

CITY OF SEGUIN & GUADALUPE COUNTY

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			1
STATE	STATE DIST.	COUNTY	
TEXAS	SAT	GUADALUPE	
CONT.	SECT.	JOB	HIGHWAY NO.
0915	46	052	CORDOVA

INDEX OF SHEETS
SEE SHEET 2 FOR INDEX OF SHEETS

60% SUBMITTAL

SUPER = LOW SPEED URBAN; TxDOT RDM TABLE 2-3
 DESIGN SPEED = 40 MPH
 AREA OF DISTURBED SOIL = 76.6 ACRES
 ADT(2028) = 18,285
 ADT(2048) = 23,060
 DESIGN CRITERIA: CITY OF SEGUIN
 ACCESSIBILITY STANDARDS = PROWAG
 REGISTERED ACCESSIBILITY SPECIALIST INSPECTION REQUIRED
 TDLR NO.

FEDERAL AID PROJECT
 PROJECT NO.
 CSJ: 0915-46-052
 LIMITS FROM: SH 46
 TO: SH 123

NET LENGTH OF ROADWAY = 18121.53 FT = 3.43 MI
 NET LENGTH OF BRIDGE = 144.82 FT = 0.03 MI
 NET LENGTH OF PROJECT = 18266.35 FT = 3.46 MI

CITY COUNCIL

DONNA DODGEN, MAYOR
 JOE REA
 SONIA MENDEZ
 JIM LIEVENS
 CHRIS RANGEL
 PAUL GAYTAN
 MONICA CARTER
 JASON BIESENBACH
 BILL KELLER

CITY MANAGER

STEVE PARKER

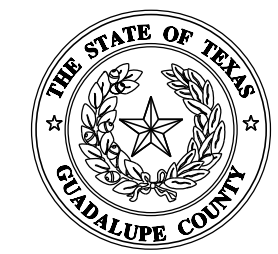
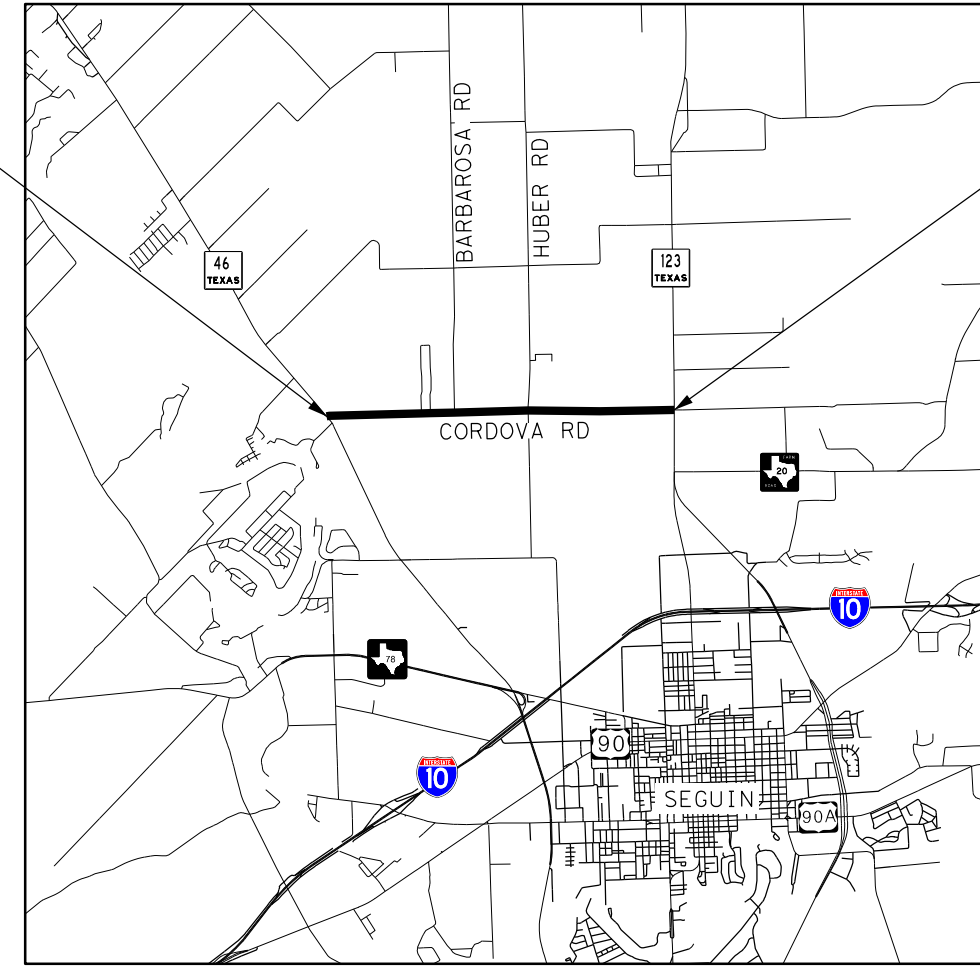
CITY ASSISTANT MANAGER

RICK CORTES

FOR WORK CONSISTING OF EXPANDING ROADWAY FROM 2 TO 4 LANES WITH RAISED MEDIAN OR CENTER TURN LANE. REALIGN CORDOVA ROAD AT SH 46. ADD SHARED USE PATHS.

BEGIN PROJECT
STA 111+91.30

END PROJECT
STA 294+57.65



It's real.



INTERIM REVIEW
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 ENGINEER: JOHN A. TYLER
 P. E. SERIAL NO: 105193
 DATE: 11/17/2023

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 5, 2022)

EXCEPTIONS: NONE
 EQUATIONS: NONE
 RAILROAD CROSSING: NONE



PLANS PREPARED BY:
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

Design Filename: \$FILE\$.

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\General\1277500_index01.dgn

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32	RETAINING WALL QUANTITY SUMMARY
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415	* D & OM (4) -20
416	* D & OM (5) -20
417	* PM (1) - 20
418	* PM (2) - 20
419	* PM (3) - 20
420	* PM (4) - 20
421	* SMD (GEN) - 08
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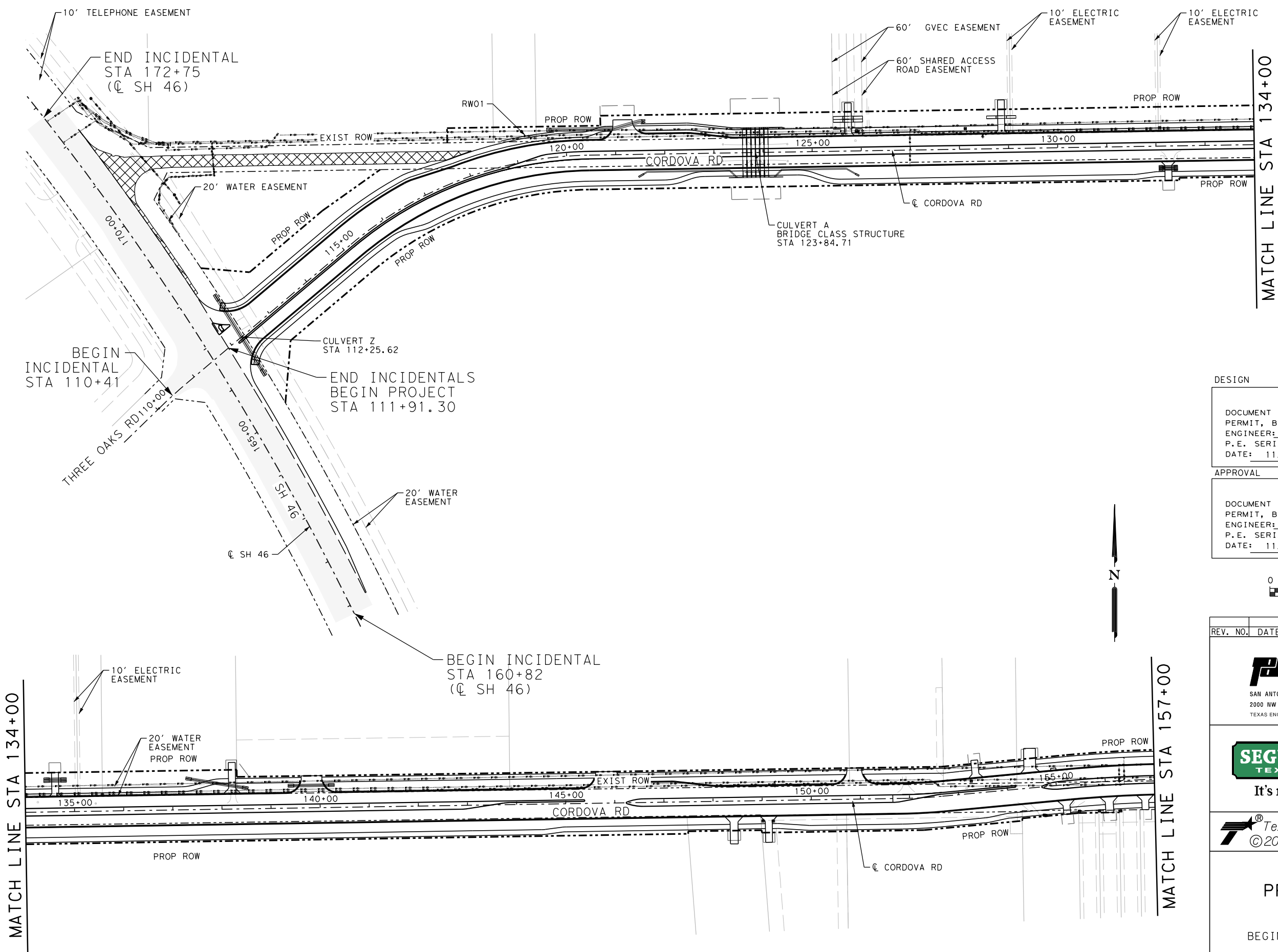
THE STANDARD SHEETS SPECIFICALLY SHOWN WITH PRECEDING (*), HAVE BEEN SELECTED BY ME, OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

INTERIM REVIEW
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ENGINEER: STEVEN J. TATE
P. E. SERIAL NO: 131443
DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
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INDEX OF SHEETS			
CHK DGN:	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO. CORDOVA
DWG:	DIST. SAT	COUNTY GUADALUPE	CONT. NO. 0915
			SECT. NO. 46
			JOB NO. 052
			SHEET NO. 2

Plotted on: 11/17/2023

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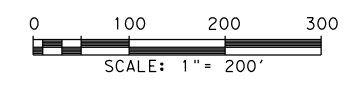


LEGEND

- PARCEL BOUNDARY
- - - VARIABLE EASEMENTS
- ▭ SEAL COAT
- ▨ PAVEMENT REMOVAL

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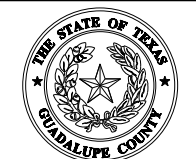
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 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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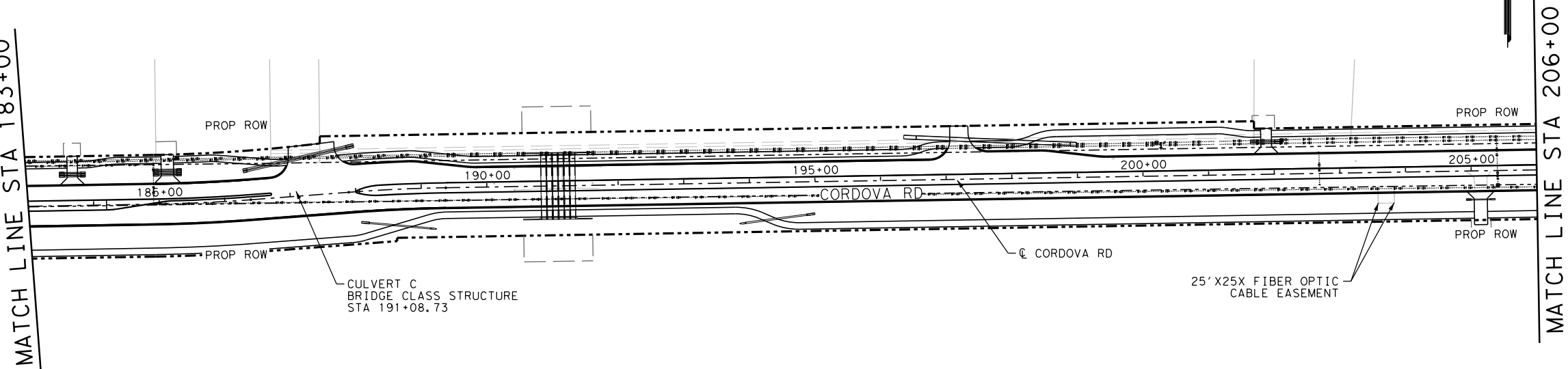
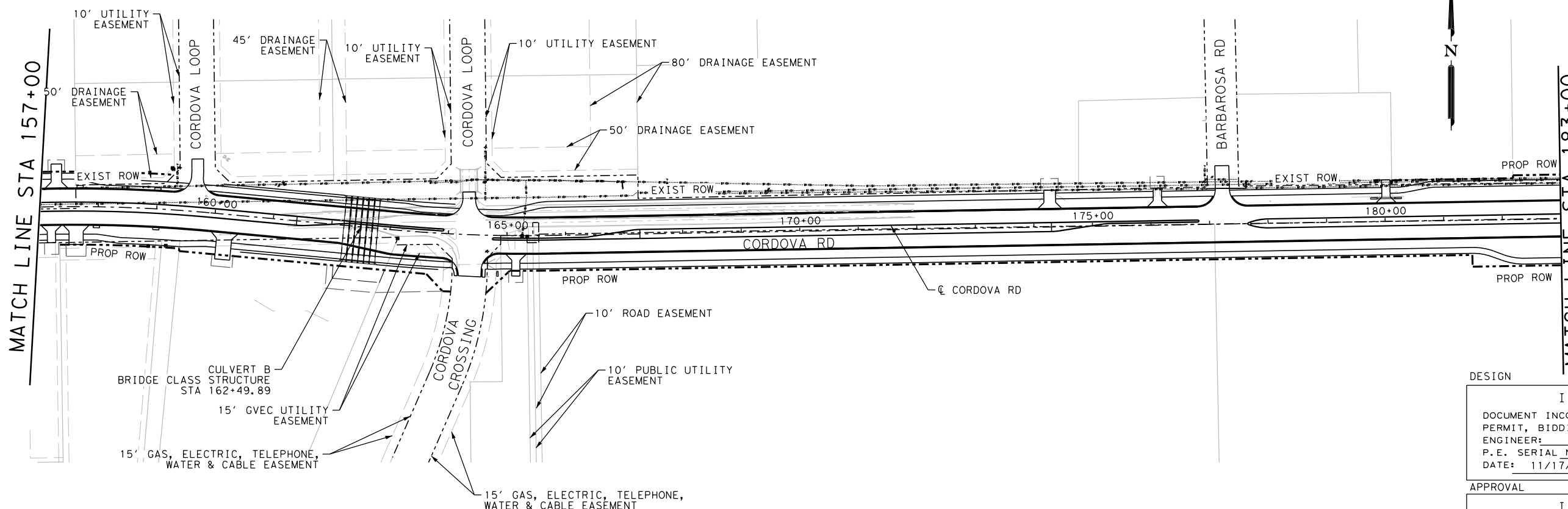


PROJECT LAYOUT

BEGIN PROJECT TO STA 157+00

SHEET 1 OF 5

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	3

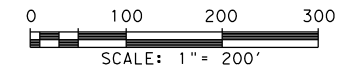


LEGEND

- PARCEL BOUNDARY
- - - VARIABLE EASEMENTS
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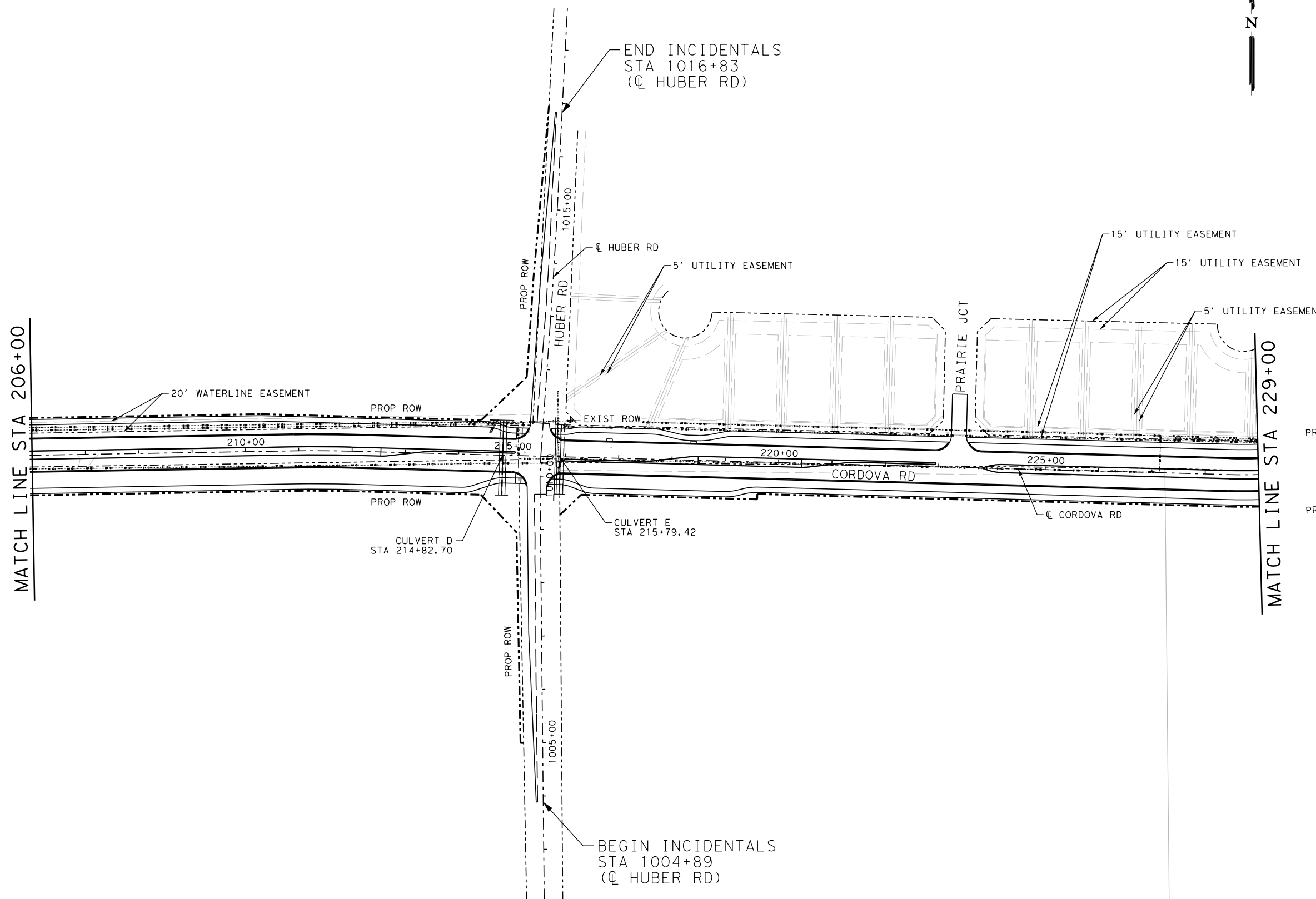
STA 157+00 TO STA 206+00

SHEET 2 OF 5

CHK	DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK	DGN:	6	TEXAS		CORDOVA		
CHK	DGN:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK	DGN:	SAT	GUADALUPE	0915	46	052	4

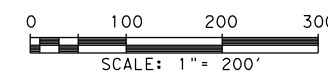
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- PARCEL BOUNDARY
- - - VARIABLE EASEMENTS
- ▭ SEAL COAT
- ▩ PAVEMENT REMOVAL



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PROP ROW

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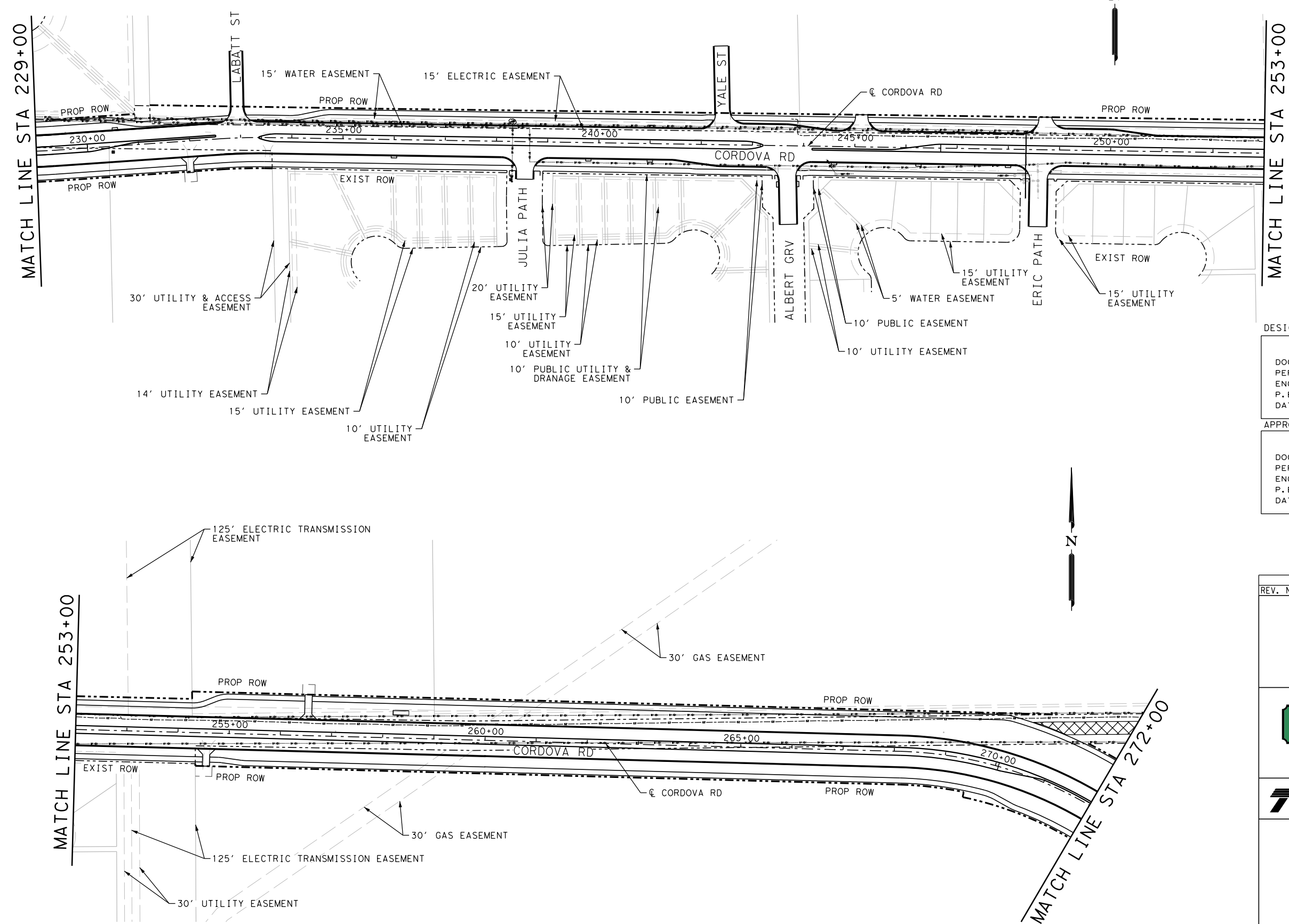


PROJECT LAYOUT

STA 206+00 TO STA 229+00

SHEET 3 OF 5

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	5



LEGEND

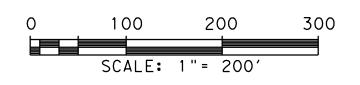
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	VARIABLE EASEMENTS
	SEAL COAT
	PAVEMENT REMOVAL

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PAPE-DAWSON ENGINEERS

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 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
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SEGUIN TEXAS

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THE STATE OF TEXAS
 GUADALUPE COUNTY

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PROJECT LAYOUT

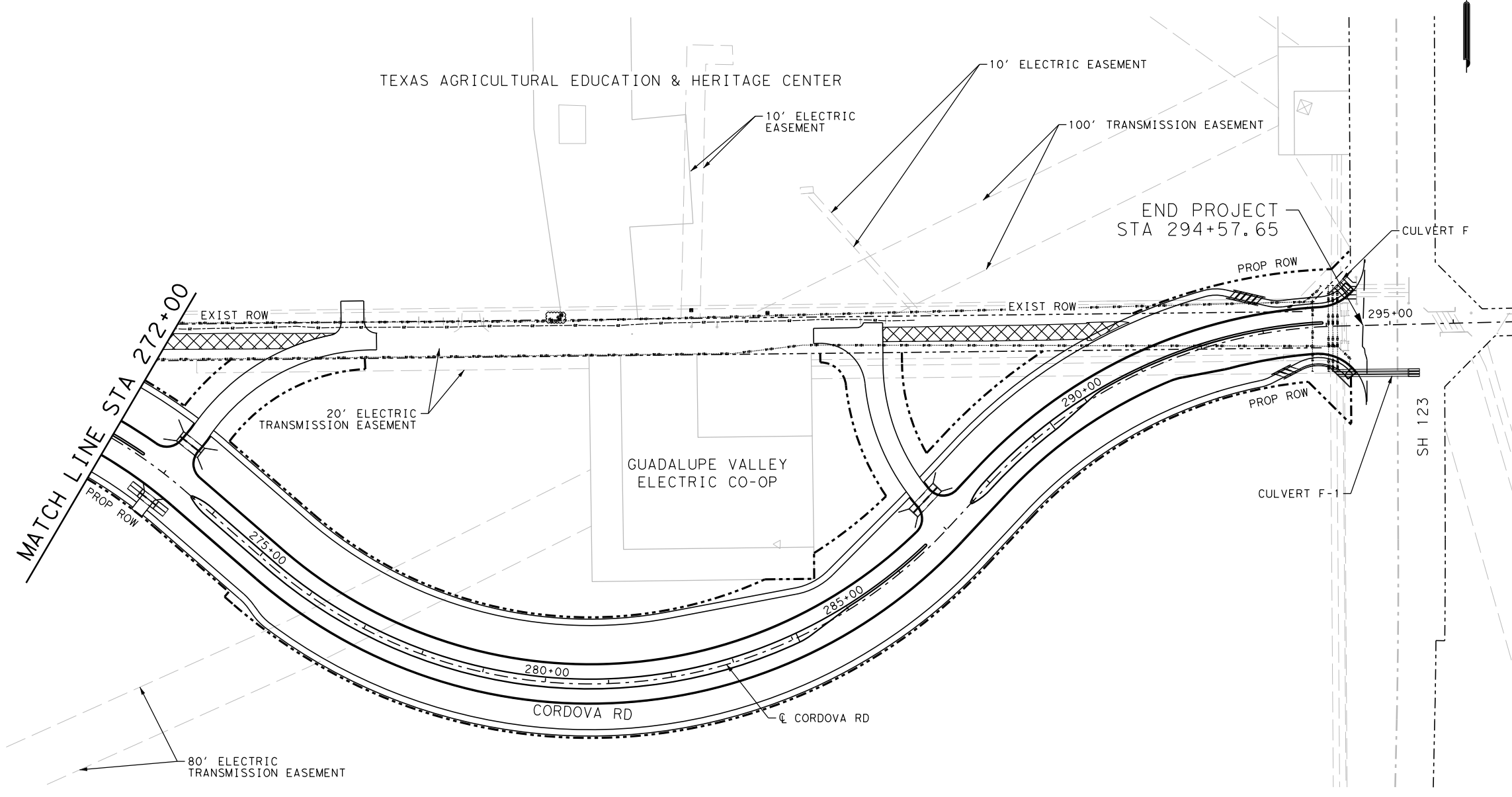
STA 229+00 TO STA 272+00

SHEET 4 OF 5

CHK DGN:	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.	HIGHWAY NO. CORDOVA
CHK DWG:	DIST. SAT	COUNTY GUADALUPE	CONT. NO. 0915	SECT. NO. 46
CHK DWG:				JOB NO. 052
				SHEET NO. 6

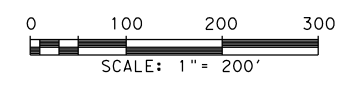
LEGEND

- PARCEL BOUNDARY
- - - VARIABLE EASEMENTS
- ▭ SEAL COAT
- ▨ PAVEMENT REMOVAL



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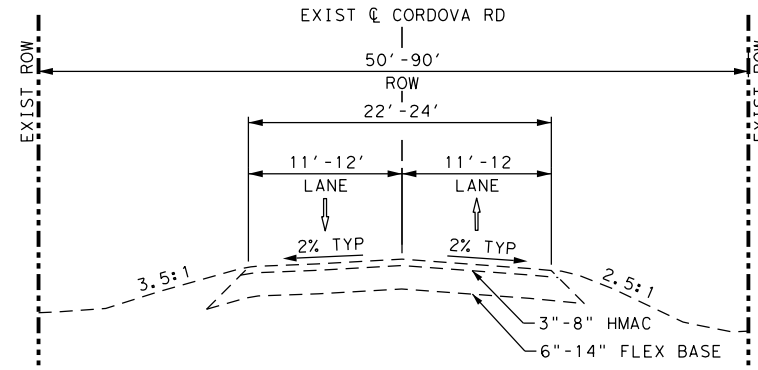
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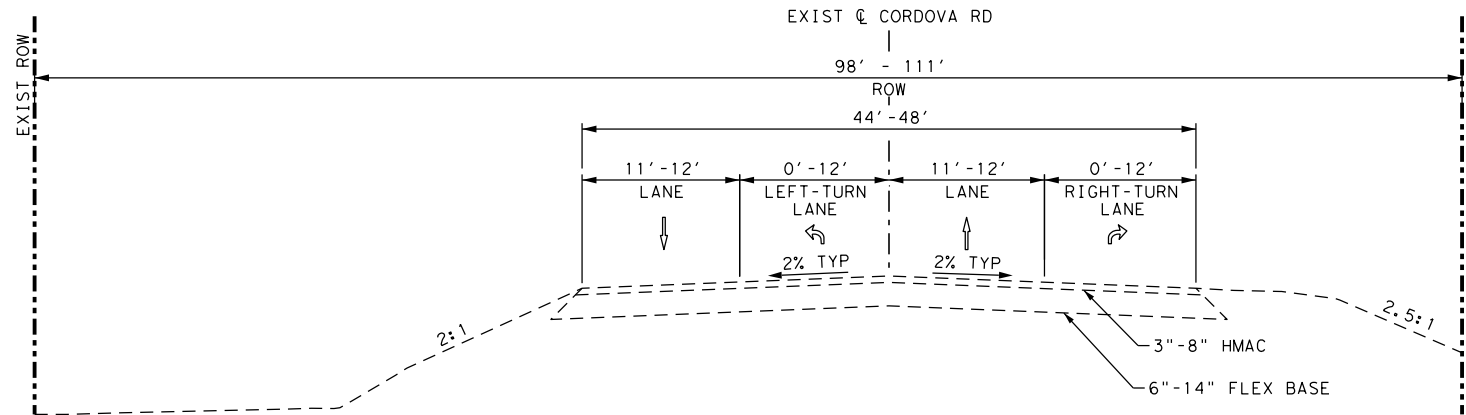
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		6	TEXAS		CORDOVA
CHK	DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.
		SAT	GUADALUPE	0915	46
				JOB NO.	SHEET NO.
				052	7

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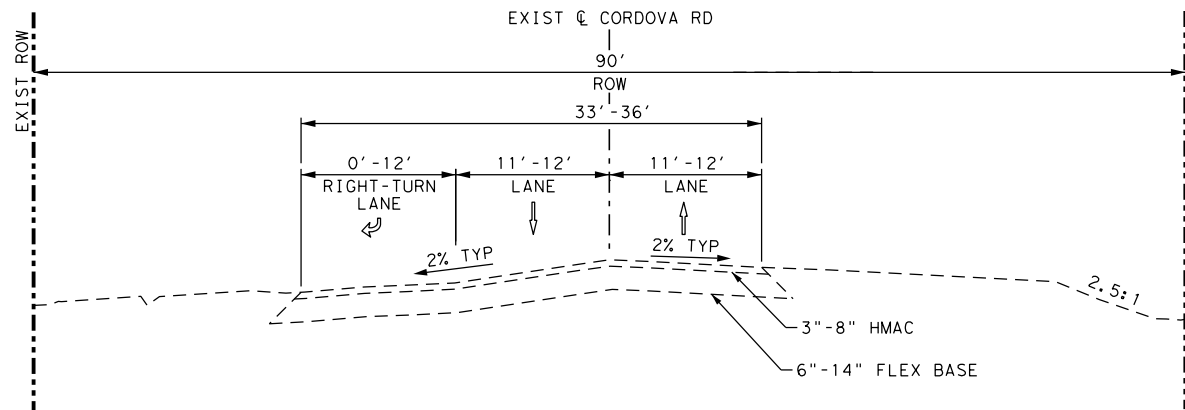
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EXISTING TYPICAL SECTION
CORDOVA RD
NTS
STA 112+00 TO STA 162+50
STA 164+00 TO STA 242+75
STA 244+50 TO STA 294+00



EXISTING TYPICAL SECTION
CORDOVA RD
NTS
STA 162+50 TO STA 164+00



EXISTING TYPICAL SECTION
CORDOVA RD
NTS
STA 242+75 TO STA 244+50

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TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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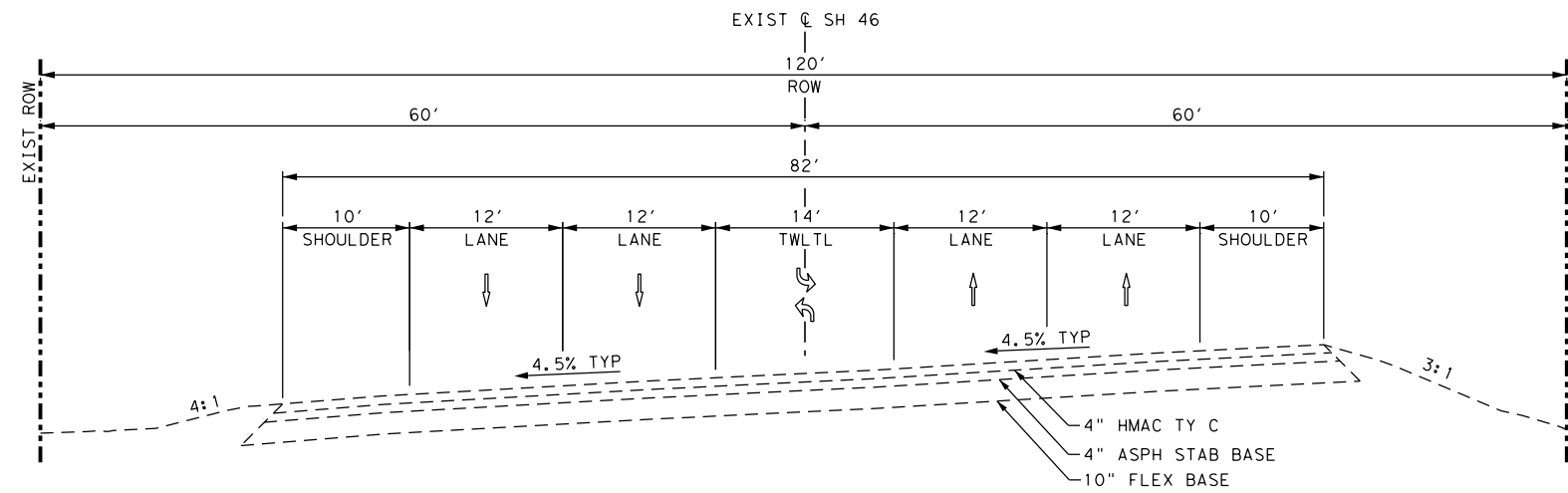
TYPICAL SECTIONS

SHEET 1 OF 11

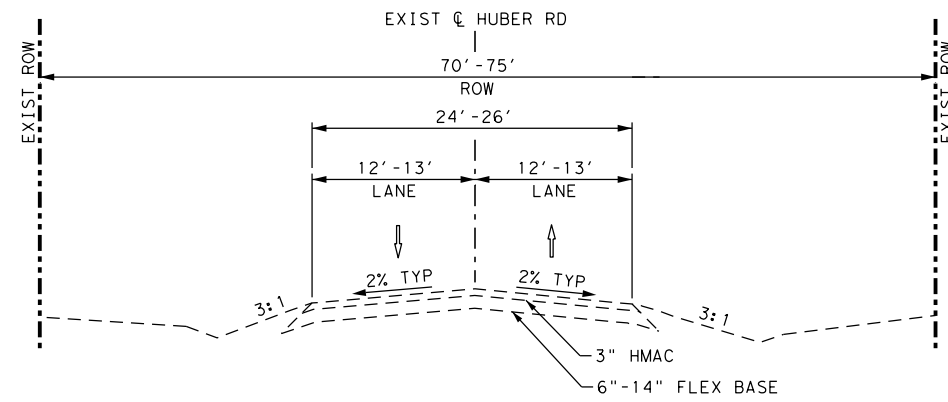
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CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	8

Plotted on: 11/17/2023

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EXISTING TYPICAL SECTION
SH 46
NTS
STA 161+00 TO STA 166+00



EXISTING TYPICAL SECTION
HUBER RD
NTS

DESIGN

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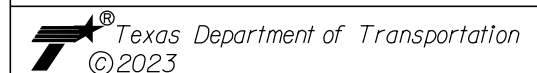
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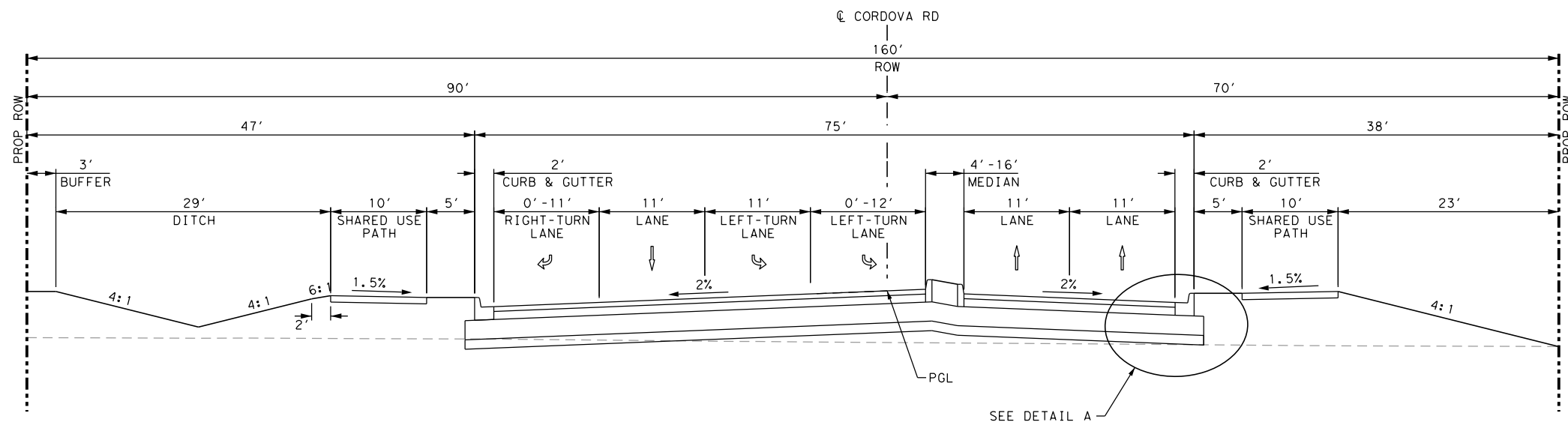
TYPICAL SECTIONS

SHEET 2 OF 11

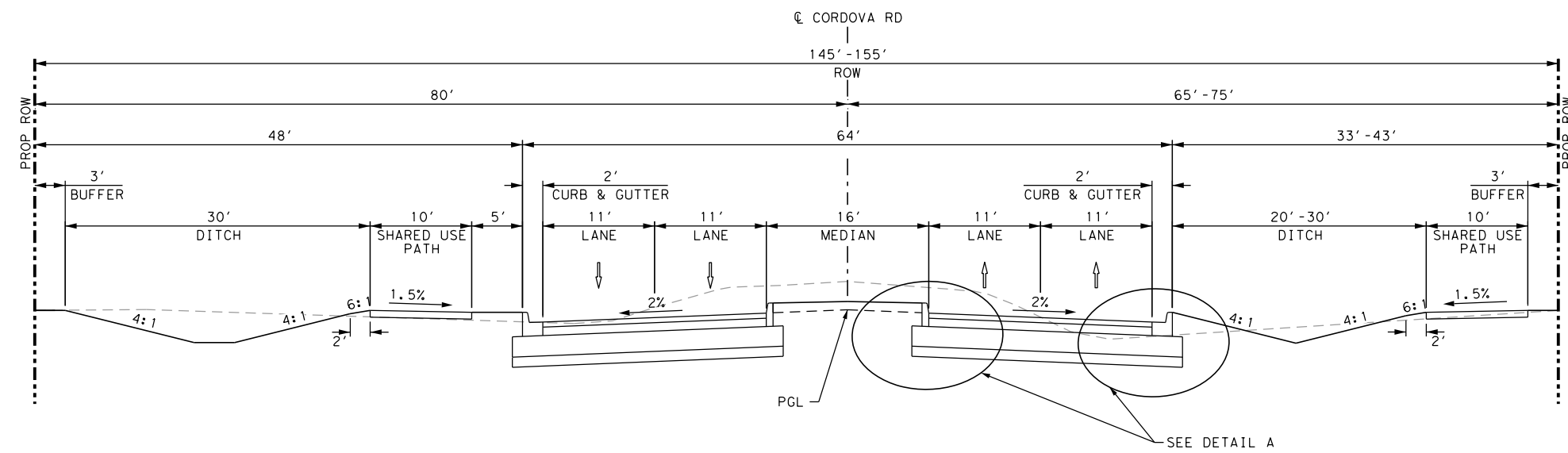
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CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	9

Plotted on: 11/17/2023

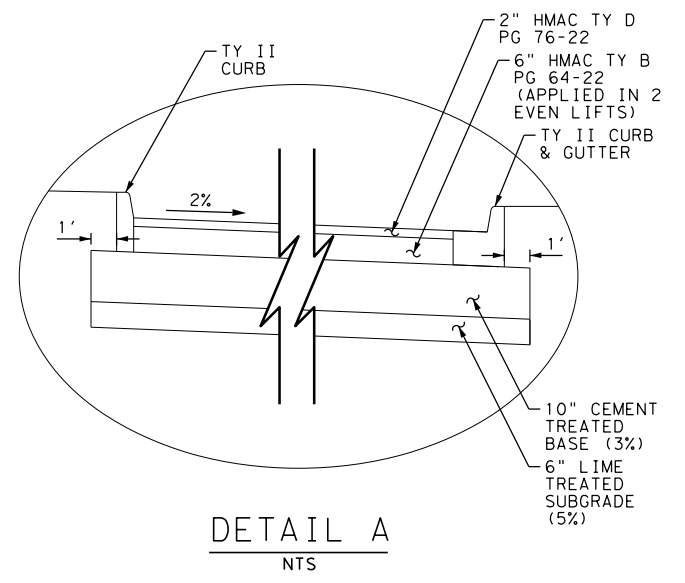
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PROPOSED TYPICAL SECTION
CORDOVA RD
NTS
STA 112+14 TO STA 119+64



PROPOSED TYPICAL SECTION
CORDOVA RD
NTS
STA 119+64 TO STA 121+64
STA 124+40 TO STA 137+18
STA 193+78 TO STA 197+64



DESIGN
INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
<small>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</small>			

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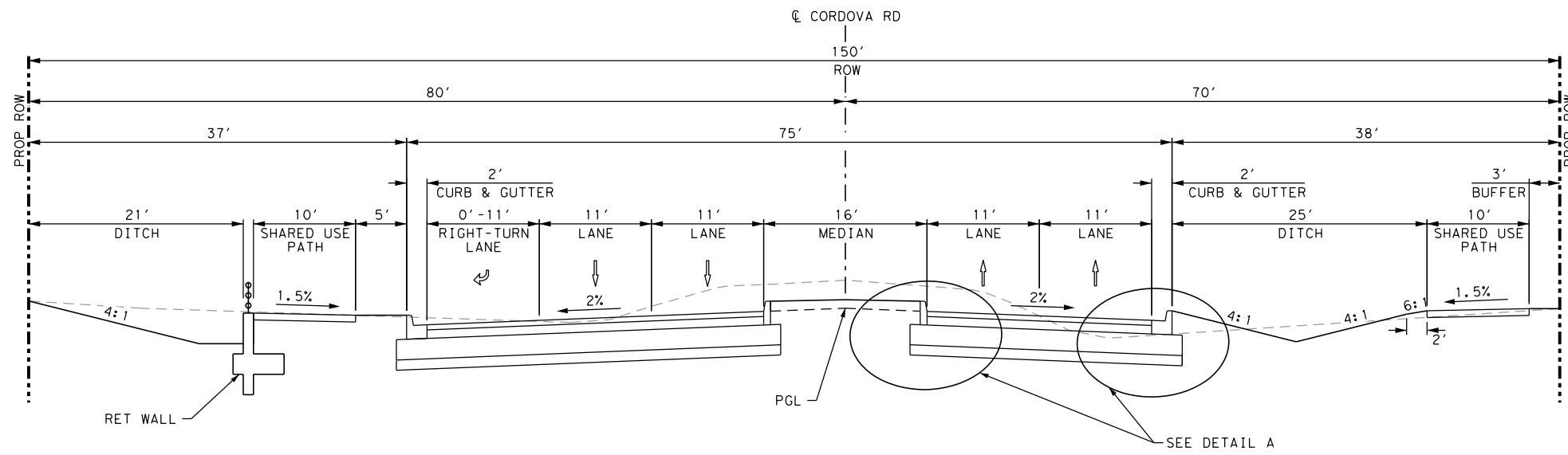
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SHEET 3 OF 11

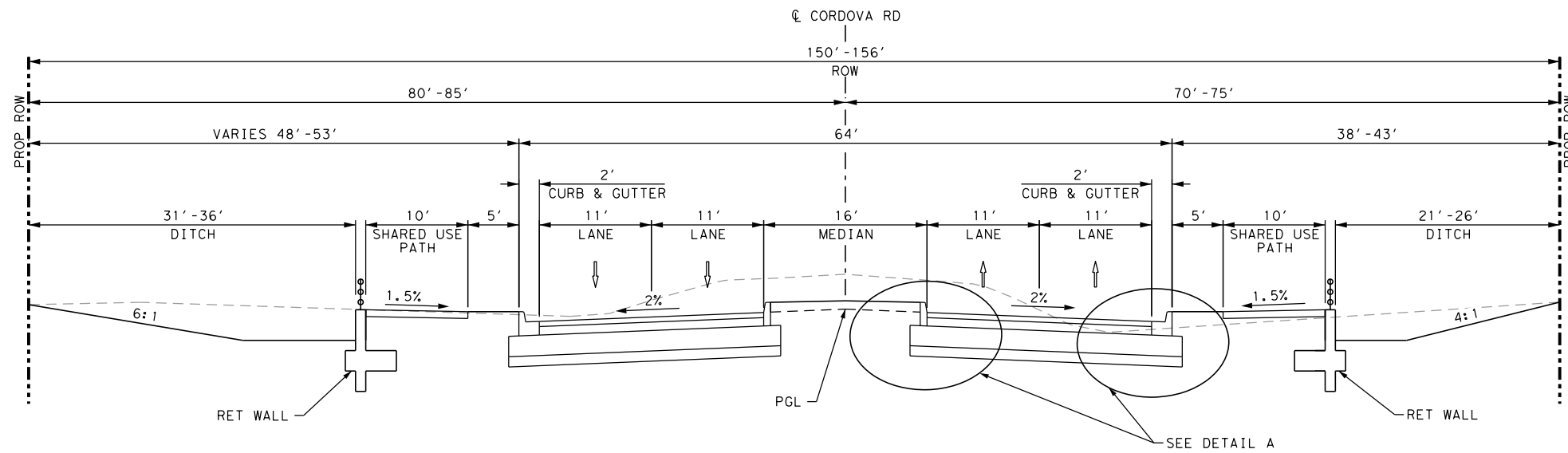
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CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	10

Plotted on: 11/17/2023

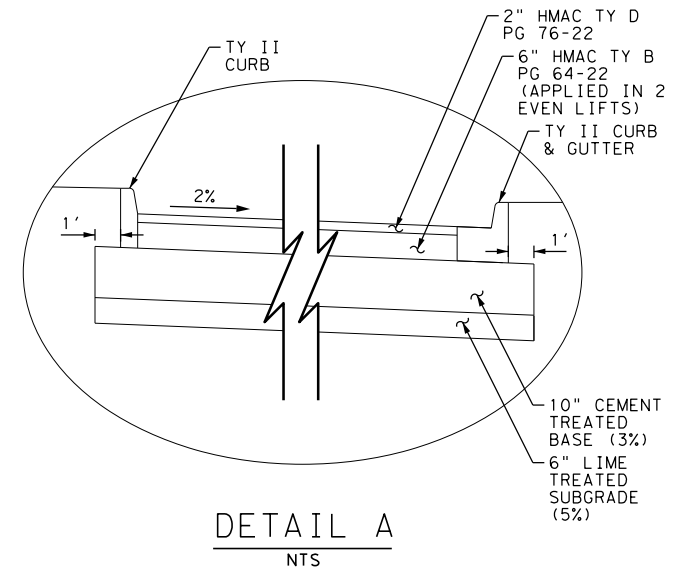
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PROPOSED TYPICAL SECTION
CORDOVA RD
NTS
STA 121+64 TO STA 123+44



PROPOSED TYPICAL SECTION
CORDOVA RD
NTS
STA 123+44 TO STA 124+40
STA 189+92 TO STA 193+78



DESIGN
INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
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PAPE-DAWSON ENGINEERS
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2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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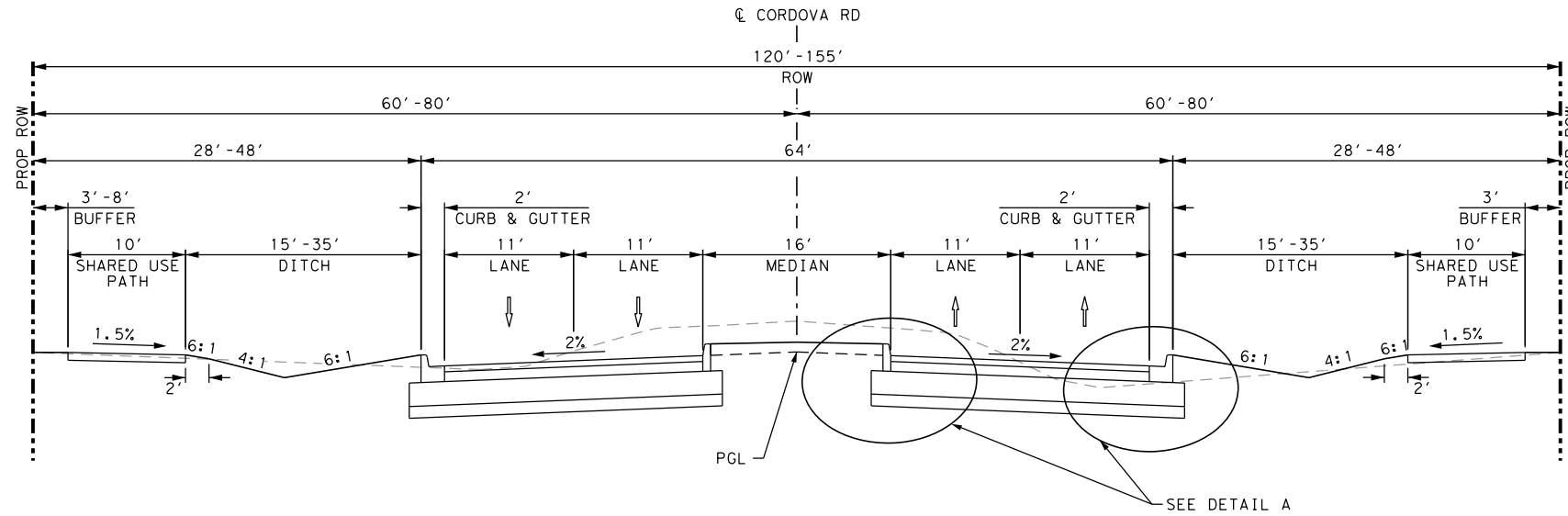
TYPICAL SECTIONS

SHEET 4 OF 11

DWG:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	11

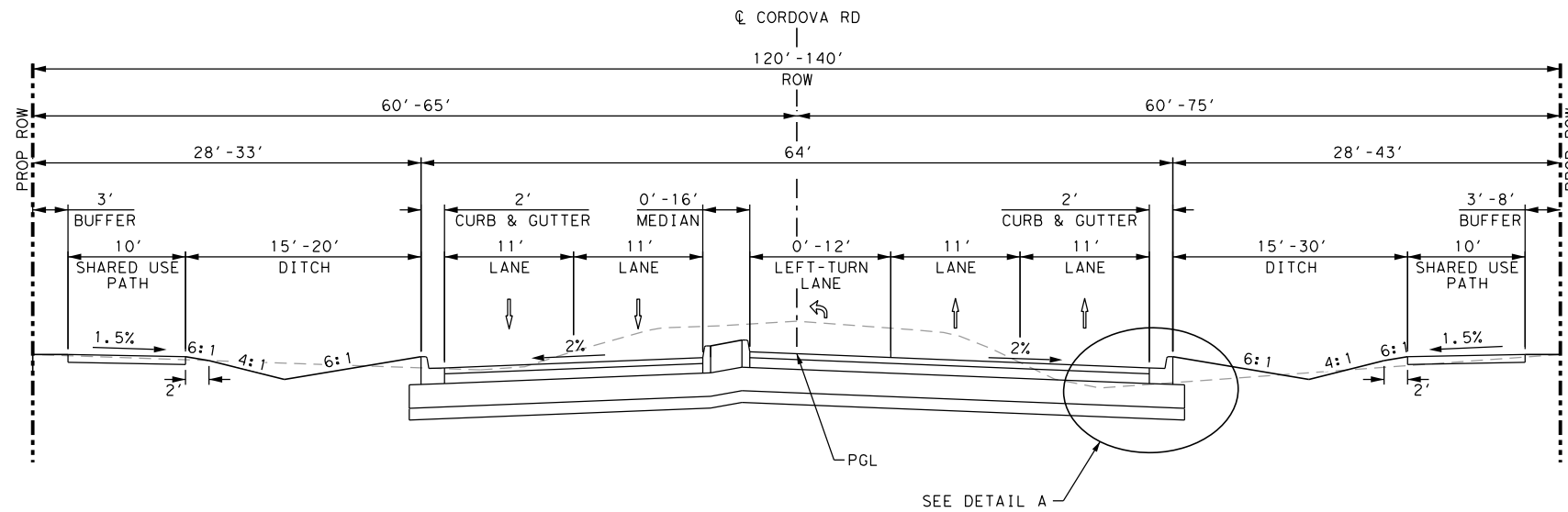
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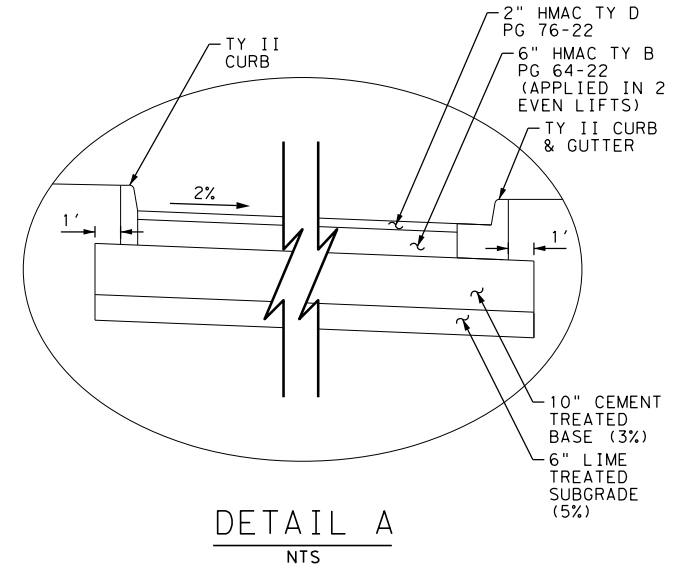
PROPOSED TYPICAL SECTION

CORDOVA RD
NTS
STA 137+18 TO STA 142+87
STA 148+14 TO STA 151+66
STA 155+05 TO STA 161+40
STA 167+27 TO STA 174+30
STA 178+00 TO STA 184+20
STA 199+44 TO STA 212+54
STA 224+20 TO STA 230+00
STA 233+70 TO STA 241+41
STA 246+68 TO STA 249+13
STA 250+93 TO STA 270+06



PROPOSED TYPICAL SECTION

CORDOVA RD
NTS
STA 142+87 TO STA 146+34
STA 151+66 TO STA 155+05
STA 174+30 TO STA 178+00
STA 184+20 TO STA 188+02
STA 212+54 TO STA 215+99
STA 230+00 TO STA 233+70



DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
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PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
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TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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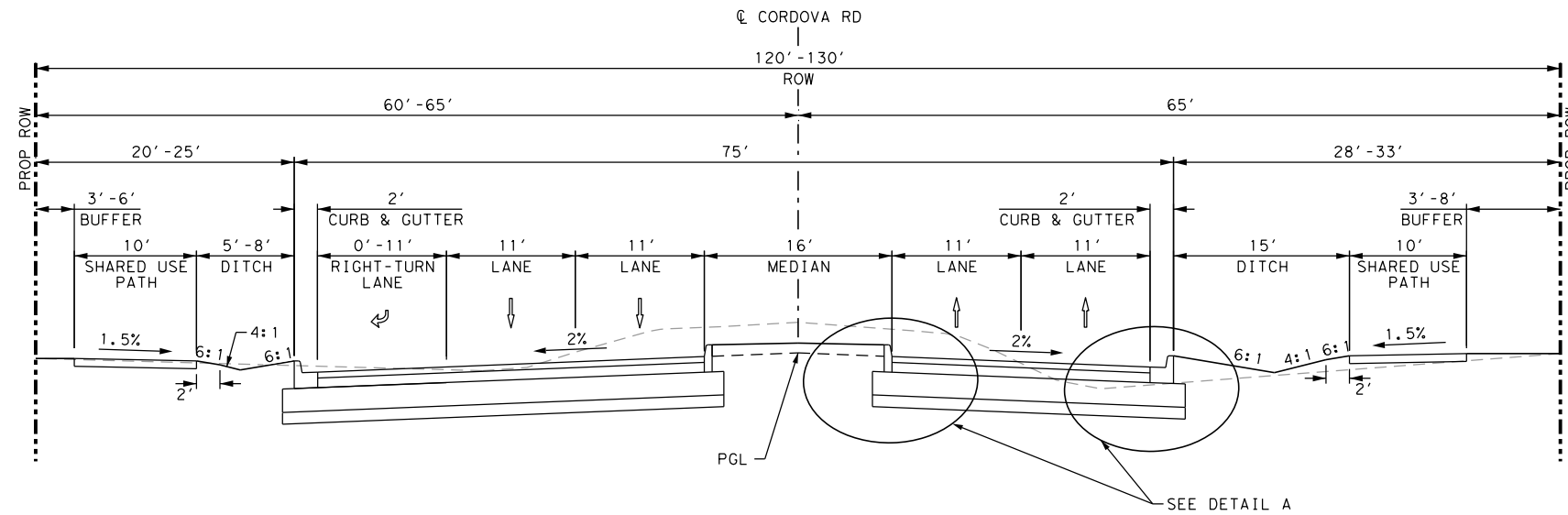
TYPICAL SECTIONS

SHEET 5 OF 11

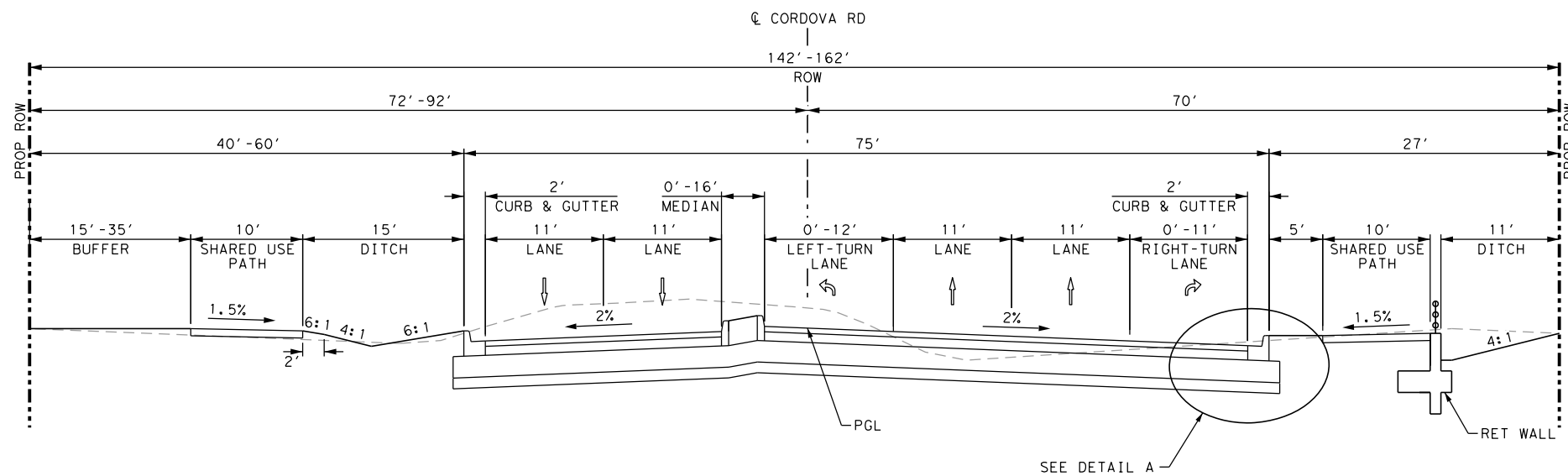
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CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	12

Plotted on: 11/17/2023

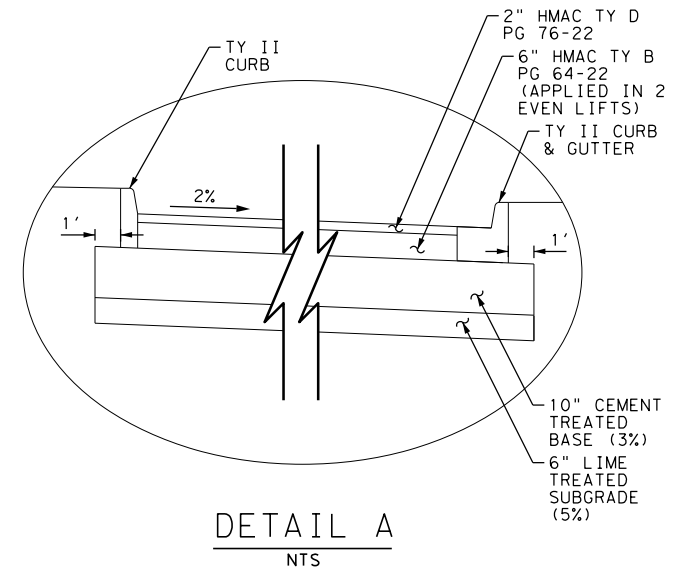
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PROPOSED TYPICAL SECTION
 CORDOVA RD
 NTS
 STA 146+34 TO STA 148+14
 STA 188+02 TO STA 189+82
 STA 197+64 TO STA 199+44
 STA 249+13 TO STA 250+93



PROPOSED TYPICAL SECTION
 CORDOVA RD
 NTS
 STA 161+40 TO STA 164+77



DESIGN
 INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

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 INTERIM REVIEW
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
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 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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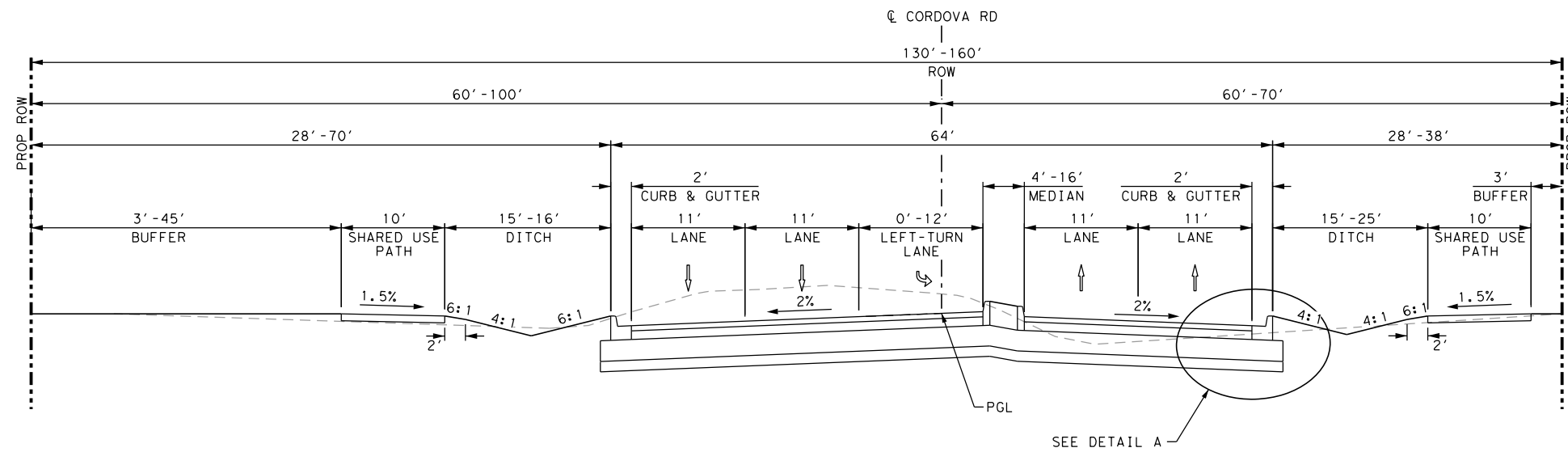
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SHEET 6 OF 11

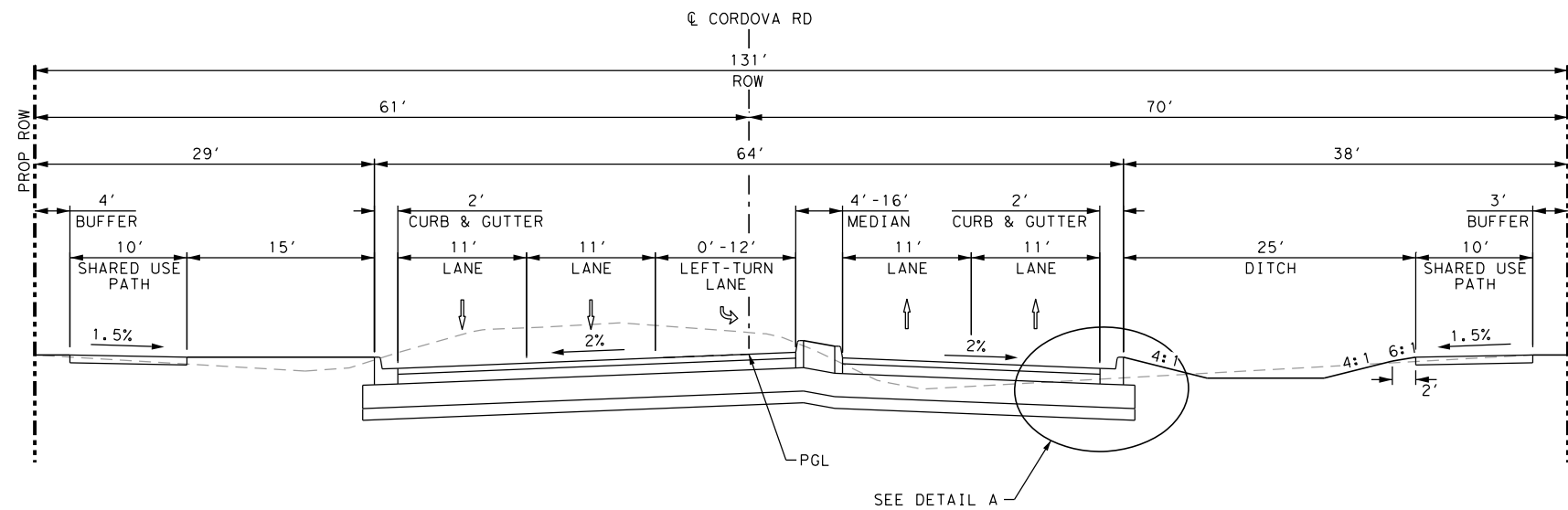
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CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	13

Plotted on: 11/17/2023

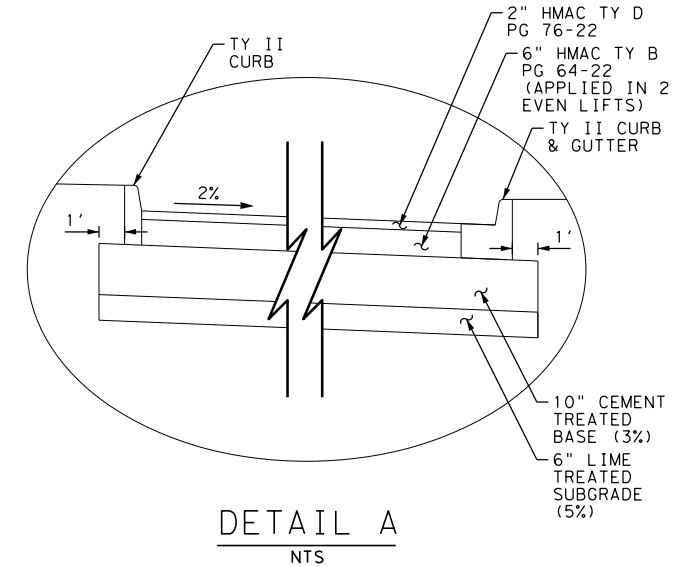
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PROPOSED TYPICAL SECTION
CORDOVA RD
NTS
STA 164+77 TO STA 167+27
STA 244+18 TO STA 246+68



PROPOSED TYPICAL SECTION
CORDOVA RD
NTS
STA 215+99 TO STA 218+49



DESIGN
INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
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2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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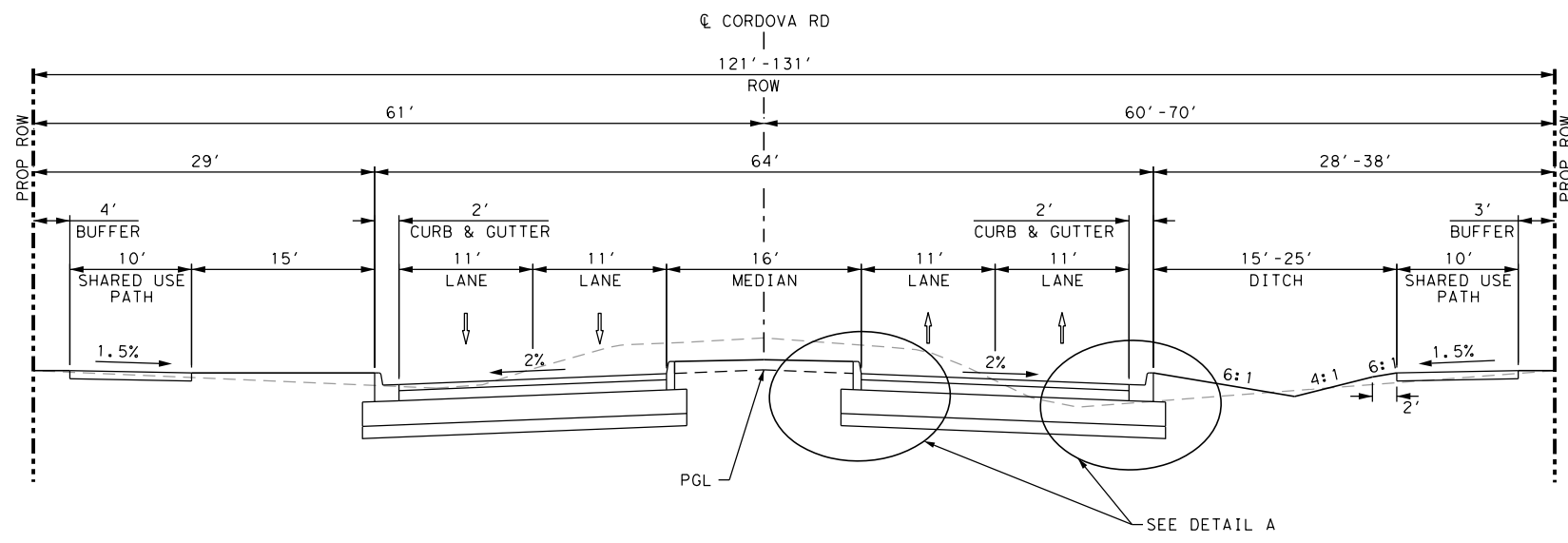
TYPICAL SECTIONS

SHEET 7 OF 11

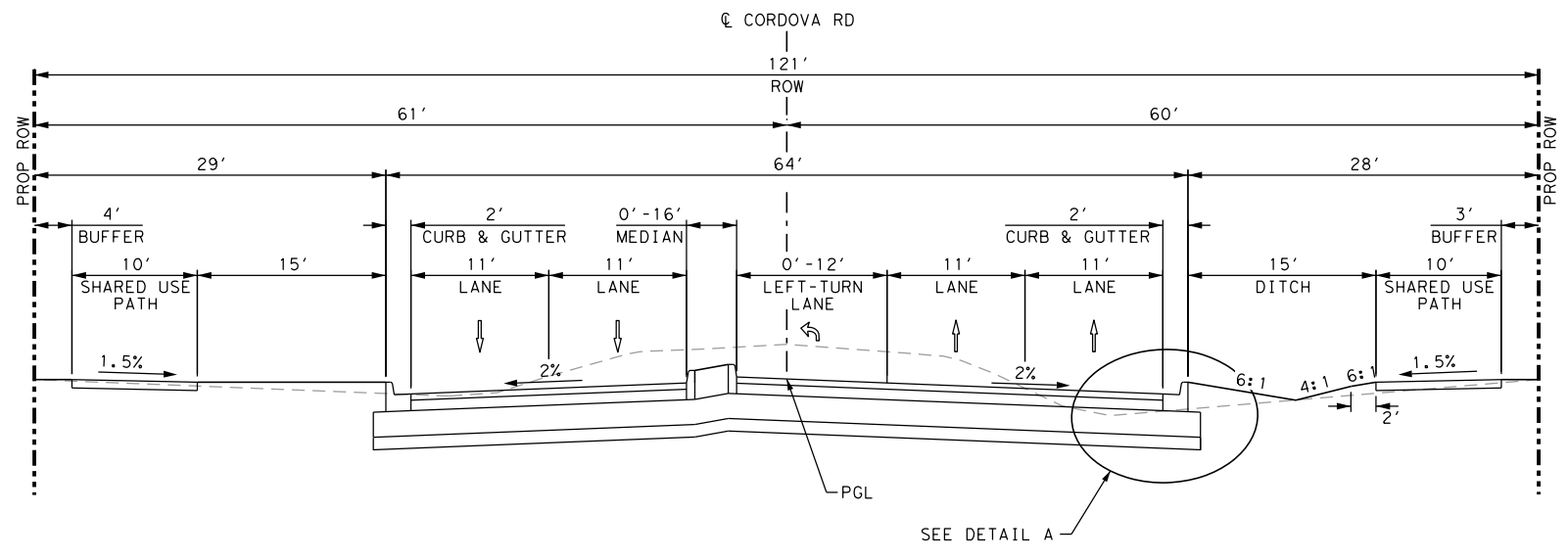
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CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	14

Plotted on: 11/17/2023

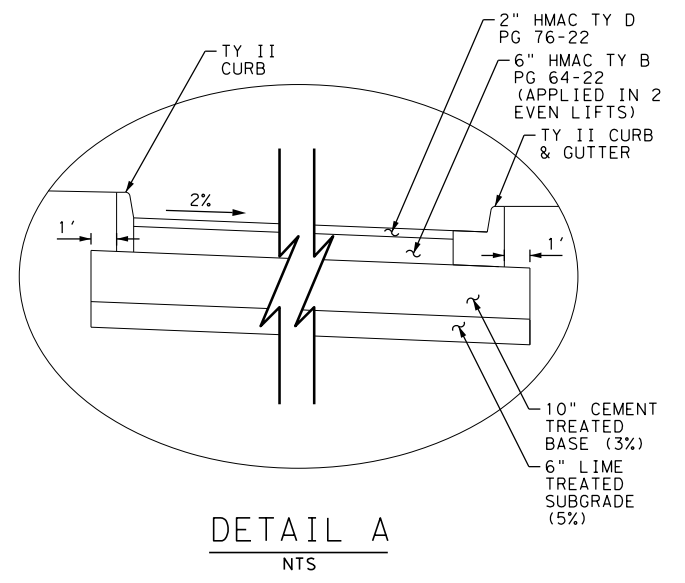
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PROPOSED TYPICAL SECTION
CORDOVA RD
NTS
STA 218+49 TO STA 220+43



PROPOSED TYPICAL SECTION
CORDOVA RD
NTS
STA 220+43 TO STA 224+20



DETAIL A
NTS

DESIGN
INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
<small>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</small>			

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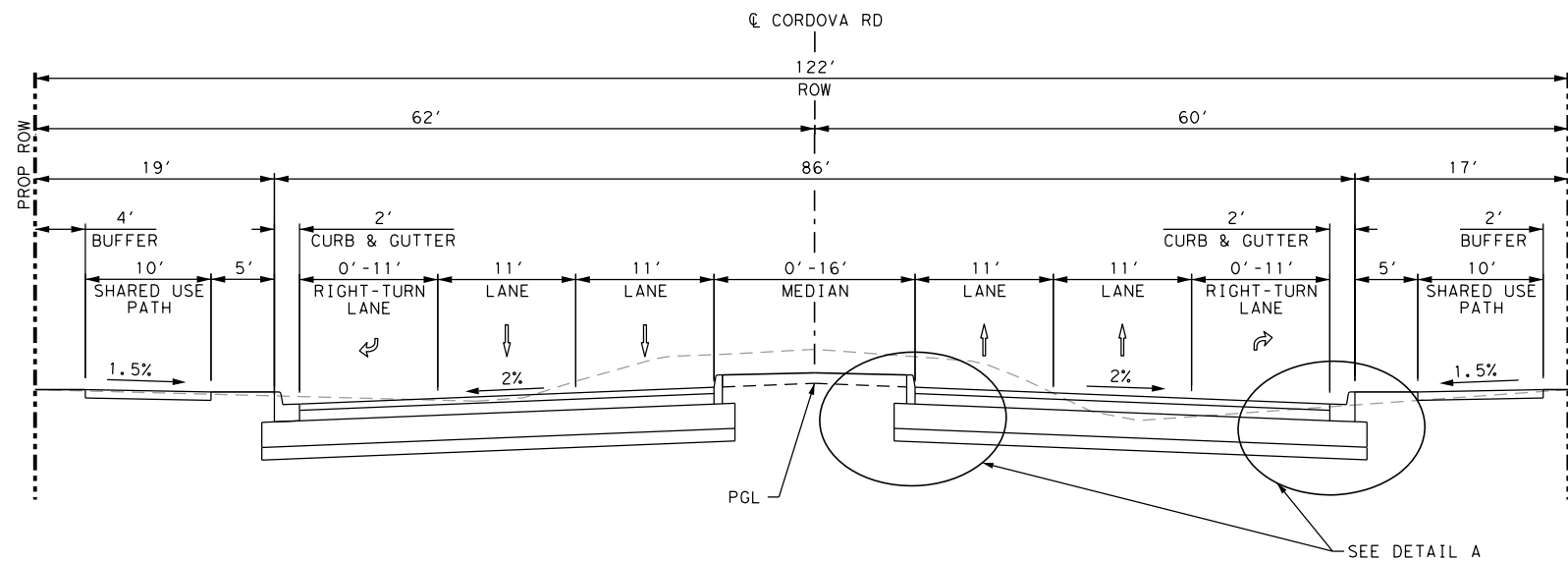
TYPICAL SECTIONS

SHEET 8 OF 11

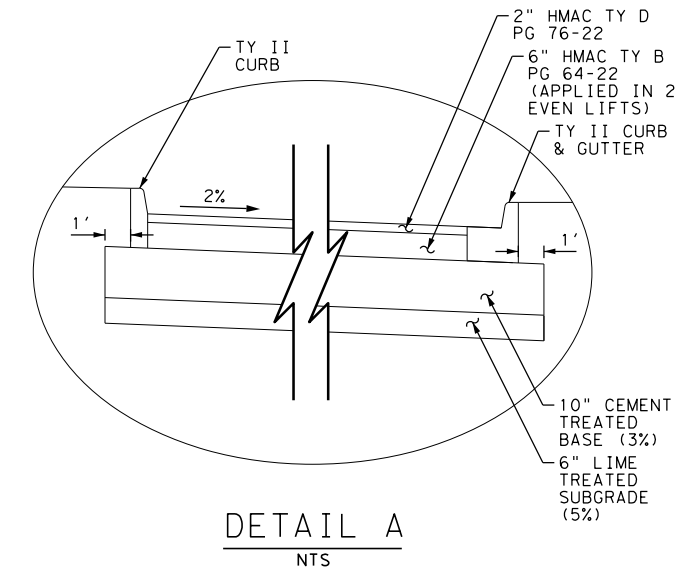
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CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	15

Plotted on: 11/17/2023

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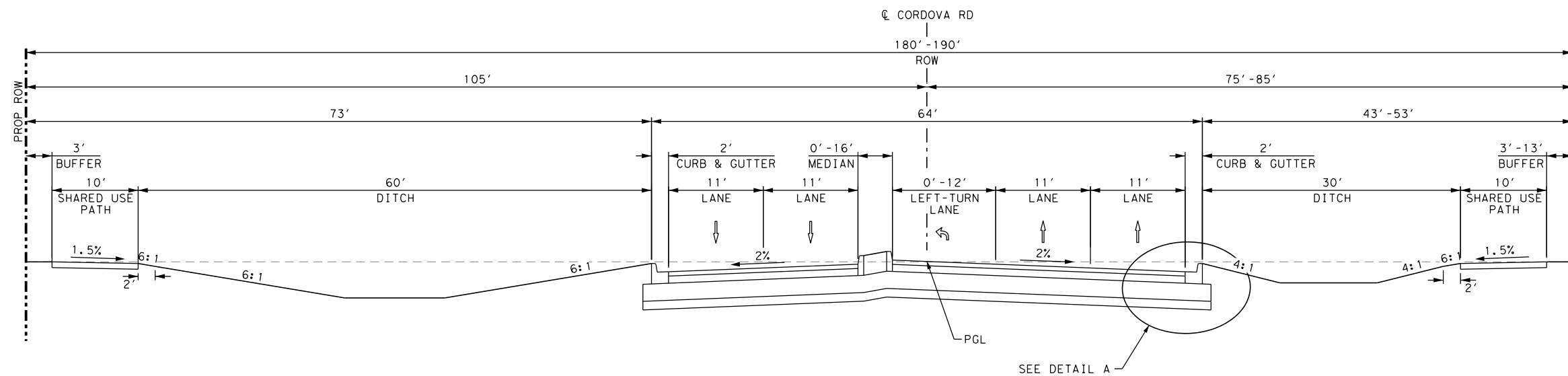


PROPOSED TYPICAL SECTION
CORDOVA RD
NTS
STA 241+41 TO STA 244+18



DESIGN
INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 11/17/2023

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INTERIM REVIEW
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ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
DATE: 11/17/2023



PROPOSED TYPICAL SECTION
CORDOVA RD
NTS
STA 270+06 TO STA 273+56
STA 284+09 TO STA 287+90

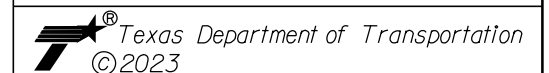
REV. NO.	DATE	DESCRIPTION	BY



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2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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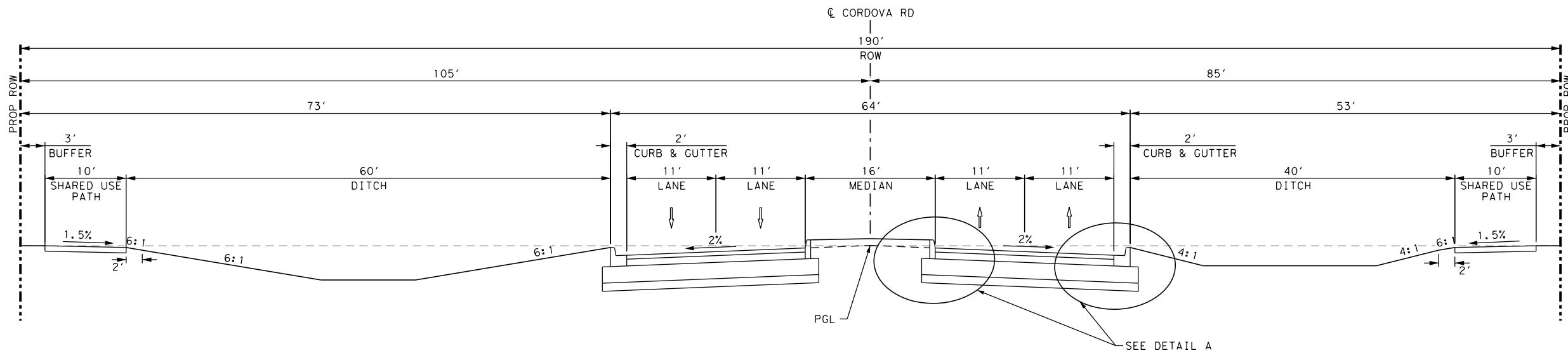


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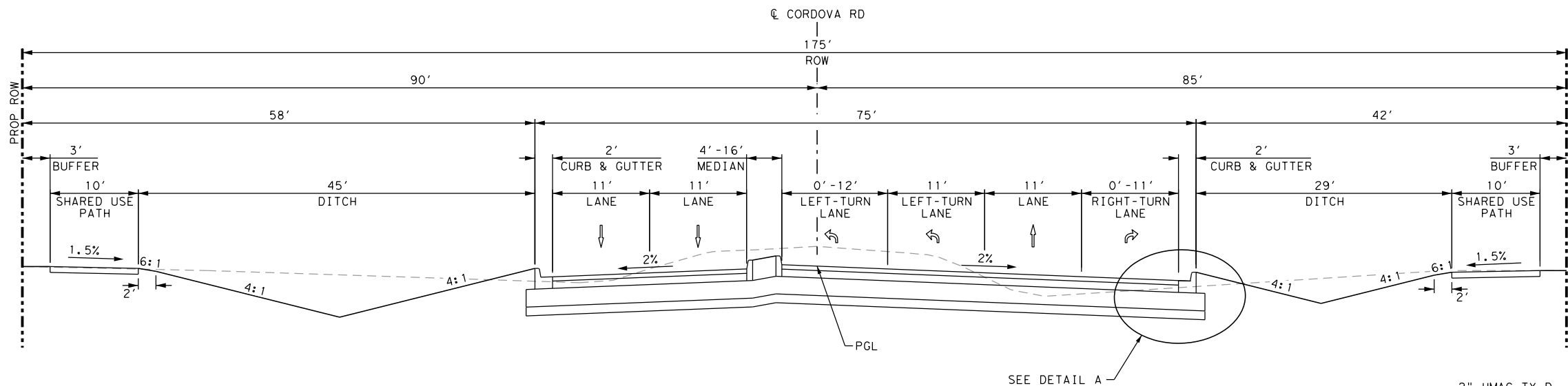
SHEET 9 OF 11

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	16

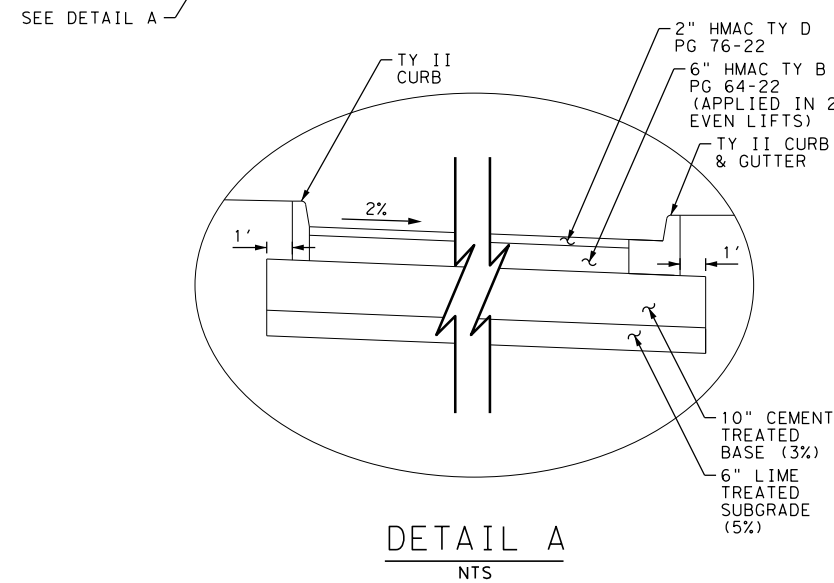
Plotted on: 11/17/2023



PROPOSED TYPICAL SECTION
CORDOVA RD
NTS
STA 273+56 TO STA 284+09
STA 287+90 TO STA 289+34



PROPOSED TYPICAL SECTION
CORDOVA RD
NTS
STA 289+34 TO STA 294+34



DETAIL A
NTS

DESIGN
INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
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TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



TYPICAL SECTIONS

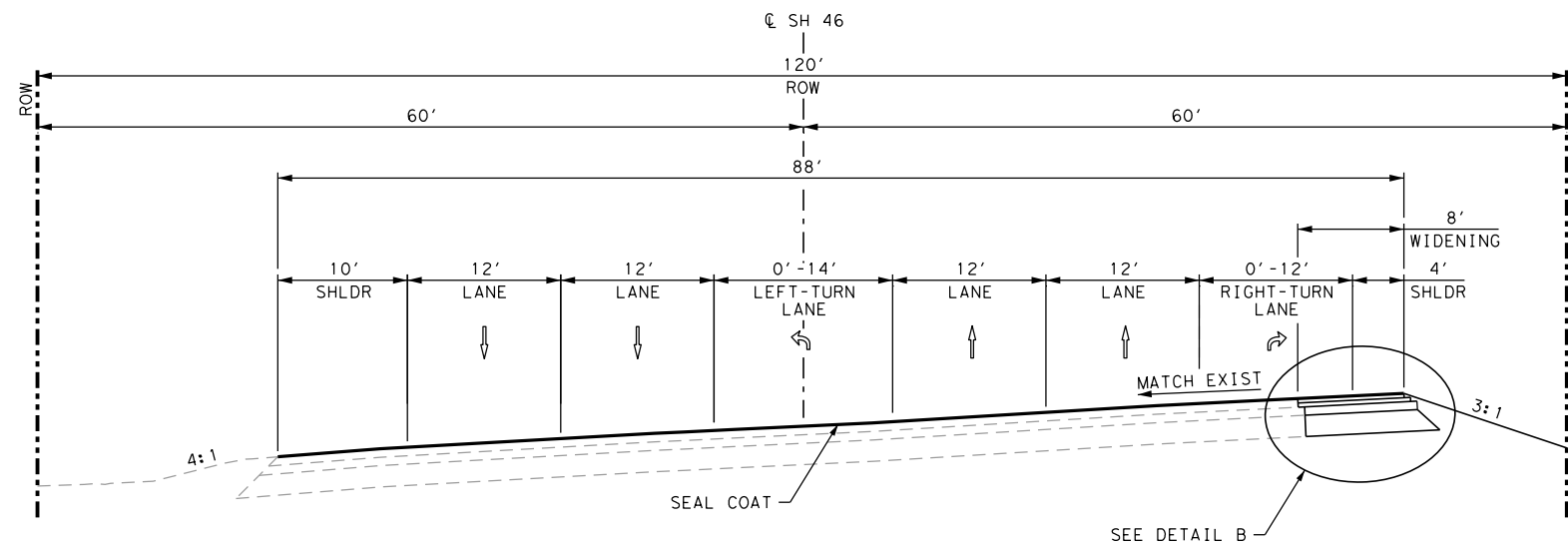
SHEET 10 OF 11

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	17

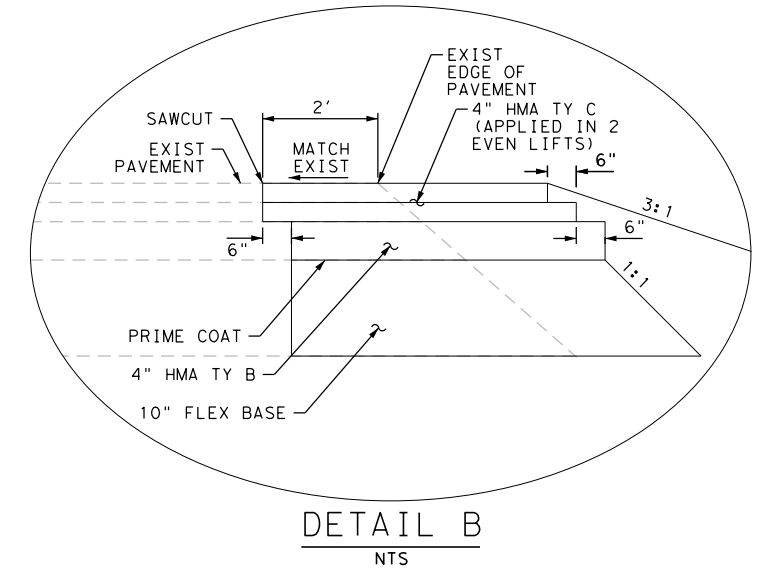
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Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\General\1277500_typP09.dgn



PROPOSED TYPICAL SECTION
SH 46
NTS
STA 161+00 TO STA 166+00



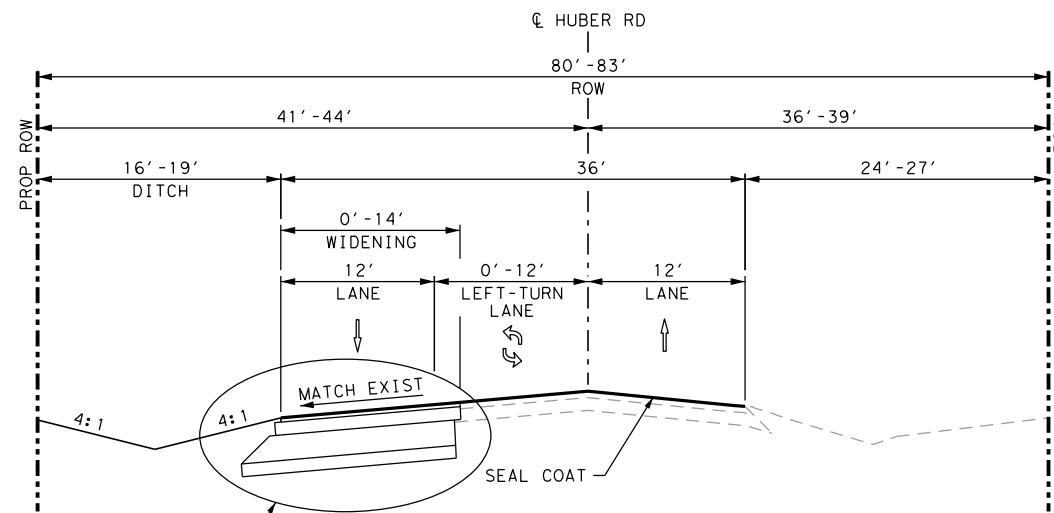
DETAIL B
NTS

DESIGN

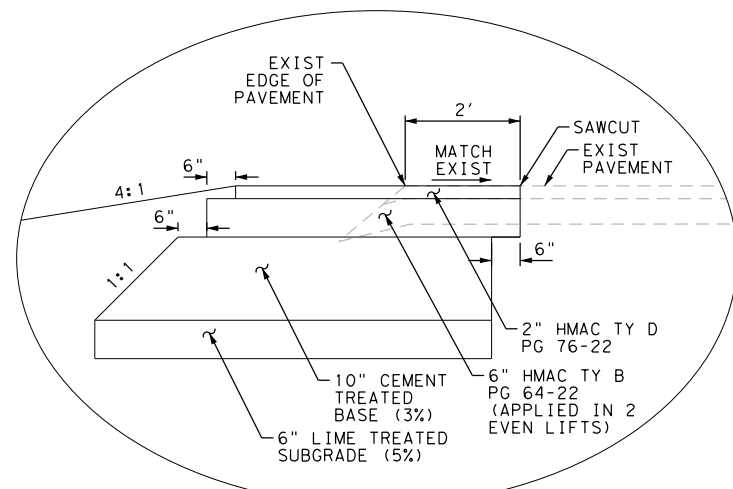
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DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
DATE: 11/17/2023



PROPOSED TYPICAL SECTION
HUBER RD
NTS
STA 1007+41 TO STA 1009+81
STA 1010+98 TO STA 1013+38



DETAIL C
NTS

REV. NO.	DATE	DESCRIPTION	BY
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PAPE-DAWSON ENGINEERS

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2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS

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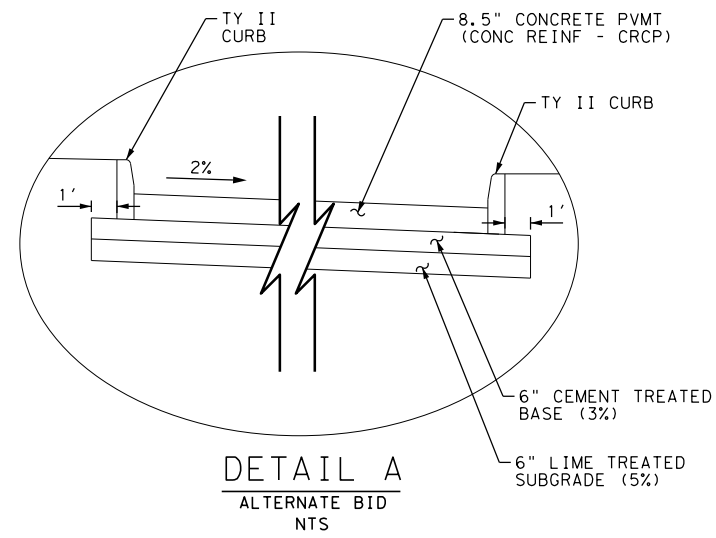


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TYPICAL SECTIONS

SHEET 11 OF 11

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	18



DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR
PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 11/17/2023

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DOCUMENT INCOMPLETE. NOT INTENDED FOR
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ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
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TYPICAL SECTIONS

ALTERNATIVE BID DETAIL

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	19

TO BE PROVIDED AT
LATER SUBMITTAL

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
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SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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GENERAL NOTES

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	20

TO BE PROVIDED AT
LATER SUBMITTAL

REV. NO.	DATE	DESCRIPTION	BY
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ESTIMATE & QUANTITY

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	21

TCP QUANTITY SUMMARY

SHT NO	ITEM TCP SHEETS	0401-6001	0403-6001	0460-6004	0460-6005	0460-6007	0508-6001	0512-6001
		FLOWABLE BACKFILL CY	TEMPORARY SPL SHORING SF	CMP (GAL STL 30 IN) LF	CMP (GAL STL 36 IN) LF	CMP (GAL STL 48 IN) LF	CONSTRUCTING DETOURS SY	PORT CTB (FUR & INST) (SGL SLOPE) (TY 1) LF
61	PHASE 1 SHEET 1 OF 22						32	
62	PHASE 1 SHEET 2 OF 22						335	
63	PHASE 1 SHEET 3 OF 22	21.5	218		144		1854	
64	PHASE 1 SHEET 4 OF 22						1371	
65	PHASE 1 SHEET 5 OF 22						1473	
66	PHASE 1 SHEET 6 OF 22						1061	
67	PHASE 1 SHEET 7 OF 22	29.3			236	132	776	
68	PHASE 1 SHEET 8 OF 22						153	
69	PHASE 1 SHEET 9 OF 22						657	
70	PHASE 1 SHEET 10 OF 22	9.9	363	109			639	
71	PHASE 1 SHEET 11 OF 22						510	
72	PHASE 1 SHEET 12 OF 22		81		75		1539	
74	PHASE 1 SHEET 14 OF 22						1331	
75	PHASE 1 SHEET 15 OF 22						1857	
76	PHASE 1 SHEET 16 OF 22						393	90
77	PHASE 1 SHEET 17 OF 22							
82	PHASE 1 SHEET 22 OF 22							
84	PHASE 1 STEP 2 SHEET 1 OF 2							13
85	PHASE 1 STEP 2 SHEET 2 OF 2							977
86	PHASE 1 STEP 2 SHEET 1 OF 6							
87	PHASE 1 STEP 2 SHEET 2 OF 6		521					
89	PHASE 1 STEP 2 SHEET 3 OF 6							
90	PHASE 1 STEP 2 SHEET 4 OF 6							
91	PHASE 1 STEP 2 SHEET 5 OF 6							
92	PHASE 1 STEP 2 SHEET 6 OF 6							
95	PHASE 2 SHEET 1 OF 22							
96	PHASE 2 SHEET 2 OF 22							
97	PHASE 2 SHEET 3 OF 22							
98	PHASE 2 SHEET 4 OF 22							
99	PHASE 2 SHEET 5 OF 22							
100	PHASE 2 SHEET 6 OF 22							
101	PHASE 2 SHEET 7 OF 22							
102	PHASE 2 SHEET 8 OF 22							
103	PHASE 2 SHEET 9 OF 22							
104	PHASE 2 SHEET 10 OF 22							
105	PHASE 2 SHEET 11 OF 22							
106	PHASE 2 SHEET 12 OF 22							
107	PHASE 2 SHEET 13 OF 22							
108	PHASE 2 SHEET 14 OF 22							
109	PHASE 2 SHEET 15 OF 22							
110	PHASE 2 SHEET 16 OF 22							
111	PHASE 2 SHEET 17 OF 22							
112	PHASE 2 SHEET 18 OF 22							
113	PHASE 2 SHEET 19 OF 22							
114	PHASE 2 SHEET 20 OF 22							
115	PHASE 2 SHEET 21 OF 22							
116	PHASE 2 SHEET 22 OF 22							
117	PHASE 2 SHEET 1 OF 1							
	TOTALS	60.7	1182	109	455	132	13981	1080

Plotted on: 11/17/2023

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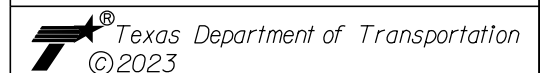
REV. NO.	DATE	DESCRIPTION	BY
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SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



TCP QUANTITY SUMMARY

SHEET 1 OF 4





DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	22

TCP QUANTITY SUMMARY CONT.

SHT NO	ITEM TCP SHEETS	0512-6009	0512-6010	0512-6025	0512-6033	0512-6034	0512-6049	0512-6057
		PORT CTB (FUR & INST) (LOW PROF) (TY 1) LF	PORT CTB (FUR & INST) (LOW PROF) (TY 2) LF	PORT CTB (MOVE) (SGL SLP) (TY 1) LF	PORT CTB (MOVE) (LOW PROF) (TY 1) LF	PORT CTB (MOVE) (LOW PROF) (TY 2) LF	PORT CTB (REMOVE) (SGL SLP) (TY 1) LF	PORT CTB (REMOVE) (LOW PROF) (TY 1) LF
61	PHASE 1 SHEET 1 OF 22		5					
62	PHASE 1 SHEET 2 OF 22	500	15					120
63	PHASE 1 SHEET 3 OF 22	1000						1000
64	PHASE 1 SHEET 4 OF 22	840	40					840
65	PHASE 1 SHEET 5 OF 22	790	40					760
66	PHASE 1 SHEET 6 OF 22	190	80					190
67	PHASE 1 SHEET 7 OF 22	90	20					
68	PHASE 1 SHEET 8 OF 22							
69	PHASE 1 SHEET 9 OF 22	140	20					
70	PHASE 1 SHEET 10 OF 22	1000						1000
71	PHASE 1 SHEET 11 OF 22	850	40					850
72	PHASE 1 SHEET 12 OF 22	610	60					610
74	PHASE 1 SHEET 14 OF 22	650	20					640
75	PHASE 1 SHEET 15 OF 22	1000						1000
76	PHASE 1 SHEET 16 OF 22	670	75					60
77	PHASE 1 SHEET 17 OF 22	310	25					10
82	PHASE 1 SHEET 22 OF 22	400	40					240
84	PHASE 1 STEP 2 SHEET 1 OF 2							
85	PHASE 1 STEP 2 SHEET 2 OF 2						390	
86	PHASE 1 STEP 2 SHEET 1 OF 6				190	40		
87	PHASE 1 STEP 2 SHEET 2 OF 6				90			
89	PHASE 1 STEP 2 SHEET 3 OF 6				420	40		
90	PHASE 1 STEP 2 SHEET 4 OF 6							
91	PHASE 1 STEP 2 SHEET 5 OF 6							
92	PHASE 1 STEP 2 SHEET 6 OF 6							
95	PHASE 2 SHEET 1 OF 22							
96	PHASE 2 SHEET 2 OF 22				440			440
97	PHASE 2 SHEET 3 OF 22				440			440
98	PHASE 2 SHEET 4 OF 22							
99	PHASE 2 SHEET 5 OF 22							
100	PHASE 2 SHEET 6 OF 22							
101	PHASE 2 SHEET 7 OF 22				300	40		300
102	PHASE 2 SHEET 8 OF 22							
103	PHASE 2 SHEET 9 OF 22							
104	PHASE 2 SHEET 10 OF 22				120	40		120
105	PHASE 2 SHEET 11 OF 22							
106	PHASE 2 SHEET 12 OF 22							
107	PHASE 2 SHEET 13 OF 22							
108	PHASE 2 SHEET 14 OF 22							
109	PHASE 2 SHEET 15 OF 22							
110	PHASE 2 SHEET 16 OF 22							
111	PHASE 2 SHEET 17 OF 22							
112	PHASE 2 SHEET 18 OF 22							
113	PHASE 2 SHEET 19 OF 22							
114	PHASE 2 SHEET 20 OF 22							
115	PHASE 2 SHEET 21 OF 22							
116	PHASE 2 SHEET 22 OF 22			150	420	40	150	420
117	PHASE 2 SHEET 1 OF 1			450			450	
	TOTALS	9040	480	600	2420	200	990	9040

Plotted on: 11/17/2023

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REV. NO.	DATE	DESCRIPTION	BY
 <p>PAPE-DAWSON ENGINEERS</p> <p>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</p>			
 <p>SEGUIN TEXAS</p> <p>It's real.</p>			
 <p>Texas Department of Transportation © 2023</p>			
<p>TCP QUANTITY SUMMARY</p>			
SHEET 2 OF 4			
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.
CHK DGN:	6	TEXAS	
DWG:	DIST.	COUNTY	CONT. NO.
CHK DWG:	SAT	GUADALUPE	0915
			SECT. NO.
			46
			JOB NO.
			052
			SHEET NO.
			23

TCP QUANTITY SUMMARY CONT.

SHT NO	ITEM TCP SHEETS	0512-6058	0545-6003	0545-6005	0545-6019	0662-6006	0662-6008	0662-6016
		PORT CTB (REMOVE) (LOW PROF) (TY 2) LF	CRASH CUSH ATTN (MOVE & RESET) EA	CRASH CUSH ATTN (REMOVE) EA	CRASH CUSH ATTN (INSTL) (S) (N) (TL3) EA	WK ZN PAV MRK NON-REMOV (W) 6" (DOT) LF	WK ZN PAV MRK NON-REMOV (W) 6" (SLD) LF	WK ZN PAV MRK NON-REMOV (W) 24" (SLD) LF
61	PHASE 1 SHEET 1 OF 22	5					131	
62	PHASE 1 SHEET 2 OF 22	15					1007	
63	PHASE 1 SHEET 3 OF 22						2002	
64	PHASE 1 SHEET 4 OF 22						2000	
65	PHASE 1 SHEET 5 OF 22	40					2000	
66	PHASE 1 SHEET 6 OF 22	80					1397	
67	PHASE 1 SHEET 7 OF 22					91	972	
68	PHASE 1 SHEET 8 OF 22						261	
69	PHASE 1 SHEET 9 OF 22						395	
70	PHASE 1 SHEET 10 OF 22						2000	
71	PHASE 1 SHEET 11 OF 22	40					2000	
72	PHASE 1 SHEET 12 OF 22	40				110	1494	
74	PHASE 1 SHEET 14 OF 22						1530	
75	PHASE 1 SHEET 15 OF 22						1908	
76	PHASE 1 SHEET 16 OF 22	75					2002	
77	PHASE 1 SHEET 17 OF 22	25			2		842	
82	PHASE 1 SHEET 22 OF 22	40					650	12
84	PHASE 1 STEP 2 SHEET 1 OF 2				1		949	
85	PHASE 1 STEP 2 SHEET 2 OF 2				1		141	
86	PHASE 1 STEP 2 SHEET 1 OF 6						487	
87	PHASE 1 STEP 2 SHEET 2 OF 6					140	1104	44
89	PHASE 1 STEP 2 SHEET 3 OF 6						631	
90	PHASE 1 STEP 2 SHEET 4 OF 6						384	
91	PHASE 1 STEP 2 SHEET 5 OF 6						552	
92	PHASE 1 STEP 2 SHEET 6 OF 6						578	
95	PHASE 2 SHEET 1 OF 22						427	
96	PHASE 2 SHEET 2 OF 22						272	
97	PHASE 2 SHEET 3 OF 22							
98	PHASE 2 SHEET 4 OF 22							
99	PHASE 2 SHEET 5 OF 22							
100	PHASE 2 SHEET 6 OF 22							
101	PHASE 2 SHEET 7 OF 22	40					260	
102	PHASE 2 SHEET 8 OF 22							
103	PHASE 2 SHEET 9 OF 22							
104	PHASE 2 SHEET 10 OF 22	40						
105	PHASE 2 SHEET 11 OF 22							
106	PHASE 2 SHEET 12 OF 22						246	
107	PHASE 2 SHEET 13 OF 22							
108	PHASE 2 SHEET 14 OF 22							
109	PHASE 2 SHEET 15 OF 22						132	
110	PHASE 2 SHEET 16 OF 22							
111	PHASE 2 SHEET 17 OF 22							
112	PHASE 2 SHEET 18 OF 22						383	
113	PHASE 2 SHEET 19 OF 22							
114	PHASE 2 SHEET 20 OF 22						94	
115	PHASE 2 SHEET 21 OF 22						357	
116	PHASE 2 SHEET 22 OF 22	40	2	2			631	61
117	PHASE 2 SHEET 1 OF 1		2	2				
	TOTALS	480	4	4	4	341	30216	117

Plotted on: 11/17/2023

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REV. NO.	DATE	DESCRIPTION	BY
 <p>PAPE-DAWSON ENGINEERS</p> <p>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</p>			
 <p>SEGUIN TEXAS</p> <p>It's real.</p>			
 <p>Texas Department of Transportation © 2023</p>			
<p>TCP QUANTITY SUMMARY</p>			
SHEET 3 OF 4			
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.
CHK DGN:	6	TEXAS	
DWG:	DIST.	COUNTY	CONT. NO.
CHK DWG:	SAT	GUADALUPE	0915
			SECT. NO.
			46
			JOB NO.
			052
			SHEET NO.
			24

TCP QUANTITY SUMMARY CONT.

SHT NO	ITEM	0662-6037
	TCP SHEETS	WK ZN PAV MRK NON-REMOV (Y) 6" (SLD)
		LF
61	PHASE 1 SHEET 1 OF 22	130
62	PHASE 1 SHEET 2 OF 22	1007
63	PHASE 1 SHEET 3 OF 22	1979
64	PHASE 1 SHEET 4 OF 22	2000
65	PHASE 1 SHEET 5 OF 22	2000
66	PHASE 1 SHEET 6 OF 22	1396
67	PHASE 1 SHEET 7 OF 22	1568
68	PHASE 1 SHEET 8 OF 22	427
69	PHASE 1 SHEET 9 OF 22	369
70	PHASE 1 SHEET 10 OF 22	2000
71	PHASE 1 SHEET 11 OF 22	2000
72	PHASE 1 SHEET 12 OF 22	1395
74	PHASE 1 SHEET 14 OF 22	1628
75	PHASE 1 SHEET 15 OF 22	2000
76	PHASE 1 SHEET 16 OF 22	2002
77	PHASE 1 SHEET 17 OF 22	810
82	PHASE 1 SHEET 22 OF 22	895
84	PHASE 1 STEP 2 SHEET 1 OF 2	
85	PHASE 1 STEP 2 SHEET 2 OF 2	
86	PHASE 1 STEP 2 SHEET 1 OF 6	1904
87	PHASE 1 STEP 2 SHEET 2 OF 6	1572
89	PHASE 1 STEP 2 SHEET 3 OF 6	1972
90	PHASE 1 STEP 2 SHEET 4 OF 6	2000
91	PHASE 1 STEP 2 SHEET 5 OF 6	2000
92	PHASE 1 STEP 2 SHEET 6 OF 6	558
95	PHASE 2 SHEET 1 OF 22	570
96	PHASE 2 SHEET 2 OF 22	563
97	PHASE 2 SHEET 3 OF 22	442
98	PHASE 2 SHEET 4 OF 22	2000
99	PHASE 2 SHEET 5 OF 22	2000
100	PHASE 2 SHEET 6 OF 22	2005
101	PHASE 2 SHEET 7 OF 22	1996
102	PHASE 2 SHEET 8 OF 22	2000
103	PHASE 2 SHEET 9 OF 22	2002
104	PHASE 2 SHEET 10 OF 22	2000
105	PHASE 2 SHEET 11 OF 22	2000
106	PHASE 2 SHEET 12 OF 22	2002
107	PHASE 2 SHEET 13 OF 22	2002
108	PHASE 2 SHEET 14 OF 22	2006
109	PHASE 2 SHEET 15 OF 22	2000
110	PHASE 2 SHEET 16 OF 22	2000
111	PHASE 2 SHEET 17 OF 22	2011
112	PHASE 2 SHEET 18 OF 22	1015
113	PHASE 2 SHEET 19 OF 22	1000
114	PHASE 2 SHEET 20 OF 22	1024
115	PHASE 2 SHEET 21 OF 22	1000
116	PHASE 2 SHEET 22 OF 22	888
117	PHASE 2 SHEET 1 OF 1	
	TOTALS	68138

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Summary\1277500_TCP_SUMM01.dgn

REV. NO.	DATE	DESCRIPTION	BY
 <p>PAPE-DAWSON ENGINEERS</p> <p>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 <small>TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</small></p>			
 <p>SEGUIN TEXAS</p> <p>It's real.</p>			
 <p>Texas Department of Transportation © 2023</p>			
<p>TCP QUANTITY SUMMARY</p>			
SHEET 4 OF 4			
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.
CHK DGN:	6	TEXAS	
DWG:	DIST.	COUNTY	CONT. NO.
CHK DWG:	SAT	GUADALUPE	0915
			SECT. NO.
			46
			JOB NO.
			052
			SHEET NO.
			25

ROADWAY QUANTITY SUMMARY

SHT NO	ITEM ROADWAY PLAN & PROFILE	0100-6002	0106-6002	0110-6001	0132-6003	0247-6053	0260-6002	0260-6079
		PREPARING ROW	OBLITERATING ABANDONED ROAD	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL) (ORD COMP) (TY B)	FL BS (CMP IN PLC) (TYD GR1-2) (FNAL	LIME (HYDRATED LIME (SLURRY))	LIME TRT (SUBGRADE) (6")
		STA	SY	CY	CY	CY	TON	SY
165	SHEET 1 OF 44	5		151	3560	838	41	3018
166	SHEET 2 OF 44	5	450	1134	1186	1126	55	4055
167	SHEET 3 OF 44	5		1116	2260	1003	49	3610
168	SHEET 4 OF 44	5		2050	1186	885	43	3185
169	SHEET 5 OF 44	5		2855	418	885	43	3185
170	SHEET 6 OF 44	5		1768	802	928	45	3340
171	SHEET 7 OF 44	5		2250	262	966	47	3477
172	SHEET 8 OF 44	5		1199	666	1044	51	3758
173	SHEET 9 OF 44	5		2313	238	1031	50	3710
174	SHEET 10 OF 44	5		3249	158	915	44	3294
175	SHEET 11 OF 44	5		657	4061	1195	58	4303
176	SHEET 12 OF 44	5		3425	208	959	47	3454
177	SHEET 13 OF 44	5		2988	366	908	44	3268
178	SHEET 14 OF 44	5		2487	285	1091	53	3927
179	SHEET 15 OF 44	5		2481	763	885	43	3186
180	SHEET 16 OF 44	5		1070	1961	950	46	3419
181	SHEET 17 OF 44	5		1127	3131	885	43	3186
182	SHEET 18 OF 44	5		3464	346	934	45	3363
183	SHEET 19 OF 44	5		3070	302	885	43	3186
184	SHEET 20 OF 44	5		2949	231	885	43	3186
185	SHEET 21 OF 44	5		2352	392	966	47	3477
186	SHEET 22 OF 44	5		2759	253	1157	56	4166
187	SHEET 23 OF 44	5		3585	173	1058	51	3808
188	SHEET 24 OF 44	5		2706	510	885	43	3186
189	SHEET 25 OF 44	5		1550	698	1036	50	3731
190	SHEET 26 OF 44	5		1835	465	938	46	3375
191	SHEET 27 OF 44	5		2964	254	1171	57	4216
192	SHEET 28 OF 44	5		3447	287	1089	53	3922
193	SHEET 29 OF 44	5		2338	460	909	44	3272
194	SHEET 30 OF 44	5		4719	6	885	43	3186
195	SHEET 31 OF 44	5		5969	13	885	43	3186
196	SHEET 32 OF 44	5		6465	84	895	43	3221
197	SHEET 33 OF 44	5	246	7137	37	1442	70	5190
198	SHEET 34 OF 44	5		7996	174	885	43	3186
199	SHEET 35 OF 44	5		7266	160	915	44	3293
200	SHEET 36 OF 44	5	63	5796	27	1352	66	4868
201	SHEET 37 OF 44	5	310	5019	148	1133	55	4079
202	SHEET 38 OF 44	2	817					
203	SHEET 39 OF 44	2	603					
204	SHEET 40 OF 44	5		766	6	168	9	630
205	SHEET 41 OF 44	5		2805	121	182	9	681
206	SHEET 42 OF 44	4				401		
207	SHEET 43 OF 44	4	840					
208	SHEET 44 OF 44		1062					
	TOTALS	207	4391	119277	26658	37549	1806	133783


Plotted on: 11/17/2023

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REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS
 It's real.


 TEXAS DEPARTMENT OF TRANSPORTATION
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ROADWAY QUANTITY SUMMARY

SHEET 1 OF 6





DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	26

ROADWAY QUANTITY SUMMARY CONT.

SHT NO	ITEM	0275-6001	0275-6031	0310-6027	0316-6240	0316-6419	0354-6045	0432-6001
	ROADWAY PLAN & PROFILE	CEMENT	CEMENT TREAT (NEW BASE) (10")	PRIME COAT (MC-30 OR AE-P)	AGGR (TY-PD GR-4 SAC-B)	ASPH (AC-15P, AC-20-5TR OR AC-20XP)	PLANE ASPH CONC PAV (2")	RIPRAP (CONC) (4 IN)
		TON	SY	GAL	CY	GAL	SY	CY
165	SHEET 1 OF 44	41	3018	604	23	831		13
166	SHEET 2 OF 44	55	4055	811				27.7
167	SHEET 3 OF 44	49	3610	722				10
168	SHEET 4 OF 44	43	3185	637				
169	SHEET 5 OF 44	43	3185	637				
170	SHEET 6 OF 44	46	3340	668				
171	SHEET 7 OF 44	47	3477	695				14.4
172	SHEET 8 OF 44	51	3758	752				1.5
173	SHEET 9 OF 44	51	3710	742				15.5
174	SHEET 10 OF 44	45	3294	659				
175	SHEET 11 OF 44	59	4303	861				48.5
176	SHEET 12 OF 44	47	3454	691				14.9
177	SHEET 13 OF 44	45	3268	654				9.2
178	SHEET 14 OF 44	54	3927	785				6.6
179	SHEET 15 OF 44	44	3186	637				9.9
180	SHEET 16 OF 44	47	3419	684				6
181	SHEET 17 OF 44	44	3186	637				
182	SHEET 18 OF 44	46	3363	673				
183	SHEET 19 OF 44	44	3186	637				
184	SHEET 20 OF 44	44	3186	637				
185	SHEET 21 OF 44	47	3477	695				15.5
186	SHEET 22 OF 44	57	4166	833				15.8
187	SHEET 23 OF 44	52	3808	762				15.9
188	SHEET 24 OF 44	44	3186	637				
189	SHEET 25 OF 44	51	3731	746				15.9
190	SHEET 26 OF 44	46	3375	675				
191	SHEET 27 OF 44	57	4216	843				2.9
192	SHEET 28 OF 44	53	3922	784				12.9
193	SHEET 29 OF 44	45	3272	654				
194	SHEET 30 OF 44	44	3186	637				
195	SHEET 31 OF 44	44	3186	637				
196	SHEET 32 OF 44	44	3221	644				
197	SHEET 33 OF 44	71	5190	1038				15.9
198	SHEET 34 OF 44	44	3186	637				
199	SHEET 35 OF 44	45	3293	659				9.9
200	SHEET 36 OF 44	66	4868	974				6.5
201	SHEET 37 OF 44	56	4079	816				15.1
202	SHEET 38 OF 44						505	
203	SHEET 39 OF 44						300	
204	SHEET 40 OF 44	9	605	121				
205	SHEET 41 OF 44	9	654	131				
206	SHEET 42 OF 44			80	35	1263.0		
207	SHEET 43 OF 44				37	1340.4		
208	SHEET 44 OF 44							
	TOTALS	1829	133731	26826	95	3434.4	805	303.5

Plotted on: 11/17/2023

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REV. NO.	DATE	DESCRIPTION	BY
 <p>PAPE-DAWSON ENGINEERS</p> <p>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</p>			
 <p>SEGUIN TEXAS</p> <p>It's real.</p>			
 <p>Texas Department of Transportation © 2023</p>			
<p>ROADWAY QUANTITY SUMMARY</p>			
SHEET 2 OF 6			
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.
CHK DGN:	6	TEXAS	
DWG:	DIST.	COUNTY	CONT. NO.
CHK DWG:	SAT	GUADALUPE	0915
			SECT. NO.
			46
			JOB NO.
			052
			HIGHWAY NO.
			CORDOVA
			SHEET NO.
			27

ROADWAY QUANTITY SUMMARY CONT.

SHT NO	ITEM ROADWAY PLAN & PROFILE	0462-6001	0462-6010	0464-6003	0464-6005	0464-6007	0467-6363	0467-6395
		CONC BOX CULV (3 FT X 2 FT) LF	CONC BOX CULV (6 FT X 3 FT) LF	RC PIPE (CL III) (18 IN) LF	RC PIPE (CL III) (24 IN) LF	RC PIPE (CL III) (30 IN) LF	SET (TY II) (18 IN) (RCP) (6: 1) (P) EA	SET (TY II) (24 IN) (RCP) (6: 1) (P) EA
165	SHEET 1 OF 44							
166	SHEET 2 OF 44							
167	SHEET 3 OF 44							
168	SHEET 4 OF 44							
169	SHEET 5 OF 44	60		88	100		4	4
170	SHEET 6 OF 44				210			4
171	SHEET 7 OF 44							
172	SHEET 8 OF 44							
173	SHEET 9 OF 44							
174	SHEET 10 OF 44							
175	SHEET 11 OF 44							
176	SHEET 12 OF 44							
177	SHEET 13 OF 44							
178	SHEET 14 OF 44							
179	SHEET 15 OF 44			96	46		6	
180	SHEET 16 OF 44			96			4	
181	SHEET 17 OF 44							
182	SHEET 18 OF 44							
183	SHEET 19 OF 44				54			2
184	SHEET 20 OF 44			110			4	
185	SHEET 21 OF 44							
186	SHEET 22 OF 44							
187	SHEET 23 OF 44							
188	SHEET 24 OF 44							
189	SHEET 25 OF 44							
190	SHEET 26 OF 44							
191	SHEET 27 OF 44							
192	SHEET 28 OF 44							
193	SHEET 29 OF 44							
194	SHEET 30 OF 44					60		
195	SHEET 31 OF 44							
196	SHEET 32 OF 44							
197	SHEET 33 OF 44		48					
198	SHEET 34 OF 44							
199	SHEET 35 OF 44							
200	SHEET 36 OF 44							
201	SHEET 37 OF 44							
202	SHEET 38 OF 44							
203	SHEET 39 OF 44							
204	SHEET 40 OF 44							
205	SHEET 41 OF 44							
206	SHEET 42 OF 44							
207	SHEET 43 OF 44							
208	SHEET 44 OF 44							
	TOTALS	60	48	390	410	60	18	10


Plotted on: 11/17/2023

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REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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ROADWAY QUANTITY SUMMARY

SHEET 3 OF 6





DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				28

ROADWAY QUANTITY SUMMARY CONT.

SHT NO	ITEM ROADWAY PLAN & PROFILE	0467-6423	0467-6519	0529-6002	0529-6008	0530-6004	0531-6001	0531-6004
		SET (TY II) (30 IN) (RCP) (6: 1) (P)	SET (TY II) (DES 1) (RCP) (6: 1) (P)	CONC CURB (TY II)	CONC CURB & GUTTER (TY II)	DRIVEWAYS (CONC)	CONC SIDEWALKS (4")	CURB RAMPS (TY 1)
		EA	EA	LF	LF	SY	SY	EA
165	SHEET 1 OF 44			651	582		639	2
166	SHEET 2 OF 44			995	1005		1110	
167	SHEET 3 OF 44			1000	951		1065	
168	SHEET 4 OF 44			1000	1000	212	1083	
169	SHEET 5 OF 44			1000	1000	143	1081	
170	SHEET 6 OF 44			1000	968	109	1055	
171	SHEET 7 OF 44			1002	1016		1106	
172	SHEET 8 OF 44			839	956	205	1026	
173	SHEET 9 OF 44			918	980	195	1035	
174	SHEET 10 OF 44		6	1000	954	429	965	
175	SHEET 11 OF 44			850	912	143	1002	
176	SHEET 12 OF 44			1017	1000	69	1097	
177	SHEET 13 OF 44			1016	1000	80	1089	
178	SHEET 14 OF 44			842	979	60	1061	2
179	SHEET 15 OF 44			1015	1000	160	1088	
180	SHEET 16 OF 44			751	905	102	1008	
181	SHEET 17 OF 44			1000	1000		1116	
182	SHEET 18 OF 44			1000	962		1076	
183	SHEET 19 OF 44			1000	1000	80	1094	
184	SHEET 20 OF 44			1000	1000	122	1090	
185	SHEET 21 OF 44			1016	1000		1118	
186	SHEET 22 OF 44			834	968		1049	
187	SHEET 23 OF 44			843	973		1078	
188	SHEET 24 OF 44			1000	1000		1112	
189	SHEET 25 OF 44			842	1194	58	1051	
190	SHEET 26 OF 44			1000	1002		1080	
191	SHEET 27 OF 44			817	1385		1036	
192	SHEET 28 OF 44			1016	1096		1006	
193	SHEET 29 OF 44			1000	1002	63	1099	
194	SHEET 30 OF 44	2		1000	1000	87	1096	
195	SHEET 31 OF 44			1000	1000		1112	
196	SHEET 32 OF 44			1000	1000		1119	
197	SHEET 33 OF 44			830	1064	87	1072	
198	SHEET 34 OF 44			1000	1000		1098	
199	SHEET 35 OF 44			1002	1000		1107	
200	SHEET 36 OF 44			829	1031	238	1080	
201	SHEET 37 OF 44			879	903		1008	2
202	SHEET 38 OF 44					670		
203	SHEET 39 OF 44					711		
204	SHEET 40 OF 44							
205	SHEET 41 OF 44							
206	SHEET 42 OF 44							
207	SHEET 43 OF 44							
208	SHEET 44 OF 44							
	TOTALS	2	6	34804	36788	4023	39207	6

Plotted on: 11/17/2023

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REV. NO.	DATE	DESCRIPTION	BY
 <p>PAPE-DAWSON ENGINEERS</p> <p>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 <small>TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</small></p>			
 <p>SEGUIN TEXAS</p> <p>It's real.</p>		 <p>THE STATE OF TEXAS GUADALUPE COUNTY</p>	
 <p>Texas Department of Transportation ©2023</p>			
<p>ROADWAY QUANTITY SUMMARY</p>			
SHEET 4 OF 6			
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.
CHK DGN:	6	TEXAS	
DWG:	DIST.	COUNTY	CONT. NO.
CHK DWG:	SAT	GUADALUPE	0915
			SECT. NO.
			46
			JOB NO.
			052
			HIGHWAY NO.
			CORDOVA
			SHEET NO.
			29


ROADWAY QUANTITY SUMMARY CONT.

SHT NO	ITEM	0531-6005	0531-6010	0531-6016	0560-6011	0560-6012	3076-6001	3076-6025
	ROADWAY PLAN & PROFILE	CURB RAMPS (TY 2)	CURB RAMPS (TY 7)	CURB RAMPS (TY 21)	MAILBOX INSTALL-S (TWW-POST) TY	MAILBOX INSTALL-D (TWW-POST) TY	D-GR HMA TY-B PG64-22	D-GR HMA TY-C SAC-B PG70-22
		EA	EA	EA	EA	EA	TON	TON
165	SHEET 1 OF 44	2		1			868	
166	SHEET 2 OF 44						1083	
167	SHEET 3 OF 44						944	
168	SHEET 4 OF 44				2		807	
169	SHEET 5 OF 44				1		807	
170	SHEET 6 OF 44				1		863	
171	SHEET 7 OF 44						891	
172	SHEET 8 OF 44				2		1010	
173	SHEET 9 OF 44				1		985	
174	SHEET 10 OF 44				2		864	
175	SHEET 11 OF 44		4		1		1142	
176	SHEET 12 OF 44					1	885	
177	SHEET 13 OF 44				1		817	
178	SHEET 14 OF 44				1		1016	
179	SHEET 15 OF 44				2		820	
180	SHEET 16 OF 44				1		1164	
181	SHEET 17 OF 44						807	
182	SHEET 18 OF 44				1		938	
183	SHEET 19 OF 44				1		807	
184	SHEET 20 OF 44				1		807	
185	SHEET 21 OF 44						893	
186	SHEET 22 OF 44		6				1133	
187	SHEET 23 OF 44						1078	
188	SHEET 24 OF 44						807	
189	SHEET 25 OF 44				1		1081	
190	SHEET 26 OF 44						872	
191	SHEET 27 OF 44						1376	
192	SHEET 28 OF 44						1148	
193	SHEET 29 OF 44						825	
194	SHEET 30 OF 44				1		807	
195	SHEET 31 OF 44						807	
196	SHEET 32 OF 44						807	
197	SHEET 33 OF 44						1002	
198	SHEET 34 OF 44						807	
199	SHEET 35 OF 44						826	
200	SHEET 36 OF 44						997	
201	SHEET 37 OF 44						1139	
202	SHEET 38 OF 44						167	
203	SHEET 39 OF 44						99	
204	SHEET 40 OF 44						193	
205	SHEET 41 OF 44						209	
206	SHEET 42 OF 44						385	371
207	SHEET 43 OF 44							
208	SHEET 44 OF 44							
	TOTALS	2	10	1	20	1	35782	371

Plotted on: 11/17/2023


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REV. NO.	DATE	DESCRIPTION	BY




PAPE-DAWSON ENGINEERS


SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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ROADWAY QUANTITY SUMMARY

SHEET 5 OF 6





DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
			JOB NO.:	SHEET NO.:
			052	30

ROADWAY QUANTITY SUMMARY CONT.

SHT NO	ITEM		3076-6050	3076-6066
	ROADWAY PLAN & PROFILE	D-GR HMA TY-D SAC-B PG76-22	TACK COAT	
		TON	GAL	
165	SHEET 1 OF 44	289	526.0	
166	SHEET 2 OF 44	361	656.6	
167	SHEET 3 OF 44	315	572.2	
168	SHEET 4 OF 44	269	489.0	
169	SHEET 5 OF 44	269	489.2	
170	SHEET 6 OF 44	288	522.8	
171	SHEET 7 OF 44	297	540.2	
172	SHEET 8 OF 44	337	612.4	
173	SHEET 9 OF 44	328	596.8	
174	SHEET 10 OF 44	288	523.8	
175	SHEET 11 OF 44	381	692.0	
176	SHEET 12 OF 44	295	536.2	
177	SHEET 13 OF 44	272	495.2	
178	SHEET 14 OF 44	339	615.6	
179	SHEET 15 OF 44	273	497.2	
180	SHEET 16 OF 44	388	705.2	
181	SHEET 17 OF 44	269	489.0	
182	SHEET 18 OF 44	313	568.6	
183	SHEET 19 OF 44	269	489.0	
184	SHEET 20 OF 44	269	489.0	
185	SHEET 21 OF 44	298	541.4	
186	SHEET 22 OF 44	378	686.4	
187	SHEET 23 OF 44	359	653.6	
188	SHEET 24 OF 44	269	489.0	
189	SHEET 25 OF 44	360	655.4	
190	SHEET 26 OF 44	291	528.4	
191	SHEET 27 OF 44	459	834.2	
192	SHEET 28 OF 44	383	695.6	
193	SHEET 29 OF 44	275	500.0	
194	SHEET 30 OF 44	269	489.0	
195	SHEET 31 OF 44	269	489.0	
196	SHEET 32 OF 44	269	489.0	
197	SHEET 33 OF 44	334	607.2	
198	SHEET 34 OF 44	269	489.0	
199	SHEET 35 OF 44	275	500.6	
200	SHEET 36 OF 44	332	604.0	
201	SHEET 37 OF 44	380	690.4	
202	SHEET 38 OF 44	56	101.0	
203	SHEET 39 OF 44	33	60.0	
204	SHEET 40 OF 44	61	114.1	
205	SHEET 41 OF 44	66	123.8	
206	SHEET 42 OF 44		75.6	
207	SHEET 43 OF 44			
208	SHEET 44 OF 44			
	TOTALS	11793	21522.7	

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REV. NO.	DATE	DESCRIPTION	BY			
 <p>PAPE-DAWSON ENGINEERS</p> <p>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 <small>TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</small></p>						
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<p>ROADWAY QUANTITY SUMMARY</p>						
SHEET 6 OF 6						
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	31

RETAINING WALL QUANTITY SUMMARY

SHT NO	ITEM ROADWAY PLAN & PROFILE	0423-6005	0450-6103	0556-6008	0740-6004
		RETAINING WALL (SPREAD FOOTING) SF	RAIL (TY PR11) LF	PIPE UNDERDRAINS (TY 8) (6") LF	ANTI - GRAFFITI COATING (PERMN) SF
242	SHEET 1 OF 6	478	110	110	708
243	SHEET 1 OF 6	890	204	204	1300
244	SHEET 1 OF 6	742	207	207	1363
245	SHEET 1 OF 6	600	125	125	850
246	SHEET 1 OF 6	1027	170	170	1365
247	SHEET 1 OF 6	624	106	106	836
	TOTALS	4361	922	922	6422

Plotted on: 11/17/2023





Design Filename: P:\127\75\00\Design\Civil\Summaries\1277500_RetWall_SUMM01.dgn

REV. NO.	DATE	DESCRIPTION	BY			
 <p>PAPE-DAWSON ENGINEERS</p> <p>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 <small>TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</small></p>						
 <p>SEGUIN TEXAS</p> <p>It's real.</p>		 <p>THE STATE OF TEXAS GUADALUPE COUNTY</p>				
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<p>RETAINING WALL QUANTITY SUMMARY</p>						
SHEET 1 OF 1						
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	32

DRAINAGE QUANTITY SUMMARY

ITEM		0420-6074	0432-6001	0462-6001	0462-6006	0462-6010	0462-6019	0462-6096	0462-6099
DRAINAGE LAYOUT		CL C CONC (MISC)	RIPRAP (CONC) (4 IN)	CONC BOX CULV (3 FT X 2 FT)	CONC BOX CULV (5 FT X 2 FT)	CONC BOX CULV (6 FT X 3 FT)	CONC BOX CULV (8 FT X 4 FT)	CONC BOX CULV (8 FT X 3 FT)	CONC BOX CULV (6 FT X 2 FT)
SHT NO		CY	CY	LF	LF	LF	LF	LF	LF
303	SHEET 2 OF 29		7.3						
304	SHEET 3 OF 29		154.0						
305	SHEET 4 OF 29		11.0						
306	SHEET 5 OF 29		12.7						
307	SHEET 6 OF 29		10.0						
308	SHEET 7 OF 29		3.3						
309	SHEET 8 OF 29		2.2	15					
310	SHEET 9 OF 29		17.7	85					
311	SHEET 10 OF 29		10.1						
312	SHEET 11 OF 29		127.7						
313	SHEET 12 OF 29		244.9						
314	SHEET 13 OF 29		24.0						
315	SHEET 14 OF 29		20.7						
316	SHEET 15 OF 29		7.7	6	230				
317	SHEET 16 OF 29		10.3						
318	SHEET 17 OF 29		6.1						
319	SHEET 18 OF 29		3.3			378			
320	SHEET 19 OF 29					500			
321	SHEET 20 OF 29					352	158		
322	SHEET 21 OF 29		6.5				500		
323	SHEET 22 OF 29			394			501		
324	SHEET 23 OF 29		28.9	494			319		
325	SHEET 24 OF 29	122.8	21.1	16					
326	SHEET 25 OF 29		39.1					86	
328	SHEET 27 OF 29		45.9						
329	SHEET 28 OF 29		29.9					112	
330	SHEET 29 OF 29		33.1		68				93
	TOTALS	122.8	877.5	1010	298	1230	1478	198	93

ITEM		0464-6003	0464-6005	0464-6007	0464-6008	0465-6006	0465-6070	0465-6071	0465-6077
DRAINAGE LAYOUT		RC PIPE (CL III) (18 IN)	RC PIPE (CL III) (24 IN)	RC PIPE (CL III) (30 IN)	RC PIPE (CL III) (36 IN)	JCTBOX (COMPL) (PJB) (4FTX4FT)	INLET (COMPL) (PSL) (RC) (3FTX3FT)	INLET (COMPL) (PSL) (RC) (4FTX4FT)	INLET (COMPL) (PSL) (RC) (8FTX8FT)
SHT NO		LF	LF	LF	LF	EA	EA	EA	EA
303	SHEET 2 OF 29								
304	SHEET 3 OF 29		372						
305	SHEET 4 OF 29		106						
306	SHEET 5 OF 29		36						
307	SHEET 6 OF 29		206						
308	SHEET 7 OF 29		500	425	53		1		
309	SHEET 8 OF 29		241	34	306		1	2	
310	SHEET 9 OF 29								
311	SHEET 10 OF 29								
312	SHEET 11 OF 29		411						
313	SHEET 12 OF 29		103						
314	SHEET 13 OF 29								
315	SHEET 14 OF 29								
316	SHEET 15 OF 29	4	155						2
317	SHEET 16 OF 29	396					1		
318	SHEET 17 OF 29		198						
319	SHEET 18 OF 29		646				3		
320	SHEET 19 OF 29		482				1		
321	SHEET 20 OF 29		551				1		
322	SHEET 21 OF 29		480						
323	SHEET 22 OF 29		98					2	
324	SHEET 23 OF 29							2	
325	SHEET 24 OF 29								
326	SHEET 25 OF 29								
328	SHEET 27 OF 29								
329	SHEET 28 OF 29								
330	SHEET 29 OF 29								
	TOTALS	400	4585	459	359	1	8	6	2

REV. NO.	DATE	DESCRIPTION	BY
 <p>PAPE-DAWSON ENGINEERS</p> <p>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</p>			
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<p>DRAINAGE QUANTITY SUMMARY</p>			
SHEET 1 OF 4			
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
CHK DGN:	6	TEXAS	
DWG:	DIST.:	COUNTY:	CONT. NO. SECT. NO. JOB NO. SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915 46 052 33

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DRAINAGE QUANTITY SUMMARY CONT.

SHT NO	ITEM DRAINAGE LAYOUT	0465-6158	0465-6160	0465-6161	0465-6176	0465-6233	0465-6338	0465-6365	0465-6558
		INLET (COMPL) (PAZD) (FG) (3FTX3FT-3FTX3FT) EA	INLET (COMPL) (PAZD) (FG) (4FTX4FT-4FTX4FT) EA	INLET (COMPL) (PAZD) (FG) (5FTX5FT-3FTX3FT) EA	INLET (COMPL) (CURB) (TY C1) EA	INLET (COMP) (TY SIDEWALK BRIDGE) EA	INLET (COMPL) (ARMOR CURB SLOT) EA	JCT BOX (COMPL) (CIP) (10FTX10FT) EA	INL (CMP) (PAZD-CZ) (FG) (3FTX3FT-3FTX3FT) EA
303	SHEET 2 OF 29					1	2		
304	SHEET 3 OF 29					2	6		
305	SHEET 4 OF 29						5		
306	SHEET 5 OF 29						3		
307	SHEET 6 OF 29				1		3		2
308	SHEET 7 OF 29		1		4		1		
309	SHEET 8 OF 29					2	2		
310	SHEET 9 OF 29	1				1	4		
311	SHEET 10 OF 29						3		
312	SHEET 11 OF 29					3	7		
313	SHEET 12 OF 29					2	6		
314	SHEET 13 OF 29						4		
315	SHEET 14 OF 29						4		
316	SHEET 15 OF 29			1	2		2		1
317	SHEET 16 OF 29						3		1
318	SHEET 17 OF 29						2		2
319	SHEET 18 OF 29				1		1		
320	SHEET 19 OF 29				3				
321	SHEET 20 OF 29				5			1	
322	SHEET 21 OF 29		1		2		2		
323	SHEET 22 OF 29								
324	SHEET 23 OF 29						2		
325	SHEET 24 OF 29						4		
326	SHEET 25 OF 29						4		
328	SHEET 27 OF 29						2		
329	SHEET 28 OF 29						1		
330	SHEET 29 OF 29						4		
	TOTALS	1	2	1	18	11	77	1	6

SHT NO	ITEM DRAINAGE LAYOUT	0465-6560	0466-6153	0466-6154	0466-6179	0467-6282	0467-6395	0496-6004	0496-6016
		INL (CMP) (PAZD-CZ) (FG) (4FTX4FT-4FTX4FT) EA	WINGWALL (FW - O) (HW=6 FT) EA	WINGWALL (FW - O) (HW=7 FT) EA	WINGWALL (PW - 1) (HW=4 FT) EA	SET (TY I) (S= 8 FT) (HW= 6 FT) (6: 1) (P) EA	SET (TY II) (24 IN) (RCP) (6: 1) (P) EA	REMOV STR (SET) EA	REMOV STR (PIPE) EA
303	SHEET 2 OF 29								
304	SHEET 3 OF 29						2		
305	SHEET 4 OF 29						2		1
306	SHEET 5 OF 29						2		
307	SHEET 6 OF 29								
308	SHEET 7 OF 29	1							
309	SHEET 8 OF 29						1		
310	SHEET 9 OF 29								
311	SHEET 10 OF 29								
312	SHEET 11 OF 29						5		
313	SHEET 12 OF 29						1		
314	SHEET 13 OF 29								
315	SHEET 14 OF 29								
316	SHEET 15 OF 29								
317	SHEET 16 OF 29								
318	SHEET 17 OF 29								
319	SHEET 18 OF 29								
320	SHEET 19 OF 29								
321	SHEET 20 OF 29								
322	SHEET 21 OF 29								
323	SHEET 22 OF 29								
324	SHEET 23 OF 29					1			
325	SHEET 24 OF 29								
326	SHEET 25 OF 29			2					
328	SHEET 27 OF 29								
329	SHEET 28 OF 29		2						
330	SHEET 29 OF 29				4			2	3
	TOTALS	1	2	2	4	1	13	2	4

Plotted on: 11/17/2023

Design File Name: P:\127\75\00\Design\Civil\Summary\1277500_Drainage_SUMM01.dgn





REV. NO.	DATE	DESCRIPTION	BY
 <p>PAPE-DAWSON ENGINEERS</p> <p>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</p>			
 <p>SEGUIN TEXAS</p> <p>It's real.</p>			
 <p>Texas Department of Transportation ©2023</p>			
<p>DRAINAGE QUANTITY SUMMARY</p>			
SHEET 2 OF 4			
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
CHK:	6	TEXAS	
DWG:	DIST.:	COUNTY:	CONT. NO.:
CHK:	SAT	GUADALUPE	0915
			SECT. NO.:
			46
			JOB NO.:
			052
			SHEET NO.:
			34

DRAINAGE QUANTITY SUMMARY CONT.

ITEM		0402-6001	0432-6001	0450-6032	0462-6001	0462-6006	0462-6014	0462-6020
CULVERT LAYOUT		TRENCH EXCAVATION PROTECTION	RIPRAP (CONC) (4 IN)	RAIL (TY C223)	CONC BOX CULV (3 FT X 2 FT)	CONC BOX CULV (5 FT X 2 FT)	CONC BOX CULV (7 FT X 3 FT)	CONC BOX CULV (8 FT X 5 FT)
SHT NO		LF	CY	LF	LF	LF	LF	LF
331	SHEET 1 OF 10							
332	SHEET 2 OF 10			116			612	
333	SHEET 3 OF 10			124				678
334	SHEET 4 OF 10			114			612	
335	SHEET 5 OF 10					284		
336	SHEET 6 OF 10		4.3		132	124		
337	SHEET 7 OF 10			49				
338	SHEET 8 OF 10	35						
339	SHEET 9 OF 10							
340	SHEET 10 OF 10					236		
	TOTALS	35	4.3	403	132	644	1224	678

ITEM		0462-6054	0464-6005	0464-6027	0464-6059	0465-6012	0466-6134	0466-6179
CULVERT LAYOUT		CONC BOX CULV (6 FT X 3 FT) (EXTEND)	RC PIPE (CL III) (24 IN)	RC PIPE (CL V) (36 IN)	RC PIPE (CL V) (30 IN)	JCTBOX (COMPL) (PJB) (8FTX8FT)	HEADWALL (CH - PW - S) (DIA= 36 IN)	WINGWALL (PW - 1) (HW=4 FT)
SHT NO		LF	LF	LF	LF	EA	EA	EA
331	SHEET 1 OF 10				330			
332	SHEET 2 OF 10							
333	SHEET 3 OF 10							
334	SHEET 4 OF 10							
335	SHEET 5 OF 10		24					1
336	SHEET 6 OF 10					1		
337	SHEET 7 OF 10	124						1
338	SHEET 8 OF 10			348			1	
339	SHEET 9 OF 10				392			
340	SHEET 10 OF 10							
	TOTALS	124	24	348	722	1	1	2

ITEM		0466-6180	0466-6181	0466-6183	0467-6184	0467-6390	0467-6418	0467-6423
CULVERT LAYOUT		WINGWALL (PW - 1) (HW=5 FT)	WINGWALL (PW - 1) (HW=6 FT)	WINGWALL (PW - 1) (HW=8 FT)	SET (TY I) (S= 5 FT) (HW= 5 FT) (6:1) (P)	SET (TY II) (24 IN) (RCP) (4:1) (C)	SET (TY II) (30 IN) (RCP) (3:1) (P)	SET (TY II) (30 IN) (RCP) (6:1) (P)
SHT NO		EA	EA	EA	EA	EA	EA	EA
331	SHEET 1 OF 10							4
332	SHEET 2 OF 10		2					
333	SHEET 3 OF 10			2				
334	SHEET 4 OF 10		2					
335	SHEET 5 OF 10	1				1		
336	SHEET 6 OF 10	2						
337	SHEET 7 OF 10							
338	SHEET 8 OF 10							
339	SHEET 9 OF 10						2	
340	SHEET 10 OF 10				2			
	TOTALS	3	4	2	2	1	2	4

REV. NO.	DATE	DESCRIPTION	BY
 <p>PAPE-DAWSON ENGINEERS</p> <p>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</p>			
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<p>DRAINAGE QUANTITY SUMMARY</p>			
SHEET 3 OF 4			
DN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.
CHK DGN:	6	TEXAS	
DWG:	DIST.	COUNTY	CONT. NO.
CHK DWG:	SAT	GUADALUPE	0915
			SECT. NO.
			46
			JOB NO.
			052
			HIGHWAY NO.
			CORDOVA
			SHEET NO.
			35

Plotted on: 11/17/2023





Design File name: P:\127\75\00\Design\Civil\Summaries\1277500_Drainage_Summary.dgn

DRAINAGE QUANTITY SUMMARY CONT.

SHT NO	ITEM	0467-6453	0496-6001	0496-6005	0496-6016	0496-6041
	CULVERT LAYOUT	SET (TY II) (36 IN) (RCP) (6: 1) (C) EA	REMOV STR (BOX CULVERT) EA	REMOV STR (WINGWALL) EA	REMOV STR (PIPE) EA	REMOV STR (LARGE) EA
331	SHEET 1 OF 10					
332	SHEET 2 OF 10		3	2		
333	SHEET 3 OF 10			2		1
334	SHEET 4 OF 10		3	2		
335	SHEET 5 OF 10				1	
336	SHEET 6 OF 10				1	
337	SHEET 7 OF 10			1		
338	SHEET 8 OF 10	3				
339	SHEET 9 OF 10					
340	SHEET 10 OF 10					
	TOTALS	3	6	7	2	1

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Summaries\1277500_Drainage_SUMM01.dgn

REV. NO.	DATE	DESCRIPTION	BY
 <p>PAPE-DAWSON ENGINEERS</p> <p>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 <small>TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</small></p>			
 <p>SEGUIN TEXAS</p> <p>It's real.</p>		 <p>THE STATE OF TEXAS GUADALUPE COUNTY</p>	
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<p>DRAINAGE QUANTITY SUMMARY</p>			
SHEET 4 OF 4			
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.
CHK DGN:	6	TEXAS	
DWG:	DIST.	COUNTY	CONT. NO.
CHK DWG:	SAT	GUADALUPE	0915
			SECT. NO.
			46
			JOB NO.
			052
			HIGHWAY NO.
			CORDOVA
			SHEET NO.
			36





SIGNING & PAVEMENT MARKING QUANTITY SUMMARY

Plotted on: 11/17/2023

SHT NO	ITEM	0644-6001	0644-6002	0644-6004	0644-6033	0666-6036	0666-6048	0666-6156
		IN SM RD SN SUP&AM TY10BWG(1)SA(IN SM RD SN SUP&AM TY10BWG(1)SA(IN SM RD SN SUP&AM TY10BWG(1)SA(IN SM RD SN SUP&AM TYS80(1)SA(U)	REFL PAV MRK TY I (W)8"(SLD)(10	REFL PAV MRK TY I (W)24"(SLD)(1	REFL PAV MRK TY I(Y)(MED NOSE)(100MIL)
	SIGNING & PAVEMENT MARKING SHEETS	EA	EA	EA	EA	LF	LF	EA
382	SHEET 1 OF 26	1		1	1	1961	378	
383	SHEET 2 OF 26	1		2		921		
384	SHEET 3 OF 26	1		1		80		
385	SHEET 4 OF 26							
386	SHEET 5 OF 26	2				230		
387	SHEET 6 OF 26		1			150	61	
388	SHEET 7 OF 26	1	2			381		
389	SHEET 8 OF 26		1			150	61	
390	SHEET 9 OF 26					232		
391	SHEET 10 OF 26	2				80		
392	SHEET 11 OF 26			1				
393	SHEET 12 OF 26	2	4	2		437	516	
394	SHEET 13 OF 26		1	1		150		
395	SHEET 14 OF 26	1	2			150	144	
396	SHEET 15 OF 26	1	3			390	236	
397	SHEET 16 OF 26							
398	SHEET 17 OF 26	1		1				
399	SHEET 18 OF 26	1	1	2		149	60	
400	SHEET 19 OF 26							
401	SHEET 20 OF 26							
402	SHEET 21 OF 26		1	3		152	60	
403	SHEET 22 OF 26	3		1	1	980	276	
404	SHEET 23 OF 26	1				1405		
405	SHEET 24 OF 26					637		1
406	SHEET 25 OF 26					71		1
407	SHEET 26 OF 26					95		
	TOTALS	18	16	15	2	8801	1792	2

Design File name: P:\127\75\00\Design\Civil\Summary\SUMMARIES\SUMM01.dgn

SHT NO	ITEM	0666-6171	0666-6178	0666-6182	0666-6184	0666-6192	0666-6306	0668-6077
		REFL PAV MRK TY II (W) 6" (BRK)	REFL PAV MRK TY II (W) 8" (SLD)	REFL PAV MRK TY II (W) 24" (SLD)	REFL PAV MRK TY II (W) (ARROW)	REFL PAV MRK TY II (W) (WORD)	RE PM W/RET REQ TY I (W)6"(BRK)(10	PREFAB PAV MRK TY C (W) (ARROW)
	SIGNING & PAVEMENT MARKING SHEETS	LF	LF	LF	EA	EA	LF	EA
382	SHEET 1 OF 26	204	1961	378	12	7	204	12
383	SHEET 2 OF 26	157	921		2	5	157	2
384	SHEET 3 OF 26	502	80		1	1	502	1
385	SHEET 4 OF 26	500					500	
386	SHEET 5 OF 26	500	230		2	2	500	2
387	SHEET 6 OF 26	498	150	61			498	
388	SHEET 7 OF 26	500	381	167			500	
389	SHEET 8 OF 26	500	150	61			500	
390	SHEET 9 OF 26	500	232				500	
391	SHEET 10 OF 26	500	80				500	
392	SHEET 11 OF 26	500					500	
393	SHEET 12 OF 26	431	437	516			431	
394	SHEET 13 OF 26	500	150	72			500	
395	SHEET 14 OF 26	500	150	144			500	
396	SHEET 15 OF 26	500	390	236			500	
397	SHEET 16 OF 26	501					501	
398	SHEET 17 OF 26	500					500	
399	SHEET 18 OF 26	250	149	60			250	
400	SHEET 19 OF 26	250					250	
401	SHEET 20 OF 26	250					250	
402	SHEET 21 OF 26	250	152	60			250	
403	SHEET 22 OF 26	115	980	276			115	
404	SHEET 23 OF 26	205	1405				205	
405	SHEET 24 OF 26	59	637				59	
406	SHEET 25 OF 26		71					
407	SHEET 26 OF 26		95					
	TOTALS	9172	8801	2031	17	15	9172	17

REV. NO.	DATE	DESCRIPTION	BY
 <p>PAPE-DAWSON ENGINEERS</p> <p>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</p>			
 <p>SEGUIN TEXAS</p> <p>It's real.</p>			
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<p>SIGNING & PAVEMENT MARKINGS QUANTITY SUMMARY</p>			
SHEET 1 OF 2			
CHK DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
	6	TEXAS	
CHK DWG:	DIST.:	COUNTY:	CONT. NO.:
	SAT	GUADALUPE	0915
			SECT. NO.:
			46
			JOB NO.:
			052
			HIGHWAY NO.:
			CORDOVA
			SHEET NO.:
			37





SIGNING & PAVEMENT MARKING QUANTITY SUMMARY CONT.

Plotted on: 11/17/2023

SHT NO	ITEM	0668-6085	0672-6007	0672-6009	0672-6010	0678-6002	0678-6004	0678-6008
	SIGNING & PAVEMENT MARKING SHEETS	PREFAB PAV MRK TY C (W) (WORD)	REFL PAV MRKR TY I-C	REFL PAV MRKR TY II-A-A	REFL PAV MRKR TY II-C-R	PAV SURF PREP FOR MRK (6")	PAV SURF PREP FOR MRK (8")	PAV SURF PREP FOR MRK (24")
		EA	EA	EA	EA	LF	LF	LF
382	SHEET 1 OF 26	7	25	16	11	204	1961	378
383	SHEET 2 OF 26	5	1		8	157	921	
384	SHEET 3 OF 26	1	1		26	502	80	
385	SHEET 4 OF 26				25	500		
386	SHEET 5 OF 26	2	3		25	500	230	
387	SHEET 6 OF 26		2		25	498	150	61
388	SHEET 7 OF 26		5		25	500	381	167
389	SHEET 8 OF 26		2		25	500	150	61
390	SHEET 9 OF 26		3		25	500	232	
391	SHEET 10 OF 26		1		25	500	80	
392	SHEET 11 OF 26				25	500		
393	SHEET 12 OF 26		6	8	22	431	437	516
394	SHEET 13 OF 26		2		25	500	150	72
395	SHEET 14 OF 26		2		25	500	150	144
396	SHEET 15 OF 26		5		25	500	390	236
397	SHEET 16 OF 26				26	501		
398	SHEET 17 OF 26				25	500		
399	SHEET 18 OF 26		2		13	250	149	60
400	SHEET 19 OF 26				13	250		
401	SHEET 20 OF 26				13	250		
402	SHEET 21 OF 26		2		13	250	152	60
403	SHEET 22 OF 26		13		6	115	980	276
404	SHEET 23 OF 26		18	28	11	205	1405	
405	SHEET 24 OF 26		8	26	3	59	637	
406	SHEET 25 OF 26		1	48			71	
407	SHEET 26 OF 26		2	50			95	
	TOTALS	15	104	176	465	9172	8801	2031

Design File name: P:\127\75\00\Design\Civil\Summary\1277500_S&PM_SUMM01.dgn

SHT NO	ITEM	0678-6009	0678-6016
	SIGNING & PAVEMENT MARKING SHEETS	PAV SURF PREP FOR MRK (ARROW)	PAV SURF PREP FOR MRK (WORD)
		EA	EA
382	SHEET 1 OF 26	12	7
383	SHEET 2 OF 26	2	5
384	SHEET 3 OF 26	1	1
385	SHEET 4 OF 26		
386	SHEET 5 OF 26	2	2
387	SHEET 6 OF 26	1	1
388	SHEET 7 OF 26	3	3
389	SHEET 8 OF 26	1	1
390	SHEET 9 OF 26	2	2
391	SHEET 10 OF 26	1	1
392	SHEET 11 OF 26		
393	SHEET 12 OF 26	3	2
394	SHEET 13 OF 26	1	1
395	SHEET 14 OF 26	1	1
396	SHEET 15 OF 26	4	4
397	SHEET 16 OF 26		
398	SHEET 17 OF 26		
399	SHEET 18 OF 26	1	1
400	SHEET 19 OF 26		
401	SHEET 20 OF 26		
402	SHEET 21 OF 26	1	1
403	SHEET 22 OF 26	5	5
404	SHEET 23 OF 26	2	2
405	SHEET 24 OF 26	1	1
406	SHEET 25 OF 26	1	1
407	SHEET 26 OF 26		1
	TOTALS	45	43

REV. NO.	DATE	DESCRIPTION	BY
 <p>PAPE-DAWSON ENGINEERS</p> <p>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</p>			
 <p>SEGUIN TEXAS</p> <p>It's real.</p>			
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<p>SIGNING & PAVEMENT MARKINGS QUANTITY SUMMARY</p>			
SHEET 2 OF 2			
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
CHK DGN:	6	TEXAS	
DWG:	DIST.:	COUNTY:	CONT. NO. SECT. NO. JOB NO. SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915 46 052 38

SUMMARY OF SMALL SIGNS

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 FILE: P:\127\75\00\Design\Civil\General\1277500_SOSS_01.dgn

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" 1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	
386	1-1	M3-3 M1-6T M6-1 M3-1 M1-6T M6-1		24"X12" 36"X36" 21"X15" 24"X12" 36"X36" 21"X15"			S80	1	SA	U	
	1-2	R2-1		30"X36"			10BWG	1	SA	P	
	1-3	W1-2R		36"X36"			10BWG	1	SA	T	
387	2-1	R3-5R		30"X36"			10BWG	1	SA	P	
	2-2	W3-3		36"X36"			10BWG	1	SA	T	
	2-3	R3-8 LLS		48"X30"			10BWG	1	SA	T	
388	3-1	W1-2L		36"X36"			10BWG	1	SA	T	
	3-2	R2-1		30"X36"			10BWG	1	SA	P	
390	5-1	R2-1		30"X36"			10BWG	1	SA	P	
	5-2	R2-1		30"X36"			10BWG	1	SA	P	
391	6-1	D3-4T D3-4T R1-1		VARX8" VARX8" 36"X36"			10BWG	1	SA	P	BM

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).



SUMMARY OF SMALL SIGNS

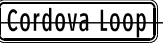
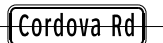

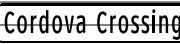
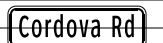









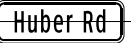

SOSS SHEET 1 OF 6

FILE: sum16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
4-16	DIST	COUNTY	SHEET NO.	
8-16	SAT	GUADALUPE	39	

SUMMARY OF SMALL SIGNS

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 FILE: P:\127\75\00\Design\Civil\General\1277500_SOSS_02.dgn

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"		1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels
392												
	7-1	D3-4T		VARX8"			10BWG	1	SA	P	BM	
		D3-4T		VARX8"	✓							
		R1-1		36"X36"								
7-2												
	D3-4T	D3-4T		VARX8"			10BWG	1	SA	P	BM	
		D3-4T		VARX8"	✓							
		R1-1		36"X36"								
7-3												
	R2-1	R2-1		30"X36"			10BWG	1	SA	P		
393												
	8-1	D3-4T		VARX8"			10BWG	1	SA	P	BM	
		D3-4T		VARX8"	✓							
		R1-1		36"X36"								
395												
	10-1	R2-1		30"X36"			10BWG	1	SA	P		
	10-2	R2-1		30"X36"			10BWG	1	SA	P		
396												
	11-1	W3-1		36"X36"			10BWG	1	SA	T		
397												
	12-1	W2-1		36"X36"	✓		10BWG	1	SA	T		
		W16-8P		VARX8"								
	12-2	R2-1		30"X36"			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/>

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 - For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).



SUMMARY OF SMALL SIGNS

SOSS SHEET 2 OF 6

FILE: slums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
4-16	DIST	COUNTY	SHEET NO.	
8-16	SAT	GUADALUPE	40	

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: 11/17/2023 6:17:31 PM
 FILE: P:\127\75\00\Design\Civil\General\1277500_SOSS_03.dgn

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"	
397											
	12-3	D3-4T		VARX8"							
		D3-4T		VARX8"							
		R1-1		36"X36"	✓		10BWG	1	SA	P	BM
		R1-3P		18"X6"							
	12-4	D3-4T		VARX8"							
		D3-4T		VARX8"							
		R1-1		36"X36"	✓		10BWG	1	SA	P	BM
		R1-3P		18"X6"							
	12-5	D3-4T		VARX8"							
		D3-4T		VARX8"							
		R1-1		36"X36"	✓		10BWG	1	SA	P	BM
		R1-3P		18"X6"							
	12-6	D3-4T		VARX8"							
		D3-4T		VARX8"							
		R1-1		36"X36"	✓		10BWG	1	SA	P	BM
		R1-3P		18"X6"							
	12-7	R2-1		30"X36"			10BWG	1	SA	P	
	12-8	W2-1		36"X36"	✓		10BWG	1	SA	T	
		W16-8P		VARX8"							
398											
	13-1	W3-1		36"X36"			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.
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 - For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).



SUMMARY OF SMALL SIGNS

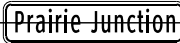
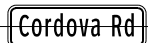





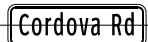



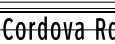


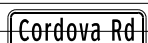

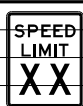
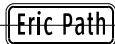


SOSS SHEET 3 OF 6

FILE: slums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
4-16	DIST	COUNTY	SHEET NO.	
8-16	SAT	GUADALUPE	41	

SUMMARY OF SMALL SIGNS

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DATE: 11/17/2023 6:17:32 PM
 FILE: P:\127\75\00\Design\Civil\General\1277500_SOSS_04.dgn

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" 1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels		
398	13-2	D3-4T		VARX8"								
		D3-4T		VARX8"	✓		10BWG	1	SA	P	BM	
		R1-1		36"X36"								
399	14-1	D3-4T		VARX8"								
		D3-4T		VARX8"	✓		10BWG	1	SA	P	BM	
		R1-1		36"X36"								
	14-2	D3-4T		VARX8"								
		D3-4T		VARX8"	✓		10BWG	1	SA	P	BM	
		R1-1		36"X36"								
	14-3	R2-1		30"X36"			10BWG	1	SA	P		
400	15-1	D3-4T		VARX8"								
		D3-4T		VARX8"	✓		10BWG	1	SA	P	BM	
		R1-1		36"X36"								
	15-2	D3-4T		VARX8"								
		D3-4T		VARX8"	✓		10BWG	1	SA	P	BM	
		R1-1		36"X36"								
	15-3	R2-1		30"X36"			10BWG	1	SA	P		
	15-4	D3-4T		VARX8"								
		D3-4T		VARX8"	✓		10BWG	1	SA	P	BM	
		R1-1		36"X36"								

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"

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SUMMARY OF SMALL SIGNS

SOSS SHEET 4 OF 6

FILE: slums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
4-16	DIST	COUNTY	SHEET NO.	
8-16	SAT	GUADALUPE	42	

SUMMARY OF SMALL SIGNS

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DATE: 11/17/2023 6:17:33 PM
 FILE: P:\127\75\00\Design\Civi\General\1277500_50SS_05.dgn

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"		1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels
402	17-1	R2-1		30"X36"			10BWG	1	SA	P		TY = TYPE TY N TY S
	17-2	W1-2R		36"X36"			10BWG	1	SA	T		
403	18-1	R2-1		30"X36"			10BWG	1	SA	P		
	18-2	D3-4T		VARX8"			10BWG	1	SA	P	BM	
		R1-1		36"X36"			10BWG	1	SA	P		
	18-3	W1-2L		36"X36"			10BWG	1	SA	T		
	18-4	W1-2L		36"X36"			10BWG	1	SA	T		
406	21-1	D3-4T		VARX8"			10BWG	1	SA	P	BM	
		R1-1		36"X36"			10BWG	1	SA	P		
	21-2	W1-2R		36"X36"			10BWG	1	SA	T		
	21-3	W1-2R		36"X36"			10BWG	1	SA	T		
	21-4	R3-8 LLS		48"X30"			10BWG	1	SA	T		
407	22-1	R2-1		30"X36"			10BWG	1	SA	P		
	22-2	R3-5R		30"X36"			10BWG	1	SA	P		
	22-3	R2-1		30"X36"			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"

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SUMMARY OF SMALL SIGNS



SOSS SHEET 5 OF 6

FILE: slums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
4-16	DIST	COUNTY	SHEET NO.	
8-16	SAT	GUADALUPE	43	

SUMMARY OF SMALL SIGNS

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DATE: 11/17/2023 6:17:34 PM
 FILE: P:\127\75\00\Des\ign\Civil\General\1277500_50SS_06.dgn

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"	
407	22-4	W1-2L		36"X36"			10BWG	1	SA	T	
22-5	M3-1 M1-6T M6-1 M3-3 M1-6T M6-1	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>NORTH</p> <div style="border: 1px solid black; padding: 2px;">123</div> <p>TEXAS</p> <div style="border: 1px solid black; padding: 2px;">←</div> </div> <div style="text-align: center;"> <p>SOUTH</p> <div style="border: 1px solid black; padding: 2px;">123</div> <p>TEXAS</p> <div style="border: 1px solid black; padding: 2px;">→</div> </div> </div>	24"X12" 36"X36" 21"X15" 24"X12" 36"X36" 21"X15"	✓			S80	1	SA	U	
408	23-1	R3-5R		30"X36"			10BWG	1	SA	P	

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
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Texas Department of Transportation

Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS SHEET 6 OF 6

FILE: slums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
4-16	DIST	COUNTY	SHEET NO.	
8-16	SAT	GUADALUPE	44	

TRAFFIC SIGNAL QUANTITY SUMMARY

Plotted on: 11/17/2023

ITEM	0416-6032	0416-6034	0618-6046	0618-6047	0618-6053	0618-6054	0620-6009	0621-6005	0624-6010
INTERSECTION	DRILL SHAFT (TRF SIG POLE) (36 IN)	DRILL SHAFT (TRF SIG POLE) (48 IN)	CONDT (PVC) (SCH 80) (2")	CONDT (PVC) (SCH 80) (2") (BORE)	CONDT (PVC) (SCH 80) (3")	CONDT (PVC) (SCH 80) (3") (BORE)	ELEC CONDR (NO. 6) BARE	TRAY CABLE (4 CONDR) (12 AWG)	GROUND BOX TY D (162922)W/APRON *
	LF	LF	LF	LF	LF	LF	LF	LF	EA
SH 46 AT CORDOVA RD	13	66	160	545	170	545	15	1080	5
SH 123 AT CORDOVA RD	52				50		15	750	1
TOTALS	65	66	160	545	220	545	30	1830	6

ITEM	0625-6002	0625-6004	0628-6188	0628-6190	0680-6002	0680-6004	0680-XX01*	0680-XX02*	0680-XX03
INTERSECTION	ZINC-COAT STL WIRE STRAND (3/16")	ZINC-COAT STL WIRE STRAND (5/16")	ELC SRV TY D 120/240 070(NS)SS(E)SP(O)	ELC SRV TY D 120/240 070(NS)SS(E)TP(O)	INSTALL HWY TRF SIG (ISOLATED)	REMOVING TRAFFIC SIGNALS	TS2 TYPE 2 SIGNAL CONTROLLER CABINET ASSEMBLY	TRAFFIC SIGNAL CONTROLLER (ECONOLITE COBALT)	MALFUNCTION MONITOR UNIT
	LF	LF	EA	EA	EA	EA	EA	EA	EA
SH 46 AT CORDOVA RD			1		1	1	1	1	1
SH 123 AT CORDOVA RD	520	520		1	1		1	1	1
TOTALS	520	520	1	1	2	1	2	2	2





ITEM	0680-XX04 *	0682-6001	0682-6002	0682-6003	0682-6004	0682-6005	0682-6006	0682-6018	0682-6054
INTERSECTION	COMMUNICATION PACKAGE	VEH SIG SEC (12")LED (GRN)	VEH SIG SEC (12")LED (GRN ARW)	VEH SIG SEC (12")LED (YEL)	VEH SIG SEC (12")LED (YEL ARW)	VEH SIG SEC (12")LED (RED)	VEH SIG SEC (12")LED (RED ARW)	PED SIG SEC (LED) (COUNTDOWN)	BACKPLATE W/REF BRDR (3 SEC) (VENT)ALUM
	EA	EA	EA	EA	EA	EA	EA	EA	EA
SH 46 AT CORDOVA RD	1	9	5	9	6	9	5	2	13
SH 123 AT CORDOVA RD	1	8	3	8	3	8	3		11
TOTALS	2	17	8	17	9	17	8	2	24

ITEM	0682-6055	0684-6009	0684-6012	0684-6080	0686-6008	0686-6051	0686-6059	0687-6001	0688-6001
INTERSECTION	BACKPLATE W/REF BRDR (4 SEC) (VENT)ALUM	TRF SIG CBL (TY A) (12 AWG) (4 CONDR)	TRF SIG CBL (TY A) (12 AWG) (7 CONDR)	TRF SIG CBL (TY C) (14 AWG) (2 CONDR)	INS TRF SIG PL AM (S)STR (TY B) LUM	INS TRF SIG PL AM (S) 1 ARM (48') LUM	INS TRF SIG PL AM (S) 1 ARM (55') LUM	PED POLE ASSEMBLY	PED DETECT PUSH BUTTON (APS) **
	EA	LF	LF	LF	EA	EA	EA	EA	EA
SH 46 AT CORDOVA RD	1	340	3090	330		1	3	1	2
SH 123 AT CORDOVA RD			2045		4				
TOTALS	1	340	5135	330	4	1	3	1	2

* SUBSIDIARY TO BID ITEM 0680
** SUBSIDIARY TO BID ITEM 0692

ITEM	0688-6003	6001-6001	6004-6031	6010-6010	6185-6002	6292-6001	6292-6002	6292-XX01**	6292-XX02
INTERSECTION	PED DETECTOR CONTROLLER UNIT	PORTABLE CHANGEABLE MESSAGE SIGN	ITS COM CBL (ETHERNET)	CCTV FIELD EQUIP (ANALOG) (INSTALL ONLY)	TMA STATIONARY	RVDS (PRESENCE DETECTION ONLY)	RVDS (ADVANCE DETECTION ONLY)	RVDS (PRESENCE DETECTION ONLY) COMM CABLE	**RVDS (ADVANCE DETECTION ONLY) COMM CABLE
	EA	DAY	LF	EA	DAY	EA	EA	LF	LF
SH 46 AT CORDOVA RD	1	30	120	1	30	4	2	1070	515
SH 123 AT CORDOVA RD		30			15	4	2	1500	750
TOTALS	1	60	120	1	45	8	4	2570	1265

Design File name: P:\127\75\00\Design\Civil\Summary\1277500_tsig_0Ty.dgn

REV. NO.	DATE	DESCRIPTION	BY
 <p>PAPE-DAWSON ENGINEERS</p> <p>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</p>			
 <p>SEGUIN TEXAS</p> <p>It's real.</p>		 <p>THE STATE OF TEXAS GUADALUPE COUNTY</p>	
 <p>Texas Department of Transportation © 2023</p>			
<p>TRAFFIC SIGNAL QUANTITY SUMMARY</p>			
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
CHK DGN:	6	TEXAS	
DWG:	DIST.:	COUNTY:	CONT. NO. SECT. NO. JOB NO. SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915 46 052 45





SW3P QUANTITY SUMMARY

Plotted on: 11/17/2023

SHT NO	ITEM	0164-6039	0164-6041	0164-6043	0168-6001	0506-6002	0506-6011	0506-6020
	TCP SHEETS	DRILL SEEDING (PERM) (URBAN) (CLAY)	DRILL SEEDING (TEMP) (WARM)	DRILL SEEDING (TEMP) (COOL)	VEGETATIVE WATERING	ROCK FILTER DAMS (INSTALL) (TY 2)	ROCK FILTER DAMS (REMOVE)	CONSTRUCTION EXITS (INSTALL) (TY)
		SY	SY	SY	MG	LF	LF	SY
450	SHEET 1 OF 24	3240	810	810	75.90			160
451	SHEET 2 OF 24	3004	751	751	70.30	19	19	
452	SHEET 3 OF 24	6819	1705	1705	159.60	334	334	
453	SHEET 4 OF 24	7849	1962	1962	183.70	70	70	
454	SHEET 5 OF 24	5499	1375	1375	128.70	20	20	
455	SHEET 6 OF 24	5157	1289	1289	120.70	20	20	
456	SHEET 7 OF 24	6241	1560	1560	146.10	158	158	
457	SHEET 8 OF 24	5255	1314	1314	123.00			
458	SHEET 9 OF 24	6905	1726	1726	161.60	86	86	
459	SHEET 10 OF 24	7348	1837	1837	172.00	170	170	
460	SHEET 11 OF 24	8277	2069	2069	193.70	27	27	
461	SHEET 12 OF 24	7357	1839	1839	172.20	129	129	
462	SHEET 13 OF 24	5400	1350	1350	126.40			
463	SHEET 14 OF 24	5120	1280	1280	119.90			
464	SHEET 15 OF 24	5070	1267	1267	118.70			
465	SHEET 16 OF 24	7047	1762	1762	164.90			
466	SHEET 17 OF 24	8227	2057	2057	192.60			
467	SHEET 18 OF 24	6183	1546	1546	144.70			
468	SHEET 19 OF 24	6585	1646	1646	154.10			
469	SHEET 20 OF 24	5947	1487	1487	139.20			
470	SHEET 21 OF 24	6996	1749	1749	163.80			
471	SHEET 22 OF 24	4278	1070	1070	100.20	223	223	160
472	SHEET 23 OF 24	1288	322	322	30.20	63	63	160
473	SHEET 24 OF 24	745	186	186	17.50			160
	TOTALS	135837	33959	33959	3179.70	1318	1318	640

Design File name: P:\127\75\00\Design\Civil\Summary\1277500_SW3P_SUMM01.dgn

SHT NO	ITEM	0506-6024	0506-6038	0506-6039	0506-6040	0506-6043
	TCP SHEETS	CONSTRUCTION EXITS (REMOVE)	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)	BIODEG EROSN CONT LOGS (INSTL) (8")	BIODEG EROSN CONT LOGS (REMOVE)
		SY	LF	LF	LF	LF
450	SHEET 1 OF 24	160	333	333		
451	SHEET 2 OF 24		459	459	28	28
452	SHEET 3 OF 24		796	796	84	84
453	SHEET 4 OF 24		991	991	33	33
454	SHEET 5 OF 24		980	980	42	42
455	SHEET 6 OF 24		929	929	262	262
456	SHEET 7 OF 24		822	822	124	124
457	SHEET 8 OF 24		1000	1000	42	42
458	SHEET 9 OF 24		1025	1025	112	112
459	SHEET 10 OF 24		895	895	84	84
460	SHEET 11 OF 24		980	980	56	56
461	SHEET 12 OF 24		823	823	172	172
462	SHEET 13 OF 24		1005	1005	172	172
463	SHEET 14 OF 24		908	908	134	134
464	SHEET 15 OF 24		857	857	134	134
465	SHEET 16 OF 24		990	990	105	105
466	SHEET 17 OF 24		939	939	67	67
467	SHEET 18 OF 24		294	294	56	56
468	SHEET 19 OF 24		437	437		
469	SHEET 20 OF 24		463	463	28	28
470	SHEET 21 OF 24		150	150	14	14
471	SHEET 22 OF 24	160	288	288	56	56
472	SHEET 23 OF 24	160				
473	SHEET 24 OF 24	160				
	TOTALS	640	16364	16364	1805	1805

REV. NO.	DATE	DESCRIPTION	BY
 <p>PAPE-DAWSON ENGINEERS</p> <p>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</p>			
			
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<p>SW3P QUANTITY SUMMARY</p>			
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
CHK DGN:	6	TEXAS	
DWG:	DIST.:	COUNTY:	CONT. NO. SECT. NO. JOB NO. SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915 46 052 46

DETOURS, BARRICADES, WARNING SIGNS, SEQUENCE OF WORK, ETC.

THE CONTRACTORS ATTENTION IS DIRECTED TO THE REQUIREMENTS OF ITEM 7, "LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC", OF THE STANDARD SPECIFICATIONS. IN ADDITION TO THESE REQUIREMENTS, THE FOLLOWING PROVISIONS SHALL ALSO GOVERN ON THIS CONTRACT:

1. GENERAL

1. TRAFFIC MUST BE HANDLED THROUGHOUT THE PROJECT DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING A SAFE AND COMFORTABLE PASSAGE FOR VEHICULAR AND PEDESTRIAN TRAFFIC WITH MINIMAL INCONVENIENCE TO THE PUBLIC, AS SHOWN IN THE PLANS OR AS DIRECTED.
2. THE CONTRACTOR MAY PROPOSE/RECOMMEND MODIFICATIONS TO THE SEQUENCE OF WORK FOR CONSIDERATION BY THE ENGINEER, ANY MAJOR RECOMMENDED MODIFICATION BY THE CONTRACTOR SHALL INCLUDE ANY CHANGES TO THE VARIOUS BID ITEMS, IMPACT TO TRAFFIC, EFFECT OF OVERALL PROJECT IN TIME AND COST, ETC. IF THIS PROPOSAL IS IMPLEMENTED, THE CONTRACTOR WILL BE RESPONSIBLE FOR DEVELOPING DETAILED PLAN SHEETS TO BE SEALED BY A LICENSED PROFESSIONAL ENGINEER FOR INCLUSION WITH THE CHANGE ORDER. THE CONTRACTOR CANNOT PROCEED WITH ANY CONSTRUCTION OPERATIONS BASED ON A REVISED PHASE/SEQUENCE UNTIL WRITTEN APPROVAL IS OBTAINED FROM BEXAR COUNTY. IF AT ANY TIME DURING CONSTRUCTION THE CONTRACTOR'S PROPOSED PLAN OF OPERATION FOR HANDLING TRAFFIC DOES NOT PROVIDE FOR SAFE AND COMFORTABLE MOVEMENT, THE CONTRACTOR WILL IMMEDIATELY CHANGE THEIR OPERATION TO CORRECT THE UNSATISFACTORY CONDITION.
3. DO NOT STORE ANY CONSTRUCTION MATERIAL OR EQUIPMENT AT ANY LOCATION THAT WILL CONSTITUTE A HAZARD AND WILL ENDANGER TRAFFIC.
4. THE CONTRACTOR WILL PROVIDE ADVANCE NOTIFICATION TO THE CITY OF SEGUIN IMPENDING/UPCOMING LANE CLOSURES FOR ALL TEMPORARY AND/OR PERMANENT LANE, RAMP, CONNECTOR, FRONTAGE, SHOULDER, ETC. CLOSURES OR DETOURS.
5. ACCESS TO ADJOINING PROPERTY MUST BE MAINTAINED AT ALL TIMES.
6. TEMPORARY DRAINAGE IS THE RESPONSIBILITY OF THE CONTRACTOR.
7. AT NO TIME SHALL TWO CONSECUTIVE INTERSECTING ROADWAYS BE CLOSED AT ONE TIME DURING CONSTRUCTION OR OVERLAY OPERATIONS.
8. UNLESS OTHERWISE NOTED IN THE PLANS AND/OR AS DIRECTED BY THE CITY OF SEGUIN, DAILY LANE CLOSURES SHALL BE LIMITED ACCORDING TO THE FOLLOWING RESTRICTIONS:
 - NIGHTTIME: ASK ENGINEER AND CONSTRUCTION ENGINEER (WITH UNIFORMED OFF DUTY LAW ENFORCEMENT OFFICERS)
 - WEEKEND CLOSURES WHEN APPROVED BY THE ENGINEER: ASK ENGINEER AND CONSTRUCTION ENGINEER.
 - NO LANE CLOSURES WILL BE PERMITTED FOR THE FOLLOWING DATES:
 - BETWEEN DECEMBER 15 AND JANUARY 1.
 - WEDNESDAY BEFORE THANKSGIVING THRU THE SUNDAY AFTER THANKSGIVING.
 - SATURDAY AND SUNDAY BEFORE MEMORIAL DAY AND LABOR DAY.
 - SATURDAY OR SUNDAY WHEN JULY 4 FALLS ON A FRIDAY OR MONDAY.
9. REMOVAL AND DISPOSAL OF EXISTING ABANDONED UTILITIES (EITHER PERVIOUSLY ABANDONED OR ABANDONED DURING THIS PROJECT) REQUIRED TO SUPPORT THIS PROJECT SHALL BE PERFORMED AND PAID FOR AS INDICATED ON THE PLANS.
10. COORDINATE WITH ADJACENT PROJECTS.
11. COVER PERMANENT SIGNS IF NOT USED OR APPLICABLE TO CURRENT OR SUBSEQUENT PHASES. THIS IS SUBSIDIARY TO ITEM 502.
12. ADVANCE WARNING SIGNS AND LANE CLOSURES MUST BE MOVED UP PERIODICALLY IN ORDER TO KEEP UP WITH THE MOVING WORK ZONE. AS WORK PROGRESSES, THE LANE CLOSURE SIGNING AND APPROPRIATE BARRICADES MUST FOLLOW APPLICABLE STANDARDS.

2. SAFETY

1. THE CONTRACTOR WILL PROVIDE, CONSTRUCT AND MAINTAIN BARRICADES AND SIGNS IN ACCORDANCE WITH STATE STANDARDS BC (1-12)-21. ANY SIGNS REQUIRED THAT ARE NOT DETAILED IN THE STANDARD SHEETS SHALL BE IN CONFORMANCE WITH THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" AND THE "STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS."
2. BARRICADES AND WARNING SIGNS SHALL BE PLACED AS INDICATED ON THE PLANS. THIS SHALL BE CONSIDERED THE MINIMUM REQUIRED TO PROVIDE FOR THE SAFETY OF TRAFFIC DURING CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN OTHER SUCH BARRICADES AND SIGNS DEEMED NECESSARY BY THE ENGINEER OR AS DIRECTED BY FIELD CONDITIONS TO PROVIDE FOR THE PASSAGE OF TRAFFIC IN SAFETY AT ALL TIMES.
3. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN FLAGGERS AS DIRECTED/APPROVED BY THE CITY OF SEGUIN, AT SUCH POINTS, AND FOR SUCH PERIODS OF TIME AS MAY BE REQUIRED, TO PROVIDE FOR THE SAFETY OF THE TRAVELING PUBLIC AND THE CONTRACTORS PERSONNEL.
4. THE CONTRACTOR SHALL KEEP THE ROADWAY CLEAN AND FREE OF DIRT OR OTHER MATERIALS DURING HAULING OPERATIONS. IF THE CONTRACTOR DOES NOT MAINTAIN A CLEAN ROADWAY, THEY SHALL CEASE ALL CONSTRUCTION OPERATIONS, WHEN DIRECTED BY THE CITY OF SEGUIN, TO CLEAN THE ROADWAY TO THE SATISFACTION OF THE CITY.

3. HAULING EQUIPMENT

1. THE USE OF RUBBER-TIRED EQUIPMENT WILL BE REQUIRED FOR MOVING DIRT OR OTHER MATERIALS ALONG OR ACROSS PAVEMENT SURFACES. WHERE THE CONTRACTOR DESIRES TO MOVE ANY EQUIPMENT NOT LICENSED FOR OPERATION ON PUBLIC HIGHWAYS, ON OR ACROSS PAVEMENT, THEY SHALL PROTECT THE PAVEMENT FROM DAMAGE AS DIRECTED/APPROVED BY THE CITY.
2. THROUGHOUT CONSTRUCTION OPERATIONS, THE CONTRACTOR WILL BE REQUIRED TO CONDUCT THEIR HAULING OPERATIONS IN A MANNER SUCH THAT VEHICLES WILL NOT HAUL OVER PREVIOUSLY RECOMPACTED SUBGRADE OR COMPACTED BASE MATERIAL, EXCEPT IN SHORT SECTIONS FOR DUMPING MANIPULATIONS.

4. FINAL CLEAN UP

UPON COMPLETION OF THE WORK AND BEFORE FINAL ACCEPTANCE, THE CONTRACTOR SHALL CLEAR AND REMOVE FROM THE SITE ALL SURPLUS AND DISCARDED MATERIALS AND DEBRIS OF EVERY KIND AND LEAVE THE ENTIRE PROJECT IN A SMOOTH, NEAT AND SIGHTLY CONDITION.

5. PAYMENT





ALL BARRICADES, SIGNS, AND FLAGGERS SHALL BE SUBSIDIARY TO ITEM 502 BARRICADES, SIGNS AND TRAFFIC HANDLING. ALL EROSION AND SEDIMENT CONTROL DEVICES WILL BE PAID FOR UNDER ITEM 506 TEMPORARY EROSION, SEDIMENTATION, AND ENVIRONMENTAL CONTROLS. ALL WORK ZONE PAVEMENT MARKINGS WILL BE PAID FOR UNDER ITEM 662 WORK ZONE PAVEMENT MARKINGS. ALL OTHER WORK AND MATERIALS SHALL BE SUBSIDIARY TO THE VARIOUS BID ITEMS UNLESS OTHERWISE INDICATED IN THE PLANS.

DESIGN

INTERIM REVIEW	
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.	
ENGINEER:	STEVEN J. TATE
P.E. SERIAL NO:	131443
DATE:	11/17/2023

APPROVAL

INTERIM REVIEW	
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ENGINEER:	JOHN A. TYLER
P.E. SERIAL NO:	105193
DATE:	11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
 <p>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</p>			
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CORDOVA RD			
TRAFFIC CONTROL PLAN GENERAL NOTES			
DON:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.
CHK DGN:	6	TEXAS	
DWG:	DIST.	COUNTY	CONT. NO.
CHK DWG:	SAT	GUADALUPE	0915
			SECT. NO.
			46
			JOB NO.
			052
			HIGHWAY NO.
			CORDOVA
			SHEET NO.
			47

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\1277500_TCP_GEN.dgn

TRAFFIC CONTROL PLAN SEQUENCE OF WORK

- (1) WORK ZONES FOR THIS PROJECT SHALL BE LIMITED TO TWO SEPARATE AREAS:
 - SH 46 TO HUBER RD
 - HUBER RD TO SH 123
 WORK SHALL BE COMPLETE IN THE PREVIOUS WORK ZONE PRIOR TO BEGINNING WORK IN THE NEXT, UNLESS OTHERWISE APPROVED BY THE ENGINEER OR CITY OF SEGUIN.
- (2) THIS PROJECT WILL BE CONSTRUCTED IN (3) PHASES. BEFORE THE COMMENCEMENT OF EACH PHASE, INSTALL ADVANCE WARNING SIGNS, TEMPORARY SIGNS AND BARRICADES AS SHOWN ON THE PLANS AND/OR AS DIRECTED/APPROVED BY THE ENGINEER. DAILY LANE CLOSURES WILL BE USED IN ACCORDANCE WITH STATE TCP STANDARDS. DROP OFF CONDITIONS OF GREATER THAN 2" MUST HAVE A 3:1 SLOPE AT THE END OF EACH DAY, AS WELL AS THROUGHOUT THE PROJECT WHERE ACCESS TO ADJACENT PROPERTIES IS ALLOWED TO DRIVEWAYS AND SIDE STREETS.
- (3) PREPARING ROW / REMOVAL OF EXISTING ITEMS TO BE DONE ONLY IN AREAS WHERE WORK IS OCCURRING, AS PER THE PHASES NOTED BELOW.
- (4) PLANING, SURFACE TREATMENTS AND OVERLAYS SHALL BE PERFORMED IN THE DIRECTION OF TRAFFIC. BEGIN SURFACE CONSTRUCTION ON HIGH SIDE OF ROAD TO AVOID WATER PONDING ISSUES.
- (5) THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE REQUIREMENTS OF ITEM 7, "LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC" AND ITEM 502, "BARRICADES, SIGNS, AND TRAFFIC HANDLING", OF THE STANDARD SPECIFICATIONS, AND TO THE GENERAL NOTES.
- (6) A BRIEF DESCRIPTION OF THESE PHASES ARE AS FOLLOWS:

PHASE 1

- A) SET ADVANCED WARNING SIGNS IN ACCORDANCE WITH TXDOT BC STANDARDS
- B) SET EROSION CONTROL MEASURES AS SHOWN ON SW3P LAYOUTS AND AS DIRECTED BY THE ENGINEER

CONSTRUCT TEMP WIDENING

- A) USE TXDOT TCP STANDARD TCP(2-2)-18 FOR ONE-LANE TWO-WAY TRAFFIC CONTROL
- B) DURING OFF-PEAK HOURS, CONSTRUCT TEMPORARY DRAINAGE AND WIDENING TO THE LIMITS SHOWN ON THE PHASE ONE LAYOUTS

STEP 1- PROPOSED PAVEMENT, DRAINAGE, AND SUP

- A) INSTALL WORK ZONE PAVEMENT MARKINGS AS SHOWN AND SHIFT TRAFFIC INTO THE PHASE ONE CONFIGURATION
- B) SET BARRIER, CHANNELIZING DEVICES, AND BARRICADES AS SHOWN AND AS DIRECTED BY THE ENGINEER.
- C) CONSTRUCT TEMPORARY SHORING, PROPOSED DRAINAGE STRUCTURES, PAVEMENT, CURB/CURB & GUTTER, SUP, AND DITCHES TO THE LIMITS SHOWN IN THE PLANS. DO NOT CONSTRUCT THE FINAL LIFT OF HMA UNTIL PHASE 3.

