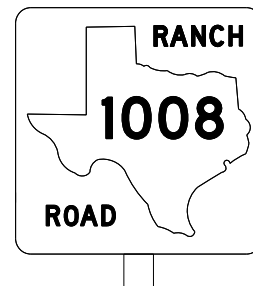
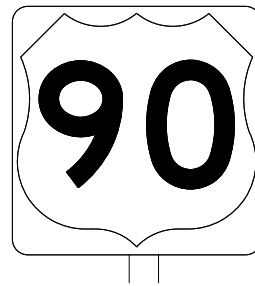
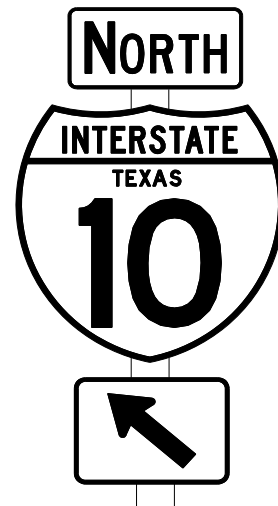
TRAFFIC SIGNAL CONTROLLER CABINET BASE AND PAD TS-CF-21			
FILE: ts-cf-21.dgn	DN:	CK:	DW:
© TxDOT October 2000	CONT	SECT	JOB
REVISIONS	0251	06	036
12-04	DIST	COUNTY	SHEET NO.
2-21	BWD	LAMPASAS	335

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.

DATE: FILE:

REQUIREMENTS FOR INDEPENDENT MOUNTED ROUTE SIGNS

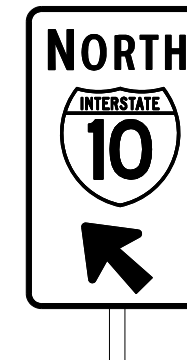
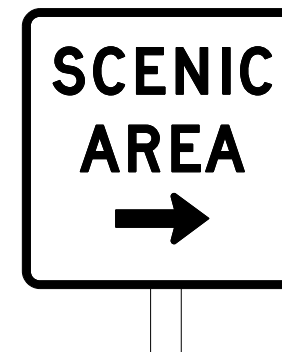
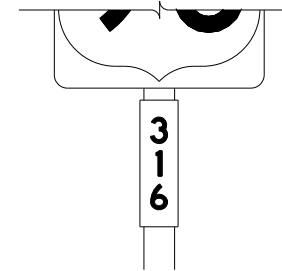
SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE A SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B or C SHEETING



TYPICAL EXAMPLES

REQUIREMENTS FOR BLUE, BROWN & GREEN D AND I SERIES GUIDE SIGNS

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	ALL	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE D SHEETING
LEGEND, SYMBOLS & BORDERS	ALL OTHERS	TYPE B OR C SHEETING



TYPICAL EXAMPLES

GENERAL NOTES

- 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).
- White legend shall use the Clearview Alphabet. The following Clearview fonts shall be used to replace the existing white Federal Highway Administration (FHWA) Standard Highway Alphabets, when not specified in the SHSD, or in the plans.

B	CV-1W
C	CV-2W
D	CV-3W
E	CV-4W
Emod	CV-5WR
F	CV-6W

- Route sign legend (ie. IH, US, SH and FM shields) shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets B, C, D, E, Emod or F).
- 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.
- Independent mounted route sign with white or colored legend and borders shall be applied by screening process with transparent color ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof. White legend, symbols and borders on all other signs shall be cut-out white sheeting applied to colored background sheeting.
- Information regarding borders and radii for signs is found in the "Standard Highway Sign Designs for Texas". Dimensions shown and described for borders and corner radii on parent sign are nominal. Borders may vary in width as much as 1/2 inch. Corner radii above 3 inches may vary in width as much as 1 inch. Borders and corner radii within a parent sign must be of matching widths. The sign area outside the corner radius should be trimmed or rounded.
- Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
- Mounting details of roadside signs are shown in the "SMD series" Standard Plan Sheets.

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080
7.5 to 15	0.100
Greater than 15	0.125

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

<http://www.txdot.gov/>



TYPICAL SIGN REQUIREMENTS

TSR(3) - 13

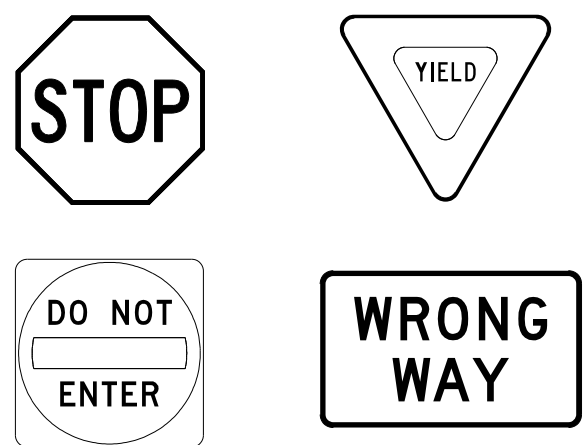
FILE: tsr3-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS		0251 06	036	US 281
12-03 7-13	DIST	COUNTY	SHEET NO.	
9-08	BWD	LAMPASAS	336	

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.

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

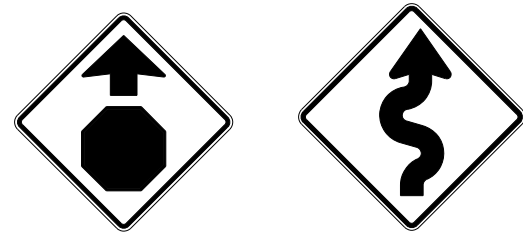
(EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



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

- 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).
- Sign legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod or F).
- 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.
- Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
- 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.
- 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.
- Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
- 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/>



TYPICAL SIGN REQUIREMENTS

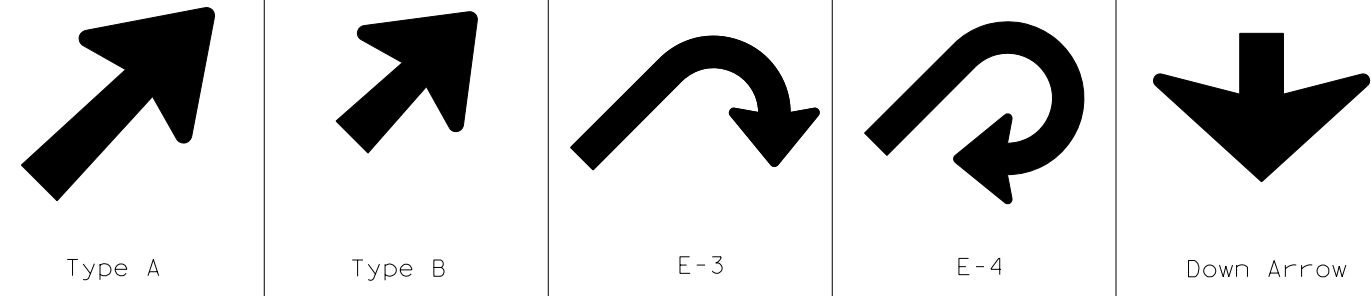
TSR (4) - 13

FILE: tsr4-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
12-03 7-13	DIST	COUNTY	SHEET NO.	
9-08	BWD	LAMPASAS	337	

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.

ARROW DETAILS

for Large Ground-Mounted and Overhead Guide Signs



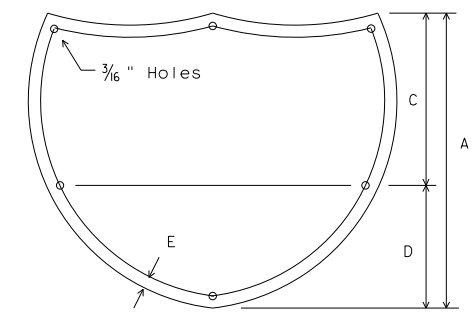
TYPE	LETTER SIZE	USE
A-1	10.67" U/L and 10" Caps	Single Lane Exits
A-2	13.33" U/L and 12" Caps	
A-3	16" & 20" U/L	
B-1	10.67" U/L and 10" Caps	Multiple Lane Exits
B-2	13.33" U/L and 12" Caps	
B-3	16" & 20" U/L	

CODE	USED ON SIGN NO.
E-3	E5-1aT
E-4	E5-1bT

NOTE
 Arrow dimensions are shown in the "Standard Highway Sign Designs for Texas" manual.

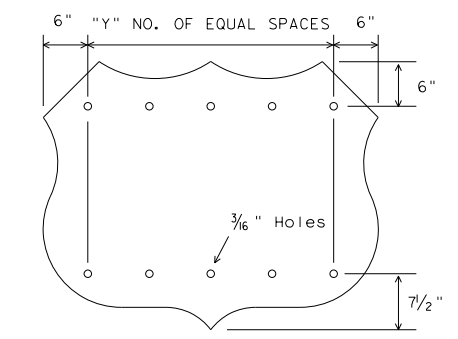
The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website:
<http://www.txdot.gov/>

SIGN BLANK PUNCHING DETAILS FOR ATTACHMENTS WHEN SPECIFIED TO BE TYPE A ALUMINUM SIGNS (FOR MOUNTING TO GUIDE SIGN FACE)



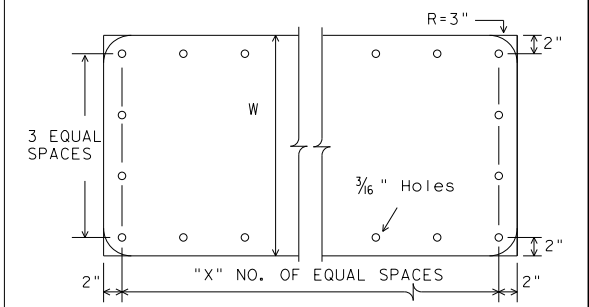
INTERSTATE ROUTE MARKERS

A	C	D	E
36	21	15	10
48	28	20	10



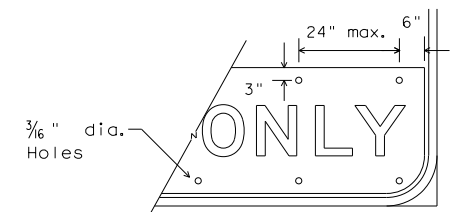
U.S. ROUTE MARKERS

Sign Size	"Y"
24x24	2
30x24	3
36x36	3
45x36	4
48x48	4
60x48	5



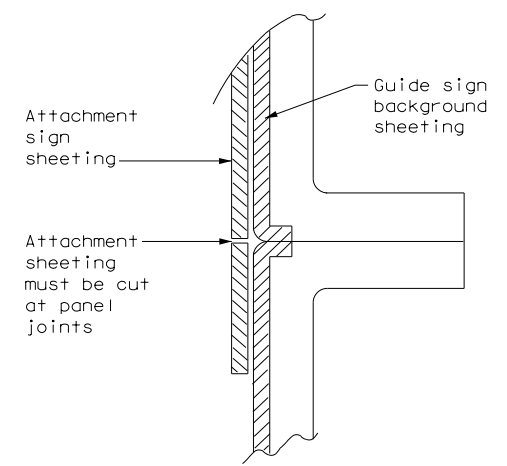
STATE ROUTE MARKERS

No. of Digits	W	X
4	24	4
4	36	5
4	48	6
3	24	3
3	36	4
3	48	5



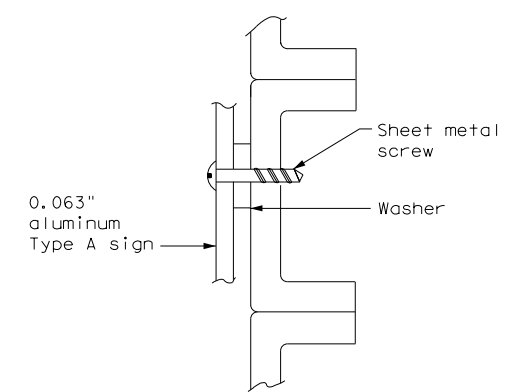
EXIT ONLY PANEL

MOUNTING DETAILS OF ATTACHMENTS TO GUIDE SIGN FACE ("EXIT ONLY" AND "LEFT EXIT" PANELS, ROUTE MARKERS AND OTHER ATTACHMENTS)

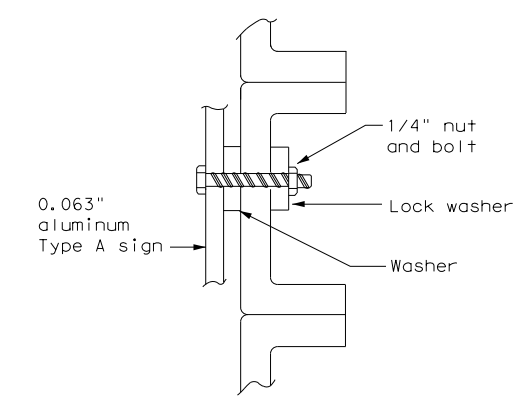


DIRECT APPLIED ATTACHMENT

- NOTE:
- Sheeting for legend, symbols, and borders must be cut at panel joints.
 - Direct applied attachment signs will be subsidiary to "Aluminum Signs" or "Fiberglass Signs".



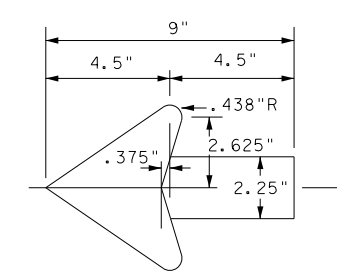
SCREW ATTACHMENT



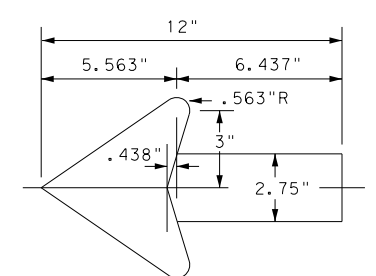
NUT/BOLT ATTACHMENT

- NOTE:
- Furnish Type A aluminum sign attachments only when specified in the plans. These signs will be paid for under "Aluminum Signs".

ARROW DETAILS for Destination Signs (Type D)



Standard arrow to be used with 6 inch letters.



Standard arrow to be used with 8 inch letters.



TYPICAL SIGN REQUIREMENTS

TSR (5) - 13

FILE: tsr5-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
	0251	06	036	US 281
12-03 7-13 9-08	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	338	

DATE:
FILE:

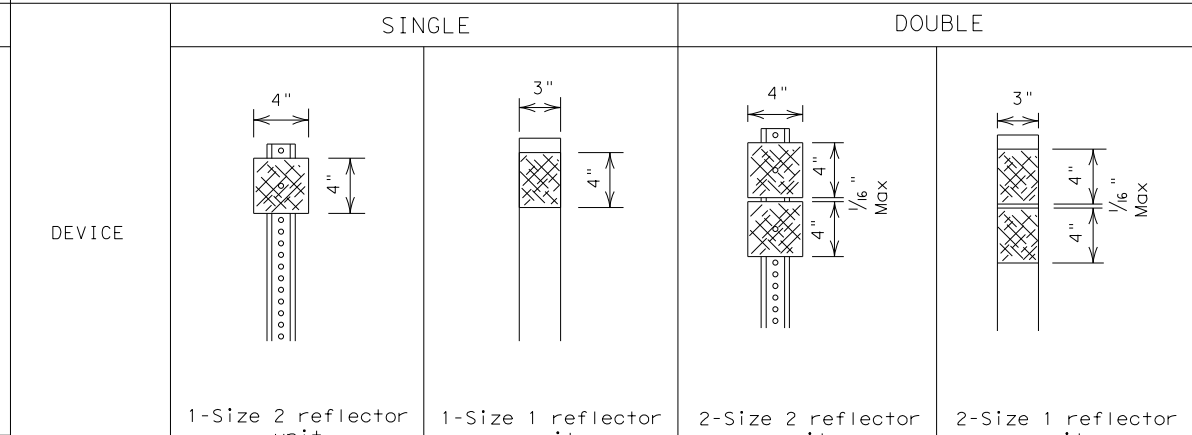
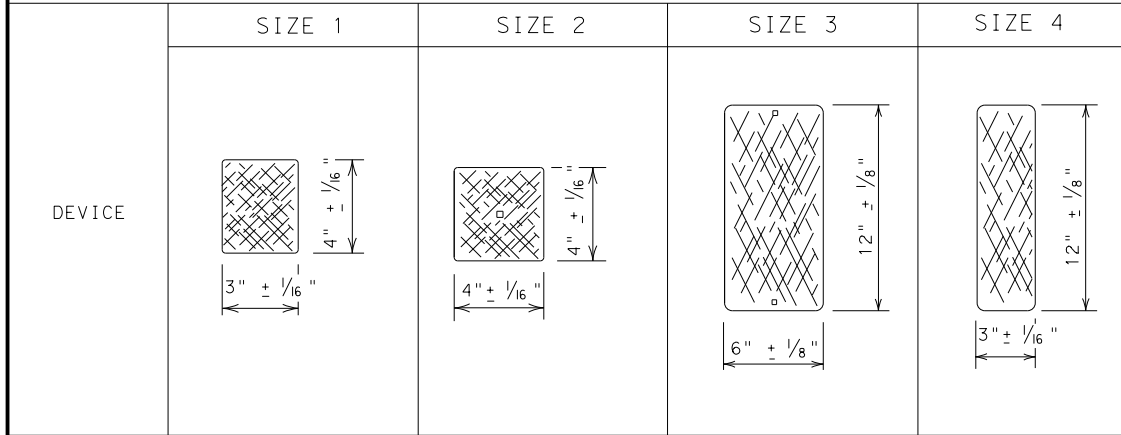
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: FILE:

REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS

DELINEATORS

D & OM DESCRIPTIVE CODES



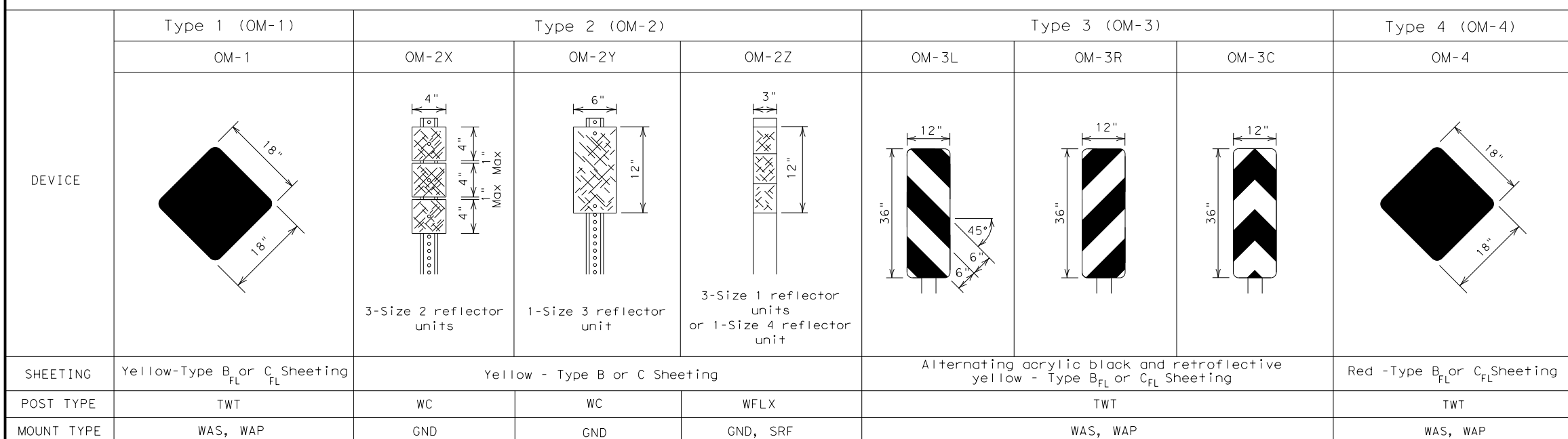
INSTR DEL ASSM (D-XX)SZ X (XXXX)XXX (XX)
 NUMBER OF REFLECTORS
 S = Single
 D = Double
 COLOR OF REFLECTORS
 W = White
 Y = Yellow
 R = Red
 REFLECTOR UNIT SIZE
 1 or 2
 TYPE OF POST OR DELINEATOR
 WC = Wing Channel Post
 YFLX = Yellow Flexible Post
 WFLX = White Flexible Post
 BRF = Barrier Reflector
 TYPE OF MOUNT
 GND = Embedded (drivable or set in concrete)
 CTB = Concrete Barrier Mount
 GF1 or GF2 = Guard Fence Attachment
 SRF = Surface Mount

SHEETING Yellow, White or Red Type B or C reflective sheeting
 NOTE 1. Size 1 and 4 - Direct applied reflective sheeting for use on flexible post (flx).
 2. Size 2 and 3 - For use on wing channel (wc) post only. Use approved metal, plastic or fiberglass backplate with 17/64" mounting holes.

SHEETING Yellow, White or Red Type B or C Reflective Sheeting
 POST TYPE WC YFLX, WFLX WC YFLX, WFLX
 MOUNT TYPE GND GND, SRF GND GND, SRF

DIRECTION
 If Required
 BI = Bi-Directional
 BR = Bi-Directional with red on back
 INSTR OM ASSM (OM-XX) (XXXX)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
 WFLX = White Flexible Post
 TWT = Thin Walled Tubing
 TYPE OF MOUNT
 GND = Embedded (drivable)
 SRF = Surface Mount
 WAS = Wedge Anchor Steel
 WAP = Wedge Anchor Plastic
 DIRECTION
 If Required
 BI = Bi-Directional

OBJECT MARKERS

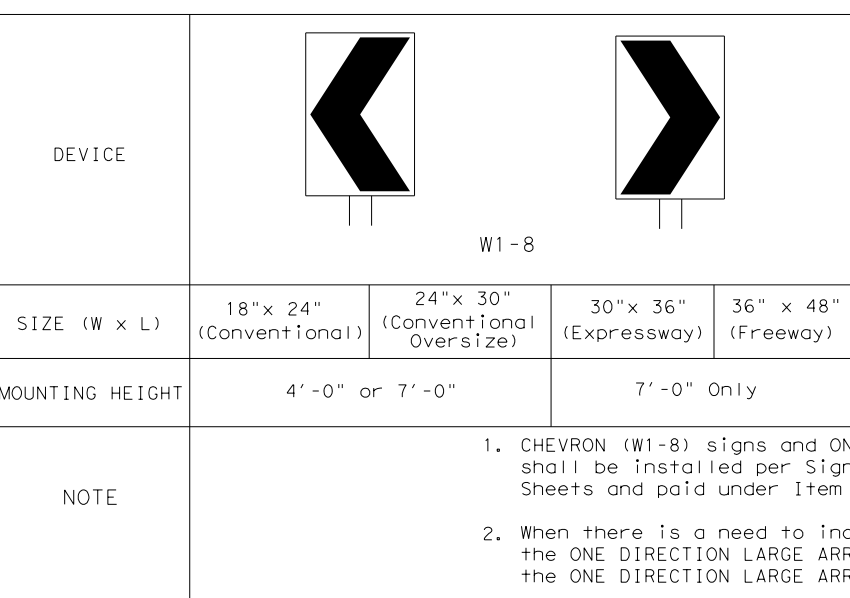
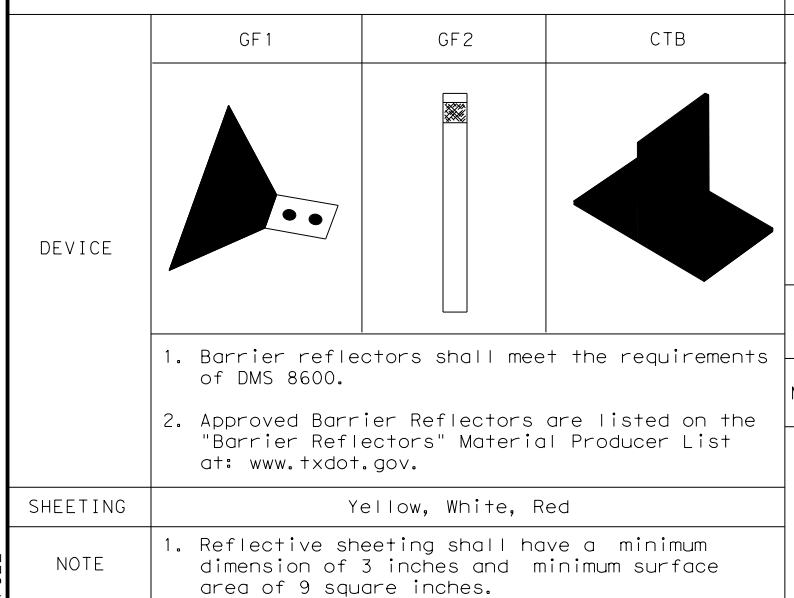


DEPARTMENTAL MATERIAL SPECIFICATIONS
 FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES) DMS-4400
 SIGN FACE MATERIALS DMS-8300
 DELINEATORS, OBJECT MARKERS AND BARRIER REFLECTORS DMS-8600

BARRIER REFLECTORS (BRF)

CHEVRONS

ONE DIRECTION LARGE ARROW



NOTE:
 Delineator and object marker substrates and sign substrates shall be 0.080" Aluminum sign blank to conform to ASTM B-209 Alloy 6061-T6 or approved alternative.

Texas Department of Transportation Traffic Safety Division Standard
DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION
D & OM(1)-20
 FILE: dom1-20.dgn DN: TxDOT CK: TxDOT DW: TxDOT CK: TxDOT
 © TxDOT August 2004 CONT SECT JOB HIGHWAY
 REVISIONS 0251 06 036 US 281
 10-09 3-15 DIST COUNTY SHEET NO.
 4-10 7-20 BWD LAMPASAS 339
 20A

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.

POST TYPE AND SUPPORT FOUNDATION DETAILS

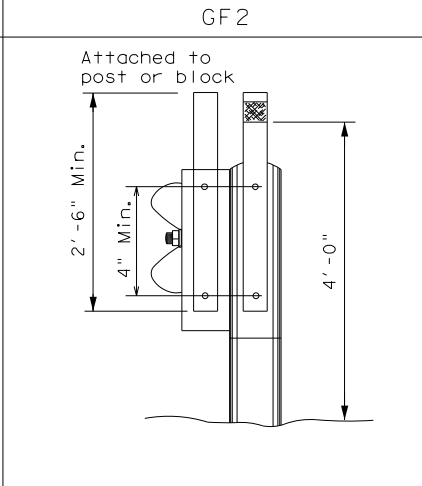
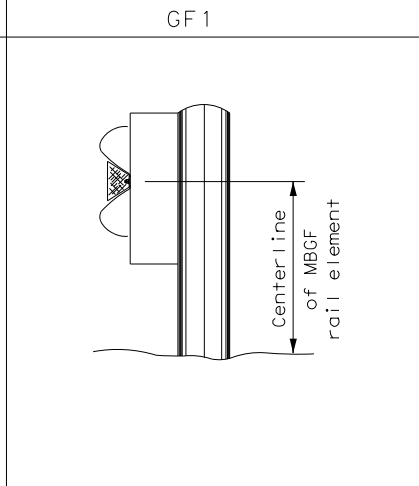
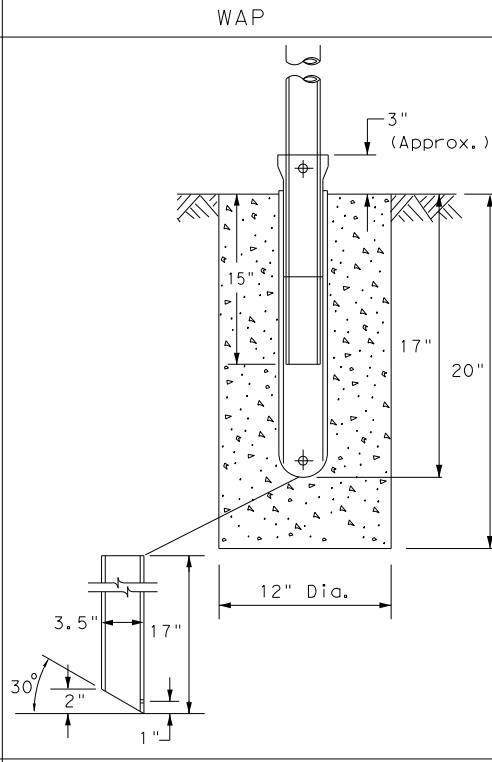
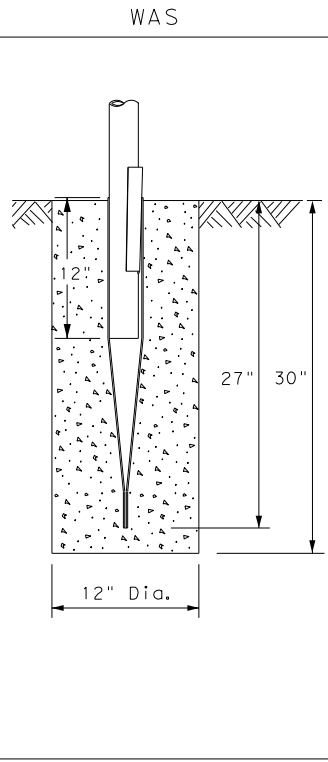
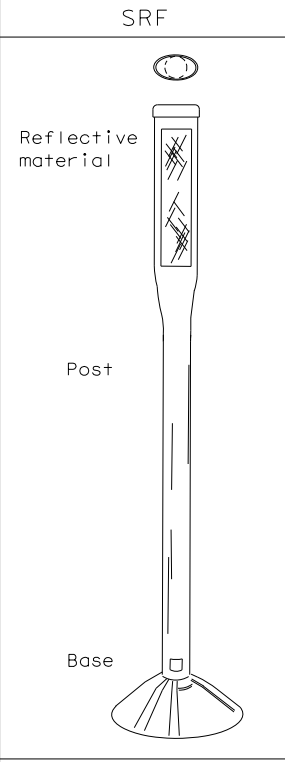
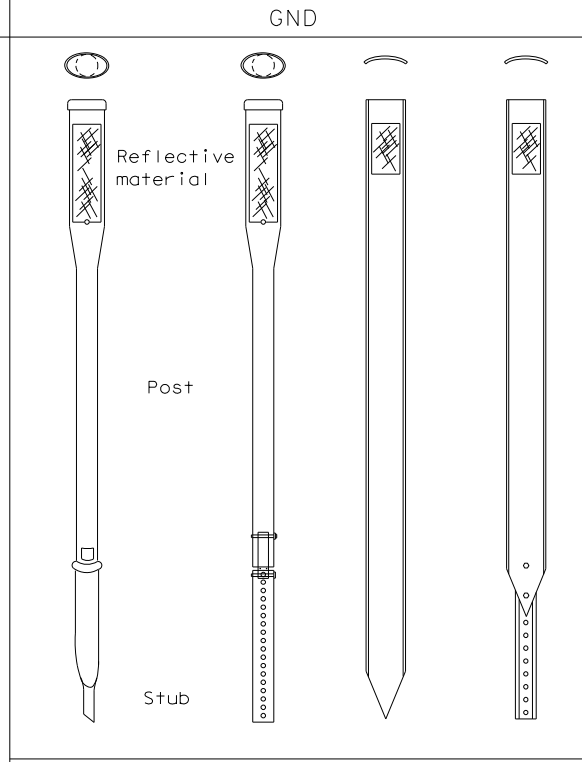
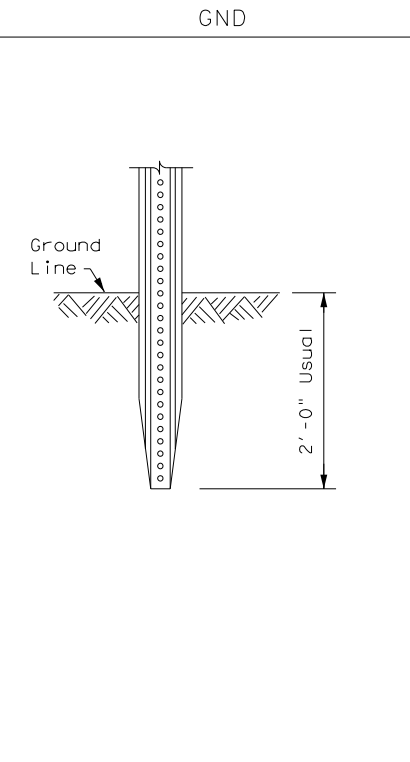
TYPE OF BARRIER MOUNTS

WING CHANNEL (WC)

FLEXIBLE POSTS (YFLX, WFLX)

WEDGE ANCHOR SYSTEMS

GUARD FENCE ATTACHMENT



NOTES

1. Embedded Wing Channel (WC) post option may be used for Type 2 Object Markers and Delineators only.
2. 1.12 lbs/ft steel per ASTM A 1011 SS Gr. 50, or ASTM A499.

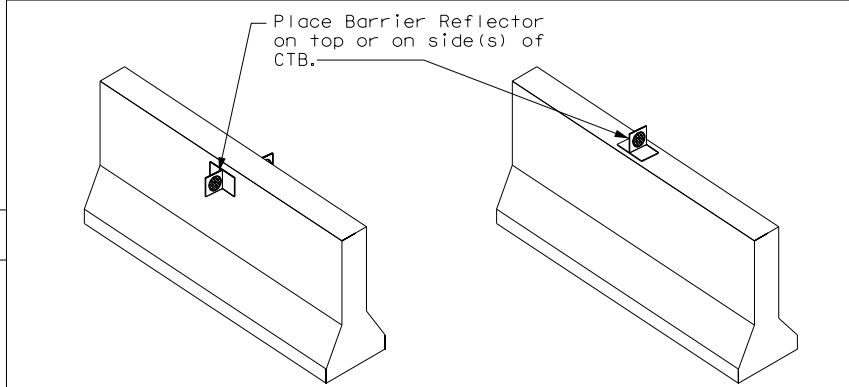
NOTES

1. See "Flexible Delineator and Object Marker Posts" Material Producer List for approved devices.
2. Install per manufacturer's recommendations.
3. Post length may vary to meet field conditions.
4. When using yellow delineators with flexible posts to separate opposing direction of travel, such as centerline or median use, the flexible posts shall be yellow.

NOTE

1. Install per manufacturer's recommendations.

CONCRETE TRAFFIC BARRIER (CTB)



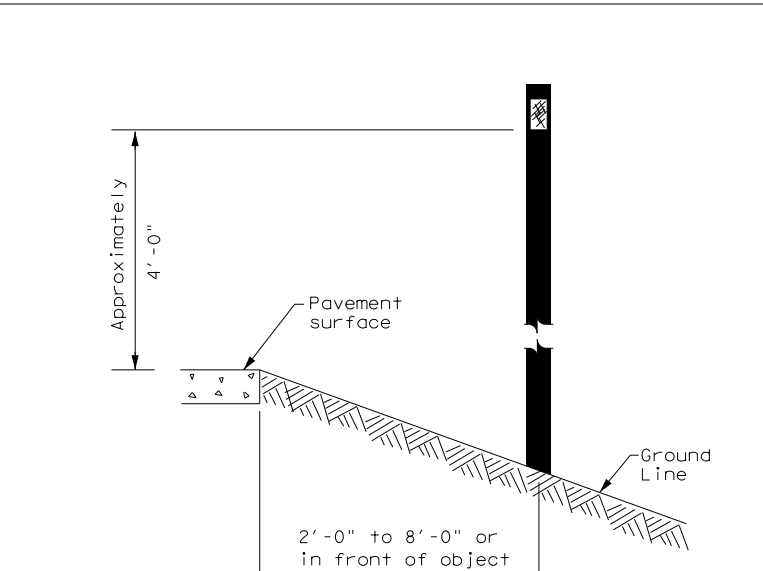
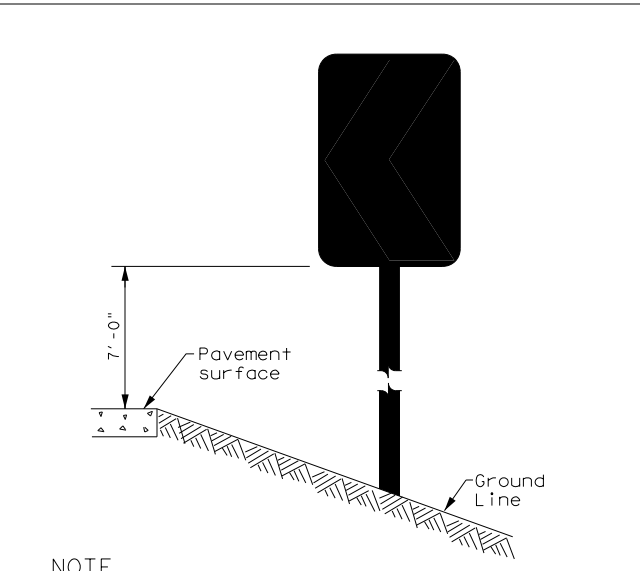
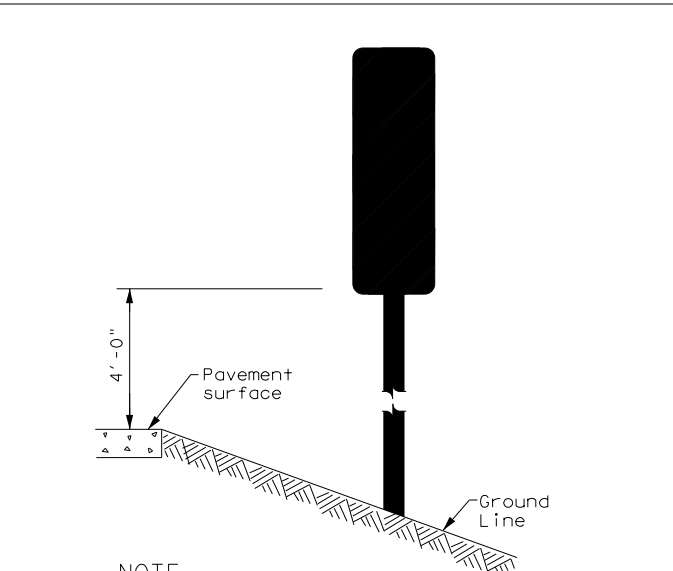
GENERAL NOTES

1. Place delineators on a section of roadway at a consistent 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 Type 2 object markers and delineators are more than 8'-0" from the edge of the pavement, it may not be possible to maintain a height of approximately 4'-0". If this is the case, place the object marker or delineator as close to the desired height as possible.
4. Install all delineators, object markers and barrier reflectors in accordance with the manufacturer's recommendation.
5. Barrier reflectors should be installed a minimum of 18 inches above the edge of the pavement surface.
6. Diagonal stripes on Type 3 object markers shall slope down toward the intended travel lane.

TYPES 1,3, AND 4 OBJECT MARKERS AND CHEVRONS

CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN

DELINEATORS AND TYPE 2 OBJECT MARKERS



NOTE

Mounting at 4 feet to the bottom of the chevron is permitted for chevrons that will not exceed a height of 6'-6" to the top of the chevron (sizes 24" x 30" and smaller)

NOTE

Chevrons 30" x 36" and larger shall be mounted at a height of 7' to the bottom of the chevron. Chevron sign and ONE DIRECTION LARGE ARROW sign (W1-9T) shall be installed per SMD standard sheets and paid under item 644.

See general notes 1, 2 and 3.



DELINEATOR & OBJECT MARKER INSTALLATION

D & OM(2)-20

FILE: dom2-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
10-09 3-15	DIST	COUNTY	SHEET NO.	
4-10 7-20	BWD	LAMPASAS	340	

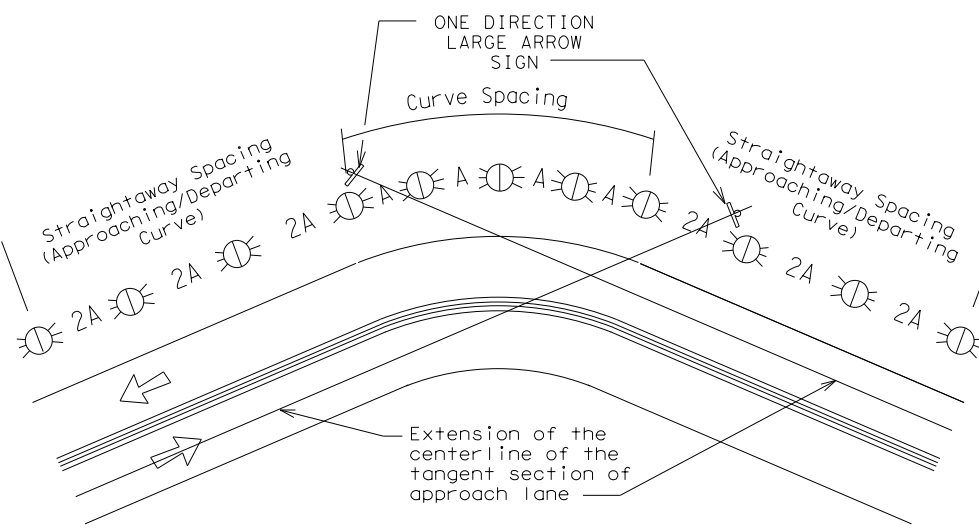
DATE:
FILE:

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.