STEP 2- INTERSECTIONS AND TRANSITIONAL AREAS

- SH 46
- A) REFERENCING THE PHASE I STEP II-SH46 SHEETS, CLOSE THE OUTSIDE NORTHBOUND SH 46 SHOULDER. SET PTCB AND CRASH CUSHIONS
 - B) CONSTRUCT SH 46 PAVEMENT WIDENING AND SH 46 AND CORDOVA RD INTERSECTION
 - C) CONSTRUCT TRAFFIC SIGNAL AND BAG SIGNAL HEADS
 - D) DO NOT CONSTRUCT SH 46 SEAL COAT OR FINAL LIFT OF HMA ON CORDOVA UNTIL PHASE 3

HUBER RD

- A) REFERENCING THE PHASE I STEP II-HUBER RD SHEETS, CLOSE HUBER RD AND DETOUR TRAFFIC AS SHOWN ON DETOUR LAYOUTS
- B) CONSTRUCT HUBER RD PAVEMENT WIDENING AND HUBER RD AND CORDOVA RD INTERSECTION
- C) DO NOT CONSTRUCT FINAL LIFT OF HMA UNTIL PHASE 3

TRANSITIONAL AREAS

- A) REFERENCING THE PHASE I STEP II SHEETS, INSTALL WORK ZONE PAVEMENT MARKINGS AS SHOWN AND SHIFT TRAFFIC INTO STEP II CONFIGURATION
- B) SET BARRIER, CHANNELIZING DEVICES, AND BARRICADES AS SHOWN AND AS DIRECTED BY THE ENGINEER.
- C) CONSTRUCT TEMPORARY SHORING, PROPOSED DRAINAGE STRUCTURES, PAVEMENT, CURB/CURB & GUTTER, SUP, AND DITCHES TO THE LIMITS SHOWN IN THE PLANS
- D) ACCELERATED CONSTRUCTION AREA TO BE CONSTRUCTED UTILIZING ONE-LANE TWO-WAY TRAFFIC CONTROL ON CORDOVA CROSSING DURING OFF-PEAK HOURS
- E) DO NOT CONSTRUCT FINAL LIFT OF HMA UNTIL PHASE 3

PHASE 2

SIGNAL ACTIVATION

- A) SET PCMB ON NORTHBOUND AND SOUTHBOUND SH 46 WITH MESSAGE WARNING OF NEW SIGNAL
- B) WITH EXISTING CORDOVA RD AND SH 46 SIGNAL IN USE, FLASH NEW CORDOVA RD AND SH 46 SIGNAL FOR 14 DAYS
- C) THE DAY NEW INTERSECTION IS OPENED, ACTIVE NEW SIGNAL AND BAG EXISTING SIGNAL HEADS

PROPOSED PAVEMENT, DRAINAGE, AND SUP

- A) ADJUST ADVANCED WARNING SIGNS IN ACCORDANCE WITH TXDOT BC STANDARDS
- B) SET EROSION CONTROL MEASURES AS SHOWN ON SW3P LAYOUTS AND AS DIRECTED BY THE ENGINEER
- C) INSTALL WORK ZONE PAVEMENT MARKINGS AS SHOWN AND SHIFT TRAFFIC INTO THE PHASE TWO CONFIGURATION
- D) SET BARRIER, CHANNELIZING DEVICES, AND BARRICADES AS SHOWN AND AS DIRECTED BY THE ENGINEER.
- E) CONSTRUCT PROPOSED DRAINAGE STRUCTURES, PAVEMENT, CURB/CURB & GUTTER, SUP, AND DITCHES TO THE LIMITS SHOWN IN THE PLANS. DO NOT CONSTRUCT THE FINAL LIFT OF HMA UNTIL PHASE 3.
- F) OBLITERATE EXISTING ROADBED TO LIMITS SHOWN IN THE PLANS

INTERSECTIONS

HUBER RD

- A) CLOSE HUBER RD AND DETOUR TRAFFIC AS SHOWN ON DETOUR LAYOUTS
- B) CONSTRUCT HUBER RD PAVEMENT WIDENING AND HUBER RD AND CORDOVA RD INTERSECTION
- C) DO NOT CONSTRUCT FINAL LIFT OF HMA UNTIL PHASE 3

OTHER INTERSECTIONS

- A) FOR RESIDENTIAL DEVELOPMENTS WITH MULTIPLE ACCESS POINTS, CONSTRUCT ONE ENTRANCE AT A TIME WHILE MAINTAINING ACCESS.
- B) FOR RESIDENTIAL DEVELOPMENTS WITH ONE ACCESS POINT OR COUNTY RDS, CONSTRUCT INTERSECTIONS WHILE MAINTAINING ACCESS OR UTILIZING DETOUR LAYOUTS PROVIDED

PHASE 3

- A) ADJUST ADVANCED WARNING SIGNS IN ACCORDANCE WITH TXDOT BC STANDARDS
- B) SET EROSION CONTROL MEASURES AS SHOWN ON SW3P LAYOUTS AND AS DIRECTED BY THE ENGINEER

STEP 1- MEDIAN AND CENTER LEFT-TURN LANES

- A) SET CHALLENGING DEVICES AND CLOSE INSIDE EASTBOUND AND WESTBOUND LANES
- B) CONSTRUCT PROPOSED MEDIANS AND LEFT-TURN LANES

STEP 2- FINAL OVERLAY AND PROJECT COMPLETION

- A) PLACE SHORT-TERM TABS IN THE FINAL PAVEMENT MARKING CONFIGURATION
- B) USING MOBILE OPERATION PLACE FINAL HMA LIFT
- C) PLACE SHORT-TERM TABS IN THE FINAL PAVEMENT MARKING CONFIGURATION
- D) PLACE FINAL PAVEMENT MARKINGS AS SHOWN IN THE PLANS
- E) INSTALL PROPOSED SIGNS AND PERMANENT SEEDING
- F) PERFORM FINAL CLEANUP

DESIGN

INTERIM REVIEW
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ENGINEER: <u>STEVEN J. TATE</u>
P.E. SERIAL NO: <u>131443</u>
DATE: <u>11/17/2023</u>

APPROVAL

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ENGINEER: <u>JOHN A. TYLER</u>
P.E. SERIAL NO: <u>105193</u>
DATE: <u>11/17/2023</u>

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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CORDOVA RD
**TRAFFIC CONTROL PLAN
 SEQUENCE OF WORK**

SHEET 1 OF 1

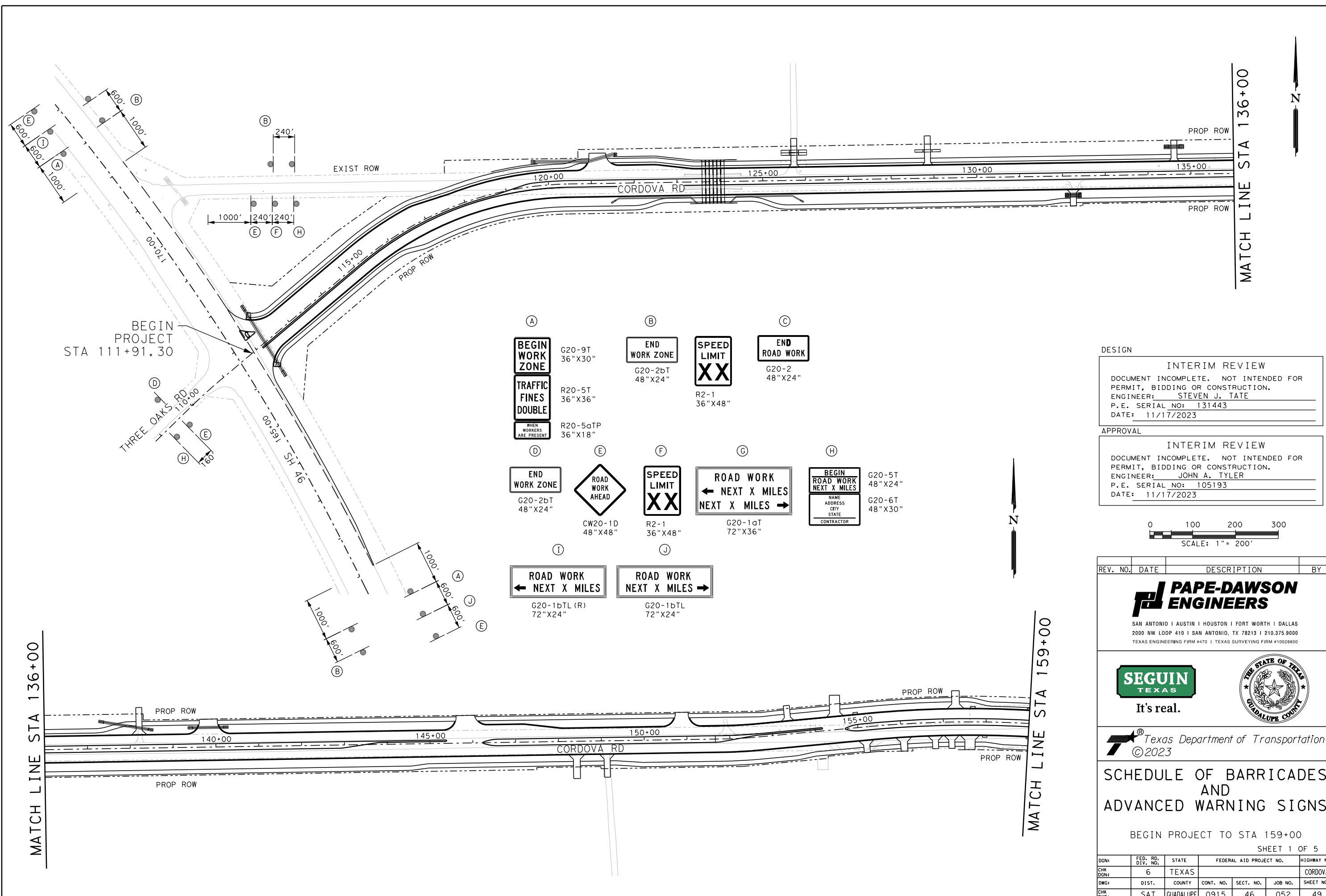
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:			HIGHWAY NO.:
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	48

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\1277500_NARR.dgn

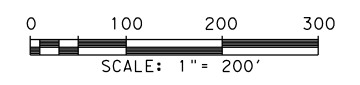
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REV. NO.	DATE	DESCRIPTION	BY

Pape-Dawson Engineers
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS
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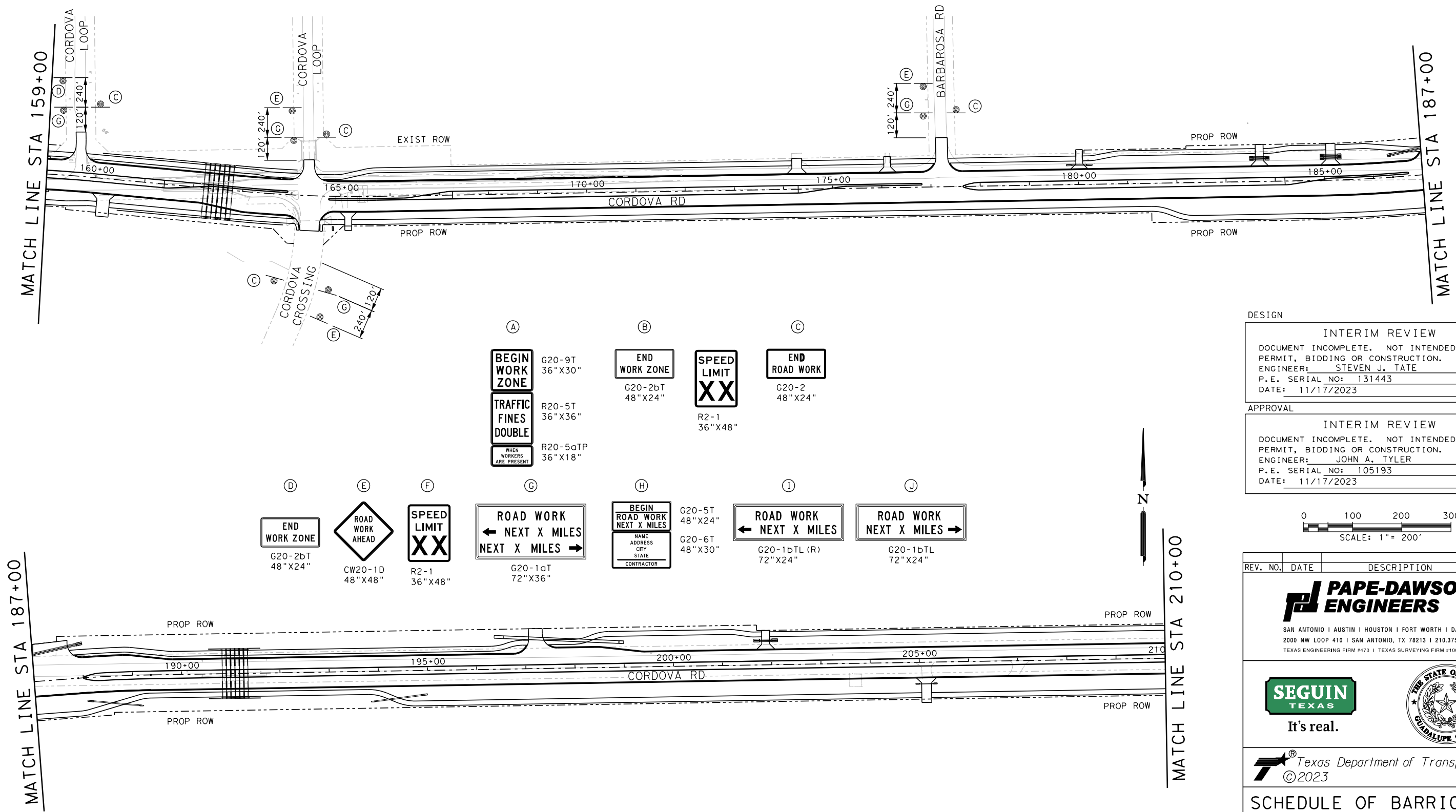
Texas Department of Transportation
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SCHEDULE OF BARRICADES AND ADVANCED WARNING SIGNS

BEGIN PROJECT TO STA 159+00
 SHEET 1 OF 5

CHK	DON:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
DGN:		6	TEXAS		CORDOVA		
CHK	DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
DWG:		SAT	GUADALUPE	0915	46	052	49

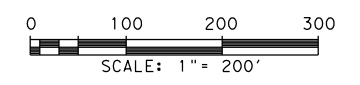
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- | | | |
|--|--|--|
| (A) | (B) | (C) |
| BEGIN WORK ZONE
G20-9T
36" X 30" | END WORK ZONE
G20-2bT
48" X 24" | SPEED LIMIT XX
R2-1
36" X 48" |
| TRAFFIC FINES DOUBLE
R20-5T
36" X 36" | | END ROAD WORK
G20-2
48" X 24" |
| WHEN WORKERS ARE PRESENT
R20-5aTP
36" X 18" | | |
- | | | | | | | |
|--|--|--|--|--|--|--|
| (D) | (E) | (F) | (G) | (H) | (I) | (J) |
| END WORK ZONE
G20-2bT
48" X 24" | ROAD WORK AHEAD
CW20-1D
48" X 48" | SPEED LIMIT XX
R2-1
36" X 48" | ROAD WORK
← NEXT X MILES
NEXT X MILES →
G20-1aT
72" X 36" | BEGIN ROAD WORK
NEXT X MILES
NAME
ADDRESS
CITY
STATE
CONTRACTOR | ROAD WORK
← NEXT X MILES
G20-5T
48" X 24"
G20-6T
48" X 30" | ROAD WORK
NEXT X MILES →
G20-1bTL (R)
72" X 24"
G20-1bTL
72" X 24" |

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 ENGINEER: STEVEN J. TATE
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PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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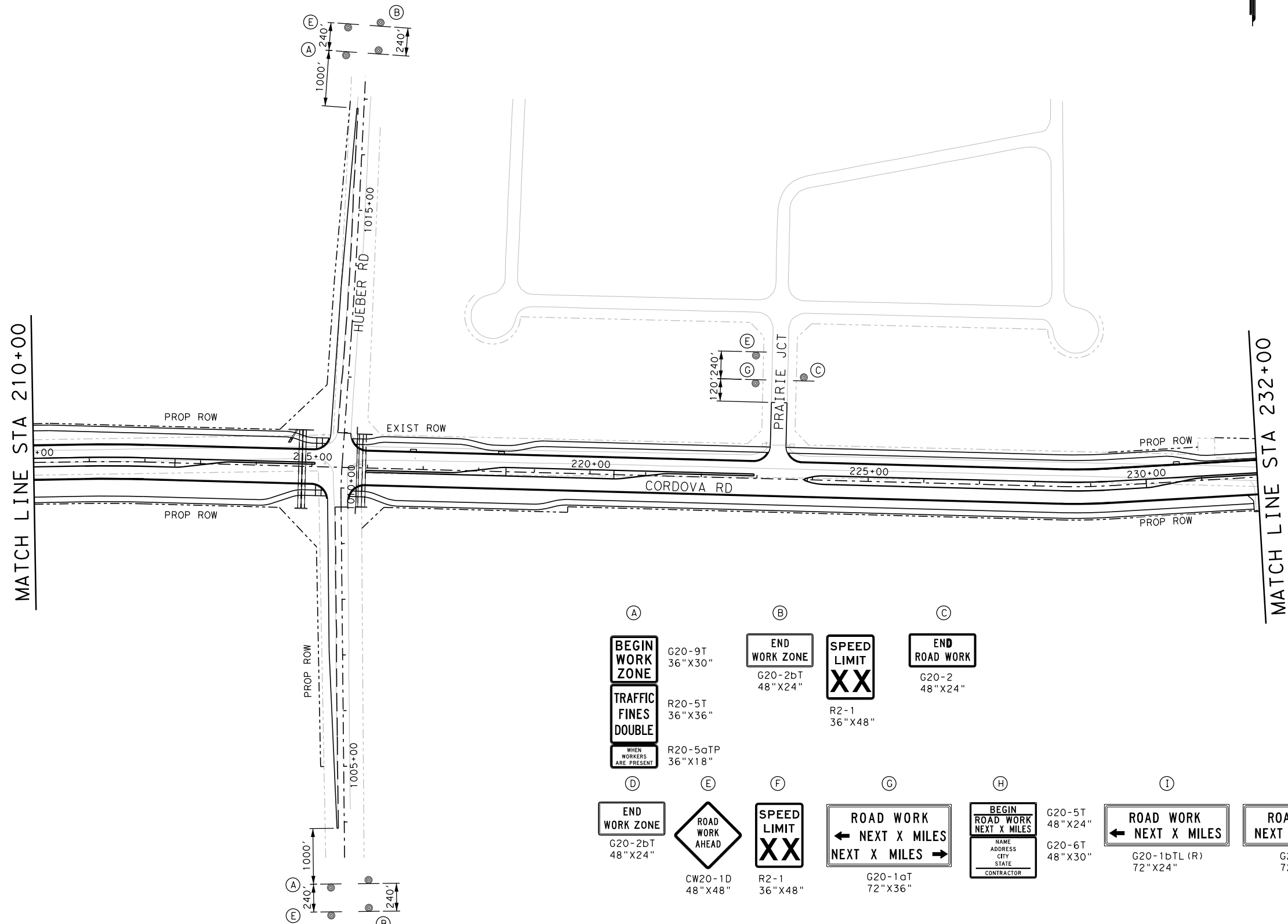
Texas Department of Transportation
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SCHEDULE OF BARRICADES AND ADVANCED WARNING SIGNS

STA 159+00 TO STA 210+00
 SHEET 2 OF 5

CHK	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
DGN:	6	TEXAS		CORDOVA		
CHK	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
DWG:	SAT	GUADALUPE	0915	46	052	50

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- | | | | | | | | | | |
|---|--|---------------------|----------------------|------------------------|---------------------|------------------------|--|-----------------------------|-------------------------|
| (A) | (B) | (C) | (D) | (E) | (F) | (G) | (H) | (I) | (J) |
|
G20-9T
36"X30"

R20-5T
36"X36"

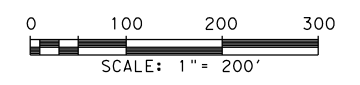
R20-5aTP
36"X18" |
G20-2bT
48"X24"

CW20-1D
48"X48" |
R2-1
36"X48" |
G20-2
48"X24" |
G20-2bT
48"X24" |
R2-1
36"X48" |
G20-1aT
72"X36" |
G20-5T
48"X24"

G20-6T
48"X30" |
G20-1bTL (R)
72"X24" |
G20-1bTL
72"X24" |

DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			

It's real.

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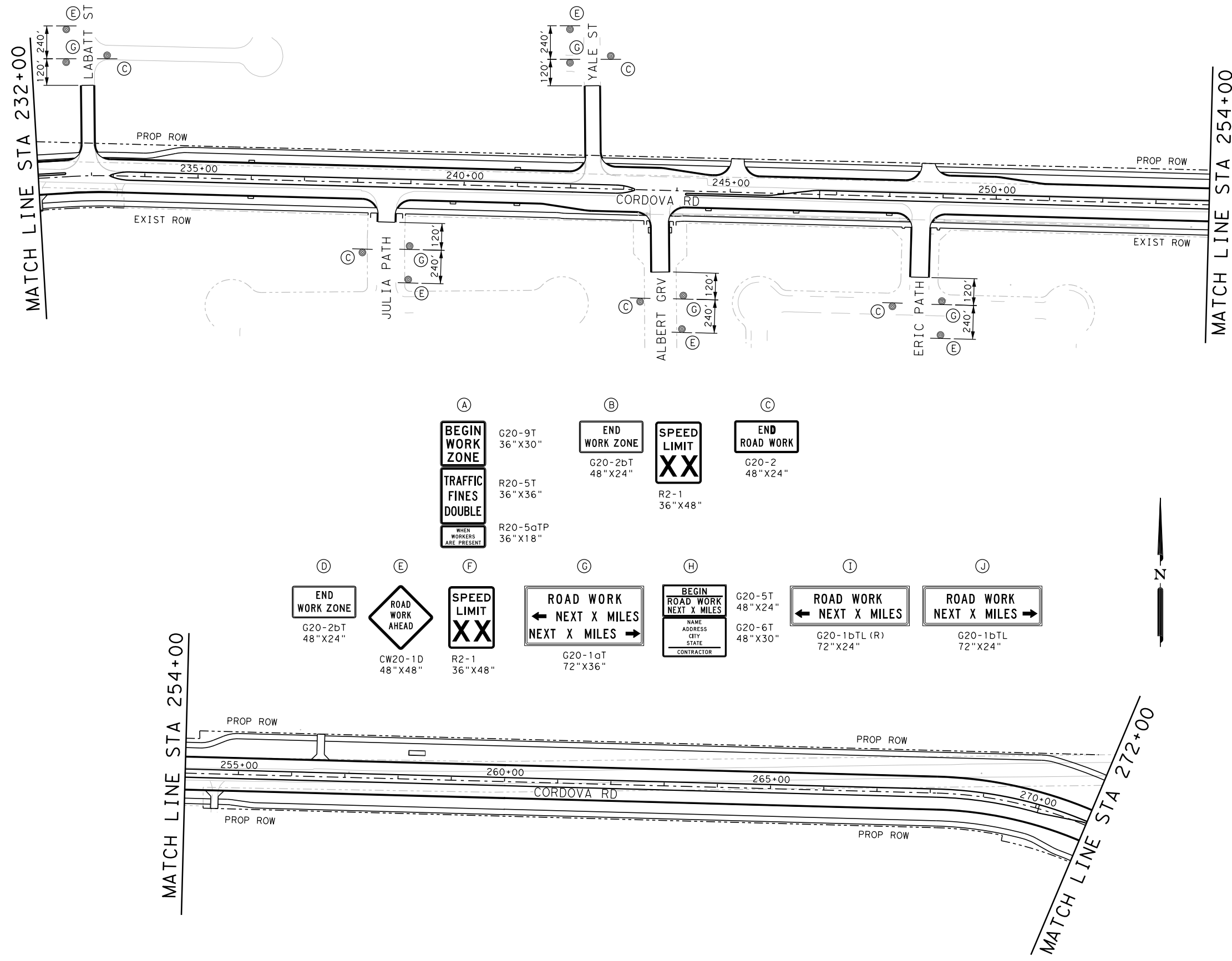
SCHEDULE OF BARRICADES AND ADVANCED WARNING SIGNS

STA 210+00 TO STA 232+00

SHEET 3 OF 5

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:			HIGHWAY NO.:
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	51

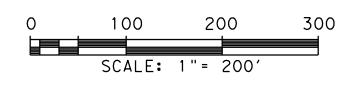
Design File name: P:\127\75\00\Design\Civil\TCP\1277500_AdvancedWarning.dgn



- (A) **BEGIN WORK ZONE** G20-9T 36"X30"
- (B) **END WORK ZONE** G20-2bT 48"X24"
- (C) **END ROAD WORK** G20-2 48"X24"
- (D) **END WORK ZONE** G20-2bT 48"X24"
- (E) **ROAD WORK AHEAD** CW20-1D 48"X48"
- (F) **TRAFFIC FINES DOUBLE** R20-5T 36"X36"
- (G) **ROAD WORK NEXT X MILES** G20-1aT 72"X36"
- (H) **SPEED LIMIT XX** R2-1 36"X48"
- (I) **ROAD WORK NEXT X MILES** G20-5T 48"X24"
- (J) **ROAD WORK NEXT X MILES** G20-6T 48"X30"
- (K) **TRAFFIC FINES DOUBLE** R20-5aTP 36"X18"
- (L) **SPEED LIMIT XX** R2-1 36"X48"
- (M) **ROAD WORK NEXT X MILES** G20-1bTL(R) 72"X24"
- (N) **ROAD WORK NEXT X MILES** G20-1bTL 72"X24"

DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

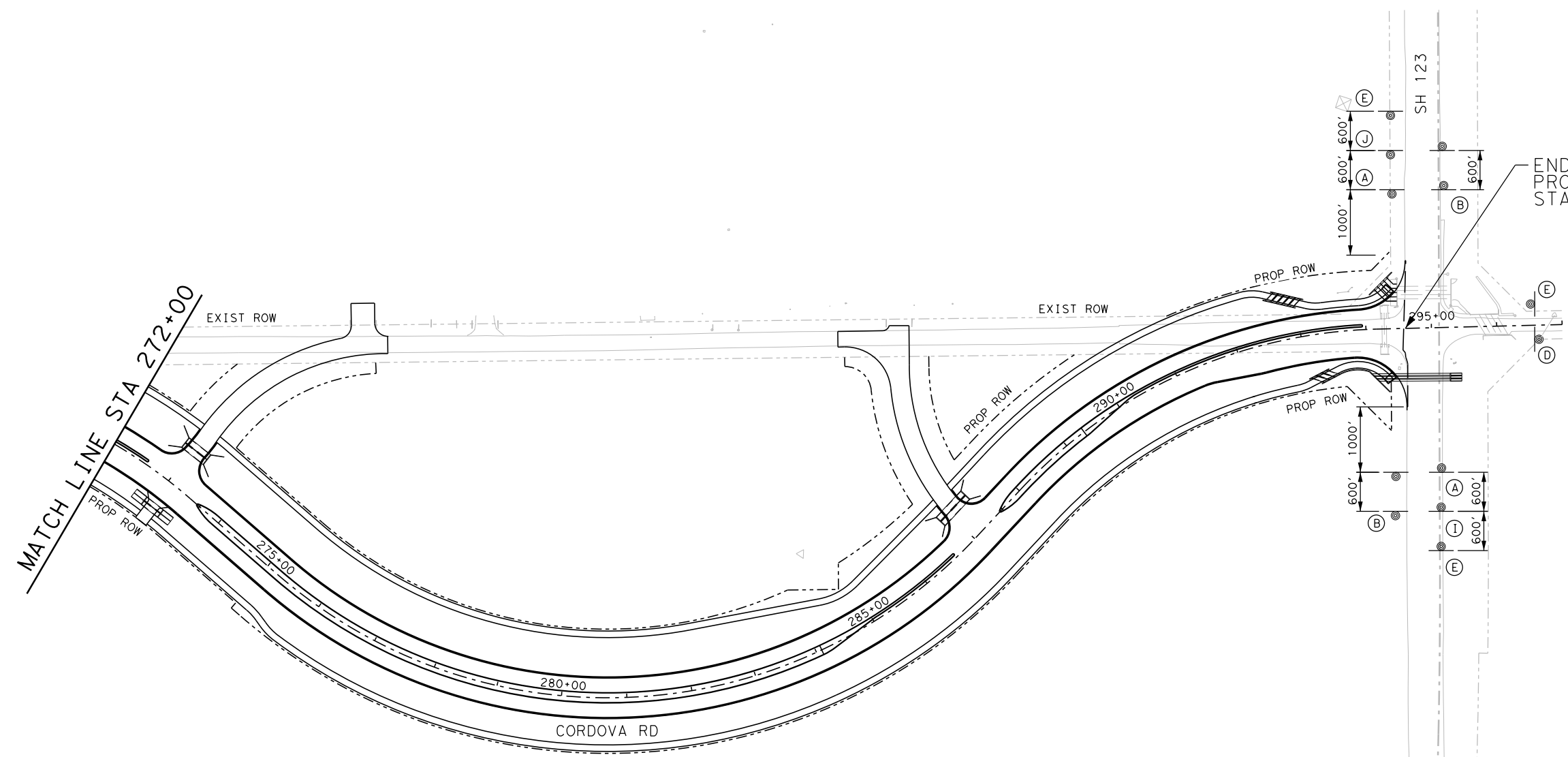
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SCHEDULE OF BARRICADES AND ADVANCED WARNING SIGNS

STA 232+00 TO STA 272+00
 SHEET 4 OF 5

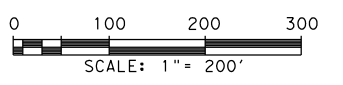
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	52



END PROJECT
STA 294+57.65

DESIGN
INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
----------	------	-------------	----

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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SCHEDULE OF BARRICADES AND ADVANCED WARNING SIGNS

STA 272+00 TO END OF PROJECT

SHEET 5 OF 5

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	53

- (A)

BEGIN WORK ZONE	G20-9T 36"X30"
TRAFFIC FINES DOUBLE	R20-5T 36"X36"
WHEN WORKERS ARE PRESENT	R20-5aTP 36"X18"
- (B)

END WORK ZONE	G20-2bT 48"X24"
SPEED LIMIT XX	R2-1 36"X48"
- (C)

END ROAD WORK	G20-2 48"X24"
----------------------	------------------
- (D)

END WORK ZONE	G20-2bT 48"X24"
----------------------	--------------------
- (E)

ROAD WORK AHEAD	CW20-1D 48"X48"
------------------------	--------------------
- (F)

SPEED LIMIT XX	R2-1 36"X48"
-----------------------	-----------------
- (G)

ROAD WORK	G20-1aT 72"X36"
------------------	--------------------
- (H)

BEGIN ROAD WORK	NAME ADDRESS CITY STATE CONTRACTOR
------------------------	--
- (I)

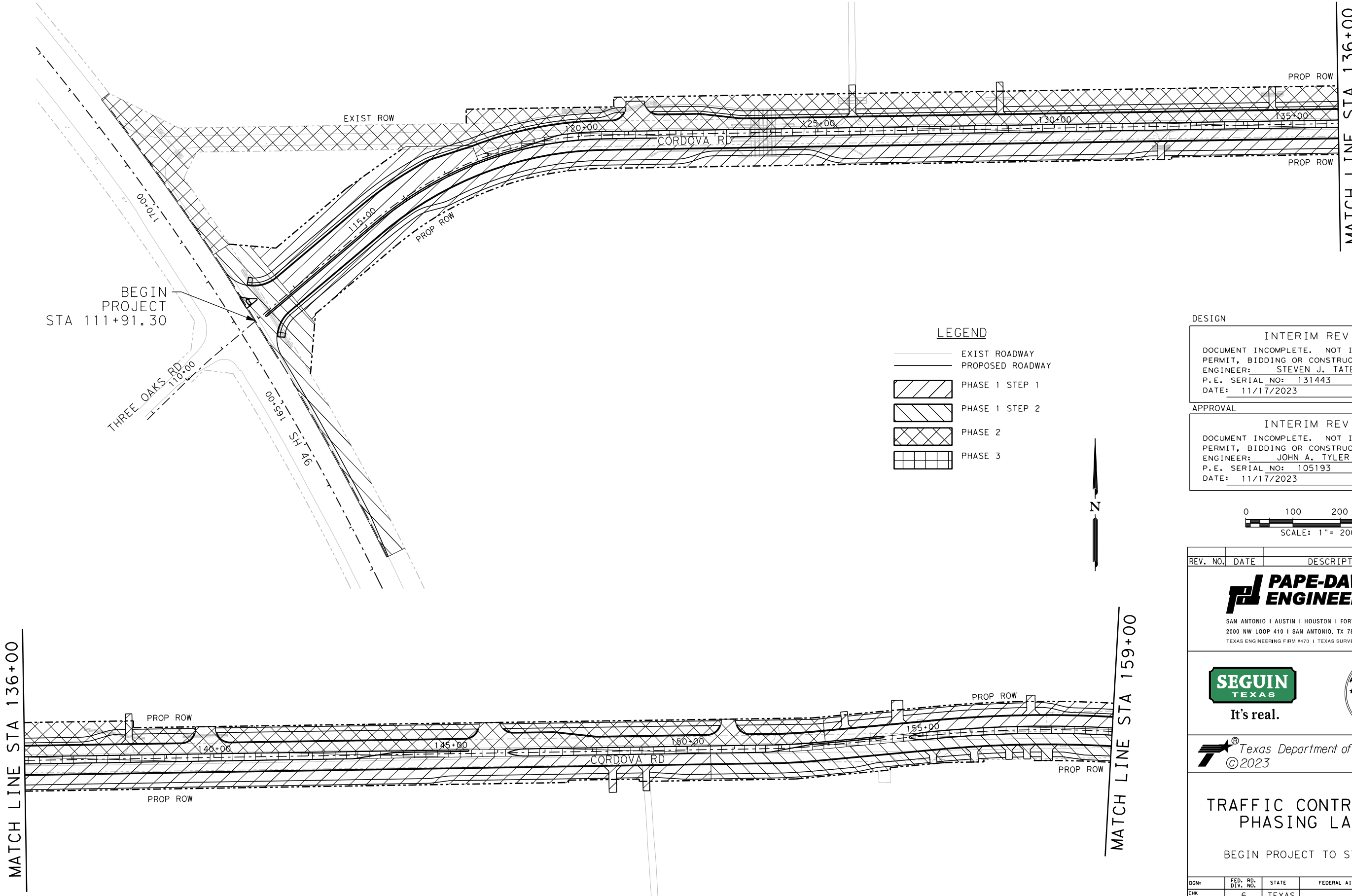
ROAD WORK	G20-5T 48"X24"
ROAD WORK	G20-6T 48"X30"
ROAD WORK	G20-1bTL (R) 72"X24"
- (J)

ROAD WORK	G20-1bTL 72"X24"
------------------	---------------------

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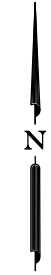
Plotted on: 11/17/2023

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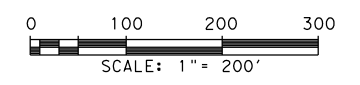
LEGEND

- EXIST ROADWAY
- PROPOSED ROADWAY
- PHASE 1 STEP 1
- PHASE 1 STEP 2
- PHASE 2
- PHASE 3



DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

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INTERIM REVIEW
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

Pape-Dawson Engineers
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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 It's real.

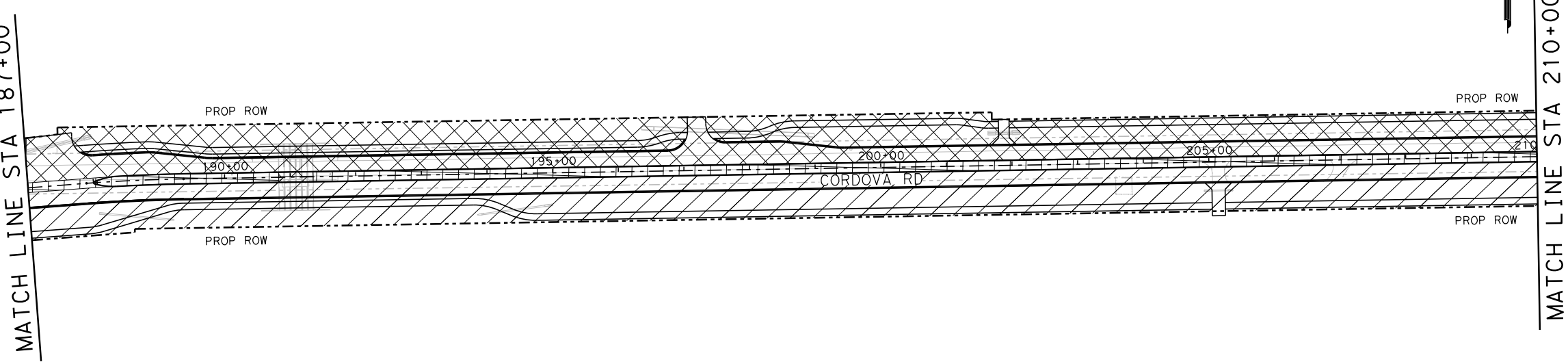
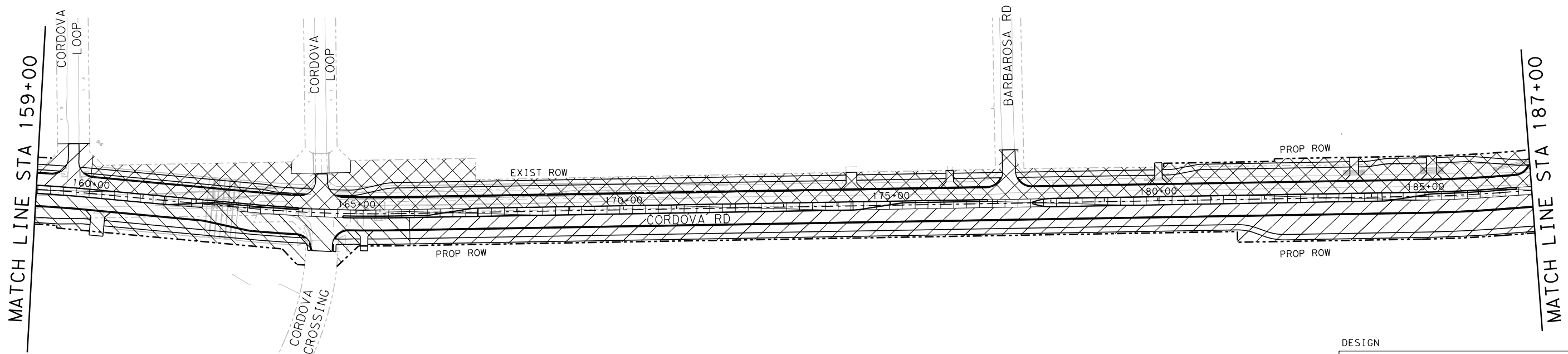
Texas Department of Transportation
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TRAFFIC CONTROL PLAN PHASING LAYOUT

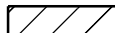
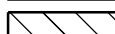
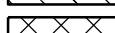

BEGIN PROJECT TO STA 159+00

SHEET 1 OF 5

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	54

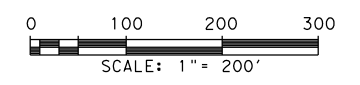


LEGEND

- EXIST ROADWAY
- PROPOSED ROADWAY
-  PHASE 1 STEP 1
-  PHASE 1 STEP 2
-  PHASE 2
-  PHASE 3

DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
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SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



TRAFFIC CONTROL PLAN PHASING LAYOUT


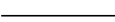

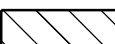
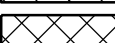
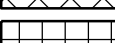
STA 159+00 TO STA 210+00

SHEET 2 OF 5

CHK DGN:	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.			HIGHWAY NO. CORDOVA
DWG:	DIST. SAT	COUNTY GUADALUPE	CONT. NO. 0915	SECT. NO. 46	JOB NO. 052	SHEET NO. 55



LEGEND

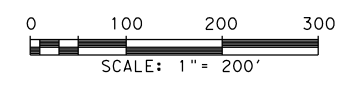
-  EXIST ROADWAY
-  PROPOSED ROADWAY
-  PHASE 1 STEP 1
-  PHASE 1 STEP 2
-  PHASE 2
-  PHASE 3

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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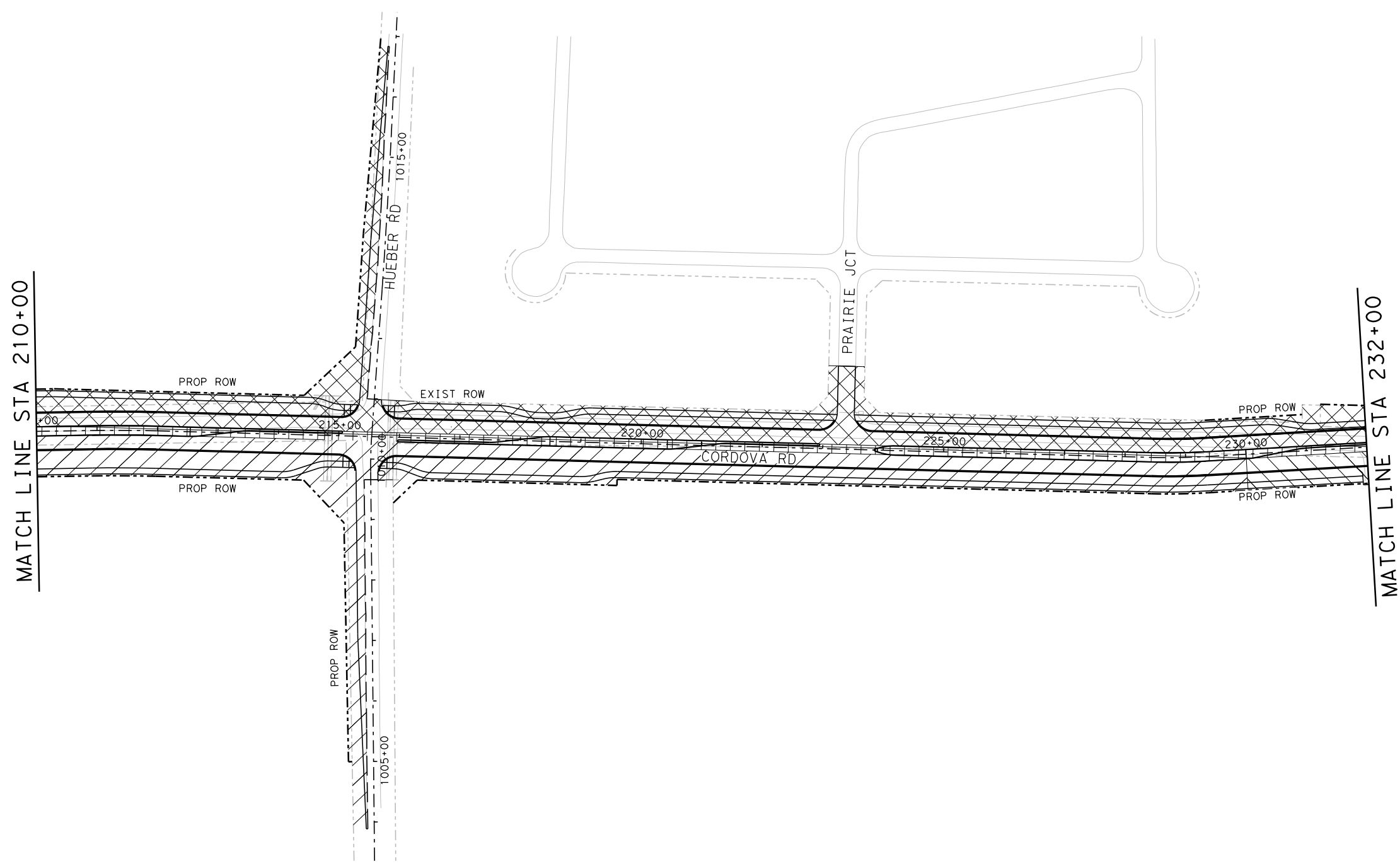
 Texas Department of Transportation
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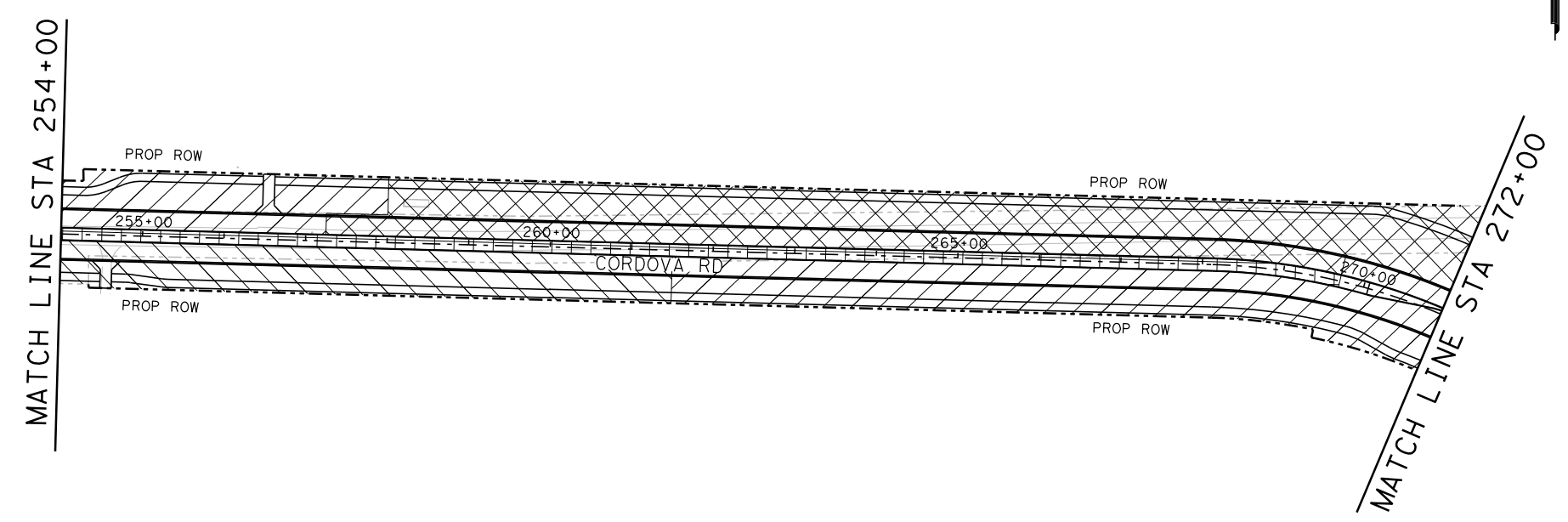
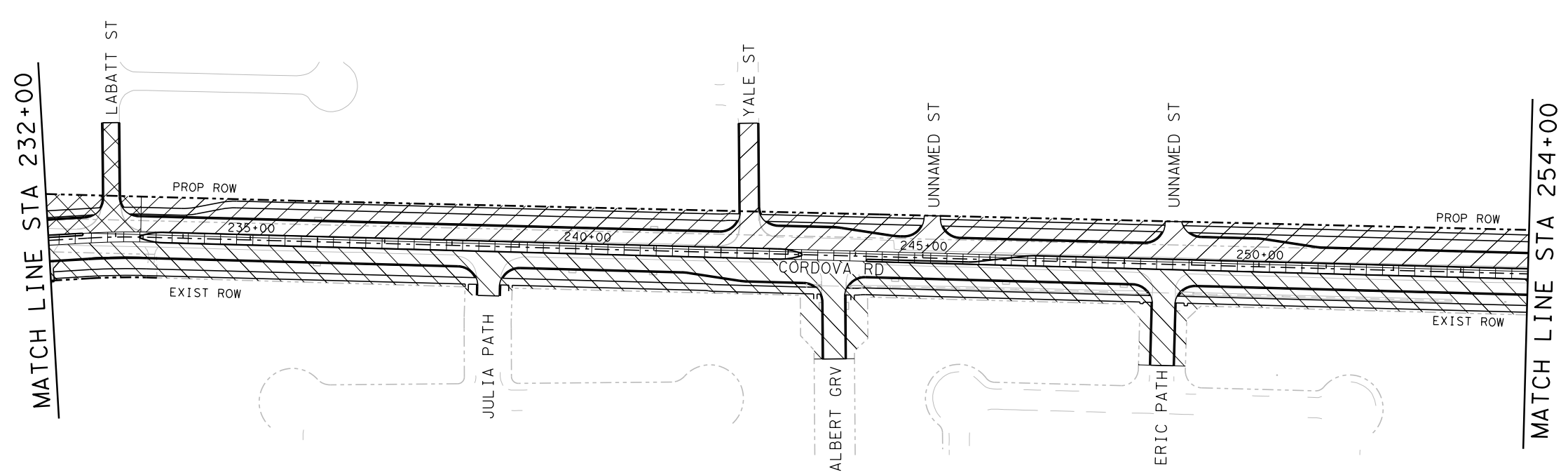
**TRAFFIC CONTROL PLAN
 PHASING LAYOUT**

STA 210+00 TO STA 232+00

SHEET 3 OF 5

CHK DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
	6	TEXAS				CORDOVA
CHK DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
	SAT	GUADALUPE	0915	46	052	56





LEGEND

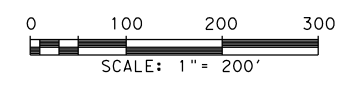
- EXIST ROADWAY
- PROPOSED ROADWAY
- PHASE 1 STEP 1
- PHASE 1 STEP 2
- PHASE 2
- PHASE 3

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



TRAFFIC CONTROL PLAN PHASING LAYOUT


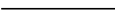



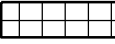
STA 232+00 TO STA 272+00

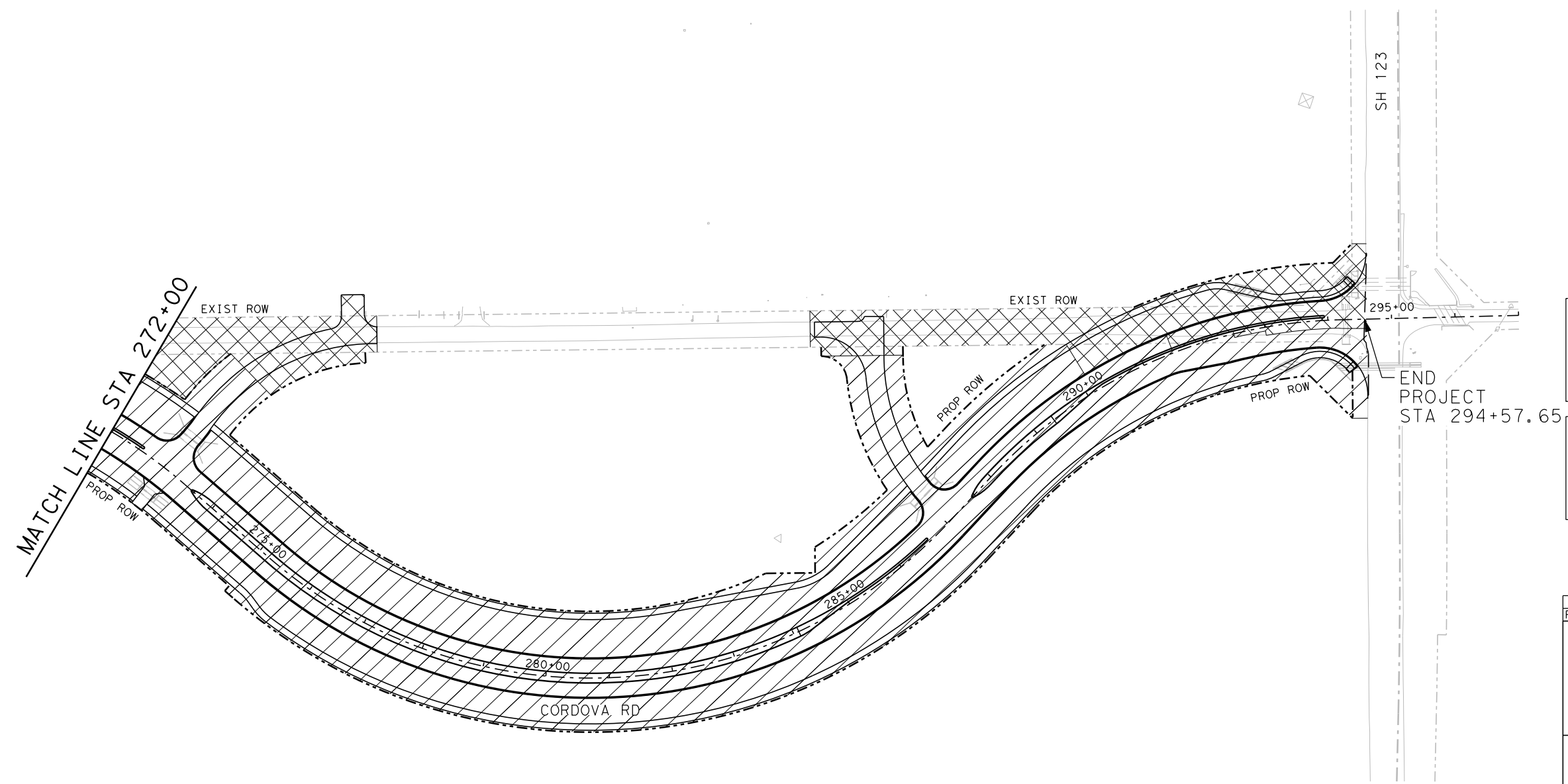
SHEET 4 OF 5

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	57



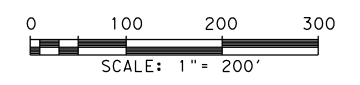
LEGEND

-  EXIST ROADWAY
-  PROPOSED ROADWAY
-  PHASE 1 STEP 1
-  PHASE 1 STEP 2
-  PHASE 2
-  PHASE 3



DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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TRAFFIC CONTROL PLAN PHASING LAYOUT

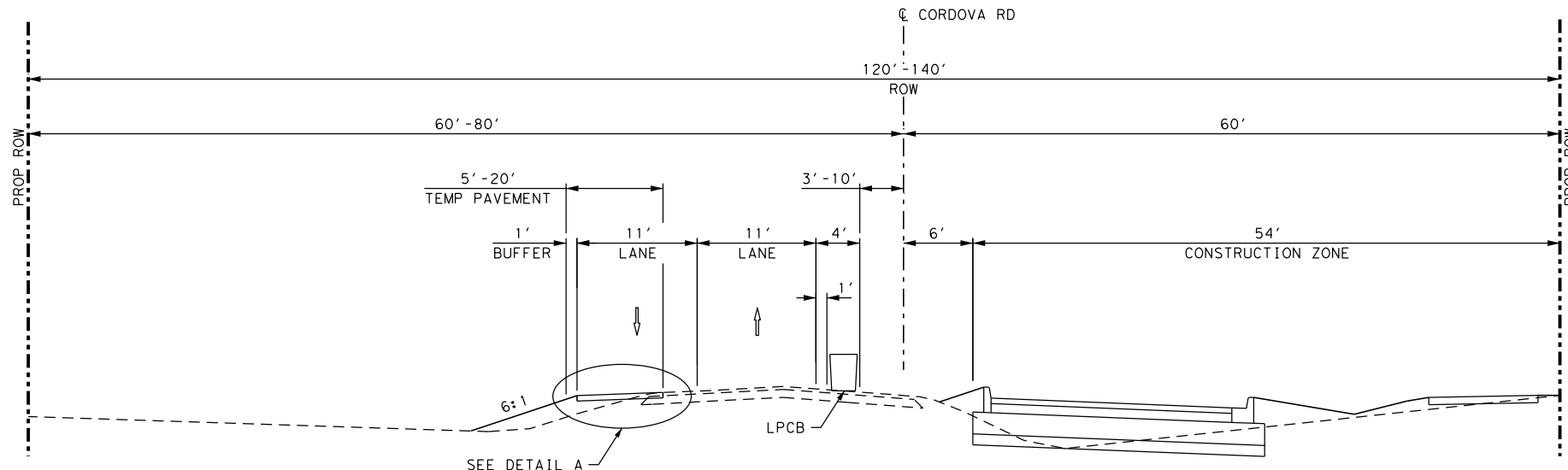
STA 272+00 TO END OF PROJECT

SHEET 5 OF 5

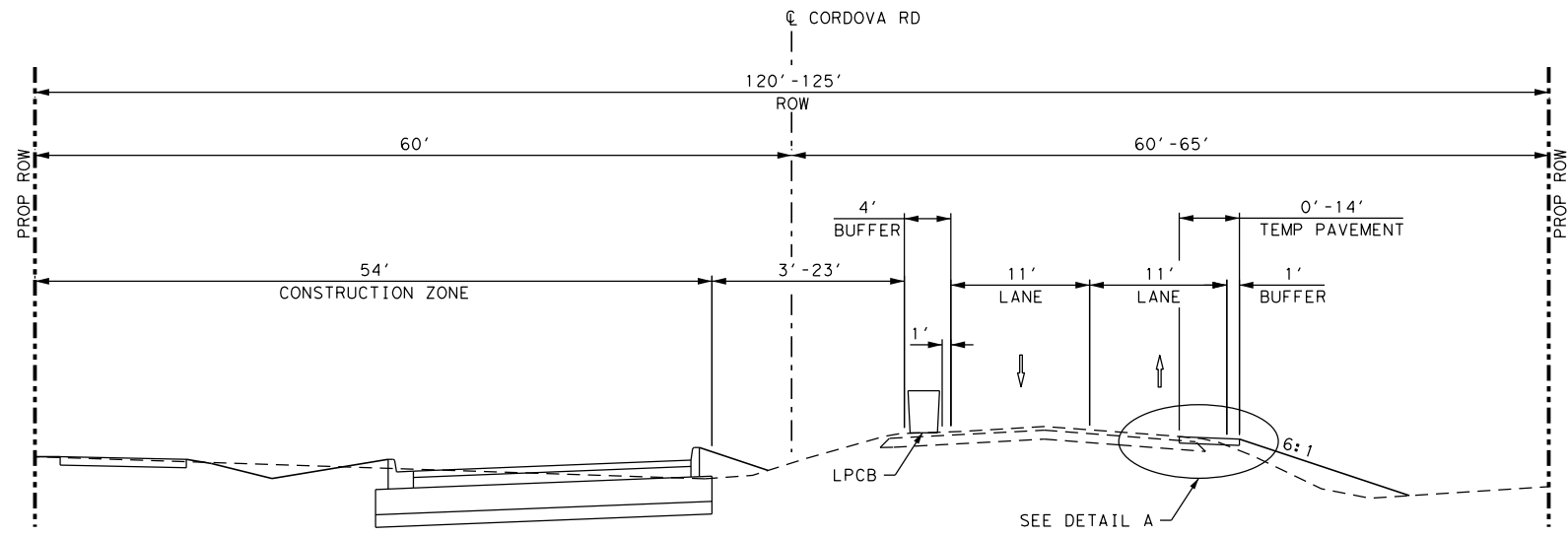
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CHK DWG:	DIST. SAT	COUNTY GUADALUPE	CONT. NO. 0915	SECT. NO. 46	JOB NO. 052	SHEET NO. 58

Plotted on: 11/17/2023

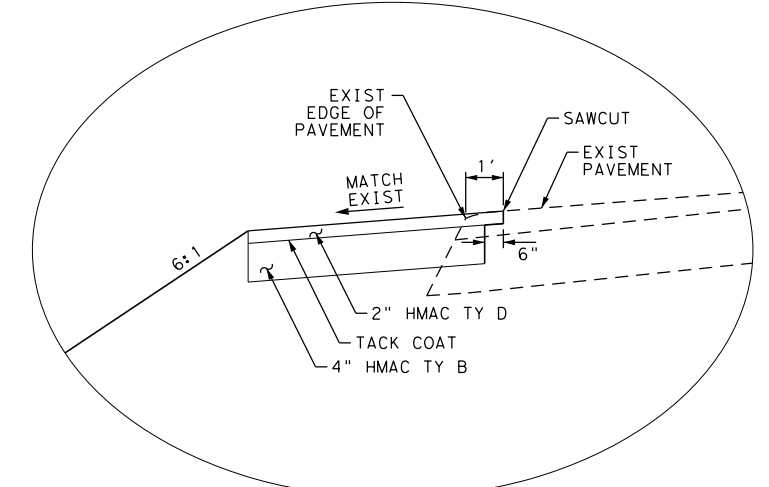
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CORDOVA RD - PHASE I STEP I
 STA 115+61 TO STA 152+93
 STA 188+44 TO STA 217+57
 STA 258+00 TO STA 263+25
 STA 290+13 TO STA 294+16
 NTS



CORDOVA RD - PHASE I STEP I
 STA 152+93 TO STA 163+00
 STA 230+00 TO STA 258+00
 NTS



DETAIL A
 NTS

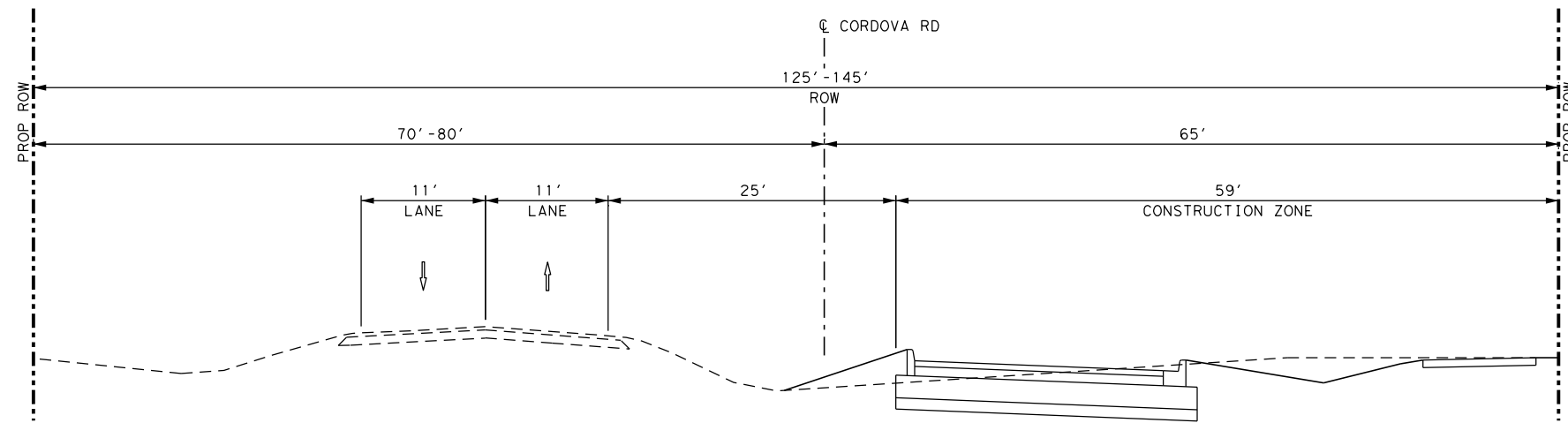
DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
CORDOVA RD TRAFFIC CONTROL PLAN PHASE I STEP I TYPICAL SECTIONS			
SHEET 1 OF 3			
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
CHK:	6	TEXAS	
DWG:	DIST.:	COUNTY:	CONT. NO. SECT. NO. JOB NO. SHEET NO.
CHK:	SAT	GUADALUPE	0915 46 052 59

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_Typico102.dgn



CORDOVA RD - PHASE I STEP I

STA 163+00 TO STA 188+44
 STA 217+57 TO STA 230+00
 STA 263+25 TO STA 271+39
 NTS

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
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SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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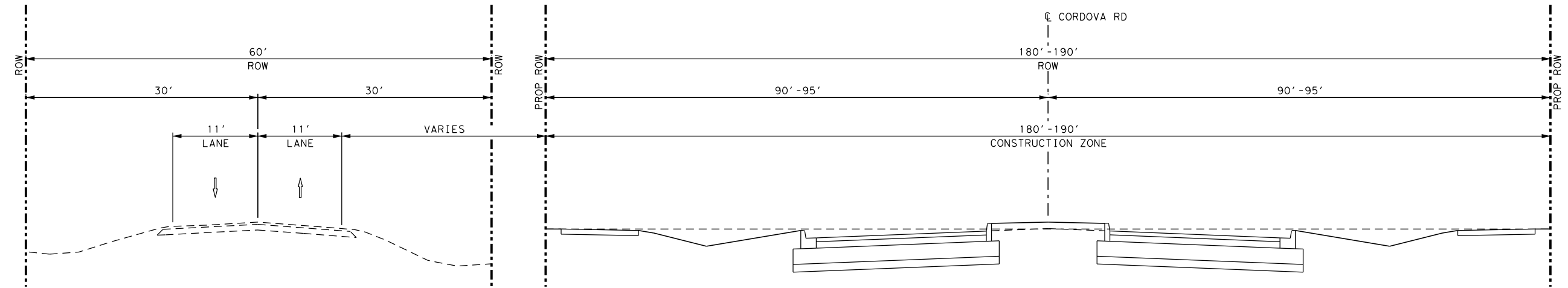
CORDOVA RD
**TRAFFIC CONTROL PLAN
 PHASE I STEP I
 TYPICAL SECTIONS**

SHEET 2 OF 3

CHK DGN:	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.			HIGHWAY NO. CORDOVA
CHK DWG:	DIST. SAT	COUNTY GUADALUPE	CONT. NO. 0915	SECT. NO. 46	JOB NO. 052	SHEET NO. 60

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_Typico103.dgn



CORDOVA RD - PHASE I STEP I
 STA 271+39 TO STA 290+13
 NTS

DESIGN
 INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
 INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
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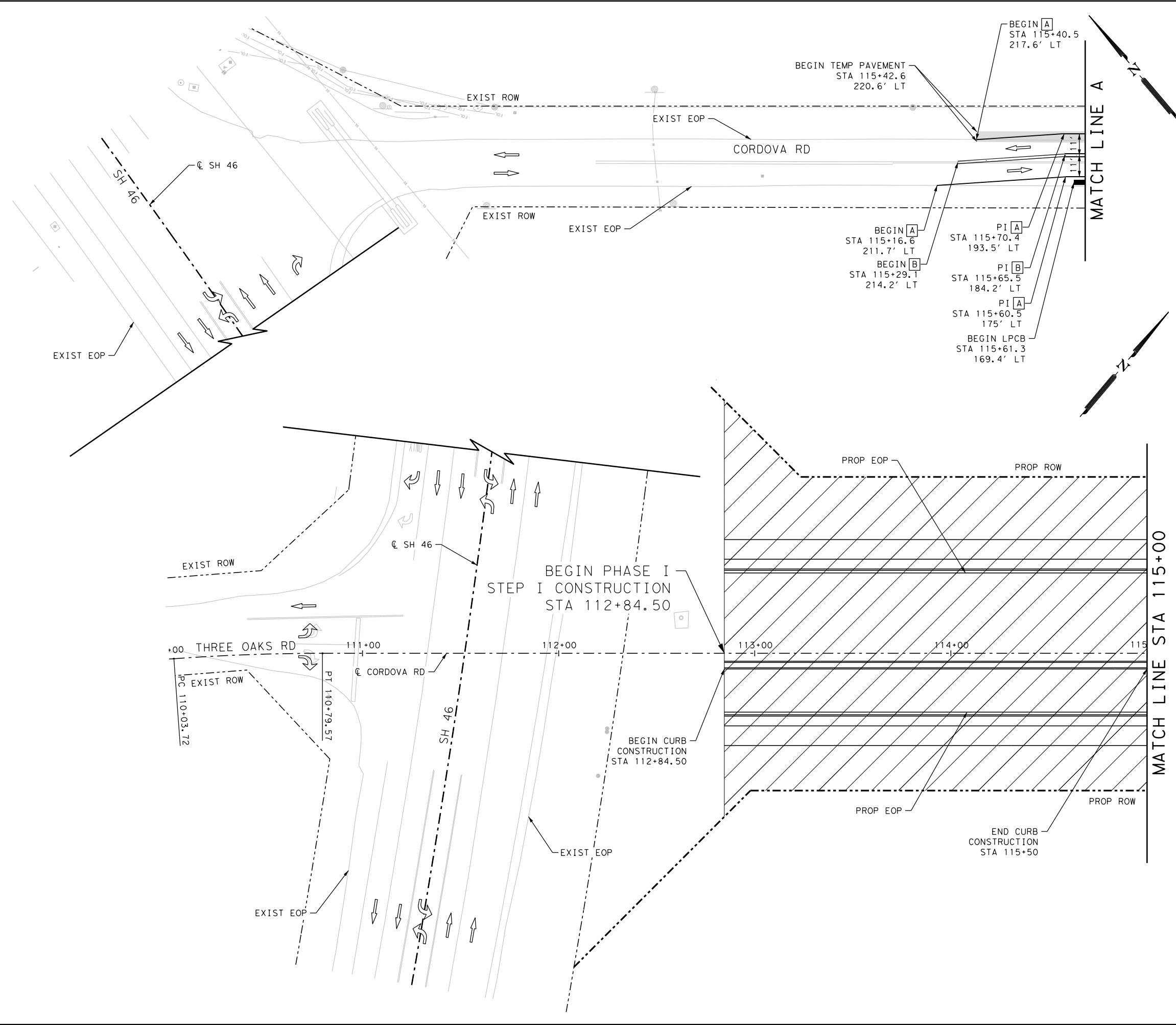
CORDOVA RD
**TRAFFIC CONTROL PLAN
 PHASE I STEP I
 TYPICAL SECTIONS**

SHEET 3 OF 3

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	61

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase I\1277500_TCP_PHI_01.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	A WK ZN PAV MRK NON-REMOV (W) 6" (SLD)		C WK ZN PAV MRK NON-REMOV (W) 4" (BRK)
	B WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD)		D WK ZN PAV MRK NON-REMOV (W) 24" (SLD)

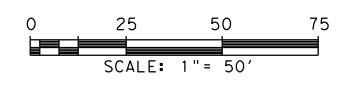
- NOTES:**
- FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
 - EXISTING FEATURES ARE SHOWN SCREENED BACK.
 - EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED. THIS WORK IS CONSIDERED SUBSIDIARY TO THE WORK ZONE PAVEMENT MARKING ITEMS.
 - ONE SECTION OF LPCB TY 2 MUST BE PLACED AT EACH UPSTREAM AND DOWNSTREAM END. THE TY 2 IS INCLUDED IN THE LPCB CALLOUTS.
 - A 3:1 TRAVERSABLE SAFETY SLOPE MUST BE ADDED TO ALL DROPOFFS GREATER THAN 2" IN AREAS NOT PROTECTED BY BARRIER AT THE END OF THE WORK DAY.

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

Pape-Dawson Engineers
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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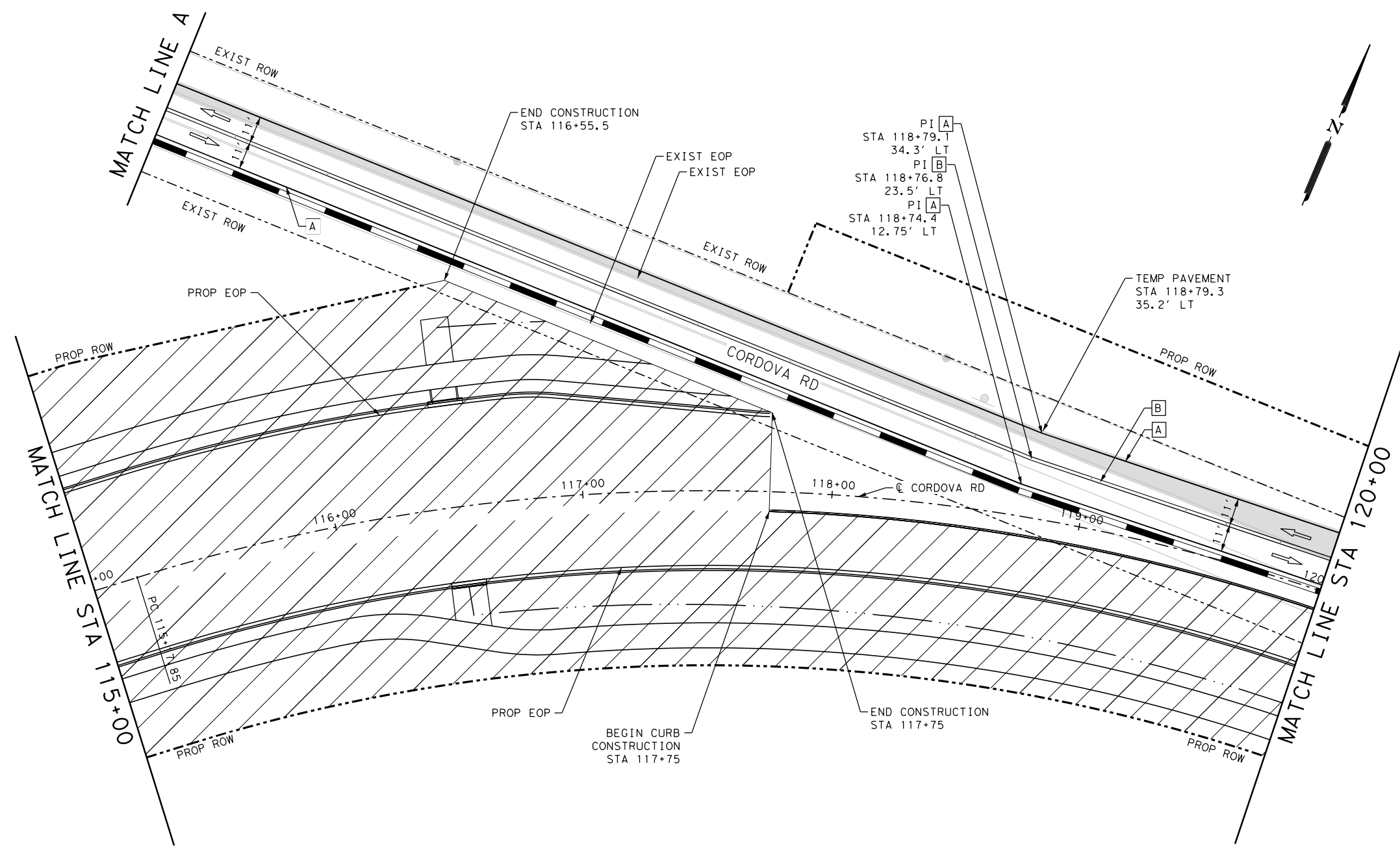
CORDOVA RD
TRAFFIC CONTROL PLAN
PHASE I
STEP I
 BEGIN PROJECT TO STA 115+00

SHEET 1 OF 22

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
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Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_PH1_02.dgn



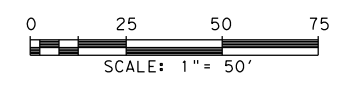
LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	WK ZN PAV MRK NON-REMOV (W) 6" (SLD)		WK ZN PAV MRK NON-REMOV (W) 4" (BRK)
	WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD)		WK ZN PAV MRK NON-REMOV (W) 24" (SLD)

- NOTES:**
- FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
 - EXISTING FEATURES ARE SHOWN SCREENED BACK.
 - EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED. THIS WORK IS CONSIDERED SUBSIDIARY TO THE WORK ZONE PAVEMENT MARKING ITEMS.
 - ONE SECTION OF LPCB TY 2 MUST BE PLACED AT EACH UPSTREAM AND DOWNSTREAM END. THE TY 2 IS INCLUDED IN THE LPCB CALLOUTS.
 - A 3:1 TRAVERSABLE SAFETY SLOPE MUST BE ADDED TO ALL DROPOFFS GREATER THAN 2" IN AREAS NOT PROTECTED BY BARRIER AT THE END OF THE WORK DAY.

DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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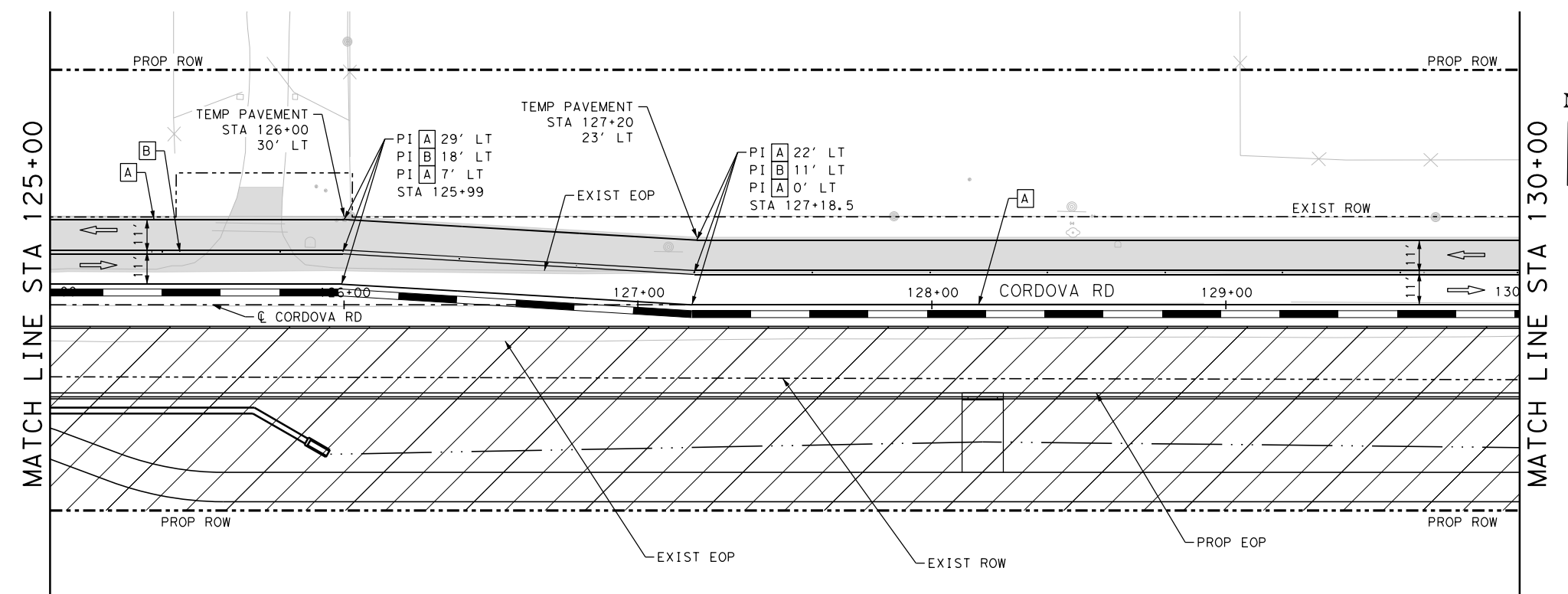
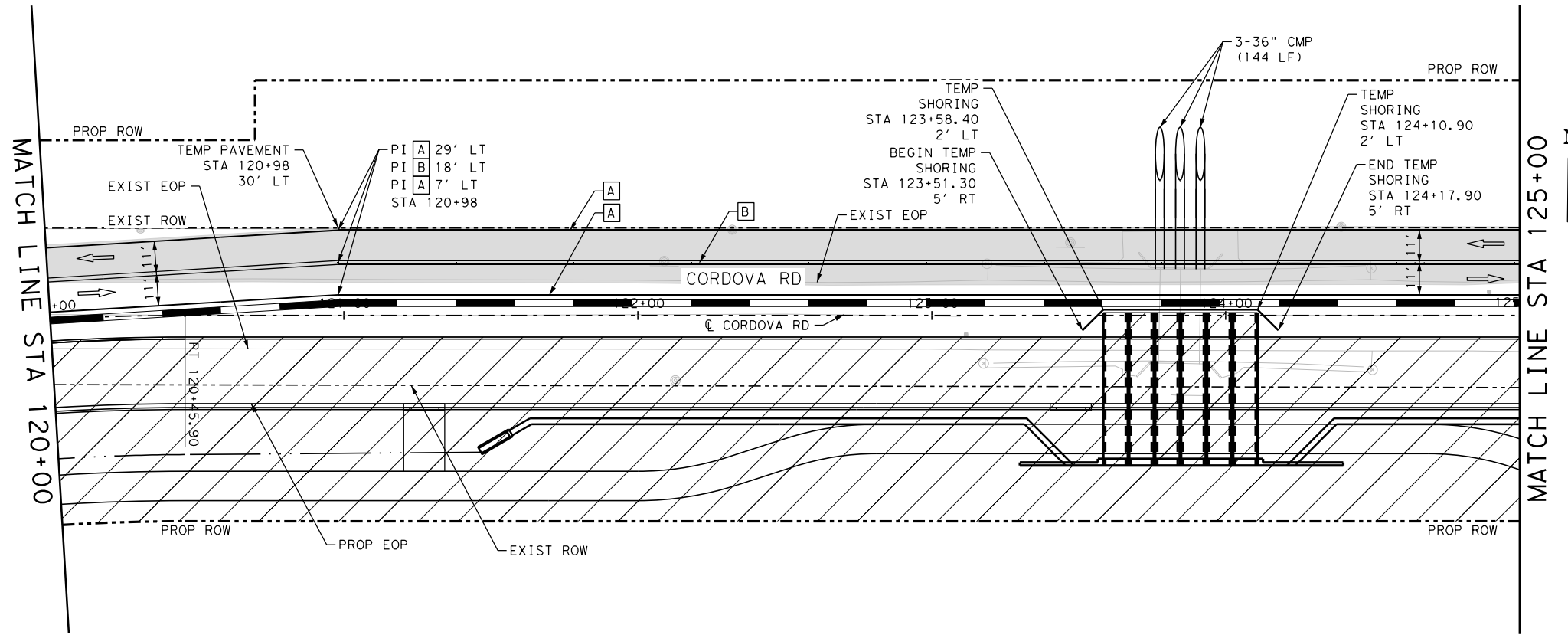
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CORDOVA RD
TRAFFIC CONTROL PLAN
PHASE I
STEP I
 STA 115+00 TO STA 120+00
 SHEET 2 OF 22

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	63

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_PH1_03.dgn



LEGEND

- CONSTRUCTION AREA
- TEMPORARY PAVEMENT
- TYPE III BARRICADE
- SIGN
- TRAFFIC FLOW ARROWS
- PLASTIC DRUMS
- LOW PROFILE CONCRETE BARRIER (LPCB)
- PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
- WK ZN PAV MRK NON-REMOV (W) 6" (SLD)
- WK ZN PAV MRK NON-REMOV (W) 4" (BRK)
- WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD)
- WK ZN PAV MRK NON-REMOV (W) 24" (SLD)

- NOTES:**
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 - EXISTING FEATURES ARE SHOWN SCREENED BACK.
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DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

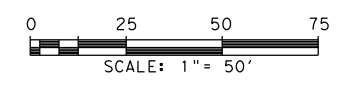
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

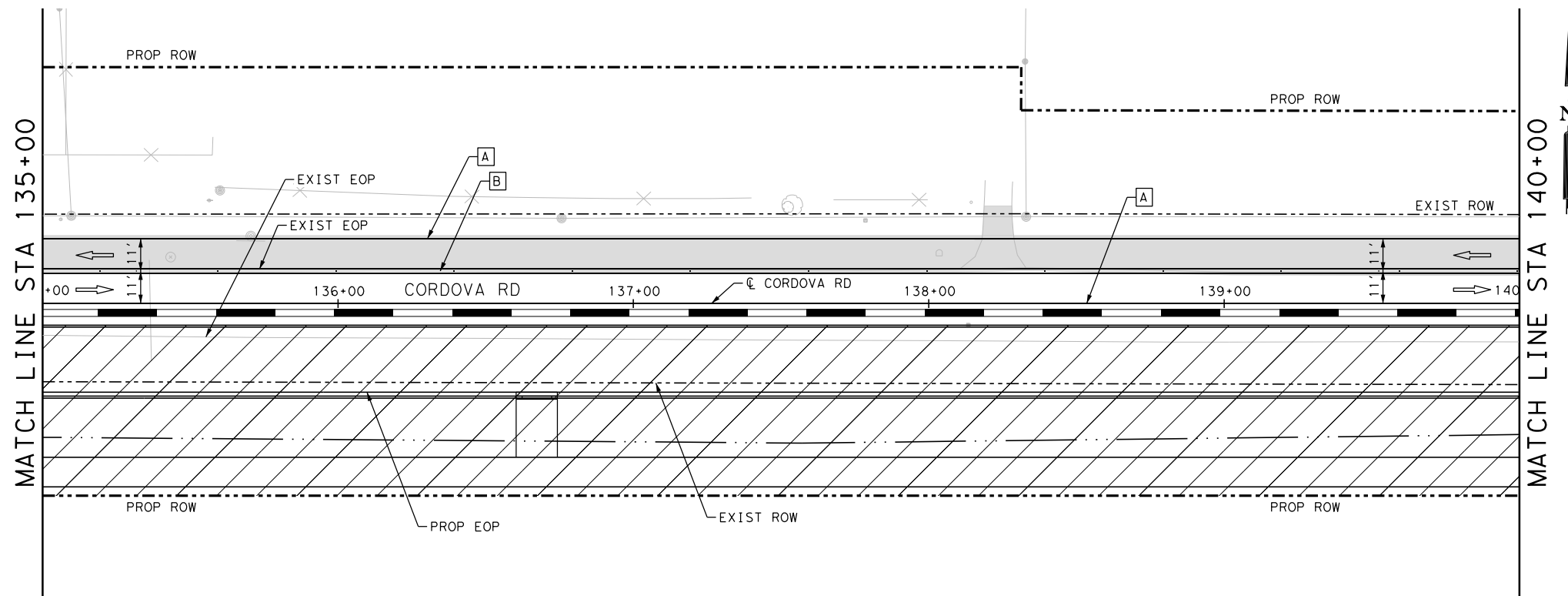
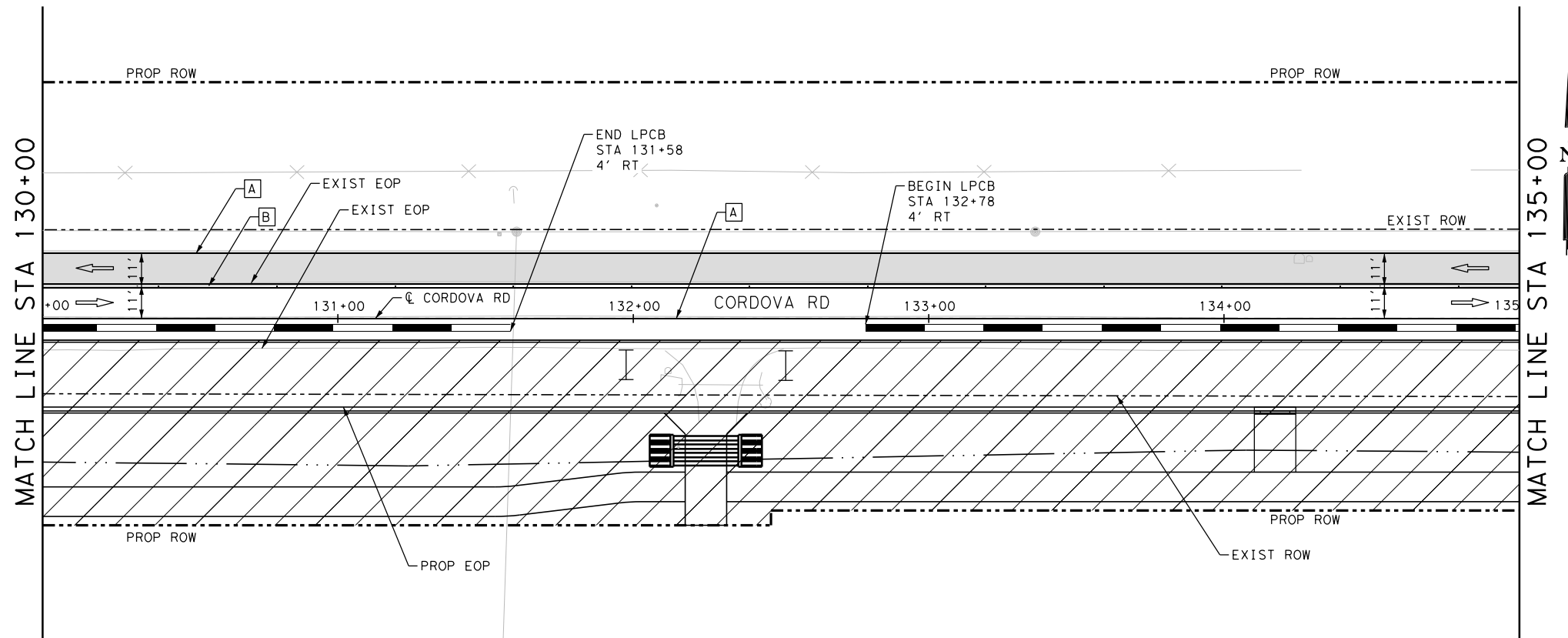
DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY			
<p>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</p>						
<p>It's real.</p>						
<p>© 2023</p>						
<p>CORDOVA RD</p> <p>TRAFFIC CONTROL PLAN</p> <p>PHASE I</p> <p>STEP I</p> <p>STA 120+00 TO STA 130+00</p> <p>SHEET 3 OF 22</p>						
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	64

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_PH1_04.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		ACCELERATED CONSTRUCTION
	PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)		
	WK ZN PAV MRK NON-REMOV (W) 6" (SLD)		WK ZN PAV MRK NON-REMOV (W) 4" (BRK)
	WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD)		WK ZN PAV MRK NON-REMOV (W) 24" (SLD)

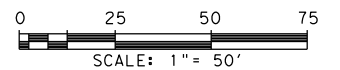
- NOTES:**
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DESIGN

INTERIM REVIEW
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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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CORDOVA RD
TRAFFIC CONTROL PLAN
PHASE I
STEP I

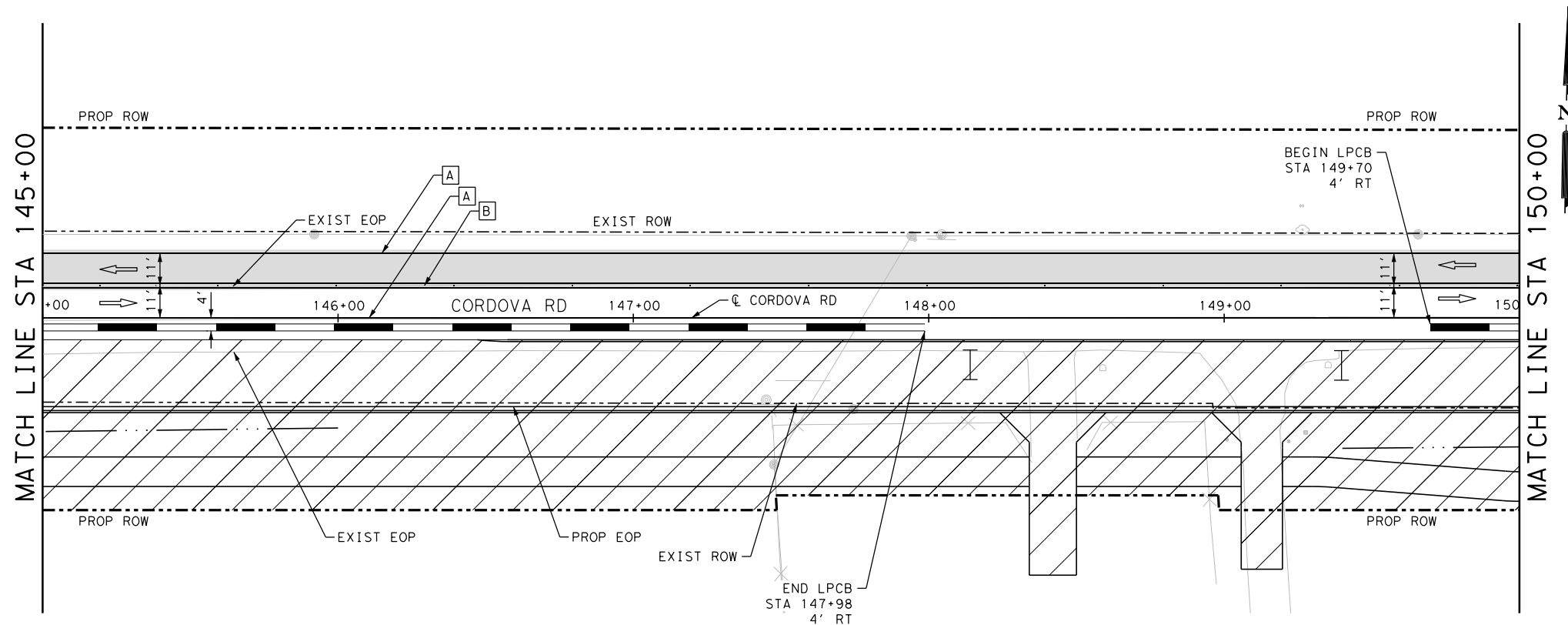
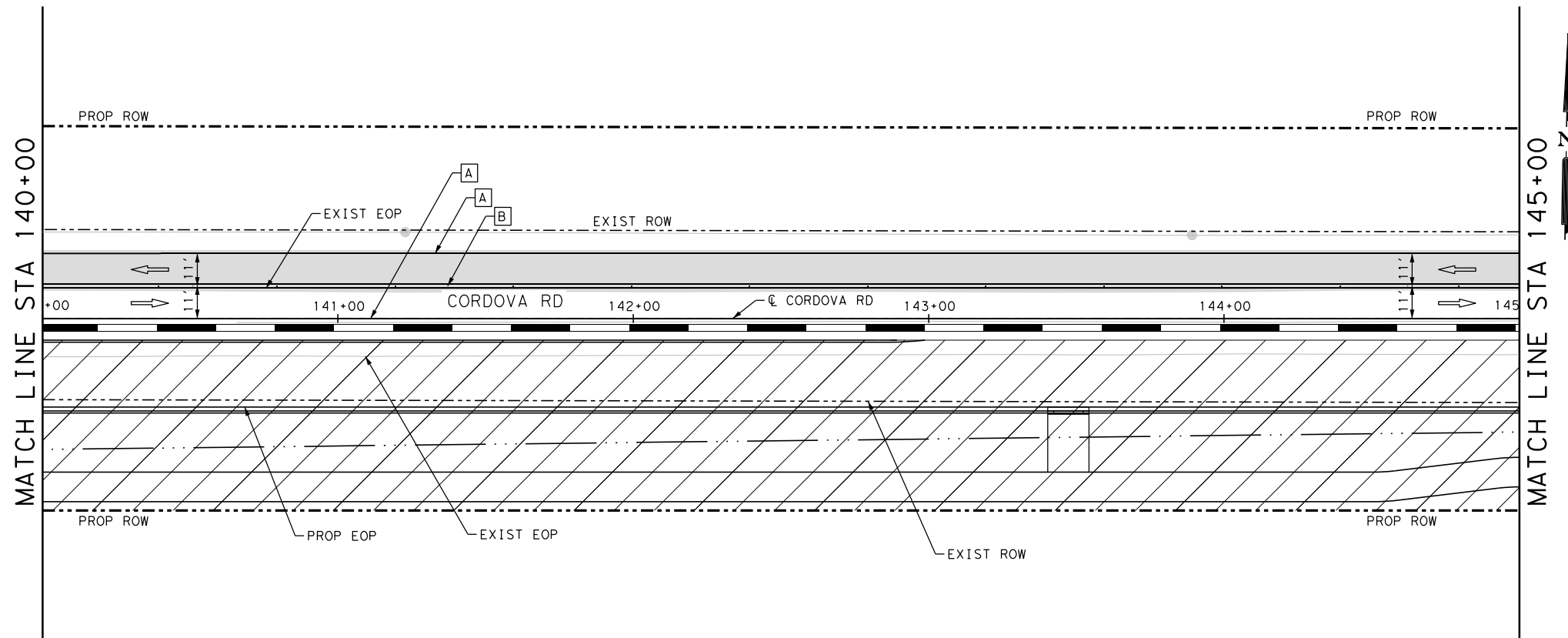
STA 130+00 TO STA 140+00

SHEET 4 OF 22

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	65

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_PH1_05.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		ACCELERATED CONSTRUCTION
	PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)		

A WK ZN PAV MRK NON-REMOV (W) 6" (SLD)
B WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD)
C WK ZN PAV MRK NON-REMOV (W) 4" (BRK)
D WK ZN PAV MRK NON-REMOV (W) 24" (SLD)

- NOTES:**
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DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

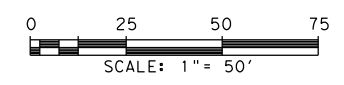
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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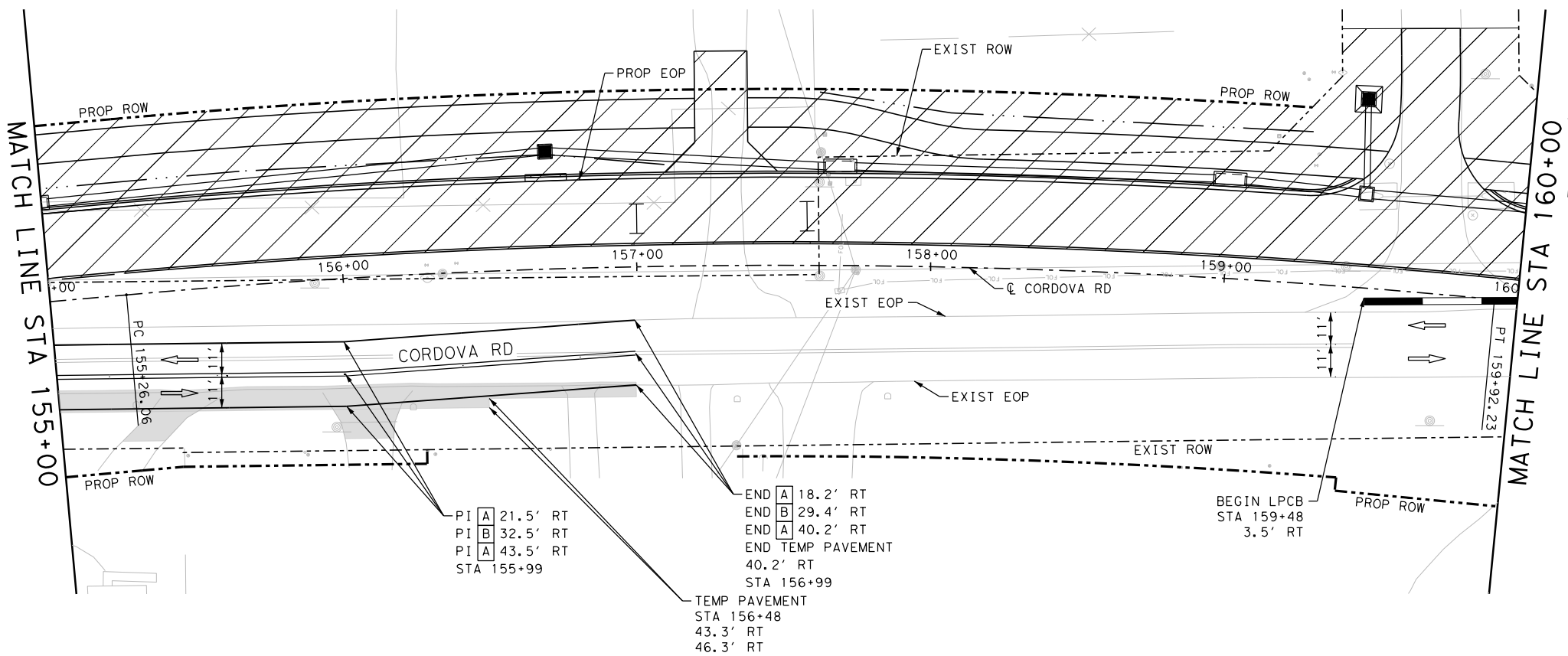
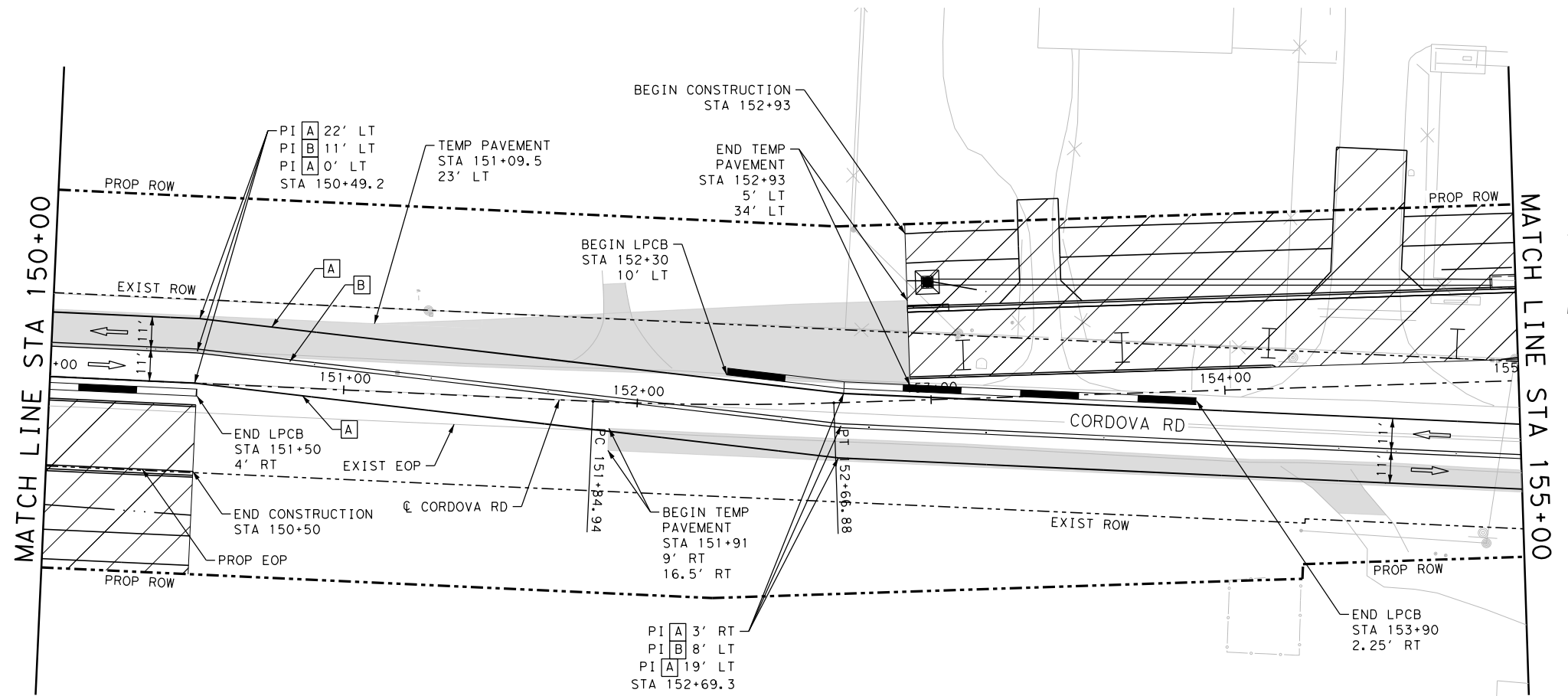
CORDOVA RD
TRAFFIC CONTROL PLAN
PHASE I
STEP I
 STA 140+00 TO STA 150+00

SHEET 5 OF 22

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				66

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_PH1_06.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
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DESIGN

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ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

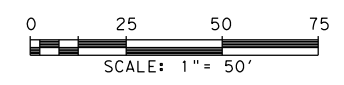
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ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
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Pape-Dawson Engineers

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000

TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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GUADALUPE COUNTY

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CORDOVA RD

TRAFFIC CONTROL PLAN

PHASE I

STEP I

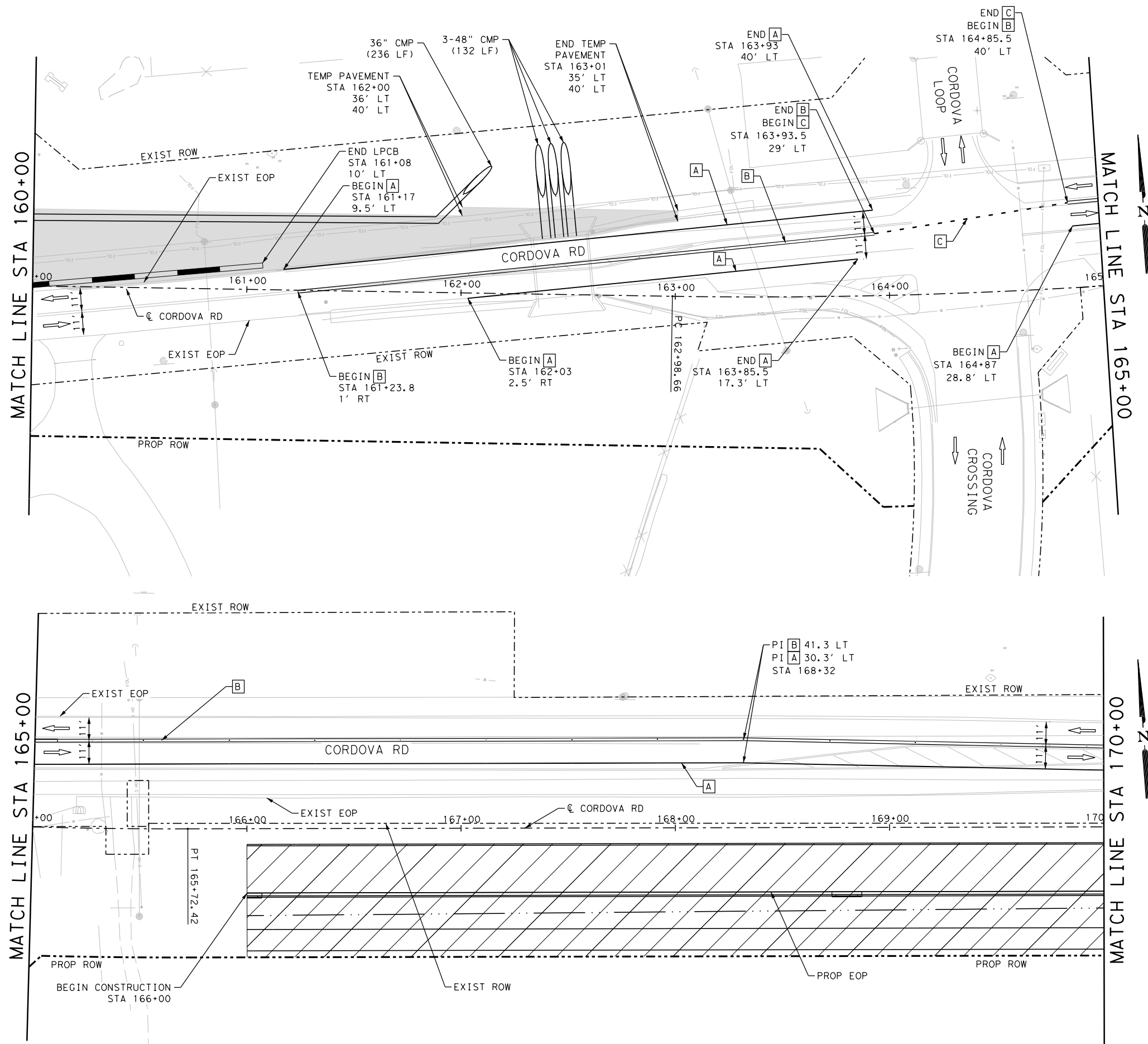
STA 150+00 TO STA 160+00

SHEET 6 OF 22

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	67

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_PHI_07.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		ACCELERATED CONSTRUCTION
	PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)		

MARKING CALLOUTS:

A WK ZN PAV MRK NON-REMOV (W) 6" (SLD)	C WK ZN PAV MRK NON-REMOV (W) 4" (BRK)
B WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD)	D WK ZN PAV MRK NON-REMOV (W) 24" (SLD)

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DESIGN

INTERIM REVIEW

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ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

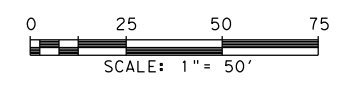
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
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Pape-Dawson Engineers

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000

TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS

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THE STATE OF TEXAS
GUADALUPE COUNTY

Texas Department of Transportation

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CORDOVA RD

TRAFFIC CONTROL PLAN

PHASE I

STEP I

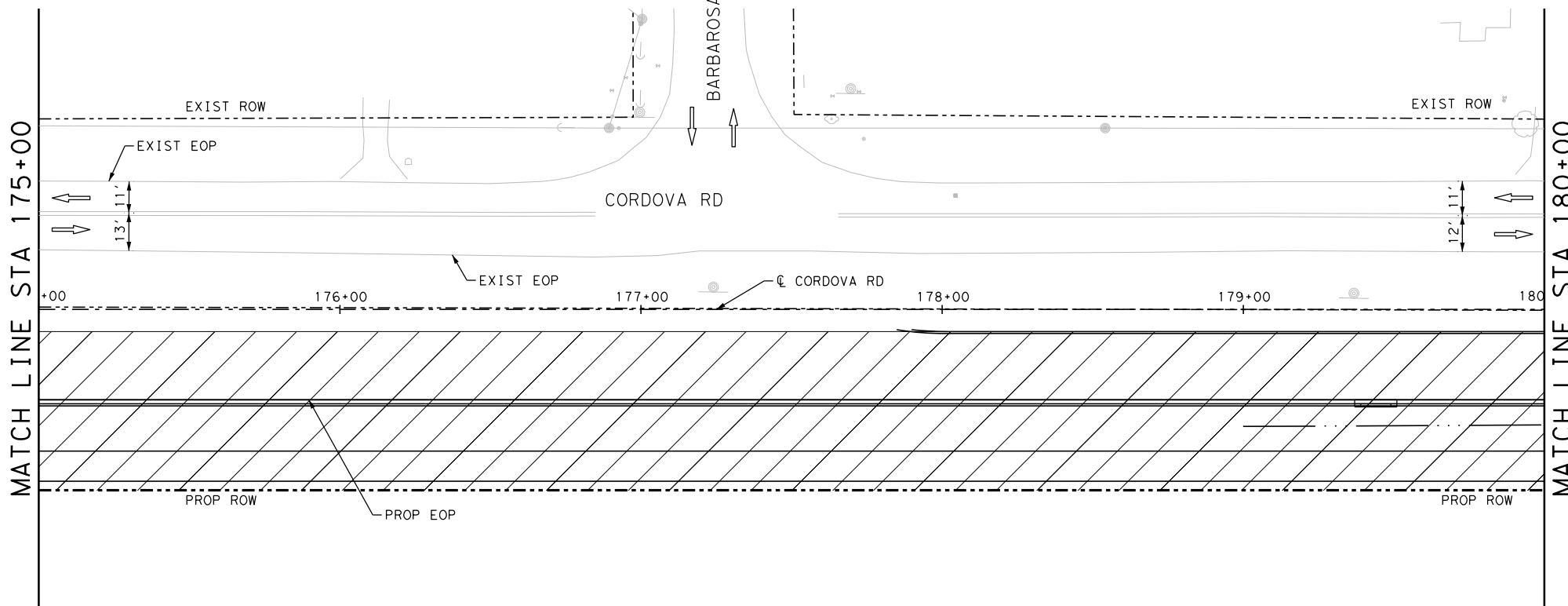
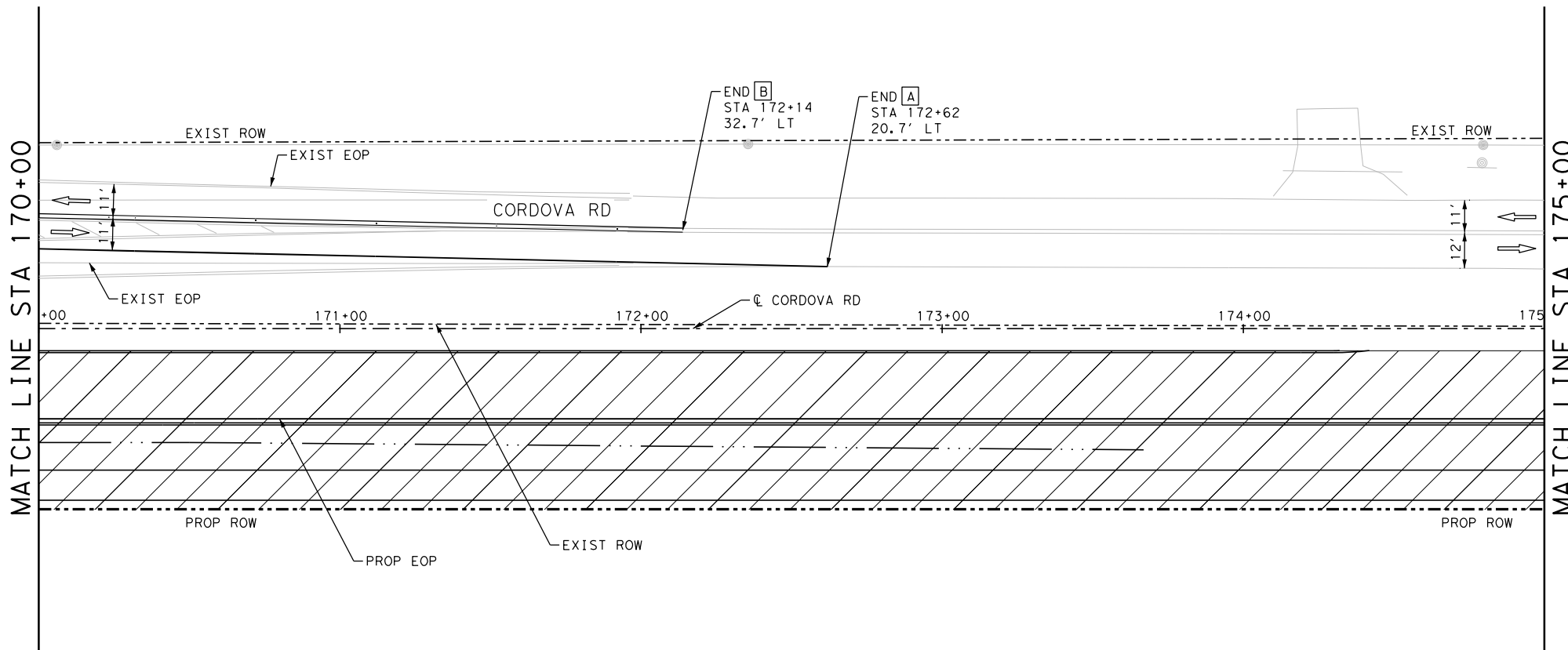
STA 160+00 TO STA 170+00

SHEET 7 OF 22

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				68

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_PH1_08.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		ACCELERATED CONSTRUCTION
	PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)		

A WK ZN PAV MRK NON-REMOV (W) 6" (SLD) **C** WK ZN PAV MRK NON-REMOV (W) 4" (BRK)
B WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD) **D** WK ZN PAV MRK NON-REMOV (W) 24" (SLD)

- NOTES:**
- FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
 - EXISTING FEATURES ARE SHOWN SCREENED BACK.
 - EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED. THIS WORK IS CONSIDERED SUBSIDIARY TO THE WORK ZONE PAVEMENT MARKING ITEMS.
 - ONE SECTION OF LPCB TY 2 MUST BE PLACED AT EACH UPSTREAM AND DOWNSTREAM END. THE TY 2 IS INCLUDED IN THE LPCB CALLOUTS.
 - A 3:1 TRAVERSABLE SAFETY SLOPE MUST BE ADDED TO ALL DROPOFFS GREATER THAN 2" IN AREAS NOT PROTECTED BY BARRIER AT THE END OF THE WORK DAY.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

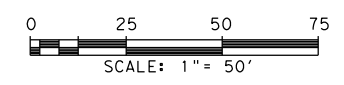
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

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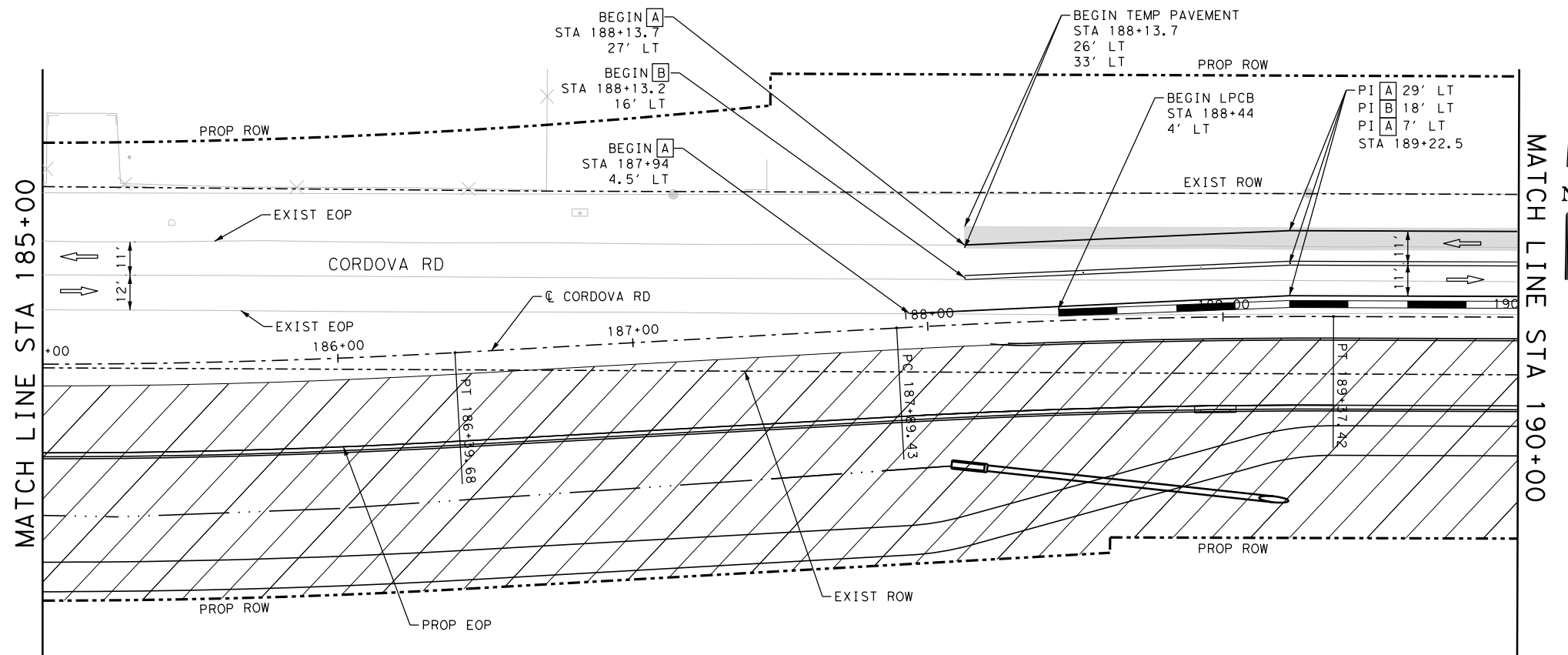
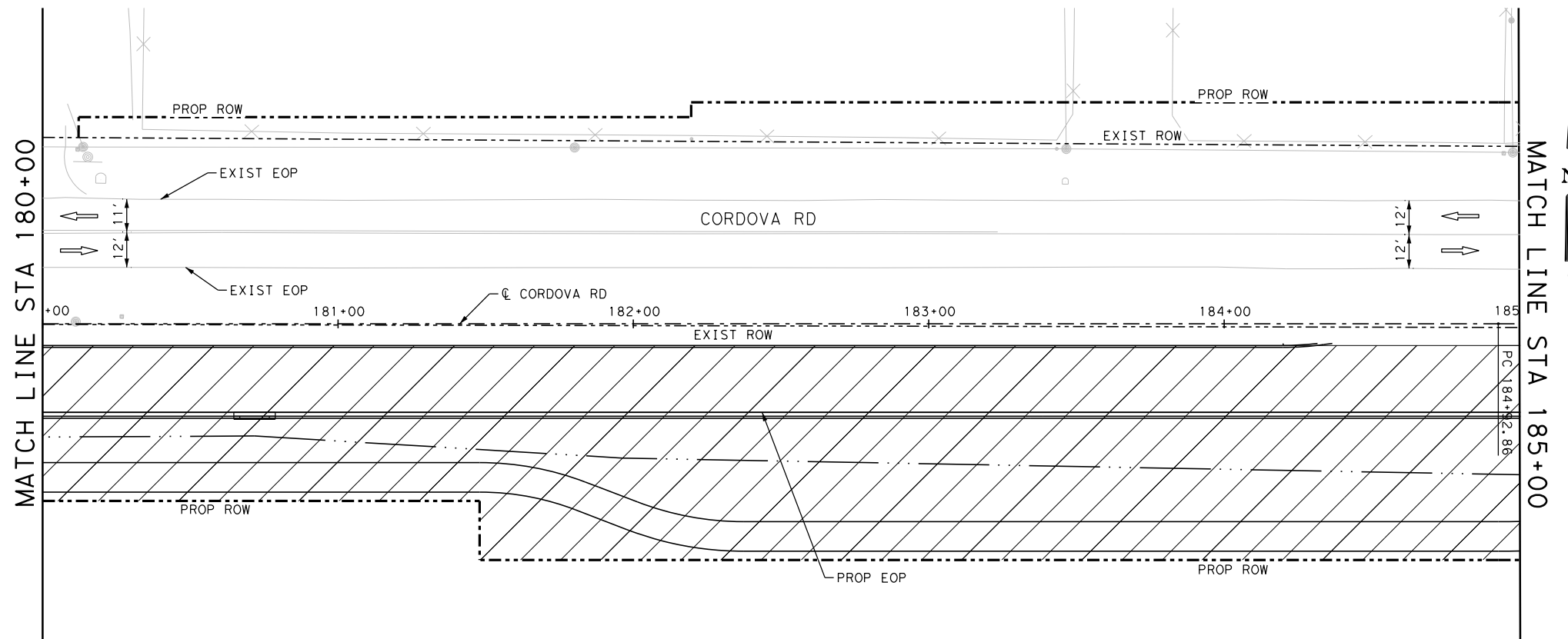
CORDOVA RD
TRAFFIC CONTROL PLAN
PHASE I
STEP I
 STA 170+00 TO STA 180+00

SHEET 8 OF 22

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				69

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_PH1_09.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	A WK ZN PAV MRK NON-REMOV (W) 6" (SLD)		C WK ZN PAV MRK NON-REMOV (W) 4" (BRK)
	B WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD)		D WK ZN PAV MRK NON-REMOV (W) 24" (SLD)

- NOTES:**
- FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
 - EXISTING FEATURES ARE SHOWN SCREENED BACK.
 - EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED. THIS WORK IS CONSIDERED SUBSIDIARY TO THE WORK ZONE PAVEMENT MARKING ITEMS.
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 - A 3:1 TRAVERSABLE SAFETY SLOPE MUST BE ADDED TO ALL DROPOFFS GREATER THAN 2" IN AREAS NOT PROTECTED BY BARRIER AT THE END OF THE WORK DAY.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

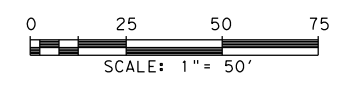
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

Pape-Dawson Engineers

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000

TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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GUADALUPE COUNTY

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CORDOVA RD

TRAFFIC CONTROL PLAN

PHASE I

STEP I

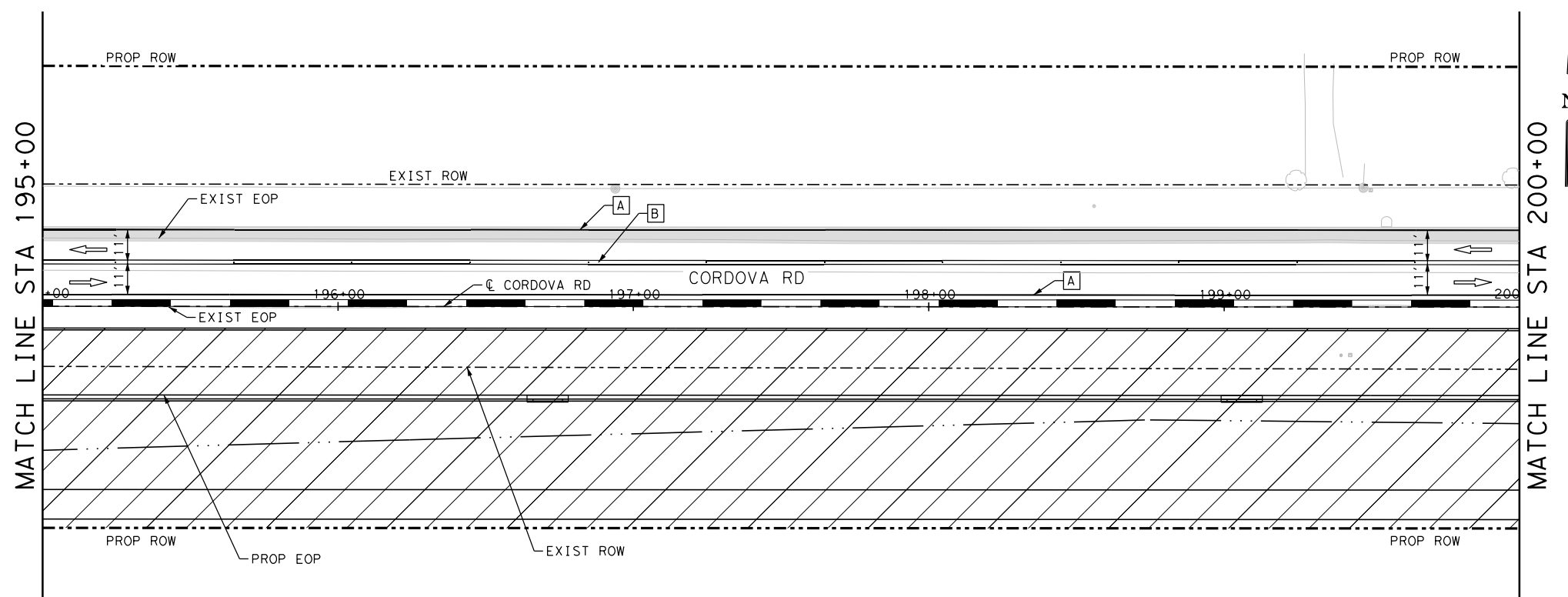
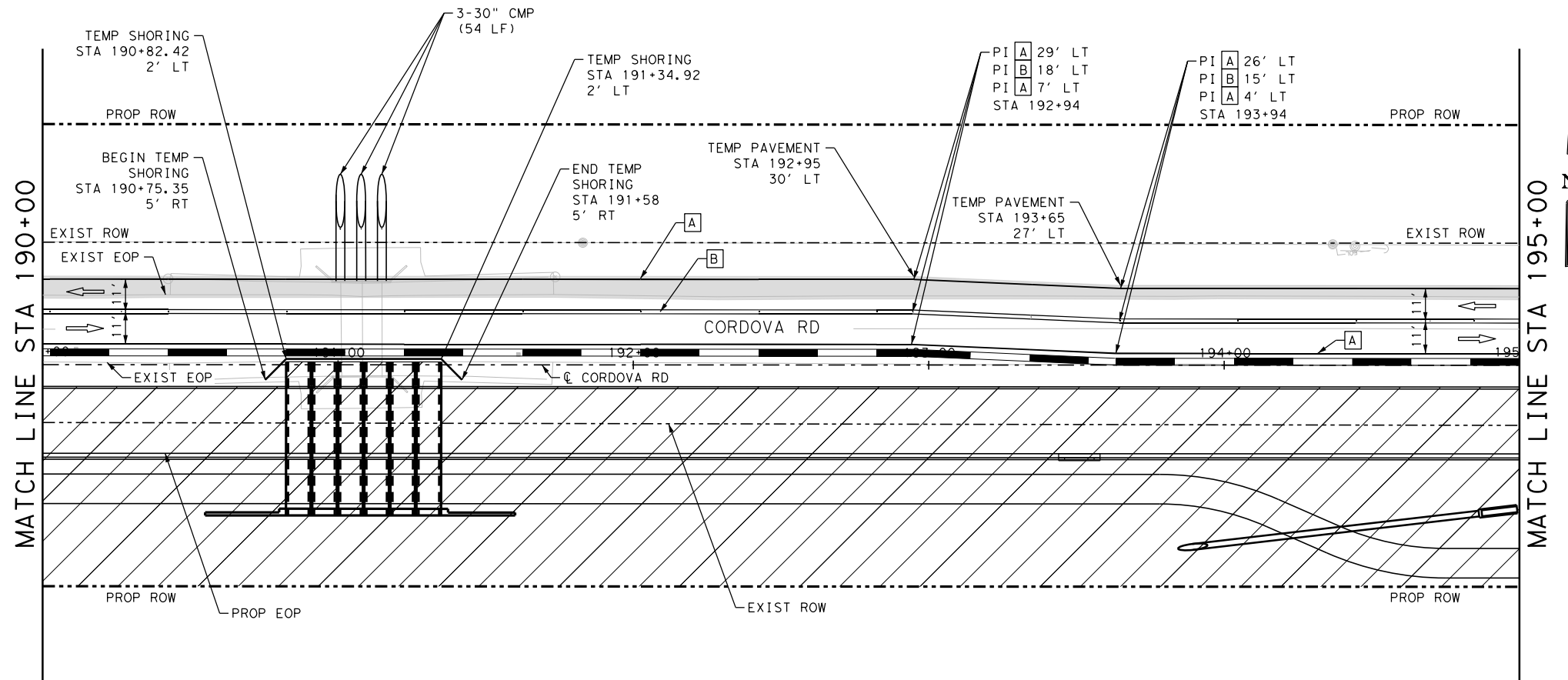
STA 180+00 TO STA 190+00

SHEET 9 OF 22

CHK	DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK	DGN:	6	TEXAS		CORDOVA		
CHK	DGN:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK	DGN:	SAT	GUADALUPE	0915	46	052	70

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_P1_10.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	A WK ZN PAV MRK NON-REMOV (W) 6" (SLD)		C WK ZN PAV MRK NON-REMOV (W) 4" (BRK)
	B WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD)		D WK ZN PAV MRK NON-REMOV (W) 24" (SLD)

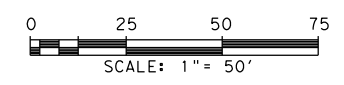
- NOTES:**
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS

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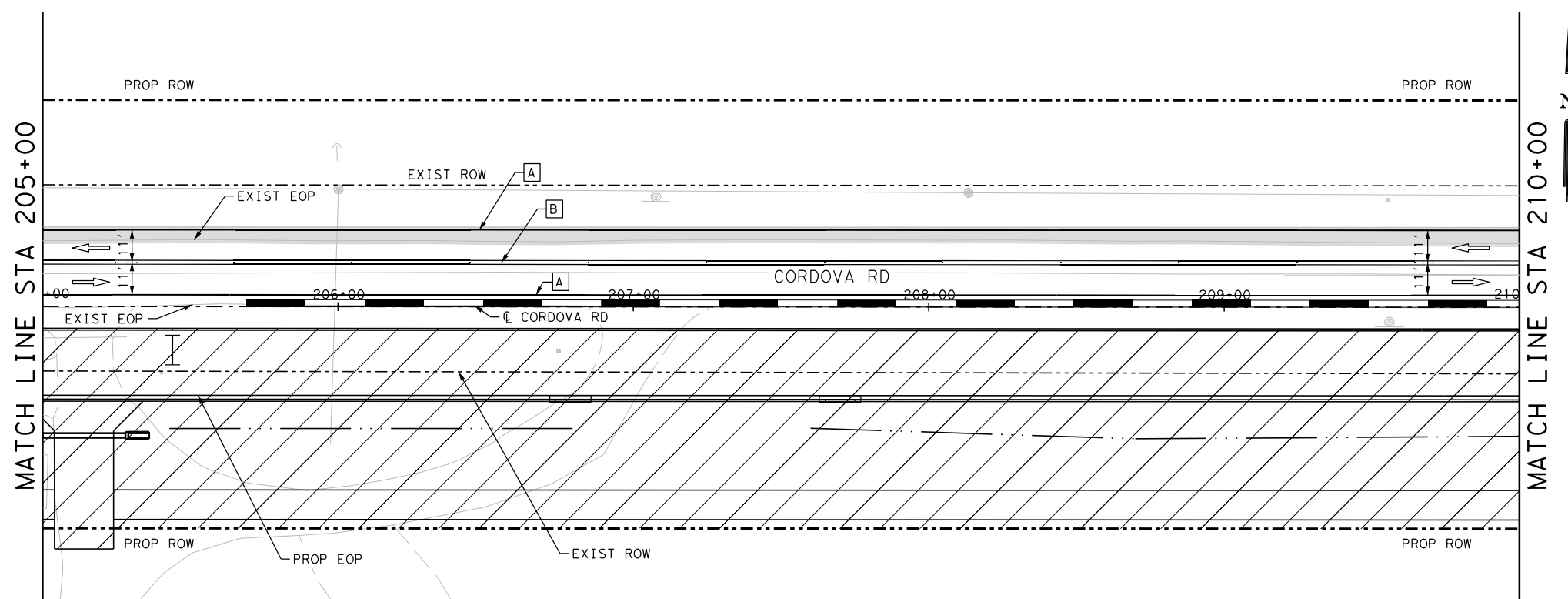
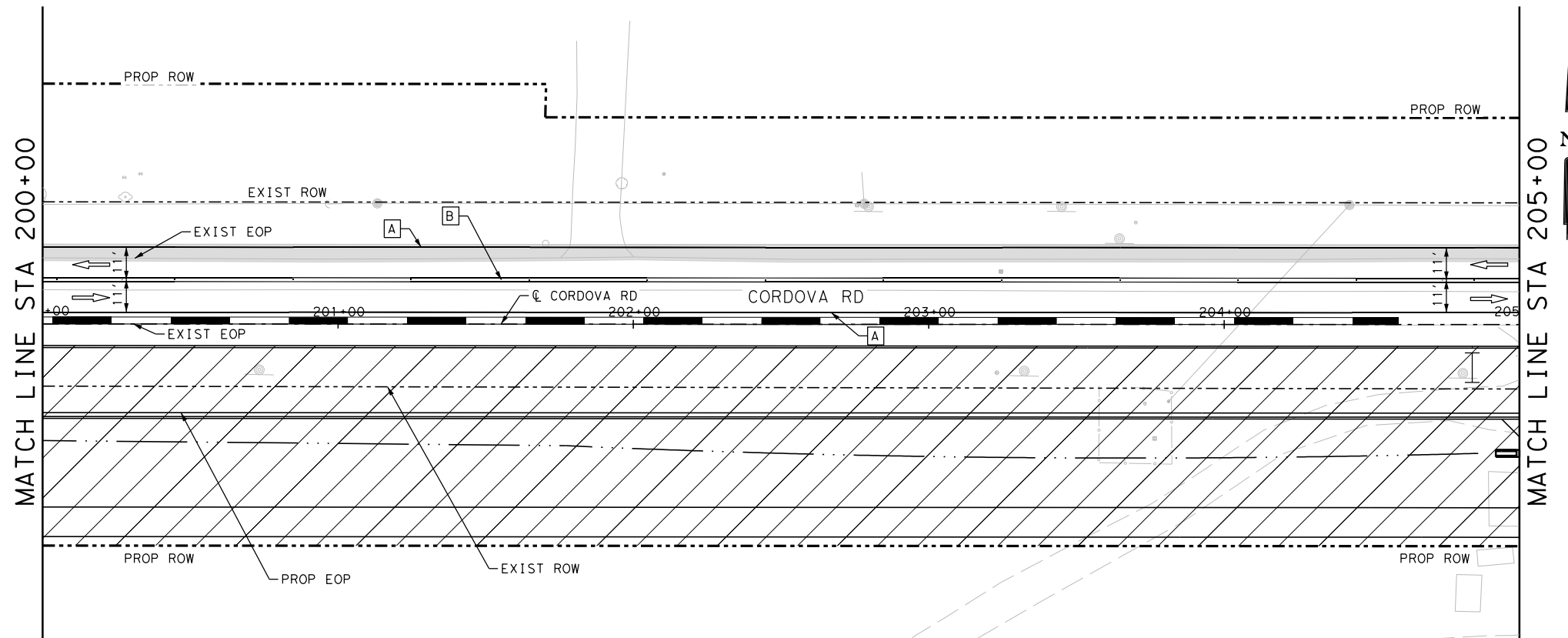
Texas Department of Transportation
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CORDOVA RD
TRAFFIC CONTROL PLAN
PHASE I
STEP I
 STA 190+00 TO STA 200+00
 SHEET 10 OF 22

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				71

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_P1_11.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		ACCELERATED CONSTRUCTION
	PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)		

A WK ZN PAV MRK NON-REMOV (W) 6" (SLD)
B WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD)
C WK ZN PAV MRK NON-REMOV (W) 4" (BRK)
D WK ZN PAV MRK NON-REMOV (W) 24" (SLD)

- NOTES:**
- FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
 - EXISTING FEATURES ARE SHOWN SCREENED BACK.
 - EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED. THIS WORK IS CONSIDERED SUBSIDIARY TO THE WORK ZONE PAVEMENT MARKING ITEMS.
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DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

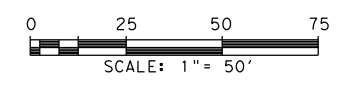
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			

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CORDOVA RD

TRAFFIC CONTROL PLAN

PHASE I

STEP I

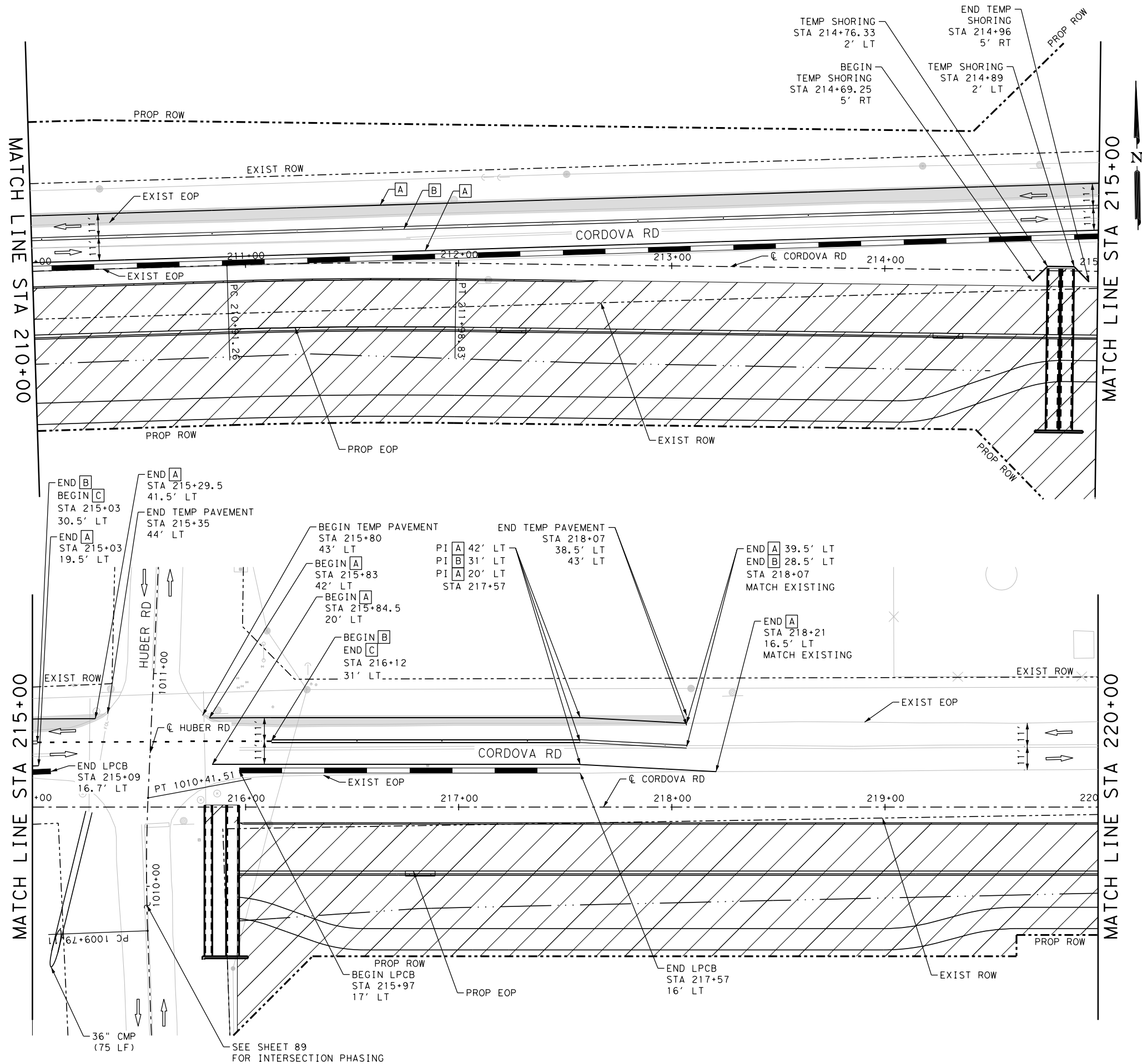
STA 200+00 TO STA 210+00

SHEET 11 OF 22

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
			JOB NO.:	SHEET NO.:
			052	72

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_P1_12.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	A WK ZN PAV MRK NON-REMOV (W) 6" (SLD)		C WK ZN PAV MRK NON-REMOV (W) 4" (BRK)
	B WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD)		D WK ZN PAV MRK NON-REMOV (W) 24" (SLD)

- NOTES:**
- FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
 - EXISTING FEATURES ARE SHOWN SCREENED BACK.
 - EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED. THIS WORK IS CONSIDERED SUBSIDIARY TO THE WORK ZONE PAVEMENT MARKING ITEMS.
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DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

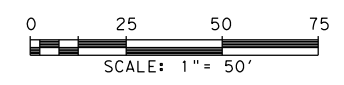
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

Pape-Dawson Engineers

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000

TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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THE STATE OF TEXAS
GUADALUPE COUNTY

Texas Department of Transportation

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CORDOVA RD

TRAFFIC CONTROL PLAN

PHASE I

STEP I

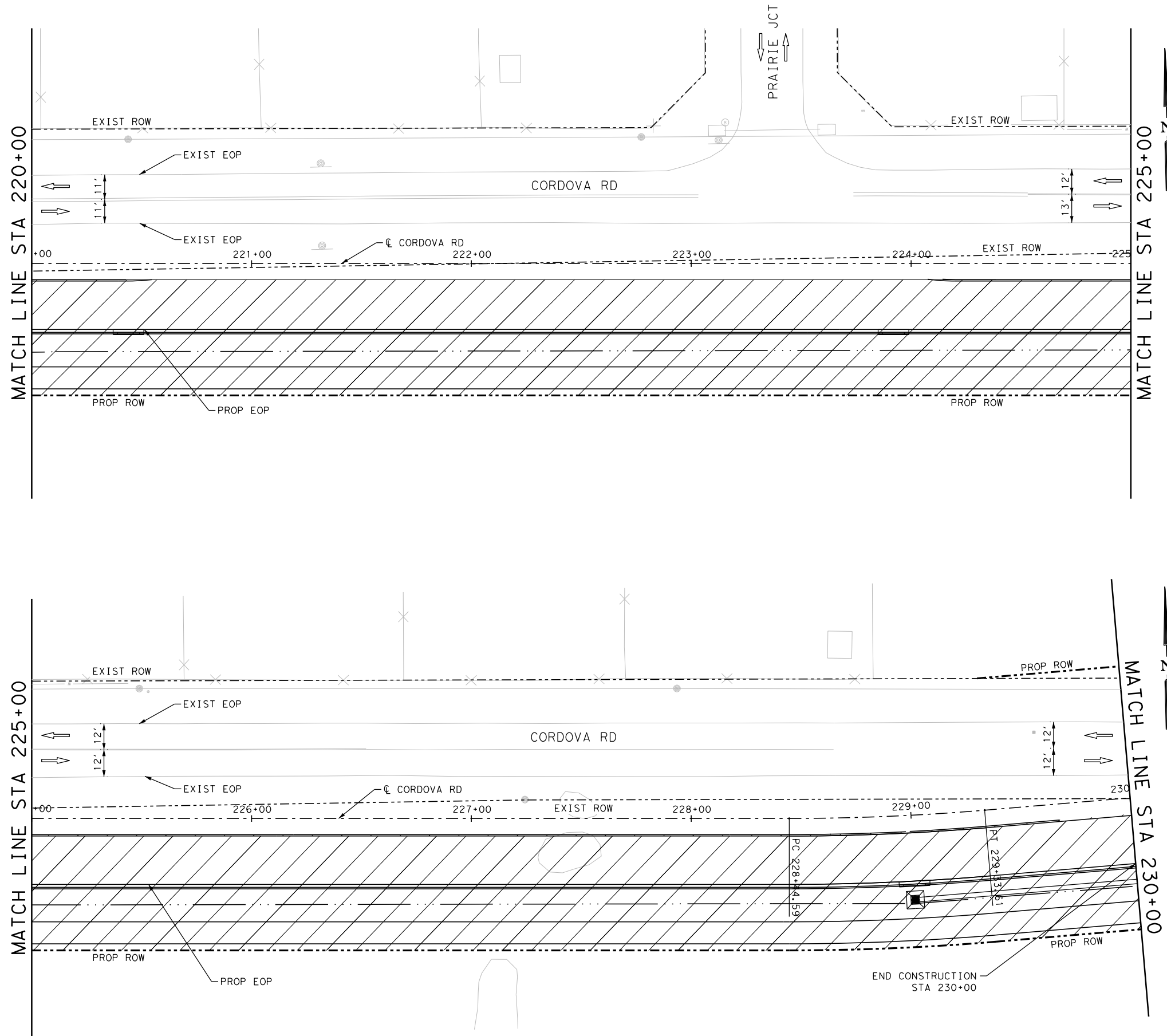
STA 210+00 TO STA 220+00

SHEET 12 OF 22

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	73

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_PH1_13.dgn



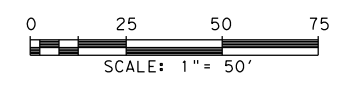
LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	WK ZN PAV MRK NON-REMOV (W) 6" (SLD)		WK ZN PAV MRK NON-REMOV (W) 4" (BRK)
	WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD)		WK ZN PAV MRK NON-REMOV (W) 24" (SLD)

- NOTES:**
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DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
----------	------	-------------	----

Pape-Dawson Engineers
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS
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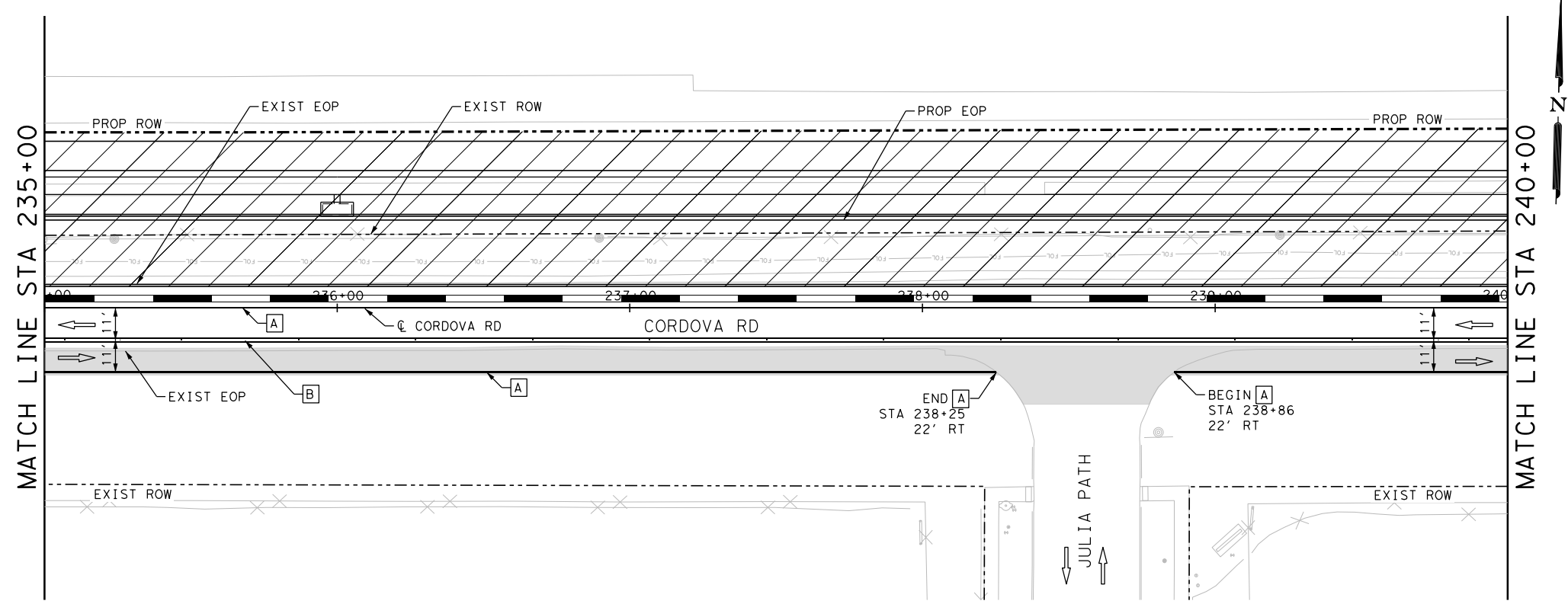
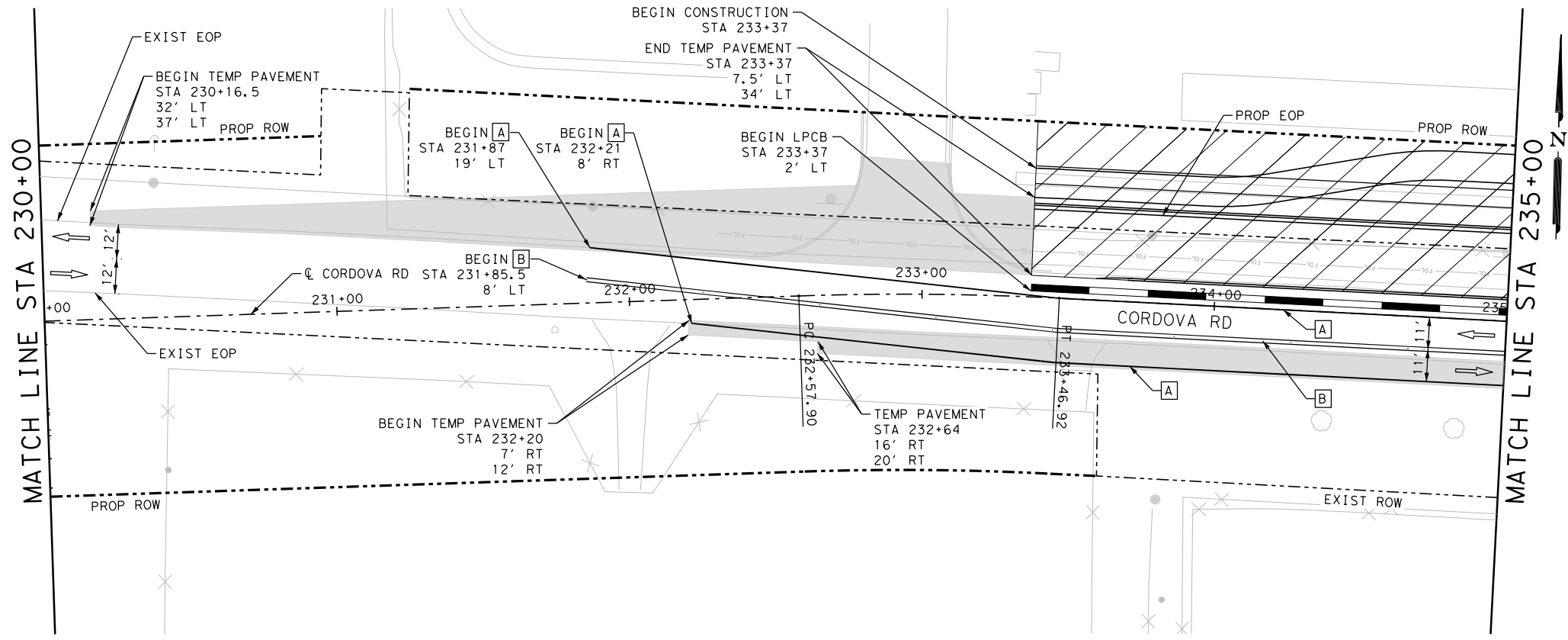
 Texas Department of Transportation
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CORDOVA RD
TRAFFIC CONTROL PLAN
PHASE I
STEP I
 STA 220+00 TO STA 230+00
 SHEET 13 OF 22

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	74

Plotted on: 11/17/2023

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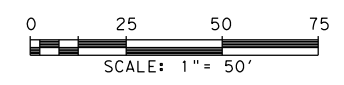
LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	WK ZN PAV MRK NON-REMOV (W) 6" (SLD)		WK ZN PAV MRK NON-REMOV (W) 4" (BRK)
	WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD)		WK ZN PAV MRK NON-REMOV (W) 24" (SLD)

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DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

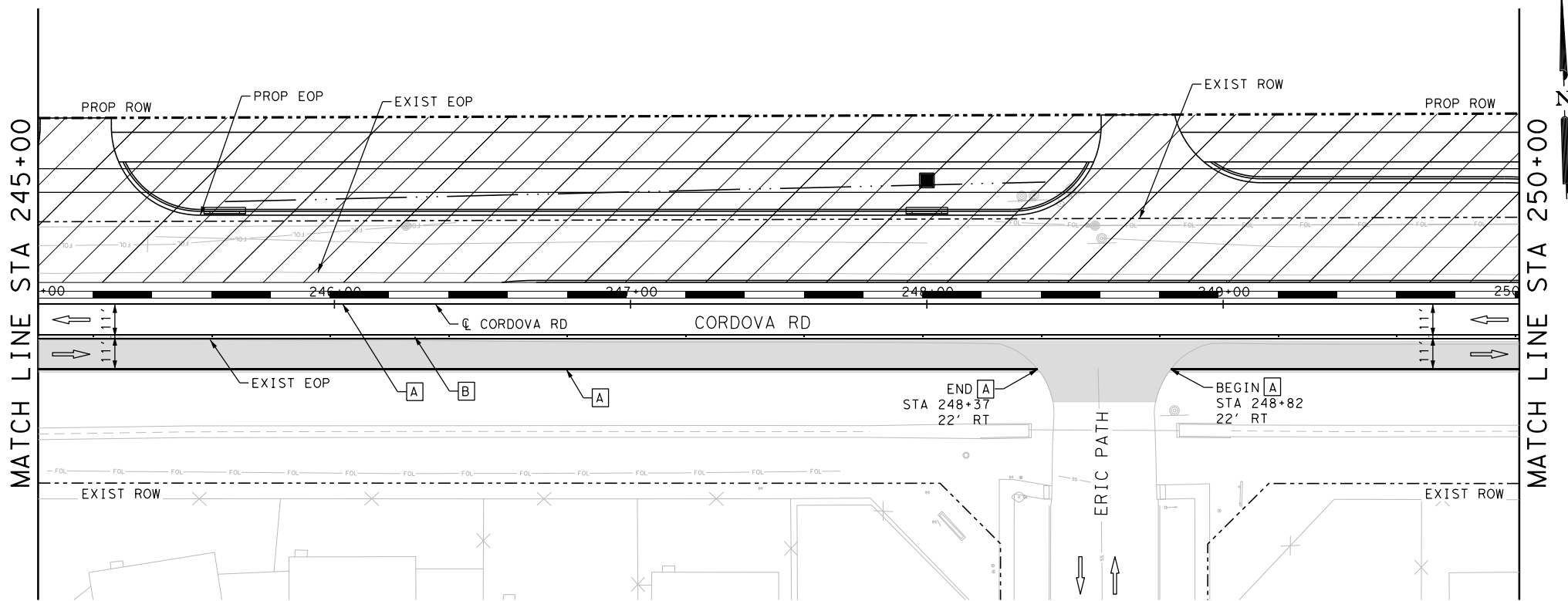
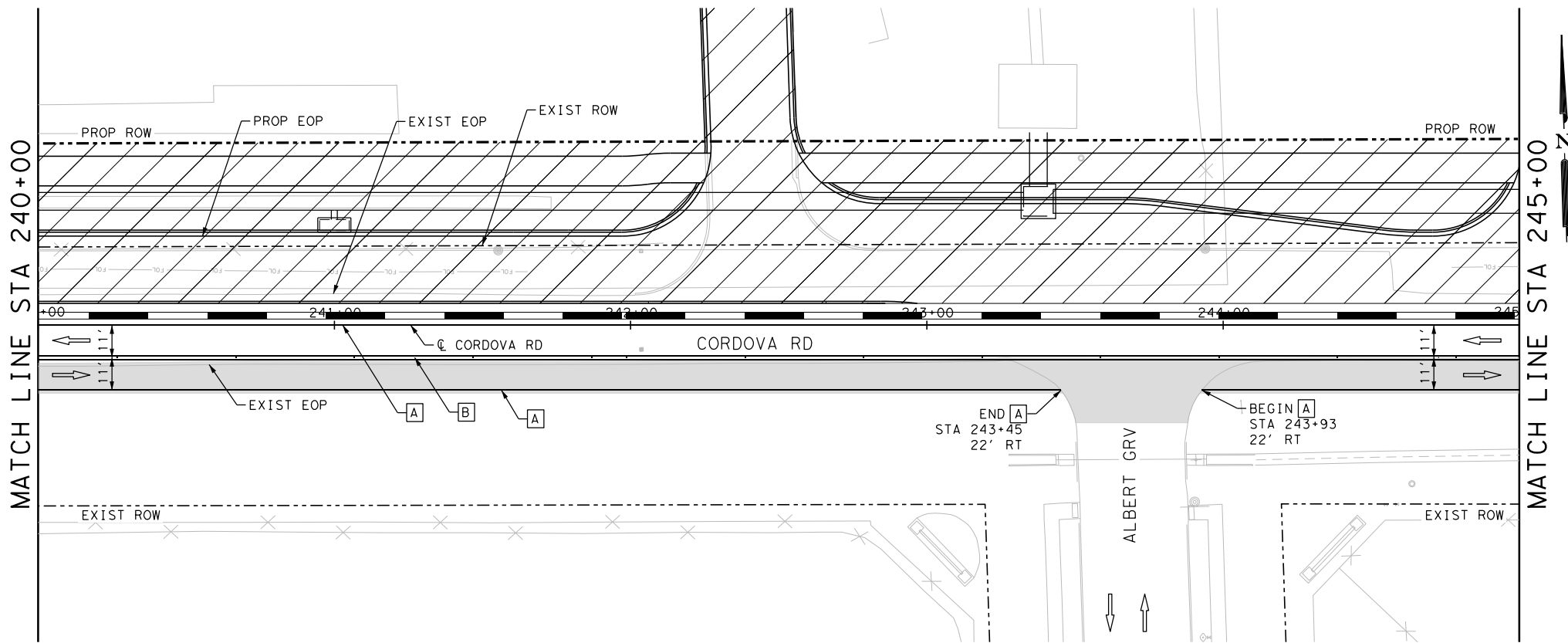
Texas Department of Transportation
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CORDOVA RD
**TRAFFIC CONTROL PLAN
 PHASE I
 STEP I**
 STA 230+00 TO STA 240+00
 SHEET 14 OF 22

CHK	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
CHK	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	75

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_PH1_15.dgn



LEGEND

- CONSTRUCTION AREA
- TEMPORARY PAVEMENT
- TYPE III BARRICADE
- SIGN
- TRAFFIC FLOW ARROWS
- PLASTIC DRUMS
- LOW PROFILE CONCRETE BARRIER (LPCB)
- PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
- A WK ZN PAV MRK NON-REMOV (W) 6" (SLD)
- B WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD)
- C WK ZN PAV MRK NON-REMOV (W) 4" (BRK)
- D WK ZN PAV MRK NON-REMOV (W) 24" (SLD)

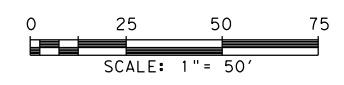
- NOTES:**
- FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
 - EXISTING FEATURES ARE SHOWN SCREENED BACK.
 - EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED. THIS WORK IS CONSIDERED SUBSIDIARY TO THE WORK ZONE PAVEMENT MARKING ITEMS.
 - ONE SECTION OF LPCB TY 2 MUST BE PLACED AT EACH UPSTREAM AND DOWNSTREAM END. THE TY 2 IS INCLUDED IN THE LPCB CALLOUTS.
 - A 3:1 TRAVERSABLE SAFETY SLOPE MUST BE ADDED TO ALL DROPOFFS GREATER THAN 2" IN AREAS NOT PROTECTED BY BARRIER AT THE END OF THE WORK DAY.

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

Texas Department of Transportation
 © 2023

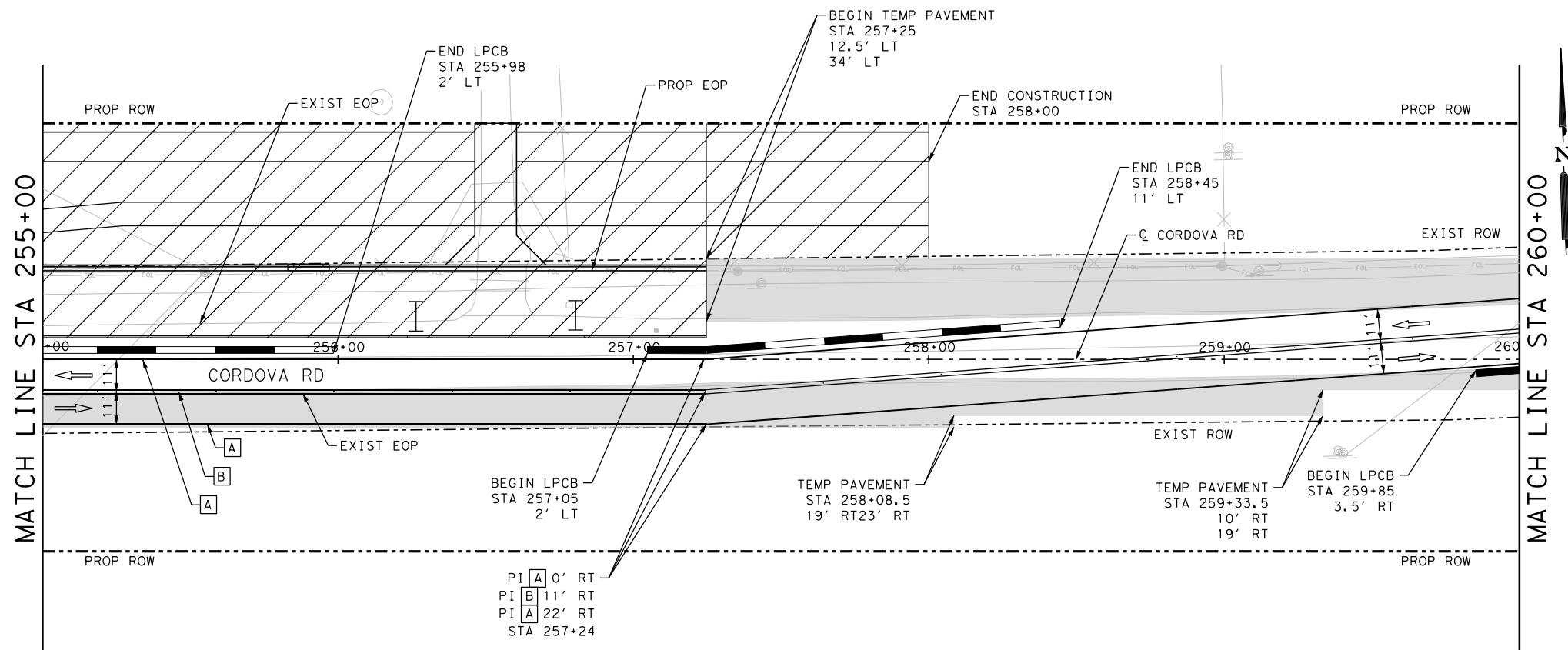
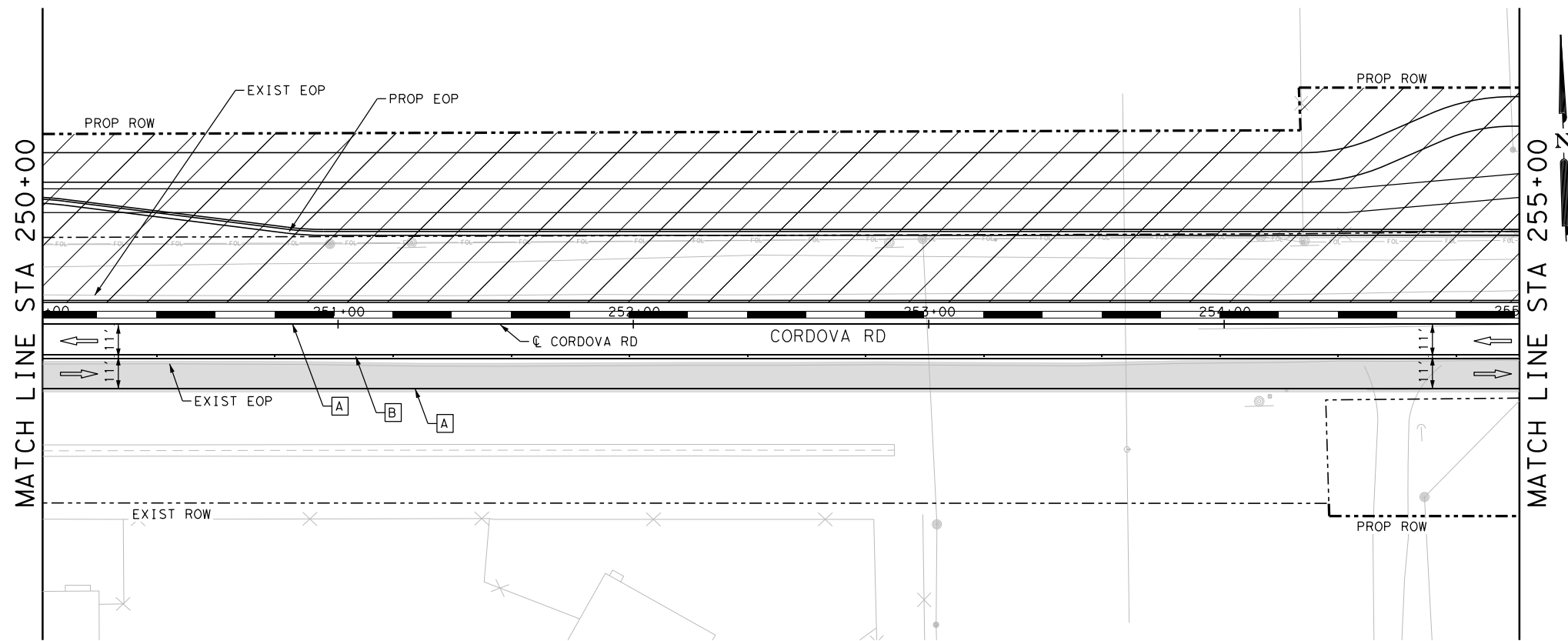
CORDOVA RD
TRAFFIC CONTROL PLAN
PHASE I
STEP I
 STA 240+00 TO STA 250+00

SHEET 15 OF 22

CHK	DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK	DGN:	6	TEXAS		CORDOVA		
CHK	DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK	DWG:	SAT	GUADALUPE	0915	46	052	76

Plotted on: 11/17/2023

Design File name: P:\1275\00\Design\Civil\TCP\Phase1\1277500_TCP_PH1_16.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	WK ZN PAV MRK NON-REMOV (W) 6" (SLD)		WK ZN PAV MRK NON-REMOV (W) 4" (BRK)
	WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD)		WK ZN PAV MRK NON-REMOV (W) 24" (SLD)

- NOTES:**
- FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
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DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

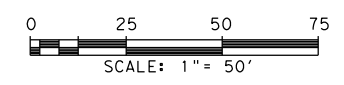
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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GUADALUPE COUNTY

Texas Department of Transportation
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CORDOVA RD

TRAFFIC CONTROL PLAN

PHASE I

STEP I

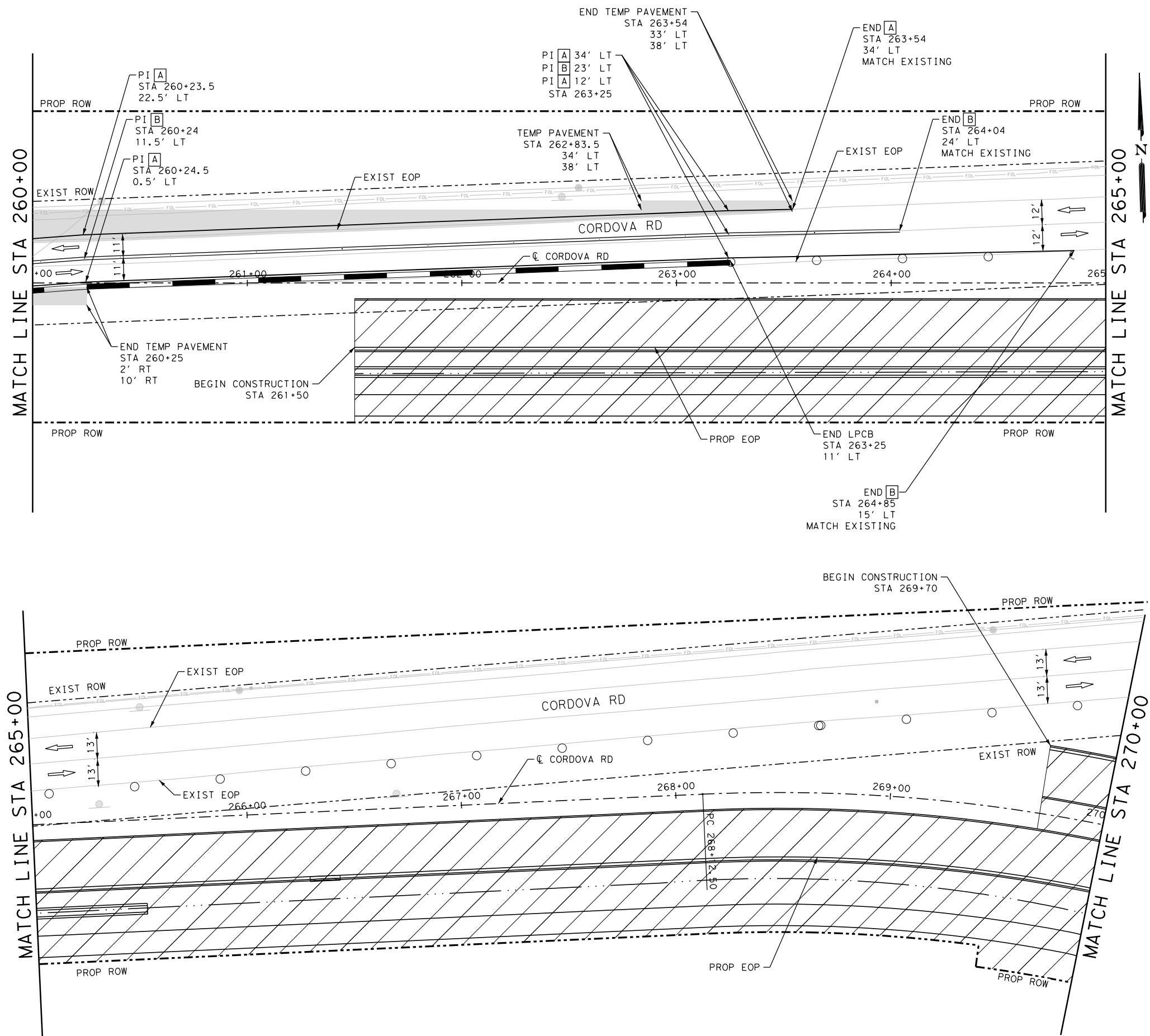
STA 250+00 TO STA 260+00

SHEET 16 OF 22

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				77

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_PH1_17.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	WK ZN PAV MRK NON-REMOV (W) 6" (SLD)		WK ZN PAV MRK NON-REMOV (W) 4" (BRK)
	WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD)		WK ZN PAV MRK NON-REMOV (W) 24" (SLD)

- NOTES:**
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DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

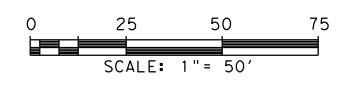
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

Pape-Dawson Engineers

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000

TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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GUADALUPE COUNTY

Texas Department of Transportation

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CORDOVA RD

TRAFFIC CONTROL PLAN

PHASE I

STEP I

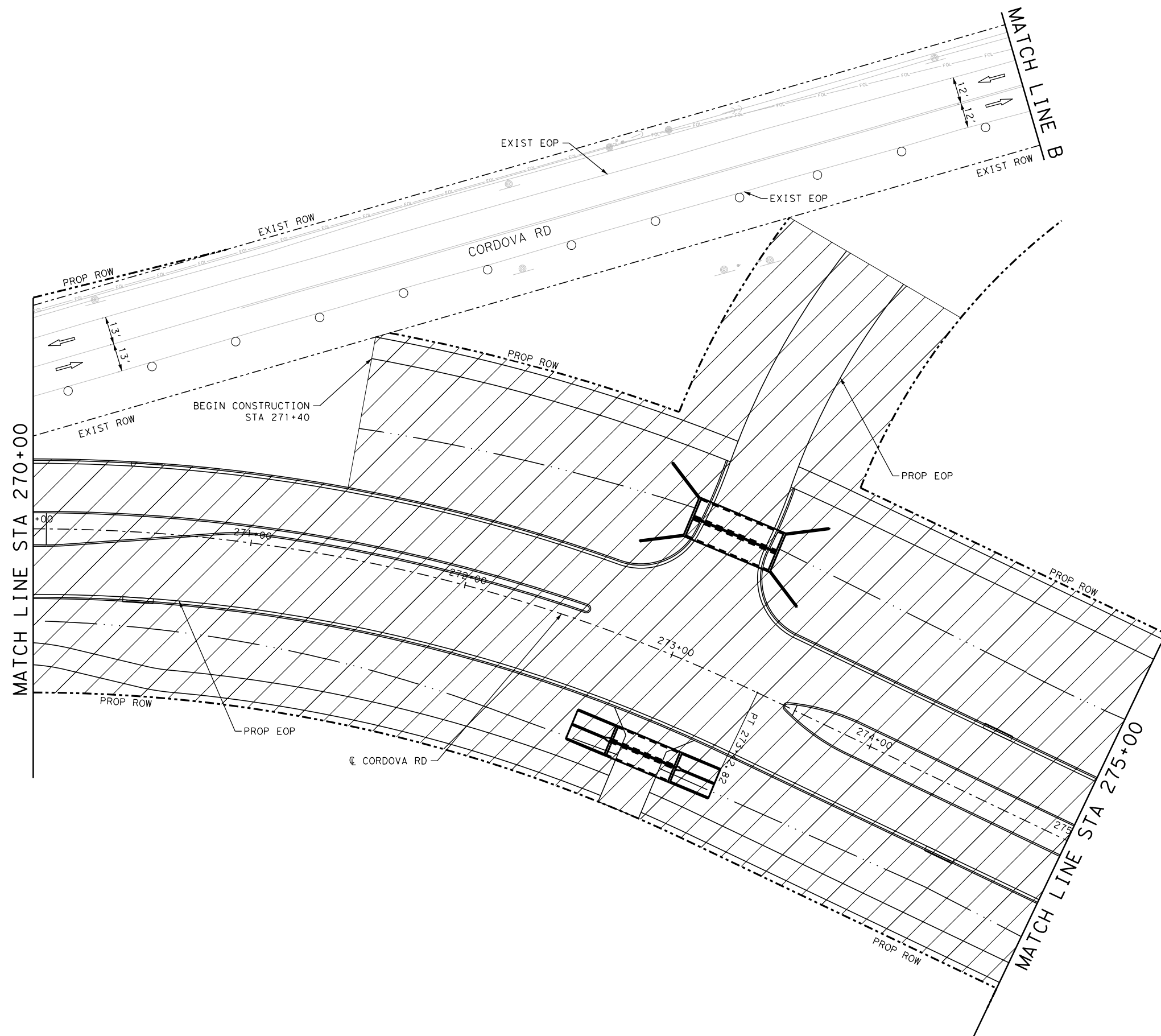
STA 260+00 TO STA 270+00

SHEET 17 OF 22

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				78

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_PH1_18.dgn



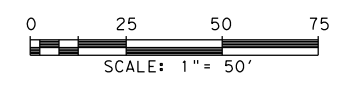
LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	WK ZN PAV MRK NON-REMOV (W) 6" (SLD)		WK ZN PAV MRK NON-REMOV (W) 4" (BRK)
	WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD)		WK ZN PAV MRK NON-REMOV (W) 24" (SLD)

- NOTES:**
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DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			

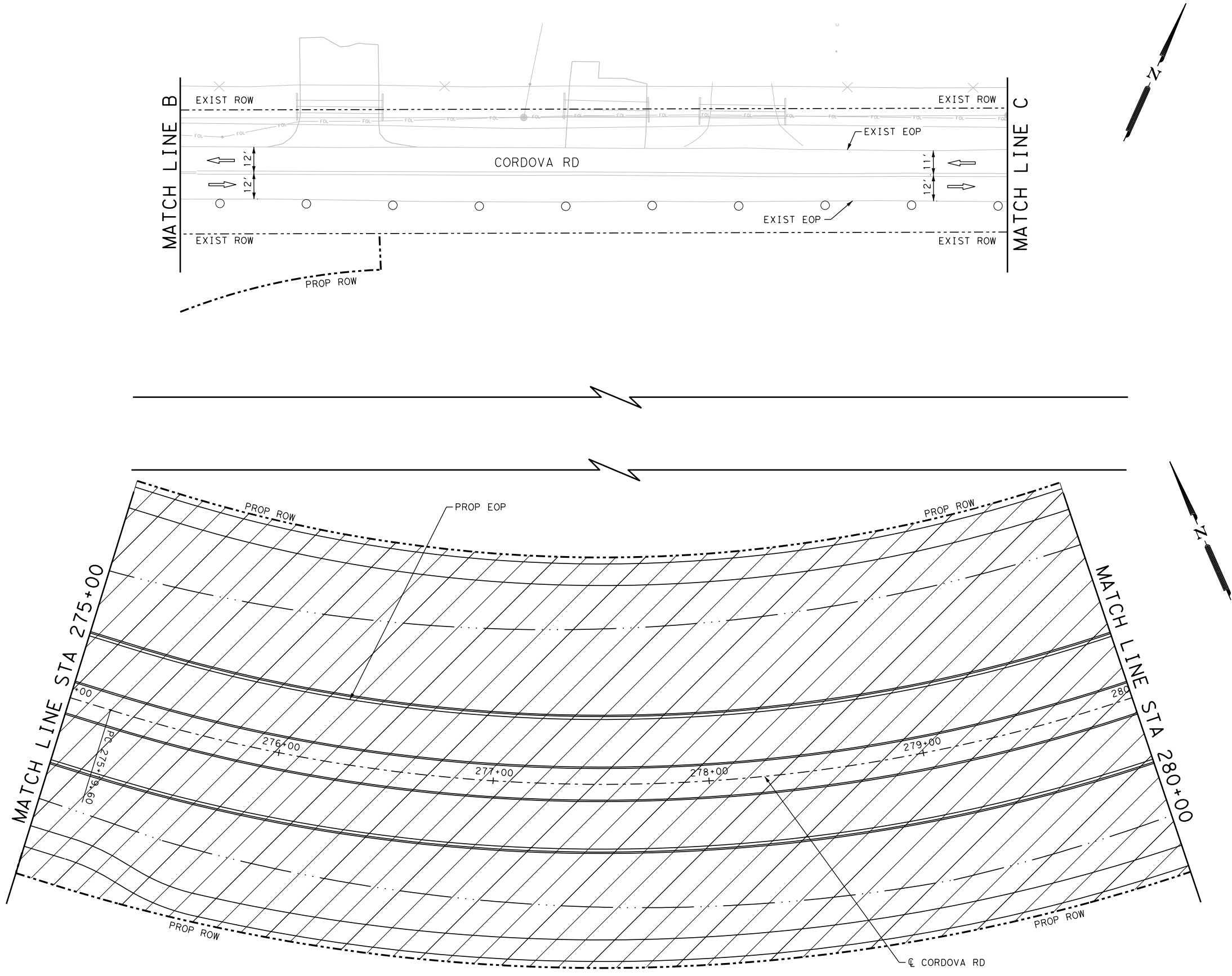
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CORDOVA RD
TRAFFIC CONTROL PLAN
PHASE I
STEP I
 STA 270+00 TO STA 275+00
 SHEET 18 OF 22

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				79

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase I\1277500_TCP_PHI_19.dgn



LEGEND

- CONSTRUCTION AREA
- TEMPORARY PAVEMENT
- TYPE III BARRICADE
- SIGN
- TRAFFIC FLOW ARROWS
- PLASTIC DRUMS
- LOW PROFILE CONCRETE BARRIER (LPCB)
- PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
- WK ZN PAV MRK NON-REMOV (W) 6" (SLD)
- WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD)
- WK ZN PAV MRK NON-REMOV (W) 4" (BRK)
- WK ZN PAV MRK NON-REMOV (W) 24" (SLD)

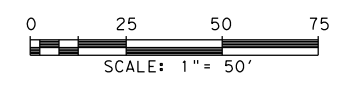
- NOTES:**
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
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PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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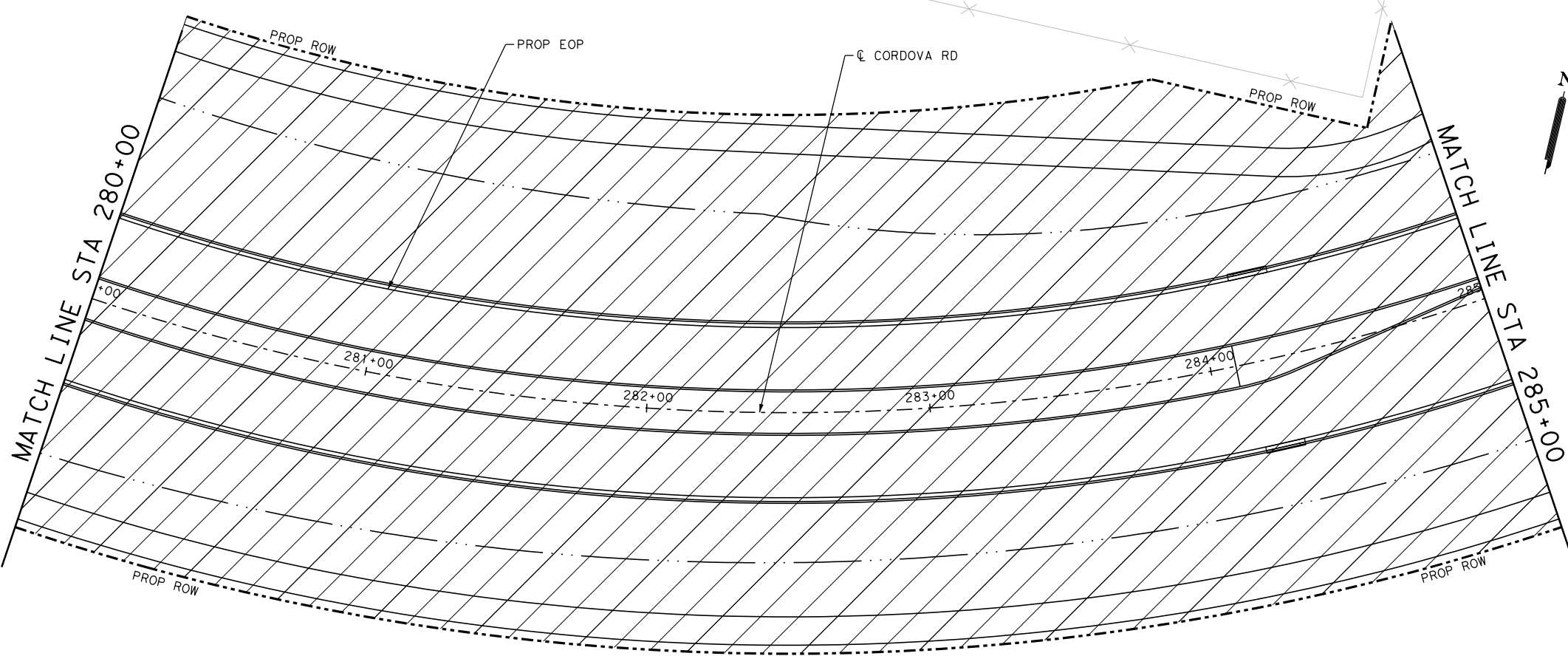
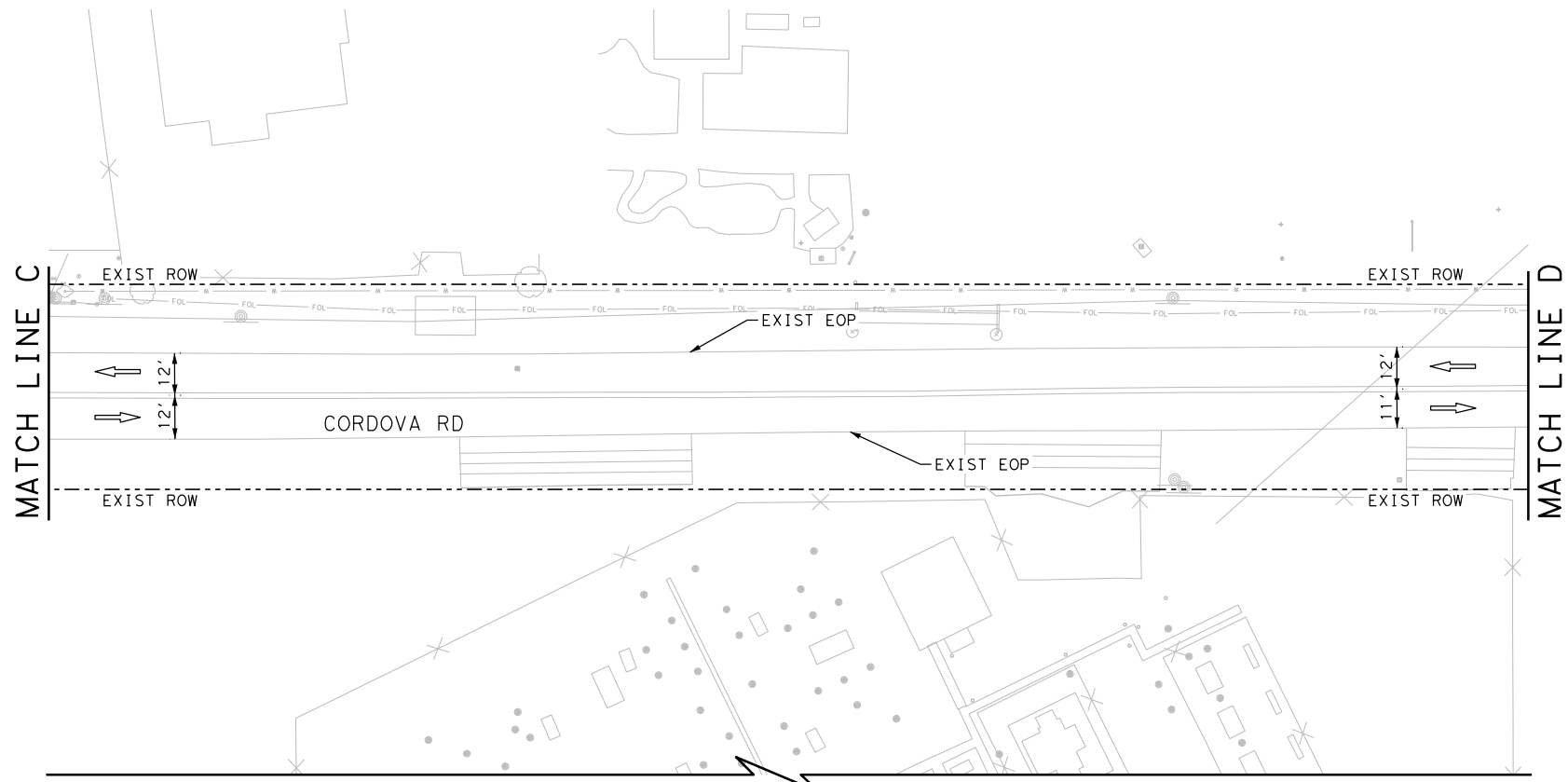
Texas Department of Transportation
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CORDOVA RD
TRAFFIC CONTROL PLAN
PHASE I
STEP I
 STA 275+00 TO STA 280+00
 SHEET 19 OF 22

DWG:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DWG:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	80

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_PH1_20.dgn



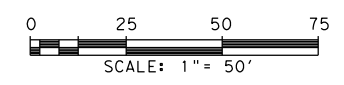
LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	WK ZN PAV MRK NON-REMOV (W) 6" (SLD)		WK ZN PAV MRK NON-REMOV (W) 4" (BRK)
	WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD)		WK ZN PAV MRK NON-REMOV (W) 24" (SLD)

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DESIGN
INTERIM REVIEW
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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

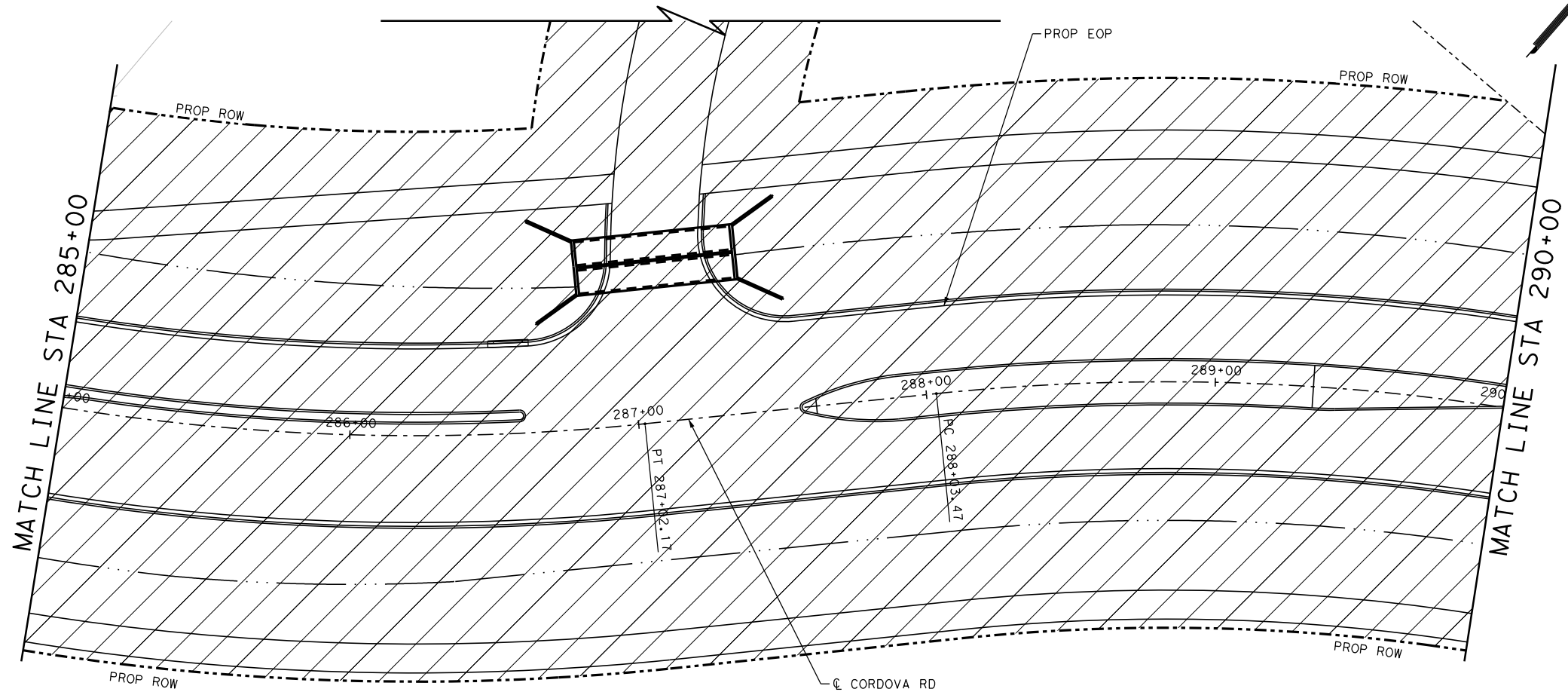
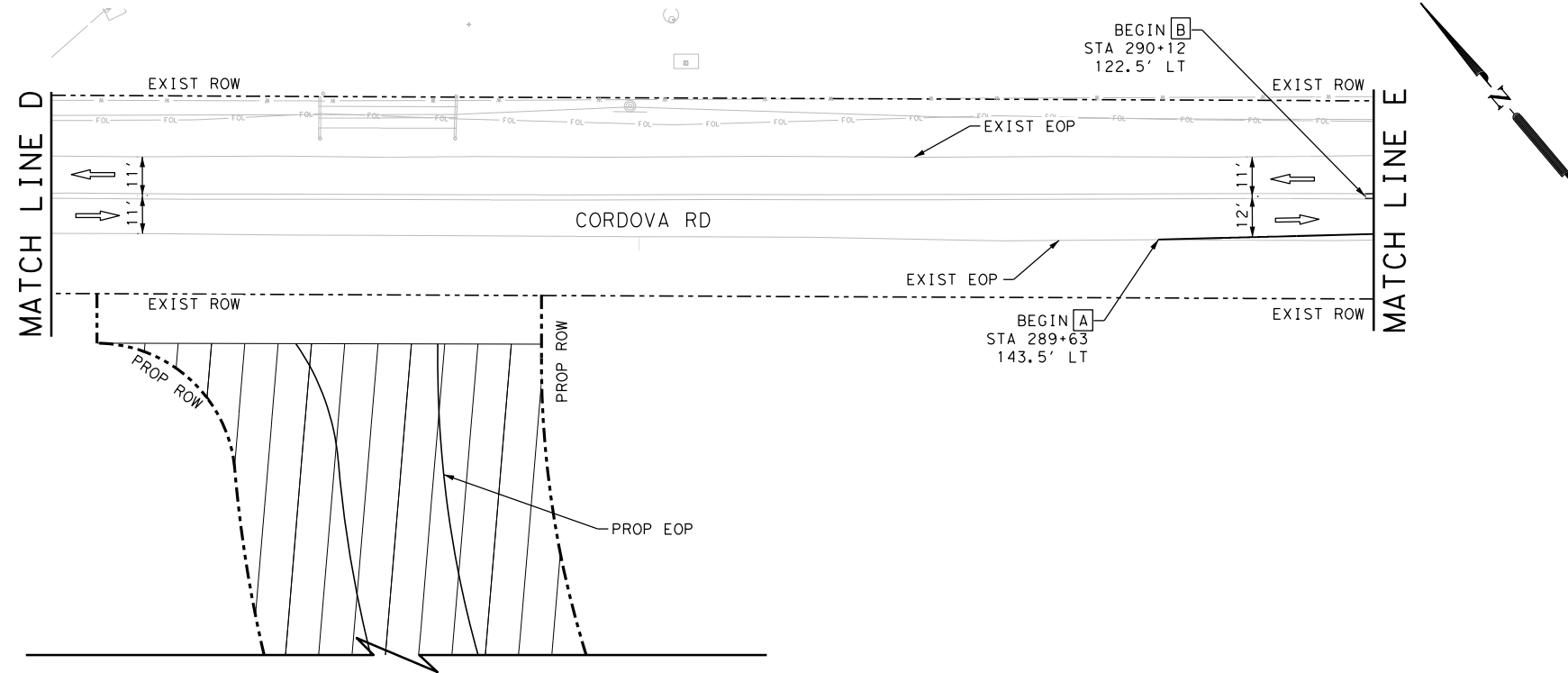
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CORDOVA RD
TRAFFIC CONTROL PLAN
PHASE I
STEP I
 STA 280+00 TO STA 285+00
 SHEET 20 OF 22

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
			JOB NO.:	SHEET NO.:
			052	81

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_PH1_21.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	WK ZN PAV MRK NON-REMOV (W) 6" (SLD)		WK ZN PAV MRK NON-REMOV (W) 4" (BRK)
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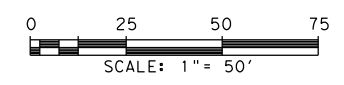
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
----------	------	-------------	----

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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CORDOVA RD
**TRAFFIC CONTROL PLAN
 PHASE I
 STEP I**
 STA 285+00 TO STA 290+00
 SHEET 21 OF 22

CHK	DGN	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
		6	TEXAS		CORDOVA		
CHK	DGN	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
		SAT	GUADALUPE	0915	46	052	82

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_P1_22.dgn

LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
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	B WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD)		D WK ZN PAV MRK NON-REMOV (W) 24" (SLD)

NOTES:

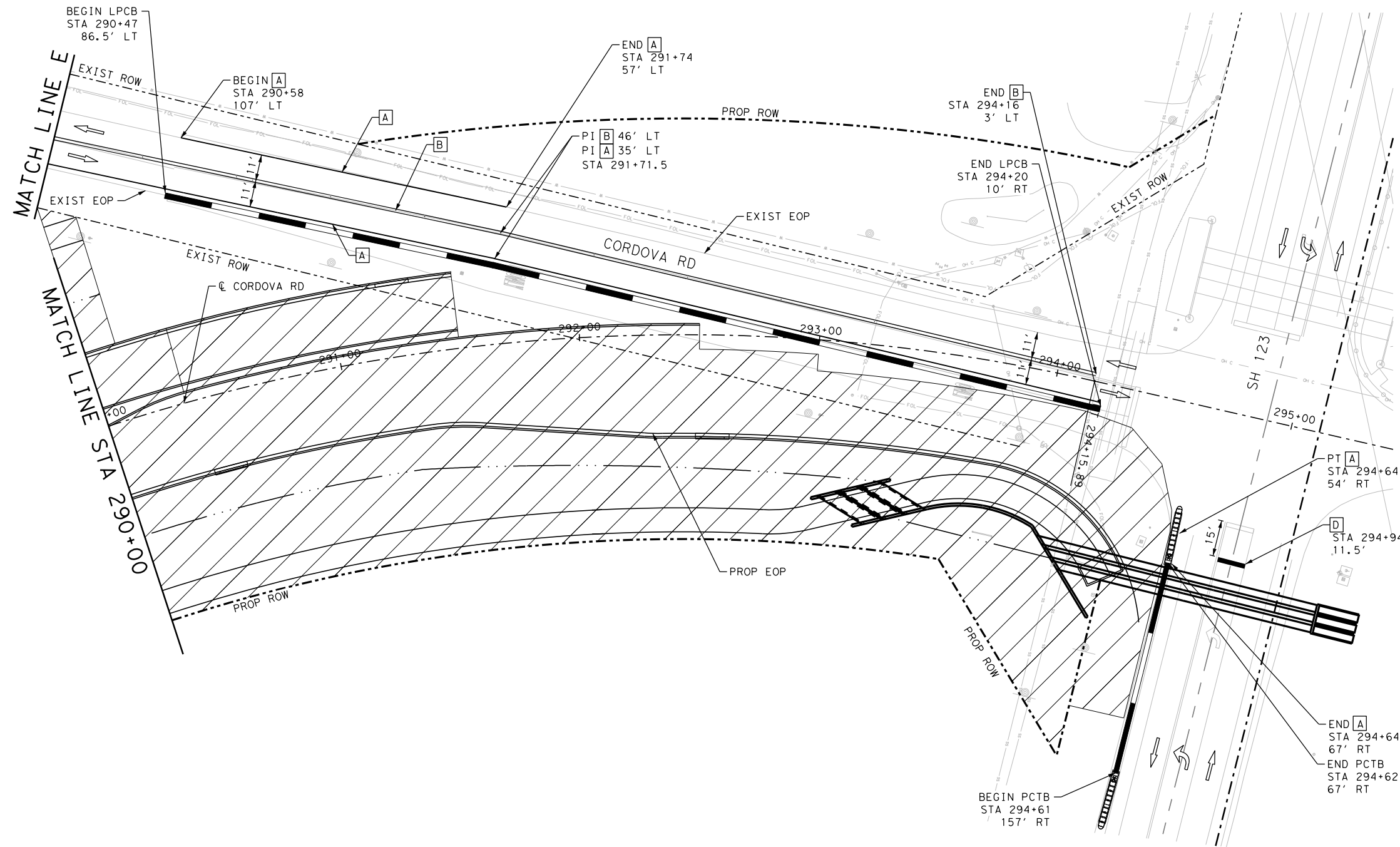
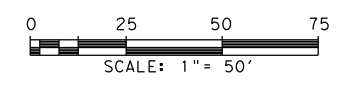
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
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Pape-Dawson Engineers
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS
 It's real.