MINIMUM WARNING DEVICES AT CURVES WITH ADVISORY SPEEDS

Amount by which Advisory Speed is less than Posted Speed	Curve Advisory Speed	
	Turn (30 MPH or less)	Curve (35 MPH or more)
5 MPH & 10 MPH	● RPMs	● RPMs
15 MPH & 20 MPH	● RPMs and One Direction Large Arrow sign	● RPMs and Chevrons; or ● RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons.
25 MPH & more	● RPMs and Chevrons; or ● RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons	● RPMs and Chevrons

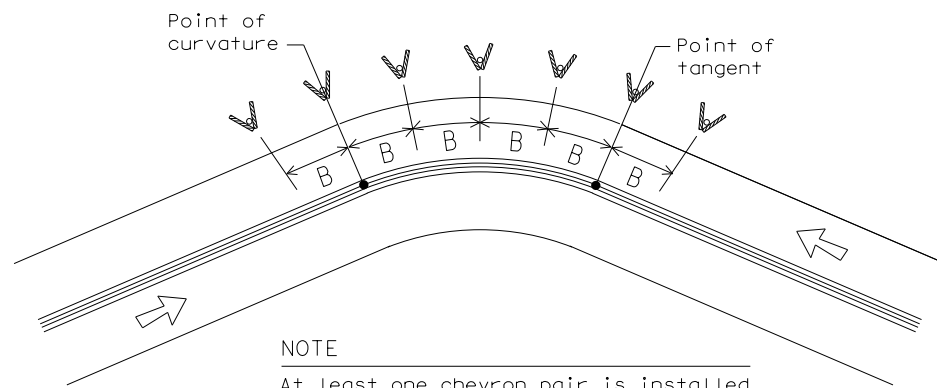
SUGGESTED SPACING FOR DELINEATORS ON HORIZONTAL CURVES



NOTE

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

SUGGESTED SPACING FOR CHEVRONS ON HORIZONTAL CURVES



NOTE

At least one chevron pair is installed beyond the point of tangent in tangent section.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS KNOWN				
Degree of Curve	FEET			
	Radius of Curve	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
		A	2A	B
1	5730	225	450	—
2	2865	160	320	—
3	1910	130	260	200
4	1433	110	220	160
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.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS NOT KNOWN			
Advisory Speed (MPH)	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
	A	2xA	B
65	130	260	200
60	110	220	160
55	100	200	160
50	85	170	160
45	75	150	120
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).

DELINEATOR AND OBJECT MARKER APPLICATION AND SPACING

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

NOTES

- Unless indicated otherwise, the delineator or barrier reflector color shall conform to the color of the pavement edge line on the side of the road where the delineators or barrier reflectors are placed.
- Barrier reflectors may be used to replace required delineators.
- Single red delineators may be mounted on the back side of delineator posts for wrong way driver applications

LEGEND

	Bi-directional Delineator
	Delineator
	Sign



DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

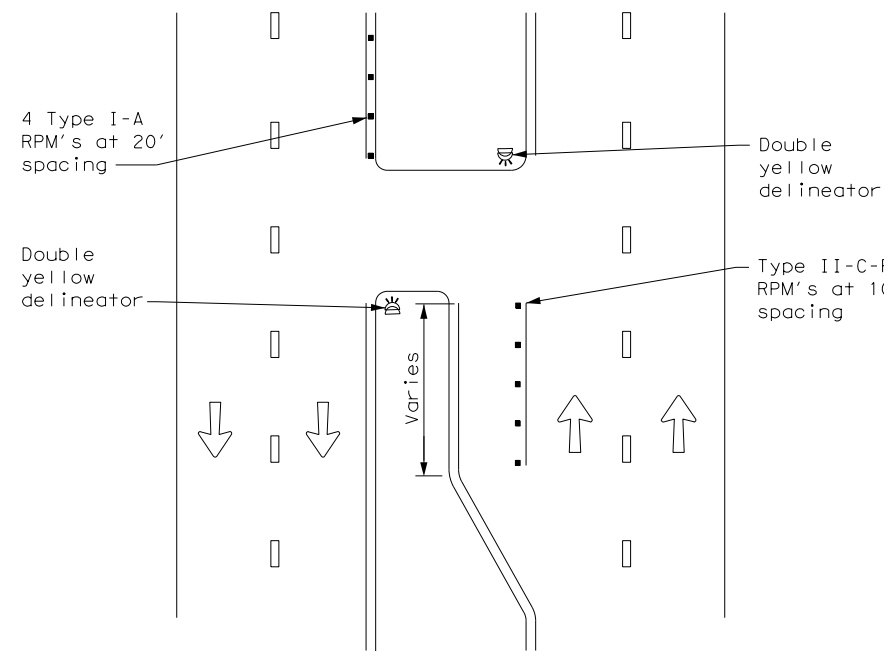
D & OM(3)-20

FILE: dom3-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
3-15 8-15	DIST	COUNTY	SHEET NO.	
8-15 7-20	BWD	LAMPASAS	341	

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.

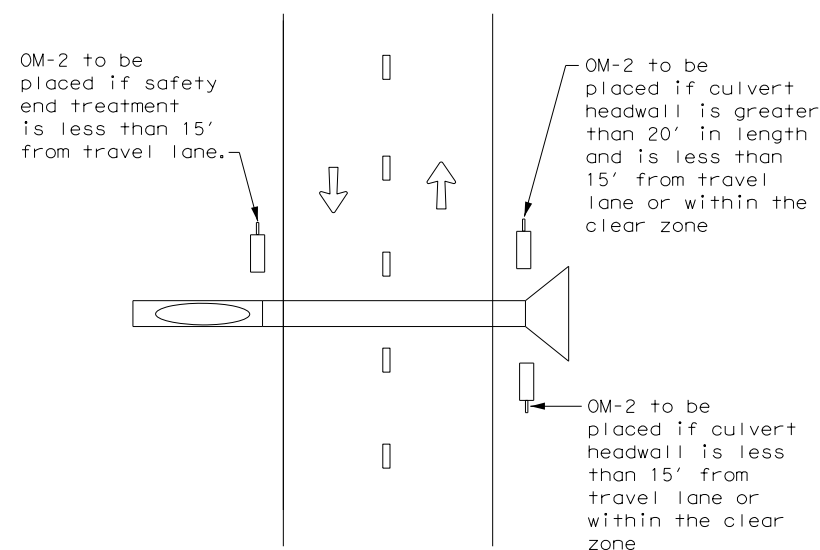
DATE:
FILE:

CROSSOVERS



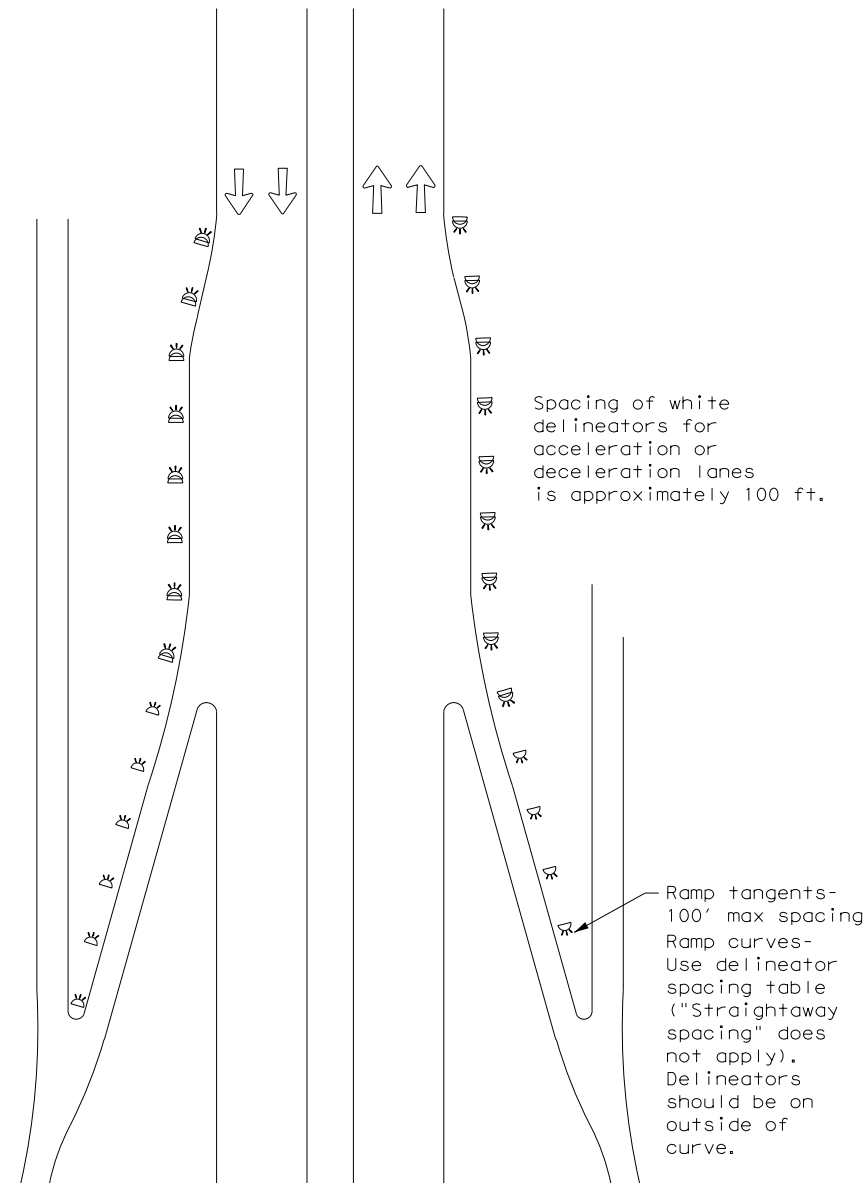
DETAIL 1

FOR CULVERTS WITHOUT MBGF



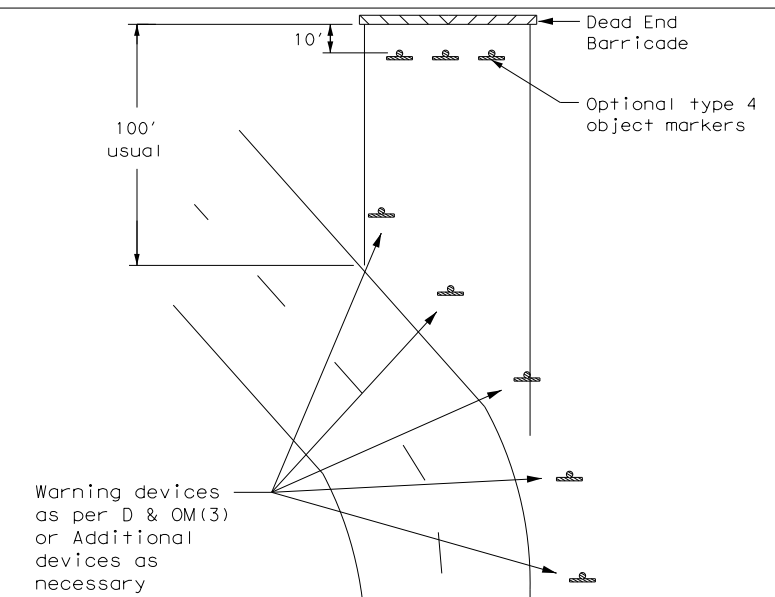
DETAIL 2

FREEWAY DELINEATION FOR RAMPS AND ACCELERATION/DECELERATION LANES



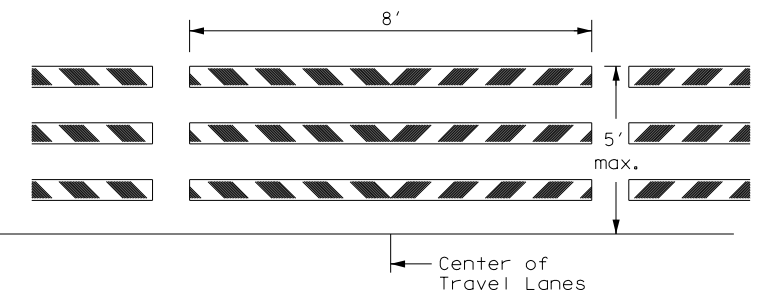
DETAIL 3

TYPICAL APPLICATION OF DEAD END BARRICADE



DETAIL 4

TYPICAL DEAD END BARRICADE INSTALLATION



NOTES

- Barricade striping shall be red and white reflective sheeting for all permanent road closures.
- Barricade striping is red and white sloping toward the center of the roadway.
- Type 3 Barricade Supports should be anchored to soil or pavement as described in compliant Work Zone Traffic Control Devices List, section D.2.f and D.2.g.

DETAIL 5

LEGEND	
	Bidirectional Delineator
	Delineator
	OM-3
	Barricade
	Sign
	OM-2
	Double Delineator

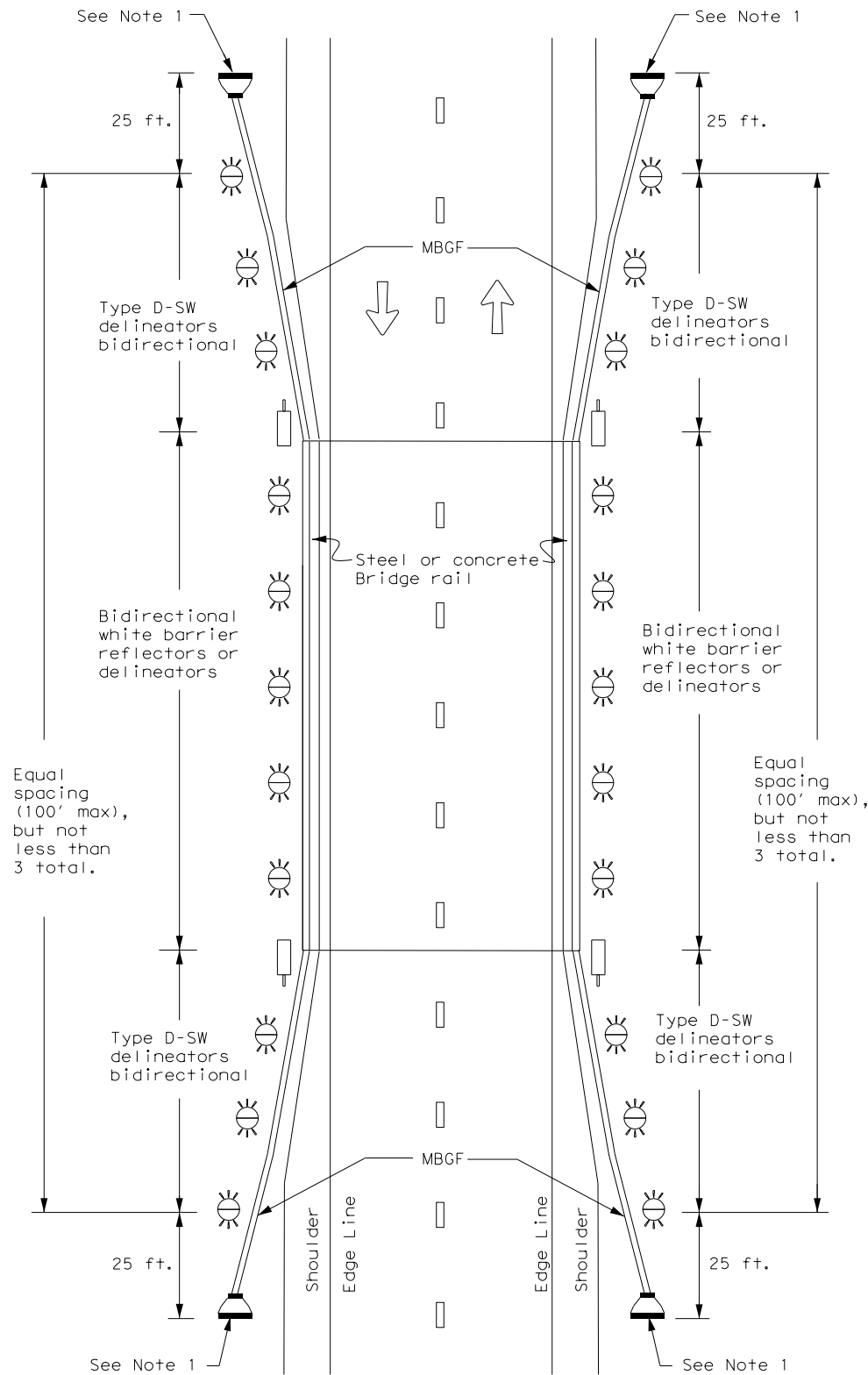


DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(4)-20

FILE: dom4-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT
© TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
3-15	DIST	COUNTY	SHEET NO.	
7-20	BWD	LAMPASAS	342	

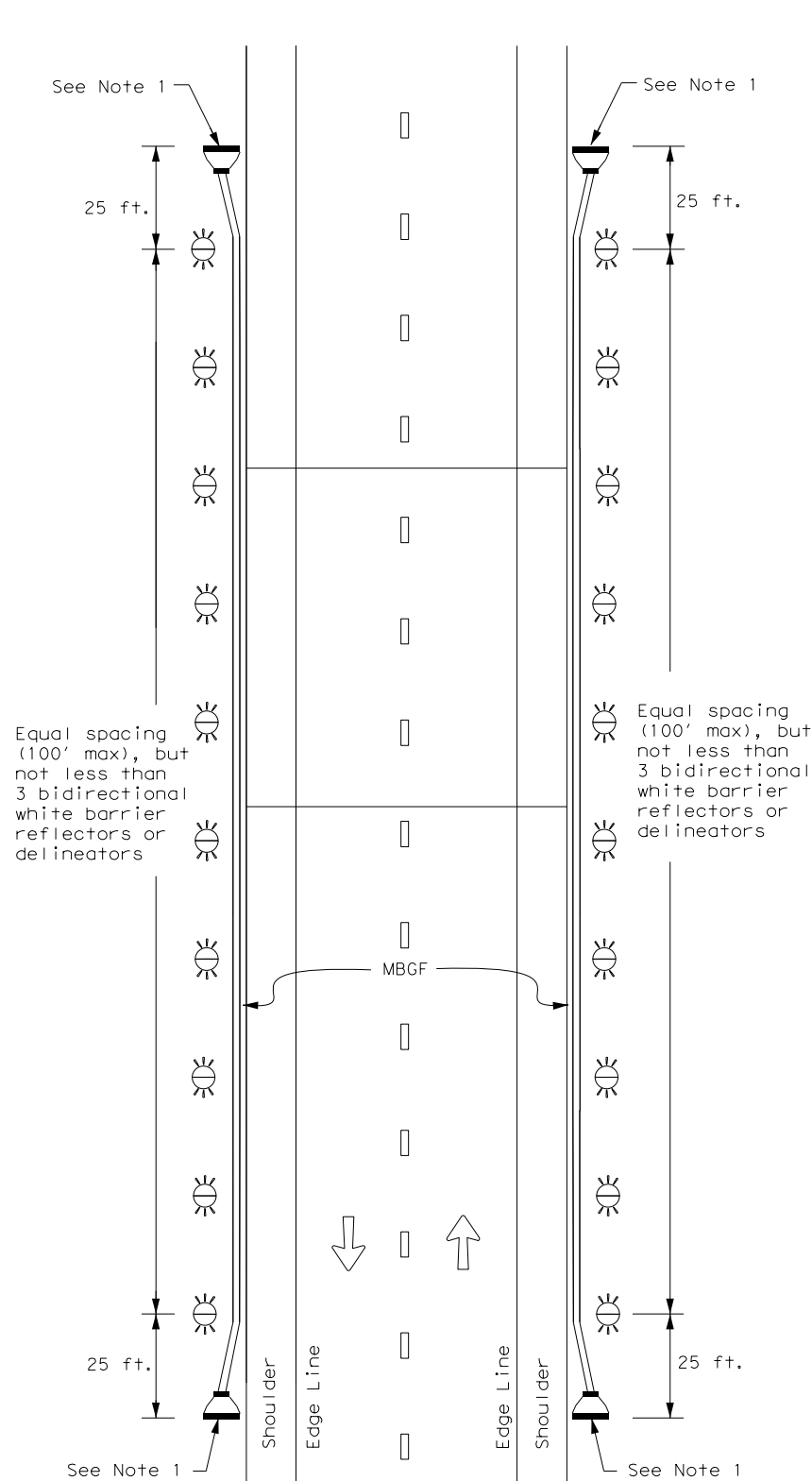
**TWO-WAY, TWO LANE ROADWAY
WITH REDUCED WIDTH APPROACH RAIL**



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

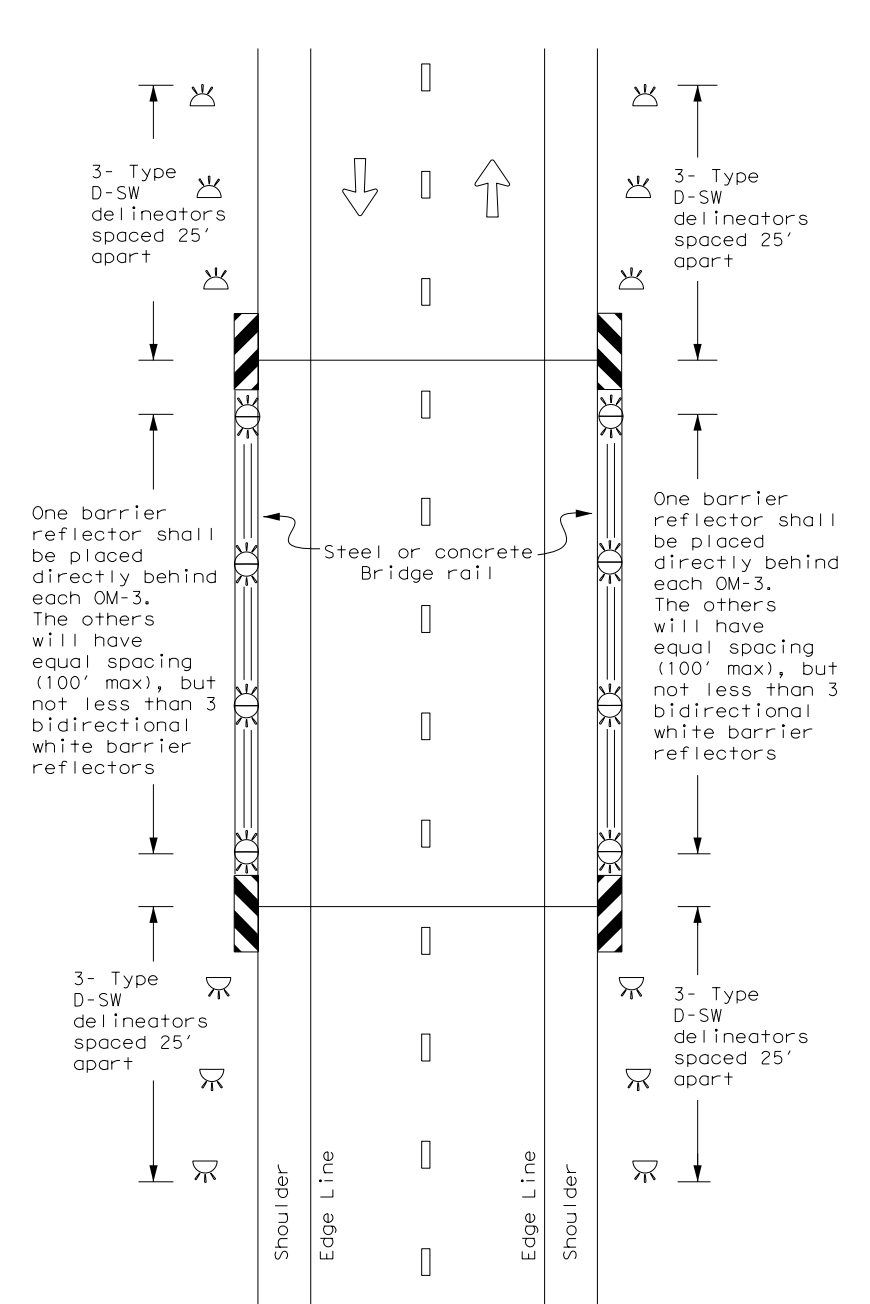
**TWO-WAY, TWO LANE ROADWAY
WITH METAL BEAM GUARD FENCE (MBGF)**



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

**TWO-WAY, TWO LANE ROADWAY
BRIDGE WITH NO APPROACH RAIL**



LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	Traffic Flow

Texas Department of Transportation Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

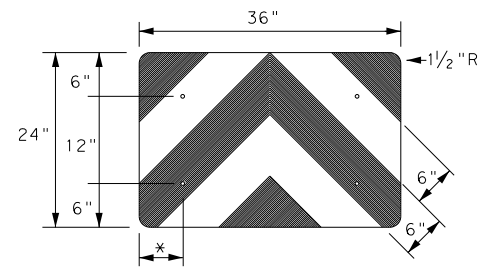
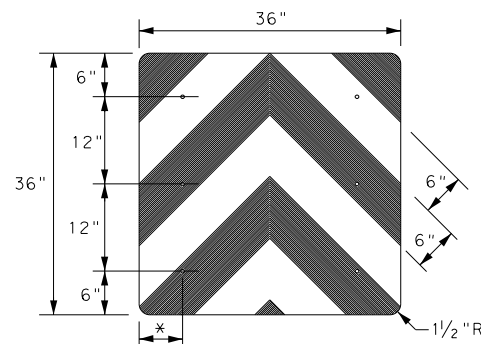
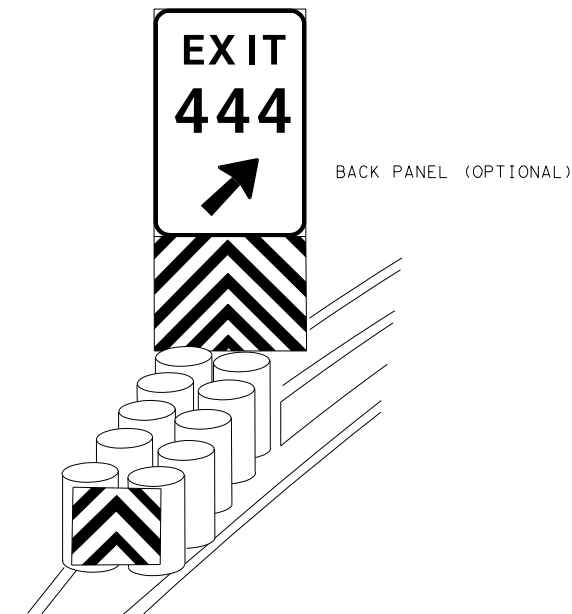
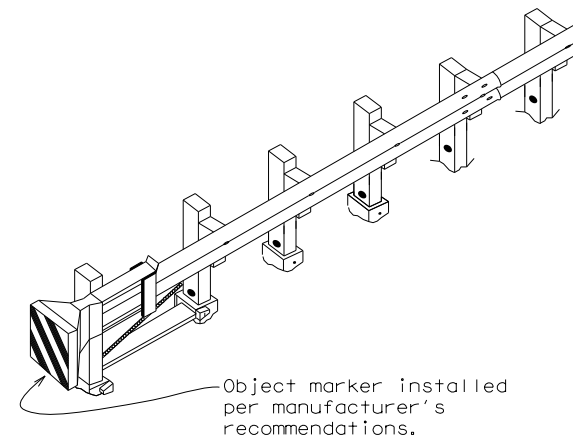
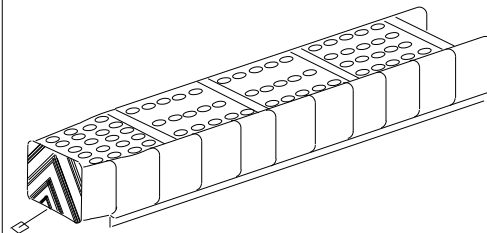
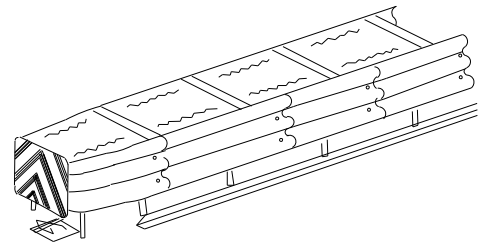
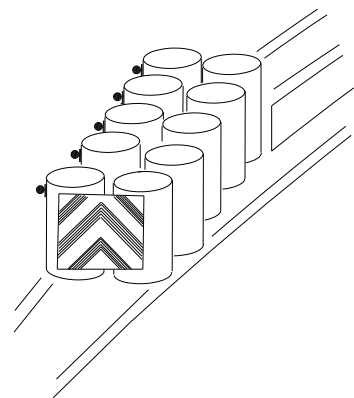
D & OM(5) - 20

FILE: dom5-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
7-20	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	343	

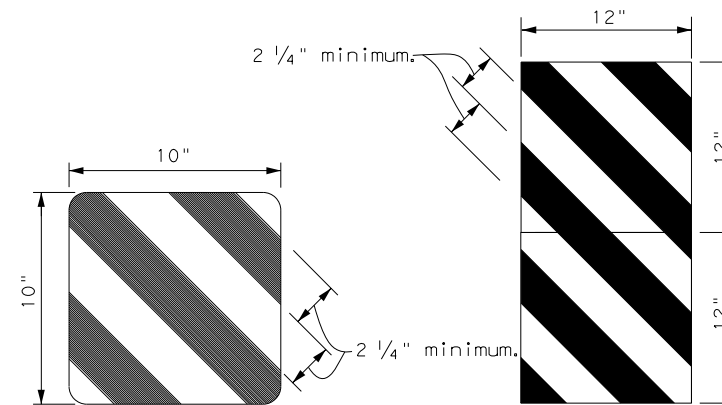
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: FILE:

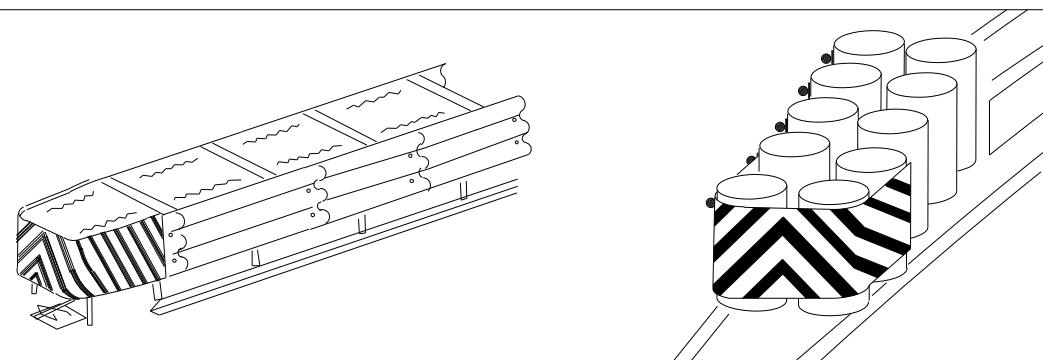
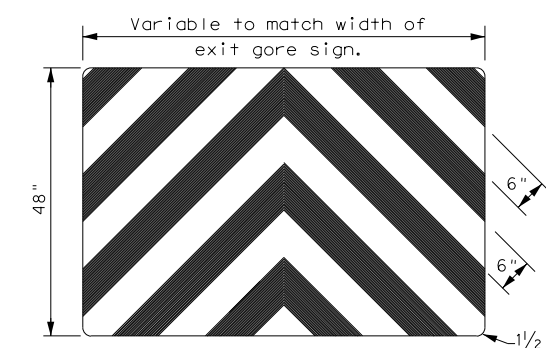
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



* Adjust to fit attenuator per manufacturer's recommendation, or as directed by the Engineer

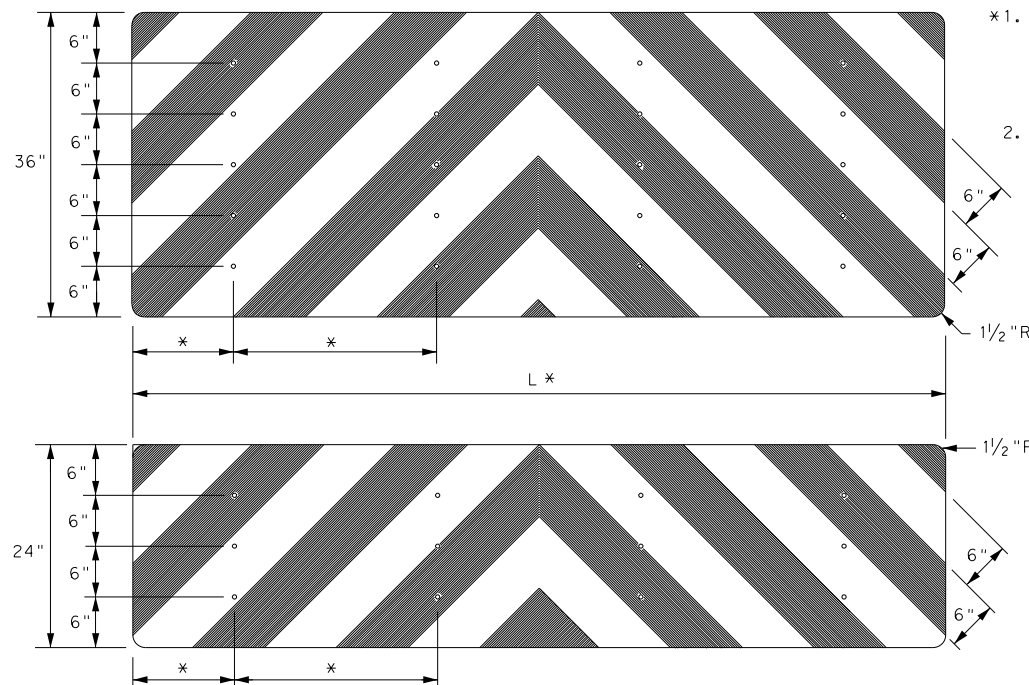


OBJECT MARKERS SMALLER THAN 3 FT²



NOTES

- *1. Spacing should be adjusted to attach through centerline of drum, per attenuator manufacturer's recommendation, or as directed by the Engineer.
- 2. Mounting should be flush with top of attenuator. Minimum size 96" x 24".



NOTES

1. Object Markers shall conform to the Texas MUTCD and meet the color and reflectivity requirement of Department Material Specification DMS 8300. Background shall be yellow reflective sheeting (Type B or C) and Chevron shall be black.
2. Object Markers 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. A radius at the corners is not required for direct applied sheeting.
3. Object Marker size may be reduced to fit smaller devices. Width of alternating black and yellow stripes are typically 6". Object Markers smaller than 3ft may have reduced width stripes of a minimum of 2 1/4".
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. Object Marker at nose of attenuator is subsidiary to the attenuator.
6. See D & OM (1-4) for required barrier reflectors.

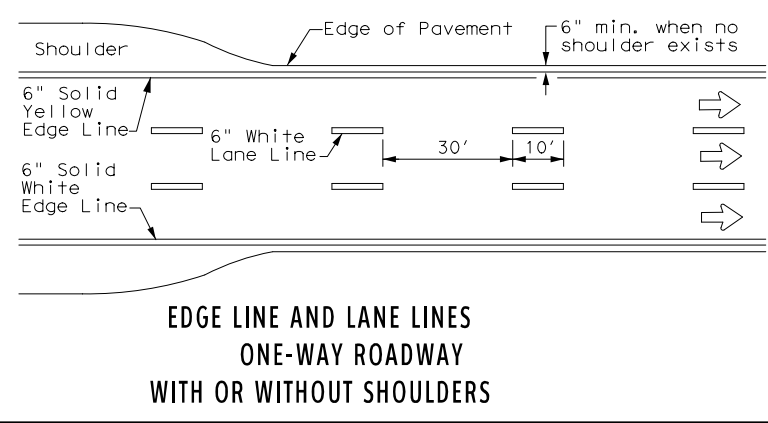


DELINEATOR &
OBJECT MARKER
FOR VEHICLE IMPACT
ATTENUATORS
D & OM(VIA) - 20

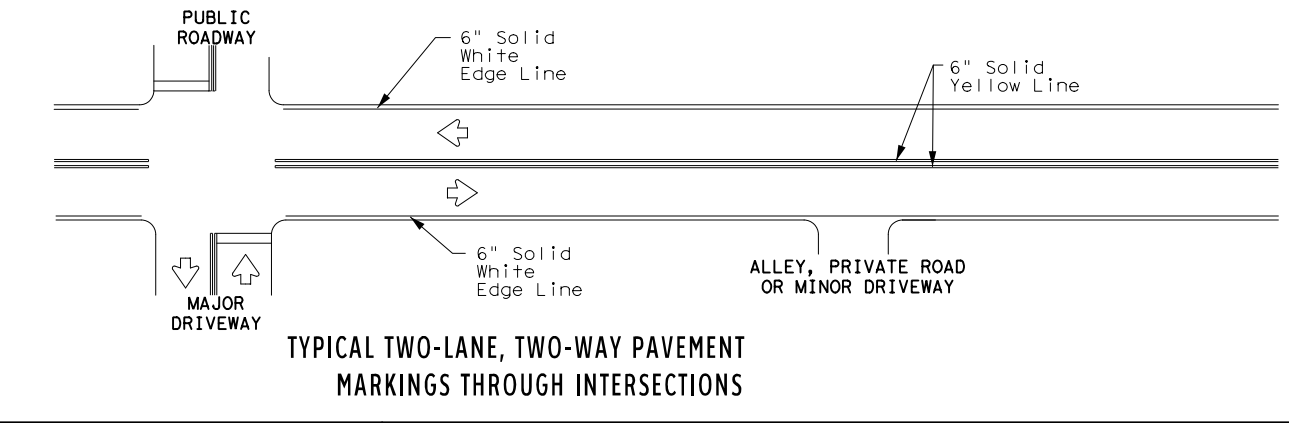
FILE: domvia20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT	
© TxDOT December 1989	CONT	SECT	JOB	HIGHWAY	
REVISIONS		0251	06	036	US 281
4-92 8-04	DIST	COUNTY	SHEET NO.		
8-95 3-15	BWD	LAMPASAS	344		
4-98 7-20					

DATE:
FILE:

DATE: 2/22/2023 2:15:12 PM
 FILE: \\stiv-sw-pw-bentley.com\stiv-sw-pw-01\Documents\Active Projects\TXDOT\61618951\61618951.dwg
 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 any drawings or information from other drawings or information.



**EDGE LINE AND LANE LINES
ONE-WAY ROADWAY
WITH OR WITHOUT SHOULDERS**

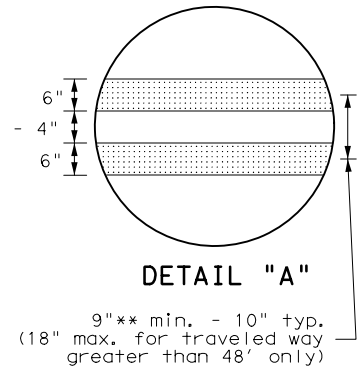
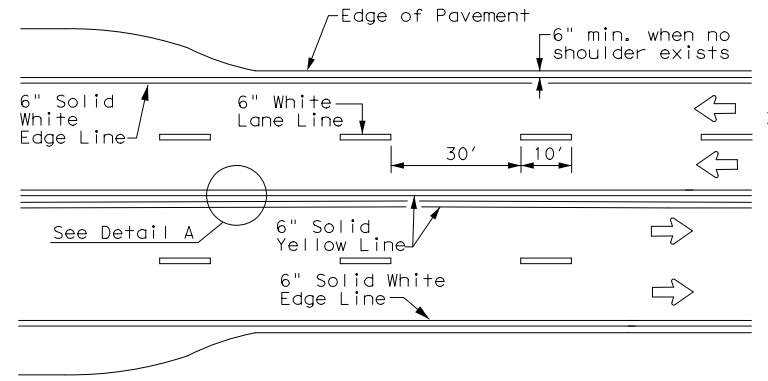


**TYPICAL TWO-LANE, TWO-WAY PAVEMENT
MARKINGS THROUGH INTERSECTIONS**

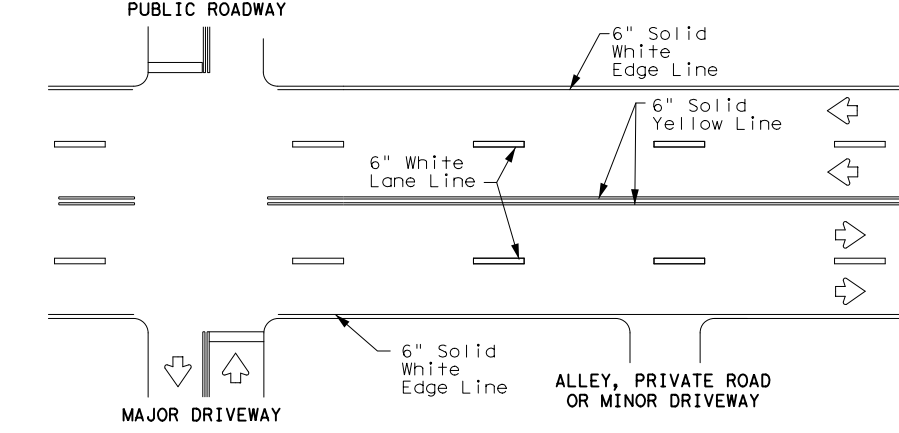
- GENERAL NOTES**
- Edge line striping shall be as shown in the plans or as directed by the Engineer. The edge line should not be placed less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edge lines are not required in curb and gutter sections of roadways.
 - The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the center of edge line to the center of edge line 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.