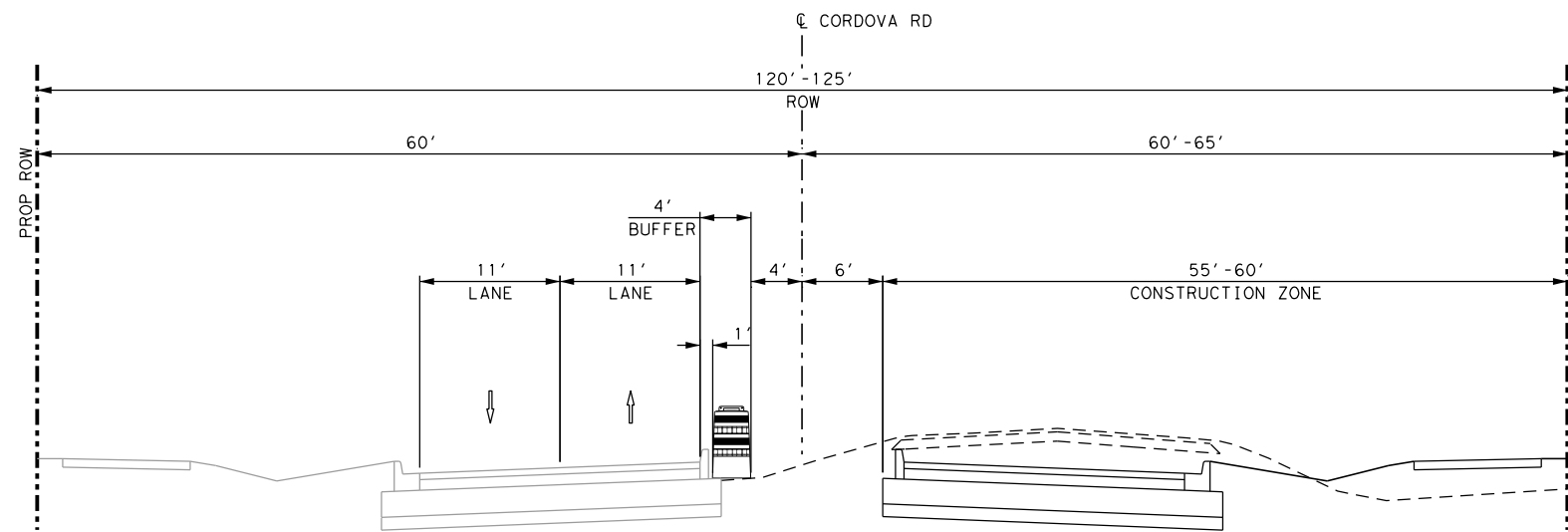
Texas Department of Transportation
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CORDOVA RD
TRAFFIC CONTROL PLAN
PHASE I
STEP I
 STA 290+00 TO END OF PROJECT
 SHEET 22 OF 22

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				83

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase I\1277500_TCP_Typico\IPH201.dgn



CORDOVA RD - PHASE I STEP II
 STA 150+50 TO STA 163+00
 STA 230+00 TO STA 260+50
 NTS

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023

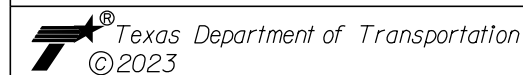
REV. NO.	DATE	DESCRIPTION	BY
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SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



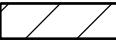



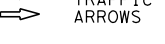
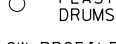


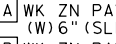
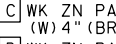
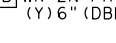
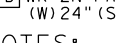
CORDOVA RD
TRAFFIC CONTROL PLAN
PHASE I STEP II
TYPICAL SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	84

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_PH1_SH46_01.dgn

LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	WK ZN PAV MRK NON-REMOV (W) 6" (SLD)		WK ZN PAV MRK NON-REMOV (W) 4" (BRK)
	WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD)		WK ZN PAV MRK NON-REMOV (W) 24" (SLD)

- NOTES:**
- FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
 - EXISTING FEATURES ARE SHOWN SCREENED BACK.
 - EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED. THIS WORK IS CONSIDERED SUBSIDIARY TO THE WORK ZONE PAVEMENT MARKING ITEMS.
 - ONE SECTION OF LPCB TY 2 MUST BE PLACED AT EACH UPSTREAM AND DOWNSTREAM END. THE TY 2 IS INCLUDED IN THE LPCB CALLOUTS.
 - A 3:1 TRAVERSABLE SAFETY SLOPE MUST BE ADDED TO ALL DROPOFFS GREATER THAN 2" IN AREAS NOT PROTECTED BY BARRIER AT THE END OF THE WORK DAY.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

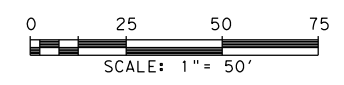
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000

TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS

It's real.



GUADALUPE COUNTY

Texas Department of Transportation

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CORDOVA RD

TRAFFIC CONTROL PLAN

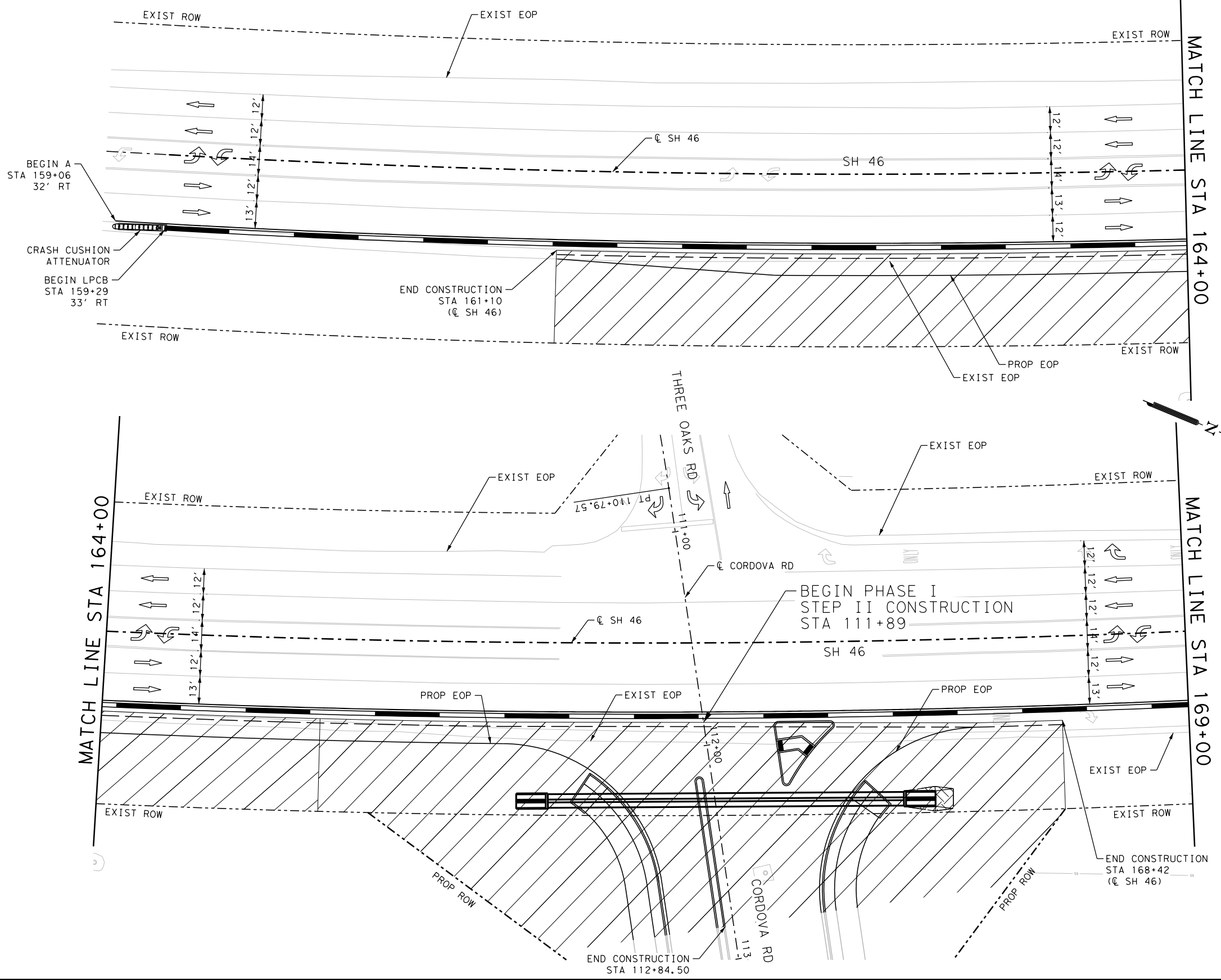
PHASE I

STEP II-SH 46

BEGIN INCIDENTAL TO STA 169+00

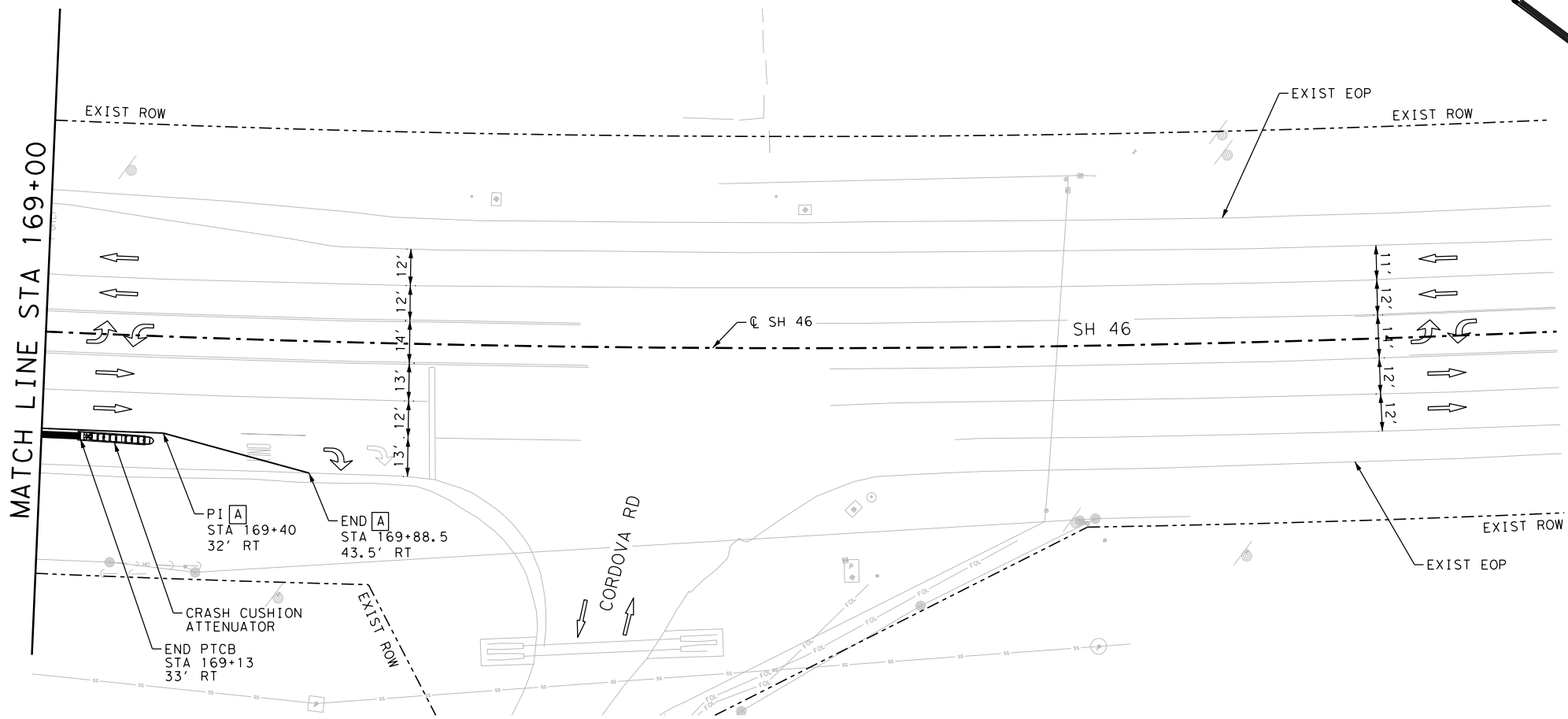
SHEET 1 OF 2

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
			JOB NO.:	SHEET NO.:
			052	85



Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_P1_SH46_02.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	W 6" (SLD)		W 4" (BRK)
	W 24" (SLD)		DBL (SLD)

- NOTES:**
- FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
 - EXISTING FEATURES ARE SHOWN SCREENED BACK.
 - EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED. THIS WORK IS CONSIDERED SUBSIDIARY TO THE WORK ZONE PAVEMENT MARKING ITEMS.
 - ONE SECTION OF LPCB TY 2 MUST BE PLACED AT EACH UPSTREAM AND DOWNSTREAM END. THE TY 2 IS INCLUDED IN THE LPCB CALLOUTS.
 - A 3:1 TRAVERSABLE SAFETY SLOPE MUST BE ADDED TO ALL DROPOFFS GREATER THAN 2" IN AREAS NOT PROTECTED BY BARRIER AT THE END OF THE WORK DAY.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

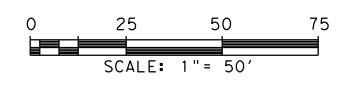
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 PAPE-DAWSON ENGINEERS <small>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</small>			

 SEGWIN TEXAS It's real.	
---------------------------------------	--

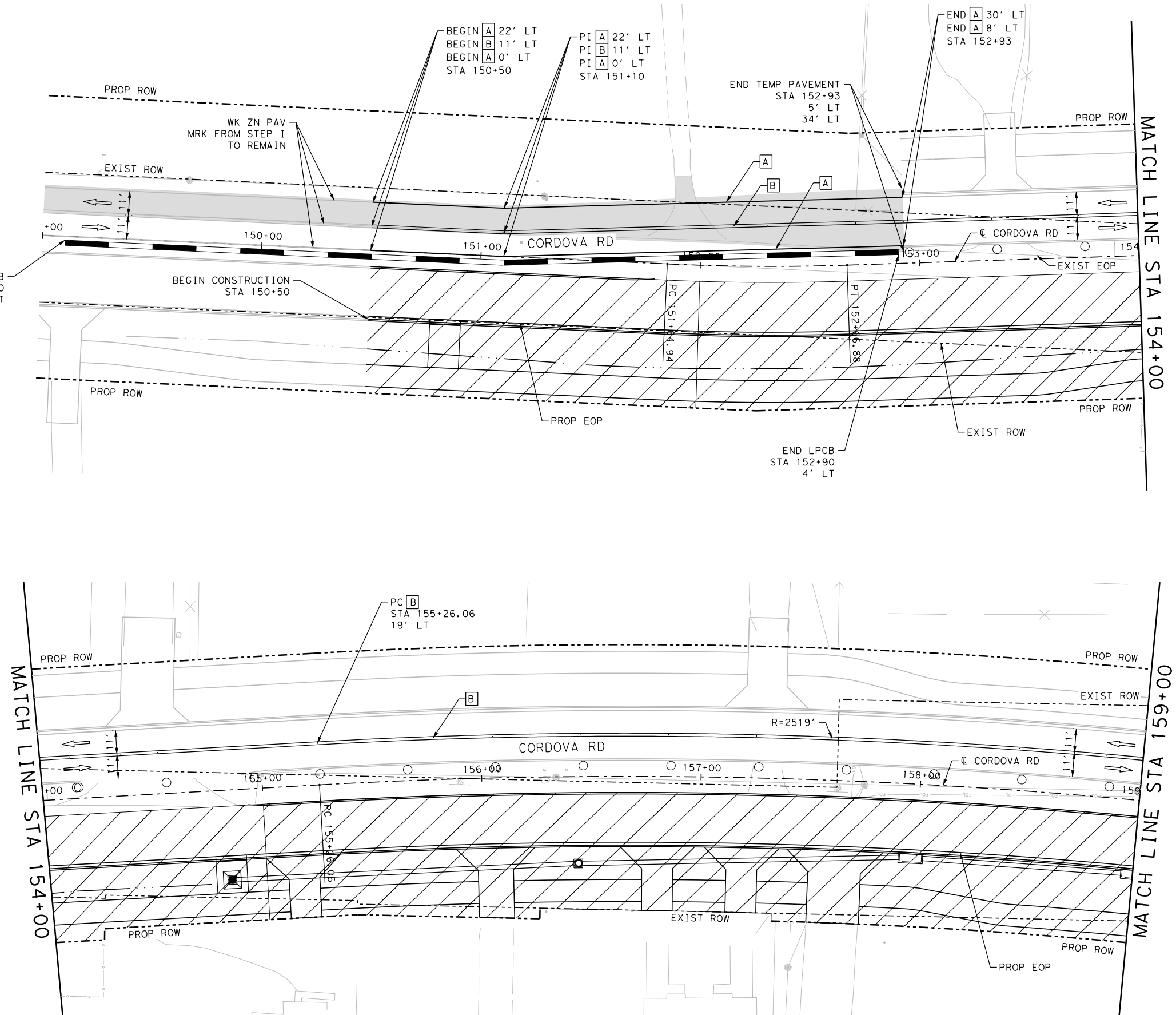
Texas Department of Transportation
© 2023

CORDOVA RD
TRAFFIC CONTROL PLAN
PHASE I
STEP II-SH 46
 STA 169+00 TO END OF INCIDENTAL

CHK DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
	6	TEXAS		CORDOVA
CHK DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
	SAT	GUADALUPE	0915	46
CHK DWG:			JOB NO.:	SHEET NO.:
			052	86

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_PHI_STEP_2_06.dgn



LEGEND

- CONSTRUCTION AREA (diagonal hatching)
- TEMPORARY PAVEMENT (stippled pattern)
- TYPE III BARRICADE (T-shaped symbol)
- SIGN (circle with 'X')
- TRAFFIC FLOW ARROWS (double arrow)
- PLASTIC DRUMS (circle with 'X')
- LOW PROFILE CONCRETE BARRIER (LPCB) (solid black bar)
- PERMANENT CONCRETE TRAFFIC BARRIER (PCTB) (hatched bar)
- WK ZN PAV MRK NON-REMOV (W) 6" (SLD) (square with 'A')
- WK ZN PAV MRK NON-REMOV (W) 4" (BRK) (square with 'C')
- WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD) (square with 'B')
- WK ZN PAV MRK NON-REMOV (W) 24" (SLD) (square with 'D')

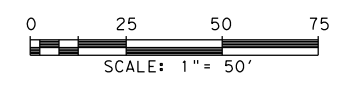
- NOTES:**
- FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
 - EXISTING FEATURES ARE SHOWN SCREENED BACK.
 - EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED. THIS WORK IS CONSIDERED SUBSIDIARY TO THE WORK ZONE PAVEMENT MARKING ITEMS.
 - ONE SECTION OF LPCB TY 2 MUST BE PLACED AT EACH UPSTREAM AND DOWNSTREAM END. THE TY 2 IS INCLUDED IN THE LPCB CALLOUTS.
 - A 3:1 TRAVERSABLE SAFETY SLOPE MUST BE ADDED TO ALL DROPOFFS GREATER THAN 2" IN AREAS NOT PROTECTED BY BARRIER AT THE END OF THE WORK DAY.

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

Pape-Dawson Engineers
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS
 It's real.

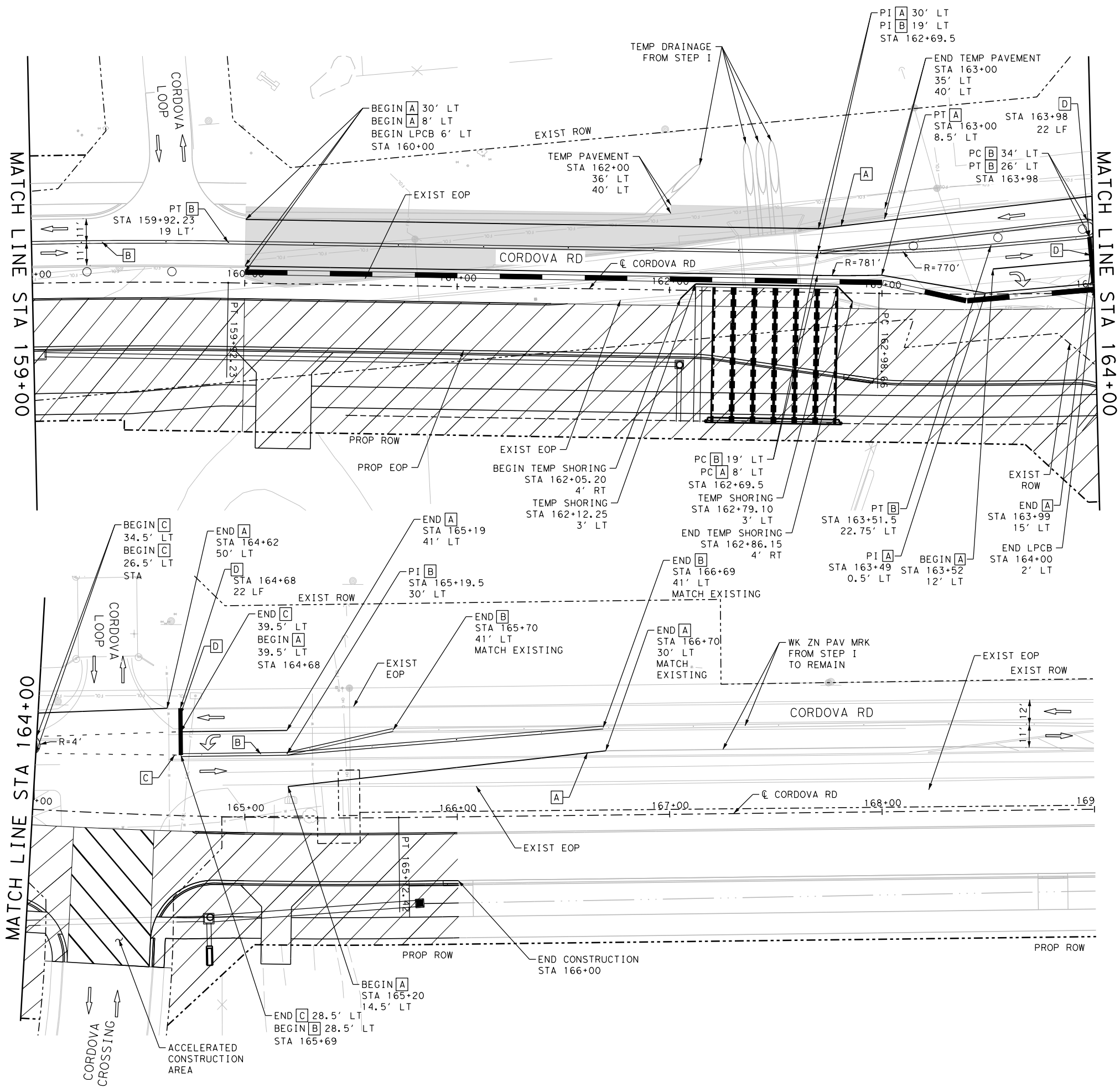
Texas Department of Transportation
 © 2023

CORDOVA RD
TRAFFIC CONTROL PLAN
PHASE I
STEP II
 BEGIN CONSTRUCTION TO STA 159+00
 SHEET 1 OF 6

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	87

Plotted on: 11/17/2023

Design File name: P:\1275\00\Design\Civil\TCP\Phase1\1277500_TCP_PHI_STEP_2_07.dgn



LEGEND

- CONSTRUCTION AREA
- TEMPORARY PAVEMENT
- TYPE III BARRICADE
- SIGN
- ACCELERATED CONSTRUCTION
- TRAFFIC FLOW ARROWS
- PLASTIC DRUMS
- LOW PROFILE CONCRETE BARRIER (LPCB)
- PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
- A WK ZN PAV MRK NON-REMOV (W) 6" (SLD)
- C WK ZN PAV MRK NON-REMOV (W) 4" (BRK)
- B WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD)
- D WK ZN PAV MRK NON-REMOV (W) 24" (SLD)

- NOTES:**
- FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
 - EXISTING FEATURES ARE SHOWN SCREENED BACK.
 - EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED. THIS WORK IS CONSIDERED SUBSIDIARY TO THE WORK ZONE PAVEMENT MARKING ITEMS.
 - ONE SECTION OF LPCB TY 2 MUST BE PLACED AT EACH UPSTREAM AND DOWNSTREAM END. THE TY 2 IS INCLUDED IN THE LPCB CALLOUTS.
 - A 3:1 TRAVERSABLE SAFETY SLOPE MUST BE ADDED TO ALL DROPOFFS GREATER THAN 2" IN AREAS NOT PROTECTED BY BARRIER AT THE END OF THE WORK DAY.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

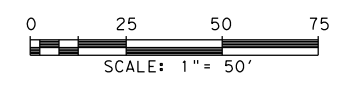
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000

TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS

It's real.

THE STATE OF TEXAS
GUADALUPE COUNTY

Texas Department of Transportation

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CORDOVA RD

TRAFFIC CONTROL PLAN

PHASE I

STEP II

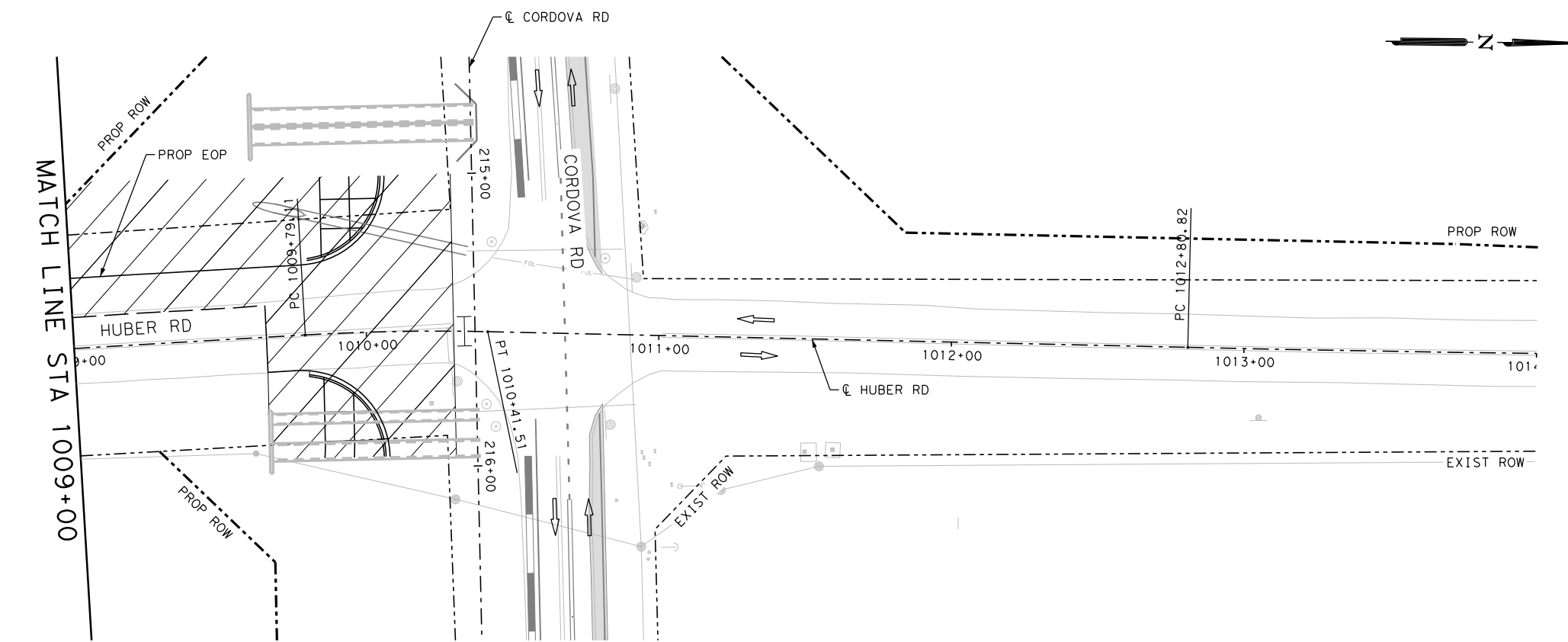
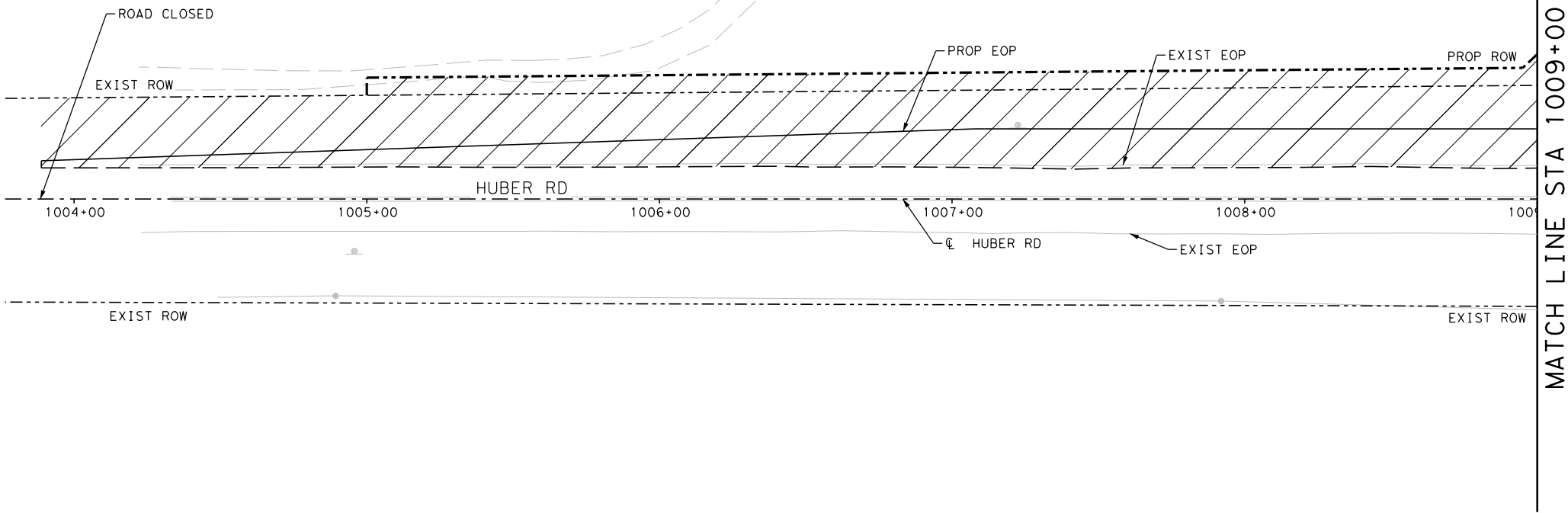
STA 159+00 TO END CONSTRUCTION

SHEET 2 OF 6

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	88

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_PH1_12A.dgn



LEGEND

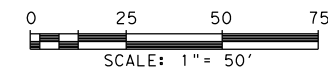
- CONSTRUCTION AREA
- TYPE III BARRICADE
- TRAFFIC FLOW ARROWS
- SIGN
- PLASTIC DRUMS
- LOW PROFILE CONCRETE BARRIER (LPCB)
- PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
- TEMPORARY PAVEMENT
- ACCELERATED CONSTRUCTION
- WK ZN PAV MRK NON-REMOV (W) 6" (SLD)
- WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD)
- WK ZN PAV MRK NON-REMOV (W) 4" (BRK)
- WK ZN PAV MRK NON-REMOV (W) 24" (SLD)

NOTES:

1. FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED. THIS WORK IS CONSIDERED SUBSIDIARY TO THE WORK ZONE PAVEMENT MARKING ITEMS.
4. ONE SECTION OF LPCB TY 2 MUST BE PLACED AT EACH UPSTREAM AND DOWNSTREAM END. THE TY 2 IS INCLUDED IN THE LPCB CALLOUTS.
5. A 3:1 TRAVERSABLE SAFETY SLOPE MUST BE ADDED TO ALL DROPOFFS GREATER THAN 2" IN AREAS NOT PROTECTED BY BARRIER AT THE END OF THE WORK DAY.

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



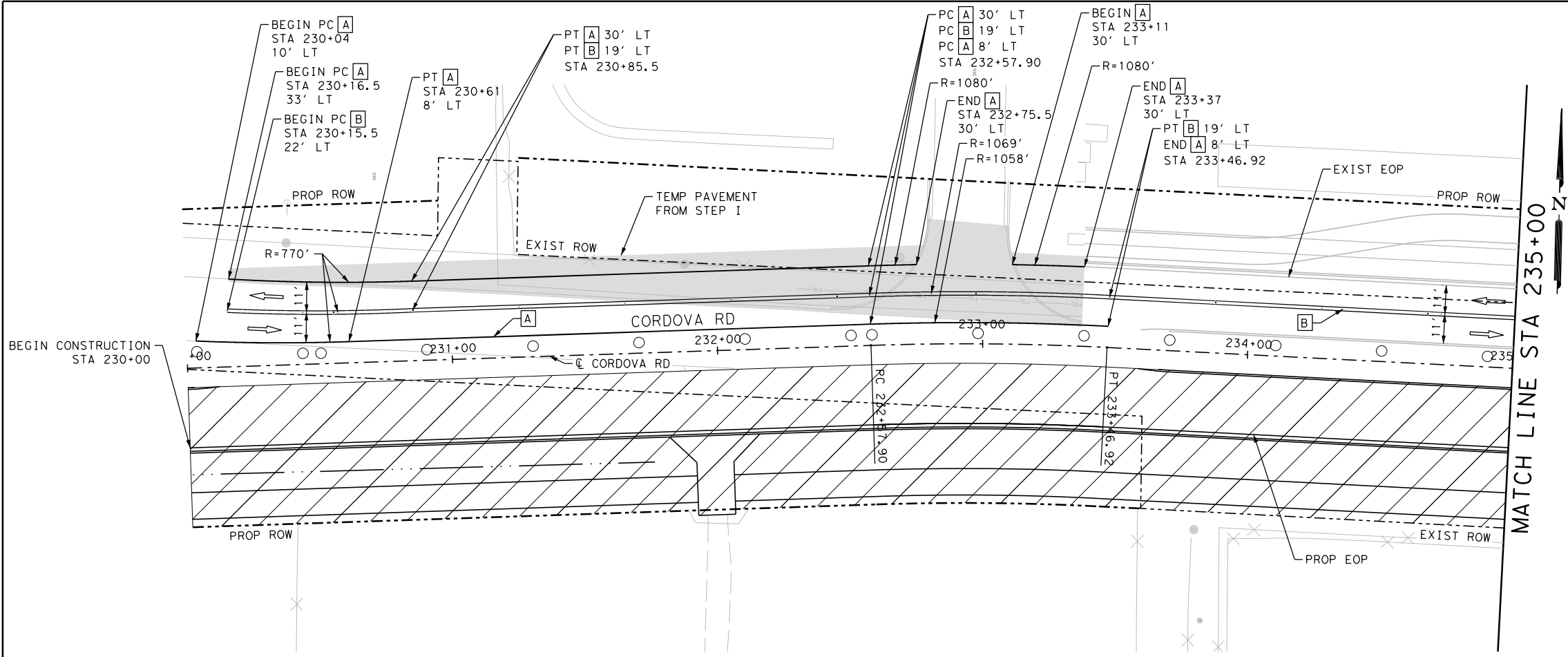
CORDOVA RD
TRAFFIC CONTROL PLAN
 PHASE I
 STEP II

SHEET 1 OF 1

CHK	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
DGN:	SAT	GUADALUPE	0915	46	052	89
CHK						
DGN:						

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_PH1_STEP_2_14.dgn



MATCH LINE STA 235+00

LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	A WK ZN PAV MRK NON-REMOV (W) 6" (SLD)		C WK ZN PAV MRK NON-REMOV (W) 4" (BRK)
	B WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD)		D WK ZN PAV MRK NON-REMOV (W) 24" (SLD)

NOTES:

- FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
- EXISTING FEATURES ARE SHOWN SCREENED BACK.
- EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED. THIS WORK IS CONSIDERED SUBSIDIARY TO THE WORK ZONE PAVEMENT MARKING ITEMS.
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- A 3:1 TRAVERSABLE SAFETY SLOPE MUST BE ADDED TO ALL DROPOFFS GREATER THAN 2" IN AREAS NOT PROTECTED BY BARRIER AT THE END OF THE WORK DAY.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

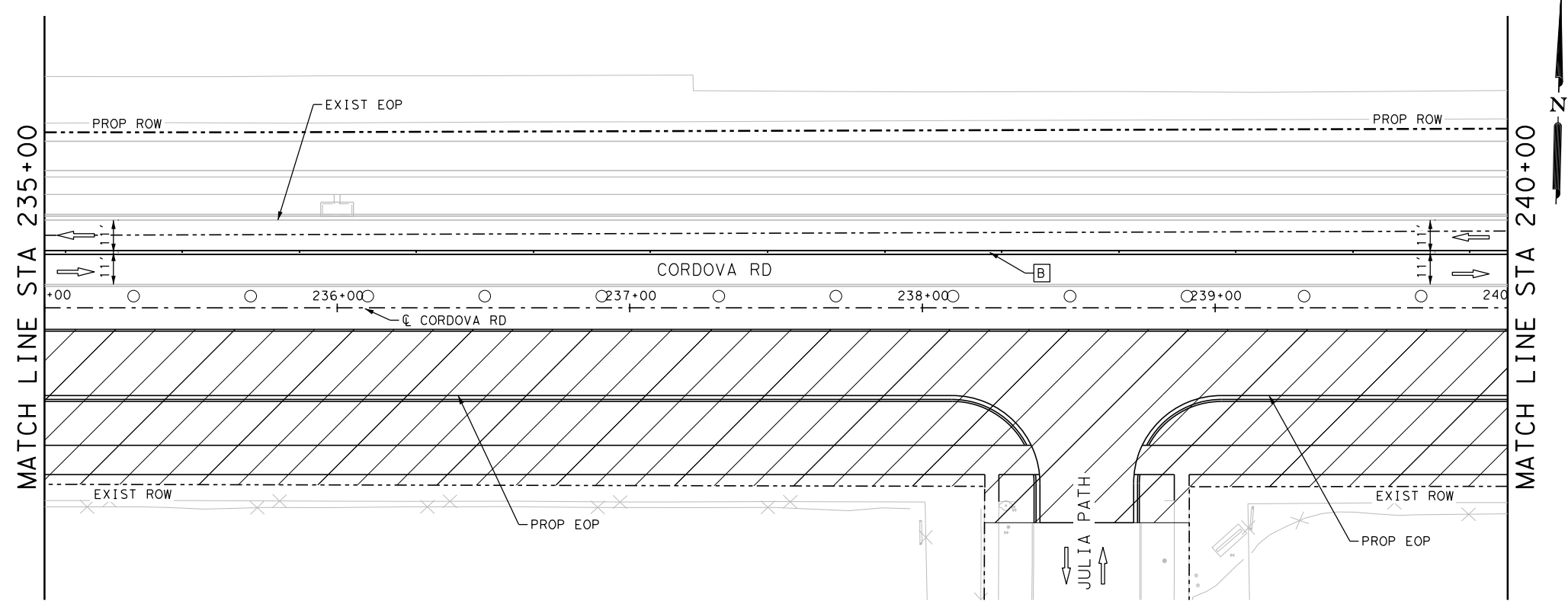
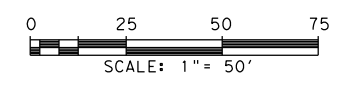
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



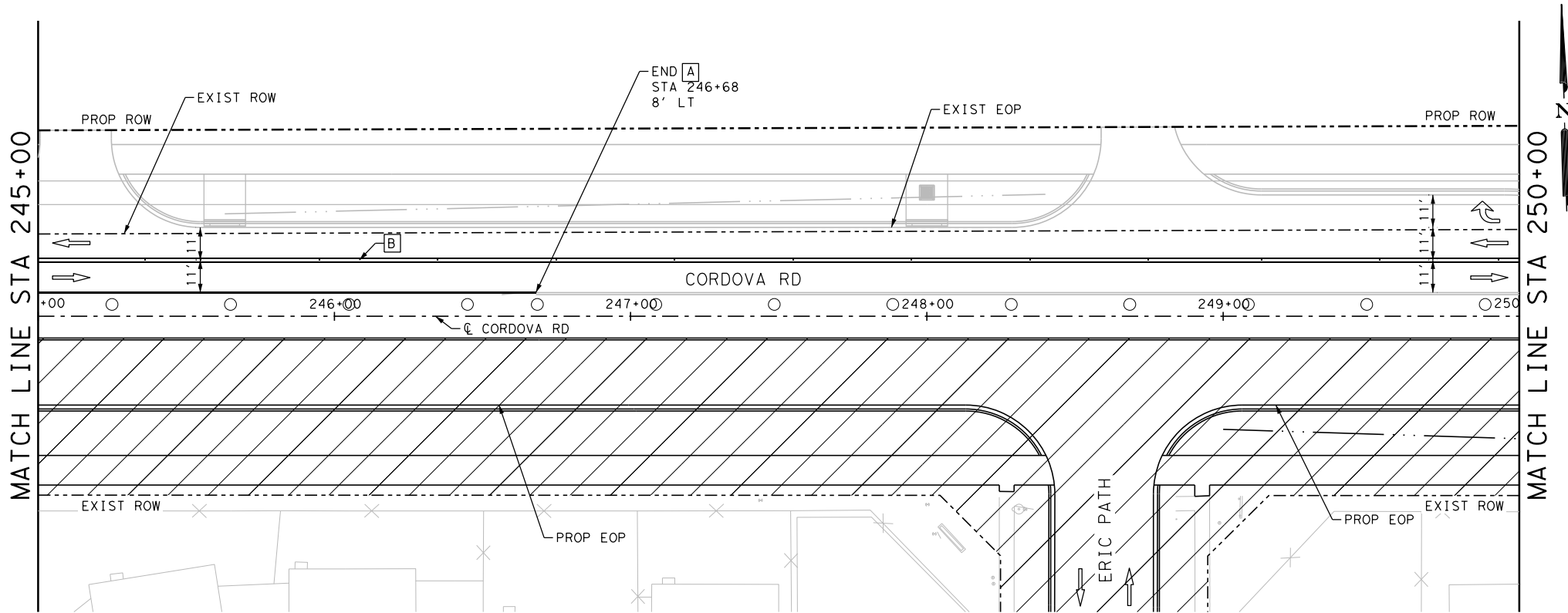
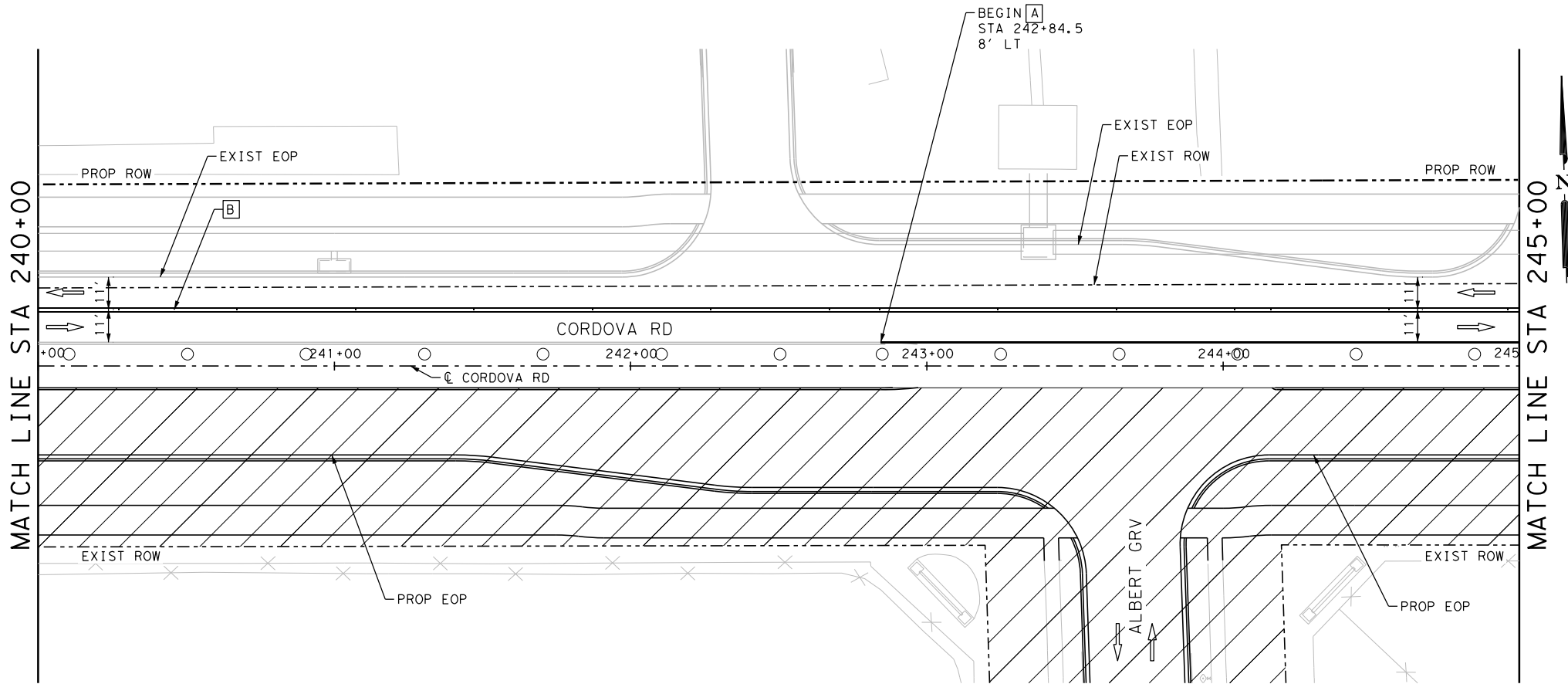
MATCH LINE STA 235+00

MATCH LINE STA 240+00

REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
© 2023			
CORDOVA RD TRAFFIC CONTROL PLAN PHASE I STEP II BEGIN CONSTRUCTION TO STA 240+00			
SHEET 3 OF 6			
DON:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
CHK DGN:	6	TEXAS	
DWG:	DIST.:	COUNTY:	CONT. NO. SECT. NO. JOB NO. SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915 46 052 90

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_PH1_STEP_2_15.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	WK ZN PAV MRK NON-REMOV (W) 6" (SLD)		WK ZN PAV MRK NON-REMOV (W) 4" (BRK)
	WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD)		WK ZN PAV MRK NON-REMOV (W) 24" (SLD)

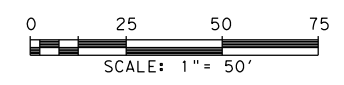
- NOTES:**
- FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
 - EXISTING FEATURES ARE SHOWN SCREENED BACK.
 - EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED. THIS WORK IS CONSIDERED SUBSIDIARY TO THE WORK ZONE PAVEMENT MARKING ITEMS.
 - ONE SECTION OF LPCB TY 2 MUST BE PLACED AT EACH UPSTREAM AND DOWNSTREAM END. THE TY 2 IS INCLUDED IN THE LPCB CALLOUTS.
 - A 3:1 TRAVERSABLE SAFETY SLOPE MUST BE ADDED TO ALL DROPOFFS GREATER THAN 2" IN AREAS NOT PROTECTED BY BARRIER AT THE END OF THE WORK DAY.

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

Texas Department of Transportation
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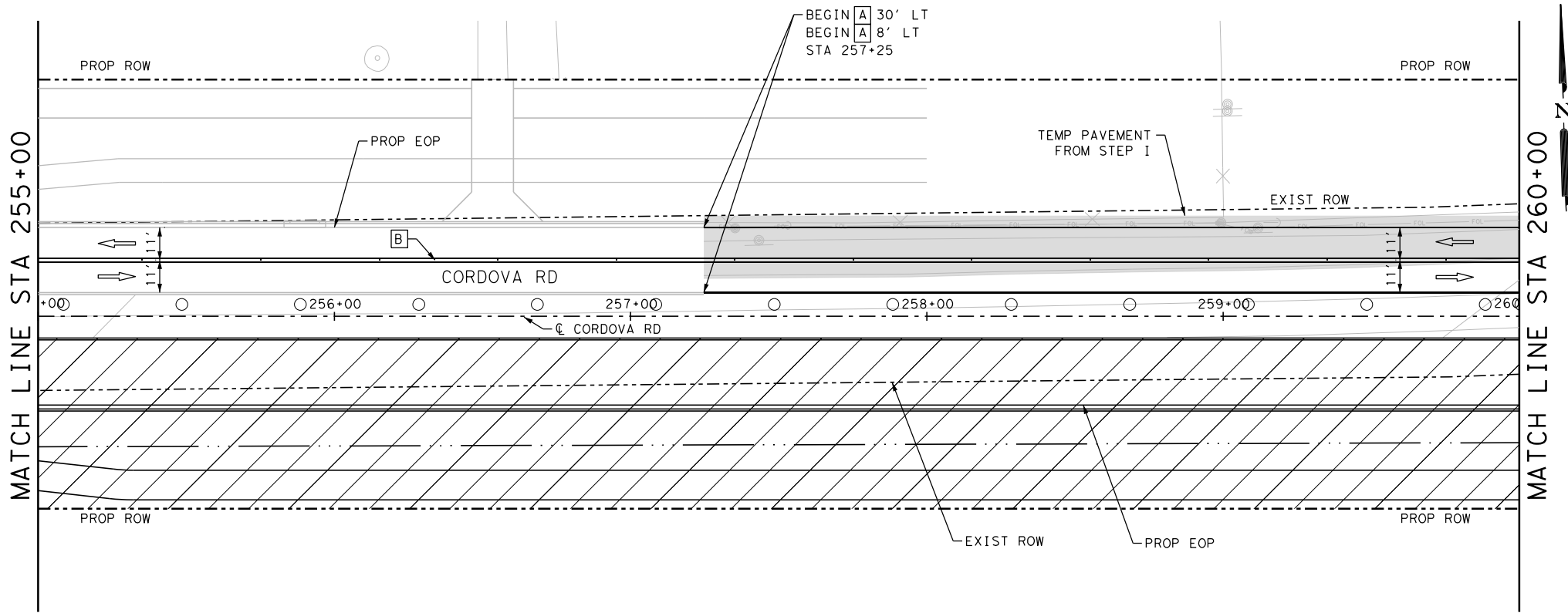
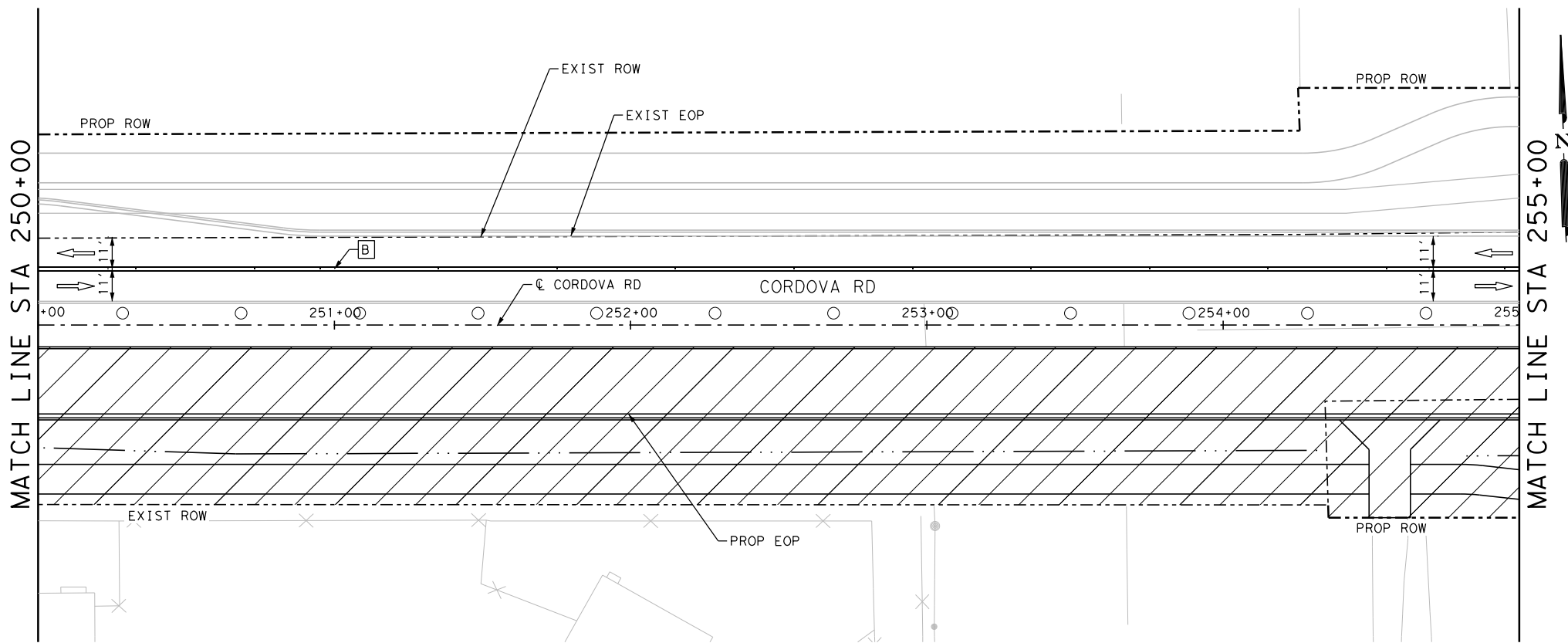
CORDOVA RD
TRAFFIC CONTROL PLAN
PHASE I
STEP II
 STA 240+00 TO STA 250+00

SHEET 4 OF 6

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				91

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase I\1277500_TCP_PHI_STEP_2_16.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	WK ZN PAV MRK NON-REMOV (W) 6" (SLD)		WK ZN PAV MRK NON-REMOV (W) 4" (BRK)
	WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD)		WK ZN PAV MRK NON-REMOV (W) 24" (SLD)

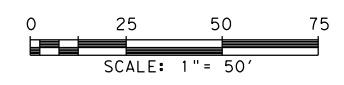
- NOTES:**
- FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
 - EXISTING FEATURES ARE SHOWN SCREENED BACK.
 - EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED. THIS WORK IS CONSIDERED SUBSIDIARY TO THE WORK ZONE PAVEMENT MARKING ITEMS.
 - ONE SECTION OF LPCB TY 2 MUST BE PLACED AT EACH UPSTREAM AND DOWNSTREAM END. THE TY 2 IS INCLUDED IN THE LPCB CALLOUTS.
 - A 3:1 TRAVERSABLE SAFETY SLOPE MUST BE ADDED TO ALL DROPOFFS GREATER THAN 2" IN AREAS NOT PROTECTED BY BARRIER AT THE END OF THE WORK DAY.

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

Texas Department of Transportation
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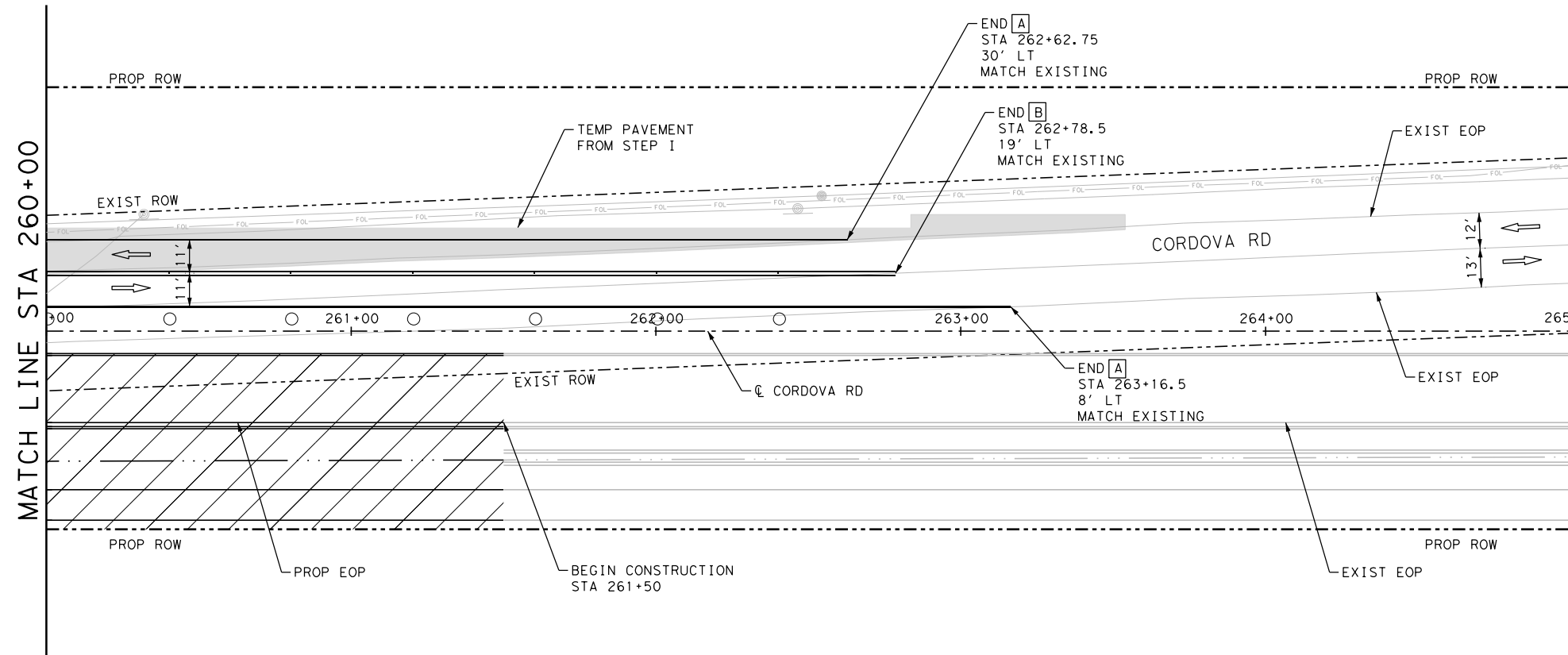
CORDOVA RD
TRAFFIC CONTROL PLAN
PHASE I
STEP II
 STA 250+00 TO STA 260+00

SHEET 5 OF 6

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	92

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_PH1_STEP_2_17.dgn



LEGEND

- CONSTRUCTION AREA
- TEMPORARY PAVEMENT
- TYPE III BARRICADE
- SIGN
- TRAFFIC FLOW ARROWS
- PLASTIC DRUMS
- LOW PROFILE CONCRETE BARRIER (LPCB)
- PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
- [A] WK ZN PAV MRK NON-REMOV (W) 6" (SLD)
- [B] WK ZN PAV MRK NON-REMOV (Y) 6" (DBL) (SLD)
- [C] WK ZN PAV MRK NON-REMOV (W) 4" (BRK)
- [D] WK ZN PAV MRK NON-REMOV (W) 24" (SLD)

NOTES:

1. FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
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5. A 3:1 TRAVERSABLE SAFETY SLOPE MUST BE ADDED TO ALL DROPOFFS GREATER THAN 2" IN AREAS NOT PROTECTED BY BARRIER AT THE END OF THE WORK DAY.

DESIGN

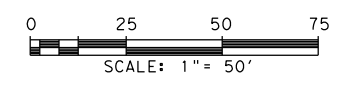
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



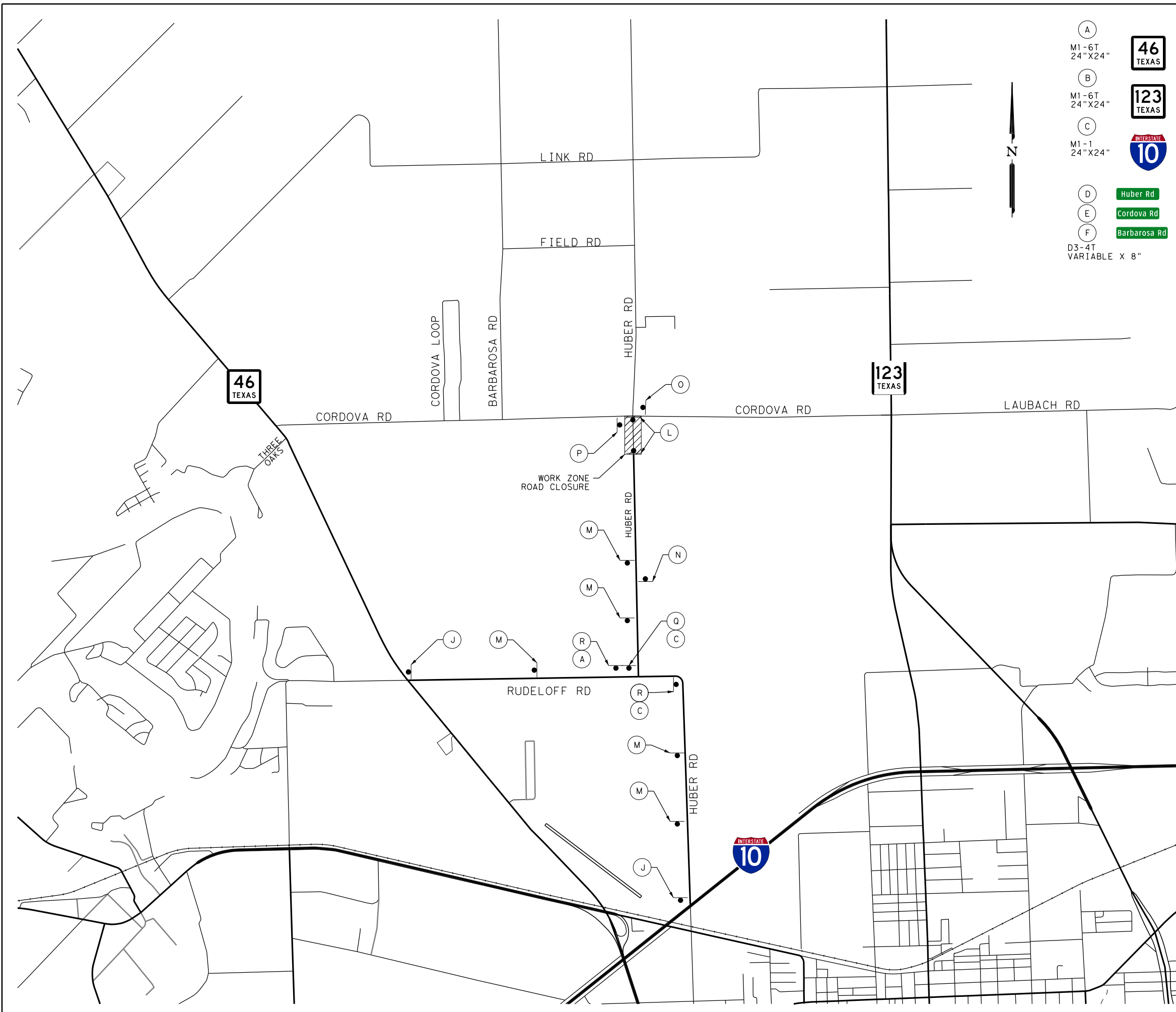
CORDOVA RD
TRAFFIC CONTROL PLAN
PHASE I
STEP II
 STA 260+00 TO END CONSTRUCTION

SHEET 6 OF 6

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	93

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\1277500_TCP_DetourMap.dgn



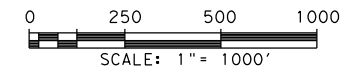
- A M1-6T 24"x24"
- B M1-6T 24"x24"
- C M1-1 24"x24"
- D
- E
- F
- D3-4T VARIABLE X 8"

- G W20-2D 48"x48"
- H M4-9L 30"x24"
- I M4-9R 30"x24"
- J M4-8A 24"x18"
- K CW20-1D 48"x48"
- L R11-2 48"x30"
- M M4-9S 30"x24"
- N CW20-3D 48"x48"
- O R3-1 48"x48"
- P R3-2 48"x48"
- Q M4-10L 48"x18"
- R M4-10R 48"x18"
- S R11-4 60"x30"
- T M4-8 24"x12"

• SIGN

DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

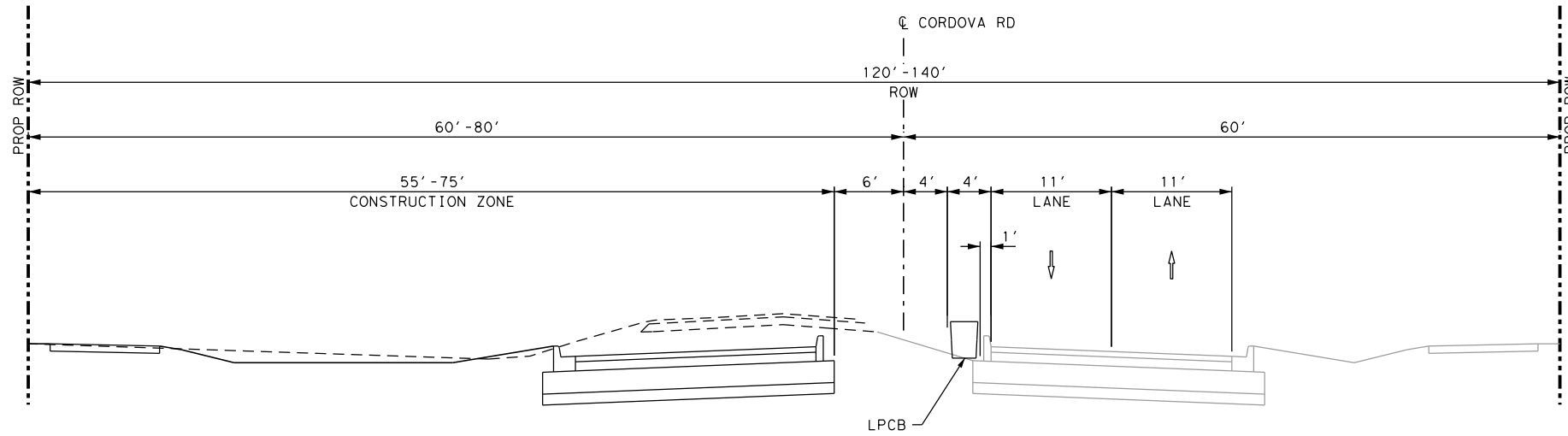
APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
© 2023			
CORDOVA RD TRAFFIC CONTROL PLAN PHASE 1 STEP 2 DETOUR MAP HUBER RD			
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
CHK DGN:	6	TEXAS	
DWG:	DIST.:	COUNTY:	CONT. NO. SECT. NO. JOB NO. SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915 46 052 94

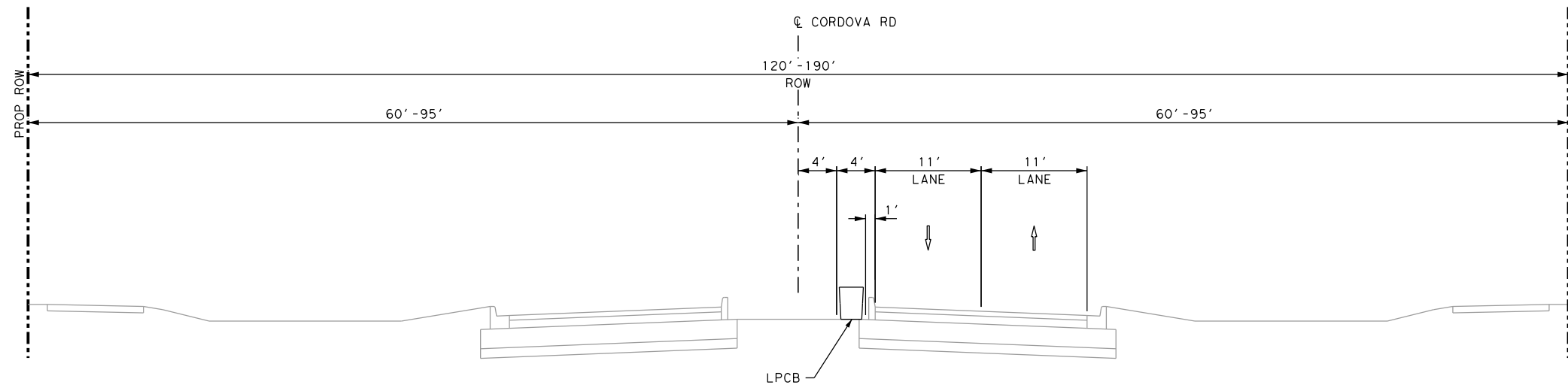
Plotted on: 11/17/2023

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CORDOVA RD - PHASE II

STA 117+45 TO STA 152+93
 STA 160+00 TO STA 233+37
 STA 258+00 TO STA 269+70
 STA 290+13 TO STA 294+16
 NTS



CORDOVA RD - PHASE II

STA 152+93 TO STA 160+00
 STA 233+37 TO STA 258+00
 STA 269+70 TO STA 290+13
 NTS

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
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SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



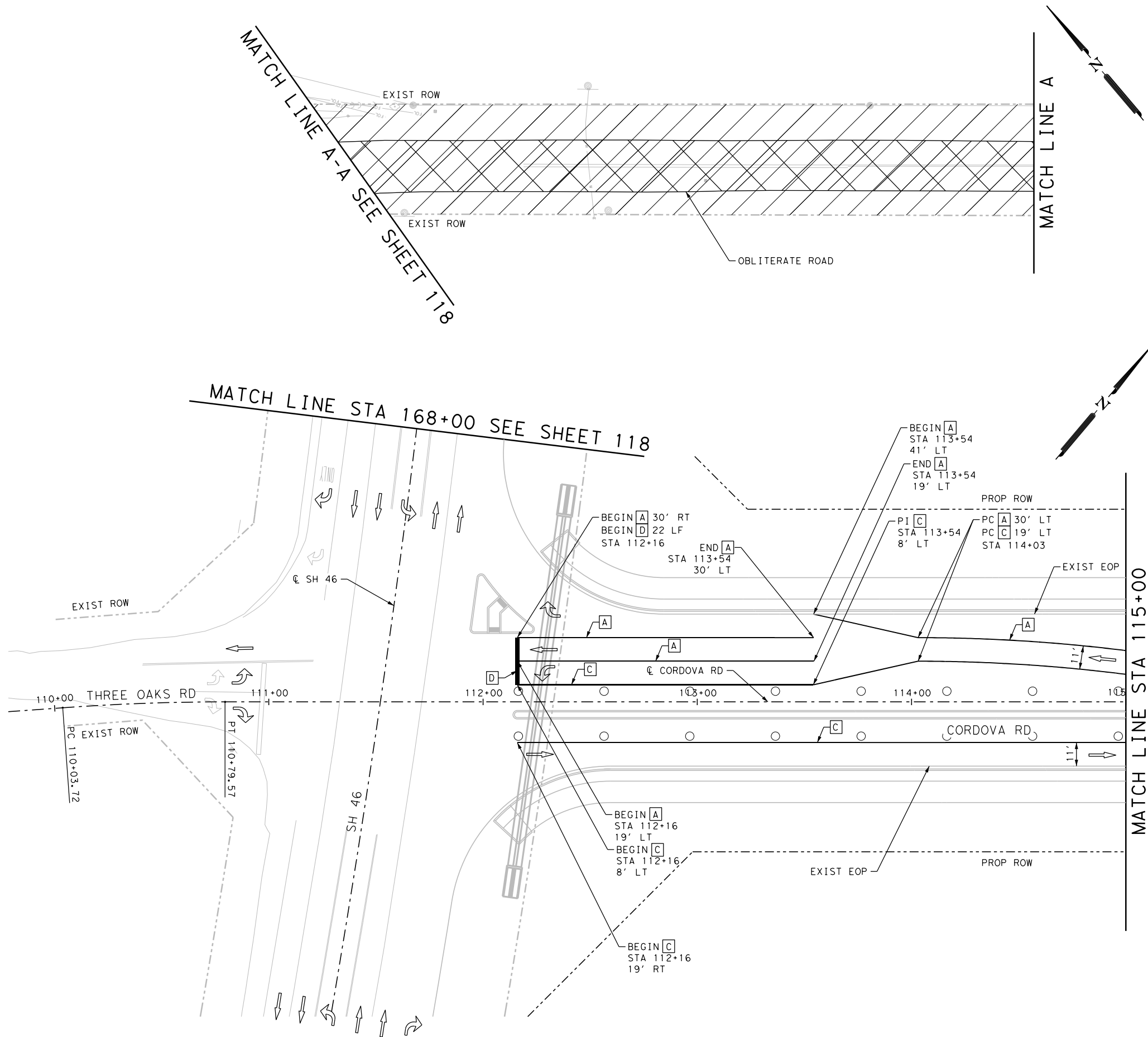
CORDOVA RD
**TRAFFIC CONTROL PLAN
 PHASE II
 TYPICAL SECTIONS**

SHEET 1 OF 1

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:			HIGHWAY NO.:
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	95

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_Ph2_01.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	A WK ZN PAV MRK REMOV (W) 6" (SLD)		C WK ZN PAV MRK REMOV (Y) 6" (SLD)
	B WK ZN PAV MRK REMOV (Y) 6" (DBL) (SLD)		D WK ZN PAV MRK REMOV (W) 24" (SLD)

- NOTES:**
- FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
 - EXISTING FEATURES ARE SHOWN SCREENED BACK.
 - EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED. THIS WORK IS CONSIDERED SUBSIDIARY TO THE WORK ZONE PAVEMENT MARKING ITEMS.
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DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

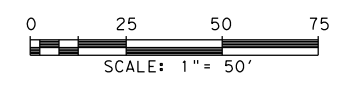
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

Pape-Dawson Engineers

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000

TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS

It's real.

GUADALUPE COUNTY

Texas Department of Transportation

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CORDOVA RD

TRAFFIC CONTROL PLAN PHASE II

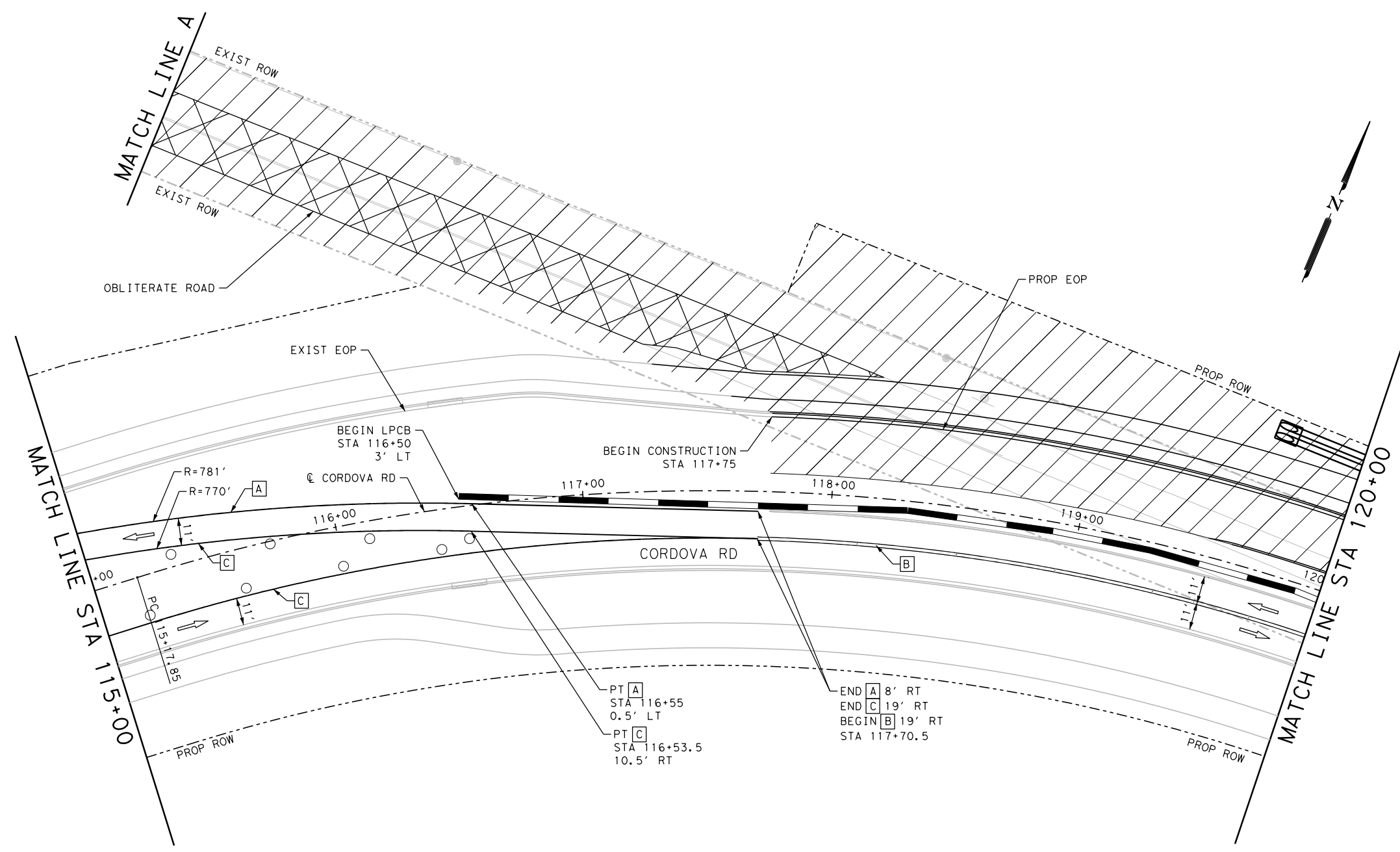
BEGIN PROJECT TO STA 115+00

SHEET 1 OF 22

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				96

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_Ph2_02.dgn



LEGEND

- CONSTRUCTION AREA
- TEMPORARY PAVEMENT
- TYPE III BARRICADE
- SIGN
- ACCELERATED CONSTRUCTION
- TRAFFIC FLOW ARROWS
- PLASTIC DRUMS
- LOW PROFILE CONCRETE BARRIER (LPCB)
- PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
- WK ZN PAV MRK REMOV (W) 6" (SLD)
- WK ZN PAV MRK REMOV (Y) 6" (SLD)
- WK ZN PAV MRK REMOV (Y) 6" (DBL) (SLD)
- WK ZN PAV MRK REMOV (W) 24" (SLD)

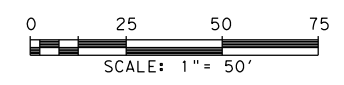
- NOTES:**
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
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PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS
 It's real.

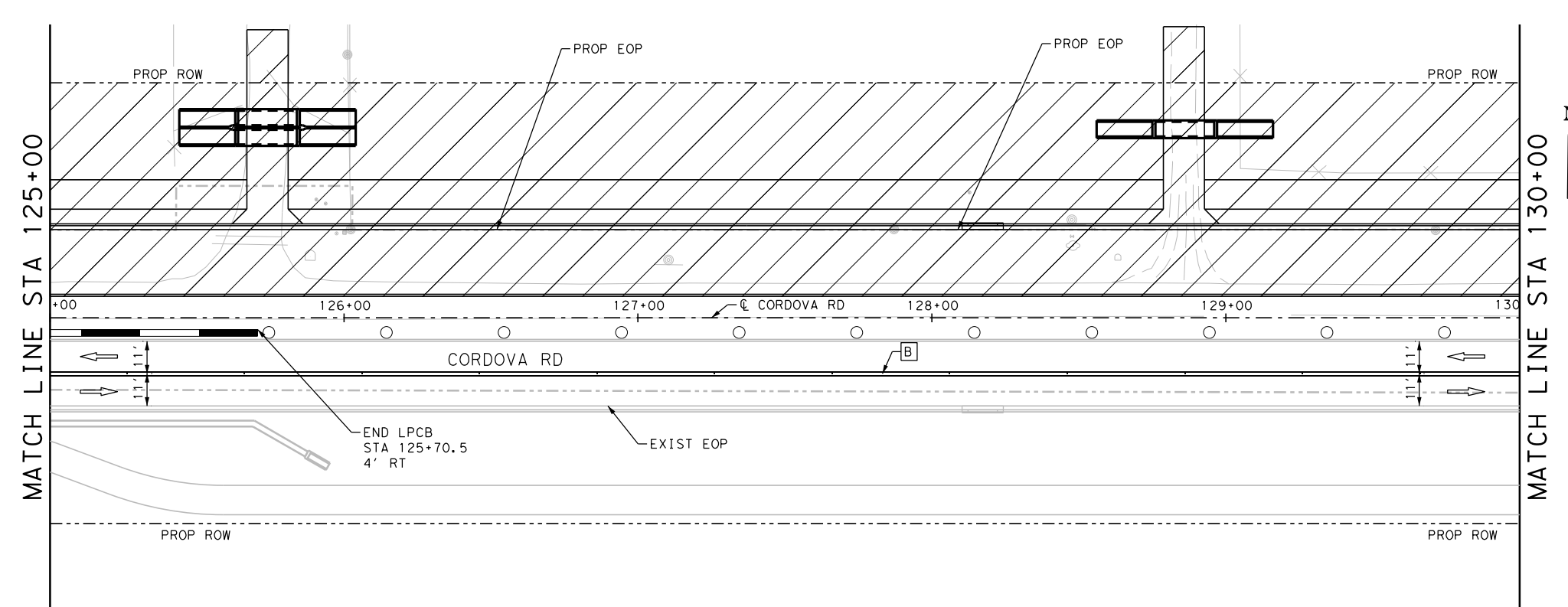
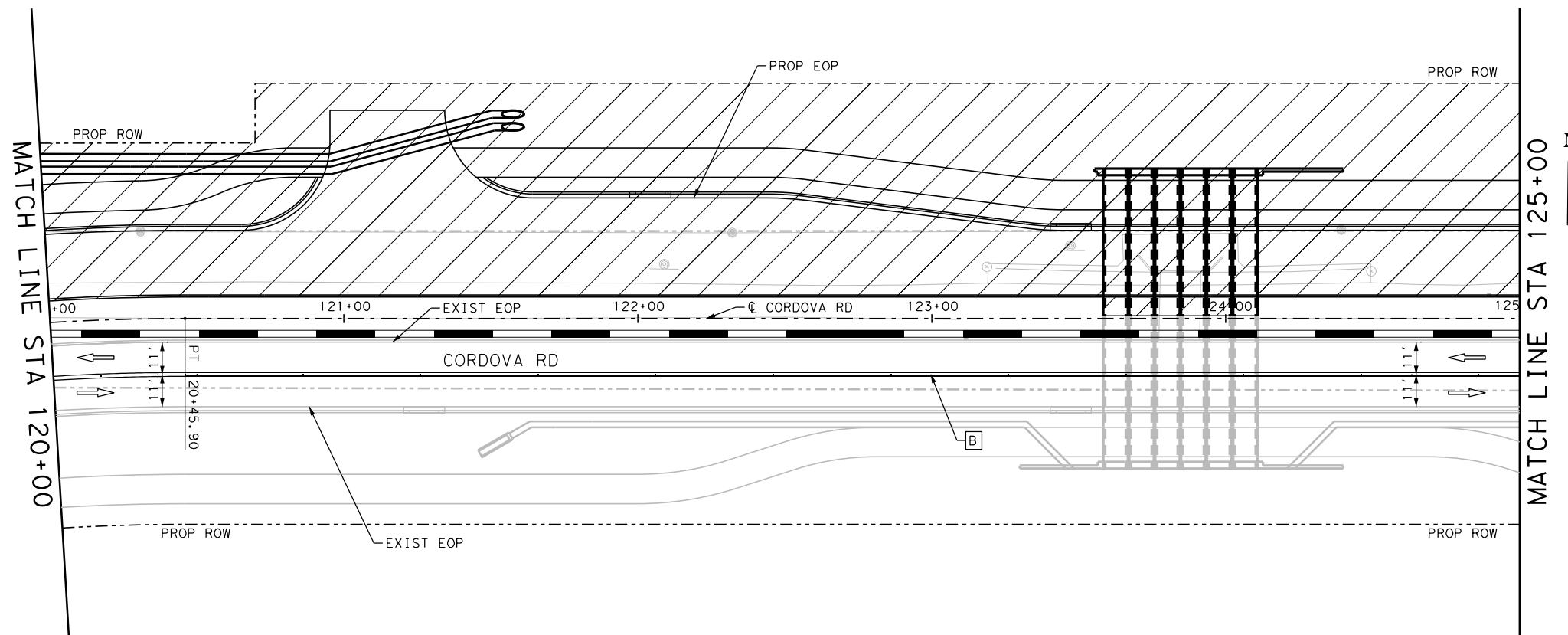
Texas Department of Transportation
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CORDOVA RD
TRAFFIC CONTROL PLAN PHASE II
 STA 115+00 TO STA 120+00
 SHEET 2 OF 22

CHK	DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK	DGN:	6	TEXAS		CORDOVA		
CHK	DGN:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK	DGN:	SAT	GUADALUPE	0915	46	052	97

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_Ph2_03.dgn



LEGEND

- CONSTRUCTION AREA
- TYPE III BARRICADE
- TRAFFIC FLOW ARROWS
- SIGN
- PLASTIC DRUMS
- TEMPORARY PAVEMENT
- ACCELERATED CONSTRUCTION
- LOW PROFILE CONCRETE BARRIER (LPCB)
- PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)

NOTES:

- A WK ZN PAV MRK REMOV (W) 6" (SLD)
- B WK ZN PAV MRK REMOV (Y) 6" (SLD)
- C WK ZN PAV MRK REMOV (Y) 6" (SLD)
- D WK ZN PAV MRK REMOV (W) 24" (SLD)

1. FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
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DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

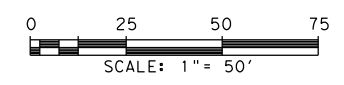
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

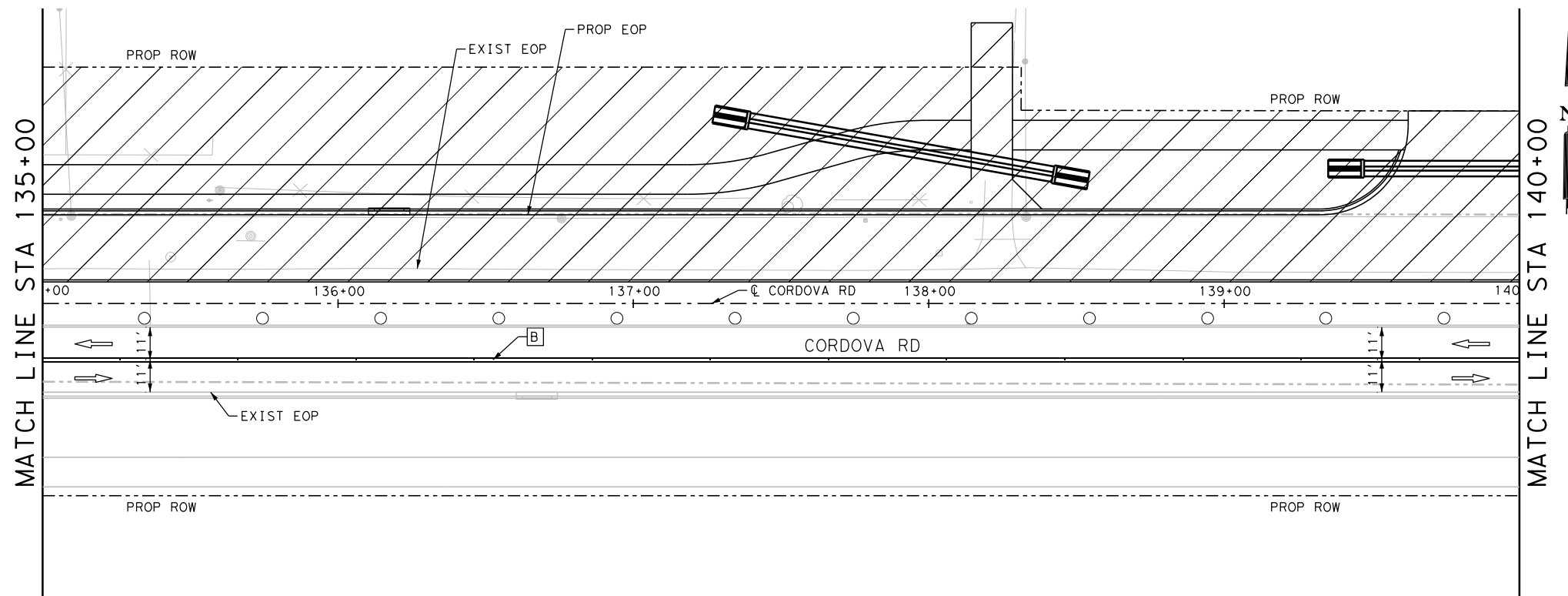
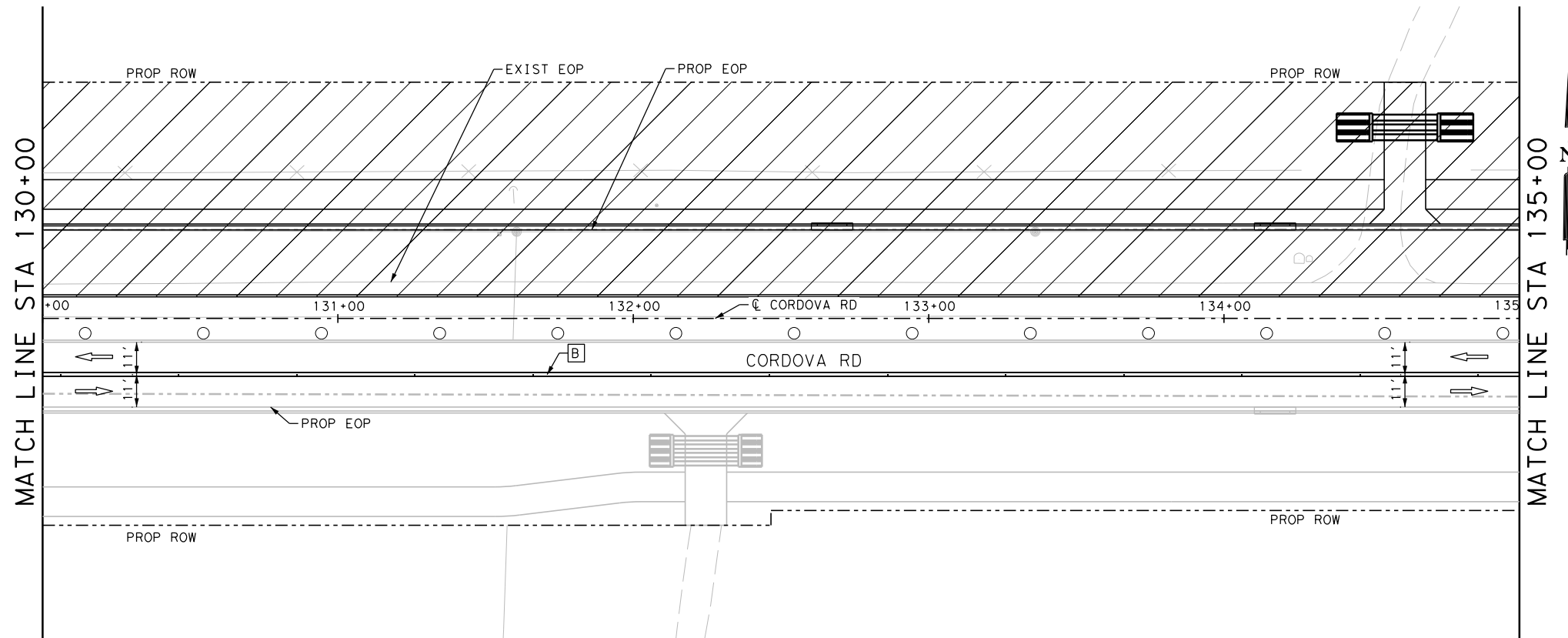
DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
<p>PAPE-DAWSON ENGINEERS</p> <p>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</p>			
<p>SEGUIN TEXAS</p> <p>It's real.</p>			
<p>Texas Department of Transportation © 2023</p>			
<p>CORDOVA RD</p> <p>TRAFFIC CONTROL PLAN</p> <p>PHASE II</p> <p>STA 120+00 TO STA 130+00</p> <p>SHEET 3 OF 22</p>			
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
CHK DGN:	6	TEXAS	
DWG:	DIST.:	COUNTY:	CONT. NO. SECT. NO. JOB NO. SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915 46 052 98

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_Ph2_04.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	WK ZN PAV MRK REMOV (W)6" (SLD)		WK ZN PAV MRK REMOV (Y)6" (SLD)
	WK ZN PAV MRK REMOV (Y)6" (DBL) (SLD)		WK ZN PAV MRK REMOV (W)24" (SLD)

NOTES:

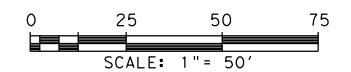
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

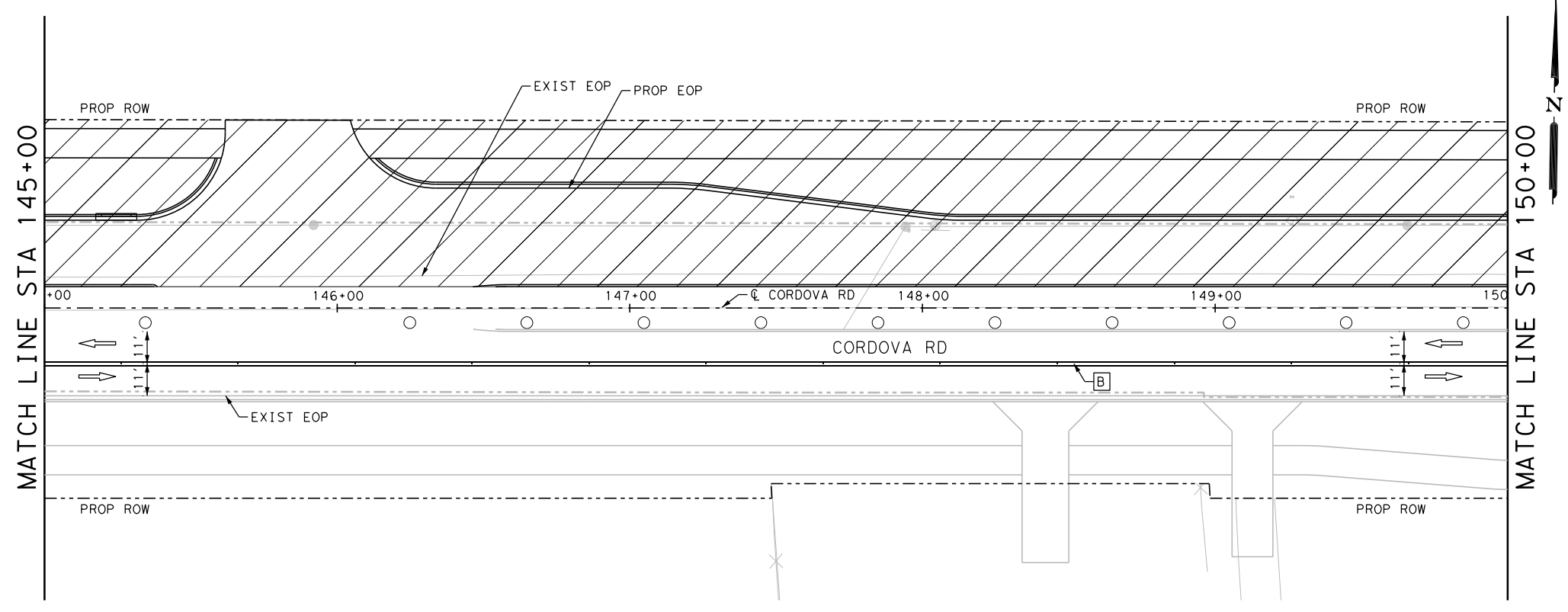
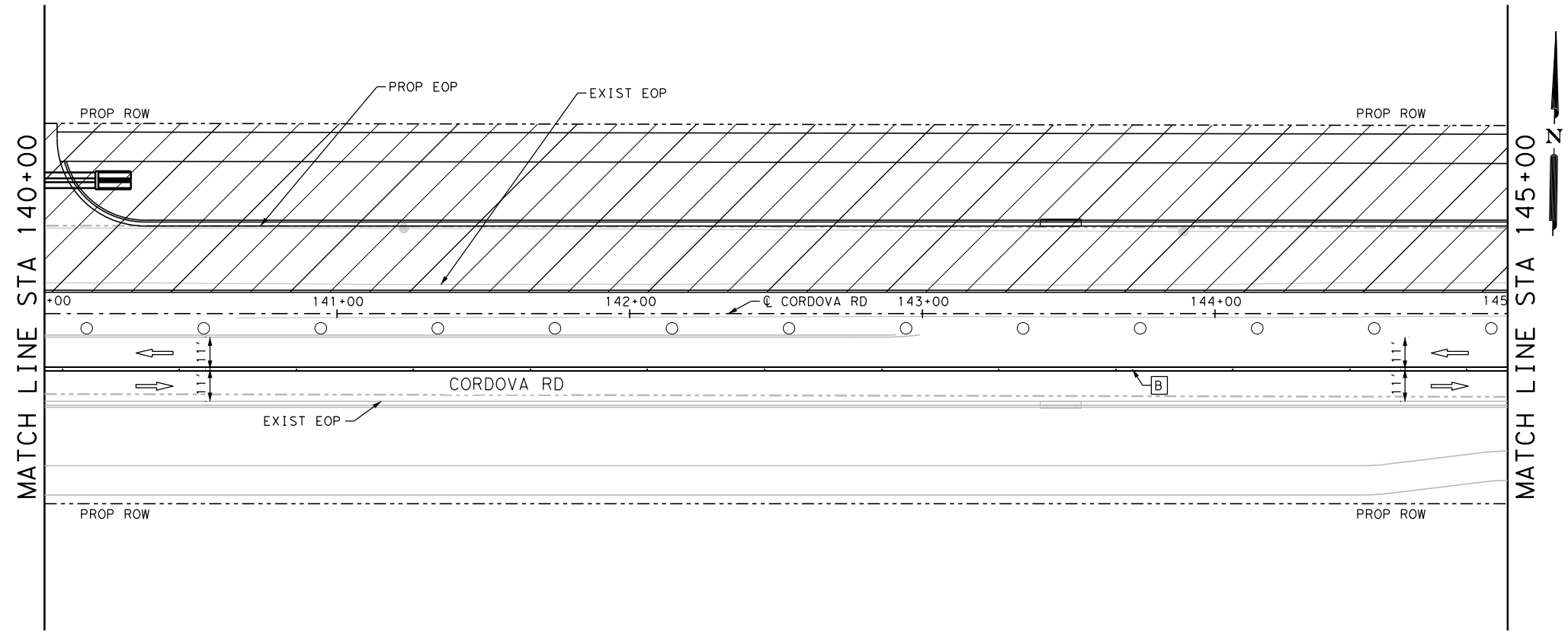
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY			
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800						
©2023						
CORDOVA RD TRAFFIC CONTROL PLAN PHASE II STA 130+00 TO STA 140+00 SHEET 4 OF 22						
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	99

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_Ph2_05.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		ACCELERATED CONSTRUCTION
	PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)		
	A WK ZN PAV MRK REMOV (W) 6" (SLD)		C WK ZN PAV MRK REMOV (Y) 6" (SLD)
	B WK ZN PAV MRK REMOV (Y) 6" (DBL) (SLD)		D WK ZN PAV MRK REMOV (W) 24" (SLD)

- NOTES:**
- FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
 - EXISTING FEATURES ARE SHOWN SCREENED BACK.
 - EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED. THIS WORK IS CONSIDERED SUBSIDIARY TO THE WORK ZONE PAVEMENT MARKING ITEMS.
 - ONE SECTION OF LPCB TY 2 MUST BE PLACED AT EACH UPSTREAM AND DOWNSTREAM END. THE TY 2 IS INCLUDED IN THE LPCB CALLOUTS.
 - A 3:1 TRAVERSABLE SAFETY SLOPE MUST BE ADDED TO ALL DROPOFFS GREATER THAN 2" IN AREAS NOT PROTECTED BY BARRIER AT THE END OF THE WORK DAY.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

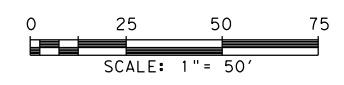
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

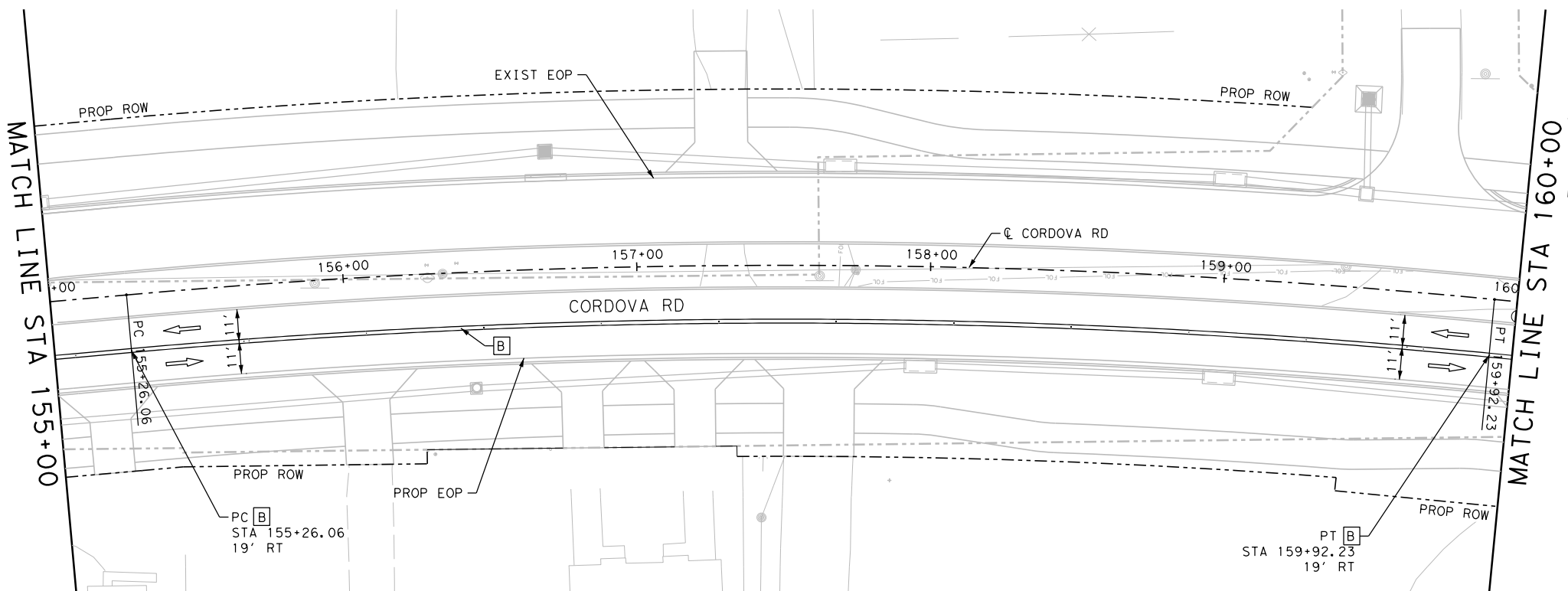
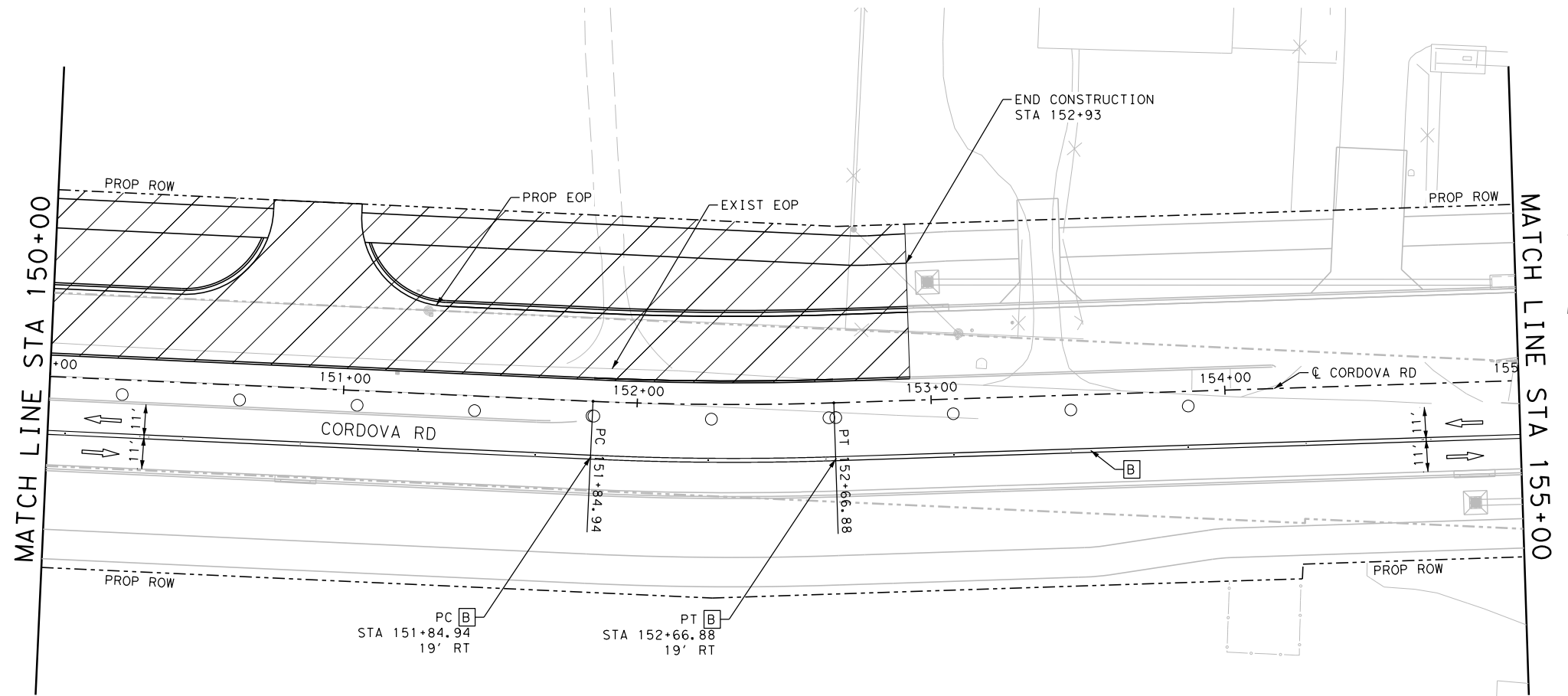
Texas Department of Transportation
© 2023

CORDOVA RD
**TRAFFIC CONTROL PLAN
PHASE II**
STA 140+00 TO STA 150+00
SHEET 5 OF 22

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				100

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_Ph2_06.dgn



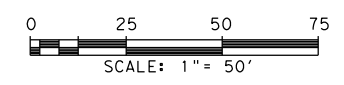
LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	WK ZN PAV MRK REMOV (W)6" (SLD)		WK ZN PAV MRK REMOV (Y)6" (SLD)
	WK ZN PAV MRK REMOV (Y)6" (DBL) (SLD)		WK ZN PAV MRK REMOV (W)24" (SLD)

- NOTES:**
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 - EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED. THIS WORK IS CONSIDERED SUBSIDIARY TO THE WORK ZONE PAVEMENT MARKING ITEMS.
 - ONE SECTION OF LPCB TY 2 MUST BE PLACED AT EACH UPSTREAM AND DOWNSTREAM END. THE TY 2 IS INCLUDED IN THE LPCB CALLOUTS.
 - A 3:1 TRAVERSABLE SAFETY SLOPE MUST BE ADDED TO ALL DROPOFFS GREATER THAN 2" IN AREAS NOT PROTECTED BY BARRIER AT THE END OF THE WORK DAY.

DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

Pape-Dawson Engineers
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS
 It's real.

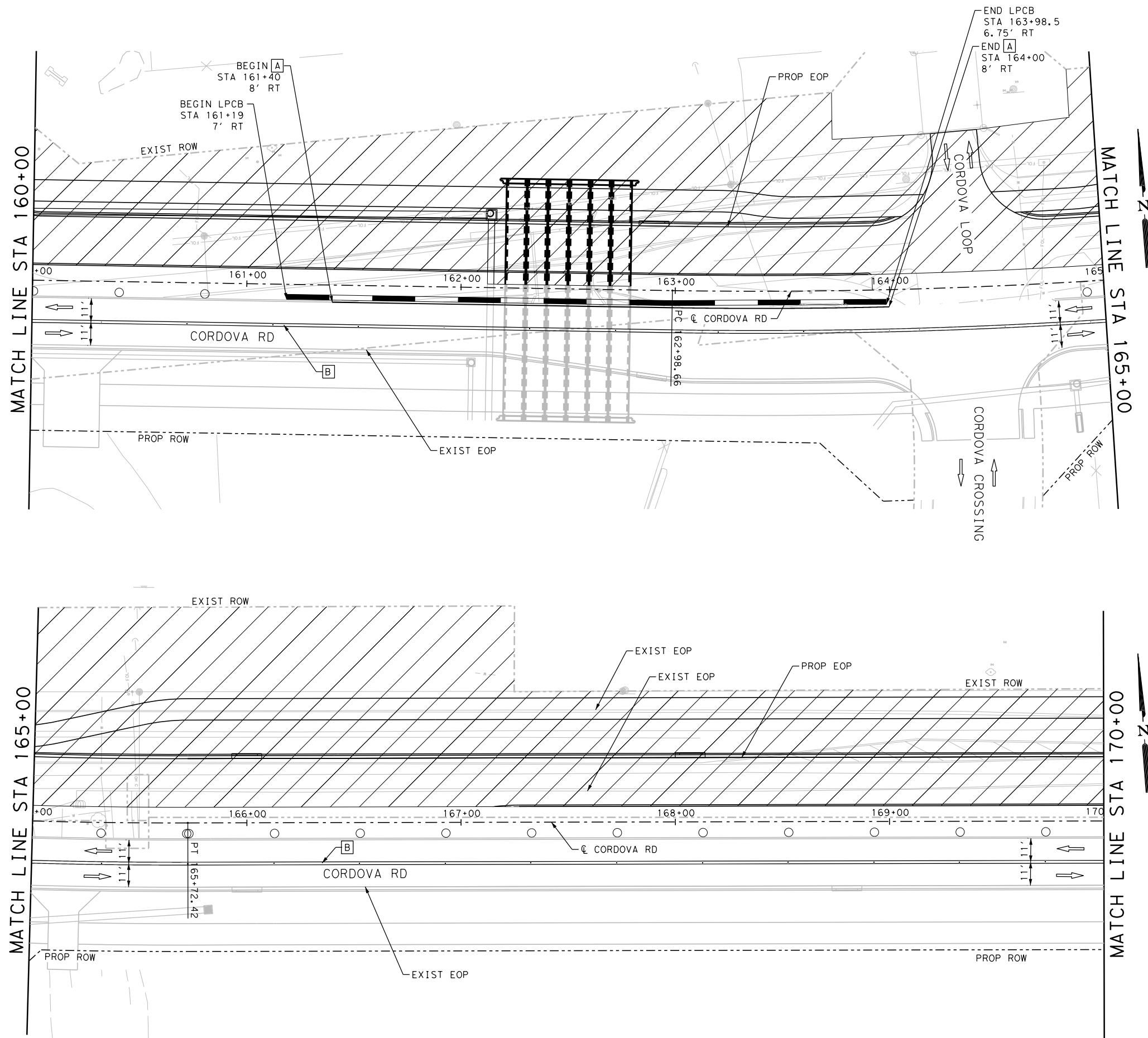
Texas Department of Transportation
 © 2023

CORDOVA RD
**TRAFFIC CONTROL PLAN
 PHASE II**
 STA 150+00 TO STA 160+00
 SHEET 6 OF 22

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	101

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_Ph2_07.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	A WK ZN PAV MRK REMOV (W)6" (SLD)		C WK ZN PAV MRK REMOV (Y)6" (SLD)
	B WK ZN PAV MRK REMOV (Y)6" (DBL) (SLD)		D WK ZN PAV MRK REMOV (W)24" (SLD)

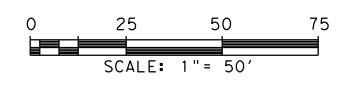
- NOTES:**
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 - ONE SECTION OF LPCB TY 2 MUST BE PLACED AT EACH UPSTREAM AND DOWNSTREAM END. THE TY 2 IS INCLUDED IN THE LPCB CALLOUTS.
 - A 3:1 TRAVERSABLE SAFETY SLOPE MUST BE ADDED TO ALL DROPOFFS GREATER THAN 2" IN AREAS NOT PROTECTED BY BARRIER AT THE END OF THE WORK DAY.

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

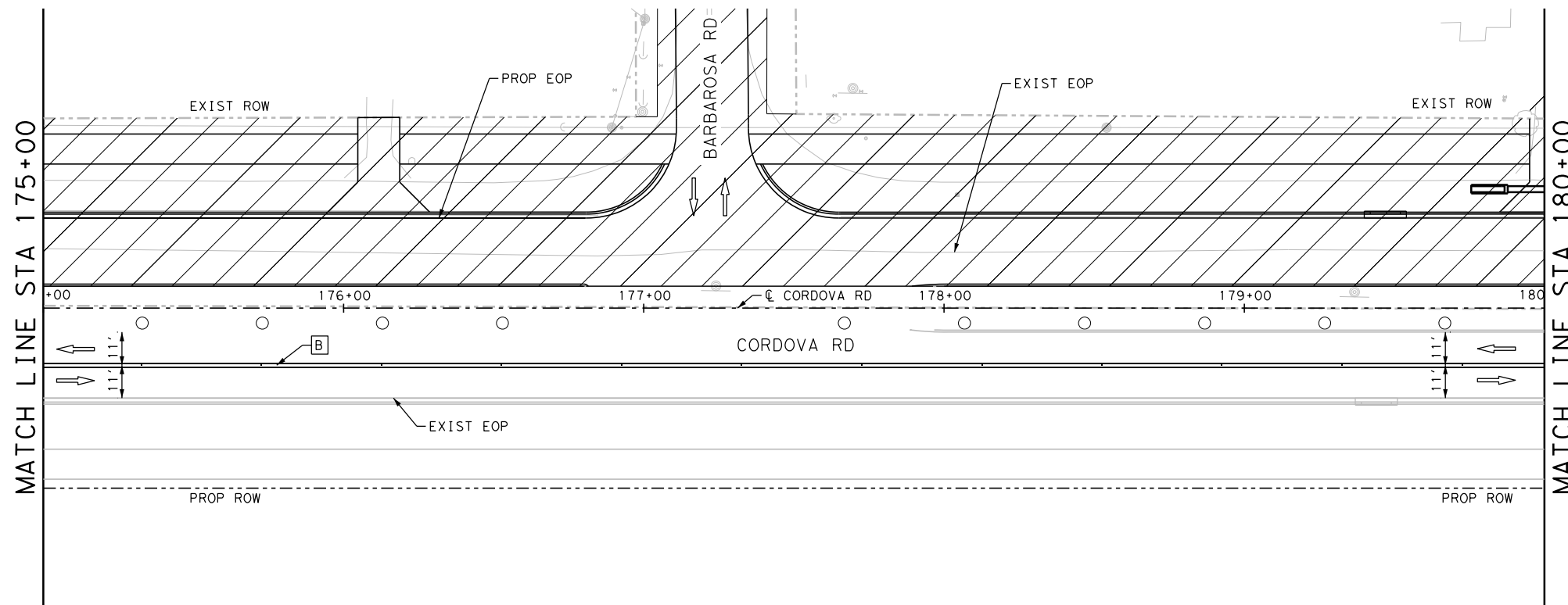
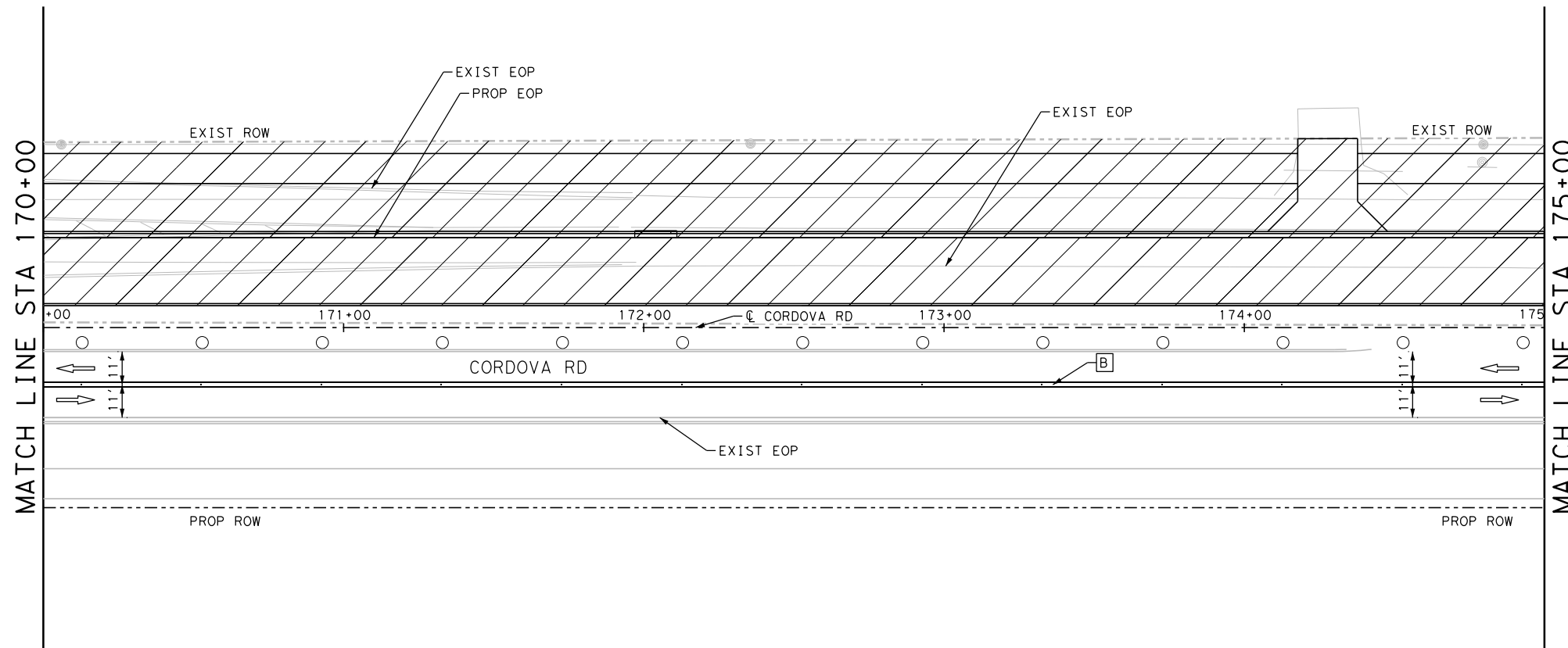
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
©2023			
CORDOVA RD TRAFFIC CONTROL PLAN PHASE II STA 160+00 TO STA 170+00 SHEET 7 OF 22			
CHK DGN:	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO. CORDOVA
DWG:	DIST. SAT	COUNTY GUADALUPE	CONT. NO. 0915
CHK DWG:			SECT. NO. 46
			JOB NO. 052
			SHEET NO. 102

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_Ph2_08.dgn



- LEGEND**
- CONSTRUCTION AREA
 - TEMPORARY PAVEMENT
 - TYPE III BARRICADE
 - SIGN
 - TRAFFIC FLOW ARROWS
 - PLASTIC DRUMS
 - LOW PROFILE CONCRETE BARRIER (LPCB)
 - PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
 - WK ZN PAV MRK REMOV (W) 6" (SLD)
 - WK ZN PAV MRK REMOV (Y) 6" (SLD)
 - WK ZN PAV MRK REMOV (Y) 6" (SLD)
 - WK ZN PAV MRK REMOV (W) 24" (SLD)

NOTES:

1. FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED. THIS WORK IS CONSIDERED SUBSIDIARY TO THE WORK ZONE PAVEMENT MARKING ITEMS.
4. ONE SECTION OF LPCB TY 2 MUST BE PLACED AT EACH UPSTREAM AND DOWNSTREAM END. THE TY 2 IS INCLUDED IN THE LPCB CALLOUTS.
5. A 3:1 TRAVERSABLE SAFETY SLOPE MUST BE ADDED TO ALL DROPOFFS GREATER THAN 2" IN AREAS NOT PROTECTED BY BARRIER AT THE END OF THE WORK DAY.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

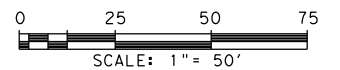
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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CORDOVA RD
**TRAFFIC CONTROL PLAN
 PHASE II**

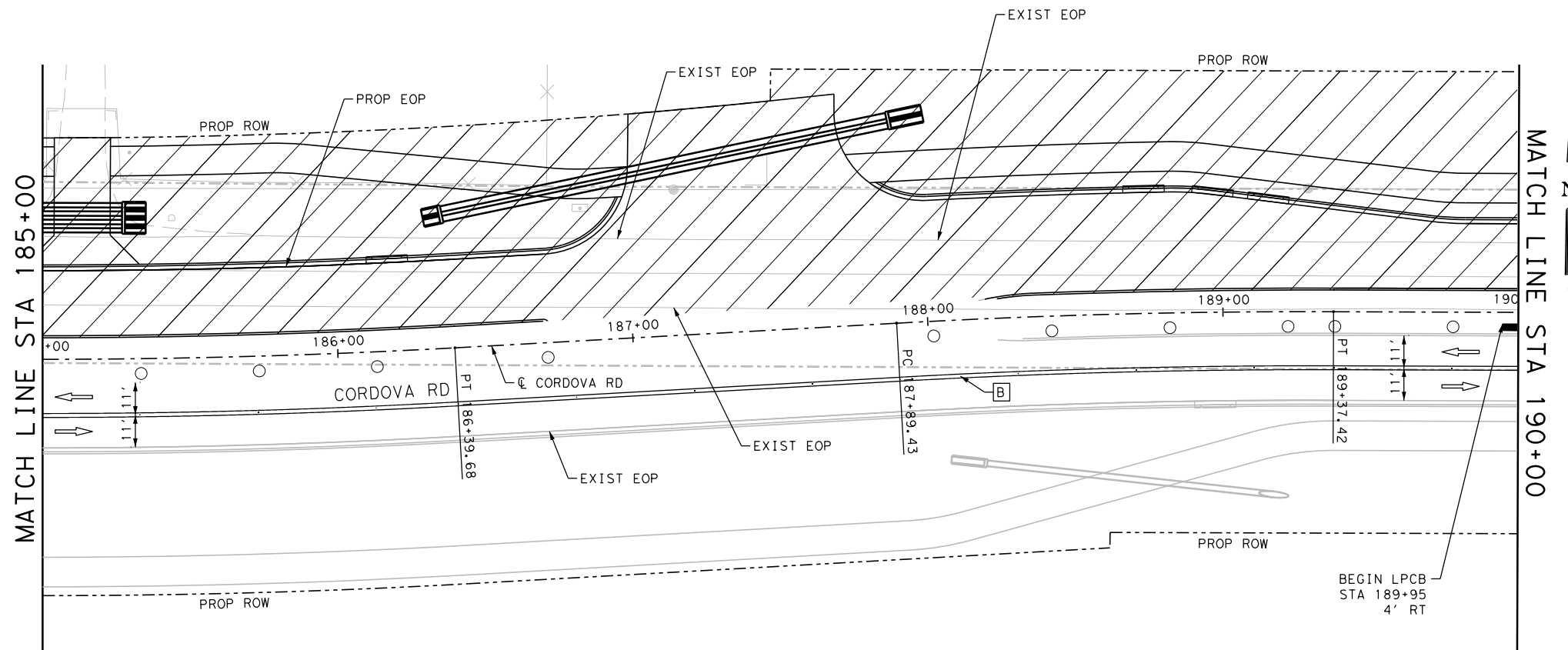
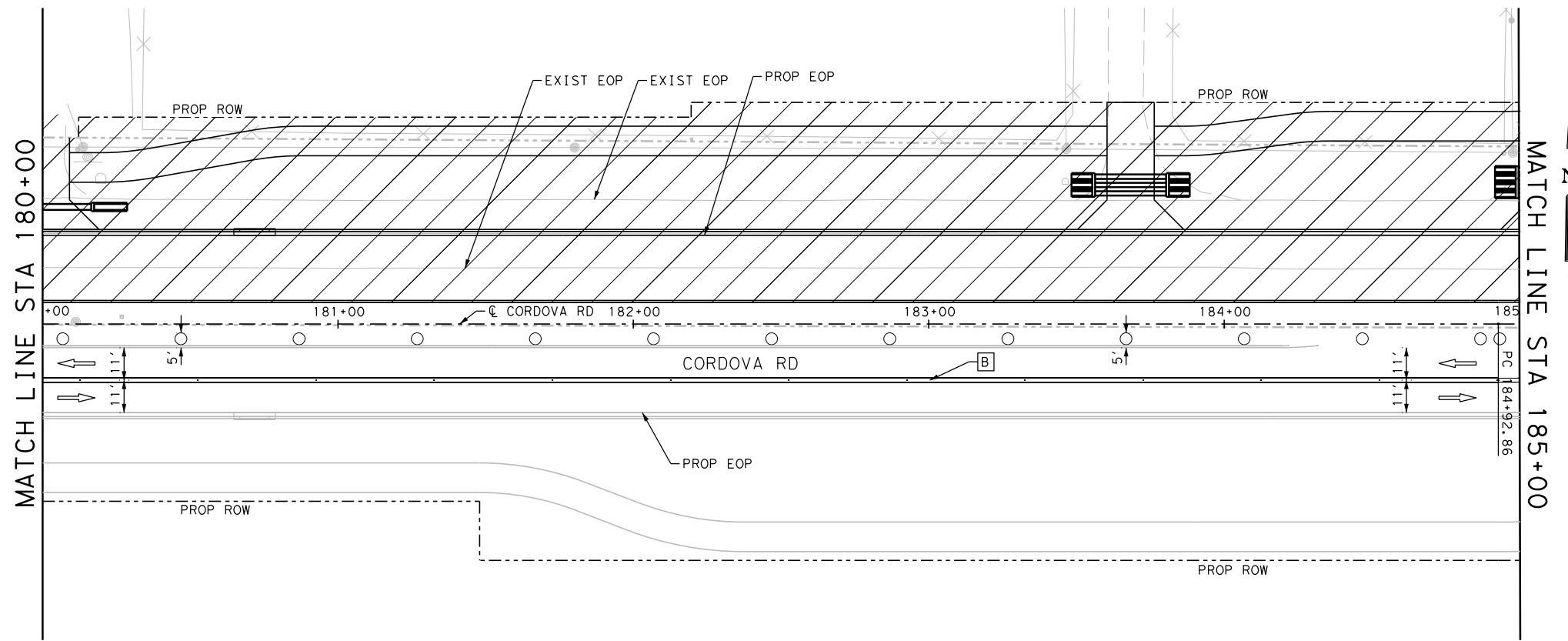
STA 170+00 TO STA 180+00

SHEET 8 OF 22

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	103

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_Ph2_09.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	WK ZN PAV MRK REMOV (W) 6" (SLD)		WK ZN PAV MRK REMOV (Y) 6" (SLD)
	WK ZN PAV MRK REMOV (Y) 6" (DBL) (SLD)		WK ZN PAV MRK REMOV (W) 24" (SLD)

NOTES:

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DESIGN

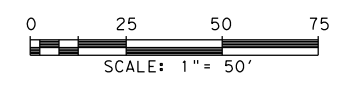
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

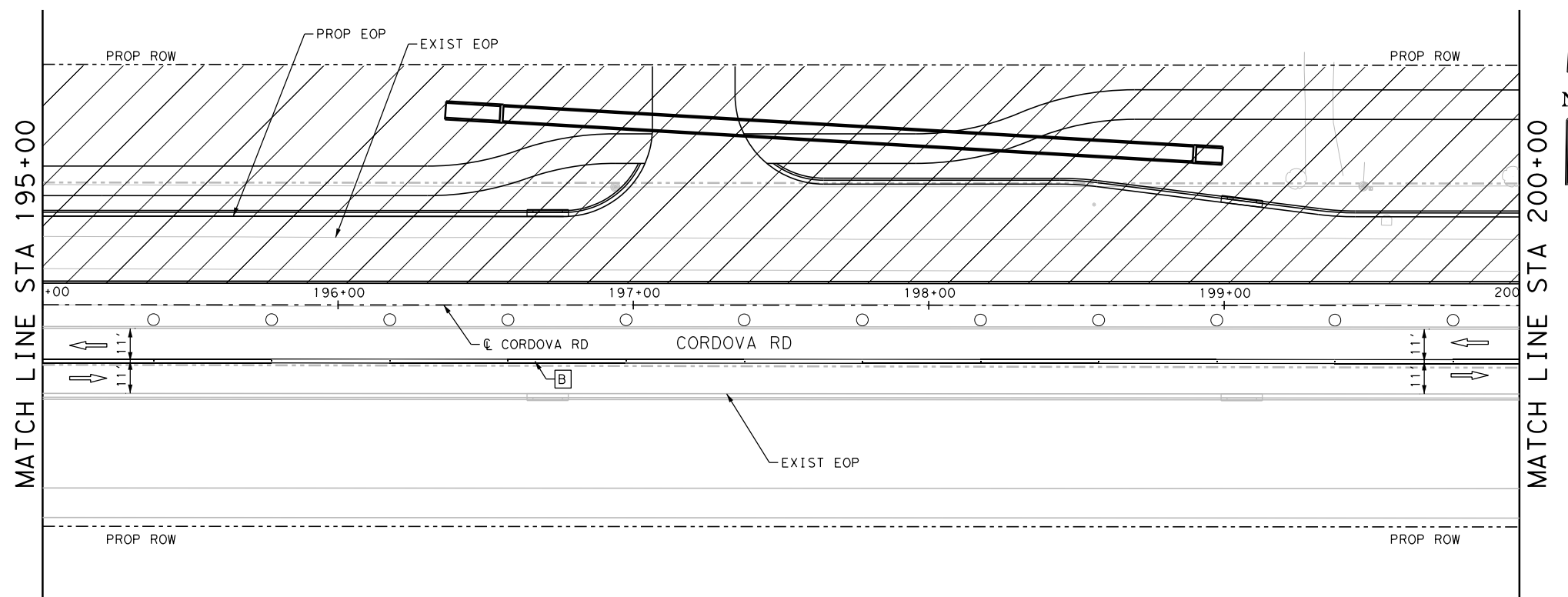
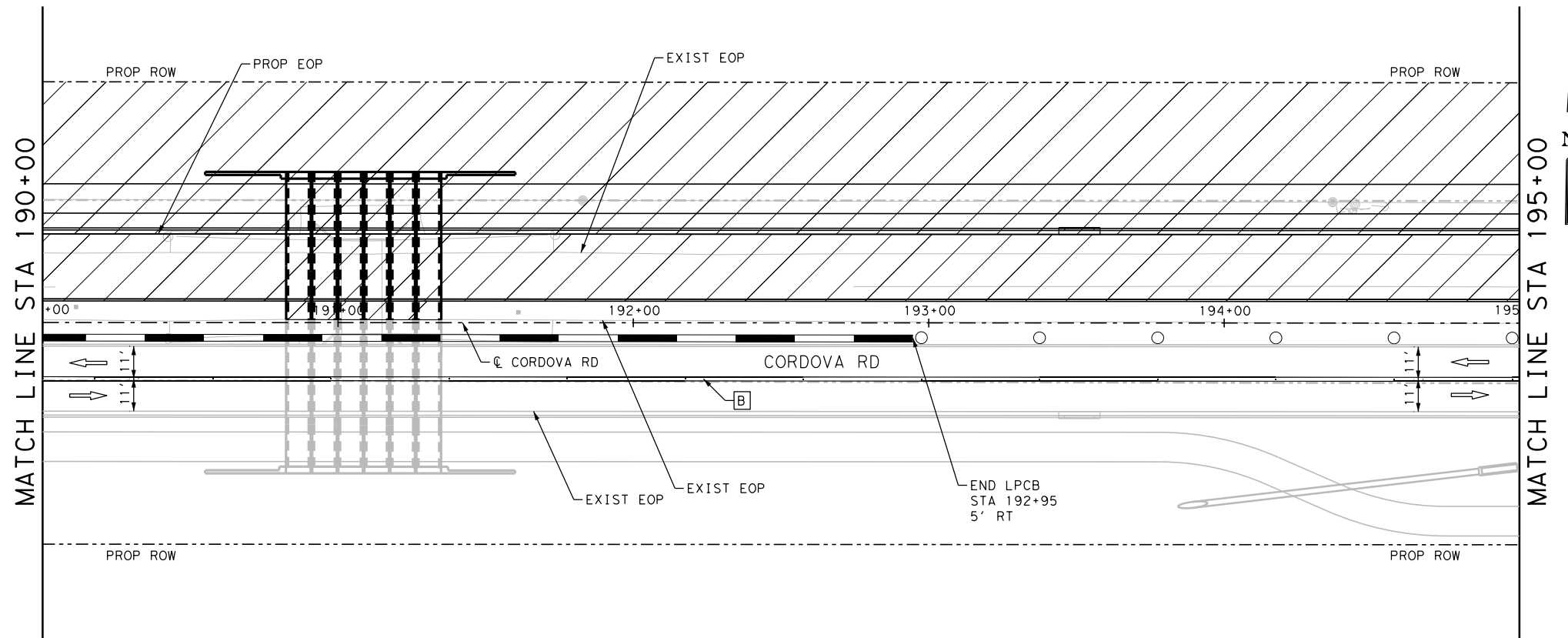
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 <small>TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</small>			
©2023			
CORDOVA RD TRAFFIC CONTROL PLAN PHASE II STA 180+00 TO STA 190+00 SHEET 9 OF 22			
CHK DGN:	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO. CORDOVA
CHK DWG:	DIST. SAT	COUNTY GUADALUPE	CONT. NO. 0915
CHK DWG:			SECT. NO. 46
			JOB NO. 052
			SHEET NO. 104

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_Ph2_10.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	A WK ZN PAV MRK REMOV (W) 6" (SLD)		C WK ZN PAV MRK REMOV (Y) 6" (SLD)
	B WK ZN PAV MRK REMOV (Y) 6" (DBL) (SLD)		D WK ZN PAV MRK REMOV (W) 24" (SLD)

NOTES:

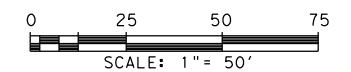
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



CORDOVA RD
TRAFFIC CONTROL PLAN
PHASE II

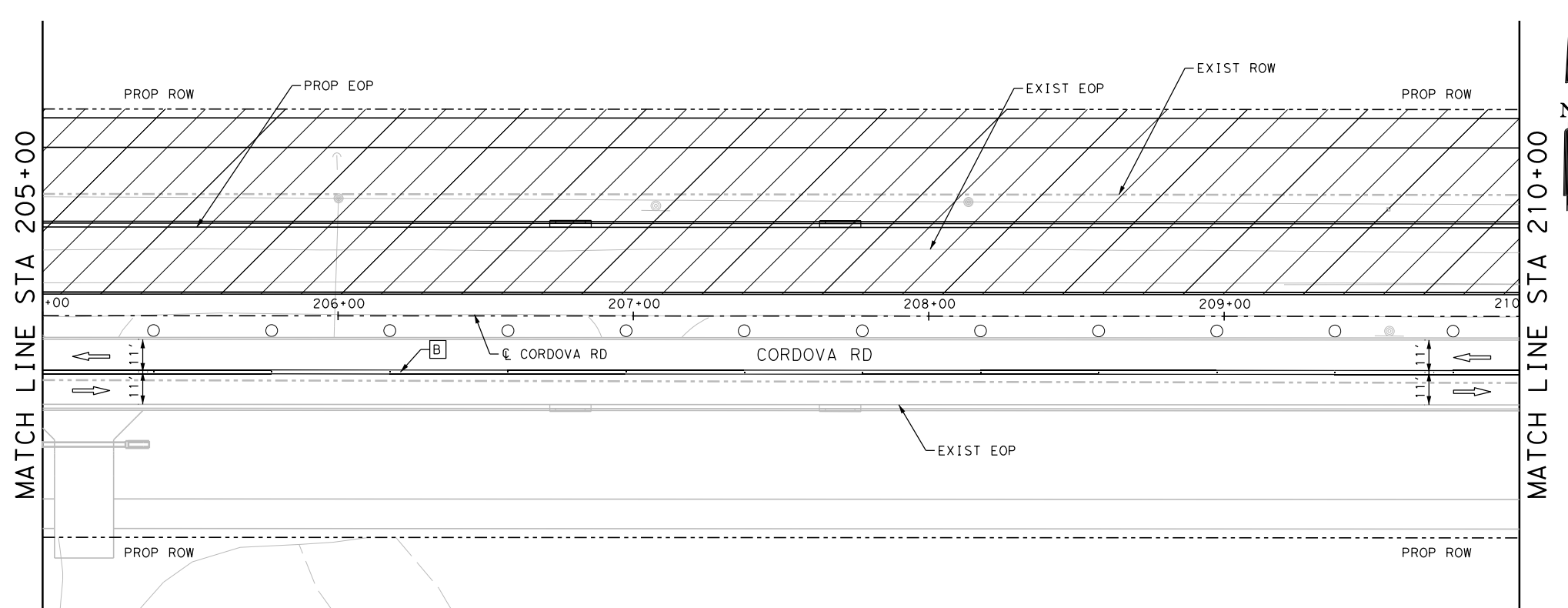
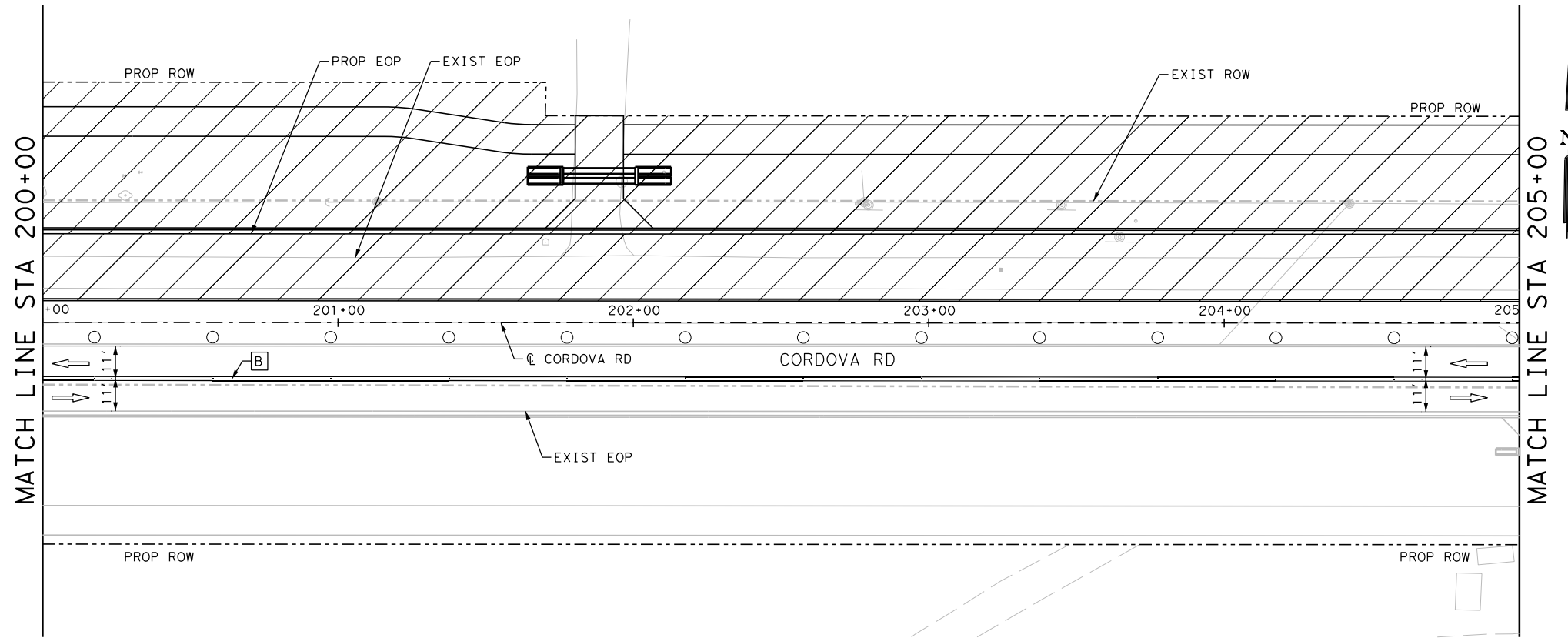
STA 190+00 TO STA 200+00

SHEET 10 OF 22

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	105

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_Ph2_11.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		ACCELERATED CONSTRUCTION
	PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)		
	WK ZN PAV MRK REMOV (W) 6" (SLD)		WK ZN PAV MRK REMOV (Y) 6" (SLD)
	WK ZN PAV MRK REMOV (Y) 6" (DBL) (SLD)		WK ZN PAV MRK REMOV (W) 24" (SLD)

NOTES:

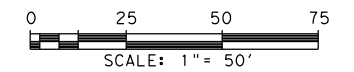
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

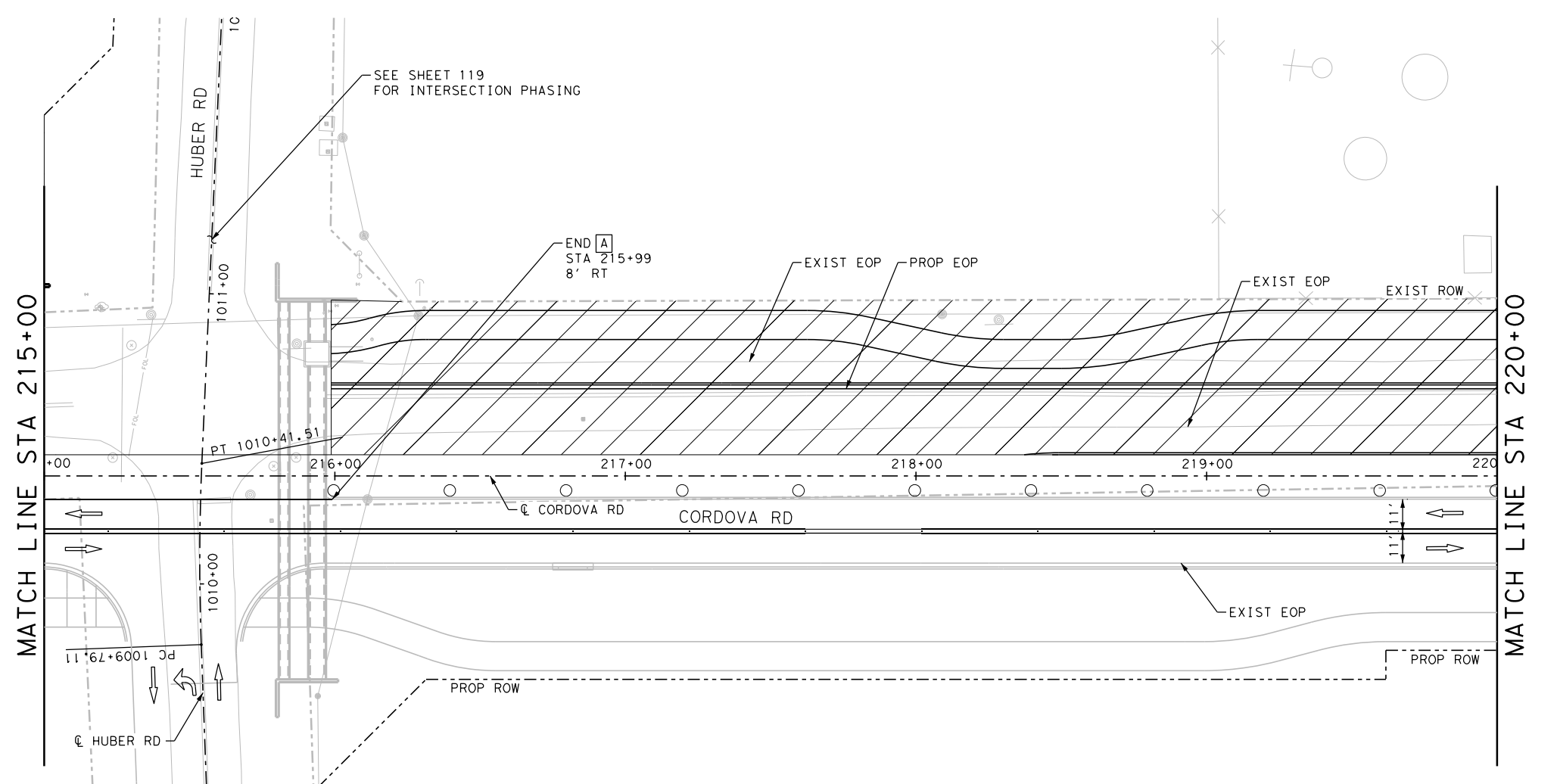
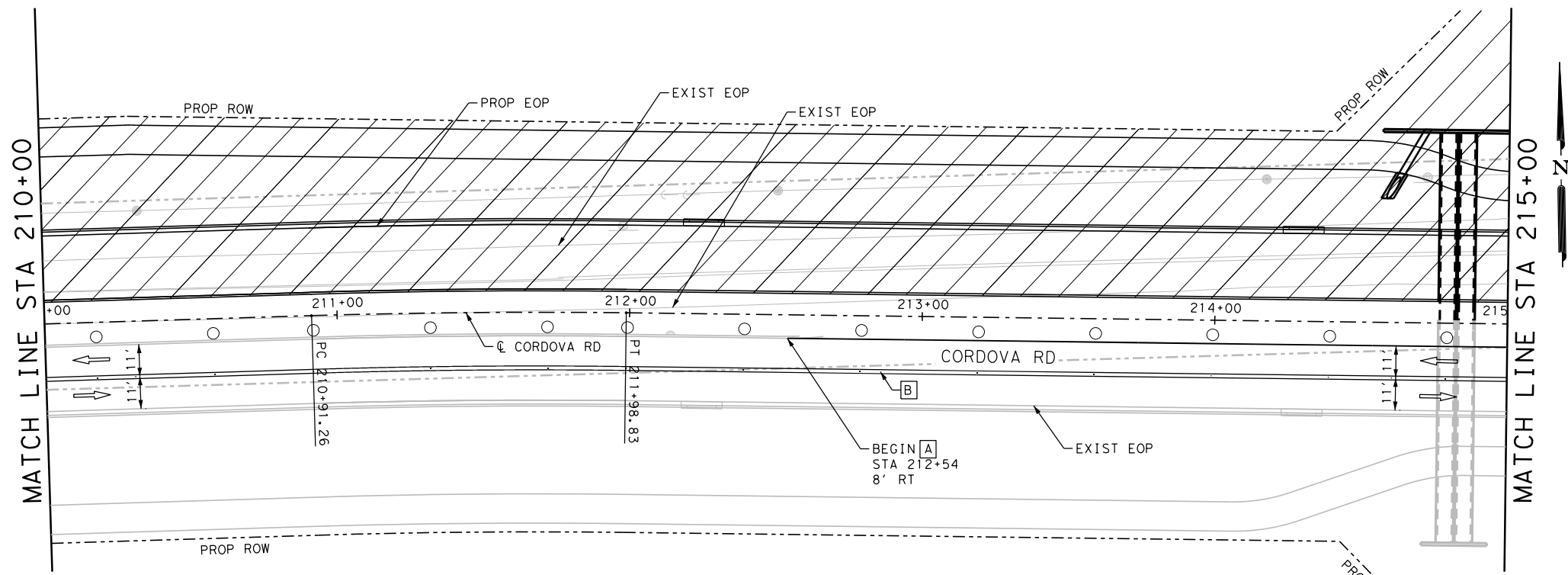
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
© 2023			
CORDOVA RD TRAFFIC CONTROL PLAN PHASE II STA 200+00 TO STA 210+00 SHEET 11 OF 22			
CHK DGN:	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO. CORDOVA
DWG:	DIST. COUNTY	CONT. NO. SECT. NO.	JOB NO. SHEET NO.
CHK DWG:	SAT GUADALUPE	0915 46	052 106

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_Ph2_12.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	WK ZN PAV MRK REMOV (W) 6" (SLD)		WK ZN PAV MRK REMOV (Y) 6" (SLD)
	WK ZN PAV MRK REMOV (Y) 6" (DBL) (SLD)		WK ZN PAV MRK REMOV (W) 24" (SLD)

- NOTES:**
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 - A 3:1 TRAVERSABLE SAFETY SLOPE MUST BE ADDED TO ALL DROPOFFS GREATER THAN 2" IN AREAS NOT PROTECTED BY BARRIER AT THE END OF THE WORK DAY.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

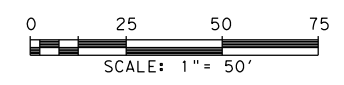
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

Pape-Dawson Engineers

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000

TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS

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THE STATE OF TEXAS
GUADALUPE COUNTY

Texas Department of Transportation

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CORDOVA RD

TRAFFIC CONTROL PLAN

PHASE II

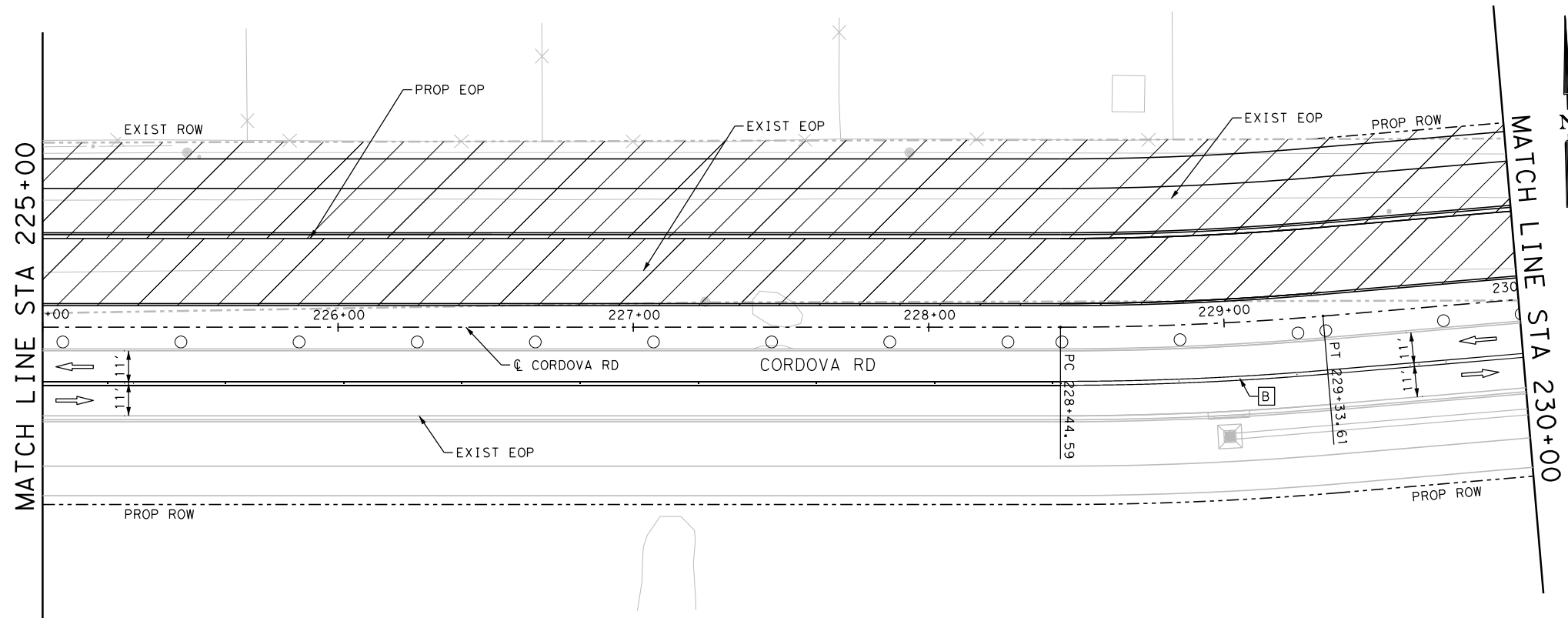
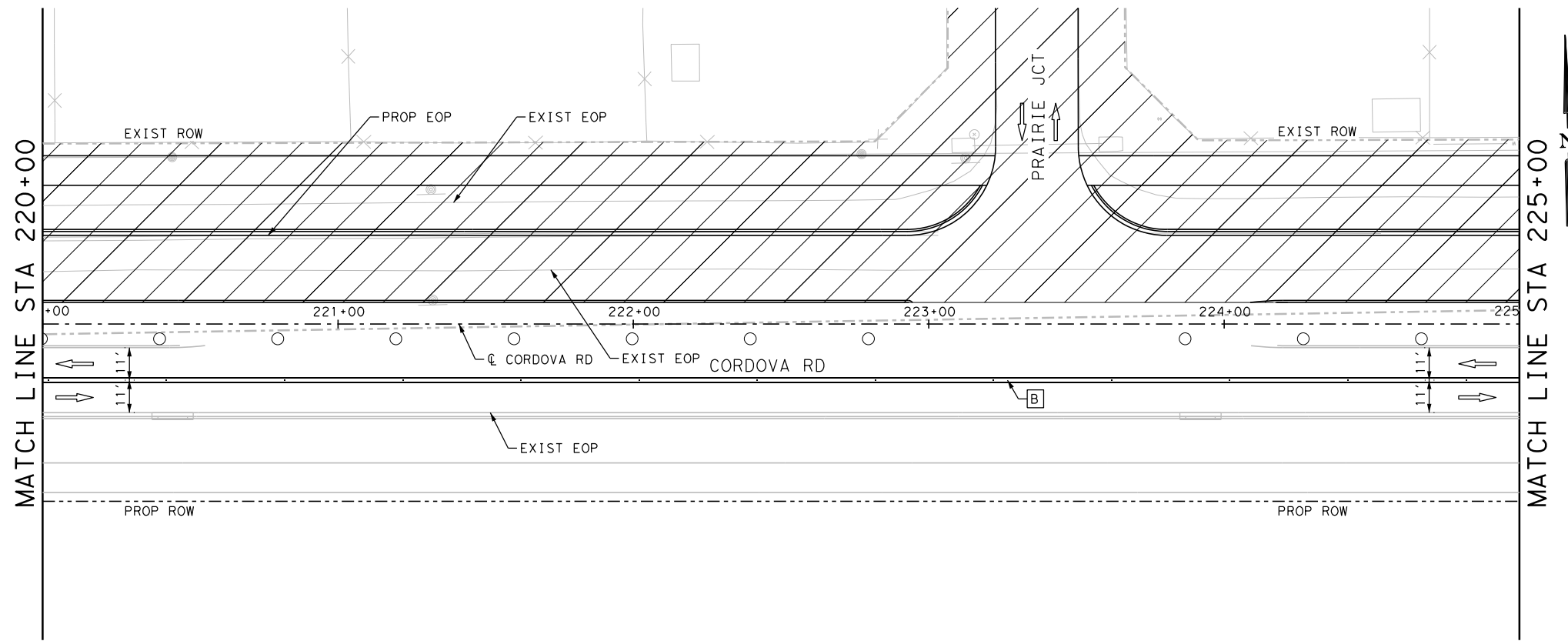
STA 210+00 TO STA 220+00

SHEET 12 OF 22

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				107

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_Ph2_13.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		ACCELERATED CONSTRUCTION
	PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)		
	WK ZN PAV MRK REMOV (W)6" (SLD)		WK ZN PAV MRK REMOV (Y)6" (SLD)
	WK ZN PAV MRK REMOV (Y)6" (DBL) (SLD)		WK ZN PAV MRK REMOV (W)24" (SLD)

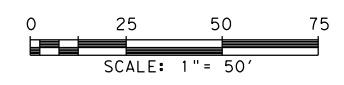
- NOTES:**
- FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

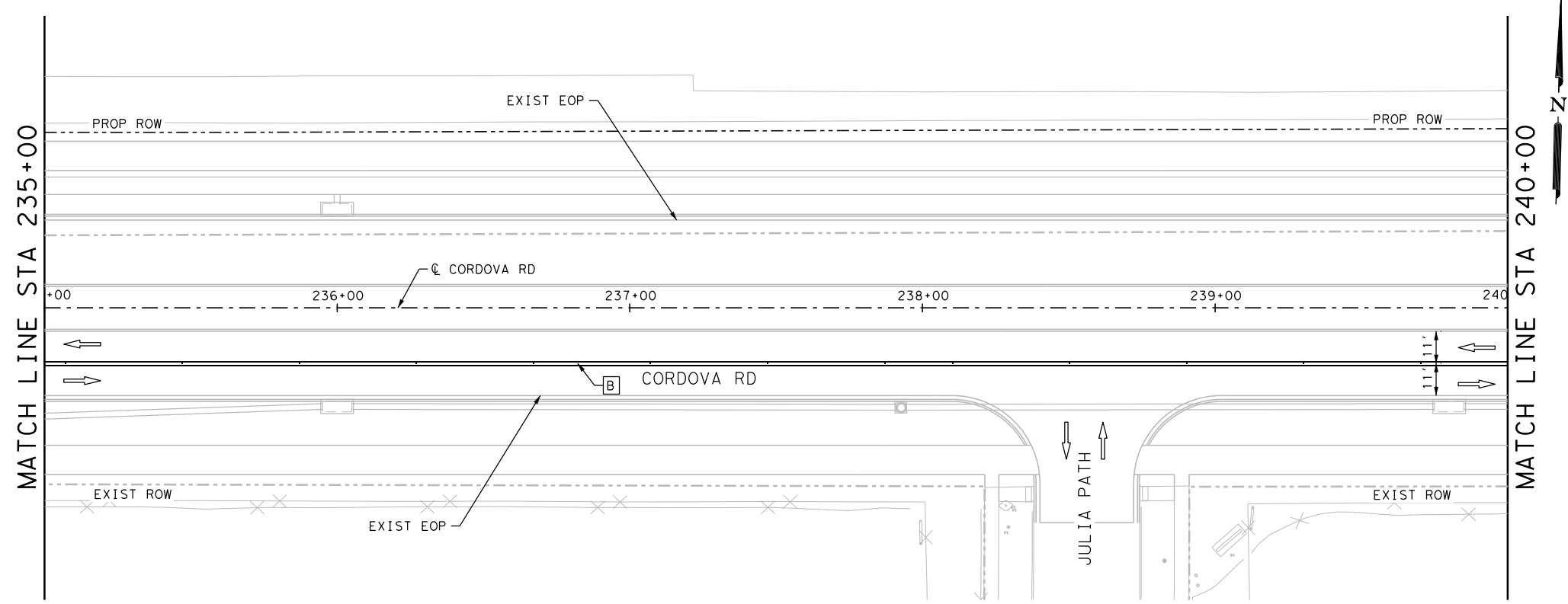
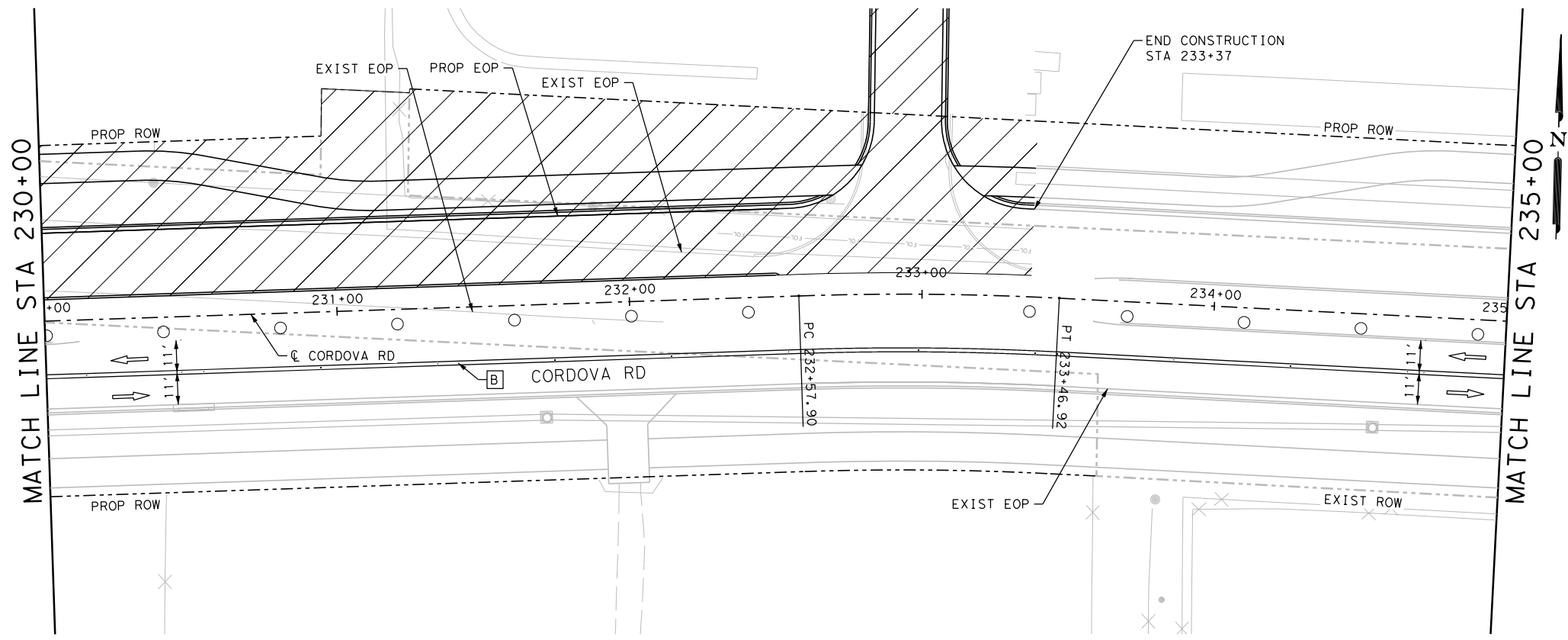
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
©2023			
CORDOVA RD TRAFFIC CONTROL PLAN PHASE II STA 220+00 TO STA 230+00 SHEET 13 OF 22			
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
CHK DGN:	6	TEXAS	
DWG:	DIST.:	COUNTY:	CONT. NO. SECT. NO. JOB NO. SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915 46 052 108

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_Ph2_14.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	WK ZN PAV MRK REMOV (W) 6" (SLD)		WK ZN PAV MRK REMOV (Y) 6" (SLD)
	WK ZN PAV MRK REMOV (Y) 6" (DBL) (SLD)		WK ZN PAV MRK REMOV (W) 24" (SLD)

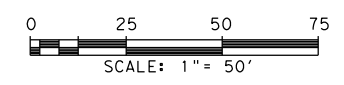
- NOTES:**
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 - EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED. THIS WORK IS CONSIDERED SUBSIDIARY TO THE WORK ZONE PAVEMENT MARKING ITEMS.
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

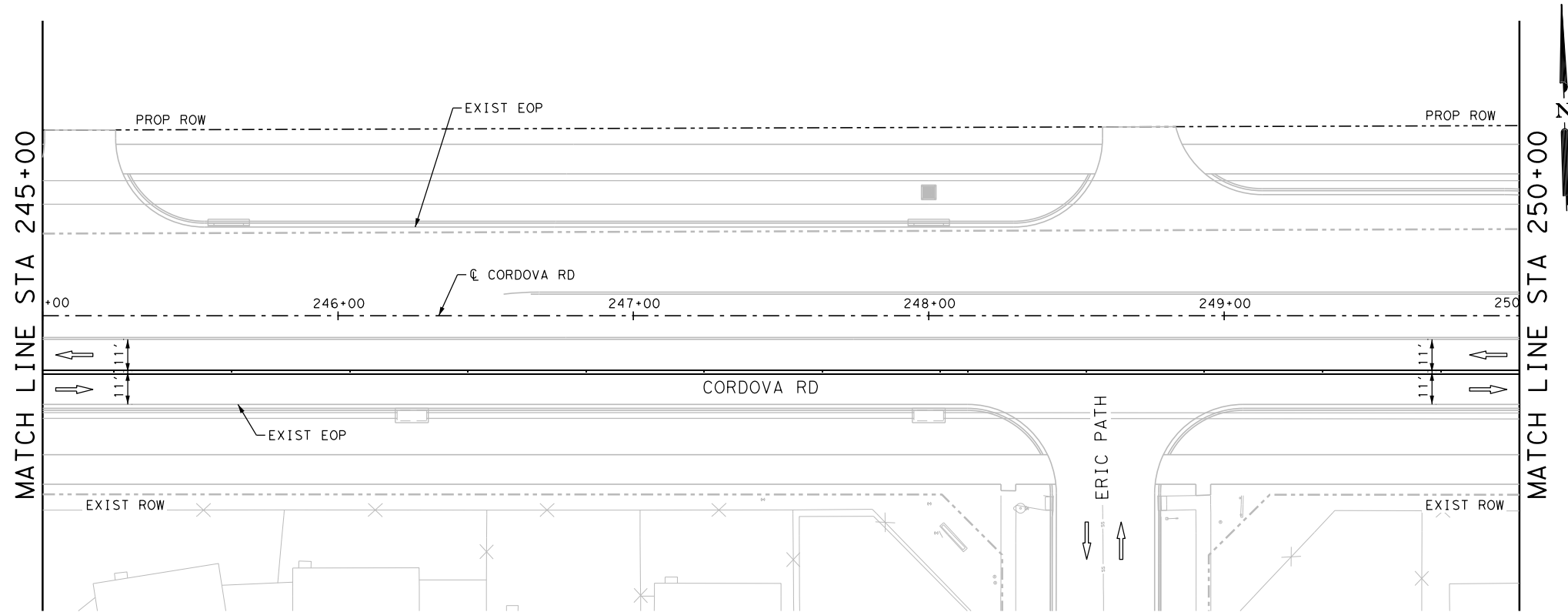
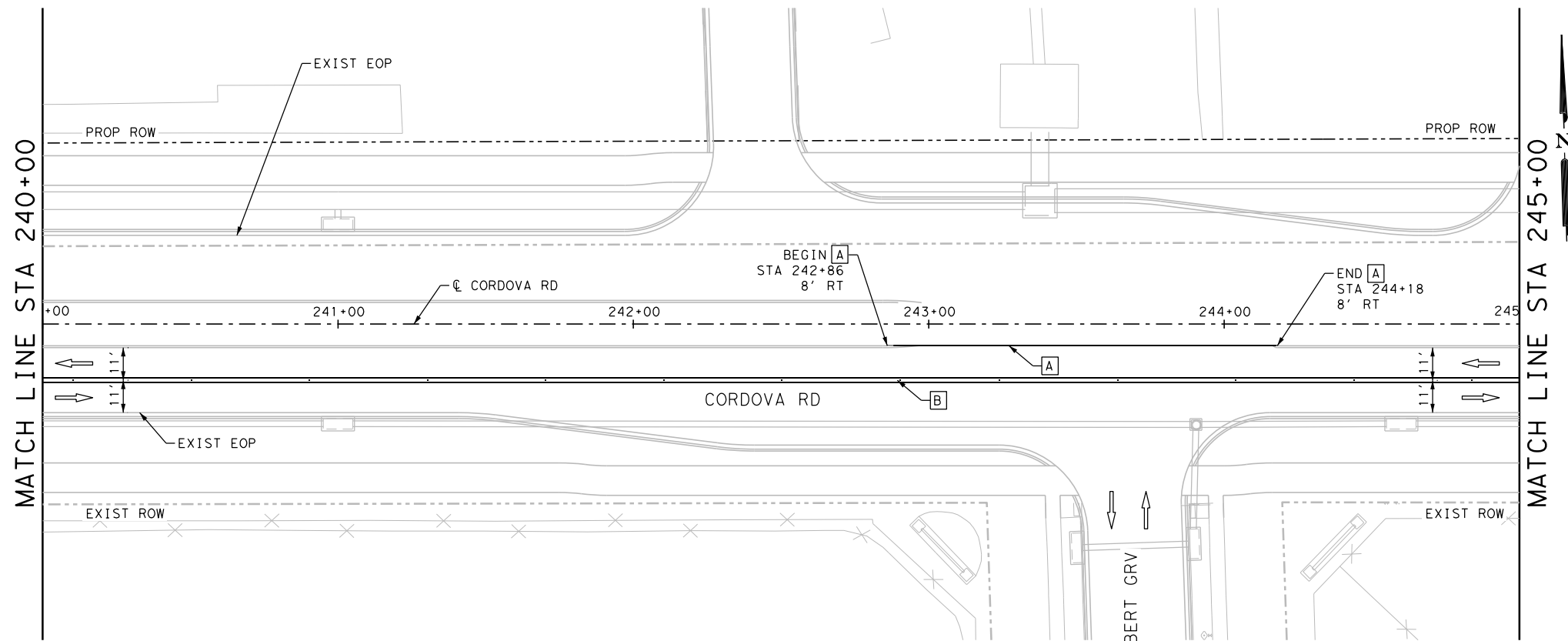
Texas Department of Transportation
 © 2023

CORDOVA RD
**TRAFFIC CONTROL PLAN
 PHASE II**
 STA 230+00 TO STA 240+00
 SHEET 14 OF 22

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
			JOB NO.:	SHEET NO.:
			052	109

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_Ph2_15.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	WK ZN PAV MRK REMOV (W) 6" (SLD)		WK ZN PAV MRK REMOV (Y) 6" (SLD)
	WK ZN PAV MRK REMOV (Y) 6" (DBL) (SLD)		WK ZN PAV MRK REMOV (W) 24" (SLD)

NOTES:

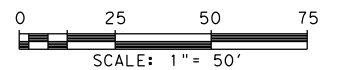
- FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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CORDOVA RD
**TRAFFIC CONTROL PLAN
 PHASE II**

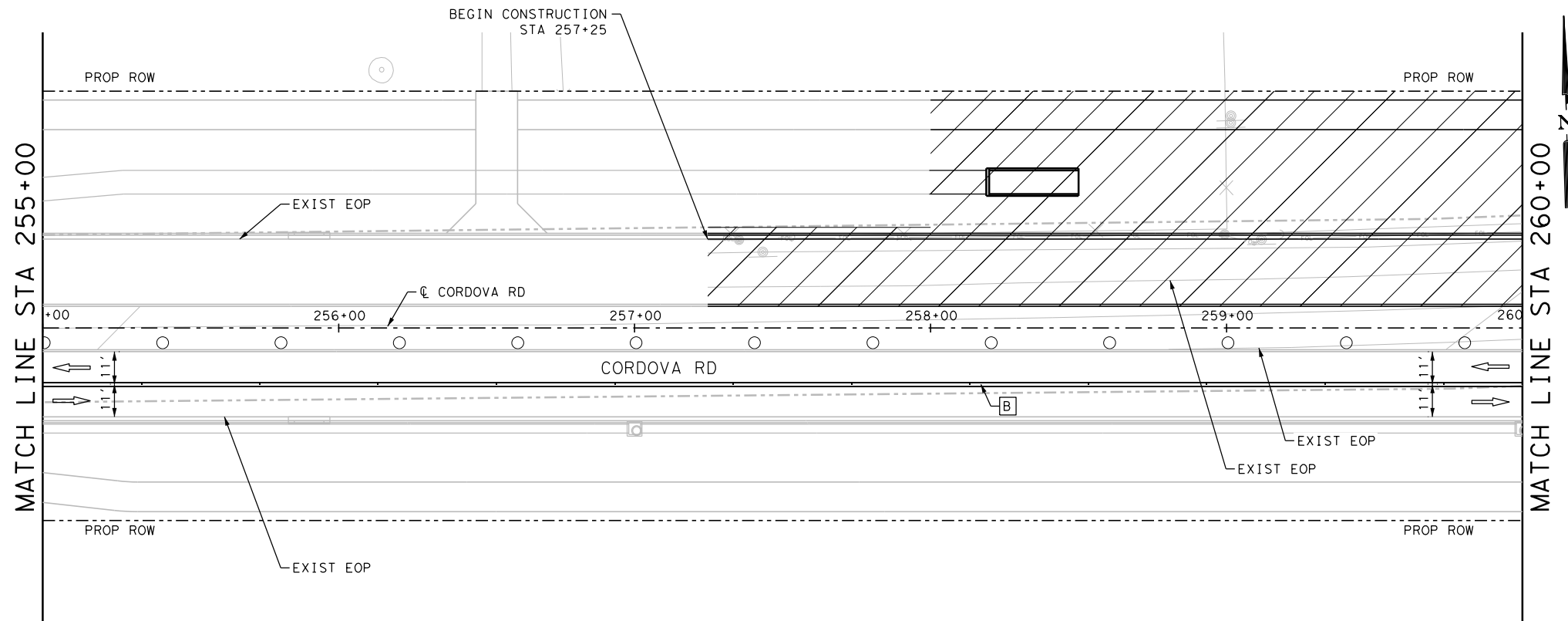
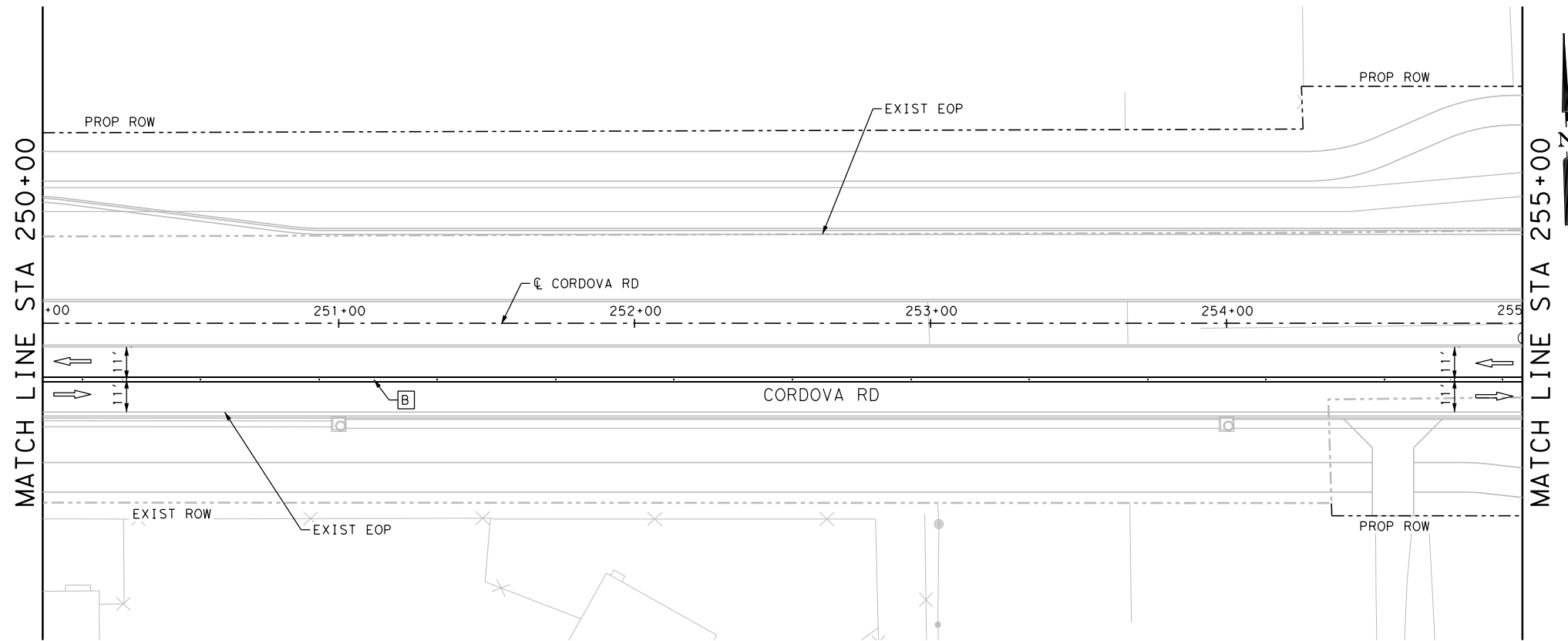
STA 240+00 TO STA 250+00

SHEET 15 OF 22

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	110

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_Ph2_16.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	WK ZN PAV MRK REMOV (W) 6" (SLD)		WK ZN PAV MRK REMOV (Y) 6" (SLD)
	WK ZN PAV MRK REMOV (Y) 6" (DBL) (SLD)		WK ZN PAV MRK REMOV (W) 24" (SLD)

- NOTES:**
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DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

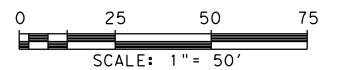
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
----------	------	-------------	----



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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CORDOVA RD
**TRAFFIC CONTROL PLAN
 PHASE II**

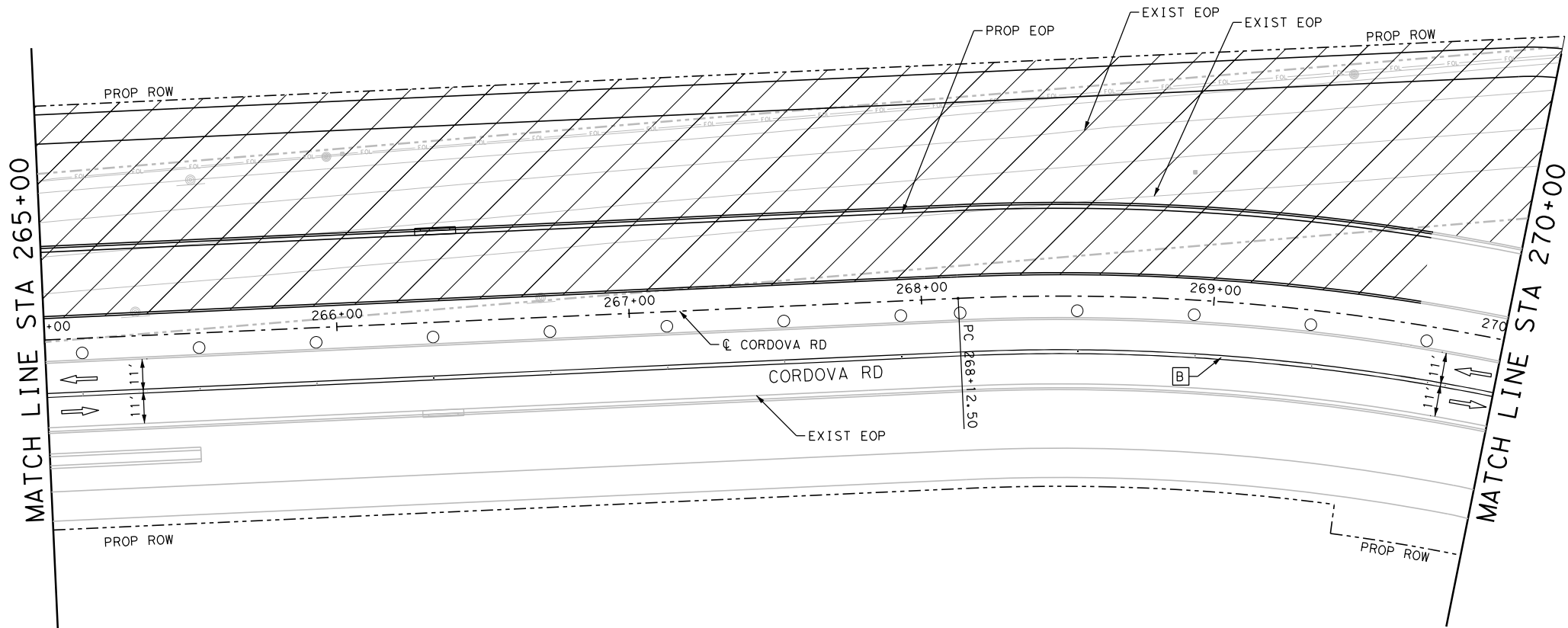
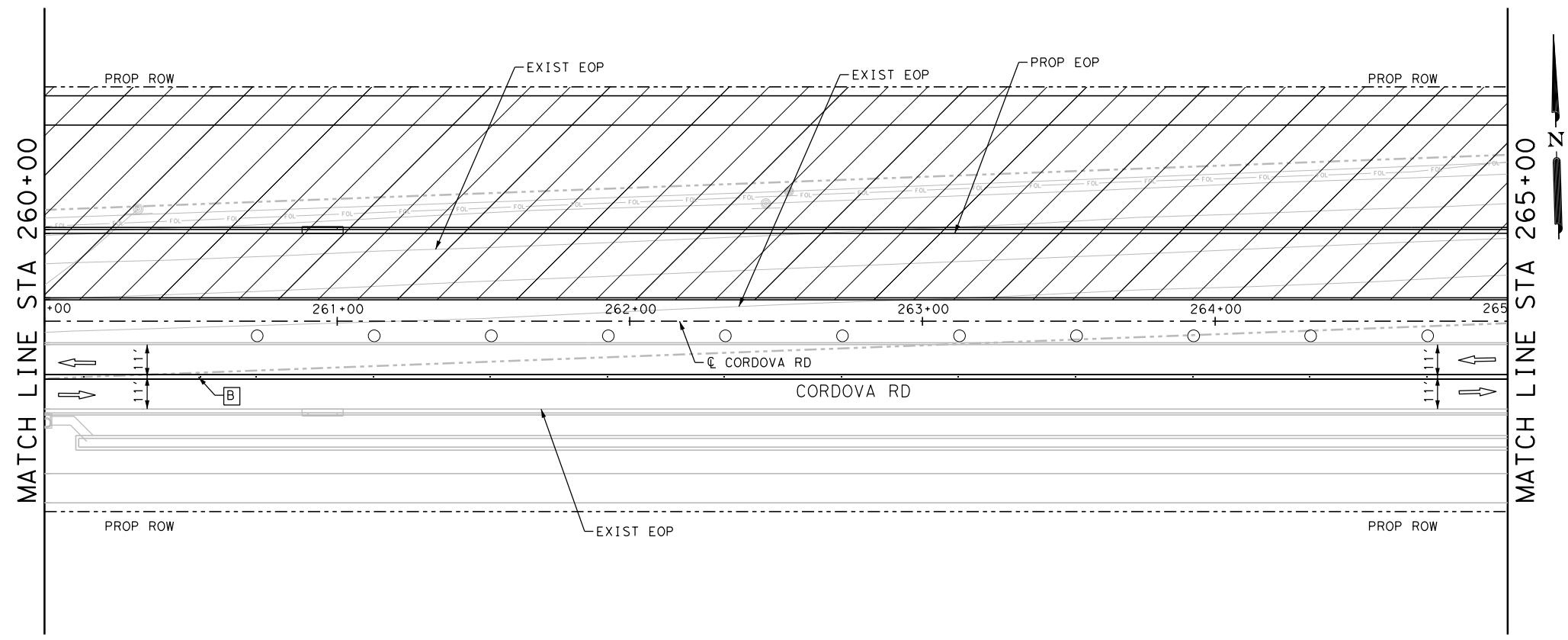
STA 250+00 TO STA 260+00

SHEET 16 OF 22

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				111

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_Ph2_17.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	WK ZN PAV MRK REMOV (W) 6" (SLD)		WK ZN PAV MRK REMOV (Y) 6" (SLD)
	WK ZN PAV MRK REMOV (Y) 6" (DBL) (SLD)		WK ZN PAV MRK REMOV (W) 24" (SLD)

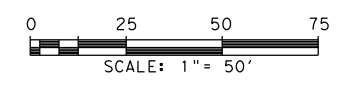
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

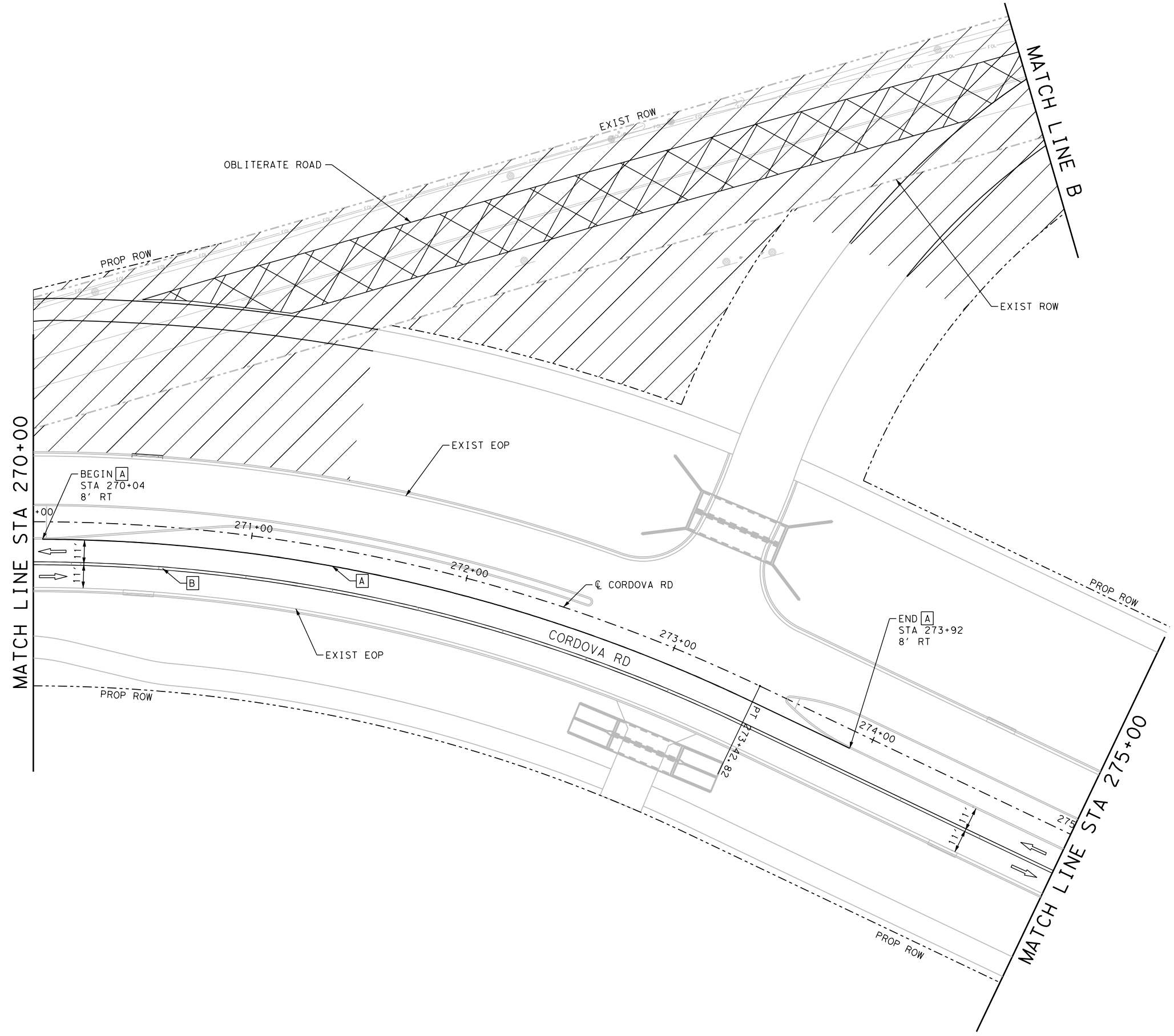
Texas Department of Transportation
 © 2023

CORDOVA RD
**TRAFFIC CONTROL PLAN
 PHASE II**
 STA 260+00 TO STA 270+00
 SHEET 17 OF 22

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	112

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_Ph2_18.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	WK ZN PAV MRK REMOV (W) 6" (SLD)		WK ZN PAV MRK REMOV (Y) 6" (SLD)
	WK ZN PAV MRK REMOV (Y) 6" (DBL) (SLD)		WK ZN PAV MRK REMOV (W) 24" (SLD)

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DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

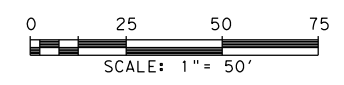
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

It's real.