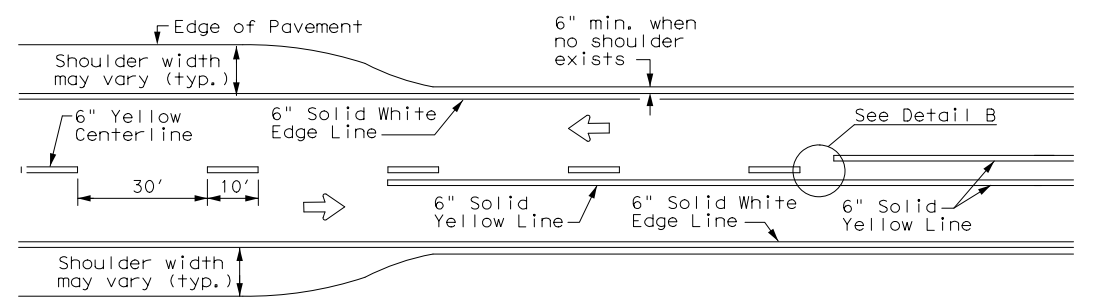


**CENTERLINE AND LANE LINES
FOUR LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS**

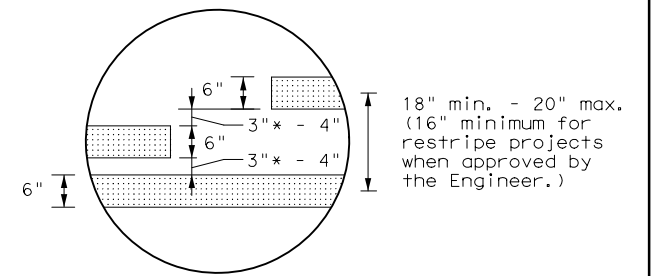


**TYPICAL MULTI-LANE, TWO-WAY PAVEMENT
MARKINGS THROUGH INTERSECTIONS**

- * 2" minimum for restripe projects when approved by the Engineer.
- ** 8" minimum for restripe projects when approved by the Engineer.

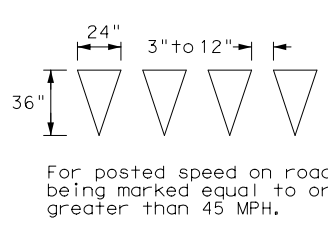


**TWO LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS**



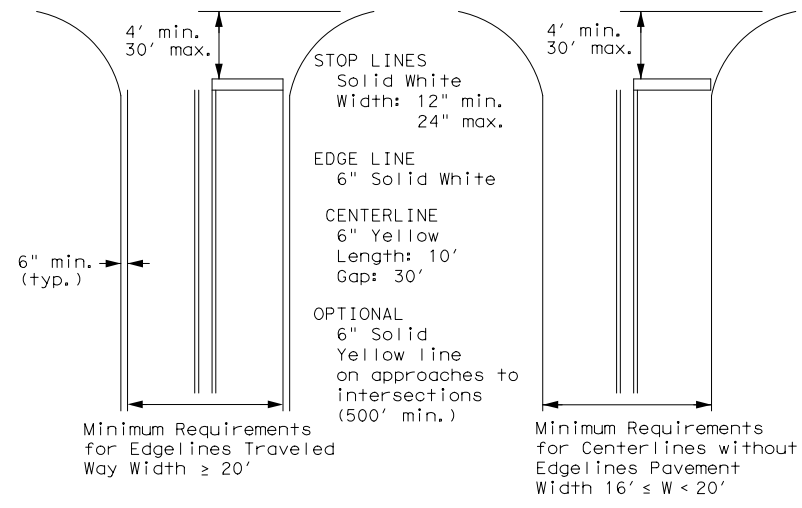
DETAIL "B"

- * 2" minimum for restripe projects when approved by the Engineer.



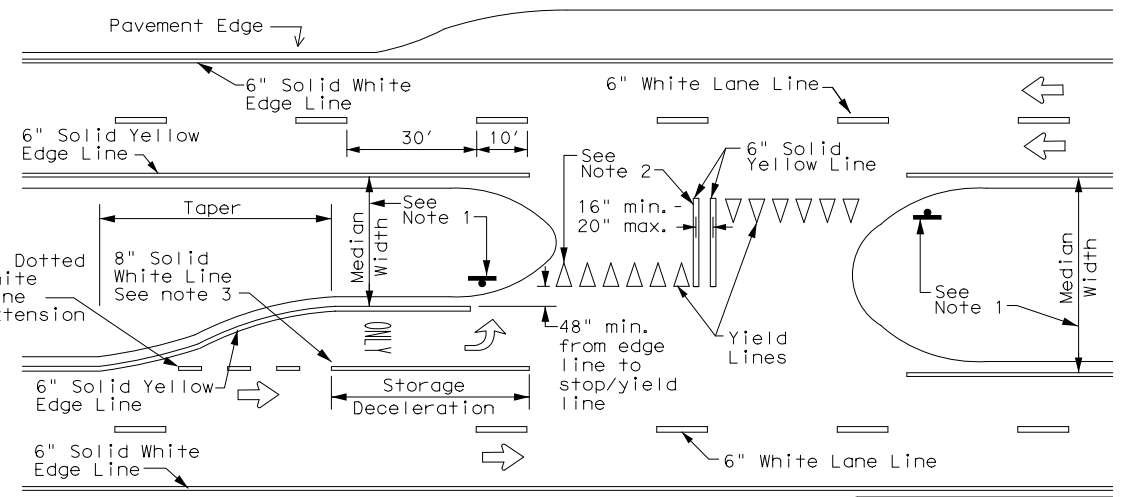
YIELD LINES

For posted speed on road being marked equal to or greater than 45 MPH.



NOTE: Traveled way is exclusive of shoulder widths. Refer to General Note 2 for additional details.

**GUIDE FOR PLACEMENT OF STOP LINES,
EDGE LINE & CENTERLINE**
Based on Traveled Way and Pavement Widths for Undivided Roadways



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

- Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs and stop bars are optional as determined by the Engineer.
- Install median striping (double yellow centerlines and stop lines/yield lines) when a 50' or greater median centerline can be placed. Stop lines shall only be used with stop signs. Yield lines shall only be used with yield signs.
- Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.



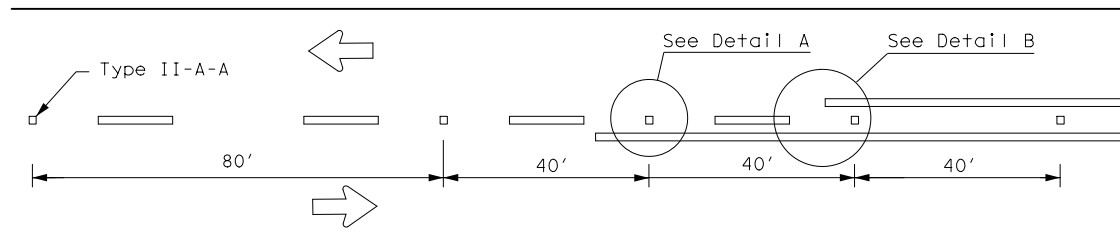
**TYPICAL STANDARD
PAVEMENT MARKINGS**

PM(1)-22

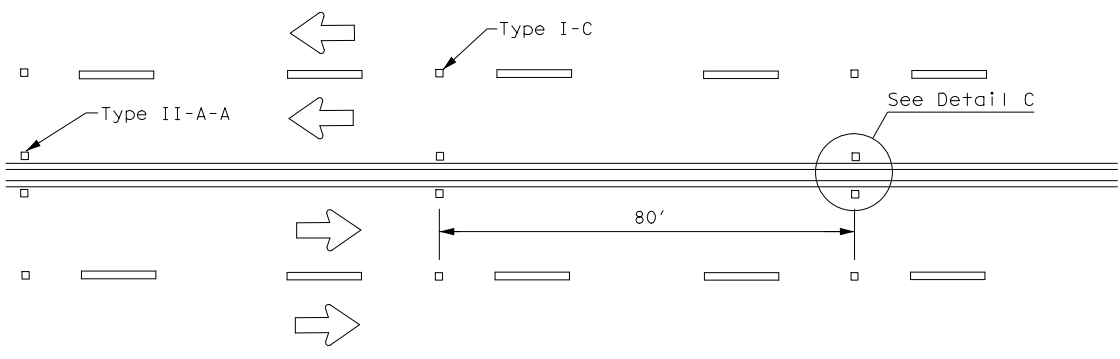
FILE:	pm1-22.dgn	DN:	CK:	DW:	CK:
© TxDOT	December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS		0251	06	036	US 281
11-78	8-00	6-20			
8-95	3-03	12-22			
5-00	2-12				
DIST	COUNTY		SHEET NO.		
BWD	LAMPASAS		345		

REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

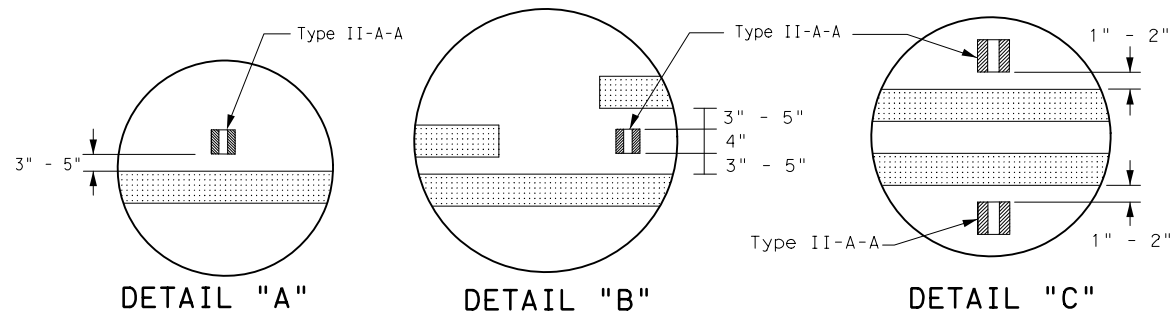
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of units or the use of this standard in any project.



CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS



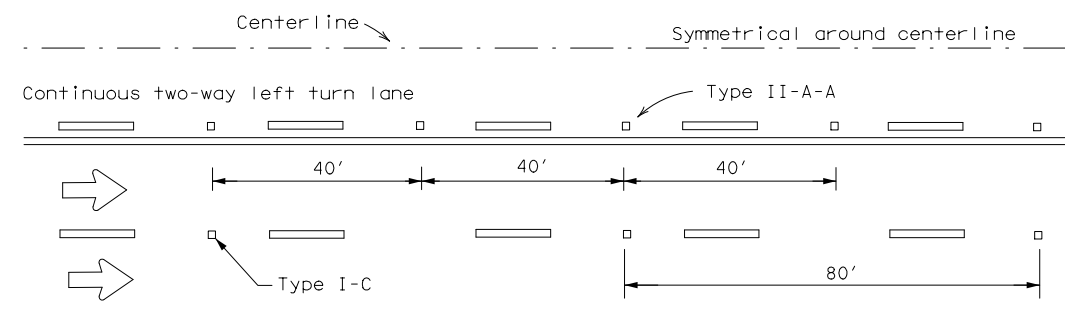
CENTERLINE & LANE LINES
FOR FOUR LANE TWO-WAY ROADWAYS



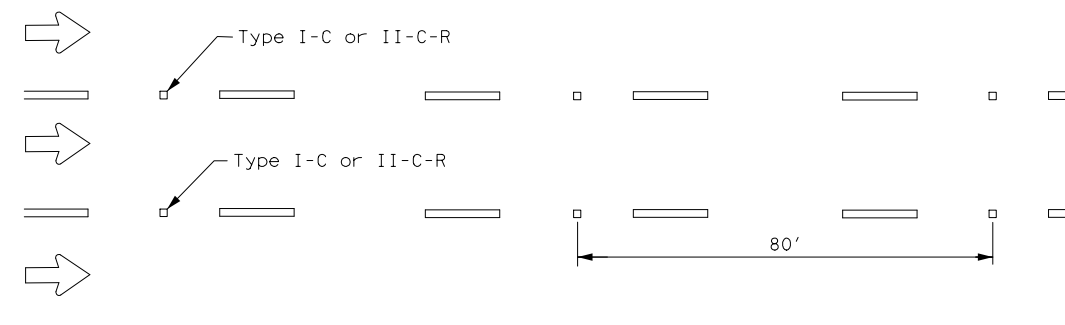
DETAIL "A"

DETAIL "B"

DETAIL "C"

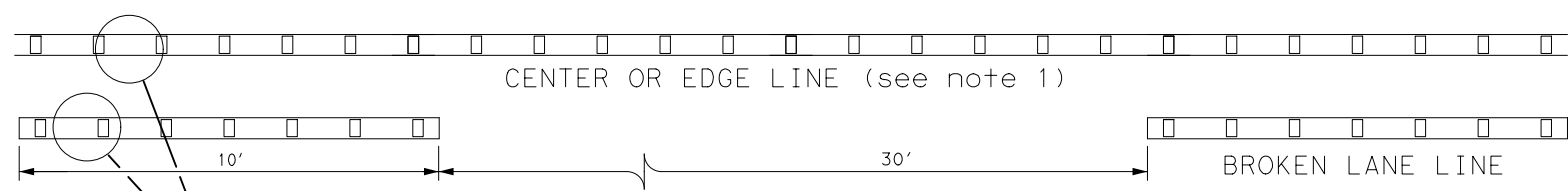


CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



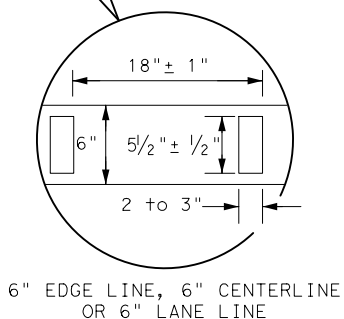
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.
See Note 3.

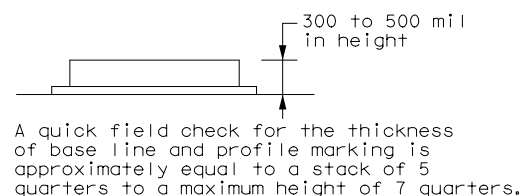


REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS



6" EDGE LINE, 6" CENTERLINE
OR 6" LANE LINE



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.

NOTES

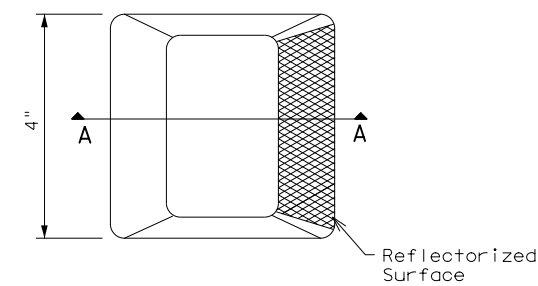
1. Edge lines should typically be 6" wide and the materials shall be specified in the plans.
2. Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

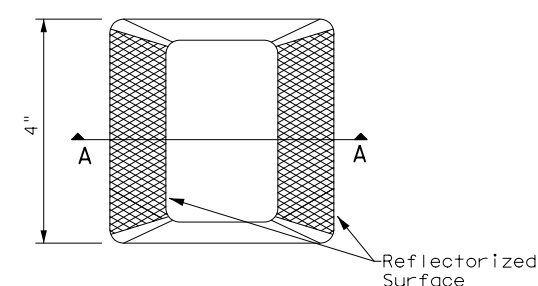
1. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.
3. Use raised pavement marker Type I-C with undivided roadways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.

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

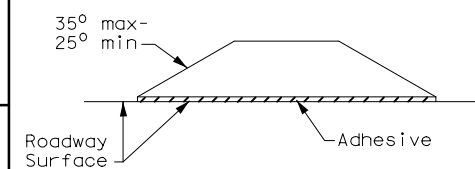
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

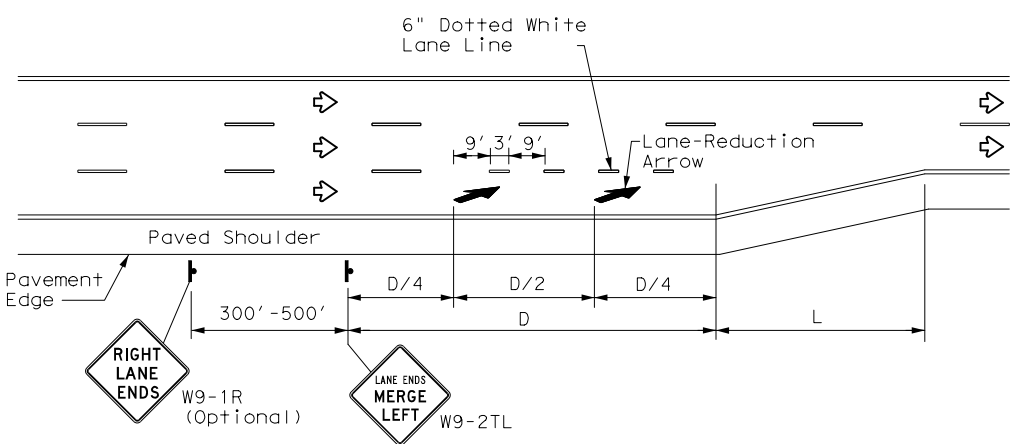
RAISED PAVEMENT MARKERS



POSITION GUIDANCE USING RAISED MARKERS REFLECTORIZED PROFILE MARKINGS PM(2)-22

FILE: pm2-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
	0251	06	036	US 281
4-77 8-00 6-20	DIST	COUNTY	SHEET NO.	
4-92 2-10 12-22	BWD	LAMPASAS	346	
5-00 2-12				

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 units or the accuracy of the information contained herein.



LANE REDUCTION

NOTES

- Lane reduction pavement markings are used where the number of through lanes is reduced because of narrowing of the roadway or because of a section of on-street parking in what would otherwise be a through lane. For Texas Super 2 Passing Lanes, see TS2(PL) standard sheets.
- On divided highways, an additional RIGHT LANE ENDS (W9-1R) sign may be installed in the median aligned with the W9-1R sign on the right side of the highway.
- Lane reduction arrows are required for speeds of 45 mph or greater. An optional third lane reduction arrow may be added based on engineering judgement. If used, the optional third lane reduction arrow should be centered between the first and last lane reduction arrows.
- For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.

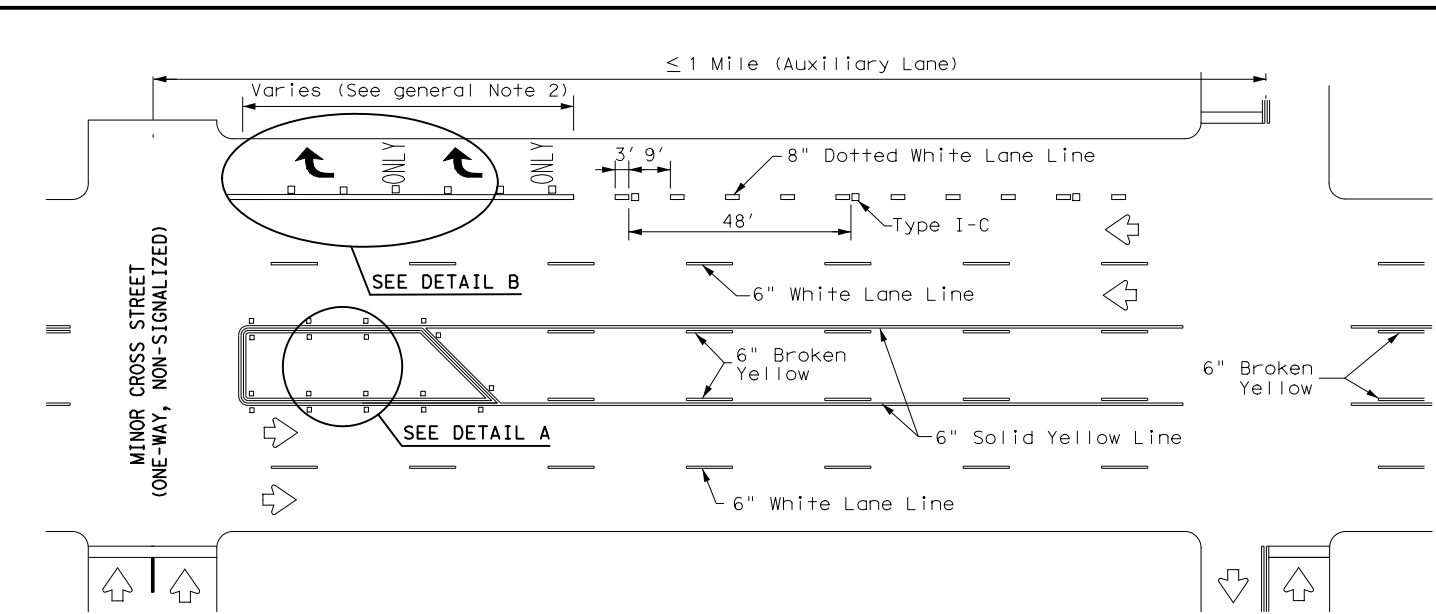
ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
30 MPH	460	$L = \frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	L=WS
45 MPH	775	
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	

GENERAL NOTES

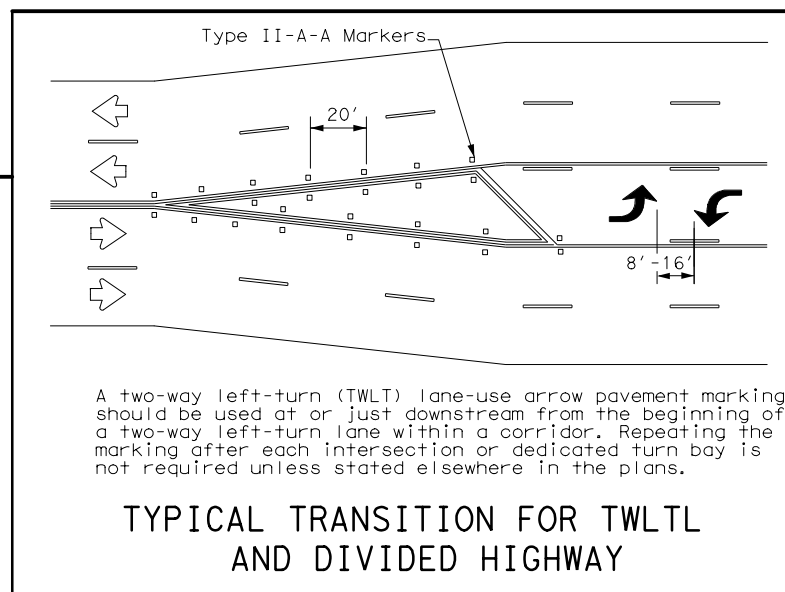
- Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows are as shown in the Standard Highway Sign Designs for Texas.
- When lane-use words 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.
- Use raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.
- Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer. See Chapter 3 of the Roadway Design Manual for additional information on turning lanes or storage lengths.

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

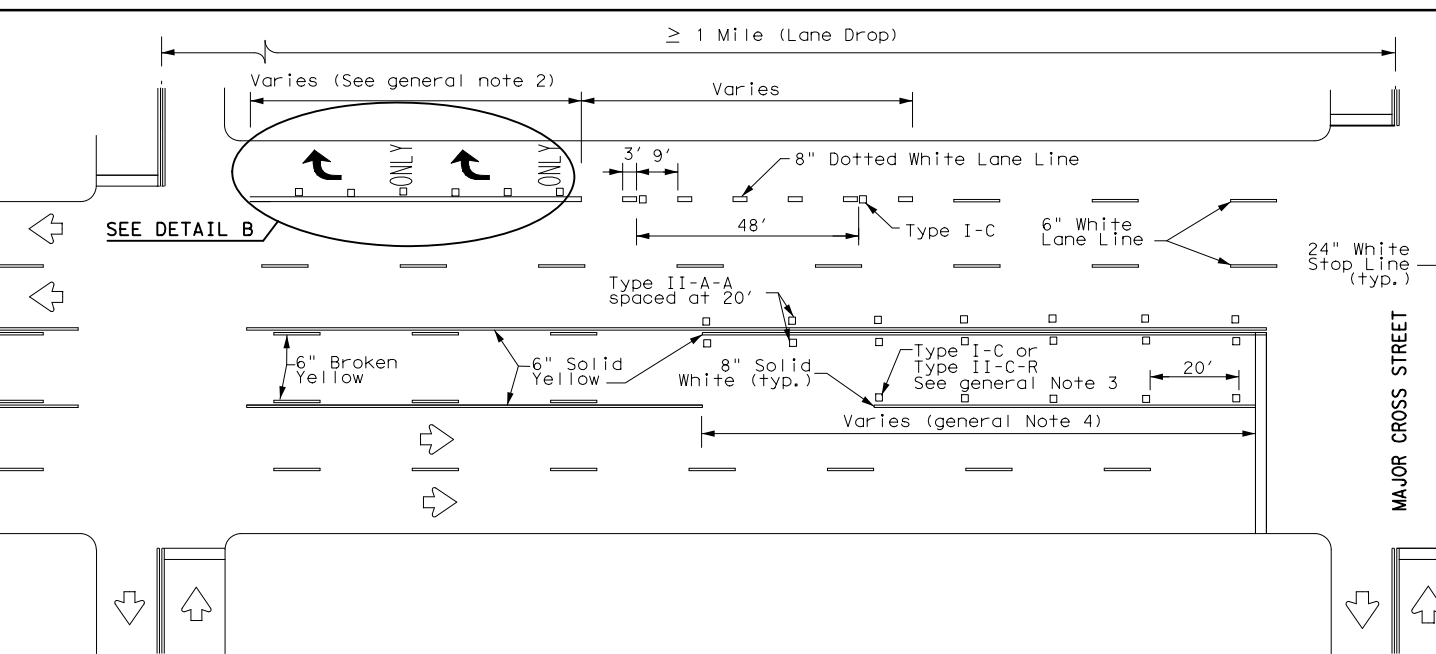
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



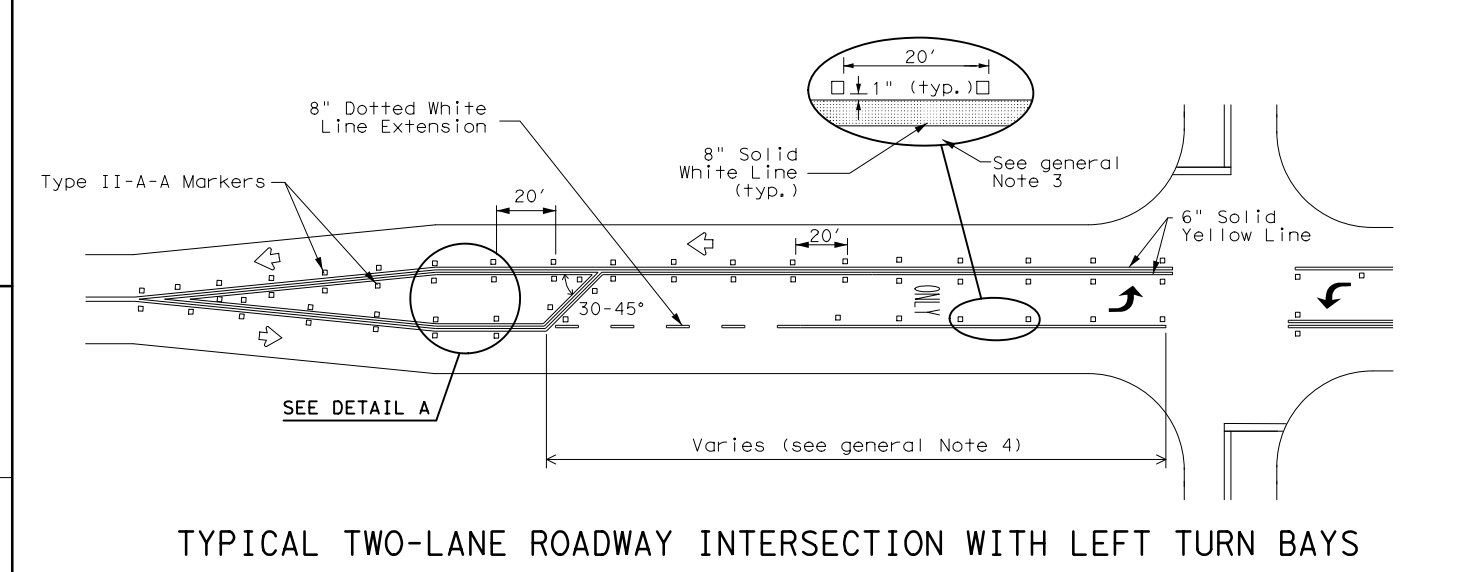
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



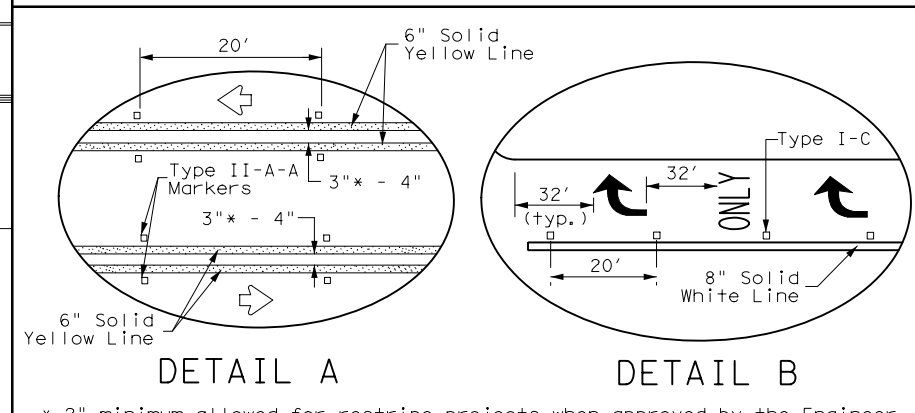
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY



TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS



DETAIL A

DETAIL B

* 2" minimum allowed for restripe projects when approved by the Engineer.

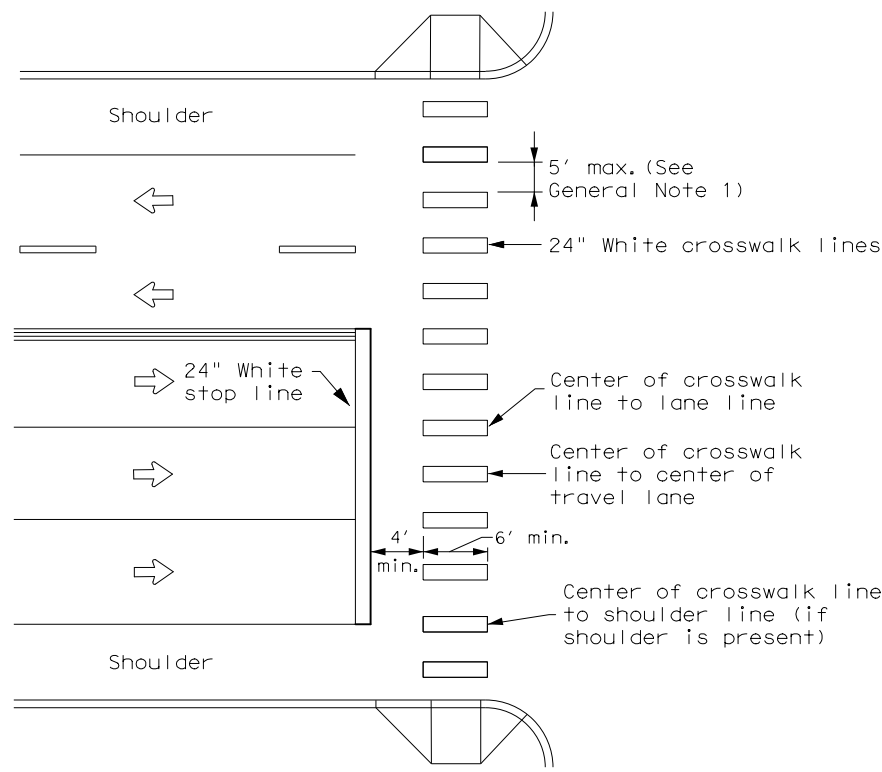
Texas Department of Transportation

Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS PM(3)-22

FILE: pm3-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
4-98 3-03 6-20	DIST	COUNTY	SHEET NO.	
5-00 2-10 12-22	BWD	LAMPASAS	347	
8-00 2-12				

DATE: 2/22/2023 2:19:20 PM
 FILE: \\stv-sw-pw.bentley.com\stv-sw-pw-01\Documents\Active Projects\TXDOT\61161\61161.dwg
 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 any information from one format to another.



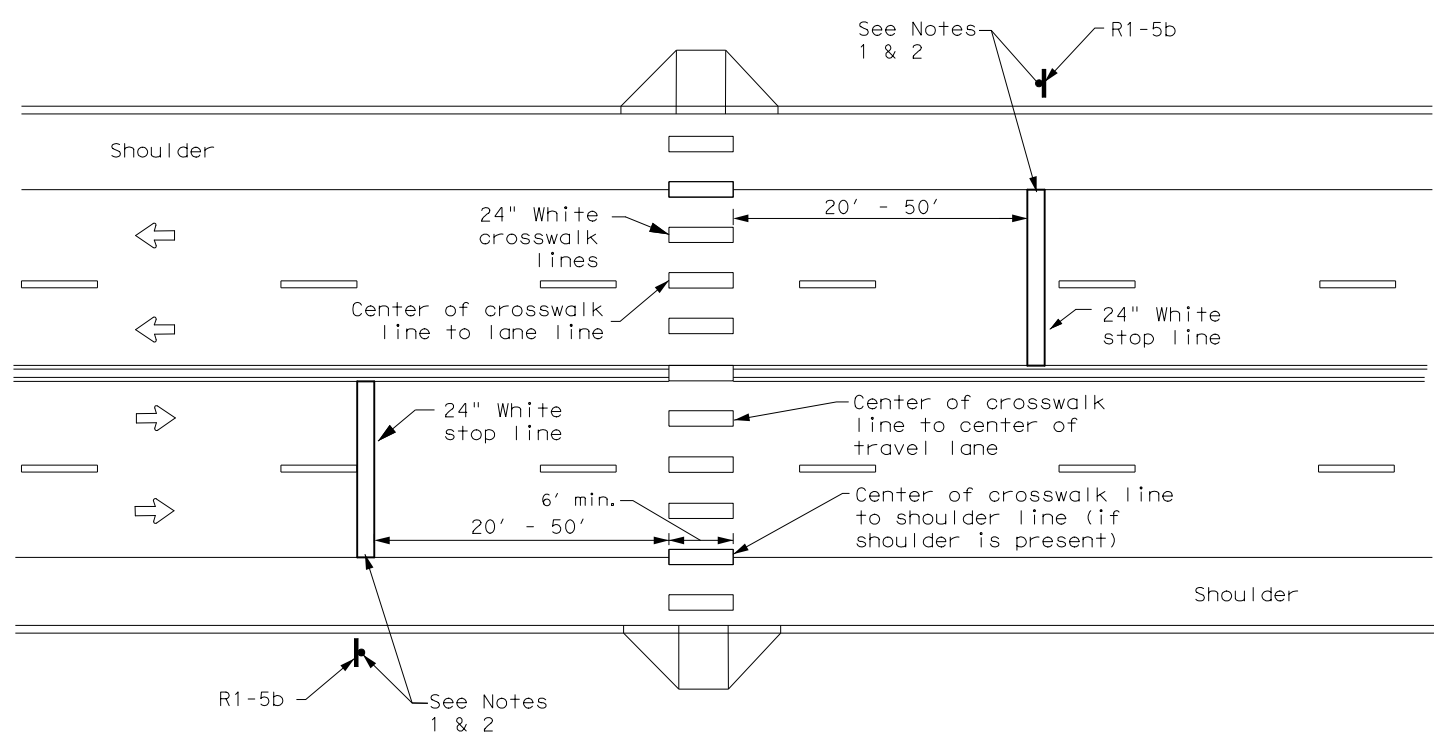
HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

GENERAL NOTES

1. Longitudinal crosswalk lines should not be placed in the wheel path of vehicles. Center the crosswalk lines on travel lanes, lane lines, and shoulder lines (if present).
2. A minimum 6" clear distance shall be provided to the curb face. If the last crosswalk line falls into this distance it must be omitted.
3. For divided roadways, adjustments in spacing of the crosswalk lines should be made in the median so that the crosswalk lines are maintained in their proper location across the travel portion of the roadway.
4. At skewed crosswalks, the crosswalk lines are to remain parallel to the lane lines.
5. Each crosswalk shall be a minimum of 6' wide.
6. The High-Visibility Longitudinal Crosswalk is the preferred crosswalk pattern on State Highways. Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used. All crosswalk designs and dimension shall comply with the "Texas Manual on Uniform Traffic Control Devices."
7. Final placement of Stop Bar and Crosswalk shall be approved by the Engineer in the field.

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.



UNSIGNALIZED MIDBLOCK HIGH-VISIBILITY LONGITUDINAL CROSSWALK

NOTES:

1. Use stop bars with Stop Here For Pedestrians (R1-5b) signs at unsignalized midblock crosswalks.
2. Use stop bars with STOP HERE ON RED (R10-6 or R10-6a) signs at mid block crosswalks controlled by traffic signals or pedestrian hybrid beacons.

Texas Department of Transportation
Traffic Safety Division Standard

CROSSWALK PAVEMENT MARKINGS

PM(4) - 22A

FILE: pm4-22a.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS		0251	06	036
6-20	DIST	COUNTY		SHEET NO.
6-22	BWD	LAMPASAS		348
12-22				
220				

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.

SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)

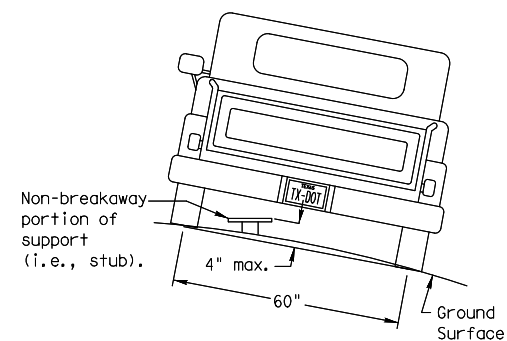
Post Type _____
 FRP = Fiberglass Reinforced Plastic Pipe (see SMD (FRP))
 TWT = Thin-Walled Tubing (see SMD (TWT))
 10BWG = 10 BWG Tubing (see SMD (SLIP-1) to (SLIP-3))
 S80 = Schedule 80 Pipe (see SMD (SLIP-1) to (SLIP-3))

Number of Posts (1 or 2) _____

Anchor Type _____
 UA = Universal Anchor - Concreted (see SMD (FRP) and (TWT))
 UB = Universal Anchor - Bolted down (see SMD (FRP) and (TWT))
 WS = Wedge Anchor Steel - (see SMD (TWT))
 WP = Wedge Anchor Plastic (see SMD (TWT))
 SA = Slipbase - Concreted (see SMD (SLIP-1) to (SLIP-3))
 SB = Slipbase - Bolted Down (see SMD (SLIP-1) to (SLIP-3))

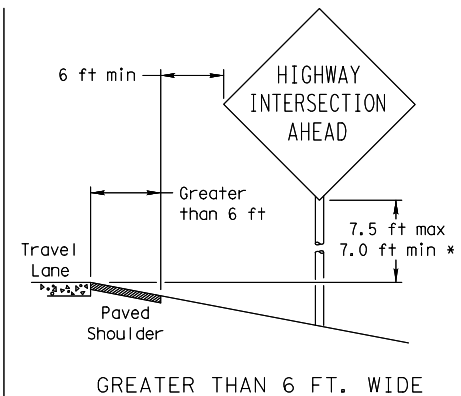
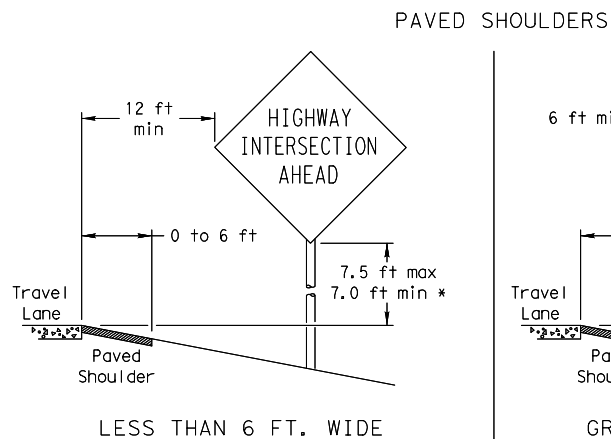
Sign Mounting Designation
 P = Prefab. "Plain" (see SMD (SLIP-1) to (SLIP-3), (TWT), (FRP))
 T = Prefab. "T" (see SMD (SLIP-1) to (SLIP-3), (TWT))
 U = Prefab. "U" (see SMD (SLIP-1) to (SLIP-3))
 IF REQUIRED
 1EXT or 2EXT = Number of Extensions (see SMD (SLIP-1) to (SLIP-3), (TWT))
 BM = Extruded Wind Beam (see SMD (SLIP-1) to (SLIP-3))
 WC = 1.12 #/ft Wing Channel (see SMD (SLIP-1) to (SLIP-3))
 EXAL = Extruded Aluminum Sign Panels (see SMD (SLIP-3))

REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

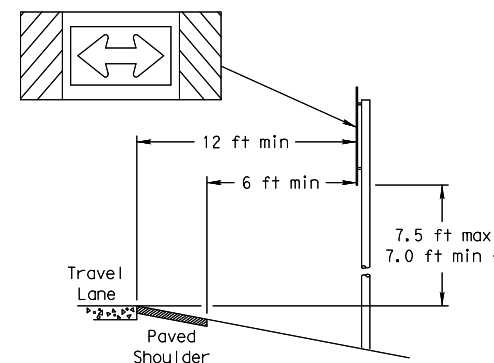
SIGN LOCATION



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.