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CORDOVA RD

TRAFFIC CONTROL PLAN

PHASE II

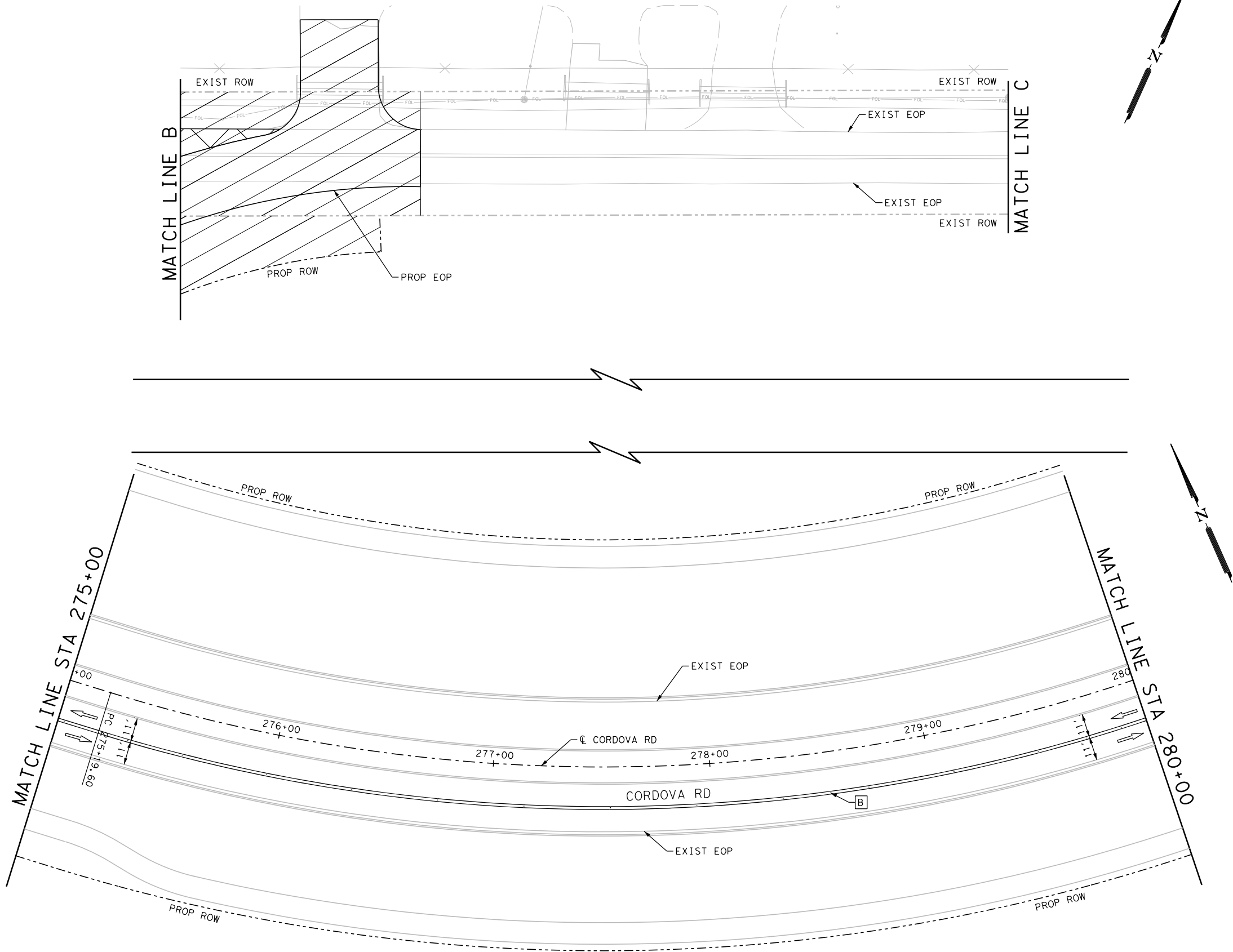
STA 270+00 TO STA 275+00

SHEET 18 OF 22

CHK	DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK	DGN:	6	TEXAS		CORDOVA		
CHK	DGN:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK	DGN:	SAT	GUADALUPE	0915	46	052	113

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_Ph2_19.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	A WK ZN PAV MRK REMOV (W) 6" (SLD)		C WK ZN PAV MRK REMOV (Y) 6" (SLD)
	B WK ZN PAV MRK REMOV (Y) 6" (DBL) (SLD)		D WK ZN PAV MRK REMOV (W) 24" (SLD)

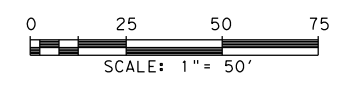
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
----------	------	-------------	----

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS
 It's real.

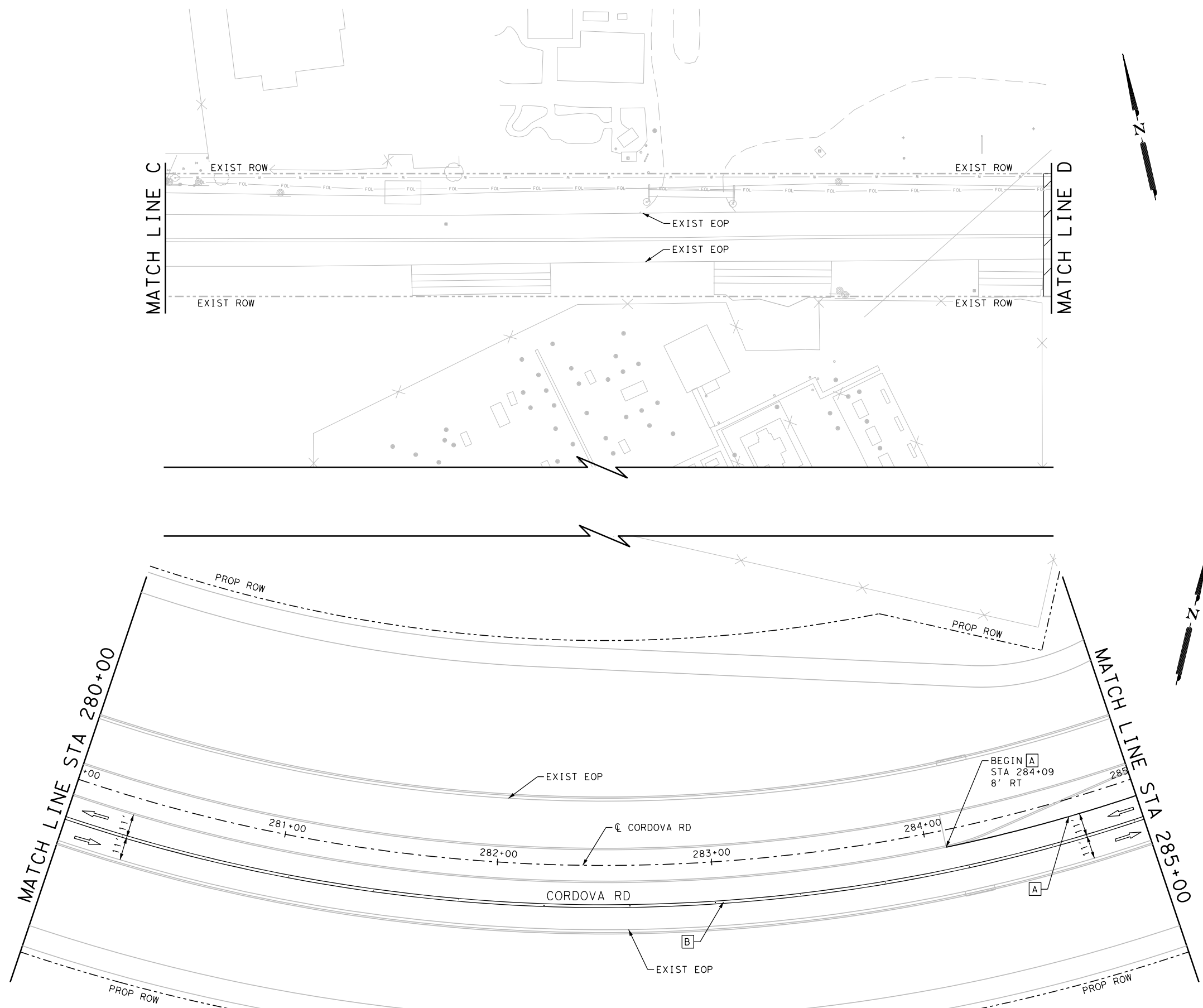
Texas Department of Transportation
 © 2023

CORDOVA RD
TRAFFIC CONTROL PLAN PHASE II
 STA 275+00 TO STA 280+00
 SHEET 19 OF 22

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	114

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_Ph2_20.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	WK ZN PAV MRK REMOV (W) 6" (SLD)		WK ZN PAV MRK REMOV (Y) 6" (SLD)
	WK ZN PAV MRK REMOV (Y) 6" (DBL) (SLD)		WK ZN PAV MRK REMOV (W) 24" (SLD)

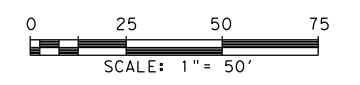
- NOTES:**
- FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
 - EXISTING FEATURES ARE SHOWN SCREENED BACK.
 - EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED. THIS WORK IS CONSIDERED SUBSIDIARY TO THE WORK ZONE PAVEMENT MARKING ITEMS.
 - ONE SECTION OF LPCB TY 2 MUST BE PLACED AT EACH UPSTREAM AND DOWNSTREAM END. THE TY 2 IS INCLUDED IN THE LPCB CALLOUTS.
 - A 3:1 TRAVERSABLE SAFETY SLOPE MUST BE ADDED TO ALL DROPOFFS GREATER THAN 2" IN AREAS NOT PROTECTED BY BARRIER AT THE END OF THE WORK DAY.

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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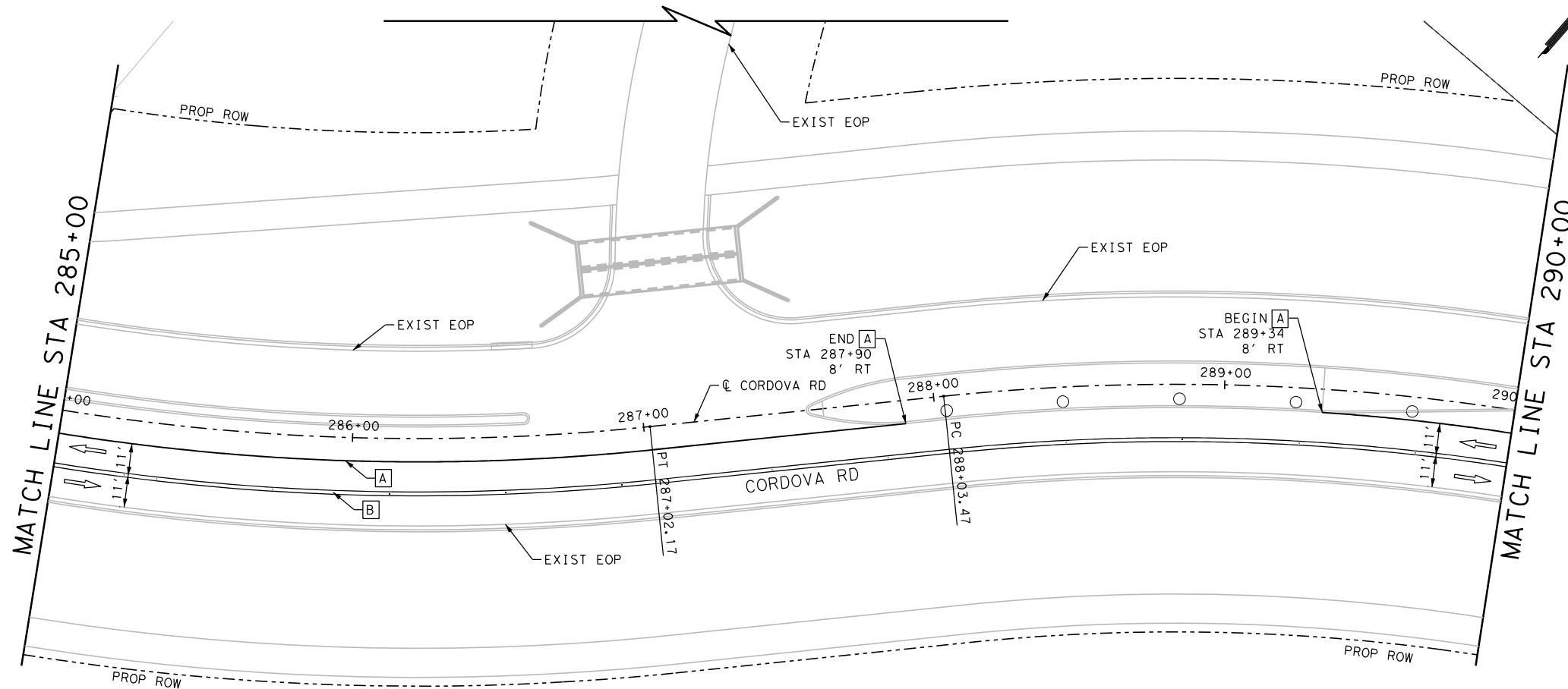
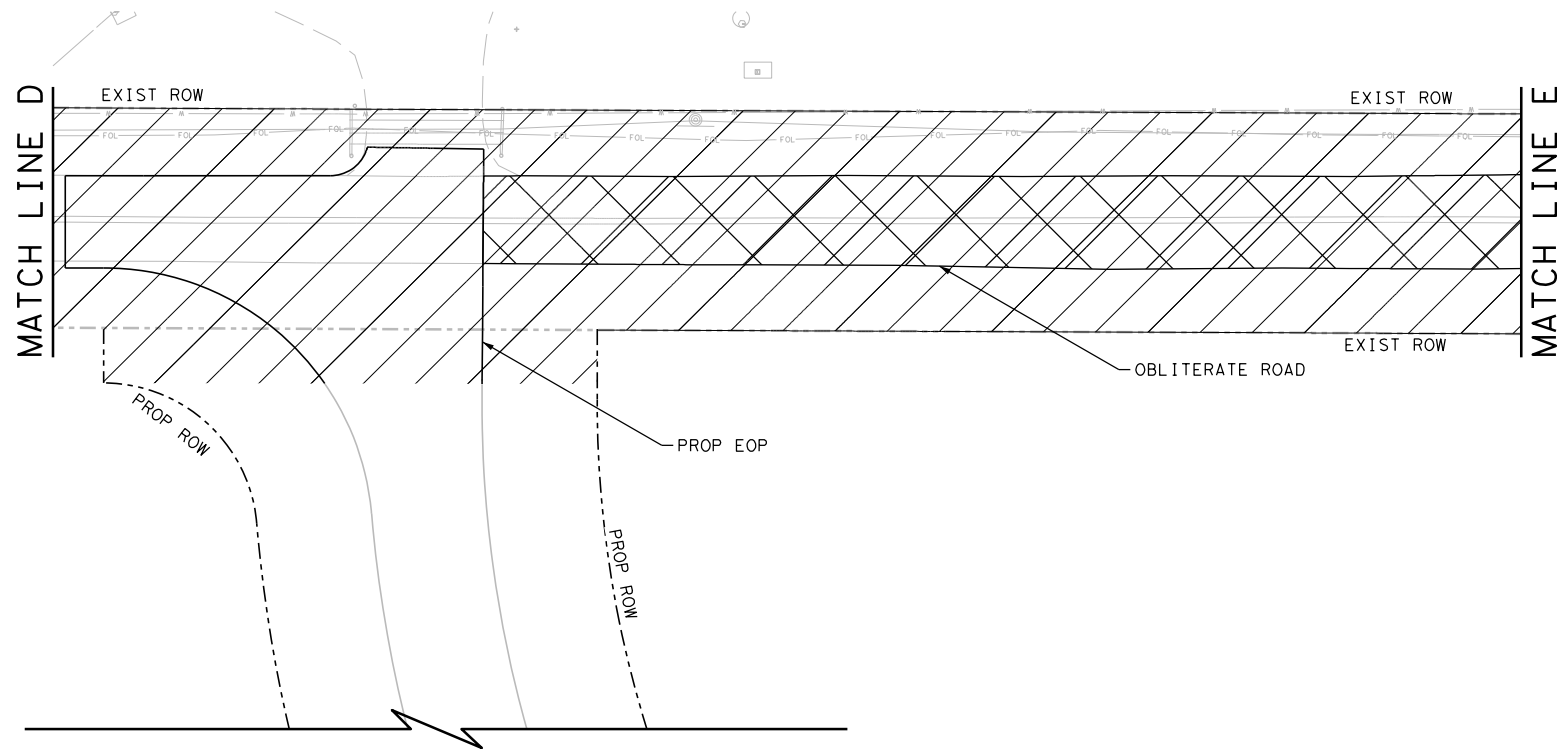
Texas Department of Transportation
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CORDOVA RD
TRAFFIC CONTROL PLAN PHASE II
 STA 280+00 TO STA 285+00
 SHEET 20 OF 22

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
			JOB NO.:	SHEET NO.:
			052	115

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_Ph2_21.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	WK ZN PAV MRK REMOV (W) 6" (SLD)		WK ZN PAV MRK REMOV (Y) 6" (SLD)
	WK ZN PAV MRK REMOV (Y) 6" (DBL) (SLD)		WK ZN PAV MRK REMOV (W) 24" (SLD)

NOTES:

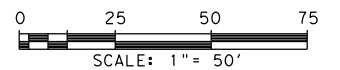
- FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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CORDOVA RD
TRAFFIC CONTROL PLAN
PHASE II

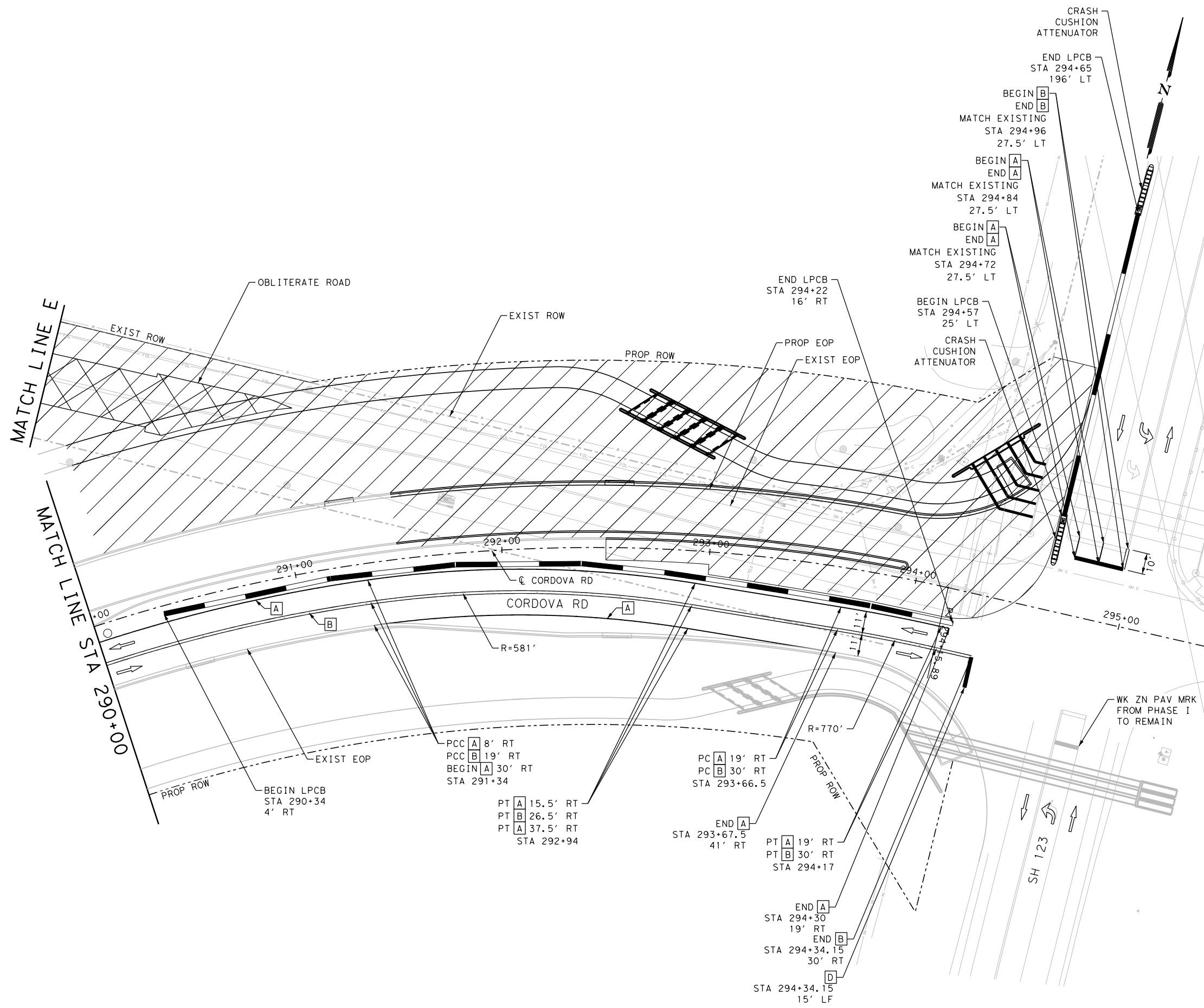
STA 285+00 TO STA 290+00

SHEET 21 OF 22

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	116

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_Ph2_22.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)
	WZM PAV MRK REMOV (W)6" (SLD)		WZM PAV MRK REMOV (Y)6" (SLD)
	WZM PAV MRK REMOV (Y)6" (DBL) (SLD)		WZM PAV MRK REMOV (W)24" (SLD)

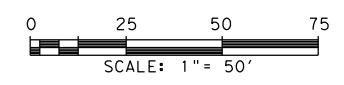
- NOTES:**
- FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
 - EXISTING FEATURES ARE SHOWN SCREENED BACK.
 - EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED. THIS WORK IS CONSIDERED SUBSIDIARY TO THE WORK ZONE PAVEMENT MARKING ITEMS.
 - ONE SECTION OF LPCB TY 2 MUST BE PLACED AT EACH UPSTREAM AND DOWNSTREAM END. THE TY 2 IS INCLUDED IN THE LPCB CALLOUTS.
 - A 3:1 TRAVERSABLE SAFETY SLOPE MUST BE ADDED TO ALL DROPOFFS GREATER THAN 2" IN AREAS NOT PROTECTED BY BARRIER AT THE END OF THE WORK DAY.

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
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Pape-Dawson Engineers
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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THE STATE OF TEXAS
 GUADALUPE COUNTY

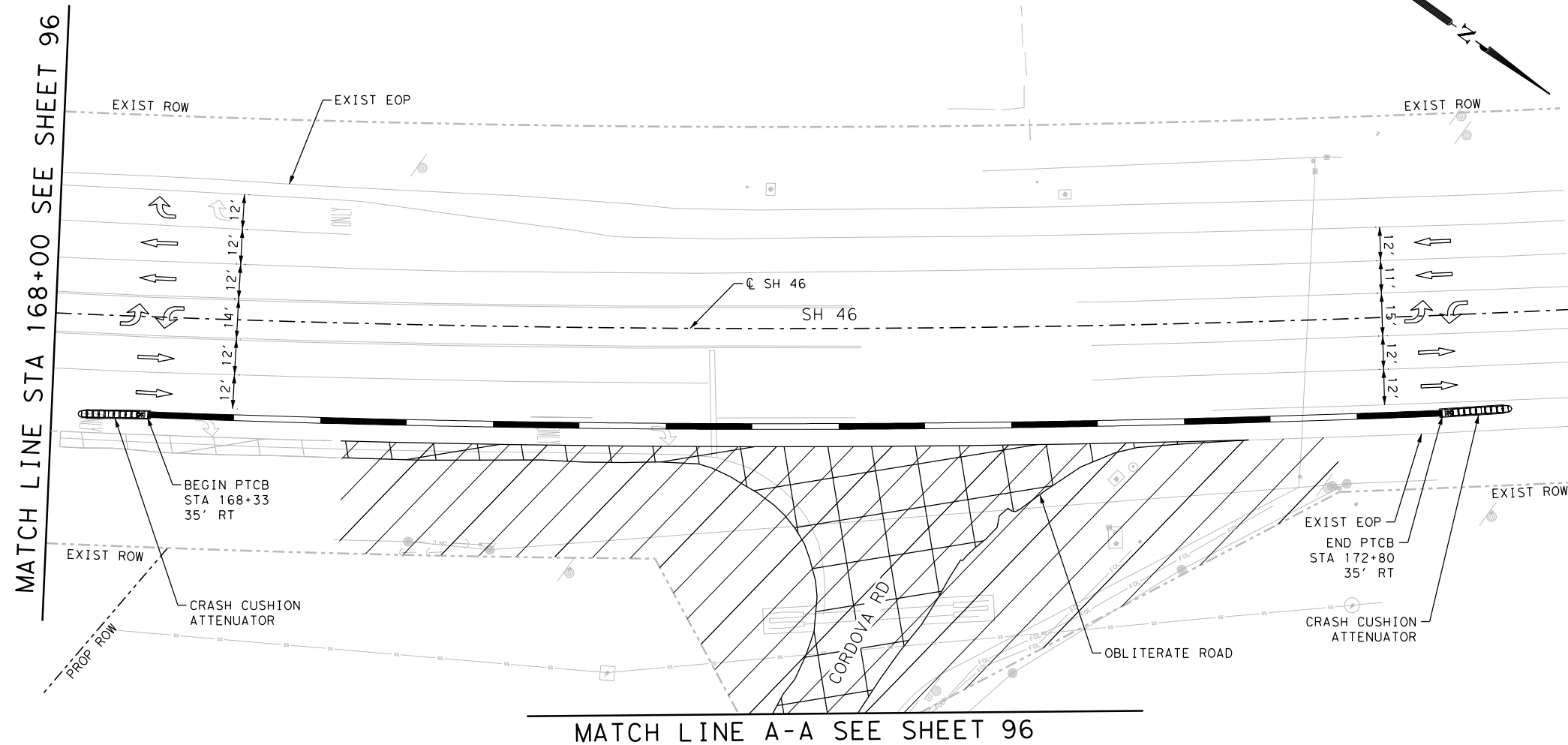
Texas Department of Transportation
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CORDOVA RD
TRAFFIC CONTROL PLAN
PHASE II
 STA 290+00 TO END OF PROJECT
 SHEET 22 OF 22

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	117

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_Ph2_SH46_01.dgn



LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		ACCELERATED CONSTRUCTION
	PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)		
	A WK ZN PAV MRK REMOV (W) 6" (SLD)		C WK ZN PAV MRK REMOV (Y) 6" (SLD)
	B WK ZN PAV MRK REMOV (Y) 6" (DBL) (SLD)		D WK ZN PAV MRK REMOV (W) 24" (SLD)

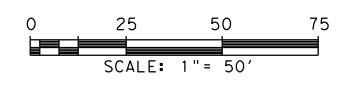
- NOTES:**
- FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
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 - A 3:1 TRAVERSABLE SAFETY SLOPE MUST BE ADDED TO ALL DROPOFFS GREATER THAN 2" IN AREAS NOT PROTECTED BY BARRIER AT THE END OF THE WORK DAY.

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
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PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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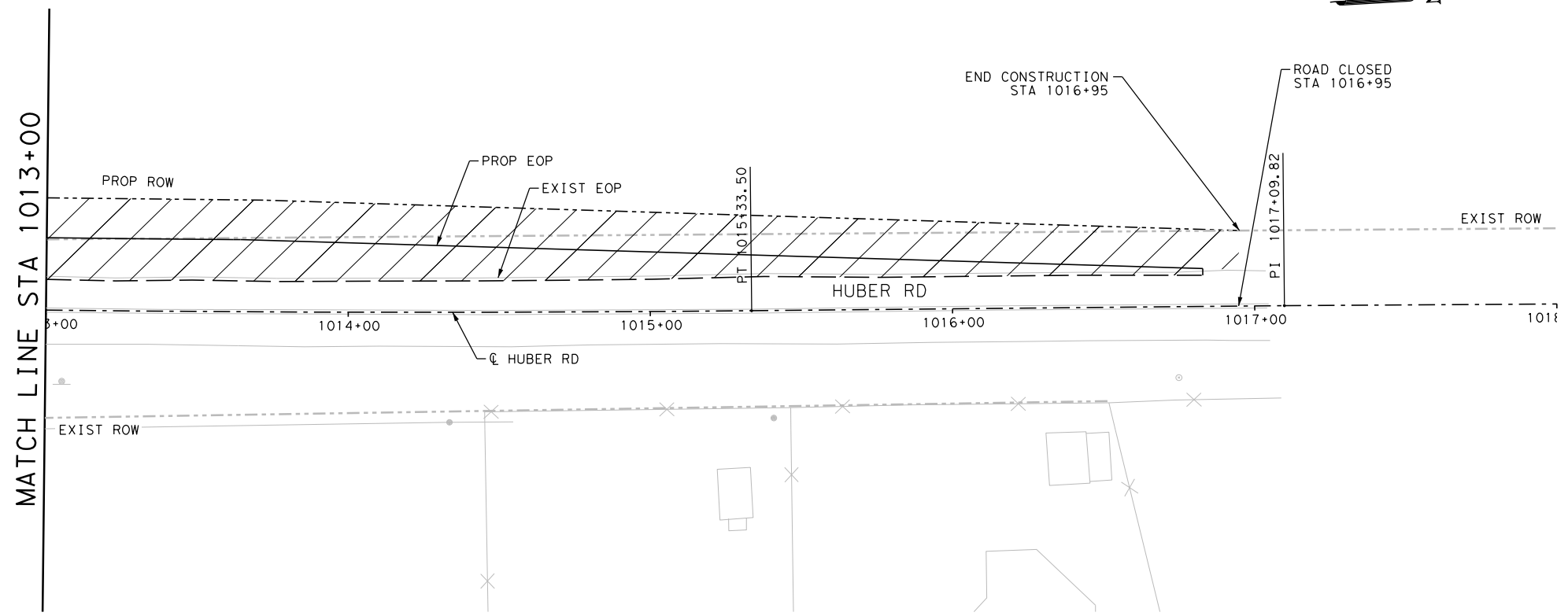
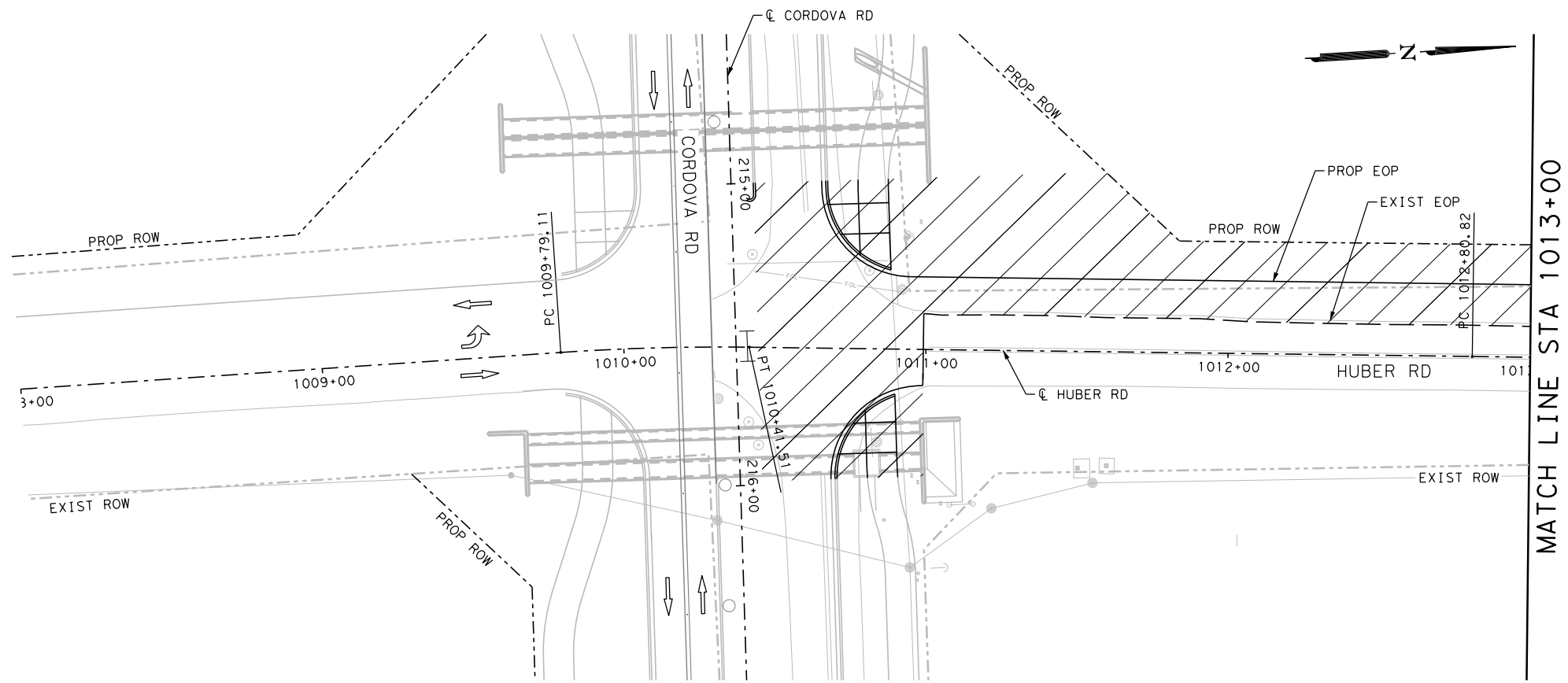
Texas Department of Transportation
 © 2023

CORDOVA RD
**TRAFFIC CONTROL PLAN
 PHASE II**
 STA 168+00 TO END OF CONSTRUCTION
 SHEET 1 OF 1

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	118

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase1\1277500_TCP_Ph2_12A.dgn



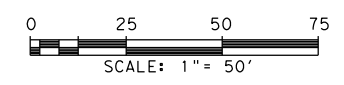
LEGEND

	CONSTRUCTION AREA		TEMPORARY PAVEMENT
	TYPE III BARRICADE		SIGN
	TRAFFIC FLOW ARROWS		PLASTIC DRUMS
	LOW PROFILE CONCRETE BARRIER (LPCB)		ACCELERATED CONSTRUCTION
	PERMANENT CONCRETE TRAFFIC BARRIER (PCTB)		
	WK ZN PAV MRK REMOV (W) 6" (SLD)		WK ZN PAV MRK REMOV (Y) 6" (SLD)
	WK ZN PAV MRK REMOV (Y) 6" (DBL) (SLD)		WK ZN PAV MRK REMOV (W) 24" (SLD)

- NOTES:**
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INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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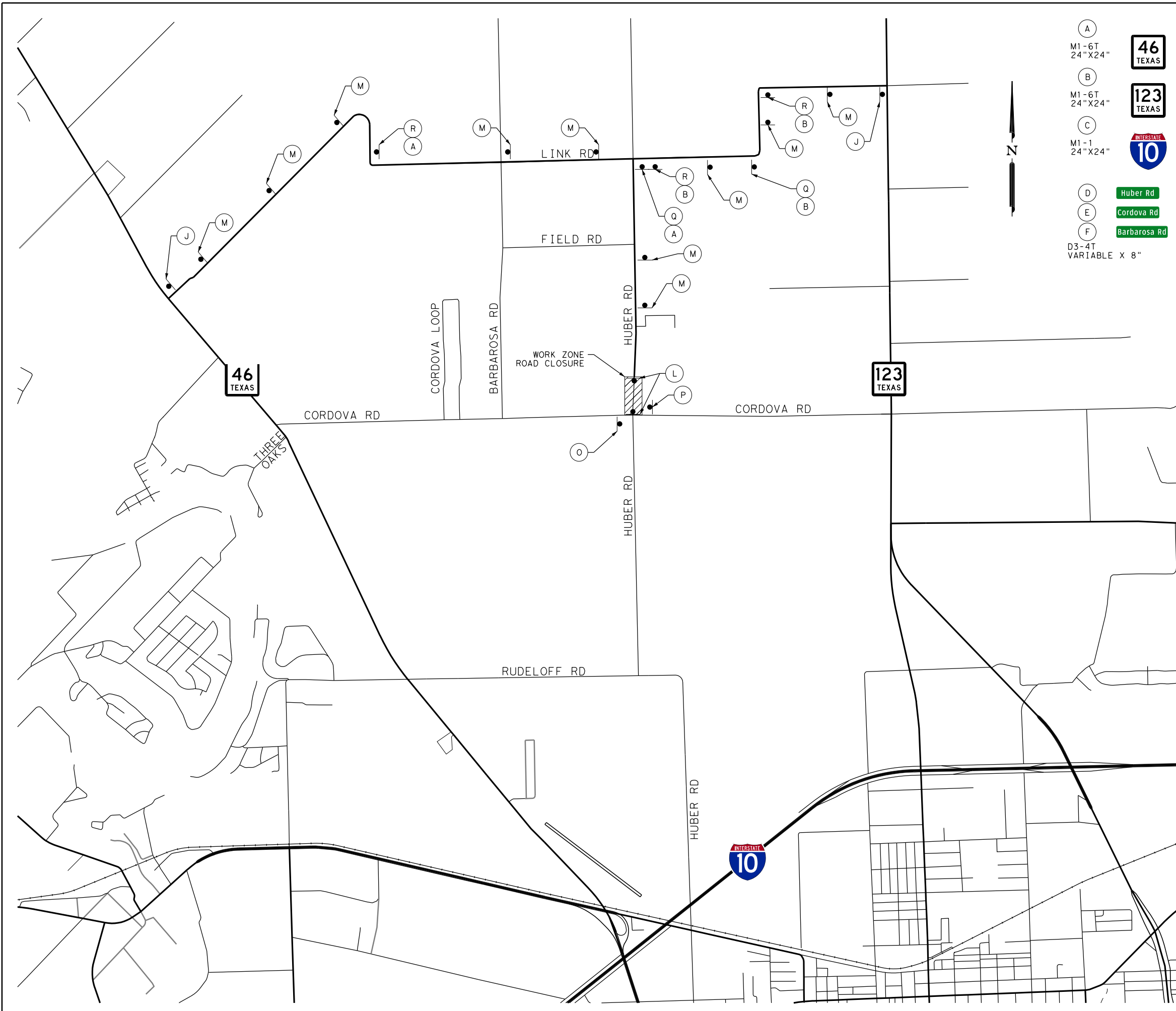
CORDOVA RD
**TRAFFIC CONTROL PLAN
 PHASE II**

SHEET 1 OF 1

CHK	DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK	DGN:	6	TEXAS		CORDOVA		
CHK	DGN:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK	DGN:	SAT	GUADALUPE	0915	46	052	119

Plotted on: 11/17/2023

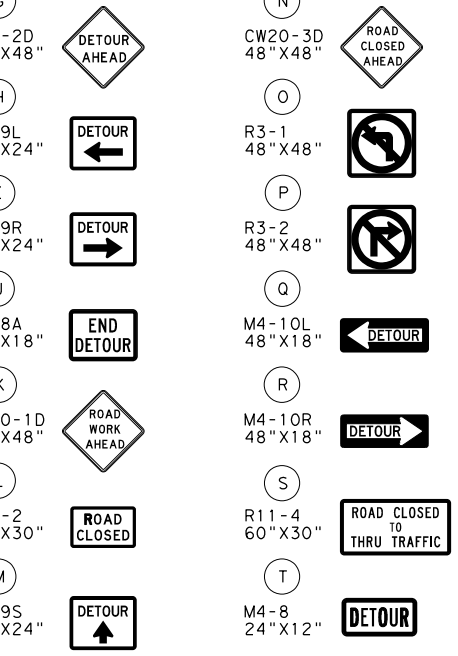
Design File name: P:\127\75\00\Design\Civil\TCP\1277500_TCP_DetourMap02.dgn



- A M1-6T 24"x24"
- B M1-6T 24"x24"
- C M1-1 24"x24"
- D Huber Rd
- E Cordova Rd
- F Barbarosa Rd
- D3-4T VARIABLE X 8"

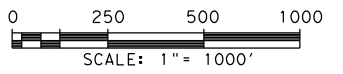


- G W20-2D 48"x48"
- H M4-9L 30"x24"
- I M4-9R 30"x24"
- J M4-8A 24"x18"
- K CW20-1D 48"x48"
- L R11-2 48"x30"
- M M4-9S 30"x24"
- N CW20-3D 48"x48"
- O R3-1 48"x48"
- P R3-2 48"x48"
- Q M4-10L 48"x18"
- R M4-10R 48"x18"
- S R11-4 60"x30"
- T M4-8 24"x12"



DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

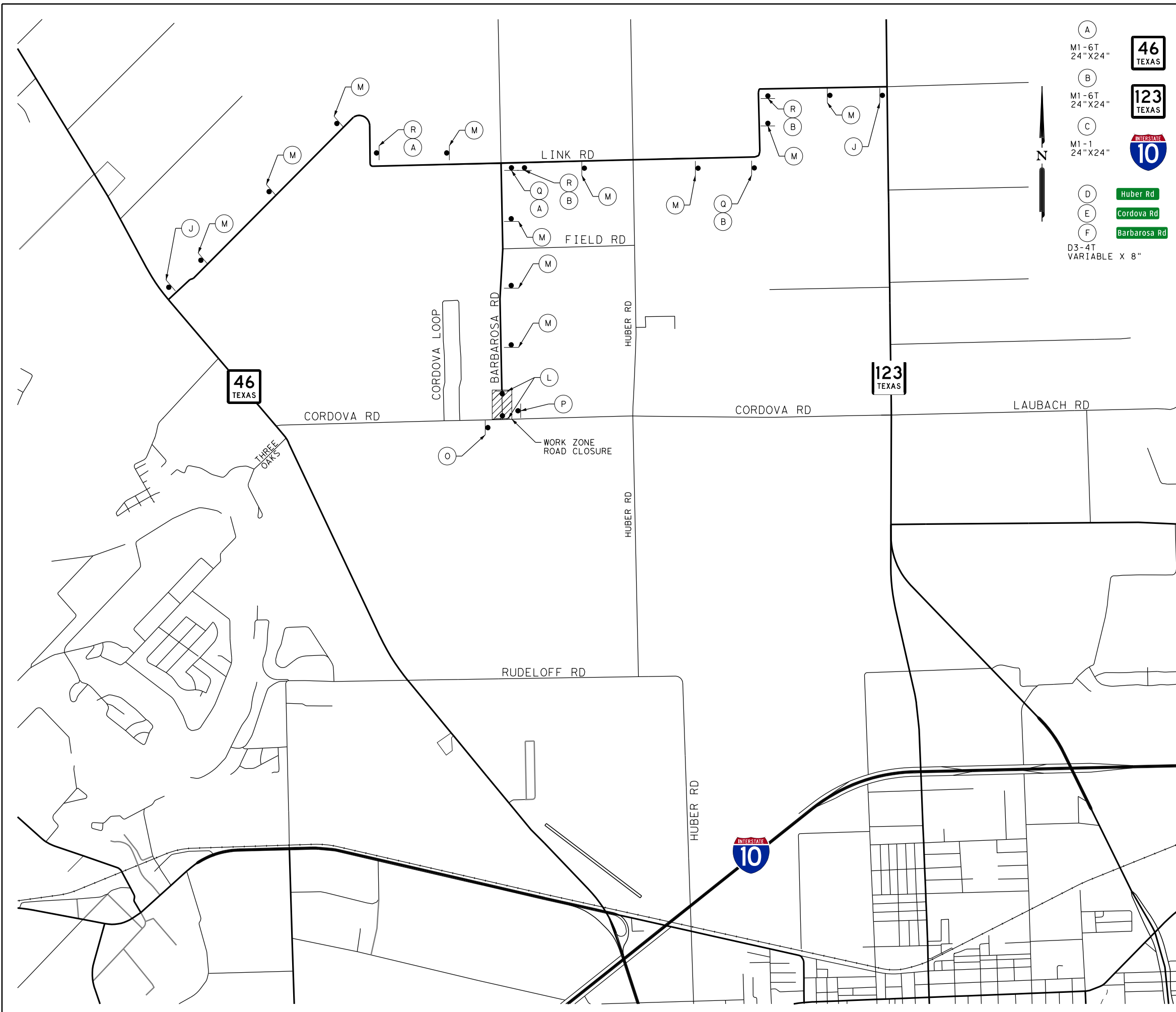


CORDOVA RD
**TRAFFIC CONTROL PLAN
 PHASE 2
 DETOUR MAP
 HUBER RD**

DWG:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DWG:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	120

Plotted on: 11/17/2023

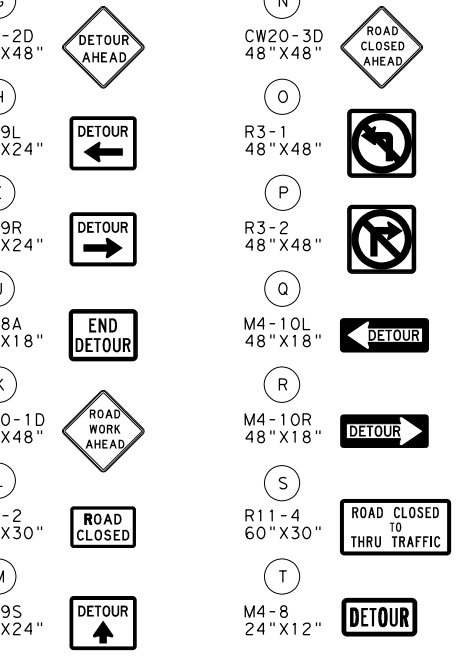
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- A M1-6T 24"X24"
- B M1-6T 24"X24"
- C M1-1 24"X24"
- D Huber Rd
- E Cordova Rd
- F Barbarosa Rd
- D3-4T VARIABLE X 8"



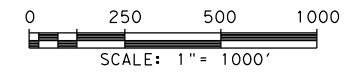
- G W20-2D 48"X48"
- H M4-9L 30"X24"
- I M4-9R 30"X24"
- J M4-8A 24"X18"
- K CW20-1D 48"X48"
- L R11-2 48"X30"
- M M4-9S 30"X24"
- N CW20-3D 48"X48"
- O R3-1 48"X48"
- P R3-2 48"X48"
- Q M4-10L 48"X18"
- R M4-10R 48"X18"
- S R11-4 60"X30"
- T M4-8 24"X12"



SIGN

DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
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Pape-Dawson Engineers
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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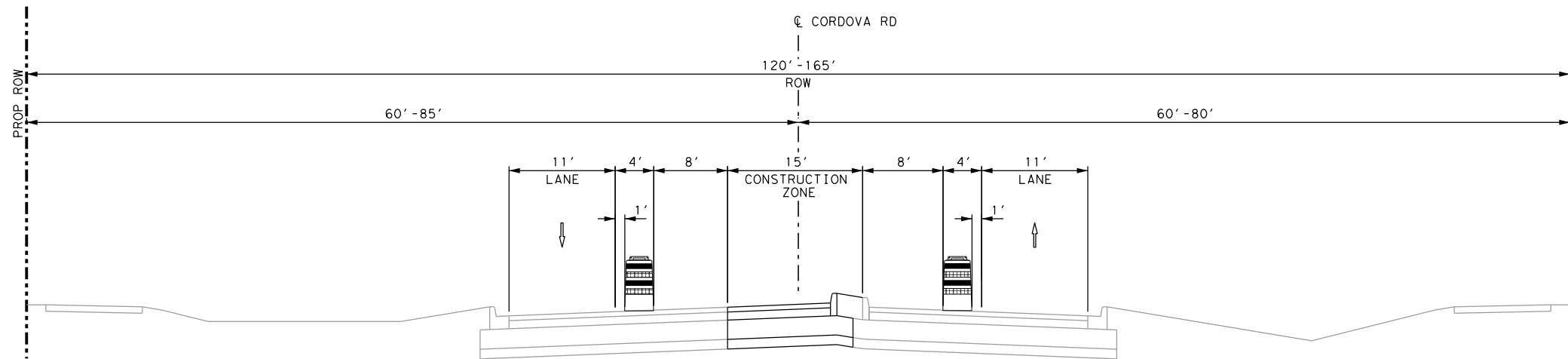
Texas Department of Transportation
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CORDOVA RD
**TRAFFIC CONTROL PLAN
 PHASE 2
 DETOUR MAP
 BARBAROSA RD**

DWG:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK	SAT	GUADALUPE	0915	46	052	121

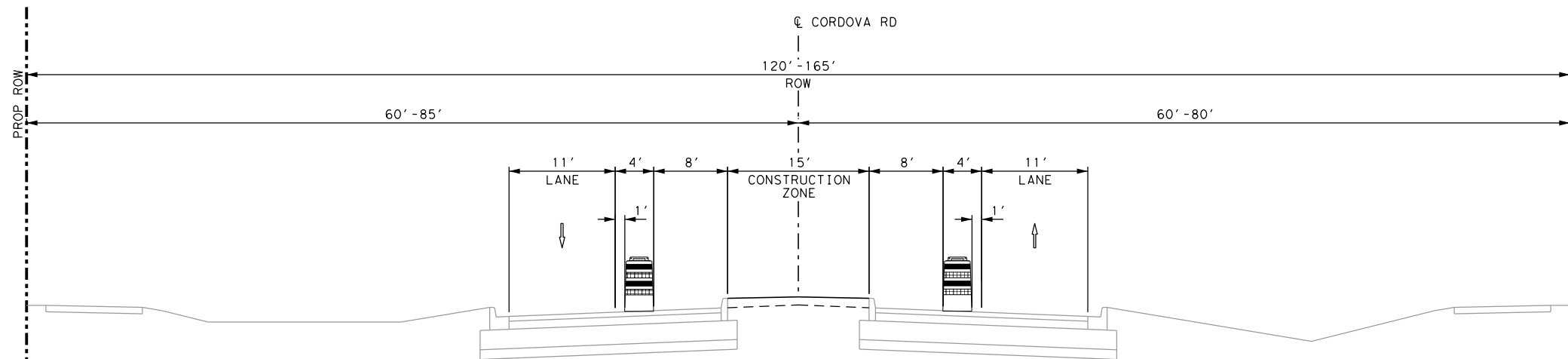
Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase111\1277500_TCP_PH3_Typ1ca101.dgn



CORDOVA RD - PHASE III

STA 117+75 TO STA 119+64
 STA 164+75 TO STA 167+27
 STA 215+97 TO STA 218+49
 STA 244+16 TO STA 246+68
 NTS



CORDOVA RD - PHASE III

STA 119+64 TO STA 142+87
 STA 146+23 TO STA 151+66
 STA 154+70 TO STA 161+40
 STA 167+27 TO STA 174+30
 STA 177+65 TO STA 184+20
 STA 188+00 TO STA 212+54
 STA 218+49 TO STA 220+43
 STA 223+85 TO STA 230+00
 STA 233+35 TO STA 243+21
 STA 246+68 TO STA 269+70
 NTS

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
----------	------	-------------	----



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



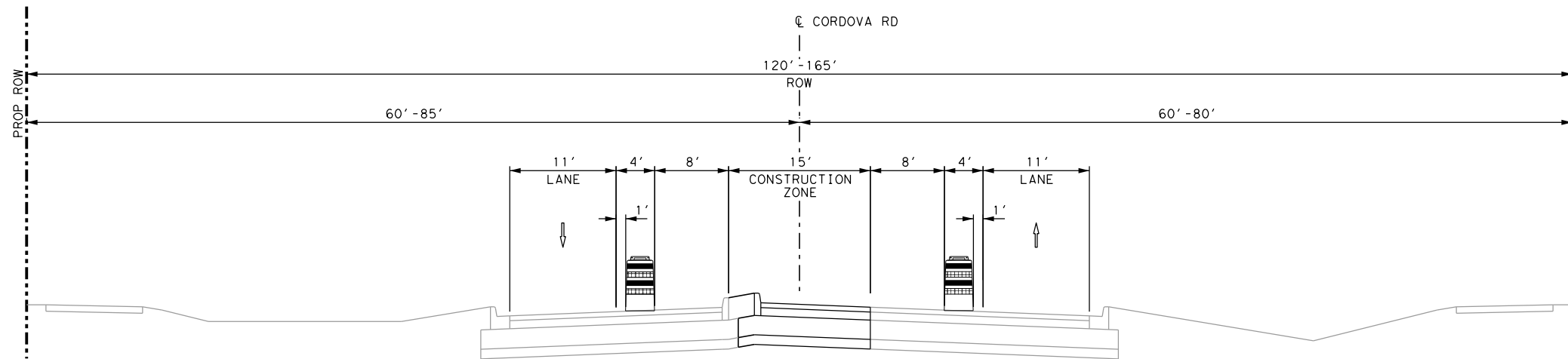
CORDOVA RD
**TRAFFIC CONTROL PLAN
 PHASE III
 TYPICAL SECTIONS**

SHEET 1 OF 2

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	122

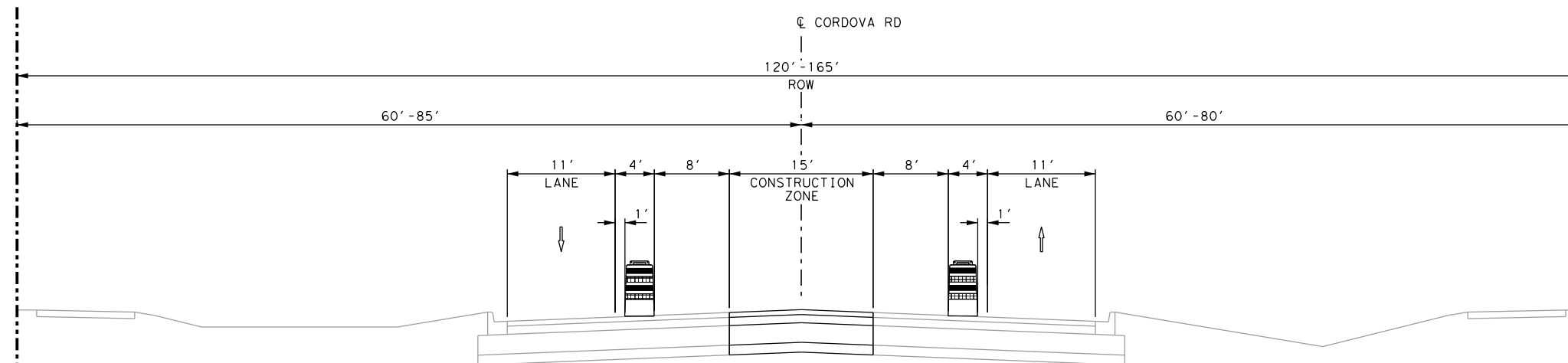
Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\TCP\Phase111\1277500_TCP_PH3_Typ.i ca 102.dgn



CORDOVA RD - PHASE III

- STA 142+87 TO STA 145+39
- STA 151+66 TO STA 154+18
- STA 161+40 TO STA 163+92
- STA 174+30 TO STA 176+82
- STA 184+20 TO STA 186+72
- STA 212+54 TO STA 215+06
- STA 220+43 TO STA 222+95
- STA 230+00 TO STA 232+52
- NTS



CORDOVA RD - PHASE III

- STA 145+39 TO STA 146+23
- STA 154+18 TO STA 154+70
- STA 163+92 TO STA 164+75
- STA 176+82 TO STA 177+65
- STA 186+72 TO STA 188+00
- STA 215+06 TO STA 215+97
- STA 222+95 TO STA 223+85
- STA 232+52 TO STA 233+35
- STA 243+21 TO STA 244+16
- NTS

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



CORDOVA RD
**TRAFFIC CONTROL PLAN
 PHASE III
 TYPICAL SECTIONS**

SHEET 2 OF 2

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	123

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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

1. The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. The development and design of the Traffic Control Plan (TCP) is the responsibility of the Engineer.
3. The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.
4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.
5. Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets," the TxDOT "Roadway Design Manual" or engineering judgment.
6. When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.
7. The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.
9. The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.
10. 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



**BARRICADE AND CONSTRUCTION
 GENERAL NOTES
 AND REQUIREMENTS**

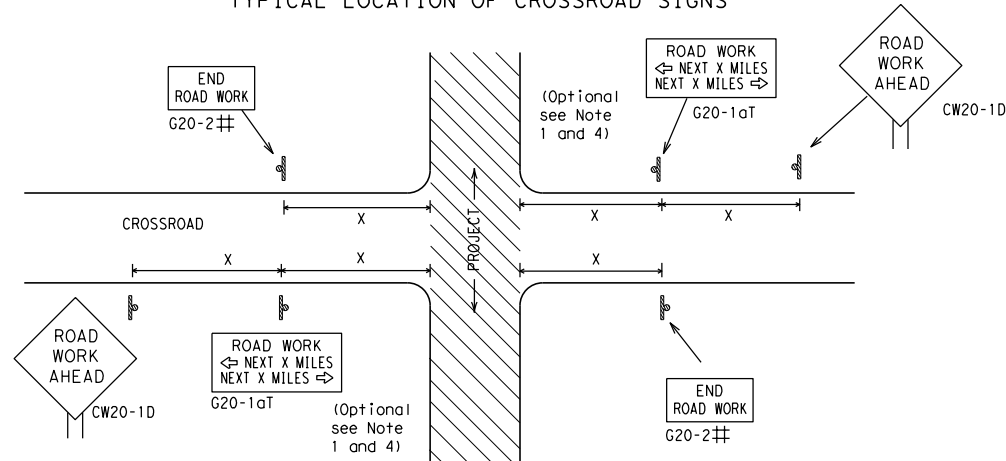
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4-03	7-13								
9-07	8-14	DIST	COUNTY		SHEET NO.				
5-10	5-21	SAT	GUADALUPE		124				

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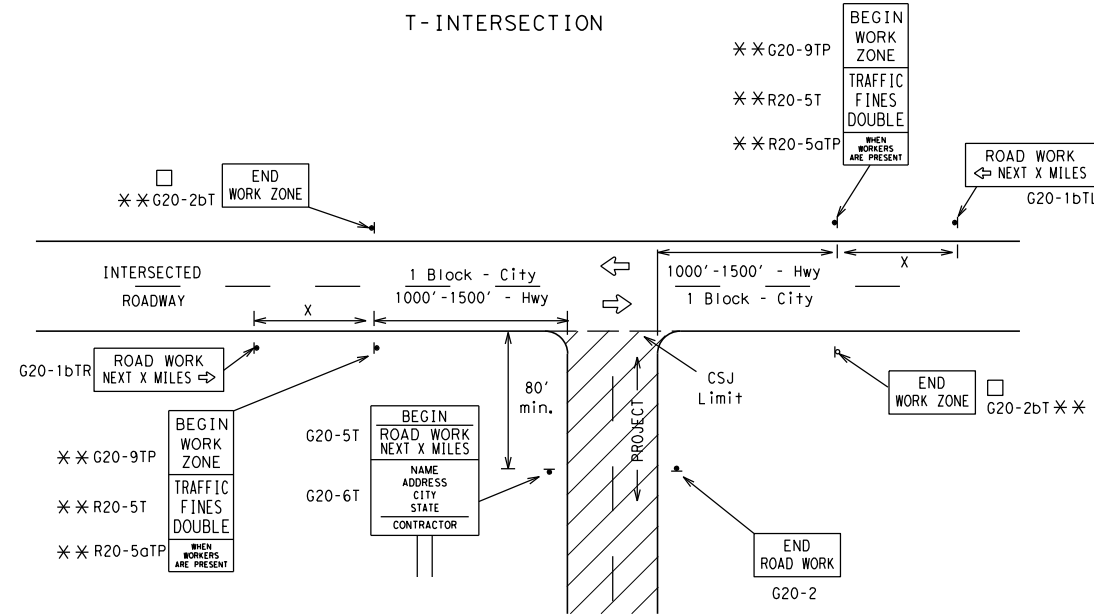
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TYPICAL LOCATION OF CROSSROAD SIGNS



- ## May be mounted on back of "ROAD WORK AHEAD" (CW20-1D) sign with approval of Engineer. (See note 2 below)
- 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 Spacing "X" Feet (Approx.)
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	48" x 48"	48" x 48"	60	600 ²
			65	700 ²
			70	800 ²
			80	1000 ²
*			*	* ³

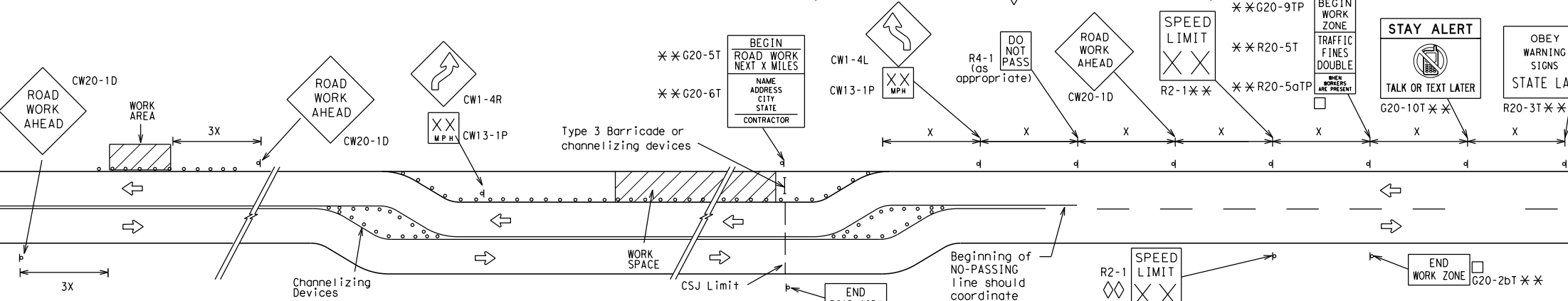
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

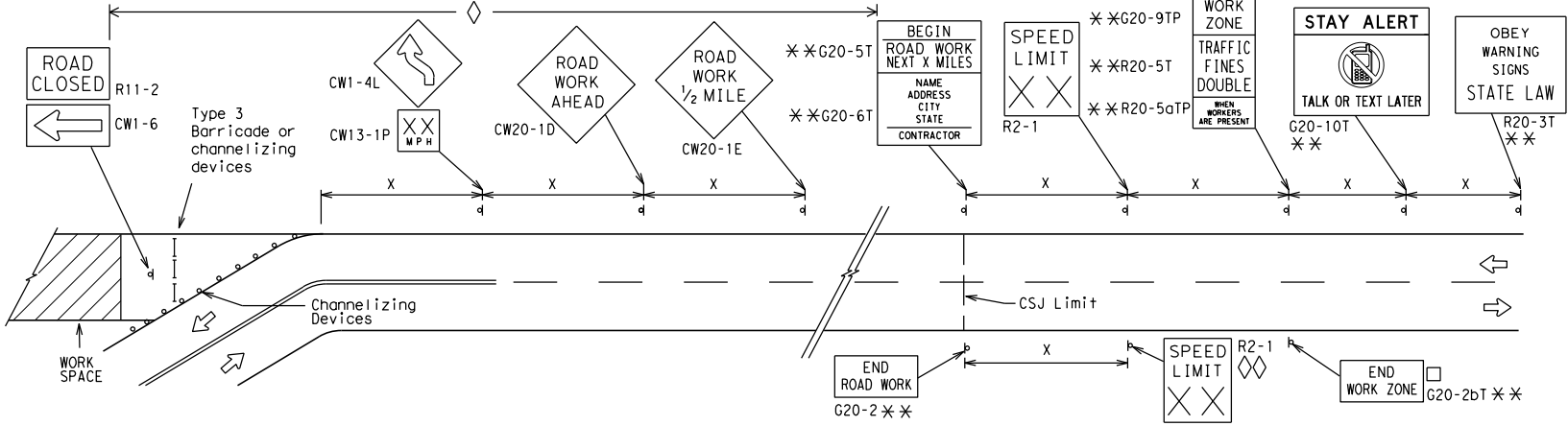
- Special or larger size signs may be used as necessary.
- Distance between signs should be increased as required to have 1500 feet advance warning.
- Distance between signs should be increased as required to have 1/2 mile or more advance warning.
- 36" x 36" "ROAD WORK AHEAD" (CW20-1D) signs may be 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

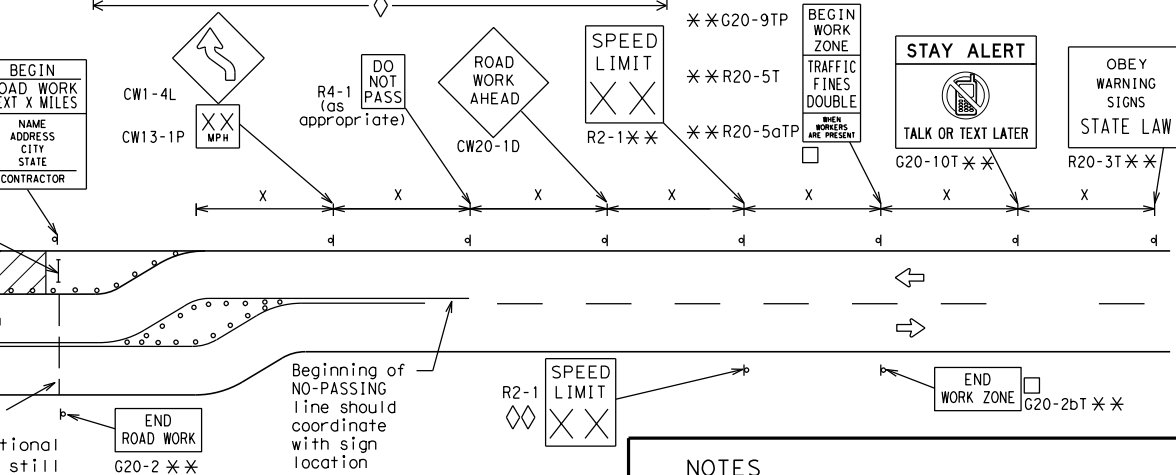


When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD" (CW20-1D) signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing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

BARRICADE AND CONSTRUCTION PROJECT LIMIT

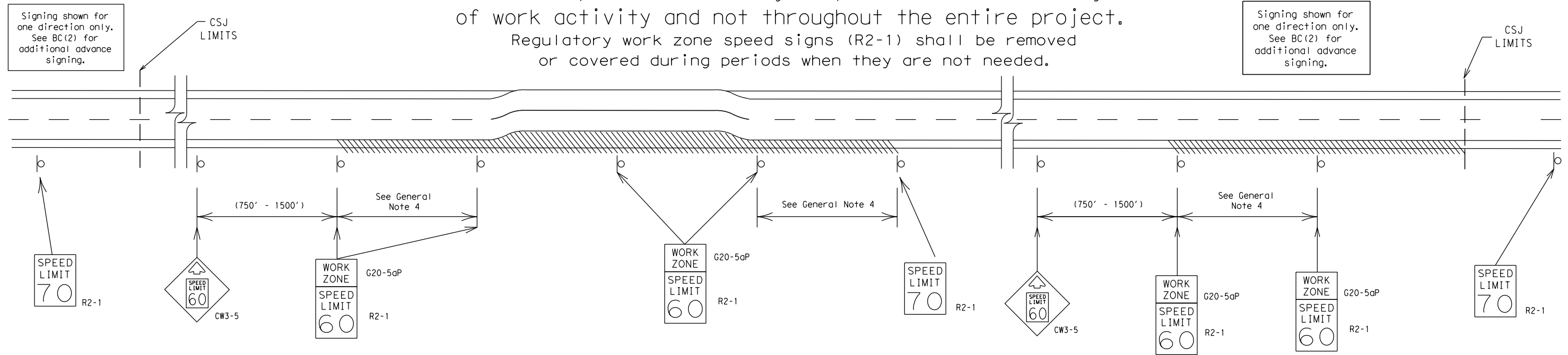
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9-07 8-14	DIST	COUNTY	SHEET NO.	
7-13 5-21	SAT	GUADALUPE	125	

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.

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SHEET 3 OF 12



BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

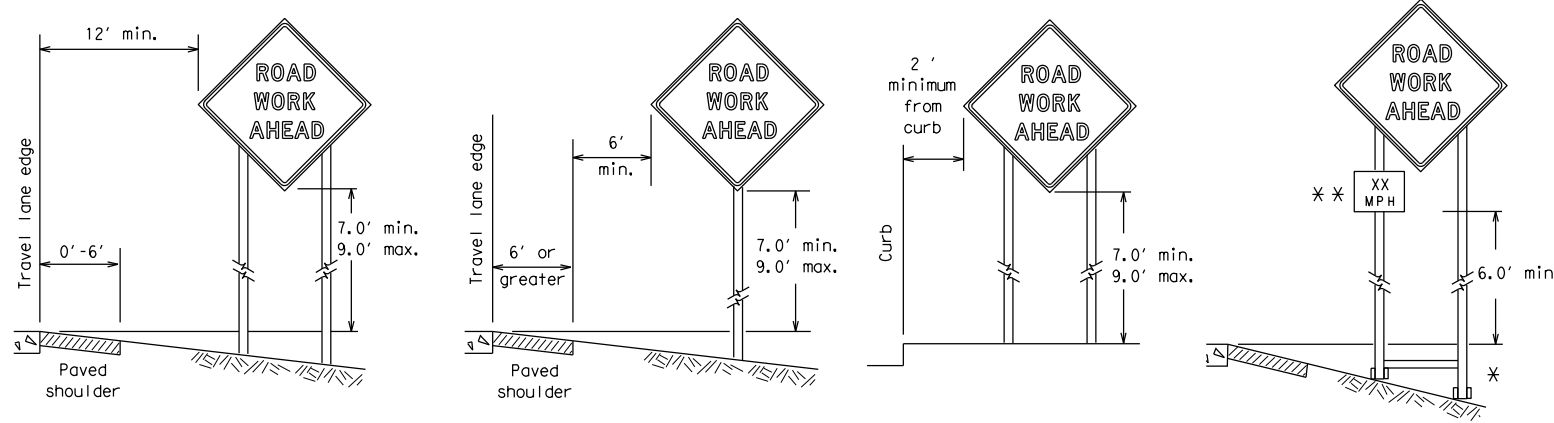
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9-07	8-14	DIST	COUNTY	SHEET NO.	
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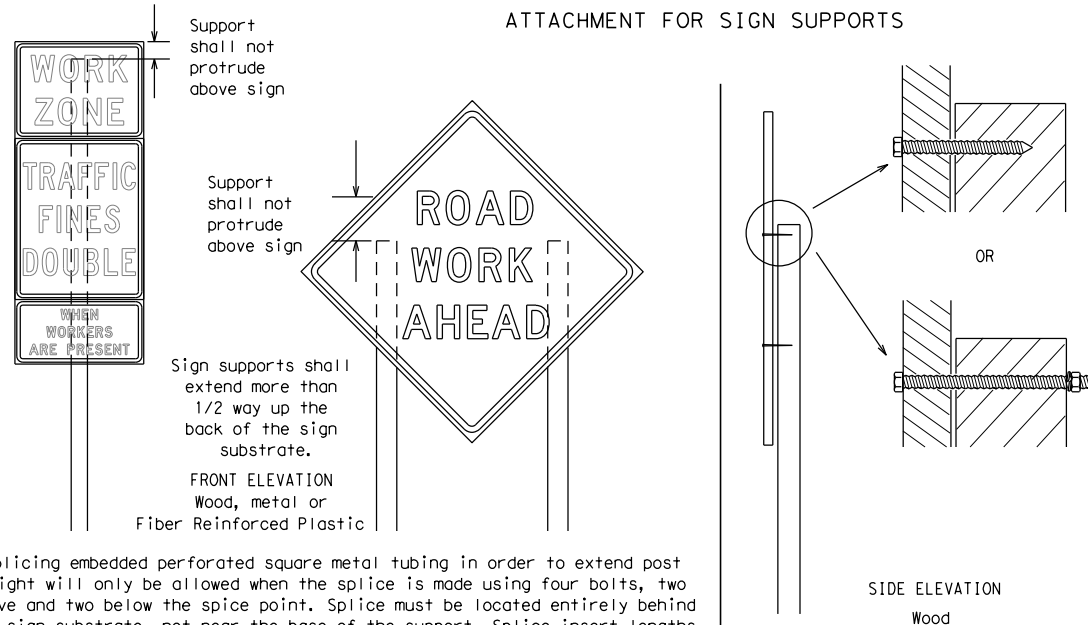
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

** When plaques are placed on dual-leg supports, they should be attached to the upright nearest the travel lane. Supplemental plaques (advisory or distance) should not cover the surface of the parent sign.

ATTACHMENT FOR SIGN SUPPORTS



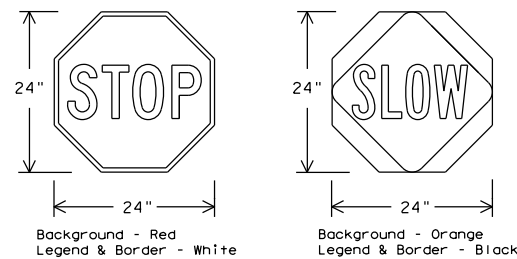
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

Nails shall NOT be allowed. Each sign shall be attached directly to the sign support. Multiple signs shall not be joined or spliced by any means. Wood supports shall not be extended or repaired by splicing or other means.

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.

STOP/SLOW PADDLES

1. STOP/SLOW paddles are the primary method to control traffic by flaggers. The STOP/SLOW paddle size should be 24" x 24".
2. STOP/SLOW paddles shall be retroreflective when used at night.
3. STOP/SLOW paddles may be attached to a staff with a minimum length of 6' to the bottom of the sign.
4. Any lights incorporated into the STOP or SLOW paddle faces shall only be as specifically described in Section 6E.03 Hand Signaling Devices in the TMUTCD.



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

1. Permanent signs are used to give notice of traffic laws or regulations, call attention to conditions that are potentially hazardous to traffic operations, show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, 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.
2. When permanent regulatory or warning signs conflict with work zone conditions, remove or cover the permanent signs until the permanent sign message matches the roadway condition. For details for covering large guide signs see the TS-CD standard.
3. When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
4. If existing signs are to be relocated on their original supports, they shall be installed on crashworthy bases as shown on the SMD Standard sheets. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards. This work should be paid for under the appropriate pay item for relocating existing signs.
5. If permanent signs are to be removed and relocated using temporary supports, the Contractor shall use crashworthy supports as shown on the BC 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.
6. Any sign or traffic control device that is struck or damaged by the Contractor or his/her construction equipment shall be replaced as soon as possible by the Contractor to ensure proper guidance for the motorists. This will be subsidiary to Item 502.

GENERAL NOTES FOR WORK ZONE SIGNS

1. Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. All signs shall be installed in accordance with the plans or as directed by the Engineer. Signs shall be used to regulate, warn, and guide the traveling public safely through the work zone.
5. The Contractor may furnish either the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD). The Engineer/Inspector may require the Contractor to furnish other work zone signs that are shown in the TMUTCD but may have been omitted from the plans. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary and having both the Inspector and Contractor initial and date the agreed upon changes.
6. The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD) 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.
7. The Contractor is responsible for installing signs on approved supports and replacing signs with damaged or cracked substrates and/or damaged or marred reflective sheeting as directed by the Engineer/Inspector.
8. Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1 inch.
9. The Contractor shall replace damaged wood posts. New or damaged wood sign posts shall not be spliced.

DURATION OF WORK (as defined by the "Texas Manual on Uniform Traffic Control Devices" Part 6)

1. The types of sign supports, sign mounting height, the size of signs, and the type of sign substrates can vary based on the type of work being performed. The Engineer is responsible for selecting the appropriate size sign for the type of work being performed. The Contractor is responsible for ensuring the sign support, sign mounting height and substrate meets manufacturer's recommendations in regard to crashworthiness and duration of work requirements.
 - a. Long-term stationary - work that occupies a location more than 3 days.
 - b. Intermediate-term stationary - work that occupies a location more than one daylight period up to 3 days, or nighttime work lasting more than one hour.
 - c. Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
 - d. Short, duration - work that occupies a location up to 1 hour.
 - e. Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

SIGN MOUNTING HEIGHT

1. The bottom of Long-term/Intermediate-term signs shall be at least 7 feet, but not more than 9 feet, above the paved surface, except as shown for supplemental plaques mounted below other signs.
2. The bottom of Short-term/Short Duration signs shall be a minimum of 1 foot above the pavement surface but no more than 2 feet above the ground.
3. Long-term/Intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
4. Short-term/Short Duration signs shall be used only during daylight and shall be removed at the end of the workday or raised to appropriate Long-term/Intermediate sign height.
5. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

1. All sign letters and numbers shall be clear, and open rounded type uppercase alphabet letters as approved by the Federal Highway Administration (FHWA) and as published in the "Standard Highway Sign Design for Texas" manual. Signs, letters and numbers shall be of first class workmanship in accordance with Department Standards and Specifications.

REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
2. Long-term stationary or intermediate stationary signs installed on square metal tubing may be turned away from traffic 90 degrees when the sign message is not applicable. This technique may not be used for signs installed in the median of divided highways or near any intersections where the sign may be seen from approaching traffic.
3. Signs installed on wooden skids shall not be turned at 90 degree angles to the roadway. These signs should be removed or completely covered when not required.
4. When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night, without damaging the sign sheeting.
5. Burlap shall NOT be used to cover signs.
6. Duct tape or other adhesive material shall NOT be affixed to a sign face.
7. Signs and anchor stubs shall be removed and holes backfilled upon completion of work.

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

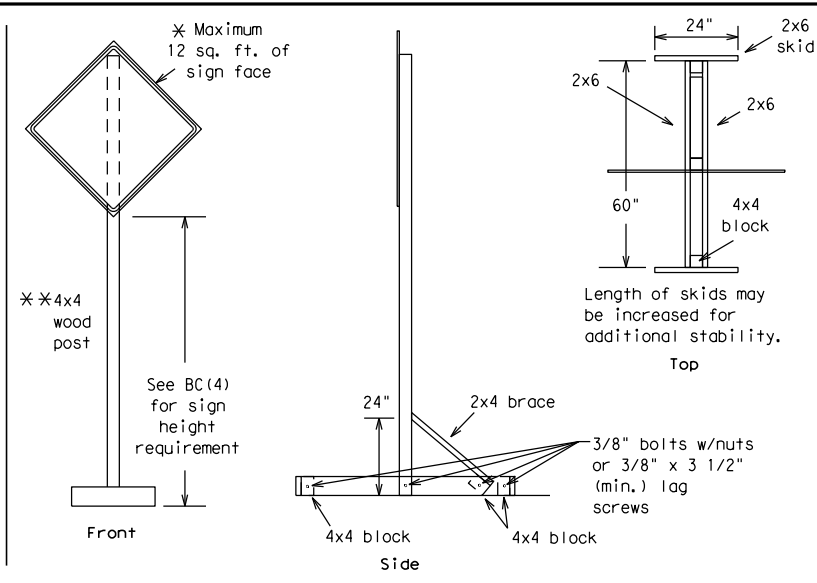
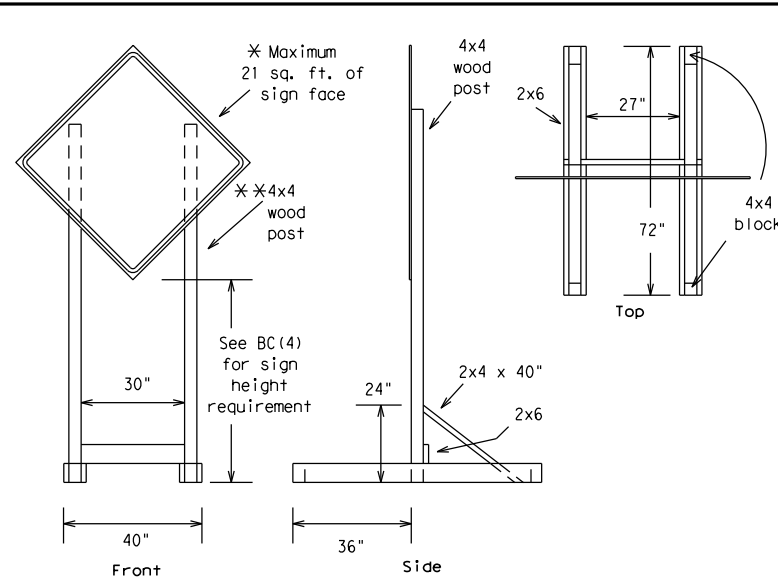


BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC (4) - 21

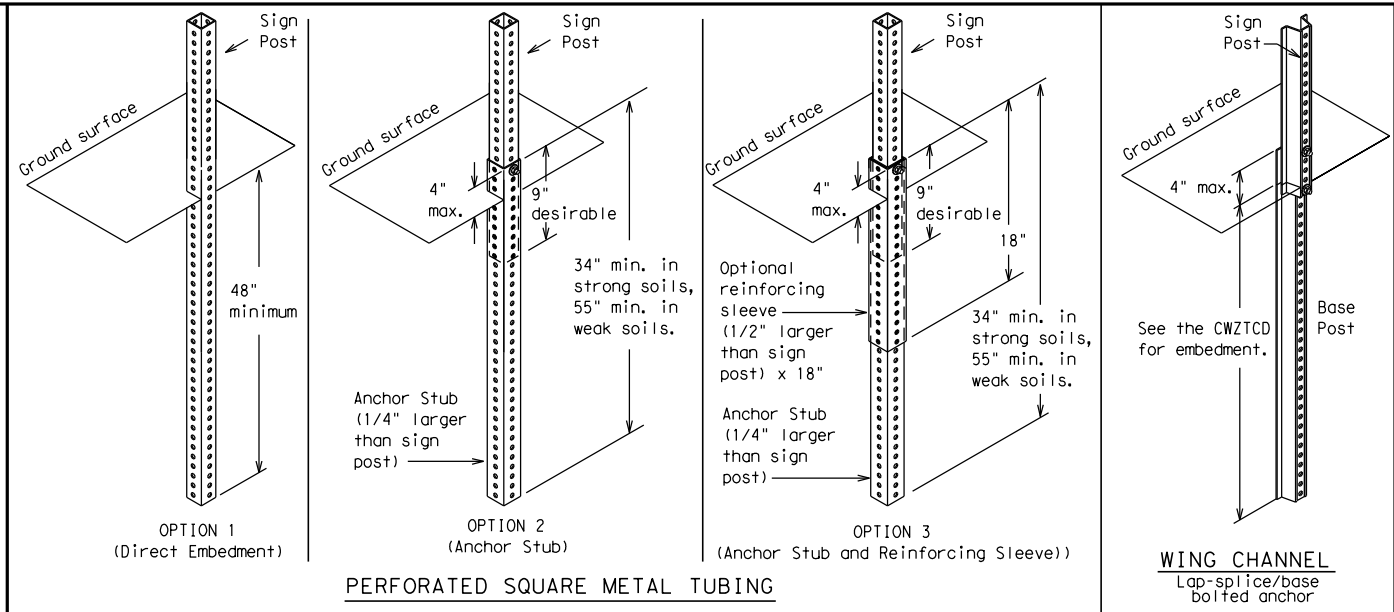
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© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0915	46	052	CORDOVA				
9-07	8-14	DIST		COUNTY		SHEET NO.			
7-13	5-21	SAT		GUADALUPE		127			

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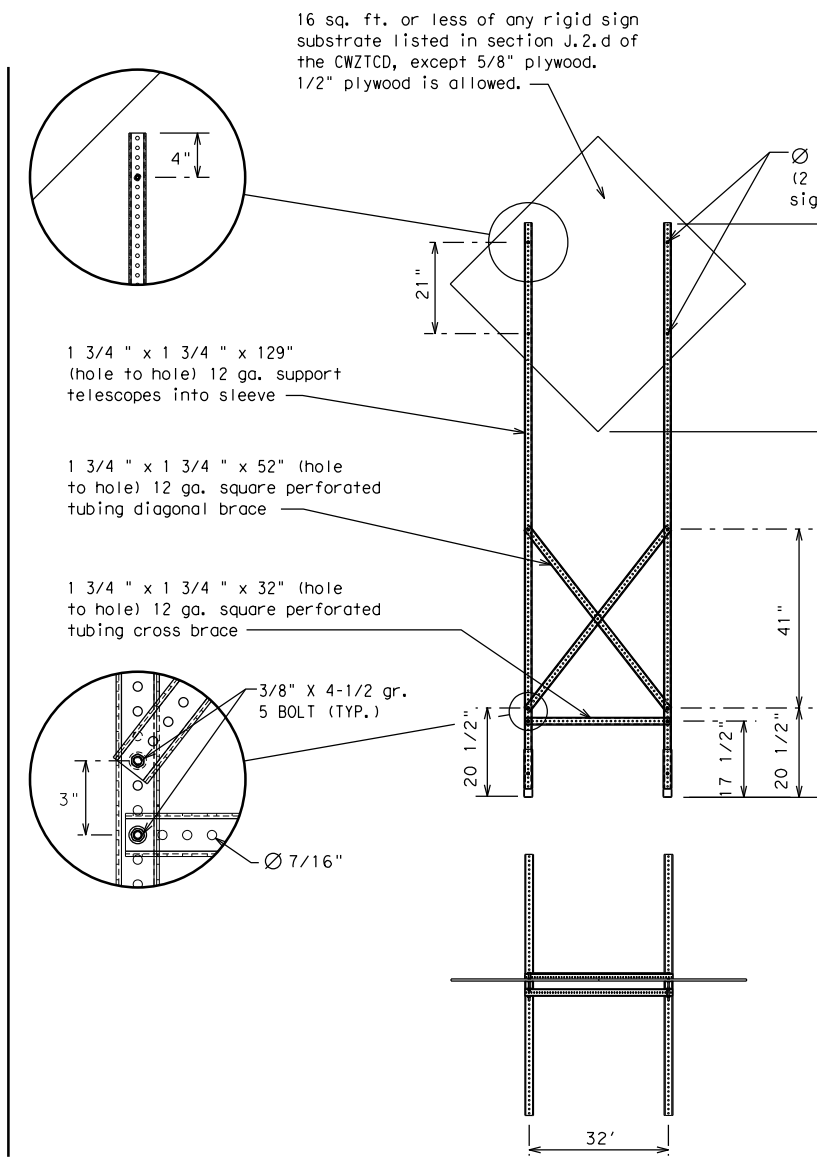
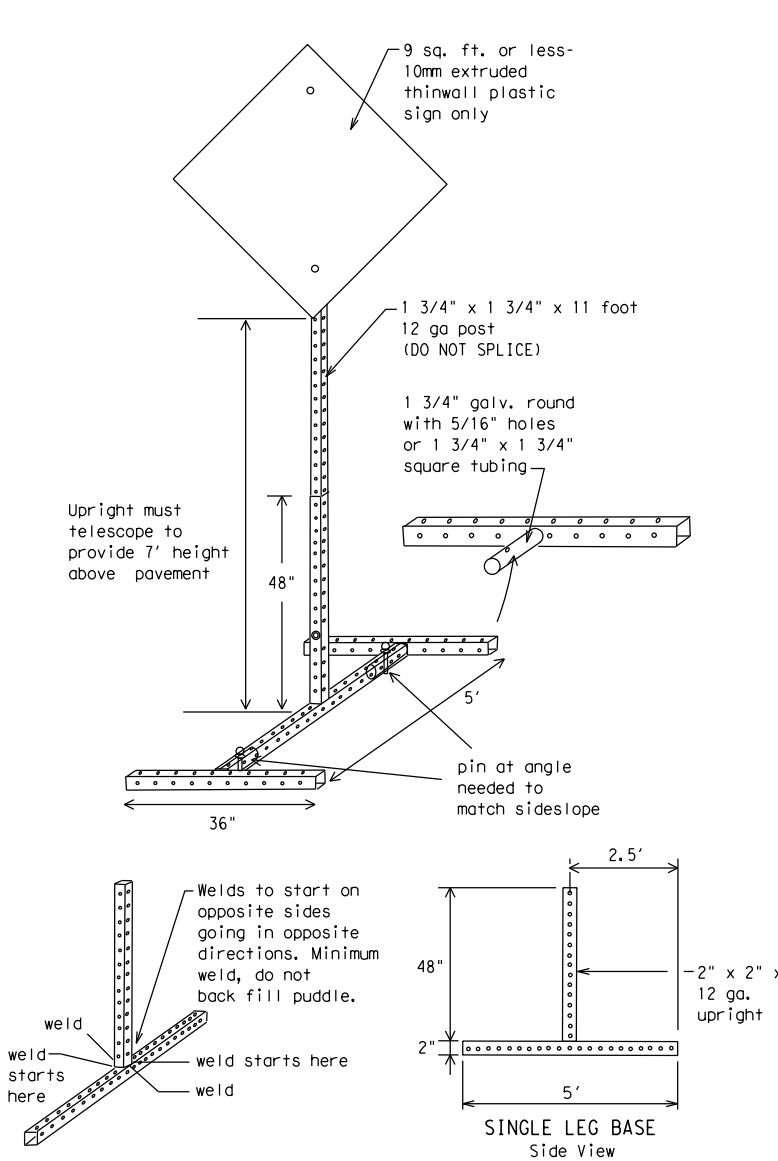
SKID MOUNTED WOOD SIGN SUPPORTS

* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS



GROUND MOUNTED SIGN SUPPORTS

Refer to the CWZTCD and the manufacturer's installation procedure for each type sign support. The maximum sign square footage shall adhere to the manufacturer's recommendation. Two post installations can be used for larger signs.



SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

* 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**
- 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.
 - No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
 - 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.

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5) - 21

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7-13	5-21	SAT	GUADALUPE	128					

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

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.

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.

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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 Vehicle	HOV	Tuesday	TUES
Highway	HWY	Time Minutes	TIME MIN
Hour(s)	HR, HRS	Upper Level	UPR LEVEL
Information	INFO	Vehicles (s)	VEH, VEHS
It Is	ITS	Warning	WARN
Junction	JCT	Wednesday	WED
Left	LFT	Weight Limit	WT LIMIT
Left Lane	LFT LN	West	W
Lane Closed	LN CLOSED	Westbound	(route) W
Lower Level	LWR LEVEL	Wet Pavement	WET PVMT
Maintenance	MAINT	Will Not	WONT

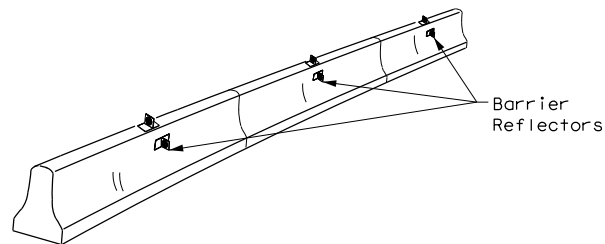
Roadway designation # IH-number, US-number, SH-number, FM-number

<h3>BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)</h3>			
<h2>BC (6) - 21</h2>			
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REVISIONS	0915	46	052
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7-13	5-21	SAT:	GUADALUPE
		JOB:	CORDOVA
		SHEET NO.:	129

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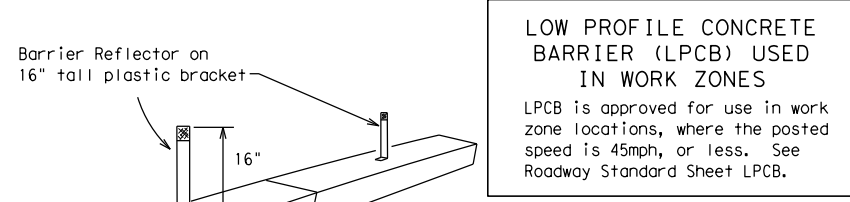
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- Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
- Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 512.



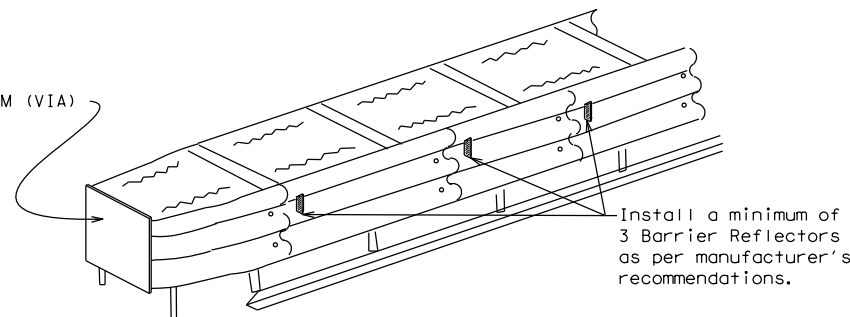
CONCRETE TRAFFIC BARRIER (CTB)

- 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

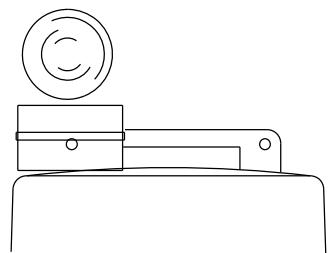
- Warning lights shall meet the requirements of the TMUTCD.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet 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.

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

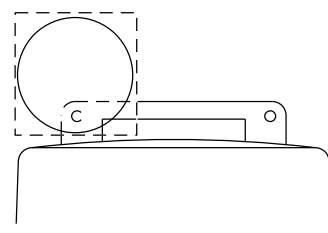
- Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
- Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
- A series of sequential flashing warning lights placed on channelizing 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 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.



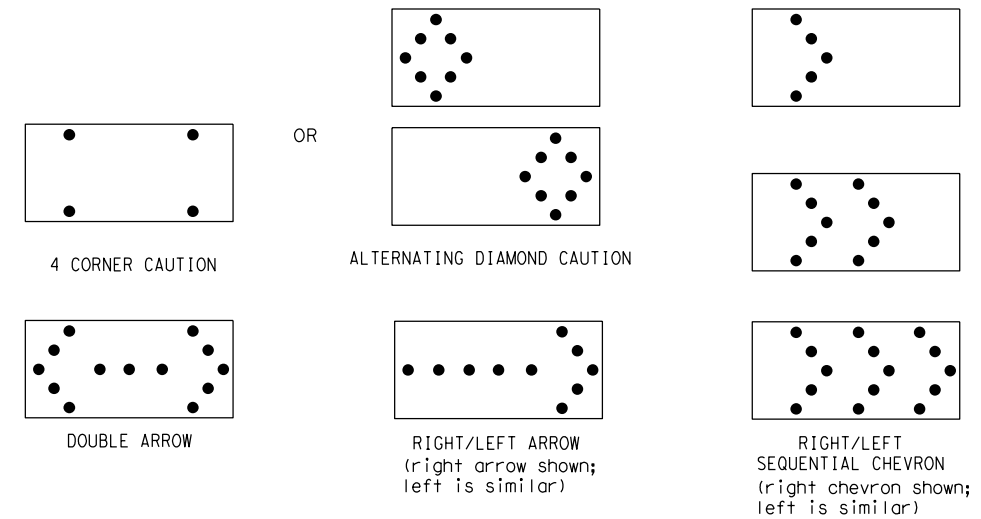
Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.



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

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

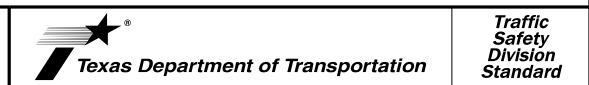
ATTENTION
 Flashing Arrow Boards shall be equipped with automatic dimming devices.

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.



BARRICADE AND CONSTRUCTION ARROW PANEL, REFLECTORS, WARNING LIGHTS & ATTENUATOR

BC (7) - 21

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REVISIONS		0915	46	052	CORDOVA				
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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:

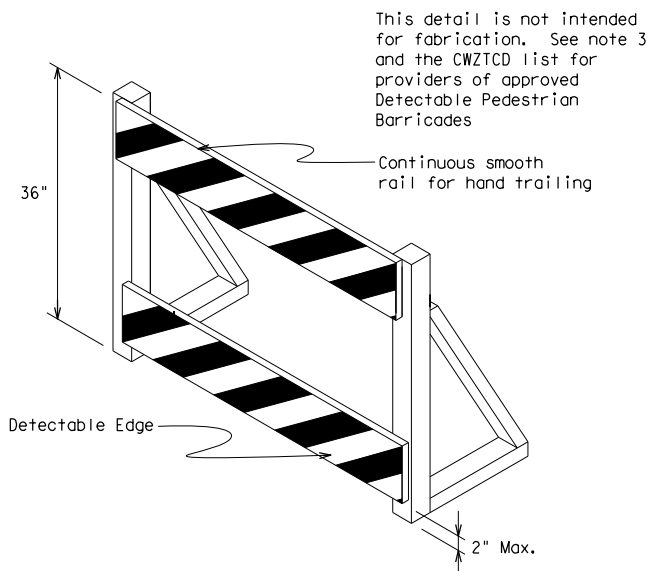
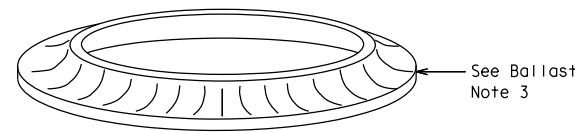
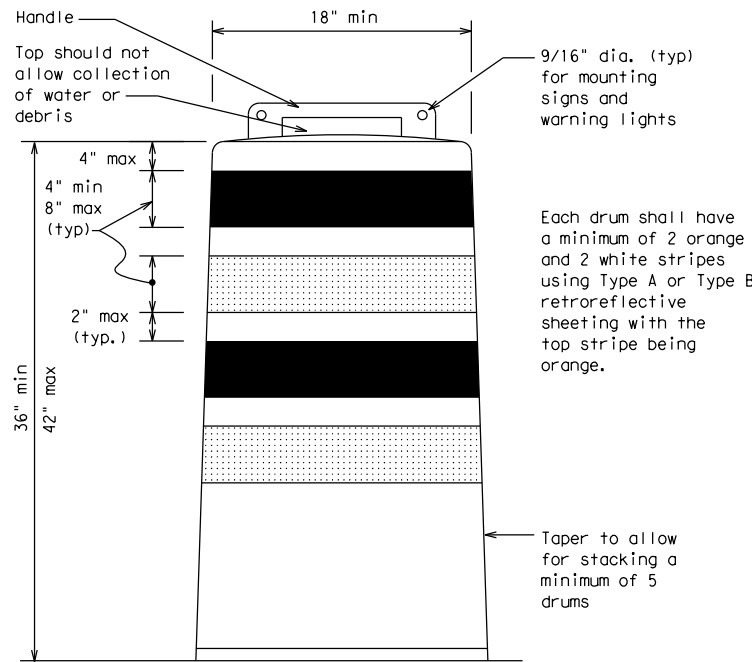
- Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
- The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents 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.

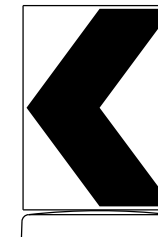
BALLAST

- 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.

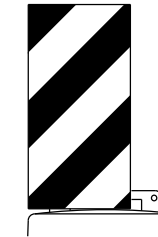


DETECTABLE PEDESTRIAN BARRICADES

- 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



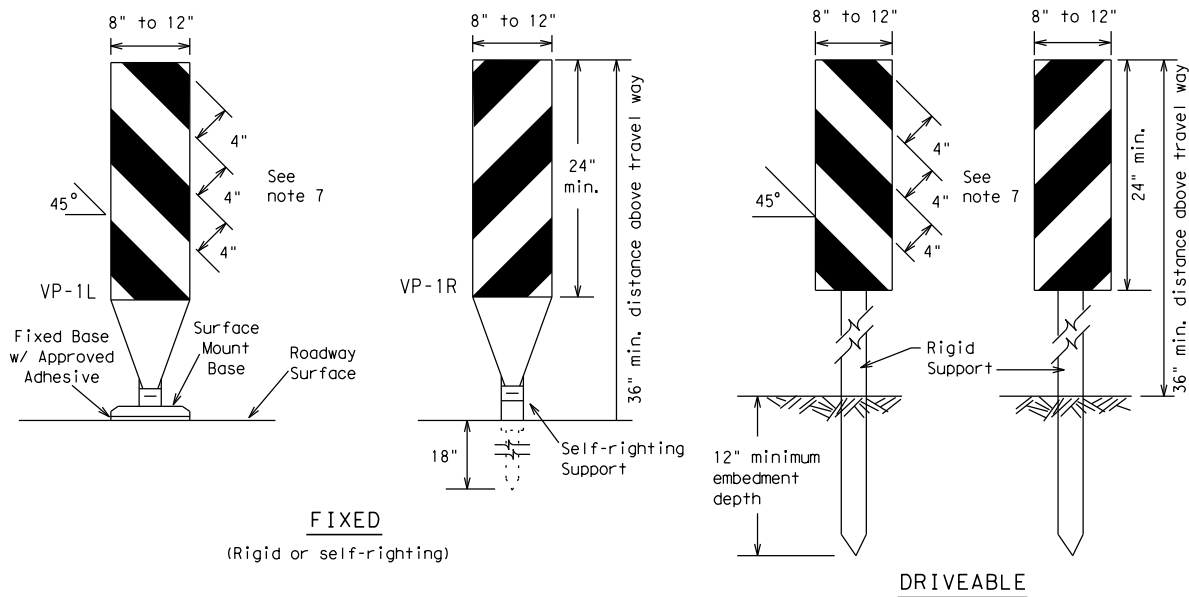
BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC (8) - 21

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9-07	5-21	SAT	GUADALUPE	131					
7-13									

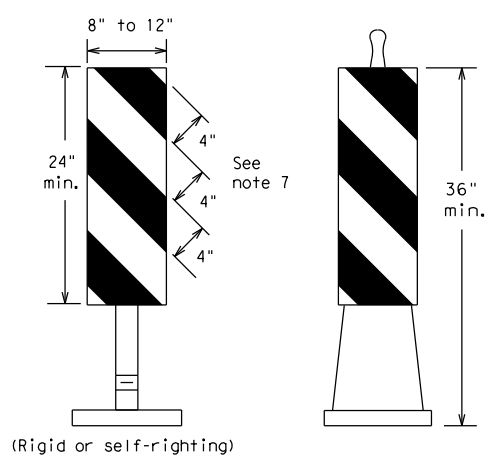
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FIXED
(Rigid or self-righting)

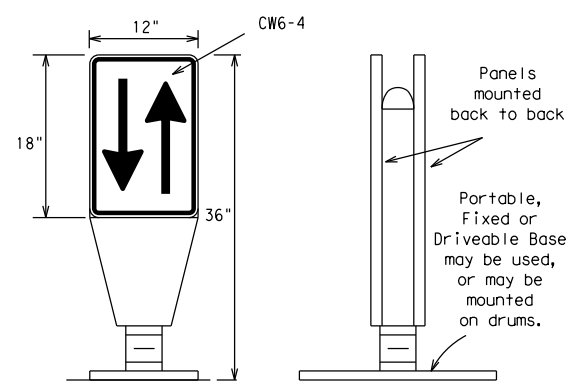
DRIVEABLE



PORTABLE

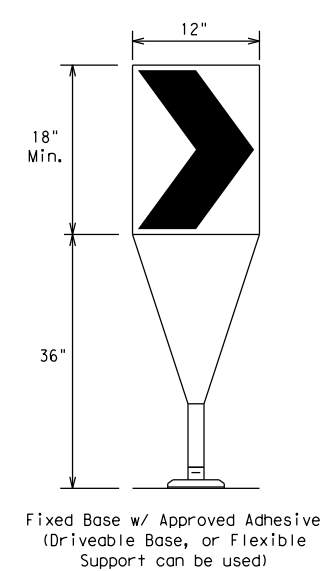
VERTICAL PANELS (VPs)

- 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.



OPPOSING TRAFFIC LANE DIVIDERS (OTLD)

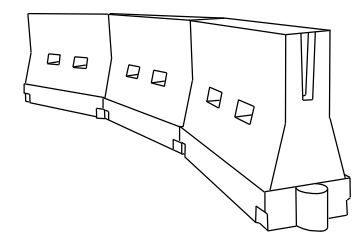
- Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base 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.



Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can 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 * *			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'

* **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

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BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC (9) - 21

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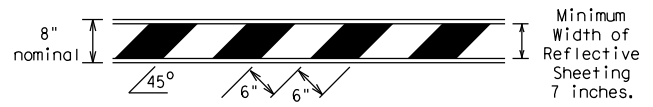
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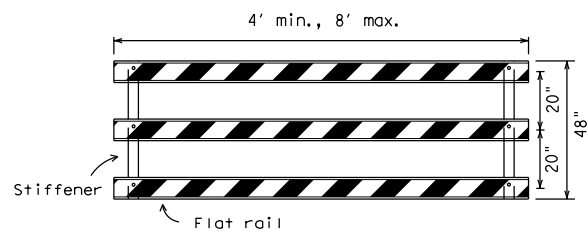
TYPE 3 BARRICADES

1. Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) for details of the Type 3 Barricades and a list of all materials used in the construction of Type 3 Barricades.
2. Type 3 Barricades shall be used at each end of construction projects closed to all traffic.
3. Barricades extending across a roadway should have stripes that slope downward in the direction toward which traffic must turn in detouring. When both right and left turns are provided, the chevron striping may slope downward in both directions from the center of the barricade. Where no turns are provided at a closed road, striping should slope downward in both directions toward the center of roadway.
4. Striping of rails, for the right side of the roadway, should slope downward to the left. For the left side of the roadway, striping should slope downward to the right.
5. Identification markings may be shown only on the back of the barricade rails. The maximum height of letters and/or company logos used for identification shall be 1".
6. Barricades shall not be placed parallel to traffic unless an adequate clear zone is provided.
7. Warning lights shall NOT be installed on barricades.
8. Where barricades require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand is recommended. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight. Sand bags shall not be stacked in a manner that covers any portion of a barricade rails reflective sheeting. Rock, concrete, iron, steel or other solid objects will NOT be permitted. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall not be used for sandbags. Sandbags shall only be placed along or upon the base supports of the device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners.
9. Sheeting for barricades shall be retroreflective Type A or Type B conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.

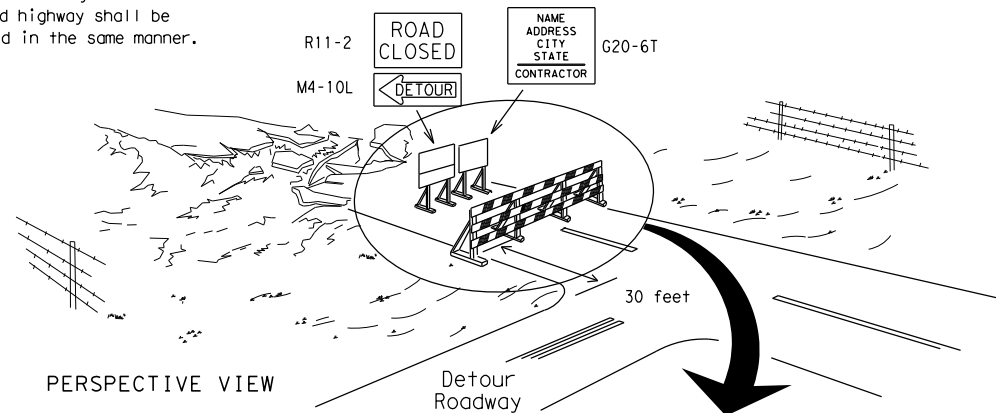


TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



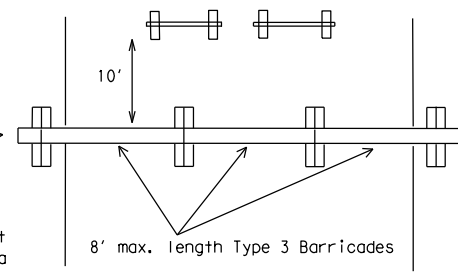
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

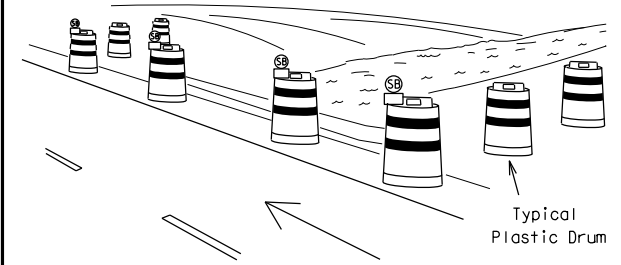
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.



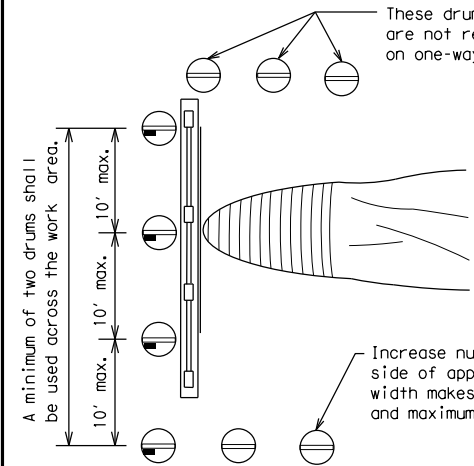
PLAN VIEW

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

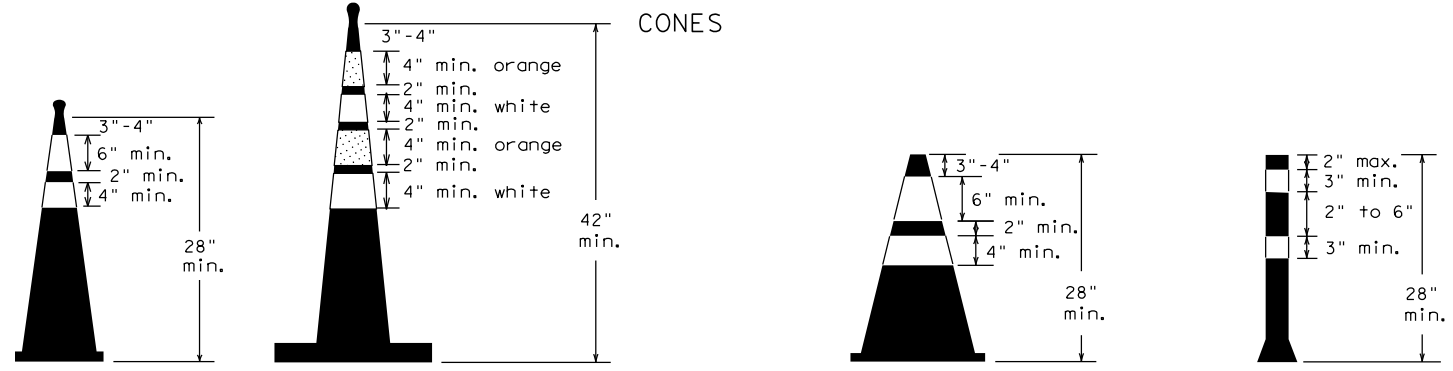


PLAN VIEW

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



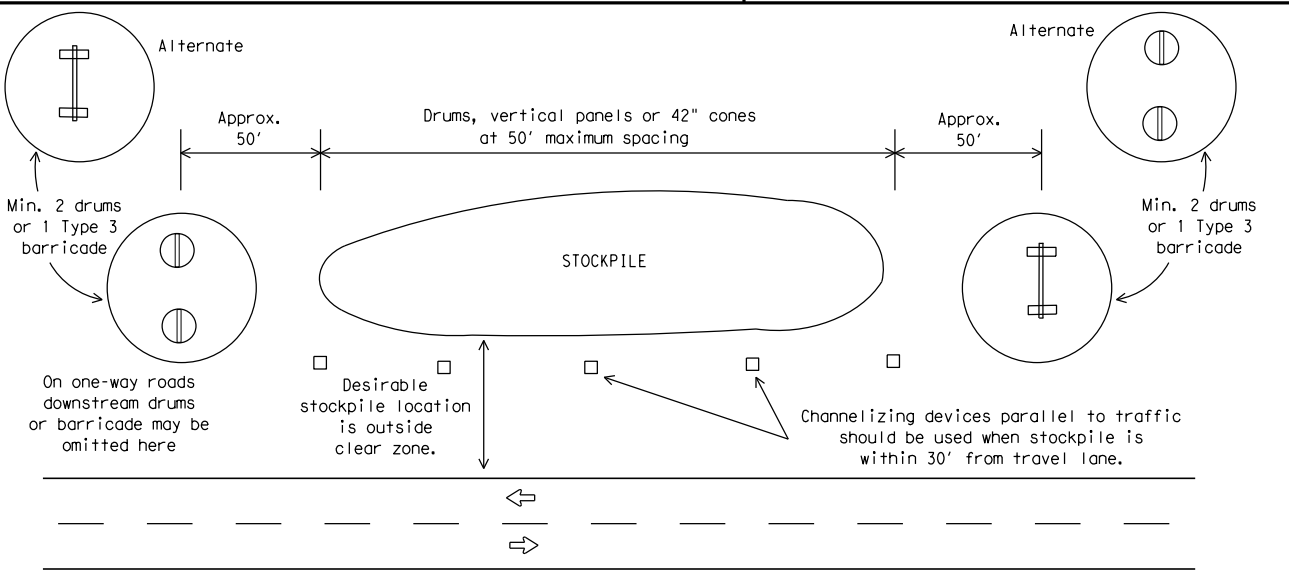
Two-Piece cones

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.

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.



TRAFFIC CONTROL FOR MATERIAL STOCKPILES



BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC (10) - 21

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7-13 5-21	SAT	GUADALUPE	133	

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.

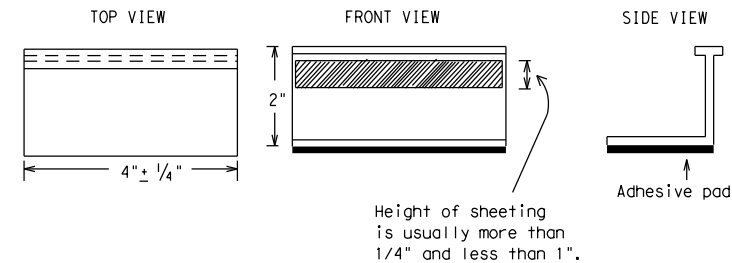
MAINTAINING WORK ZONE PAVEMENT MARKINGS

- 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

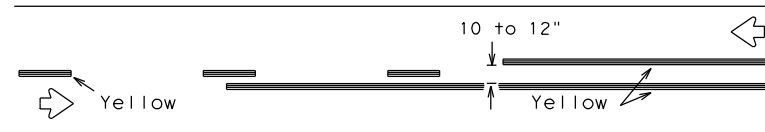
BC(11) - 21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DN: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS		0915	46	052
2-98	9-07	5-21		
1-02	7-13	DIST		COUNTY
11-02	8-14	SAT	GUADALUPE	SHEET NO. 134

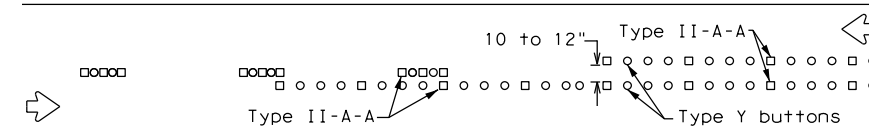
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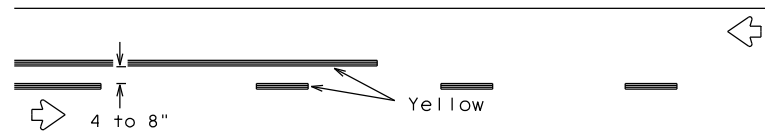
PAVEMENT MARKING PATTERNS



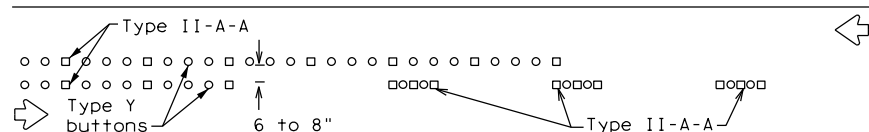
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



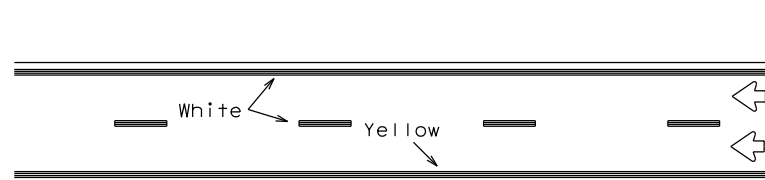
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



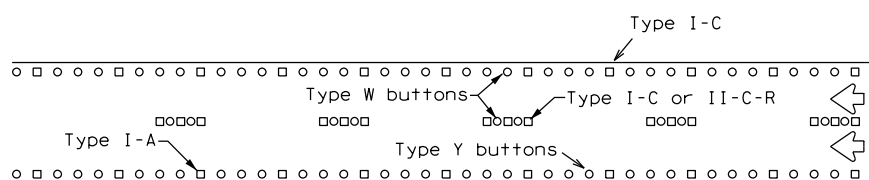
RAISED PAVEMENT MARKERS - PATTERN B

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

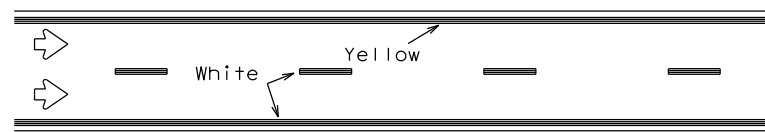
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO-LANE, TWO-WAY HIGHWAYS



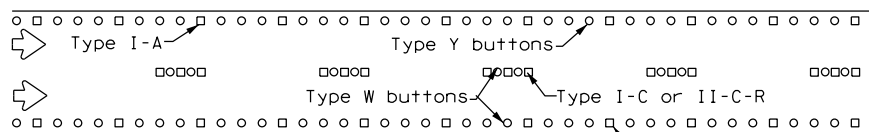
REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS



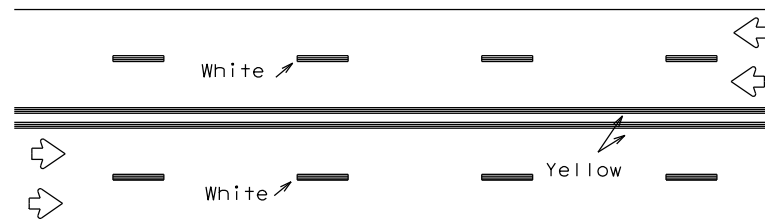
REFLECTORIZED PAVEMENT MARKINGS



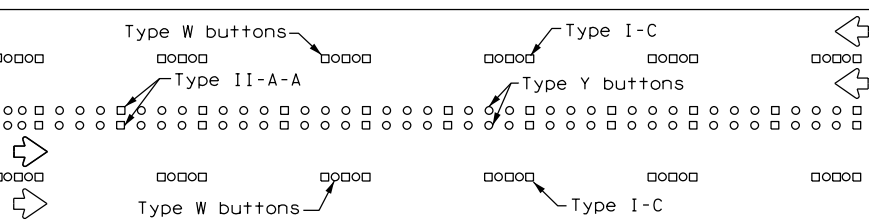
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



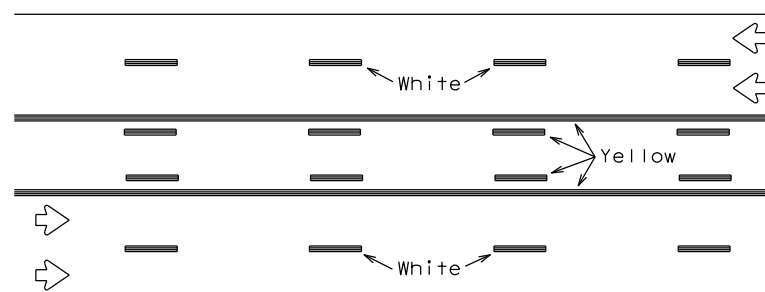
REFLECTORIZED PAVEMENT MARKINGS



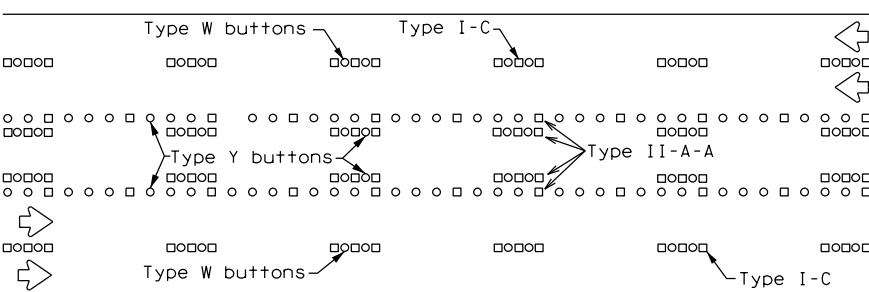
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS

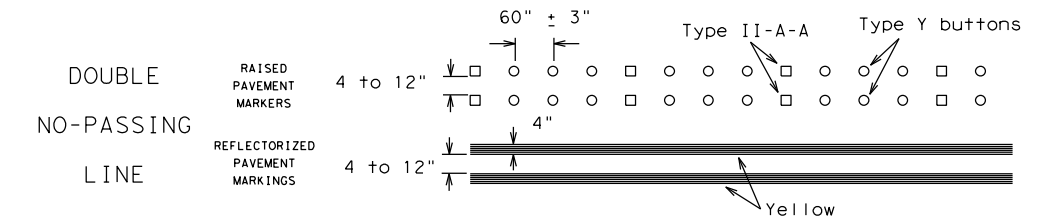


RAISED PAVEMENT MARKERS

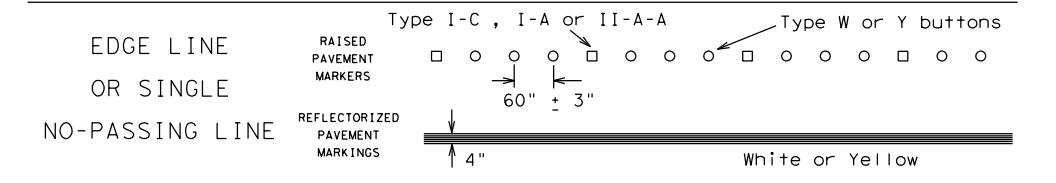
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

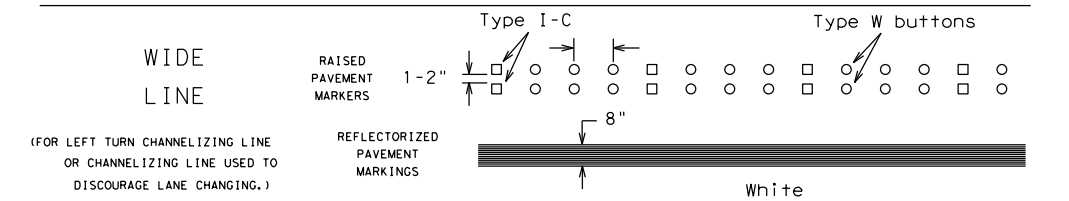
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



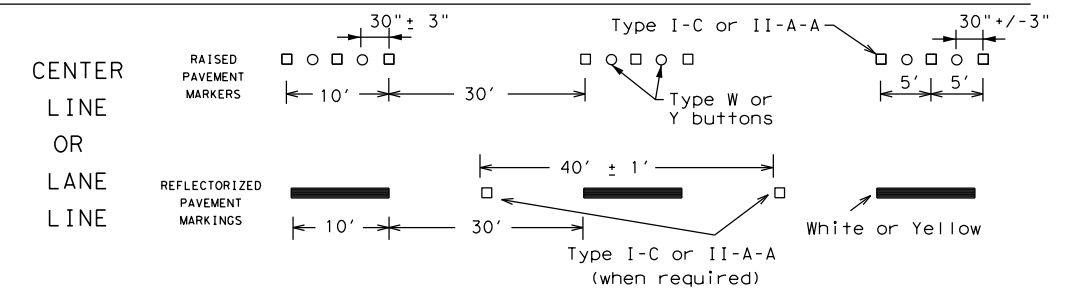
SOLID LINES



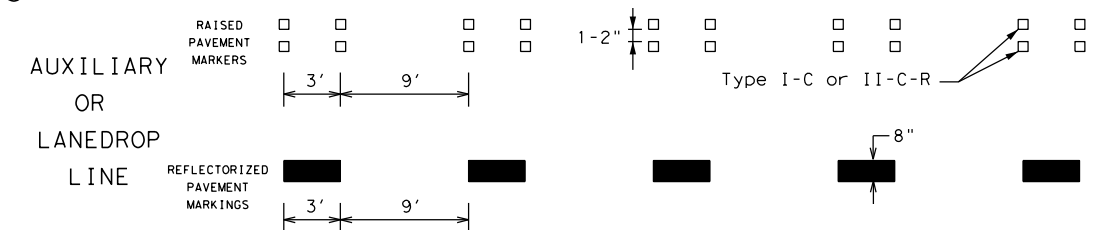
WIDE LINE



CENTER LINE OR LANE LINE

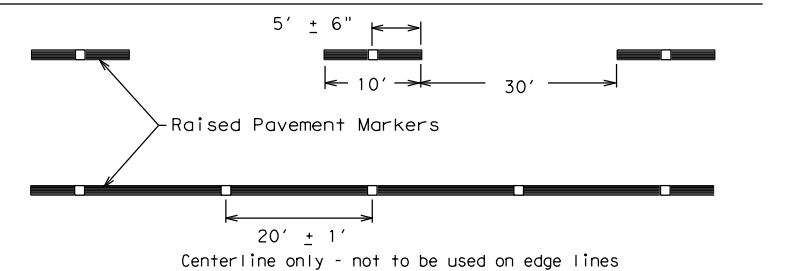


BROKEN LINES



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	DN: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
1-97 9-07 5-21	DIST	COUNTY	SHEET NO.	
2-98 7-13	SAT	GUADALUPE	135	
11-02 8-14				

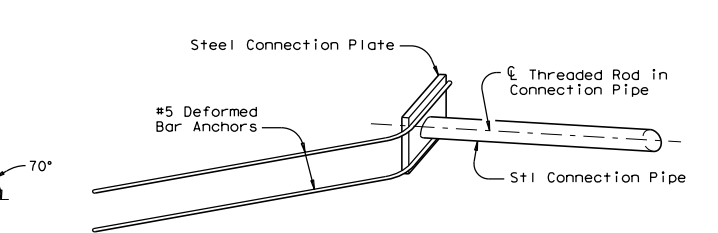
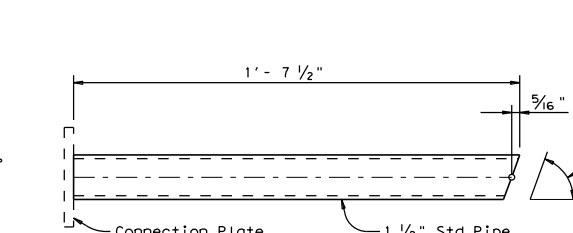
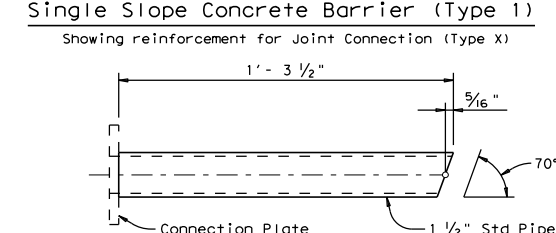
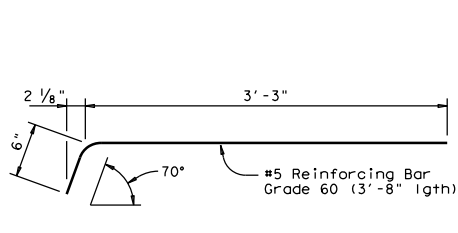
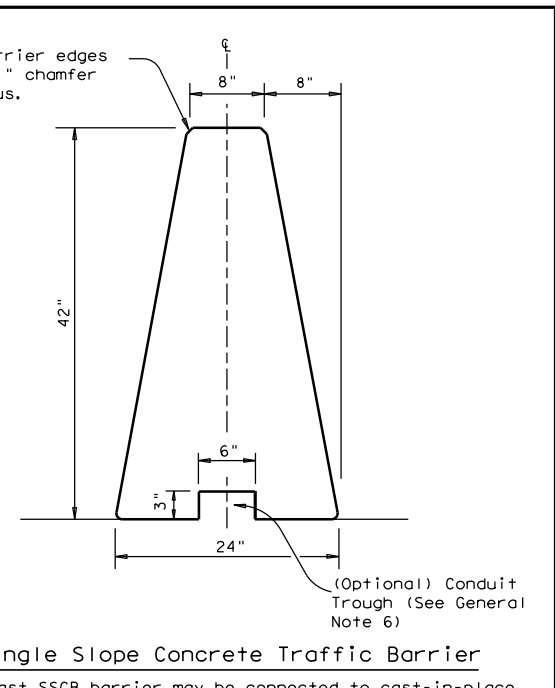
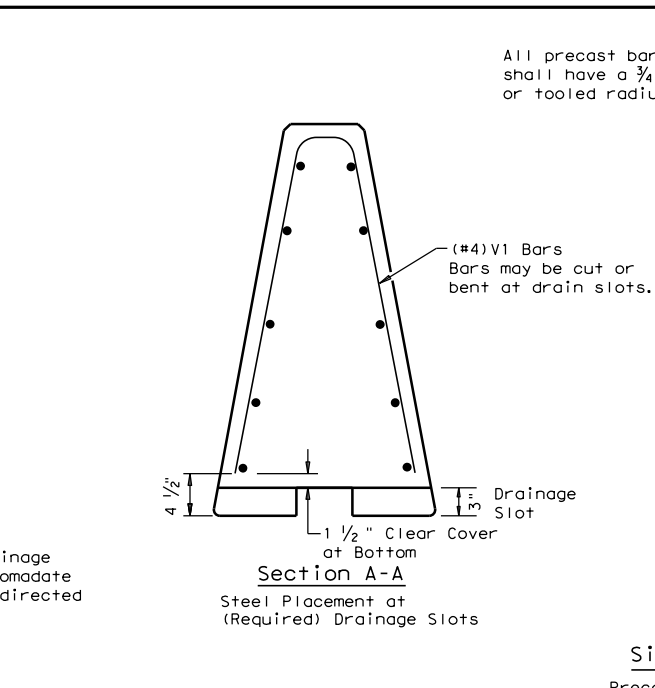
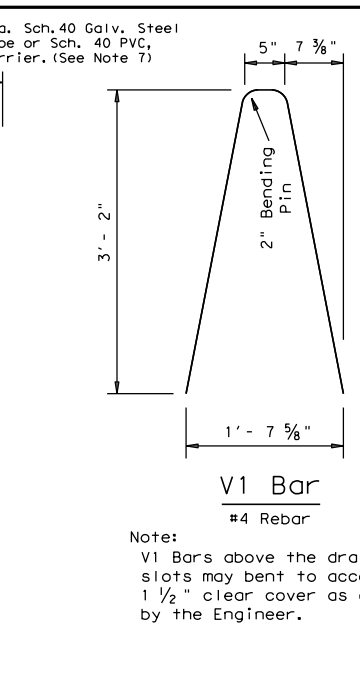
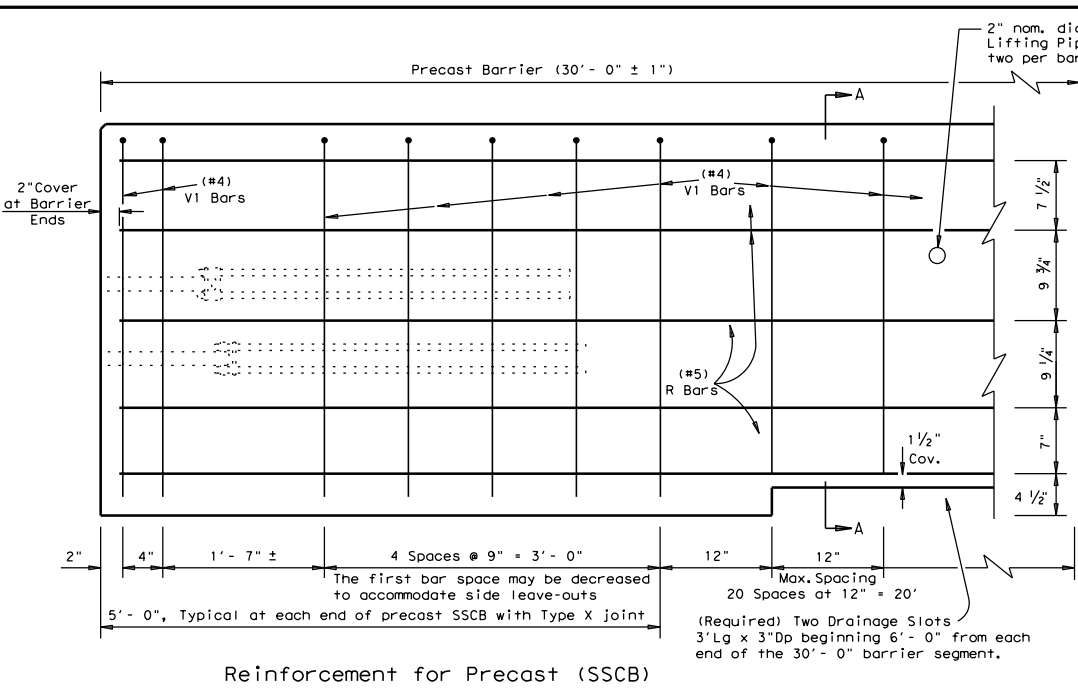
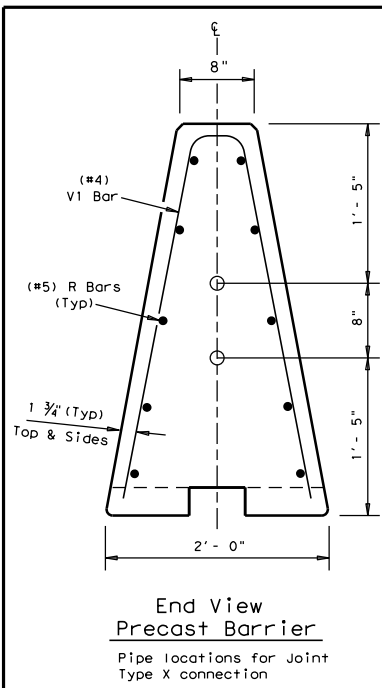
Raised pavement markers used as standard pavement markings shall be from the approved products list and meet the requirements of Item 672 "RAISED PAVEMENT MARKERS."

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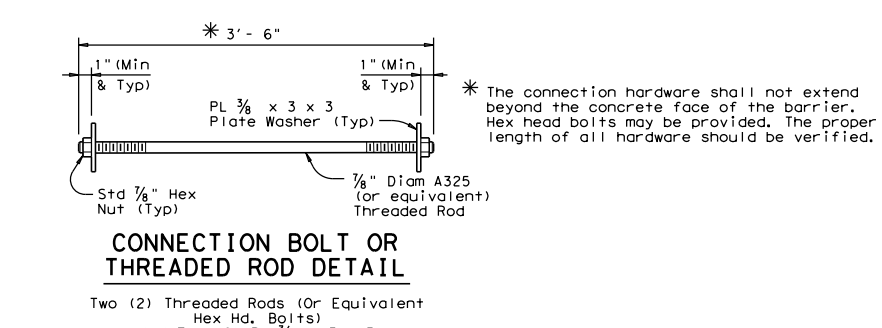
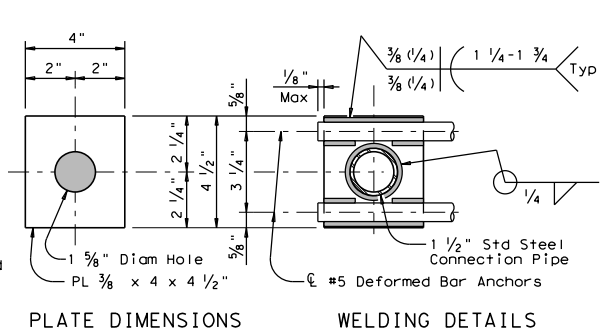
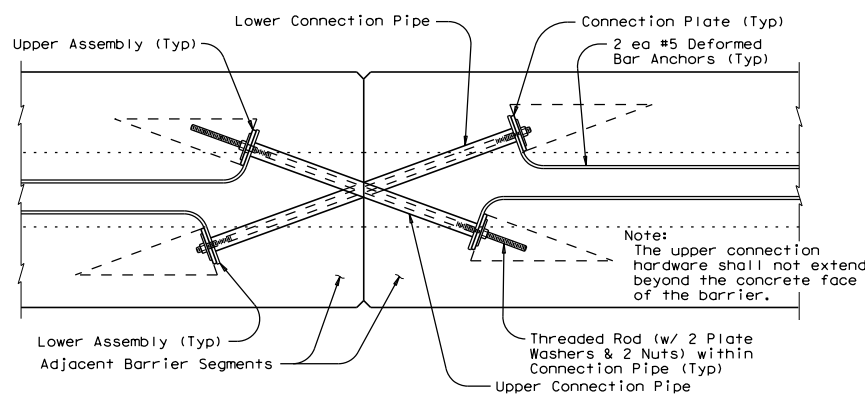


Two (2) Bars required per assembly.
 Eight (8) required per Joint.

One (1) Steel Pipe required per Upper Assembly.
 Two (2) required per Joint.

One (1) Steel Pipe required per Lower Assembly.
 Two (2) required per Joint.

Four (4) [2 Upper & 2 Lower] Assemblies required per Joint.

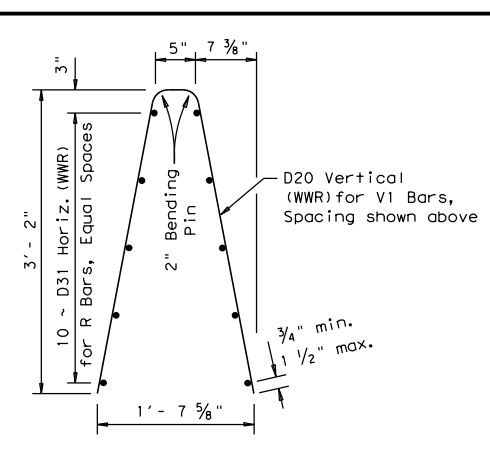


Barrier reinforcing and Type X Joint Leave-Out dimensions not shown for clarity.

One (1) Plate required per assembly.
 Four (4) required per Joint. All steel fittings for joint Type X shall be galvanized after fabrication in accordance with Item 445.

Two (2) Threaded Rods (Or Equivalent Hex Hd. Bolts) (w/ Two (2) PL 3/8 x 3 x 3 Plate Washers & Two (2) Std Hex Nuts) required per Joint.

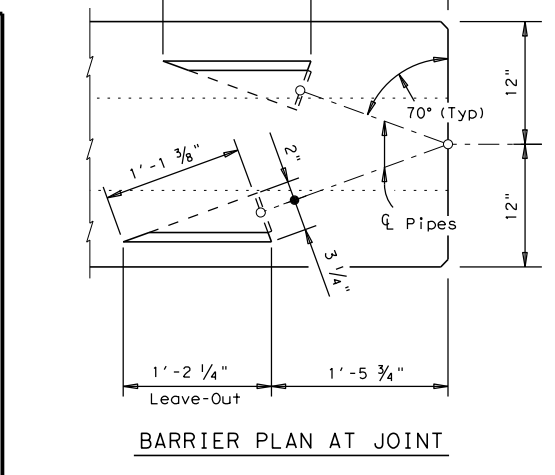
Weight of one precast 30 ft. (SSCB) segment = Approx. 10.5 Tons or 717 lbs per ft.



Welded Wire Reinforcement (WWR) Option for Bars R and V1

(WWR) General Notes

- Deformed Welded Wire Reinforcement (WWR) shall conform to ASTM A497.
- Welded wire cage may be cut or bent to accommodate the Type X joint connection and drainage slots, as directed by the Engineer.
- All reinforcement shall comply with Item 440, "Reinforcing Steel."
- Combinations of reinforcing steel and WWR will be permitted, as directed by the Engineer. The dimension from the end of the barrier section to the first wire shall not exceed 3".



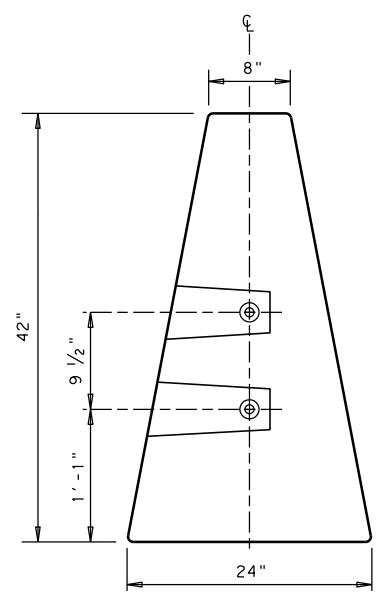
- General Notes**
- Concrete shall be Class H with a minimum compressive strength of 3,600 psi.
 - Where used, rebar reinforcement shall be Grade 60 and conform to ASTM A615.
 - Precast barrier length shall be 30 ft. unless otherwise specified on the plans.
 - All precast barrier edges shall have a 3/4 inch chamfer or a tooled radius.
 - All concrete, reinforcement, joint connection systems, grout etc. as shown, are considered as part of the barrier payment.
 - Conduit trough when required shall be shown elsewhere on the plans, or as directed by the Engineer.
 - Regardless of the method of handling, barrier lifting points shall be approx. 7.5 feet from the ends of the barrier. Lifting devices and attachments to barrier sections shall be approved by the Engineer.
 - Surface finishing and grouting (where required) shall be two parts sand one part cement with enough water to make the mixture plastic. Grouting shall be done in a manner that will assure a smooth surface. Surface finishing shall be considered subsidiary to the various bid items.
 - All steel assemblies shall be galvanized after fabrication in accordance with Item 445, "Galvanizing."

SHEET 1 OF 2

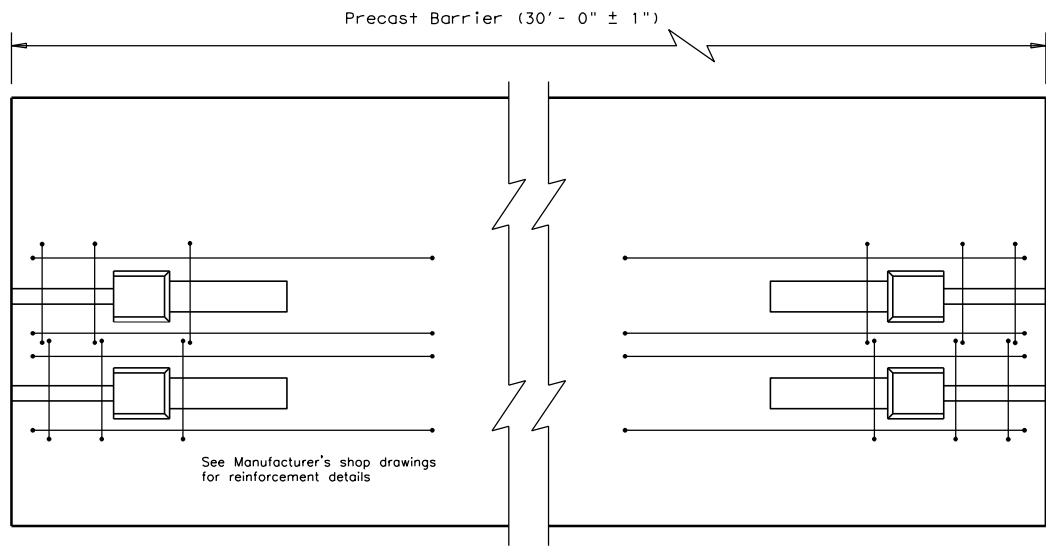
		Design Division Standard	
SINGLE SLOPE CONCRETE BARRIER			
PRECAST BARRIER (TYPE 1)			
SSCB (2) - 10			
FILE: sscb210.dgn	DN: TxDOT	CK: AM	DW: BD
© TxDOT December 2010	CONT: 0915	SECT: 46	JOB: 052
REVISIONS	DIST: COUNTY		HIGHWAY: CORDOVA
	SAT: GUADALUPE		SHEET NO.: 136

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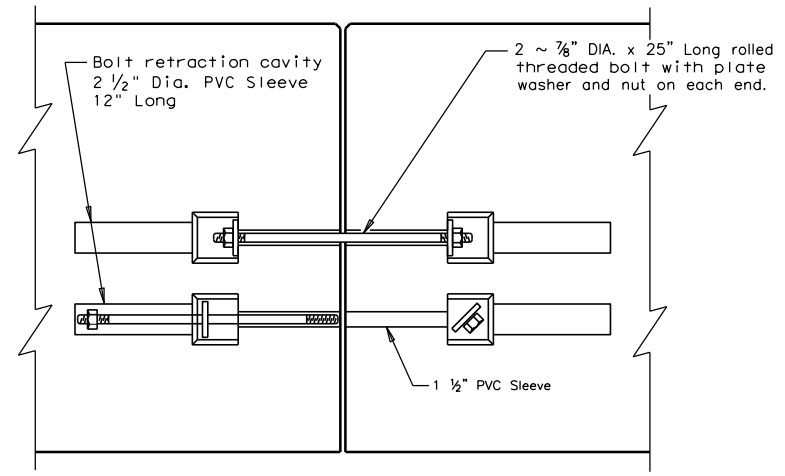
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END VIEW
 "QUICK-BOLT" POCKET LOCATIONS

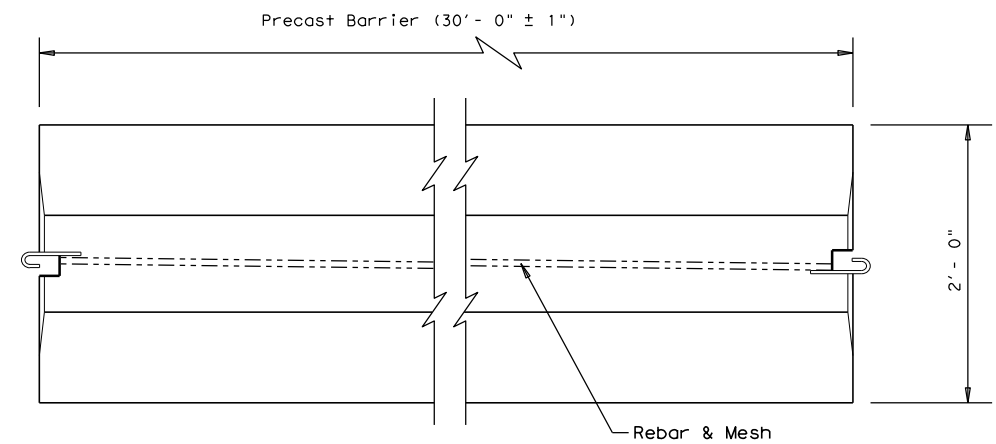


ELEVATION VIEW
 "QUICK-BOLT" (SSCB)
 See Manufacturer's shop drawing for additional details

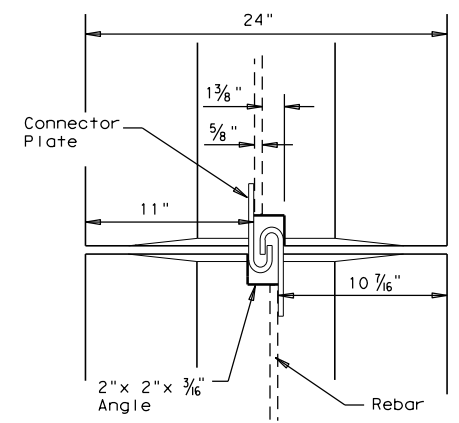


ELEVATION VIEW SHOWING JOINT CONNECTION
 "QUICK-BOLT"

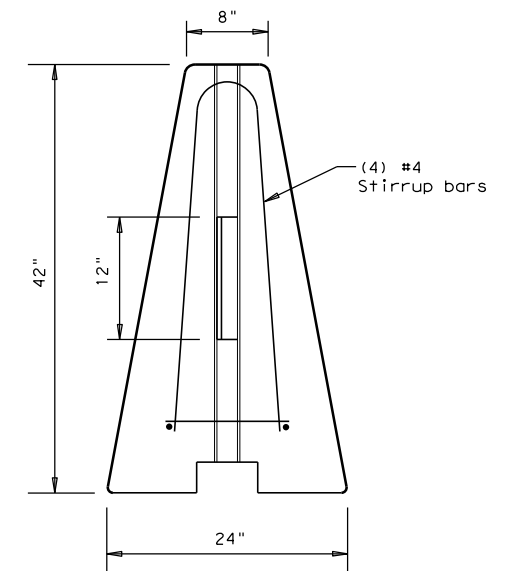
Joint Connection (Type Q)



TOP VIEW
 PRECAST (SSCB) WITH J-J HOOKS
 See Manufacturer's shop drawing for additional details



VIEW FROM ABOVE
 J-J HOOK CONNECTION



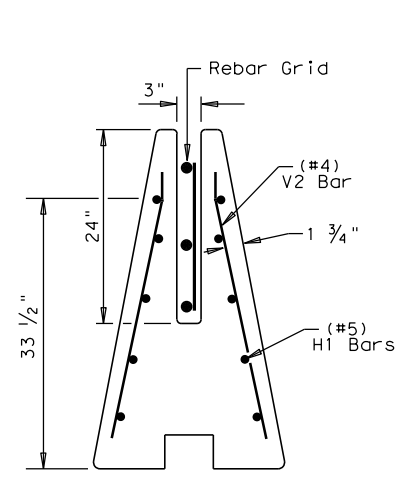
END VIEW

Proprietary Joint Connections (SSCB)

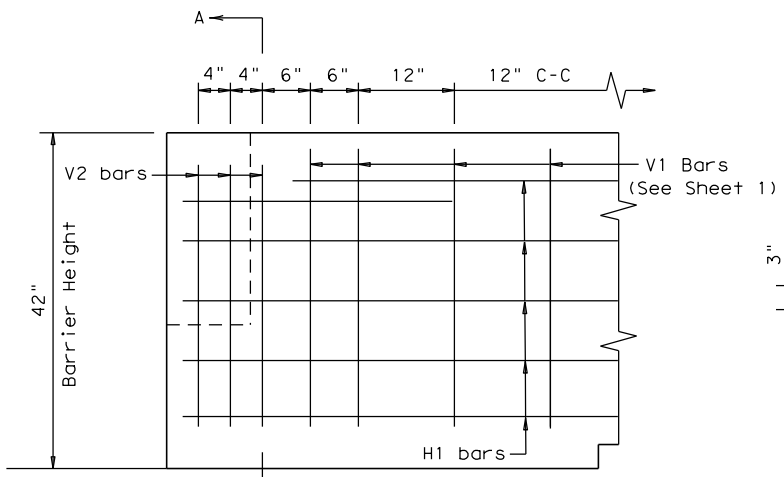
Two proprietary joint connections are acceptable as alternates to the (Type X) connection shown, here on. These joint connections types are:

J-J Hooks by Easi-Set Industries, (800)547-4045
 Quick-Bolt by Bexar Concrete, (210)497-3773

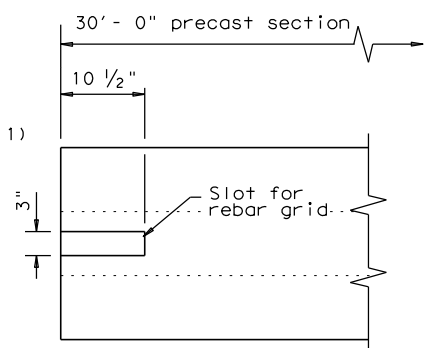
If one of these connection systems are exclusively specified in the plans, prior approval for sole source use must be obtained. Details of the connection components and barrier reinforcement for these systems, will be shown on the manufacturer's shop drawing(s) furnished to the Engineer.



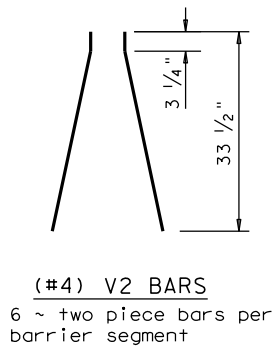
SECTION A-A
 Showing (Type R)
 Rebar Grid



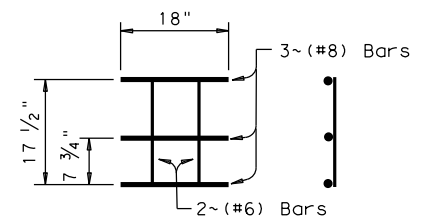
ELEVATION
 V1 Bars (See Sheet 1)



TOP VIEW
 JOINT CONNECTION
 Typical at both ends of barrier segment



(#4) V2 BARS
 6 ~ two piece bars per barrier segment



WELDED REBAR GRID

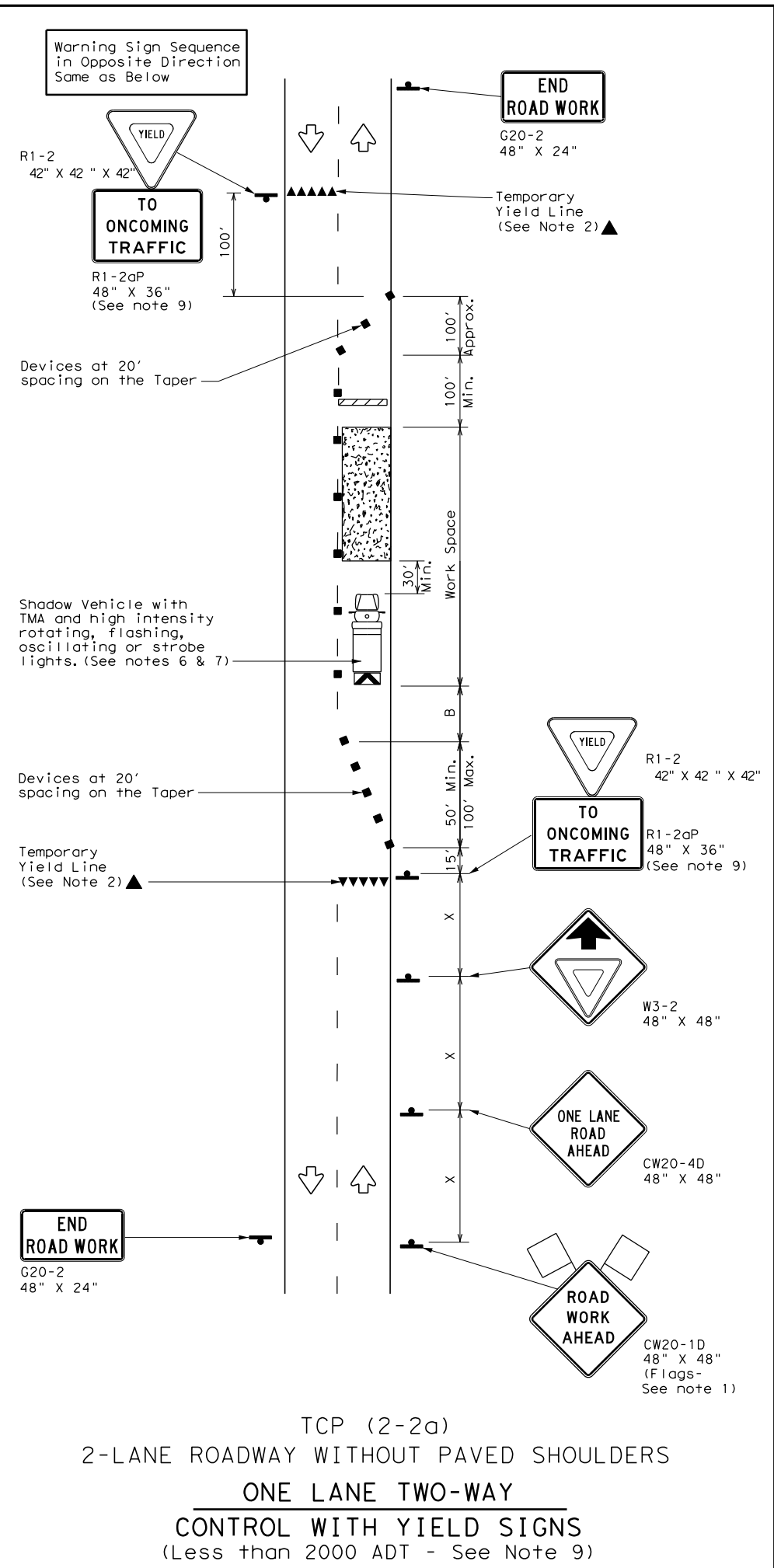


SINGLE SLOPE CONCRETE BARRIER
 PRECAST BARRIER (TYPE 1)
 SSCB(2) - 10

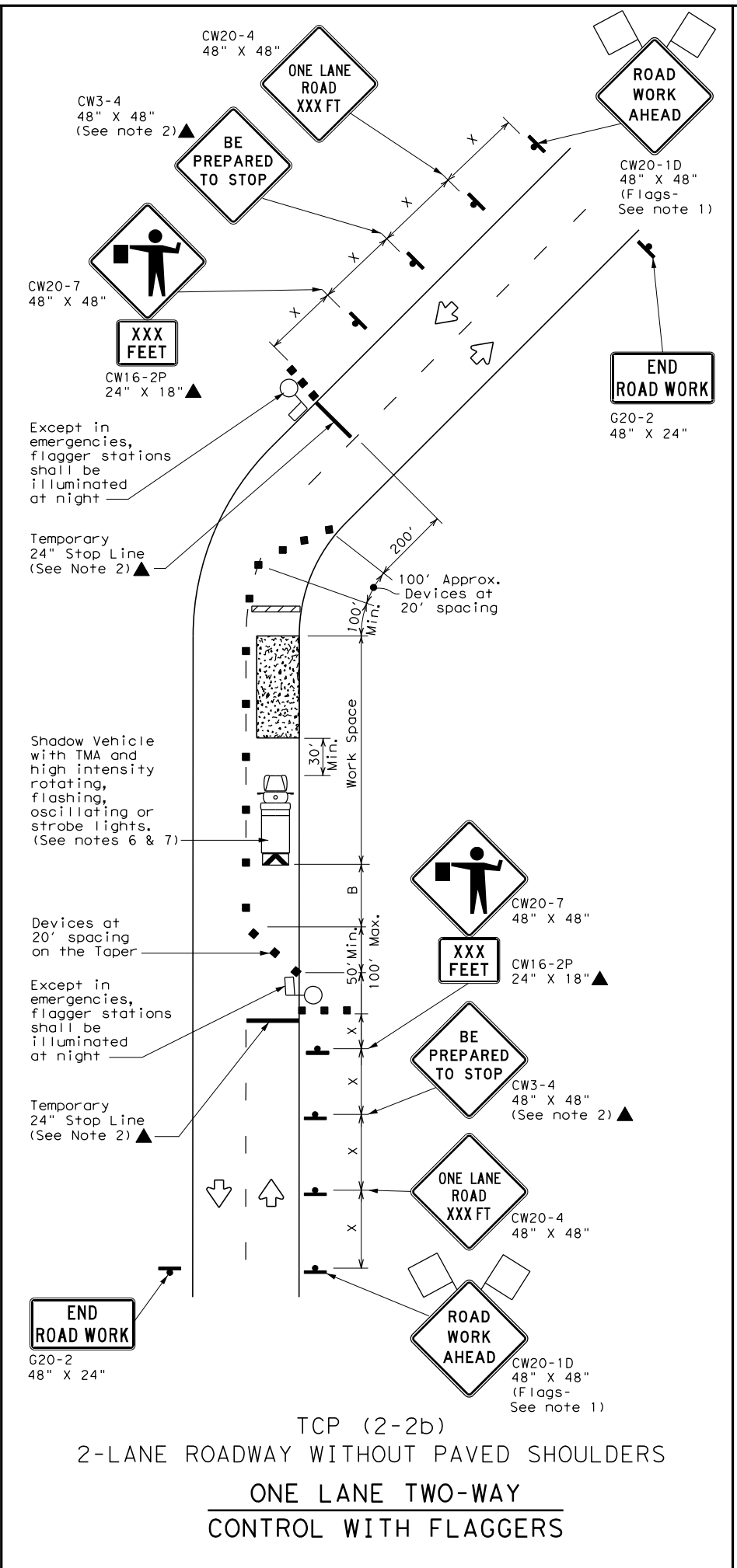
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©TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
	DIST	COUNTY	SHEET NO.	
	SAT	GUADALUPE	137	

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TCP (2-2a)
 2-LANE ROADWAY WITHOUT PAVED SHOULDERS
 ONE LANE TWO-WAY
 CONTROL WITH YIELD SIGNS
 (Less than 2000 ADT - See Note 9)



TCP (2-2b)
 2-LANE ROADWAY WITHOUT PAVED SHOULDERS
 ONE LANE TWO-WAY
 CONTROL WITH FLAGGERS

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		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"	Stopping Sight Distance
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent			
30	L = WS ² / 60	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L = WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	575'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

* Conventional Roads Only
 ** Taper lengths have been rounded off.
 L=Length of Taper (FT) W=Width of Offset (FT) S=Posted Speed (MPH)

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

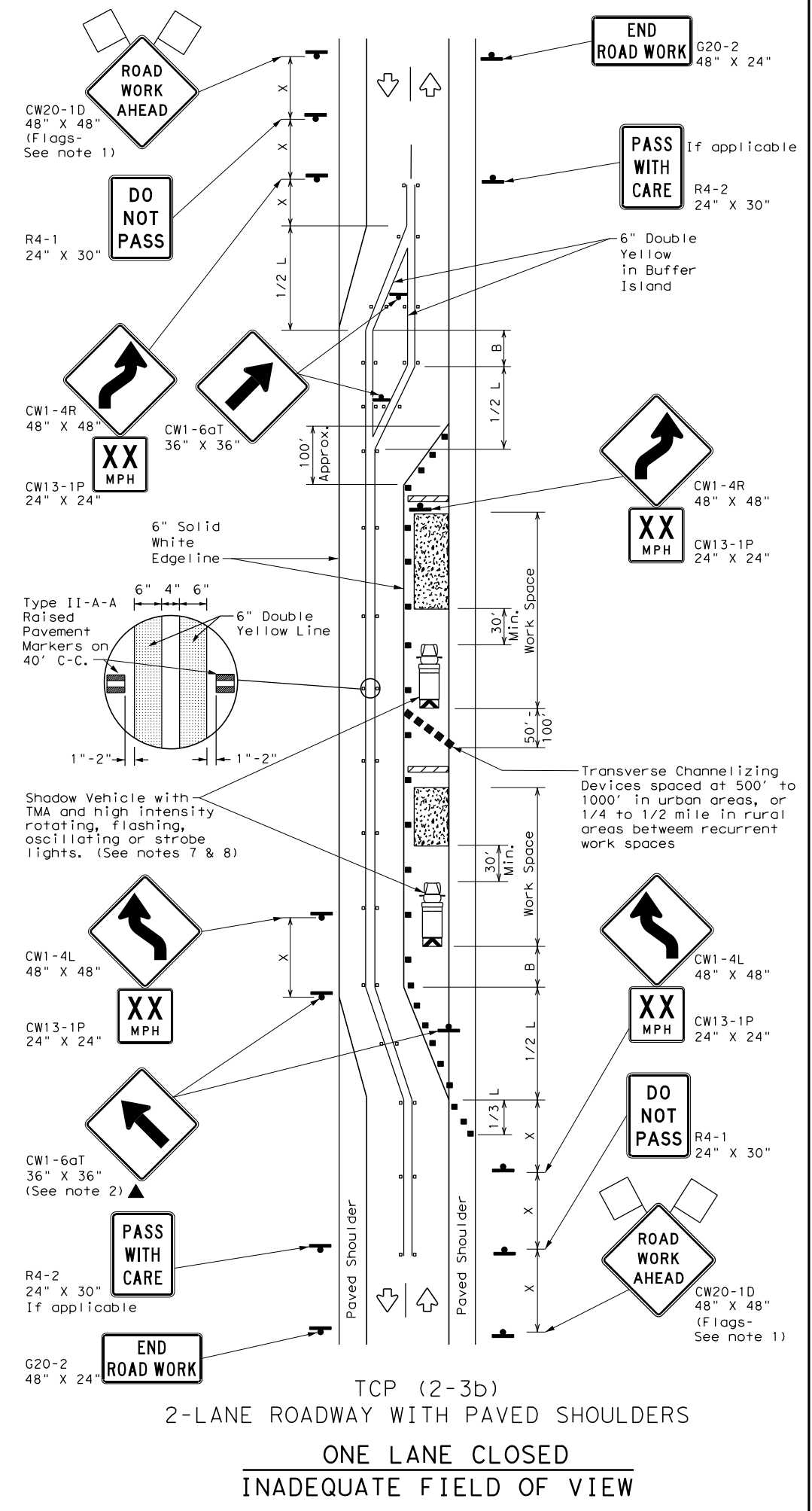
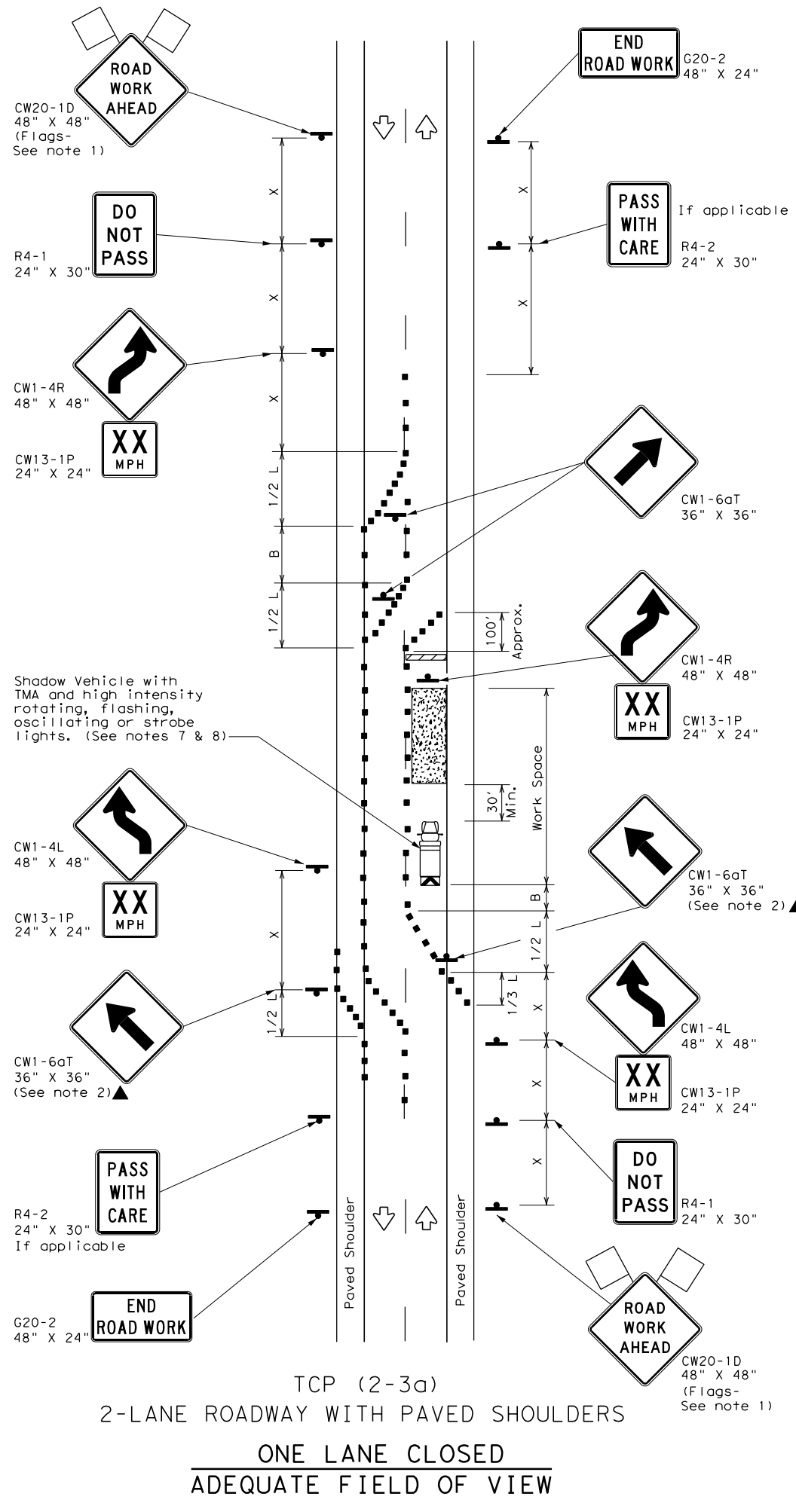
GENERAL NOTES

- 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 CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4 "ONE LANE ROAD XXX FT" sign, but proper sign spacing shall be maintained.
 - Flaggers should use two-way radios or other methods of communication to control traffic.
 - Length of work space should be based on the ability of flaggers to communicate.
 - 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.
- TCP (2-2a)
- The R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work space should be no longer than one half city block. In rural areas, roadways with less than 2000 ADT, work space should be no longer than 400 feet.
 - The R1-2aP "YIELD TO ONCOMING TRAFFIC" sign shall be placed on a support at a 7 foot minimum mounting height.
- TCP (2-2b)
- Channelizing devices on the center line may be omitted when a pilot car is leading traffic and approved by the Engineer.
 - If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain stopping sight distance to the flagger and a queue of stopped vehicles. (See table above).
 - Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

		Traffic Operations Division Standard	
TRAFFIC CONTROL PLAN			
ONE-LANE TWO-WAY			
TRAFFIC CONTROL			
TCP (2-2) - 18			
FILE: tcp2-2-18.dgn	DN:	CK:	DW: CK:
© TxDOT December 1985	CON:	SECT:	JOB: HIGHWAY:
REVISIONS		0915	46
8-95	3-03	052	
1-97	2-12	CORDOVA	
4-98	2-18	DIST:	COUNTY: SHEET NO.:
		SAT	GUADALUPE 138

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DATE: 11/17/2023 5:49:59 PM
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LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Raised Pavement Markers Ty II-AA
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			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
			✓	✓
				TCP (2-3b) ONLY

- 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.
 - When work space will be in place less than three days existing pavement markings may remain in place. Channelizing devices shall be used to separate traffic.
 - Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Flagger should be positioned at end of traffic queue.
 - The R4-1 "DO NOT PASS," R4-2 "PASS WITH CARE" and construction regulatory speed zone signs may be installed within CW20-1D "ROAD WORK AHEAD" signs. Proper spacing of signs shall be maintained.
 - Conflicting pavement marking shall be removed for long term projects.
 - 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.
 - Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
- TCP (2-3a)**
- Conflicting pavement markings shall be removed for long-term projects. For shorter durations where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2(S) where S is the speed in mph. This tighter device spacing is intended for the area of the conflicting markings, not the entire work zone.



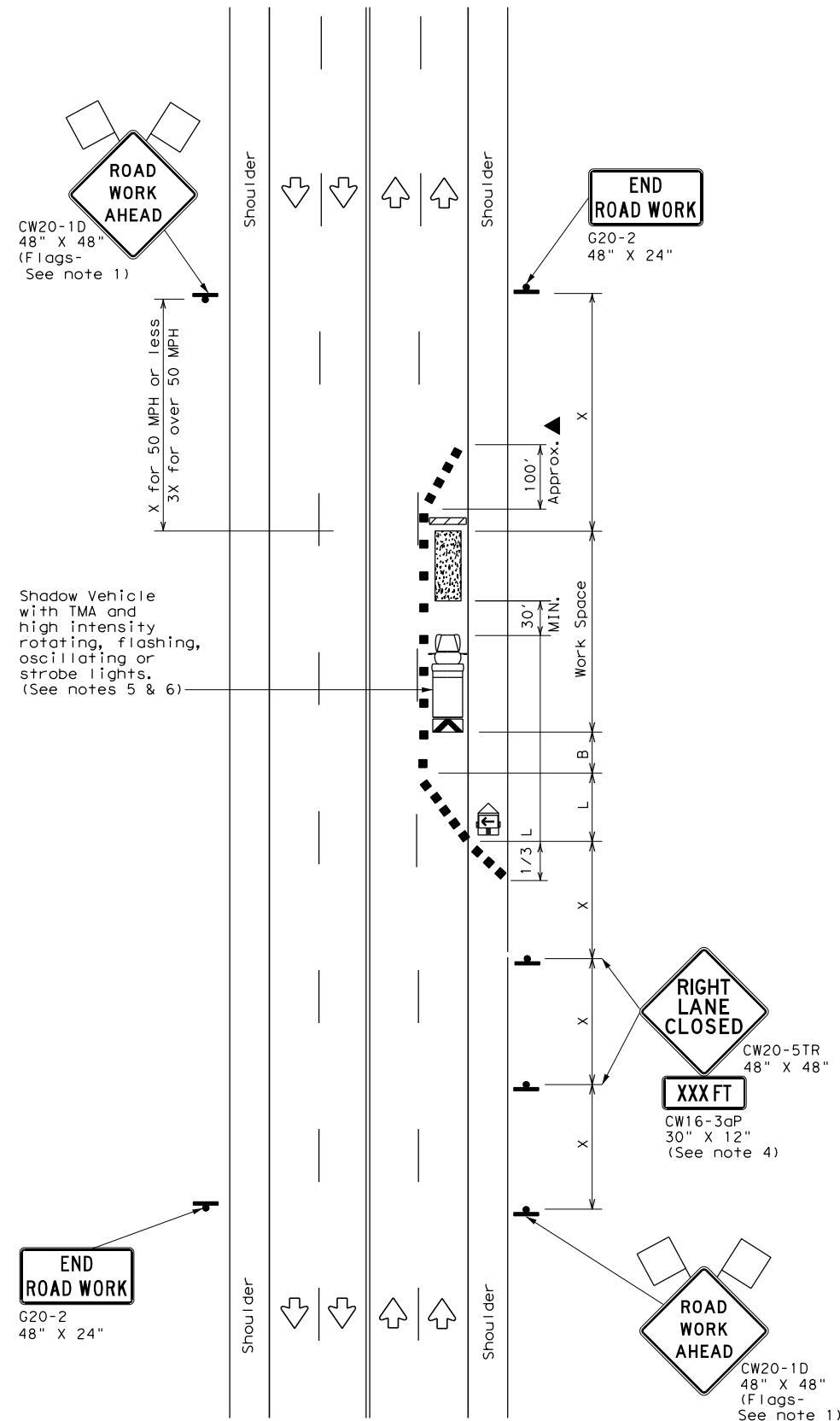
**TRAFFIC CONTROL PLAN
 TRAFFIC SHIFTS ON
 TWO-LANE ROADS**

TCP (2-3) - 23

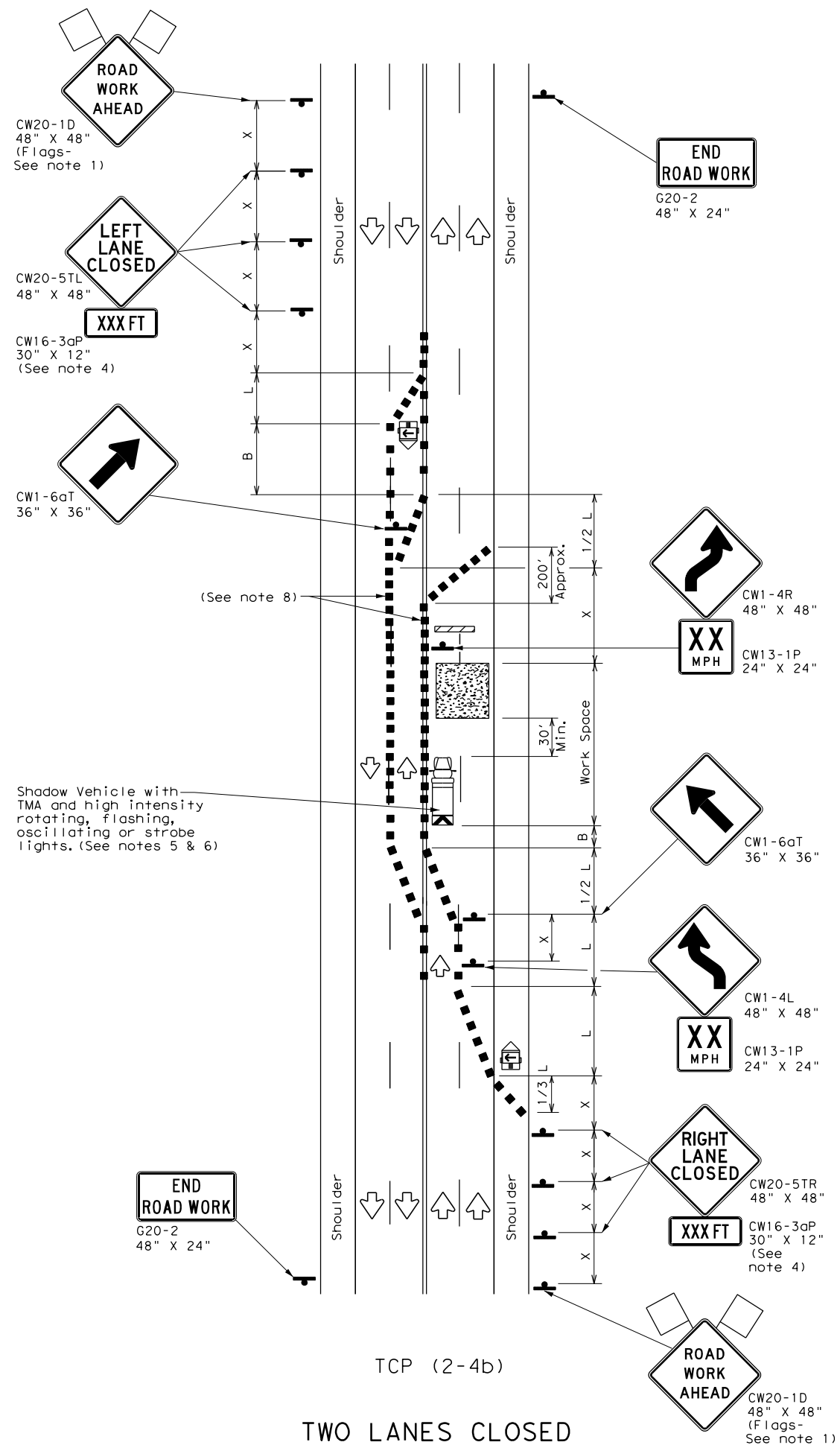
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8-95	3-03	4-23				DIST:	COUNTY	SHEET NO.	
1-97	2-12		SAT		GUADALUPE			139	

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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 **			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)

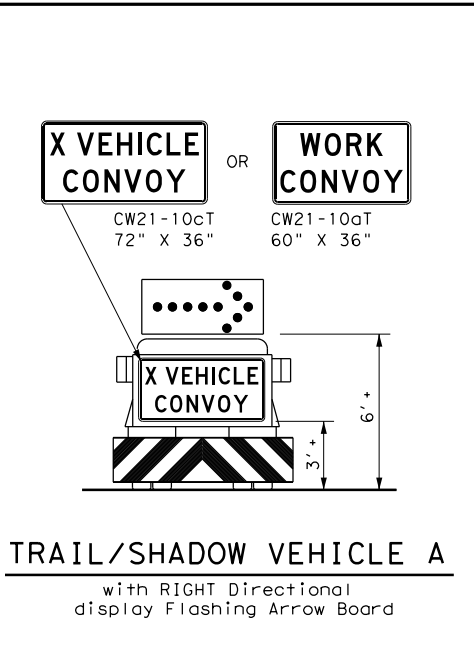
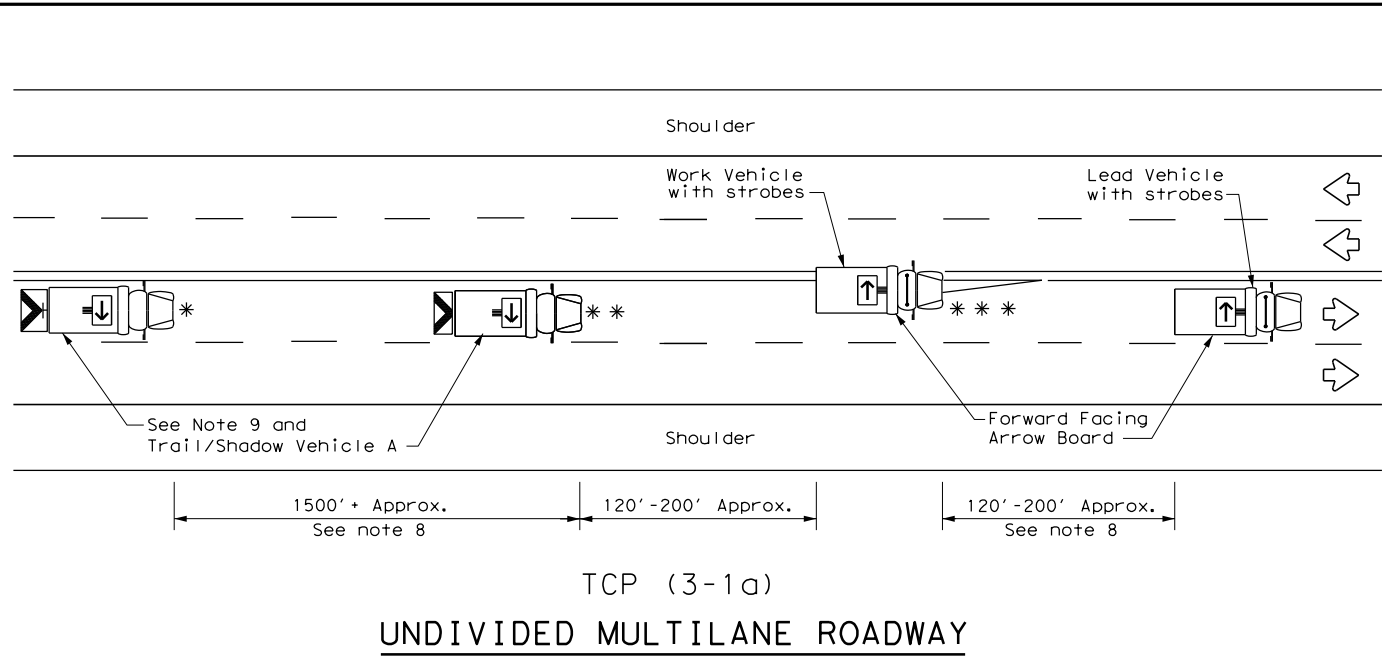
TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
		✓	✓	

- 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.
 - 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 Operations Division Standard	
TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS TCP (2-4) - 18			
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© TxDOT December 1985	CON:	SECT:	JOB:
REVISIONS	0915	46	052
8-95 3-03	DIST:		COUNTY:
1-97 2-12	SAT		GUADALUPE
4-98 2-18	SHEET NO.		140

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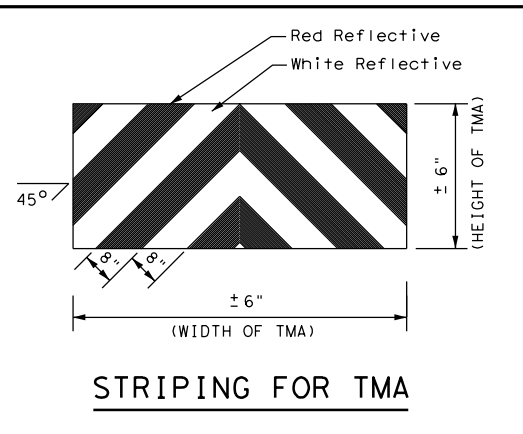
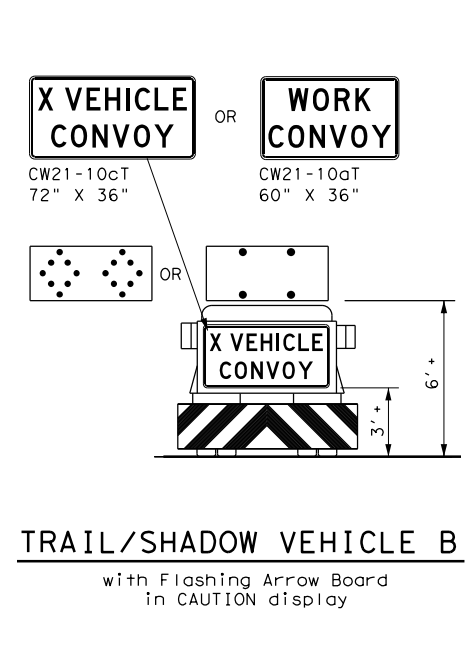
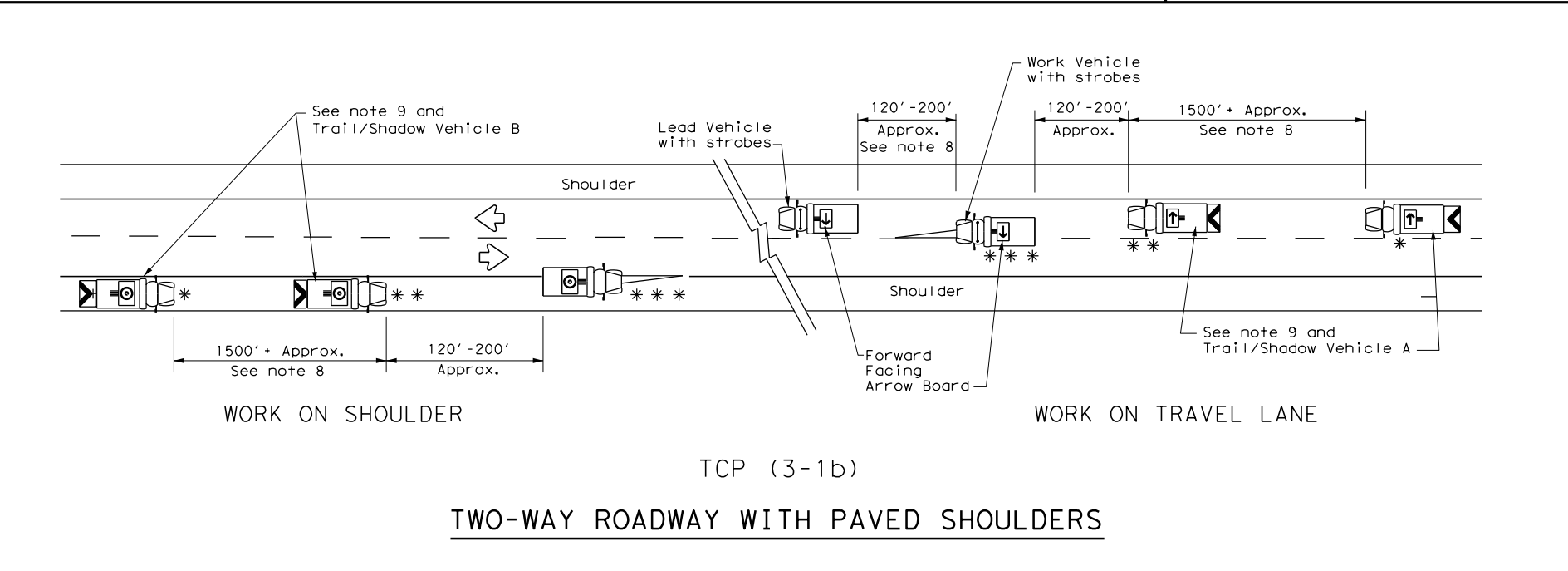
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LEGEND				
*	Trail Vehicle	ARROW BOARD DISPLAY		
**	Shadow Vehicle			
***	Work Vehicle		RIGHT	Directional
	Heavy Work Vehicle		LEFT	Directional
	Truck Mounted Attenuator (TMA)		Double	Arrow
	Traffic Flow		CAUTION (Alternating Diamond or 4 Corner Flash)	

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
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- 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.

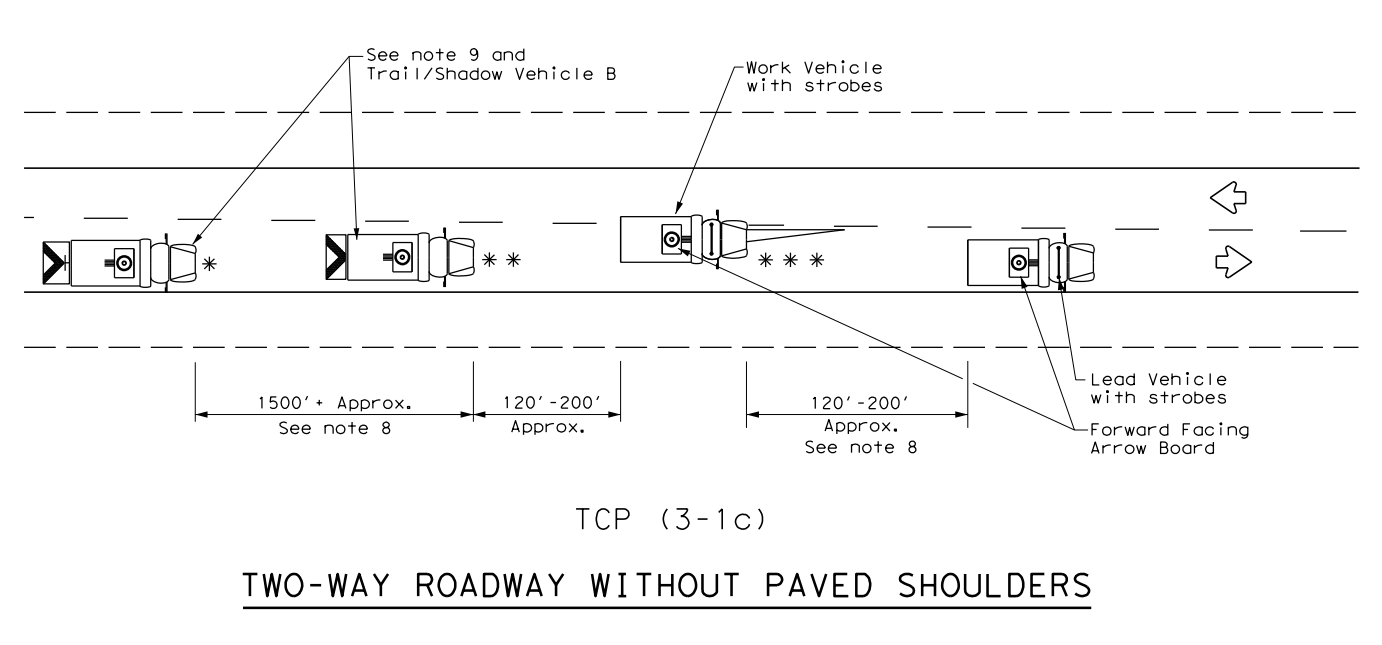


Texas Department of Transportation
 Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
 MOBILE OPERATIONS
 UNDIVIDED HIGHWAYS

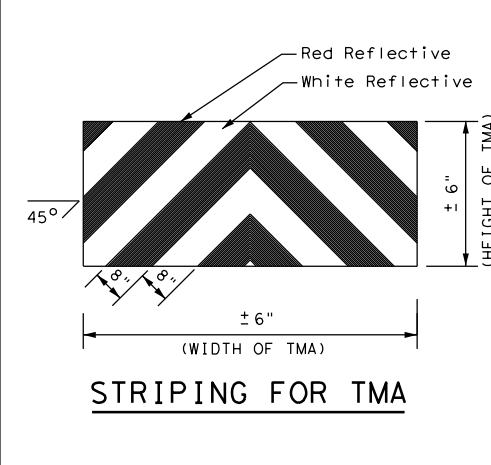
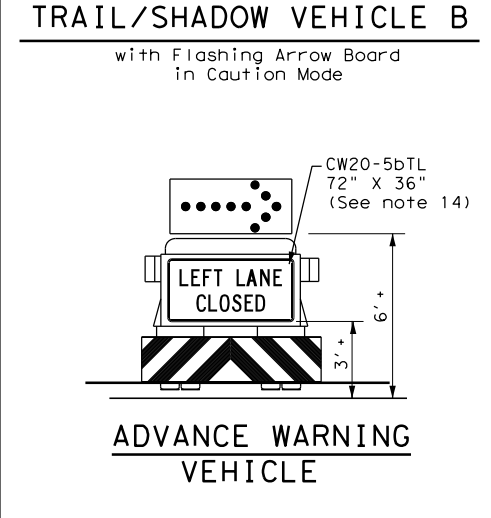
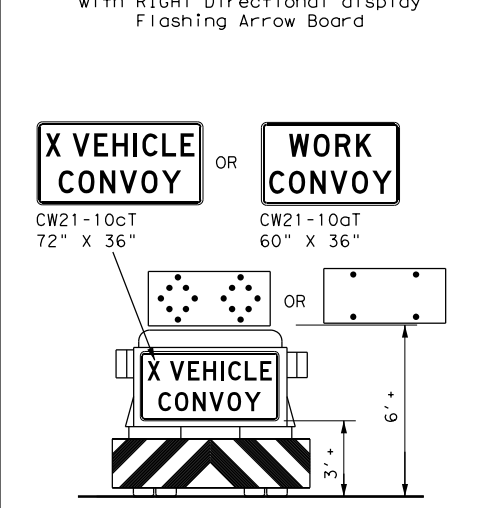
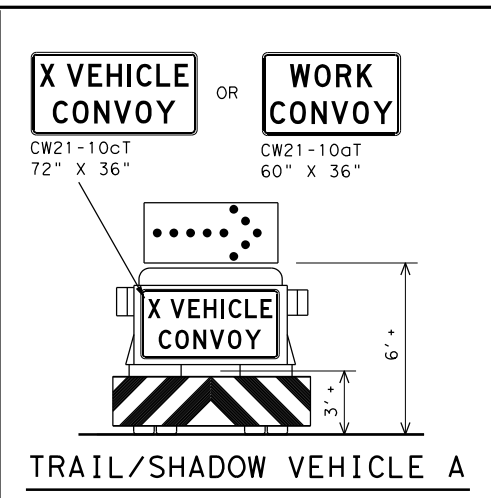
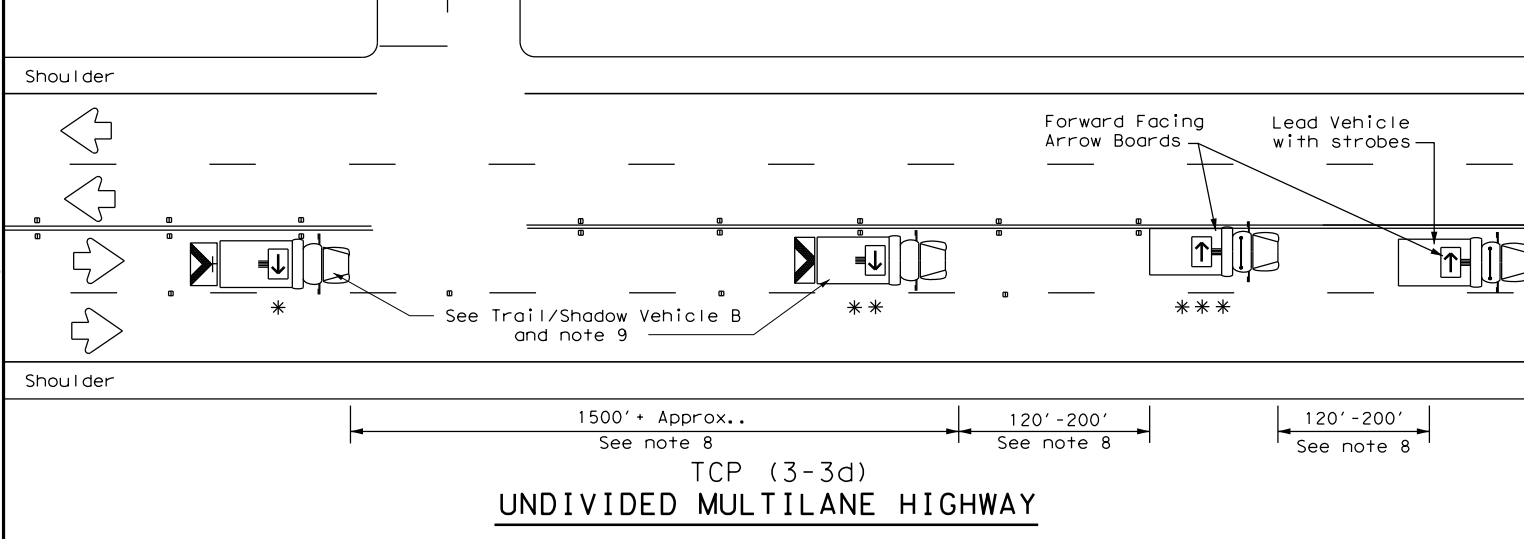
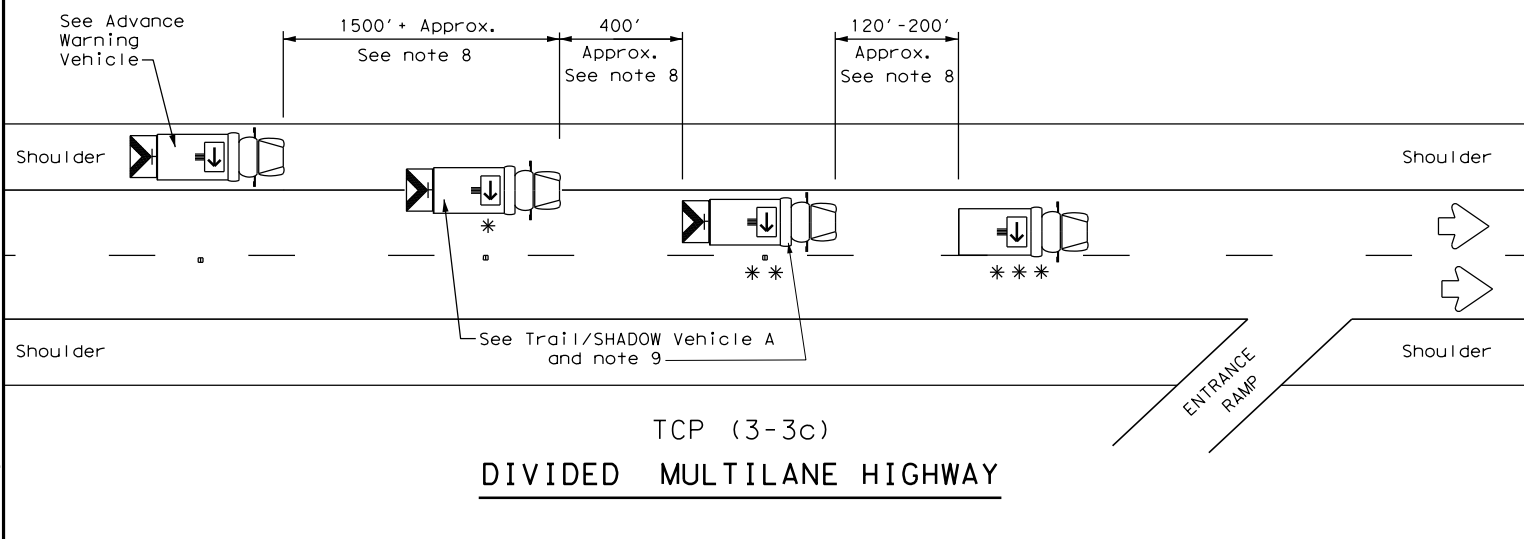
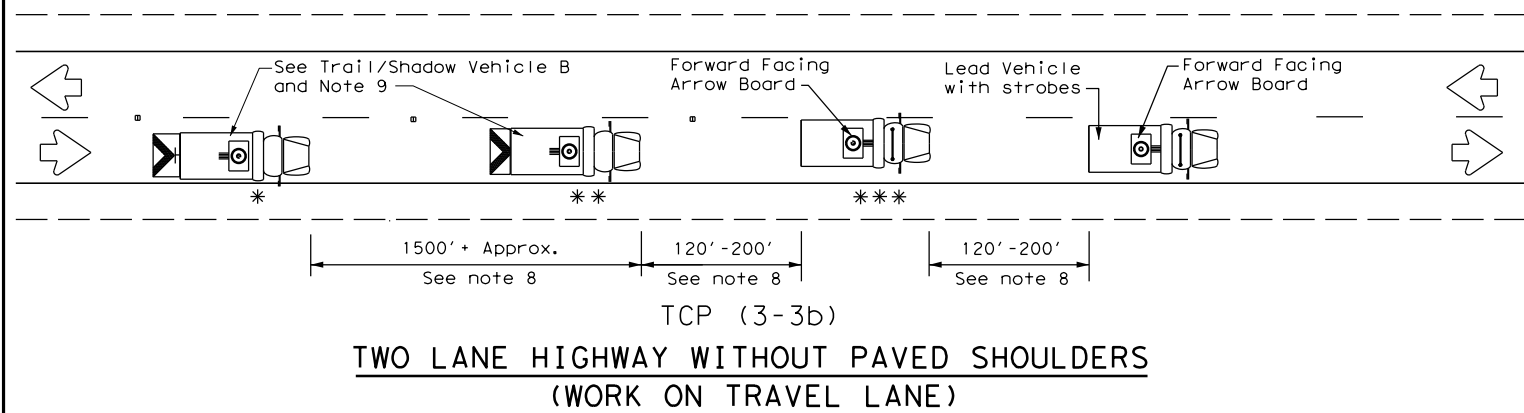
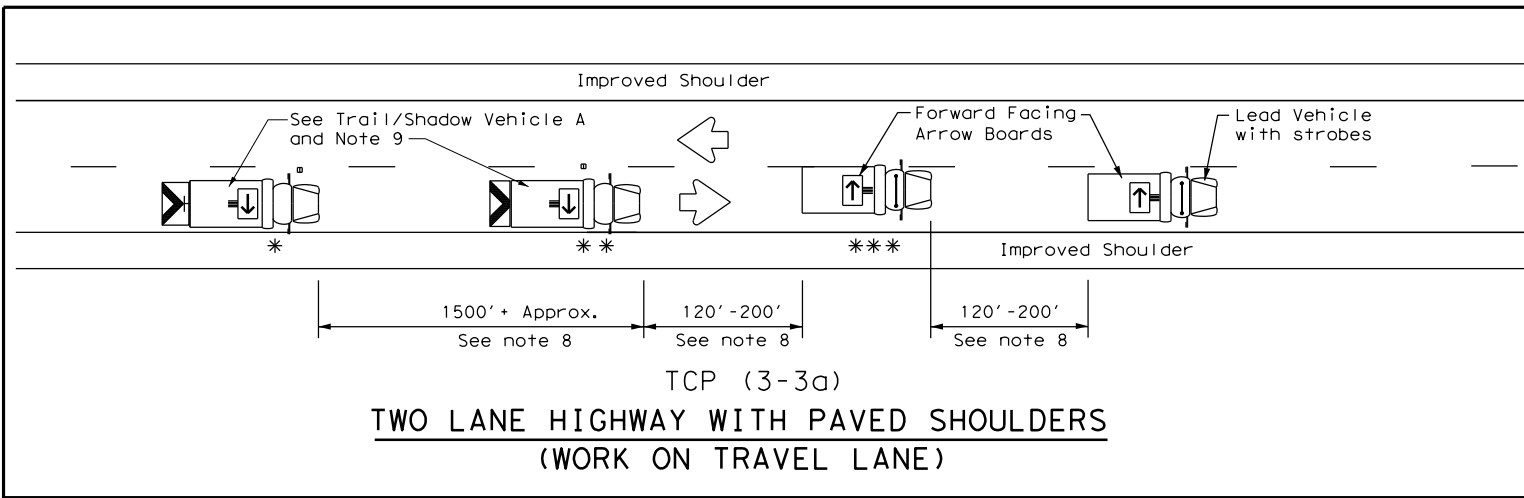
TCP (3-1) - 13

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© TxDOT	December 1985	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0915	46	052	CORDOVA				
2-94	4-98								
8-95	7-13								
1-97									
		DIST	COUNTY		SHEET NO.				
		SAT	GUADALUPE		141				



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DATE: 11/17/2023 5:50:02 PM
 FILE: P:\127\75\00\Design\Civil\Standards\TCP\tcp3-3.dgn



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 (CW20-5dT) sign should be used on the Advance Warning Vehicle. As an option, a portable changeable message sign (PCMS) or truck mounted changeable message sign (TMCMS) with a minimum character height of 12", and displaying the same legend may be substituted for these signs. An appropriate directional arrow display, simulating the size and legibility of the flashing arrow board may be used in the second phase of the PCMS/TMCMS message. When this is done, the arrow board will not be required on the Advance Warning Vehicle.
11. A double arrow shall not be displayed on the arrow board on the Advance Warning Vehicle.
12. For divided highways with three or four lanes in each direction, use TCP(3-2).
13. Standard diamond shape versions of the CW20-5 series signs may be used as an option if the rectangular signs shown are not available.
14. The Advance Warning Vehicle may straddle the edgeline when Shoulder width makes it necessary.
15. On two-lane two-way roadways, the work and protection vehicles should pull over periodically to allow motor vehicle traffic to pass. If motorists are not allowed to pass the work convoy, a DO NOT PASS (R4-1) sign should be placed on the back of the rearmost protection vehicle.

Texas Department of Transportation

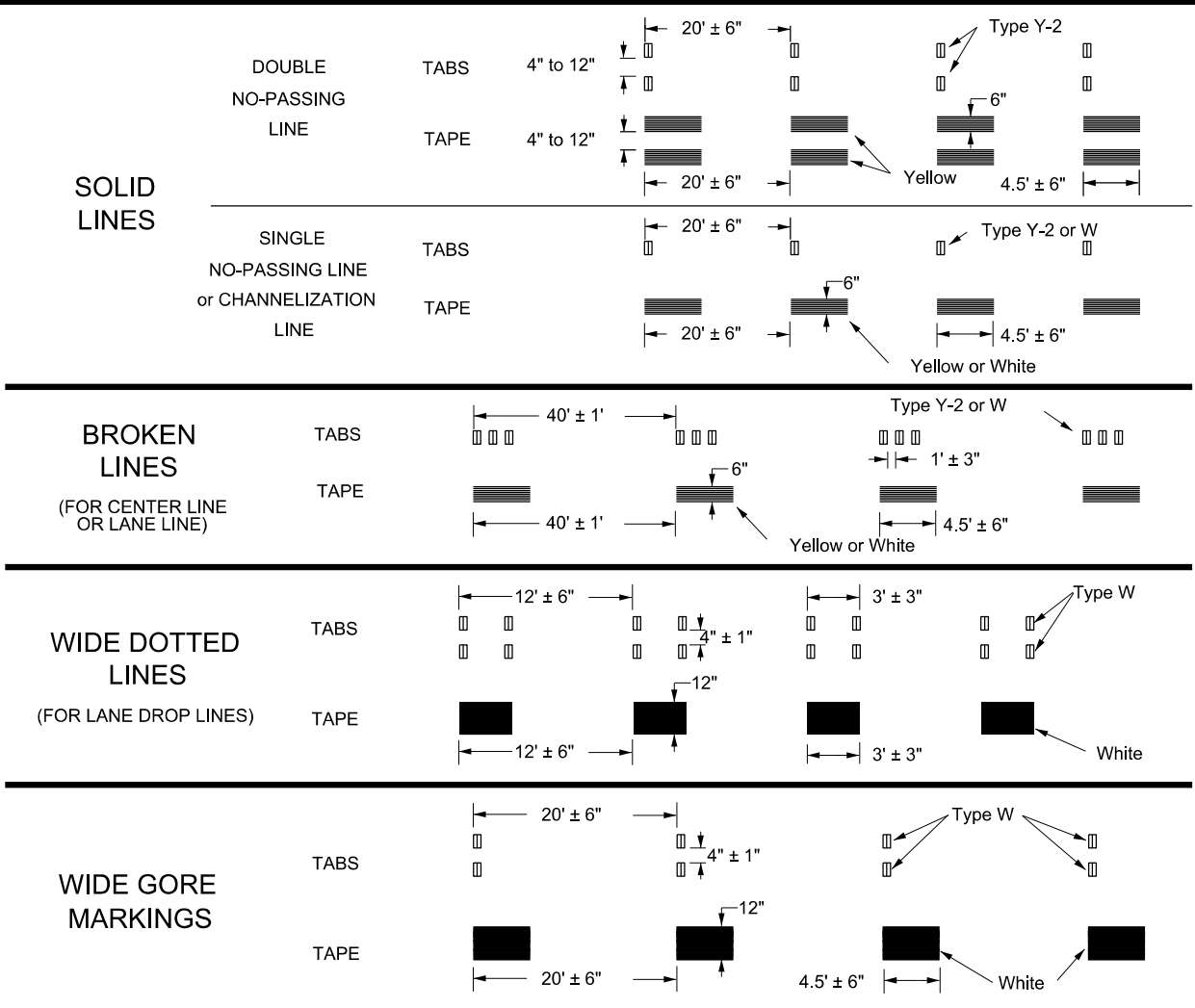
Traffic Operations Division Standard

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

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© TxDOT September 1987	CONT	SECT	JOB	HIGHWAY
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2-94 4-98	DIST	COUNTY	SHEET NO.	
8-95 7-13	SAT	GUADALUPE	142	
1-97 7-14				

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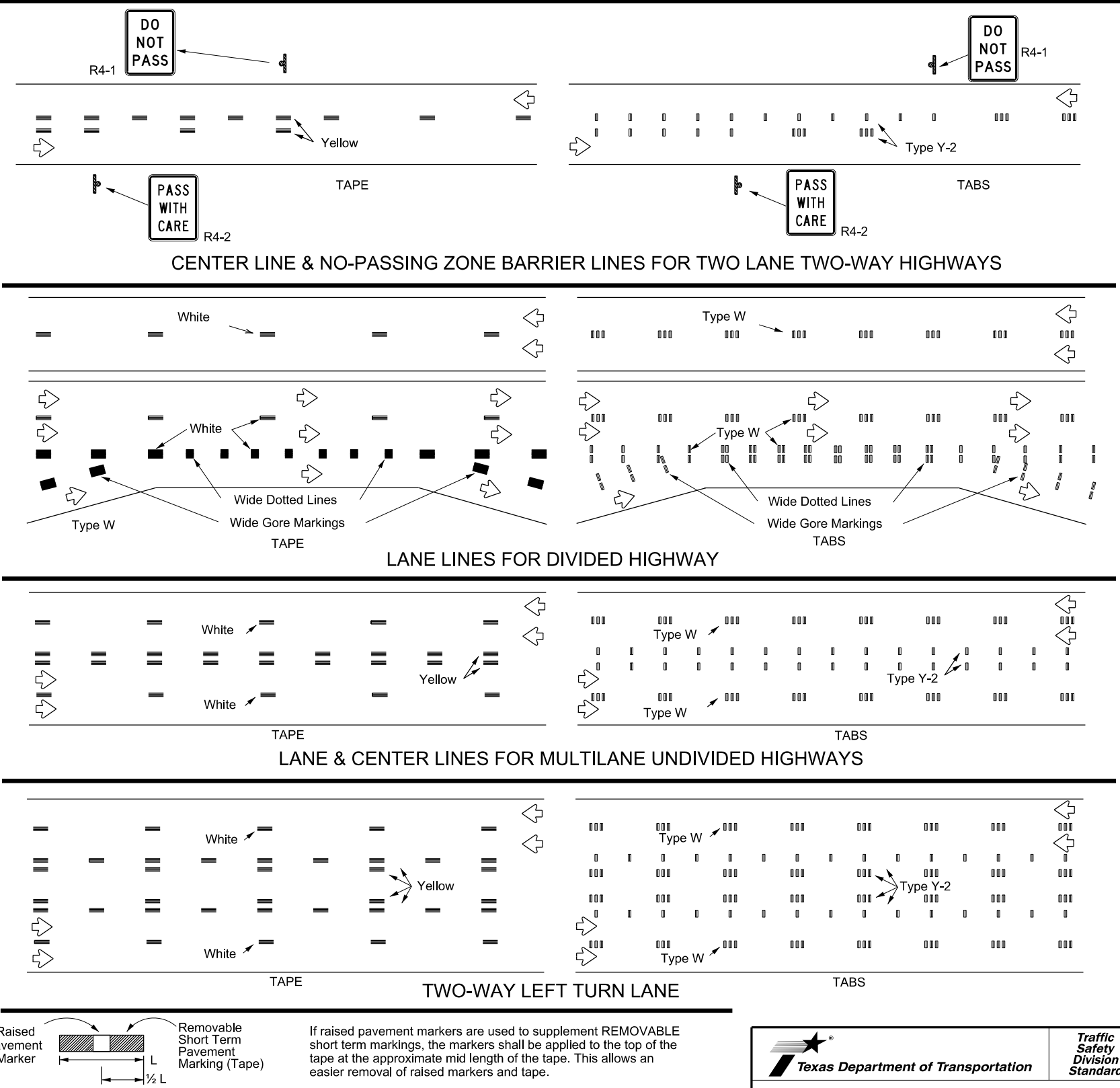
WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS



- 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. 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.

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

Texas Department of Transportation

Traffic Safety Division Standard

WORK ZONE SHORT TERM PAVEMENT MARKINGS

WZ(STPM)-23

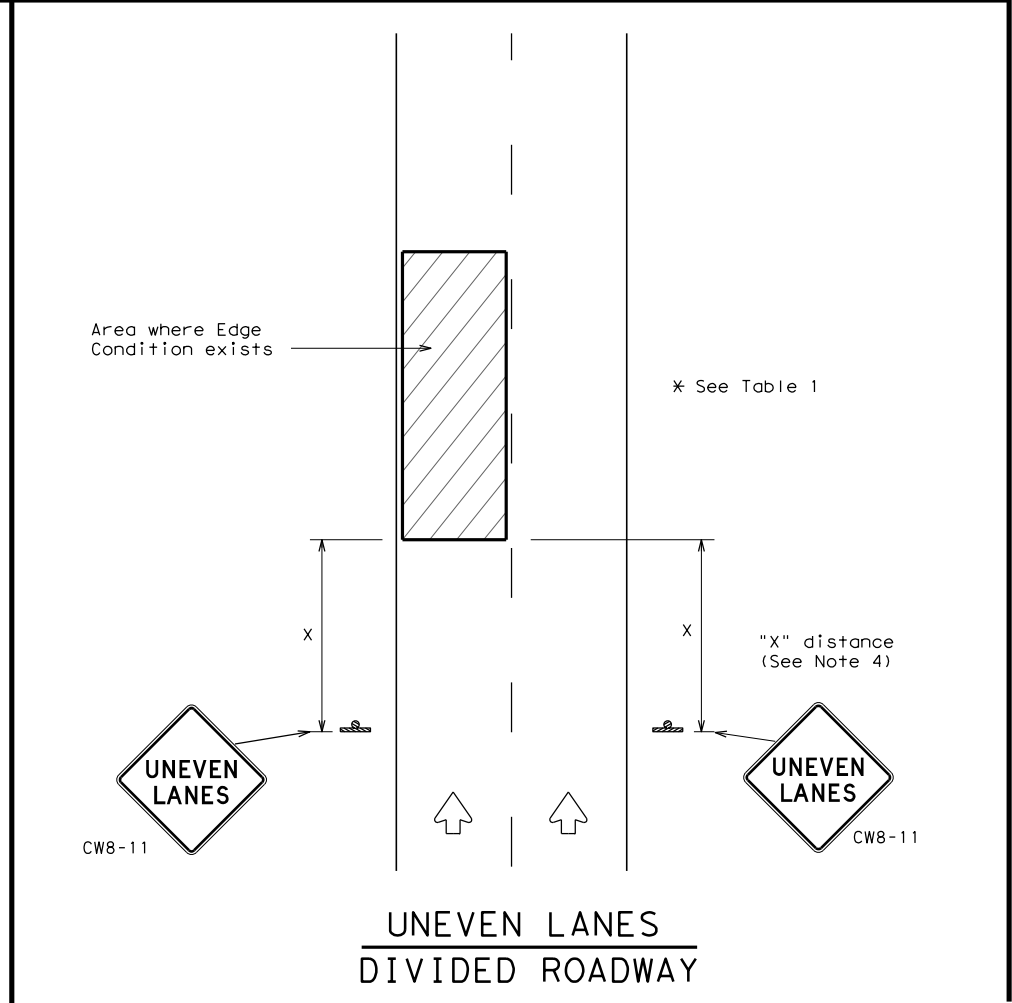
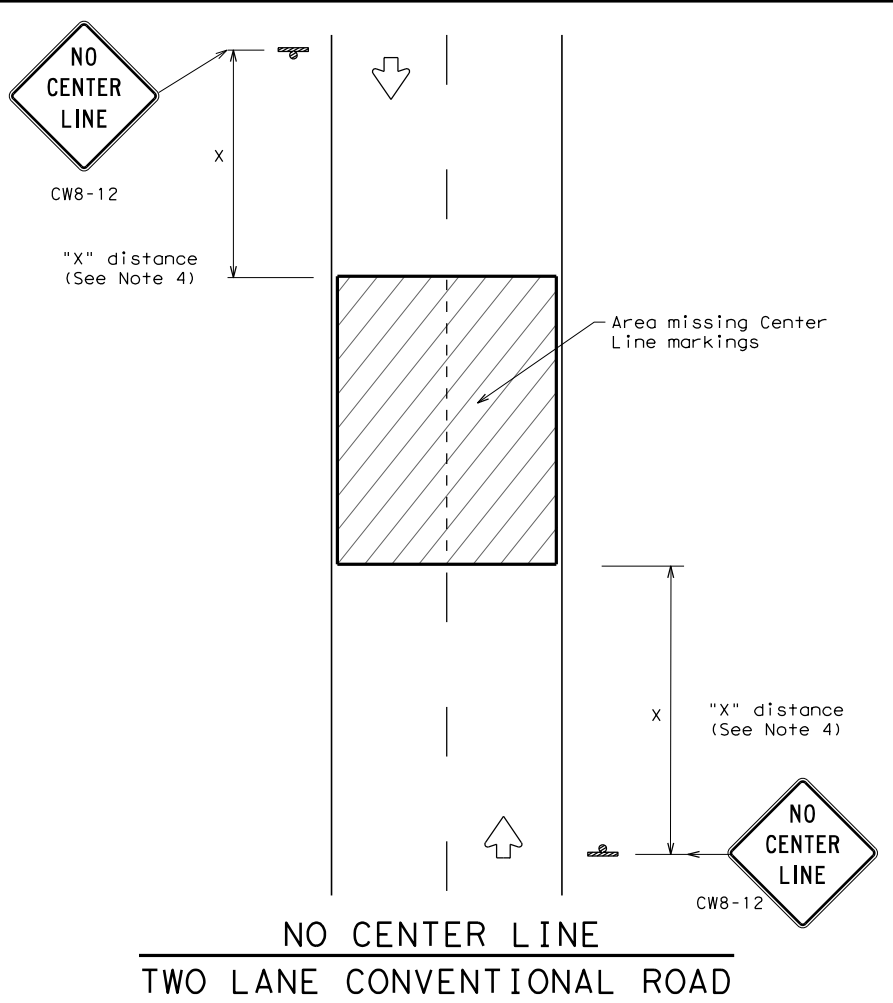
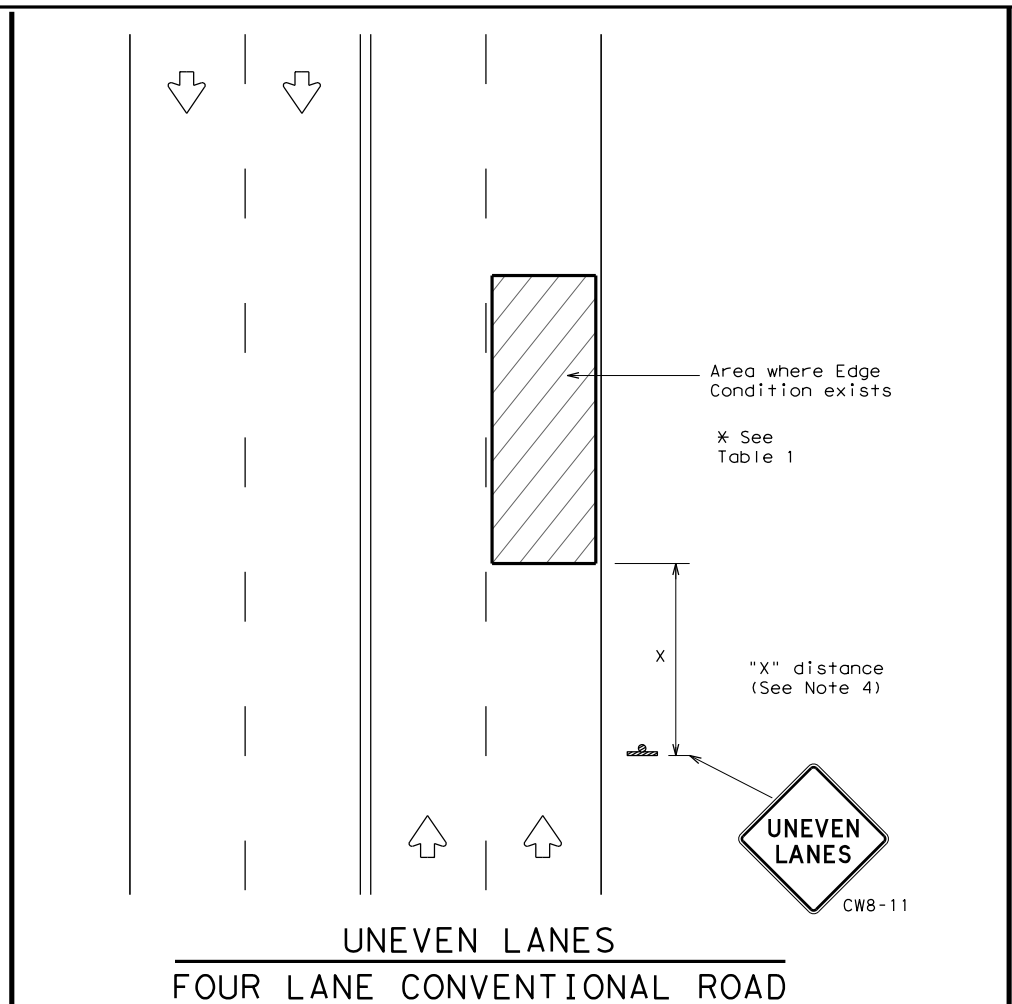
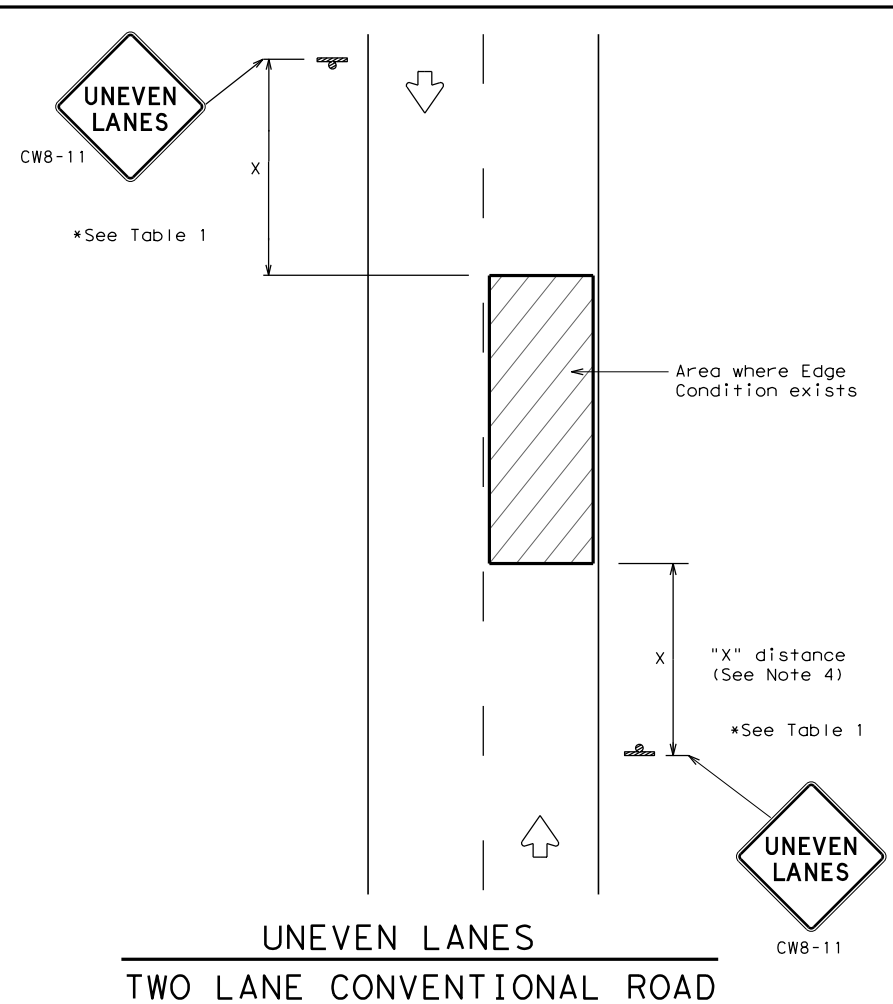
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© TxDOT February 2023	CONT: 0915	SECT: 46	JOB: 052	HIGHWAY: CORDOVA
REVISIONS: 4-92 7-13, 1-97 2-23, 3-03	DIST: SAT	COUNTY: GUADALUPE	SHEET NO.: 143	

111

DATE: FILE:

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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

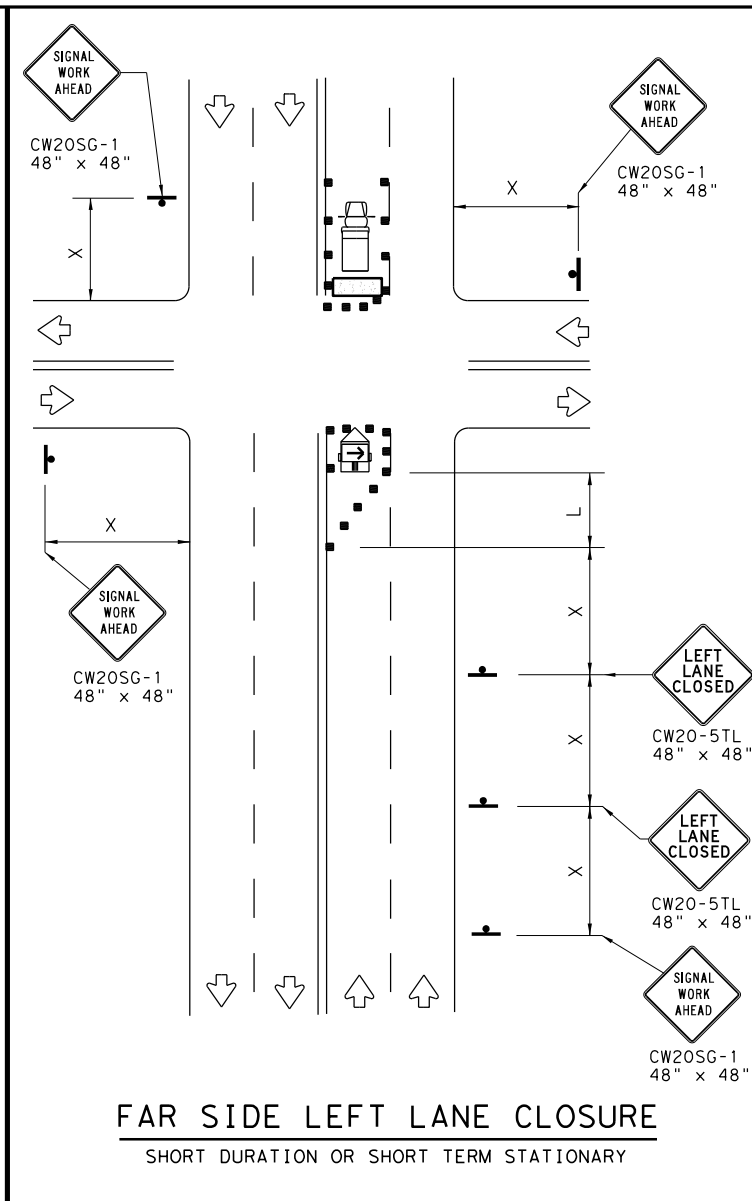
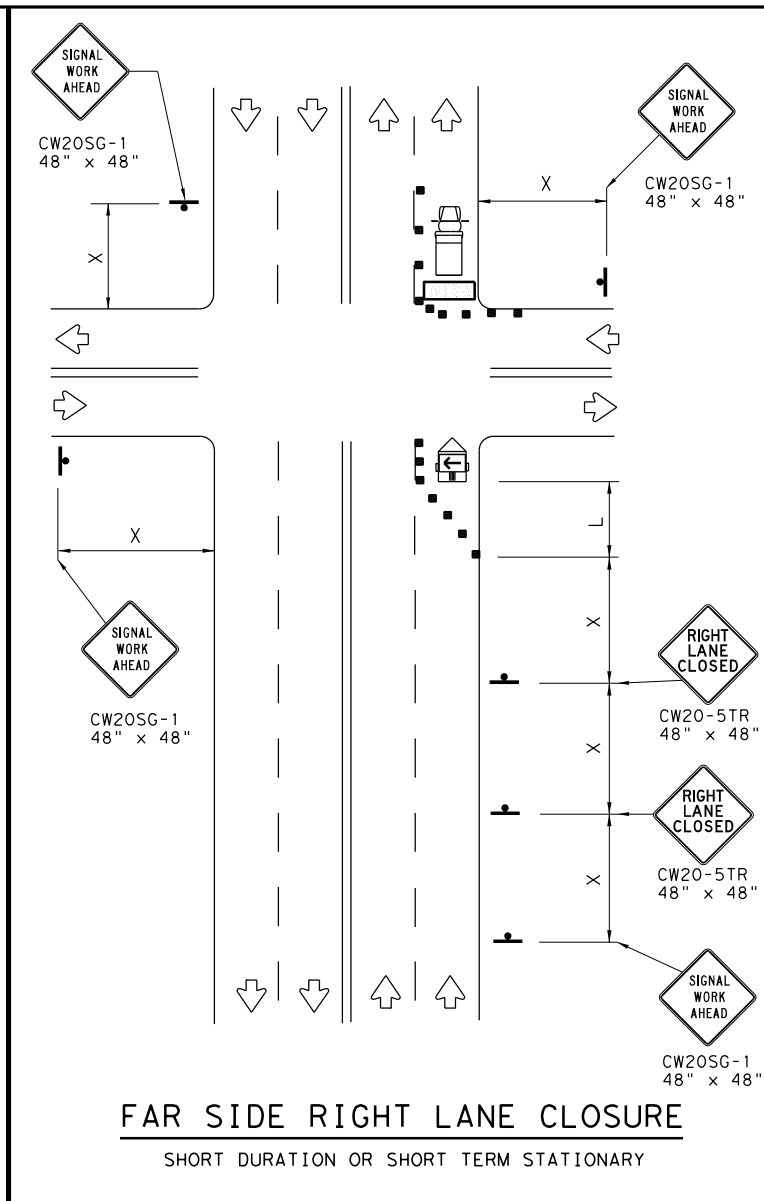
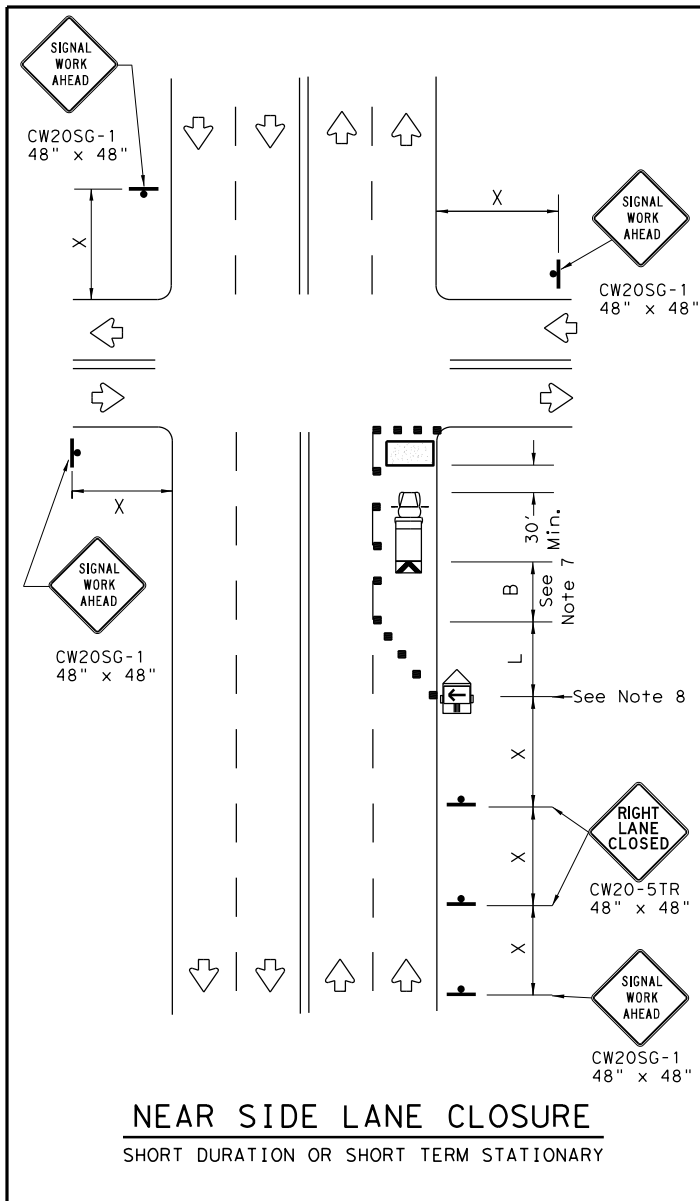
SIGNING FOR UNEVEN LANES

WZ (UL) - 13

FILE: wz1-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
8-95 2-98 7-13	DIST	COUNTY	SHEET NO.	
1-97 3-03	SAT	GUADALUPE	144	

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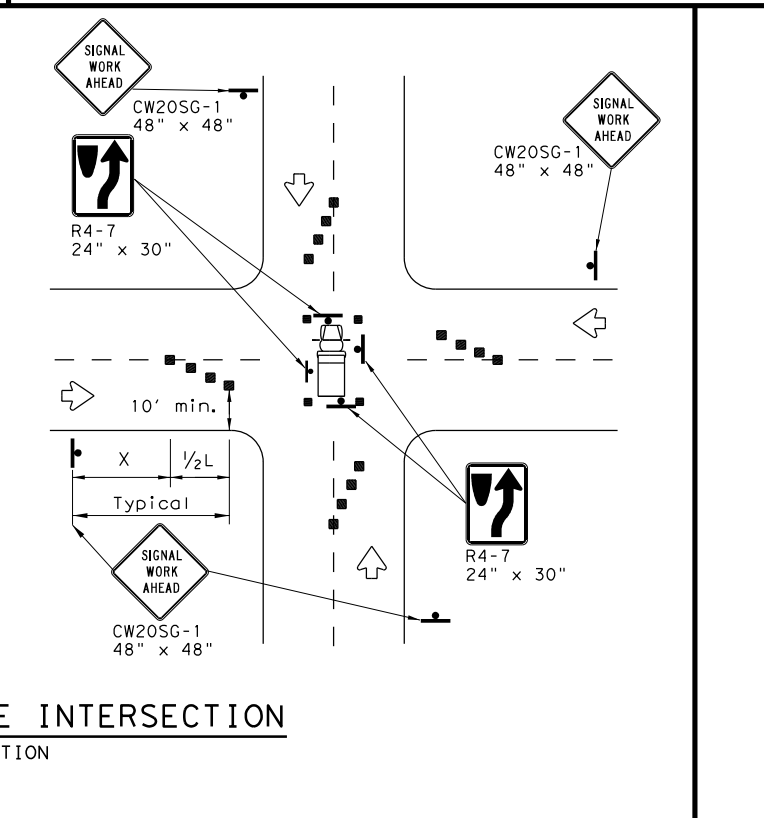
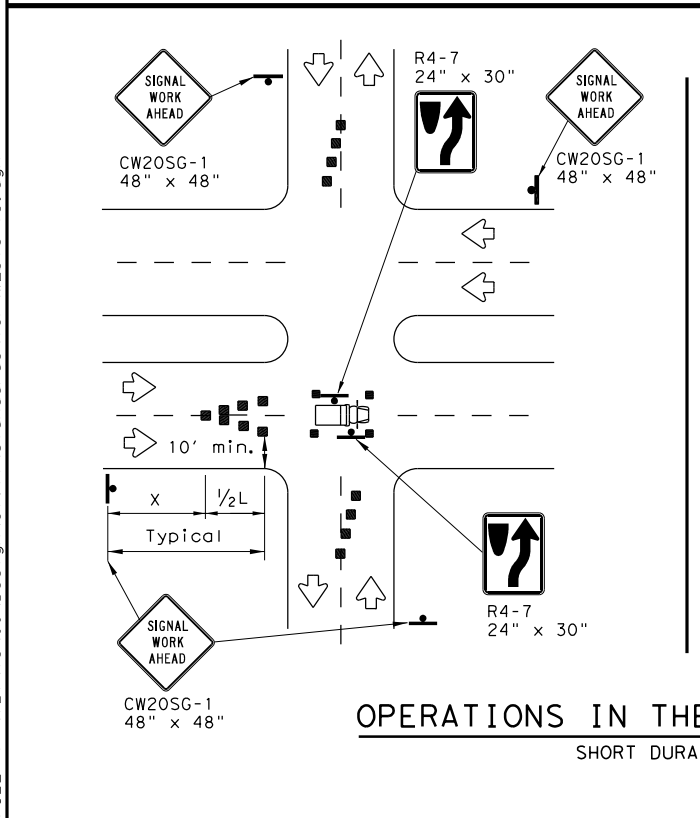


LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

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	$L = \frac{WS^2}{60}$	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.



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

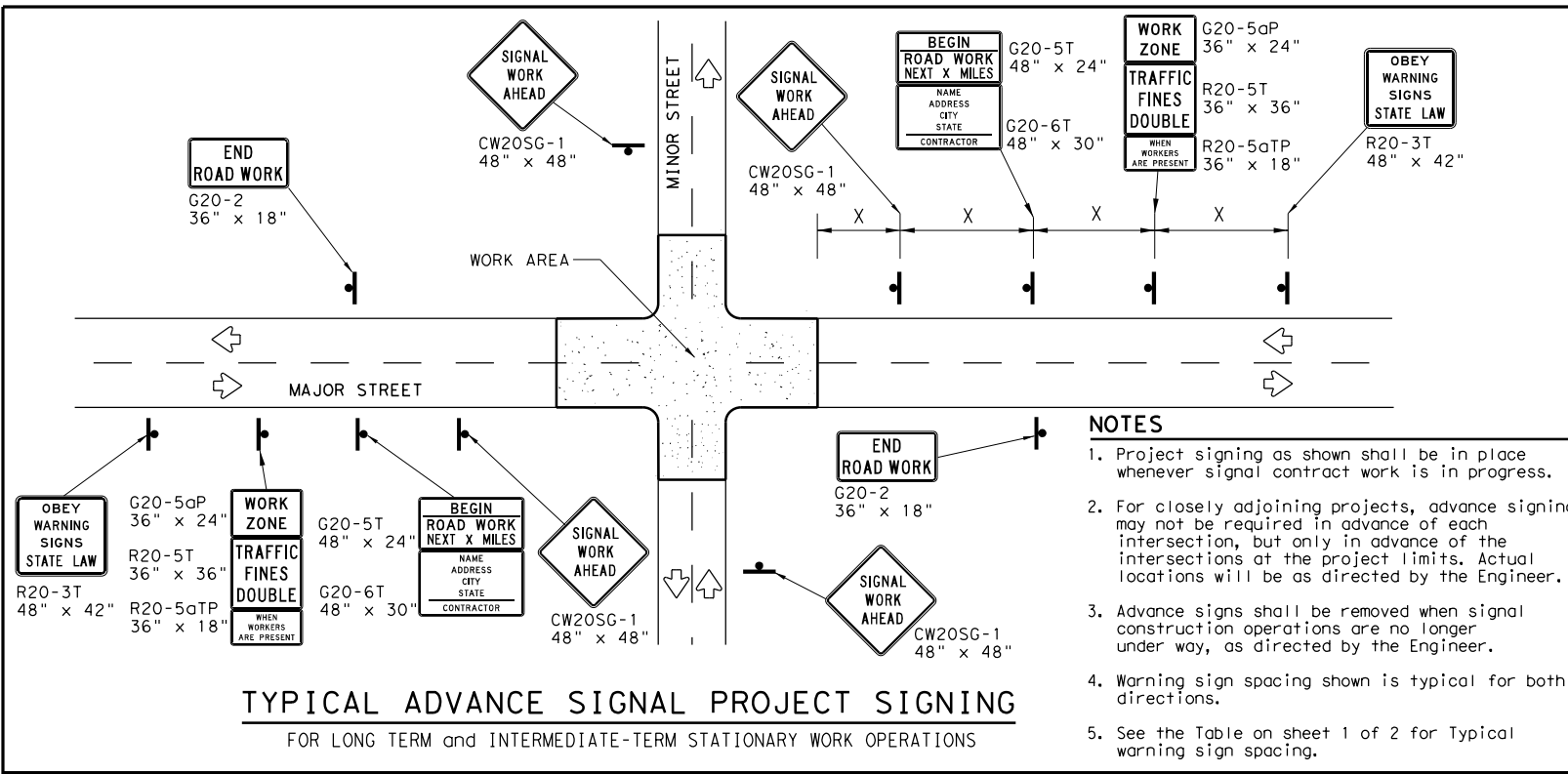
TRAFFIC SIGNAL WORK TYPICAL DETAILS

WZ(BTS-1)-13

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© TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
2-98 10-99 7-13	DIST	COUNTY	SHEET NO.	
4-98 3-03	SAT	GUADALUPE	145	

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TYPICAL ADVANCE SIGNAL PROJECT SIGNING
 FOR LONG TERM and INTERMEDIATE-TERM STATIONARY WORK OPERATIONS

- NOTES**
1. Project signing as shown shall be in place whenever signal contract work is in progress.
 2. For closely adjoining projects, advance signing may not be required in advance of each intersection, but only in advance of the intersections at the project limits. Actual locations will be as directed by the Engineer.
 3. Advance signs shall be removed when signal construction operations are no longer under way, as directed by the Engineer.
 4. Warning sign spacing shown is typical for both directions.
 5. See the Table on sheet 1 of 2 for Typical warning sign spacing.

GENERAL NOTES FOR WORK ZONE SIGNS

1. Signs shall be installed and maintained in a straight and plumb condition.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. Nails shall NOT be used to attach signs to any support.
5. All signs shall be installed in accordance with the plans or as directed by the Engineer.
6. The Contractor shall furnish the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD).
7. The Contractor shall furnish sign supports and substrates listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD), installed as per the manufacturer's recommendations.
8. Temporary signs that have damaged or cracked substrates and/or damaged or marred reflective sheeting shall be replaced as directed by the Engineer.
9. Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1".
10. Damaged wood posts shall be replaced. Splicing wood posts will not be allowed.

DURATION OF WORK

1. Work zone durations are defined in Part 6, Section 6G.02 of the Texas Manual on Uniform Traffic Control Devices (TMUTCD).

SIGN MOUNTING HEIGHT

1. Sign height of Long-term/Intermediate-term warning signs shall be as shown on Figure 6F-1 of the TMUTCD.
2. Sign height of Short-term/Short Duration warning signs shall be as shown on Figure 6F-2 of the TMUTCD.
3. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered, unless otherwise approved by the Engineer.
2. When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night without damaging the sign sheeting. Burlap, or heavy materials such as plywood or aluminum shall not be used to cover signs.
3. Duct tape or other adhesive material shall NOT be affixed to a sign face.
4. Signs and anchor stubs shall be removed and holes back filled upon completion of the work.

REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the requirements of the DMS and color usage table shown on this sheet.

SIGN SUPPORT WEIGHTS

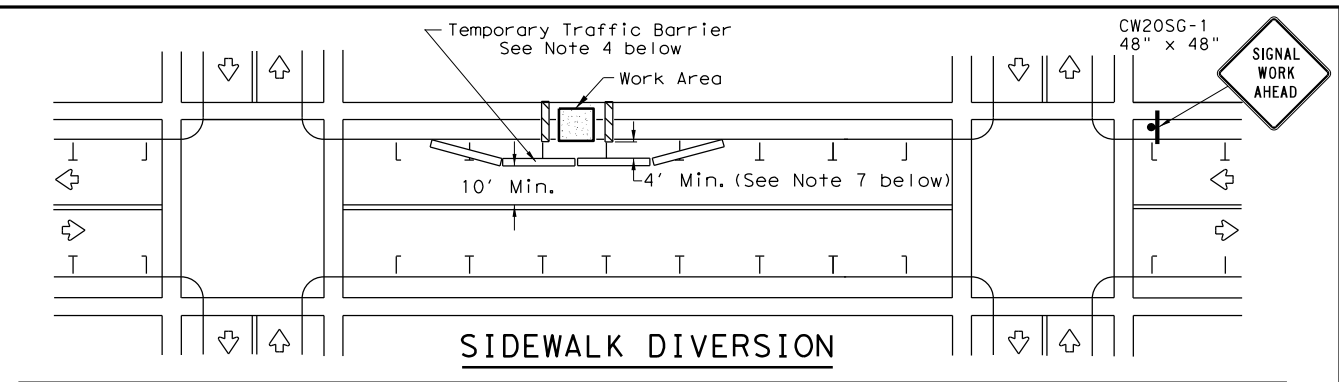
1. Weights used to keep signs from turning over should be sandbags filled with dry, cohesionless material.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects will not be permitted for use as sign support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

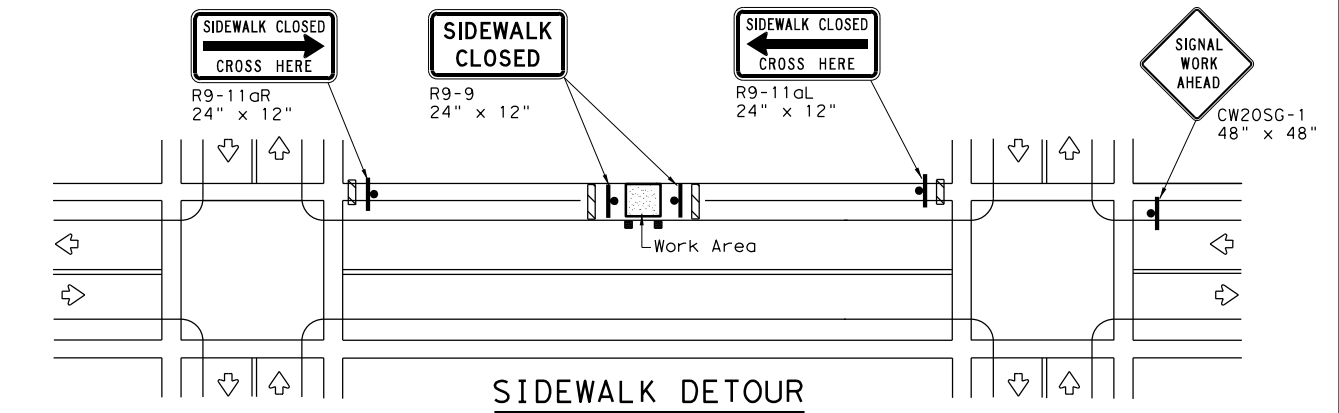
DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN FACE MATERIALS	DMS-8300
FLEXIBLE ROLL-UP REFLECTIVE SIGNS	DMS-8310

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

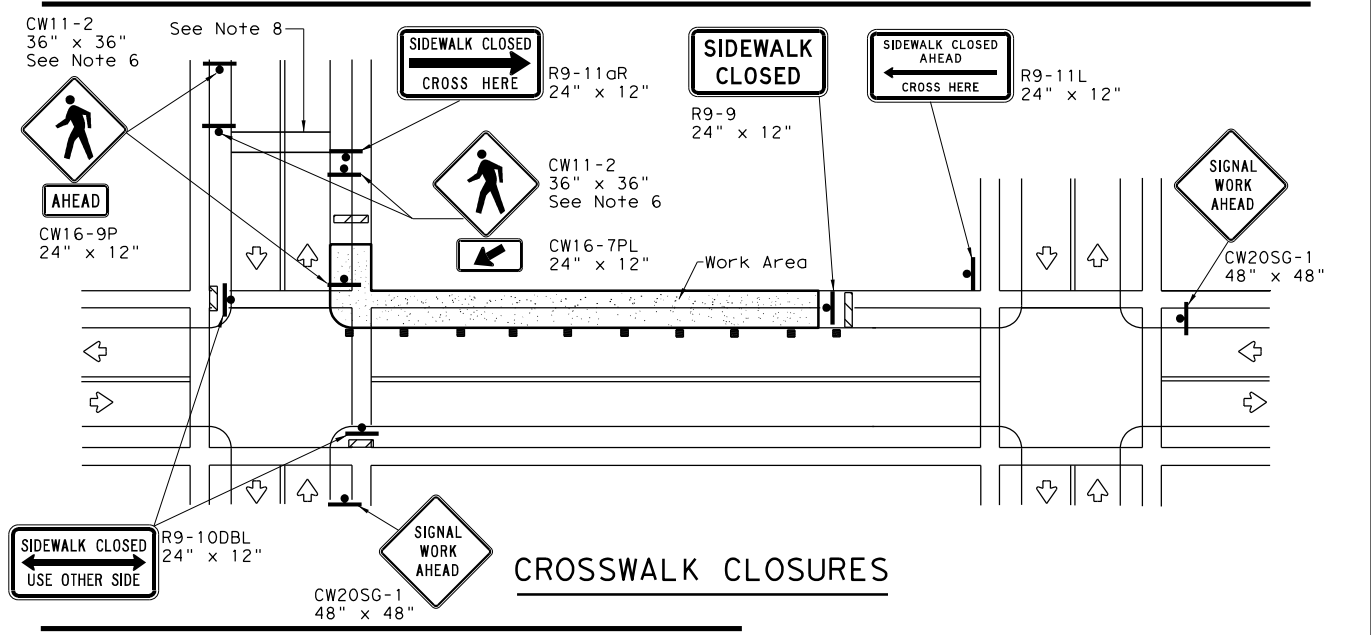
Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found at the following web address:
http://www.txdot.gov/txdot_library/publications/construction.htm



SIDEWALK DIVERSION



SIDEWALK DETOUR



CROSSWALK CLOSURES

PEDESTRIAN CONTROL

1. Holes, trenches or other hazards shall be adequately protected by covering, delineating or surrounding the hazard with orange plastic pedestrian fencing or longitudinal channelizing devices, or as directed by the Engineer.
2. "CROSSWALK CLOSURES" as detailed above will require the Engineer's approval prior to installation.
3. R9 series signs shown may be placed on supports detailed on the BC standards or CWZTCD list, or when fabricated from approved lightweight plastic substrates, they may be mounted on top of a plastic drum at or near the location shown.
4. For speeds less than 45 mph longitudinal channelizing devices may be used instead of traffic barriers when approved by the Engineer. Attenuation of blunt ends and installation of water filled devices shall be as per BC(9) and manufacturer's recommendations.
5. Location of devices are for general guidance. Actual device spacing and location must be field adjusted to meet actual conditions.
6. Where pedestrians with visual disabilities normally use the closed sidewalk Detectable Pedestrian Barricades should be used instead of the Type 3 Barricades shown.
7. The width of existing sidewalk should be maintained if practical.
8. Pavement markings for mid-block crosswalks shall be paid for under the appropriate bid items.
9. When crosswalks or other pedestrian facilities are closed or relocated, temporary facilities shall be detectable and shall include accessibility features consistent with the features present in the existing pedestrian facility.

SHEET 2 OF 2



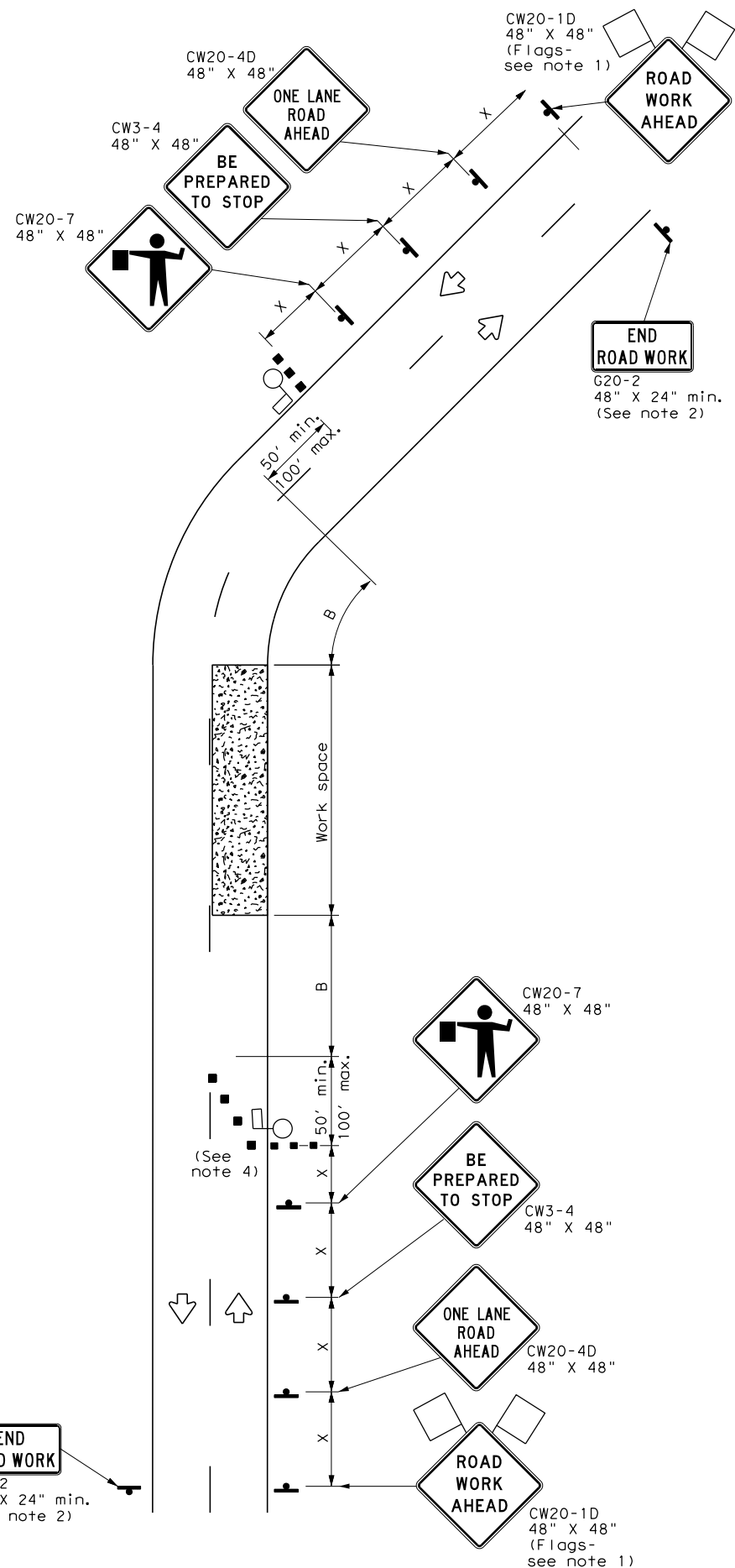
TRAFFIC SIGNAL WORK BARRICADES AND SIGNS

WZ (BTS-2) - 13

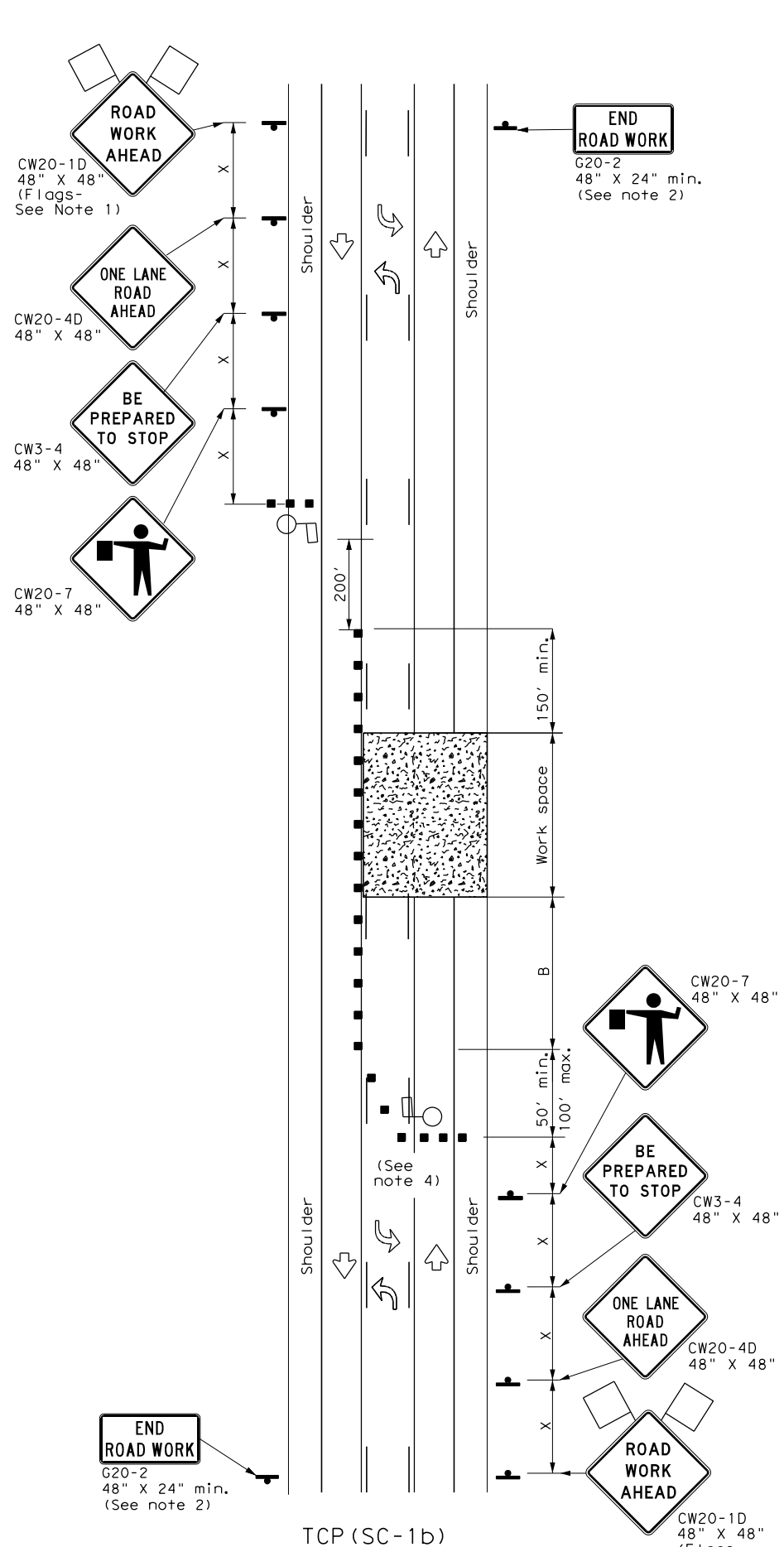
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© TxDOT	April 1992	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0915	46	052	CORDOVA				
2-98	10-99	7-13	DIST		COUNTY	SHEET NO.			
4-98	3-03	SAT		GUADALUPE		146			

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TCP (SC-1a)
 ONE LANE TWO-WAY (TWO LANES)
 CONTROL WITH PILOT VEHICLE



TCP (SC-1b)
 ONE LANE TWO-WAY (THREE LANES)
 CONTROL WITH PILOT VEHICLE
 AND CHANNELIZING DEVICES

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 Distance "x"	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
		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'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45		450'	495'	540'	45'	90'	320'	195'	360'
50	L=WS	500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

* Conventional Roads Only
 ** Taper lengths have been rounded off.
 L = Length of Taper (FT) W = Width of Offset (FT) S = Posted Speed (MPH)

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

GENERAL NOTES

- Flags attached to signs where shown are REQUIRED.
- All traffic control devices illustrated are REQUIRED, except: if project signing is present, END ROAD WORK (G20-2) sign is optional with approval by the Engineer.
- Sign spacing may be increased or an additional ROAD WORK AHEAD (CW20-1D) sign may be used if advance warning ahead of the flagger is less than 1500 feet.
- Flaggers should use two-way radios or other methods of communication at all times for traffic control coordination.
- Flaggers should use 24" STOP (CW20-8) / SLOW (CW20-8aT) paddles to control traffic. Flags should be limited to emergency situations.
- If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).
- If the seal coat operation crosses intersections, traffic in these areas must be controlled. Care must be taken to prevent vehicles from crossing the asphalt before the aggregate is placed. This may require positioning additional traffic control personnel (flaggers) at the intersection.
- Temporary rumble strips are not required on seal coat operations.
- The pilot car is used to guide vehicles through traffic control zone. The pilot car shall have an identification name displayed and PILOT CAR, FOLLOW ME (G20-4) sign or message board mounted in a conspicuous position on rear.

TCP (SC-1a)

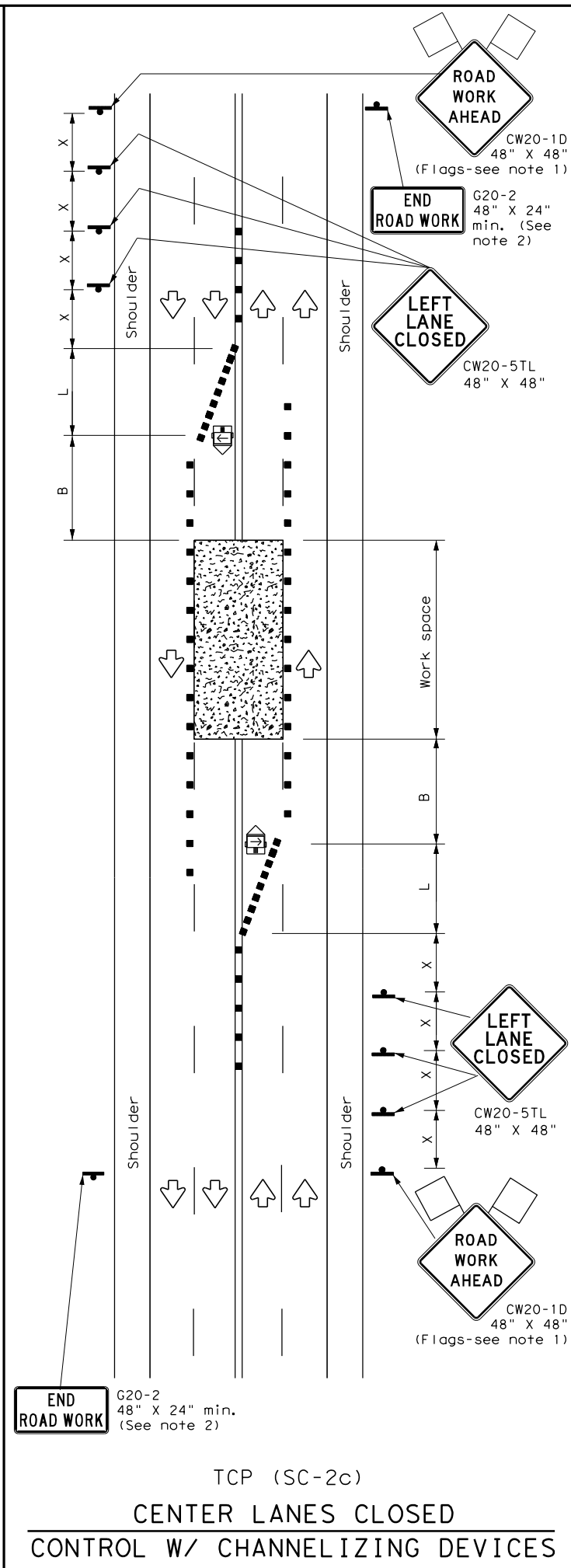
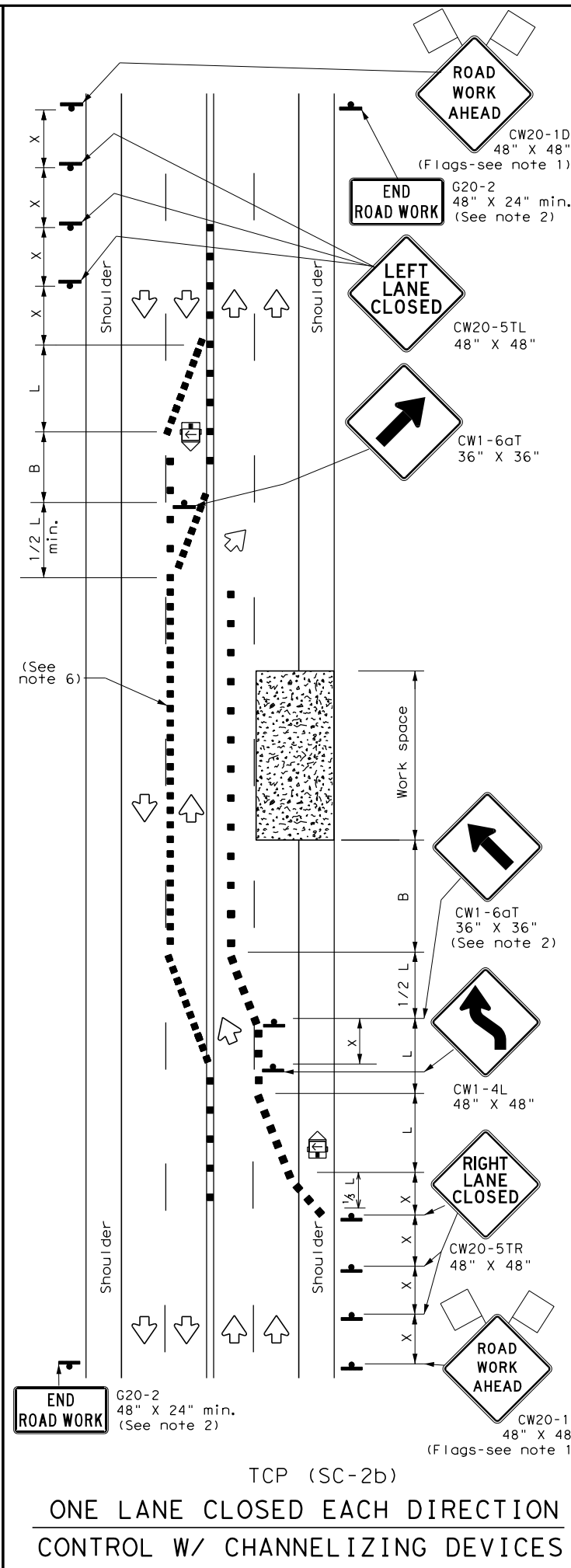
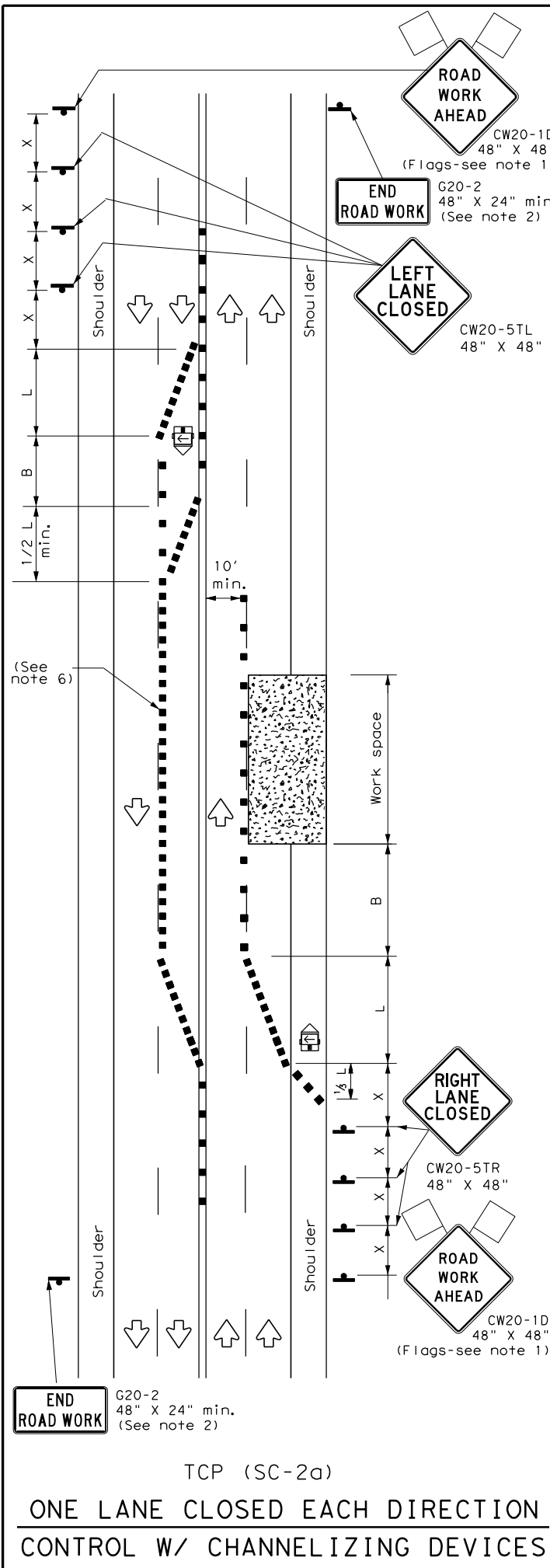
- Channelizing devices on the centerline are not required when a pilot car is leading traffic, unless directed by the Engineer.

SHEET 1 OF 8

		Traffic Safety Division Standard	
TRAFFIC CONTROL PLAN SEAL COAT OPERATIONS ONE-LANE TWO-WAY TCP (SC-1) - 22			
FILE: tcpssc-1-22.dgn	DN:	CK:	DW:
© TxDOT October 2022	CON:	SECT:	JOB:
REVISIONS	0915	46	052
4-21	DIST:	COUNTY:	SHEET NO.
10-22	SAT	GUADALUPE	147

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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 Distance "X"	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	L = WS	265'	295'	320'	40'	80'	240'	155'
45		450'	495'	540'	45'	90'	320'	195'
50	L = WS	500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60	L = WS	600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70	L = WS	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: if project signing is present, END ROAD WORK (G20-2) sign is optional with approval by the Engineer.
 - The ROAD WORK AHEAD (CW20-1D) sign may be repeated if the visibility of the work zone is less than 1500 feet.
 - If the seal coat operation crosses intersections, traffic in these areas must be controlled. Care must be taken to prevent vehicles from crossing the asphalt before the aggregate is placed. This may require positioning additional traffic control personnel (flaggers) at the intersection.
 - Temporary rumble strips are not required on seal coat operations.
- TCP (SC-2a) and (SC-2b)**
- Channelizing devices which separate two-way traffic shall be spaced on tapers at:
 - 20 feet;
 - 15 feet when posted speeds are 35 mph or slower; or
 - at 1/2(S) for tangent sections.
 This tighter device spacing is intended for the areas of conflicting markings, not the entire work zone.

SHEET 2 OF 8

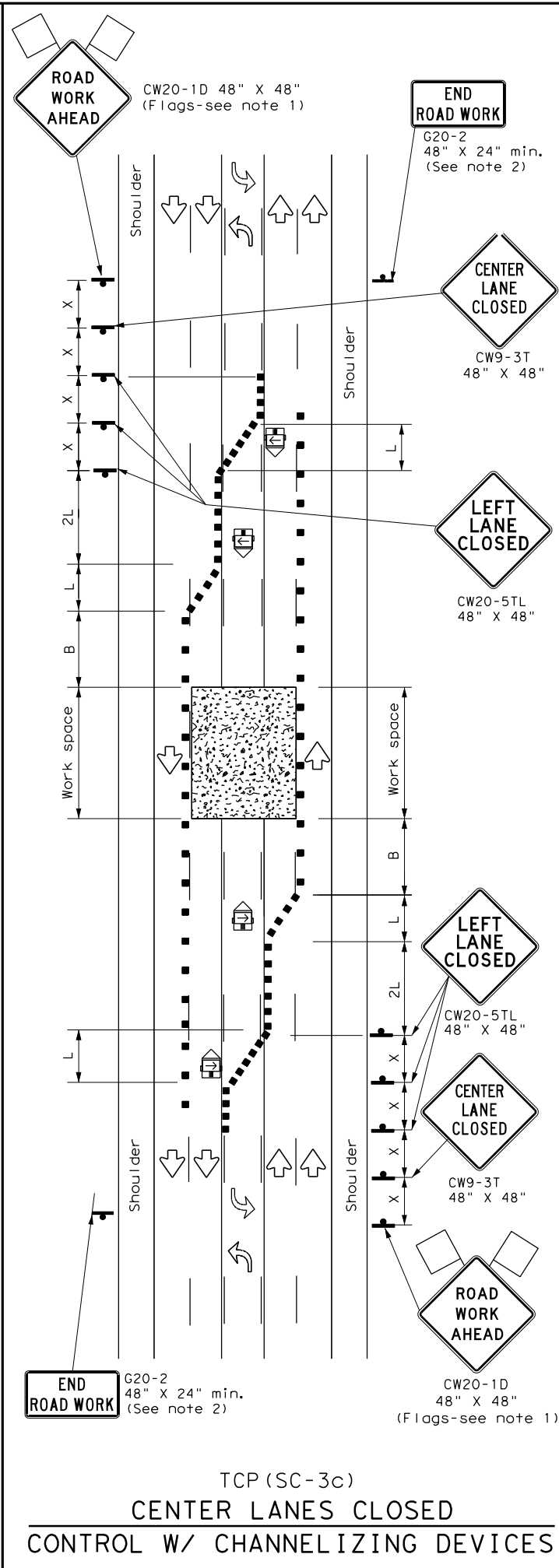
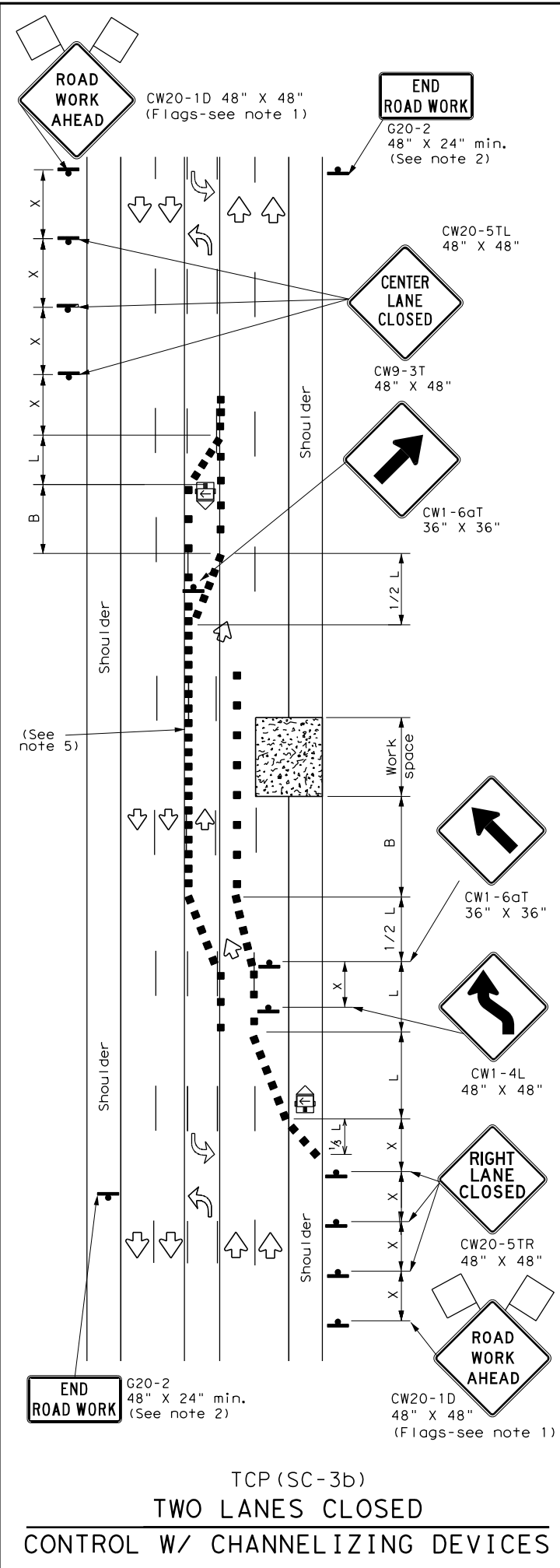
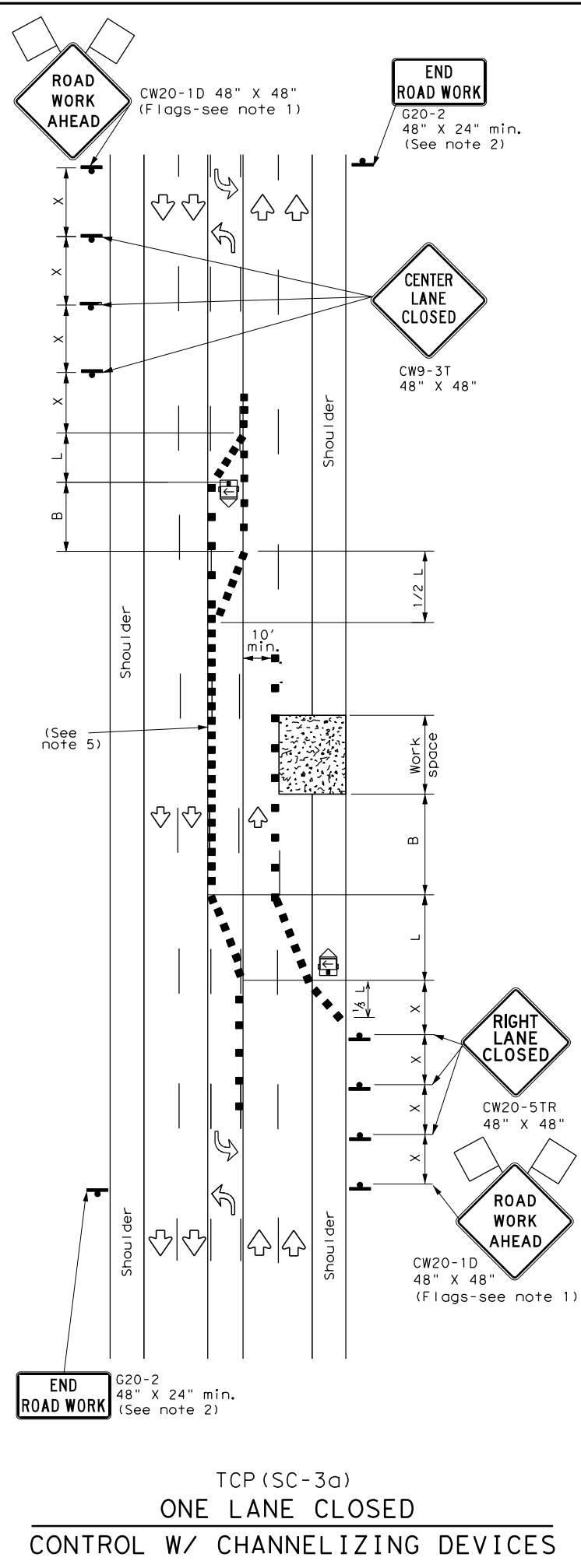
Texas Department of Transportation
 Traffic Safety Division Standard

**TRAFFIC CONTROL PLAN
 SEALCOAT OPERATIONS
 MULTILANE ROADS
 (UNDIVIDED)
 TCP (SC-2) -22**

FILE: tcpsc-2-22.dgn	DN:	CK:	DW:	CK:
© TxDOT October 2022	CON:	SECT:	JOB:	HIGHWAY:
REVISIONS	0915	46	052	CORDOVA
4-21	DIST:	COUNTY:	SHEET NO.:	
10-22	SAT	GUADALUPE	148	

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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 Distance "X"	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: if project signing is present, END ROAD WORK (G20-2) sign is optional with approval by the Engineer.
 - If the seal coat operation crosses intersections, traffic in these areas must be controlled. Care must be taken to prevent vehicles from crossing the asphalt before the aggregate is placed. This may require positioning additional traffic control personal (flaggers) at the intersection.
 - Temporary rumble strips are not required on seal coat operations.
- TCP (SC-3a) and (SC-3b)
- Channelizing devices which separate two-way traffic shall be spaced on tapers at:
 - 20 feet;
 - 15 feet when posted speeds are 35 mph or slower; or
 - at 1/2(S) for tangent sections.
 This tighter device spacing is intended for the areas of conflicting markings, not the entire work zone.

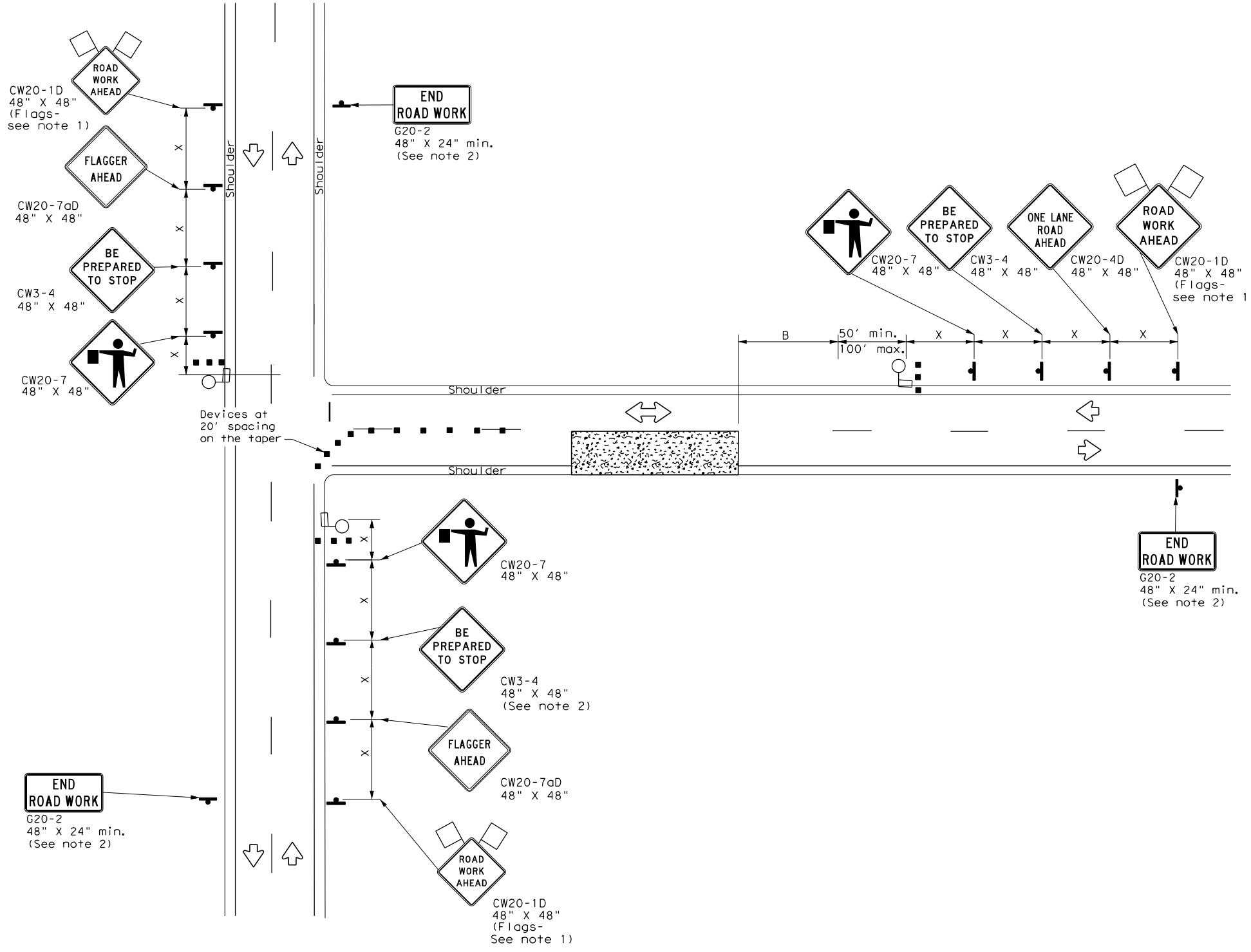
Texas Department of Transportation
 Traffic Safety Division Standard

**TRAFFIC CONTROL PLAN
SEAL COAT OPERATIONS
MULTILANE ROADS
(W/ CENTER LEFT TURN LANE)
TCP (SC-3) - 22**

FILE: tcpssc-3-22.dgn	DN:	CK:	DW:	CK:
© TxDOT October 2022	CON:	SECT:	JOB:	HIGHWAY:
REVISIONS	0915	46	052	CORDOVA
4-21	DIST:	COUNTY:	SHEET NO.:	
10-22	SAT	GUADALUPE	149	

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**ONE LANE TWO-WAY (T-INTERSECTION)
 CONTROL WITH PILOT VEHICLE**

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 X	Formula	Minimum Desirable Taper Lengths X X			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing Distance "X"	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
		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'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L = WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

* Conventional Roads Only
 ** Taper lengths have been rounded off.
 L = Length of Taper (FT) W = Width of Offset (FT) S = Posted Speed (MPH)

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

GENERAL NOTES

- Flags attached to signs where shown are REQUIRED.
- All traffic control devices illustrated are REQUIRED, except: if project signing is present, END ROAD WORK (G20-2) sign is optional with approval by the Engineer.
- Flaggers should use two-way radios or other methods of communication at all times for traffic control coordination.
- Flaggers should use 24" STOP (CW20-8) / SLOW (CW20-8aT) paddles to control traffic. Flags should be limited to emergency situations.
- If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).
- Temporary rumble strips are not required on seal coat operations.
- The pilot car is used to guide vehicles through traffic control zone. The pilot car shall have an identification name displayed and PILOT CAR, FOLLOW ME (G20-4) sign or message board mounted in a conspicuous position on rear.

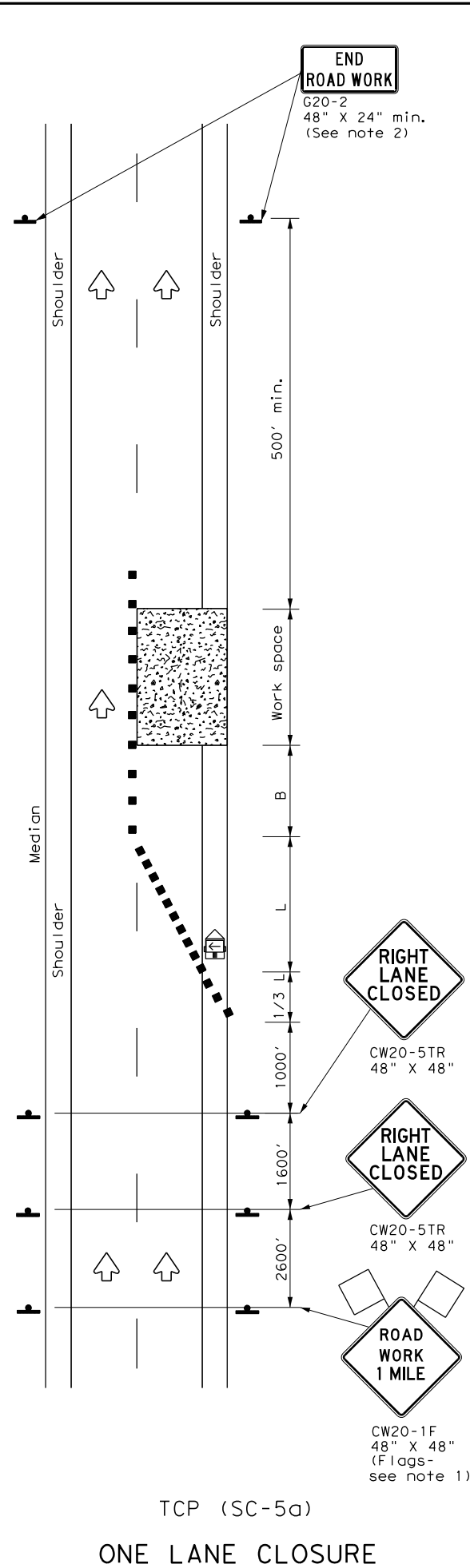


**TRAFFIC CONTROL PLAN
 SEAL COAT OPERATIONS
 NEAR INTERSECTION
 TCP (SC-4) - 22**

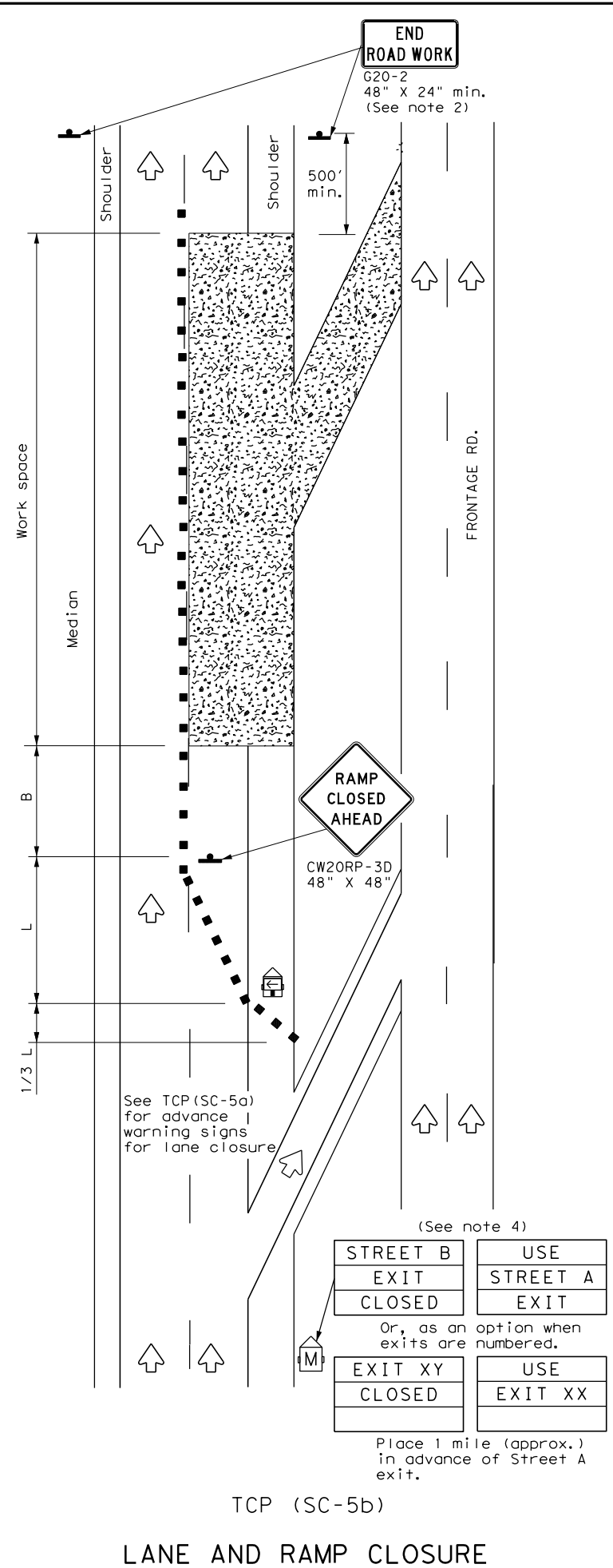
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© TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
4-21	DIST	COUNTY	SHEET NO.	
10-22	SAT	GUADALUPE	150	

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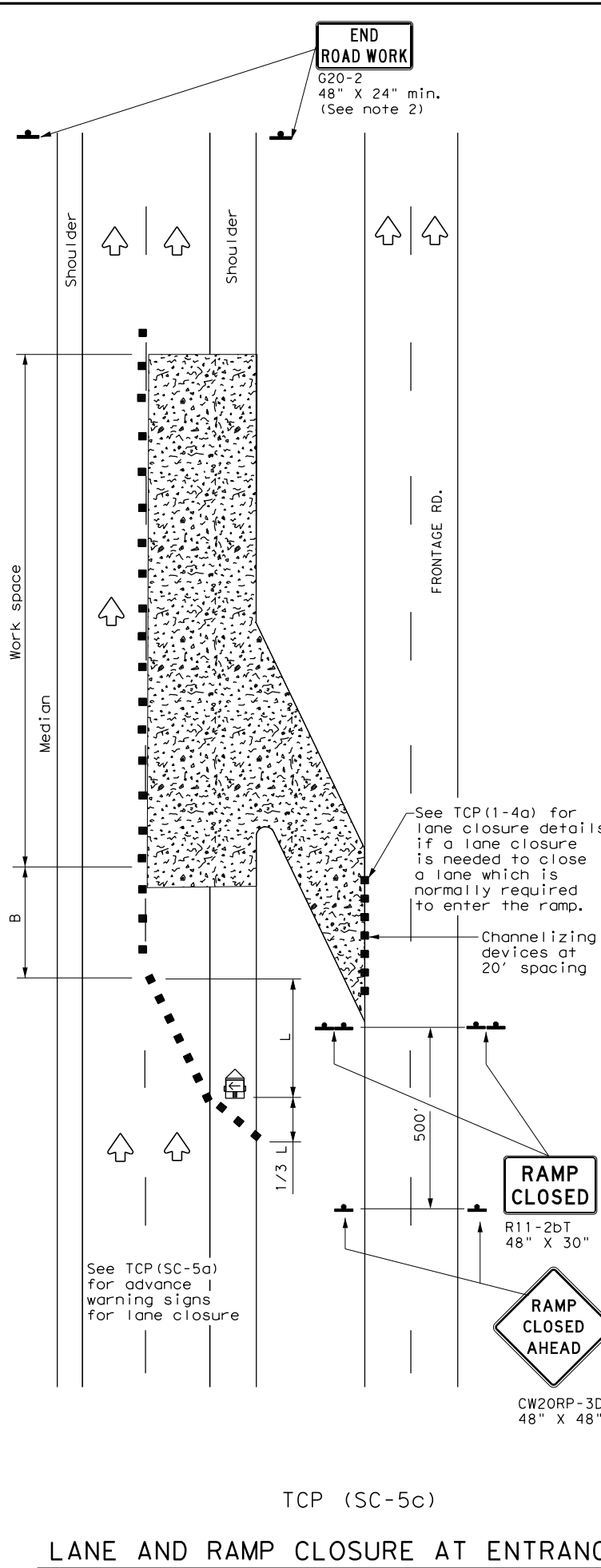
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TCP (SC-5a)
 ONE LANE CLOSURE



TCP (SC-5b)
 LANE AND RAMP CLOSURE
 AT EXIT RAMP



TCP (SC-5c)
 LANE AND RAMP CLOSURE AT ENTRANCE RAMP

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 Distance "X"	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:
 - If project signing is present, END ROAD WORK (G20-2) sign is optional with approval by the Engineer.
 - USE NEXT RAMP (CW25-1T) sign is optional with approval by the Engineer.
 - Channelizing devices used to close lanes may be supplemented with the Chevron Alignment Sign placed on every other channelizing device. Chevrons may be attached to plastic drums as per BC Standards.
 - The PCMS may be omitted if: it is replaced with a RAMP CLOSED AHEAD (CW20RP-3D) sign or when a permanent Dynamic Message Sign (DMS) is available in the appropriate location to display a similar message as called for on the PCMS.
 - Temporary rumble strips are not required on seal coat operations.



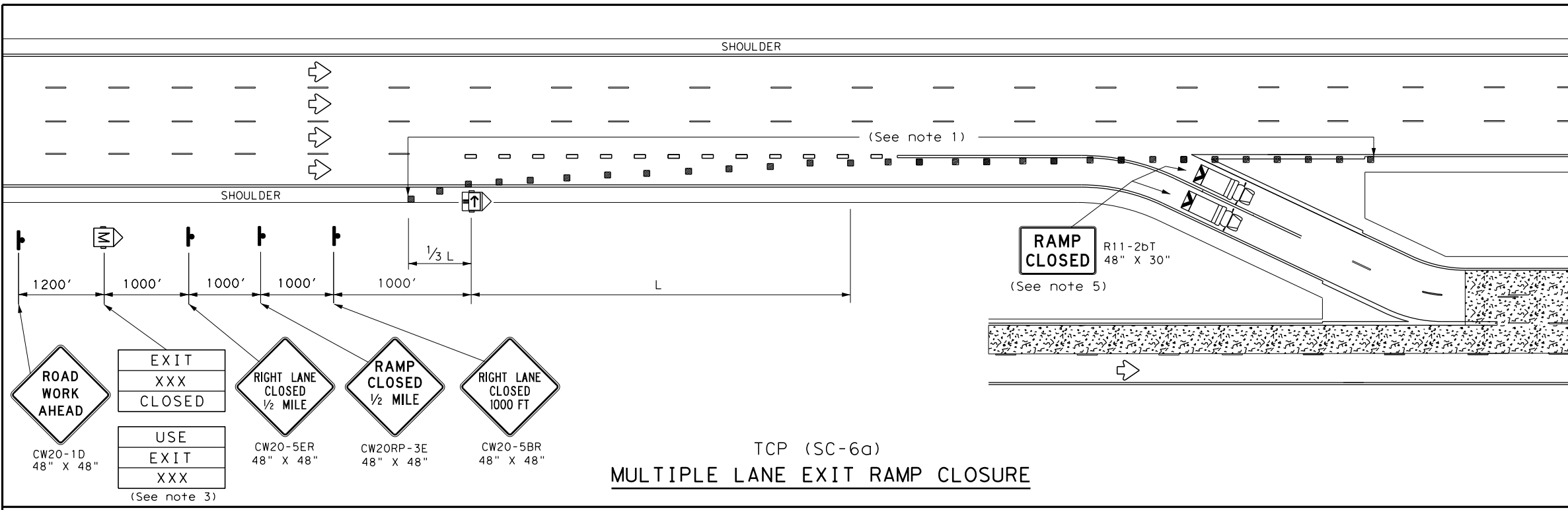
TRAFFIC CONTROL PLAN
 SEAL COAT OPERATIONS
 DIVIDED HIGHWAYS

TCP (SC-5) - 22

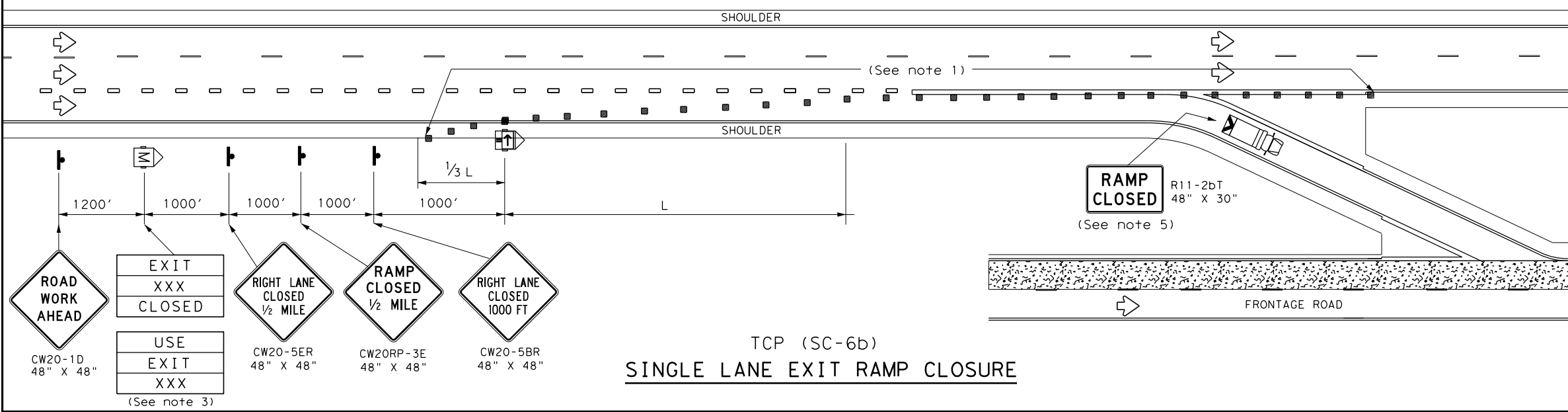
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© TxDOT October 2022	CON: 0915	SECT: 46	JOB: 052	HIGHWAY: CORDOVA
4-21	DIST: SAT	COUNTY: GUADALUPE	SHEET NO. 151	
10-22				

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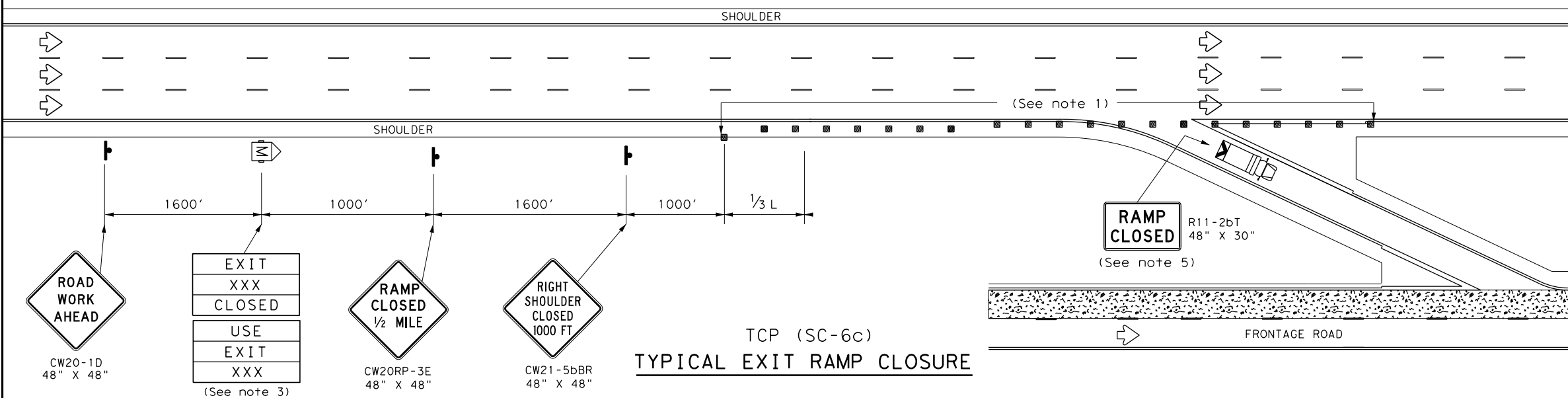
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TCP (SC-6a)
MULTIPLE LANE EXIT RAMP CLOSURE



TCP (SC-6b)
SINGLE LANE EXIT RAMP CLOSURE



TCP (SC-6c)
TYPICAL EXIT RAMP CLOSURE

LEGEND			
	Type 3 Barricade		Channelizing Devices (CDs)
	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 "L" **			Suggested Maximum Spacing of Channelizing Devices		Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent	
45	L = WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'
85		850'	935'	1020'	85'	170'	695'

** 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**
- Place channelizing devices at 20' spacings. Tighter spacing allowed as necessary to address field conditions or observed driver behavior.
 - See the Standard Highway Sign Design for Texas (SHSD) for sign details.
 - The PCMS may be omitted if replaced with a RAMP CLOSED AHEAD (CW20RP-3D) sign or when a permanent Dynamic Message Sign (DMS) is available in an appropriate location to display a similar message as called for on the PCMS.
 - When it is determined that a through lane should be closed in addition to the exit ramp, refer to TCP(6-4) for traffic control details.
 - A Truck Mounted Attenuator (TMA), where shown, is REQUIRED and shall have a RAMP CLOSED (R11-2bT) sign mounted on the rear of the truck.

Texas Department of Transportation
 Traffic Safety Division Standard

**TRAFFIC CONTROL PLAN
 SEAL COAT OPERATIONS
 DIVIDED HIGHWAYS**

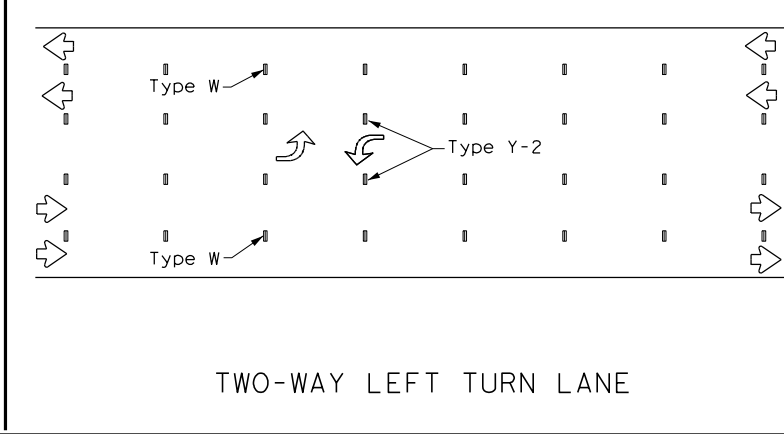
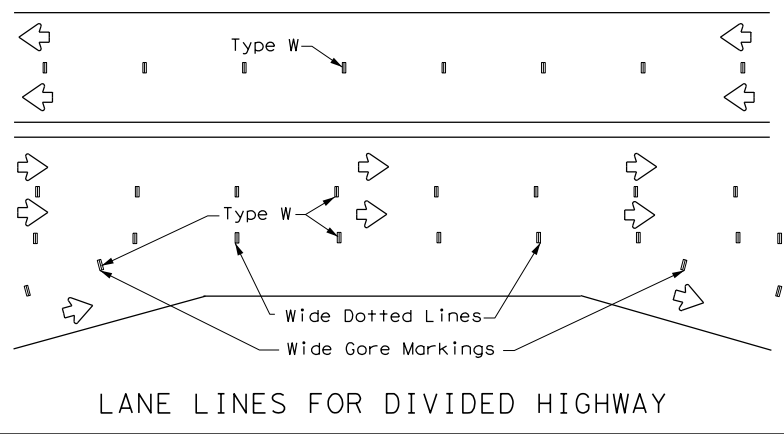
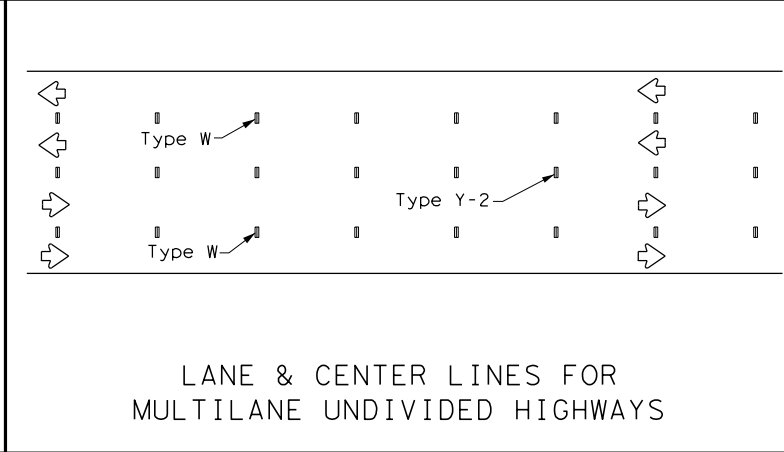
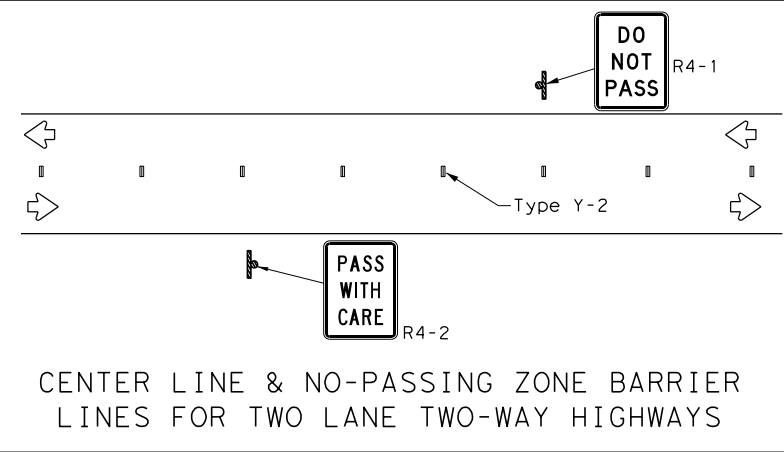
TCP (SC-6) - 22

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© TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
10-22	0915	46	052	CORDOVA
	DIST	COUNTY	SHEET NO.	
	SAT	GUADALUPE	152	

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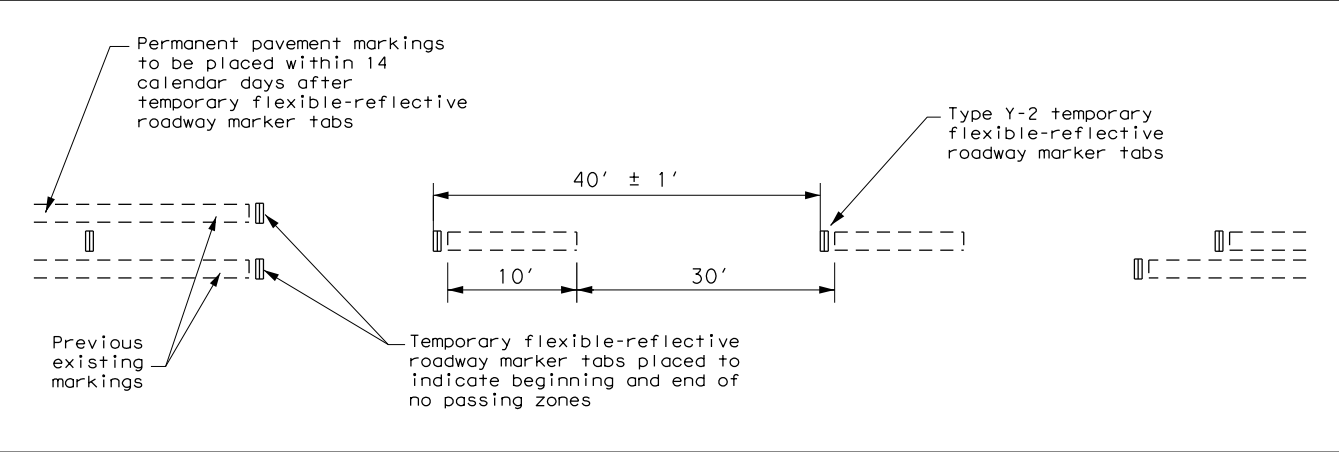
WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS (TABS)



WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS (TABS)

SOLID LINES	DOUBLE NO-PASSING LINE	
	SINGLE NO-PASSING LINE or CHANNELIZATION LINE	
	8" WIDE SOLID LINE	
BROKEN LINES (FOR CENTER LINE OR LANE LINE)		
WIDE DOTTED LINES (FOR LANE DROP LINES)		
WIDE GORE MARKINGS		

TABS ON CENTERLINES OF TWO-LANE TWO-WAY ROADS



TEMPORARY FLEXIBLE-REFLECTIVE ROADWAY MARKER TABS

- Temporary markings for surfacing projects shall be Temporary Flexible-Reflective Roadway Marker Tabs with protective cover unless otherwise approved by the Engineer. Tabs are to be installed to provide true alignment for striping crews or as directed by the Engineer. Tabs will be placed at the spacing indicated. Tabs should be applied to the pavement no more than two days before the surfacing is applied. After the surfacing is rolled and swept, the protective cover over the reflective strip shall be removed.
- Temporary Flexible-Reflective Roadway Marker Tabs detailed on this sheet will be designated Type Y-2 (two amber reflective surfaces with a 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).
- Temporary Flexible-Reflective Roadway Marker Tabs will require normal maintenance replacement when used on roadways with an Average Daily Traffic (ADT) per lane of up to 7500 vehicles with no more than 10% truck mix. When roadway volumes exceed these values, additional maintenance replacement of these devices should be planned for.
- 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 4.
- Tabs shall meet requirements of Departmental Material Specification DMS-8242.
- Tabs shall NOT be used to simulate edge lines.

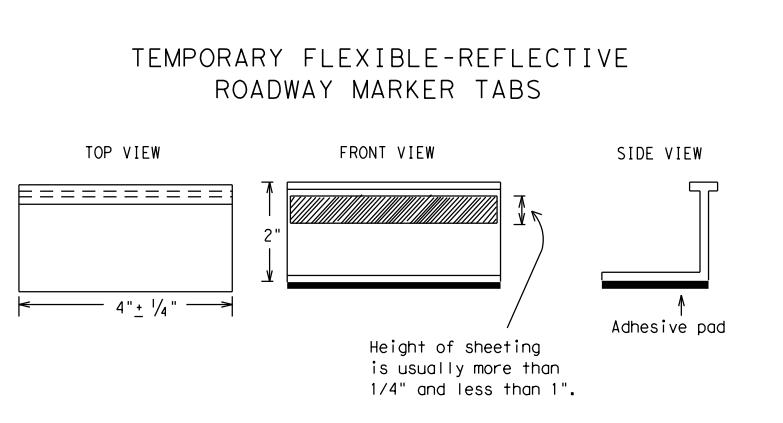
NOTES:

- 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 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 acceptable.
- 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.

DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS) & MATERIAL PRODUCER LISTS (MPL)

- DMSs referenced above may be found along with embedded links to their respective MPLs at the following website: <http://www.txdot.gov>

SHEET 7 OF 8



Texas Department of Transportation
 Traffic Safety Division Standard

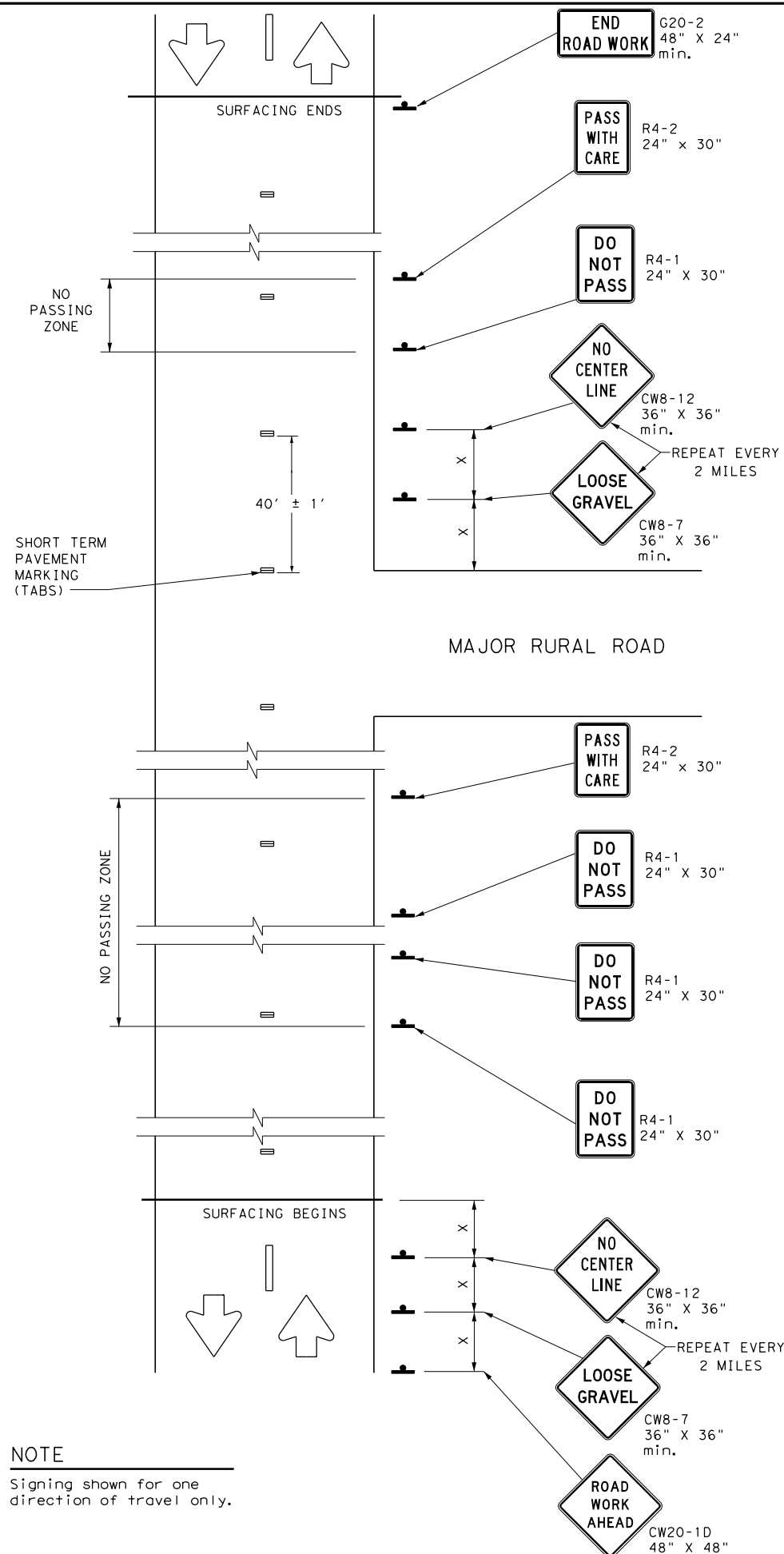
TEMPORARY PAVEMENT MARKINGS FOR SEAL COAT OPERATIONS

TCP (SC-7) -22

FILE: tpsc-7-22.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
4-21	DIST	COUNTY	SHEET NO.	
10-22	SAT	GUADALUPE	153	

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NOTE
 Signing shown for one direction of travel only.

NO PASSING ZONES ON TWO-LANE TWO-WAY ROADS

DO NOT PASS (R4-1) SIGN and NO-PASSING ZONES

- A. Prior to the beginning of construction, all currently striped no-passing zones shall be signed with the DO NOT PASS (R4-1) signs and PASS WITH CARE (R4-2) signs placed at the beginning and end of each zone for each direction of travel, except as otherwise provided herein. Signs marking these individual no-passing zones need not be covered prior to construction if the signs supplement the existing pavement markings.
- B. At the discretion of the Engineer, in areas of numerous no-passing zones, several zones may be combined as a single zone. If passing is to be prohibited over one or more lengthy sections, a DO NOT PASS sign and a NEXT XX MILES (R20-1TP) plaque may be used at the beginning of such zones. The DO NOT PASS sign and the NEXT XX MILES plaque should be repeated every mile to the end of the no-passing zone. In areas where there is a considerable distance between no-passing zones, the end of the no-passing zone may be signed with a PASS WITH CARE sign and a NEXT XX MILES plaque.
- C. Depending on traffic volumes and length of sections, it may be desirable to prohibit passing throughout the project to prevent damage to windshields and lights. The DO NOT PASS sign and NEXT XX MILES plaque should be used and repeated as often as necessary for this purpose. Where several existing zones are to be combined into one individual no-passing zone, the sign at the beginning of the zone should be covered until the surfacing operation has passed this location so as not to have the DO NOT PASS sign conflict with the existing pavement markings. Also, unless one day of operation completes the entire length of such combined zones, appropriate DO NOT PASS and PASS WITH CARE signs should be placed at the beginning and end of the no-passing zones where the surfacing operation has stopped for the day.
- D. DO NOT PASS and PASS WITH CARE signs are to remain in place until permanent pavement markings are installed.

NO CENTER LINE (CW8-12) SIGN

- A. Center line markings are yellow pavement markings that delineate the separation between lanes that have opposite directions of travel on a roadway. Divided highways do not typically have center line markings.
- B. At the time construction activity obliterates the existing center line markings (low volume roads may not have an existing center line), a NO CENTER LINE (CW8-12) sign should be erected at the beginning of the work area, at approximately two mile intervals within the work area, beyond major intersections, and other locations deemed necessary by the Engineer.
- C. The NO CENTER LINE signs are to remain in place until permanent pavement markings are installed.

LOOSE GRAVEL (CW8-7) SIGN

- A. When construction begins, a LOOSE GRAVEL (CW8-7) sign should be erected at each end of the work area and repeated at intervals of approximately two miles in rural areas and closer in urban areas.
- B. The LOOSE GRAVEL signs are to remain in place until the condition no longer exists.

COORDINATION OF SIGN LOCATIONS

- A. The location of warning signs at the beginning and end of a work area are to be coordinated with other signing typically shown on the Barricade and Construction Standards for project limits to ensure adequate sign spacing.
- B. Where possible, the ROAD WORK AHEAD (CW20-1D), LOOSE GRAVEL (CW8-7), and NO CENTER LINE (CW8-12) signs should be placed:
 - a.) In the sequence shown following the OBEY WARNING SIGNS STATE LAW (R20-3T) sign and the TRAFFIC FINES DOUBLE (R20-5T) sign; and
 - b.) One "X" sign spacing prior to the CONTRACTOR (G20-6T) sign typically located at or near the limits of surfacing.
 LOOSE GRAVEL and NO CENTER LINE sign placements will then be repeated as described above.

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

* Conventional Roads Only

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

GENERAL NOTES

1. Surfacing operations that cover or obliterate existing pavement markings must first have the passing zones clearly marked with tabs as well as having any of the traffic control devices detailed on this sheet furnished and erected as directed by the Engineer.
2. The devices shown on this sheet are to be used to supplement those required by the BC Standards or others required elsewhere in the plans.
3. Signs shall be erected as detailed on the BC Standards or the Compliant Work Zone Traffic Control Devices List (CWZTCD) on supports approved for Short Duration / Short Term Stationary Work Zone Sign Supports.
4. When surfacing operations take place on divided highways, freeways or expressways, the size of diamond shaped construction warning signs shall be 48" x 48".
5. Signs on divided highways, freeways and expressways should be placed on both right and left sides of the roadway based on roadway conditions as directed by the Engineer.

SHEET 8 OF 8

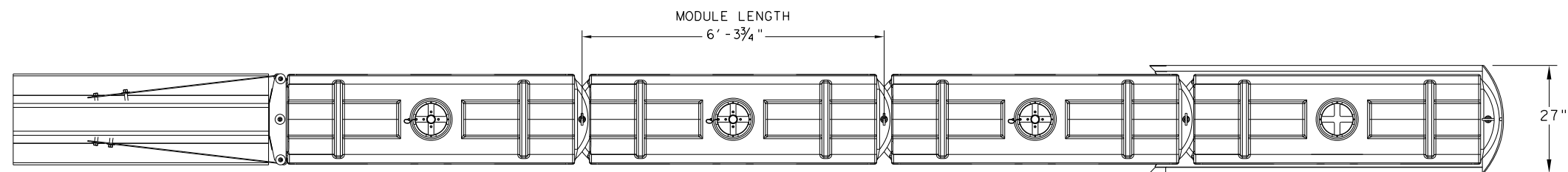


TRAFFIC CONTROL DETAILS FOR SEAL COAT OPERATIONS
TCP (SC-8) -22

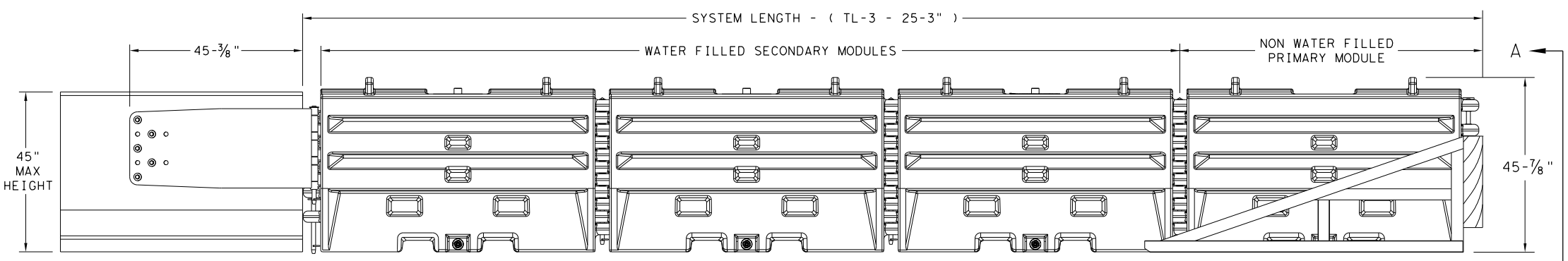
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© TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
4-21	DIST	COUNTY	SHEET NO.	
10-22	SAT	GUADALUPE	154	

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DATE: 11/17/2023
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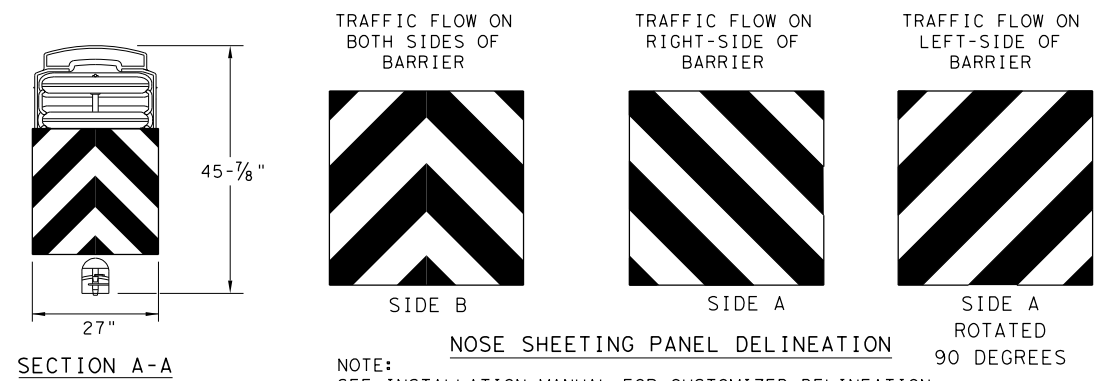
PLAN VIEW



ELEVATION VIEW

GENERAL NOTES

1. REFER TO THE INSTALLATION MANUAL FOR SPECIFIC SYSTEM ASSEMBLY AND MODULE ORIENTATION. FOR ADDITIONAL INFORMATION, CONTACT TRAFFIX, INC. AT (949) 361-5663.
2. THE SLED SYSTEM IS A MASH APPROVED TEST LEVEL 3 (TL-3) CRASH CUSHION APPROVED FOR USE IN TEMPORARY WORK ZONES. THE SLED SYSTEM IS A NON-REDIRECTIVE, GATING CRASH CUSHION THAT DOES NOT NEED TO BE ATTACHED TO THE GROUND AND CAN BE INSTALLED ON CONCRETE, ASPHALT, GRAVEL OR COMPACTED SOIL.
3. MAXIMUM PERMISSIBLE CROSS SLOPE IS 8° (DEGREES) (14%).
4. THE INSTALLATION AREA SHOULD BE FREE FROM CURBS, ELEVATED OBJECTS, OR DEPRESSIONS.
5. THE SLED SYSTEM CAN BE ATTACHED TO:
 - CONCRETE BARRIER, TEMPORARY OR PERMANENT, 45" MAXIMUM HEIGHT
 - STEEL BARRIER
 - PLASTIC BARRIER
 - CONCRETE BRIDGE ABUTMENTS
 - W-BEAM GUARD RAIL
 - THRIE BEAM GUARD RAIL

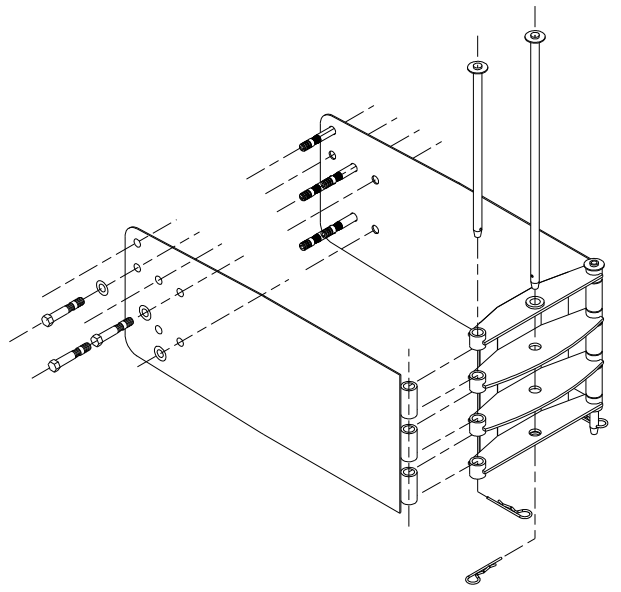


NOTE:
SEE INSTALLATION MANUAL FOR CUSTOMIZED DELINEATION NOSE SHEETING FOR DECAL PLACEMENT.

TEST LEVEL	NUMBER OF SECONDARY MODULES	SYSTEM LENGTH
TL-3	3	25' 3"

BILL OF MATERIAL		
PART NUMBER	DESCRIPTION	QTY: TL-3
45131	TRANSITION FRAME, GALVANIZED	1
45150	TRANSITION PANEL, GALVANIZED	2
45147-CP	TRANSITION SHORT DROP PIN W/ KEEPER PIN, GALVANIZED	2
45148-CP	TRANSITION LONG DROP PIN W/ KEEPER PIN, GALVANIZED	1
45050	ANCHOR BOLTS	9
12060	WASHER, 3/4" ID X 2" OD	9
45044-Y	SLED YELLOW WATER FILLED MODULE	3
45044-YH	SLED YELLOW "NO FILL" MODULE	1
45044-S	CIS (CONTAINMENT IMPACT SLED), GALVANIZED	1
45043-CP	T-PIN W/ KEEPER PIN	4
18009-B-I	FILL CAP W/ "DRIVE BY" FLOAT INDICATOR	3
45033-RC-B	DRAIN PLUG	3
45032-DPT	DRAIN PLUG REMOVAL TOOL	1

TRANSITION OPTIONS
SLED TRANSITION TO CONCRETE TRAFFIC BARRIER (TEMPORARY OR PERMANENT)
SLED TRANSITION TO STEEL TRAFFIC BARRIER (CONTACT MFGR FOR PROPER TRANSITION)
SLED TRANSITION TO PLASTIC TRAFFIC BARRIER (CONTACT MFGR FOR PROPER TRANSITION)
SLED TRANSITION TO W-BEAM OR THRIE BEAM GUARD RAIL (CONTACT MFGR FOR PROPER TRANSITION)
SLED TRANSITION TO CONCRETE BRIDGE ABUTMENT



SLED TRANSITION COMPONENTS FOR ATTACHMENT TO CMB

NOTE:
SEE MANUFACTURER'S INSTALLATION MANUAL FOR FURTHER DETAILS.

NOTE:
THIS STANDARD IS A BASIC REPRESENTATION OF THE SLED, IT IS NOT INTENDED TO REPLACE THE INSTALLATION INSTRUCTIONS MANUAL.

SACRIFICIAL

Design Division Standard

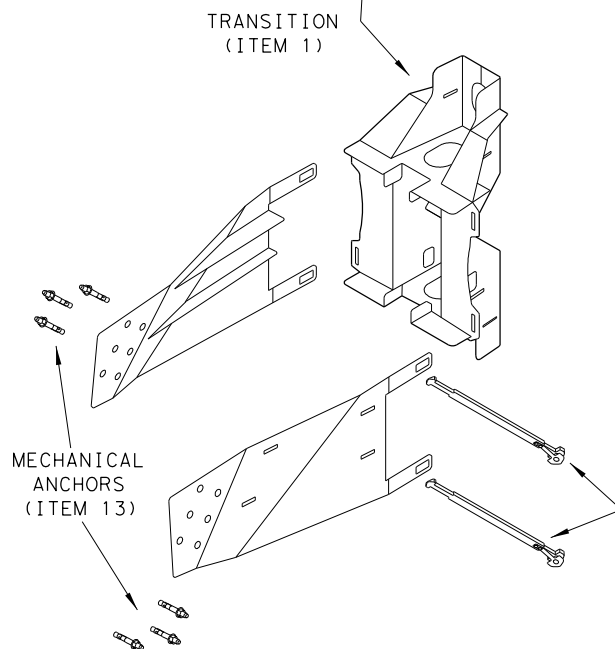
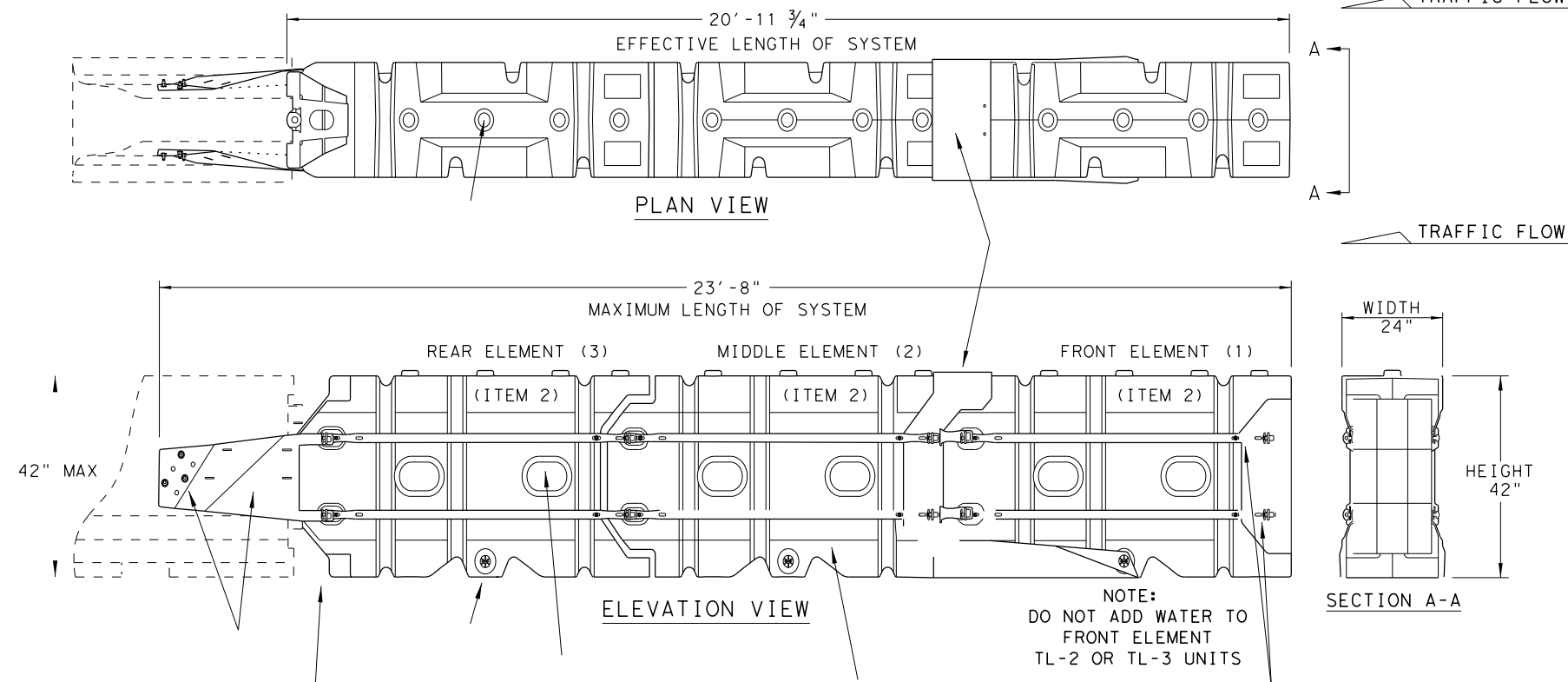
SLED
 CRASH CUSHION
 TL-3 MASH COMPLIANT
 (TEMPORARY, WORK ZONE)
 SLED-19

FILE: sled19.dgn	DN: TxDOT	CK: KM	DW: VP	CK:
© TxDOT: DECEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
DIST	COUNTY		SHEET NO.	
SAT	GUADALUPE		155	

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: 11/17/2023
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SYSTEM SHOWN - ABSORB-M TL-3



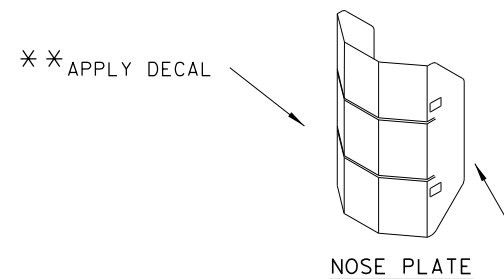
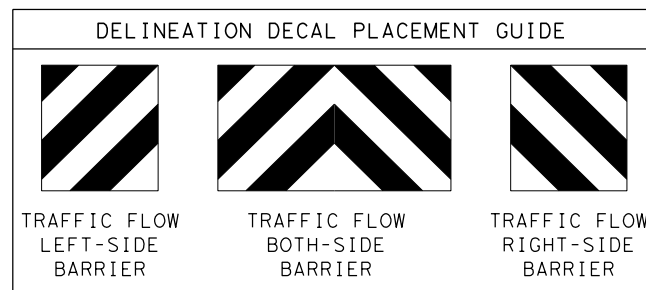
TEST LEVEL	NUMBER OF ELEMENTS	EFFECTIVE LENGTH	MAXIMUM LENGTH
TL-2	2	14' - 7 3/4"	17' - 4"
TL-3	3	20' - 11 3/4"	23' - 8"

BILL OF MATERIALS (BOM) ABSORB-M TL-3 & TL-2 SYSTEMS			QTY	QTY
ITEM #	PART NUMBER	PART DESCRIPTION	TL-2 SYSTEM	TL-3 SYSTEM
1	BSI-1809036-00	TRANSITION - (GALV)	1	1
2	BSI-1808002-00	PRE-ASSEMBLED ABSORBING (ELEMENTS)	2	3
3	BSI-4004598	FILL CAPS	8	12
4	BSI-4004599	DRAIN PLUGS	2	3
5	BSI-1809053-00	TENSION STRAP - (GALV)	8	12
6	BSI-2001998	C-SCR FH 3/8-16 X 1 1/2 GR5 PLT	8	12
7	BSI-2001999	C-SCR FH 3/8-16 X 1 GR5 PLT	8	12
8	BSI-1809035-00	MIDNOSE - (GALV)	1	1
9	BSI-1808014-00	NOSE PLATE	1	1
10	BSI-1809037-00	TRANSITION STRAP (LEFT-HAND) - (GALV)	1	1
11	BSI-1809038-00	TRANSITION STRAP (RIGHT-HAND) - (GALV)	1	1
12	BSI-1808005-00	PIN ASSEMBLY	8	10
13	BSI-2002001	ANC MECH 5/8-11X5 (GALV)	6	6
14	ABSORB-M	INSTALLATION AND INSTRUCTIONS MANUAL	1	1

* COMPONENTS PRE-ASSEMBLED WITH ELEMENT ASSEMBLY

GENERAL NOTES

- FOR SPECIFIC INFORMATION REGARDING THE INSTALLATION AND TECHNICAL GUIDANCE, CONTACT: LINDSAY TRANSPORTATION SOLUTIONS (LTS) - BARRIER SYSTEMS, INC. AT (707) 374-6800. 180 RIVER ROAD, RIO VISTA, CA 94571
- THE ABSORB-M SYSTEM IS ONLY APPROVED FOR USE IN (TEMPORARY WORK ZONE) LOCATIONS.
- THE ABSORB-M IS A WATER FILLED NON-REDIRECTIVE, GATING CRASH CUSHION THAT DOES NOT NEED TO BE ATTACHED TO A FOUNDATION AND CAN BE INSTALLED ON TOP OF CONCRETE, ASPHALT, OR ANY SURFACE CAPABLE OF BEARING THE WEIGHT OF THE SYSTEM.
- MAXIMUM PERMISSIBLE CROSS-SLOPE IS 8%.
- THE INSTALLATION AREA SHOULD BE FREE FROM CURBS, ELEVATED OBJECTS, OR DEPRESSIONS.
- THE ABSORB-M SHOULD BE LOCATED APPROXIMATELY PARALLEL WITH THE BARRIER.
- THE USE OF THE ABSORB-M IS RESTRICTED TO A BARRIER HEIGHT OF UP TO 42 INCHES.
- DO NOT ADD WATER TO FRONT ELEMENT (TL-2 OR TL-3 UNIT).



NOTE: APPLY A HIGH REFLECTIVE DECAL TO THE NOSE PLATE. DELINEATION DECAL ORIENTATION IS SHOWN ON THE CONSTRUCTION PLAN SET AND SHALL BE IN ACCORDANCE WITH THE TEXAS MUTCD FOR (TRAFFIC CONTROL DEVICES). DECALS ARE AVAILABLE FOR TRAFFIC FLOW ON THE LEFT-SIDE, BOTH -SIDES AND RIGHT-SIDE.

** NOTE: (PROVIDED BY OTHERS) ENGINEER OR CONTRACTOR SHALL COORDINATE WITH THE MANUFACTURER FOR THE CORRECT DECAL PER TRAFFIC FLOW, LEFT, RIGHT OR BOTH-SIDES.

NOTE: THIS STANDARD IS A BASIC REPRESENTATION OF THE ABSORB-M, IT IS NOT INTENDED TO REPLACE THE INSTALLATION INSTRUCTIONS MANUAL.

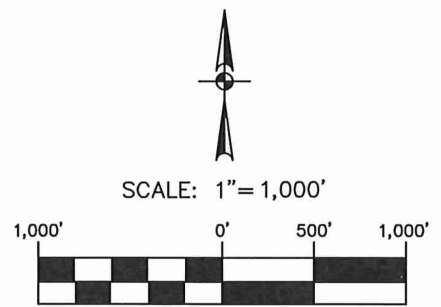
SACRIFICIAL

		Design Division Standard	
LINDSAY TRANSPORTATION SOLUTIONS CRASH CUSHION (MASH TL-3 & TL-2) TEMPORARY - WORK ZONE ABSORB (M) - 19			
FILE: absorbm19	DN: TxDOT	CK: KM	DW: VP
© TXDOT: JULY 2019	CONT SECT	JOB	HIGHWAY
REVISIONS	0915 46	052	CORDOVA
DIST	COUNTY	SHEET NO.	
SAT	GUADALUPE	156	

Plotted on: July 20, 2023

Design Filename: N:\TRANSP0\CIVIL\12775-00\CONTROL SHEETS\CT 12775-00 SEGUIN-MLH.DWG

HORIZONTAL AND VERTICAL CONTROL POINTS				
Point #	Northing	Easting	Elevation	Full Description
50	13,780,269.16	2,277,895.93	589.96	MAG NAIL & WASHER
51	13,779,469.20	2,278,587.47	587.58	MAG NAIL & WASHER
52	13,779,443.43	2,284,204.79	580.19	MAG NAIL & WASHER
53	13,778,683.52	2,284,079.80	580.46	MAG NAIL & WASHER
54	13,779,354.28	2,292,144.04	594.36	MAG NAIL & WASHER
55	13,777,847.98	2,292,104.52	593.85	MAG NAIL & WASHER
56	13,780,032.11	2,296,957.28	576.81	MAG NAIL & WASHER
57	13,778,614.39	2,296,968.07	577.06	MAG NAIL & WASHER
89	13,779,353.71	2,296,983.86	575.22	BM-CW123 CHISELLED SQUARE ON CONCRETE
90	13,779,348.54	2,278,820.42	588.69	BM-CW125 CHISELLED SQUARE ON CONCRETE
91	13,779,499.02	2,289,276.70	590.81	BM-CW124 CHISELLED "X" ON FIRE HYDRANT BOLT



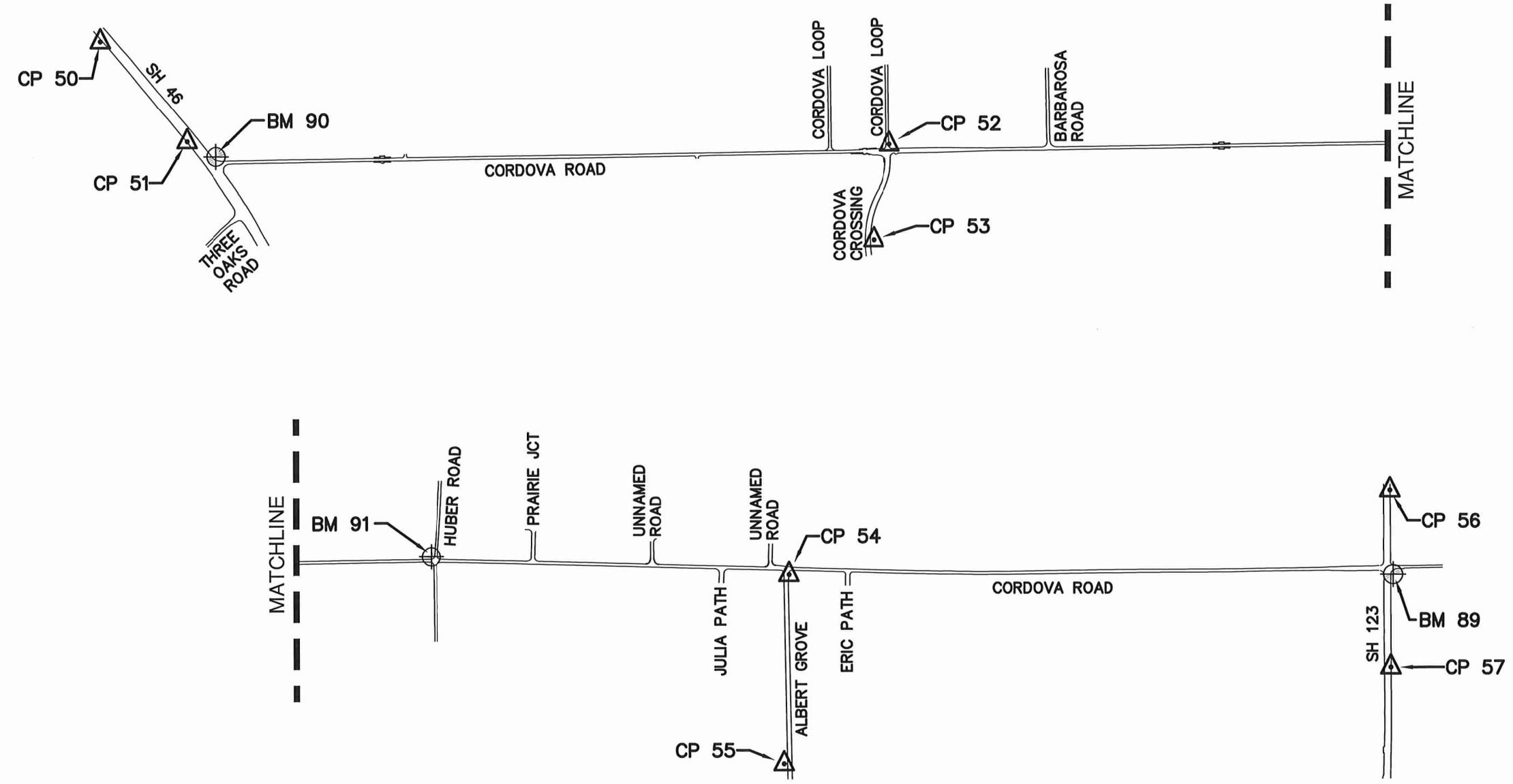
NOTES:
 1. COORDINATES SHOWN ARE DISPLAYED AS SURFACE VALUES IN US SURVEY FEET, BASED ON THE NORTH AMERICAN DATUM OF 1983 (2011) EPOCH 2010.00 FROM THE TEXAS COORDINATE SYSTEM ESTABLISHED FOR THE SOUTH CENTRAL ZONE, WITH A SURFACE ADJUSTMENT FACTOR OF 1.00015 APPLIED.
 2. ELEVATIONS SHOWN ARE BASED ON NAVD88 (GEOID 18), OBTAINED BY RTK METHODS AND BALANCING A CLOSED, DOUBLE RUN DIGITAL LEVEL LOOP.
 3. FIELD WORK FOR THIS SURVEY WAS COMPLETED IN JANUARY, 2023.
 4. CONTRACTOR MUST VERIFY CONTROL POINT PRIOR TO BEGINNING CONSTRUCTION.

LEGEND
 CP CONTROL POINT
 BM BENCHMARK
 N.T.S. NOT TO SCALE

SURVEYOR'S CERTIFICATION:

THE CONTROL POINTS SHOWN HEREIN WERE DETERMINED BY A SURVEY MADE ON THE GROUND UNDER MY SUPERVISION.

Sharon L. Sabin 1/6/2023
 SHARON L. SABIN
 RPLS 6950



REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 HW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TPPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800



Texas Department of Transportation
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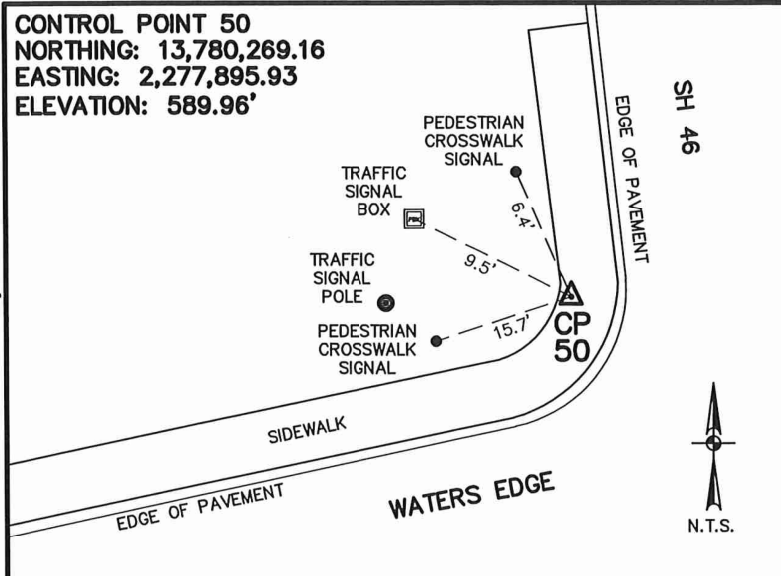
CORDOVA RD
HORIZONTAL AND VERTICAL CONTROL SHEETS

SHEET 1 OF 3

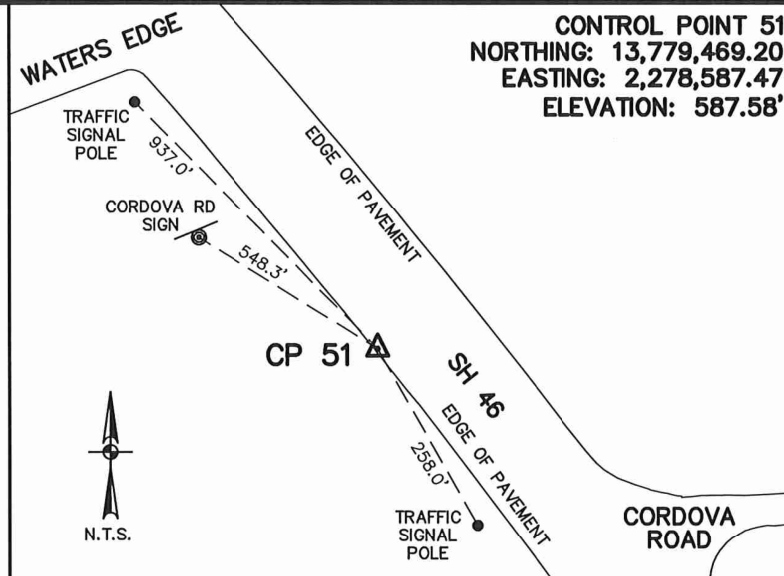
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CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	158

Plotted on: July 20, 2023

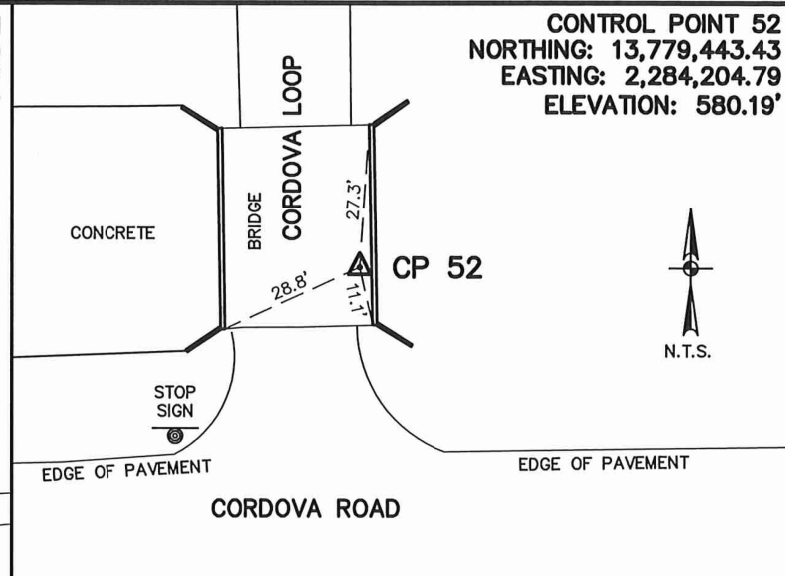
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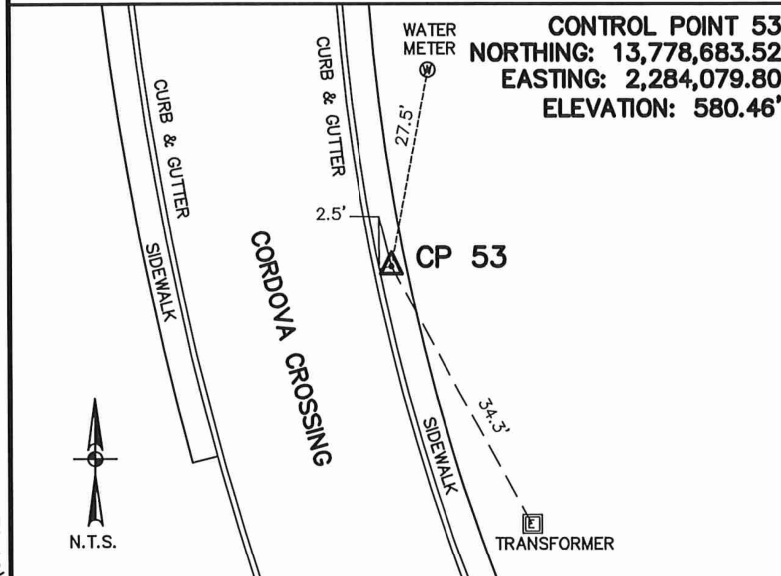
MAG NAIL WITH WASHER ON THE WEST SIDE OF SH 46 APPROXIMATELY 1,350 FEET NORTH OF THE INTERSECTION OF SH 46 AND CORDOVA ROAD.



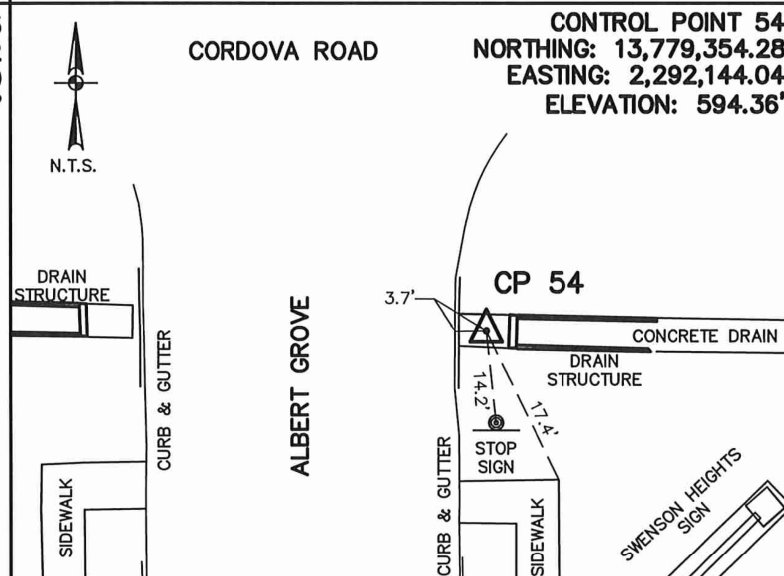
MAG NAIL WITH WASHER ON THE WEST SIDE OF SH 46 APPROXIMATELY 280 FEET NORTH OF THE INTERSECTION OF SH 46 AND CORDOVA ROAD.



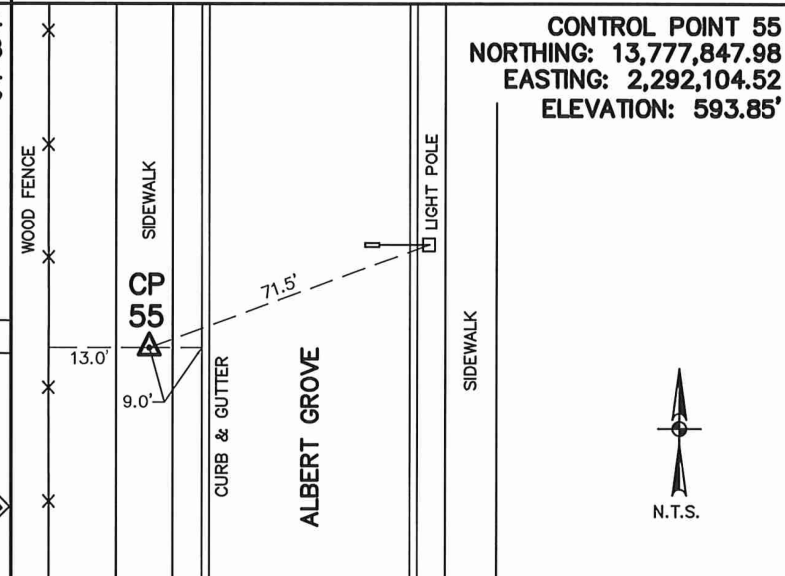
MAG NAIL WITH WASHER ON THE EAST SIDE OF CORDOVA LOOP APPROXIMATELY 50 FEET NORTH OF THE INTERSECTION OF CORDOVA LOOP AND CORDOVA ROAD.



MAG NAIL WITH WASHER ON THE EAST SIDE OF CORDOVA CROSSING APPROXIMATELY 720 FEET SOUTH OF THE INTERSECTION OF CORDOVA CROSSING AND CORDOVA ROAD.



MAG NAIL WITH WASHER ON THE EAST SIDE OF ALBERT GROVE APPROXIMATELY 50 FEET SOUTH OF THE INTERSECTION OF ALBERT GROVE AND CORDOVA ROAD.



MAG NAIL WITH WASHER ON THE WEST SIDE OF ALBERT GROVE APPROXIMATELY 1,550 FEET SOUTH OF THE INTERSECTION OF ALBERT GROVE AND CORDOVA ROAD.

NOTES:
 1. COORDINATES SHOWN ARE DISPLAYED AS SURFACE VALUES IN US SURVEY FEET, BASED ON THE NORTH AMERICAN DATUM OF 1983 (2011) EPOCH 2010.00 FROM THE TEXAS COORDINATE SYSTEM ESTABLISHED FOR THE SOUTH CENTRAL ZONE, WITH A SURFACE ADJUSTMENT FACTOR OF 1.00015 APPLIED.
 2. ELEVATIONS SHOWN ARE BASED ON NAVD88 (GEOID 18), OBTAINED BY RTK METHODS AND BALANCING A CLOSED, DOUBLE RUN DIGITAL LEVEL LOOP.
 3. FIELD WORK FOR THIS SURVEY WAS COMPLETED IN JANUARY, 2023.
 4. CONTRACTOR MUST VERIFY CONTROL POINT PRIOR TO BEGINNING CONSTRUCTION.

LEGEND

- CP CONTROL POINT
- BM BENCHMARK
- N.T.S. NOT TO SCALE

SURVEYOR'S CERTIFICATION:

THE CONTROL POINTS SHOWN HEREIN WERE DETERMINED BY A SURVEY MADE ON THE GROUND UNDER MY SUPERVISION.

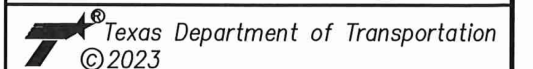
Sharon L. Sabin 1/6/2023
 SHARON L. SABIN
 RPLS 6950



REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 HW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TPPE FIRM REGISTRATION #470 | TPPLS FIRM REGISTRATION #1002800



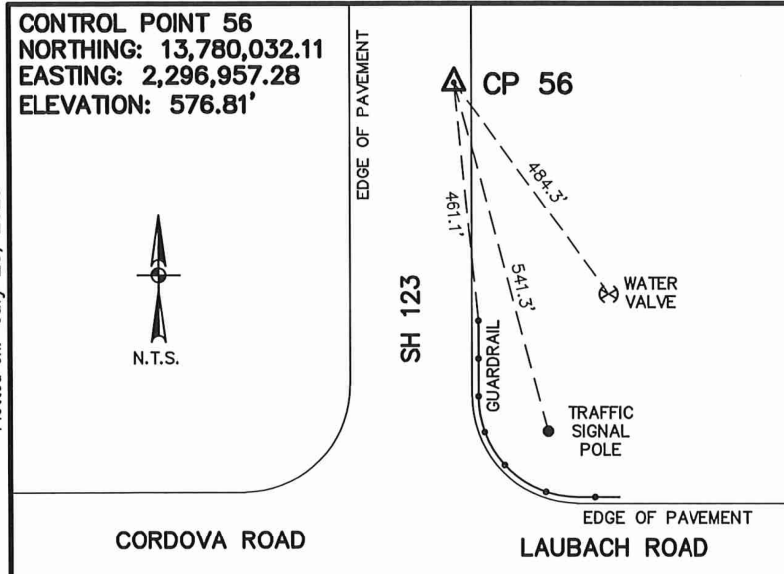
CORDOVA RD
HORIZONTAL AND VERTICAL CONTROL SHEETS

SHEET 2 OF 3

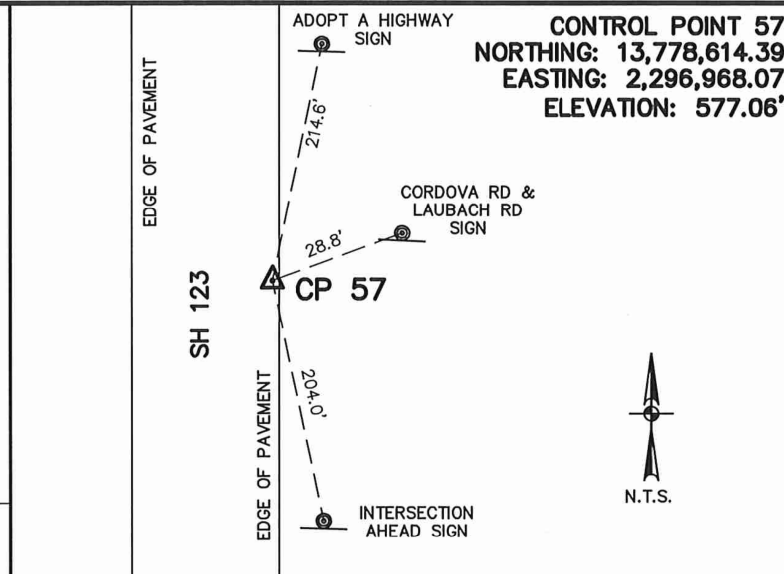
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CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	159

Plotted on: July 20, 2023

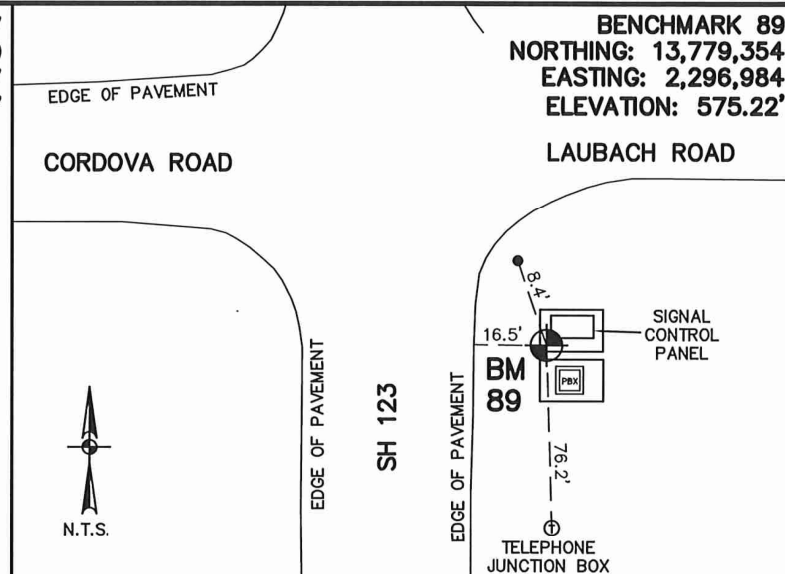
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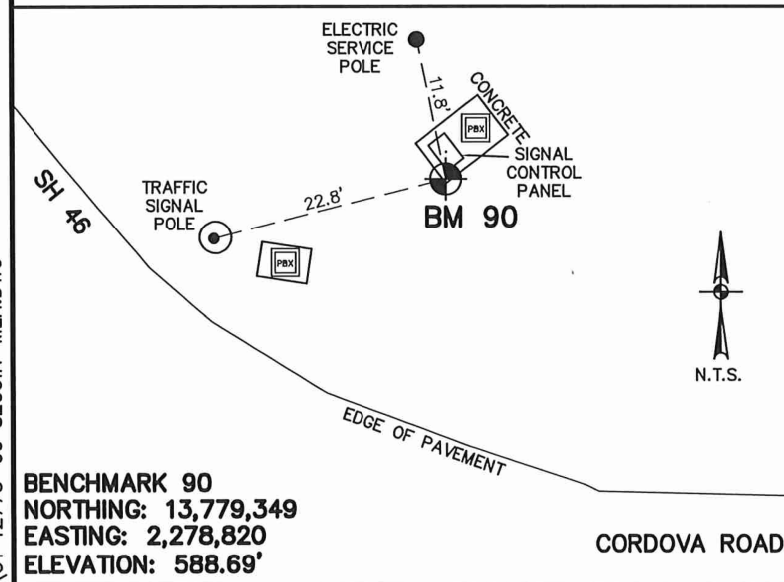
MAG NAIL WITH WASHER ON THE EAST SIDE OF SH 123 APPROXIMATELY 640 FEET NORTH OF THE INTERSECTION OF SH 123 AND CORDOVA ROAD.



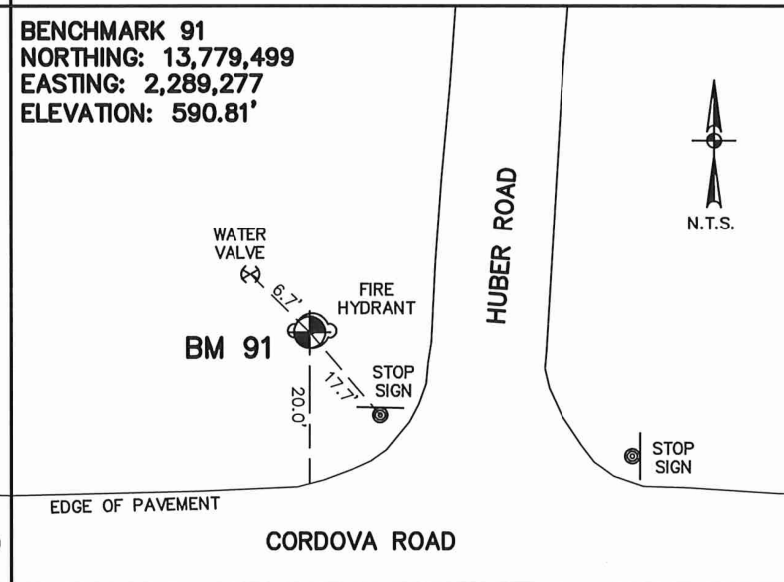
MAG NAIL WITH WASHER ON THE EAST SIDE OF SH 123 APPROXIMATELY 790 FEET SOUTH OF THE INTERSECTION OF SH 123 AND CORDOVA ROAD.



CHISELLED SQUARE IN CONCRETE ON THE SOUTHWEST CORNER OF A CONCRETE PAD WITH A SIGNAL CONTROL PANEL ON THE SOUTHEAST CORNER OF THE INTERSECTION OF SH 123 AND LAUBACH ROAD.



CHISELLED SQUARE IN CONCRETE AT THE SOUTH CORNER OF A CONCRETE PAD WITH A SIGNAL CONTROL PANEL ON THE NORTHEAST CORNER OF THE INTERSECTION OF CORDOVA ROAD AND SH 46.



CHISELLED 'X' ON FIRE HYDRANT BOLT ON THE NORTHWEST CORNER OF THE INTERSECTION OF HUBER ROAD AND CORDOVA ROAD.

- NOTES:
- COORDINATES SHOWN ARE DISPLAYED AS SURFACE VALUES IN US SURVEY FEET, BASED ON THE NORTH AMERICAN DATUM OF 1983 (2011) EPOCH 2010.00 FROM THE TEXAS COORDINATE SYSTEM ESTABLISHED FOR THE SOUTH CENTRAL ZONE, WITH A SURFACE ADJUSTMENT FACTOR OF 1.00015 APPLIED.
 - ELEVATIONS SHOWN ARE BASED ON NAVD88 (GEOID 18), OBTAINED BY RTK METHODS AND BALANCING A CLOSED, DOUBLE RUN DIGITAL LEVEL LOOP.
 - FIELD WORK FOR THIS SURVEY WAS COMPLETED IN JANUARY, 2023.
 - CONTRACTOR MUST VERIFY CONTROL POINT PRIOR TO BEGINNING CONSTRUCTION.

LEGEND

- CP CONTROL POINT
- BM BENCHMARK
- N.T.S. NOT TO SCALE
- SH STATE HIGHWAY
- PBX PULL BOX

SURVEYOR'S CERTIFICATION:

THE CONTROL POINTS SHOWN HEREIN WERE DETERMINED BY A SURVEY MADE ON THE GROUND UNDER MY SUPERVISION.

Sharon L. Sabin 1/6/2023
 SHARON L. SABIN
 RPLS 6950



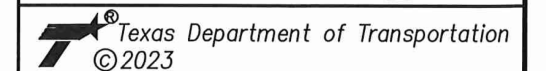
REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 HW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TPPE FIRM REGISTRATION #470 | TPPLS FIRM REGISTRATION #1002800



It's real.



CORDOVA RD
HORIZONTAL AND VERTICAL CONTROL SHEETS

SHEET 3 OF 3

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	160

CORDOVA RD

Beginning chain CORDOVA description

Point CORDOVA1 N 13,778,111.77 E 2,278,203.43 Sta 100+00.00

Course from CORDOVA1 to PC CORDOVA 3 N 45° 39' 47.18" E Dist 515.36

Curve Data

Curve CORDOVA 3
P.I. Station 105+67.01 N 13,778,508.54 E 2,278,608.49
Delta = 7° 23' 15.83" (RT)
Degree = 7° 09' 43.10"
Tangent = 51.65
Length = 103.15
Radius = 800.00
External = 1.67
Long Chord = 103.08
Mid. Ord. = 1.66
P.C. Station 105+15.36 N 13,778,471.95 E 2,278,572.04
P.T. Station 106+18.51 N 13,778,540.15 E 2,278,649.34
C.C. N 13,777,907.43 E 2,279,138.89
Back = N 44° 52' 56.44" E
Ahead = N 52° 16' 12.27" E
Chord Bear = N 48° 34' 34.36" E

Curve Data

Curve CORDOVA 4
P.I. Station 107+05.09 N 13,778,593.13 E 2,278,717.81
Delta = 6° 36' 24.99" (LT)
Degree = 3° 49' 10.99"
Tangent = 86.58
Length = 172.97
Radius = 1,500.00
External = 2.50
Long Chord = 172.87
Mid. Ord. = 2.49
P.C. Station 106+18.51 N 13,778,540.15 E 2,278,649.34
P.T. Station 107+91.48 N 13,778,653.64 E 2,278,779.74
C.C. N 13,779,726.51 E 2,277,731.43
Back = N 52° 16' 12.27" E
Ahead = N 45° 39' 47.28" E
Chord Bear = N 48° 57' 59.78" E

Course from PT CORDOVA 4 to PC CORDOVA 7 N 45° 39' 47.28" E Dist 212.23

Curve Data

Curve CORDOVA 7
P.I. Station 110+41.66 N 13,778,828.48 E 2,278,958.68
Delta = 4° 08' 20.91" (RT)
Degree = 5° 27' 24.27"
Tangent = 37.94
Length = 75.85
Radius = 1,050.00
External = 0.69
Long Chord = 75.84
Mid. Ord. = 0.68
P.C. Station 110+03.72 N 13,778,801.97 E 2,278,931.54
P.T. Station 110+79.57 N 13,778,852.97 E 2,278,987.66
C.C. N 13,778,050.96 E 2,279,665.36
Back = N 45° 39' 47.28" E
Ahead = N 49° 48' 08.19" E
Chord Bear = N 47° 43' 57.74" E

Course from PT CORDOVA 7 to PC CORDOVA 10 N 49° 48' 08.19" E Dist 438.28

Curve Data

Curve CORDOVA 10
P.I. Station 117+92.74 N 13,779,313.27 E 2,279,532.39
Delta = 39° 17' 32.56" (RT)
Degree = 7° 26' 27.64"
Tangent = 274.88
Length = 528.05
Radius = 770.00
External = 47.59
Long Chord = 517.76
Mid. Ord. = 44.82
P.C. Station 115+17.85 N 13,779,135.85 E 2,279,322.43
P.T. Station 120+45.90 N 13,779,317.61 E 2,279,807.24
C.C. N 13,778,547.71 E 2,279,819.41
Back = N 49° 48' 08.19" E
Ahead = N 89° 05' 40.75" E
Chord Bear = N 69° 26' 54.47" E

Course from PT CORDOVA 10 to PC CORDOVA 13 N 89° 05' 40.75" E Dist 3,139.04

Curve Data

Curve CORDOVA 13
P.I. Station 152+25.93 N 13,779,367.86 E 2,282,986.87
Delta = 4° 28' 16.36" (LT)
Degree = 5° 27' 24.27"
Tangent = 40.99
Length = 81.94
Radius = 1,050.00
External = 0.80
Long Chord = 81.92
Mid. Ord. = 0.80
P.C. Station 151+84.94 N 13,779,367.21 E 2,282,945.89
P.T. Station 152+66.88 N 13,779,371.70 E 2,283,027.68
C.C. N 13,780,417.08 E 2,282,929.30
Back = N 89° 05' 40.75" E
Ahead = N 84° 37' 24.39" E
Chord Bear = N 86° 51' 32.57" E

Course from PT CORDOVA 13 to PC CORDOVA 16 N 84° 37' 24.39" E Dist 259.18

Curve Data

Curve CORDOVA 16
P.I. Station 157+59.82 N 13,779,417.89 E 2,283,518.45
Delta = 10° 41' 01.38" (RT)
Degree = 2° 17' 30.59"
Tangent = 233.76
Length = 466.17
Radius = 2,500.00
External = 10.90
Long Chord = 465.49
Mid. Ord. = 10.86
P.C. Station 155+26.06 N 13,779,395.99 E 2,283,285.72
P.T. Station 159+92.23 N 13,779,396.27 E 2,283,751.21
C.C. N 13,776,906.98 E 2,283,519.97
Back = N 84° 37' 24.39" E
Ahead = S 84° 41' 34.23" E
Chord Bear = N 89° 57' 55.08" E

Course from PT CORDOVA 16 to PC CORDOVA 19 S 84° 41' 34.23" E Dist 306.43

Curve Data

Curve CORDOVA 19
P.I. Station 164+35.68 N 13,779,355.25 E 2,284,192.76
Delta = 6° 16' 27.13" (LT)
Degree = 2° 17' 30.59"
Tangent = 137.02
Length = 273.76
Radius = 2,500.00
External = 3.75
Long Chord = 273.63
Mid. Ord. = 3.75
P.C. Station 162+98.66 N 13,779,367.92 E 2,284,056.33
P.T. Station 165+72.42 N 13,779,357.56 E 2,284,329.76
C.C. N 13,781,857.21 E 2,284,287.57
Back = S 84° 41' 34.23" E
Ahead = N 89° 01' 58.64" E
Chord Bear = S 87° 49' 47.79" E

Course from PT CORDOVA 19 to PC CORDOVA 22 N 89° 01' 58.64" E Dist 1,920.44

Curve Data

Curve CORDOVA 22
P.I. Station 185+66.29 N 13,779,391.21 E 2,286,323.34
Delta = 3° 21' 53.57" (LT)
Degree = 2° 17' 30.59"
Tangent = 73.43
Length = 146.82
Radius = 2,500.00
External = 1.08
Long Chord = 146.80
Mid. Ord. = 1.08
P.C. Station 184+92.86 N 13,779,389.98 E 2,286,249.92
P.T. Station 186+39.68 N 13,779,396.76 E 2,286,396.57
C.C. N 13,781,889.62 E 2,286,207.73
Back = N 89° 01' 58.64" E
Ahead = N 85° 40' 05.07" E
Chord Bear = N 87° 21' 01.86" E

Course from PT CORDOVA 22 to PC CORDOVA 25 N 85° 40' 05.07" E Dist 149.75

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
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SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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HORIZONTAL ALIGNMENT DATA

SHEET 1 OF 5

CHK	DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
		6	TEXAS		CORDOVA		
CHK	DGN:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
		SAT	GUADALUPE	0915	46	052	161

Plotted on: 11/17/2023

Design Filename: P:\127\75\00\Design\Civil\General\1277500_HairData01.dgn

CORDOVA RD CONT.