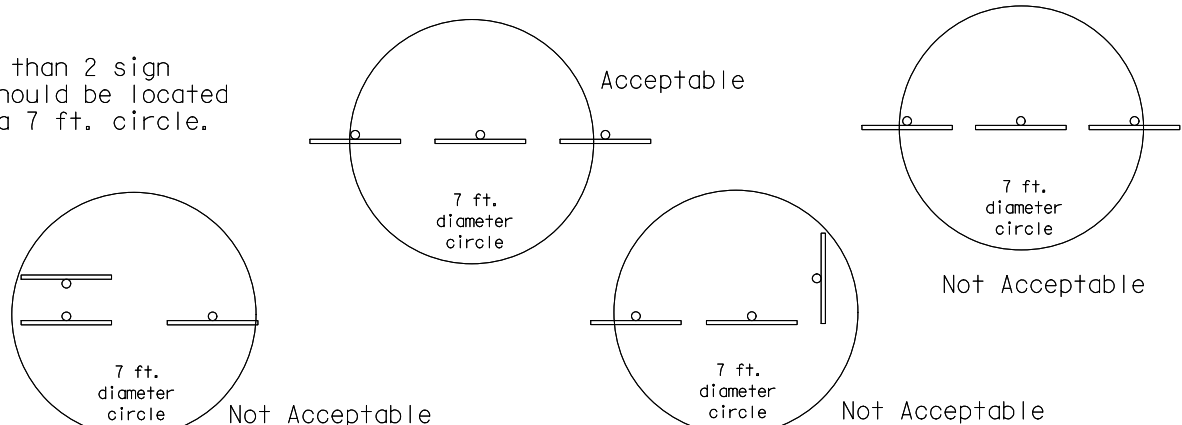
When the shoulder is greater than 6 ft. in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

T-INTERSECTION

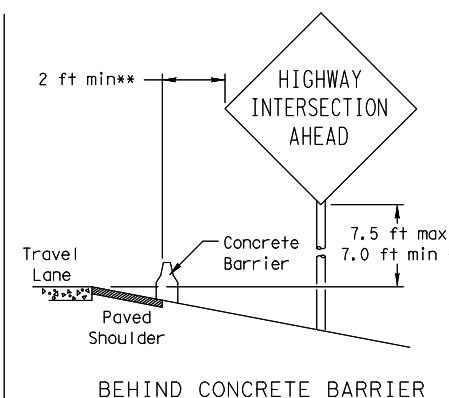
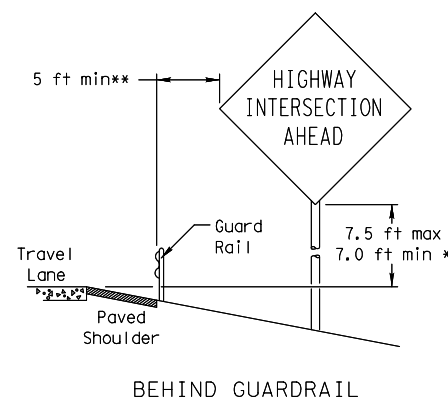


When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.

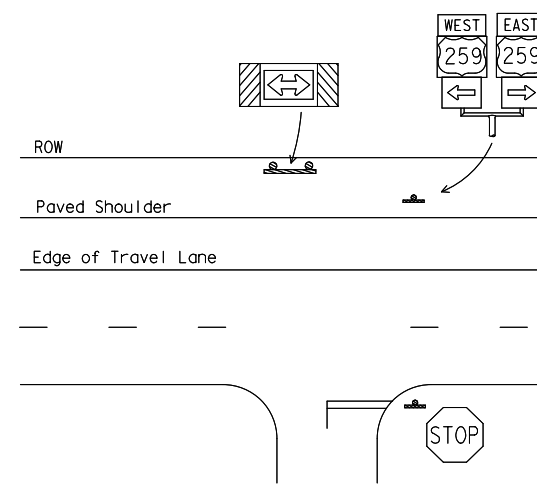
No more than 2 sign posts should be located within a 7 ft. circle.



BEHIND 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:

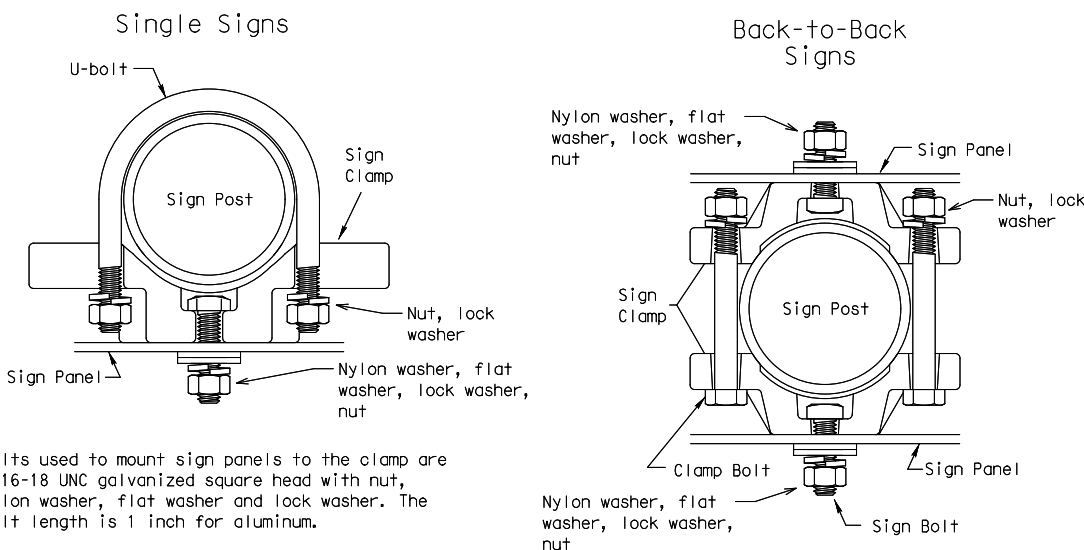
- (1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or
- (2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

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>

TYPICAL SIGN ATTACHMENT DETAIL



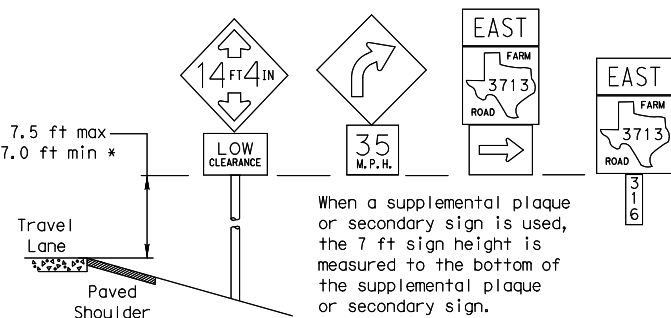
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

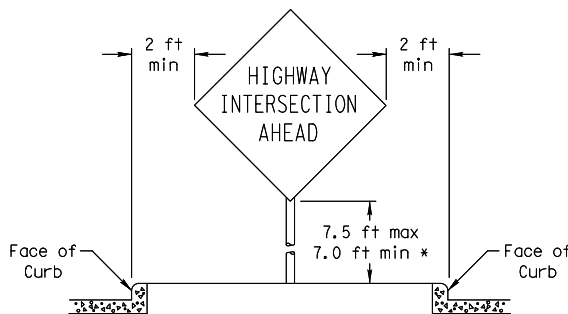
Sign clamps may be either the specific size clamp or the universal clamp.

Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

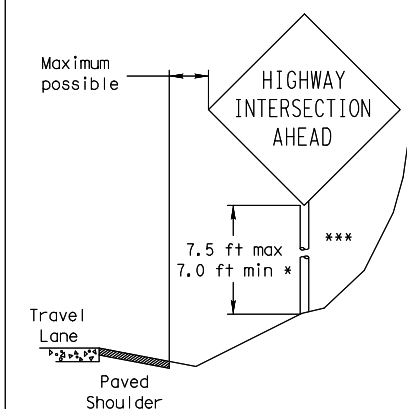
SIGNS WITH PLAQUES



CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY (When 6 ft min. is not possible.)



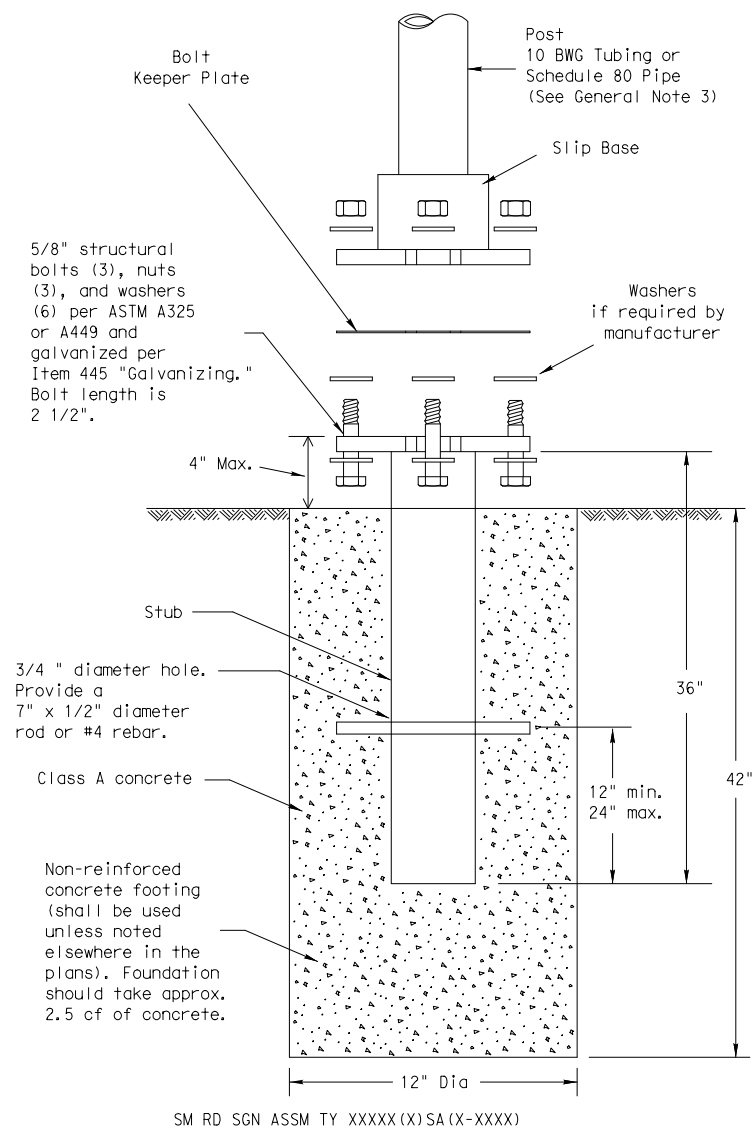
Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

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.

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.

TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



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:

- 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.
- 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
- 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>
- Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

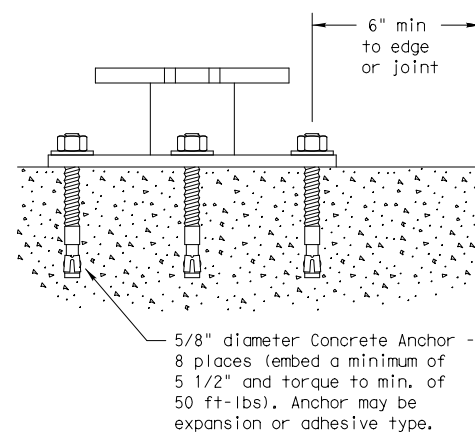
Foundation

- 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.
- 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.
- 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.
- Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
- The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support

- 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.
- 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, "Epoxyes 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.

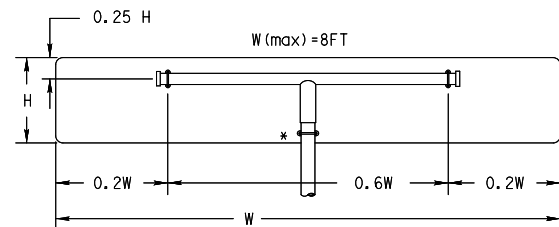
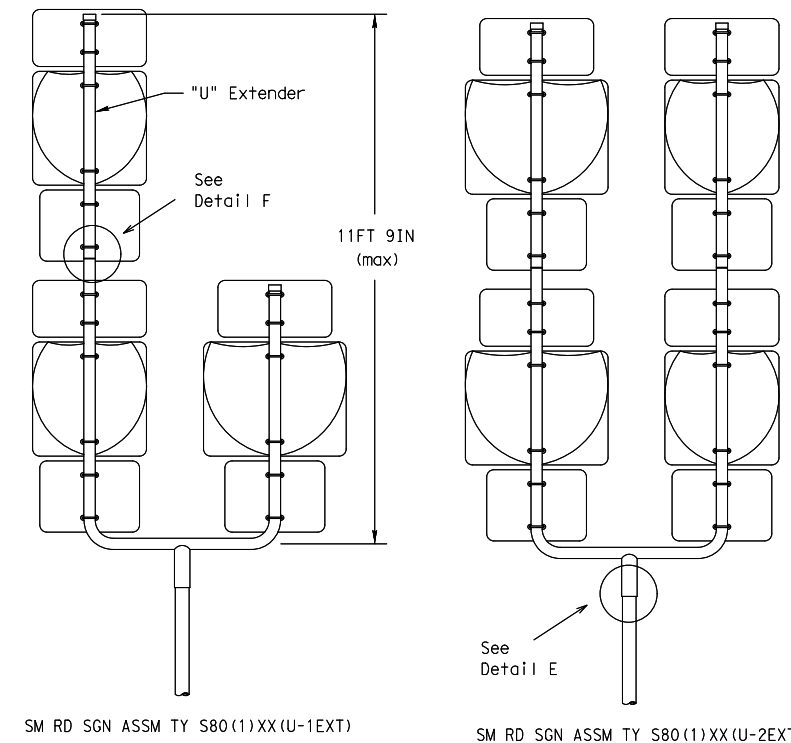
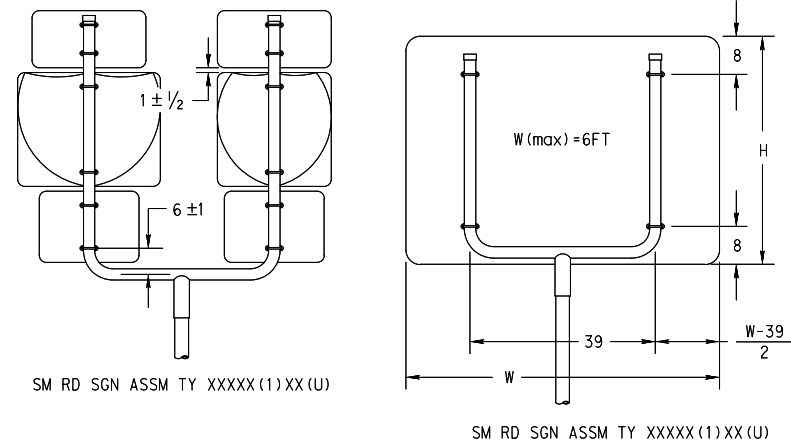
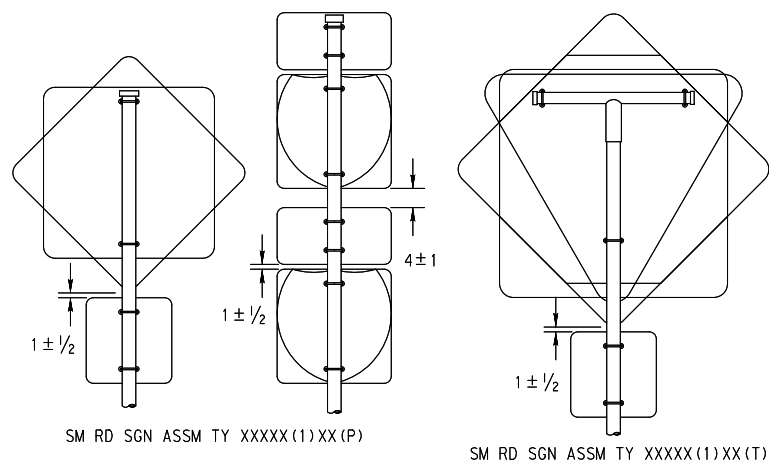


SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

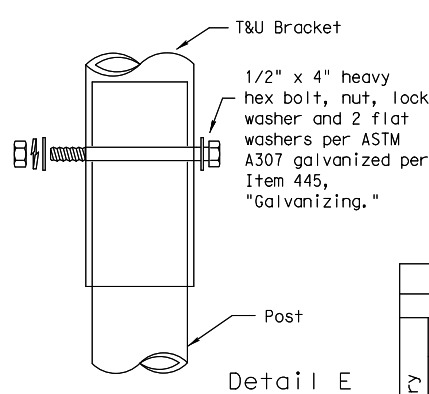
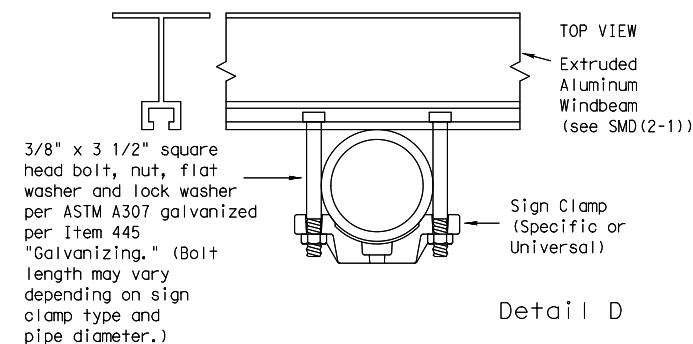
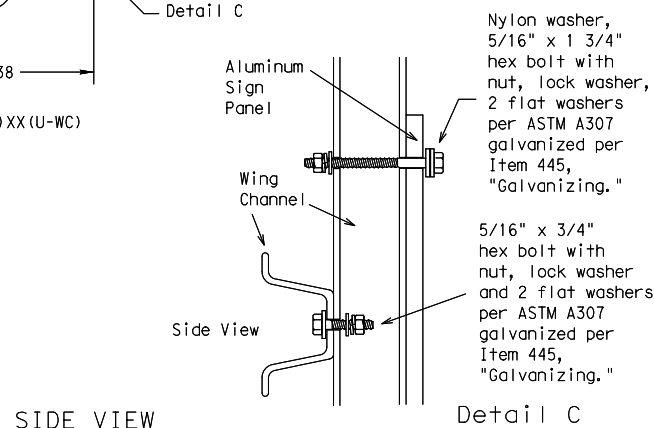
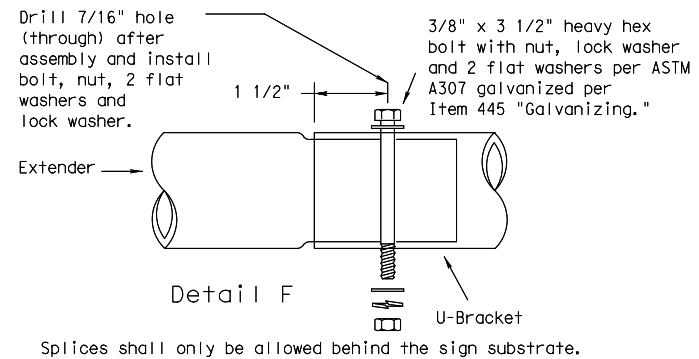
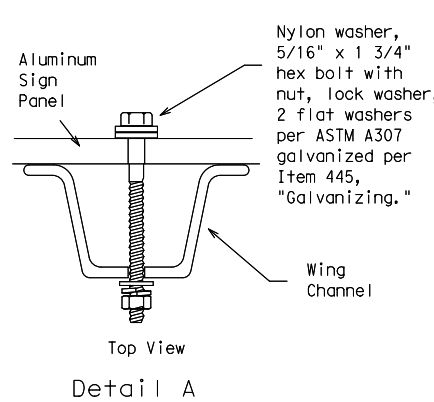
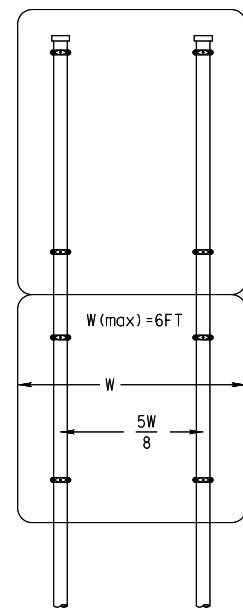
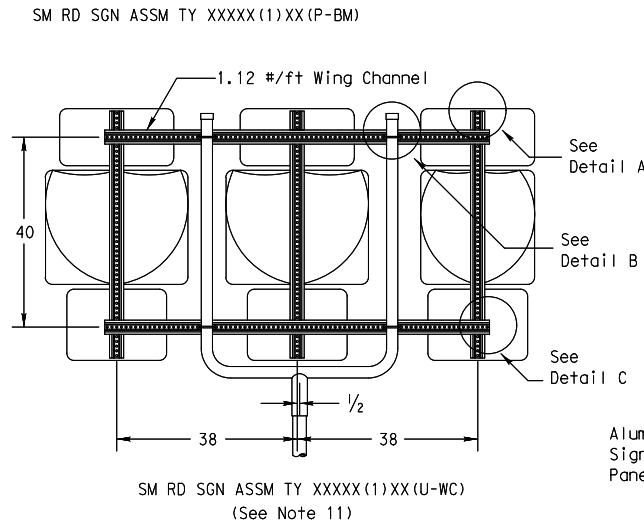
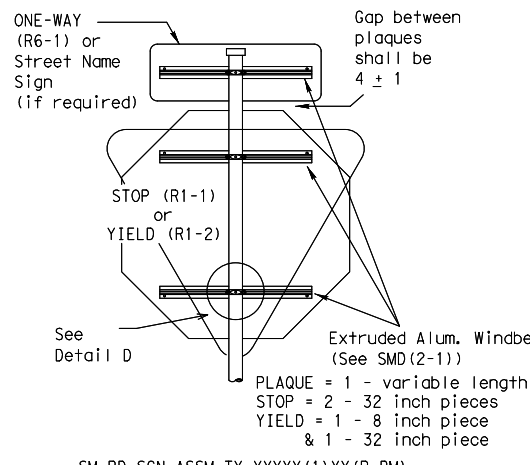
© TxDOT July 2002		DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT	
9-08	REVISIONS		CONT	SECT	JOB	HIGHWAY
			0251	06	036	US 281
			DIST	COUNTY		SHEET NO.
		BWD	LAMPASAS		350	

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.

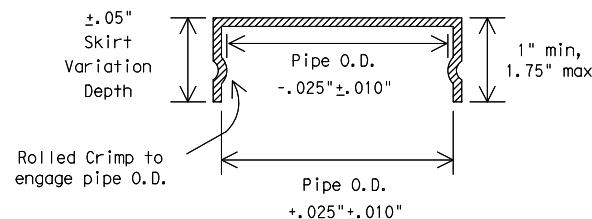


All dimensions are in english unless detailed otherwise.

SM RD SGN ASSM TY XXXXX(1)XX(T) (* - See Note 12)



FRICION 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:

- | 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 |
- 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.
- Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
- 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.
- Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
- 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.
- 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.
- Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
- 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."
- Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
- 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.
- Post open ends shall be fitted with Friction Caps.
- Sign blanks shall be the sizes and shapes shown on the plans.

REQUIRED SUPPORT

	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)
Warning	48x60-inch signs	TY S80(1)XX(T)
	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)

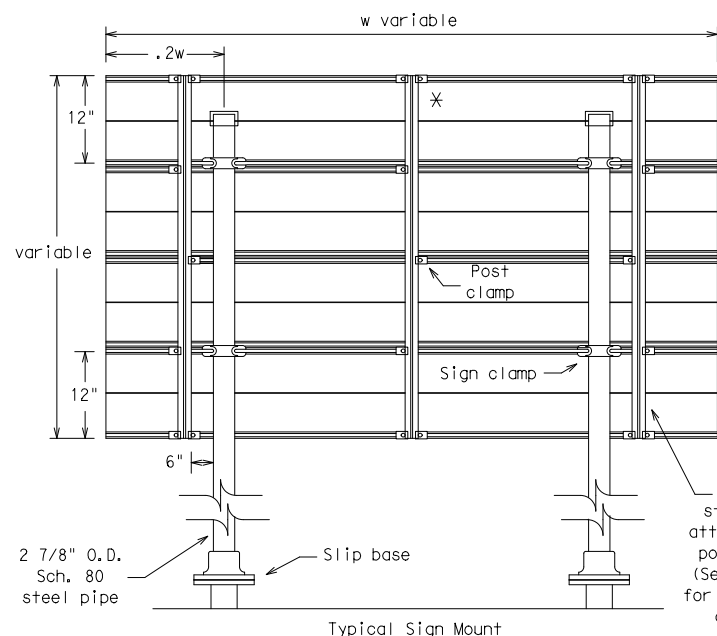
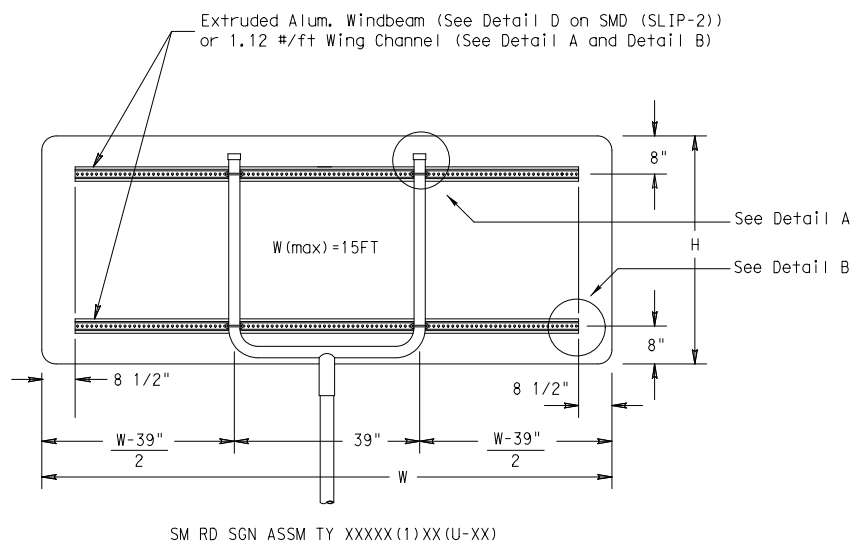
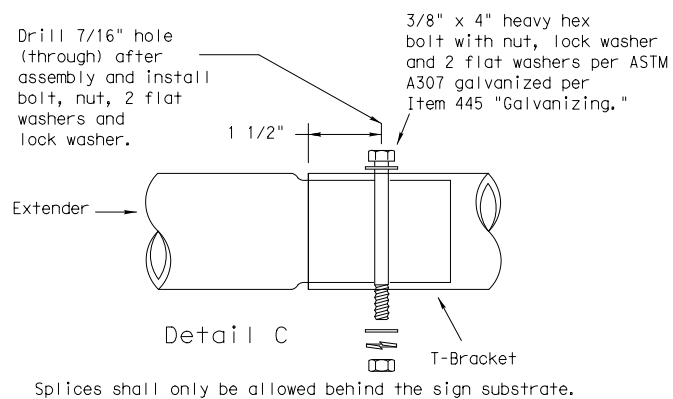
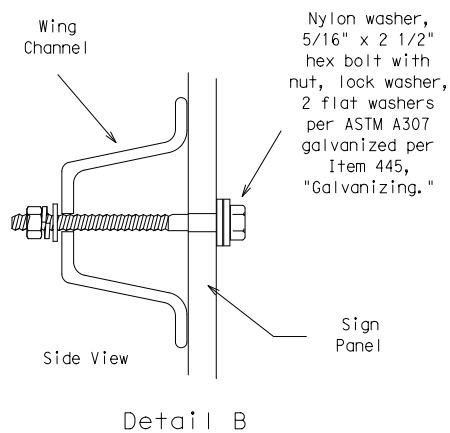
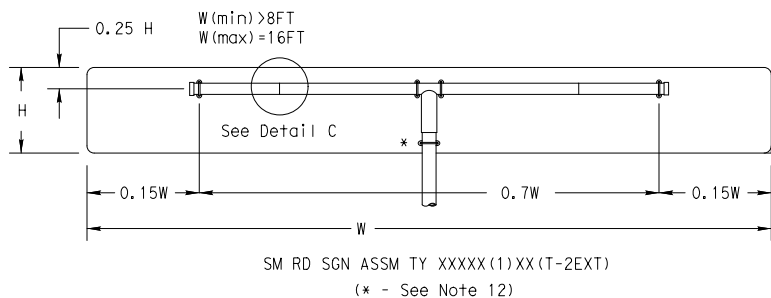
Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM SMD(SLIP-2)-08

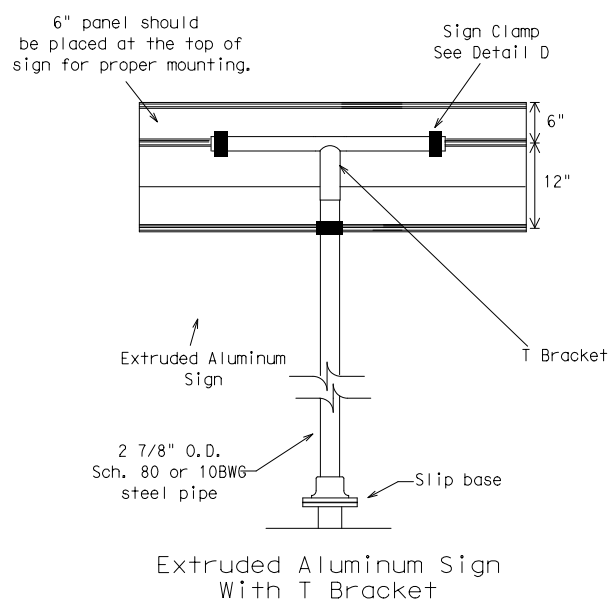
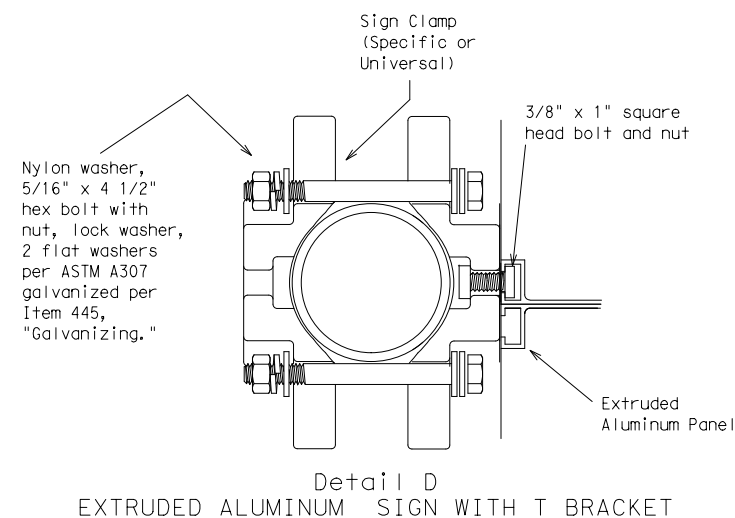
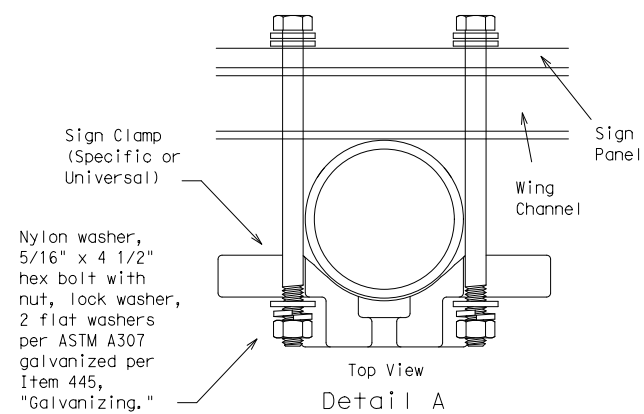
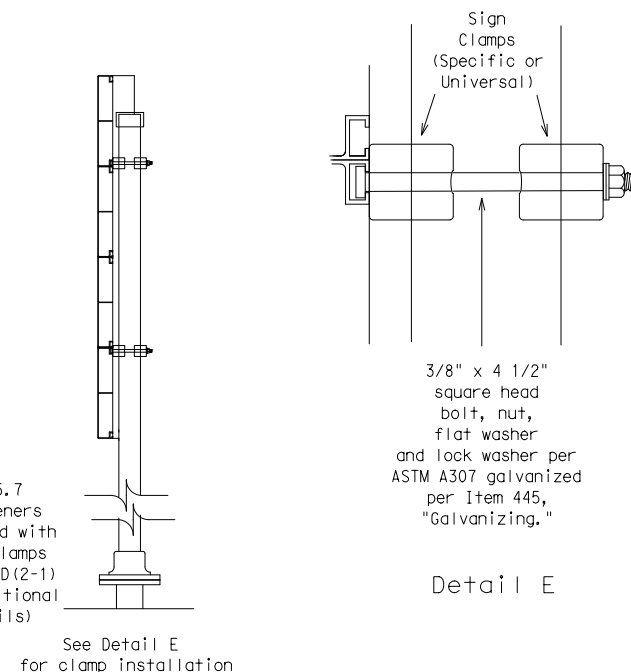
© TxDOT July 2002	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
9-08 REVISIONS	CONT	SECT	JOB	HIGHWAY
	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	351	

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.

DATE:
FILE:



* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.



Use Extruded Alum. Windbeam as stiffeners See SMD (2-1) for additional details
See Detail E for clamp installation

GENERAL NOTES:

- | SIGN SUPPORT | # OF POSTS | MAX. SIGN AREA |
|--------------|------------|----------------|
| 10 BWG | 1 | 16 SF |
| 10 BWG | 2 | 32 SF |
| Sch 80 | 1 | 32 SF |
| Sch 80 | 2 | 64 SF |
- 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.
- Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
- 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.
- Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
- 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.
- 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.
- Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
- 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."
- Sign blanks shall be the sizes and shapes shown on the plans.
- 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.
- 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

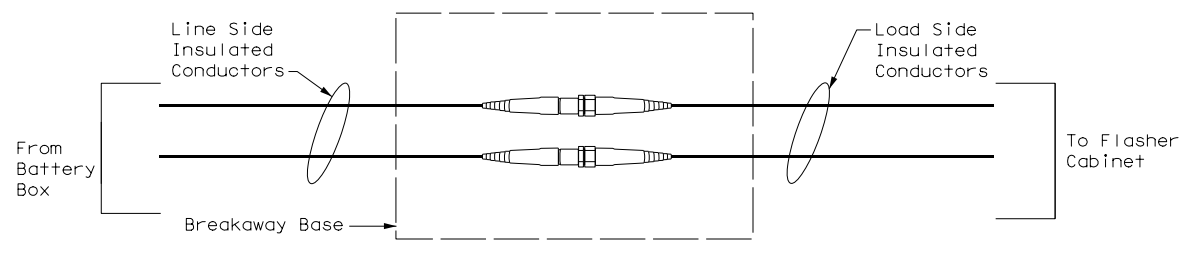
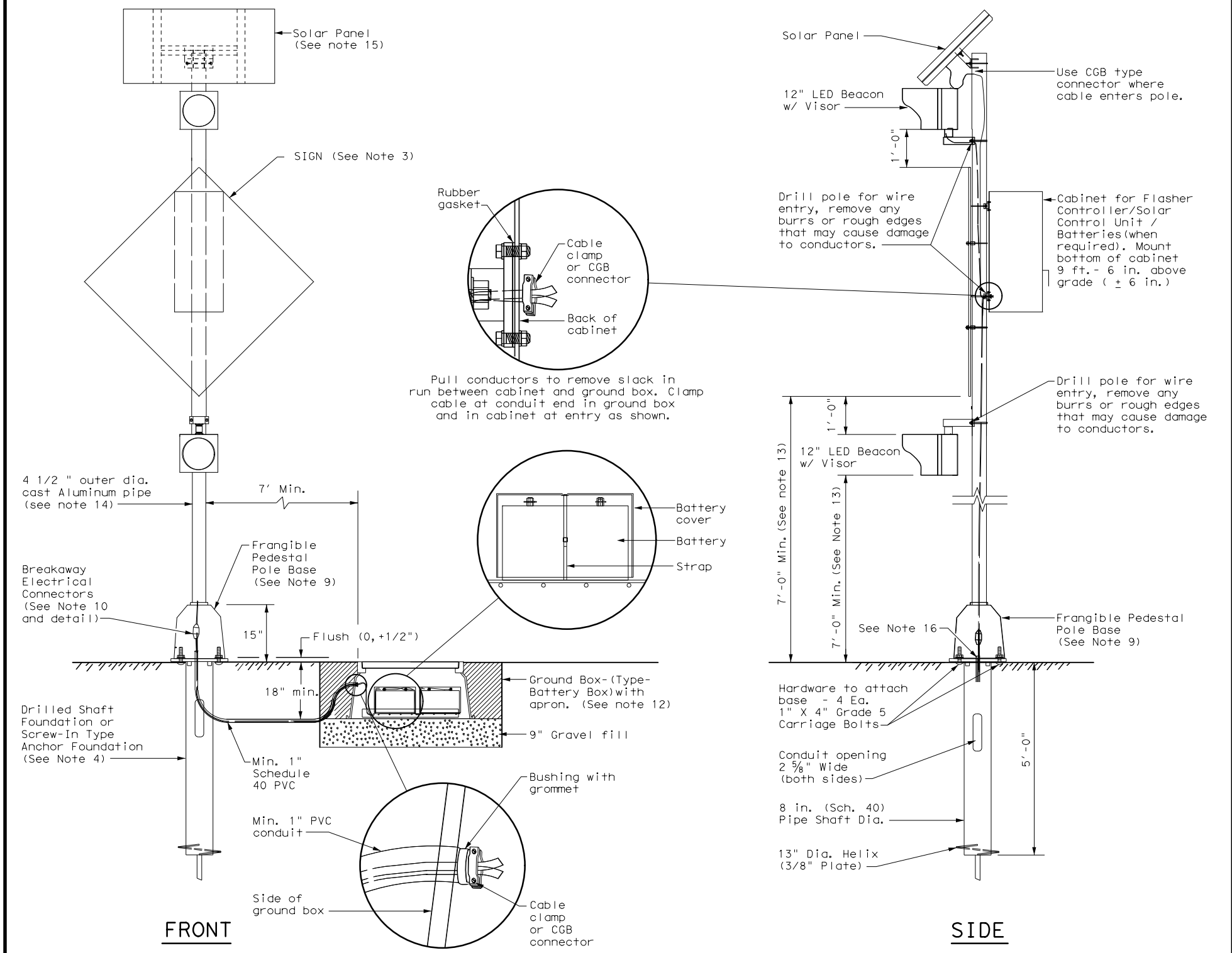
SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM
SMD(SLIP-3) -08

© TxDOT July 2002		DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
9-08	REVISIONS	CONT	SECT	JOB	HIGHWAY
		0251	06	036	US 281
		DIST	COUNTY		SHEET NO.
		BWD	LAMPASAS		352

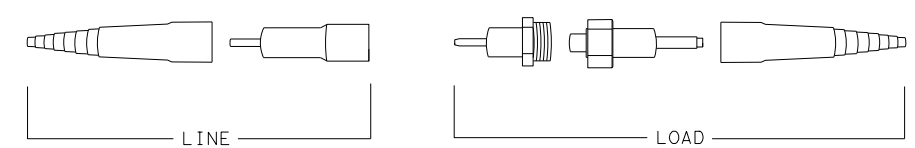
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

GENERAL NOTES:

1. Details show a typical warning sign with two flashing beacon heads, other arrangements are possible. When only one beacon is required, install the upper beacon.
2. See Item 685, "Roadside Flashing Beacon Assemblies" for further requirements.
3. See SMD standard sheets for lateral and vertical clearances and sign mounting details. Install signs as shown on the sign layout sheets.
4. Use either a Screw-In Type Anchor Foundation or a Drilled Shaft Foundation as shown elsewhere in the plans. When plans require a Drilled Shaft Foundation, see standard sheet TS-FD. Install the Screw-In Type Anchor Foundation as per manufacturer's recommendations. On a slope, install one edge at ground level. Screw-In/Drilled Shaft Foundation is subsidiary to Item 685. Installation of a ground rod is not required for solar powered flashing beacon assemblies.
5. When used, provide Screw-In Type Anchor Foundations as shown on TxDOT's Material Producer List (MPL) in the file "Highway Traffic Signals".
6. Use materials specifically designed for attaching cabinets, beacon heads, solar panels, etc., to poles.
7. Install beacon heads as shown here, as shown elsewhere on the plans, or as directed. Use hardware specifically designed for mounting beacon heads on poles.
8. Conduit in foundation and within 6 in. of foundation is subsidiary to the Item 685, "Roadside Flashing Beacon Assemblies."
9. Per manufacturer's recommendations, engage all threads on the pedestal pole base and pipe unless the pipe is fully seated into base. In high winds, use a pole and base collar assembly to add strength and prevent loosening on connection.
10. Provide single pole non-fused watertight breakaway electrical connectors for frangible pedestal pole bases, as shown on TxDOT's MPL in the file "Roadway Illumination and Electrical Supplies." Approved models are listed under Item 685. For ungrounded (hot) conductors, install a breakaway connector with a dummy fuse slug. For grounded (neutral) conductors, install a breakaway connector with a white colored marking and a permanently installed dummy fuse (slug).
11. Install the batteries in a battery box. Place the batteries on a 3/16" thick plastic sheet and connect together. Place a plastic cover (battery bell jar) over the top of each battery and secure the battery bell jar to the battery with a strap. The batteries, bell jars, straps and 3/16" plastic sheet are subsidiary to the Item 685, "Roadside Flashing Beacon Assemblies." When required, install batteries in the flasher cabinet. Wire batteries according to manufacturers recommendations. Provide the number of batteries as required by the manufacturer.
12. See standard sheet Electrical Details (ED) for additional requirements regarding the installation of ground boxes/battery boxes, conduit, and cabinets.
13. Provide clearance as shown above the sidewalk or pavement grade at the edge of the road. When a bottom beacon is not used, mount the bottom of the sign at least 7 ft. above the sidewalk or pavement grade at the edge of the road.
14. Unless otherwise shown on the plans, pole shaft shall be one piece, Schedule 40 Aluminum pipe, ASTM B429 or B221 (Alloy 6061-T6 only). Aluminum conduit will not develop the necessary strength and will not be allowed.
15. Orient solar panel for optimum exposure to sunlight (face to the south). Prior to installation, check the location to ensure there is no overhead obstruction that would block the solar panel from receiving full sunlight. Unless specified elsewhere, mount a minimum of 14' above grade.
16. Ensure height of conduit is below top of anchor bolts.



NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS



**NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS
EXPLODED VIEW**

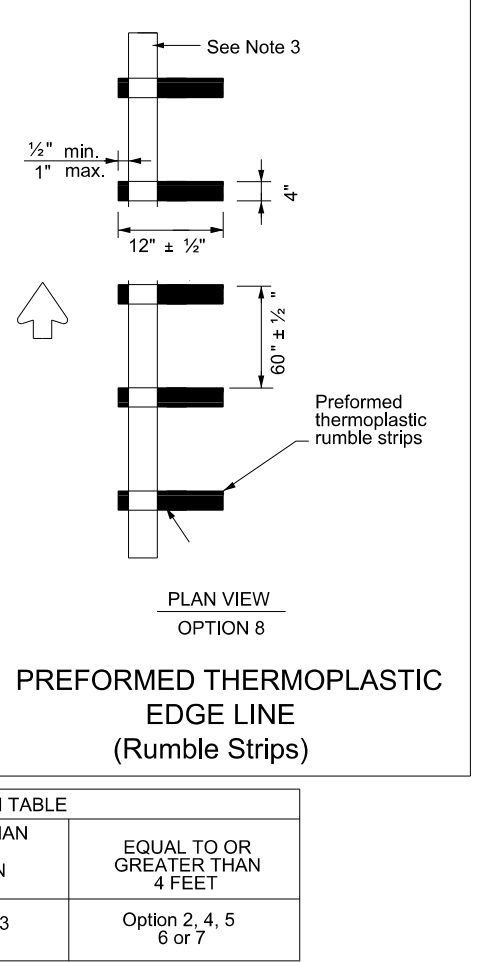
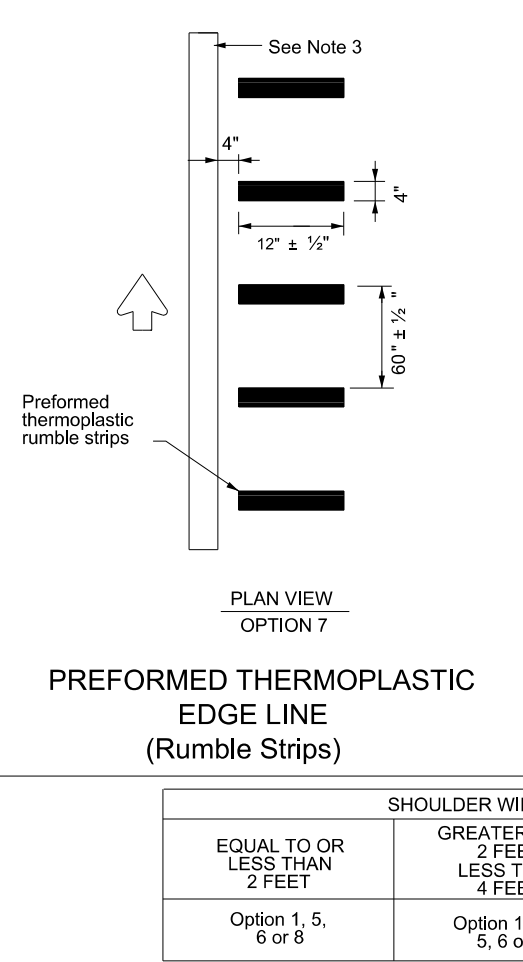
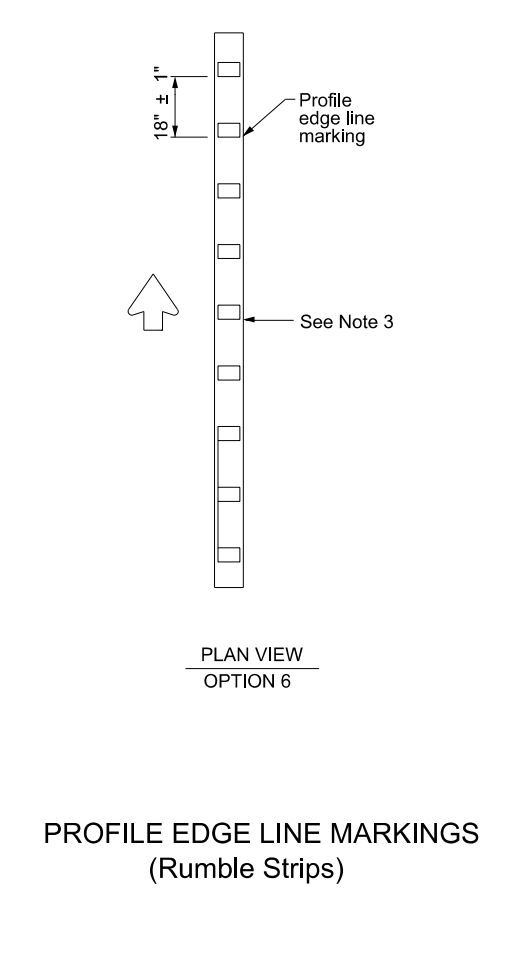
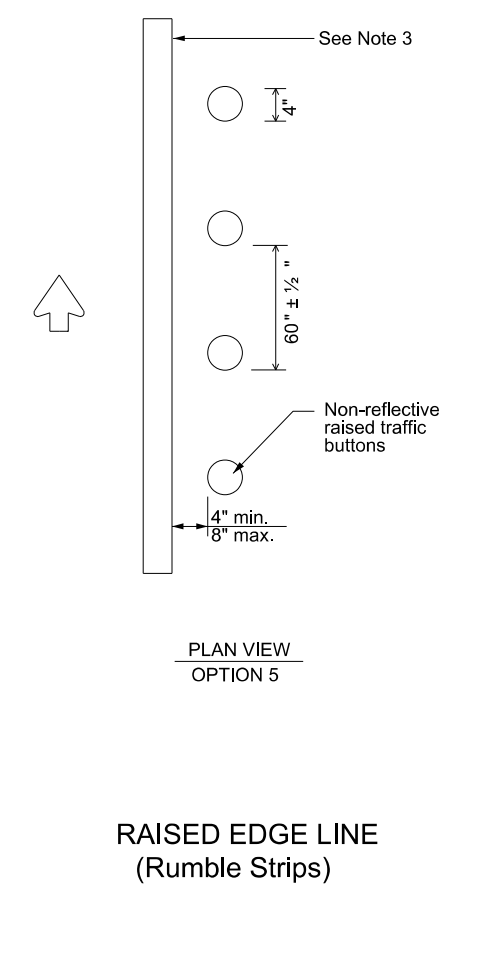
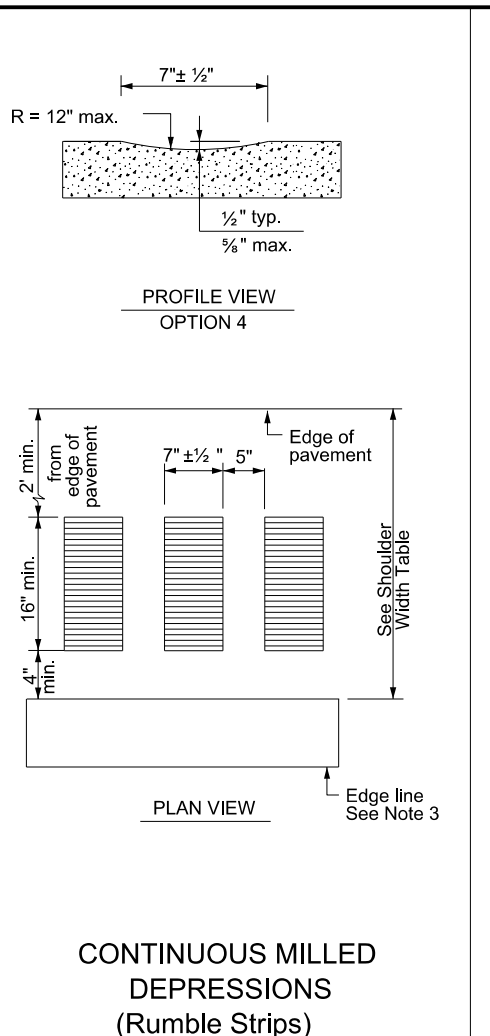
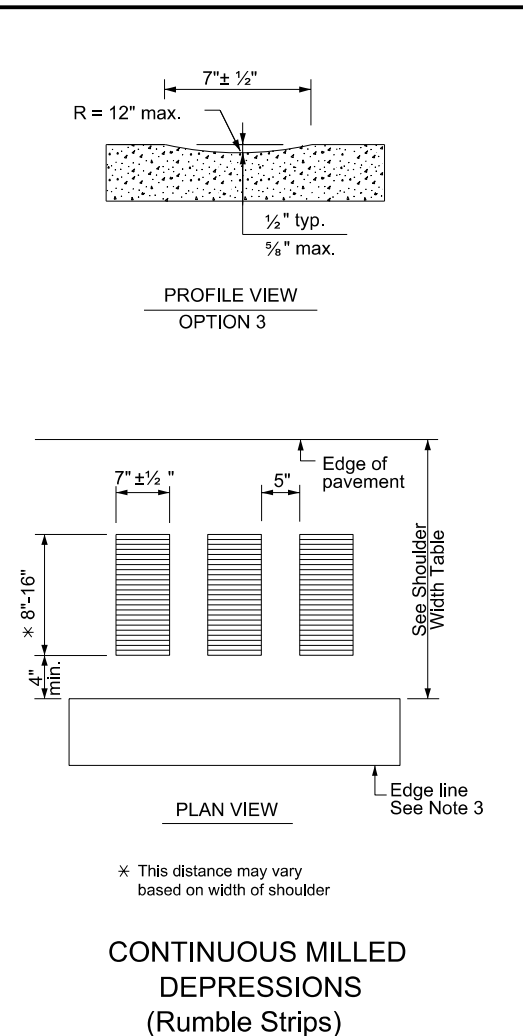
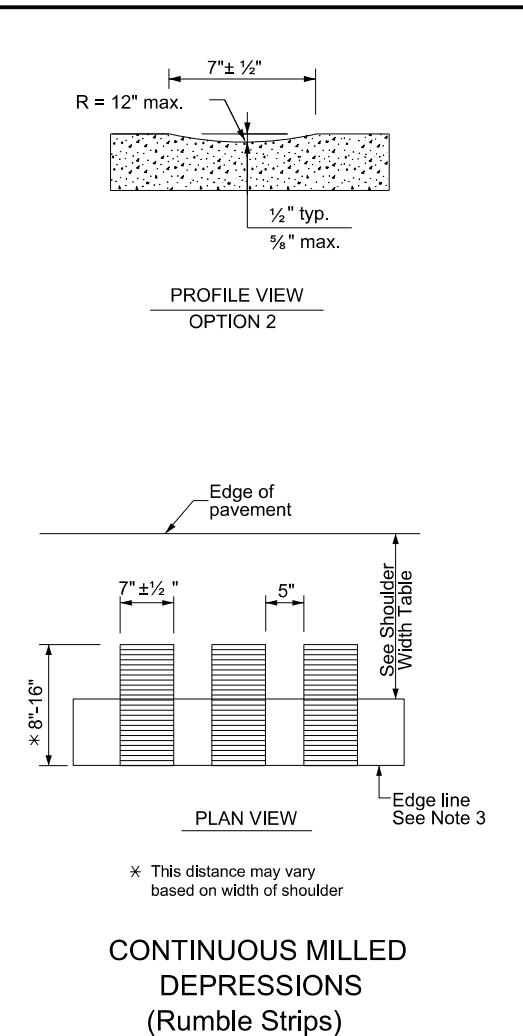
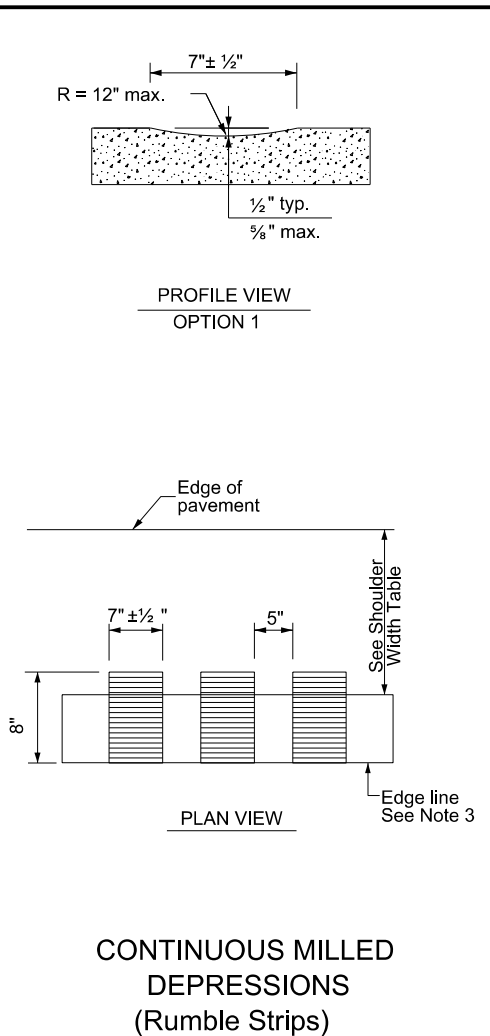
SOLAR POWERED ROADSIDE FLASHING BEACON ASSEMBLY DETAILS
SPRFBA (1) - 13

FILE: spb1-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
12-04	DIST	COUNTY	SHEET NO.	
3-13	BWD	LAMPASAS	353	

DATE:
FILE:

DATE: 2/22/2023 2:11:59 PM
 FILE: \\stiv-sw-pw-bentley.com\stiv-sw-pw-01\Documents\Active Projects\TXDOT\60043304\80043304\Drawings\8.3.xx signing and striping\STANDARDS

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.



SHOULDER WIDTH TABLE		
EQUAL TO OR LESS THAN 2 FEET	GREATER THAN 2 FEET LESS THAN 4 FEET	EQUAL TO OR GREATER THAN 4 FEET
Option 1, 5, 6 or 8	Option 1, 2, 3, 5, 6 or 7	Option 2, 4, 5, 6 or 7

GENERAL NOTES

- Rumble strips and profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.
- Milled rumble strips are preferred when adequate pavement depth is available. If pavement thickness is less than 2 inches, milled rumble strips shall not be used. Rumble strips shall not be milled or depressed into bridge decks.
- Use Standard Sheet PM(2) and FPM(1) for positioning, dimensioning, and spacing of all reflective raised pavement markers, pavement markings, and profile markings.
- See the Shoulder Width Table below for determining what options may be used for edge line rumble strips.
- Breaks in edge line rumble strips shall occur at least 50 feet and no more than 150 feet in advance of bridges, railroad crossings, intersections, or driveways with high usage of large trucks when installed on conventional highways.
- Rumble strips shall not be placed across exit or entrance ramps, acceleration or deceleration lanes, crossovers, gore areas, or intersections with other roadways.
- Consideration should be given to noise levels when edgeline rumble strips are to be installed near residential areas, schools, churches, etc. A 3/8 inch deep (minimum) milled rumble strip may be considered in these areas.
- Consideration shall be given to bicyclists. See RS(6).

WHEN INSTALLING MILLED DEPRESSION EDGE LINE RUMBLE STRIPS:

- See dimensions for milled rumble strips. Other shapes and dimensions may be used if approved by the Traffic Safety Division.
- Pavement markings can be applied over milled shoulder rumble strips to create an edge line rumble strip.

WHEN INSTALLING RAISED OR PROFILE EDGE LINE RUMBLE STRIPS:

- Raised rumble strips consisting of non-reflective raised traffic buttons may be used. Non-reflective raised traffic buttons can be affixed to asphalt or concrete with bitumen or adhesives, as per the manufacturer's recommendations.
- Non-reflective traffic buttons shall be placed adjacent to the pavement marking delineating the edge line when used as a rumble strip. The color of the button should match the color of the adjacent edge line marking (white or yellow). The buttons will be paid for under Item 672, "Raised Pavement Markers." Non-reflective traffic buttons must meet the requirements of DMS-4300.
- Non-reflective traffic buttons shall not be placed across exit or entrance ramps, acceleration and deceleration lanes, crossovers, gore areas or intersections with other roadways.
- The minimum distance between the edge line and the buttons should be used if the shoulder is less than 8 feet in width.
- Raised profile thermoplastic markings used as edge lines may substitute for buttons.

Texas Department of Transportation

Traffic Safety Division Standard

EDGE LINE RUMBLE STRIPS ON UNDIVIDED OR TWO LANE HIGHWAYS RS(2)-23

FILE: rs(2)-23.dgn	DWG: TxDOT	CHK: TxDOT	DES: TxDOT	APP: TxDOT
© TxDOT	January 2023	CONT: 0251	SECT: 06	JOB: 036
10-13	REVISIONS	DIST: BWD	COUNTY: LAMPASAS	SHEET NO.: 354

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with the TPDES Construction General Permit TXR150000 (CGP). The Texas Department of Transportation (TxDOT) ensures that project specifications include adequate best management practices (BMPs) for this project.

For all projects with any soil disturbing activities, TxDOT will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc. at the project field office. If no field office is available, then this SWP3 shall be kept in the appropriate TxDOT Area Office.

This SWP3 is consistent with requirements specified in applicable stormwater plans and the projects environmental permits, issues, and commitments (EPICs). A copy of the CGP is included in Attachment 2.12 of the SWP3 binder.

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):

0251-06-036

1.2 PROJECT LIMITS:

From: US 183

To: BURNET COUNTY LINE

1.3 PROJECT COORDINATES:

END: (Lat) +31.0352627,(Long) -98.1808662

BEGIN: (Lat) +31.0591267,(Long) -98.1764077

1.4 TOTAL PROJECT AREA (Acres): 30.92 ACRES

1.5 TOTAL AREA TO BE DISTURBED (Acres): 9.79 ACRES

1.6 NATURE OF CONSTRUCTION ACTIVITY:

WIDENING FROM 4 LANE UNDIVIDED TO 4 LANE DIVIDED WITH FLUSH MEDIAN, STORM DRAIN, C&G, AND SIDEWALK

1.7 MAJOR SOIL TYPES:

Soil Type	Description
Bolar Clay Loam, 1 to 3% slopes	90% clay, well drained, low rate of runoff
Brackett Gravelly Clay, 3 to 8% slopes	100% clay, well drained, medium rate of runoff
Doss Silty Clay, 1 to 5% slopes	100% clay, well drained, medium rate of runoff
Lampasas Gravelly Clay, 1 to 5% slopes	85% clay, well drained, very high rate of runoff
Oakalla Silty Clay Loam, 0 to 1% slopes	90% clay, well drained, negligible runoff
Rumley Silty Clay Loam, 0 to 1% slopes	100% clay, well drained, negligible runoff
Rumley Silty Clay Loam, 1 to 3% slopes	100% clay, well drained, low rate of runoff

1.8 PROJECT SPECIFIC LOCATIONS (PSLs):

PSLs must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. PSLs may be identified during preconstruction meetings or during the construction process. Please choose from the options below:

- PSLs determined during preconstruction meeting
- PSLs determined during construction
- No PSLs planned for construction

Type	Sheet #s

All off-ROW PSLs required by the Contractor are the Contractor's responsibility. The Contractor shall secure all permits required by local, state, federal laws for off-ROW PSLs. The contractor shall provide diagrams, areas of disturbance, acreage, and BMPs for all off-ROW PSLs within one mile of the project.

1.9 CONSTRUCTION ACTIVITIES:

(Use the following list as a starting point when developing the Construction Activity Schedule and Ceasing Record in Attachment 2.5.)

- Mobilization
- Install sediment and erosion controls
- Blade existing topsoil into windrows, prep ROW, clear and grub
- Remove existing pavement
- Grading operations, excavation, and embankment
- Excavate and prepare subgrade for proposed pavement widening
- Remove existing culverts, safety end treatments (SETs)
- Remove existing metal beam guard fence (MBGF), bridge rail
- Install proposed pavement per plans
- Install culverts, culvert extensions, SETs
- Install mow strip, MBGF, bridge rail
- Place flex base
- Rework slopes, grade ditches
- Blade windrowed material back across slopes
- Revegetation of unpaved areas
- Achieve site stabilization and remove sediment and erosion control measures

- Other: _____
- Other: _____
- Other: _____

1.10 POTENTIAL POLLUTANTS AND SOURCES:

- Sediment laden stormwater from stormwater conveyance over disturbed area
- Fuels, oils, and lubricants from construction vehicles, equipment, and storage
- Solvents, paints, adhesives, etc. from various construction activities
- Transported soils from offsite vehicle tracking
- Construction debris and waste from various construction activities
- Contaminated water from excavation or dewatering pump-out water
- Sanitary waste from onsite restroom facilities
- Trash from various construction activities/receptacles
- Long-term stockpiles of material and waste

- Other: _____
- Other: _____

1.11 RECEIVING WATERS:

Receiving waters must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. Include Segment # for receiving waters.

Tributaries	Classified Waterbody
SULPHUR CREEK (1217B)	

* Add (*) for impaired waterbodies with pollutant in ().

1.12 ROLES AND RESPONSIBILITIES: TxDOT

- Development of plans and specifications
- Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
- Post Construction Site Notice
- Submit NOI/CSN to local MS4
- Perform SWP3 inspections
- Maintain SWP3 records and update to reflect daily operations
- Complete and submit Notice of Termination to TCEQ
- Maintain SWP3 records for 3 years

- Other: _____
- Other: _____
- Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

- Day To Day Operational Control
- Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
- Post Construction Site Notice
- Submit NOI/CSN to local MS4
- Maintain schedule of major construction activities
- Install, maintain and modify BMPs
- Complete and submit Notice of Termination to TCEQ
- Maintain SWP3 records for 3 years
- Other: _____
- Other: _____
- Other: _____

1.14 LOCAL MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) OPERATOR COORDINATION:

MS4 Entity
N/A

STORMWATER POLLUTION PREVENTION PLAN (SWP3)



Sheet 1 of 2

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			355
STATE	STATE DESG.	COUNTY	
TEXAS	BWD	LAMPASAS	
CONT.	SECT.	JOB	HIGHWAY NO.
0251	06	036	US 281

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

2.0 BEST MANAGEMENT PRACTICES (BMPs) AND CONTROLS, INSPECTION, AND MAINTENANCE

The Contractor shall be the responsible party for implementing the BMPs described herein and for complying with the SWP3 for control of erosion and sedimentation during day-to-day operations. The Contractor shall implement changes to this SWP3 approved by TxDOT within the times specified in this SWP3 or the CGP.

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

- Protection of Existing Vegetation
- Vegetated Buffer Zones
- Soil Retention Blankets
- Geotextiles
- Mulching/ Hydromulching
- Soil Surface Treatments
- Temporary Seeding
- Permanent Planting, Sodding or Seeding
- Biodegradable Erosion Control Logs
- Rock Filter Dams/ Rock Check Dams
- Vertical Tracking
- Interceptor Swale
- Riprap
- Diversion Dike
- Temporary Pipe Slope Drain
- Embankment for Erosion Control
- Paved Flumes
- Other: _____
- Other: _____
- Other: _____
- Other: _____

2.2 SEDIMENT CONTROL BMPs:

T / P

- Biodegradable Erosion Control Logs
- Dewatering Controls
- Inlet Protection
- Rock Filter Dams/ Rock Check Dams
- Sandbag Berms
- Sediment Control Fence
- Stabilized Construction Exit
- Floating Turbidity Barrier
- Vegetated Buffer Zones
- Vegetated Filter Strips
- Other: _____
- Other: _____
- Other: _____
- Other: _____

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

Sediment control BMPs requiring design capacity calculations (See SWP3 Attachment 1.3.):

T / P

- Sediment Trap
 - Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
 - 3,600 cubic feet of storage per acre drained
- Sedimentation Basin
 - Not required (<10 acres disturbed)
 - Required (>10 acres) and implemented.
 - Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
 - 3,600 cubic feet of storage per acre drained
 - Required (>10 acres), but not feasible due to:
 - Available area/Site geometry
 - Site slope/Drainage patterns
 - Site soils/Geotechnical factors
 - Public safety
 - Other: _____

2.3 PERMANENT CONTROLS:

(Coordinate post-construction BMPs with appropriate TxDOT maintenance sections.)

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To

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

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

- Excess dirt/mud on road removed daily
- Haul roads dampened for dust control
- Loaded haul trucks to be covered with tarpaulin
- Stabilized construction exit
- Other: _____
- Other: _____
- Other: _____
- Other: _____

2.5 POLLUTION PREVENTION MEASURES:

- Chemical Management
- Concrete and Materials Waste Management
- Debris and Trash Management
- Dust Control
- Sanitary Facilities
- Other: _____
- Other: _____
- Other: _____
- Other: _____

2.6 VEGETATED BUFFER ZONES:

Natural vegetated buffers shall be maintained as feasible to protect adjacent surface waters. If vegetated natural buffer zones are not feasible due to site geometry, the appropriate additional sediment control measures have been incorporated into this SWP3.

Type	Stationing	
	From	To
RFD for outflow of culvert	33+66.00	33+66.00
RFD for outflow of culvert	41+50.00	41+50.00
Vegetative buffer w/ SCF	57+66.00	61+80.00
RFD for outflow of storm sewer & culvert	57+66.00	57+66.00
RFD for outflow of culvert	83+60.00	83+60.00

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

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

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

2.8 INSPECTIONS:

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3 .

2.9 MAINTENANCE:

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.

STORMWATER POLLUTION PREVENTION PLAN (SWP3)



FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			355A
STATE	STATE DIST.	COUNTY	
TEXAS	BWD	LAMPASAS	
CONT.	SECT.	JOB	HIGHWAY NO.
0251	06	036	US 281

Prepared by: Andrew Chisholm
 DATE: 2/27/2023 11:18:27 AM
 FILE: pw:\stvw-sw-pw-bent\ey.com\stvw-sw-pw-01\Documents\Active Projects\TXD01600493.00\TXD01600493.04\8.00 Plans and Drawings\8_30 Cut Sheets\8_3_3_x SW3P\49304EPIC.dgn

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, Sec. 402 Texas Pollutant Discharge Elimination System

(Addresses CGP and MS4 Storm Water requirements for the project.)
 (In the event that the Contractor implements a PSL on or within one mile of the project, a Site Notice and/or a NOI will apply.)

No Action Required Required Action

Action No. 1
 The project disturbs five or more acres of surface area. TxDOT must file a NOI and coordinate with TCEQ for CGP. The contractor is responsible for the PSL as defined in the Standard Specifications for construction and Maintenance of Highways, Streets, and Bridges (2014 Edition, Section 7.7.6, Page 42). The total disturbed acreage is the combined acreage to be disturbed on the project and the contractor's PSL. This includes, as required, posting a site notice and NOI for the PSL.

Commitment No. 1
 Comply with TPDES CGP. The project requires that a NOI and a Large Site Notice be posted. TxDOT must file an NOI with TCEQ and send a copy to any non-TxDOT MS4 operator that receives discharge from the project. Implement and maintain the SW3P. Refer to the SW3P Plan Sheet, BMPs, and Detail.

Identify all MS4 Permit holders that may be impacted by the project:

Commitment No. 2
 The contractor must stabilize the project site as stated in the SW3P.

Action No. 2
 TxDOT must file a NOT for the project when final stabilization has been achieved.

MS4 operators that receives discharge from the project: -N/A-

II. Clean Water Act, Section 401 and 404 Compliance

(Addresses Nationwide Permits, Individual Permits, and Wetlands.)
 (Filling, dredging, or excavating in any water bodies, rivers, creeks, streams, wetlands, or wet area is prohibited unless specified in the USACE permit and approved by the Engineer.)
 (When temporary fills implemented, only stated TxDOT standards will be used unless written authorization for an alternative is obtained from the Engineer. No equipment is allowed in any stream channel below the Ordinary High Water Mark except on temporary stream crossings or drill pads.)

No Action Required 404 Permit and 401 Certification Required

Permit	Required Action	Waters of the US	App. Plan Sheet(s)
NWP 14	Follow permit conditions	Sulphur Creek/Tributaries of Sulphur Creek	culvert/SW3P and gabion wall layouts

Best Management Practices for applicable 401 General Conditions:

General Condition 12 - Categories I and II BMPs required

Category I (Erosion Control)

- Temporary Vegetation
- Mulch
- Interceptor Swale
- Erosion Control Compost
- Compost Filter Berms and Socks

- Blankets, Matting
- Sod
- Diversion Dike
- Mulch Filter Berms and Socks
- Compost Blankets

Category II (Sedimentation Control)

- Sand Bag Berm
- Silt Fence
- Triangular Filter Dike
- Stone Outlet Sediment Traps
- Erosion Control Compost
- Compost Filter Berms and Socks

- Rock Berm
- Hay Bale Dike
- Brush Berms
- Sediment Basins
- Mulch Filter Berms and Socks

General Condition 25 - Category III BMPs required

Category III (Post-Construction TSS Control)

- Retention/Irrigation
- Extended Detention Basin
- Vegetative Filter Strips
- Grassy Swales
- Erosion Control Compost
- Compost Filter Berms and Socks
- Constructed Wetlands
- Wet Basins
- Vegetation-Lined Ditches
- Sand Filter Systems
- Mulch Filter Berms and Socks
- Sedimentation Chambers

III. Cultural Resources

(Addresses any special circumstances associated with cultural resources, such as archeological or historic sites.)
 (Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) cease work in the immediate area and contact the Engineer immediately.)

No Action Required Required Action

Action No. Station (Rt/Lt) Commitment

IV. Vegetation Resources

(Addresses any special circumstances associated with vegetation, such as large trees to be avoided, or mitigation that will occur as part of the project.)

No Action Required Required Action

Action No. Station (Rt/Lt) Commitment

1. Project Limits
 Preserve native vegetation to the extent practical. Contractor must adhere to Construction Specification Requirements Specs 162, 164, 192, 193, 506, 730, 751, 752 in order to comply with requirements for invasive species, beneficial landscaping, and tree/brush removal commitments.

V. Federal Listed, Proposed, Threatened, Endangered Species, Critical Habitat, State Listed Species, Candidate Species, and Migratory Bird Treaty Act (MBTA)

(Addresses any special habitat that may need to be avoided, lists any threatened or endangered species where habitat was observed and might be impacted within the project area, and lists any precautions such as nesting seasons for migratory birds.)

No Action Required Required Action

Species Potentially within Project Area & Description Habitat Description

Construction personnel are advised that the southern end of the project area contains potential habitat for the Golden-cheeked Warbler (GCWA). See Environmental General Notes for specific requirements.

- Construction personnel are also advised of the potential occurrence of the Zone-tailed Hawk in the project area and to avoid harming this species if encountered.

- Avoid harm to all species encountered in the project area.

The Migratory Bird Treaty Act of 1918 states that it is unlawful to kill, capture, collect, possess, buy, sell, trade, or transport any migratory bird, nest, young, feather, or egg in part or in whole, without a federal permit issued in accordance within the Act's policies and regulations. Migration patterns would not be affected by the proposed project. The contractor will remove all old migratory bird nests from any structure where work would be done from September 1 through the end of February. In addition, the contractor will be prepared to prevent migratory birds from building nests between March 1 and August 31, per the Environmental Permits, Issues, and Commitments (EPIC) plans. In the event that migratory birds are encountered on-site during project construction, adverse impacts on protected birds, active nests, eggs, and/or young shall be avoided.

VI. Hazardous Material or Contamination Issues

(Addresses any previously identified high risk sites associated with hazardous materials that may be encountered during construction.)

Comply with the Hazard Communication Act (the Act) for personnel who will be working with hazardous materials by conducting safety meetings prior to beginning construction and making workers aware of potential hazards in the workplace. Ensure that all workers are provided with personal protective equipment appropriate for any hazardous materials used. Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act. Maintain an adequate supply of on-site spill response materials, as indicated in the MSDS. In the event of a spill, take actions to mitigate the spill as indicated in the MSDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contractor will follow all applicable storage and management requirements for liquid oil products, liquid petroleum products, and other chemical liquids as per 40 CFR 112 (a.k.a. SPCC) and/or TCEQ Construction General Permit for storm water management.

Contact the Engineer if any of the following are detected:
 Dead or distressed vegetation (not identified as normal)
 Trash piles, drums, canisters, barrels, etc.
 Undesirable smells/odors
 Underground storage tanks
 Evidence of leaching or seepage of substances
 Any other evidence indicating possible hazardous materials or contamination discovered on-site

Does the project involve any bridge class structure rehabilitation or replacements (bridge class structure not including box culverts)?

Yes No

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

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

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

Bridges on this project may contain Lead-Containing Paint (LCP) or other items that contain lead. The location of (LCP) is identified in the General Notes. Item 6.10.1.2 in the 2014 TxDOT Standard Specifications shall be utilized for this project.

See below in Section VII for other required actions.

VII. Other Environmental Issues

(Addresses any other environmental issues that may not have been covered in other sections.)

No Action Required Required Action

Action No. Station (Rt/Lt) Commitment

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
 MS4: Municipal Separate Stormwater Sewer System
 MBTA: Migratory Bird Treaty Act
 NOI: Notice of Intent
 NOT: Notice of Termination
 NWP: Nationwide Permit
 SPCC: Spill Prevention Control and Countermeasure
 SW3P: Storm Water Pollution Prevention Plan
 PCN: Pre-Construction Notification
 PSL: Project Specific Location
 TCEQ: Texas Commission on Environmental Quality
 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

US 281 ENVIRONMENTAL PERMITS, ISSUES, AND COMMITMENTS (EPIC)

©2023 Texas Department of Transportation BROWNWOOD DISTRICT			
CONT	SECT	JOB	HIGHWAY
0251	06	036	US 281
DIST	COUNTY		SHEET NO.
BWD	LAMPASAS		356

SPECIFIC SPECIES

Golden-cheeked Warbler (GCWA)

Clearing of woody vegetation should be minimized to the amount necessary for proposed project construction and limited to existing and proposed ROW and easements.

Staging areas and other Project Specific Locations (PSLs) within the ROW shall be located 300-ft away from GCWA habitat identified on this sheet.

Woody vegetation clearing shall be conducted from August 15 - March 1, outside of the breeding season of the GCWA.

Zone-tailed Hawk

Contractors are advised of potential occurrence in the project area. If large nest are observed, the District Environmental Coordinator is to be contacted at 325-203-0414.

Habitat Map



Prepared by _____ 8:00:35 AM
 DATE: 9/2/2022
 FILE: pw:\stv-sw-pw.bentley.com:stv-sw-pw-01\Documents\Active Projects\TXD01600493_00\TXD01600493_04\8_00 Plans and Drawings\8_30 Cut Sheets\8_31\2022\BWP\423022\EN\Tagn

If questions arise regarding any of these BMPs or if a species is encountered; please contact the Brownwood District Environmental Coordinator, Andrew Chisholm at 325-643-0442 or andrew.chisholm@txdot.gov

**US 281
ENVIRONMENTAL
GENERAL NOTES**

LIST OF ABBREVIATIONS

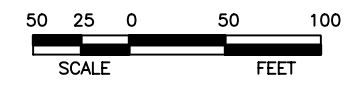
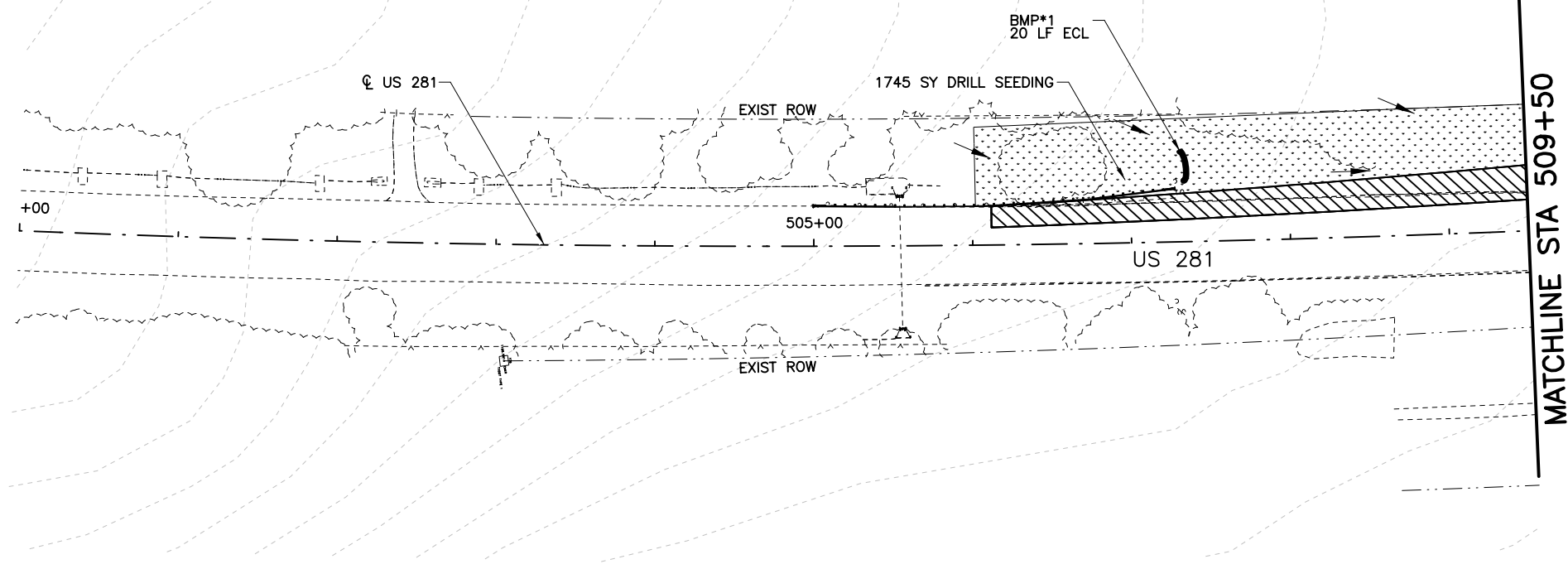
BMP: Best Management Practice
 PA: Programmatic Agreement (TPWD and TxDOT)
 MBTA: Migratory Bird Treaty Act
 SW3P/SWPPP: Storm Water Pollution Prevention Plan
 PSL: Project Specific Location
 TCEQ: Texas Commission on Environmental Quality
 TPWD: Texas Parks and Wildlife Department
 WHAB: Wildlife Habitat Assessment Branch
 SGCN: Species of Greatest Conservation Need
 ROW: Right-of-Way (TxDOT ROW)

©2022
Texas Department of Transportation
BROWNWOOD DISTRICT

CONT	SECT	JOB	HIGHWAY
0251	06	036	US 281
DIST		COUNTY	SHEET NO.
BWD		LAMPASAS	357

DATE DISTURBED	DATE	INITIALS
DATE STABILIZED		

BMP #	INSTALL DATE	REMOVE DATE
BMP*1		



LEGEND

SYMBOL	DESCRIPTION
	PERMANENT PAVEMENT THIS PHASE
	TEMPORARY PAVEMENT THIS PHASE
	COMPLETED PERMANENT PAVEMENT
	COMPLETED TEMPORARY PAVEMENT
	SEDIMENT CONTROL FENCE
	DRILL SEEDING
	SODDING
	EROSION CONTROL BLANKET
	EROSION CONTROL LOG (ECL)
	EXISTING LANE
	FLOW DIRECTION
	DITCH INLET PROTECTION (26 LF) (ECL)
	TYPE 2 ROCK FILTER DAM (RFD)

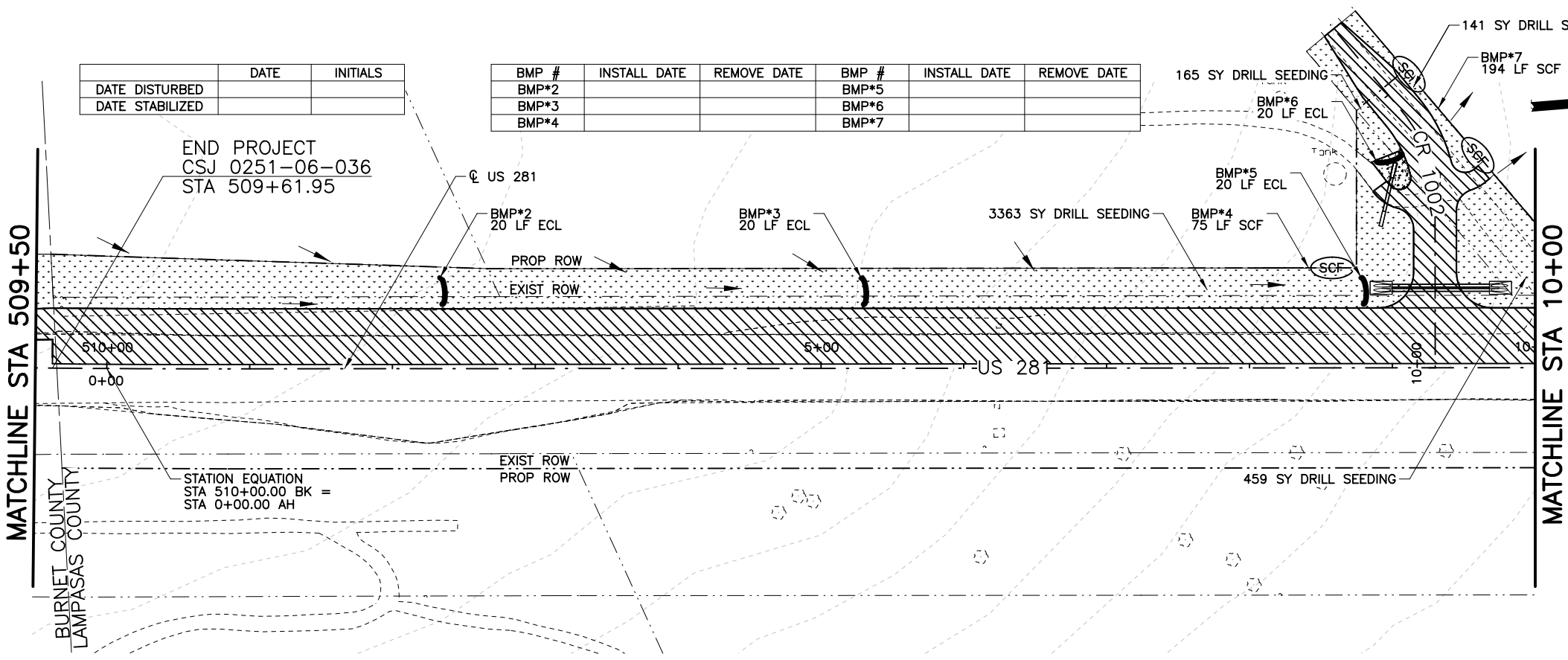
- NOTES:
- THE LOCATION OF DEVICES ARE FOR GRAPHIC REPRESENTATION ONLY. OBTAIN ENGINEERS APPROVAL BEFORE INSTALLATION.
 - SEE ROADWAY LAYOUT SHEETS FOR RIPRAP DETAILS.