Plotted on: 11/17/2023

Design Filename: P:\127\75\00\Design\Civil\General\1277500_HaInData01.dgn

Curve Data

Curve CORDOVA 25
P.I. Station 188+63.45 N 13,779,413.66 E 2,286,619.69
Delta = 3° 23' 30.07" (RT)
Degree = 2° 17' 30.59"
Tangent = 74.02
Length = 147.99
Radius = 2,500.00
External = 1.10
Long Chord = 147.97
Mid. Ord. = 1.09
P.C. Station 187+89.43 N 13,779,408.07 E 2,286,545.89
P.T. Station 189+37.42 N 13,779,414.88 E 2,286,693.70
C.C. N 13,776,915.21 E 2,286,734.72
Back = N 85° 40' 05.07" E
Ahead = N 89° 03' 35.14" E
Chord Bear = N 87° 21' 50.10" E

Course from PT CORDOVA 25 to PC CORDOVA 28 N 89° 03' 35.14" E Dist 2,153.84

Curve Data

Curve CORDOVA 28
P.I. Station 211+45.05 N 13,779,451.10 E 2,288,901.04
Delta = 2° 27' 55.03" (RT)
Degree = 2° 17' 30.59"
Tangent = 53.79
Length = 107.57
Radius = 2,500.00
External = 0.58
Long Chord = 107.56
Mid. Ord. = 0.58
P.C. Station 210+91.26 N 13,779,450.22 E 2,288,847.25
P.T. Station 211+98.83 N 13,779,449.67 E 2,288,954.81
C.C. N 13,776,950.56 E 2,288,888.27
Back = N 89° 03' 35.14" E
Ahead = S 88° 28' 29.83" E
Chord Bear = S 89° 42' 27.35" E

Course from PT CORDOVA 28 to PC CORDOVA 31 S 88° 28' 29.83" E Dist 1,645.76

Curve Data

Curve CORDOVA 31
P.I. Station 228+89.13 N 13,779,404.69 E 2,290,644.51
Delta = 4° 51' 27.88" (LT)
Degree = 5° 27' 24.27"
Tangent = 44.54
Length = 89.02
Radius = 1,050.00
External = 0.94
Long Chord = 89.00
Mid. Ord. = 0.94
P.C. Station 228+44.59 N 13,779,405.87 E 2,290,599.99
P.T. Station 229+33.61 N 13,779,407.28 E 2,290,688.97
C.C. N 13,780,455.50 E 2,290,627.93
Back = S 88° 28' 29.83" E
Ahead = N 86° 40' 02.28" E
Chord Bear = N 89° 05' 46.22" E

Course from PT CORDOVA 31 to PC CORDOVA 34 N 86° 40' 02.28" E Dist 324.29

Curve Data

Curve CORDOVA 34
P.I. Station 233+02.44 N 13,779,428.72 E 2,291,057.18
Delta = 4° 51' 27.88" (RT)
Degree = 5° 27' 24.27"
Tangent = 44.54
Length = 89.02
Radius = 1,050.00
External = 0.94
Long Chord = 89.00
Mid. Ord. = 0.94
P.C. Station 232+57.90 N 13,779,426.13 E 2,291,012.71
P.T. Station 233+46.92 N 13,779,427.53 E 2,291,101.70
C.C. N 13,778,377.90 E 2,291,073.75
Back = N 86° 40' 02.28" E
Ahead = S 88° 28' 29.83" E
Chord Bear = N 89° 05' 46.22" E

Course from PT CORDOVA 34 to PC CORDOVA 37 S 88° 28' 29.83" E Dist 3,465.57

Curve Data

Curve CORDOVA 37
P.I. Station 270+88.66 N 13,779,327.95 E 2,294,842.11
Delta = 39° 27' 40.51" (RT)
Degree = 7° 26' 27.64"
Tangent = 276.16
Length = 530.32
Radius = 770.00
External = 48.03
Long Chord = 519.90
Mid. Ord. = 45.21
P.C. Station 268+12.50 N 13,779,335.30 E 2,294,566.04
P.T. Station 273+42.82 N 13,779,146.82 E 2,295,050.58
C.C. N 13,778,565.57 E 2,294,545.55
Back = S 88° 28' 29.83" E
Ahead = S 49° 00' 49.32" E
Chord Bear = S 68° 44' 39.58" E

Course from PT CORDOVA 37 to PC CORDOVA 40 S 49° 00' 49.32" E Dist 176.78

Curve Data

Curve CORDOVA 40
P.I. Station 282+63.12 N 13,778,543.22 E 2,295,745.28
Delta = 87° 59' 43.14" (LT)
Degree = 7° 26' 27.64"
Tangent = 743.52
Length = 1,182.57
Radius = 770.00
External = 300.38
Long Chord = 1,069.73
Mid. Ord. = 216.09
P.C. Station 275+19.60 N 13,779,030.87 E 2,295,184.02
P.T. Station 287+02.17 N 13,779,087.07 E 2,296,252.27
C.C. N 13,779,612.12 E 2,295,689.05
Back = S 49° 00' 49.32" E
Ahead = N 42° 59' 27.54" E
Chord Bear = N 86° 59' 19.11" E

Course from PT CORDOVA 40 to PC CORDOVA 43 N 42° 59' 27.54" E Dist 101.30

Curve Data

Curve CORDOVA 43
P.I. Station 291+26.91 N 13,779,397.75 E 2,296,541.90
Delta = 45° 34' 13.50" (RT)
Degree = 7° 26' 27.64"
Tangent = 323.44
Length = 612.42
Radius = 770.00
External = 65.17
Long Chord = 596.41
Mid. Ord. = 60.09
P.C. Station 288+03.47 N 13,779,161.17 E 2,296,321.35
P.T. Station 294+15.89 N 13,779,405.87 E 2,296,865.24
C.C. N 13,778,636.12 E 2,296,884.57
Back = N 42° 59' 27.54" E
Ahead = N 88° 33' 41.04" E
Chord Bear = N 65° 46' 34.29" E

Course from PT CORDOVA 43 to CORDOVA45 N 88° 33' 41.04" E Dist 627.83

Point CORDOVA45 N 13,779,421.64 E 2,297,492.87 Sta 300+43.72

=====
Ending chain CORDOVA description

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
DATE: 11/17/2023

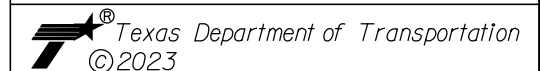
REV. NO.	DATE	DESCRIPTION	BY
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SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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HORIZONTAL ALIGNMENT DATA

SHEET 2 OF 5

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	162

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\General\1277500_HainData01.dgn

SH46

Beginning chain SH46 description

Point SH461 N 13,777,353.16 E 2,279,802.31 Sta 149+46.95

Course from SH461 to PC SH46 3 N 24° 33' 01.65" W Dist 982.05

Curve Data

Curve SH46 3
P.I. Station = 167+07.91 N 13,778,954.92 E 2,279,070.64
Delta = 15° 29' 00.00" (LT)
Degree = 1° 00' 00.00"
Tangent = 778.91
Length = 1,548.33
Radius = 5,729.58
External = 52.70
Long Chord = 1,543.63
Mid. Ord. = 52.22
P.C. Station = 159+29.00 N 13,778,246.43 E 2,279,394.27
P.T. Station = 174+77.33 N 13,779,551.31 E 2,278,569.61
C.C. = N 13,775,865.82 E 2,274,182.67
Back = N 24° 33' 01.65" W
Ahead = N 40° 02' 01.65" W
Chord Bear = N 32° 17' 31.65" W

Course from PT SH46 3 to SH465 N 40° 02' 01.65" W Dist 397.18

Point SH465 N 13,779,855.42 E 2,278,314.13 Sta 178+74.52

Ending chain SH46 description

ALBERT GRV

Beginning chain ALBERT description

Feature: Geom Centerline

Point ALBERT1 N 13,779,246.75 E 2,292,123.01 Sta 10+00.00

Course from ALBERT1 to ALBERT3 N 0° 25' 46.59" W Dist 103.58

Point ALBERT3 N 13,779,350.33 E 2,292,122.23 Sta 11+03.58

Course from ALBERT3 to ALBERT4 N 0° 28' 53.55" W Dist 50.05

Point ALBERT4 N 13,779,400.37 E 2,292,121.81 Sta 11+53.63

Ending chain ALBERT description

ERIC PATH

Beginning chain ERIC description

Feature: Geom Centerline

Point ERIC1 N 13,779,226.89 E 2,292,609.72 Sta 10+00.00

Course from ERIC1 to ERIC3 N 1° 34' 36.12" E Dist 110.79

Point ERIC3 N 13,779,337.64 E 2,292,612.77 Sta 11+10.79

Course from ERIC3 to ERIC4 N 1° 34' 36.12" E Dist 49.64

Point ERIC4 N 13,779,387.27 E 2,292,614.13 Sta 11+60.44

Ending chain ERIC description

HUBER

Beginning chain HUBERRD description

Point HUBERBL71 N 13,778,403.12 E 2,289,318.23 Sta 1000+00.00

Course from HUBERBL71 to PC HUBERBL7 3 N 0° 34' 49.04" W Dist 979.11

Curve Data

Curve HUBERBL7 3
P.I. Station = 1010+10.32 N 13,779,413.39 E 2,289,308.00
Delta = 4° 38' 36.16" (RT)
Degree = 7° 26' 27.64"
Tangent = 31.22
Length = 62.40
Radius = 770.00
External = 0.63
Long Chord = 62.39
Mid. Ord. = 0.63
P.C. Station = 1009+79.11 N 13,779,382.18 E 2,289,308.32
P.T. Station = 1010+41.51 N 13,779,444.53 E 2,289,310.21
C.C. = N 13,779,389.97 E 2,290,078.28
Back = N 0° 34' 49.04" W
Ahead = N 4° 03' 47.12" E
Chord Bear = N 1° 44' 29.04" E

Course from PT HUBERBL7 3 to PC HUBERBL7 6 N 4° 03' 47.12" E Dist 282.57

Curve Data

Curve HUBERBL7 6
P.I. Station = 1014+07.93 N 13,779,810.06 E 2,289,335.85
Delta = 0° 51' 04.34" (LT)
Degree = 0° 30' 27.14"
Tangent = 83.86
Length = 167.71
Radius = 11,288.92
External = 0.31
Long Chord = 167.71
Mid. Ord. = 0.31
P.C. Station = 1013+24.07 N 13,779,726.39 E 2,289,330.24
P.T. Station = 1014+91.79 N 13,779,893.80 E 2,289,340.23
C.C. = N 13,780,482.71 E 2,278,066.68
Back = N 3° 50' 29.42" E
Ahead = N 2° 59' 25.08" E
Chord Bear = N 3° 24' 57.25" E

Course from PT HUBERBL7 6 to HUBERBL79 N 2° 46' 49.78" E Dist 218.04

Point HUBERBL79 N 13,780,111.58 E 2,289,350.81 Sta 1017+09.82

Course from HUBERBL79 to HUBERBL710 N 2° 57' 26.27" E Dist 417.77

Point HUBERBL710 N 13,780,528.80 E 2,289,372.36 Sta 1021+27.59

Ending chain HUBERRD description

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

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ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
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SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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HORIZONTAL ALIGNMENT DATA

SHEET 3 OF 5

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:			HIGHWAY NO.:
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	163

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\General\1277500_HairData01.dgn

CORDOVA LOOP E

Beginning chain CORDLP E description
Feature: Geom Centerline

Point 252 N 13,779,398.64 E 2,283,724.03 Sta 10+00.00

Course from 252 to PC CORDLP E 3 N 4° 40' 43.09" E Dist 56.57

Curve Data

Curve CORDLP E 3
P.I. Station 10+65.60 N 13,779,464.02 E 2,283,729.38
Delta = 5° 10' 14.68" (LT)
Degree = 28° 38' 52.40"
Tangent = 9.03
Length = 18.05
Radius = 200.00
External = 0.20
Long Chord = 18.04
Mid. Ord. = 0.20
P.C. Station 10+56.57 N 13,779,455.02 E 2,283,728.64
P.T. Station 10+74.61 N 13,779,473.05 E 2,283,729.30
C.C. N 13,779,471.33 E 2,283,529.31
Back = N 4° 40' 43.08" E
Ahead = N 0° 29' 31.59" W
Chord Bear = N 2° 05' 35.74" E

Course from PT CORDLP E 3 to 253 N 0° 29' 31.60" W Dist 24.19

Point 253 N 13,779,497.24 E 2,283,729.09 Sta 10+98.80

Ending chain CORDLP E description

CORDOVA LOOP W

Beginning chain CORLP W description
Feature: Geom Centerline

Point 254 N 13,779,358.97 E 2,284,193.70 Sta 10+00.00

Course from 254 to 255 N 0° 47' 41.89" W Dist 53.38

Point 255 N 13,779,412.35 E 2,284,192.96 Sta 10+53.38

Course from 255 to 256 N 0° 47' 41.89" W Dist 139.24

Point 256 N 13,779,551.57 E 2,284,191.03 Sta 11+92.62

Ending chain CORLP W description

LABATT ST

Beginning chain LABATT description
Feature: Geom Centerline

Point LABATT1 N 13,779,427.61 E 2,291,049.09 Sta 10+00.00

Course from LABATT1 to LABATT3 N 0° 34' 57.29" W Dist 89.21

Point LABATT3 N 13,779,516.82 E 2,291,048.18 Sta 10+89.21

Course from LABATT3 to LABATT4 N 0° 34' 57.29" W Dist 117.22

Point LABATT4 N 13,779,634.03 E 2,291,046.99 Sta 12+06.43

Ending chain LABATT description

CORDOVA CROSSING

Beginning chain CORDXING description
Feature: Geom Centerline

Curve Data

Curve CORDXING 1
P.I. Station 10+65.16 N 13,779,249.96 E 2,284,194.43
Delta = 14° 08' 56.91" (LT)
Degree = 10° 54' 48.53"
Tangent = 65.16
Length = 129.65
Radius = 525.00
External = 4.03
Long Chord = 129.32
Mid. Ord. = 4.00
P.C. Station 10+00.00 N 13,779,186.77 E 2,284,178.55
P.T. Station 11+29.65 N 13,779,315.12 E 2,284,194.37
C.C. N 13,779,314.66 E 2,283,669.37
Back = N 14° 05' 55.75" E
Ahead = N 0° 03' 01.17" W
Chord Bear = N 7° 01' 27.29" E

Course from PT CORDXING 1 to CORDXING3 N 0° 03' 01.17" W Dist 43.83

Point CORDXING3 N 13,779,358.95 E 2,284,194.33 Sta 11+73.48

Ending chain CORDXING description

BARBAROSA RD

Beginning chain BARB description
Feature: Geom Centerline

Point BARB1 N 13,779,376.98 E 2,285,480.52 Sta 10+00.00

Course from BARB1 to BARB3 N 1° 24' 59.72" W Dist 31.99

Point BARB3 N 13,779,408.97 E 2,285,479.73 Sta 10+31.99

Course from BARB3 to BARB4 N 1° 24' 59.72" W Dist 99.62

Point BARB4 N 13,779,508.56 E 2,285,477.27 Sta 11+31.62

Ending chain BARB description

PRAIRIE JCT

Beginning chain PRAIRIE description
Feature: Geom Centerline

Point PRAIRIE1 N 13,779,419.39 E 2,290,092.34 Sta 10+00.00

Course from PRAIRIE1 to PRAIRIE3 N 1° 31' 30.17" E Dist 47.00

Point PRAIRIE3 N 13,779,466.37 E 2,290,093.59 Sta 10+47.00

Course from PRAIRIE3 to PRAIRIE4 N 1° 21' 51.29" E Dist 90.24

Point PRAIRIE4 N 13,779,556.58 E 2,290,095.74 Sta 11+37.24

Ending chain PRAIRIE description

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
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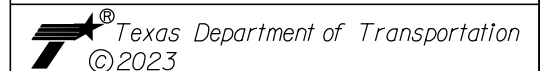
REV. NO.	DATE	DESCRIPTION	BY
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SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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HORIZONTAL ALIGNMENT DATA

SHEET 4 OF 5

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:			HIGHWAY NO.:
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	164

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\General\1277500_HaInData01.dgn

☉ JULIA PATH

Beginning chain JULIA description
Feature: Geom Centerline

Point JULIA1 N 13,779,222.27 E 2,291,608.03 Sta 10+00.00

Course from JULIA1 to PC JULIA 3 N 0° 28' 31.88" W Dist 50.97

Curve Data

Curve JULIA 3
P.I. Station 10+68.43 N 13,779,290.69 E 2,291,607.46
Delta = 2° 00' 00.47" (RT)
Degree = 5° 43' 46.48"
Tangent = 17.46
Length = 34.91
Radius = 1,000.00
External = 0.15
Long Chord = 34.91
Mid. Ord. = 0.15
P.C. Station 10+50.97 N 13,779,273.23 E 2,291,607.60
P.T. Station 10+85.88 N 13,779,308.14 E 2,291,607.92
C.C. = N 13,779,281.53 E 2,292,607.57
Back = N 0° 28' 31.88" W
Ahead = N 1° 31' 28.59" E
Chord Bear = N 0° 31' 28.35" E

Course from PT JULIA 3 to JULIA5 N 1° 31' 28.59" E Dist 105.88

Point JULIA5 N 13,779,413.98 E 2,291,610.74 Sta 11+91.76

Ending chain JULIA description

☉ YALE ST

Beginning chain YALE description
Feature: Geom Centerline

Point YALE1 N 13,779,403.69 E 2,291,997.24 Sta 10+00.00

Course from YALE1 to YALE3 N 0° 29' 30.30" W Dist 103.65

Point YALE3 N 13,779,507.34 E 2,291,996.35 Sta 11+03.65

Course from YALE3 to YALE4 N 0° 29' 30.30" W Dist 94.14

Point YALE4 N 13,779,601.48 E 2,291,995.54 Sta 11+97.79

Ending chain YALE description

☉ BRB_W

Beginning chain BRB W description

Point 286 N 13,779,171.14 E 2,295,021.29 Sta 500+00.00

Course from 286 to PC BRB W 3 N 38° 45' 24.90" E Dist 90.99

Curve Data

Curve BRB W 3
P.I. Station 502+65.97 N 13,779,385.71 E 2,295,178.21
Delta = 55° 52' 06.03" (RT)
Degree = 17° 21' 44.49"
Tangent = 174.98
Length = 321.78
Radius = 330.00
External = 43.52
Long Chord = 309.18
Mid. Ord. = 38.45
P.C. Station 500+90.99 N 13,779,242.10 E 2,295,078.25
P.T. Station 504+12.77 N 13,779,383.55 E 2,295,353.17
C.C. = N 13,779,053.57 E 2,295,349.10
Back = N 34° 50' 22.77" E
Ahead = S 89° 17' 31.19" E
Chord Bear = N 62° 46' 25.79" E

Ending chain BRB W description

☉ BRB_E

Beginning chain BRB E description

Point 287 N 13,779,091.83 E 2,296,256.71 Sta 600+00.00

Course from 287 to PC BRB E 3 N 45° 51' 30.44" W Dist 27.93

Curve Data

Curve BRB E 3
P.I. Station 601+67.22 N 13,779,208.29 E 2,296,136.70
Delta = 45° 23' 54.86" (RT)
Degree = 17° 12' 21.38"
Tangent = 139.29
Length = 263.85
Radius = 333.00
External = 27.96
Long Chord = 257.01
Mid. Ord. = 25.79
P.C. Station 600+27.93 N 13,779,111.28 E 2,296,236.66
P.T. Station 602+91.79 N 13,779,347.58 E 2,296,135.59
C.C. = N 13,779,350.25 E 2,296,468.58
Back = N 45° 51' 30.43" W
Ahead = N 0° 27' 35.58" W
Chord Bear = N 23° 09' 33.01" W

Course from PT BRB E 3 to 288 N 0° 27' 35.58" W Dist 63.55

Point 288 N 13,779,411.13 E 2,296,135.08 Sta 603+55.34

Ending chain BRB E description

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.

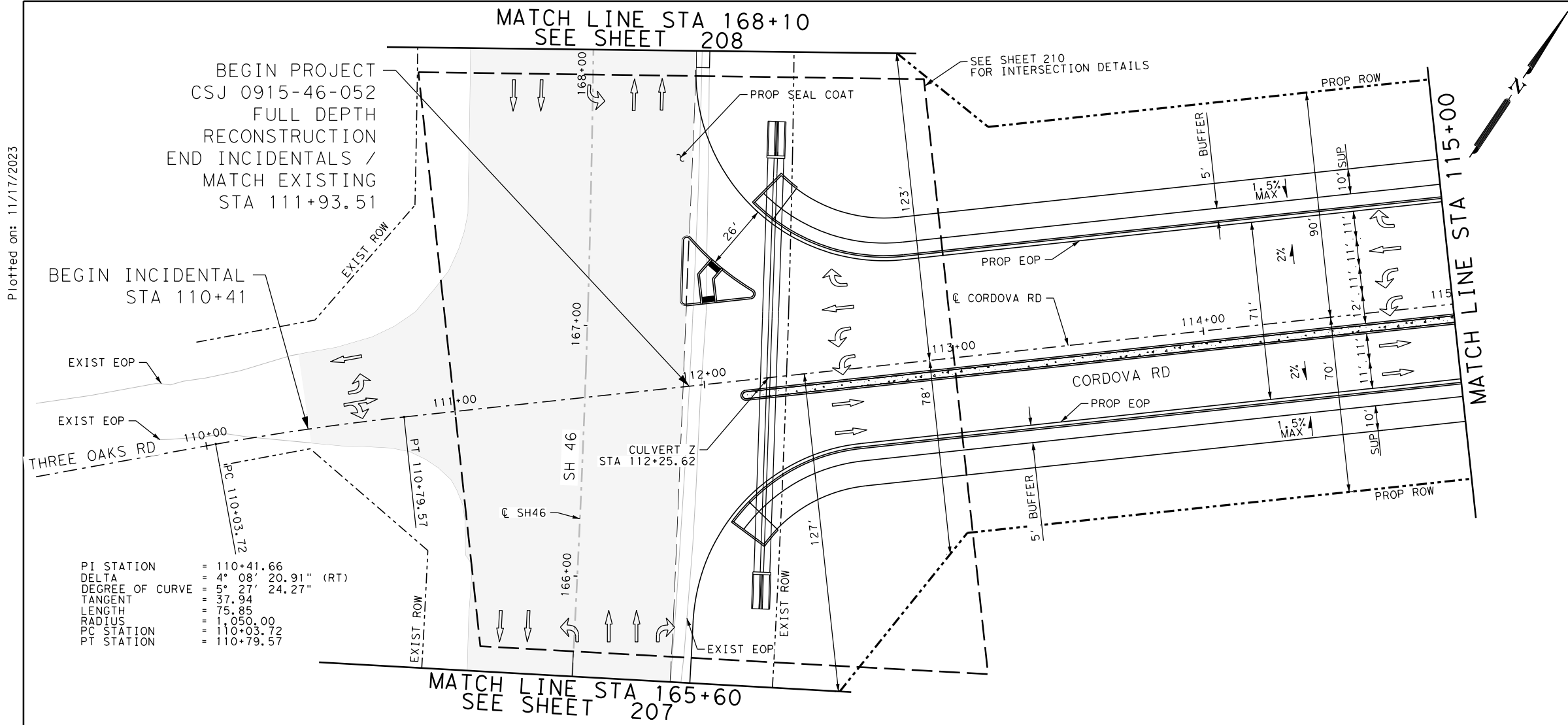


HORIZONTAL ALIGNMENT DATA

SHEET 5 OF 5

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:			HIGHWAY NO.:
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	165

Plotted on: 11/17/2023



LEGEND

	RETAINING WALL		EXIST ROW
	PROP ROW		DITCH FLOW LINE
	DRIVEWAY NUMBER		TRAFFIC FLOW
	ARMOR CURB SLOTS		MAILBOX
	CONC RIPRAP / DRIVEWAYS		SEAL COAT

- NOTES**
1. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING, EDGE OF GUTTER, OR FACE OF CURB UNLESS OTHERWISE NOTED.
 2. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK, I.E. FADED.
 3. REFER TO HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA AND ALIGNMENT INFORMATION.
 4. SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN

INTERIM REVIEW

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ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

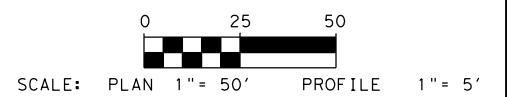
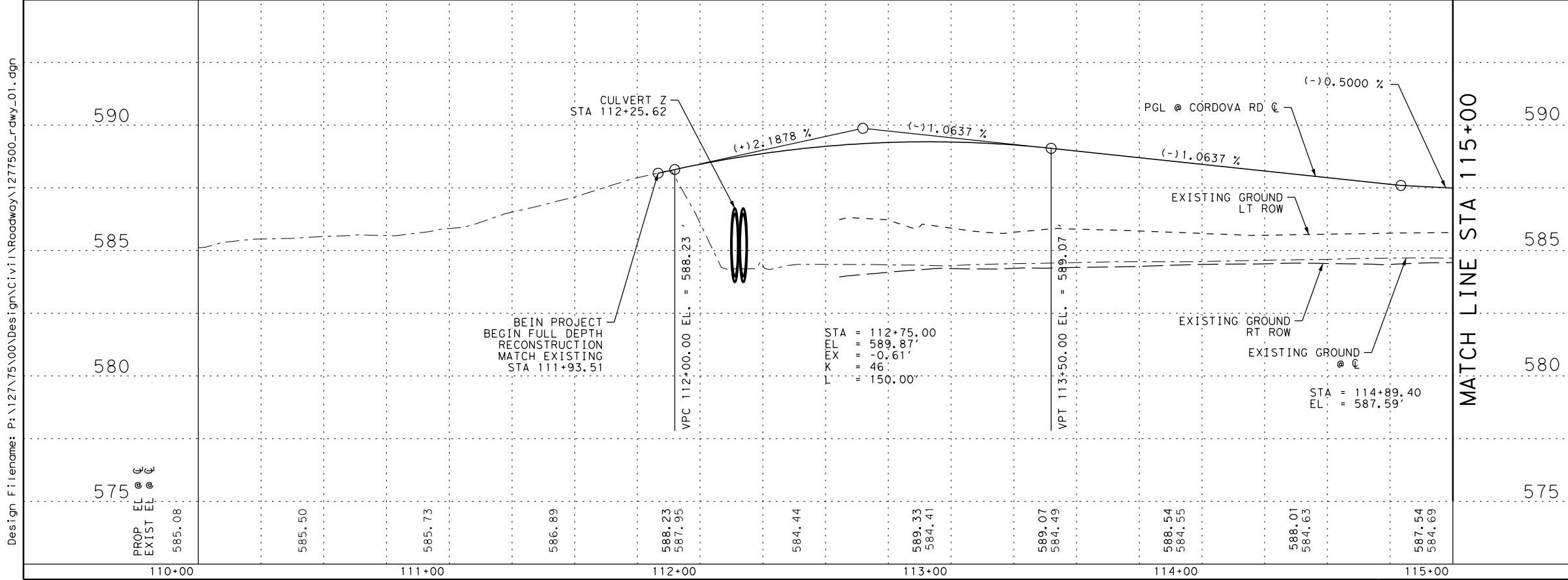
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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GUADALUPE COUNTY

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ROADWAY PLAN AND PROFILE

STA 110+00 TO STA 115+00

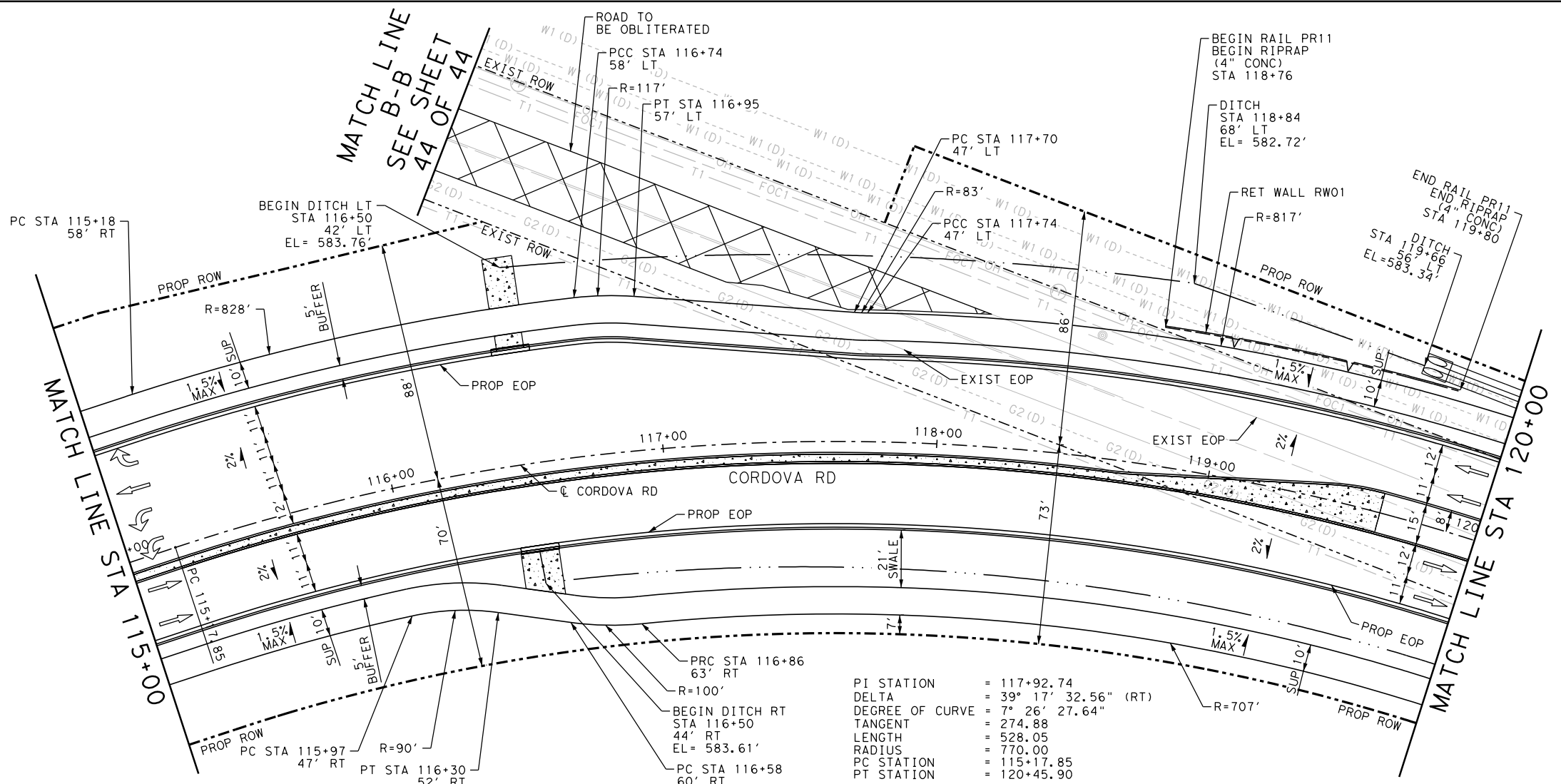
SHEET 1 OF 44

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				166

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Plotted on: 11/17/2023

Design File name: P:\12775\00\Design\Civil\Roadway\1277500_rdw_02.dgn



LEGEND

	RETAINING WALL		EXIST ROW
	PROP ROW		DITCH FLOW LINE
	DRIVEWAY NUMBER		TRAFFIC FLOW
	ARMOR CURB SLOTS		MAILBOX
	CONC RIPRAP / DRIVEWAYS		SEAL COAT

- NOTES**
1. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING, EDGE OF GUTTER, OR FACE OF CURB UNLESS OTHERWISE NOTED.
 2. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK. I.E. FADED.
 3. REFER TO HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA AND ALIGNMENT INFORMATION.
 4. SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023

PI STATION = 117+92.74
 DELTA = 39° 17' 32.56" (RT)
 DEGREE OF CURVE = 7° 26' 27.64"
 TANGENT = 274.88
 LENGTH = 528.05
 RADIUS = 770.00
 PC STATION = 115+17.85
 PT STATION = 120+45.90



SCALE: PLAN 1" = 50' PROFILE 1" = 5'

REV. NO.	DATE	DESCRIPTION	BY

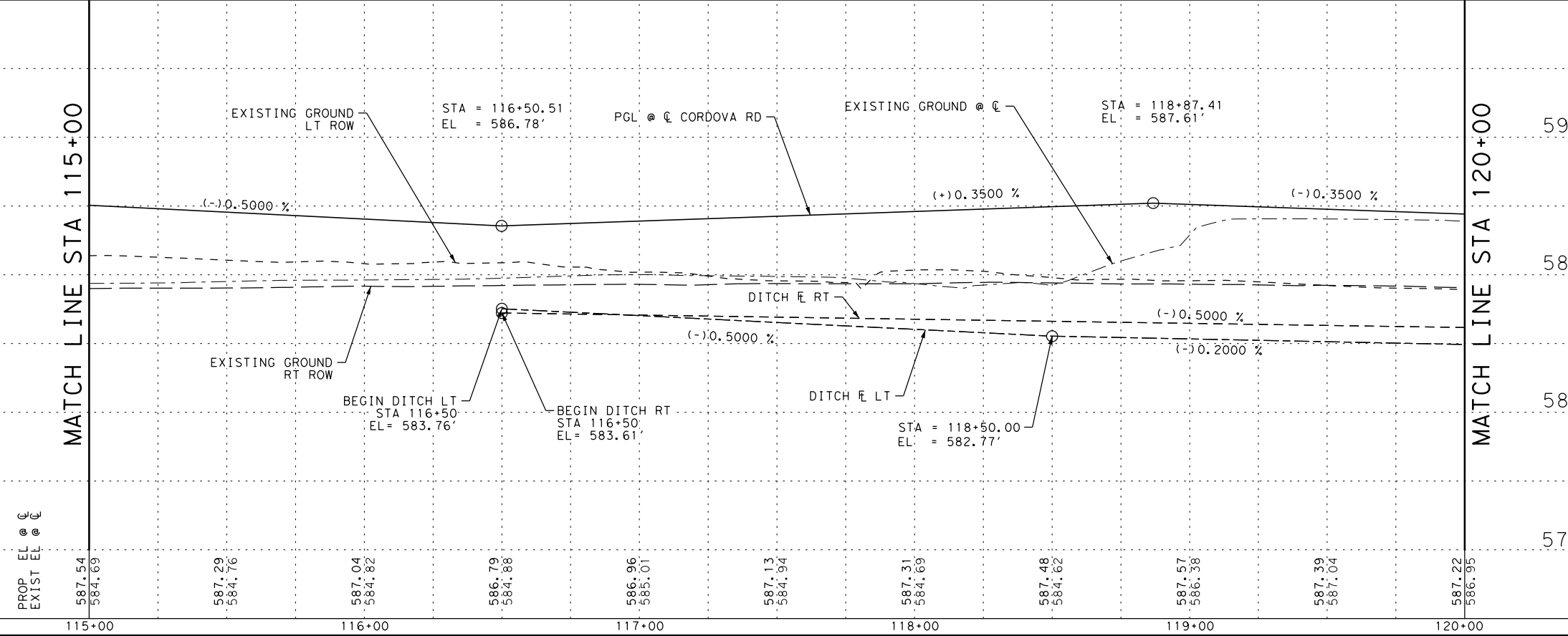


ROADWAY PLAN AND PROFILE

STA 115+00 TO STA 120+00

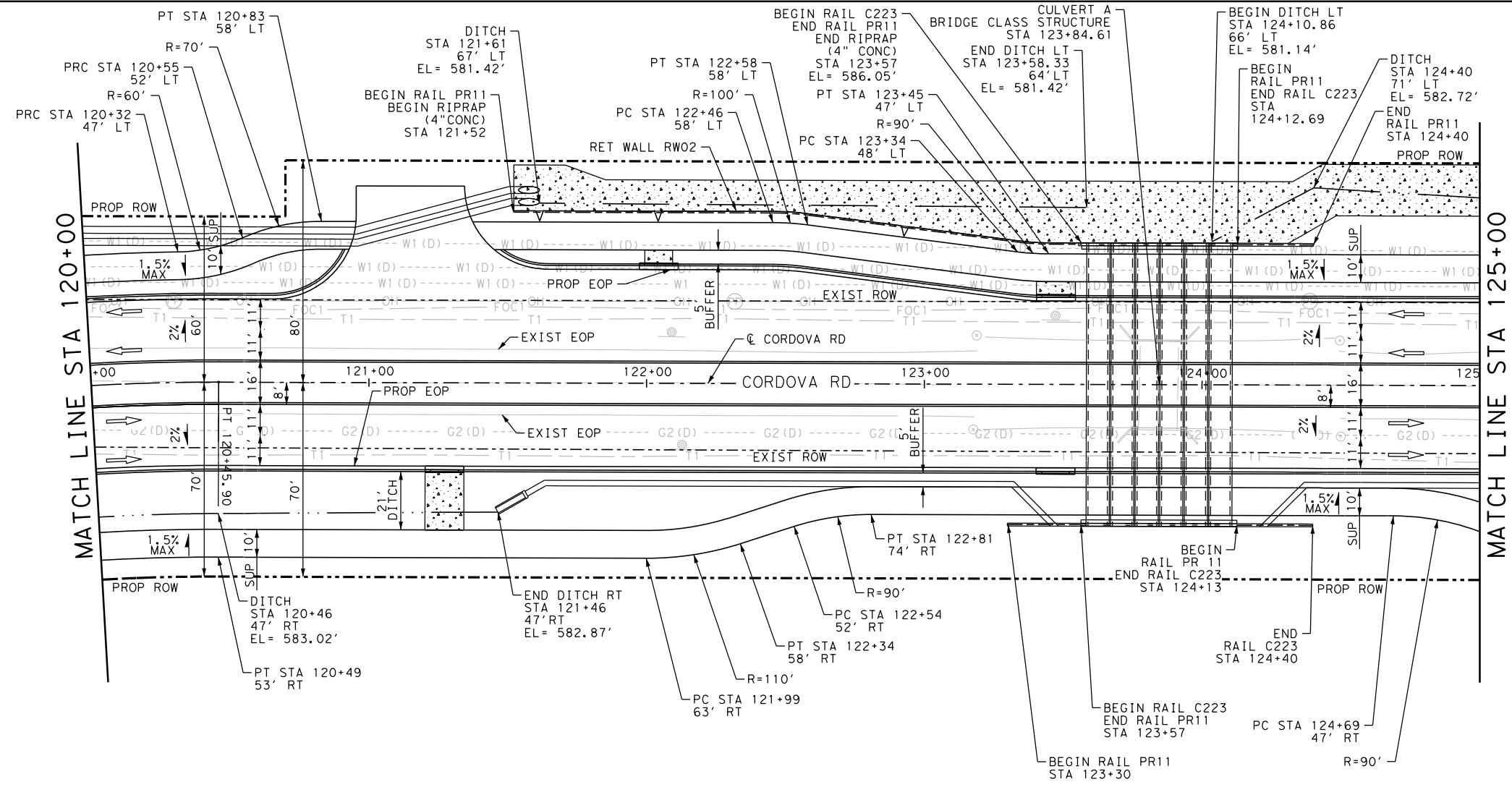
SHEET 2 OF 44

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				167



Plotted on: 11/17/2023

Design File name: P:\12775\00\Design\Civil\Roadway\1277500_rdw_03.dgn



LEGEND

- RETAINING WALL
- PROP ROW
- DRIVEWAY NUMBER
- ARMOR CURB SLOTS
- CONC RIPRAP / DRIVEWAYS
- EXIST ROW
- DITCH FLOW LINE
- TRAFFIC FLOW
- MAILBOX
- SEAL COAT

- NOTES**
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 - SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN

INTERIM REVIEW

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ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

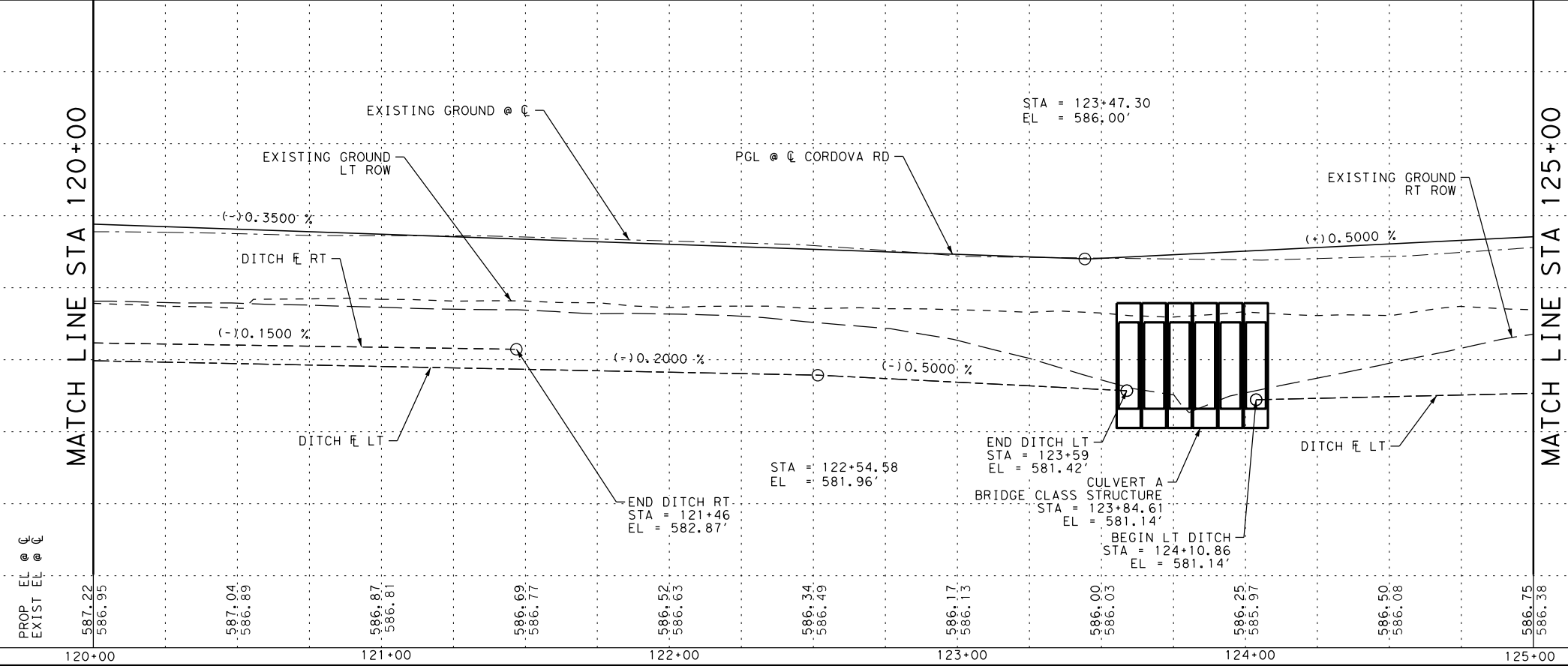
ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 5'



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000

TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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ROADWAY PLAN AND PROFILE

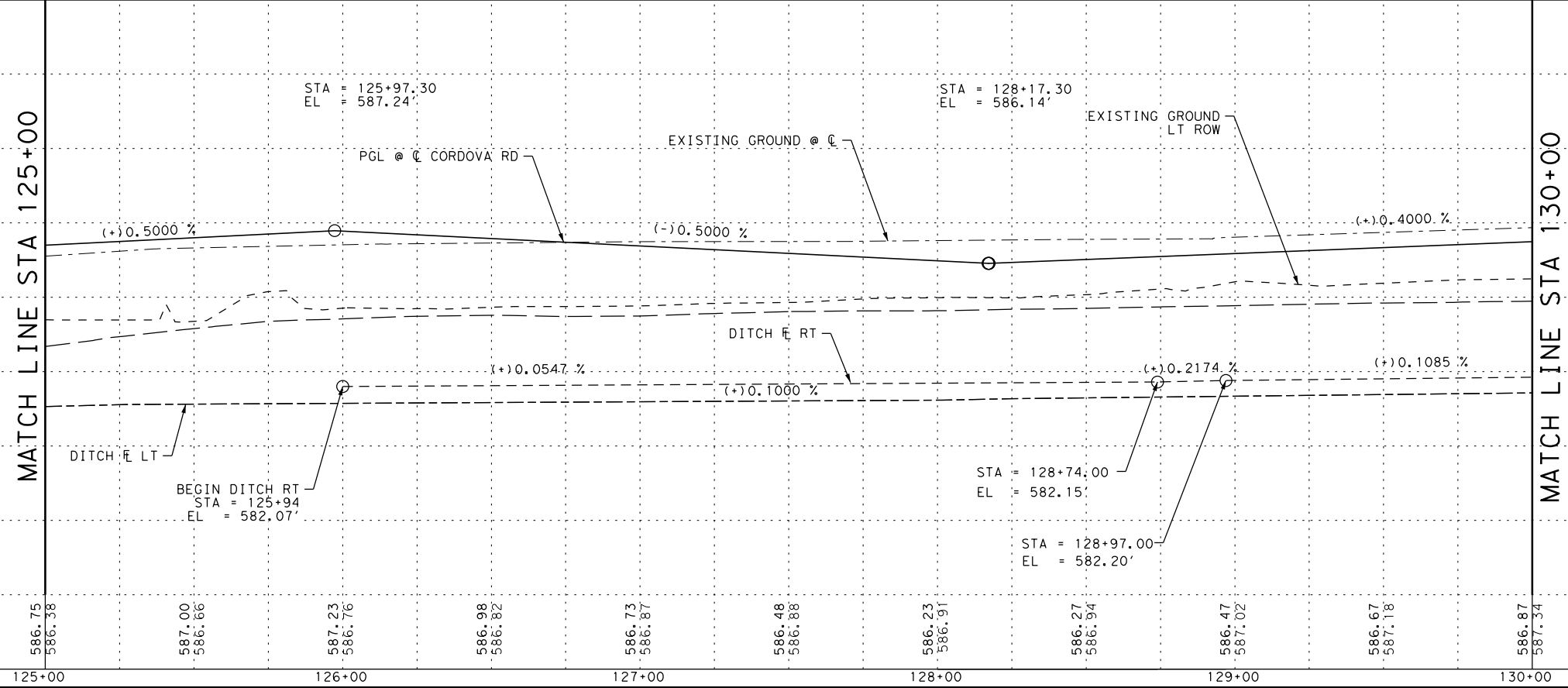
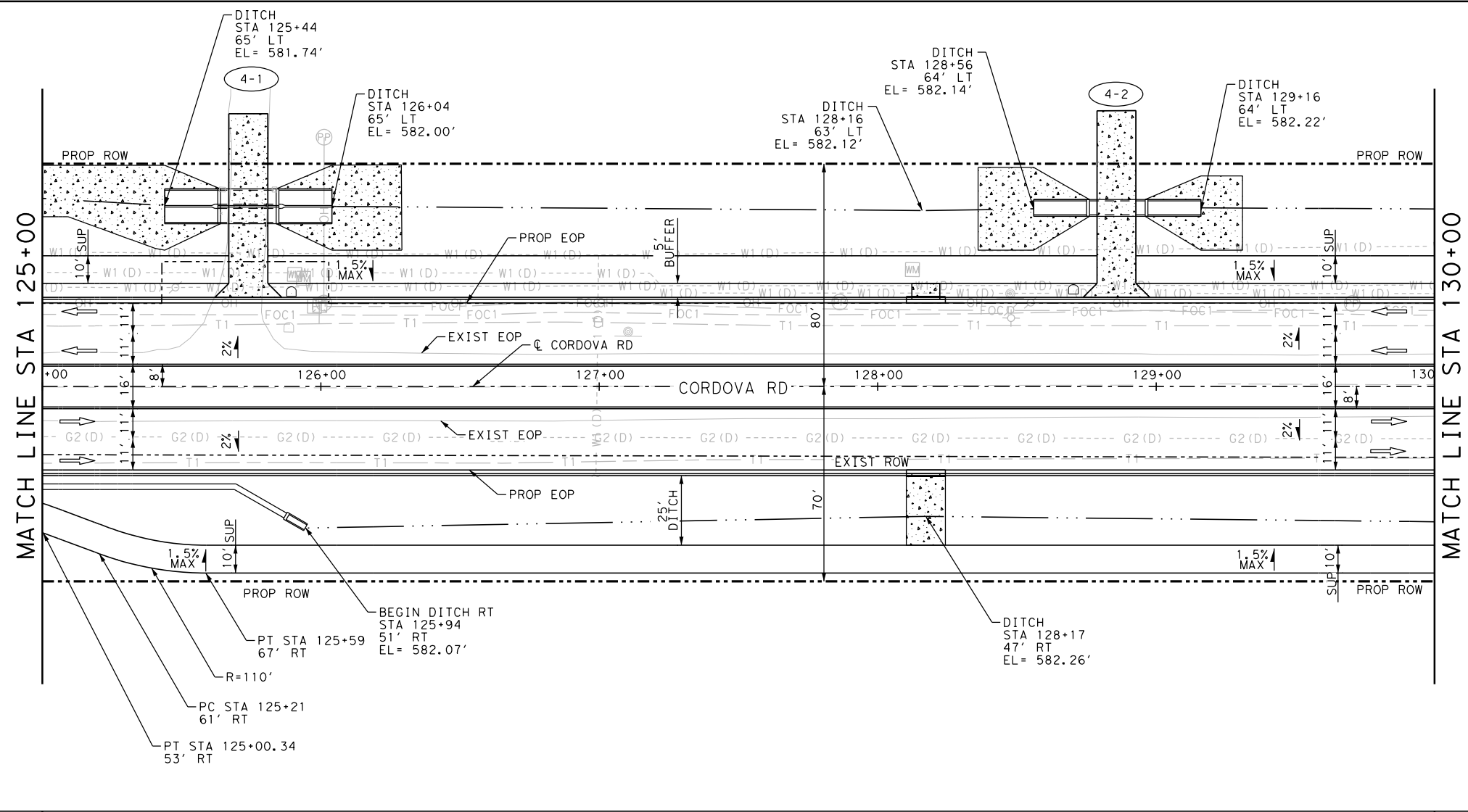
STA 120+00 TO STA 125+00

SHEET 3 OF 44

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	168

Plotted on: 11/17/2023

Design File name: P:\1275\00\Design\Civil\Roadway\127500_rdw_04.dgn



PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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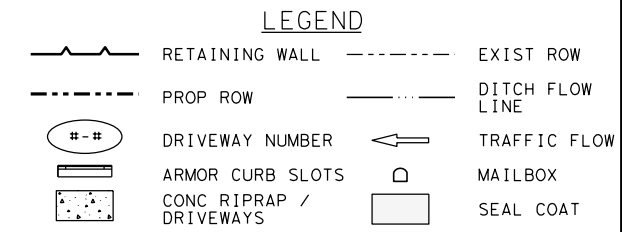
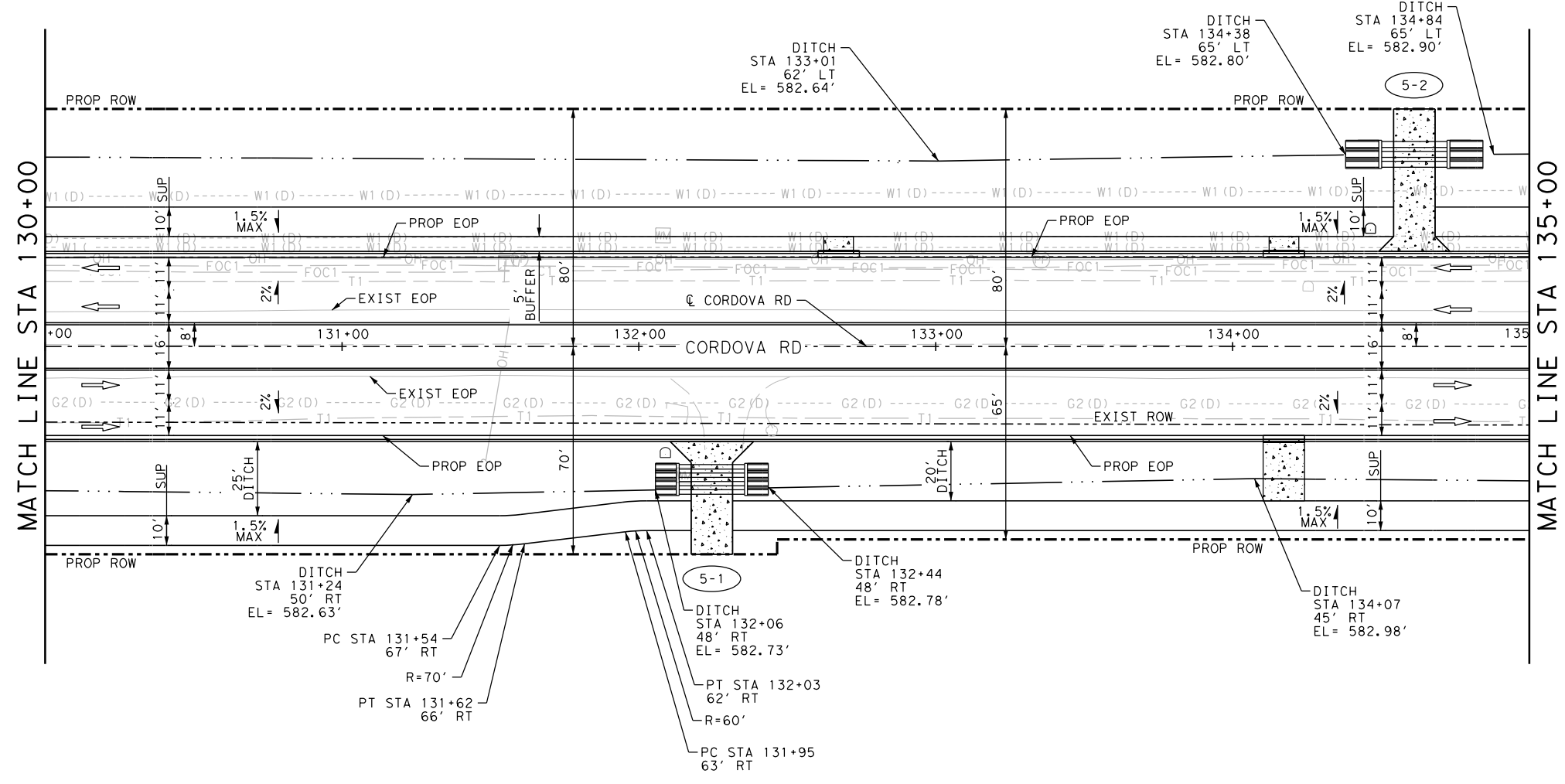
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 GUADALUPE COUNTY

Texas Department of Transportation
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ROADWAY PLAN AND PROFILE
 STA 125+00 TO STA 130+00
 SHEET 4 OF 44

Plotted on: 11/17/2023

Design File name: P:\1275\00\Design\Civil\Roadway\1277500_rdw_05.dgn



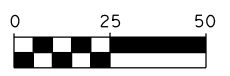
- NOTES**
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 4. SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN

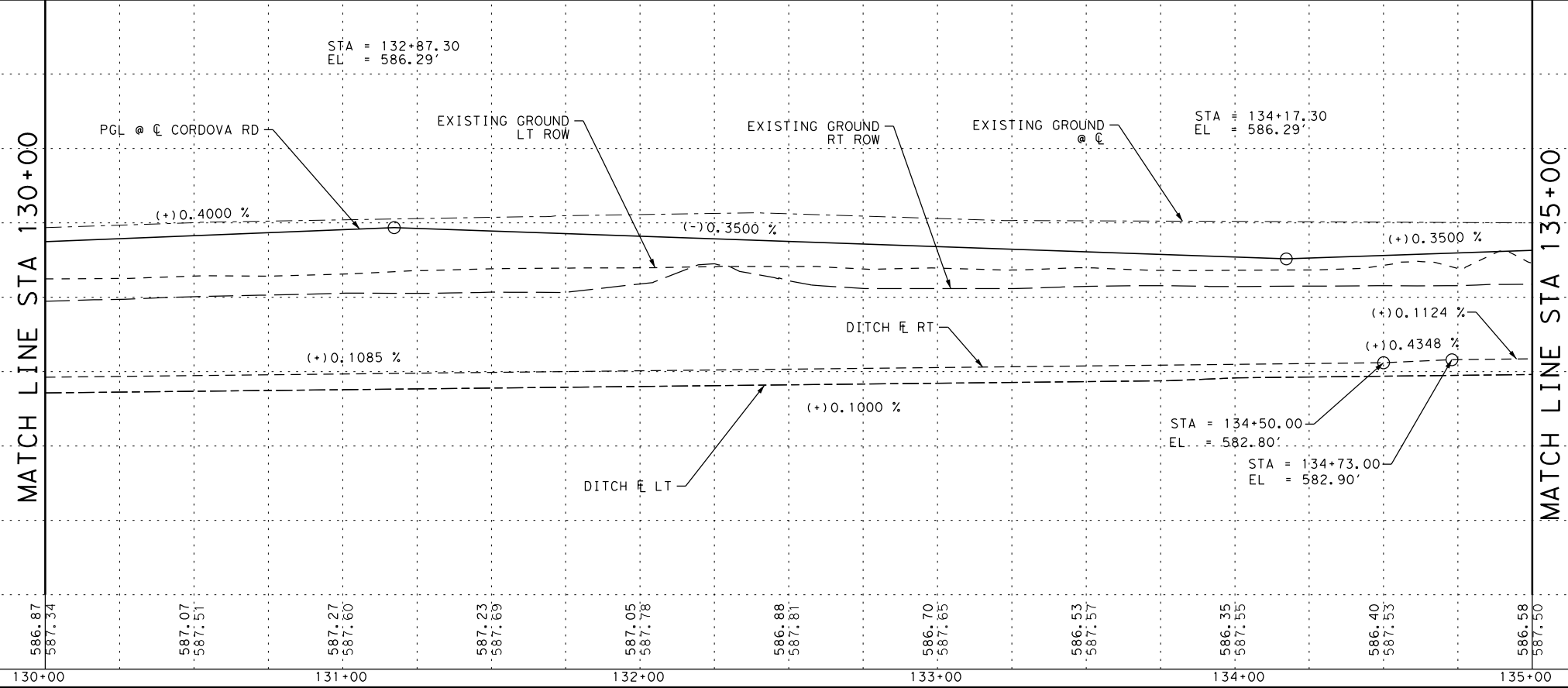
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 5'



REV. NO.	DATE	DESCRIPTION	BY
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PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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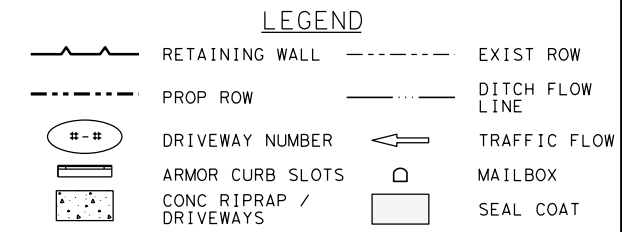
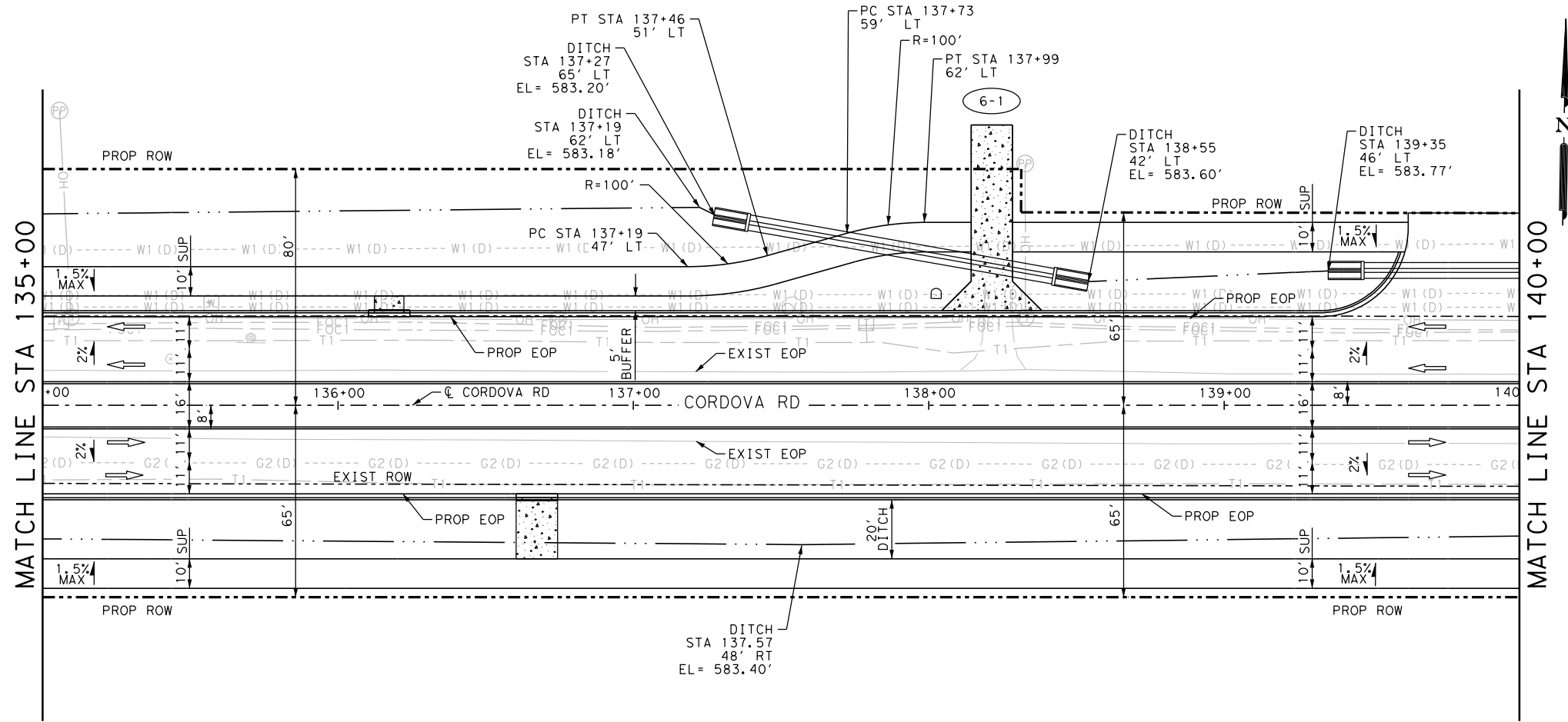
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ROADWAY PLAN AND PROFILE
 STA 130+00 TO STA 135+00
 SHEET 5 OF 44

CHK DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
DWG:	6	TEXAS		CORDOVA
CHK DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				170

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Roadway\1277500_rdw_06.dgn



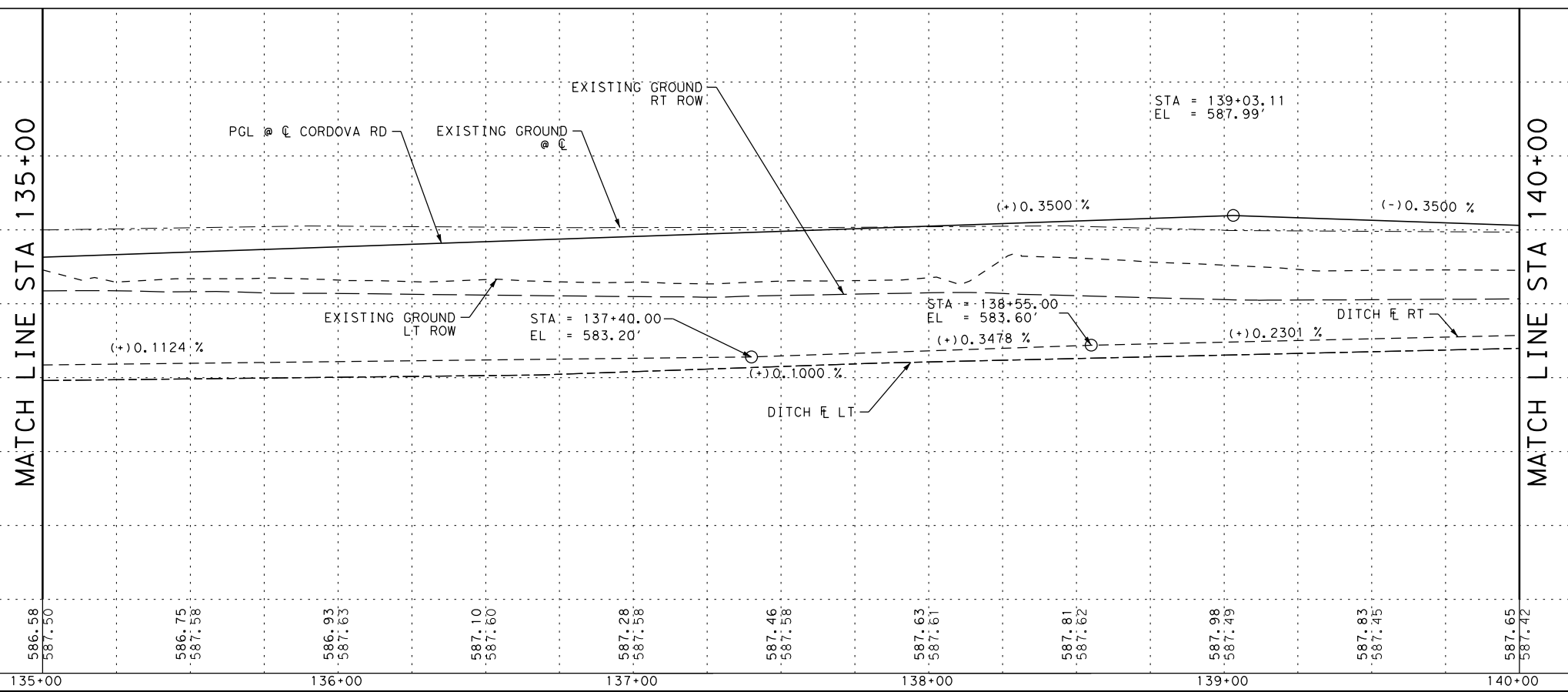
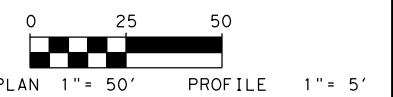
- NOTES**
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

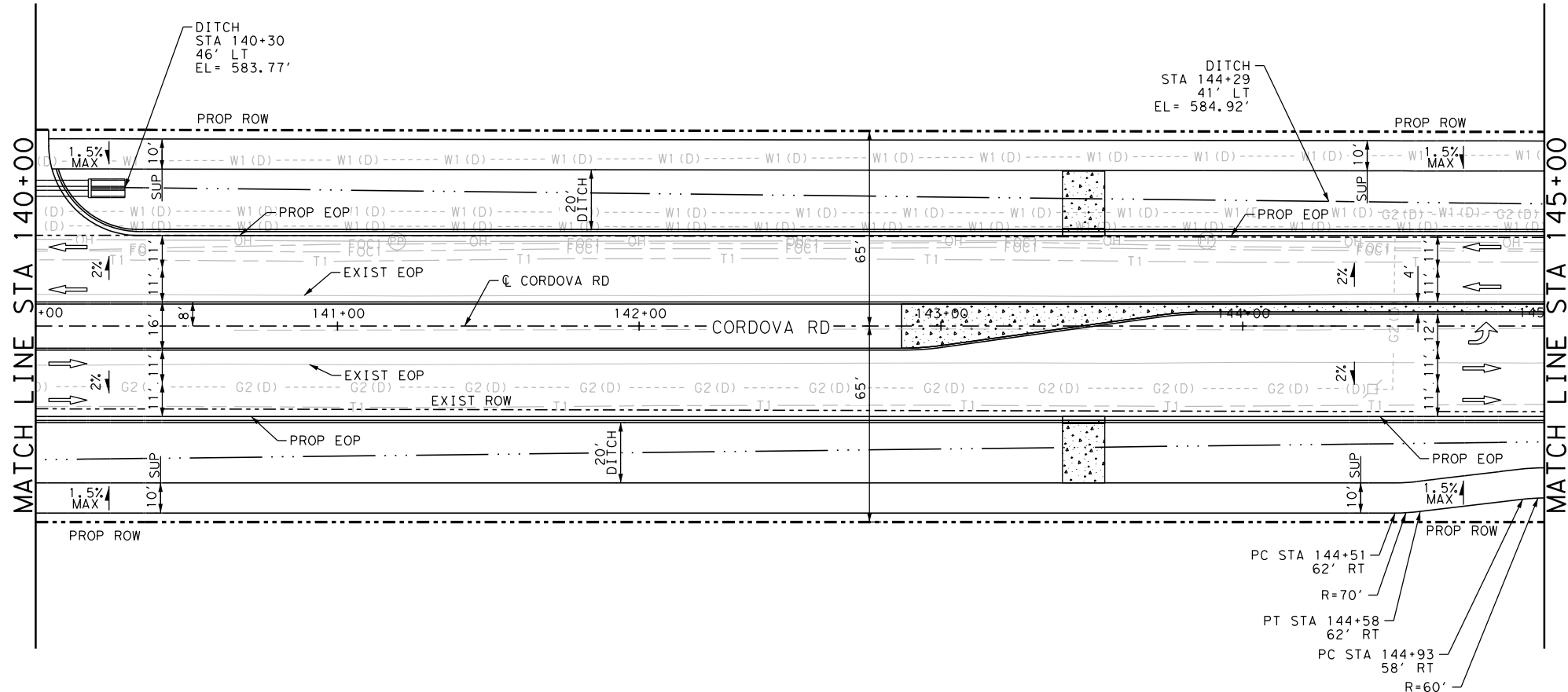
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
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ROADWAY PLAN AND PROFILE STA 135+00 TO STA 140+00 SHEET 6 OF 44			
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
CHK DGN:	6	TEXAS	
DWG:	DIST.:	COUNTY:	CONT. NO. SECT. NO. JOB NO. SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915 46 052 171

Plotted on: 11/17/2023

Design Filename: P:\127\75\00\Design\Civil\Roadway\1277500_rdw_07.dgn



LEGEND

	RETAINING WALL		EXIST ROW
	PROP ROW		DITCH FLOW LINE
	DRIVEWAY NUMBER		TRAFFIC FLOW
	ARMOR CURB SLOTS		MAILBOX
	CONC RIPRAP / DRIVEWAYS		SEAL COAT

NOTES

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4. SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN

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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 5'

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.

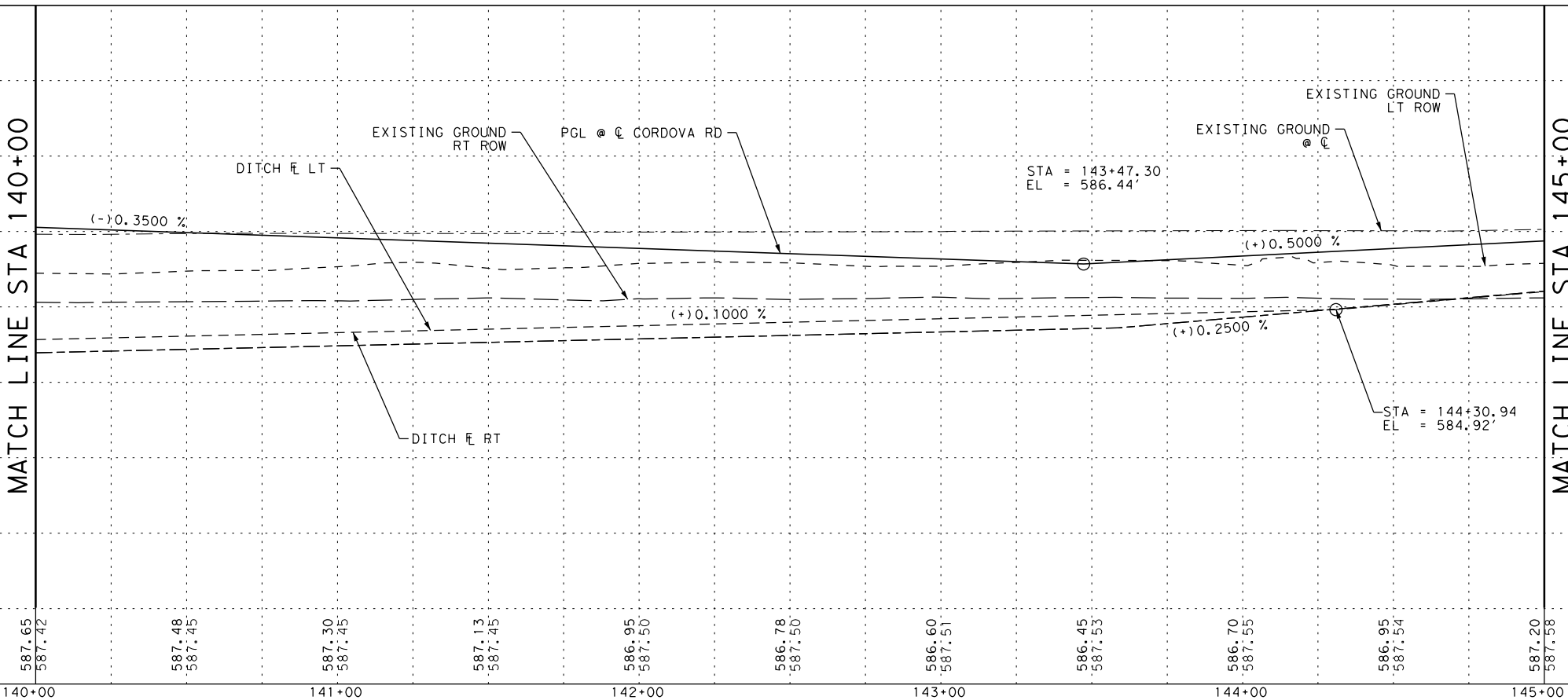


ROADWAY PLAN AND PROFILE

STA 140+00 TO STA 145+00

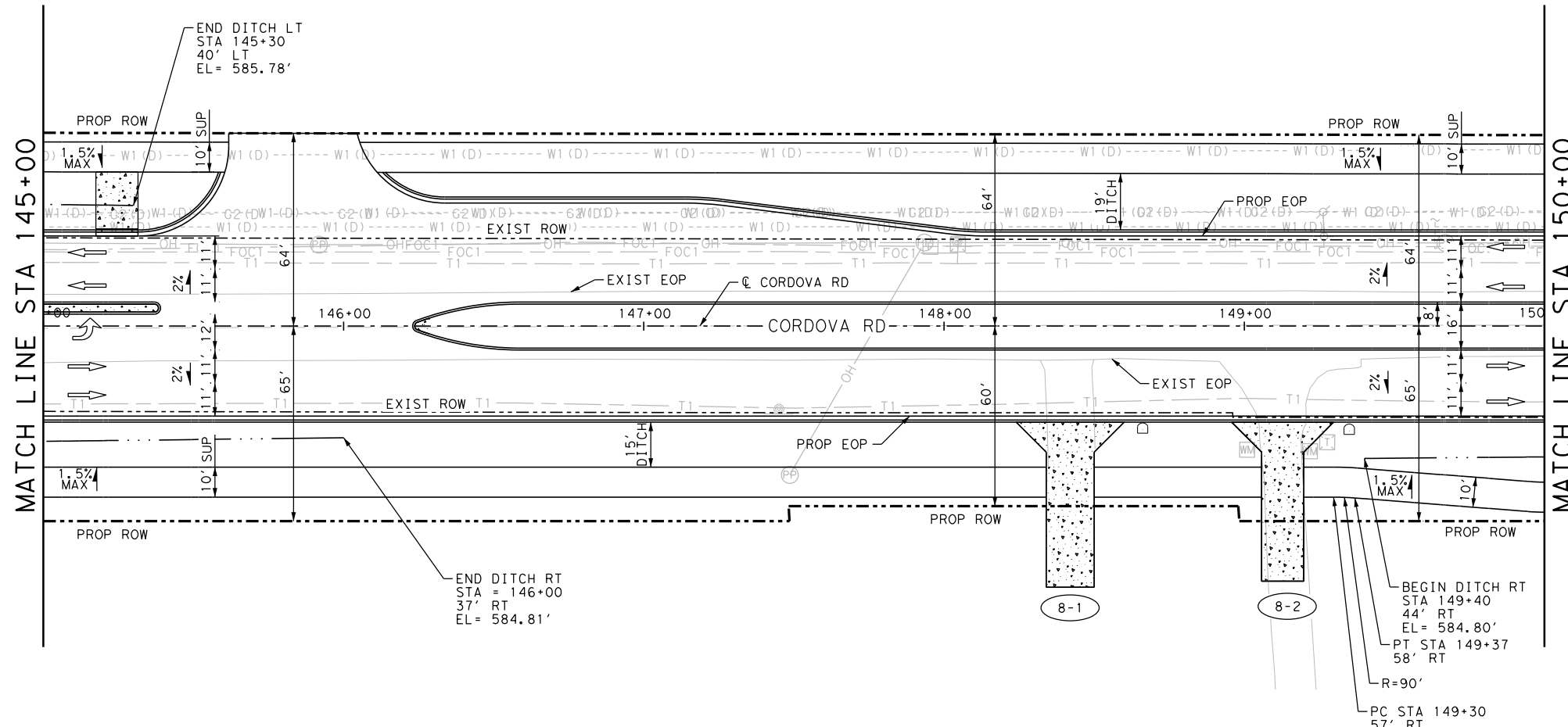
SHEET 7 OF 44

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	172



Plotted on: 11/17/2023

Design File name: P:\127175\00\Design\Civil\Roadway\1277500_rdw_08.dgn



LEGEND

	RETAINING WALL		EXIST ROW
	PROP ROW		DITCH FLOW LINE
	DRIVEWAY NUMBER		TRAFFIC FLOW
	ARMOR CURB SLOTS		MAILBOX
	CONC RIPRAP / DRIVEWAYS		SEAL COAT

- NOTES**
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DESIGN

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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 5'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

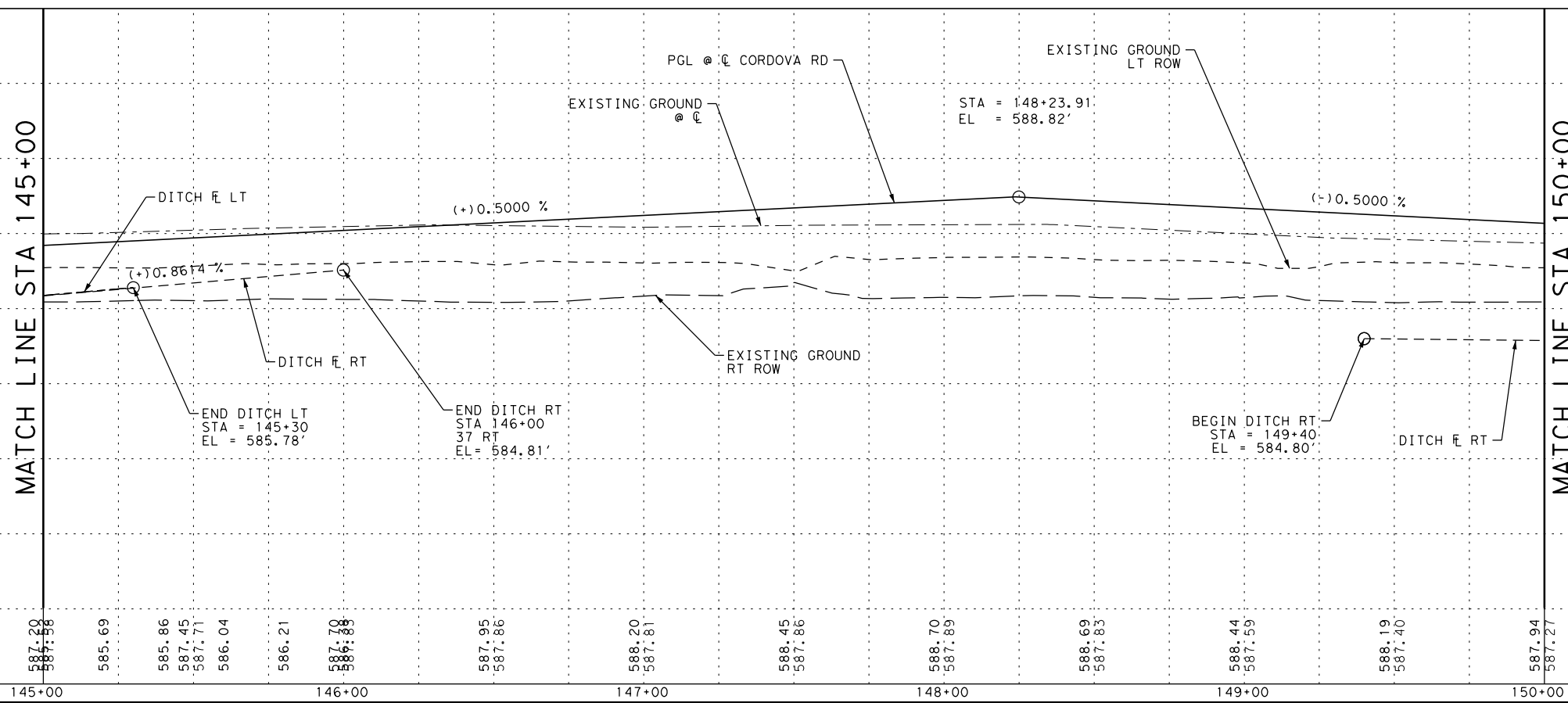
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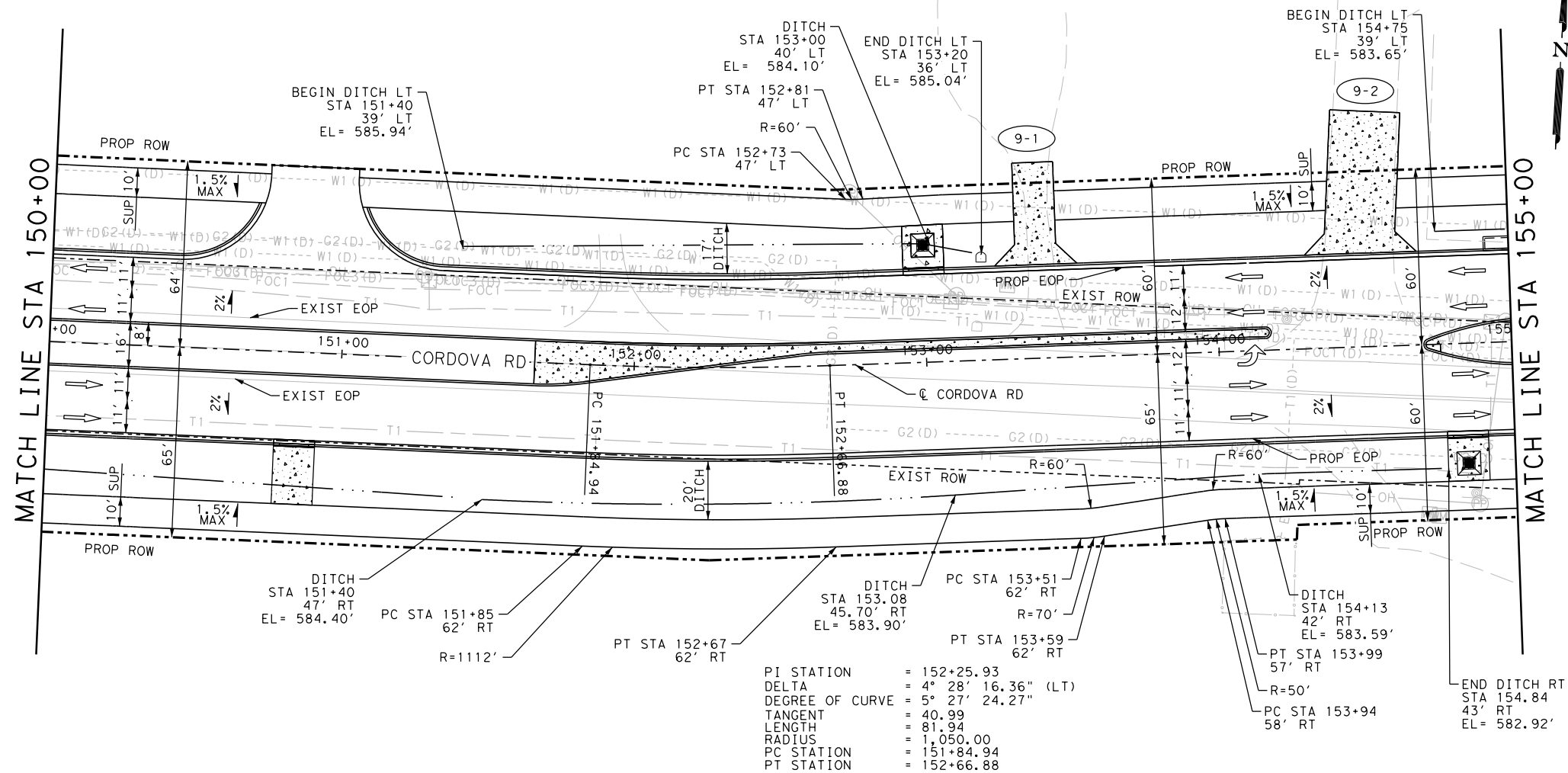
ROADWAY PLAN AND PROFILE
 STA 145+00 TO STA 150+00
 SHEET 8 OF 44

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				173



Plotted on: 11/17/2023

Design File name: P:\1275\00\Design\Civil\Roadway\1277500_rdw_09.dgn



LEGEND

	RETAINING WALL		EXIST ROW
	PROP ROW		DITCH FLOW LINE
	DRIVEWAY NUMBER		TRAFFIC FLOW
	ARMOR CURB SLOTS		MAILBOX
	CONC RIPRAP / DRIVEWAYS		SEAL COAT

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DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

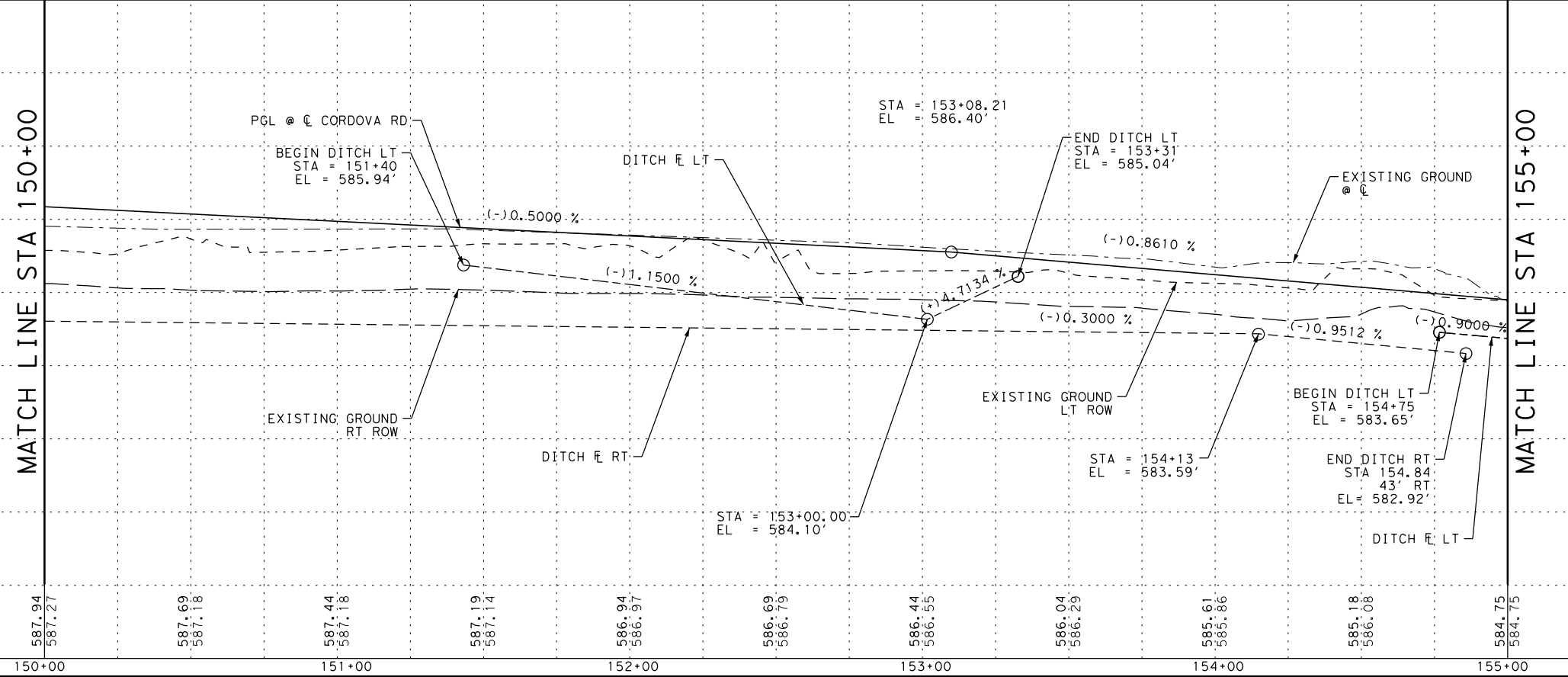
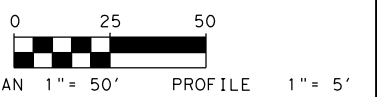
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023

PI STATION = 152+25.93
 DELTA = 4° 28' 16.36" (LT)
 DEGREE OF CURVE = 5° 27' 24.27"
 TANGENT = 40.99
 LENGTH = 81.94
 RADIUS = 1,050.00
 PC STATION = 151+84.94
 PT STATION = 152+66.88



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS

It's real.

THE STATE OF TEXAS
 GUADALUPE COUNTY

Texas Department of Transportation
 ©2023

ROADWAY PLAN AND PROFILE

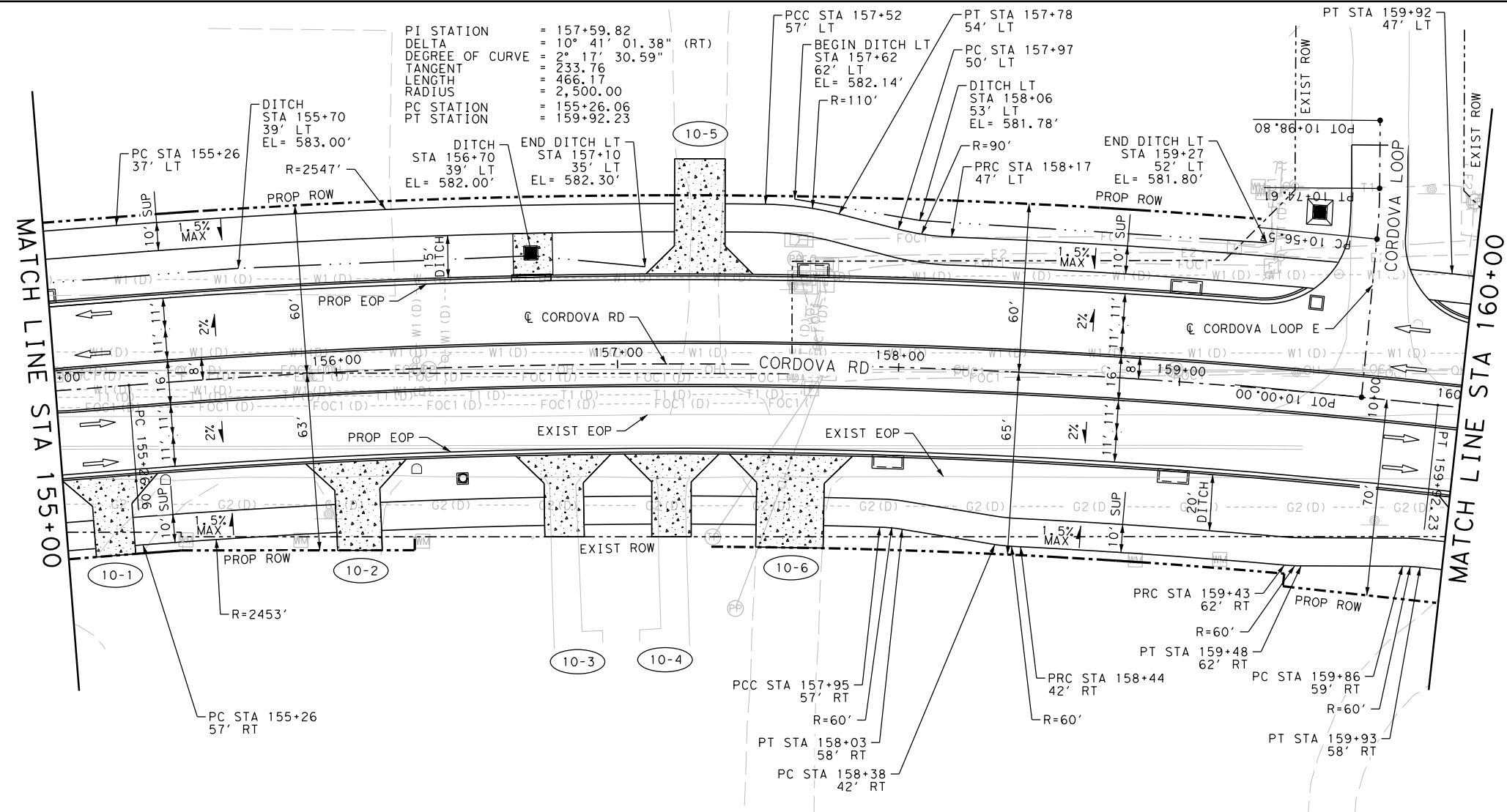
STA 150+00 TO STA 155+00

SHEET 9 OF 44

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				174

Plotted on: 11/17/2023

Design File name: P:\1275\00\Design\Civil\Roadway\1277500_rdw_10.dgn



LEGEND

	RETAINING WALL		EXIST ROW
	PROP ROW		DITCH FLOW LINE
	DRIVEWAY NUMBER		TRAFFIC FLOW
	ARMOR CURB SLOTS		MAILBOX
	CONC RIPRAP / DRIVEWAYS		SEAL COAT

- NOTES**
1. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING, EDGE OF GUTTER, OR FACE OF CURB UNLESS OTHERWISE NOTED.
 2. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK. I.E. FADED.
 3. REFER TO HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA AND ALIGNMENT INFORMATION.
 4. SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN
INTERIM REVIEW
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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 5'

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.

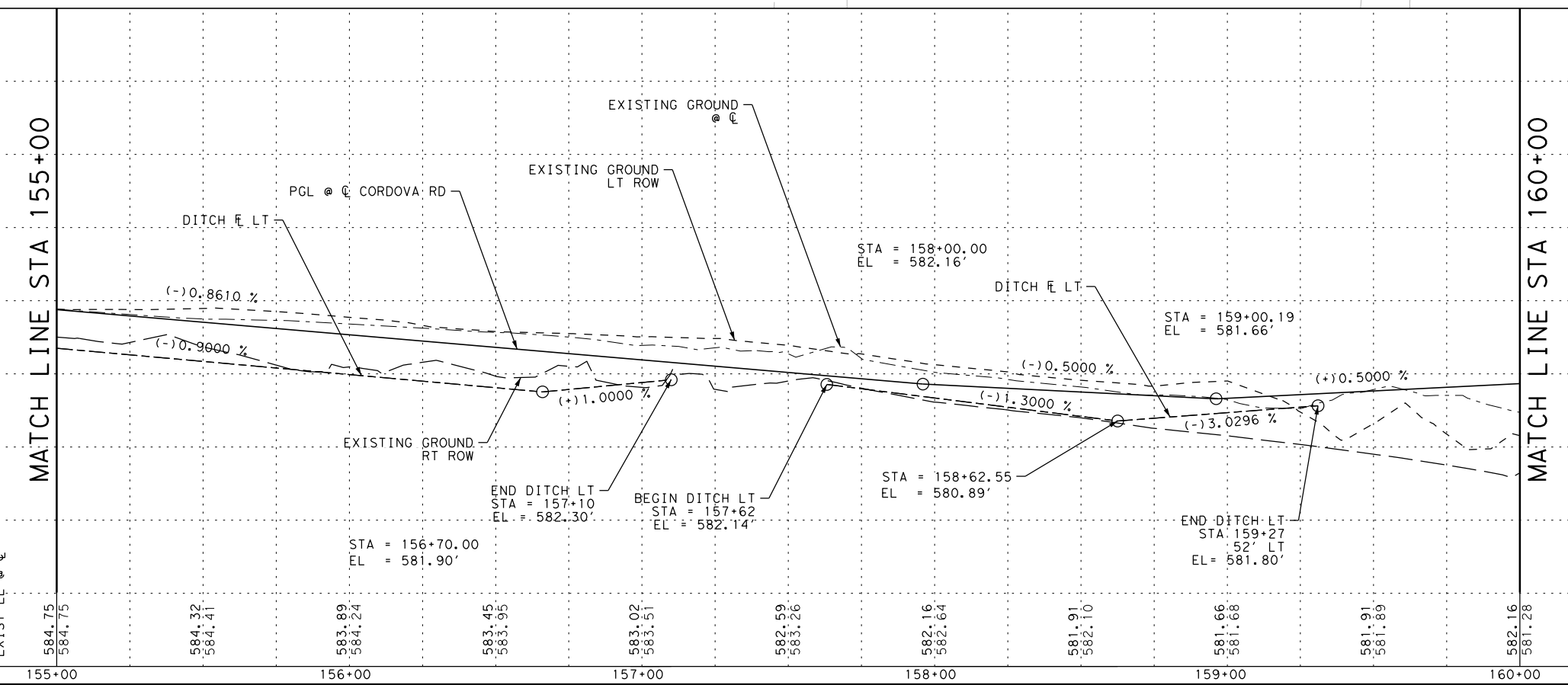


ROADWAY PLAN AND PROFILE

STA 155+00 TO STA 160+00

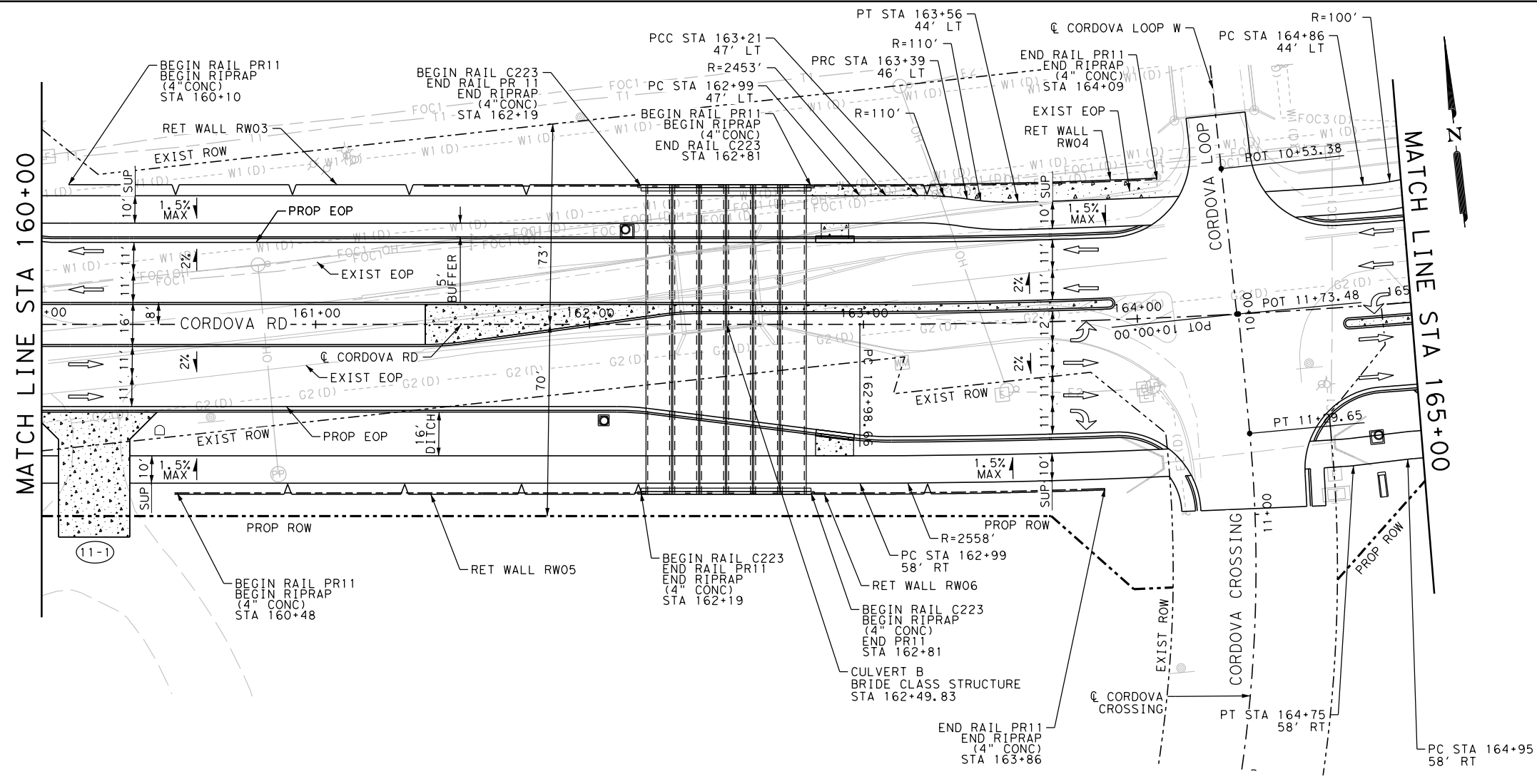
SHEET 10 OF 44

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	175



Plotted on: 11/17/2023

Design File name: P:\12775\00\Design\Civil\Roadway\1277500_rdw_11.dgn



LEGEND

	RETAINING WALL		EXIST ROW
	PROP ROW		DITCH FLOW LINE
	DRIVEWAY NUMBER		TRAFFIC FLOW
	ARMOR CURB SLOTS		MAILBOX
	CONC RIPRAP / DRIVEWAYS		SEAL COAT

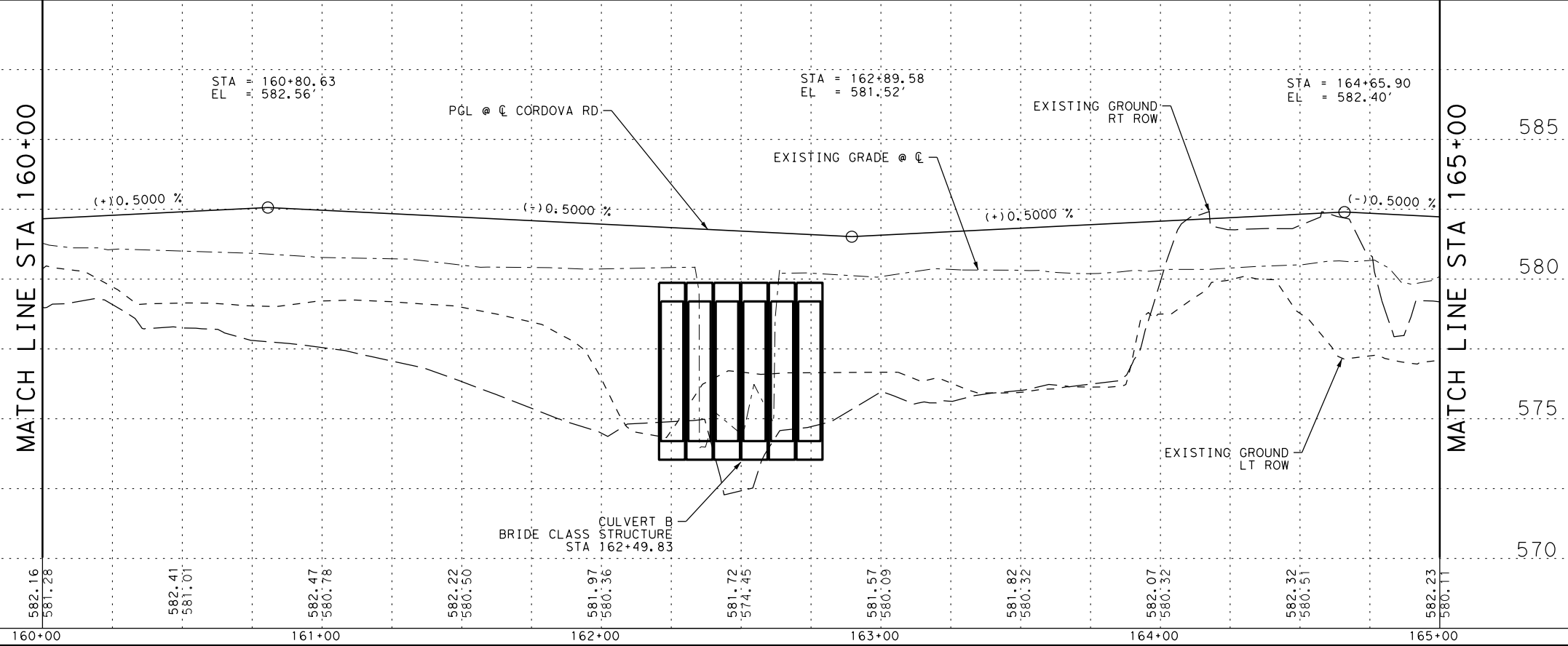
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 5'



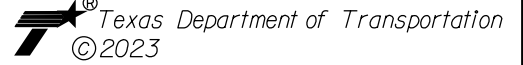
REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



ROADWAY PLAN AND PROFILE

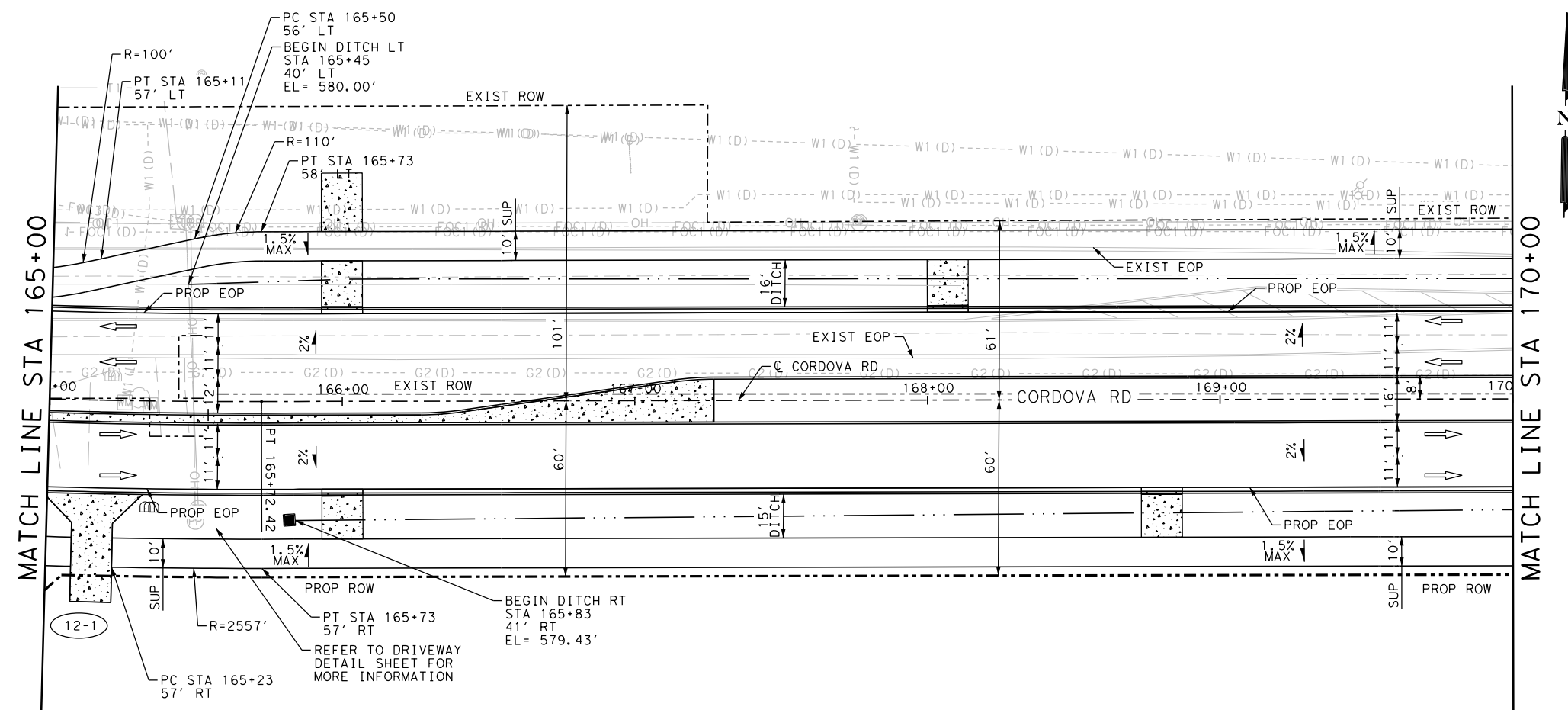
STA 160+00 TO STA 165+00

SHEET 11 OF 44

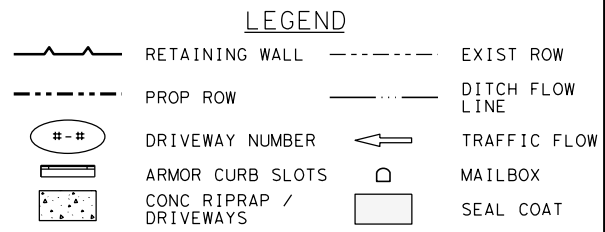
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CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				176

Plotted on: 11/17/2023

Design File name: P:\1275\00\Design\Civil\Roadway\1277500_rdw_12.dgn



PI STATION = 164+35.68
 DELTA = 6° 16' 27.13" (LT)
 DEGREE OF CURVE = 2° 17' 30.59"
 TANGENT = 137.02
 LENGTH = 273.76
 RADIUS = 2,500.00
 PC STATION = 162+98.66
 PT STATION = 165+72.42



- NOTES**
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 2. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK. I.E. FADED.
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INTERIM REVIEW
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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 5'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS
 It's real.

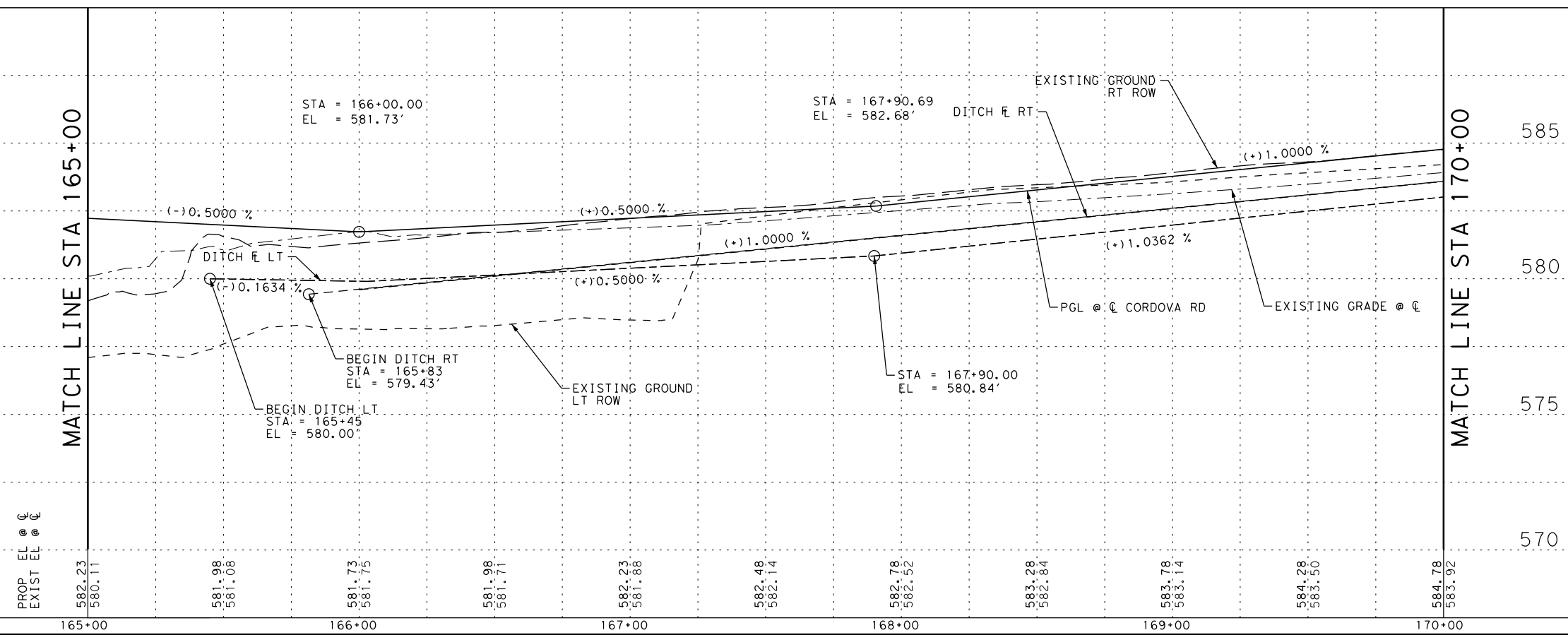
Texas Department of Transportation
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ROADWAY PLAN AND PROFILE

STA 165+00 TO STA 170+00

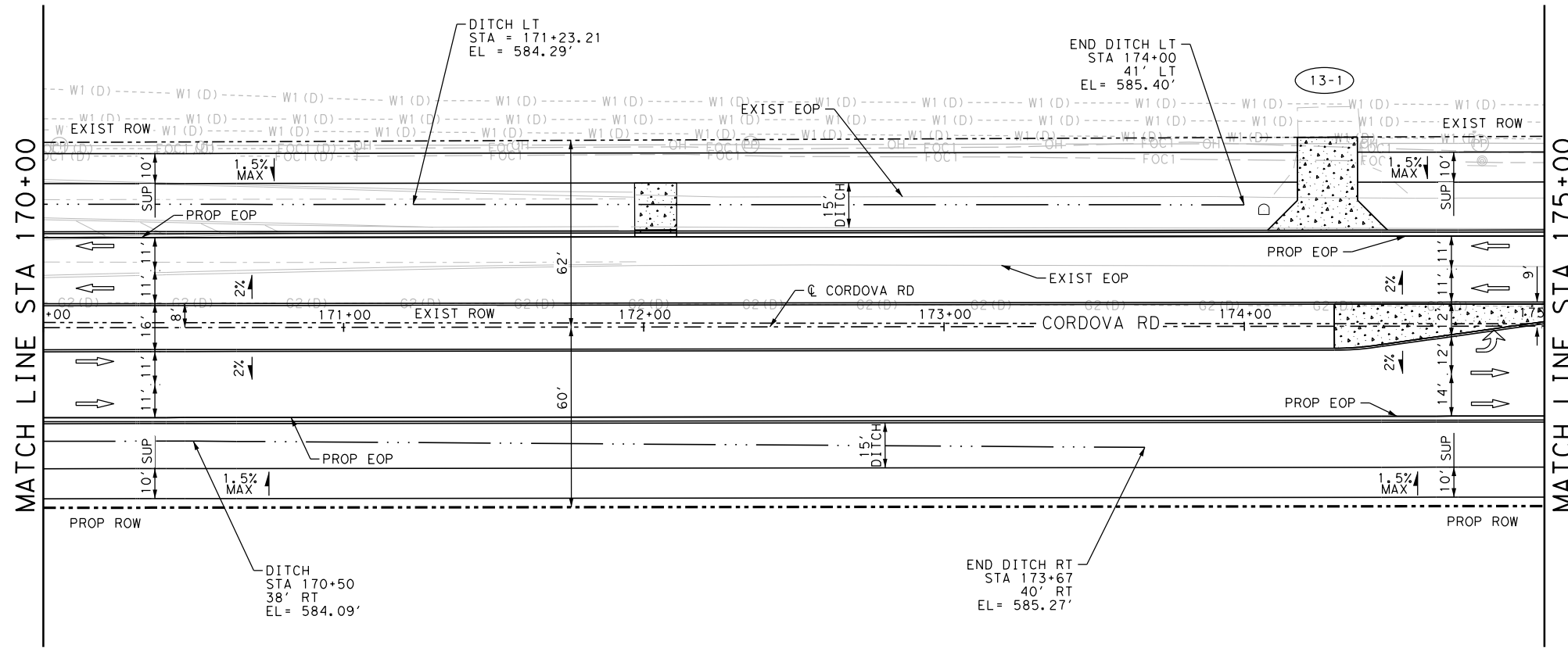
SHEET 12 OF 44

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				177



Plotted on: 11/17/2023

Design File name: P:\1275\00\Design\Civil\Roadway\1277500_rdw_13.dgn



LEGEND

	RETAINING WALL		EXIST ROW
	PROP ROW		DITCH FLOW LINE
	DRIVEWAY NUMBER		TRAFFIC FLOW
	ARMOR CURB SLOTS		MAILBOX
	CONC RIPRAP / DRIVEWAYS		SEAL COAT

- NOTES**
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DESIGN

INTERIM REVIEW

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ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

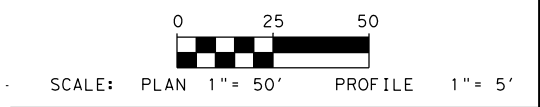
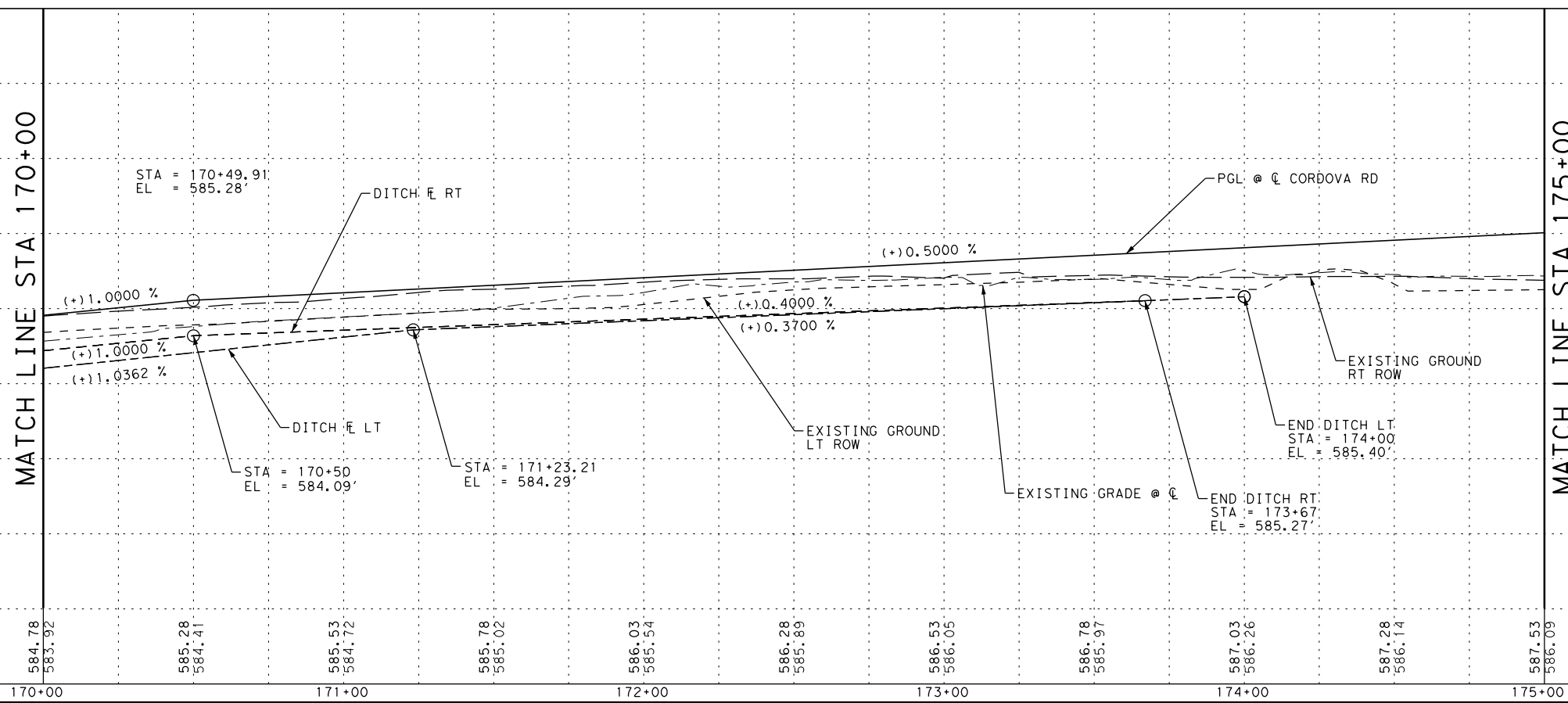
INTERIM REVIEW

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ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
<p>PAPE-DAWSON ENGINEERS</p> <p>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</p>			

<p>SEGUIN TEXAS</p> <p>It's real.</p>	<p>THE STATE OF TEXAS GUADALUPE COUNTY</p>
--	--

Texas Department of Transportation
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ROADWAY PLAN AND PROFILE

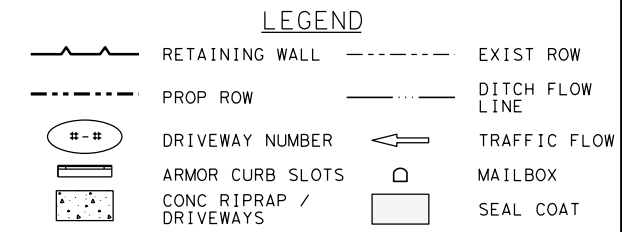
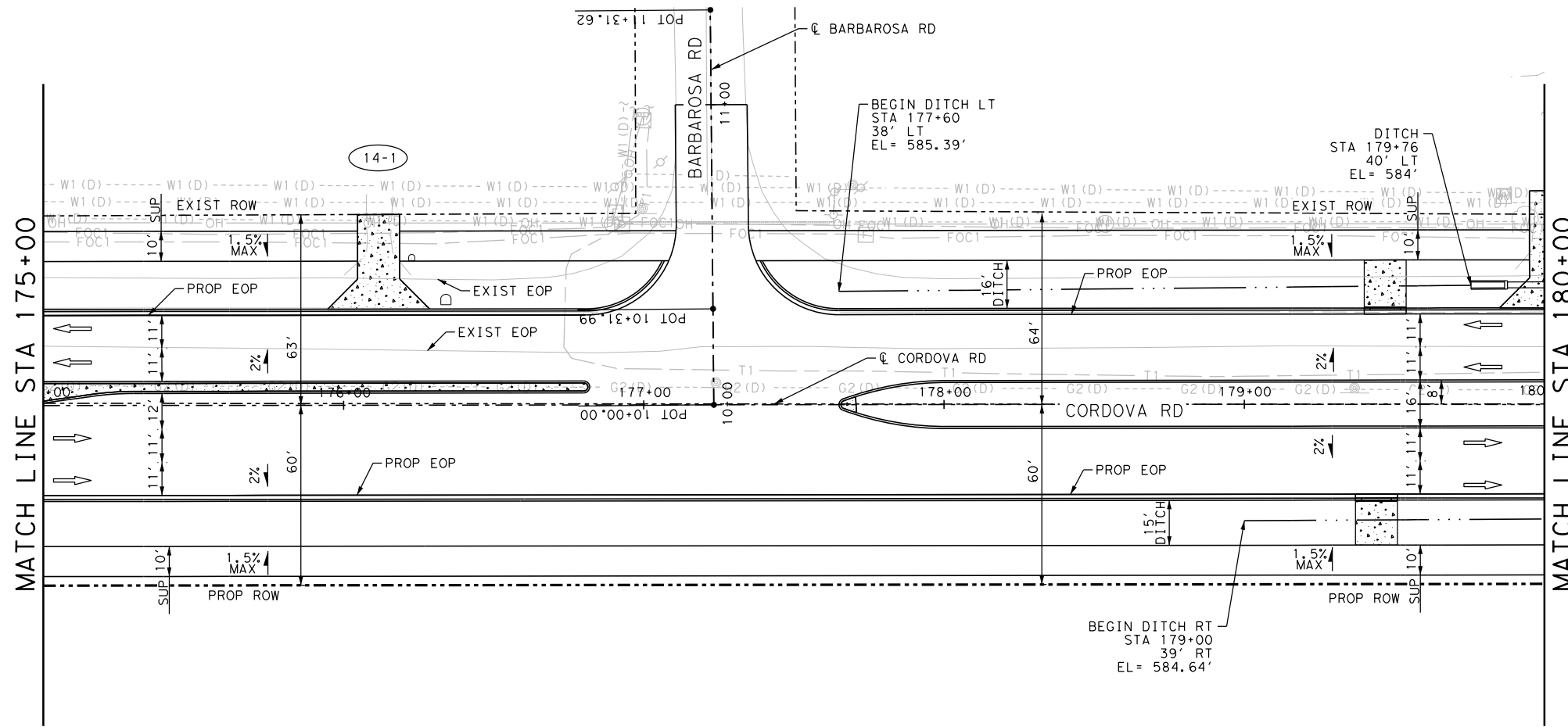
STA 170+00 TO STA 175+00

SHEET 13 OF 44

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	178

Plotted on: 11/17/2023

Design File name: P:\1275\00\Design\Civil\Roadway\1277500_rdw_14.dgn



- NOTES**
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DESIGN

INTERIM REVIEW
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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 5'

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.

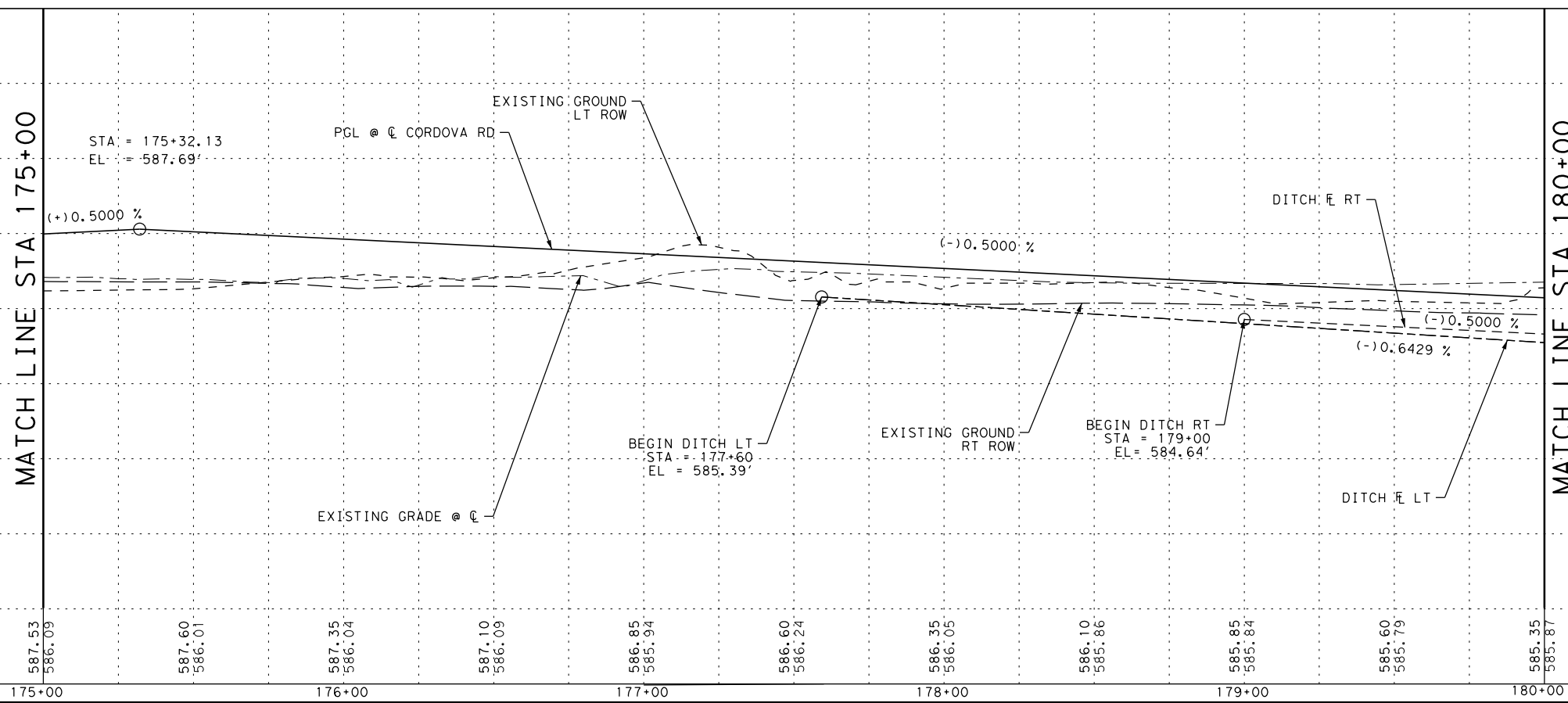


ROADWAY PLAN AND PROFILE

STA 175+00 TO STA 180+00

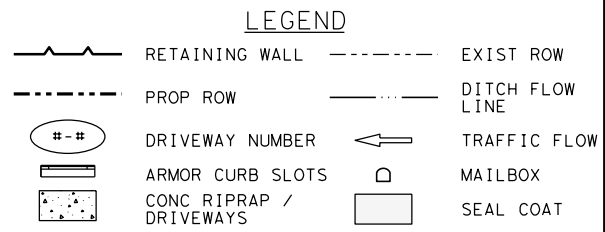
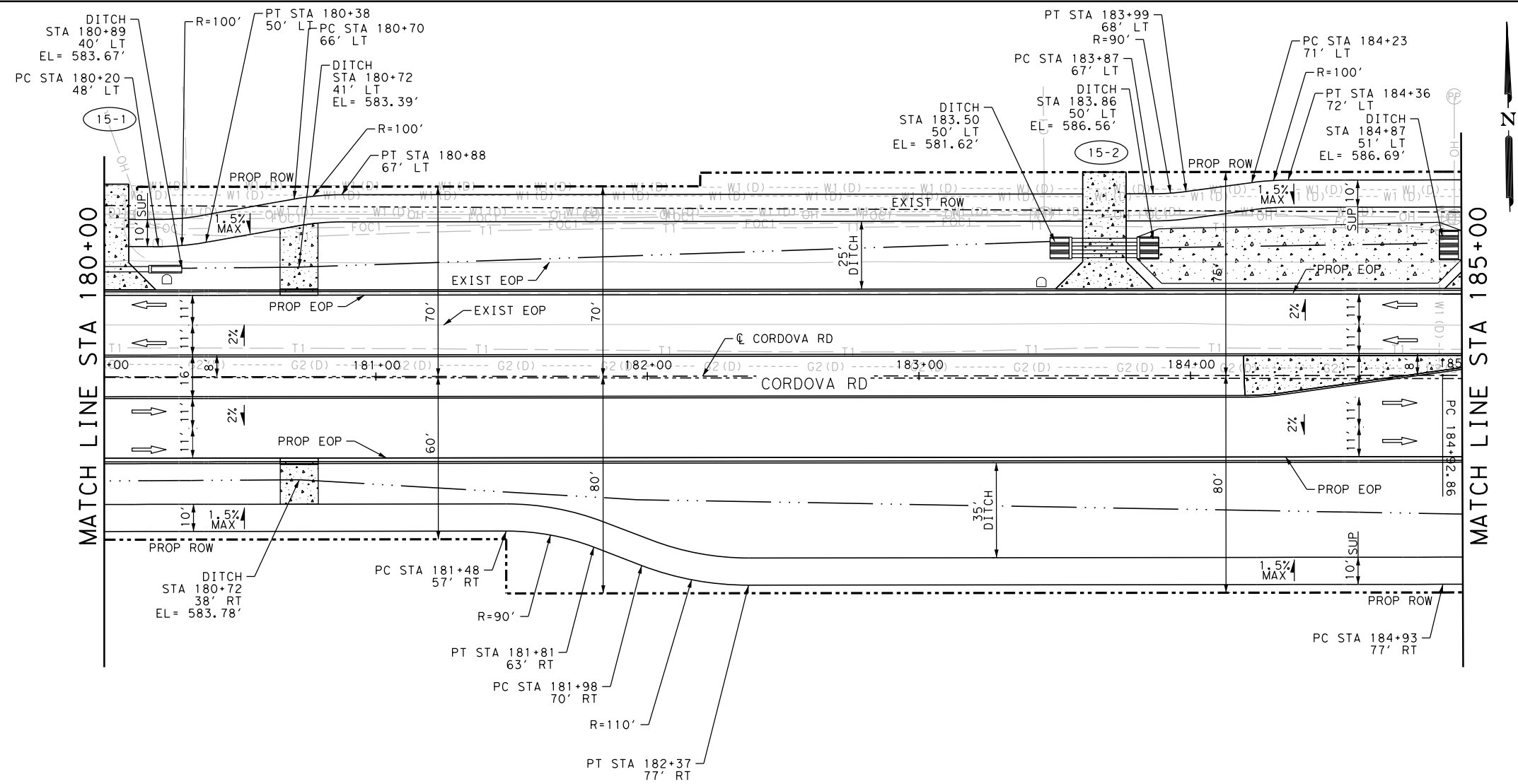
SHEET 14 OF 44

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	179



Plotted on: 11/17/2023

Design File name: P:\12775\00\Design\Civil\Roadway\1277500_rdw_15.dgn



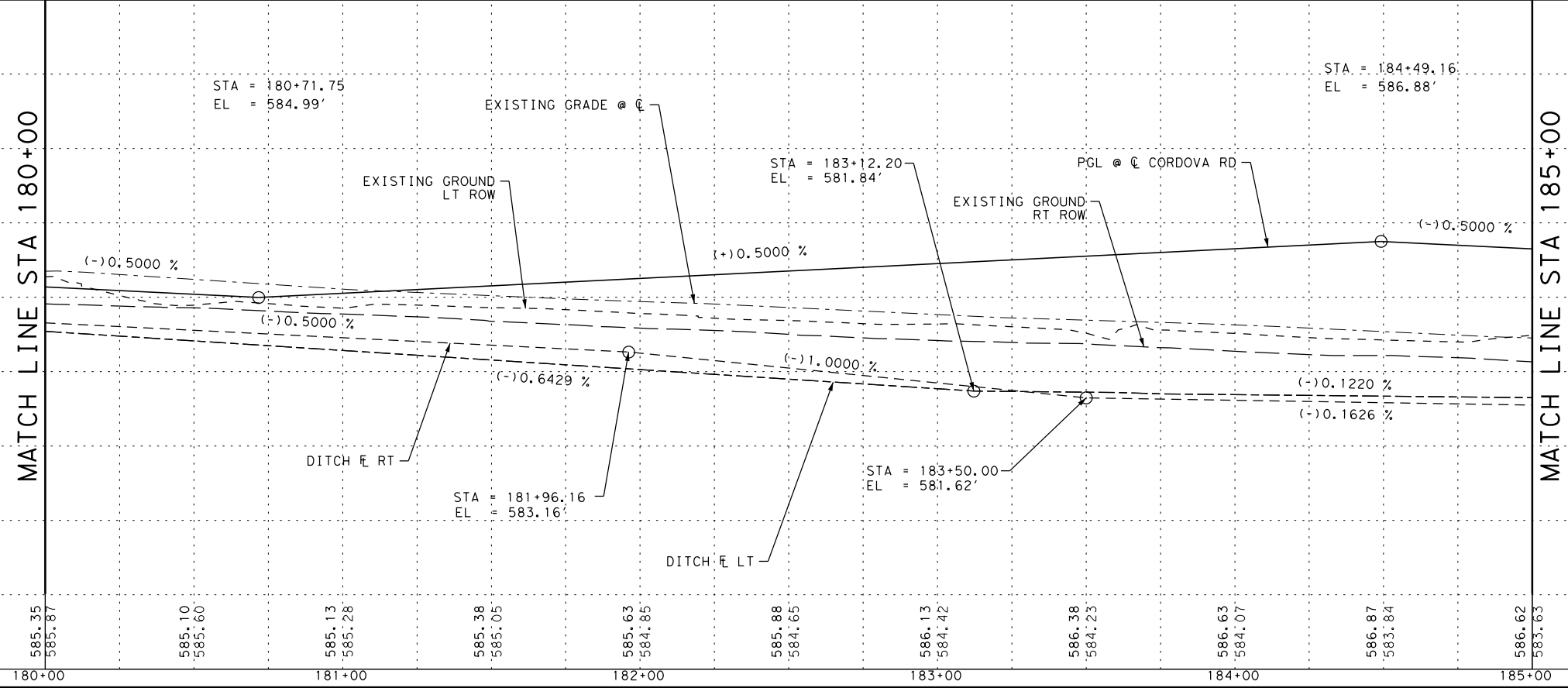
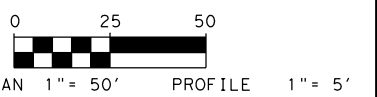
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DESIGN

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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

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 DATE: 11/17/2023



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PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS
 It's real.

THE STATE OF TEXAS
 GUADALUPE COUNTY

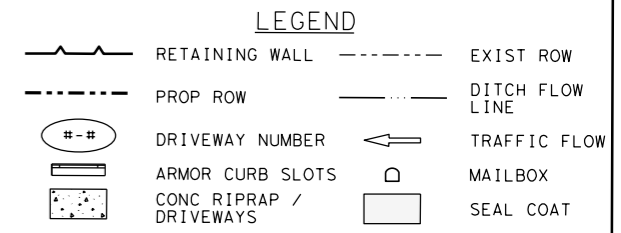
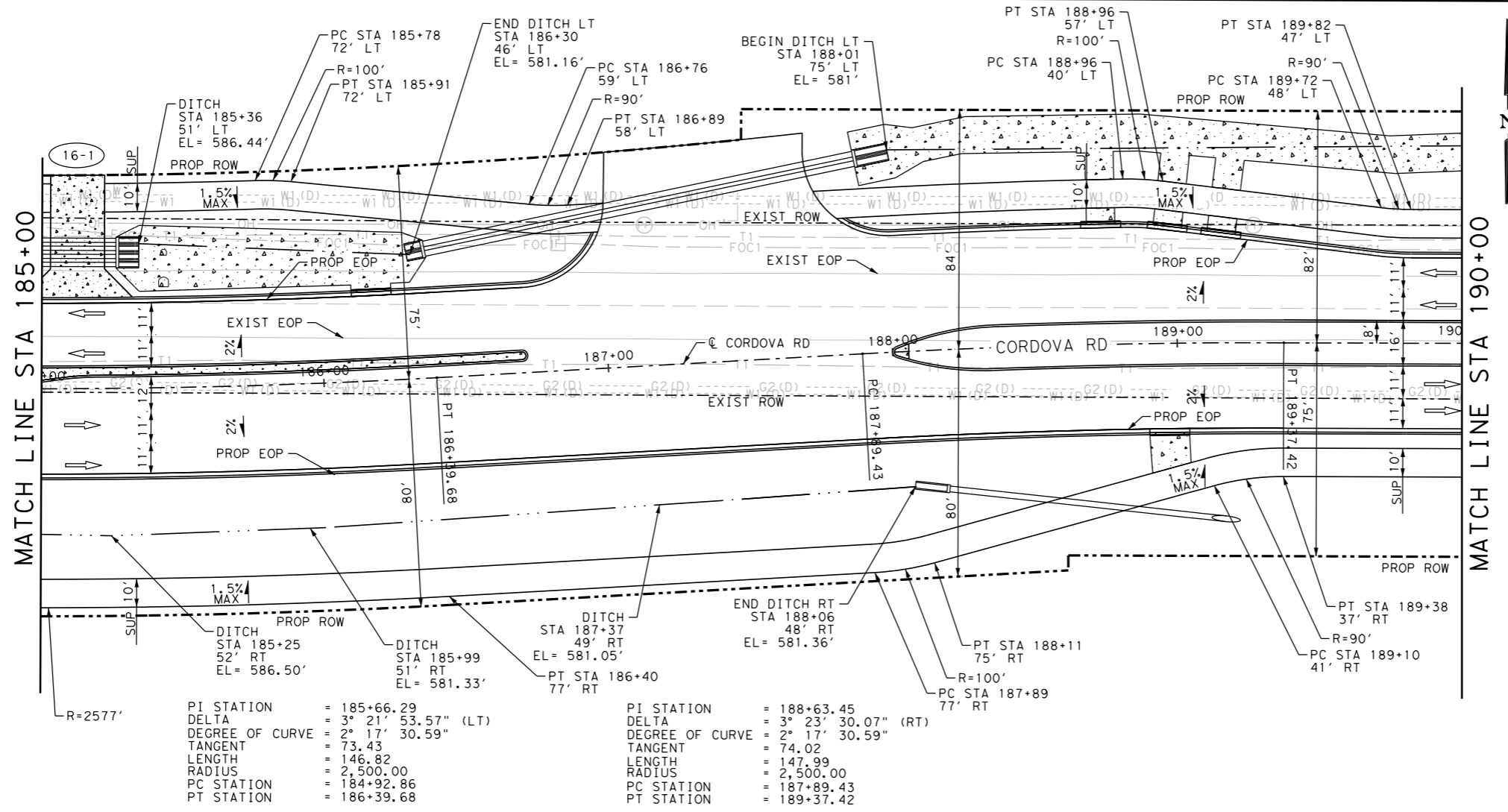
Texas Department of Transportation
 ©2023

ROADWAY PLAN AND PROFILE
 STA 180+00 TO STA 185+00
 SHEET 15 OF 44

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	180

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Roadway\1277500_rdw_16.dgn



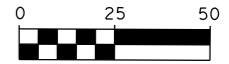
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 DATE: 11/17/2023

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 DATE: 11/17/2023

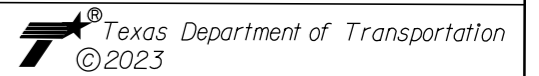


SCALE: PLAN 1" = 50' PROFILE 1" = 5'

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

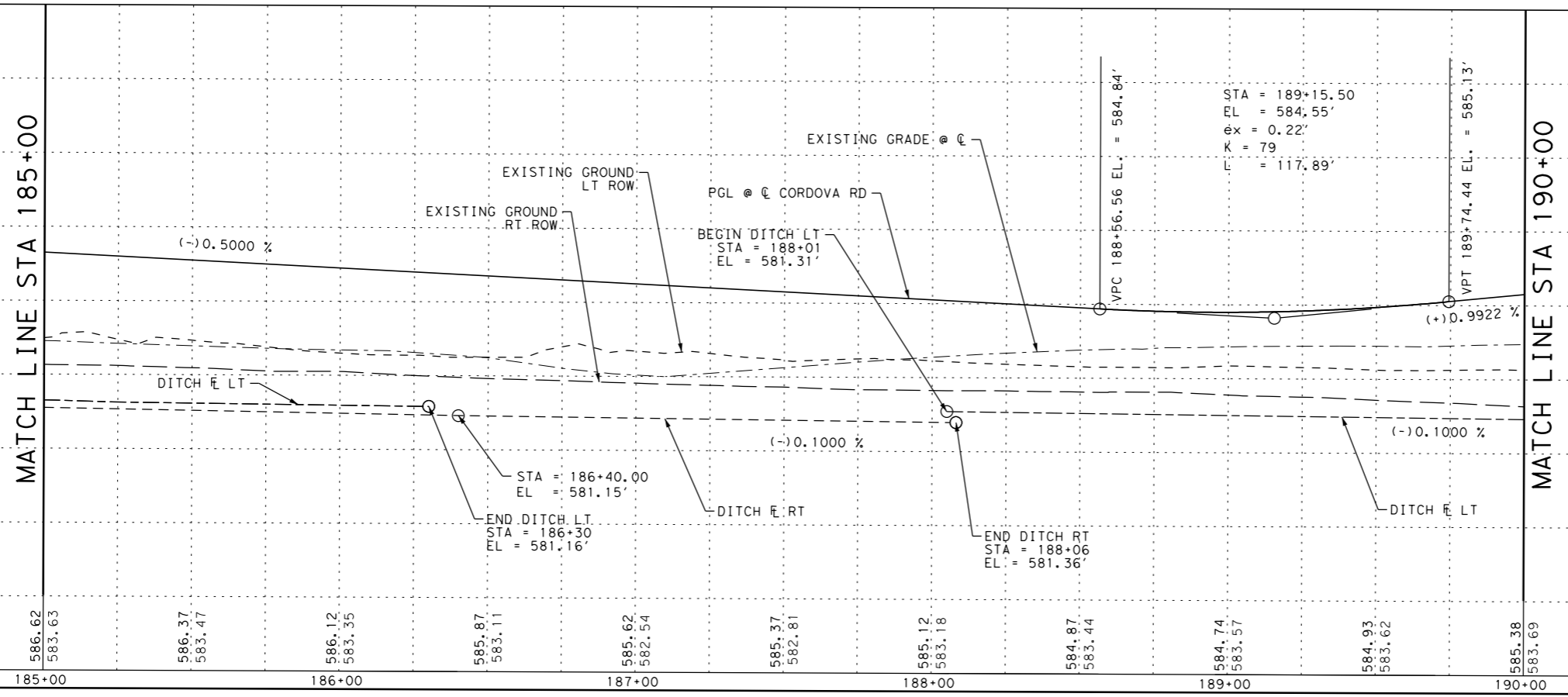


ROADWAY PLAN AND PROFILE

STA 185+00 TO STA 190+00

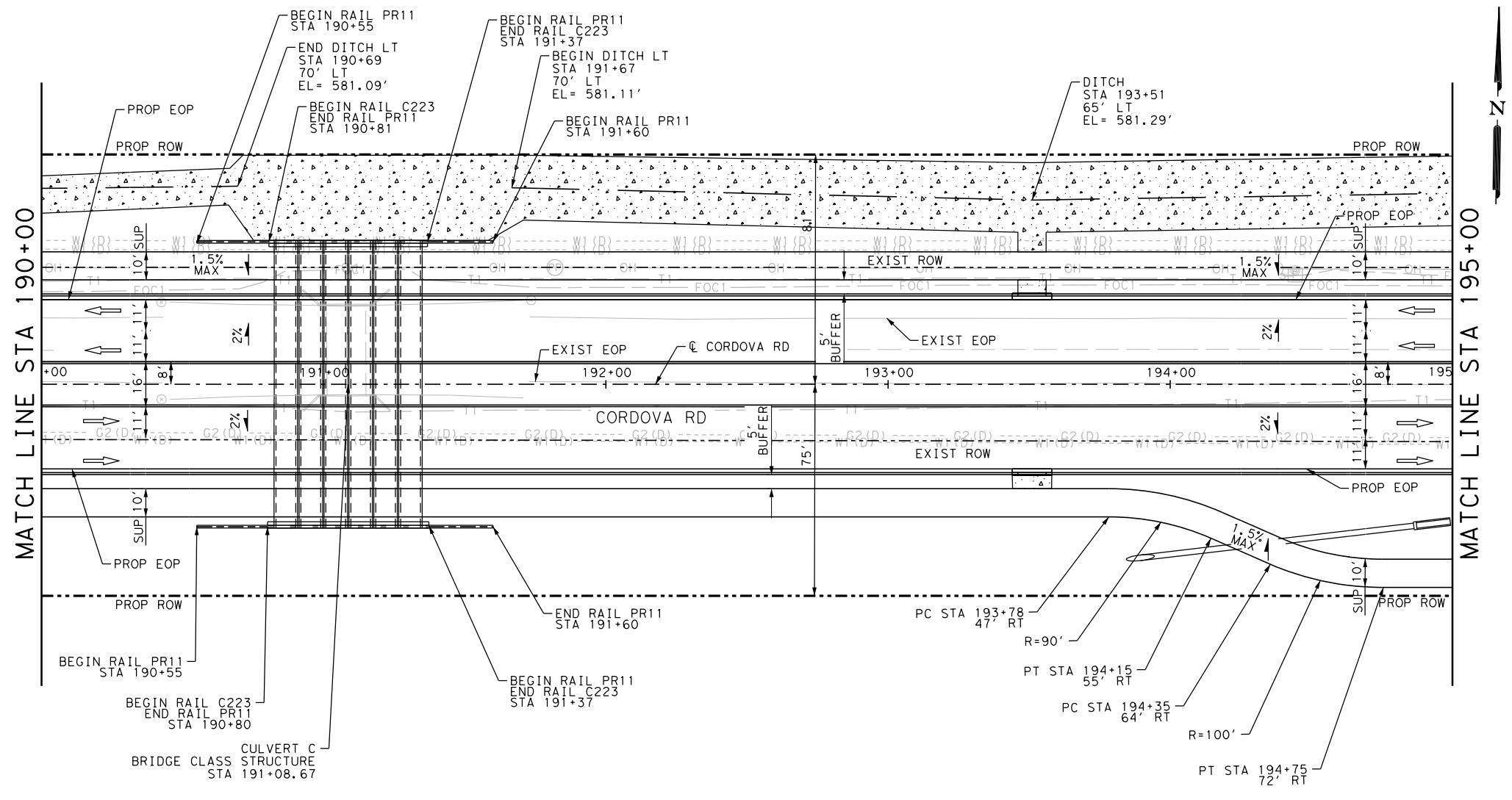
SHEET 16 OF 44

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	181



Plotted on: 11/17/2023

Design File name: P:\1275\00\Design\Civil\Roadway\1277500_rdw_17.dgn



LEGEND

	RETAINING WALL		EXIST ROW
	PROP ROW		DITCH FLOW LINE
	DRIVEWAY NUMBER		TRAFFIC FLOW
	ARMOR CURB SLOTS		MAILBOX
	CONC RIPRAP / DRIVEWAYS		SEAL COAT

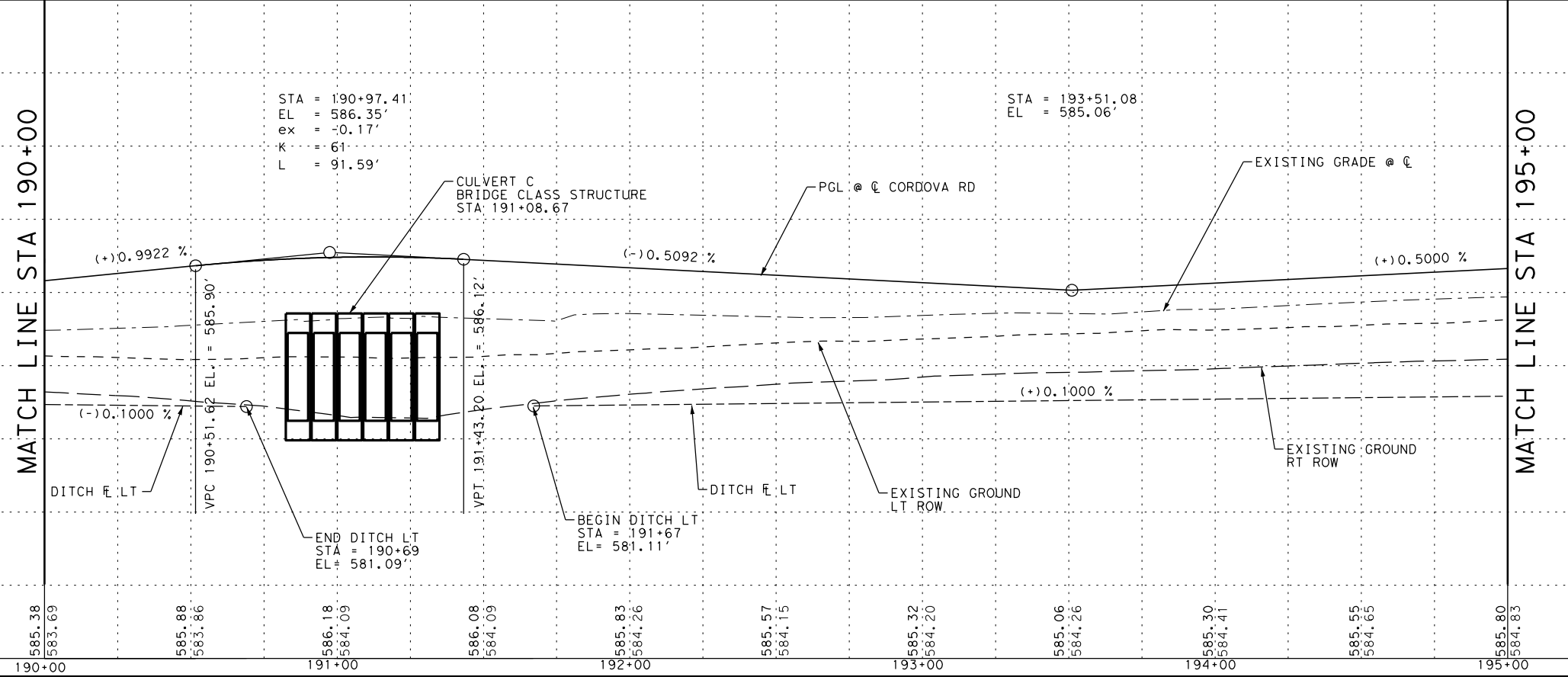
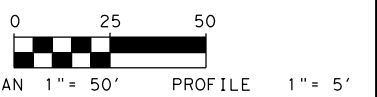
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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

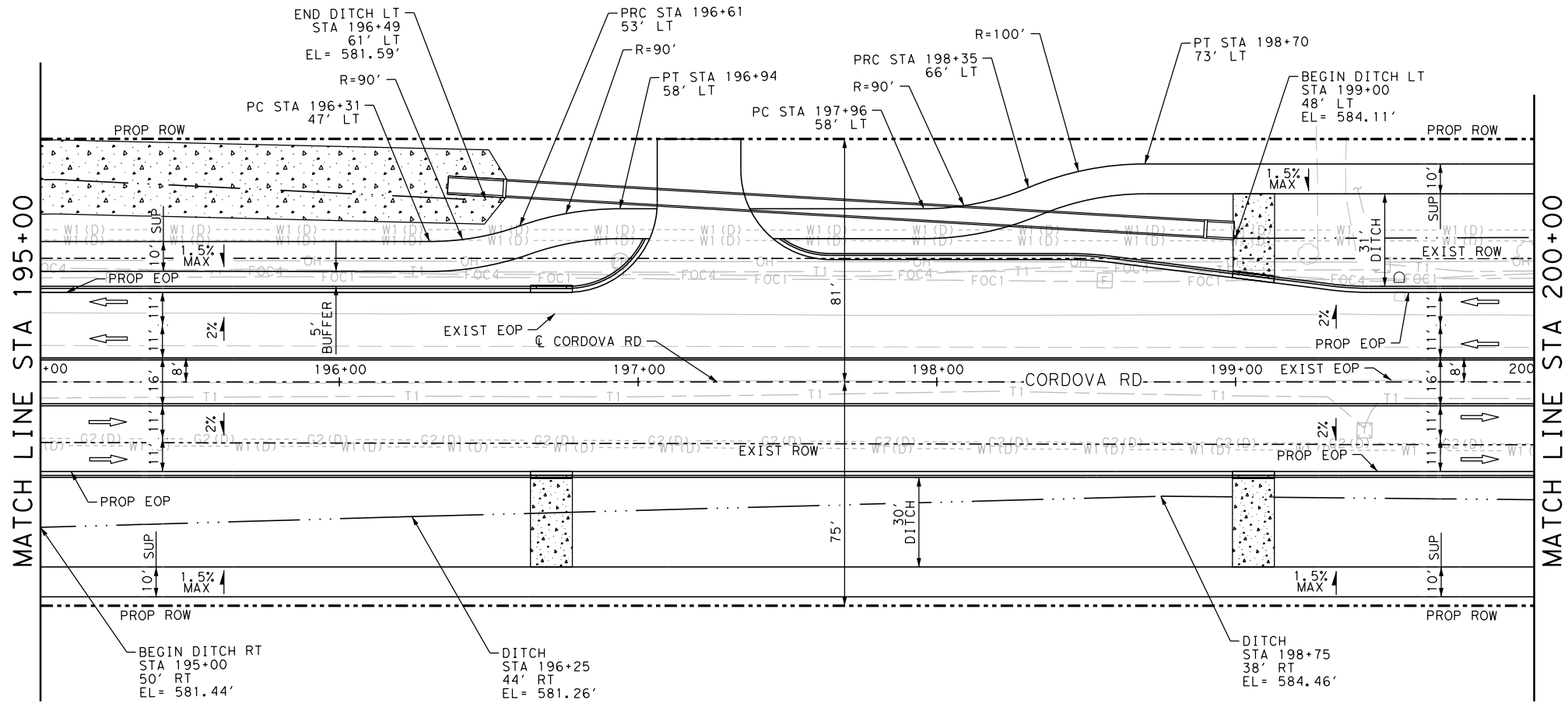
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY			
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800						
©2023						
ROADWAY PLAN AND PROFILE STA 190+00 TO STA 195+00 SHEET 17 OF 44						
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK:	SAT	GUADALUPE	0915	46	052	182

Plotted on: 11/17/2023

Design File name: P:\1275\00\Design\Civil\Roadway\1277500_rdw_18.dgn



LEGEND

	RETAINING WALL		EXIST ROW
	PROP ROW		DITCH FLOW LINE
	DRIVEWAY NUMBER		TRAFFIC FLOW
	ARMOR CURB SLOTS		MAILBOX
	CONC RIPRAP / DRIVEWAYS		SEAL COAT

- NOTES**
1. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING, EDGE OF GUTTER, OR FACE OF CURB UNLESS OTHERWISE NOTED.
 2. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK. I.E. FADED.
 3. REFER TO HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA AND ALIGNMENT INFORMATION.
 4. SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN

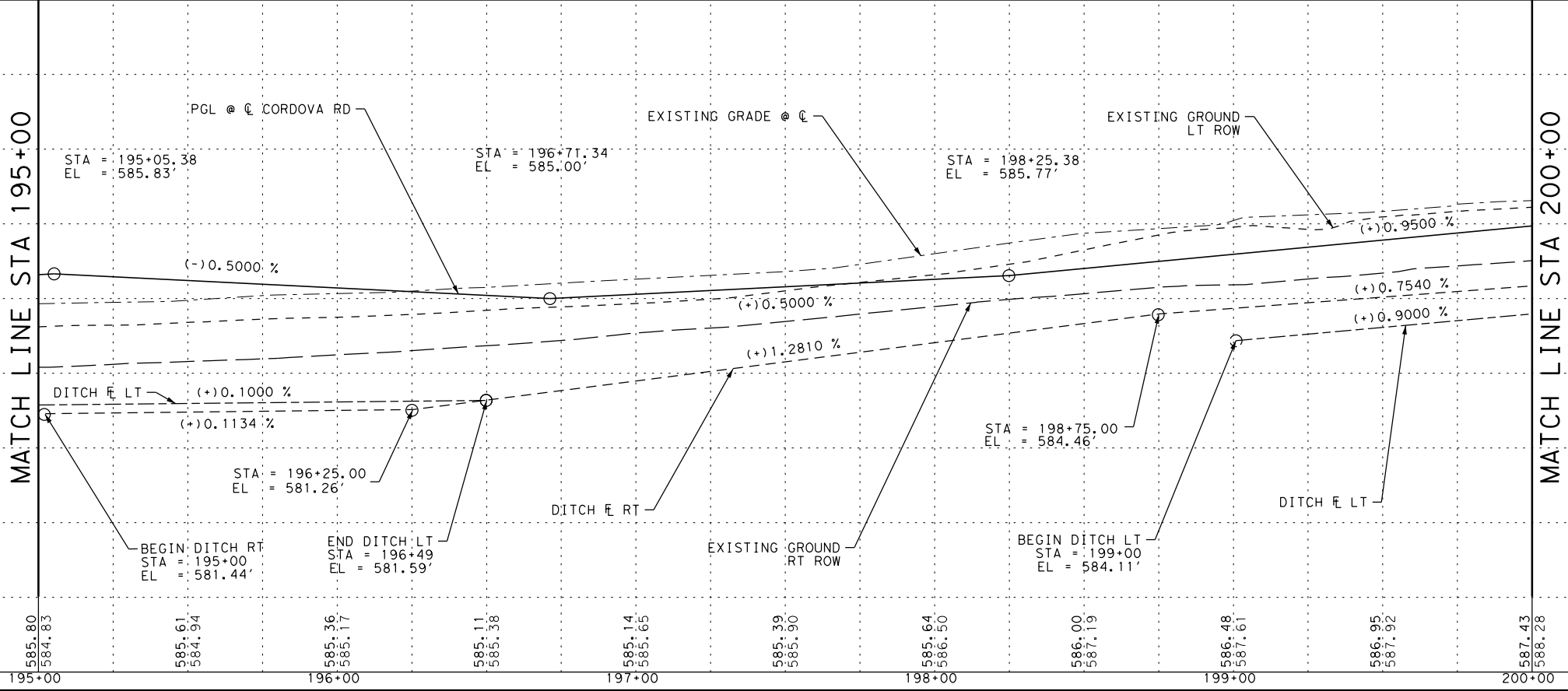
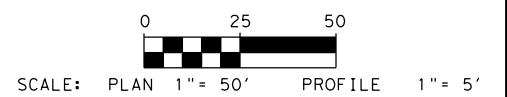
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			

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ROADWAY PLAN AND PROFILE

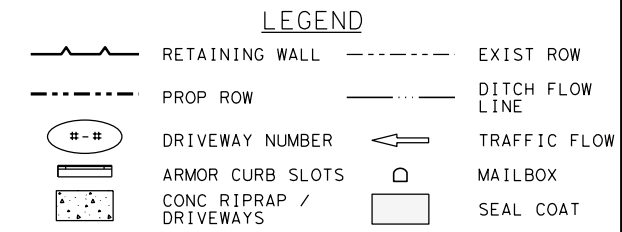
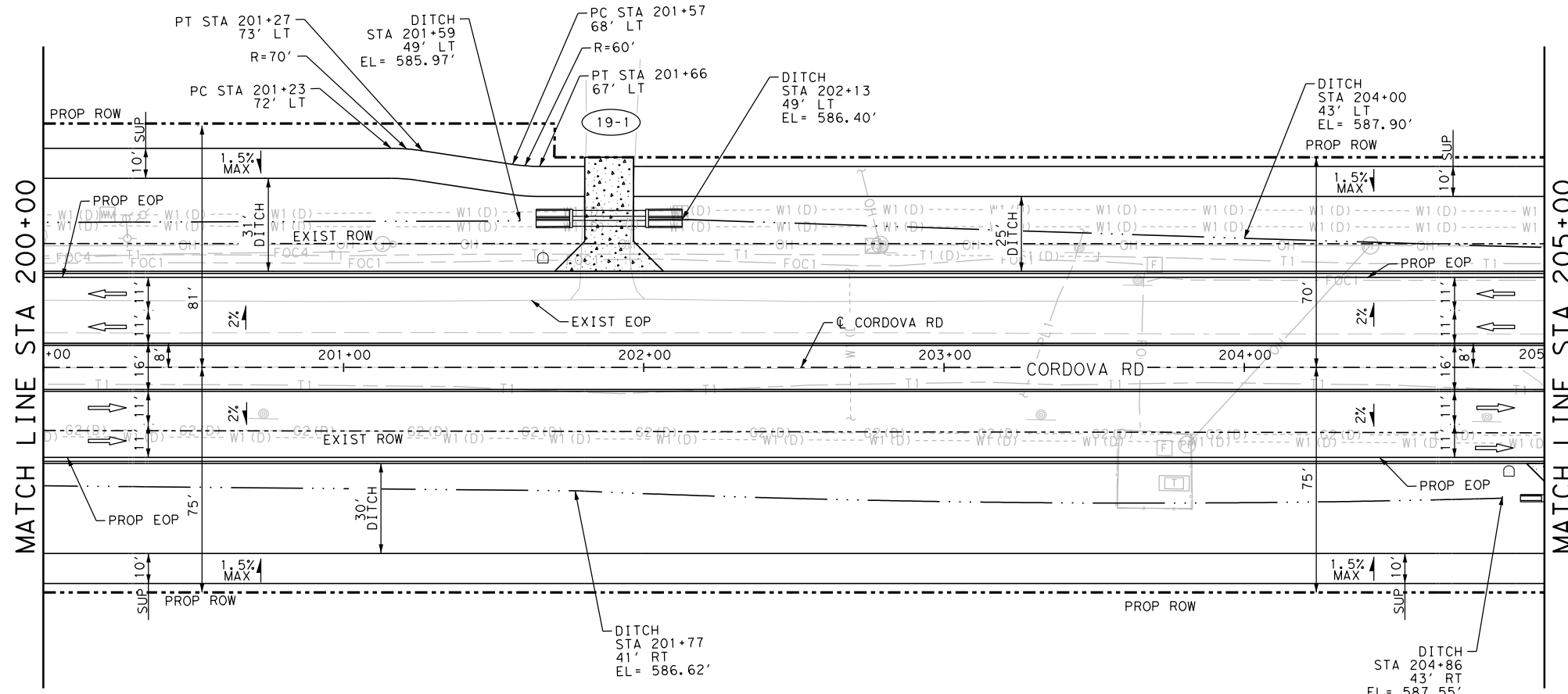
STA 195+00 TO STA 200+00

SHEET 18 OF 44

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				183

Plotted on: 11/17/2023

Design File name: P:\12775\00\Design\Civil\Roadway\1277500_rdw_19.dgn



- NOTES**
- ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING, EDGE OF GUTTER, OR FACE OF CURB UNLESS OTHERWISE NOTED.
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 - REFER TO HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA AND ALIGNMENT INFORMATION.
 - SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN

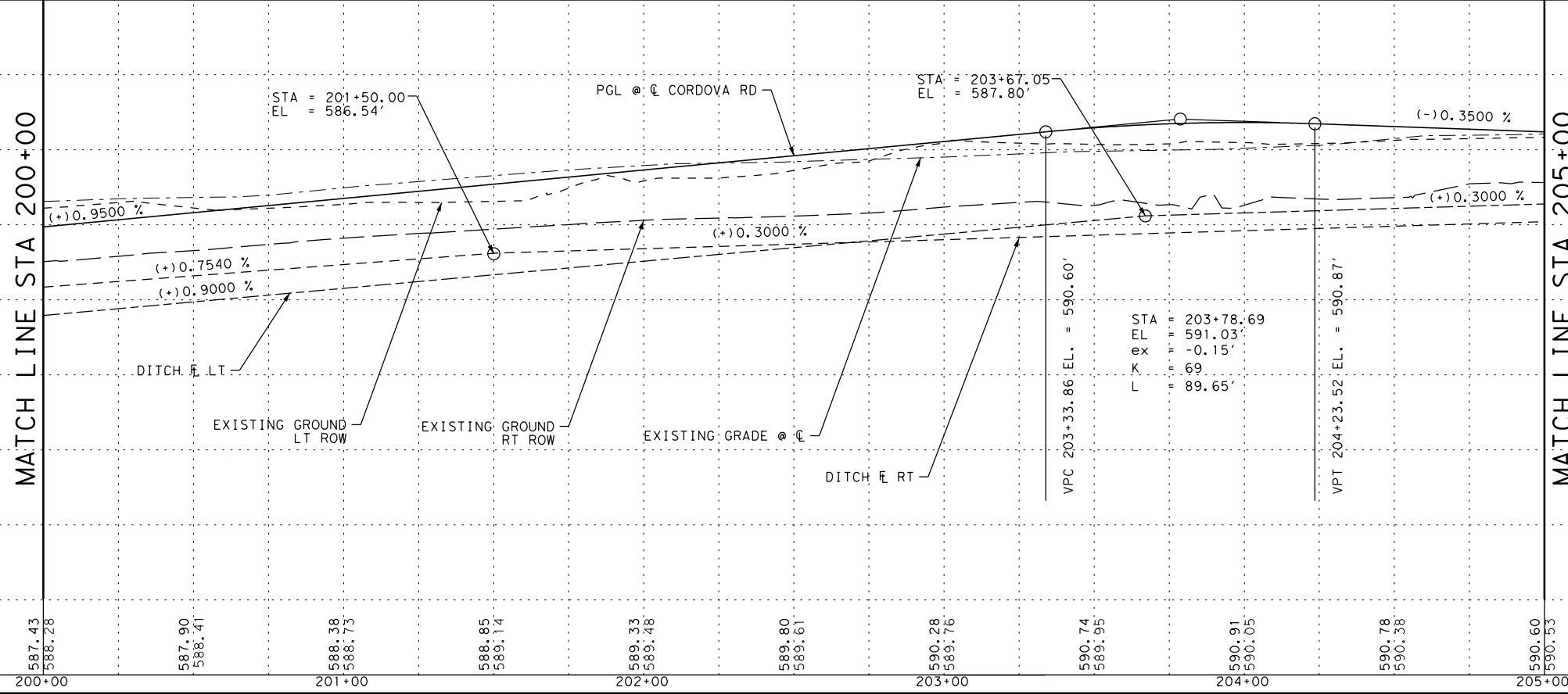
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 5'



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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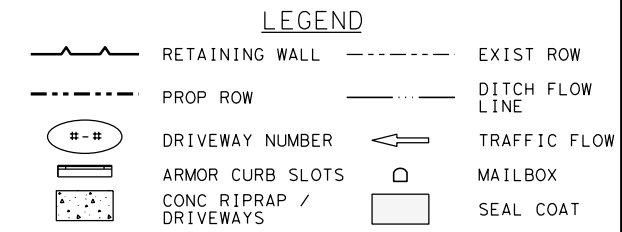
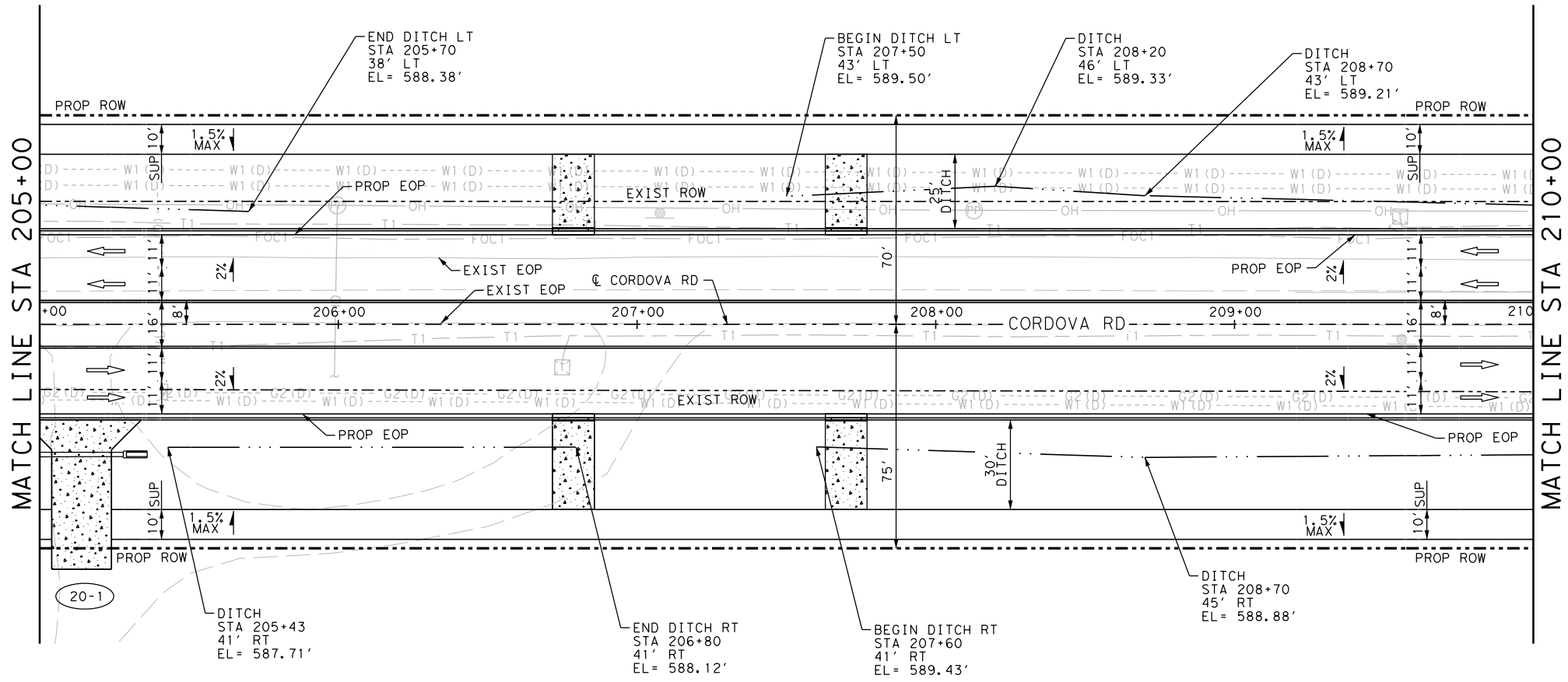
Texas Department of Transportation
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ROADWAY PLAN AND PROFILE
 STA 200+00 TO STA 205+00
 SHEET 19 OF 44

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	184

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Roadway\1277500_rdw_20.dgn



- ### NOTES
- ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING, EDGE OF GUTTER, OR FACE OF CURB UNLESS OTHERWISE NOTED.
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 - SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

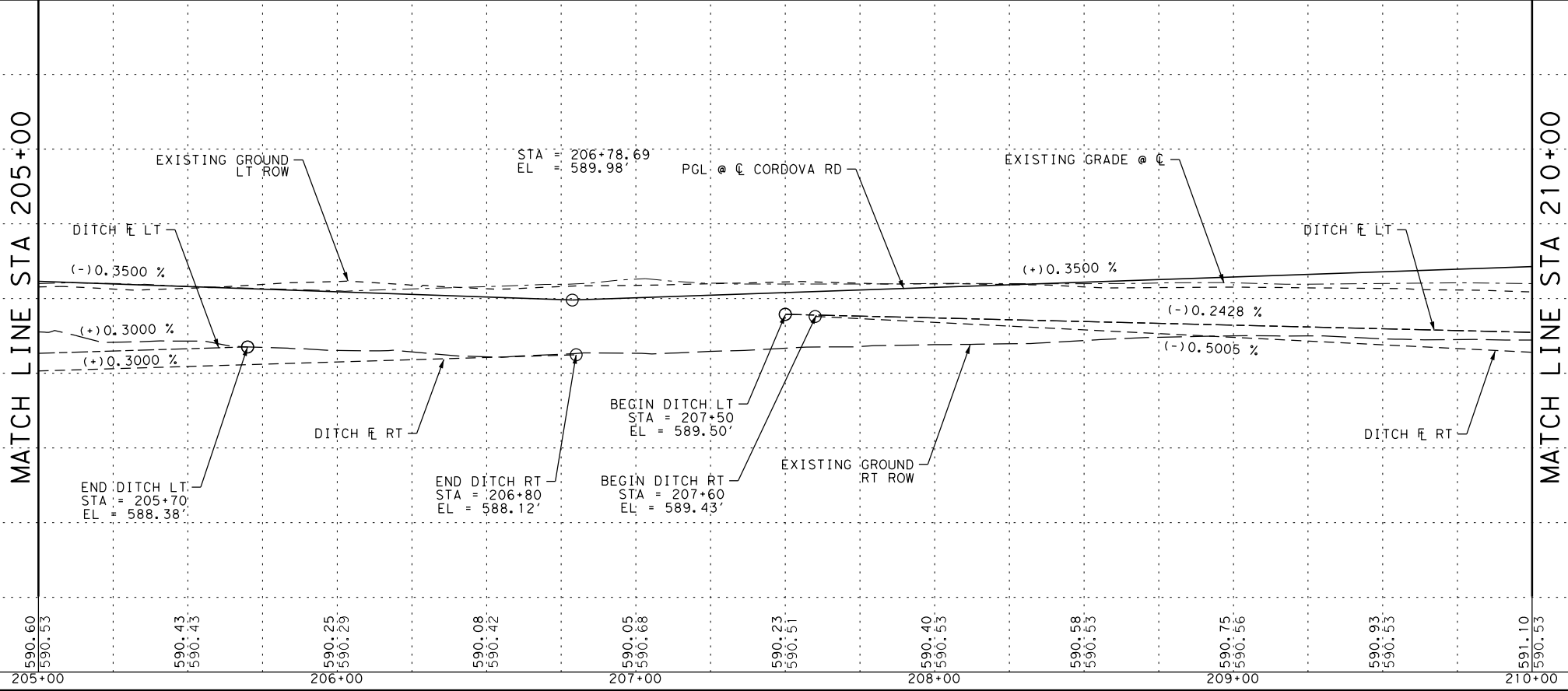
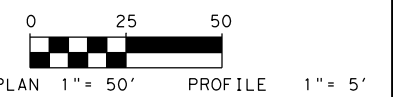
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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ROADWAY PLAN AND PROFILE

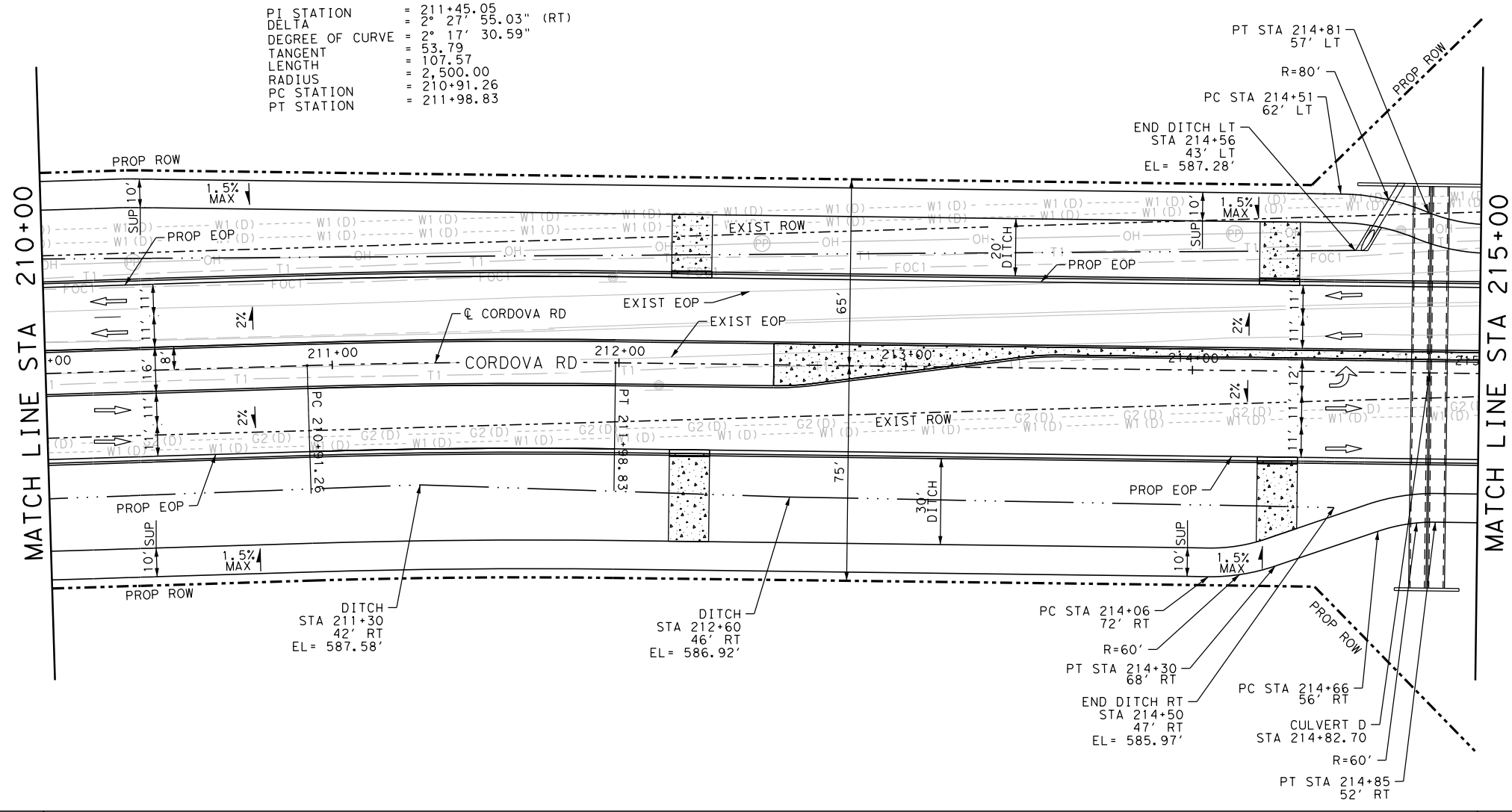
STA 205+00 TO STA 210+00

SHEET 20 OF 44

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	185

Plotted on: 11/17/2023

PI STATION = 211+45.05
 DELTA = 2° 27' 55.03" (RT)
 DEGREE OF CURVE = 2° 17' 30.59"
 TANGENT = 53.79
 LENGTH = 107.57
 RADIUS = 2,500.00
 PC STATION = 210+91.26
 PT STATION = 211+98.83



LEGEND

	RETAINING WALL		EXIST ROW
	PROP ROW		DITCH FLOW LINE
	DRIVEWAY NUMBER		TRAFFIC FLOW
	ARMOR CURB SLOTS		MAILBOX
	CONC RIPRAP / DRIVEWAYS		SEAL COAT

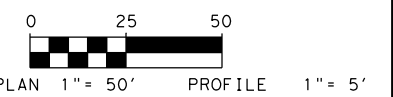
- NOTES**
- ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING, EDGE OF GUTTER, OR FACE OF CURB UNLESS OTHERWISE NOTED.
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 - REFER TO HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA AND ALIGNMENT INFORMATION.
 - SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN

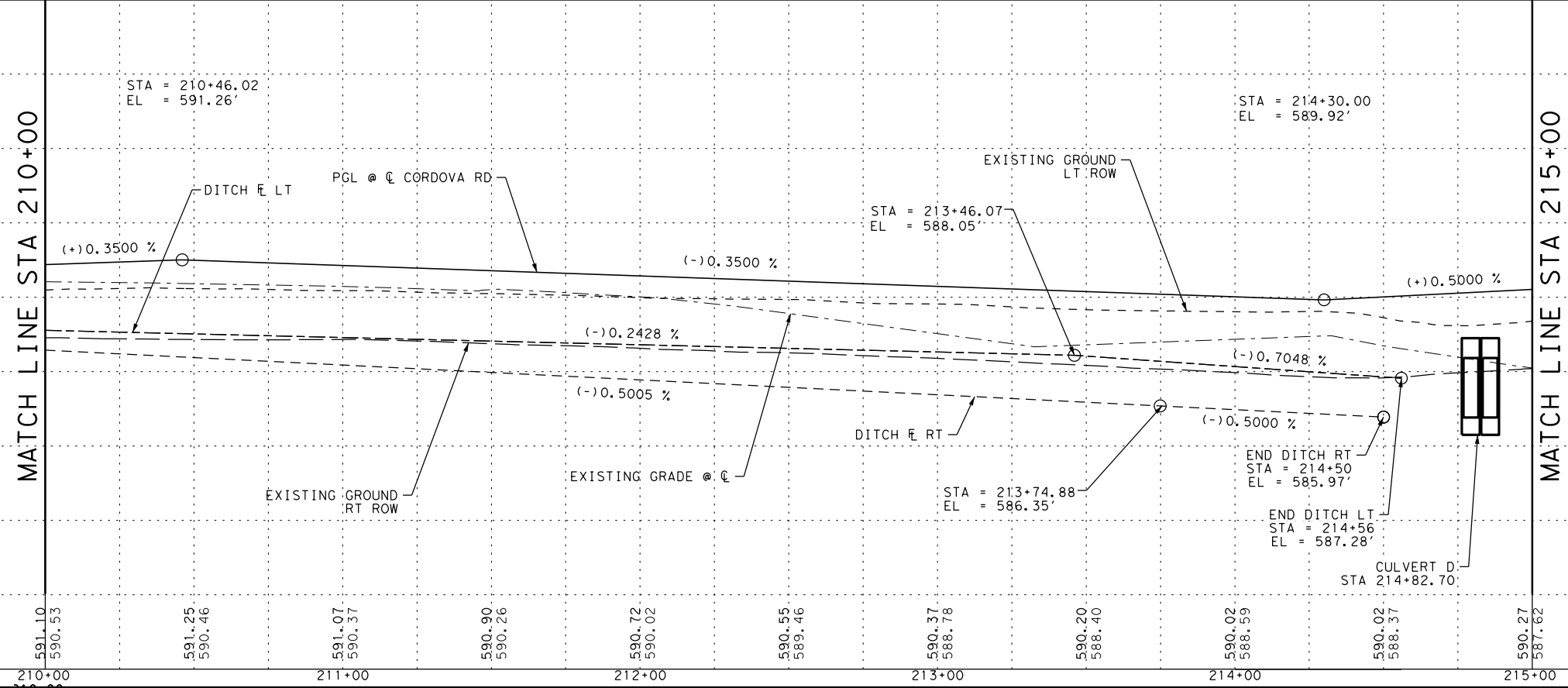
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



Design File name: P:\12775\00\Design\Civil\Roadway\1277500_rdw-21.dgn



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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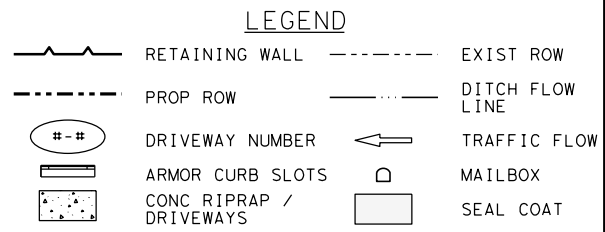
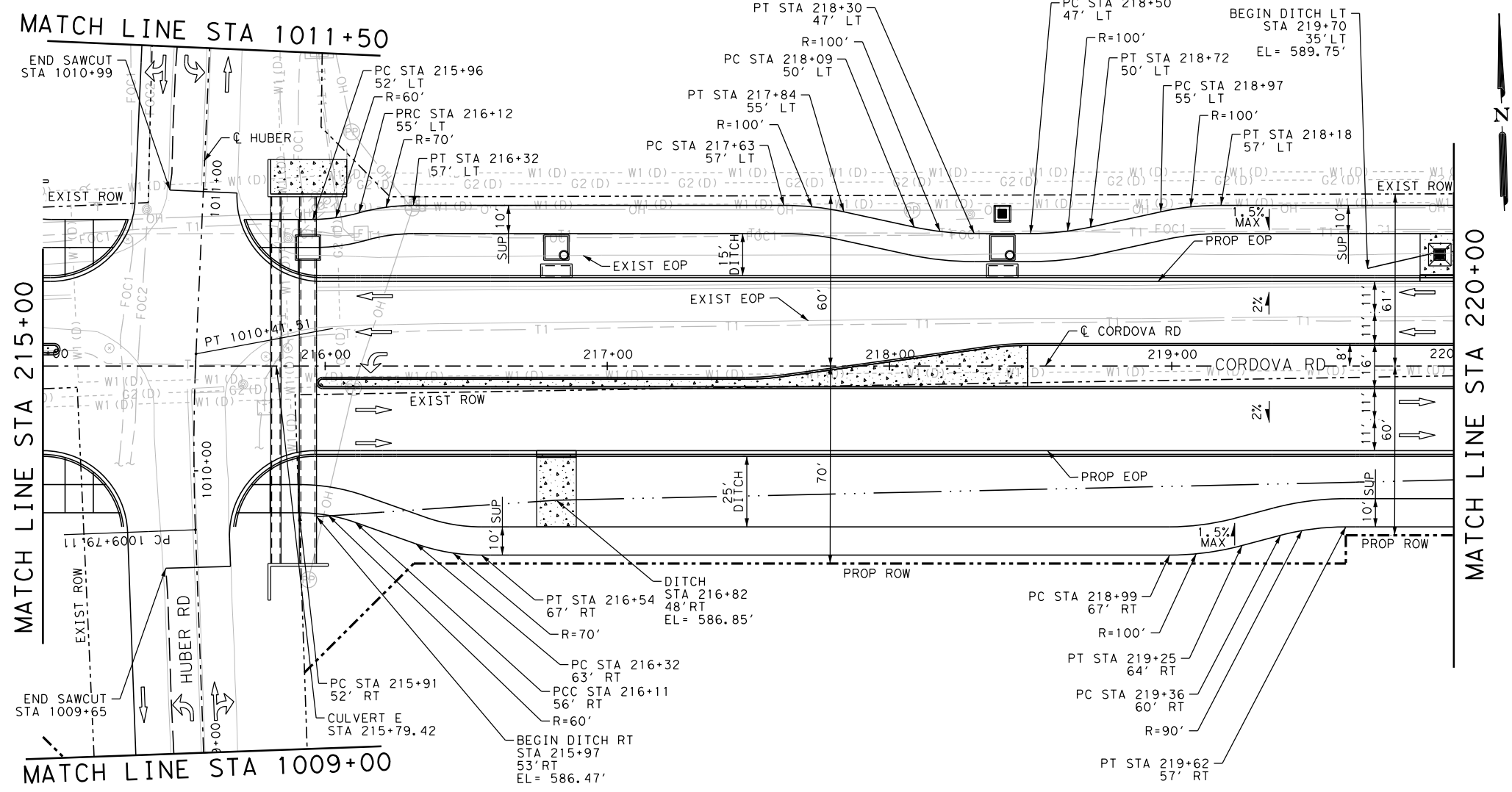
Texas Department of Transportation
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ROADWAY PLAN AND PROFILE
 STA 210+00 TO STA 215+00
 SHEET 21 OF 44