Kristen L. Perry

DATE DISTURBED	DATE	INITIALS
DATE STABILIZED		

BMP #	INSTALL DATE	REMOVE DATE	BMP #	INSTALL DATE	REMOVE DATE
BMP*2			BMP*5		
BMP*3			BMP*6		
BMP*4			BMP*7		



NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741



US 281

SW3P LAYOUT PHASE 1

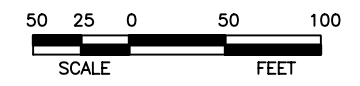
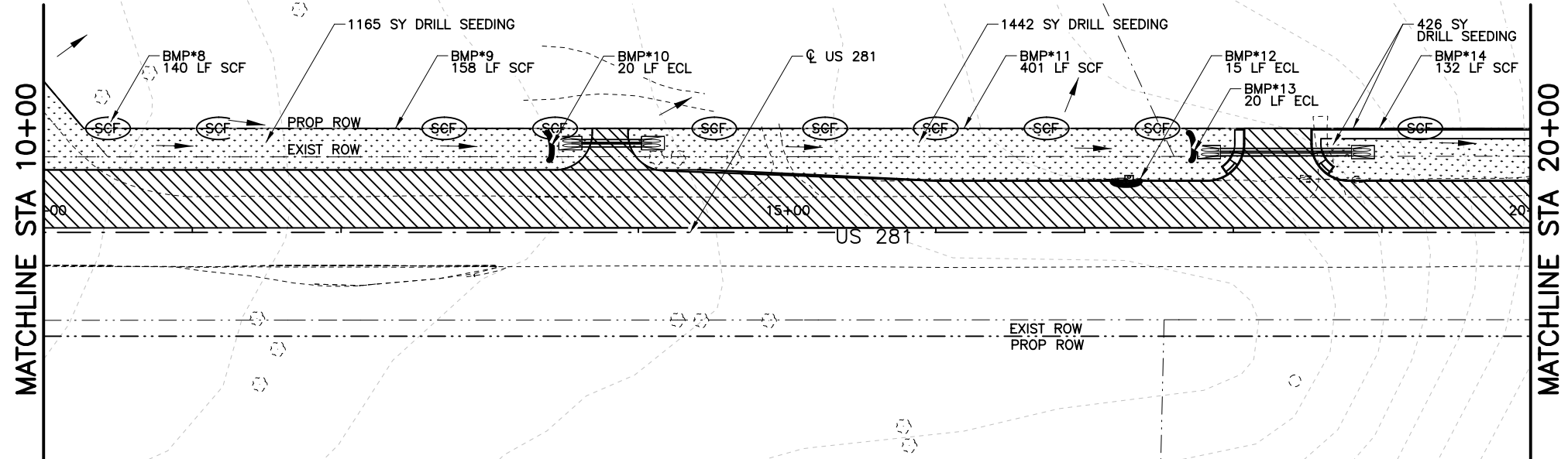
END PROJECT TO STA 10+00

Designed:	CPY	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	CPY	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Drawn:	CPY	JOB NO.	036	SHEET NO.	358				
Checked:	CPY	BWD							

1/31/2023 5:02:46 PM kperry
cpvbw_ANSIB.tbl
cpvbw_ANSIB.plt
pw:/

DATE DISTURBED	DATE	INITIALS
DATE STABILIZED		

BMP #	INSTALL DATE	REMOVE DATE	BMP #	INSTALL DATE	REMOVE DATE
BMP*8			BMP*12		
BMP*9			BMP*13		
BMP*10			BMP*14		
BMP*11					



LEGEND

- | SYMBOL | DESCRIPTION |
|--------|--------------------------------------|
| | PERMANENT PAVEMENT THIS PHASE |
| | TEMPORARY PAVEMENT THIS PHASE |
| | COMPLETED PERMANENT PAVEMENT |
| | COMPLETED TEMPORARY PAVEMENT |
| | SEDIMENT CONTROL FENCE |
| | DRILL SEEDING |
| | SODDING |
| | EROSION CONTROL BLANKET |
| | EROSION CONTROL LOG (ECL) |
| | EXISTING LANE |
| | FLOW DIRECTION |
| | DITCH INLET PROTECTION (26 LF) (ECL) |
| | TYPE 2 ROCK FILTER DAM (RFD) |

NOTES:

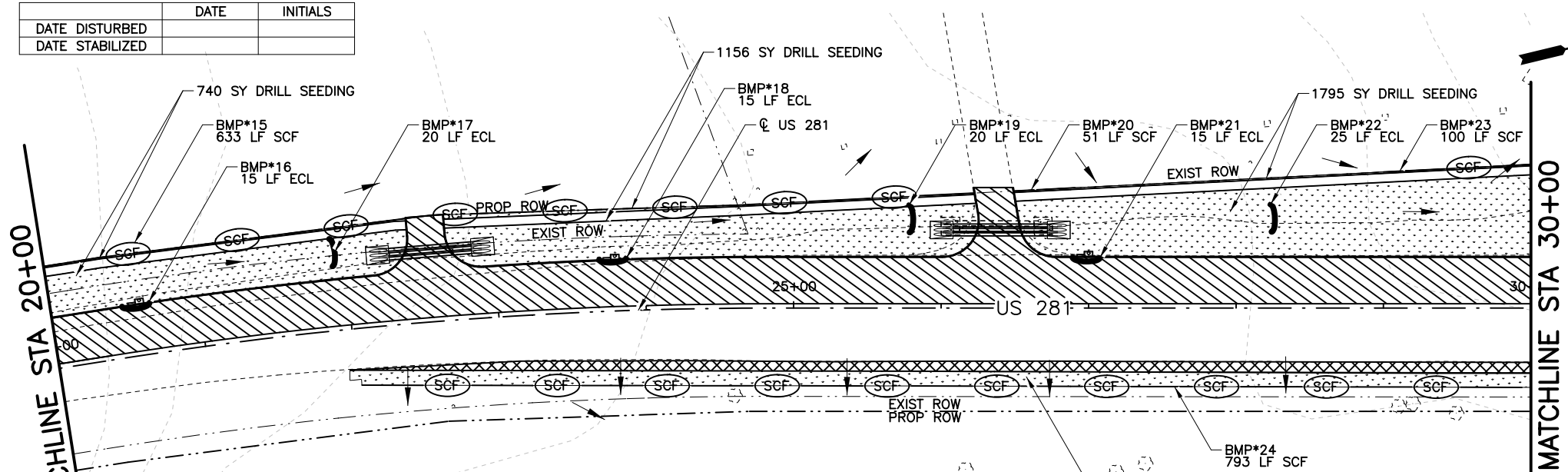
1. THE LOCATION OF DEVICES ARE FOR GRAPHIC REPRESENTATION ONLY. OBTAIN ENGINEERS APPROVAL BEFORE INSTALLATION.
2. SEE ROADWAY LAYOUT SHEETS FOR RIPRAP DETAILS.



Kristin L. Perry

DATE DISTURBED	DATE	INITIALS
DATE STABILIZED		

BMP #	INSTALL DATE	REMOVE DATE	BMP #	INSTALL DATE	REMOVE DATE
BMP*15			BMP*20		
BMP*16			BMP*21		
BMP*17			BMP*22		
BMP*18			BMP*23		
BMP*19			BMP*24		



NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741

©2023 Texas Department of Transportation

US 281

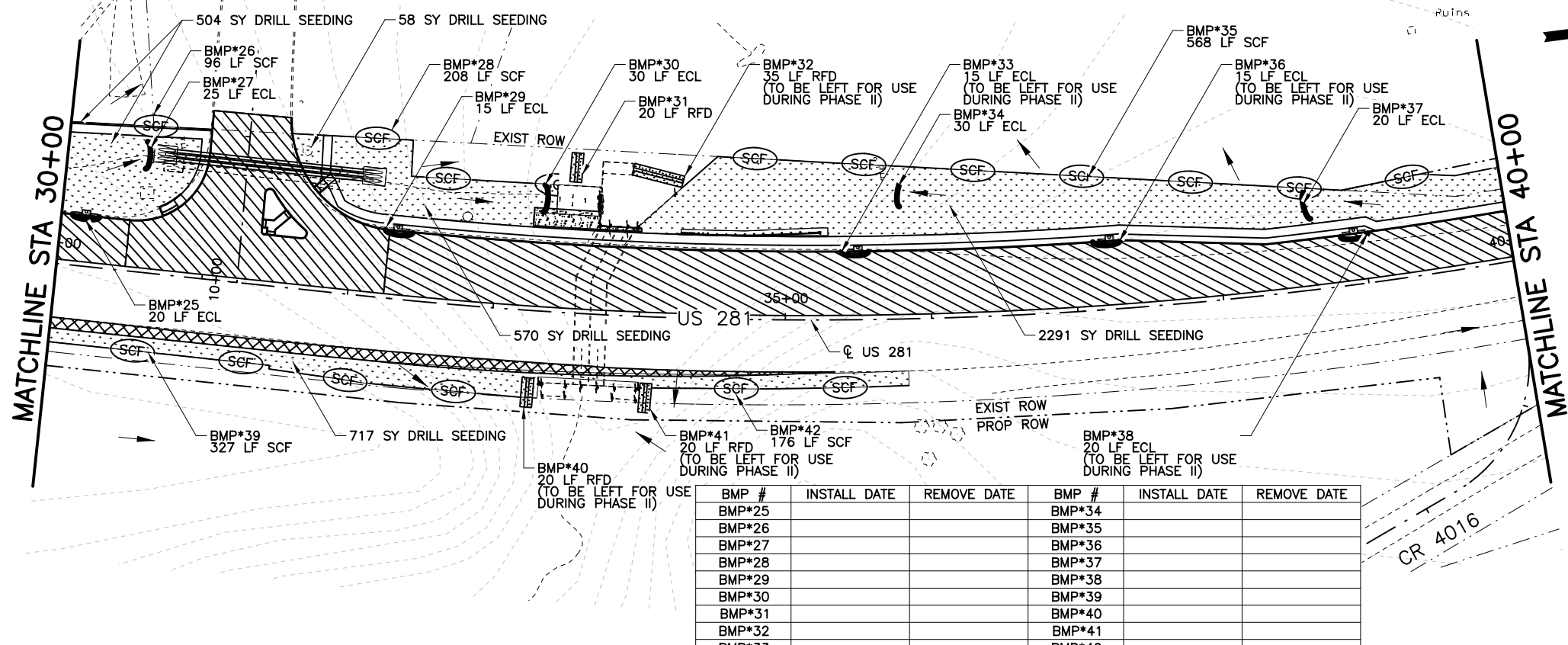
SW3P LAYOUT PHASE 1

STA 10+00 TO 30+00

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	CPY	6	TEXAS		US 281		
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	CPY	BWD	LAMPASAS	0251	06	036	359

1/31/2023 5:02:55 PM kperry
cpvbw_ANSIB.tbl
cpvpdf_ANSIB.plt
pw:/

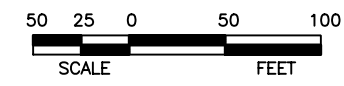
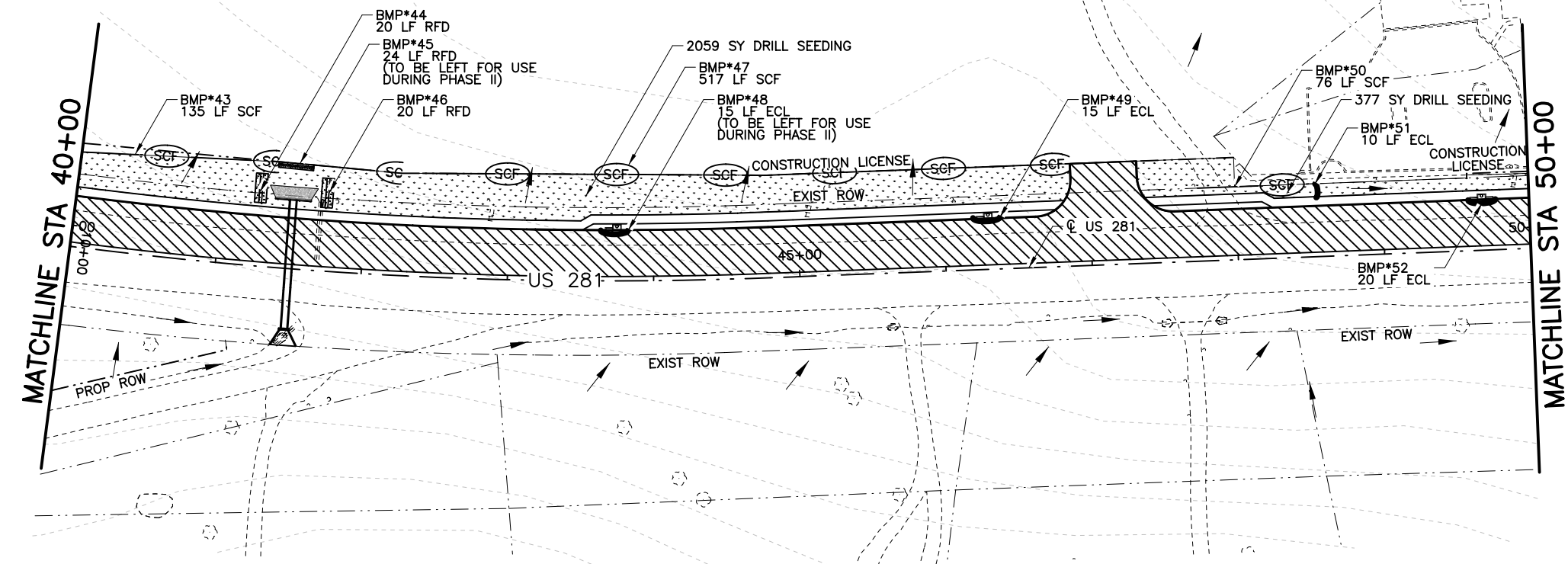
DATE DISTURBED	DATE	INITIALS
DATE STABILIZED		



BMP #	INSTALL DATE	REMOVE DATE	BMP #	INSTALL DATE	REMOVE DATE
BMP*25			BMP*34		
BMP*26			BMP*35		
BMP*27			BMP*36		
BMP*28			BMP*37		
BMP*29			BMP*38		
BMP*30			BMP*39		
BMP*31			BMP*40		
BMP*32			BMP*41		
BMP*33			BMP*42		

DATE DISTURBED	DATE	INITIALS
DATE STABILIZED		

BMP #	INSTALL DATE	REMOVE DATE	BMP #	INSTALL DATE	REMOVE DATE
BMP*43			BMP*48		
BMP*44			BMP*49		
BMP*45			BMP*50		
BMP*46			BMP*51		
BMP*47			BMP*52		

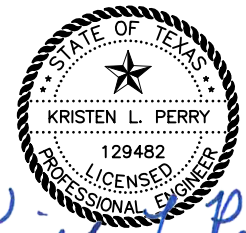


LEGEND

SYMBOL	DESCRIPTION
[Hatched Box]	PERMANENT PAVEMENT THIS PHASE
[Grid Box]	TEMPORARY PAVEMENT THIS PHASE
[Solid Grey Box]	COMPLETED PERMANENT PAVEMENT
[Dotted Grey Box]	COMPLETED TEMPORARY PAVEMENT
(SCF)	SEDIMENT CONTROL FENCE
[Dotted Box]	DRILL SEEDING
[Hatched Box]	SODDING
[Cross-hatched Box]	EROSION CONTROL BLANKET
(ECL)	EROSION CONTROL LOG (ECL)
(Lane)	EXISTING LANE
(Arrow)	FLOW DIRECTION
(Ditch)	DITCH INLET PROTECTION (26 LF) (ECL)
[Rock Filter Dam]	TYPE 2 ROCK FILTER DAM (RFD)

NOTES:

- THE LOCATION OF DEVICES ARE FOR GRAPHIC REPRESENTATION ONLY. OBTAIN ENGINEERS APPROVAL BEFORE INSTALLATION.
- SEE ROADWAY LAYOUT SHEETS FOR RIPRAP DETAILS.



1/31/2023

Kristin L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741



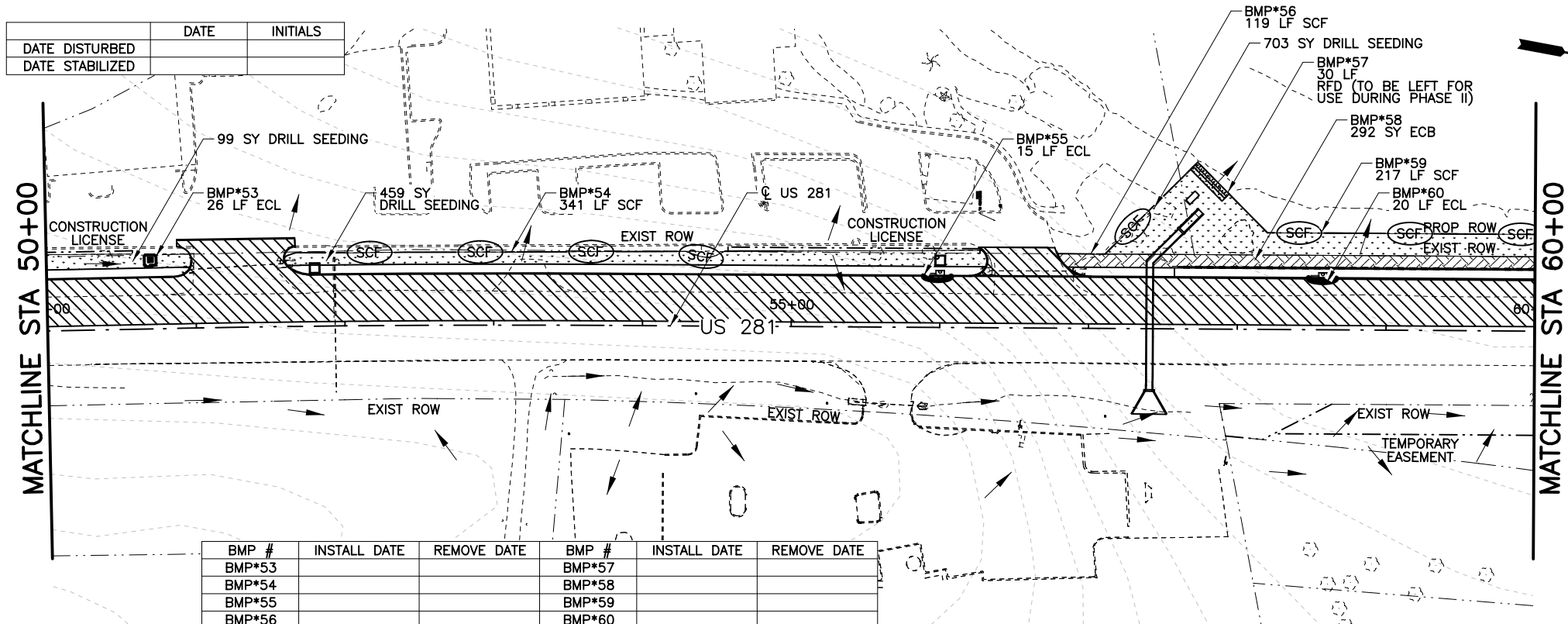
US 281

SW3P LAYOUT PHASE 1

STA 30+00 TO 50+00

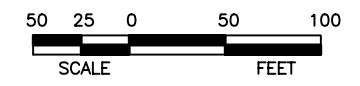
Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. LAMPASAS	COUNTY	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 360		
Checked: CPY	BWD			

1/31/2023 5:03:05 PM kperry
 cpvbw_ANSIB.tbl
 cpvbw_ANSIB.plt
 pw:/



DATE DISTURBED	DATE	INITIALS
DATE STABILIZED		

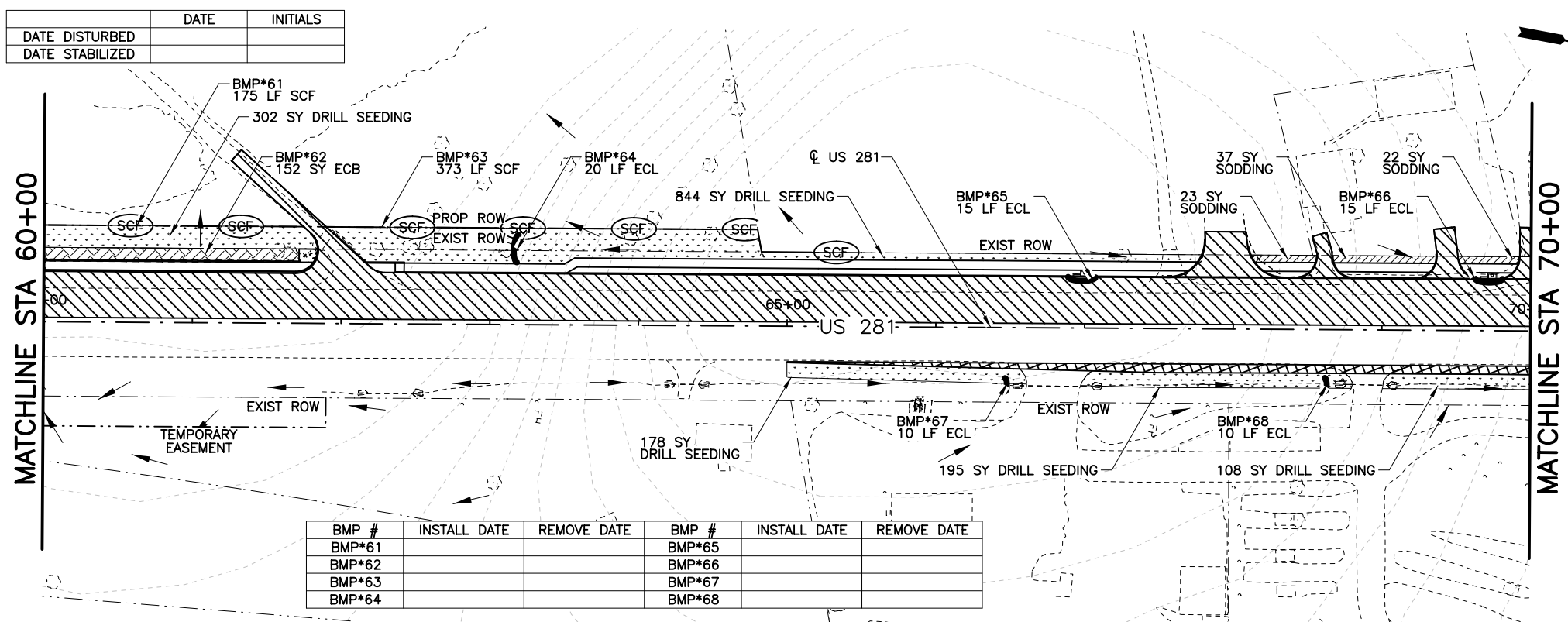
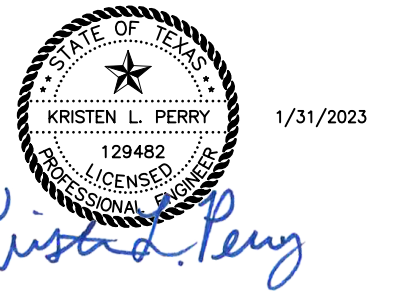
BMP #	INSTALL DATE	REMOVE DATE	BMP #	INSTALL DATE	REMOVE DATE
BMP*53			BMP*57		
BMP*54			BMP*58		
BMP*55			BMP*59		
BMP*56			BMP*60		



LEGEND

SYMBOL	DESCRIPTION
	PERMANENT PAVEMENT THIS PHASE
	TEMPORARY PAVEMENT THIS PHASE
	COMPLETED PERMANENT PAVEMENT
	COMPLETED TEMPORARY PAVEMENT
	SEDIMENT CONTROL FENCE
	DRILL SEEDING
	SODDING
	EROSION CONTROL BLANKET
	EROSION CONTROL LOG (ECL)
	EXISTING LANE
	FLOW DIRECTION
	DITCH INLET PROTECTION (26 LF) (ECL)
	TYPE 2 ROCK FILTER DAM (RFD)

- NOTES:
- THE LOCATION OF DEVICES ARE FOR GRAPHIC REPRESENTATION ONLY. OBTAIN ENGINEERS APPROVAL BEFORE INSTALLATION.
 - SEE ROADWAY LAYOUT SHEETS FOR RIPRAP DETAILS.



DATE DISTURBED	DATE	INITIALS
DATE STABILIZED		

BMP #	INSTALL DATE	REMOVE DATE	BMP #	INSTALL DATE	REMOVE DATE
BMP*61			BMP*65		
BMP*62			BMP*66		
BMP*63			BMP*67		
BMP*64			BMP*68		

NO.	REVISION	BY	DATE

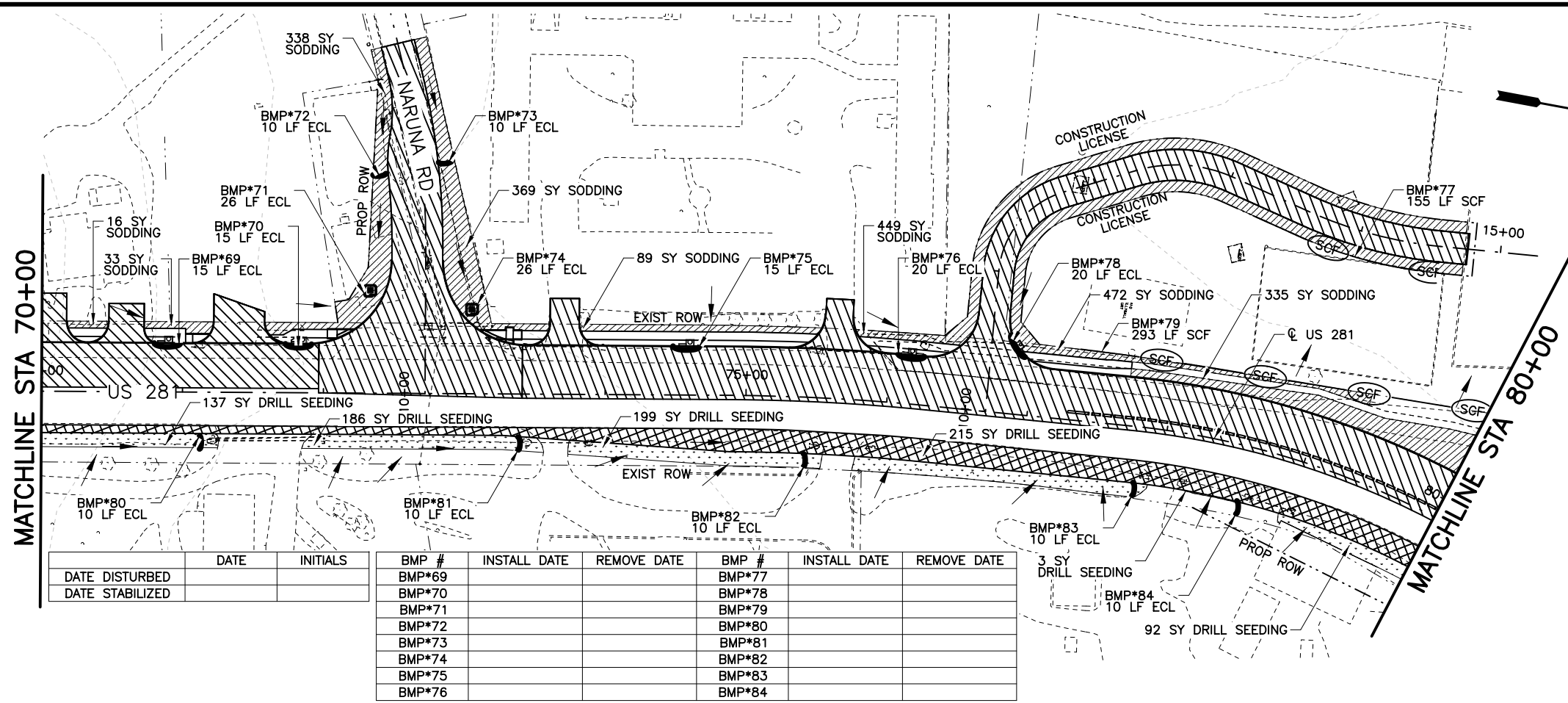


SW3P LAYOUT PHASE 1

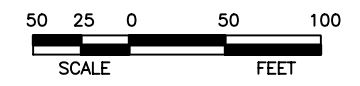
STA 50+00 TO 70+00

Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. LAMPASAS	COUNTY	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 361		
Checked: CPY	BWD			

1/31/2023 5:03:11 PM kperry
 cp/bw_ANSIB.tbl
 cp/pdf_ANSIB.plt/cfg
 pw:/



DATE DISTURBED	DATE	INITIALS	BMP #	INSTALL DATE	REMOVE DATE	BMP #	INSTALL DATE	REMOVE DATE
			BMP*69			BMP*77		
			BMP*70			BMP*78		
			BMP*71			BMP*79		
			BMP*72			BMP*80		
			BMP*73			BMP*81		
			BMP*74			BMP*82		
			BMP*75			BMP*83		
			BMP*76			BMP*84		



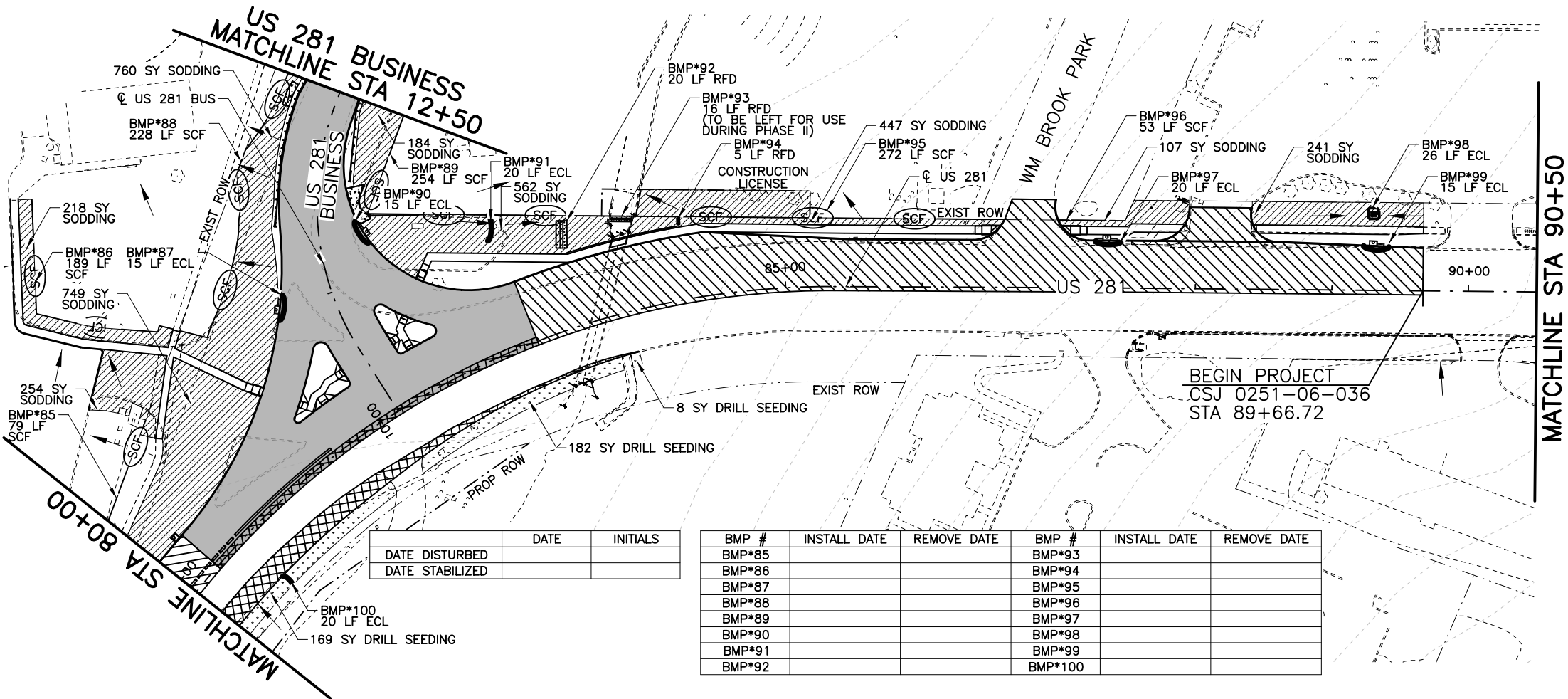
LEGEND

SYMBOL	DESCRIPTION
	PERMANENT PAVEMENT THIS PHASE
	TEMPORARY PAVEMENT THIS PHASE
	COMPLETED PERMANENT PAVEMENT
	COMPLETED TEMPORARY PAVEMENT
	SEDIMENT CONTROL FENCE
	DRILL SEEDING
	SODDING
	EROSION CONTROL BLANKET
	EROSION CONTROL LOG (ECL)
	EXISTING LANE
	FLOW DIRECTION
	DITCH INLET PROTECTION (26 LF) (ECL)
	TYPE 2 ROCK FILTER DAM (RFD)

- NOTES:**
- THE LOCATION OF DEVICES ARE FOR GRAPHIC REPRESENTATION ONLY. OBTAIN ENGINEERS APPROVAL BEFORE INSTALLATION.
 - SEE ROADWAY LAYOUT SHEETS FOR RIPRAP DETAILS.



Kristin L. Perry



DATE DISTURBED	DATE	INITIALS	BMP #	INSTALL DATE	REMOVE DATE	BMP #	INSTALL DATE	REMOVE DATE
			BMP*85			BMP*93		
			BMP*86			BMP*94		
			BMP*87			BMP*95		
			BMP*88			BMP*96		
			BMP*89			BMP*97		
			BMP*90			BMP*98		
			BMP*91			BMP*99		
			BMP*92			BMP*100		

BEGIN PROJECT
CSJ 0251-06-036
STA 89+66.72

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741

©2023 Texas Department of Transportation

US 281

SW3P LAYOUT PHASE 1

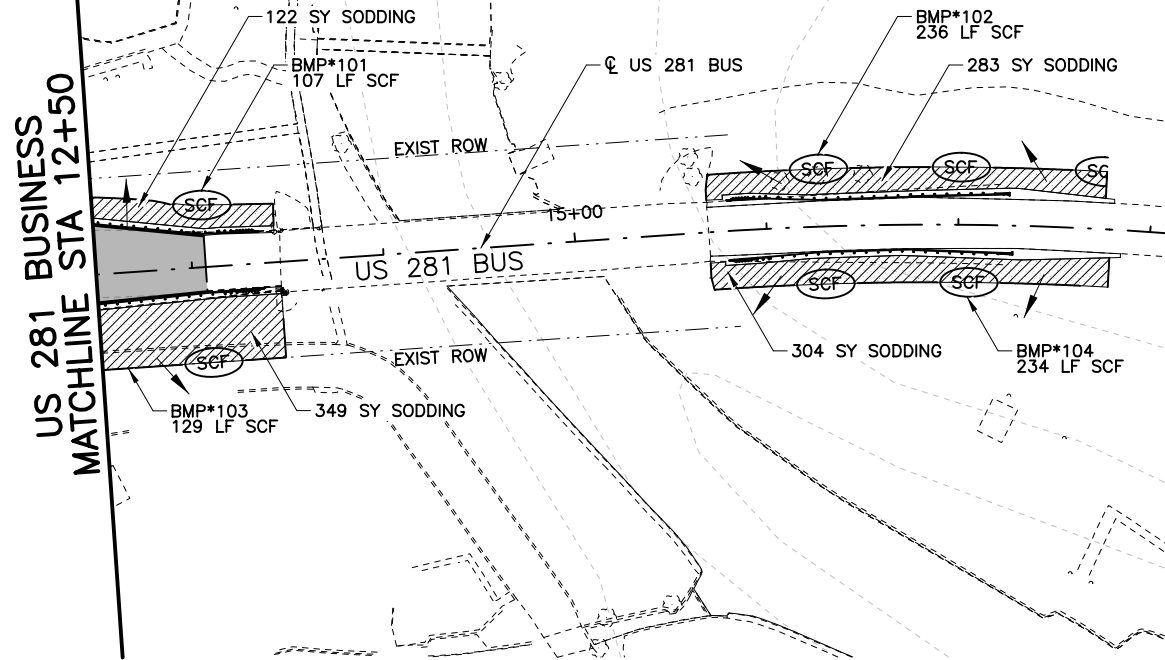
STA 70+00 TO BEGIN PROJECT

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	CPY	6	TEXAS		US 281		
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	CPY	BWD	LAMPASAS	0251	06	036	362

1/31/2023 5:03:16 PM kperry
cp/bw_ANSIB.tbl
cp/pdf_ANSIB.plt/cfg
pw:/

DATE DISTURBED	DATE	INITIALS
DATE STABILIZED		

BMP #	INSTALL DATE	REMOVE DATE	BMP #	INSTALL DATE	REMOVE DATE
BMP*101			BMP*103		
BMP*102			BMP*104		



LEGEND

SYMBOL	DESCRIPTION
	PERMANENT PAVEMENT THIS PHASE
	TEMPORARY PAVEMENT THIS PHASE
	COMPLETED PERMANENT PAVEMENT
	COMPLETED TEMPORARY PAVEMENT
	SEDIMENT CONTROL FENCE
	DRILL SEEDING
	SODDING
	EROSION CONTROL BLANKET
	EROSION CONTROL LOG (ECL)
	EXISTING LANE
	FLOW DIRECTION
	DITCH INLET PROTECTION (26 LF) (ECL)
	TYPE 2 ROCK FILTER DAM (RFD)

NOTES:

1. THE LOCATION OF DEVICES ARE FOR GRAPHIC REPRESENTATION ONLY. OBTAIN ENGINEERS APPROVAL BEFORE INSTALLATION.
2. SEE ROADWAY LAYOUT SHEETS FOR RIPRAP DETAILS.



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741



©2023 Texas Department of Transportation

US 281 BUSINESS

SW3P LAYOUT PHASE 1

US 281 BUSINESS

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
Checked:	CPY	6	TEXAS		US 281
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.
Checked:	CPY	BWD	LAMPASAS	0251	06
					JOB NO.
					036
					SHEET NO.
					363

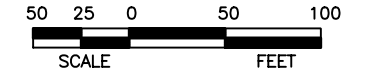
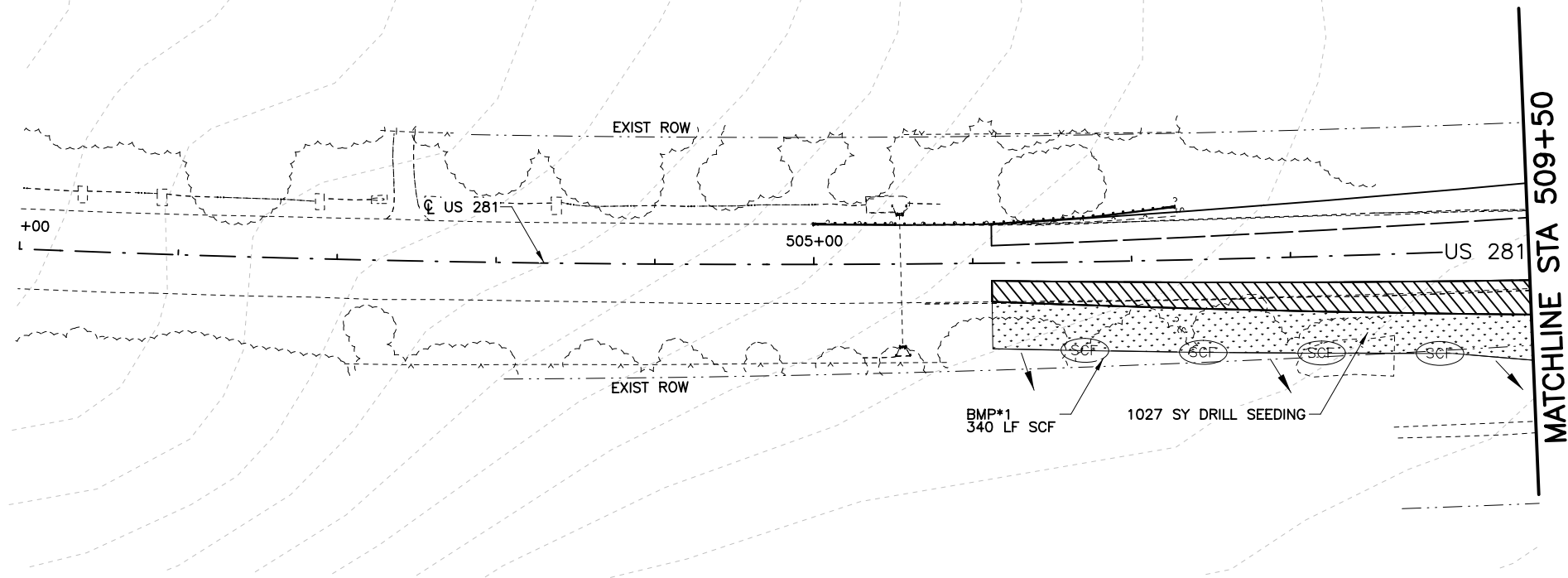
cpybw_ANSIB.tbl
cpypdf_ANSIB.pltcfgr
pw:/

1/31/2023 5:03:22 PM kperry

pw:/

DATE DISTURBED	DATE	INITIALS
DATE STABILIZED		

BMP #	INSTALL DATE	REMOVE DATE
BMP*1		



LEGEND

SYMBOL	DESCRIPTION
	PERMANENT PAVEMENT THIS PHASE
	TEMPORARY PAVEMENT THIS PHASE
	COMPLETED PERMANENT PAVEMENT
	COMPLETED TEMPORARY PAVEMENT
	SEDIMENT CONTROL FENCE
	DRILL SEEDING
	SODDING
	EROSION CONTROL BLANKET
	EROSION CONTROL LOG (ECL)
	EXISTING LANE
	FLOW DIRECTION
	DITCH INLET PROTECTION (26 LF) (ECL)
	TYPE 2 ROCK FILTER DAM (RFD)

NOTES:

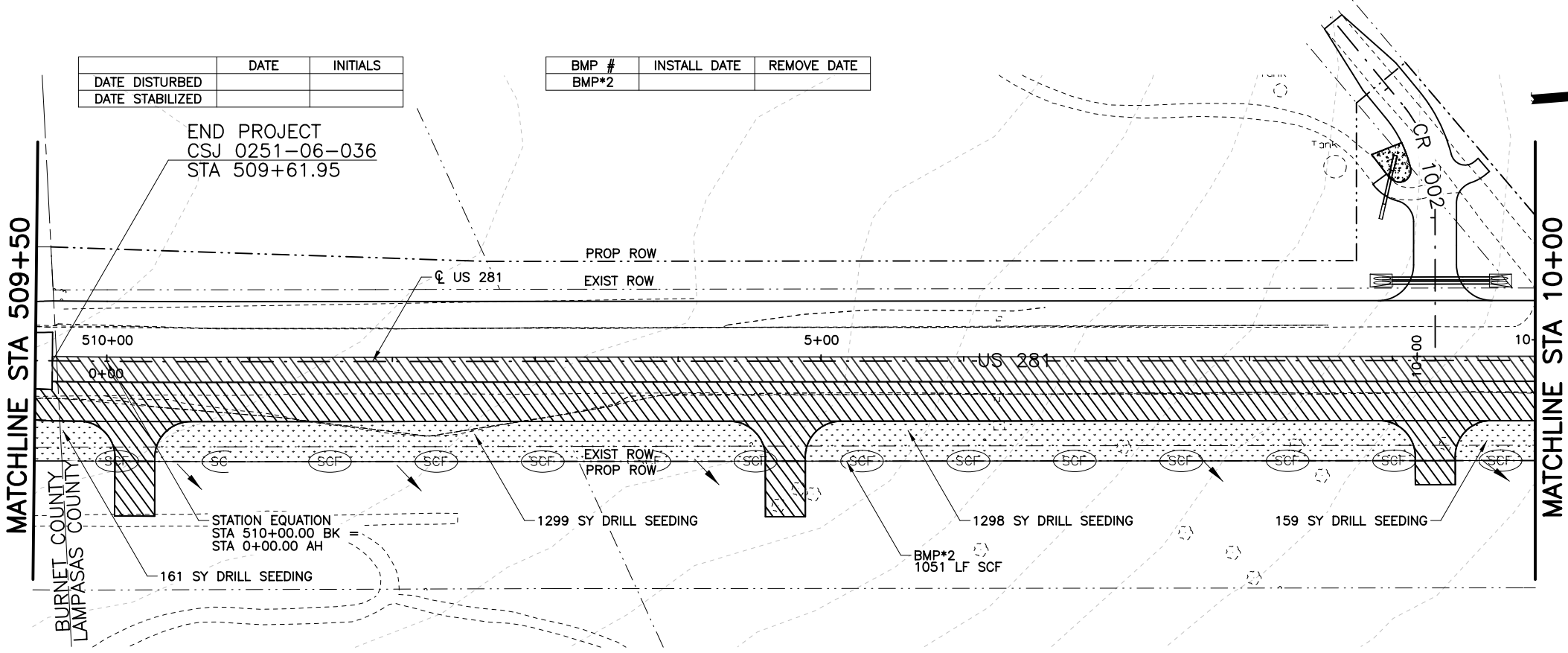
1. THE LOCATION OF DEVICES ARE FOR GRAPHIC REPRESENTATION ONLY. OBTAIN ENGINEERS APPROVAL BEFORE INSTALLATION.
2. SEE ROADWAY LAYOUT SHEETS FOR RIPRAP DETAILS.



Kristen L. Perry

DATE DISTURBED	DATE	INITIALS
DATE STABILIZED		

BMP #	INSTALL DATE	REMOVE DATE
BMP*2		



NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741



US 281

SW3P LAYOUT PHASE 2

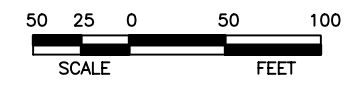
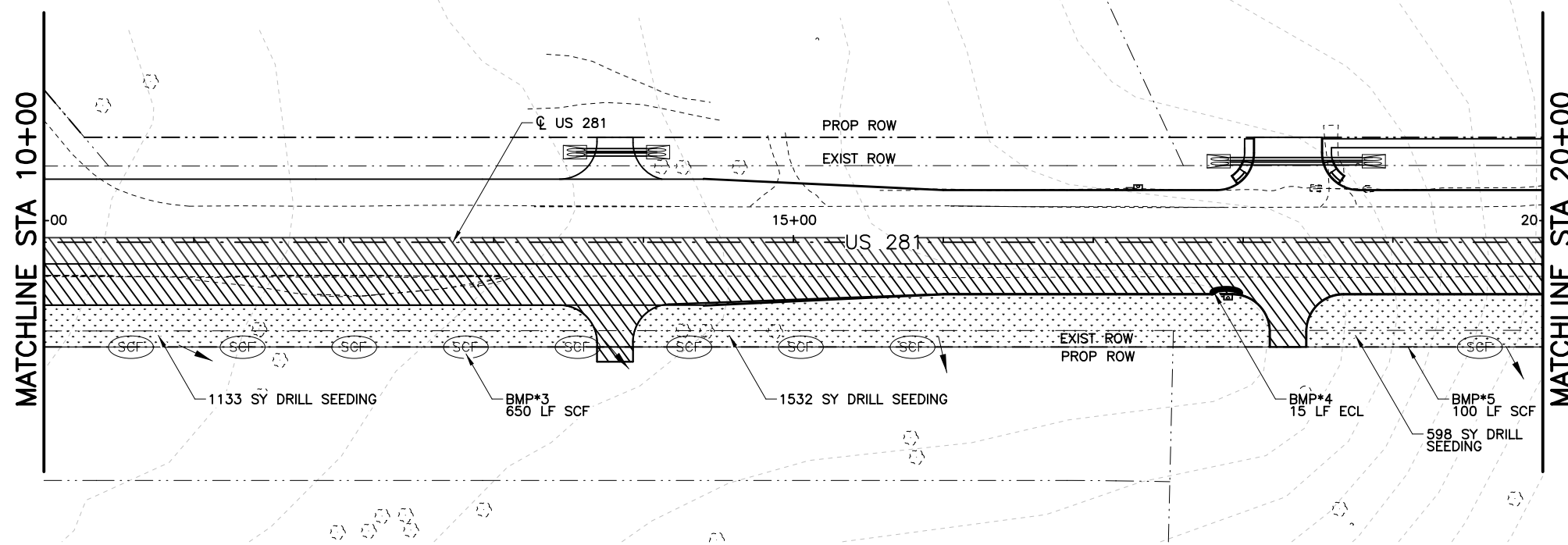
END PROJECT TO STA 10+00

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	CPY	6	TEXAS		US 281		
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	CPY	BWD	LAMPASAS	0251	06	036	364

1/31/2023 5:03:31 PM kperry
 cpybw_ANSIB.tbl
 cpypdf_ANSIB.pltcfgr
 pw:/

DATE DISTURBED	DATE	INITIALS
DATE STABILIZED		

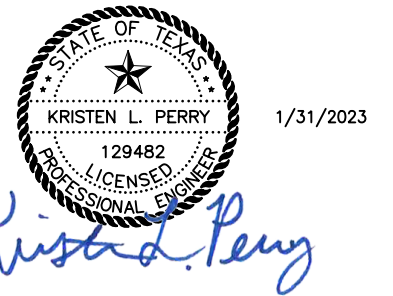
BMP #	INSTALL DATE	REMOVE DATE	BMP #	INSTALL DATE	REMOVE DATE
BMP*3			BMP*5		
BMP*4					



LEGEND

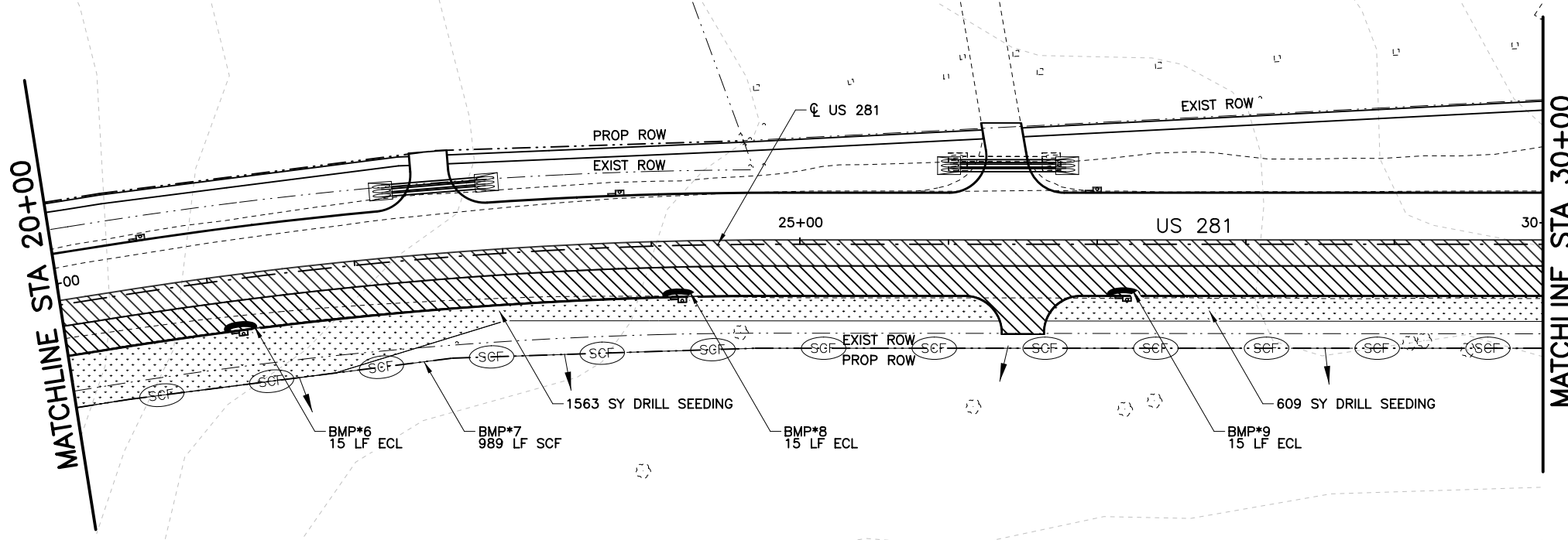
SYMBOL	DESCRIPTION
	PERMANENT PAVEMENT THIS PHASE
	TEMPORARY PAVEMENT THIS PHASE
	COMPLETED PERMANENT PAVEMENT
	COMPLETED TEMPORARY PAVEMENT
	SEDIMENT CONTROL FENCE
	DRILL SEEDING
	SODDING
	EROSION CONTROL BLANKET
	EROSION CONTROL LOG (ECL)
	EXISTING LANE
	FLOW DIRECTION
	DITCH INLET PROTECTION (26 LF) (ECL)
	TYPE 2 ROCK FILTER DAM (RFD)

- NOTES:
1. THE LOCATION OF DEVICES ARE FOR GRAPHIC REPRESENTATION ONLY. OBTAIN ENGINEERS APPROVAL BEFORE INSTALLATION.
 2. SEE ROADWAY LAYOUT SHEETS FOR RIPRAP DETAILS.



DATE DISTURBED	DATE	INITIALS
DATE STABILIZED		

BMP #	INSTALL DATE	REMOVE DATE	BMP #	INSTALL DATE	REMOVE DATE
BMP*6			BMP*8		
BMP*7			BMP*9		



NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741



US 281
SW3P LAYOUT PHASE 2

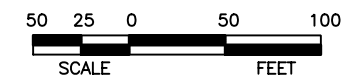
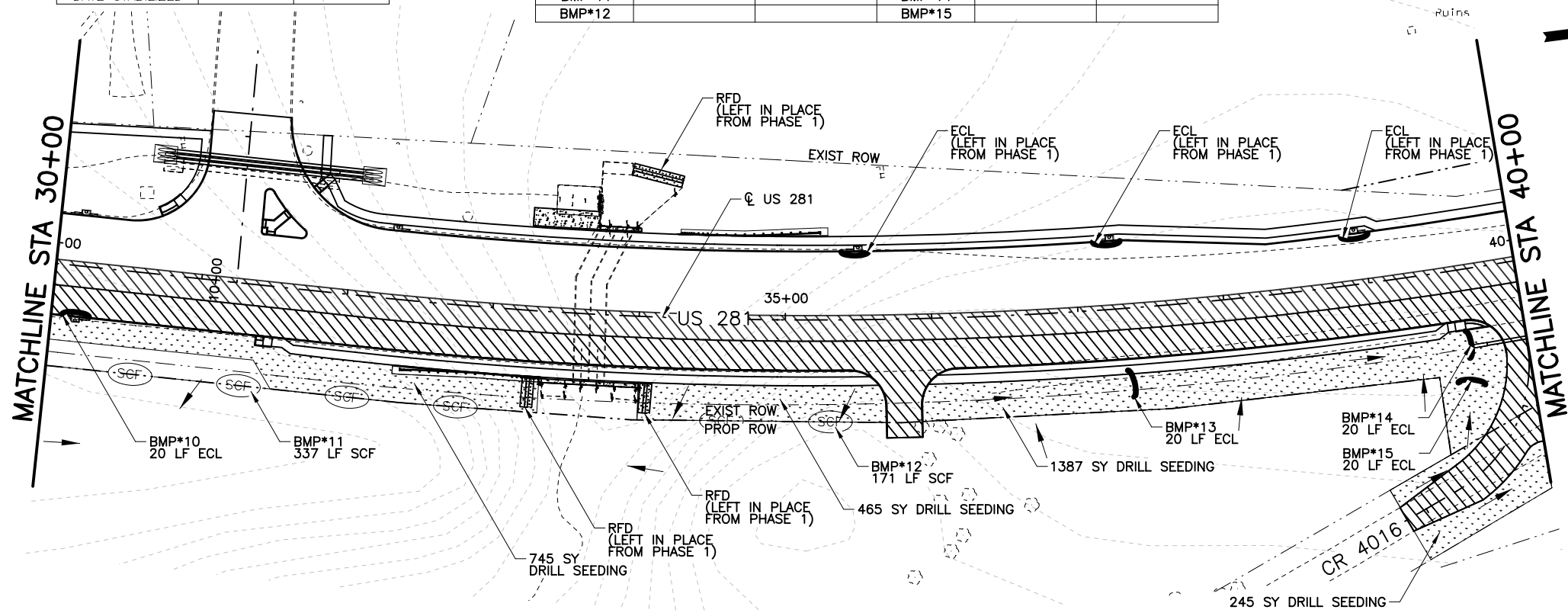
STA 10+00 TO 30+00

Designed: CPY	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. US 281
Checked: CPY	DIST. LAMPASAS	COUNTY	CONTROL NO. 0251	SECTION NO. 06
Drawn: CPY	JOB NO. 036	SHEET NO. 365		
Checked: CPY	BWD			

1/31/2023 5:03:37 PM kperry
 cp/bw_ANSIB.tbl
 cp/pdf_ANSIB.plt/cfg
 pw:/

DATE DISTURBED	DATE	INITIALS
DATE STABILIZED		

BMP #	INSTALL DATE	REMOVE DATE	BMP #	INSTALL DATE	REMOVE DATE
BMP*10			BMP*13		
BMP*11			BMP*14		
BMP*12			BMP*15		



LEGEND

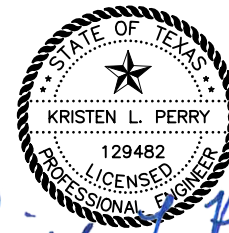
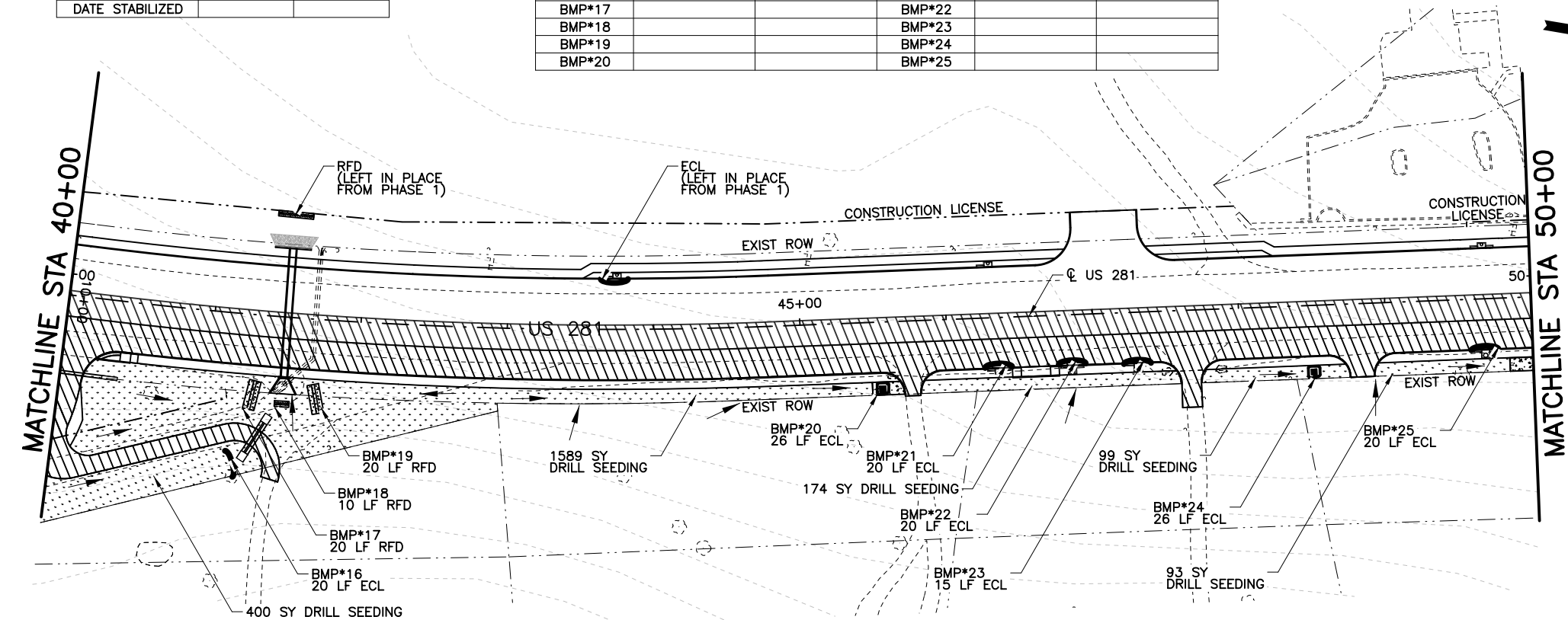
SYMBOL	DESCRIPTION
	PERMANENT PAVEMENT THIS PHASE
	TEMPORARY PAVEMENT THIS PHASE
	COMPLETED PERMANENT PAVEMENT
	COMPLETED TEMPORARY PAVEMENT
	SEDIMENT CONTROL FENCE
	DRILL SEEDING
	SODDING
	EROSION CONTROL BLANKET
	EROSION CONTROL LOG (ECL)
	EXISTING LANE
	FLOW DIRECTION
	DITCH INLET PROTECTION (26 LF) (ECL)
	TYPE 2 ROCK FILTER DAM (RFD)

NOTES:

- THE LOCATION OF DEVICES ARE FOR GRAPHIC REPRESENTATION ONLY. OBTAIN ENGINEERS APPROVAL BEFORE INSTALLATION.
- SEE ROADWAY LAYOUT SHEETS FOR RIPRAP DETAILS.

DATE DISTURBED	DATE	INITIALS
DATE STABILIZED		

BMP #	INSTALL DATE	REMOVE DATE	BMP #	INSTALL DATE	REMOVE DATE
BMP*16			BMP*21		
BMP*17			BMP*22		
BMP*18			BMP*23		
BMP*19			BMP*24		
BMP*20			BMP*25		



1/31/2023

Kristin L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741

©2023 Texas Department of Transportation

US 281

SW3P LAYOUT PHASE 2

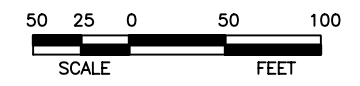
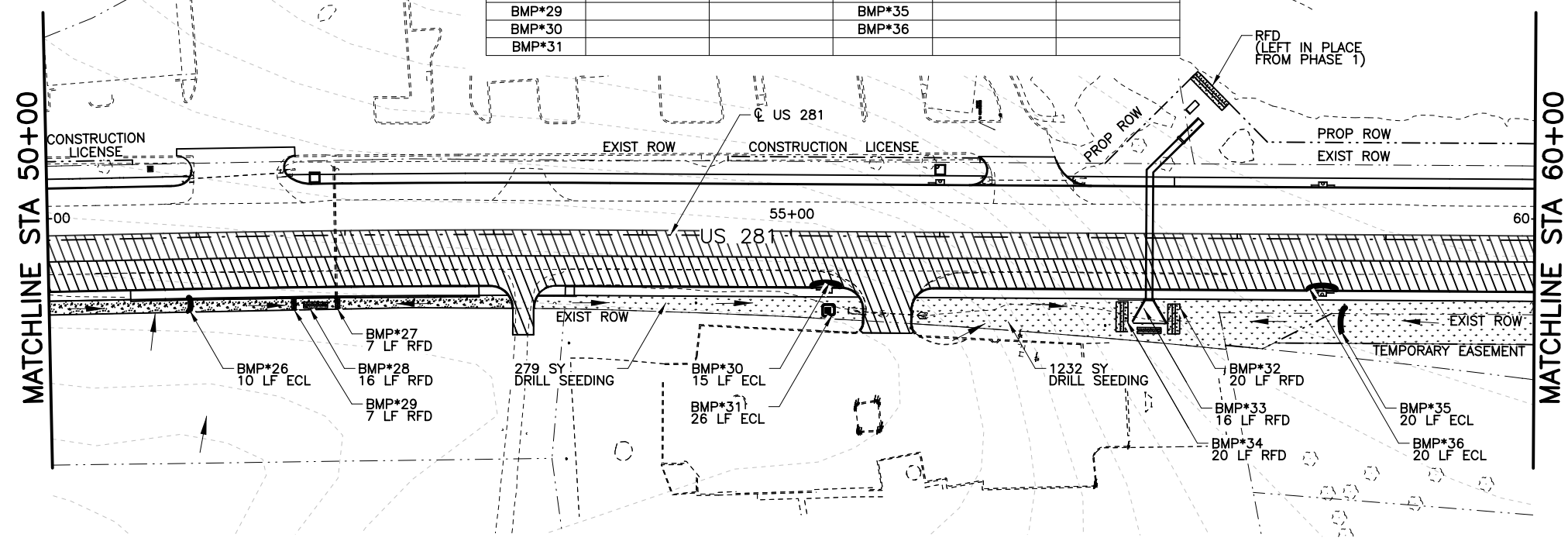
STA 30+00 TO 50+00

Designed:	CPY	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	CPY	DIST.	LAMPASAS	COUNTY	0251	SECTION NO.	06	JOB NO.	036
Drawn:	CPY	DIST.	LAMPASAS	COUNTY	0251	SECTION NO.	06	JOB NO.	036
Checked:	CPY	DIST.	LAMPASAS	COUNTY	0251	SECTION NO.	06	JOB NO.	036

1/31/2023 5:03:43 PM kperry
cpvbw_ANSIB.tbl
cpvbw_ANSIB.plt
pw:/

DATE DISTURBED	DATE	INITIALS
DATE STABILIZED		

BMP #	INSTALL DATE	REMOVE DATE	BMP #	INSTALL DATE	REMOVE DATE
BMP*26			BMP*32		
BMP*27			BMP*33		
BMP*28			BMP*34		
BMP*29			BMP*35		
BMP*30			BMP*36		
BMP*31					



LEGEND

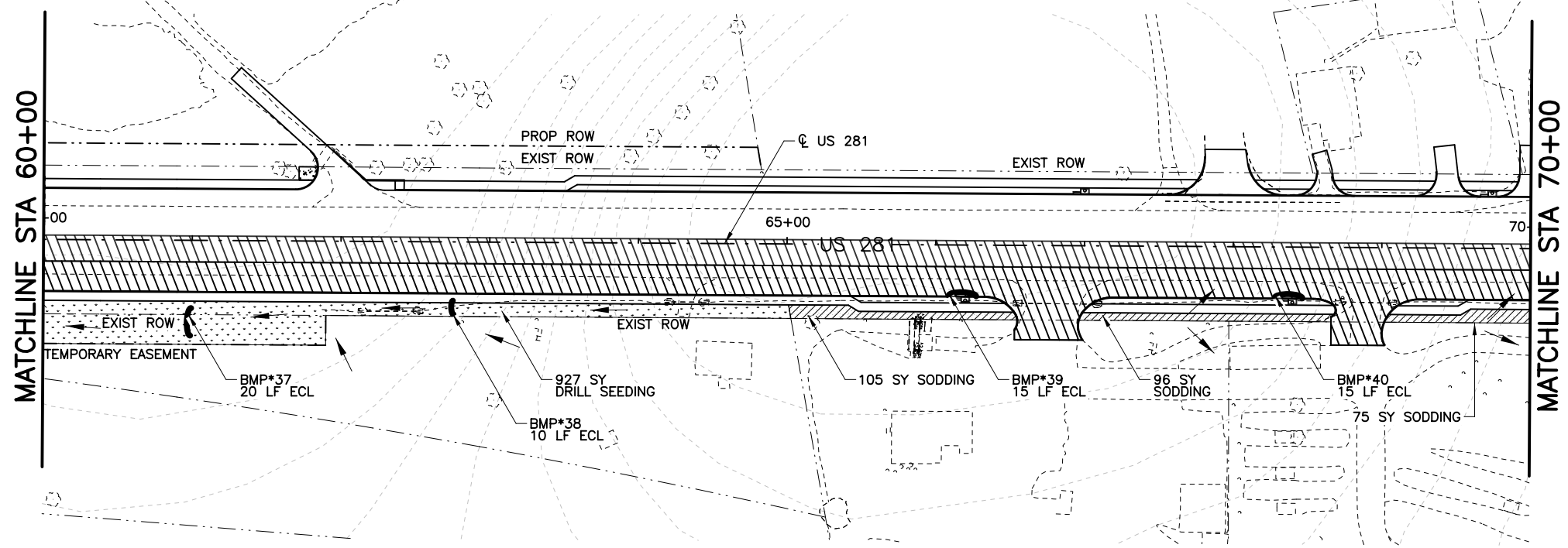
- | SYMBOL | DESCRIPTION |
|--------|--------------------------------------|
| | PERMANENT PAVEMENT THIS PHASE |
| | TEMPORARY PAVEMENT THIS PHASE |
| | COMPLETED PERMANENT PAVEMENT |
| | COMPLETED TEMPORARY PAVEMENT |
| | SEDIMENT CONTROL FENCE |
| | DRILL SEEDING |
| | SODDING |
| | EROSION CONTROL BLANKET |
| | EROSION CONTROL LOG (ECL) |
| | EXISTING LANE |
| | FLOW DIRECTION |
| | DITCH INLET PROTECTION (26 LF) (ECL) |
| | TYPE 2 ROCK FILTER DAM (RFD) |

NOTES:

- THE LOCATION OF DEVICES ARE FOR GRAPHIC REPRESENTATION ONLY. OBTAIN ENGINEERS APPROVAL BEFORE INSTALLATION.
- SEE ROADWAY LAYOUT SHEETS FOR RIPRAP DETAILS.

DATE DISTURBED	DATE	INITIALS
DATE STABILIZED		

BMP #	INSTALL DATE	REMOVE DATE	BMP #	INSTALL DATE	REMOVE DATE
BMP*37			BMP*39		
BMP*38			BMP*40		



1/31/2023

Kristen L. Perry

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741

©2023 Texas Department of Transportation

US 281

SW3P LAYOUT PHASE 2

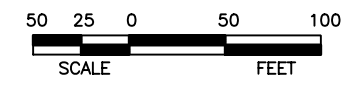
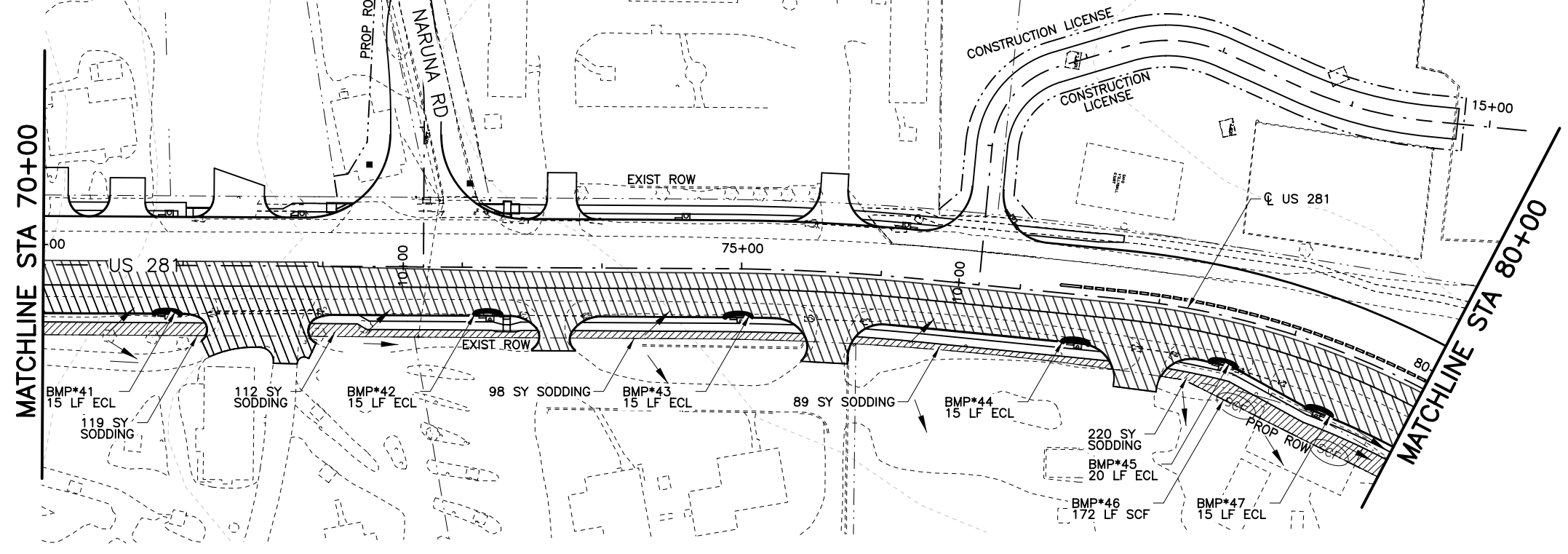
STA 50+00 TO 70+00

Designed:	CPY	FED. RD. DIV. NO.	6	STATE	TEXAS	FEDERAL AID PROJECT NO.		HIGHWAY NO.	US 281
Checked:	CPY	DIST.	LAMPASAS	COUNTY		CONTROL NO.	0251	SECTION NO.	06
Drawn:	CPY	JOB NO.	036	SHEET NO.	367				
Checked:	CPY	BWD							

1/31/2023 5:04:01 PM kperry
pw:/

DATE DISTURBED	DATE	INITIALS
DATE STABILIZED		

BMP #	INSTALL DATE	REMOVE DATE	BMP #	INSTALL DATE	REMOVE DATE
BMP*41			BMP*45		
BMP*42			BMP*46		
BMP*43			BMP*47		
BMP*44					



LEGEND

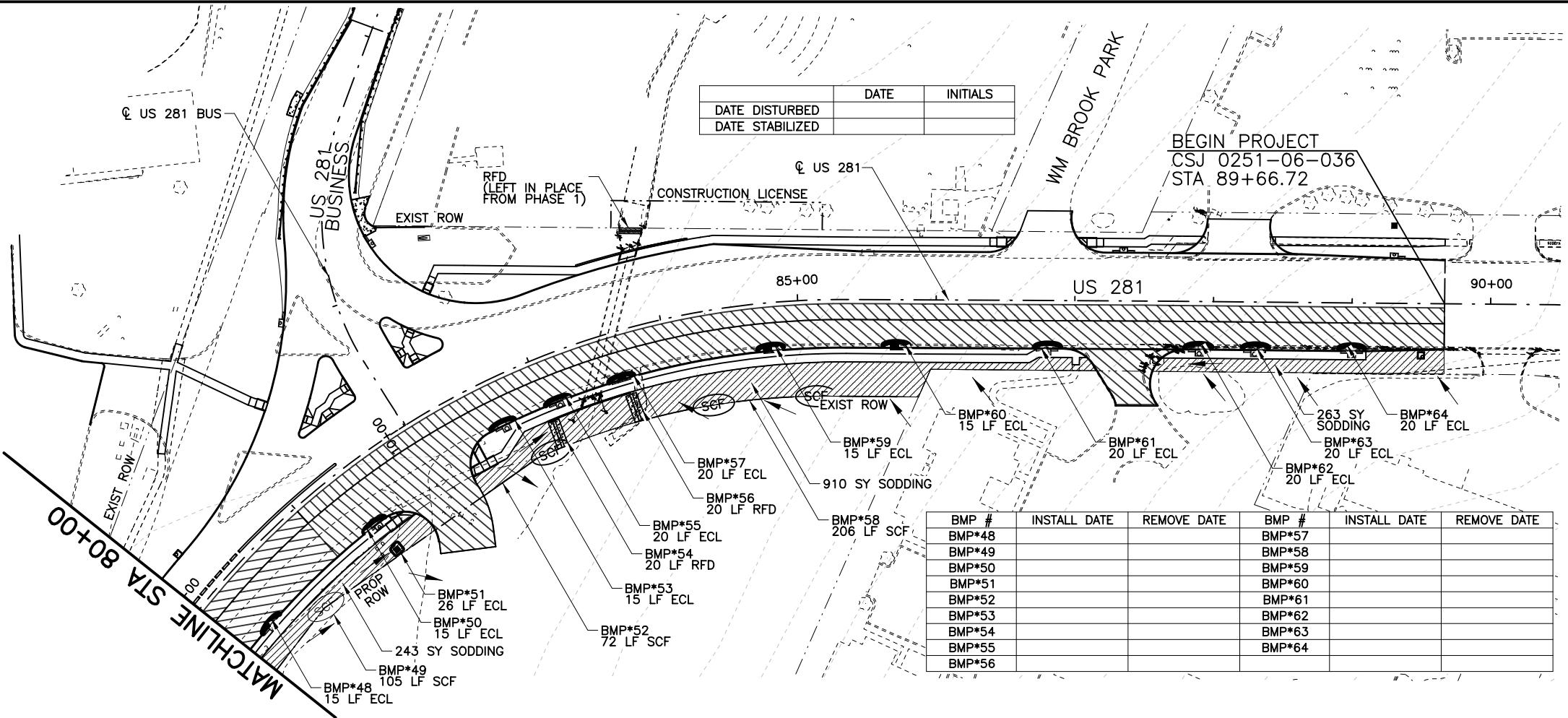
SYMBOL	DESCRIPTION
	PERMANENT PAVEMENT THIS PHASE
	TEMPORARY PAVEMENT THIS PHASE
	COMPLETED PERMANENT PAVEMENT
	COMPLETED TEMPORARY PAVEMENT
	SEDIMENT CONTROL FENCE
	DRILL SEEDING
	SODDING
	EROSION CONTROL BLANKET
	EROSION CONTROL LOG (ECL)
	EXISTING LANE
	FLOW DIRECTION
	DITCH INLET PROTECTION (26 LF) (ECL)
	TYPE 2 ROCK FILTER DAM (RFD)

- NOTES:
- THE LOCATION OF DEVICES ARE FOR GRAPHIC REPRESENTATION ONLY. OBTAIN ENGINEERS APPROVAL BEFORE INSTALLATION.
 - SEE ROADWAY LAYOUT SHEETS FOR RIPRAP DETAILS.