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				186

Plotted on: 11/17/2023

Design File name: P:\12775\00\Design\Civil\Roadway\1277500_rdw_22.dgn



- NOTES**
- ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING, EDGE OF GUTTER, OR FACE OF CURB UNLESS OTHERWISE NOTED.
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 - REFER TO HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA AND ALIGNMENT INFORMATION.
 - SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

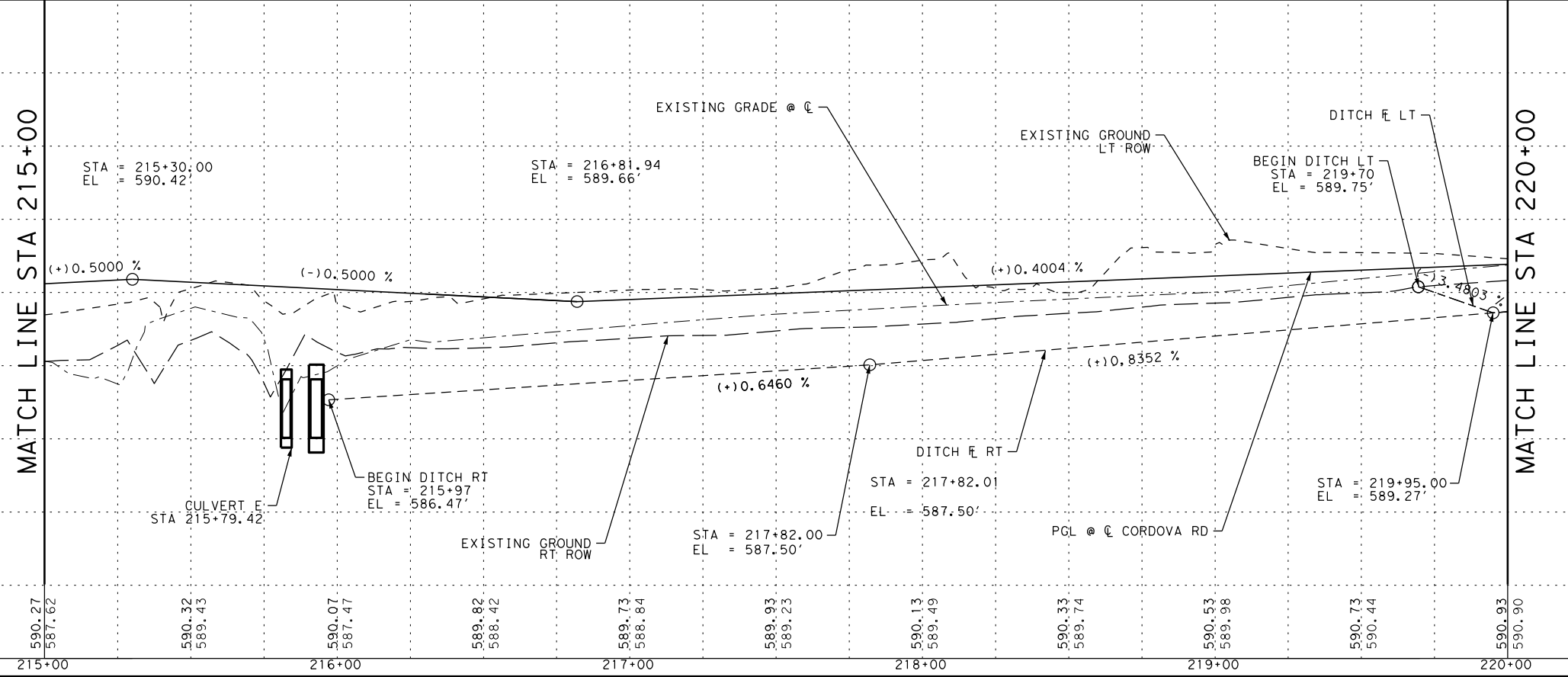
ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 5'



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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 GUADALUPE COUNTY

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ROADWAY PLAN AND PROFILE

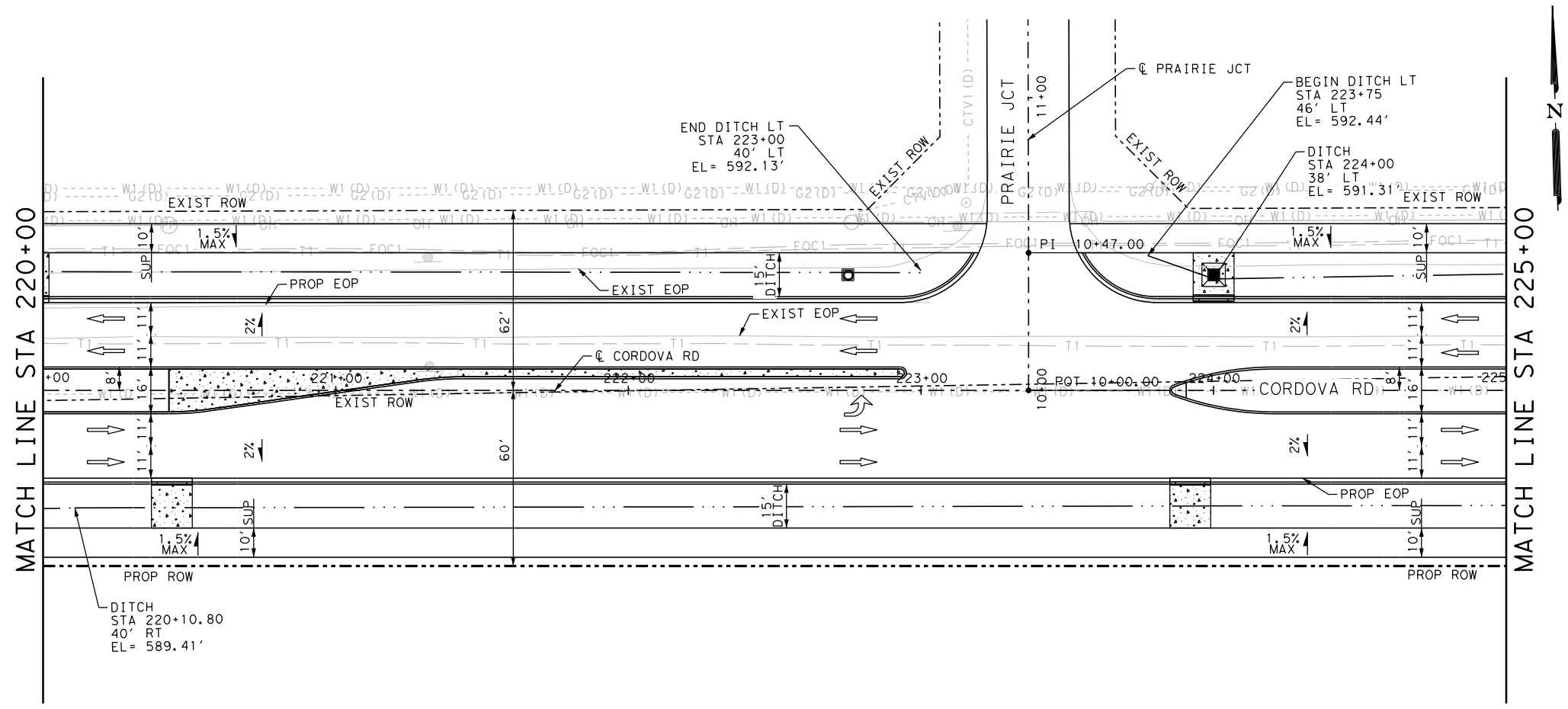
STA 215+00 TO STA 220+00

SHEET 22 OF 44

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	187

Plotted on: 11/17/2023

Design File name: P:\12775\00\Design\Civil\Roadway\1277500_rdw-23.dgn



LEGEND

	RETAINING WALL		EXIST ROW
	PROP ROW		DITCH FLOW LINE
	DRIVEWAY NUMBER		TRAFFIC FLOW
	ARMOR CURB SLOTS		MAILBOX
	CONC RIPRAP / DRIVEWAYS		SEAL COAT

- NOTES**
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 4. SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

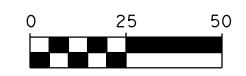
INTERIM REVIEW

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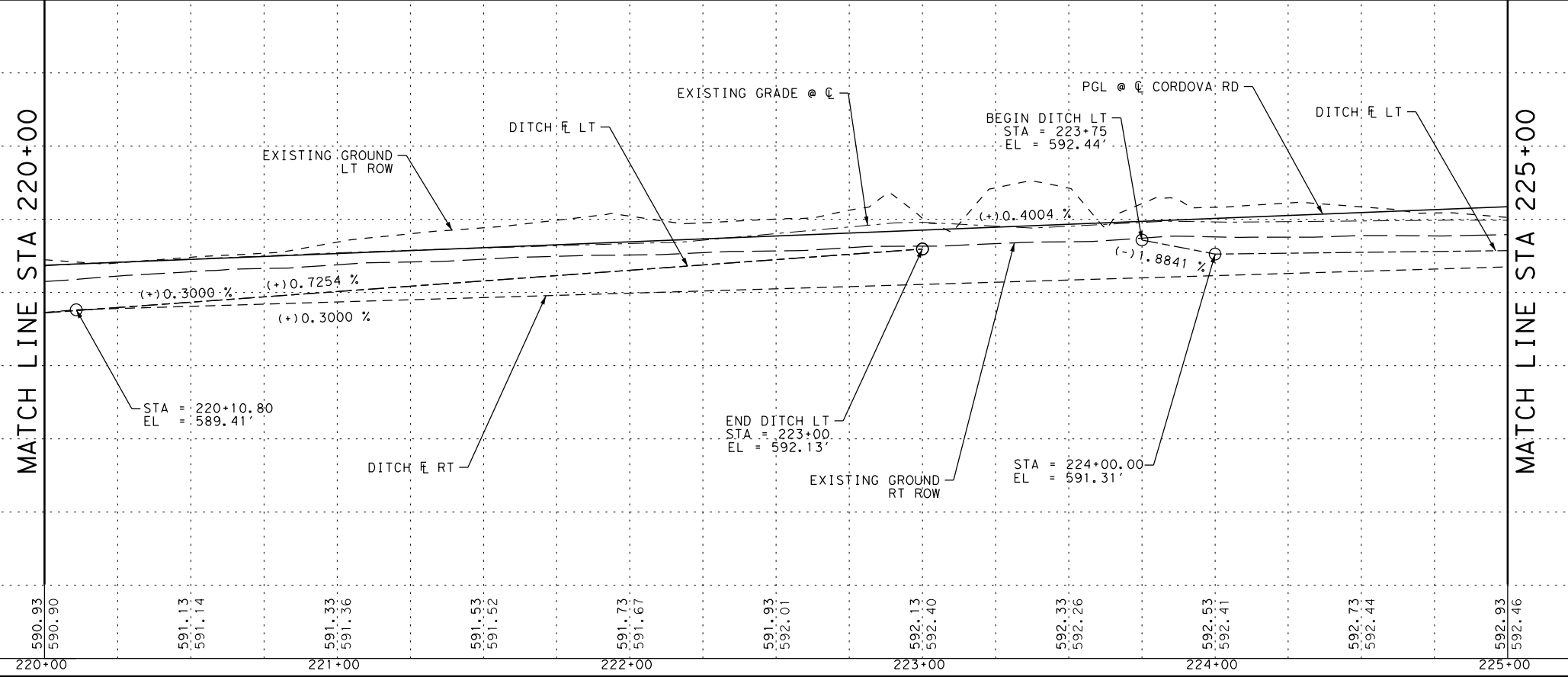
ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 5'



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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ROADWAY PLAN AND PROFILE

STA 220+00 TO STA 225+00

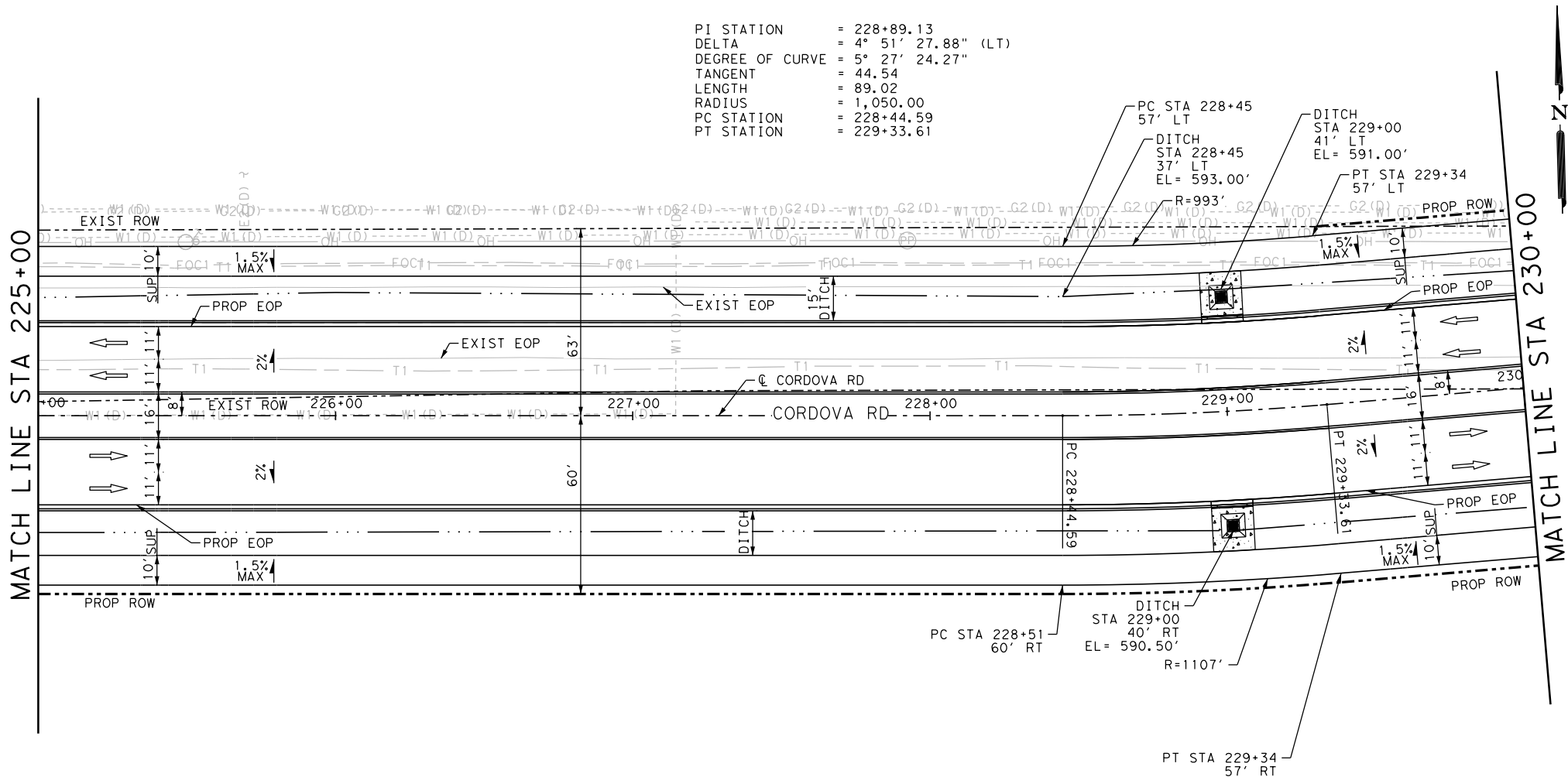
SHEET 23 OF 44

DIST:	SAT	COUNTY:	GUADALUPE	CONT. NO.:	0915	SECT. NO.:	46	JOB NO.:	052	SHEET NO.:	188
CHK DGN:	6	STATE:	TEXAS	FEDERAL AID PROJECT NO.:				HIGHWAY NO.:	CORDOVA		

Plotted on: 11/17/2023

Design File name: P:\1275\00\Design\Civil\Roadway\127500_rdw_24.dgn

PI STATION = 228+89.13
 DELTA = 4° 51' 27.88" (LT)
 DEGREE OF CURVE = 5° 27' 24.27"
 TANGENT = 44.54
 LENGTH = 89.02
 RADIUS = 1,050.00
 PC STATION = 228+44.59
 PT STATION = 229+33.61



LEGEND

	RETAINING WALL		EXIST ROW
	PROP ROW		DITCH FLOW LINE
	DRIVEWAY NUMBER		TRAFFIC FLOW
	ARMOR CURB SLOTS		MAILBOX
	CONC RIPRAP / DRIVEWAYS		SEAL COAT

- NOTES**
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 - SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN

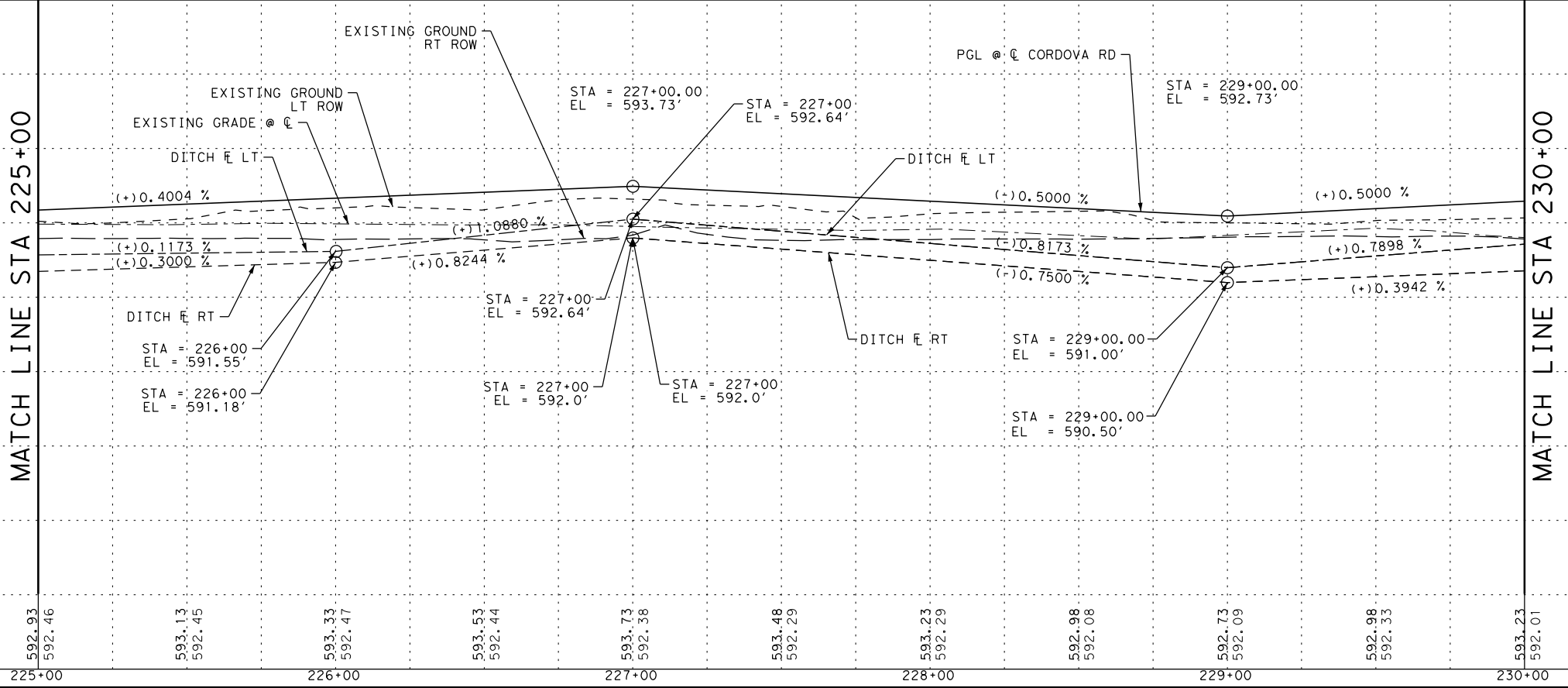
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 5'



REV. NO.	DATE	DESCRIPTION	BY



ROADWAY PLAN AND PROFILE

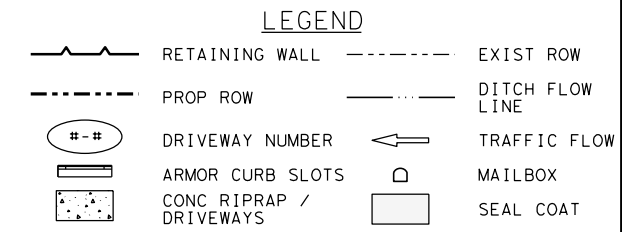
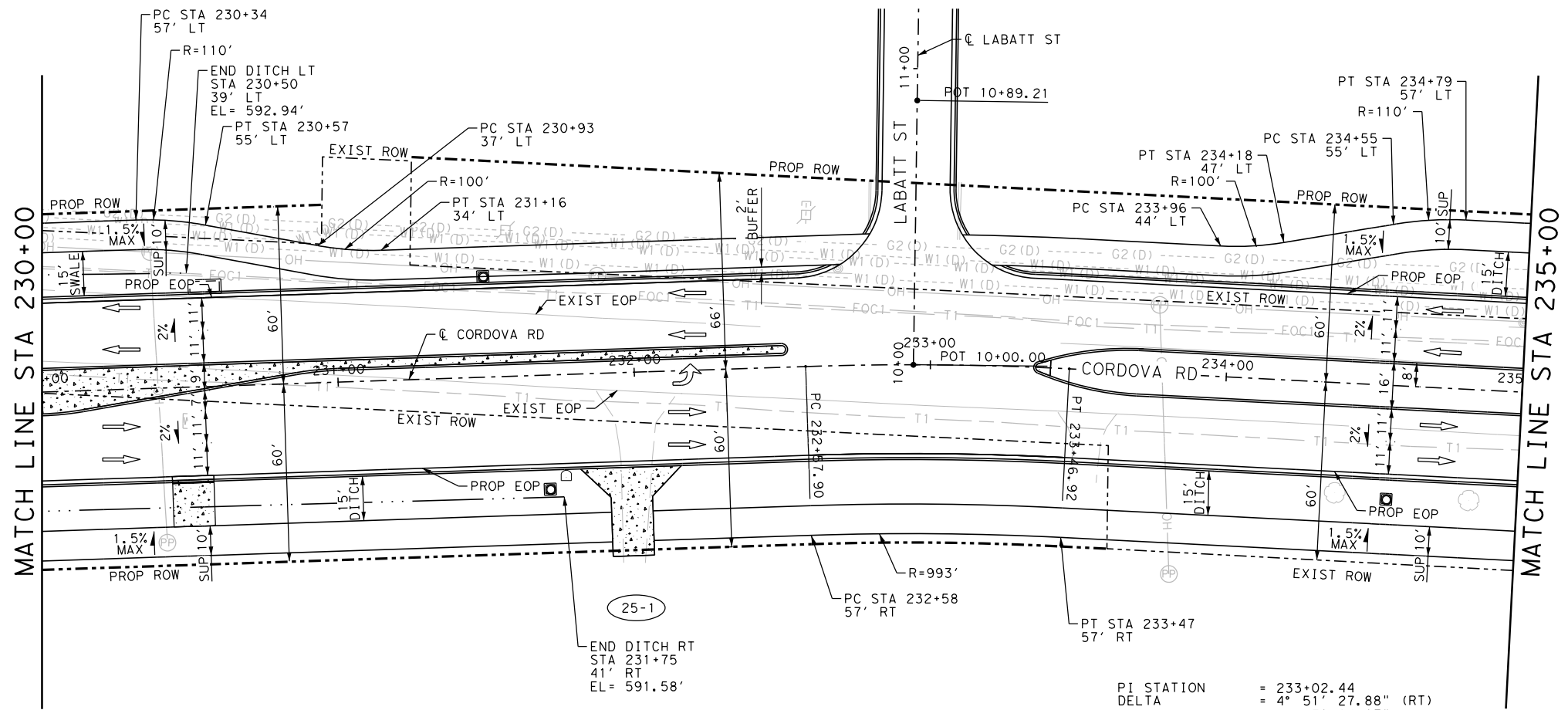
STA 225+00 TO STA 230+00

SHEET 24 OF 44

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
			JOB NO.:	SHEET NO.:
			052	189

Plotted on: 11/17/2023

Design File name: P:\1275\00\Design\Civil\Roadway\1277500_rdw-25.dgn



- ### NOTES
- ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING, EDGE OF GUTTER, OR FACE OF CURB UNLESS OTHERWISE NOTED.
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DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

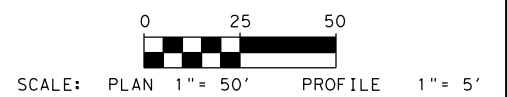
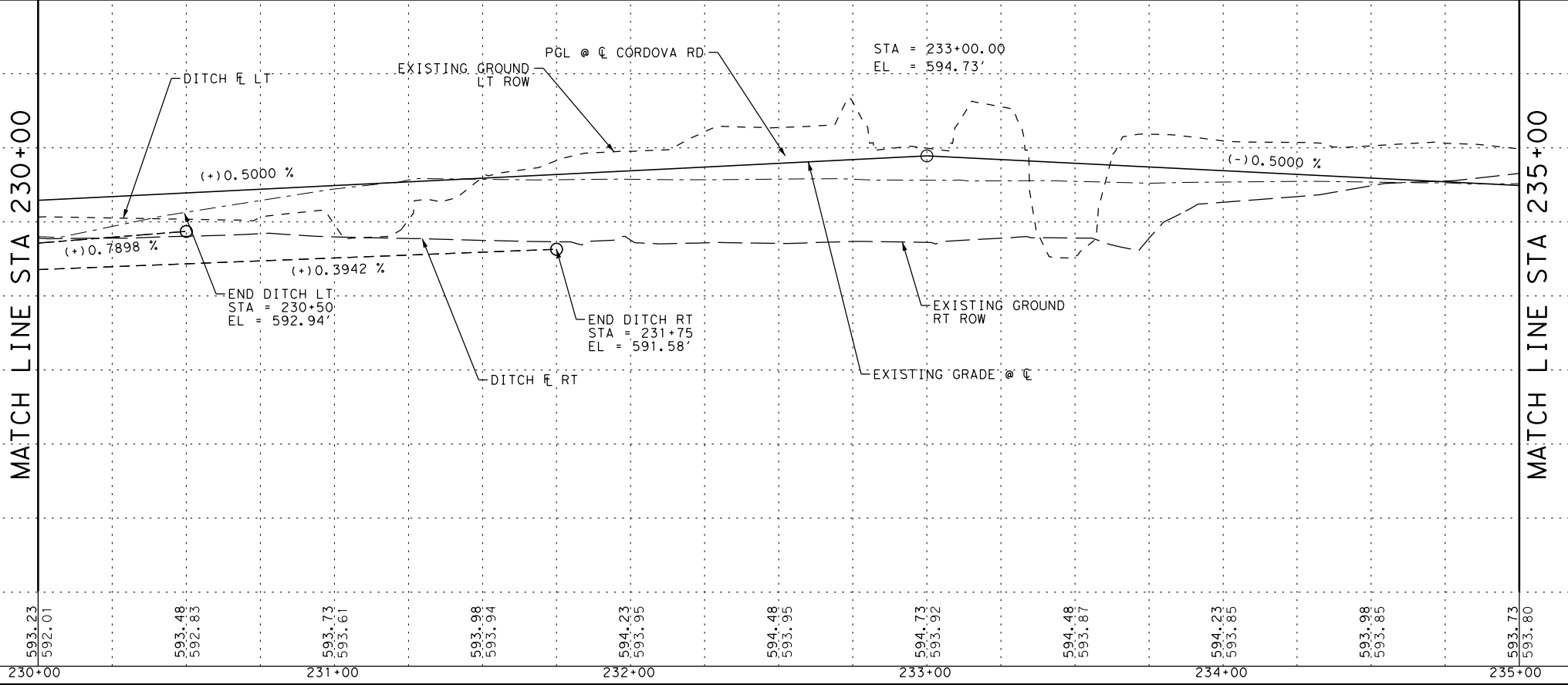
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

Pape-Dawson Engineers

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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ROADWAY PLAN AND PROFILE

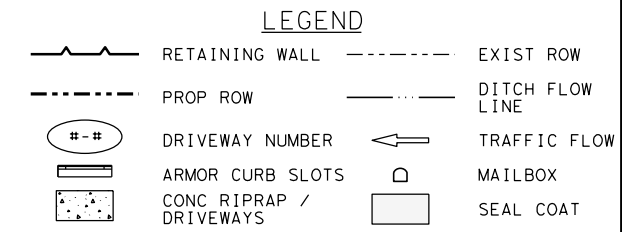
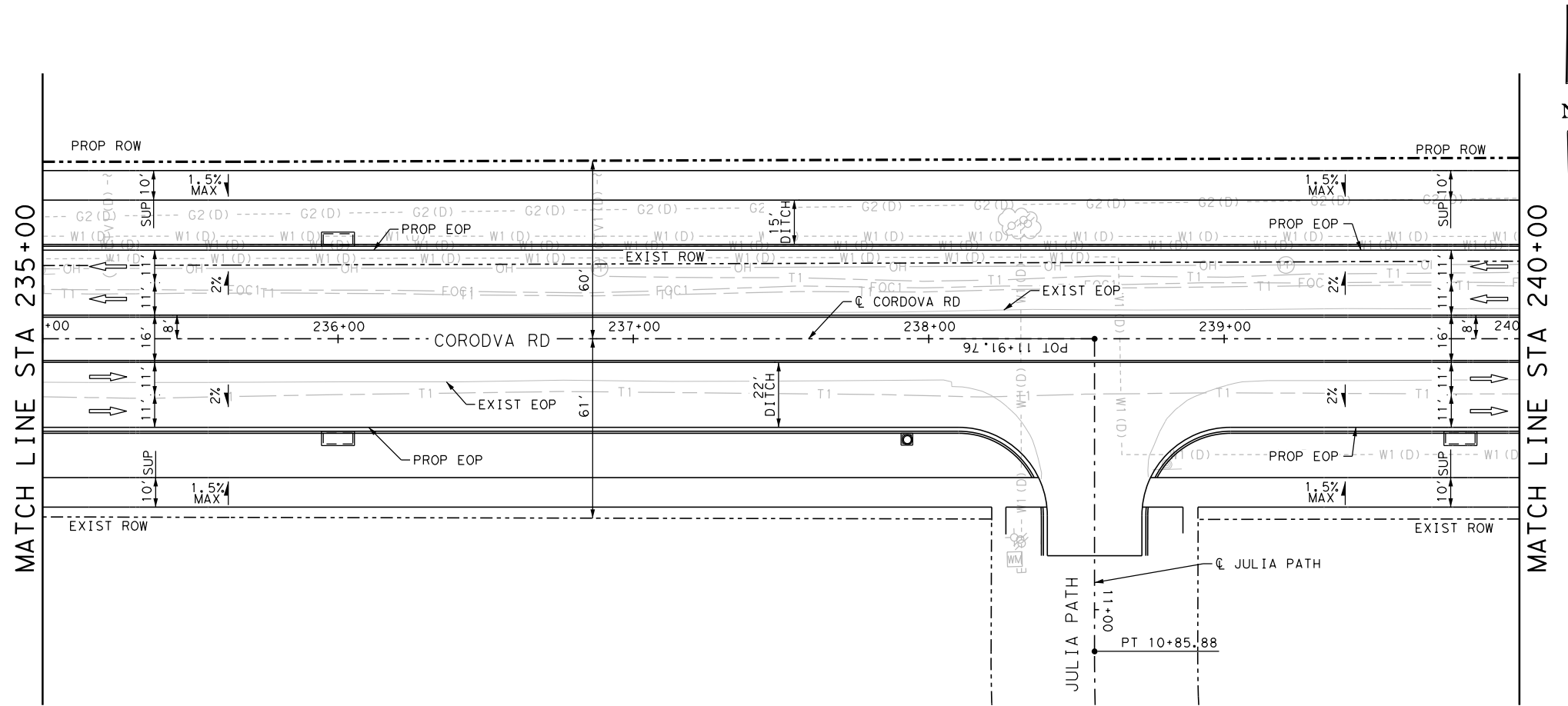
STA 230+00 TO STA 235+00

SHEET 25 OF 44

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				190

Plotted on: 11/17/2023

Design File name: P:\127175\00\Design\Civil\Roadway\1277500_rdw_26.dgn



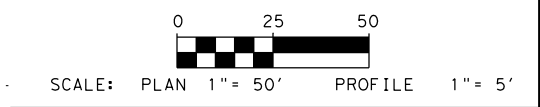
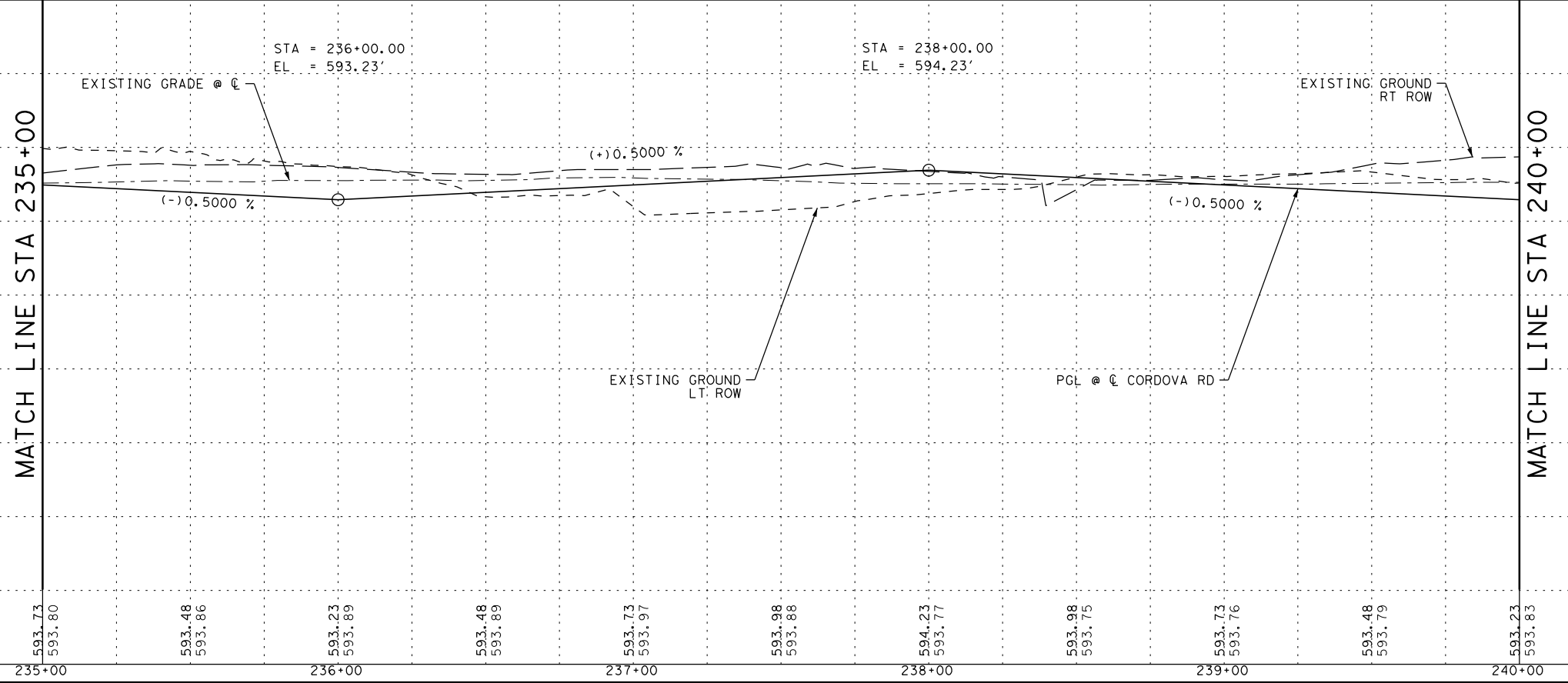
- NOTES**
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 - SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

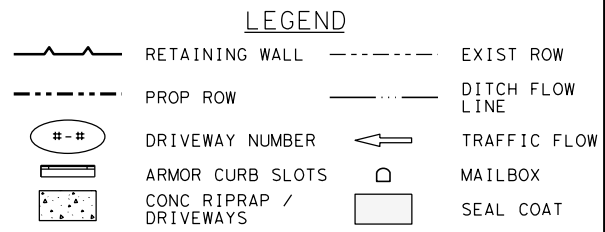
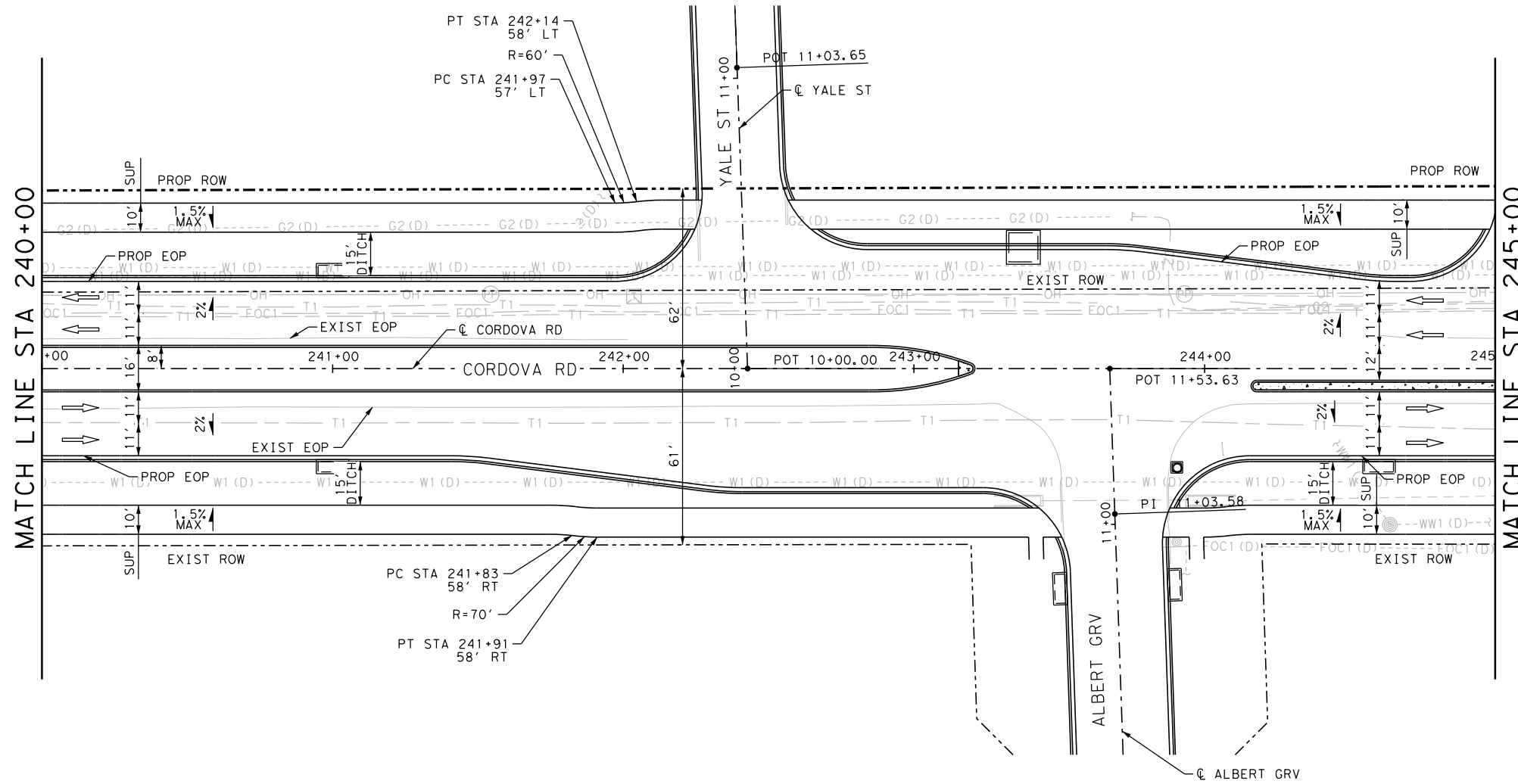
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
©2023			
ROADWAY PLAN AND PROFILE STA 235+00 TO STA 240+00 SHEET 26 OF 44			
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
CHK DGN:	6	TEXAS	
DWG:	DIST.:	COUNTY:	CONT. NO. SECT. NO. JOB NO.
CHK DWG:	SAT	GUADALUPE	0915 46 052
			HIGHWAY NO. SHEET NO.
			CORDOVA 191

Plotted on: 11/17/2023

Design File name: P:\12775\00\Design\Civil\Roadway\1277500_rdw-27.dgn



- NOTES**
- ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING, EDGE OF GUTTER, OR FACE OF CURB UNLESS OTHERWISE NOTED.
 - ALL EXISTING FEATURES ARE SHOWN SCREENED BACK, I.E. FADED.
 - REFER TO HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA AND ALIGNMENT INFORMATION.
 - SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN

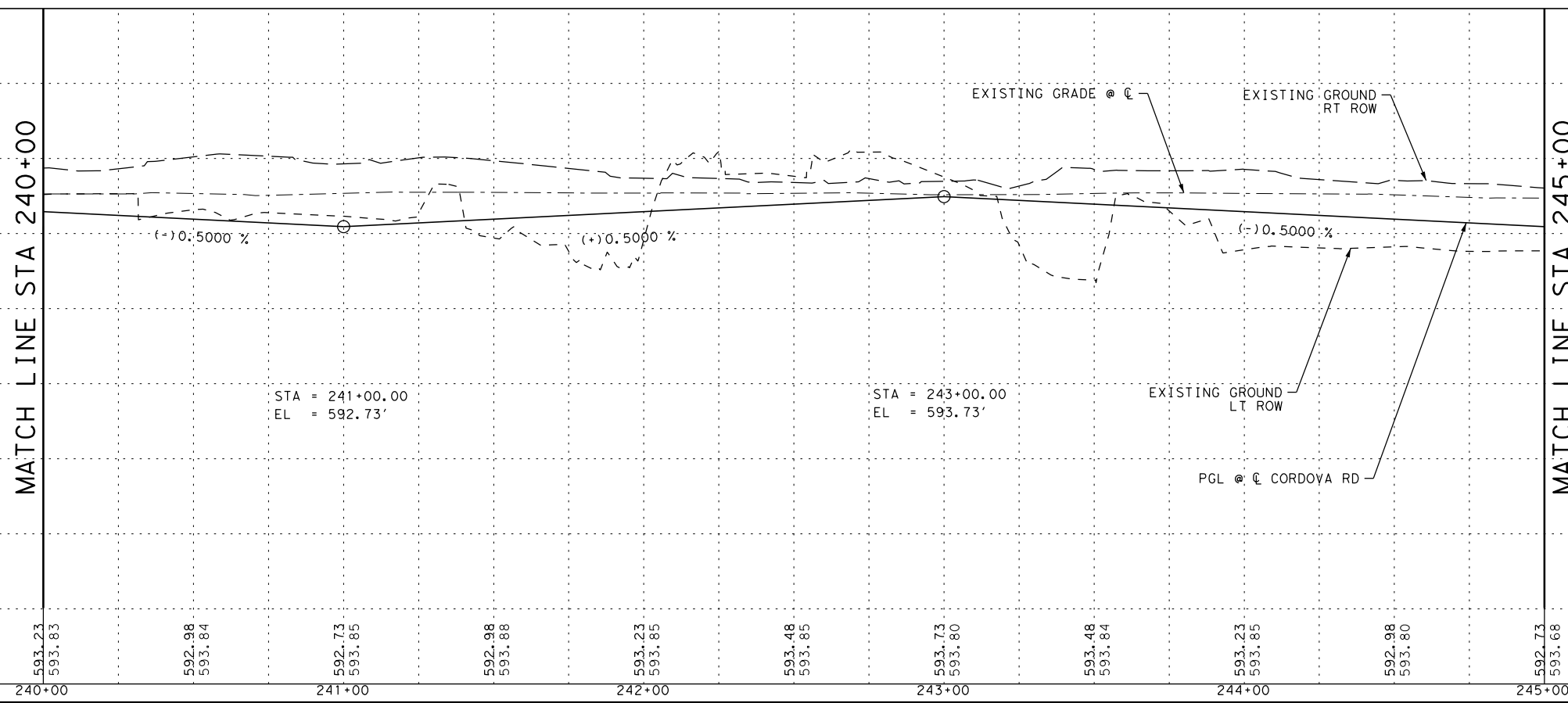
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 5'



REV. NO.	DATE	DESCRIPTION	BY



ROADWAY PLAN AND PROFILE

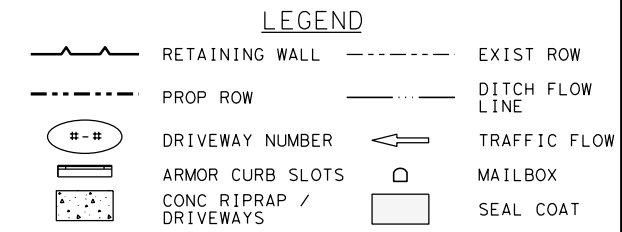
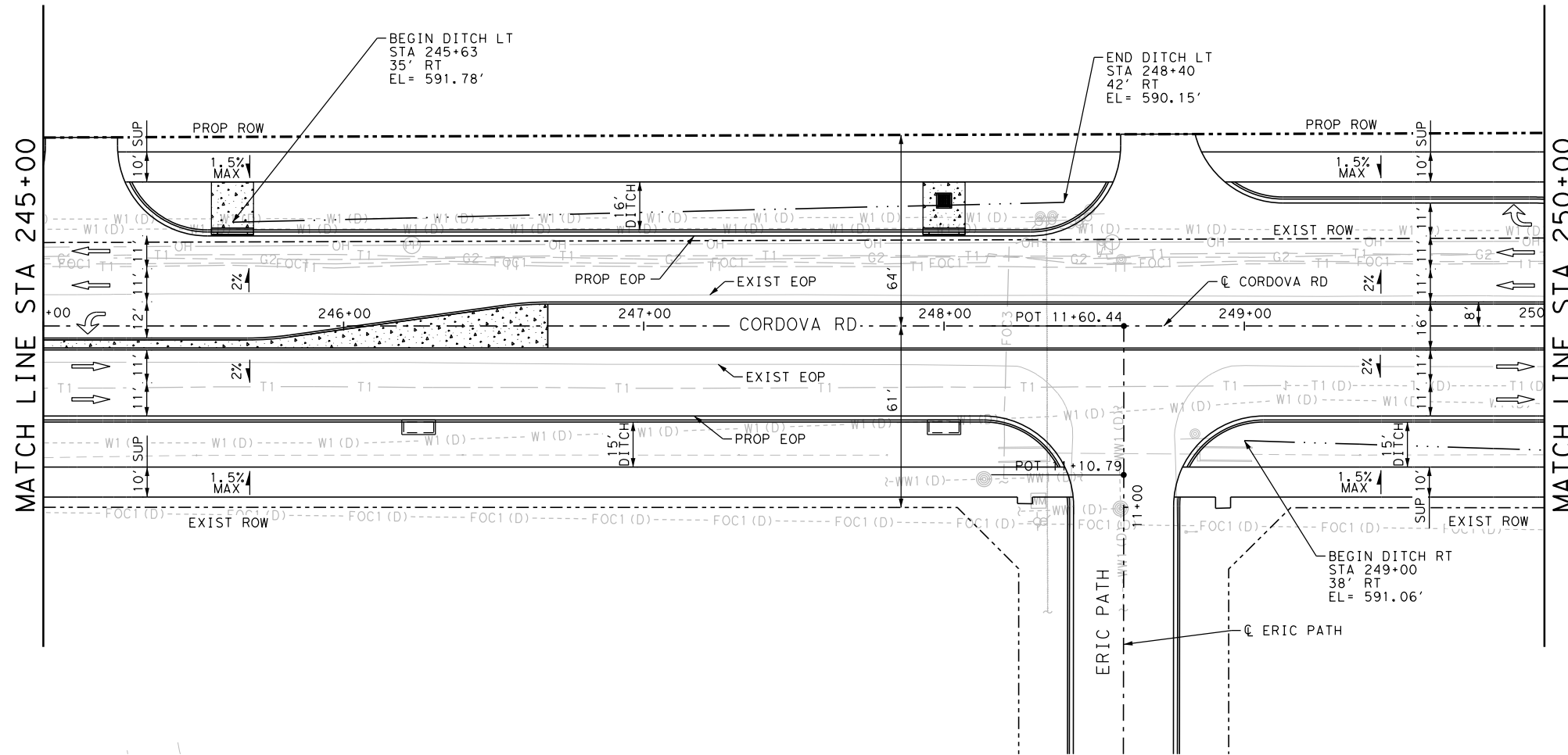
STA 240+00 TO STA 245+00

SHEET 27 OF 44

CHK DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
	6	TEXAS		CORDOVA		
CHK DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
	SAT	GUADALUPE	0915	46	052	192

Plotted on: 11/17/2023

Design File name: P:\12775\00\Design\Civil\Roadway\1277500_rdw_28.dgn



- NOTES**
- ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING, EDGE OF GUTTER, OR FACE OF CURB UNLESS OTHERWISE NOTED.
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 - REFER TO HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA AND ALIGNMENT INFORMATION.
 - SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 5'

REV. NO.	DATE	DESCRIPTION	BY

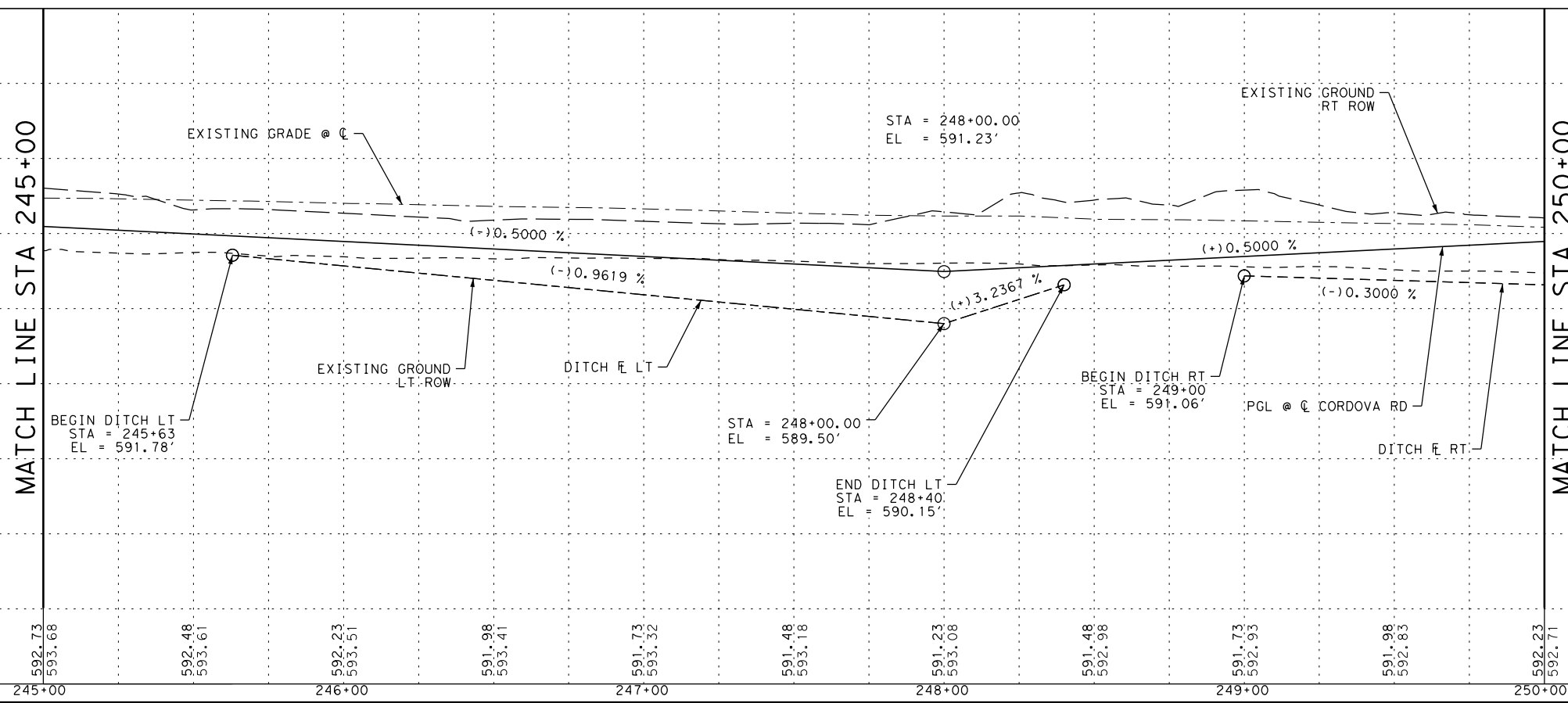
PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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ROADWAY PLAN AND PROFILE
 STA 245+00 TO STA 250+00
 SHEET 28 OF 44

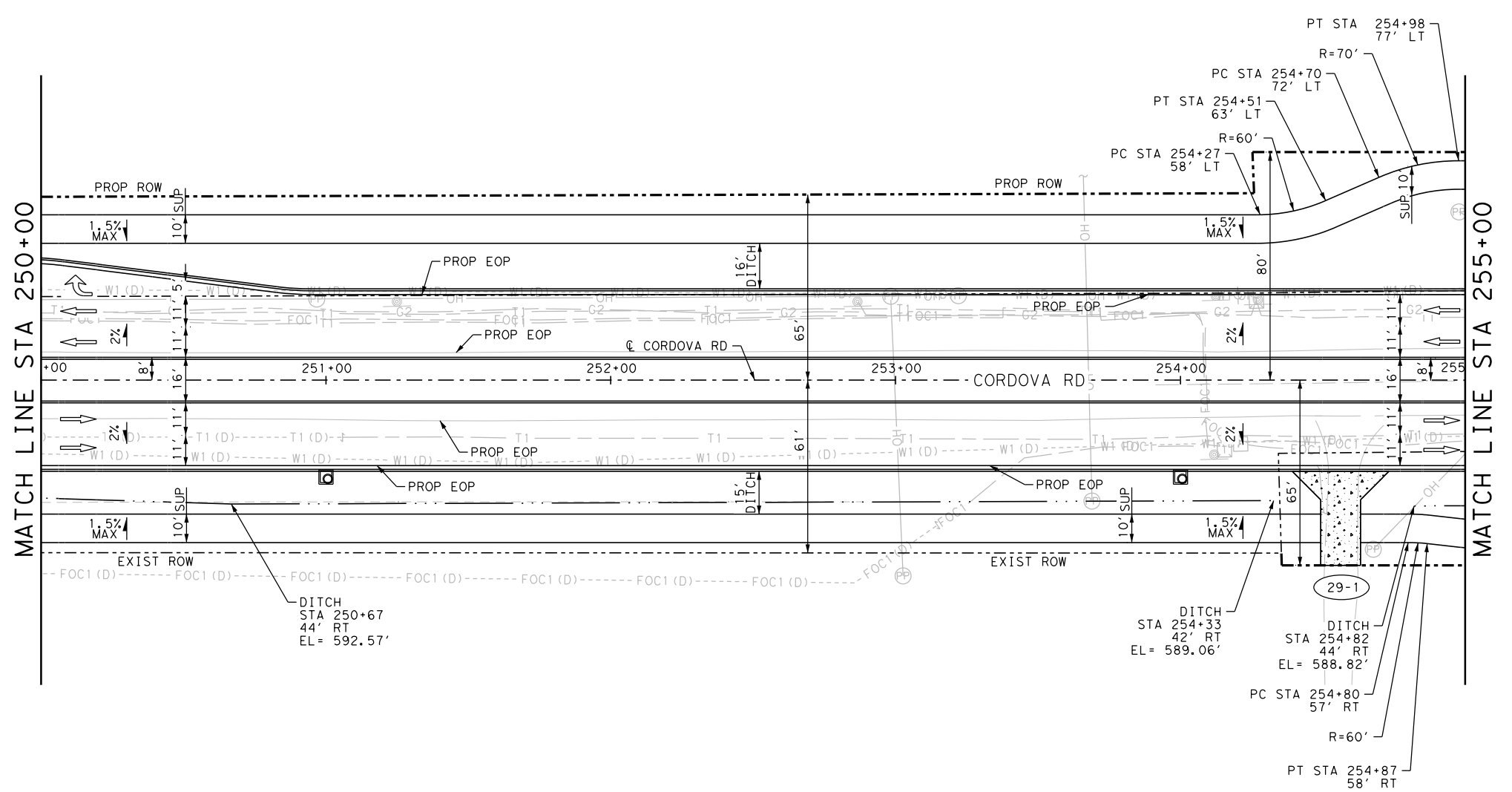
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CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	193



PROP EL @ C	EXIST EL @ C	PROP EL @ G	EXIST EL @ G
592.73	593.68	592.48	593.61
592.23	593.51	591.98	593.41
591.73	593.32	591.48	593.18
591.23	593.08	591.48	592.98
591.73	592.93	591.98	592.83
592.23	592.71		

Plotted on: 11/17/2023

Design File name: P:\12775\00\Design\Civil\Roadway\1277500_rdw-29.dgn



LEGEND

	RETAINING WALL		EXIST ROW
	PROP ROW		DITCH FLOW LINE
	DRIVEWAY NUMBER		TRAFFIC FLOW
	ARMOR CURB SLOTS		MAILBOX
	CONC RIPRAP / DRIVEWAYS		SEAL COAT

- NOTES**
1. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING, EDGE OF GUTTER, OR FACE OF CURB UNLESS OTHERWISE NOTED.
 2. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK. I.E. FADED.
 3. REFER TO HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA AND ALIGNMENT INFORMATION.
 4. SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

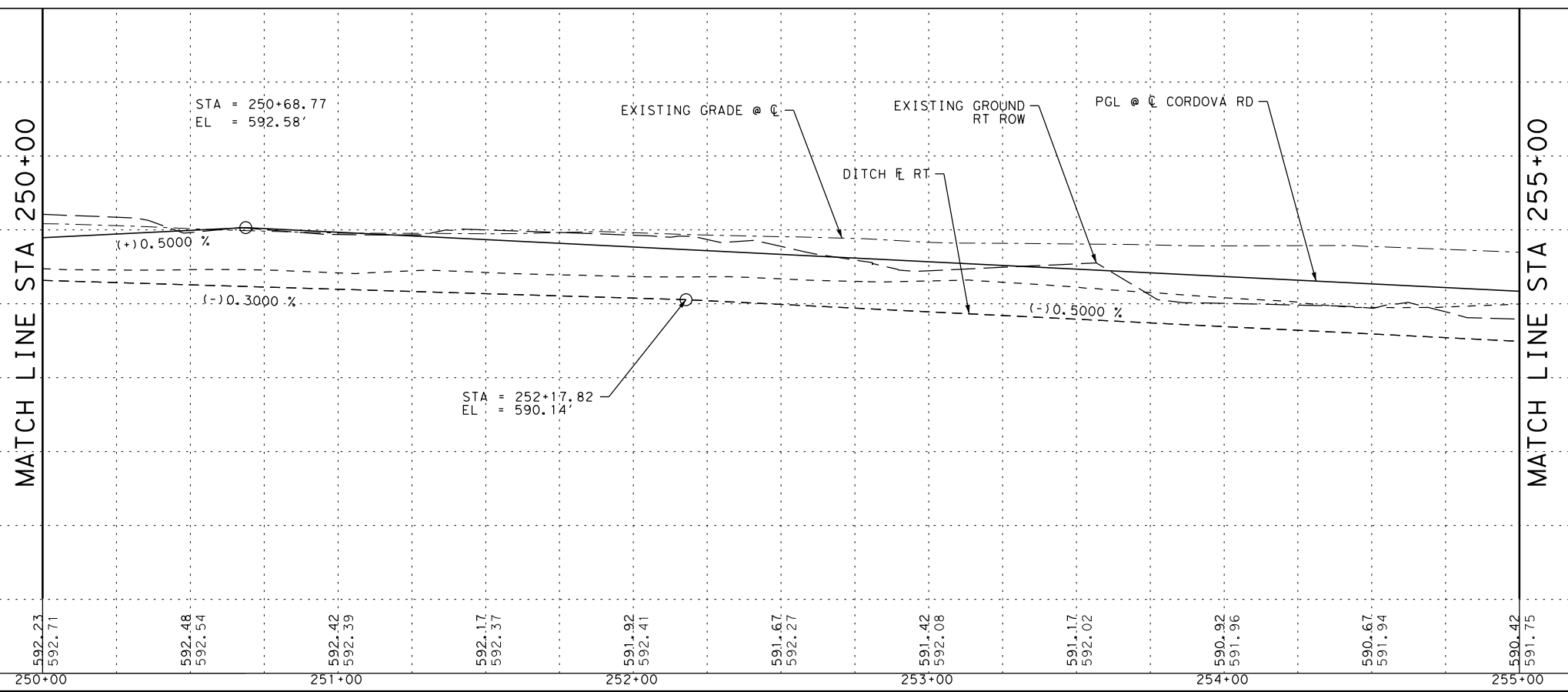
ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 5'



REV. NO.	DATE	DESCRIPTION	BY
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ROADWAY PLAN AND PROFILE

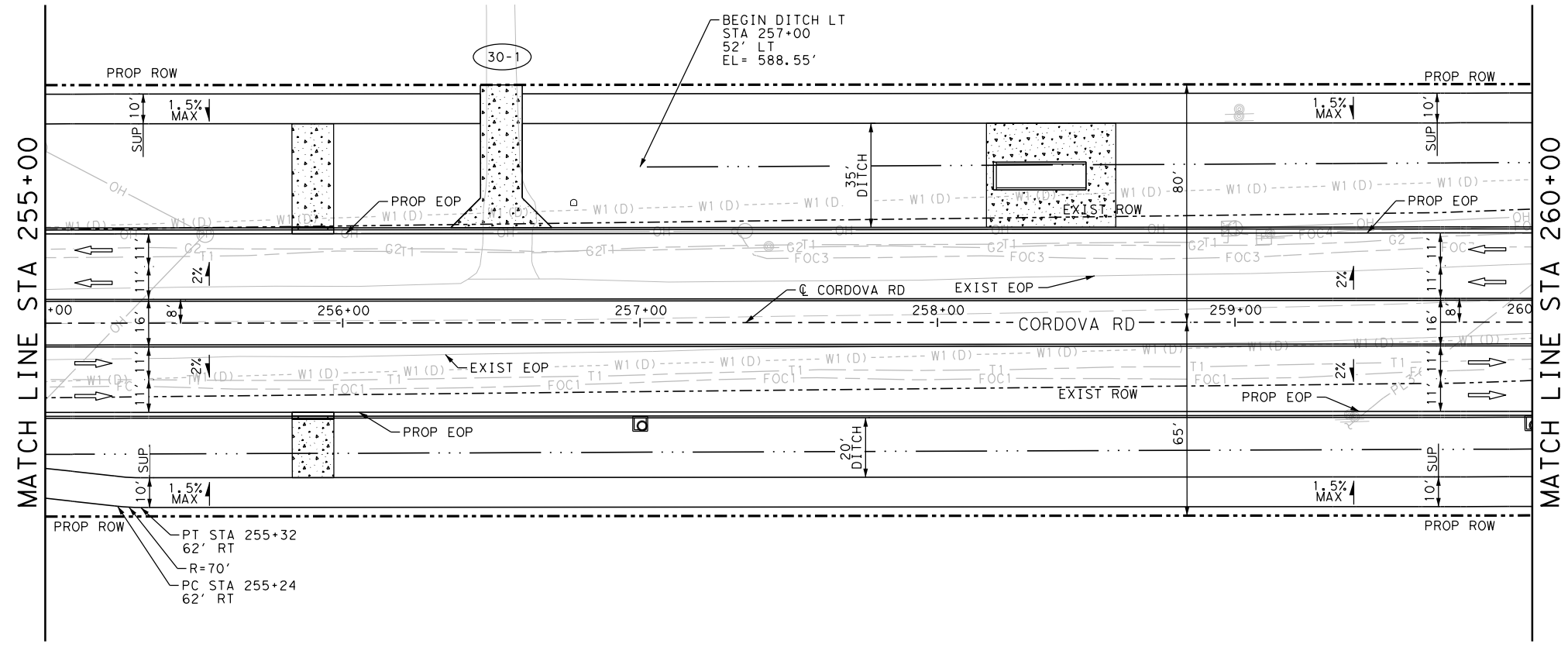
STA 250+00 TO STA 255+00

SHEET 29 OF 44

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				194

Plotted on: 11/17/2023

Design File name: P:\127175\00\Design\Civil\Roadway\1277500_rdw_30.dgn



LEGEND

	RETAINING WALL		EXIST ROW
	PROP ROW		DITCH FLOW LINE
	DRIVEWAY NUMBER		TRAFFIC FLOW
	ARMOR CURB SLOTS		MAILBOX
	CONC RIPRAP / DRIVEWAYS		SEAL COAT

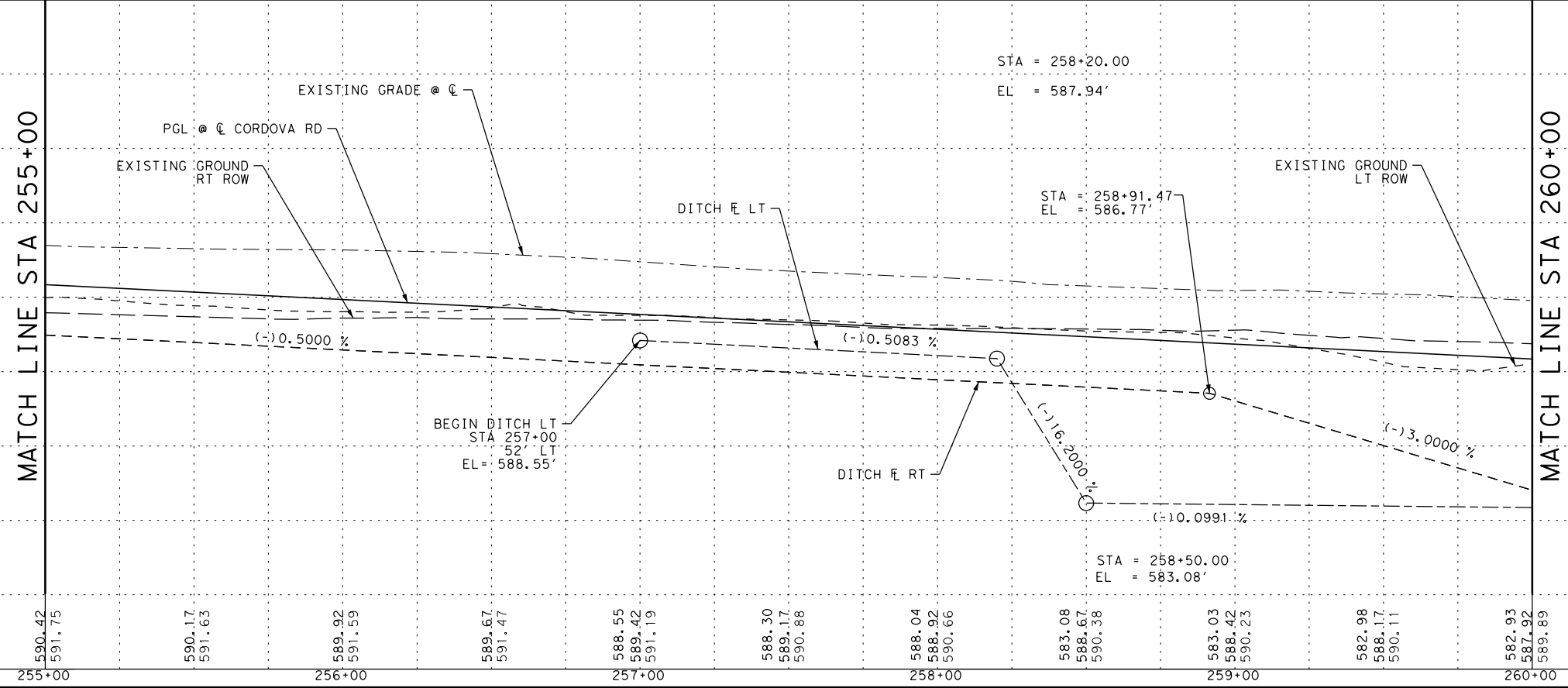
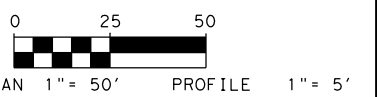
- NOTES**
1. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING, EDGE OF GUTTER, OR FACE OF CURB UNLESS OTHERWISE NOTED.
 2. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK, I.E. FADED.
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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 GUADALUPE COUNTY

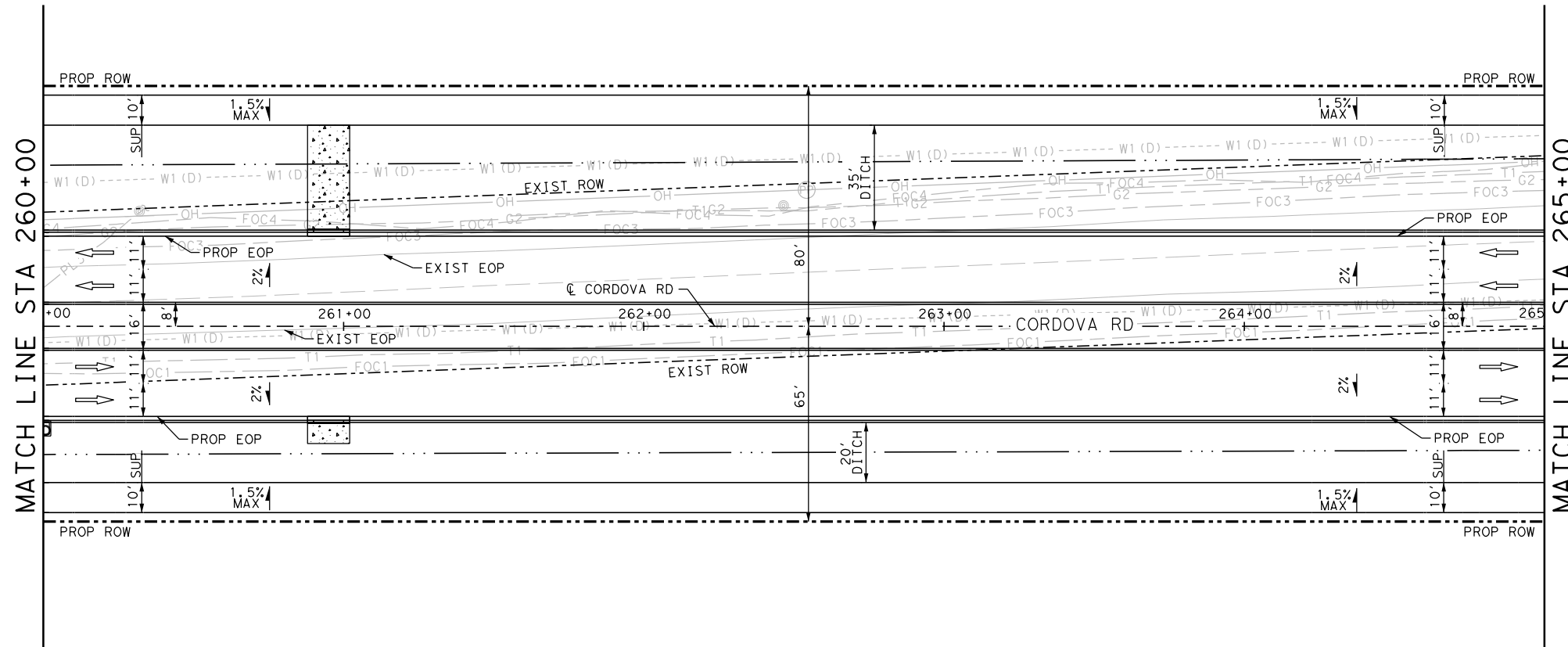
Texas Department of Transportation
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ROADWAY PLAN AND PROFILE
 STA 255+00 TO STA 260+00
 SHEET 30 OF 44

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				195

Plotted on: 11/17/2023

Design File name: P:\12775\00\Design\Civil\Roadway\1277500_rdw_31.dgn



LEGEND

	RETAINING WALL		EXIST ROW
	PROP ROW		DITCH FLOW LINE
	DRIVEWAY NUMBER		TRAFFIC FLOW
	ARMOR CURB SLOTS		MAILBOX
	CONC RIPRAP / DRIVEWAYS		SEAL COAT

- NOTES**
1. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING, EDGE OF GUTTER, OR FACE OF CURB UNLESS OTHERWISE NOTED.
 2. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK, I.E. FADED.
 3. REFER TO HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA AND ALIGNMENT INFORMATION.
 4. SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN

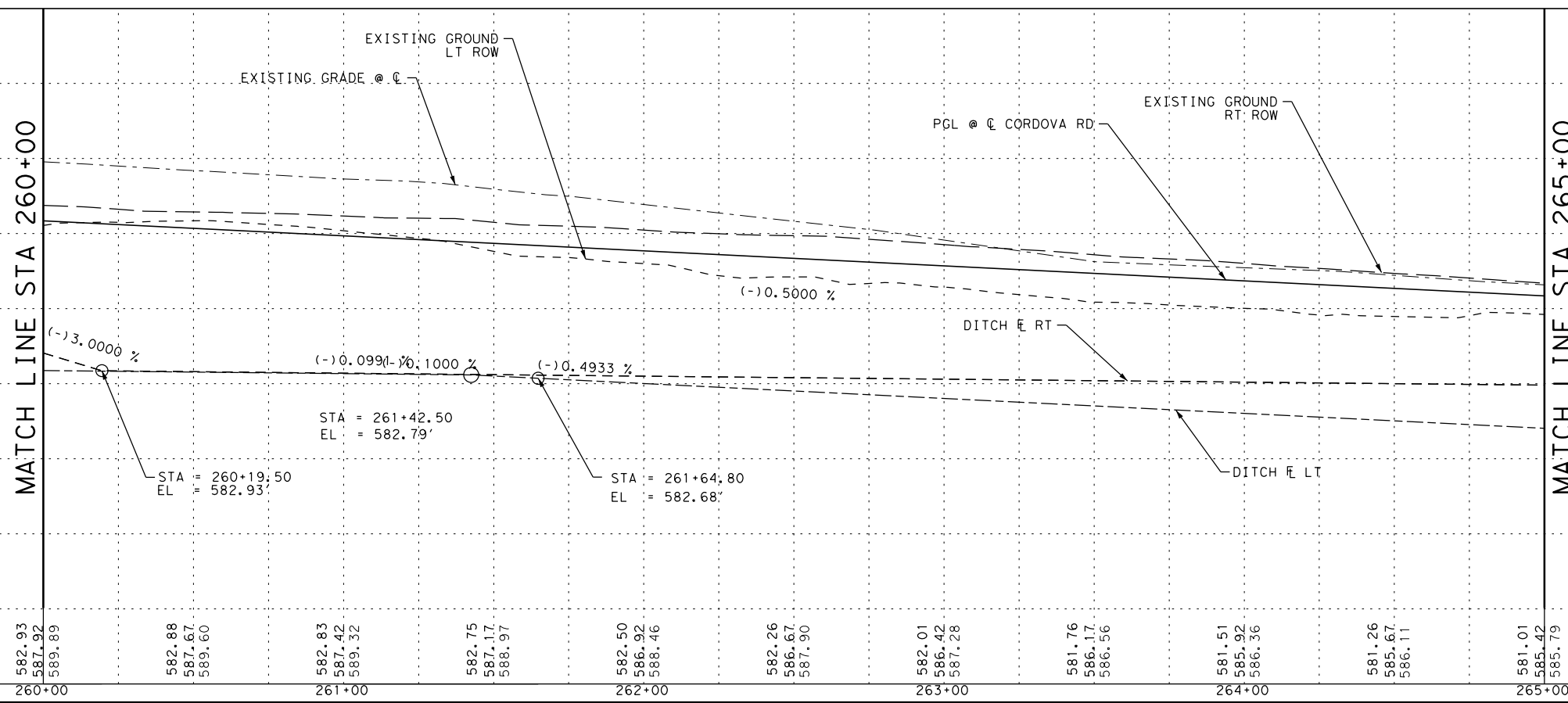
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 5'



REV. NO.	DATE	DESCRIPTION	BY

Pape-Dawson Engineers
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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 GUADALUPE COUNTY

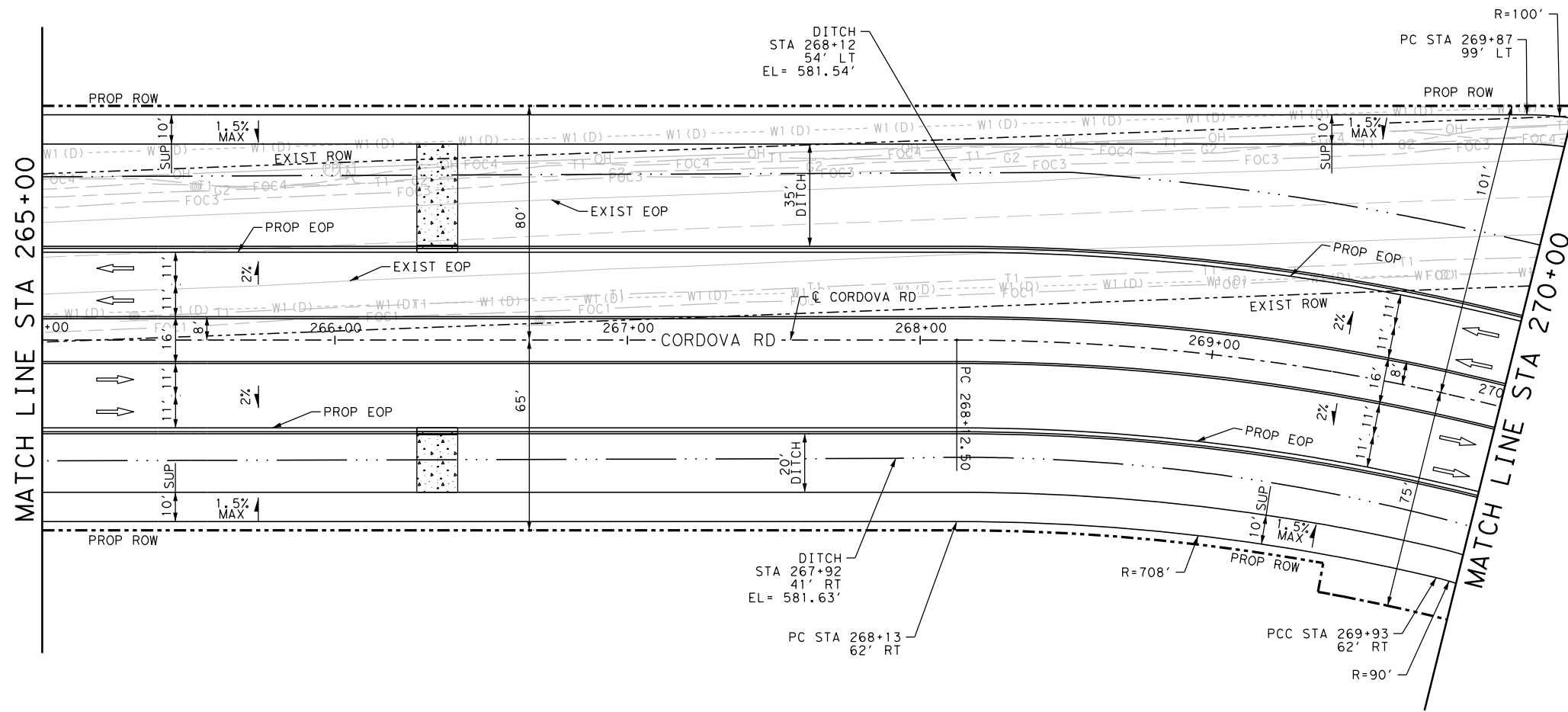
Texas Department of Transportation
 ©2023

ROADWAY PLAN AND PROFILE
 STA 260+00 TO STA 265+00
 SHEET 31 OF 44

CHK DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
DWG:	6	TEXAS		CORDOVA
CHK DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				196

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Roadway\1277500_rdw_32.dgn



LEGEND	
	RETAINING WALL
	PROP ROW
	DRIVEWAY NUMBER
	ARMOR CURB SLOTS
	CONC RIPRAP / DRIVEWAYS
	EXIST ROW
	DITCH FLOW LINE
	TRAFFIC FLOW
	MAILBOX
	SEAL COAT

NOTES

1. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING, EDGE OF GUTTER, OR FACE OF CURB UNLESS OTHERWISE NOTED.
2. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK, I.E. FADED.
3. REFER TO HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA AND ALIGNMENT INFORMATION.
4. SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN

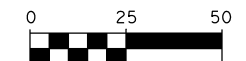
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 5'

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.

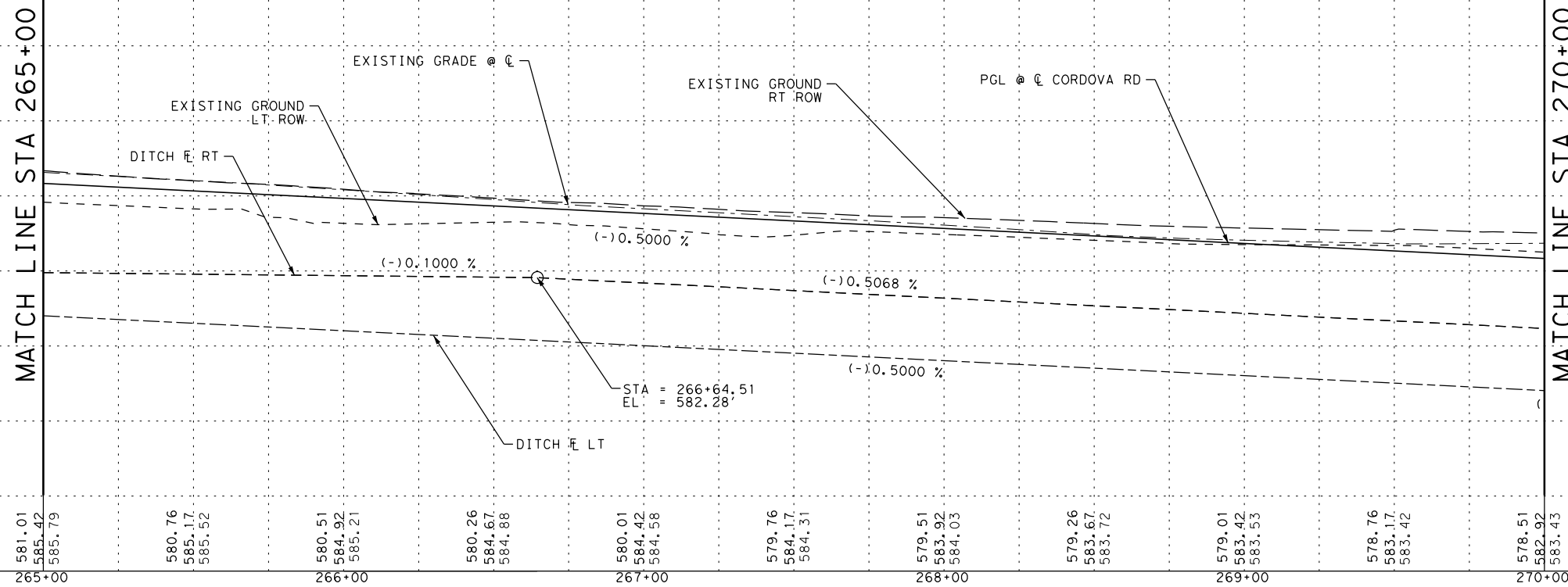


ROADWAY PLAN AND PROFILE

STA 265+00 TO STA 270+00

SHEET 32 OF 44

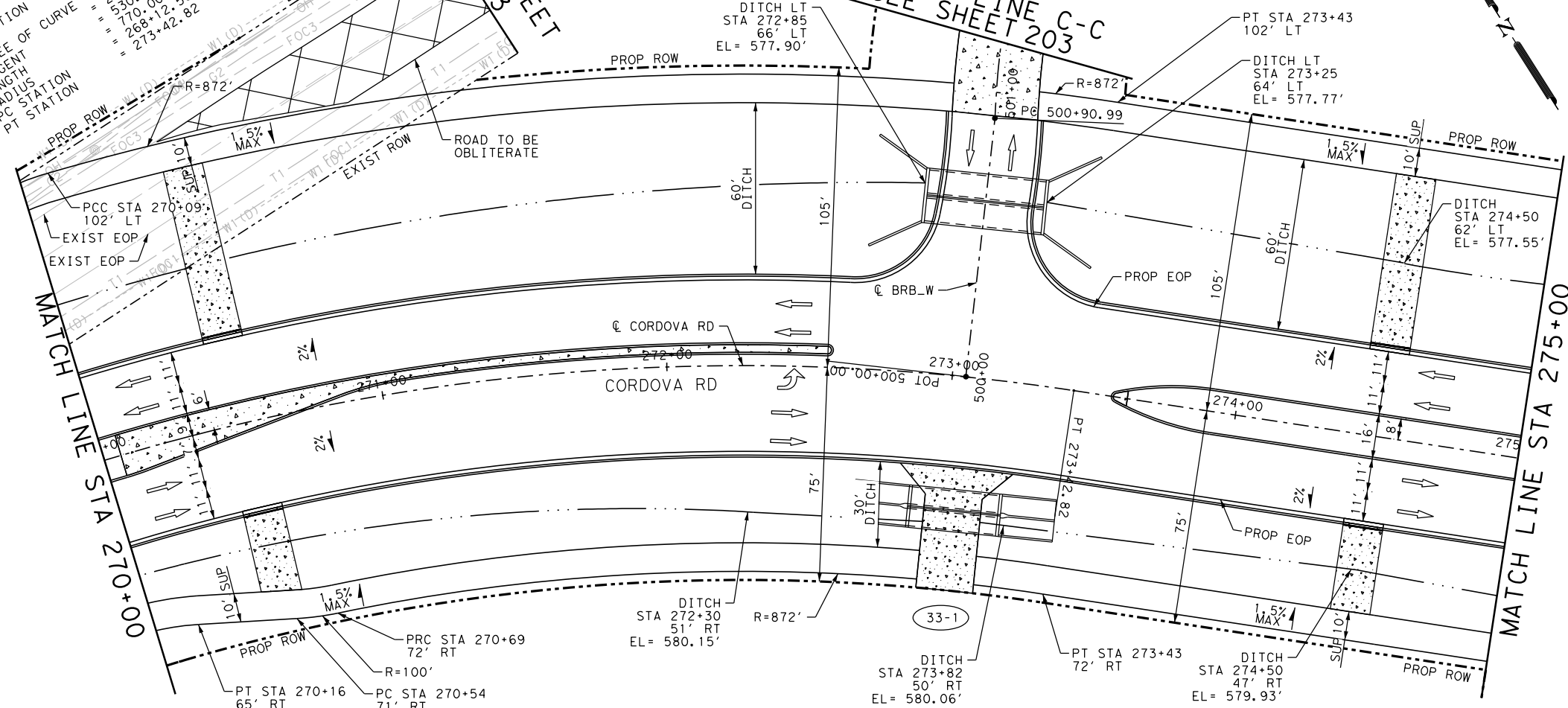
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				197



Plotted on: 11/17/2023

Design File name: P:\12775\00\Design\Civil\Roadway\1277500_rdw_33.dgn

PI STATION = 270+88.66
 DELTA DEGREE OF CURVE = 39° 27' 40.51" (RT)
 TANGENT LENGTH = 276.26
 RADIUS = 170.00
 PC STATION = 268+12.50
 PT STATION = 273+42.82
 R=872'
 SEE C-C SHEET 203
 MATCH LINE C-C SEE SHEET 203



LEGEND

	RETAINING WALL		EXIST ROW
	PROP ROW		DITCH FLOW LINE
	DRIVEWAY NUMBER		TRAFFIC FLOW
	ARMOR CURB SLOTS		MAILBOX
	CONC RIPRAP / DRIVEWAYS		SEAL COAT

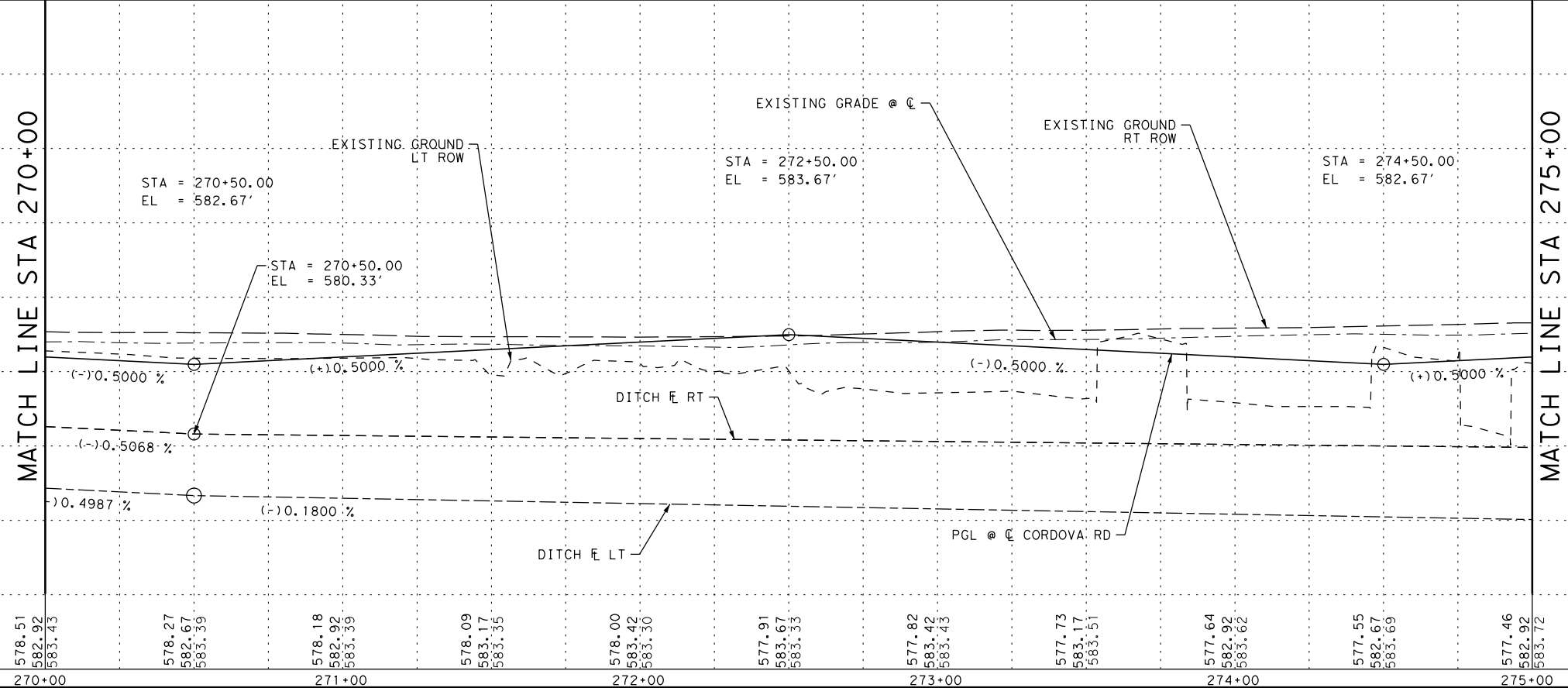
- NOTES**
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 - SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN
 INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
 INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 5'



REV. NO.	DATE	DESCRIPTION	BY
----------	------	-------------	----

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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GUADALUPE COUNTY

Texas Department of Transportation
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ROADWAY PLAN AND PROFILE

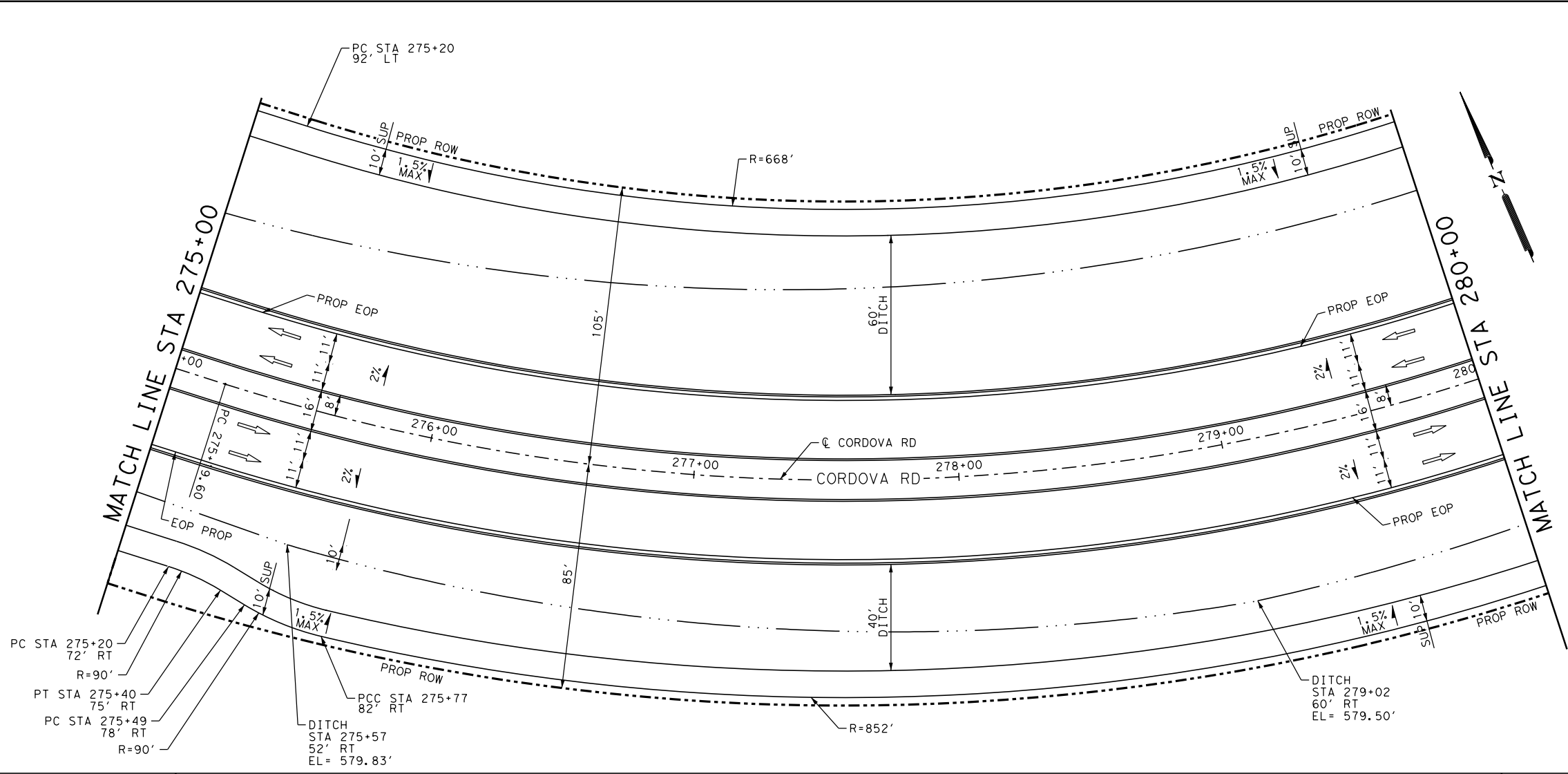
STA 270+00 TO STA 275+00

SHEET 33 OF 44

DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
SAT	GUADALUPE	0915	46	052	198

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Roadway\1277500_rdw_34.dgn



LEGEND

	RETAINING WALL		EXIST ROW
	PROP ROW		DITCH FLOW LINE
	DRIVEWAY NUMBER		TRAFFIC FLOW
	ARMOR CURB SLOTS		MAILBOX
	CONC RIPRAP / DRIVEWAYS		SEAL COAT

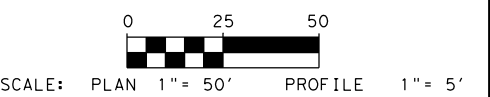
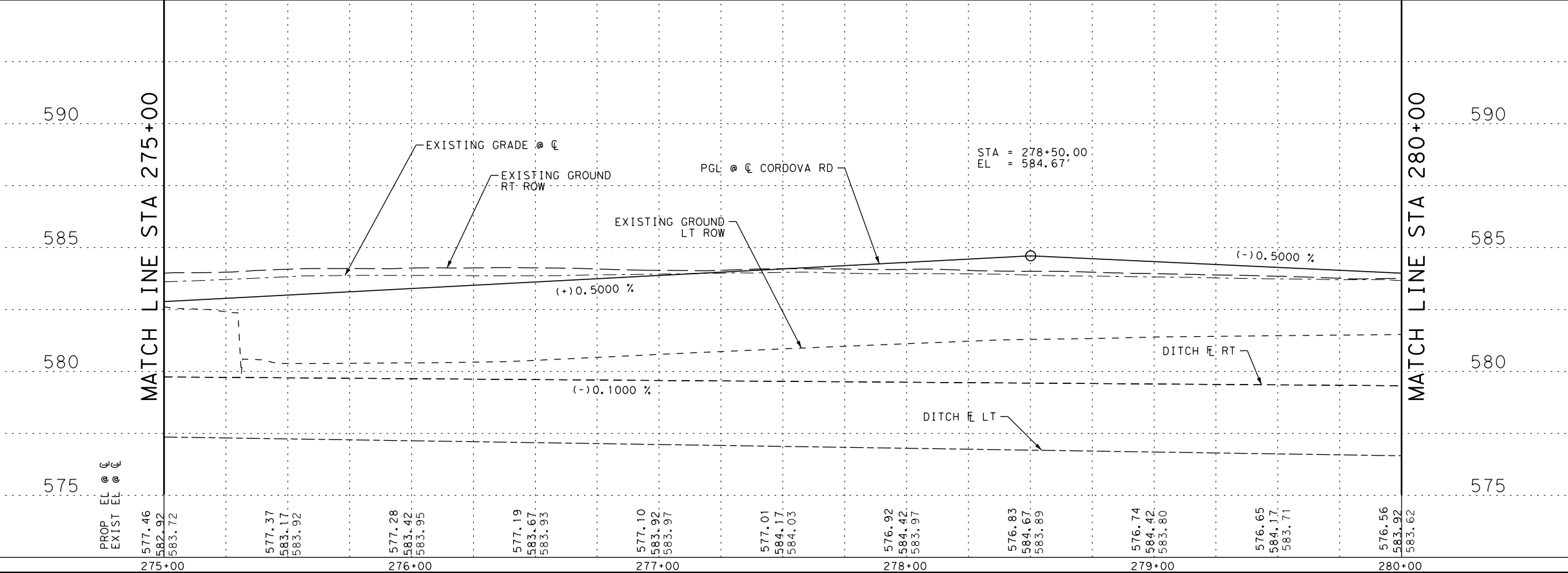
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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THE STATE OF TEXAS
 GUADALUPE COUNTY

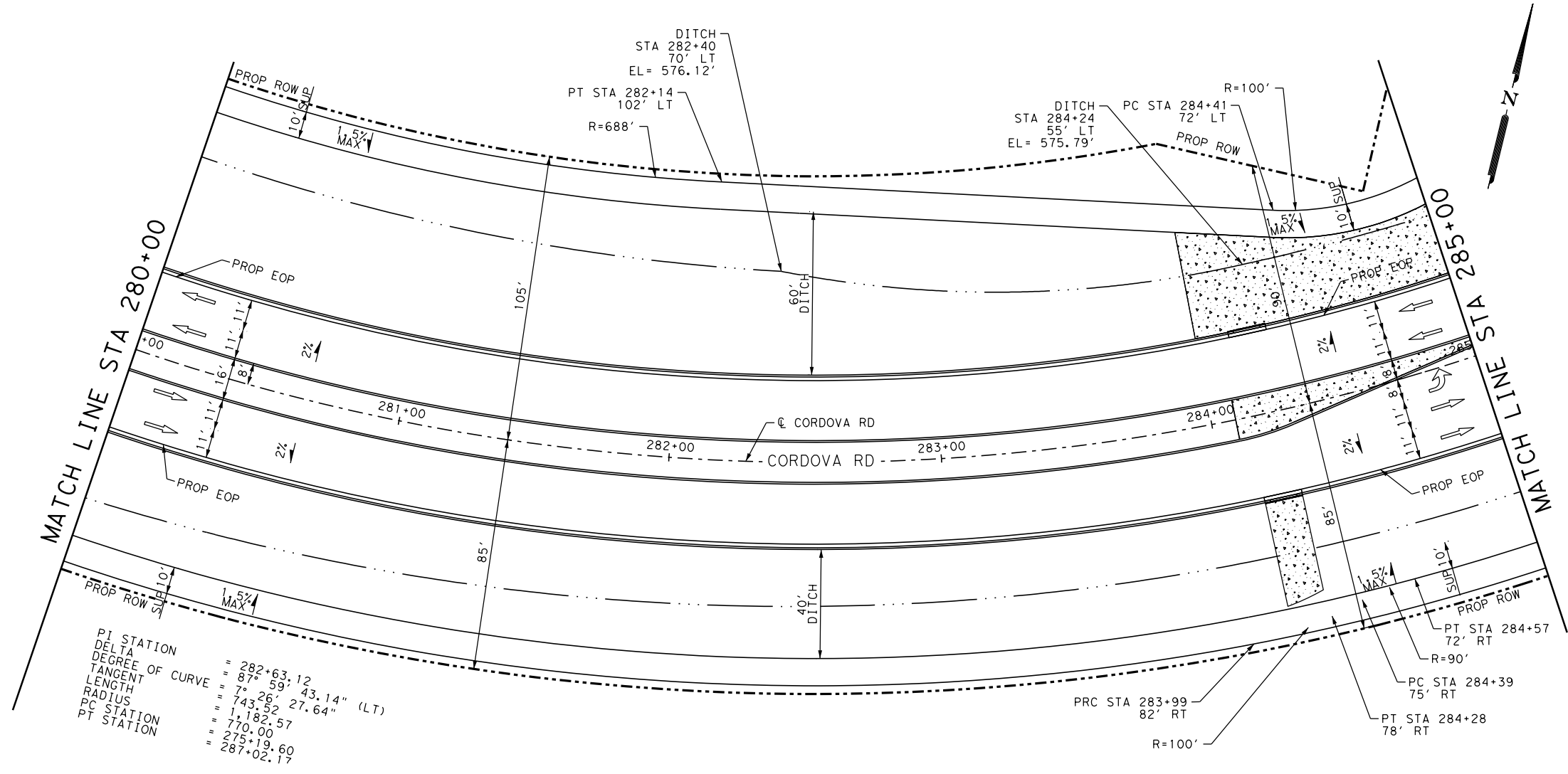
Texas Department of Transportation
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ROADWAY PLAN AND PROFILE
 STA 275+00 TO STA 280+00
 SHEET 34 OF 44

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	199

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Des\ign\Civil\Roadway\1277500_rdw_35.dgn



PI STATION = 282+63.12
 DELTA = 87° 59' 43.14" (LT)
 DEGREE OF CURVE = 7' 26' 27.64"
 TANGENT LENGTH = 743.52
 RADIUS = 1,182.57
 PC STATION = 277.00
 PT STATION = 275+19.60
 = 287+02.17

LEGEND

	RETAINING WALL		EXIST ROW
	PROP ROW		DITCH FLOW LINE
	DRIVEWAY NUMBER		TRAFFIC FLOW
	ARMOR CURB SLOTS		MAILBOX
	CONC RIPRAP / DRIVEWAYS		SEAL COAT

- NOTES**
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 5'

REV. NO.	DATE	DESCRIPTION	BY
----------	------	-------------	----

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS
 It's real.

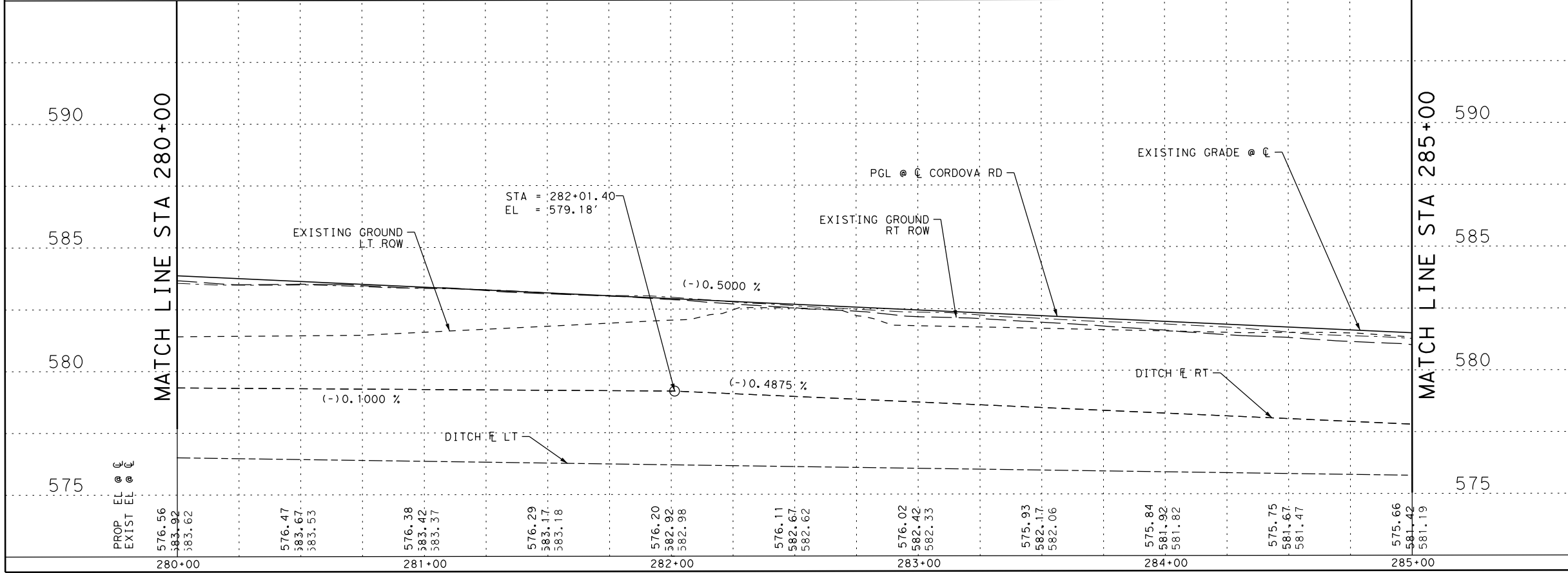
Texas Department of Transportation
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ROADWAY PLAN AND PROFILE

STA 280+00 TO STA 285+00

SHEET 35 OF 44

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
			JOB NO.:	SHEET NO.:
			052	200

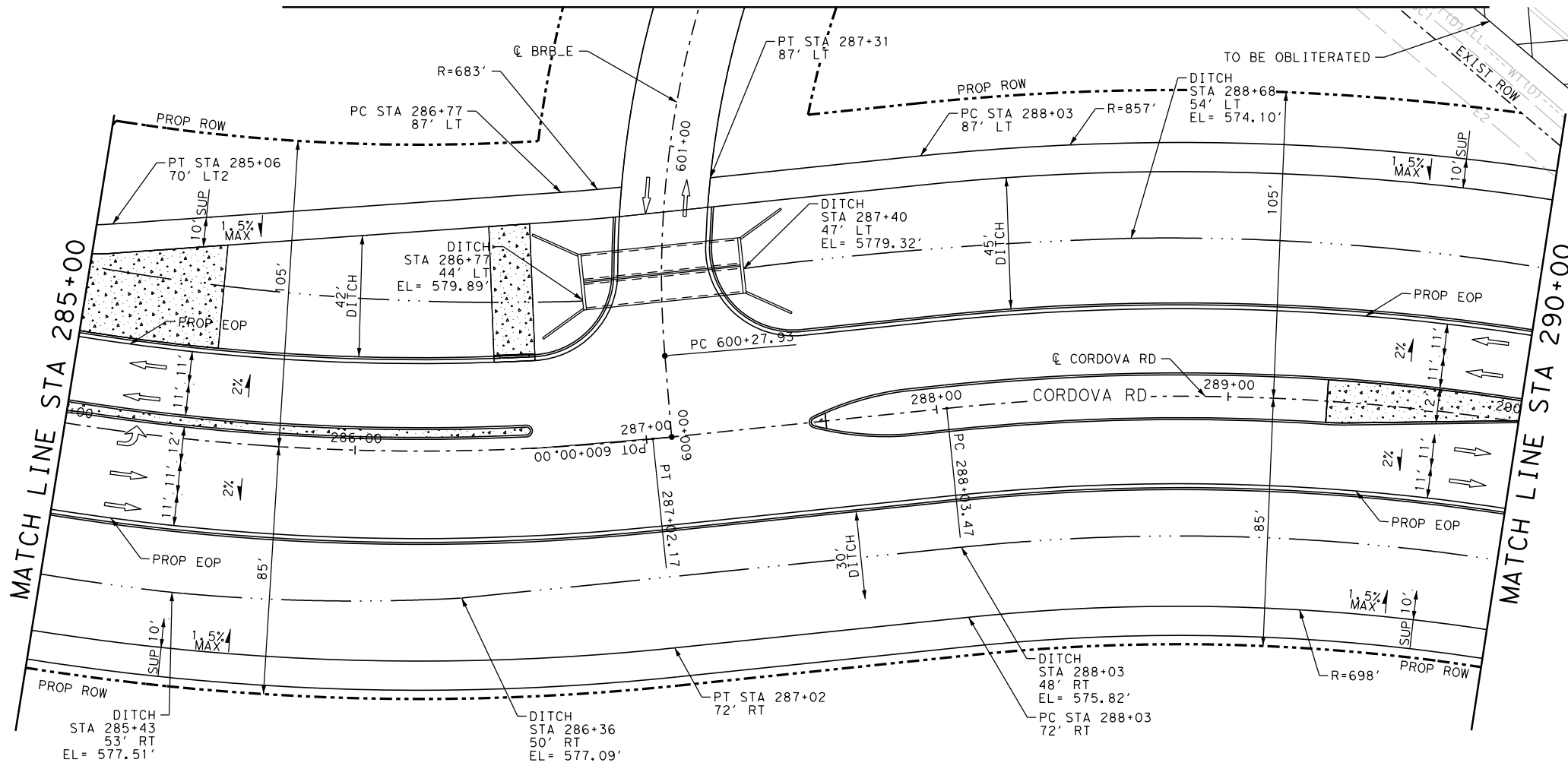


STATION	PROP EL @ C	EXIST EL @ C
280+00	576.56	583.92
	576.47	583.67
	576.38	583.53
281+00	576.38	583.42
	576.29	583.17
	576.20	583.18
282+00	576.11	582.92
	576.02	582.98
	576.11	582.67
	576.02	582.62
283+00	576.02	582.42
	576.11	582.33
	575.93	582.17
	575.84	582.06
284+00	575.84	581.92
	575.75	581.82
	575.75	581.67
	575.66	581.47
285+00	575.66	581.42
	575.66	581.19

Plotted on: 11/17/2023

Design File name: P:\1275\00\Design\Civil\Roadway\1277500_rdw_36.dgn

MATCH LINE D-D SEE SHEET 204



LEGEND

	RETAINING WALL		EXIST ROW
	PROP ROW		DITCH FLOW LINE
	DRIVEWAY NUMBER		TRAFFIC FLOW
	ARMOR CURB SLOTS		MAILBOX
	CONC RIPRAP / DRIVEWAYS		SEAL COAT

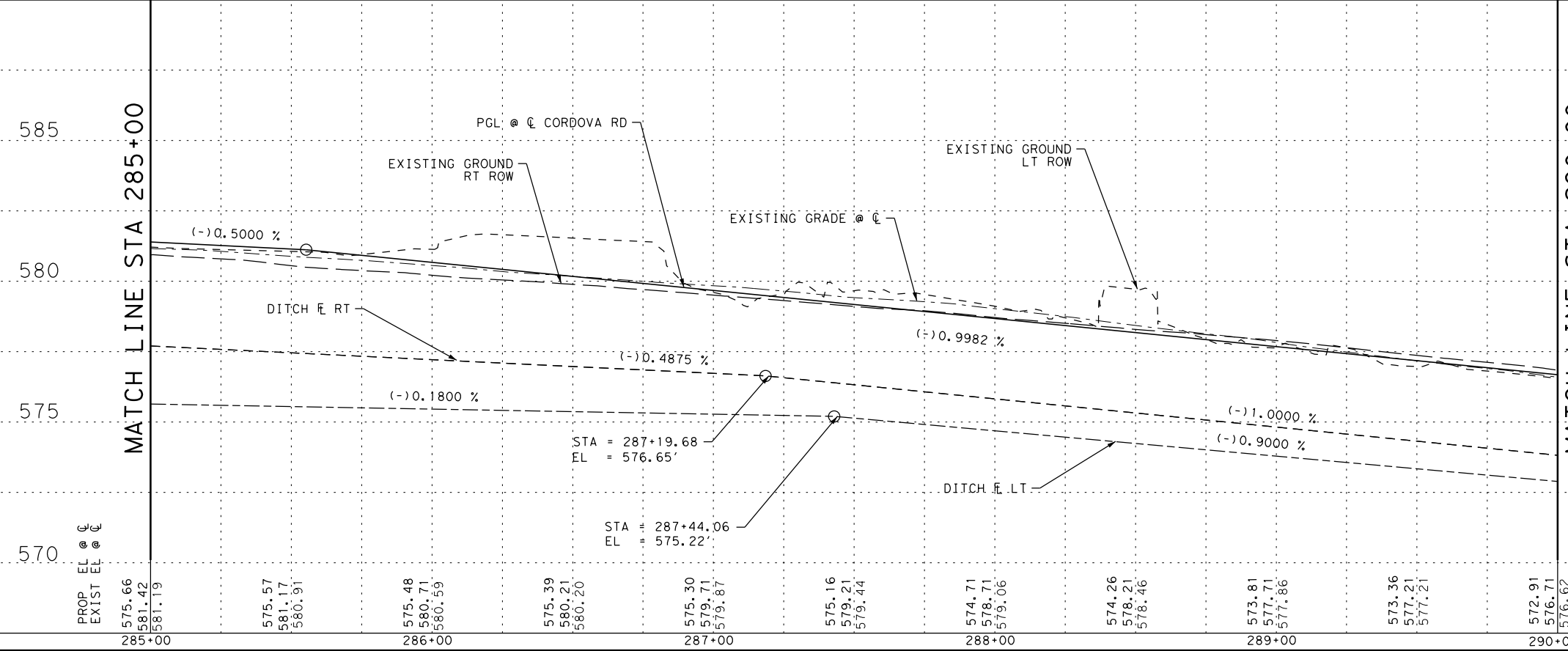
- NOTES**
1. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING, EDGE OF GUTTER, OR FACE OF CURB UNLESS OTHERWISE NOTED.
 2. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK. I.E. FADED.
 3. REFER TO HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA AND ALIGNMENT INFORMATION.
 4. SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 5'



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS
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THE STATE OF TEXAS
 GUADALUPE COUNTY

Texas Department of Transportation
 ©2023

ROADWAY PLAN AND PROFILE

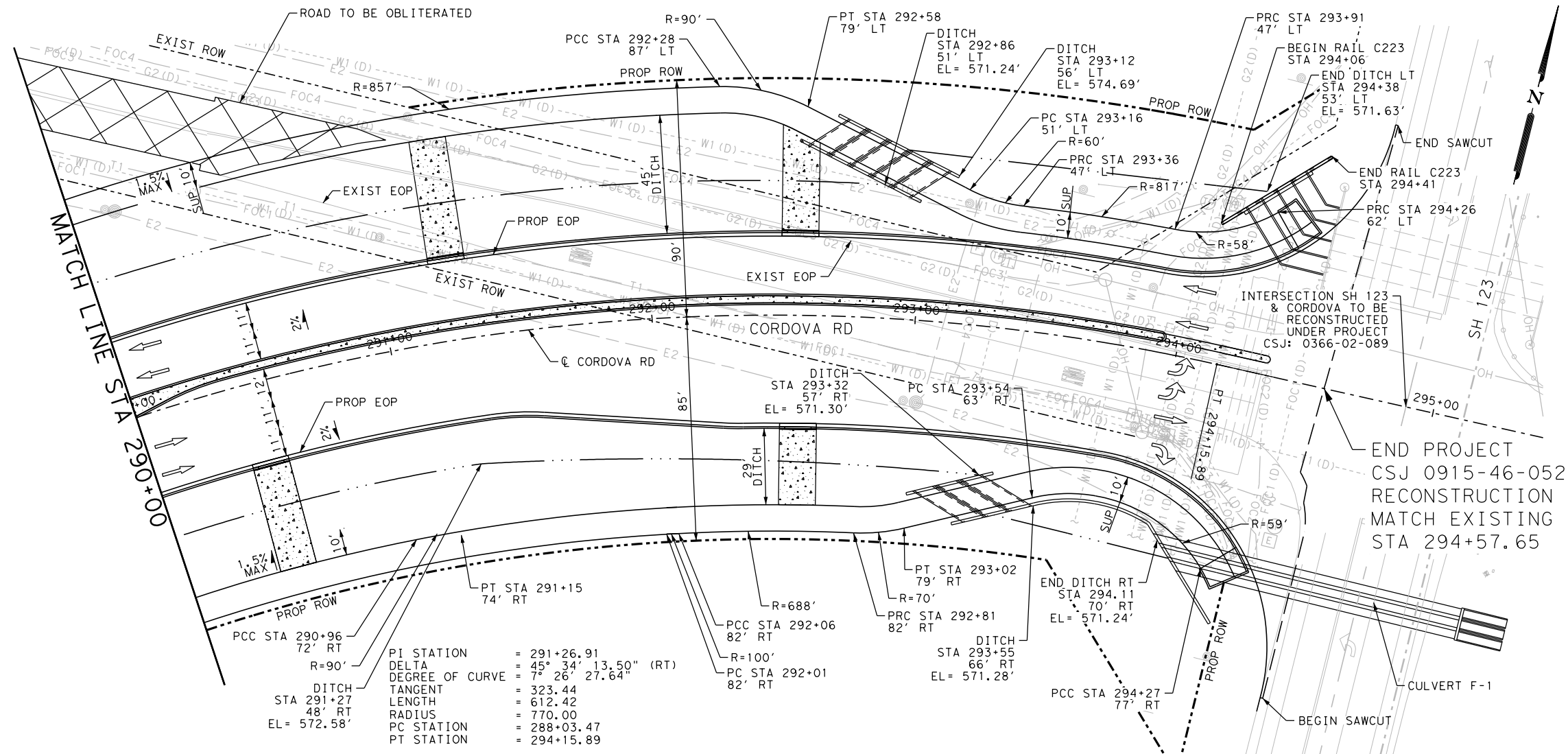
STA 285+00 TO STA 290+00

SHEET 36 OF 44

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				201

Plotted on: 11/17/2023

Design File name: P:\1275\00\Design\Civil\Roadway\1277500_rdw_37.dgn



- NOTES**
1. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING, EDGE OF GUTTER, OR FACE OF CURB UNLESS OTHERWISE NOTED.
 2. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK. I.E. FADED.
 3. REFER TO HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA AND ALIGNMENT INFORMATION.
 4. SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN

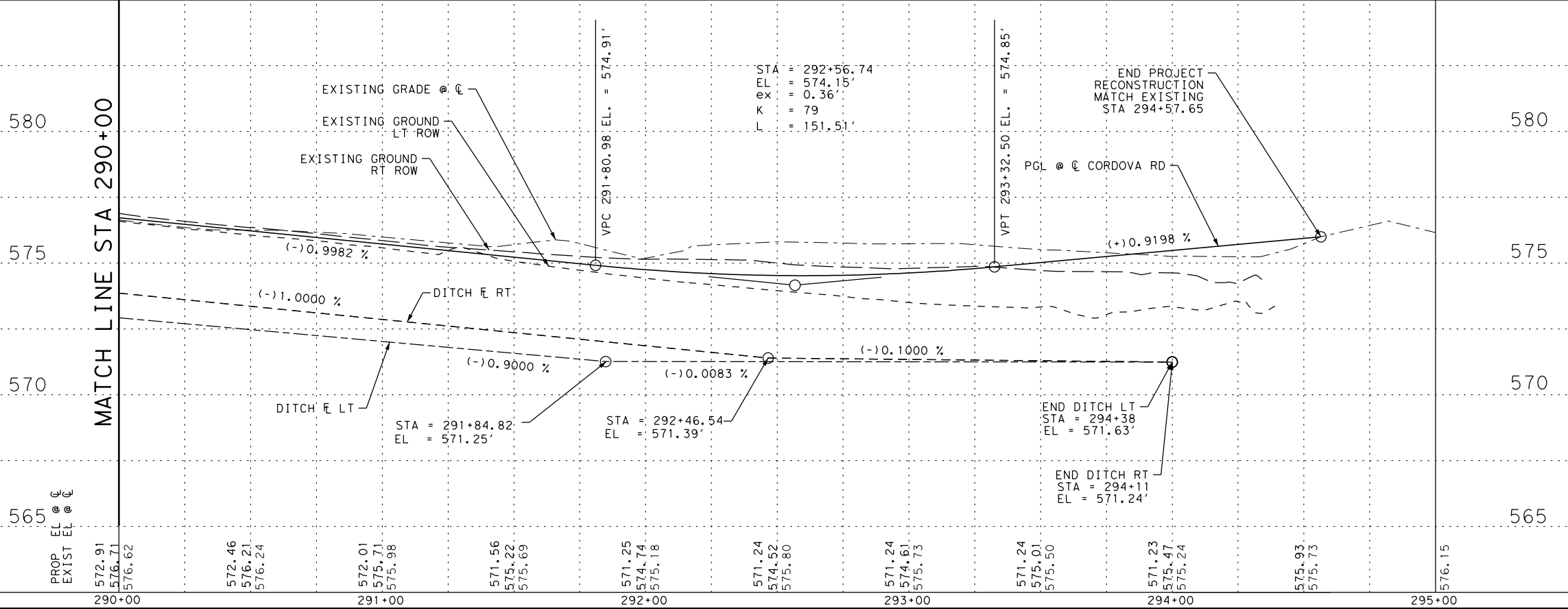
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 5'



PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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ROADWAY PLAN AND PROFILE

STA 290+00 TO STA 295+00

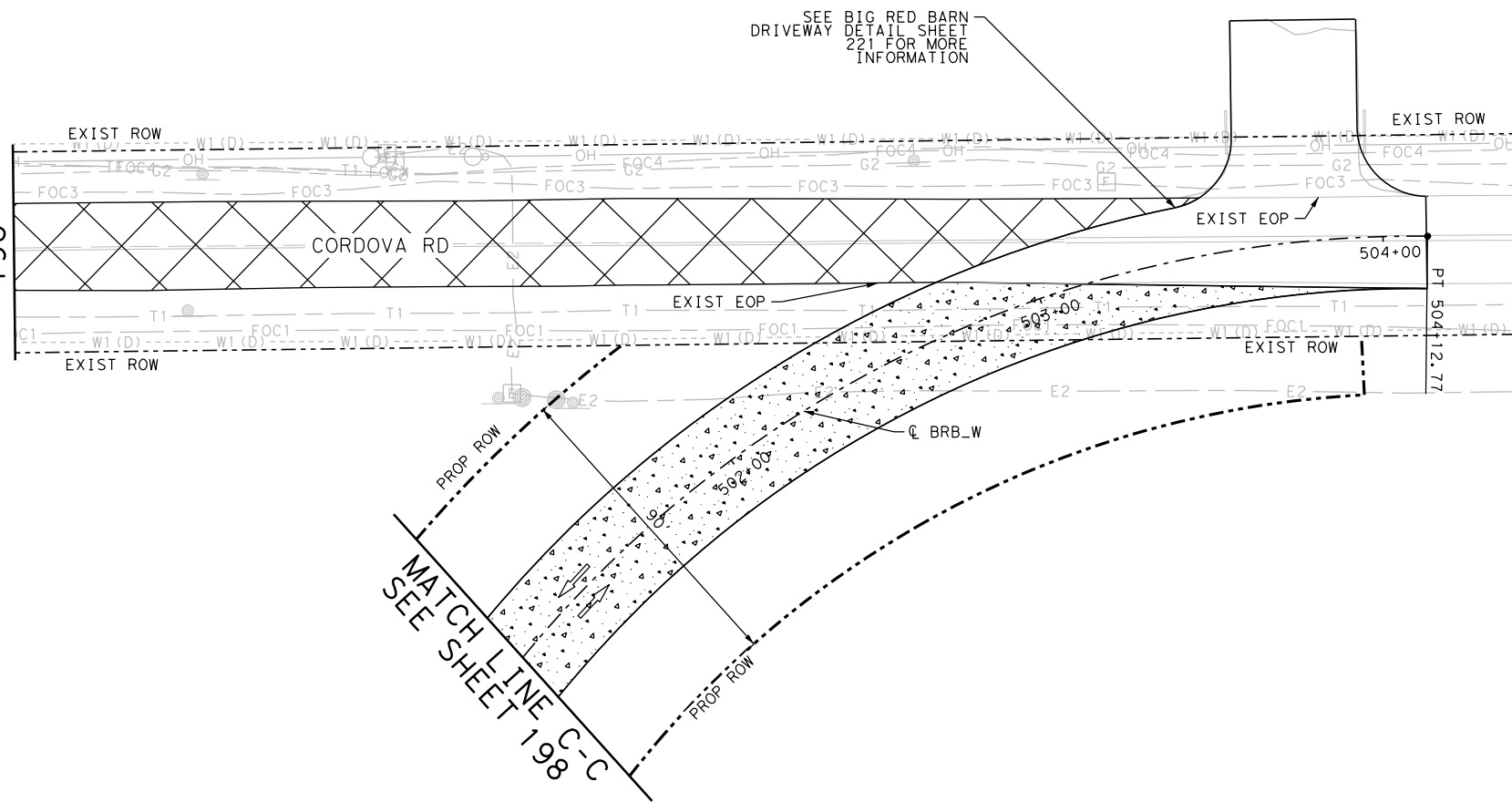
SHEET 37 OF 44

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
			052	202

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Roadway\1277500_rdw_38.dgn

MATCH LINE
C-C
SEE SHEET
198



MATCH LINE
C-C
SEE SHEET
198

LEGEND

	RETAINING WALL		EXIST ROW
	PROP ROW		DITCH FLOW LINE
	DRIVEWAY NUMBER		TRAFFIC FLOW
	ARMOR CURB SLOTS		MAILBOX
	CONC RIPRAP / DRIVEWAYS		SEAL COAT

- NOTES**
1. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING, EDGE OF GUTTER, OR FACE OF CURB UNLESS OTHERWISE NOTED.
 2. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK. I.E. FADED.
 3. REFER TO HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA AND ALIGNMENT INFORMATION.
 4. SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 5'

NO PROPOSED PROFILE THIS SHEET

REV. NO.	DATE	DESCRIPTION	BY
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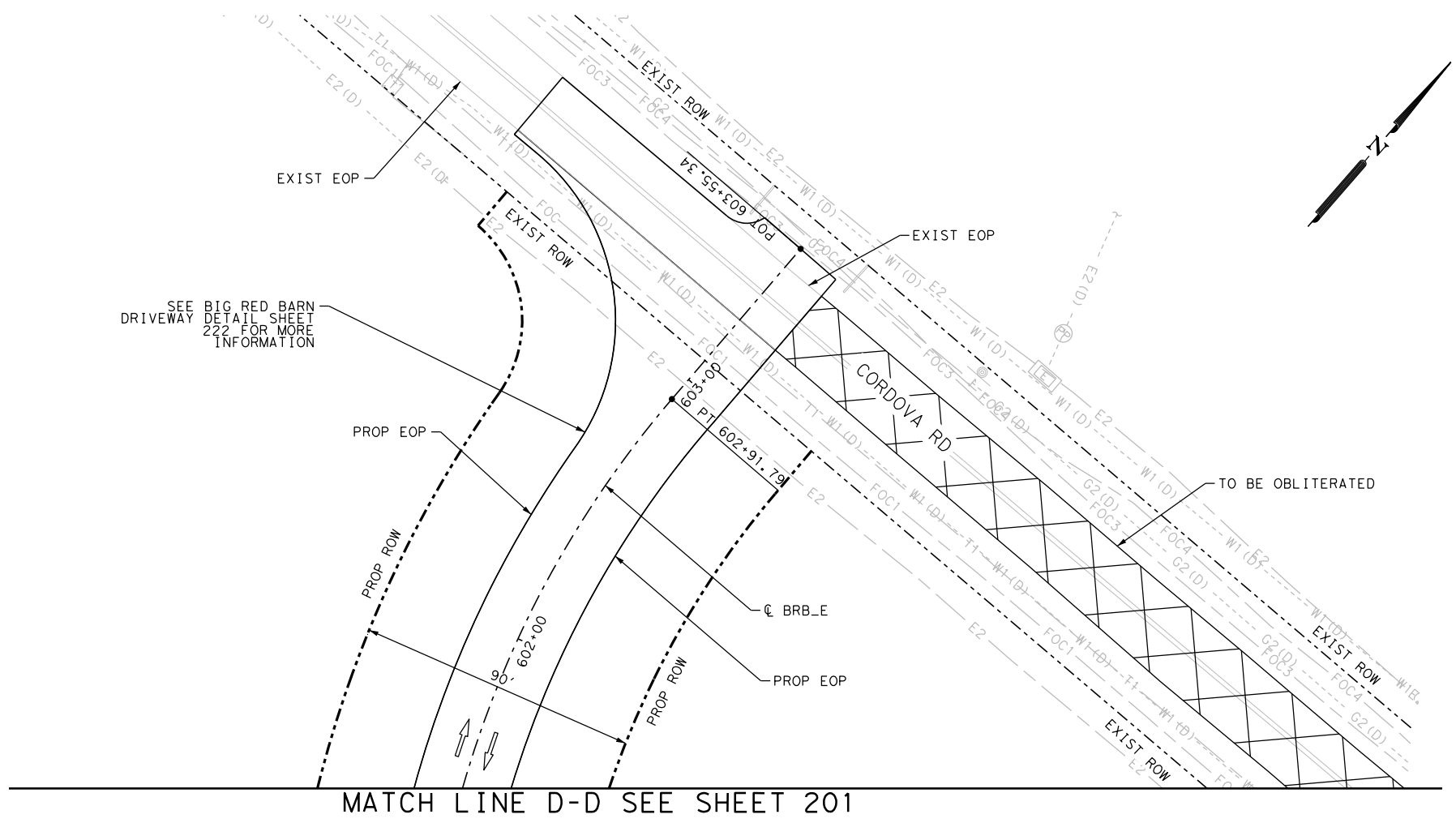


ROADWAY
PLAN AND PROFILE

SHEET 38 OF 44

CHK DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:			HIGHWAY NO.:
	6	TEXAS				CORDOVA
CHK DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
	SAT	GUADALUPE	0915	46	052	203

Plotted on: 11/17/2023



SEE BIG RED BARN
DRIVEWAY
DETAIL SHEET
222 FOR MORE
INFORMATION

LEGEND

	RETAINING WALL		EXIST ROW
	PROP ROW		DITCH FLOW LINE
	DRIVEWAY NUMBER		TRAFFIC FLOW
	ARMOR CURB SLOTS		MAILBOX
	CONC RIPRAP / DRIVEWAYS		SEAL COAT

- NOTES**
1. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING, EDGE OF GUTTER, OR FACE OF CURB UNLESS OTHERWISE NOTED.
 2. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK. i.e. FADED.
 3. REFER TO HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA AND ALIGNMENT INFORMATION.
 4. SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 5'

MATCH LINE D-D SEE SHEET 201

NO PROPOSED PROFILE THIS SHEET

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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**ROADWAY
PLAN AND PROFILE**

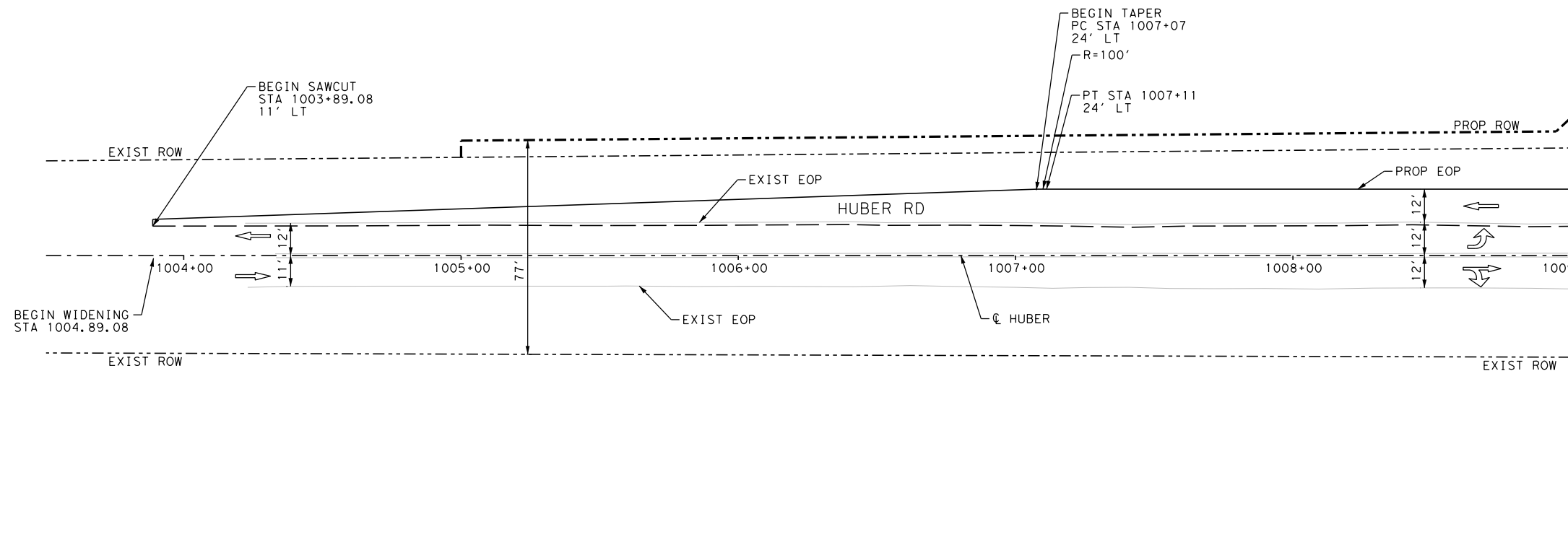
SHEET 39 OF 44

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
			JOB NO.:	SHEET NO.:
			052	204

Design File name: P:\127\75\00\Design\Civil\Roadway\1277500_rdw_39.dgn

Plotted on: 11/17/2023

Design Filename: P:\127\75\00\Design\Civil\Roadway\1277500_rdw_40.dgn



MATCH LINE STA 1009+00
SEE SHEET 187

LEGEND

	RETAINING WALL		EXIST ROW
	PROP ROW		DITCH FLOW LINE
	DRIVEWAY NUMBER		TRAFFIC FLOW
	ARMOR CURB SLOTS		MAILBOX
	CONC RIPRAP / DRIVEWAYS		SEAL COAT

- NOTES**
1. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING, EDGE OF GUTTER, OR FACE OF CURB UNLESS OTHERWISE NOTED.
 2. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK. i.e. FADED.
 3. REFER TO HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA AND ALIGNMENT INFORMATION.
 4. SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN

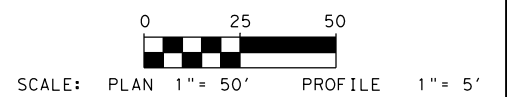
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



PROP EL @ G
EXIST EL @ G

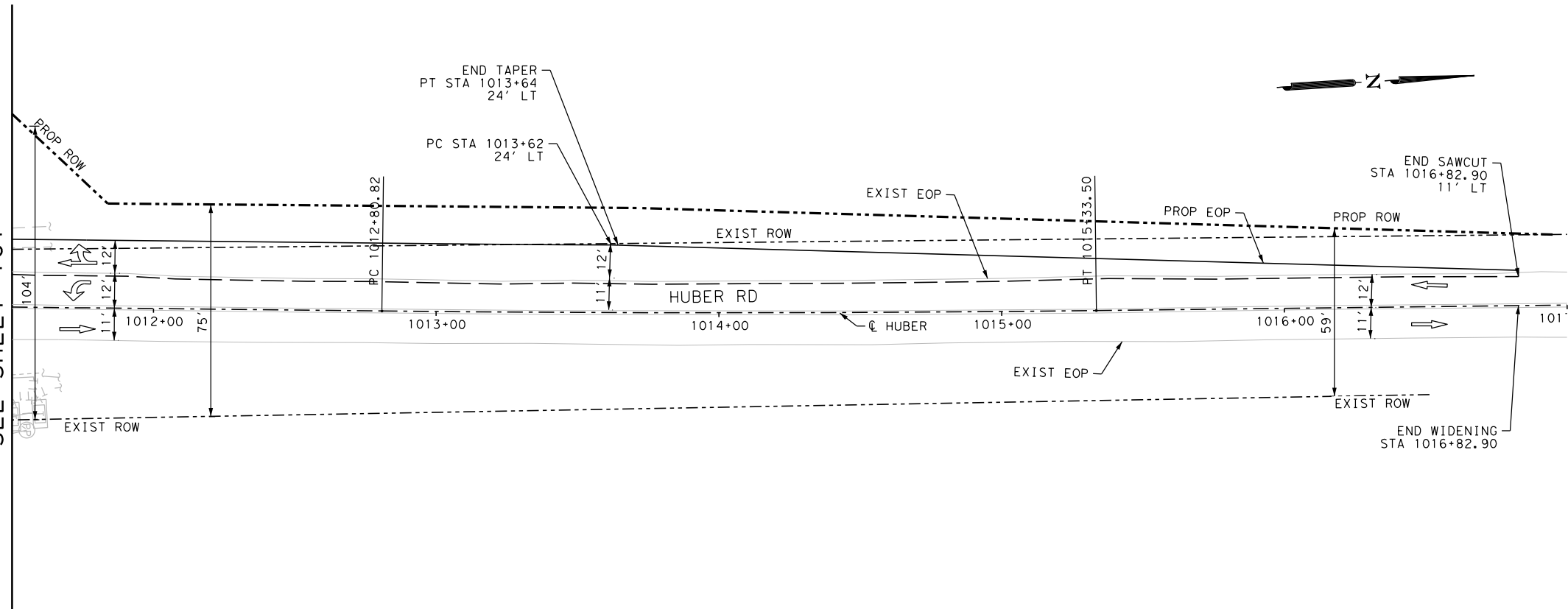
NO PROPOSED PROFILE THIS SHEET

REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 <small>TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</small>			
 It's real.			
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HUBER RD ROADWAY PLAN AND PROFILE			
STA 1004+00 TO STA 1009+00 SHEET 40 OF 44			
CHK DGN:	FED. RD. DIV. NO. 6	STATE TEXAS	HIGHWAY NO. CORDOVA
CHK DWG:	DIST. SAT	COUNTY GUADALUPE	CONT. NO. 0915
		SECT. NO. 46	JOB NO. 052
			SHEET NO. 205

Plotted on: 11/17/2023

Design Filename: P:\127\75\00\Design\Civil\Roadway\1277500_rdw_41.dgn

MATCH LINE STA 1011+50
SEE SHEET 187



LEGEND

	RETAINING WALL		EXIST ROW
	PROP ROW		DITCH FLOW LINE
	DRIVEWAY NUMBER		TRAFFIC FLOW
	ARMOR CURB SLOTS		MAILBOX
	CONC RIPRAP / DRIVEWAYS		SEAL COAT

- NOTES**
1. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING, EDGE OF GUTTER, OR FACE OF CURB UNLESS OTHERWISE NOTED.
 2. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK. I.E. FADED.
 3. REFER TO HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA AND ALIGNMENT INFORMATION.
 4. SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 5'

PROP EL @ @
EXIST EL @ @

NO PROPOSED PROFILE THIS SHEET

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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HUBER RD
ROADWAY
PLAN AND PROFILE

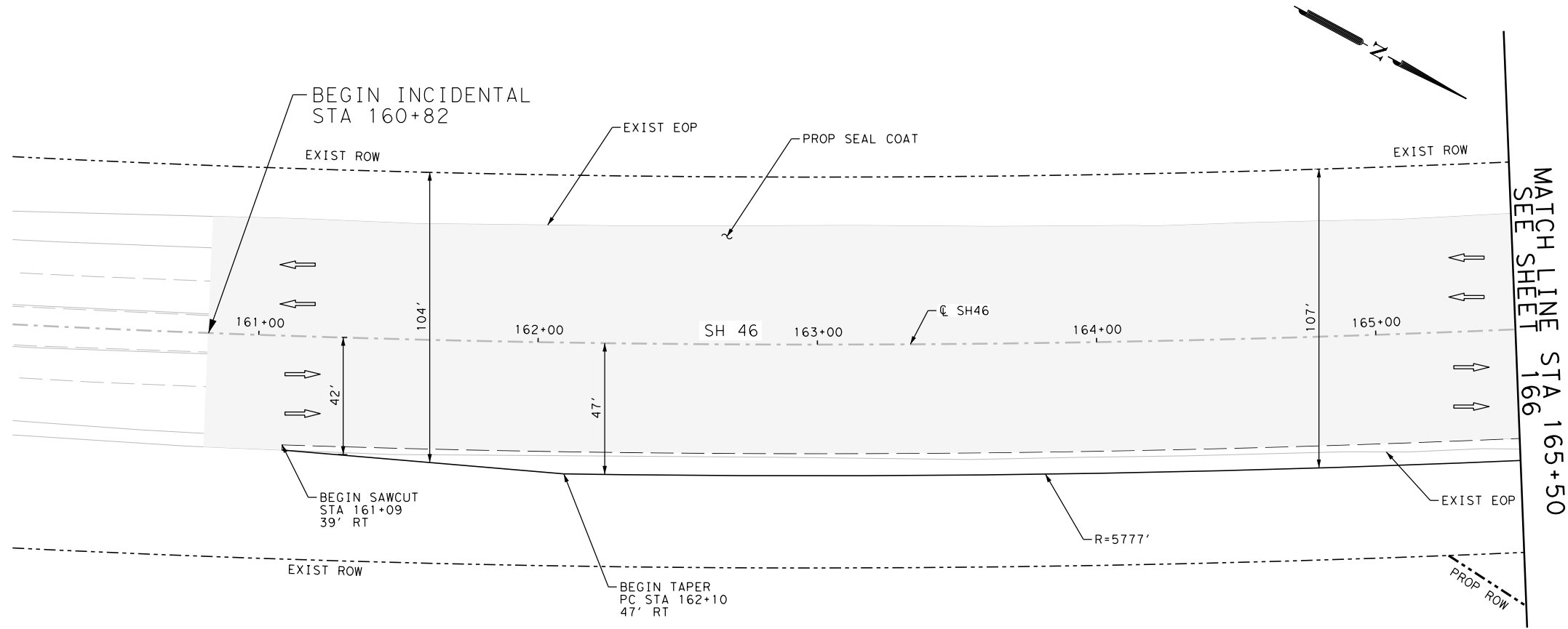
STA 1011+50 TO STA 1016+60

SHEET 41 OF 44

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	206

Plotted on: 11/17/2023

Design File name: P:\127175\00\Design\Civil\Roadway\1277500_rdw_42.dgn



LEGEND

	RETAINING WALL		EXIST ROW
	PROP ROW		DITCH FLOW LINE
	DRIVEWAY NUMBER		TRAFFIC FLOW
	ARMOR CURB SLOTS		MAILBOX
	CONC RIPRAP / DRIVEWAYS		SEAL COAT

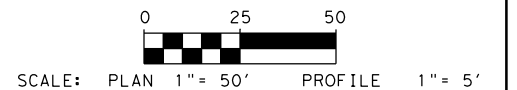
- NOTES**
1. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING, EDGE OF GUTTER, OR FACE OF CURB UNLESS OTHERWISE NOTED.
 2. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK. I.E. FADED.
 3. REFER TO HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA AND ALIGNMENT INFORMATION.
 4. SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023

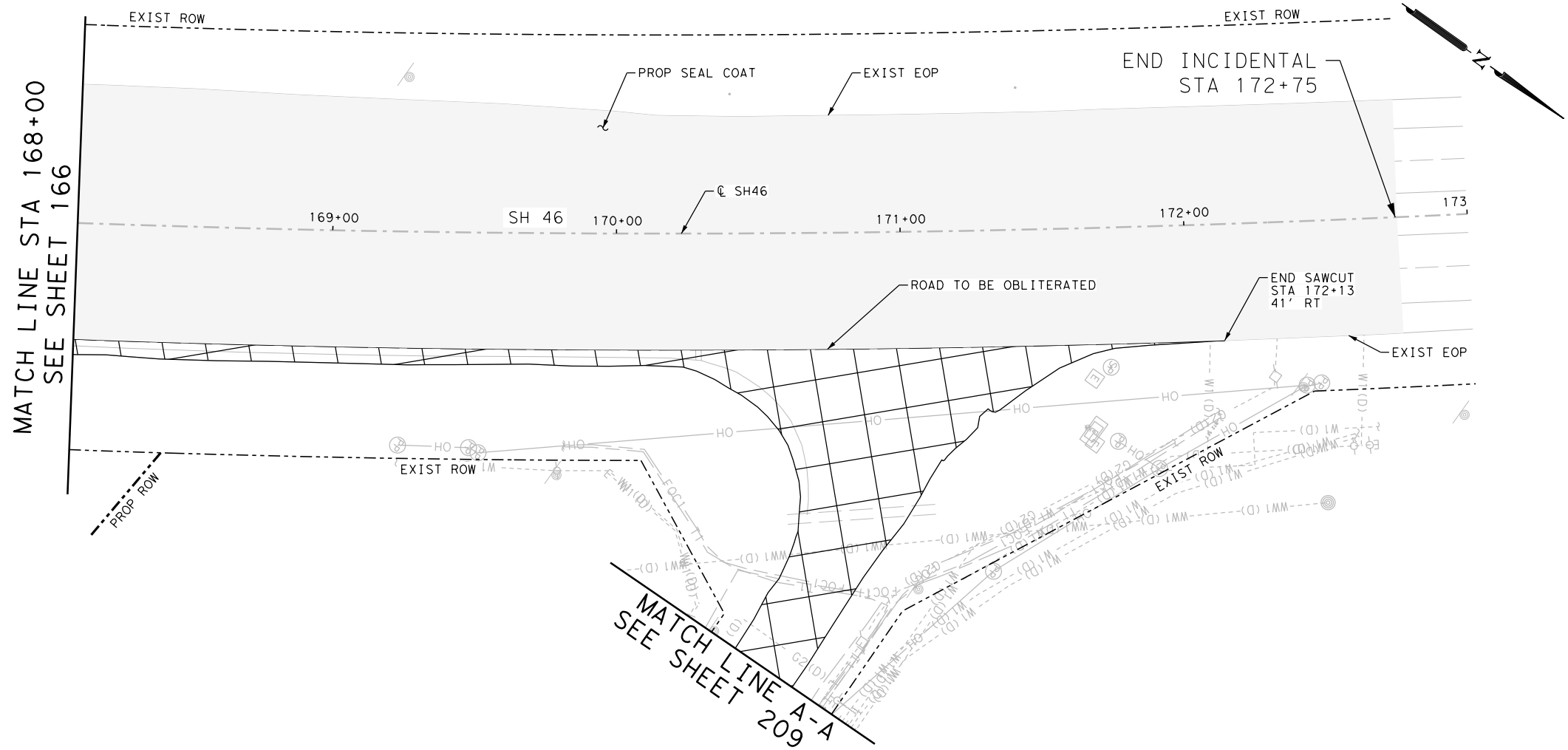


NO PROPOSED PROFILE THIS SHEET

REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 <small>TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</small>			
 It's real.			
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SH46 ROADWAY PLAN AND PROFILE STA 160+82 TO STA 165+50 SHEET 42 OF 44			
CHK DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
	6	TEXAS	
DWG:	DIST.:	COUNTY:	CONT. NO.:
	SAT	GUADALUPE	0915
CHK DWG:	SECT. NO.:	JOB NO.:	SHEET NO.:
	46	052	207

Plotted on: 11/17/2023

Design File name: P:\127175\00\Design\Civil\Roadway\1277500_rdw_43.dgn



LEGEND

	RETAINING WALL		EXIST ROW
	PROP ROW		DITCH FLOW LINE
	DRIVEWAY NUMBER		TRAFFIC FLOW
	ARMOR CURB SLOTS		MAILBOX
	CONC RIPRAP / DRIVEWAYS		SEAL COAT

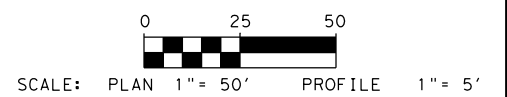
- NOTES**
1. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING, EDGE OF GUTTER, OR FACE OF CURB UNLESS OTHERWISE NOTED.
 2. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK. I.E. FADED.
 3. REFER TO HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA AND ALIGNMENT INFORMATION.
 4. SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



NO PROPOSED PROFILE THIS SHEET

REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 <small>TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</small>			

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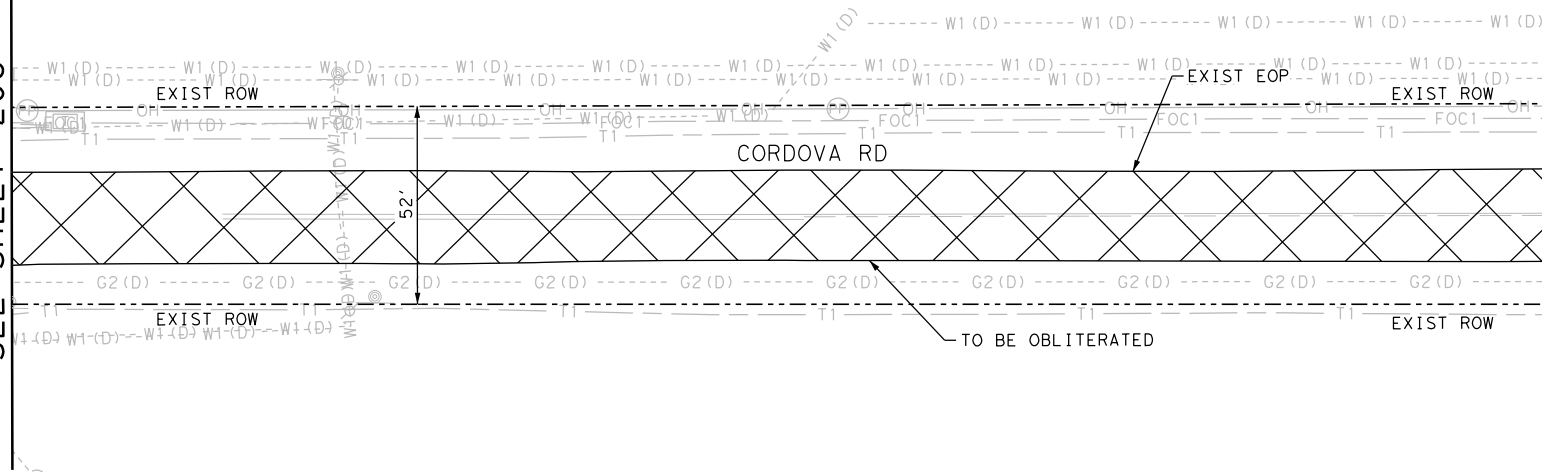
SH46
**ROADWAY
 PLAN AND PROFILE**
 STA 168+00 TO STA 172+75
 SHEET 43 OF 44

CHK DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
	6	TEXAS		CORDOVA
CHK DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				208

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Roadway\1277500_rdw_44.dgn

MATCH LINE C-C
SEE SHEET 208



MATCH LINE B-B
SEE SHEET 167



LEGEND			
	RETAINING WALL		EXIST ROW
	PROP ROW		DITCH FLOW LINE
	DRIVEWAY NUMBER		TRAFFIC FLOW
	ARMOR CURB SLOTS		MAILBOX
	CONC RIPRAP / DRIVEWAYS		SEAL COAT

NOTES

1. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING, EDGE OF GUTTER, OR FACE OF CURB UNLESS OTHERWISE NOTED.
2. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK. I.E. FADED.
3. REFER TO HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA AND ALIGNMENT INFORMATION.
4. SEE MISCELLANEOUS ROADWAY DETAIL SHEETS FOR TURN LANE AND MEDIAN DIMENSIONAL CONTROL.

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 5'

NO PROPOSED PROFILE THIS SHEET

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



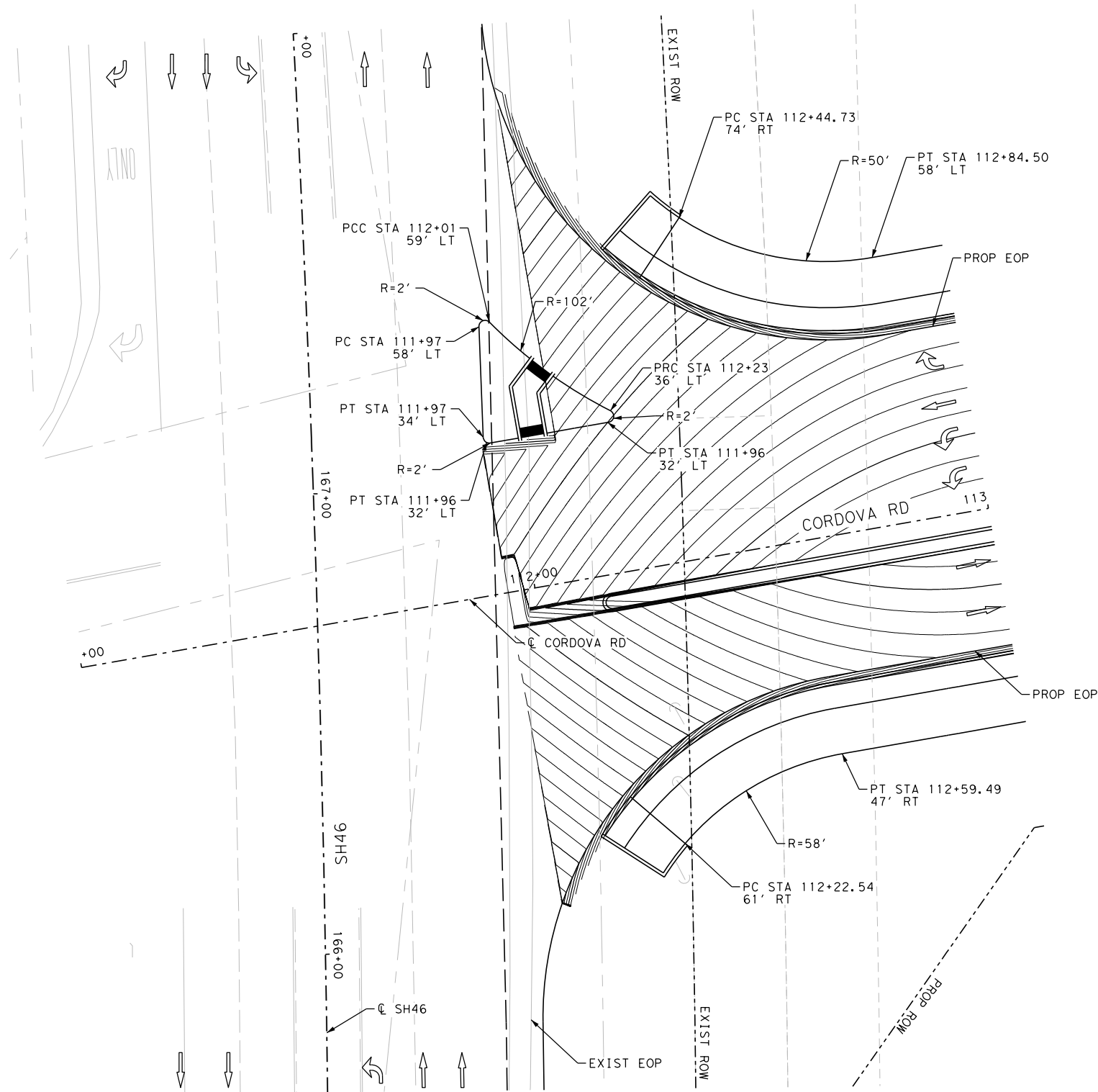
CORDOVA RD
ROADWAY
PLAN AND PROFILE

SHEET 44 OF 44

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	209

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Roadway\1277500_intersection_01.dgn



NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
3. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED.
4. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING OR FACE OF CURB AT THE GUTTER UNLESS OTHERWISE NOTED.

DESIGN

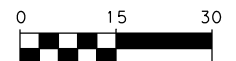
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023

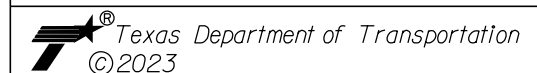


SCALE: PLAN 1" = 30' PROFILE 1" = 5'

REV. NO.	DATE	DESCRIPTION	BY



PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

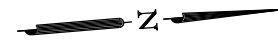
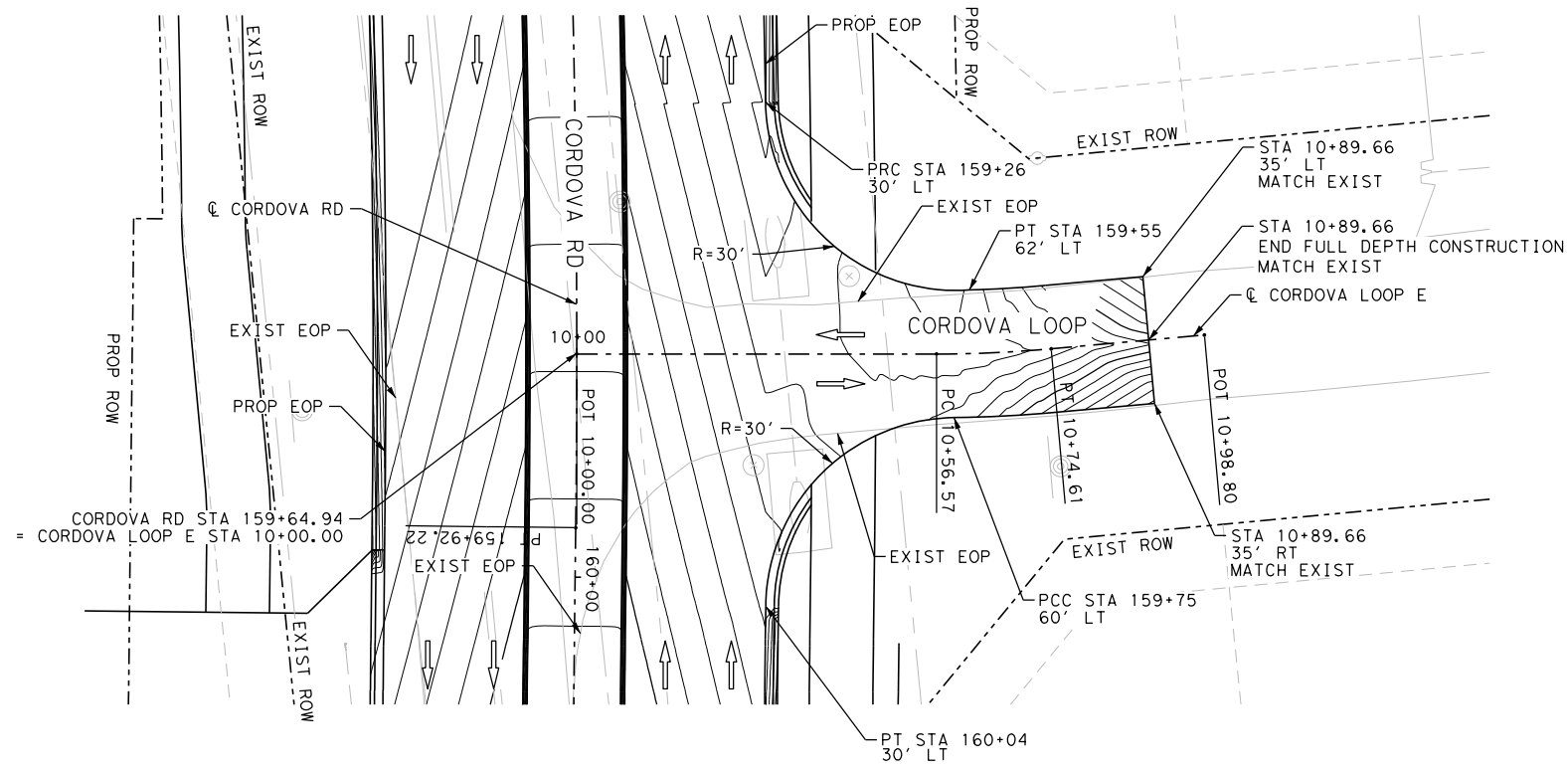


INTERSECTION DETAIL
 SH 46 & CORDOVA RD

SHEET 1 OF 11

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	210

Plotted on: 11/17/2023

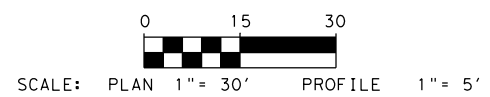
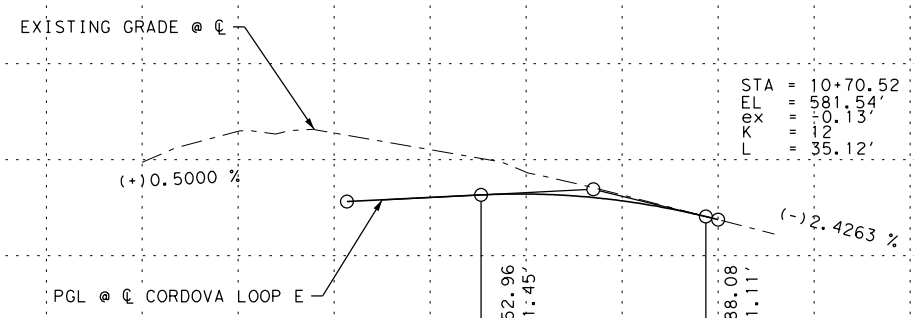


- NOTES**
1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
 2. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
 3. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED.
 4. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING OR FACE OF CURB AT THE GUTTER UNLESS OTHERWISE NOTED.

DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023

Design File name: P:\127175\00\Design\Civil\Roadway\1277500_intersection_02.dgn



REV. NO.	DATE	DESCRIPTION	BY

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 GUADALUPE COUNTY

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INTERSECTION DETAIL
 CORDOVA LOOP E

SHEET 2 OF 11

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	211

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582

579

579

576

576

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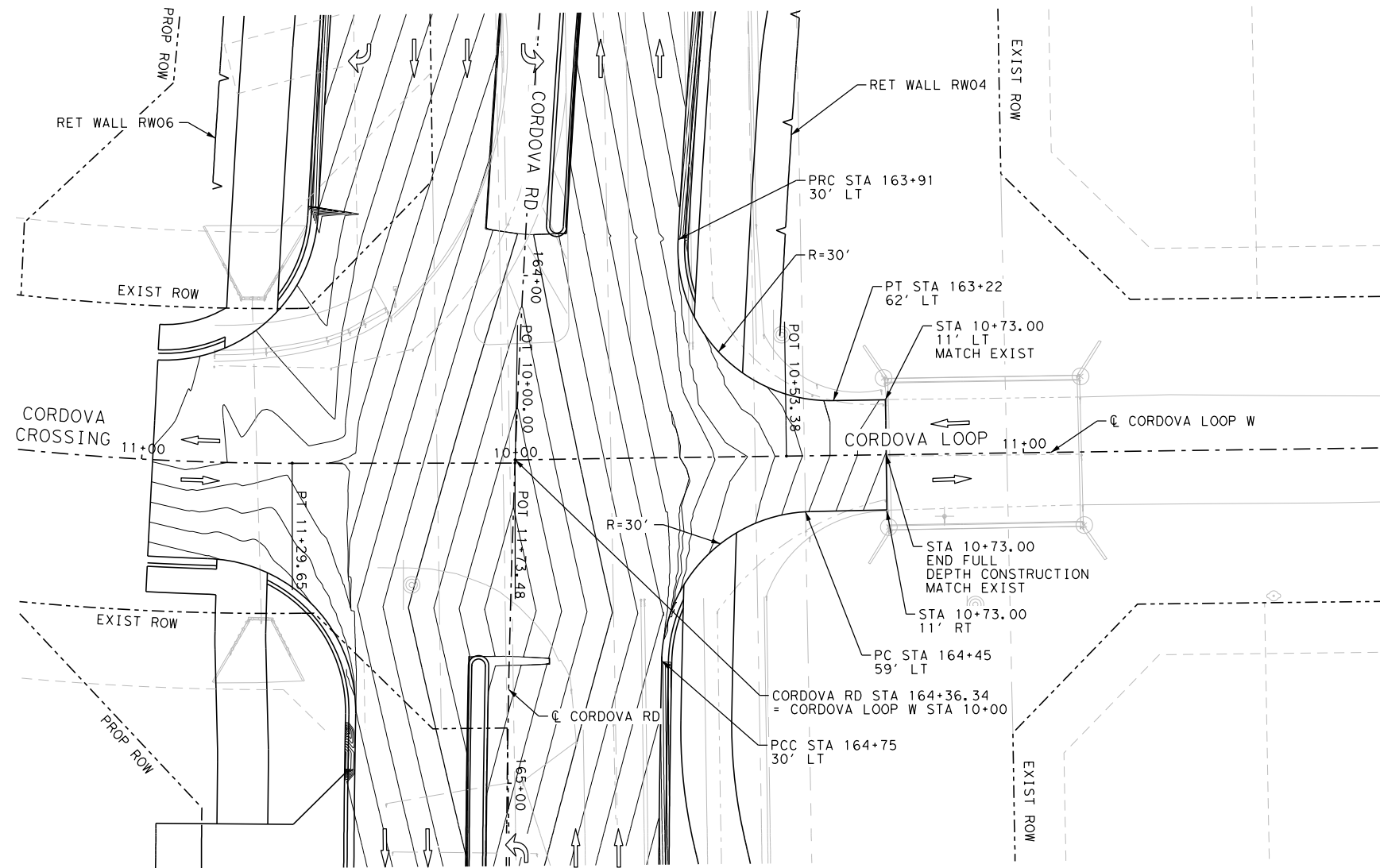
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PROP EL @ C
 EXIST EL @ C

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Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Roadway\1277500_intersection_03.dgn



NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
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DESIGN

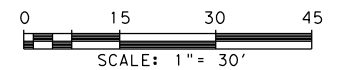
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DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



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TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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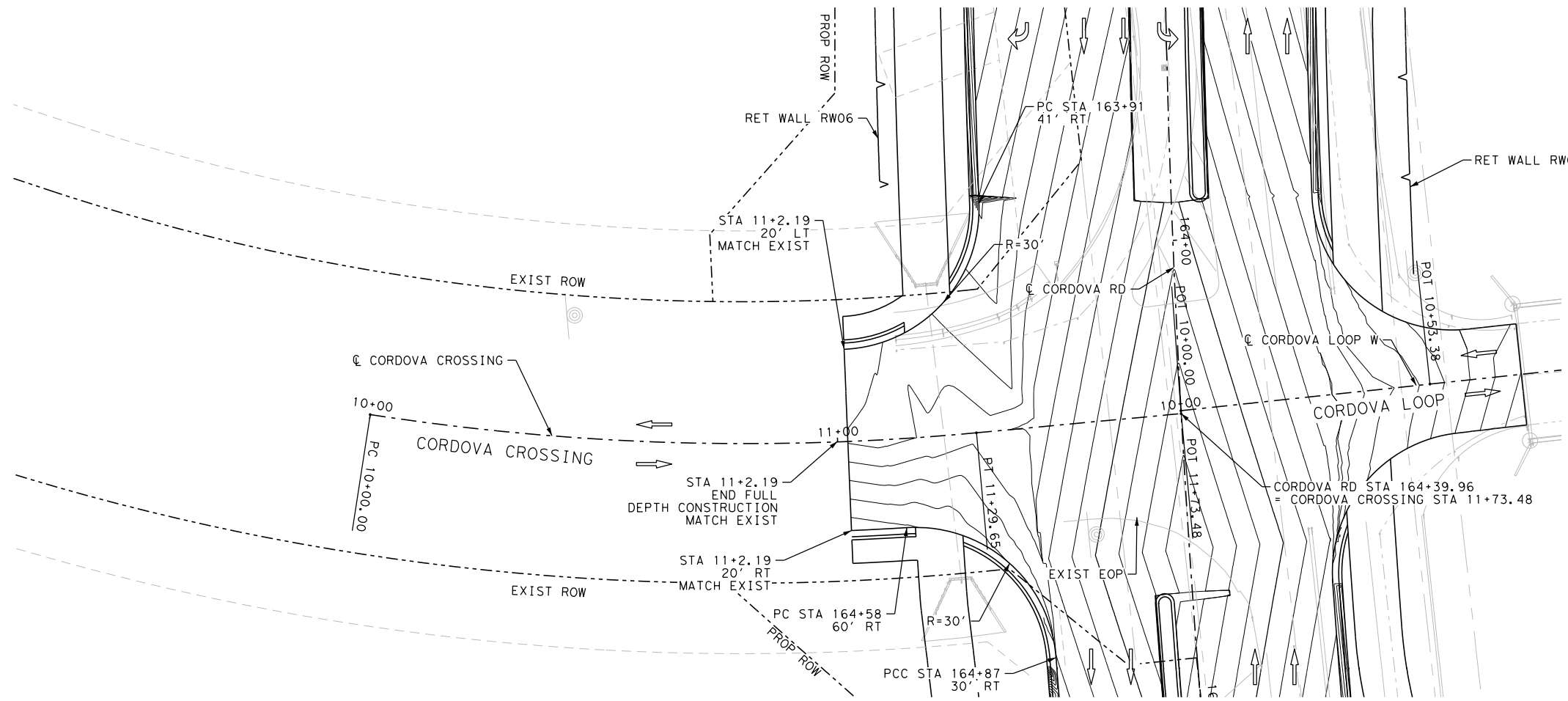
INTERSECTION DETAIL

CORDOVA LOOP W

SHEET 3 OF 11

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	212

Plotted on: 11/17/2023



NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

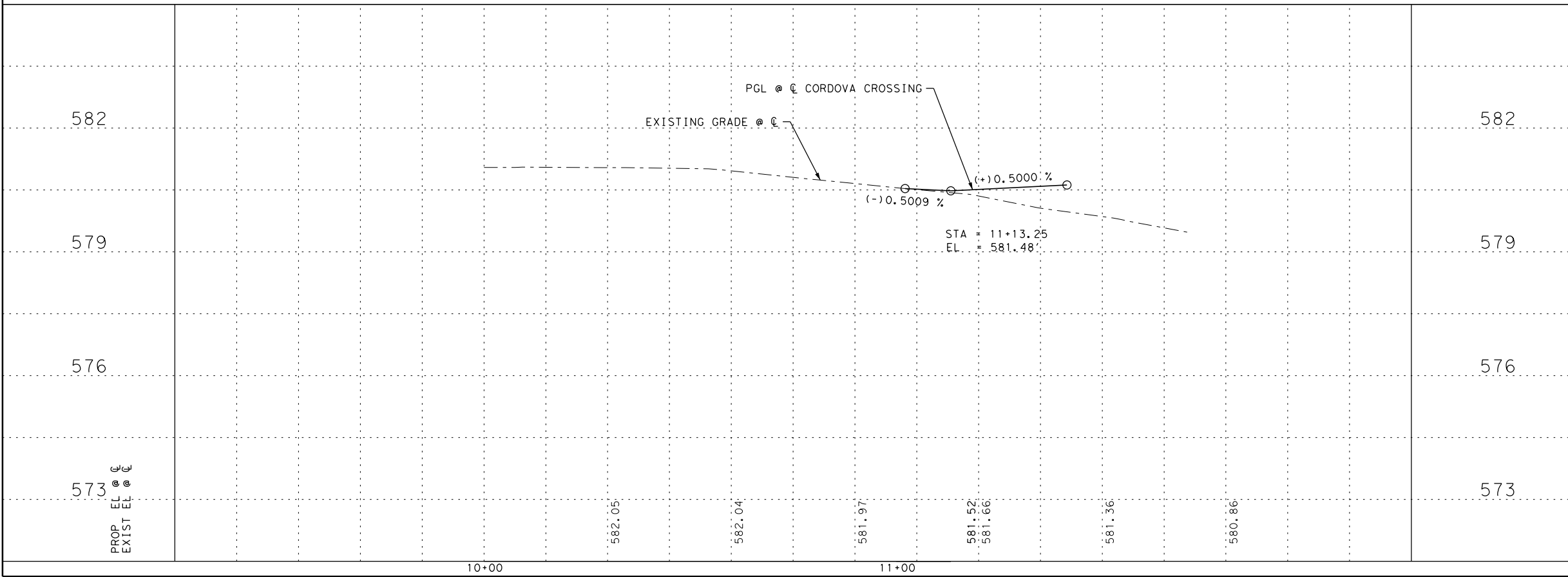
APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 30' PROFILE 1" = 5'

Design File name: P:\127175\00\Design\Civil\Roadway\1277500_intersection_04.dgn



REV. NO.	DATE	DESCRIPTION	BY



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 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



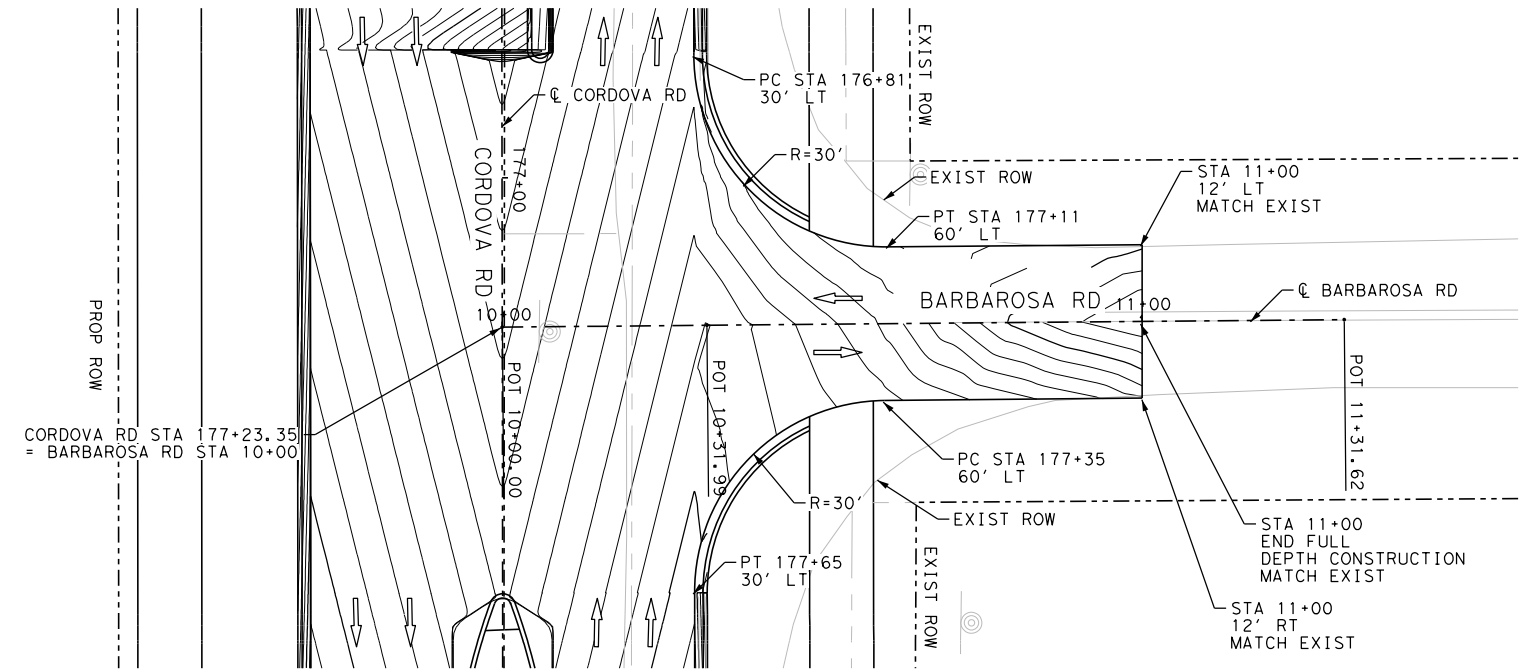
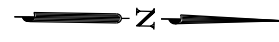
INTERSECTION DETAIL

CORDOVA CROSSING

SHEET 4 OF 11

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	213

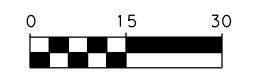
Plotted on: 11/17/2023



- NOTES**
1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
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DESIGN
INTERIM REVIEW
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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 30' PROFILE 1" = 5'

REV. NO.	DATE	DESCRIPTION	BY

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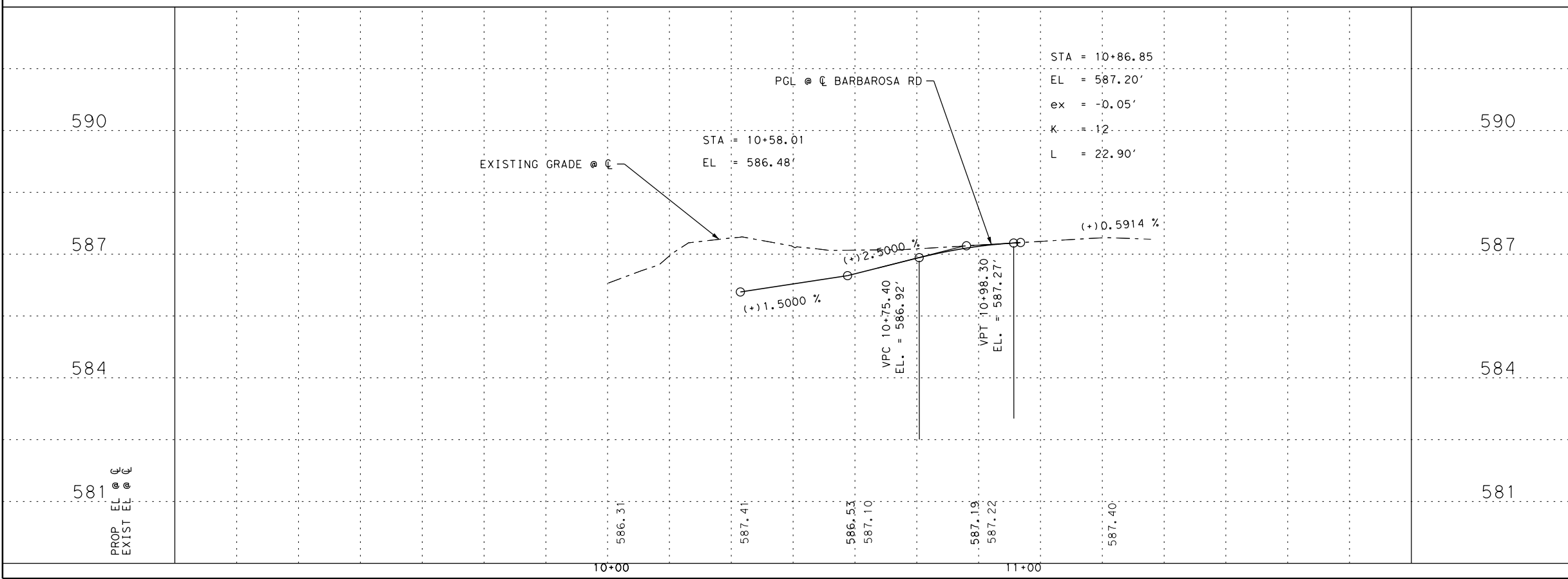
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INTERSECTION DETAIL
 BARBAROSA RD

SHEET 5 OF 11

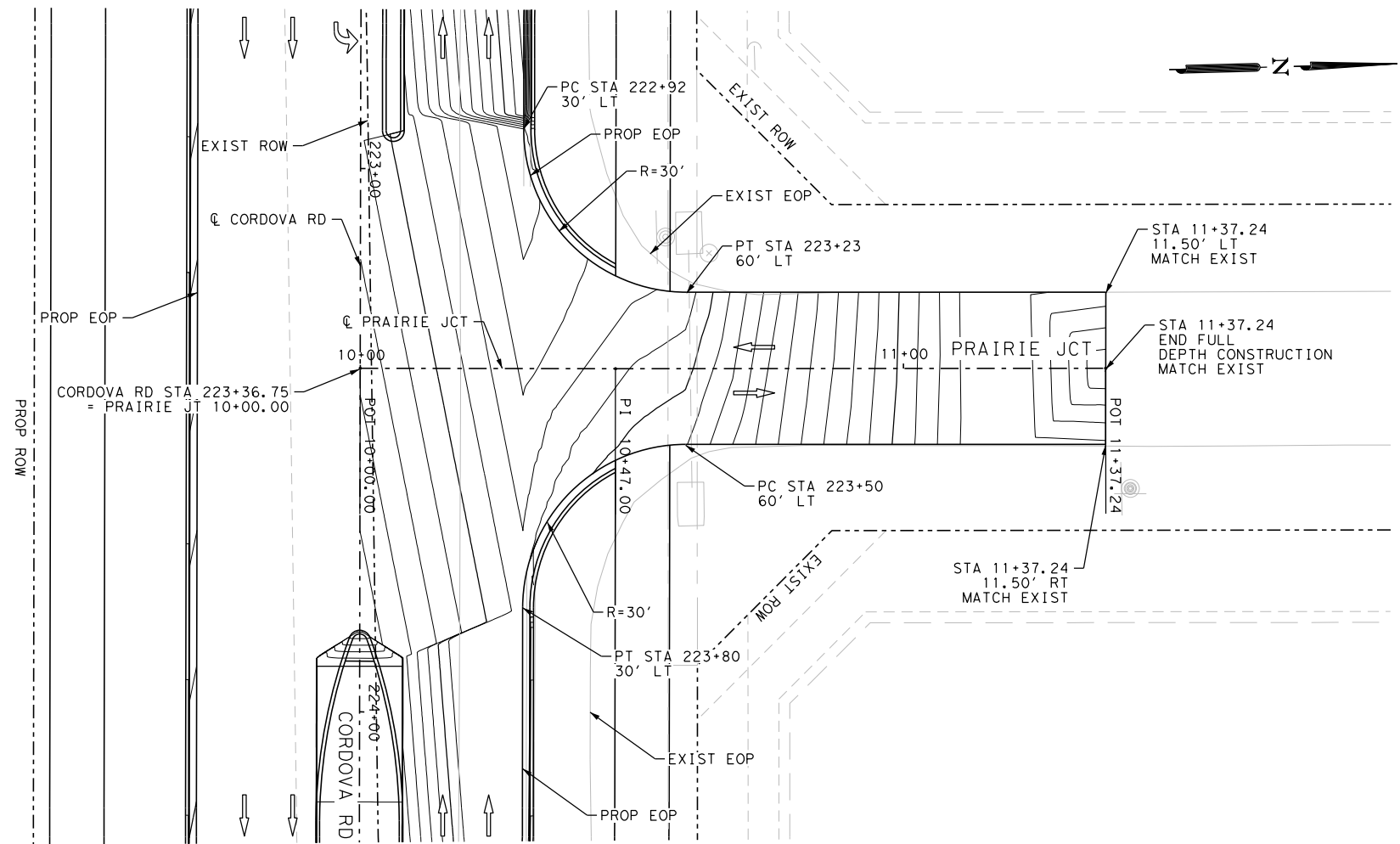
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DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
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			052	214

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Plotted on: 11/17/2023

Design File name: P:\127175\00\Design\Civil\Roadway\1277500_intersection_06.dgn



- NOTES**
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DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 30' PROFILE 1" = 5'

REV. NO.	DATE	DESCRIPTION	BY

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INTERSECTION DETAIL
 PRAIRIE JUNCTION

SHEET 6 OF 11

CHK	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
DGN:	6	TEXAS		CORDOVA		
CHK	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
DWG:	SAT	GUADALUPE	0915	46	052	215

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593

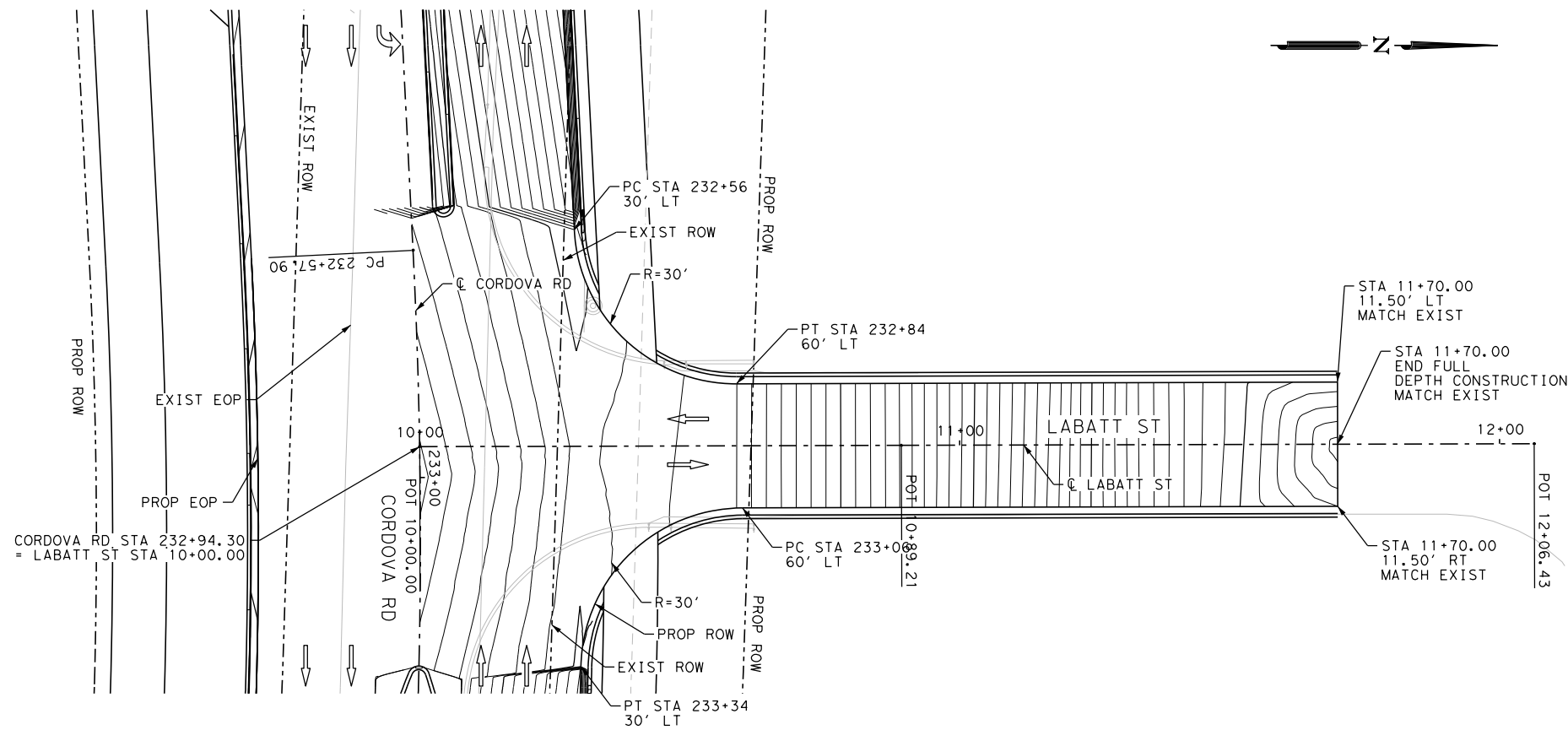
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10+00

Plotted on: 11/17/2023

Design File name: P:\127175\00\Design\Civil\Roadway\1277500_intersection_07.dgn



- NOTES**
- SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
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DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 30' PROFILE 1" = 5'

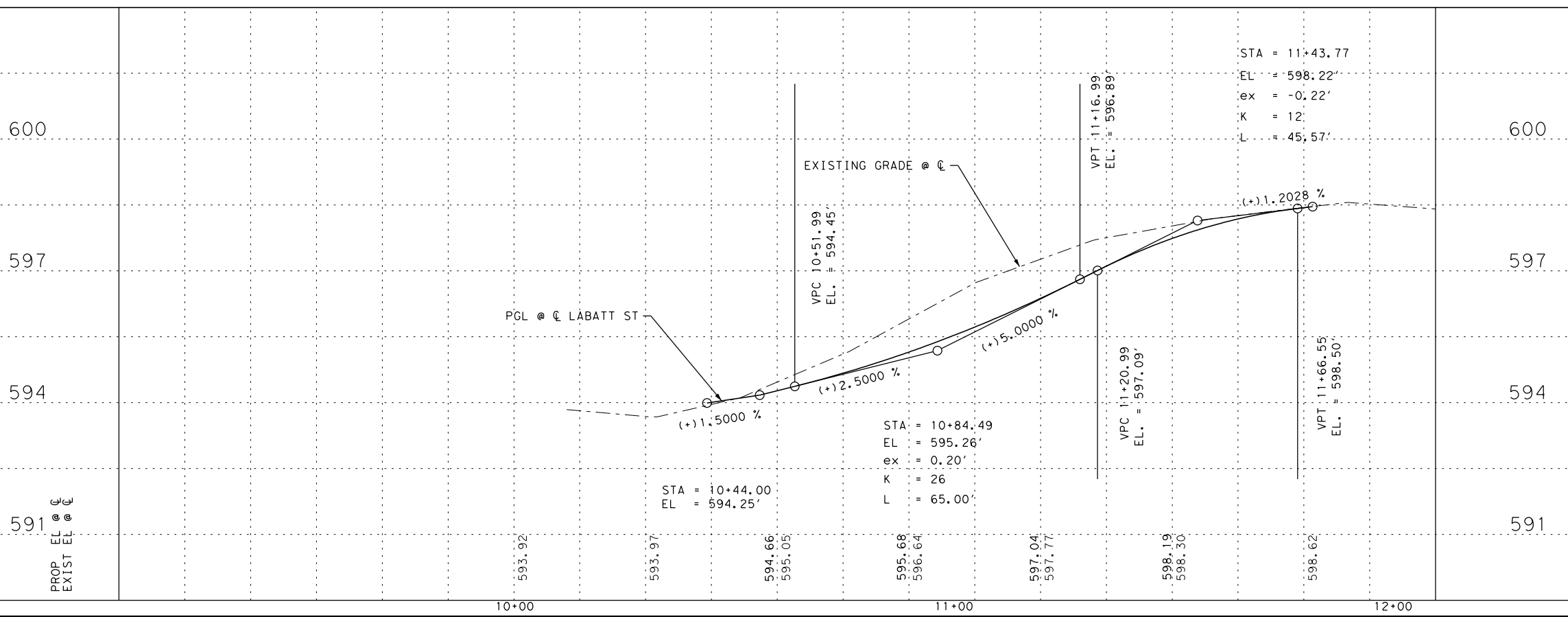
REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
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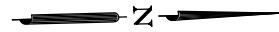
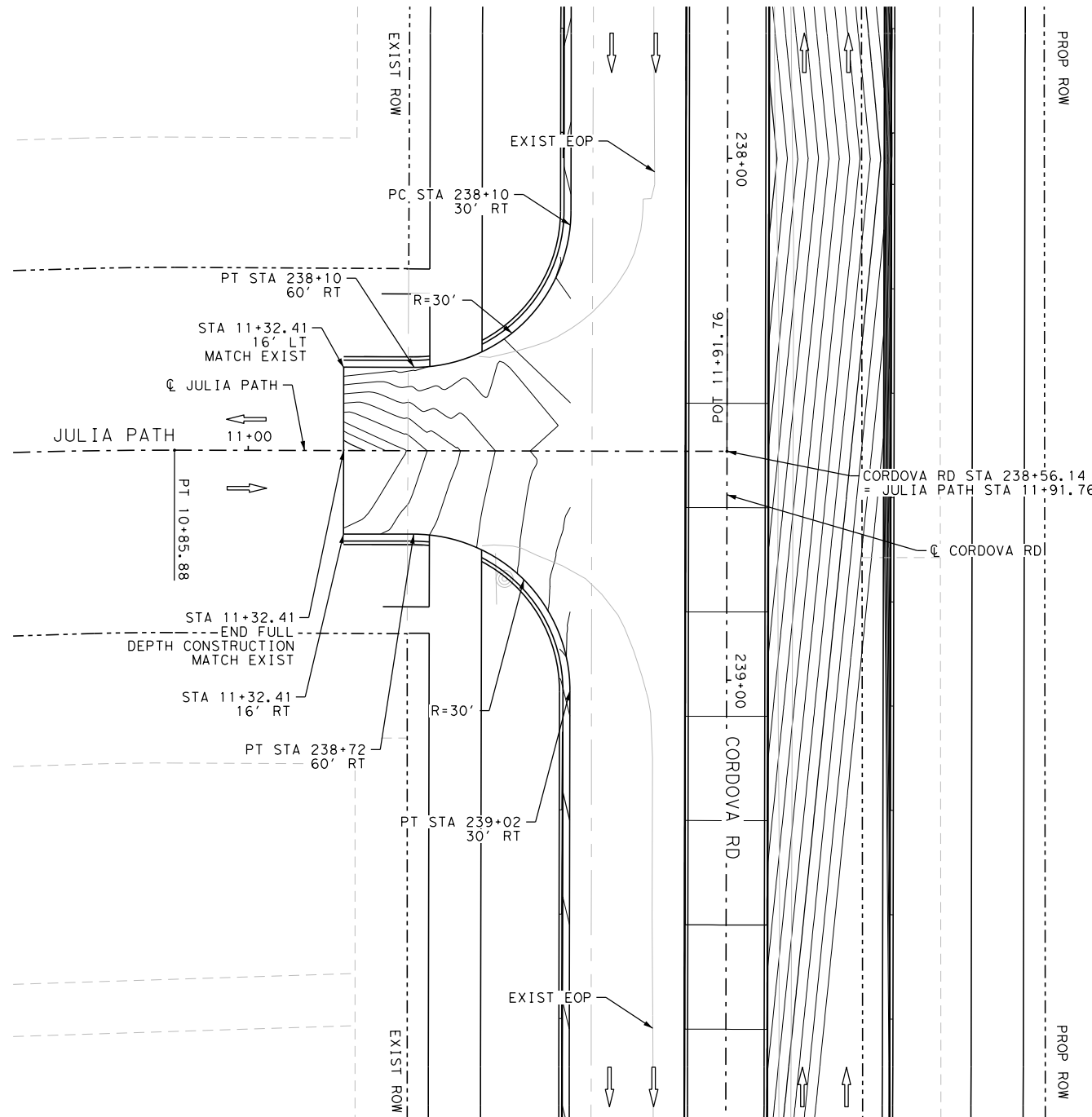
INTERSECTION DETAIL
 LABATT ST
 SHEET 7 OF 11



DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	216

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Roadway\1277500_intersection_08.dgn



NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
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DESIGN

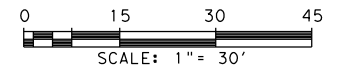
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



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INTERSECTION DETAIL

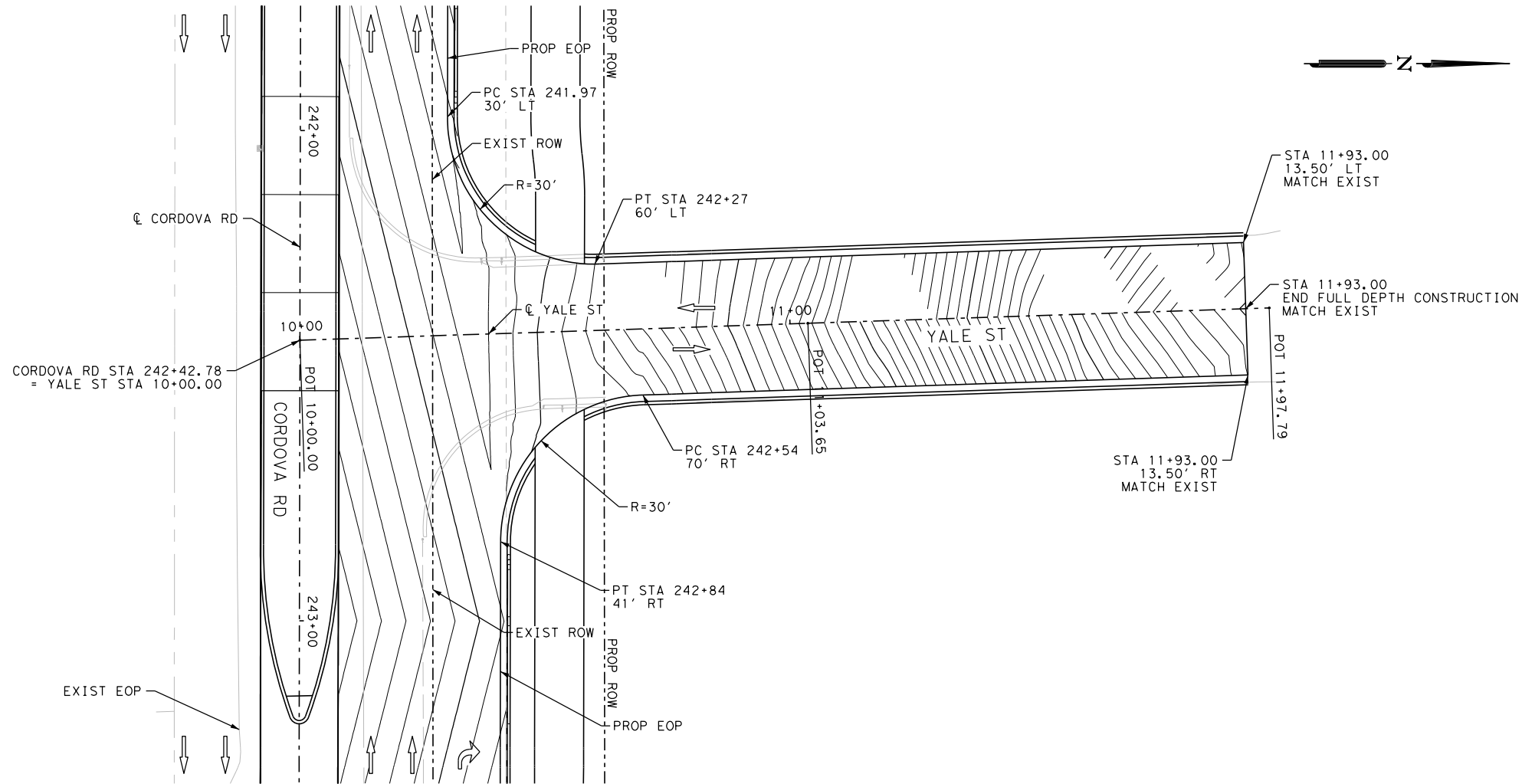
JULIA PATH

SHEET 8 OF 11

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	217

Plotted on: 11/17/2023

Design File name: P:\1275\00\Design\Civil\Roadway\1277500_intersection_09.dgn



NOTES

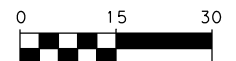
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 30' PROFILE 1" = 5'

REV. NO.	DATE	DESCRIPTION	BY



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 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



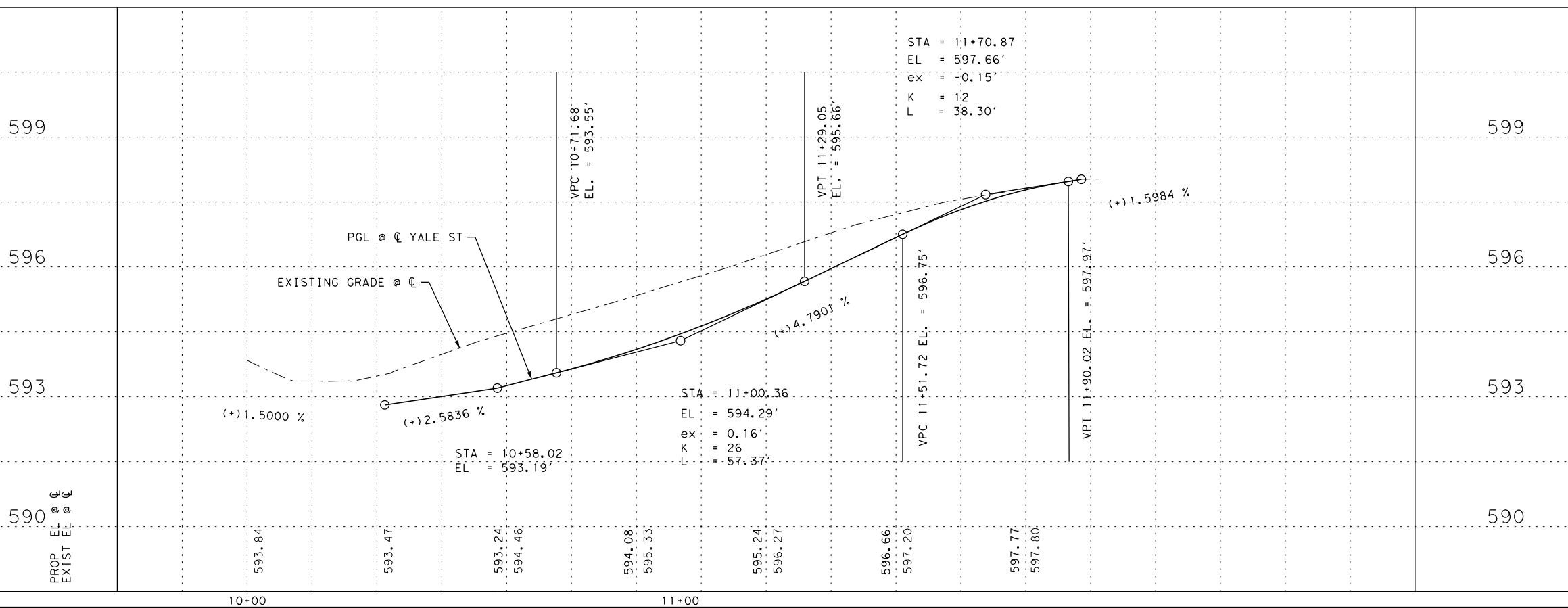
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INTERSECTION DETAIL

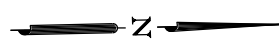
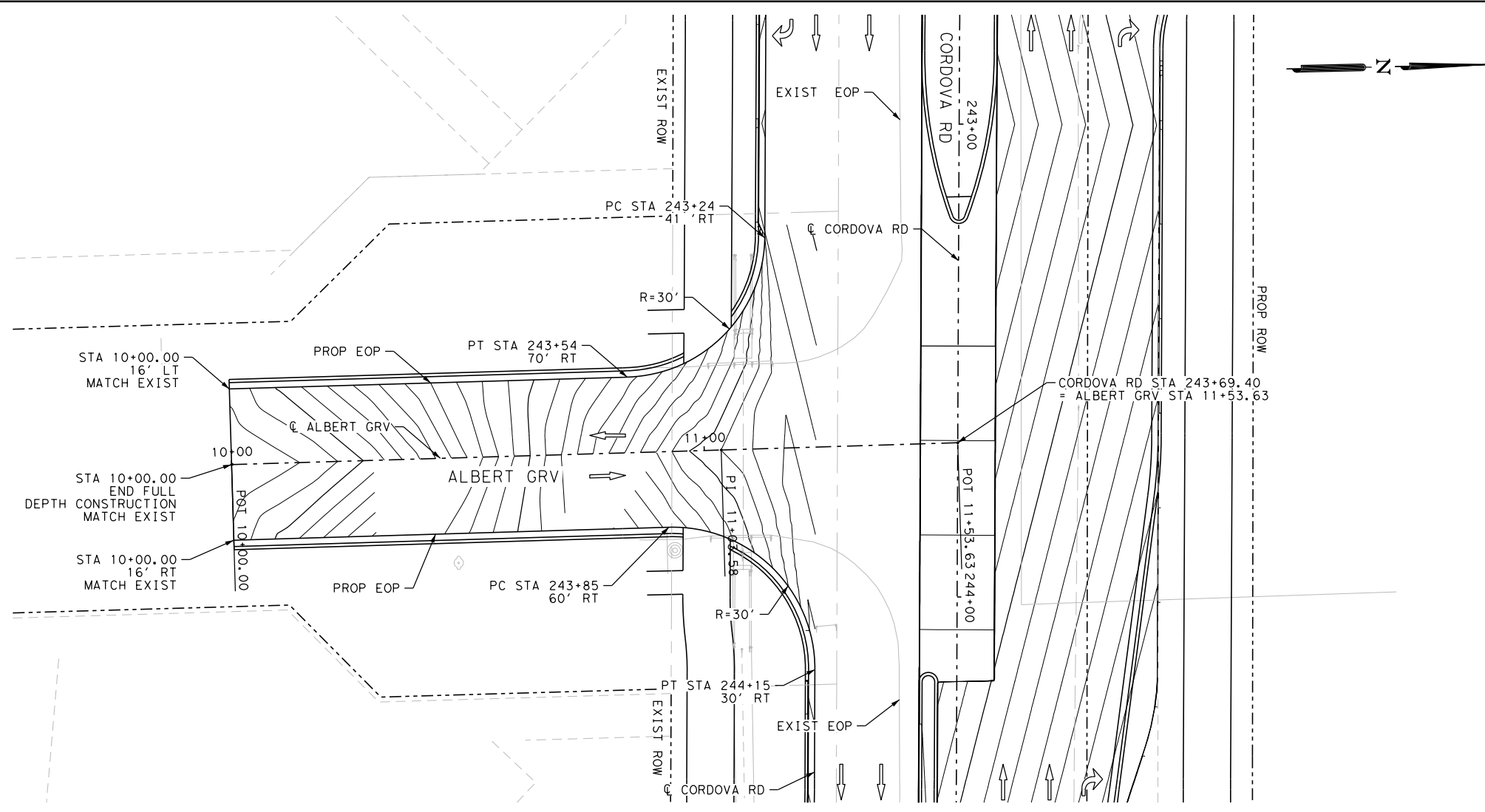
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SHEET 9 OF 11



Plotted on: 11/17/2023

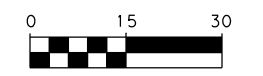
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- NOTES**
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DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
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APPROVAL
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 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
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SCALE: PLAN 1" = 30' PROFILE 1" = 5'

REV. NO.	DATE	DESCRIPTION	BY

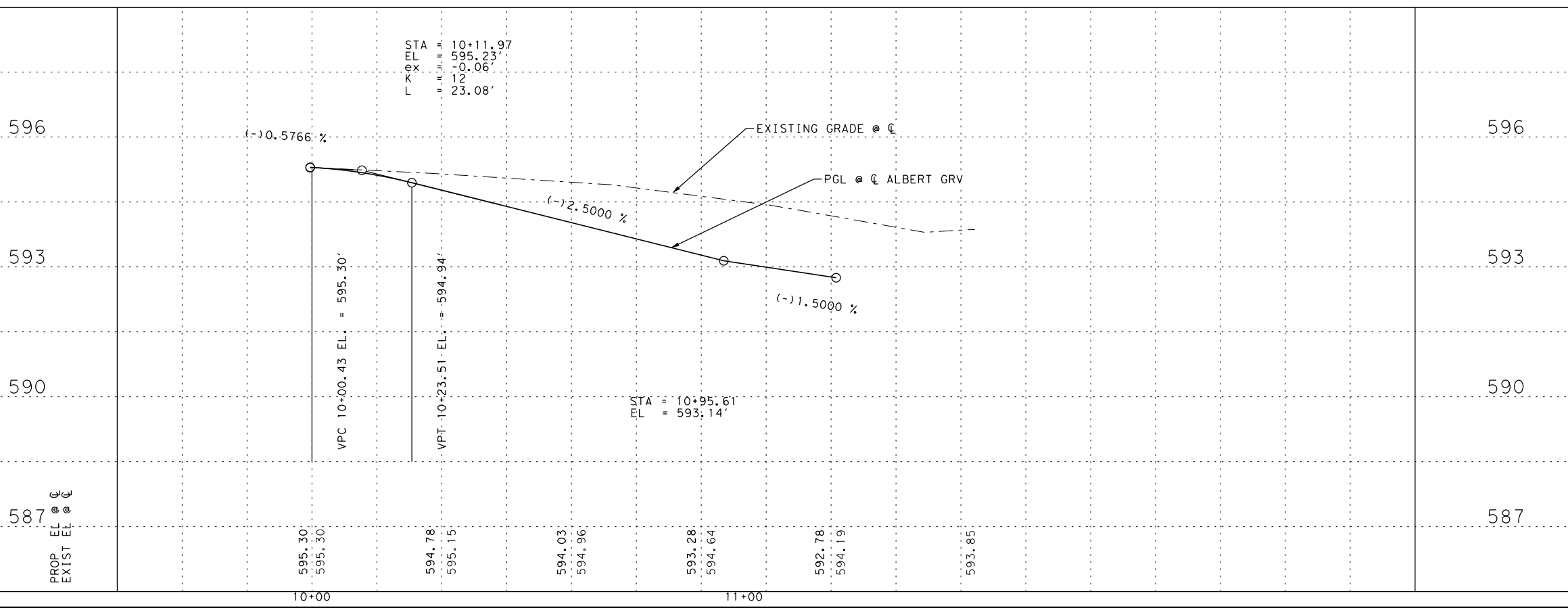
Pape-Dawson Engineers
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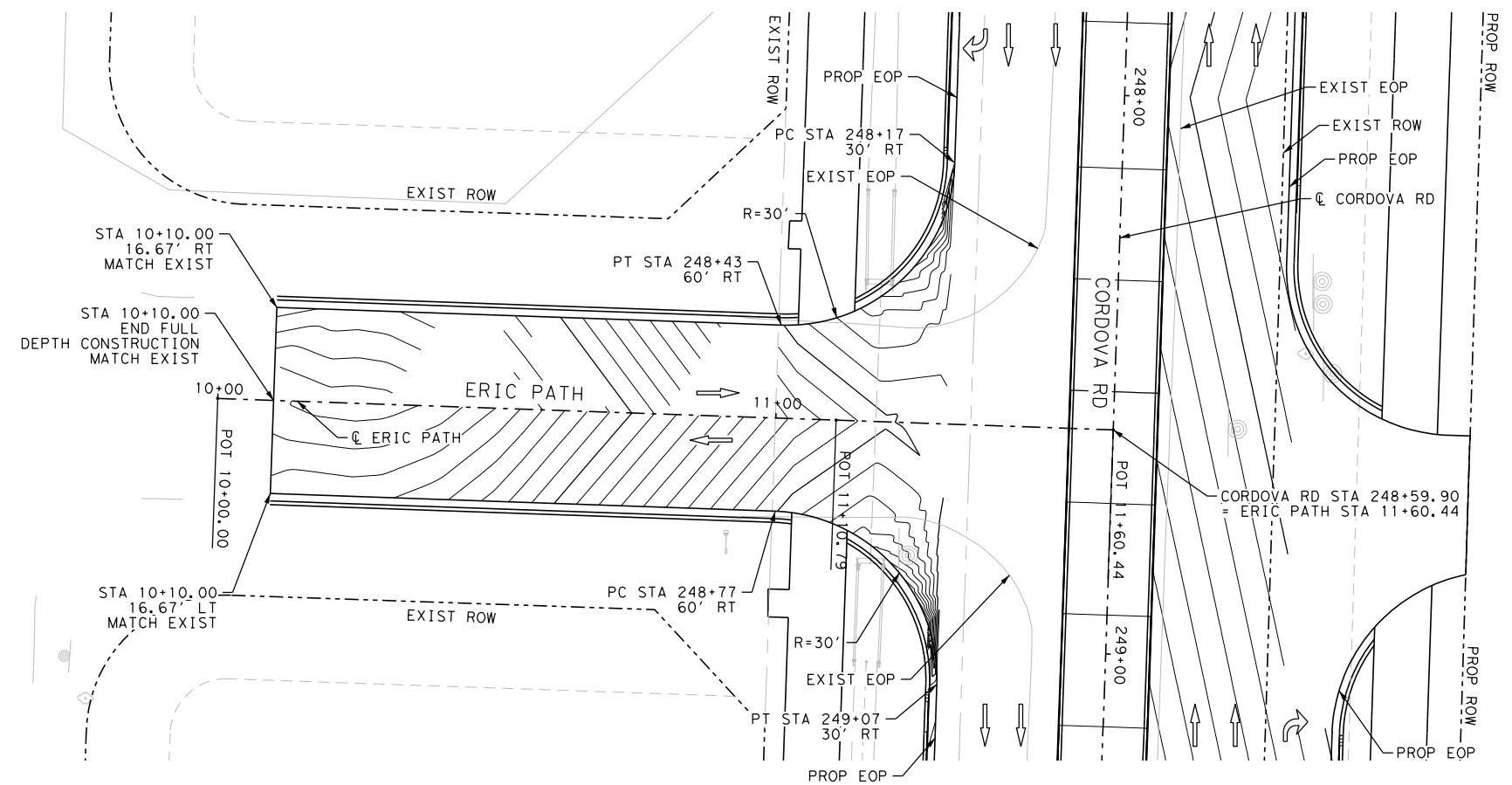
INTERSECTION DETAIL
 ALBERT GRV

SHEET 10 OF 11



DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
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				SHEET NO.:
				219

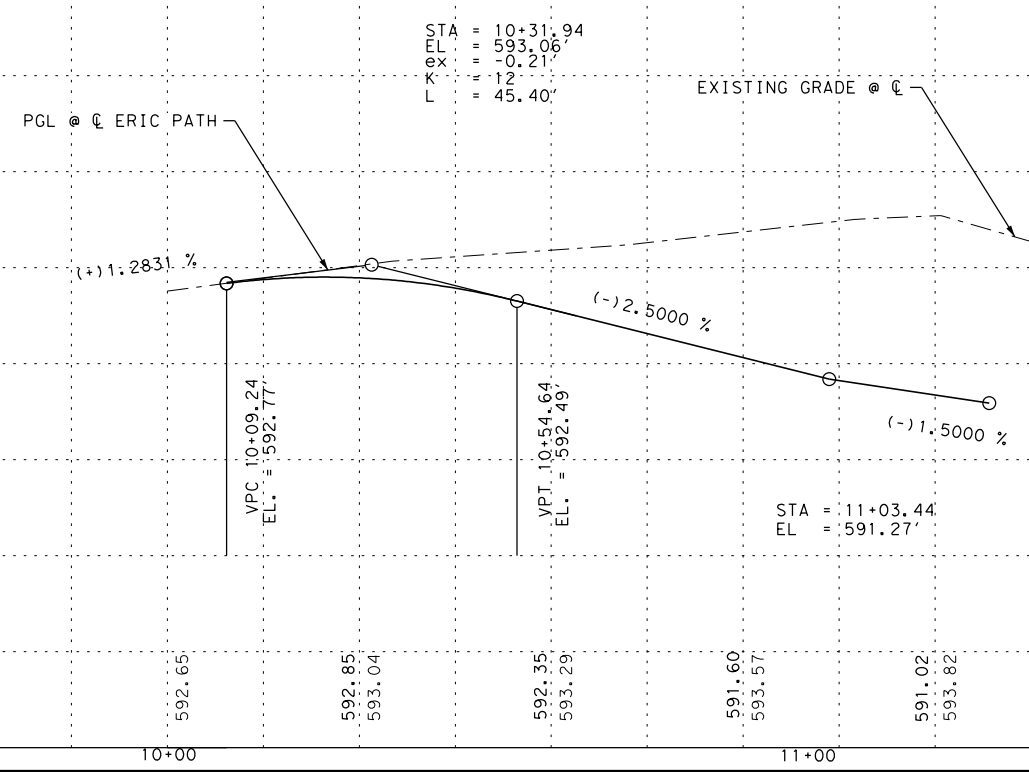
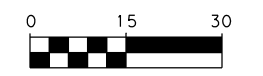
Plotted on: 11/17/2023



- NOTES**
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INTERIM REVIEW
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 ENGINEER: STEVEN J. TATE
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



INTERSECTION DETAIL

ERIC PATH

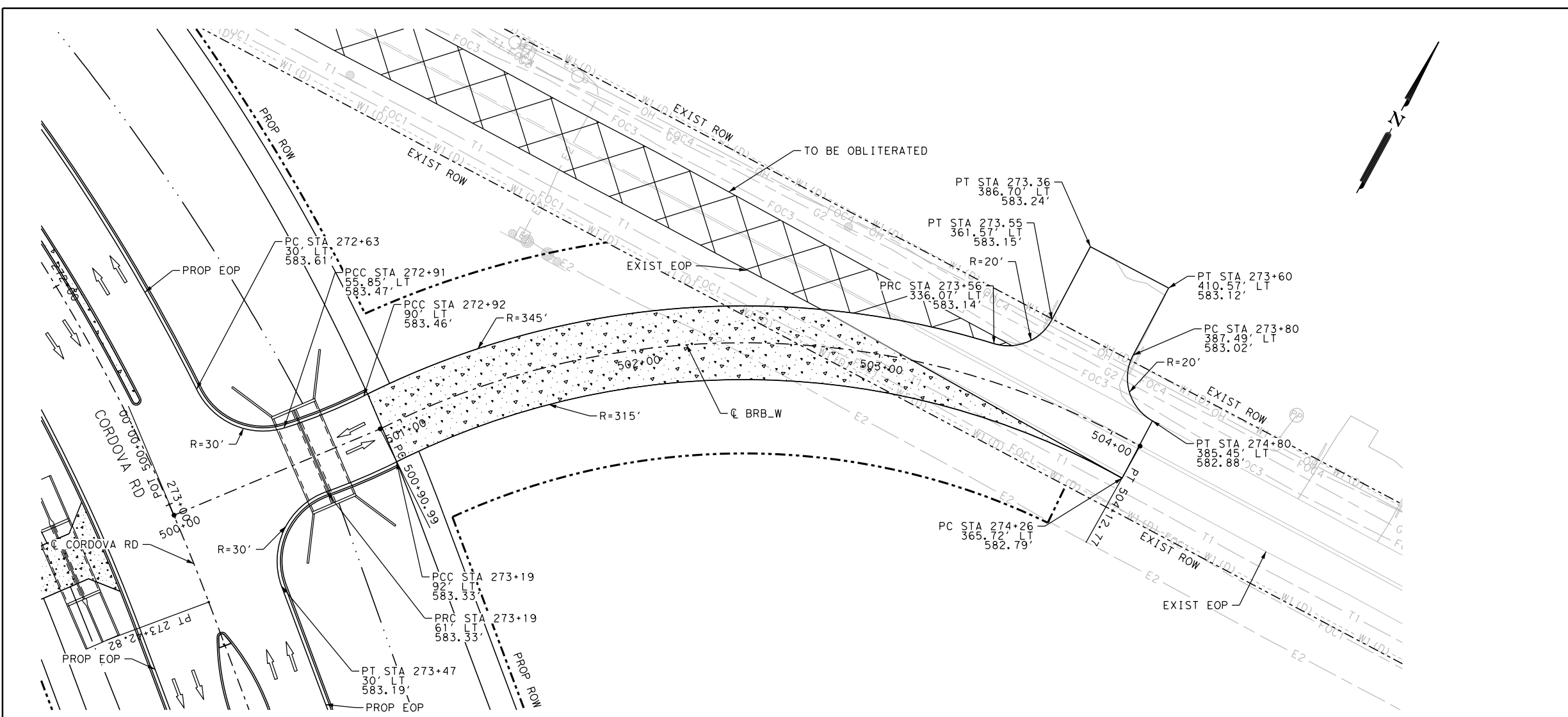
SHEET 11 of 11

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				220

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Plotted on: 11/17/2023

Design File name: P:\127175\00\Design\Civil\Roadway\Driveways\12717500_BRB_DETAILS.dgn



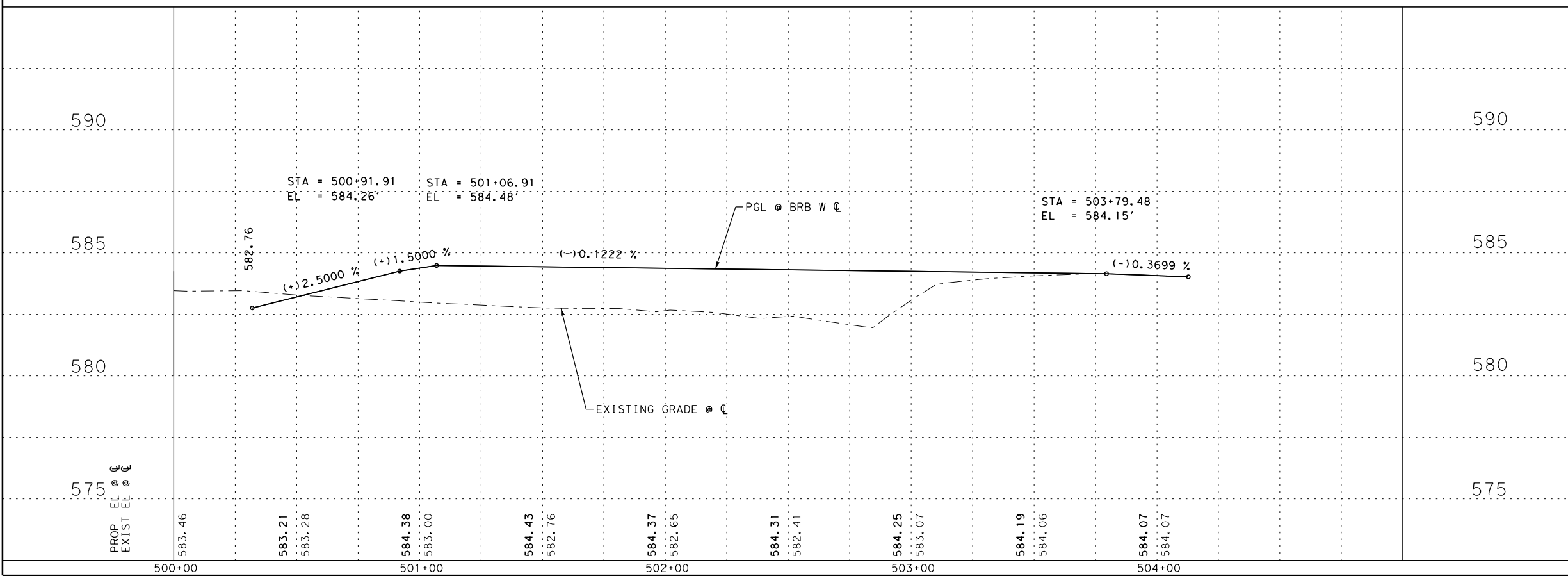
- NOTES**
1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
 2. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
 3. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED.
 4. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING OR FACE OF CURB AT THE GUTTER UNLESS OTHERWISE NOTED.

DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 5'



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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 GUADALUPE COUNTY

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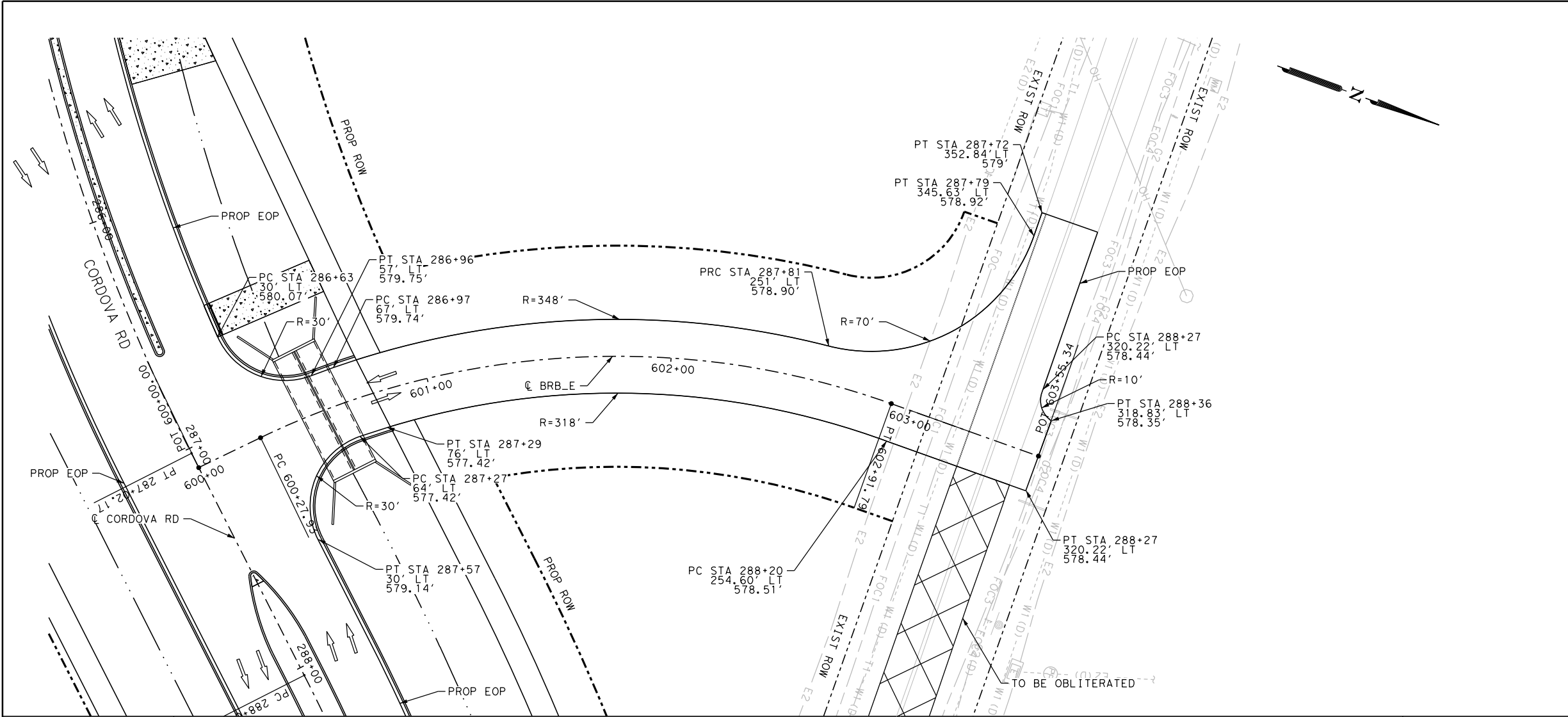
CORDOVA RD
BIG RED BARN DRIVEWAY DETAILS

SHEET 1 OF 2

CHK DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
DWG:	6	TEXAS		CORDOVA
CHK DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				221

Plotted on: 11/17/2023

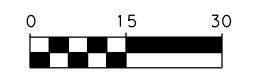
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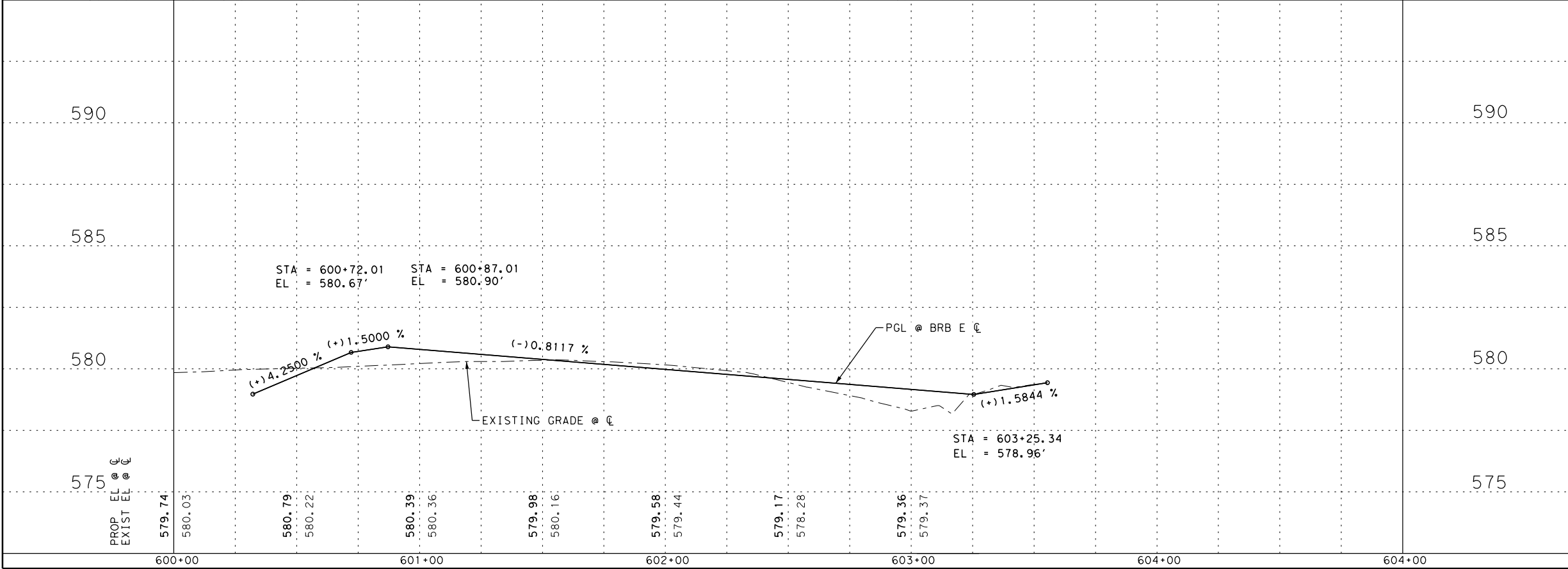
- NOTES**
- SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
 - SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
 - EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED.
 - ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, CENTER OF MARKING OR FACE OF CURB AT THE GUTTER UNLESS OTHERWISE NOTED.

DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 30' PROFILE 1" = 5'



REV. NO.	DATE	DESCRIPTION	BY
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BIG RED BARN DRIVEWAY DETAIL

SHEET 2 OF 2

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				222

Plotted on: 11/17/2023

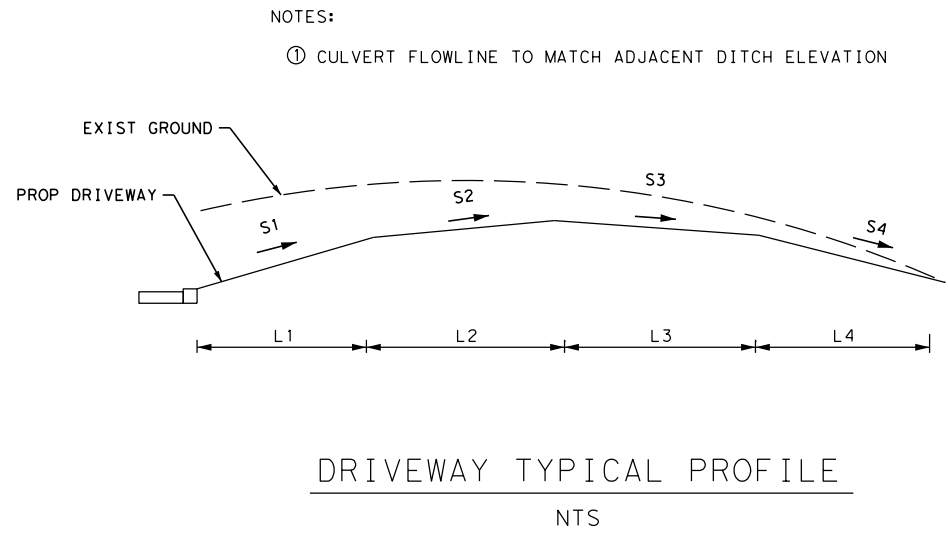
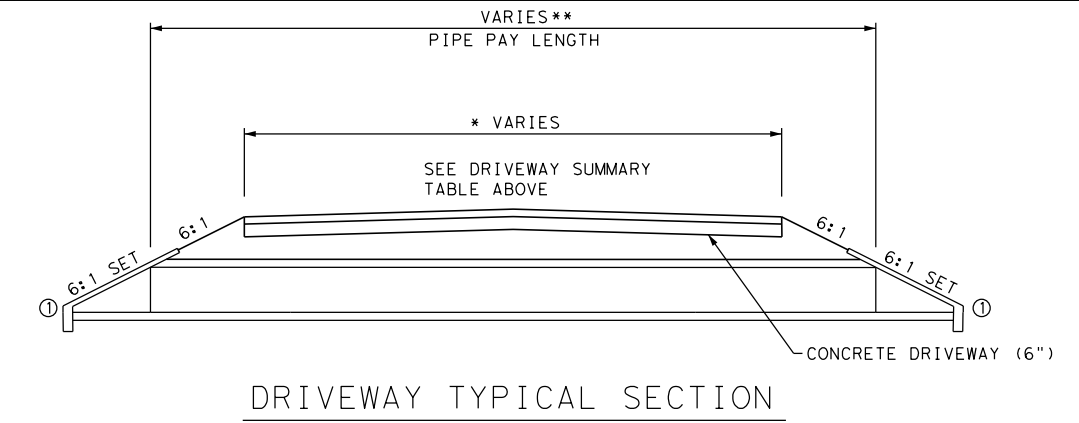
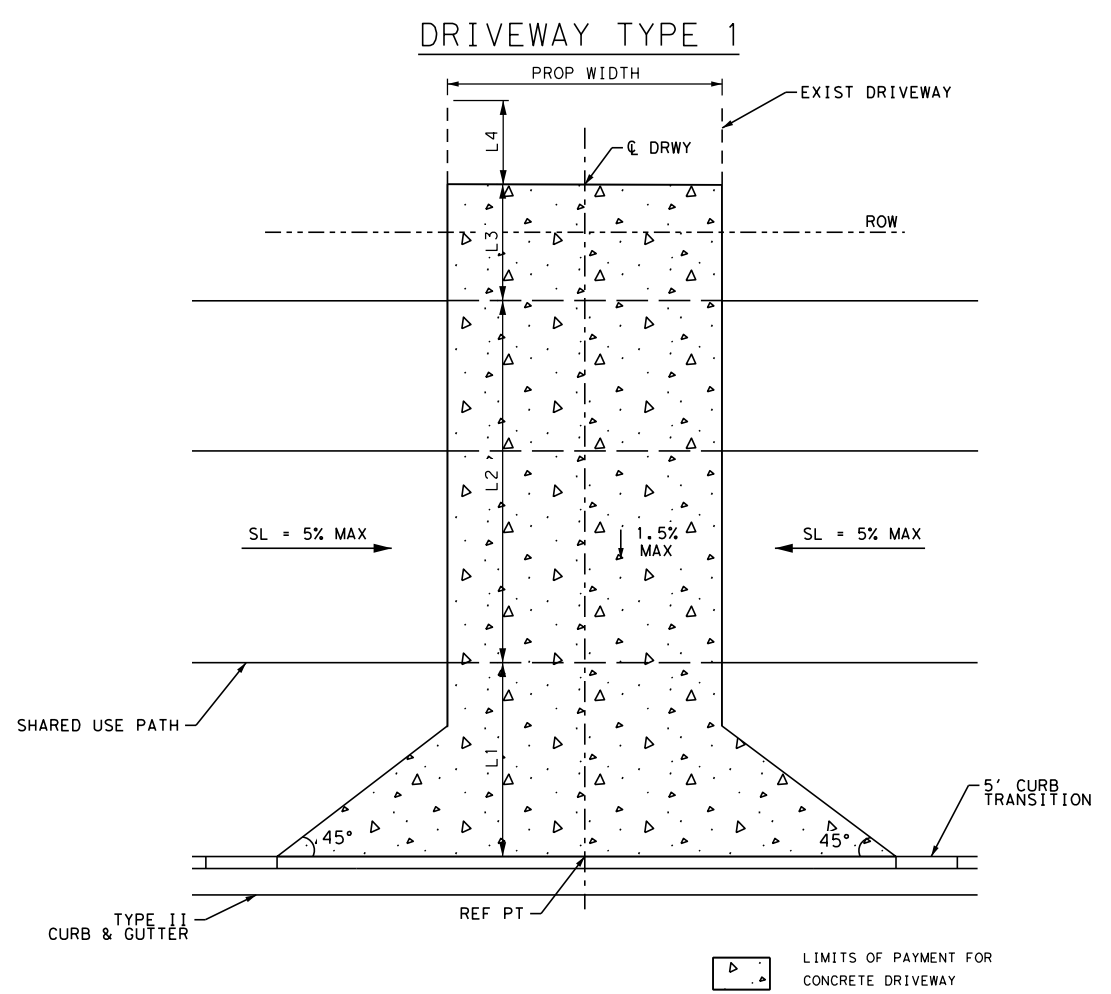
Design File name: P:\127\75\00\Design\Civil\Roadway\Driveways\1277500_Dr Driveway_detail.dwg

DRIVEWAY NO.	REFERENCE POINT			ITEM CONC DRIVEWAY SY	SKEW DEGREE	PROP WIDTH FT	L1 FT	S1 %	L2 FT	S2 %	L3 FT	S3 %	L4 FT	S4 %	Flowline Elevation	ITEM				
	STA	OFFSET (FT)	SIDE													RC PIPE (CL III) (18 IN)	RC PIPE (CL I) (24 IN)	RC PIPE (CL III) (30 IN)	RC PIPE (ARCH) (CL I) (DES 1)	CONC BOX CULV (5 FT X 2 FT)
4-1	125+74	32	LT	105	90	14	15	-1.50	22	-3.00	11	-2.00	15.2	-0.86	581.82	0	0	0	0	40
4-2	128+86	32	LT	107	90	14	15	1.50	20	-0.50	31.9	-1.75	0	0	582.15	0	0	0	0	20
5-1	132+25	32	RT	65	90	14	14	2.00	16	-1.50	8	-3.00	0	0	582.74	88	0	0	0	0
5-2	134+61	32	LT	78	90	14	15	1.50	17	2.00	16	-1.00	0	0	582.79	0	100	0	0	0
6-1	138+21	32	LT	109	90	14	20	0.50	12	-1.50	31	-2.00	0	0	583.39	0	210	0	0	0
8-1	148+42	32	RT	109	90	16	15	-8.00	11	-1.50	29	-5.00	0	0	0	0	0	0	0	0
8-2	149+13	32	RT	94	90	14	15	-8.00	11	-1.50	26	-4.00	0	0	0	0	0	0	0	0
9-1	153+39	32	LT	60	90	14	11	3.00	14	0.50	10	-1.60	0	0	SEE DRN SHEET	0	0	0	0	0
9-2	154+46	32	LT	102	90	24	15	6.00	11	1.50	22.5	0.30	0	0	SEE DRN SHEET	0	0	0	0	0
10-1	155+17	32	RT	55	90	14	11	-1.50	14	-1.00	3	-0.50	0	0	SEE DRN SHEET	0	0	0	0	0
10-2	156+06	32	RT	68	90	16	11	-1.00	14	-1.50	6.6	-3.80	0	0	SEE DRN SHEET	0	0	0	0	0
10-3	156+45	32	RT	57	90	14	11	1.50	14	0.50	4.3	-0.52	0	0	SEE DRN SHEET	0	0	0	0	0
10-4	157+19	32	RT	57	90	14	11	2.20	14	0.50	4.5	-0.33	0	0	SEE DRN SHEET	0	0	0	0	0
10-5	157+29	32	LT	82	90	6.18	15	8.00	10	1.50	15	2.00	0	0	SEE DRN SHEET	0	0	0	0	0
10-6	157+62	32	RT	99	90	24	11	6.00	14	0.50	8	-2.47	0	0	SEE DRN SHEET	0	0	0	0	0
11-1	160+19	32	RT	143	90	26	17	-8.00	11	-1.50	17.6	-5.28	0	0	SEE DRN SHEET	0	0	0	0	0
12-1	165+15	32	RT	69	90	14	15	-8.00	10	-1.50	12	-5.00	0	0	SEE DRN SHEET	0	0	0	0	0
13-1	174+28	32	LT	80	90	20	11	3.00	14	-1.50	5	-6.50	0	0	0	0	0	0	0	0
14-1	176+12	32	LT	60	90	14	11	-1.00	15	-1.50	5.54	-3.00	0	0	0	0	0	0	0	0
15-1	180+02	32	LT	72	90	14	14	6.50	13	0.50	10	-4.10	0	0	581.8	0	46	0	0	0
15-2	183+68	32	LT	79	90	16	25	-6.00	10	-1.50	8	-1.80	0	0	581.81	96	0	0	0	0
16-1	185+13	32	LT	102	90	19	30	-4.25	10	-1.50	3	-2.80	0	0	581.64	96	0	0	0	0
19-1	201+88	32	LT	80	90	16.31	14	2.00	11	0.55	13	1.50	0	0	586.02	0	54	0	0	0
20-1	205+14	32	RT	122	90	20	11	-1.00	19	-4.00	10	-1.50	10	-2.13	587.55	110	0	0	0	0
25-1	231+98	32	RT	55	90	14	15	-8.00	10	-1.50	5	-4.46	0	0	0	0	0	0	0	0
29-1	254+56	32	RT	63	90	14	15	0.50	11	-0.50	7	-0.46	0	0	0	0	0	0	0	0
30-1	256+53	75	LT	87	90	14	22	3.00	13	0.50	13	-0.26	0	0	585.9	0	0	60	0	0
33-1	273+00	32	RT	106	90	20	16	2.12	14	0.50	13	-1.50	0	0	580.1	0	0	0	0	0

- NOTES**
- CURB CUT LENGTH NO GREATER THAN REQUIRED TO MATCH SLOPE OF ADJACENT SIDEWALK.
 - DUMMY JOINTS TO BE PROVIDED AT MINIMUM 4-FT. INTERVALS PERPENDICULAR TO THE CURB LINE WITHIN THE SIDEWALK AREA AND PARALLEL TO THE SIDEWALK AREA.
 - PROVIDE A MINIMUM 7" HIGH POINT. HIGH HEIGHT SHALL BE MEASURED FROM THE GUTTER FLOW LINE TO THE DRIVEWAY APRON. NOTE HIGH POINT MAY OCCUR OUTSIDE OF ROW.
 - PROVIDE EXPANSION JOINTS AT ALL SIDEWALK AND DRIVEWAY THROAT JOINTS. EXPANSION JOINTS SHALL BE PLACED USING 1/2" ASPHALTIC MATERIAL WITH 1/2" DOWELS 16" O.C..

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



NOT TO SCALE

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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CORDOVA RD

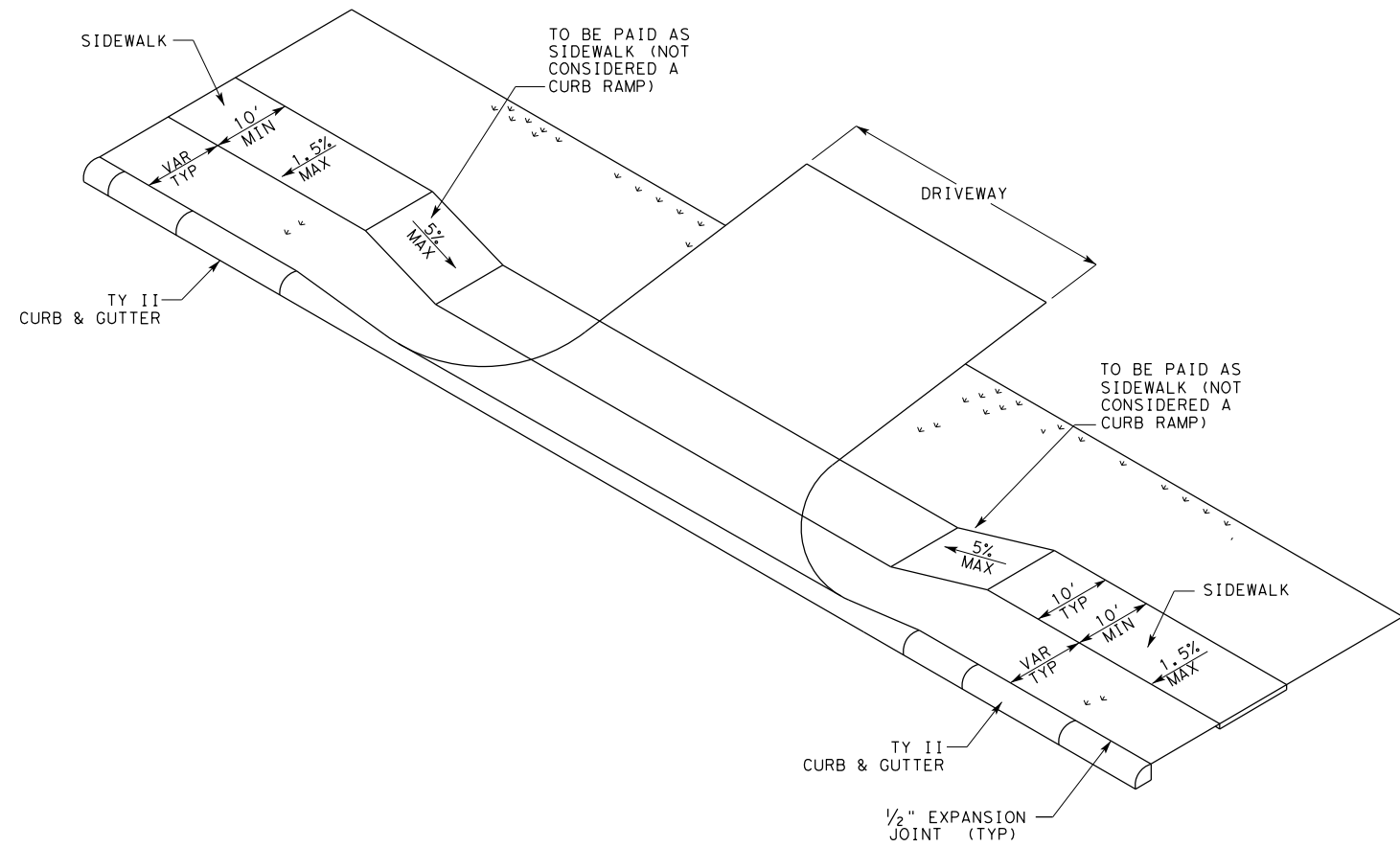
DRIVEWAY DETAILS

SHEET 1 OF 2

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	223

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Roadway\Driveways\1277500_Dr\driveway_detail1.s02.dgn



CONCRETE DRIVEWAY NOTES

1. ROW PENETRATION REFERS TO A PORTION OF THE DRIVEWAY THAT MAY BE NECESSARY TO RECONSTRUCT WITHIN PRIVATE PROPERTY TO COMPLY WITH A MAXIMUM DRIVEWAY SLOPE. THIS PORTION OF THE CONCRETE DRIVEWAY SHALL BE PAID FOR UNDER ITEM NO. 503.1 OR 503.2.
2. THE PROPOSED DRIVEWAY SHOULD MATCH THE EXISTING WIDTH AT THE PROPERTY LINE UNLESS AUTHORIZED BY THE CITY TRAFFIC ENGINEER, THE WIDTH SHALL BE WITHIN THE FOLLOWING VALUES:

TYPE	MINIMUM	MAXIMUM
RESIDENTIAL	10'	20'
COMMERCIAL - ONE WAY	12'	20'
COMMERCIAL - TWO WAY	24'	30'

3. FOR LOCAL TYPE "A" STREETS, SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 4' AND IF SEPARATED FROM THE CURB, THE SIDEWALK SHALL BE LOCATED A MINIMUM OF 2' FROM THE BACK OF CURB.
4. FOR OTHER THAN LOCAL TYPE "A" STREETS, THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 4' AND SEPARATED A MINIMUM OF 2' FROM THE BACK OF CURB OR, AS AN OPTION, THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 6' WHEN LOCATED AT THE BACK OF CURB.
5. SIDEWALK RAMP LENGTHS SHALL BE OF SUFFICIENT LENGTH TO MAINTAIN 5.0% (1:20) MAXIMUM SLOPE. WHERE SIDEWALKS CROSS DRIVEWAYS, SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2%.
6. SIDEWALK RAMP SURFACE SHALL BE BRUSH FINISHED.

INTERIM REVIEW
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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

INTERIM REVIEW
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
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SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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CORDOVA RD

DRIVEWAY DETAILS

SHEET 2 OF 2

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	224

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Standards\Roadway\1277500_Misc_rdw_detail.s.dgn

LANE TYPE	DIRECTION	A			B			C			D		
LEFT / RIGHT TURN	WEST / EAST BOUND	STA	OFFSET	DESC.	STA	OFFSET	DESC.	STA	OFFSET	DESC.	STA	OFFSET	DESC.
RIGHT TURN	WEST BOUND	116+92	40' LT	END TAPER PT	117+68	30' LT	PC	116+92	39' LT	PT	116+7	41' LT	BEGIN TAPER PCC
LEFT TURN	WEST BOUND	119+64	8' RT	END TAPER PT	119+44	4' RT	PC	118+64	4' LT	PT	118+	4' RT	BEGIN TAPER PCC
LEFT TURN	EAST BOUND	142+87	8' RT	BEGIN TAPER PC	143+01	8' RT	PT	143+74	3' RT	PC	143+	4' RT	END TAPER PT
RIGHT TURN	WEST BOUND	148+14	30' LT	END TAPER PT	147+14	31' LT	PC	147+26	40' LT	PT	147+	41' LT	BEGIN TAPER PC
LEFT TURN	EAST BOUND	151+66	8' RT	BEGIN TAPER PC	151+83	7' RT	PT	152+57	4' RT	PC	152+	4' RT	END TAPER PT
LEFT TURN	EAST BOUND	161+40	8' RT	BEGIN TAPER PC	161+54	7' RT	PT	162+27	3' LT	PC	162+	4' RT	END TAPER PT
RIGHT TURN	EAST BOUND	162+10	30' RT	BEGIN TAPER PC	162+23	31' RT	PT	162+97	40' RT	PC	163+	41' RT	END TAPER PT
LEFT TURN	WEST BOUND	167+27	8' LT	END TAPER PT	167+14	7' LT	PC	166+41	4' RT	PT	166+	4' LT	BEGIN TAPER PC
LEFT TURN	EAST BOUND	174+30	8' RT	BEGIN TAPER PC	174+44	8' RT	PT	175+17	3' LT	PC	175+	4' LT	END TAPER PT
LEFT TURN	EAST BOUND	184+20	8' RT	BEGIN TAPER PC	184+34	7' RT	PT	185+07	4' LT	PC	185+	4' LT	END TAPER PT
RIGHT TURN	WEST BOUND	189+82	30' LT	END TAPER PT	189+70	31' LT	PC	188+96	58' LT	PT	188+	41' LT	BEGIN TAPER PC
RIGHT TURN	WEST BOUND	199+45	30' LT	END TAPER PT	199+32	31' LT	PC	198+57	40' LT	PT	198+	41' LT	BEGIN TAPER PC
LEFT TURN	EAST BOUND	212+54	8' RT	BEGIN TAPER PC	212+68	7' RT	PT	212+54	8' LT	PC	213+	4' LT	END TAPER PT
LEFT TURN	WEST BOUND	218+49	8' LT	END TAPER PT	218+36	7' LT	PC	217+63	3' RT	PT	217+	4' RT	BEGIN TAPER PC
LEFT TURN	EAST BOUND	220+43	8' RT	BEGIN TAPER PC	220+57	7' RT	PT	221+30	3' LT	PC	221+	4' LT	END TAPER PT
LEFT TURN	EAST BOUND	229+99	8' RT	BEGIN TAPER PC	230+14	7' RT	PT	230+87	3' LT	PC	230+	4' LT	END TAPER PT
RIGHT TURN	EAST BOUND	241+47	30' RT	BEGIN TAPER PC	241+54	31' RT	PT	242+29	41' RT	PC	242+4	41' RT	END TAPER PT
RIGHT TURN	WEST BOUND	244+66	30' LT	END TAPER PT	244+54	31' LT	PC	243+79	40' LT	PT	243+	41' LT	BEGIN TAPER PC
LEFT TURN	WEST BOUND	246+68	8' LT	END TAPER PT	246+55	7' LT	PC	245+82	3' RT	PT	245+	4' RT	BEGIN TAPER PC
RIGHT TURN	WEST BOUND	250+95	30' LT	END TAPER PT	249+95	41' LT	PC	250+08	41' LT	PT	249+	41' LT	BEGIN TAPER PC
LEFT TURN	EAST BOUND	269+70	8' RT	BEGIN TAPER PC	269+78	8' RT	PT	270+49	2' LT	PC	270+	4' LT	END TAPER PT
LEFT TURN	EAST BOUND	284+09	8' RT	BEGIN TAPER PCC	284+30	6' RT	PT	285+02	4' LT	PC	285+	4' LT	END TAPER PCC
LEFT TURN	EAST BOUND	289+34	8' RT	BEGIN TAPER PC	289+42	8' RT	PT	290+14	2' LT	PC	290+	4' LT	END TAPER PCC

E			F		
STA	OFFSET	DESC.	STA	OFFSET	DESC.
112+16	4' LT	PT	112+1	8' RT	PT
145+37	8' LT	PC	145+37	4' RT	PC
154+16	8' LT	PC	154+1	4' LT	PC
163+90	8' LT	PT	163+9	4' LT	PC
164+77	4' LT	PT	164+77	8' RT	PT
176+80	8' LT	PC	176+8	4' LT	PC
186+70	8' LT	PC	186+7	4' LT	PC
215+04	8' LT	PC	215+04	4' LT	PC
215+99	4' RT	PT	215+9	8' RT	PC
222+93	8' LT	PC	222+9	4' LT	PC
232+50	8' LT	PC	232+5	4' LT	PC
244+18	4' RT	PT	244+1	8' RT	PT
272+20	8' LT	PC	272+2	4' LT	PC
286+59	8' LT	PC	286+5	4' LT	PC
294+34	8' LT	PC	294+34	4' LT	PC

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

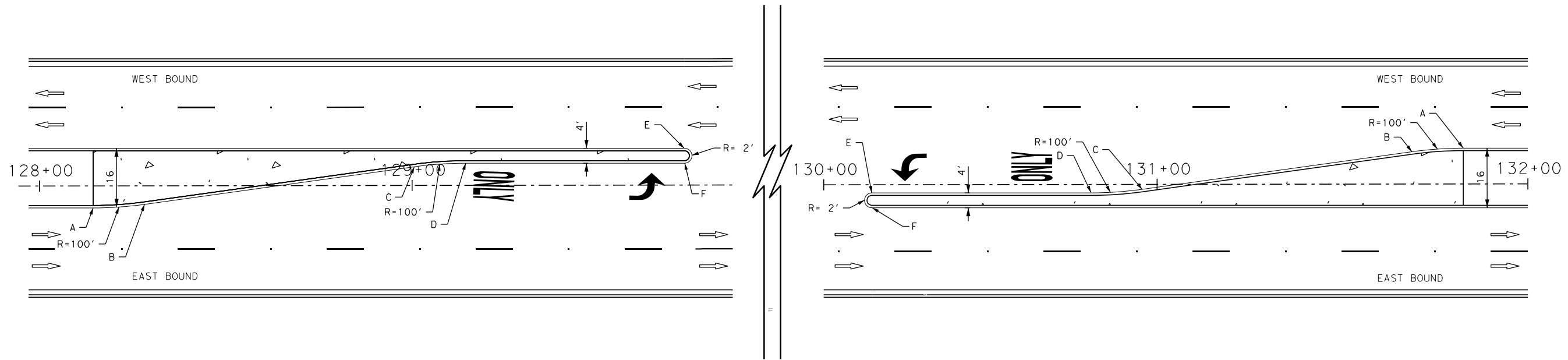
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023

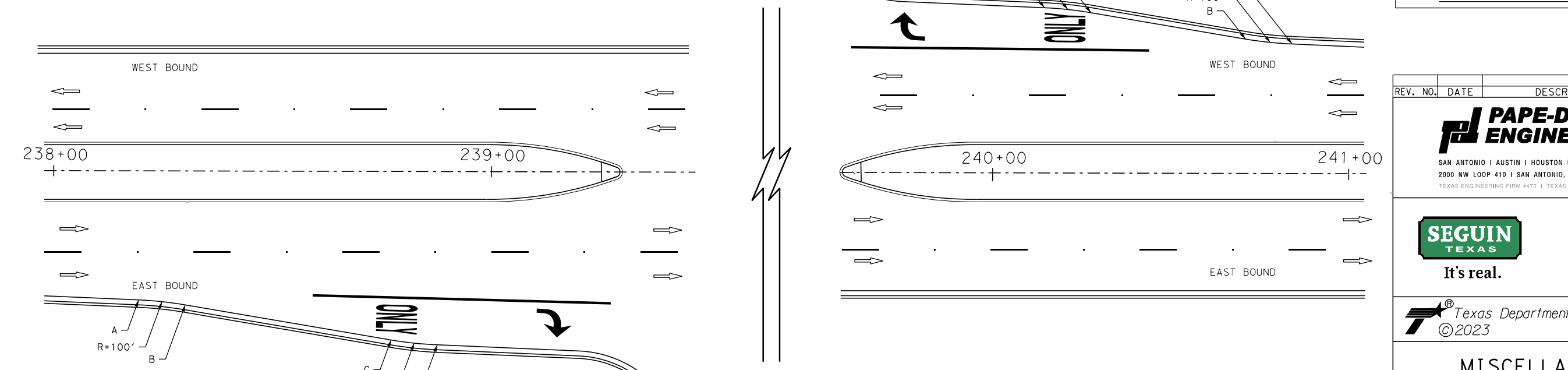
REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 <small>TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</small>			
 It's real.			
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MISCELLANEOUS ROADWAY DETAIL SHEET			
SHEET 1 OF 3			
<small>DGN:</small> <small>CHK DGN:</small>	<small>FED. RD. DIV. NO.:</small> 6	<small>STATE:</small> TEXAS	<small>FEDERAL AID PROJECT NO.:</small> CORDOVA
<small>DWG:</small> <small>CHK DWG:</small>	<small>DIST.:</small> SAT	<small>COUNTY:</small> GUADALUPE	<small>CONT. NO.:</small> 0915
	<small>SECT. NO.:</small> 46	<small>JOB NO.:</small> 052	<small>SHEET NO.:</small> 225

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Standards\Roadway\1277500_Misc_rdw_detail1.s.dgn




LEFT TURN LANE
MEDIAN DETAIL
NTS



RIGHT TURN LANE
MEDIAN DETAIL
NTS

DESIGN
INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
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REV. NO.	DATE	DESCRIPTION	BY
 PAPE-DAWSON ENGINEERS <small>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</small>			

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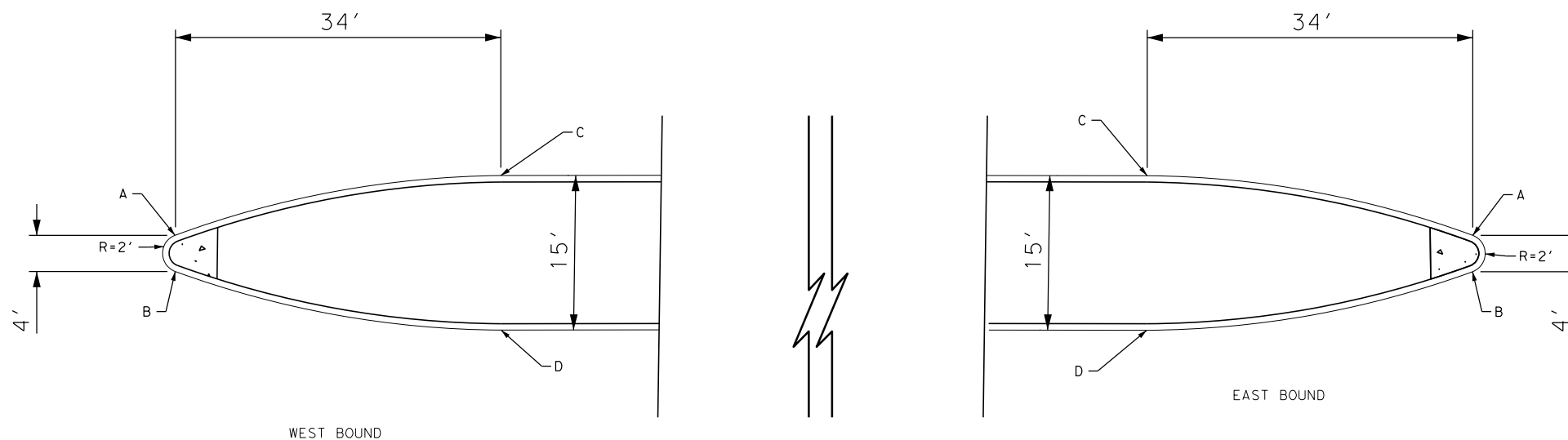
MISCELLANEOUS
ROADWAY
DETAIL SHEET

SHEET 2 OF 3						
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:			HIGHWAY NO.:
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	226

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Standards\Roadway\1277500_Misc_rdw_detail.s.dgn

DIRECTION	A			B			C			D		
WEST / EAST BOUND	STA	OFFSET	DESC.	STA	OFFSET	DESC.	STA	OFFSET	DESC.	STA	OFFSET	DESC.
WEST BOUND	146+24	2' LT	PC	146+24	2' RT	PC	145+58	8' LT	PT	146+58	8' RT	PT
WEST BOUND	154+71	2' LT	PC	154+71	2' RT	PC	155+07	8' LT	PT	155+05	8' RT	PT
WEST BOUND	177+66	2' LT	PC	177+66	2' RT	PC	178+02	8' LT	PT	178+02	8' RT	PT
WEST BOUND	188+01	2' LT	PC	188+01	2' RT	PC	188+35	8' LT	PT	188+35	8' RT	PT
WEST BOUND	223+86	2' LT	PC	223+86	2' RT	PC	224+20	8' LT	PT	224+20	8' RT	PT
WEST BOUND	233+36	2' LT	PC	223+87	2' RT	PC	233+72	8' LT	PT	224+21	8' RT	PT
EAST BOUND	243+20	2' LT	PCC	243+20	2' RT	PCC	242+85	8' LT	PC	242+85	8' RT	PC
WEST BOUND	273+08	2' LT	PCC	273+08	2' RT	PCC	273+40	8' LT	PT	273+40	8' RT	PT
WEST BOUND	287+57	2' LT	PC	287+57	2' RT	PC	287+90	8' LT	PT	287+90	8' RT	PT



NOSE OF MEDIAN
MEDIAN DETAIL
NTS

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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Texas Department of Transportation
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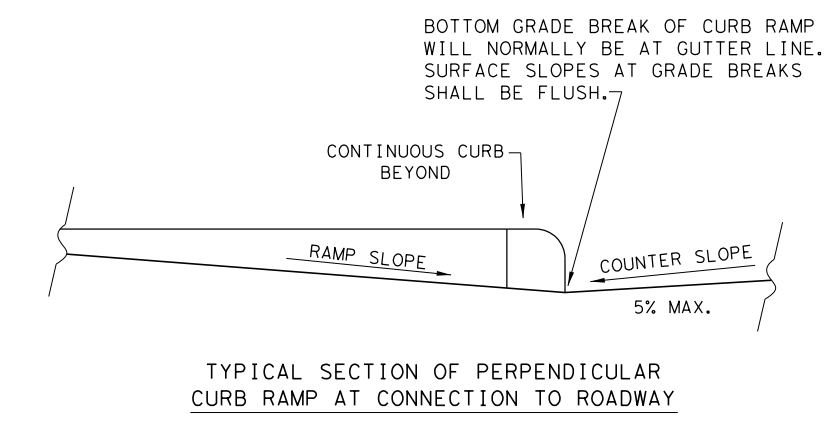
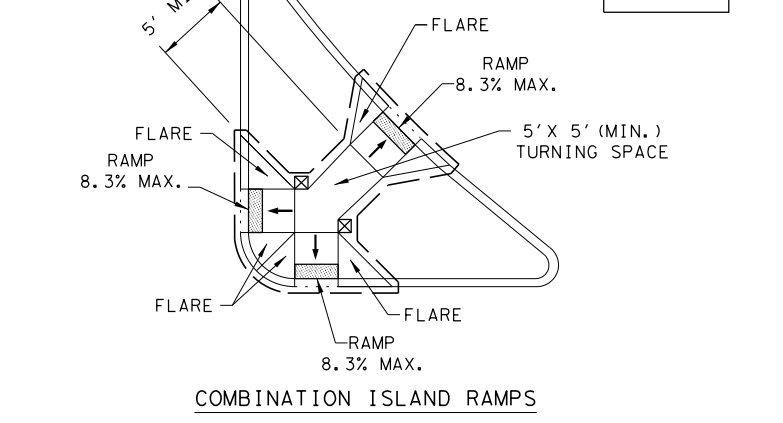
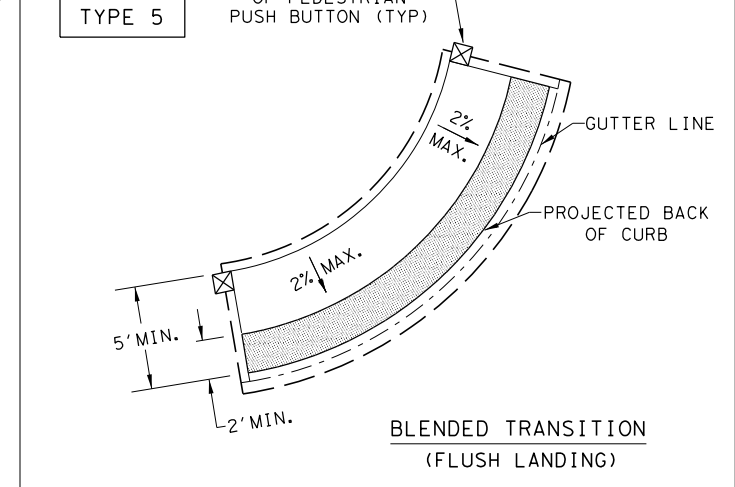
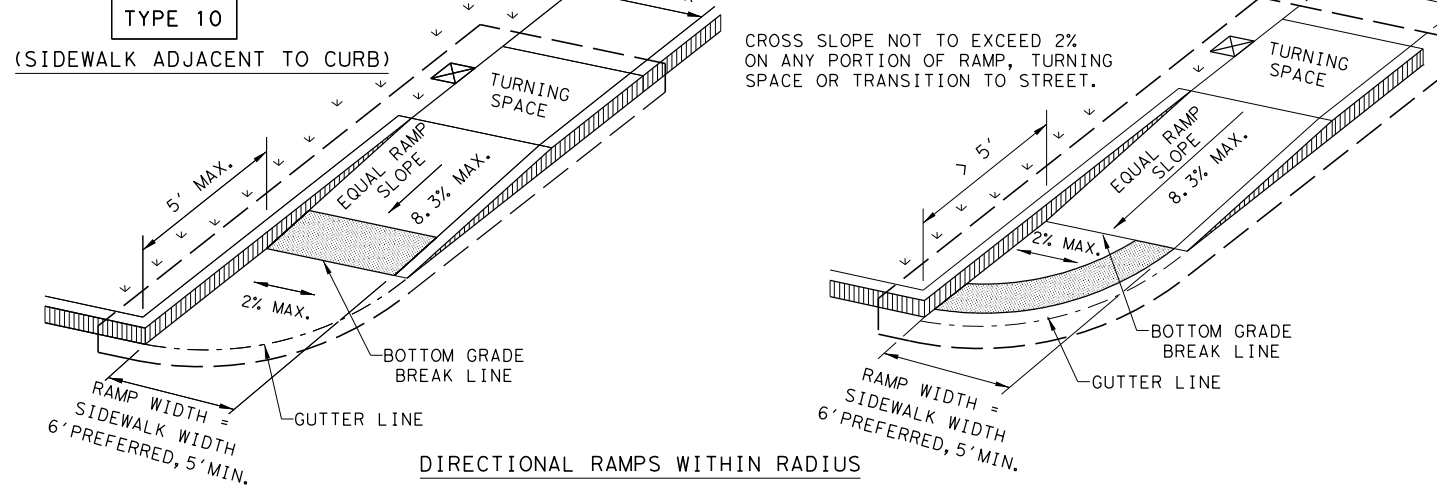
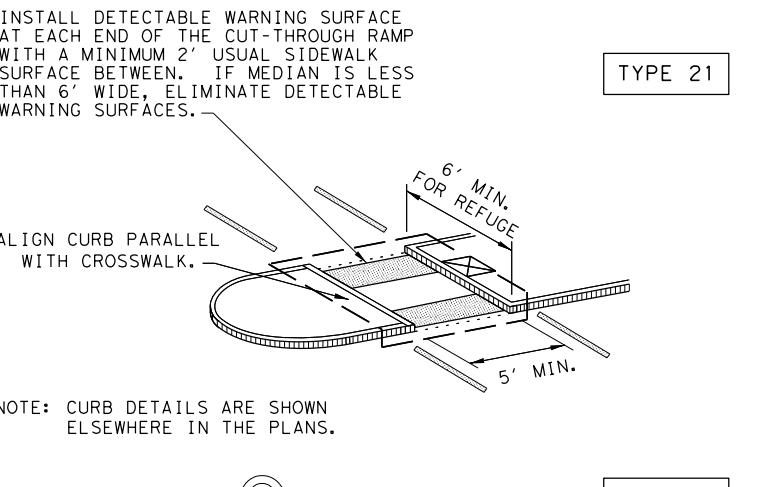
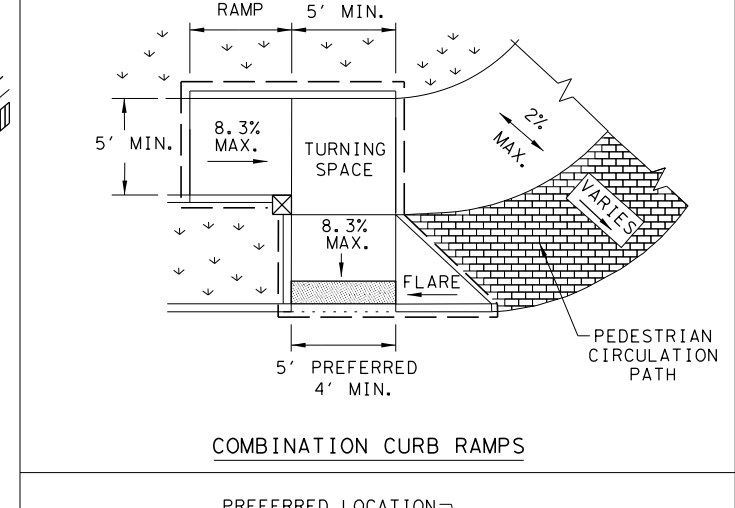
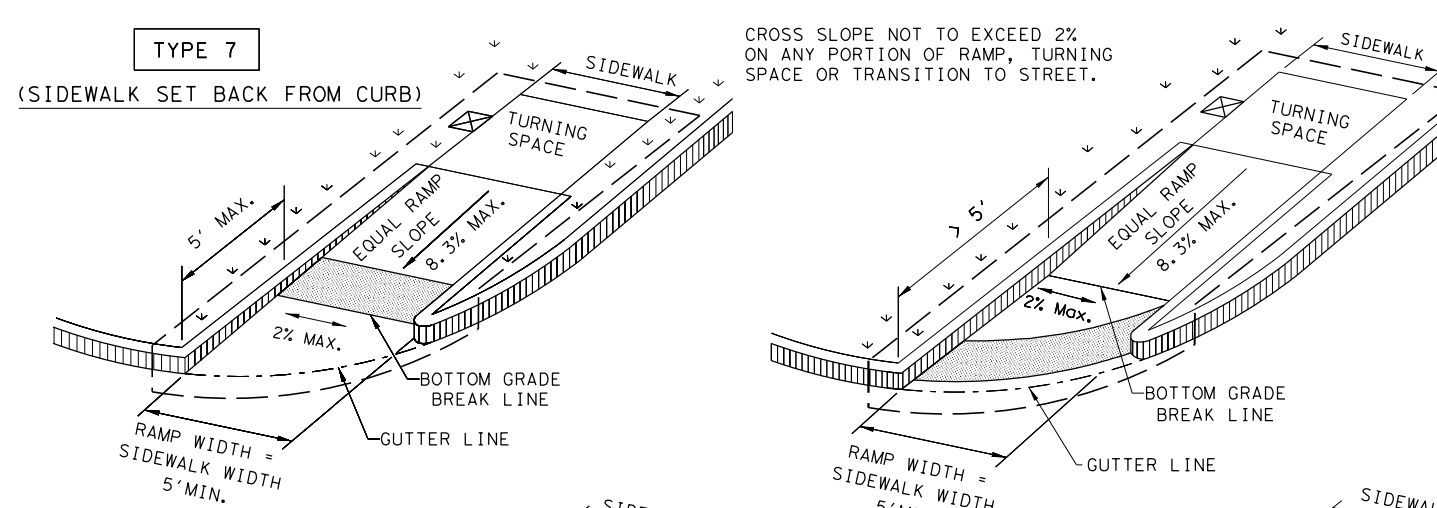
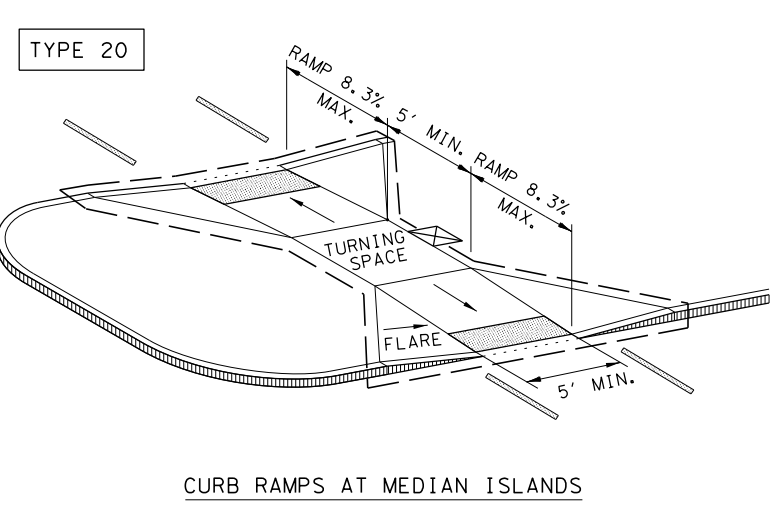
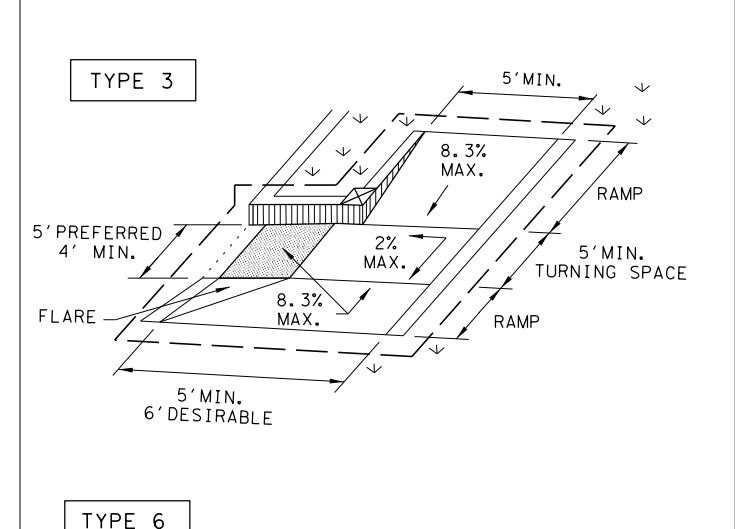
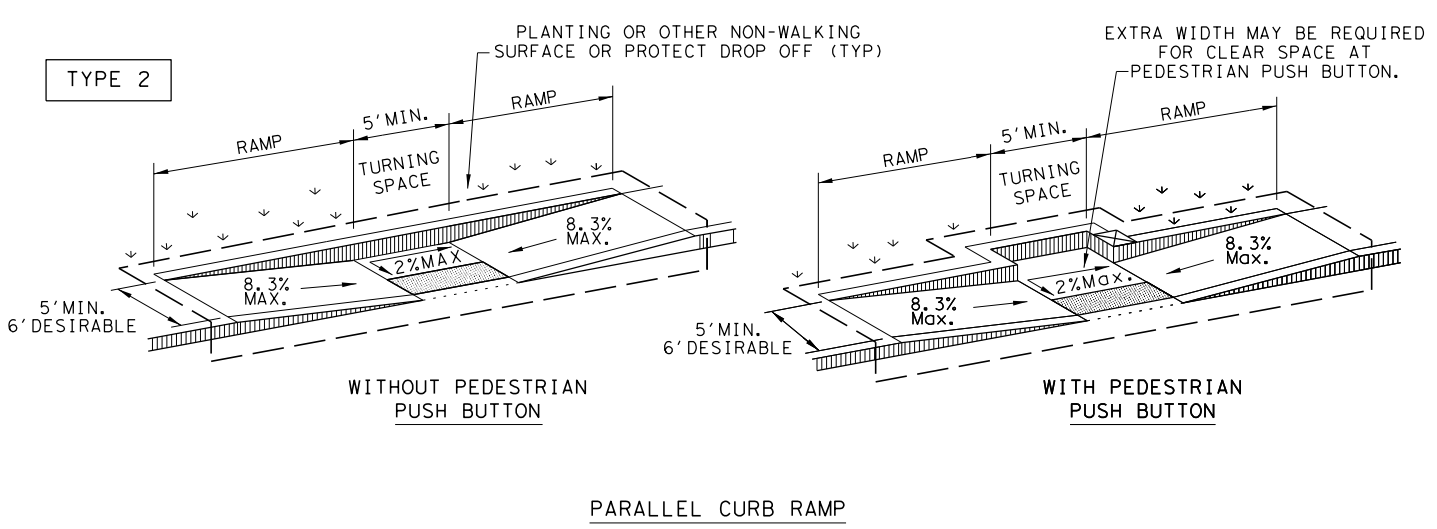
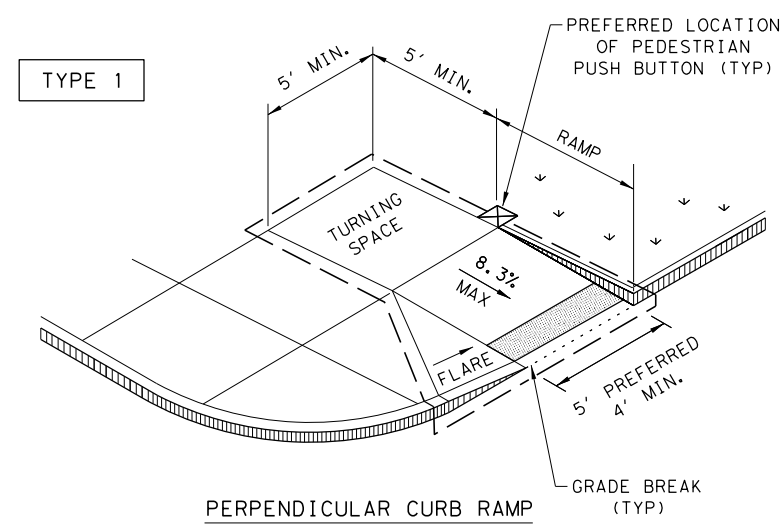
MISCELLANEOUS
ROADWAY
DETAIL SHEET

SHEET 3 OF 3

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	227

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DATE: 11/17/2023
 FILE: P:\127\75\00\Design\Civil\Standards\Roadway\ped18.dgn



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]

Gutter Line: [Symbol]

Ramp Limits of Payment: [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	0915	46	052	CORDOVA
REVISED 08, 2005	DIST	COUNTY	SHEET NO.	
REVISED 06, 2012	SAT	GUADALUPE	228	
REVISED 01, 2018				

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DATE: 11/17/2023
 FILE: P:\127\75\00\Design\Civil\Standards\Roadway\ped18.dgn

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

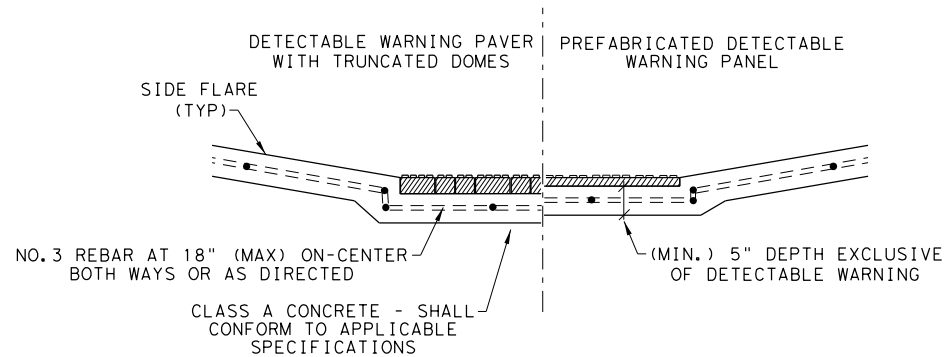
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material 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.

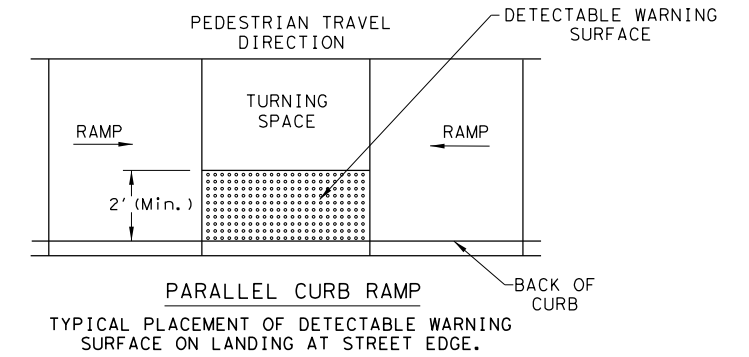
SIDEWALKS

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.

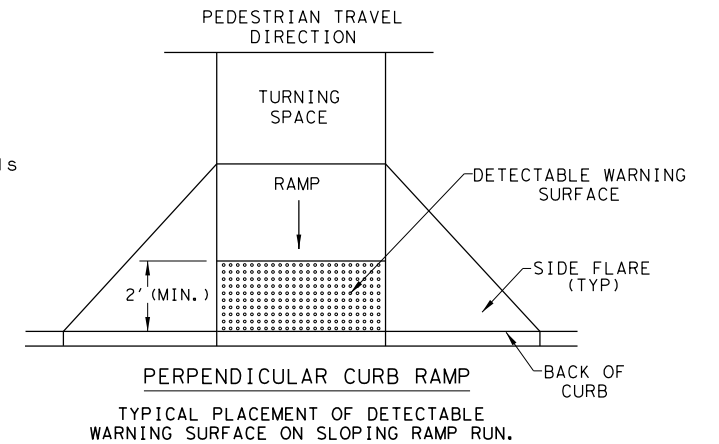


**SECTION VIEW DETAIL
 CURB RAMP AT DETECTIBLE WARNINGS**

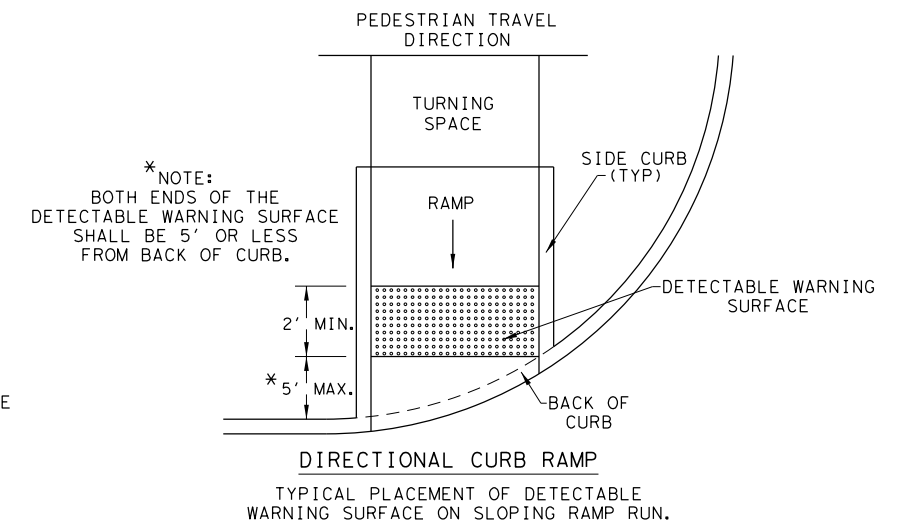
DETECTABLE WARNING SURFACE DETAILS



**PARALLEL CURB RAMP
 TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE.**



**PERPENDICULAR CURB RAMP
 TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.**



**DIRECTIONAL CURB RAMP
 TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.**

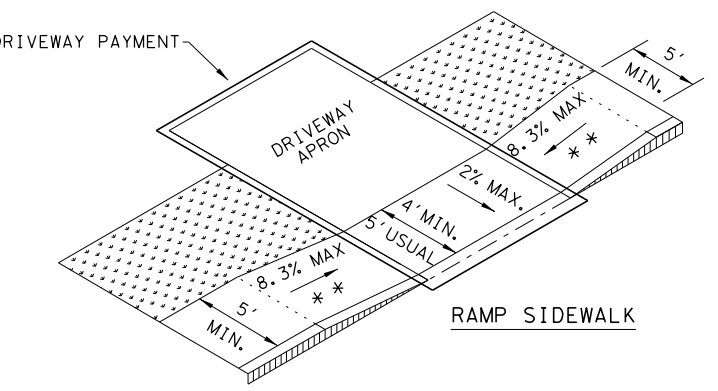
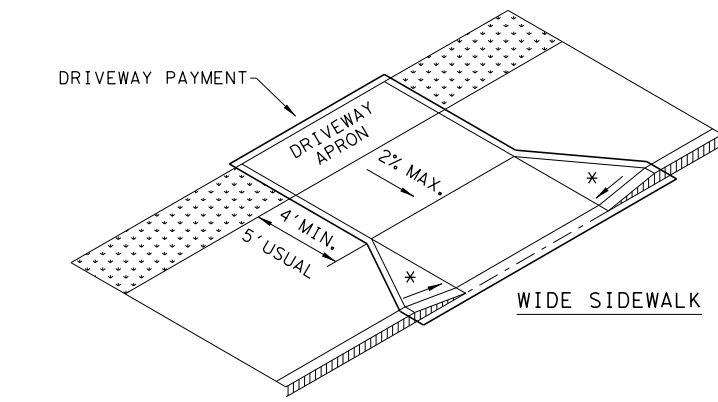
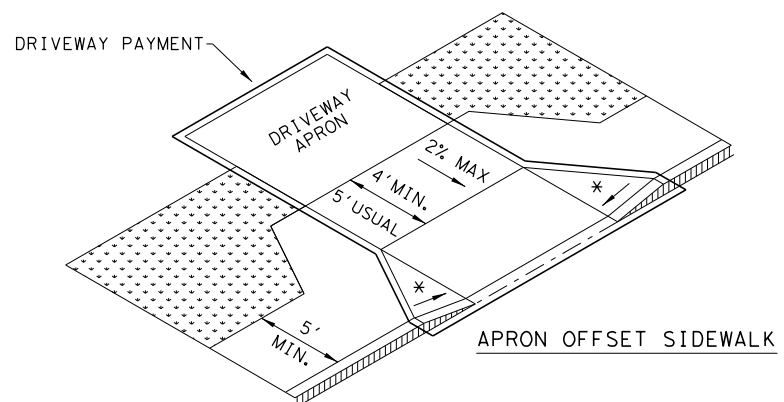
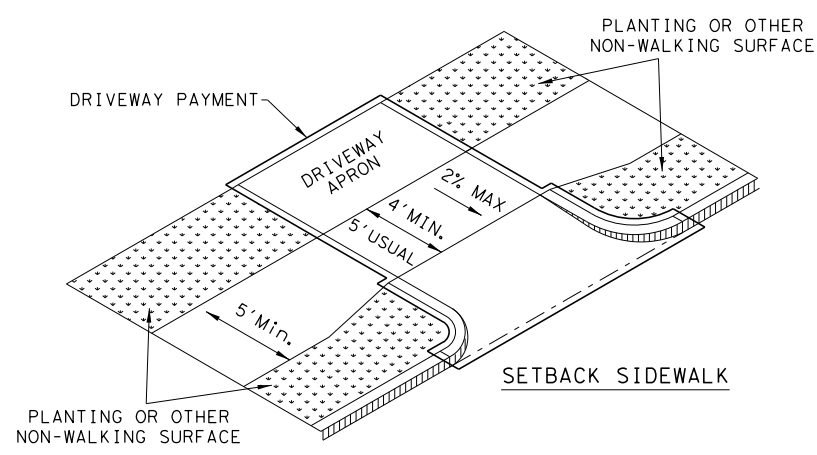
SHEET 2 OF 4

		Design Division Standard	
<h1>PEDESTRIAN FACILITIES</h1> <h2>CURB RAMPS</h2> <h3>PED-18</h3>			
FILE: ped18	DN: TxDOT	DW: VP	CK: KM
© TxDOT: MARCH, 2002	CONT	SECT	JOB
REVISIONS	0915	46	052
REVISED 08, 2005	DIST	COUNTY	SHEET NO.
REVISED 06, 2012	SAT	GUADALUPE	229
REVISED 01, 2018			

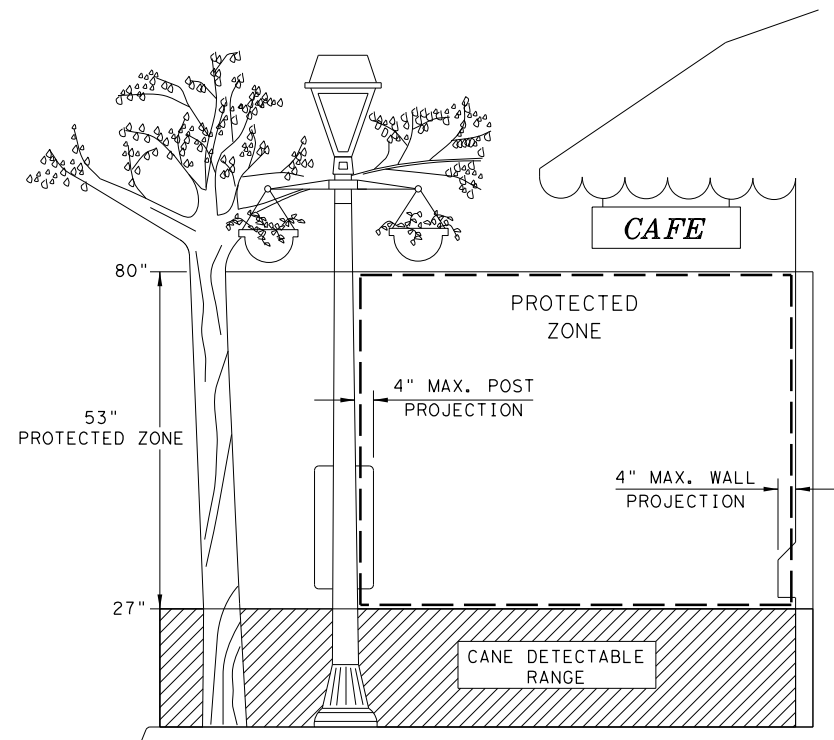
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DATE: 11/17/2023
 FILE: P:\127\75\00\Design\Civil\Standards\Roadway\ped18.dgn

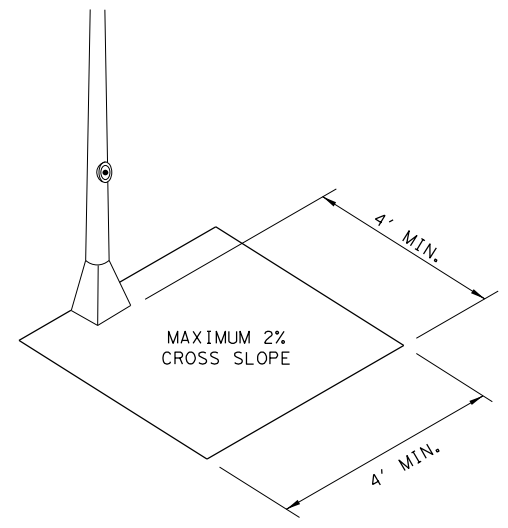
SIDEWALK TREATMENT AT DRIVEWAYS



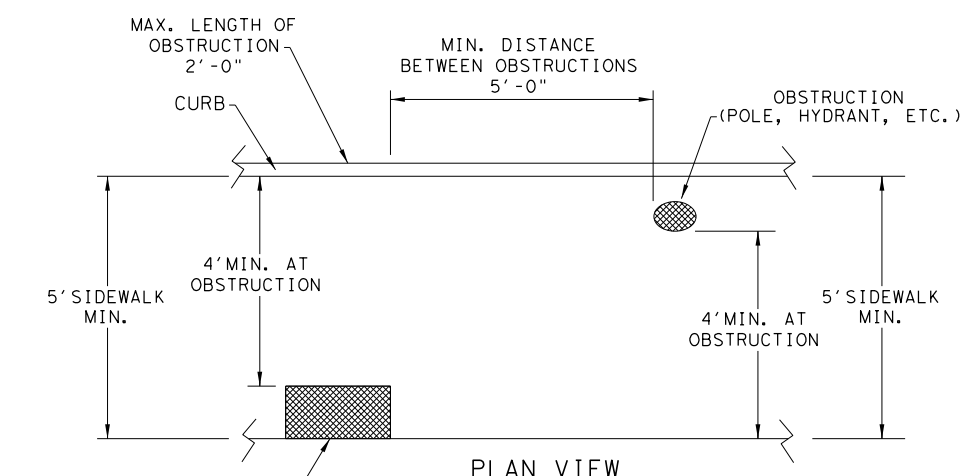
NOTES:
 * WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.
 * * IF CURB HEIGHT IS GREATER THAN 6 INCHES, USE GRADE LESS THAN OR EQUAL TO 5%. HANDRAIL AND DETECTABLE WARNING ARE NOT REQUIRED.



NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.

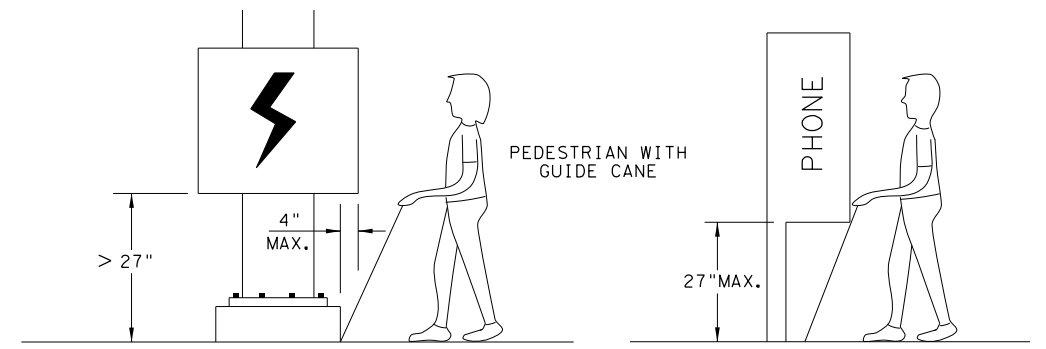


CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



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.

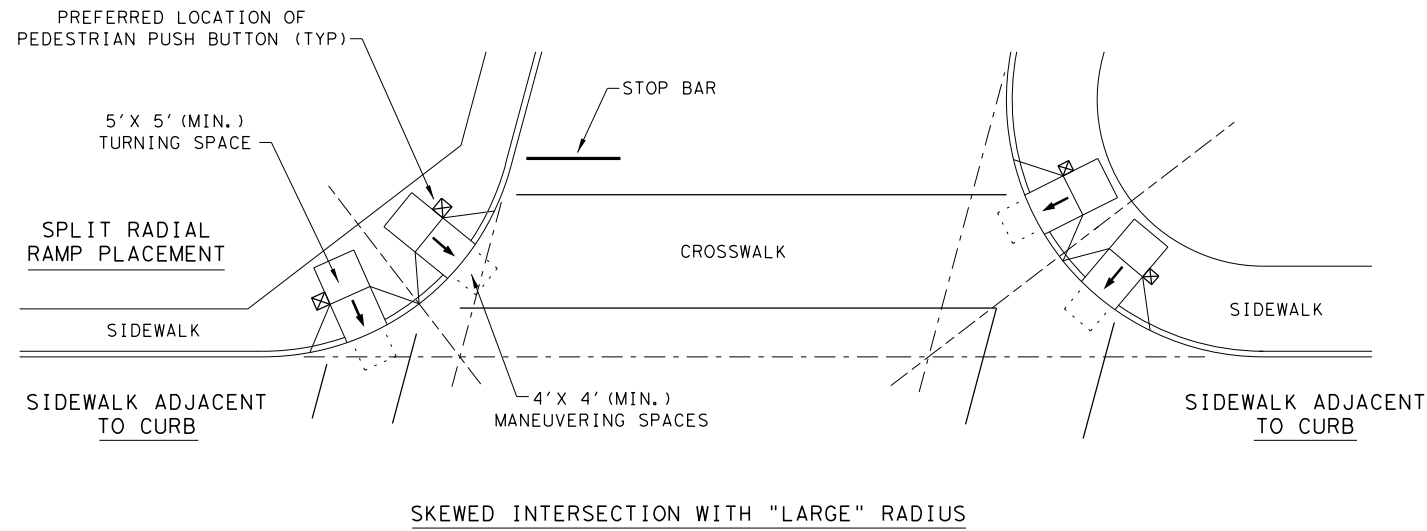
DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

		Design Division Standard	
<h2>PEDESTRIAN FACILITIES</h2> <h3>CURB RAMPS</h3> <h1>PED-18</h1>			
FILE: ped18	DN: TxDOT	DW: VP	CK: KM
© TxDOT: MARCH, 2002	CONT	SECT	JOB
REVISIONS	0915	46	052
REVISED 08, 2005	DIST	COUNTY	SHEET NO.
REVISED 06, 2012	SAT	GUADALUPE	230
REVISED 01, 2018			

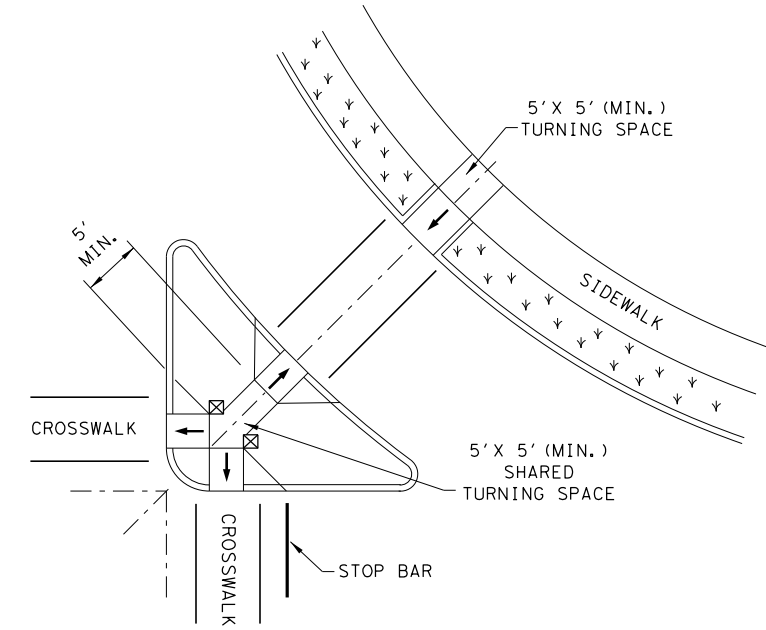
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DATE: 11/17/2023
 FILE: P:\127\75\00\Des\ign\Civil\Standards\Roadway\ped18.dgn

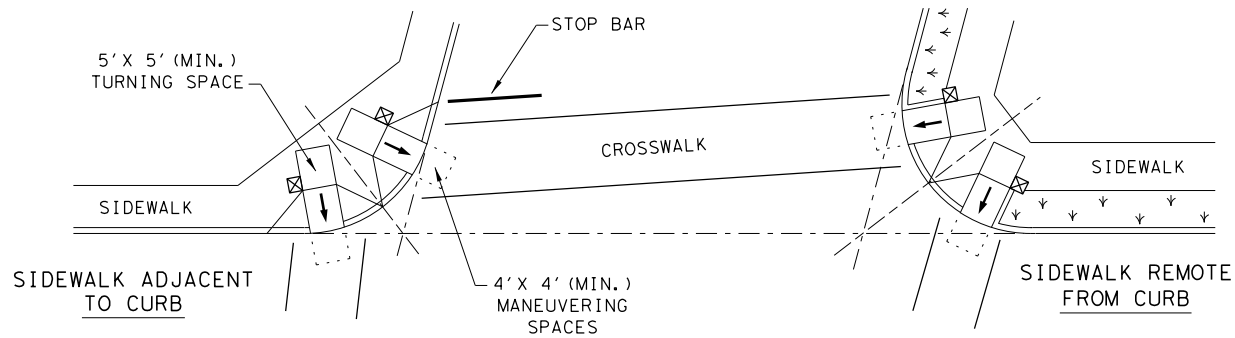
TYPICAL CROSSING LAYOUTS
 SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



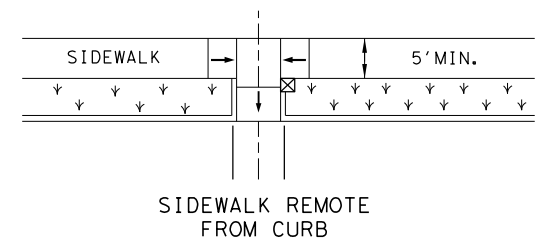
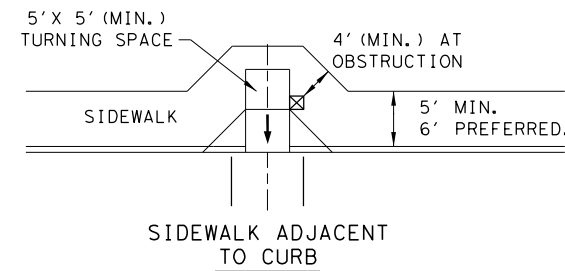
SKewed INTERSECTION WITH "LARGE" RADIUS



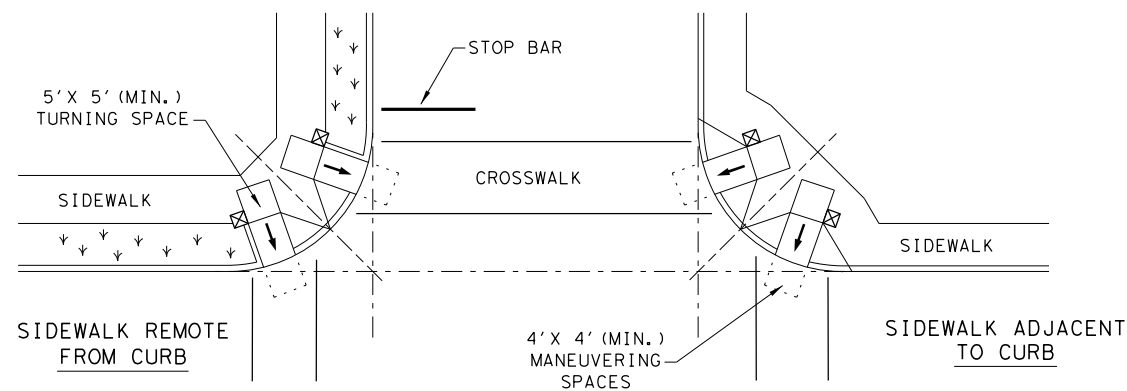
AT INTERSECTION
 W/FREE RIGHT TURN & ISLAND



SKewed INTERSECTION WITH "SMALL" RADIUS



MID-BLOCK PLACEMENT
 PERPENDICULAR RAMPS



NORMAL INTERSECTION WITH "SMALL" RADIUS

LEGEND:

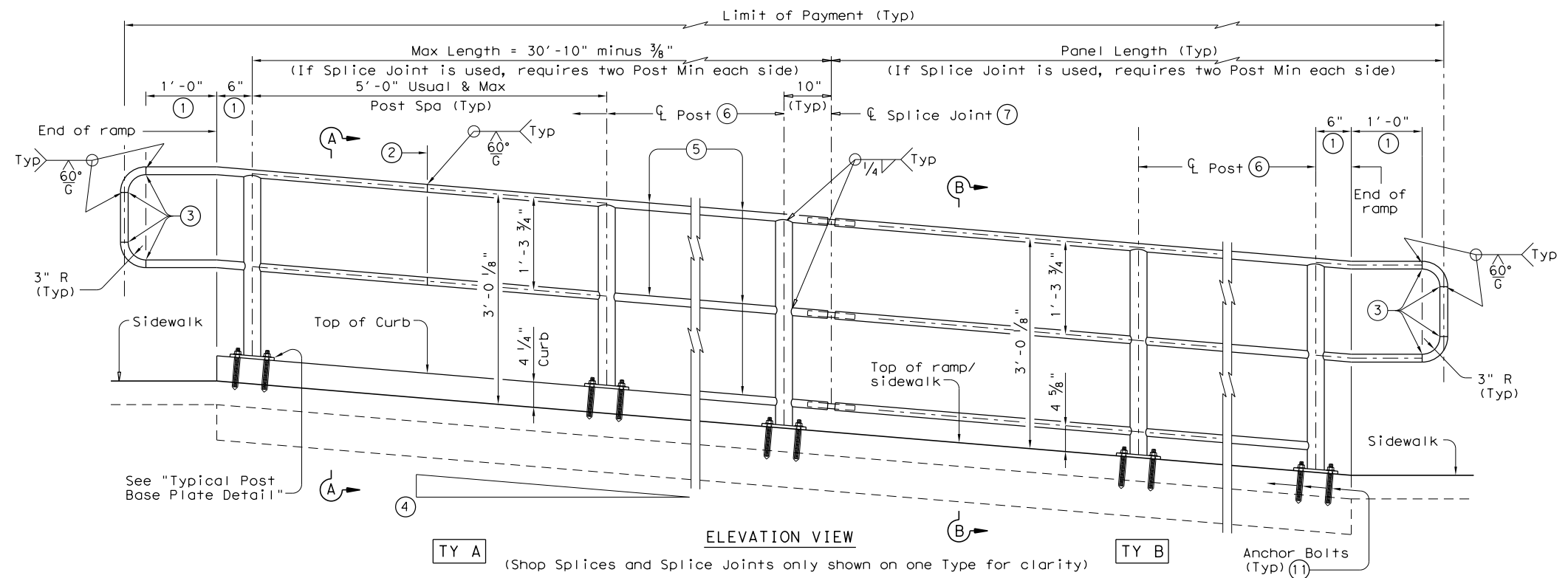
- SHOWS DOWNWARD SLOPE. →
- DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON (IF APPLICABLE). ☒
- DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH. ↙ ↘ ↙ ↘ ↙ ↘

SHEET 4 OF 4

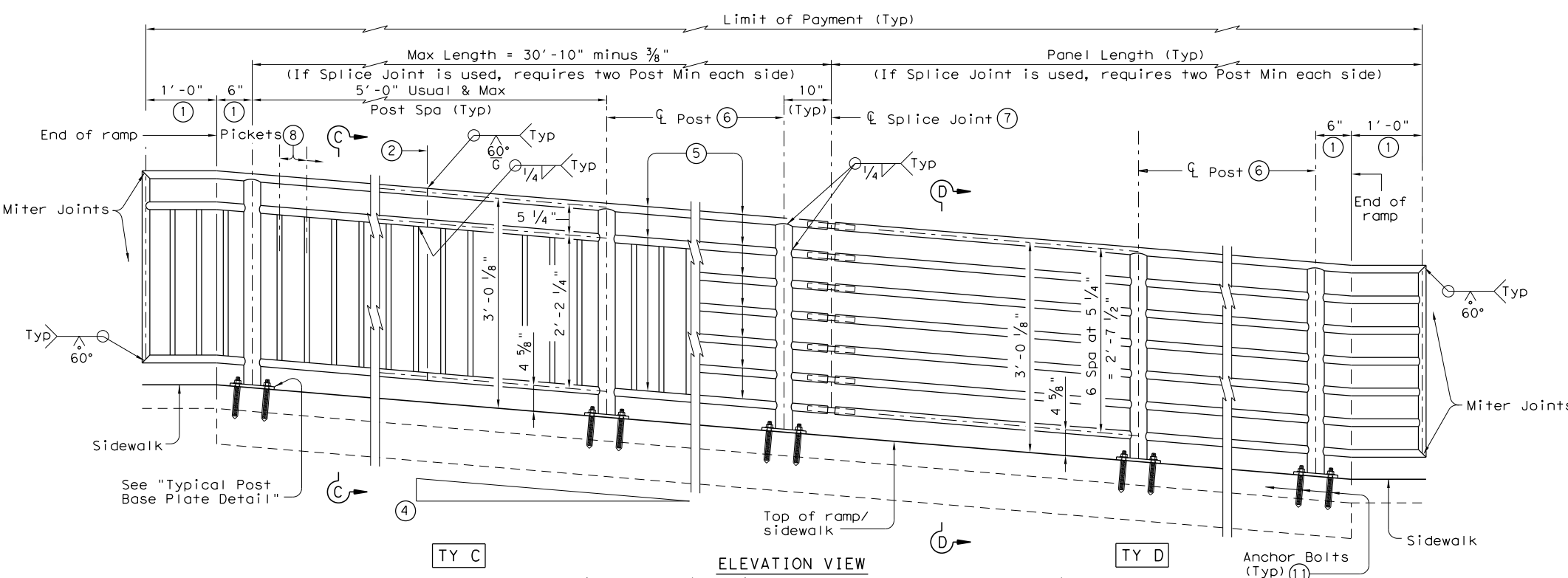
		Design Division Standard	
<h2>PEDESTRIAN FACILITIES</h2> <h3>CURB RAMPS</h3> <h1>PED-18</h1>			
FILE: ped18	DN: TxDOT	DW: VP	CK: KM
© TxDOT: MARCH, 2002	CONT: 0915	SECT: 46	JOB: 052
REVISIONS	DIST: COUNTY		SHEET NO.
REVISED 08, 2005	SAT		GUADALUPE
REVISED 06, 2012			231
REVISED 01, 2018			

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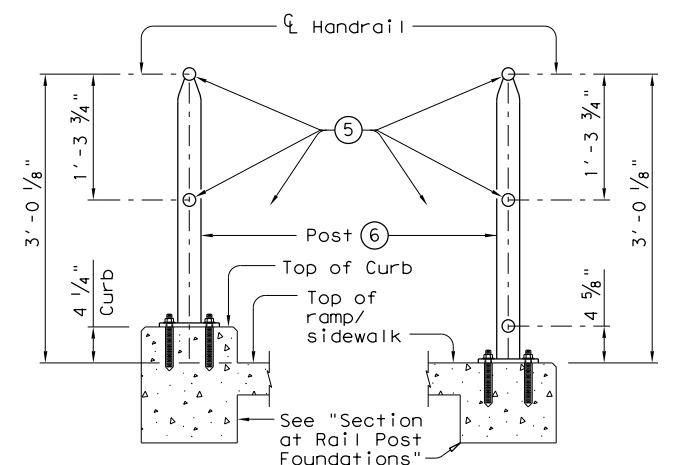


TY A (Shop Splices and Splice Joints only shown on one Type for clarity)

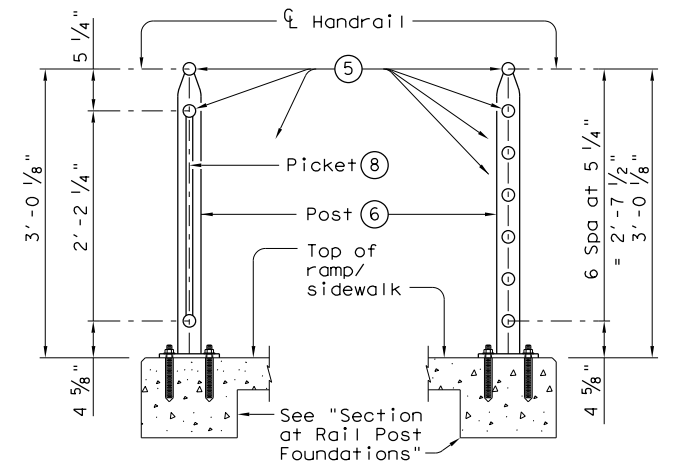


TY C (Shop Splices and Splice Joints only shown on one Type for clarity)

RECOMMENDED USAGE ⑨ ⑩	
Dropoff Height/Condition	Recommended Rail Options
< 30" dropoff	TY A, TY B, TY C, or TY D
≥ 30" dropoff, or along Bike Path	TY E or TY F



SECTION A-A (Showing Handrail TY A) SECTION B-B (Showing Handrail TY B)



SECTION C-C (Showing Handrail TY C) SECTION D-D (Showing Handrail TY D)

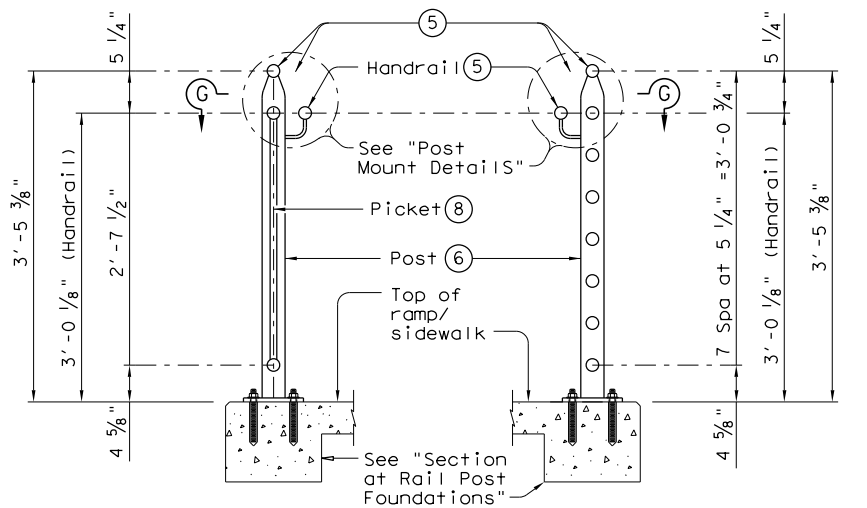
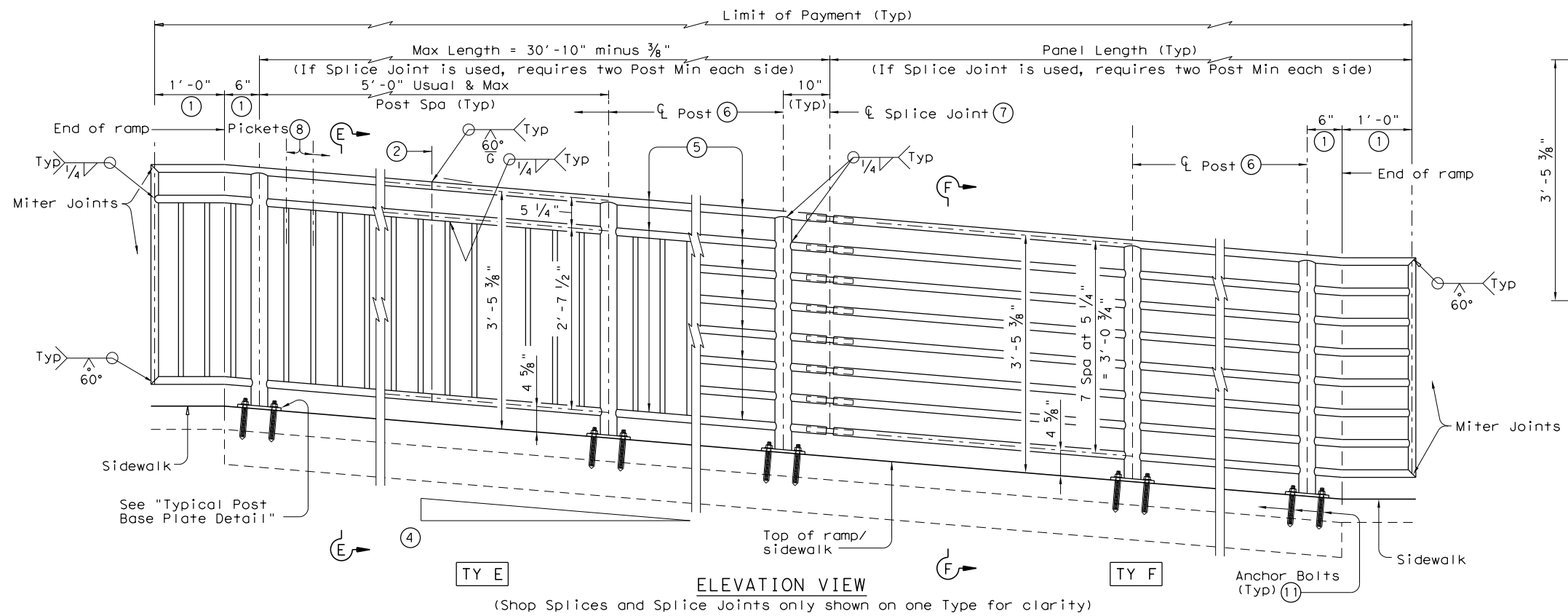
SHEET 1 OF 3

- ① Parallel to ground.
- ② One shop splice per panel is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
- ③ Shop splice is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
- ④ See Ramp Details located elsewhere in plans for ramp slope and dimensions. Maximum ramp slope will not exceed 8.3 percent. Level landing required for each 30" rise if grade exceeds 5 percent.
- ⑤ 1 1/2" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 1/2" Dia. pipe for galvanizing drainage and venting.
- ⑥ 2 1/2" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). See "Post Mount Detail" for crimping and trimming post to fit Dia. of top rail. Provide holes as needed in post for galvanizing drainage and venting. Plumb all posts.
- ⑦ See "Handrail Fabrication Details" for Splice Joints.
- ⑧ 5/8" Dia. Round Bar equal spacing at 4 1/2" Max. Plumb all pickets.
- ⑨ When needed for accessibility (grade > 5 percent) or as needed for pedestrian safety.
- ⑩ Not to be used on bridges.
- ⑪ See "General Notes" for anchor bolt information.

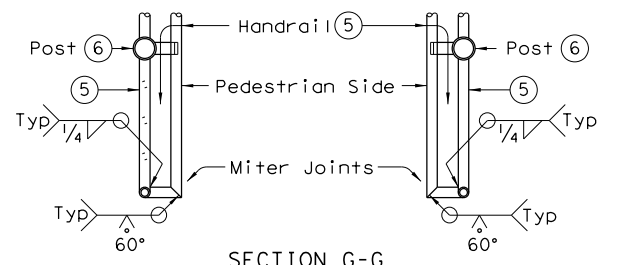
		Design Division Standard	
<h2>PEDESTRIAN HANDRAIL DETAILS</h2> <h3>PRD-13</h3>			
FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR
© TxDOT December 2006	CONT	SECT	JOB
REVISIONS	0915	46	052
REVISED MAY, 2013 (VP)	DIST	COUNTY	SHEET NO.
	SAT	GUADALUPE	232

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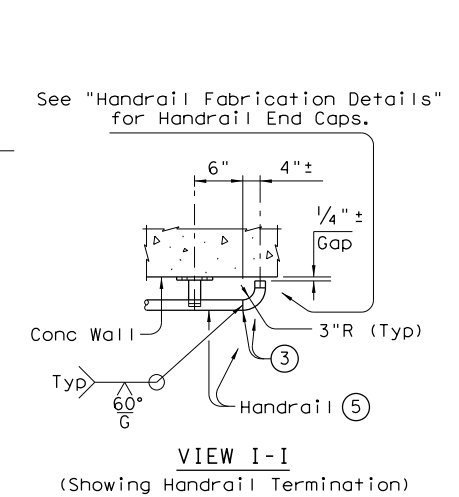
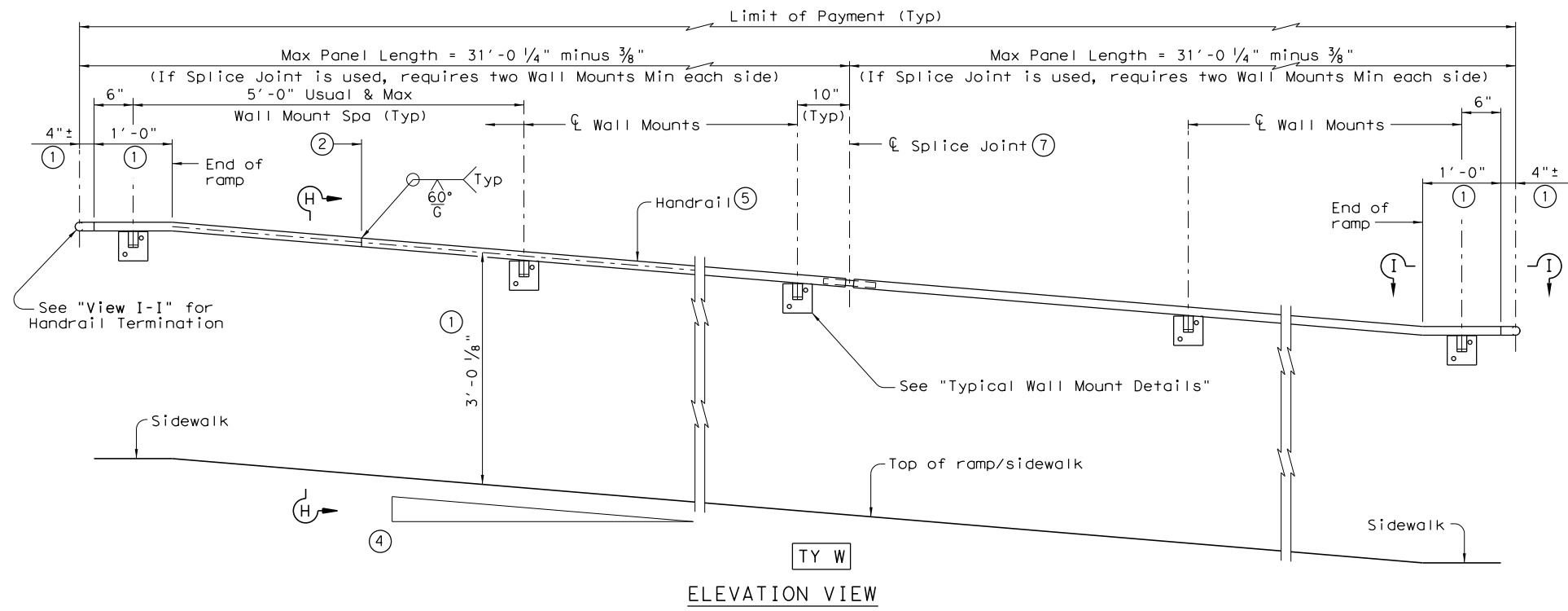
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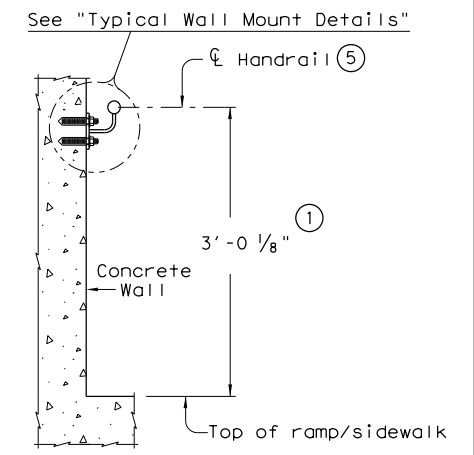
SECTION E-E (Showing Handrail TY E)
 SECTION F-F (Showing Handrail TY F)



SECTION G-G (Showing Handrail Termination)



VIEW I-I (Showing Handrail Termination)



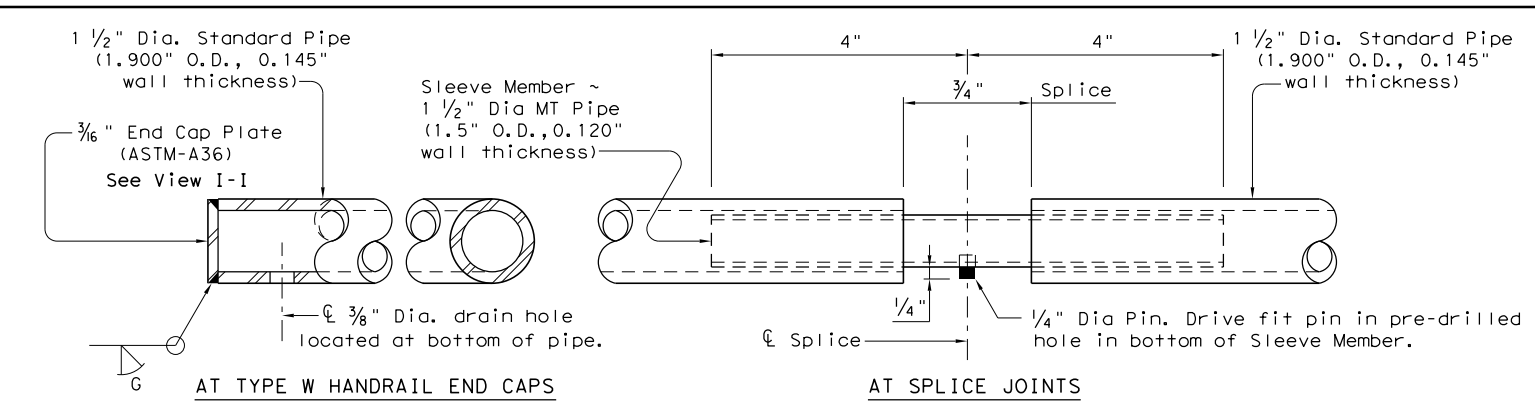
SECTION H-H (Showing Handrail TY W)

SHEET 2 OF 3

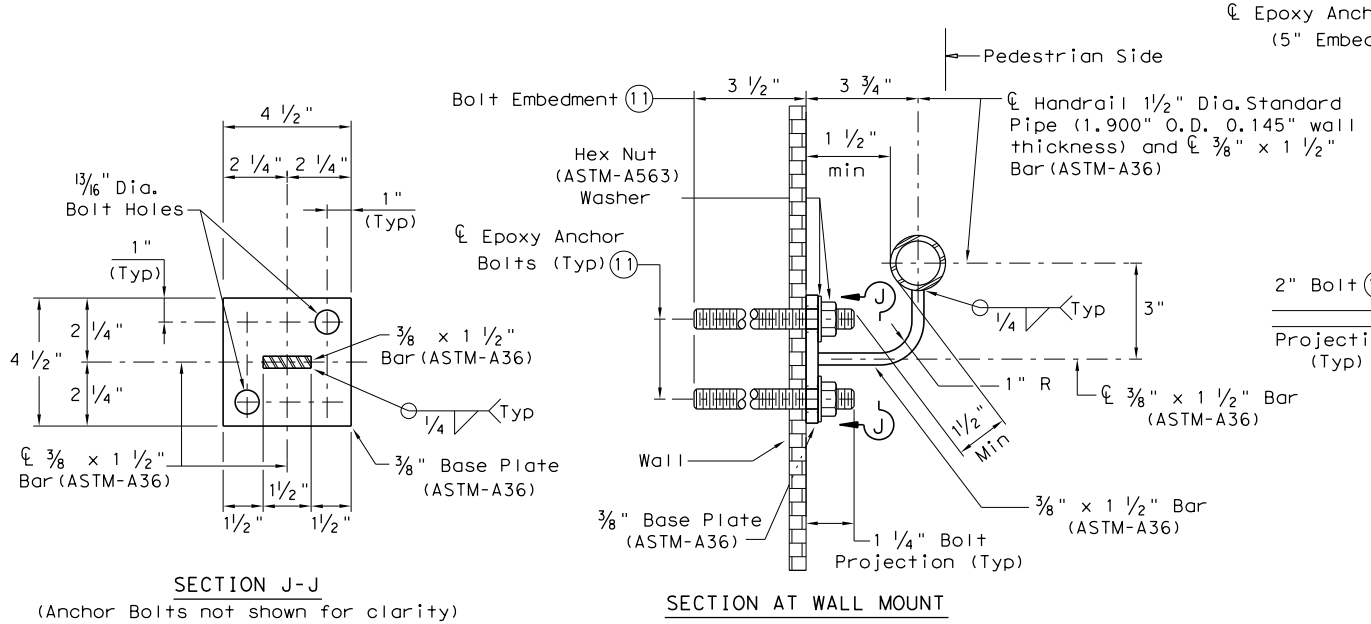
- ① Parallel to ground.
- ② One shop splice per panel is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
- ③ Shop splice is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
- ④ See Ramp Details located elsewhere in plans for ramp slope and dimensions. Maximum ramp slope will not exceed 8.3 percent. Level landing required for each 30" rise if grade exceeds 5 percent.
- ⑤ 1 1/2" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 1/2" Dia. pipe for galvanizing drainage and venting.
- ⑥ 2 1/2" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). See "Post Mount Detail" for crimping and trimming post to fit Dia. of top rail. Provide holes as needed in post for galvanizing drainage and venting. Plumb all posts.
- ⑦ See "Handrail Fabrication Details" for Splice Joints.
- ⑧ 5/8" Dia. Round Bar equal spacing at 4 1/2" Max. Plumb all pickets.
- ⑪ See "General Notes" for anchor bolt information.

		Design Division Standard	
<h2>PEDESTRIAN HANDRAIL DETAILS</h2> <h3>PRD-13</h3>			
FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR
© TxDOT December 2006	CONT	SECT	JOB
REVISIONS	0915	46	052
REVISED MAY, 2013 (VP)	DIST	COUNTY	SHEET NO.
	SAT	GUADALUPE	233

DATE: 11/17/2023
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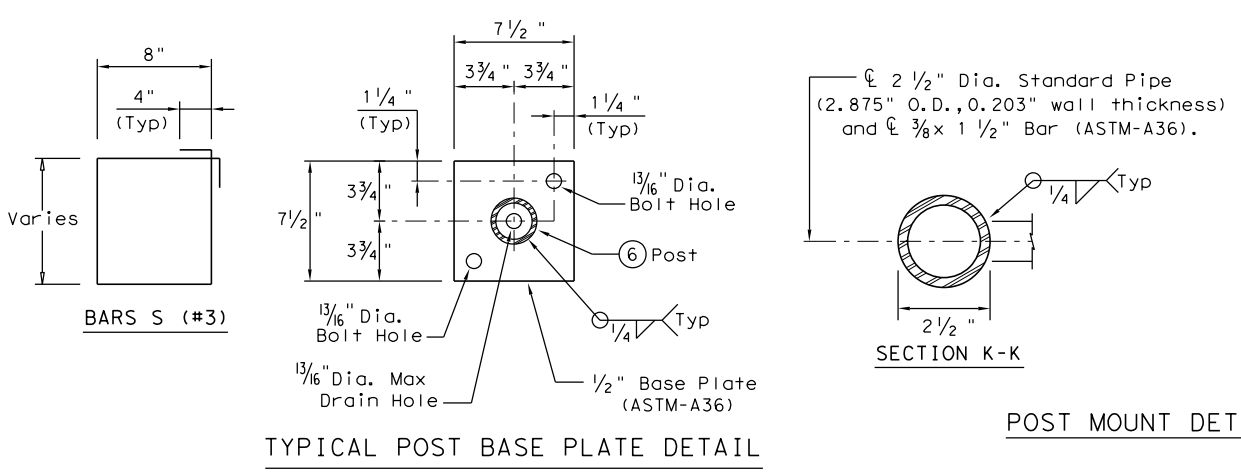


HANDRAIL FABRICATION DETAILS

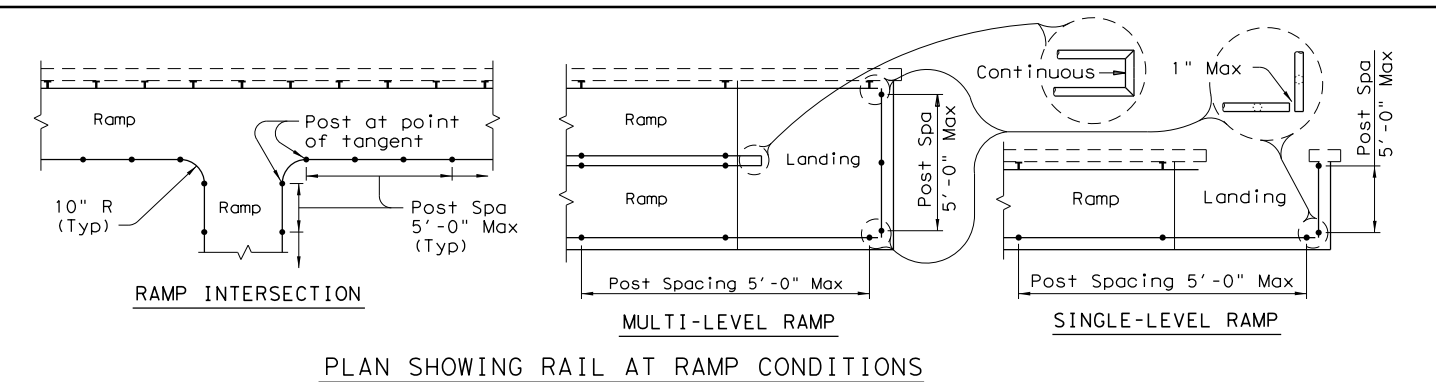


TYPICAL WALL MOUNT DETAILS

- (5) 1 1/2" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp/sidewalk. Provide holes as needed in 1 1/2" Dia. pipe for galvanizing drainage and venting.
- (6) 2 1/2" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). Plumb all posts. See "Post Mount Detail" for crimping and trimming post to fit the diameter of top rail. Provide holes as needed in post for galvanizing drainage and venting.
- (11) See "General Notes" for anchor bolt information.
- (12) Bars S(#3) spaced at 12" Max (Spaced 3" from outside edge of overall length of Ramp/Sidewalk).
- (13) Provide 1 1/2" end cover to Bars D(#4) from outside edge of overall length of Ramp/Sidewalk.



POST MOUNT DETAILS



PLAN SHOWING RAIL AT RAMP CONDITIONS

GENERAL NOTES

Designed according to ADAAG, Texas Accessibility Standards, Uniform Building Code, and AASHTO LRFD Specifications.

Handrail anchorage details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.

Pipe will conform to ASTM-A53 Grade B or A500 Grade B. Steel plates and steel bars will conform to ASTM-A36. Mechanical tubing (MT) will conform to ASTM A513 Grade 1015 or higher. Galvanize all steel components except reinforcing steel unless noted otherwise.

Concrete for foundations will be in accordance with Item 531 "Sidewalks". All reinforcing steel must be Grade 60. Bar laps, where required, will be as follows: Uncoated ~ #4 = 1'-5" Epoxy coated ~ #4 = 2'-1"

When the plans require painted steel, follow the requirements for painting galvanized steel in Item 446, "Cleaning and Painting Steel". Sleeve Members will receive galvanization and only get field painted after installation unless directed otherwise by Engineer.

Epoxy Anchor bolts for wall mount and post base plate will be 5/8" Dia. ASTM A36 threaded rods with one hex nut and one hardened steel washer at each bolt. 5/8" Dia. threaded rod embedment depth for wall mounts is 3 1/2" and embedment depth for post base plate is 5".

Embed threaded rods into concrete with a Type III (Class C) epoxy meeting the requirements of DMS-6100, "Epoxyes and Adhesives". Mix and dispense adhesive with the manufacturer's static mixing nozzle/dual cartridge system. Core drill holes (percussion drilling not permitted).

At the contractor's option the post base plate anchor bolts may be cast with the Ramp/Sidewalk (See Cast-in-Place Anchor Bolt Options).

Optional cast-in-place anchor bolts will be 5/8" Dia ASTM A307 Grade A bolts (or A36 threaded rods with one tack welded hex nut each) with one hex nut and one hardened steel washer at each bolt. Embedment depth of cast-in-place bolt will be 8" for post base plate.

Handrails and any wall or other surface adjacent to them will be free of any sharp or abrasive elements.

Submit shop drawings to the Engineer unless otherwise noted. For curved handrail applications, fabricate the handrail to the curve if radius is less than 600 ft. Shop drawings are required when rail is fabricated to the curve.

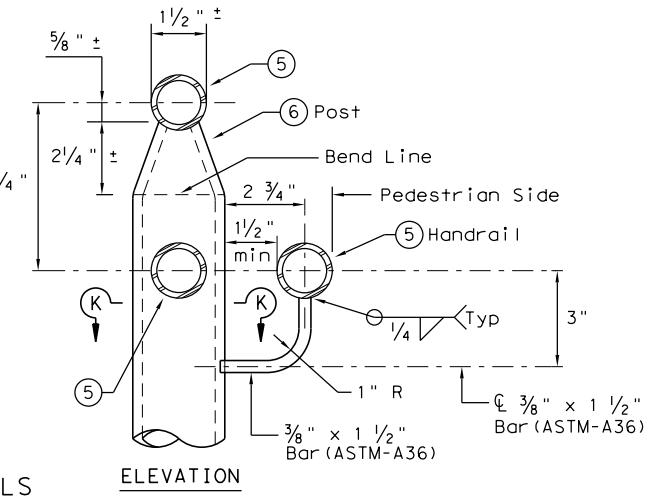
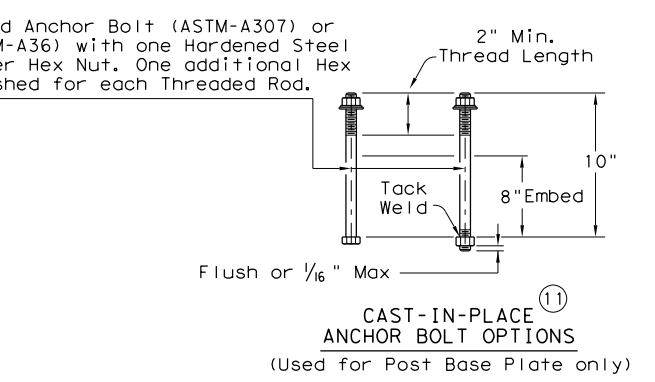
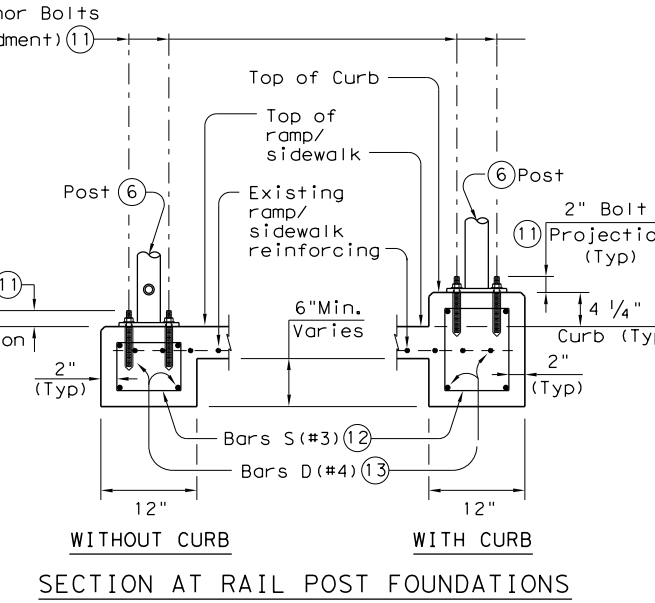
For all handrails, erection drawings will be submitted to the Engineer for approval to ensure proper installation.

Drawings will show handrail mount locations with bolts setting, spacing, ramp slope, and/or splice joint locations, and handrail lengths with identification showing where each handrail goes on the layout.

Payment for concrete sidewalks or curb ramps will be paid for in accordance with Item 531 "Sidewalks".

Payment for all items shown is to be included in unit price bid in accordance with Item 450 "Railing" of the type specified.

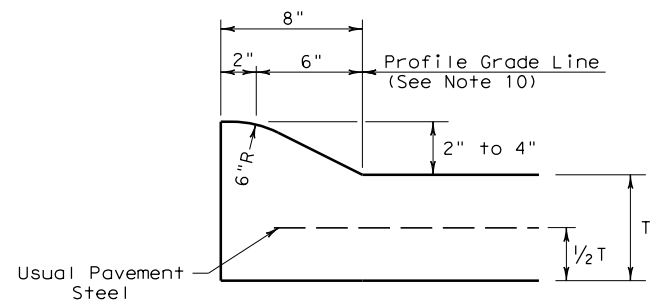
All exposed edges will be rounded or chamfered to approximately 1/8" by grinding.



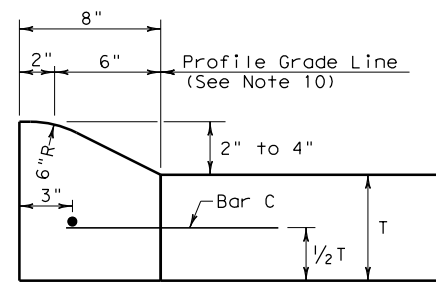
		Design Division Standard	
<h2>PEDESTRIAN HANDRAIL DETAILS</h2> <h3>PRD-13</h3>			
FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR
© TxDOT December 2006	CONT	SECT	JOB
REVISIONS	0915	46	052
REVISED MAY, 2013 (VP)	DIST	COUNTY	SHEET NO.
	SAT	GUADALUPE	234

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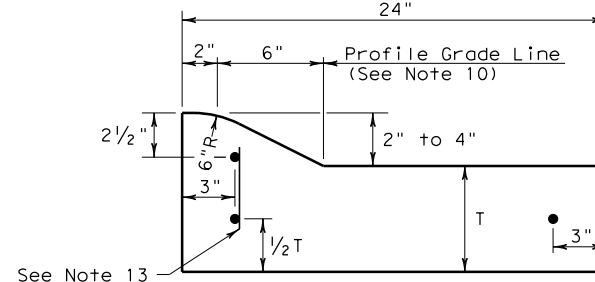
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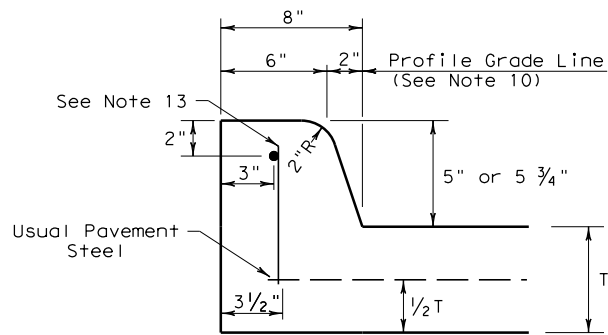
TYPE I CURB (MONOLITHIC)
 2" - 4" HEIGHT



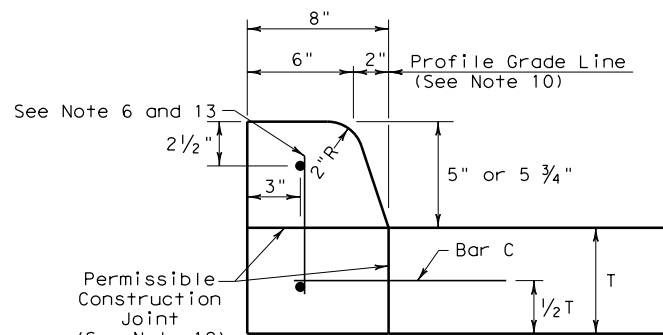
TYPE I CURB
 2" - 4" HEIGHT



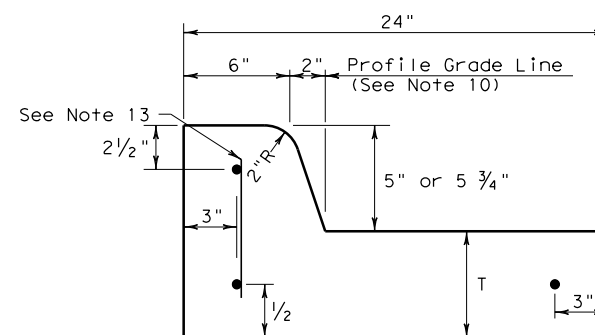
TYPE I CURB AND GUTTER
 2" - 4" HEIGHT



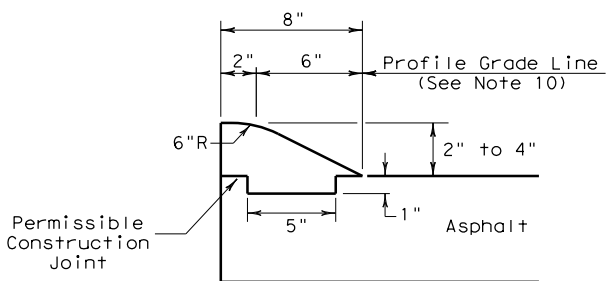
TYPE II CURB (MONOLITHIC)
 5" - 5 3/4" HEIGHT



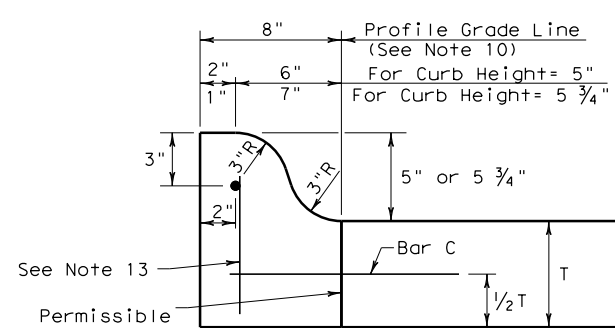
TYPE II CURB
 5" - 5 3/4" HEIGHT



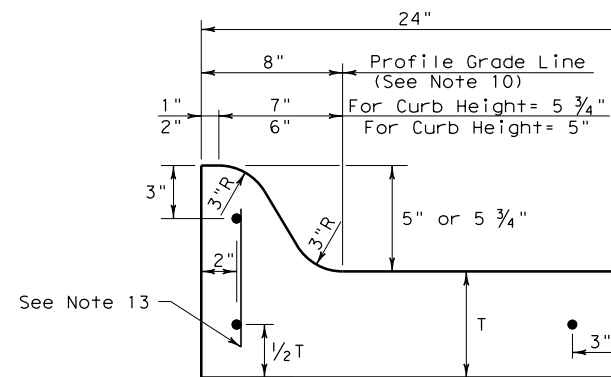
TYPE II CURB AND GUTTER
 5" - 5 3/4" HEIGHT



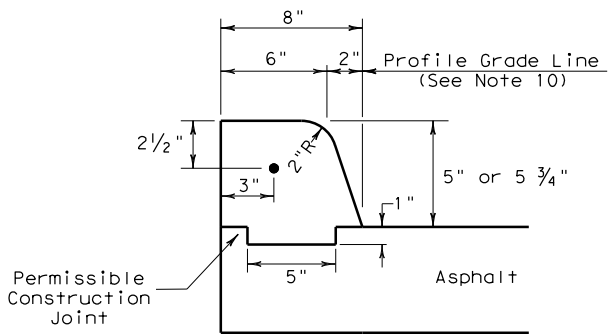
TYPE III CURB (KEYED)
 2" - 4" HEIGHT



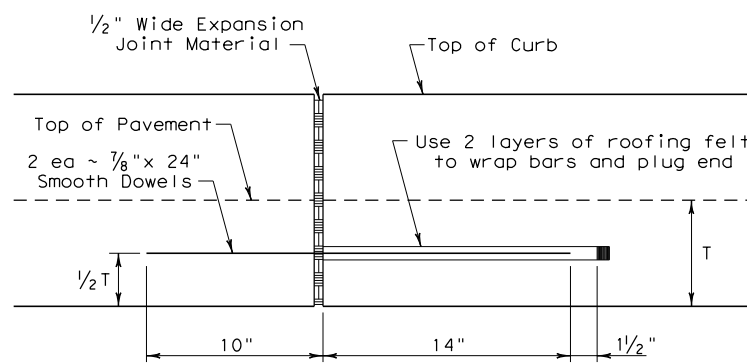
TYPE IIa CURB
 5" - 5 3/4" HEIGHT



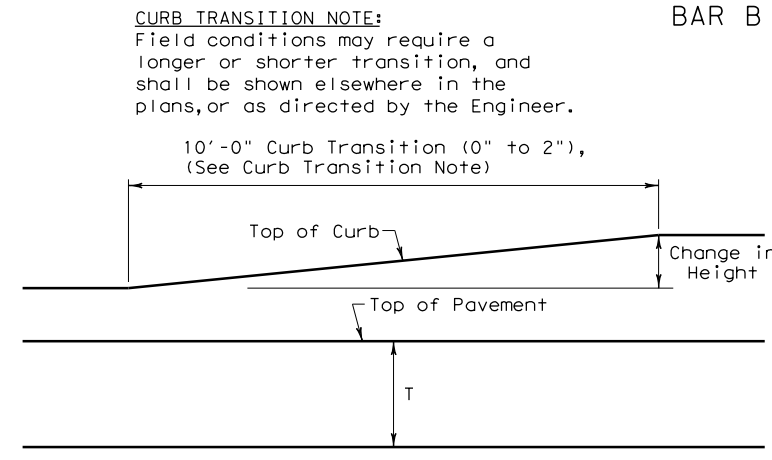
TYPE IIa CURB AND GUTTER
 5" - 5 3/4" HEIGHT



TYPE IV CURB (KEYED)
 5" - 5 3/4" HEIGHT



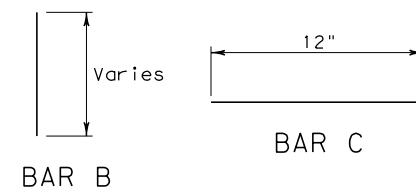
EXPANSION JOINT DETAIL



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.



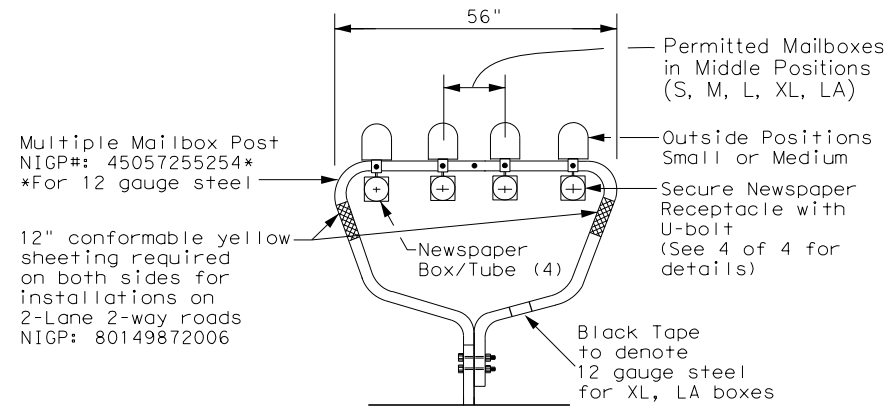
CURB TRANSITION NOTE:
 Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans, or as directed by the Engineer.

				Design Division Standard	
<h2>CONCRETE CURB AND GUTTER</h2> <h3>CCCG-22</h3>					
FILE: cccg21.dgn	DN: TxDOT	CK: AN	DW: CS	CK: KM	
© TxDOT: JUNE 2022	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0915	46	052	CORDOVA	
	DIST	COUNTY	SHEET NO.		
	SAT	GUADALUPE	235		

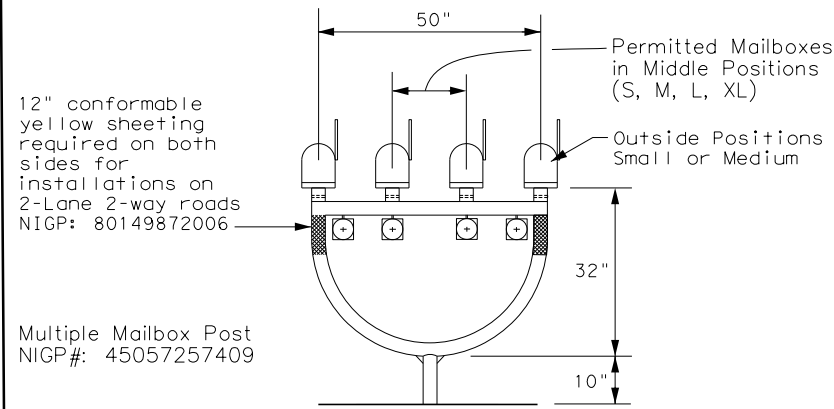
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TYPE 1 - MULTIPLE



TYPE 4 - MULTIPLE



MAILBOX SIZES

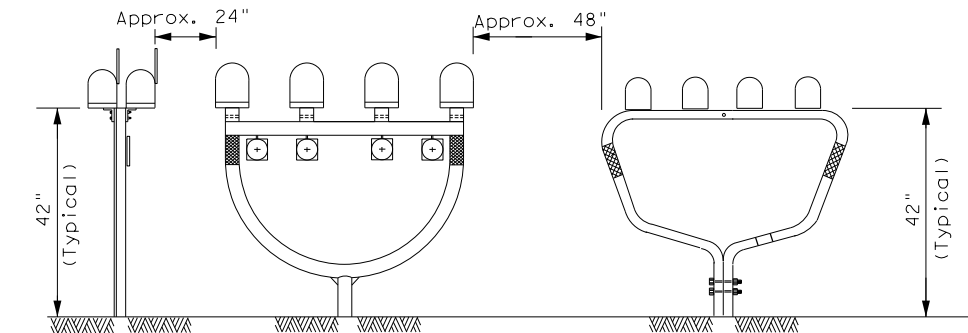
MAILBOX SIZE	TYPICAL DIMENSIONS			MAX ** WEIGHT
	LENGTH	WIDTH	HEIGHT	
SMALL	19 1/2"	6"	7"	6 LBS
MEDIUM	22 1/2" *	8" *	11 1/2" *	8 LBS
LARGE	23 1/2"	11 1/2"	13 1/2"	11 LBS
EXTRA LARGE	18"	14"	12"	13 LBS
LOCKABLE	18"	11 1/2"	15"	23 LBS

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.

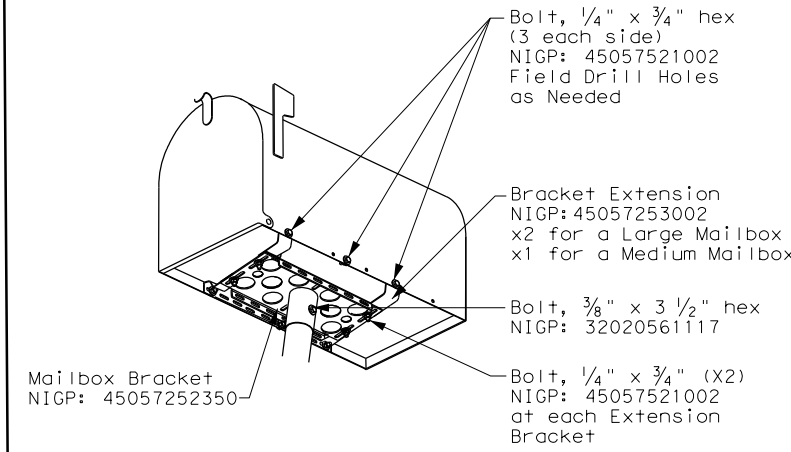
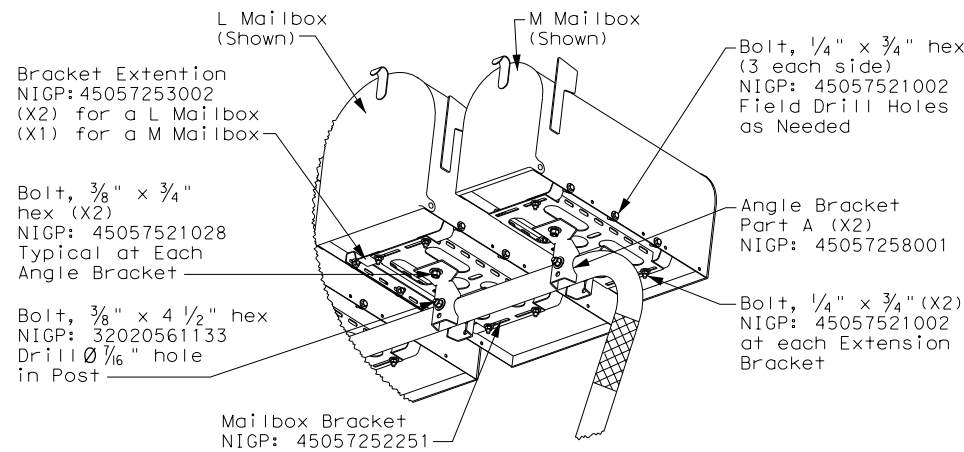
* See Note 1.
 ** Excluding Molded Plastic on 4 X 4 Post

TYPICAL INSTALLATION MEASUREMENTS

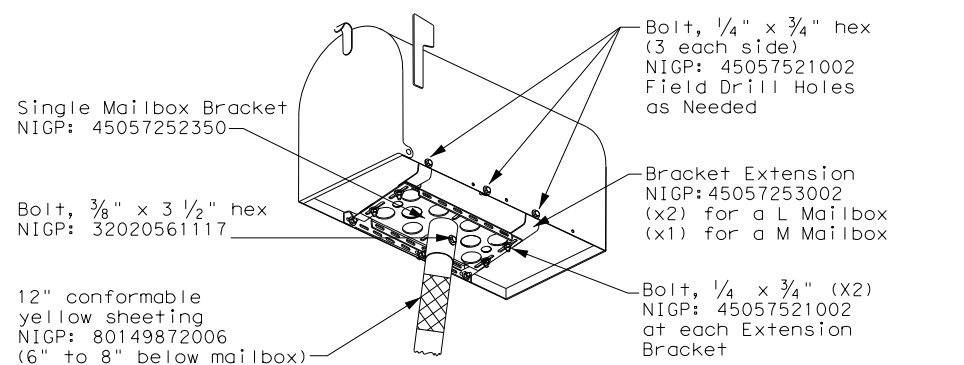


NOTE:

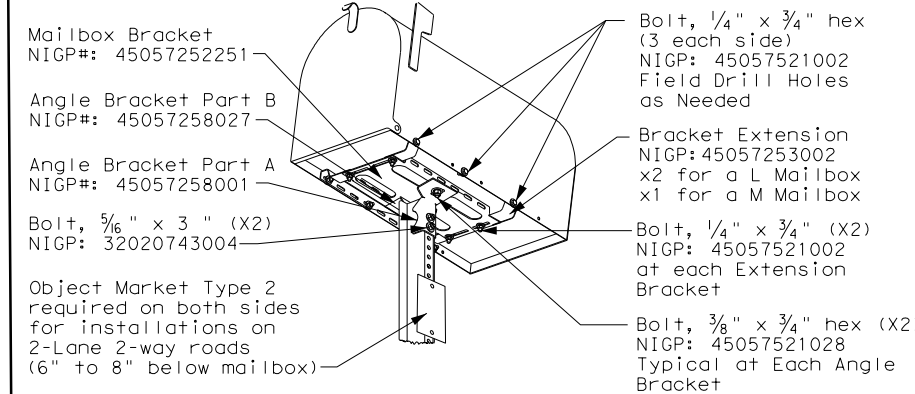
Mailbox installations in sidewalk areas shall be in accordance with the latest TxDOT Design Standard sheets PED-Pedestrian Facilities Curb Ramps.



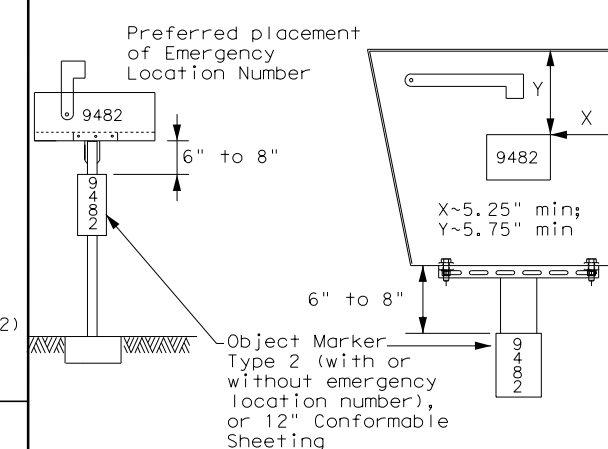
TYPE 2 and 4 - SINGLE/DOUBLE



TYPE 3 - SINGLE/DOUBLE

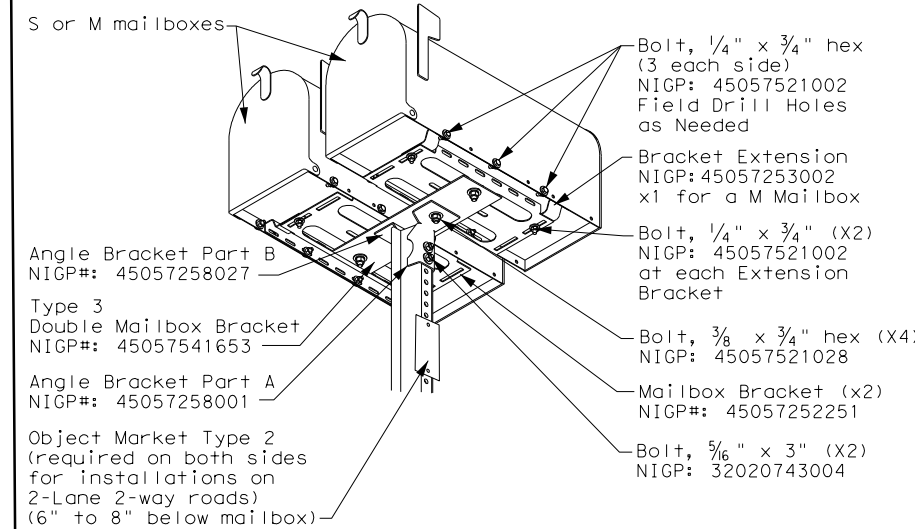
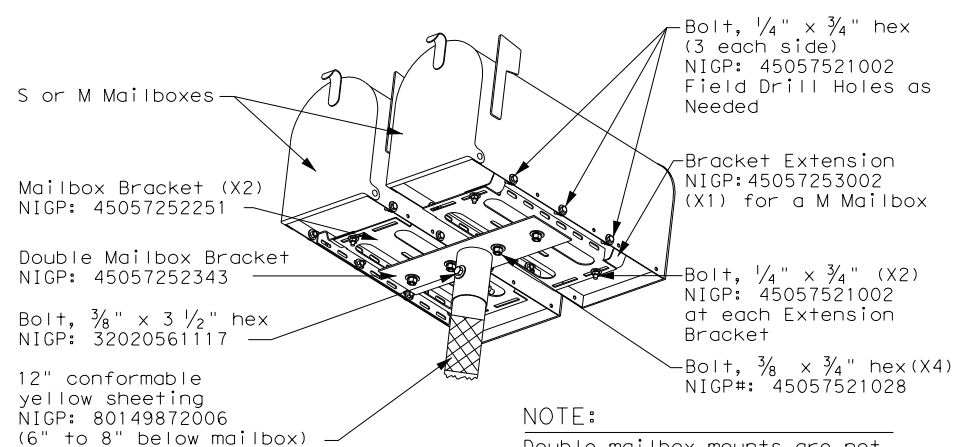


PLACEMENT OF EMERGENCY LOCATION NUMBER

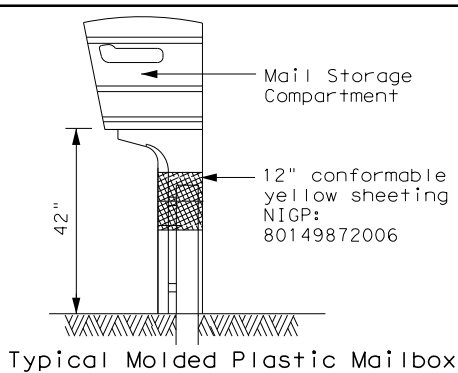


NOTES:

- 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.



TYPE 5



SHEET 1 OF 4



MAILBOX MOUNTING AND ASSEMBLY

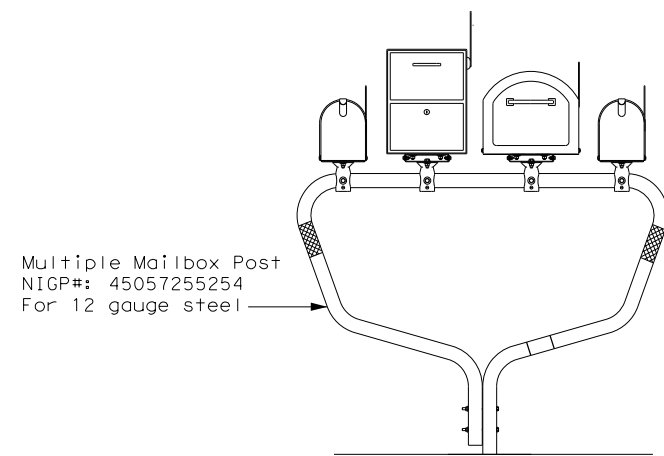
MB(1)-21

FILE: MB-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
2/2005	11/2009	4/2015		
6/2005	1/2011			
11/2006	7/2014			
	DIST	COUNTY		SHEET NO.
	SAT	GUADALUPE		236

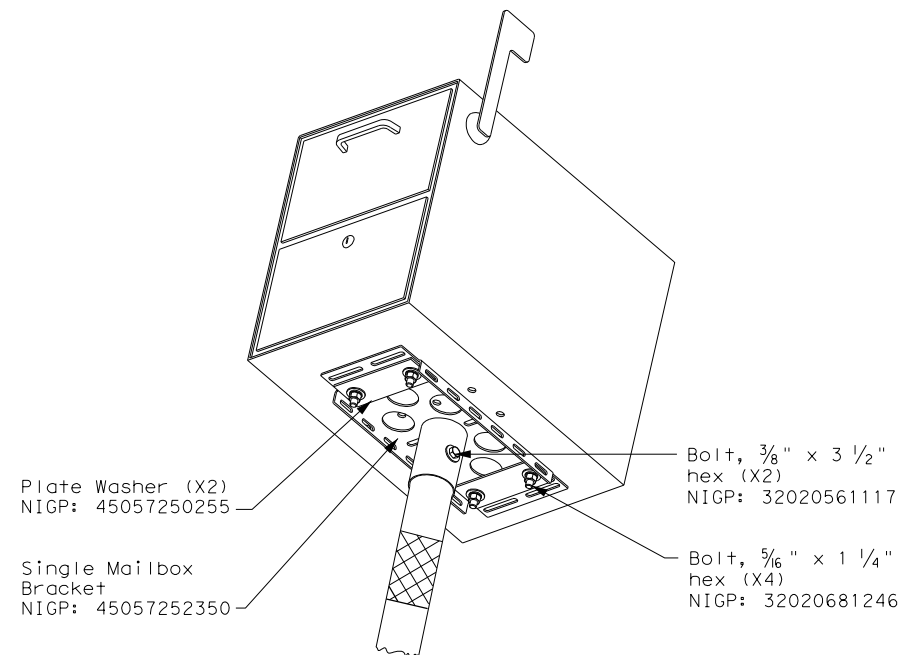
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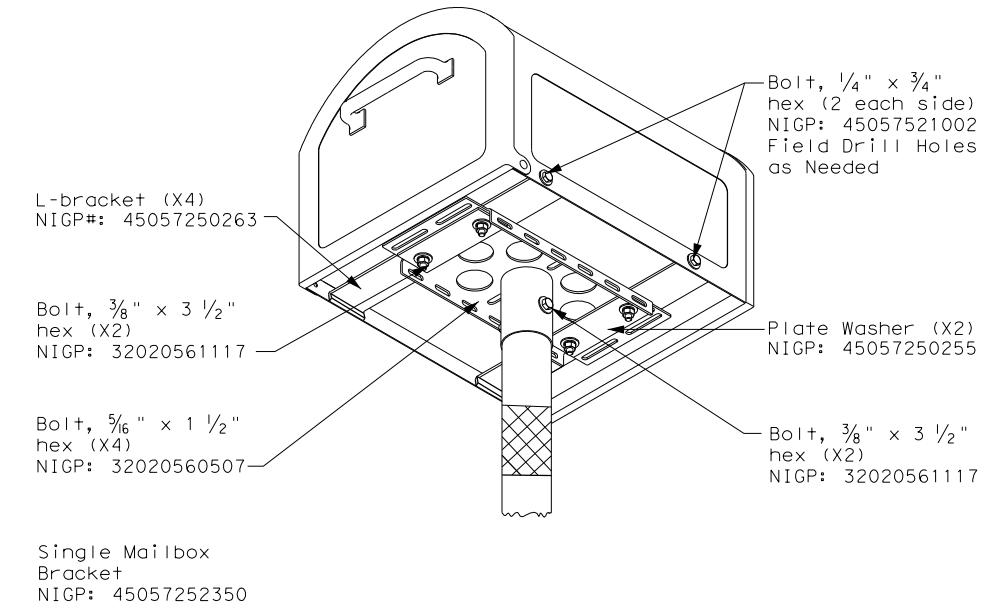
TYPE 1 - MULTI LOCKABLE AND XL MAILBOX



TYPE 2/4 - SINGLE LOCKABLE MAILBOX

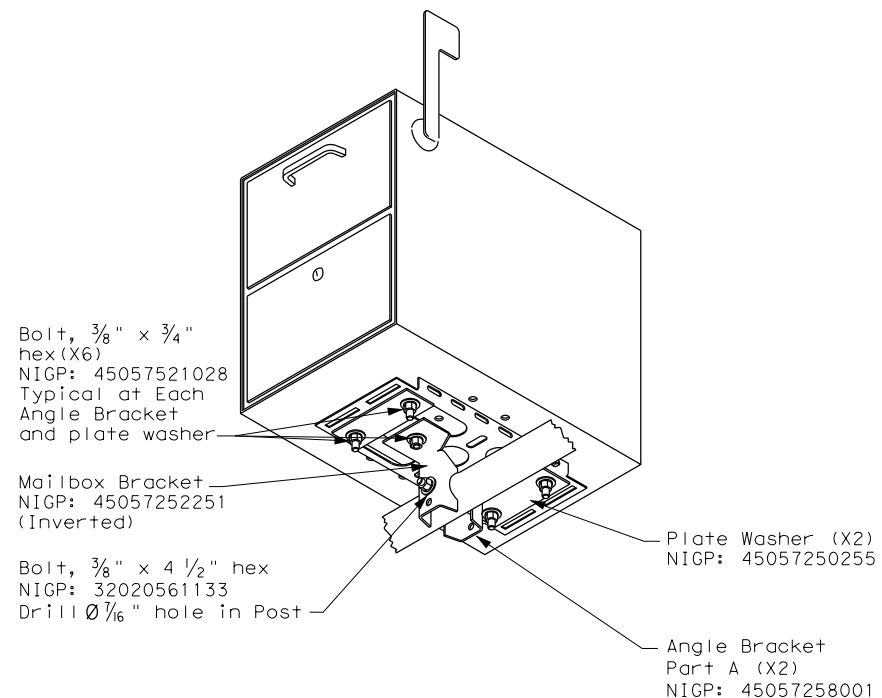


TYPE 2/4 - SINGLE XL MAILBOX

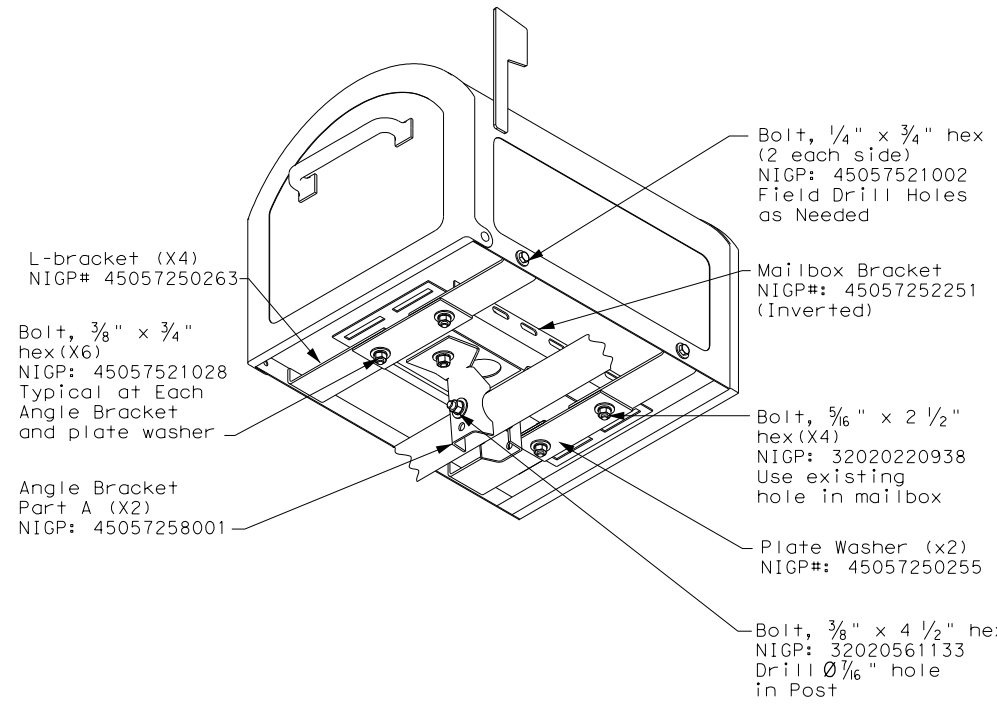


NOTE:
 Follow same configuration when mounting an XL mailbox on a Type 4 multi post.

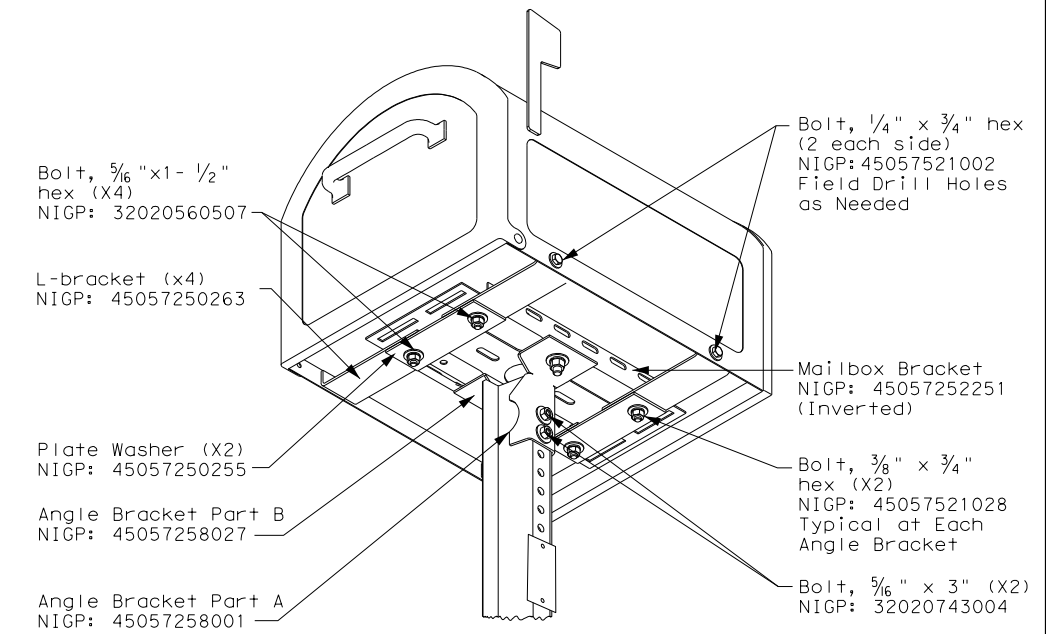
TYPE 1 MULTI - LOCKABLE ARCHITECTURAL (LA)



TYPE 1 MULTI - XL MAILBOX



TYPE 3 - XL MAILBOX MOUNTING



SHEET 2 OF 4

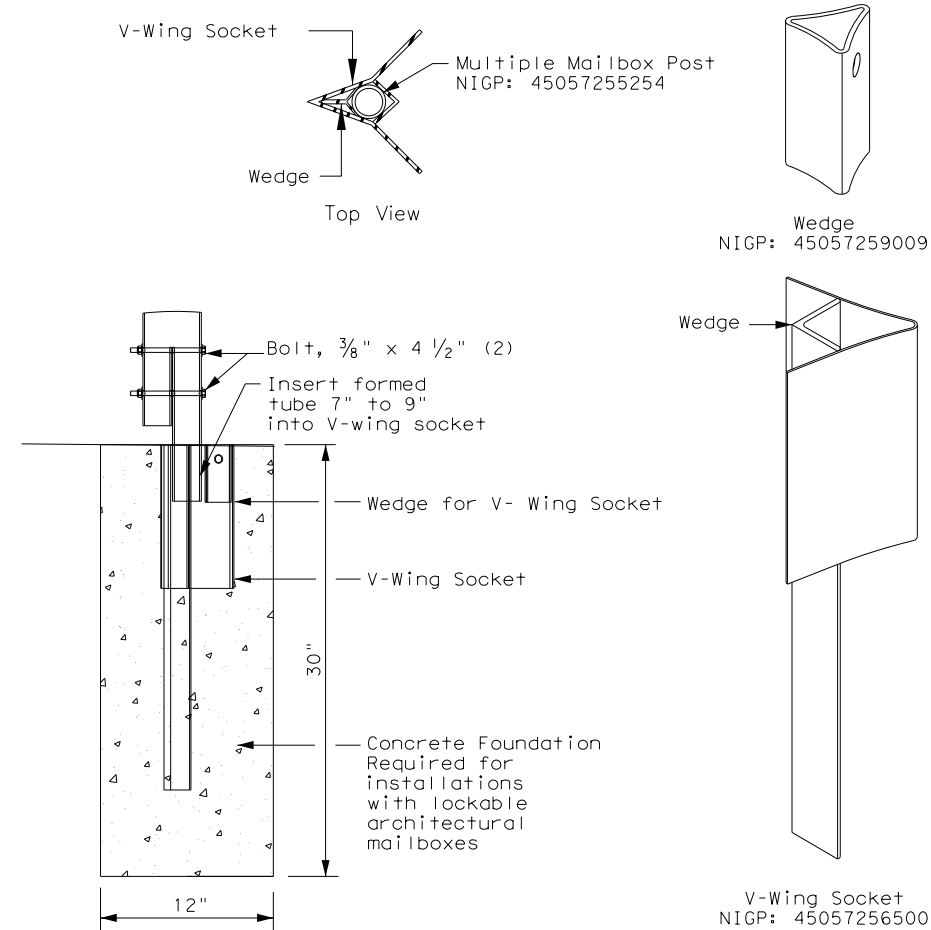
		Maintenance Division Standard	
<h2>XL AND LOCKABLE ARCHITECTURAL MAILBOX ASSEMBLY</h2> <h3>MB(2) - 21</h3>			
FILE: MB-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
© TxDOT March 2004	CONT	SECT	JOB
2/2005	0915	46	052
6/2005	DIST	COUNTY	SHEET NO.
11/2006	SAT	GUADALUPE	237

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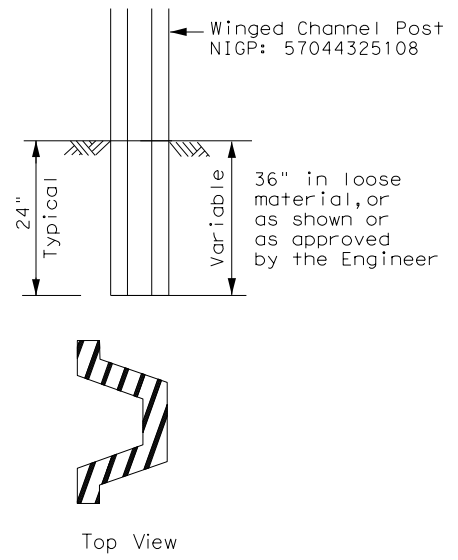
DATE: 11/17/2023 6:35:38 PM
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TYPE 1 - SUPPORT/FOUNDATION

Thin Wall Tube w/ V-LOC Anchorage