Kristen L. Perry

DATE DISTURBED	DATE	INITIALS
DATE STABILIZED		



BMP #	INSTALL DATE	REMOVE DATE	BMP #	INSTALL DATE	REMOVE DATE
BMP*48			BMP*57		
BMP*49			BMP*58		
BMP*50			BMP*59		
BMP*51			BMP*60		
BMP*52			BMP*61		
BMP*53			BMP*62		
BMP*54			BMP*63		
BMP*55			BMP*64		
BMP*56					

NO.	REVISION	BY	DATE



TEXAS REGISTERED ENGINEERING FIRM F-1741

©2023 Texas Department of Transportation

US 281

SW3P LAYOUT PHASE 2

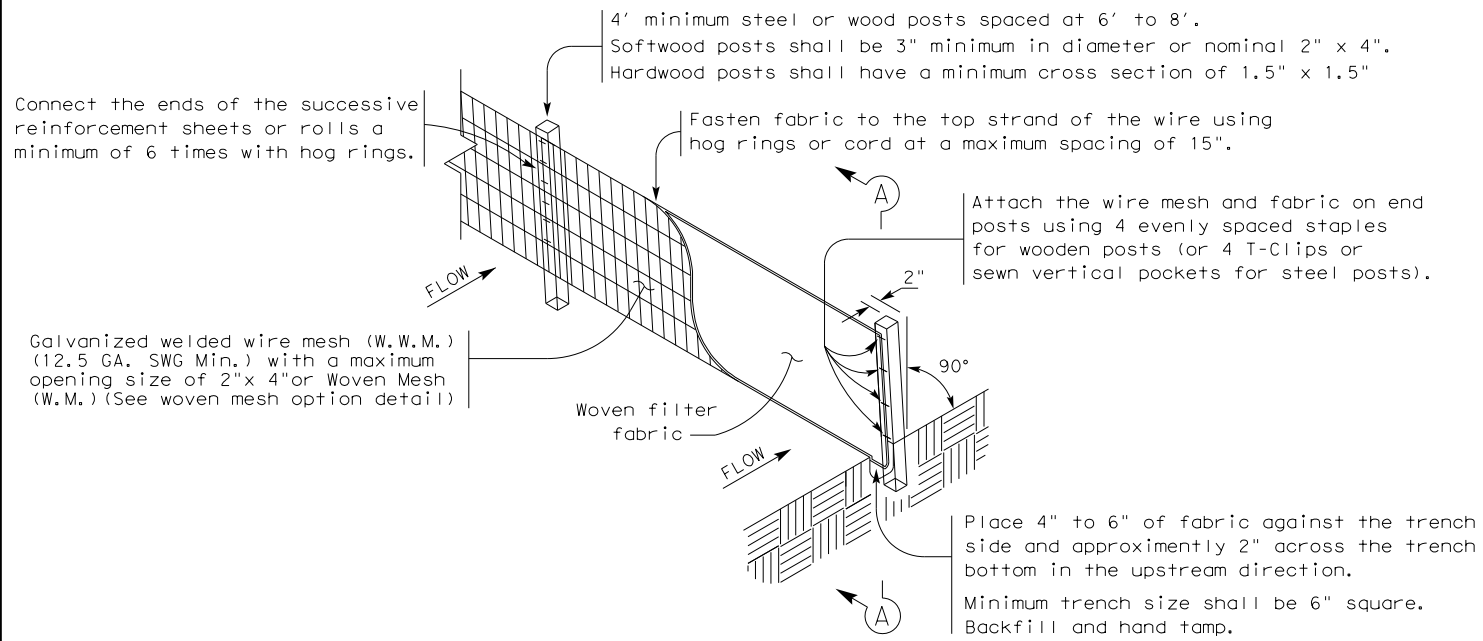
STA 70+00 TO BEGIN PROJECT

Designed:	CPY	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
Checked:	CPY	6	TEXAS		US 281		
Drawn:	CPY	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	CPY	BWD	LAMPASAS	0251	06	036	368

1/31/2023 5:04:11 PM kperry
cpw:\baw_ansi\ib.tbl
cpw:\pdf_ansi\ib.plt\cfcg
pw:/

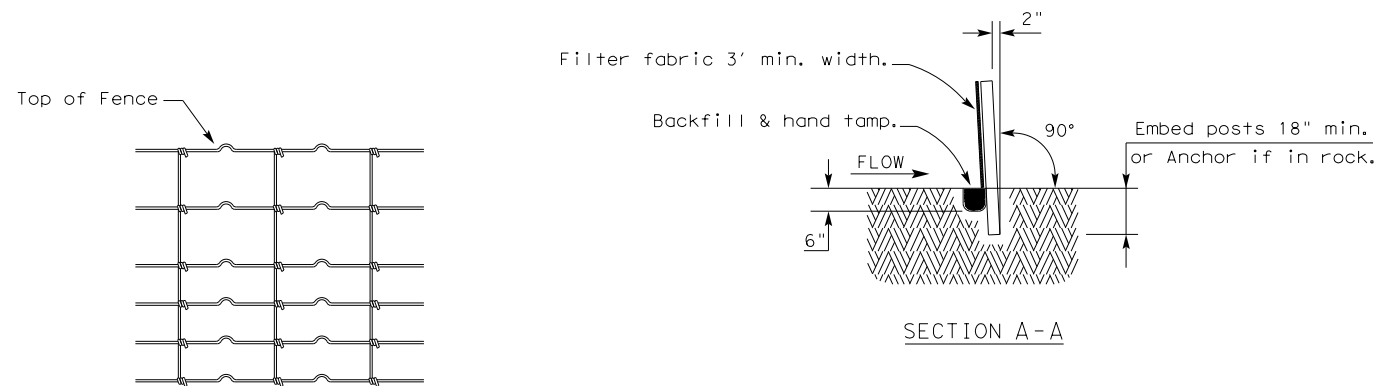
DISCLAIMER: This standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT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

DATE
FILE



TEMPORARY SEDIMENT CONTROL FENCE

SCF



HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

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

SEDIMENT CONTROL FENCE USAGE GUIDELINES

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

Sediment control fence should be sized to filter a maximum flow through rate of 100 GPM/FT². Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

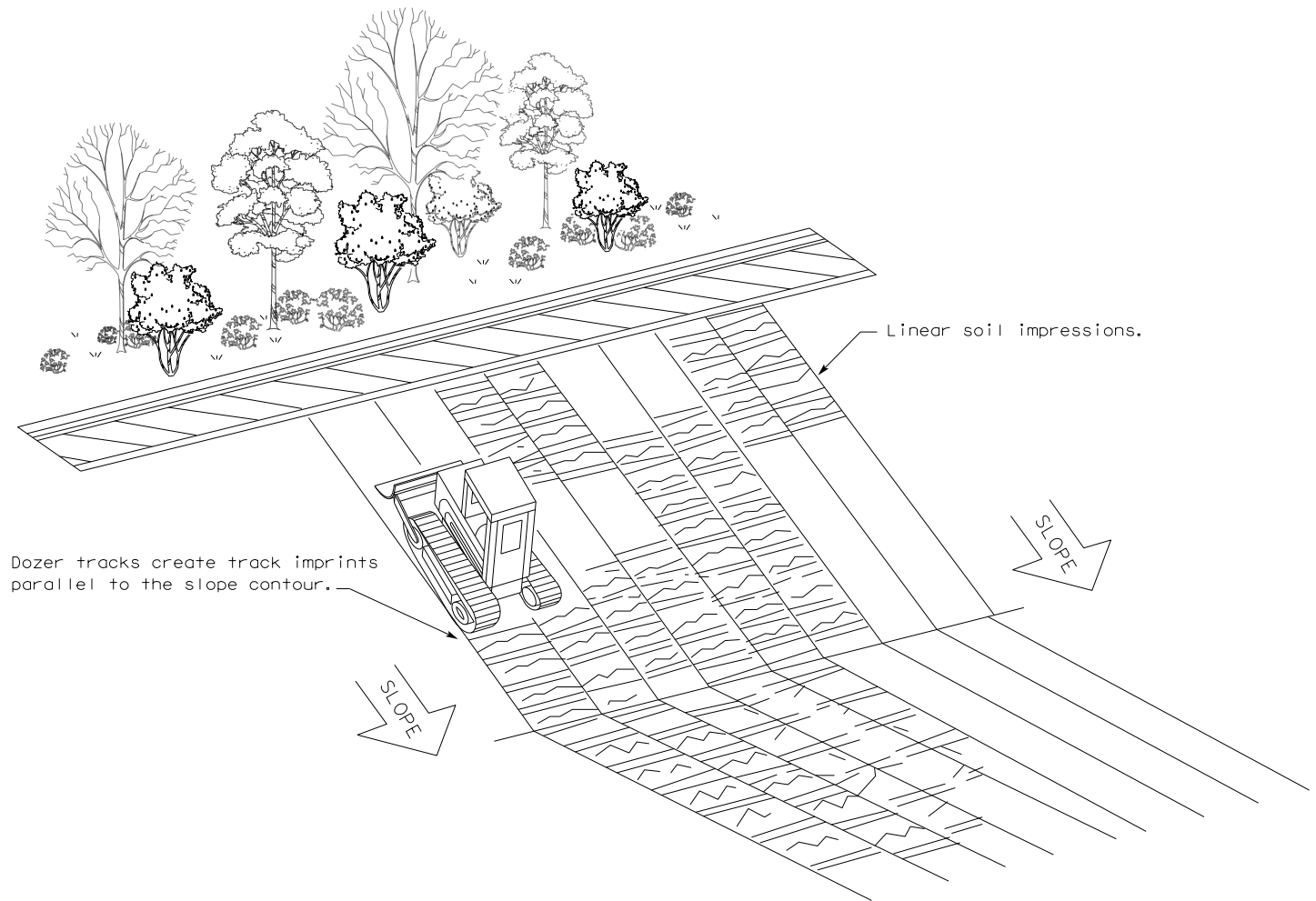
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continuous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING



Design
Division
Standard

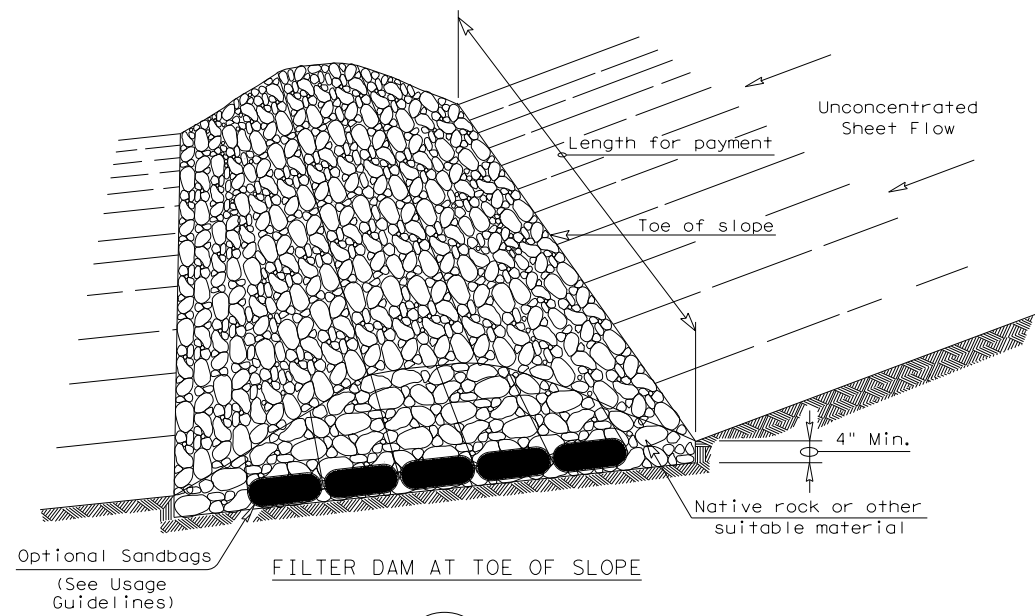
TEMPORARY EROSION,
SEDIMENT AND WATER
POLLUTION CONTROL MEASURES
FENCE & VERTICAL TRACKING

EC(1)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	369	

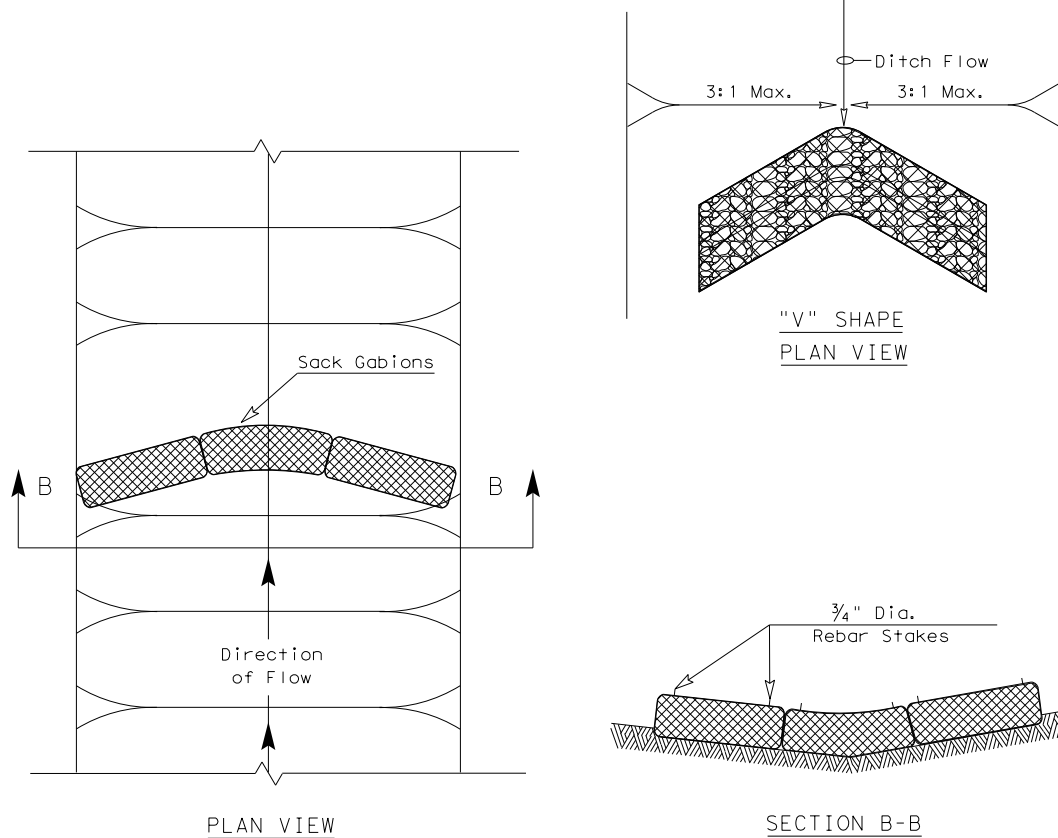
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: FILE:



FILTER DAM AT TOE OF SLOPE

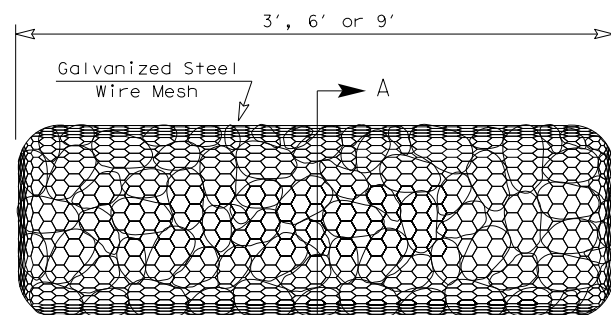
(RFD1)



"V" SHAPE PLAN VIEW

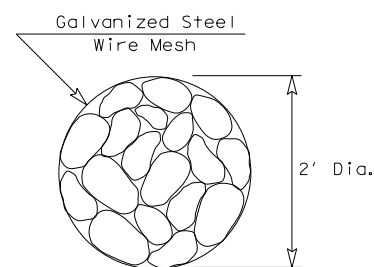
PLAN VIEW

SECTION B-B

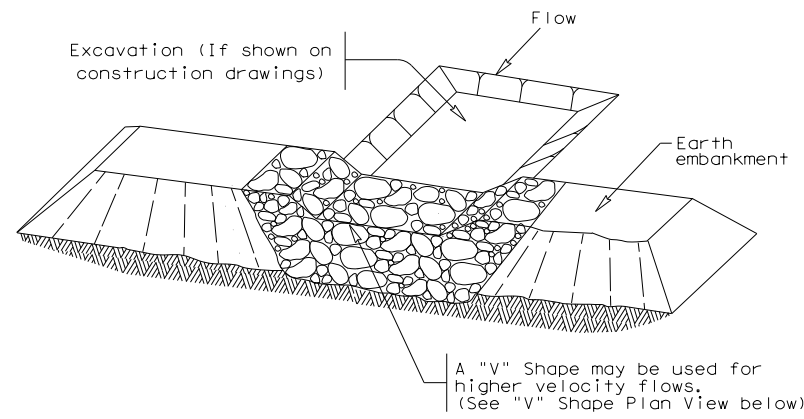


TYPE 4 (SACK GABIONS)

(RFD4)

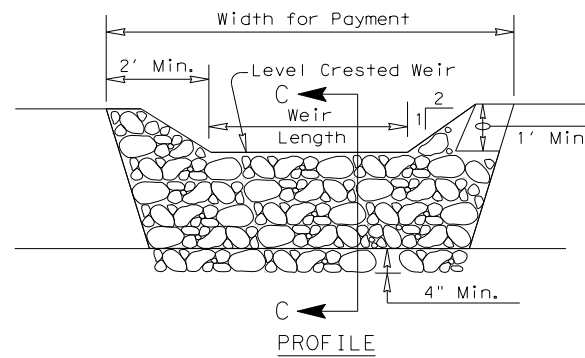


SECTION A-A

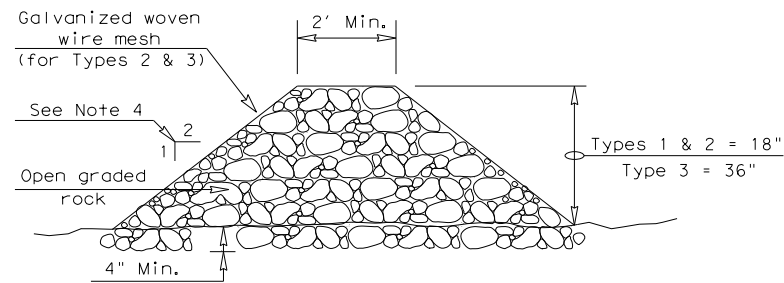


FILTER DAM AT SEDIMENT TRAP

(RFD1) OR (RFD2)



PROFILE



SECTION C-C

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT² of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

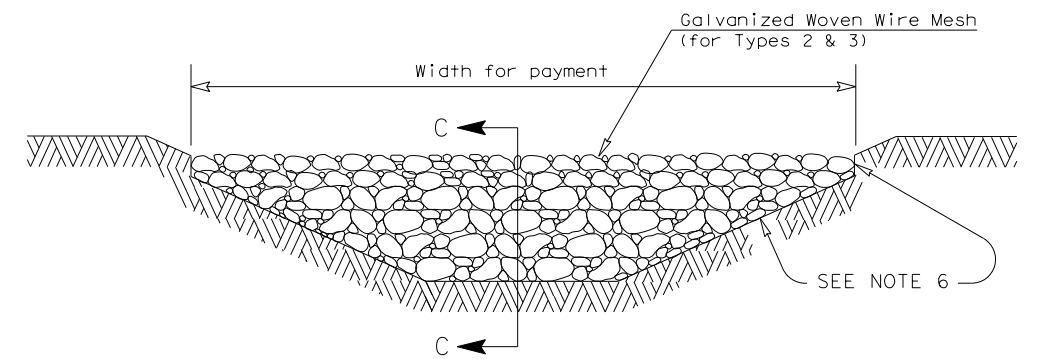
Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity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

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

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

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

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



FILTER DAM AT CHANNEL SECTIONS

(RFD1) OR (RFD2) OR (RFD3)

GENERAL NOTES

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

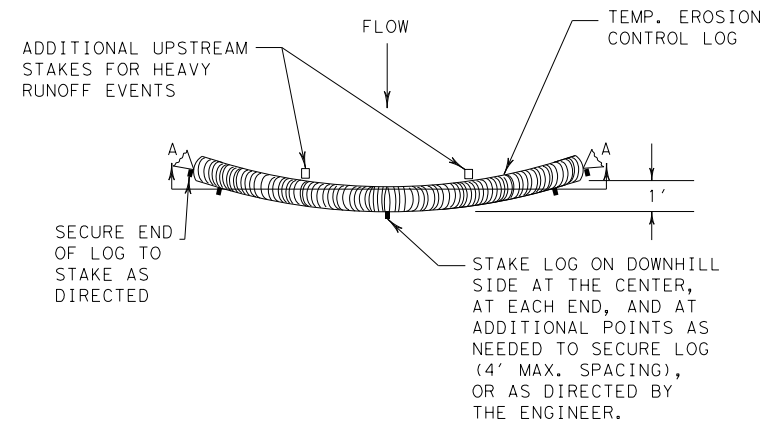
PLAN SHEET LEGEND

- Type 1 Rock Filter Dam (RFD1)
- Type 2 Rock Filter Dam (RFD2)
- Type 3 Rock Filter Dam (RFD3)
- Type 4 Rock Filter Dam (RFD4)

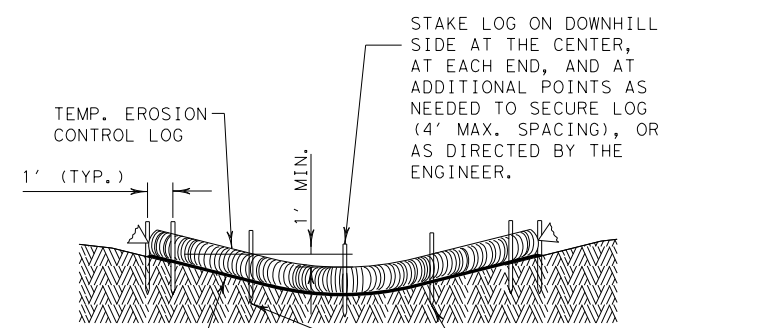
		Design Division Standard	
<p>TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES ROCK FILTER DAMS EC(2)-16</p>			
FILE: ec216	DN: TxDOT	CK: KM	DW: VP
© TxDOT: JULY 2016	CONT: 0251	SECT: 06	JOB: 036
REVISIONS	DIST: BWD	COUNTY: LAMPASAS	HIGHWAY: US 281
			SHEET NO.: 370

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.

DATE:
FILE:



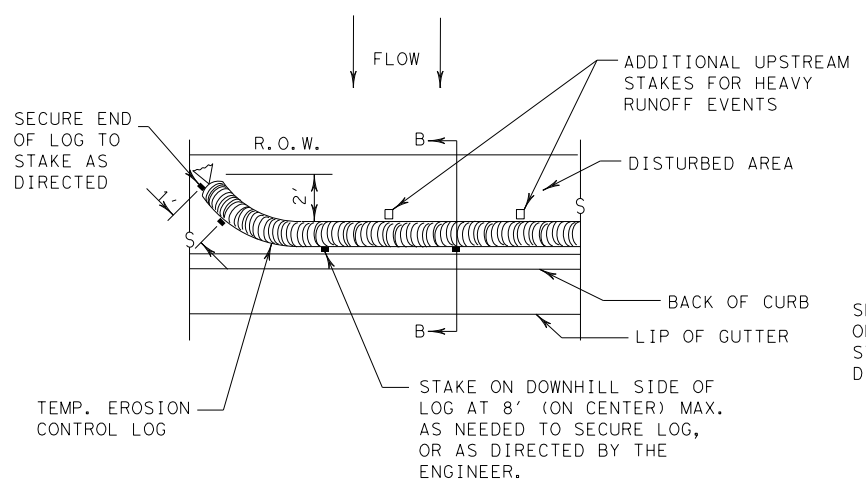
PLAN VIEW



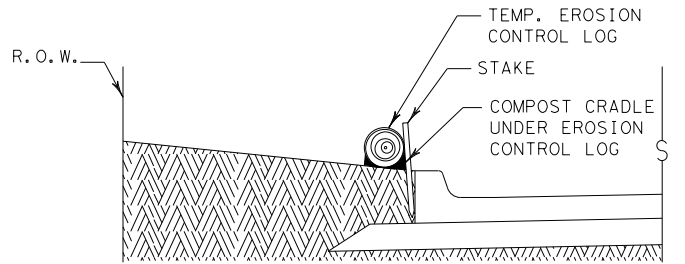
SECTION A-A

EROSION CONTROL LOG DAM

CL-D



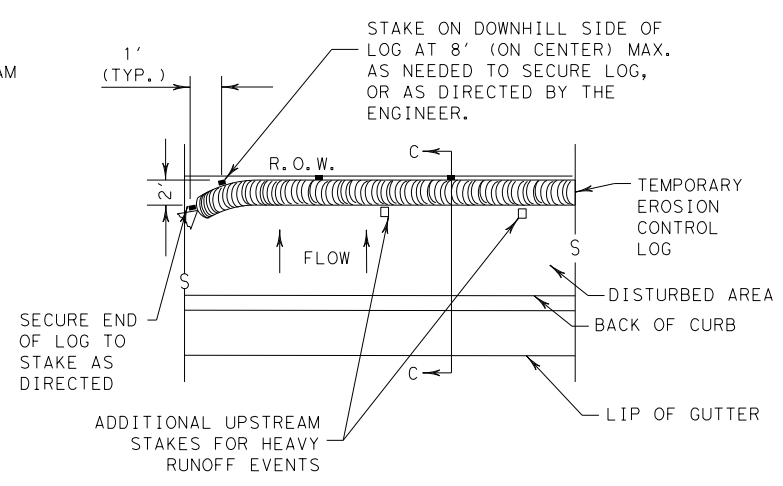
PLAN VIEW



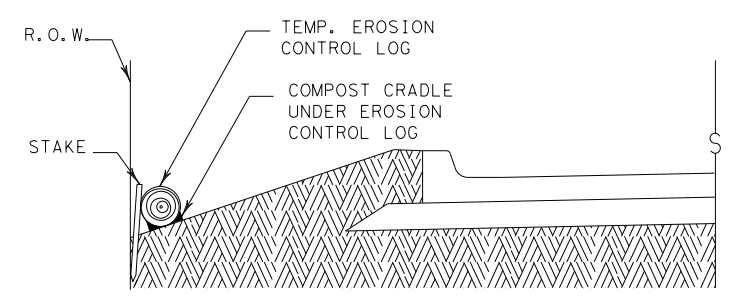
SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

CL-BOC



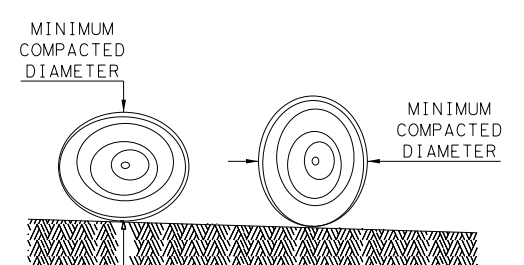
PLAN VIEW



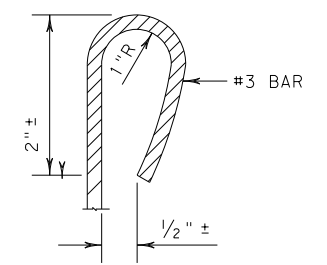
SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS



REBAR STAKE DETAIL

SEDIMENT BASIN & TRAP USAGE GUIDELINES

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

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

Control logs should be placed in the following locations:

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

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

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

GENERAL NOTES:

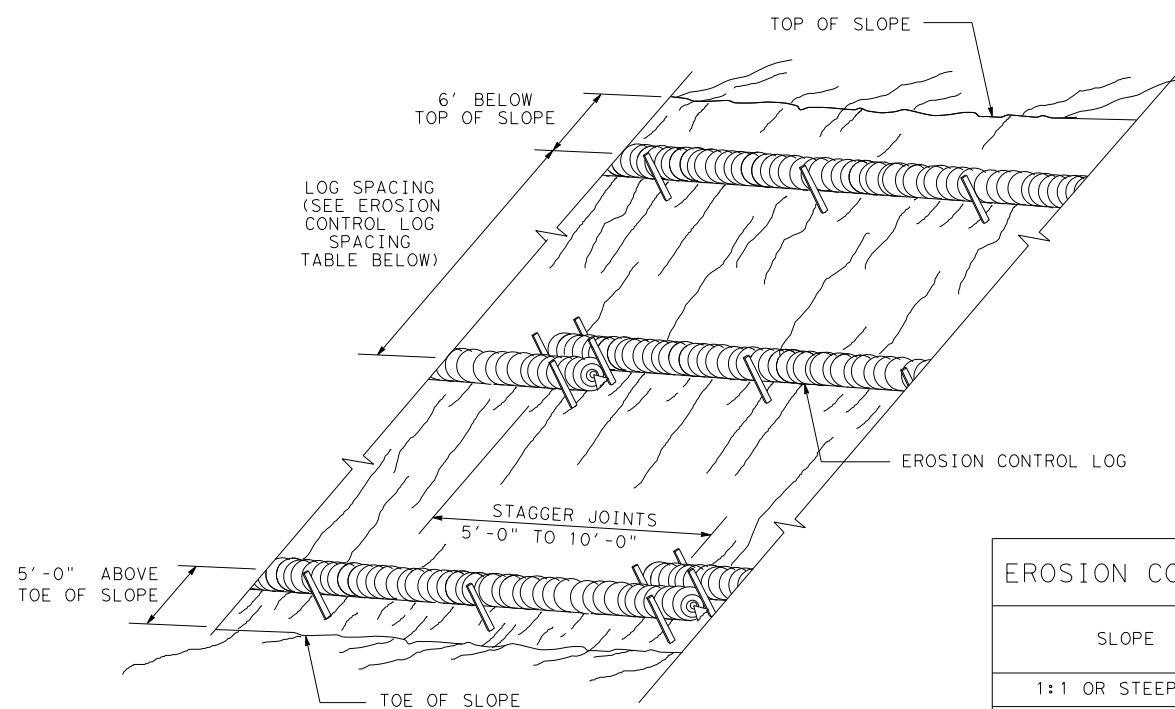
1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE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

SHEET 1 OF 3

		Design Division Standard	
<p>TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES EROSION CONTROL LOG</p> <p>EC (9) - 16</p>			
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT
© TxDOT: JULY 2016	CONT SECT	JOB	HIGHWAY
REVISIONS	0251 06	036	US 281
	DIST	COUNTY	SHEET NO.
	BWD	LAMPASAS	371

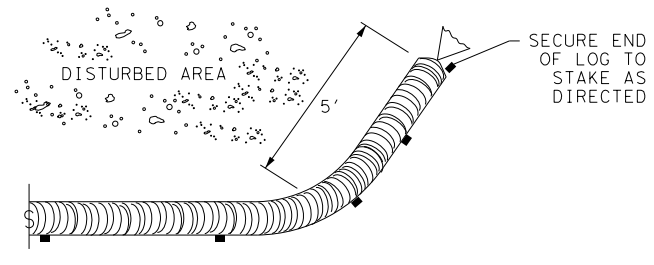
DISCLAIMER: This standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

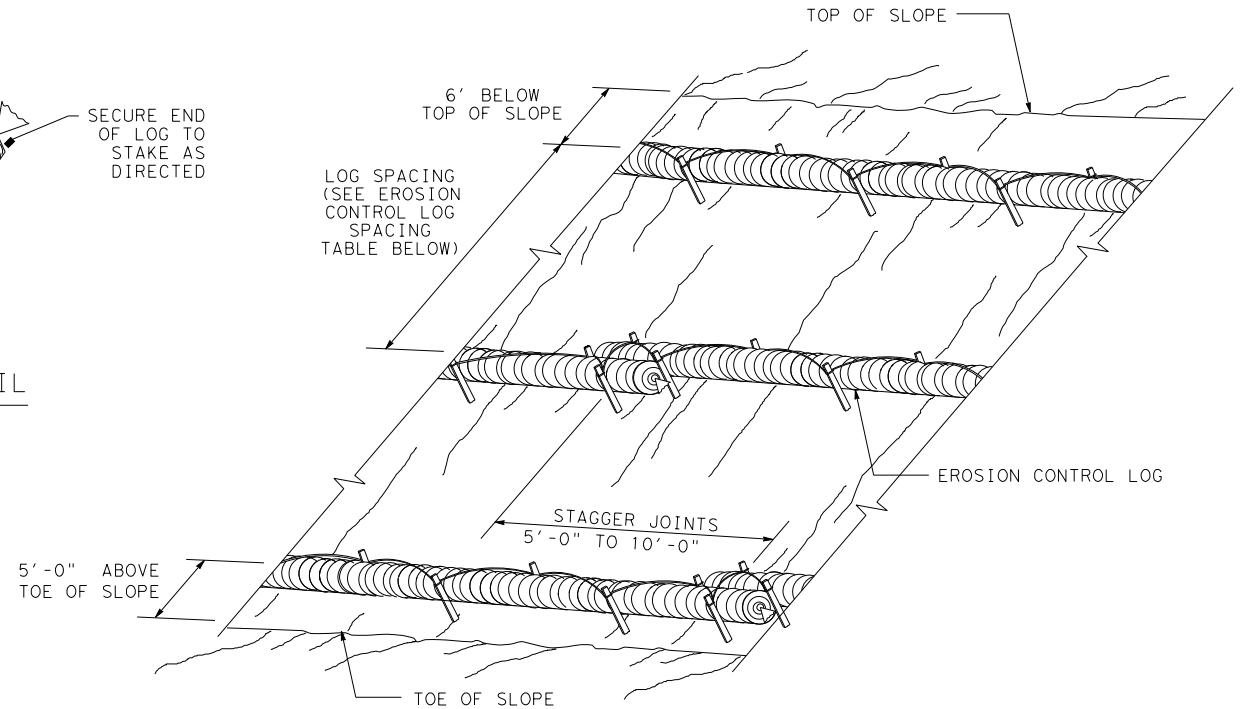


EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

CL-SST



END SECTION RAP DETAIL

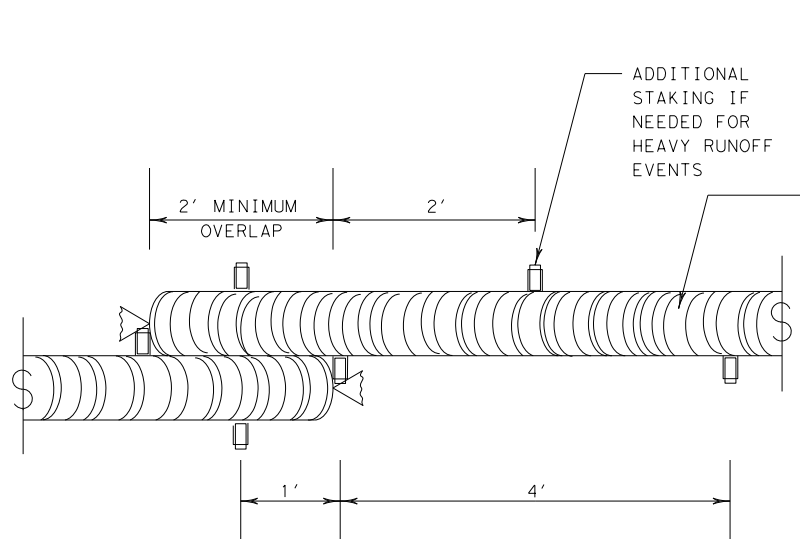


EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

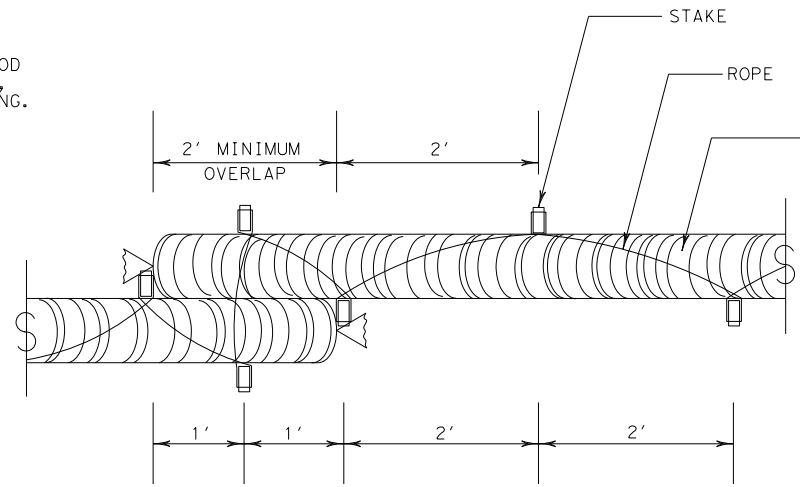
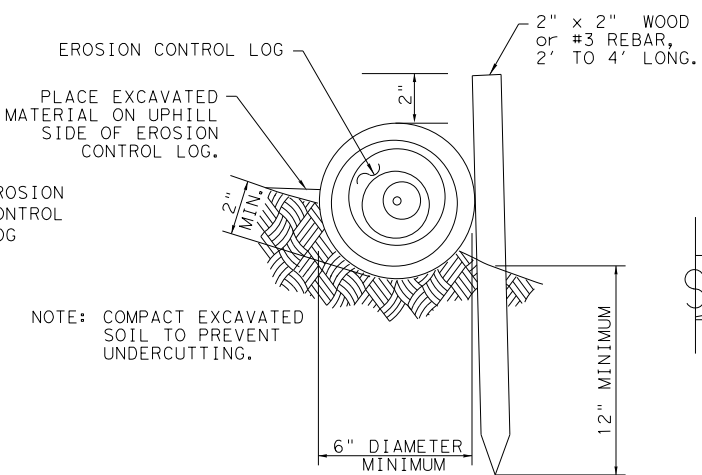
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

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



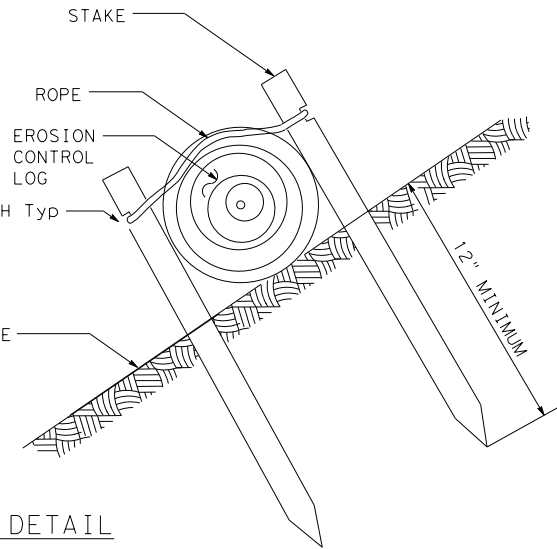
STAKE AND TRENCHING ANCHORING DETAIL

CL-SST



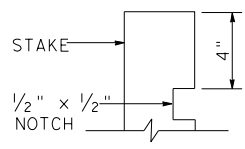
STAKE AND LASHING ANCHORING DETAIL

CL-SSL



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

TRENCH DEPTH TABLE

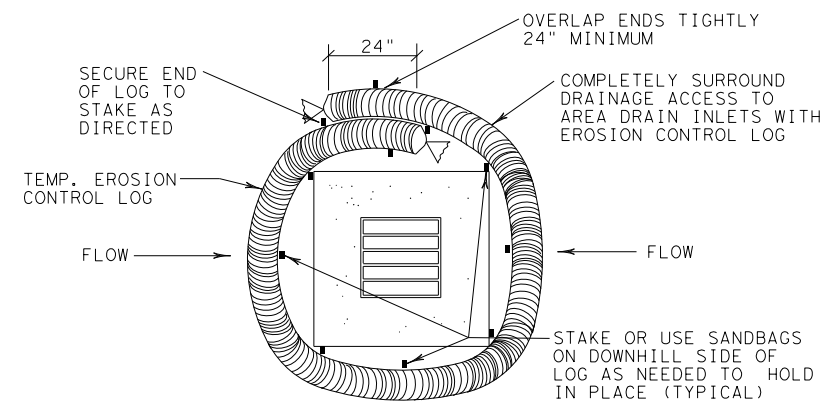


STAKE NOTCH DETAIL

SHEET 2 OF 3

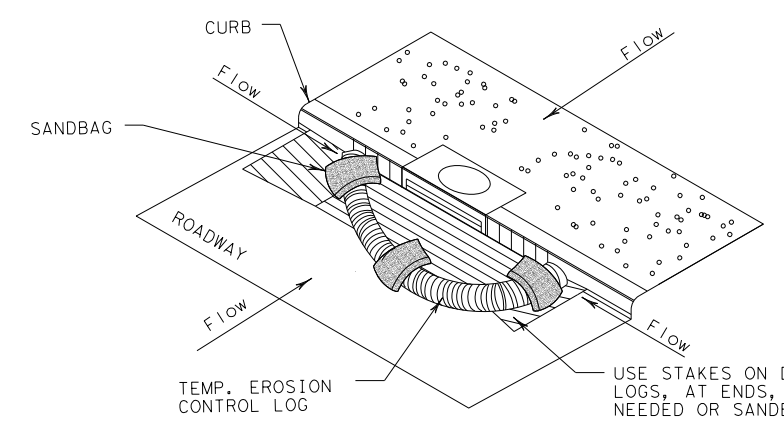
		Design Division Standard	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES EROSION CONTROL LOG EC (9) - 16			
FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT
© TxDOT: JULY 2016	CONT	SECT	JOB
REVISIONS	0251	06	036
DIST	COUNTY	SHEET NO.	
BWD	LAMPASAS	372	

DISCLAIMER: 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.



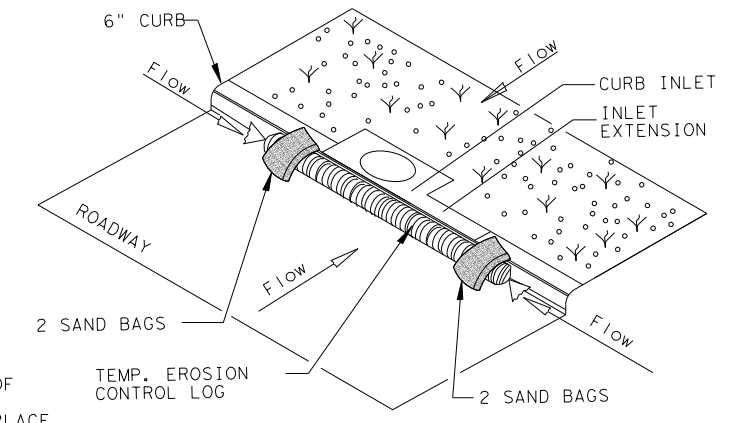
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

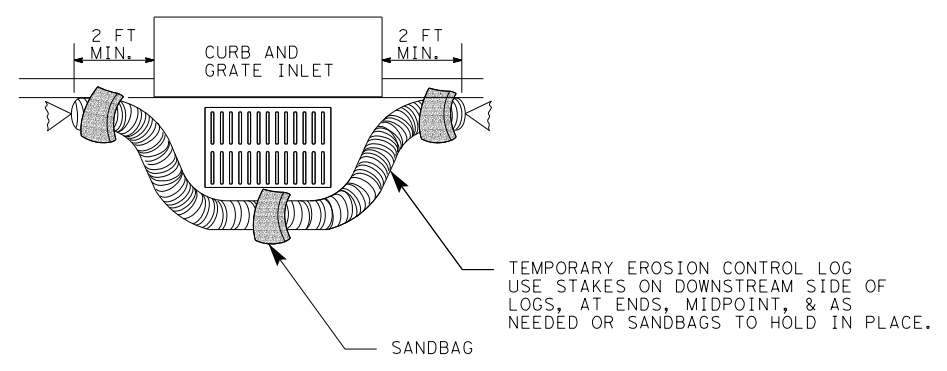
CL-CI



EROSION CONTROL LOG AT CURB INLET

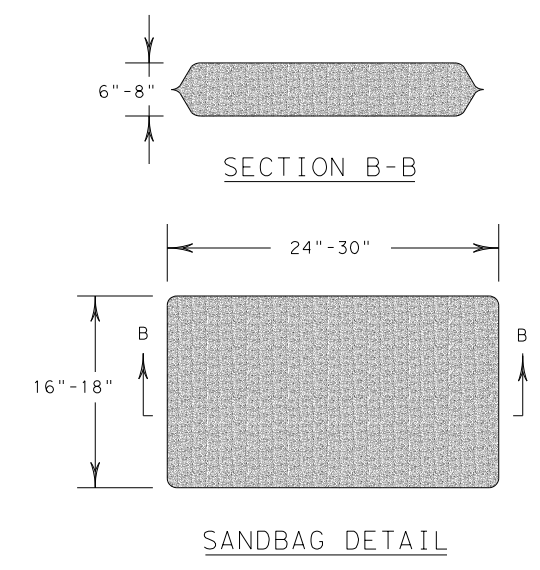
CL-CI

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



EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI



SHEET 3 OF 3

		Design Division Standard		
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES EROSION CONTROL LOG EC (9) - 16				
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0251	06	036	US 281
	DIST	COUNTY	SHEET NO.	
	BWD	LAMPASAS	373	

DATE:
FILE: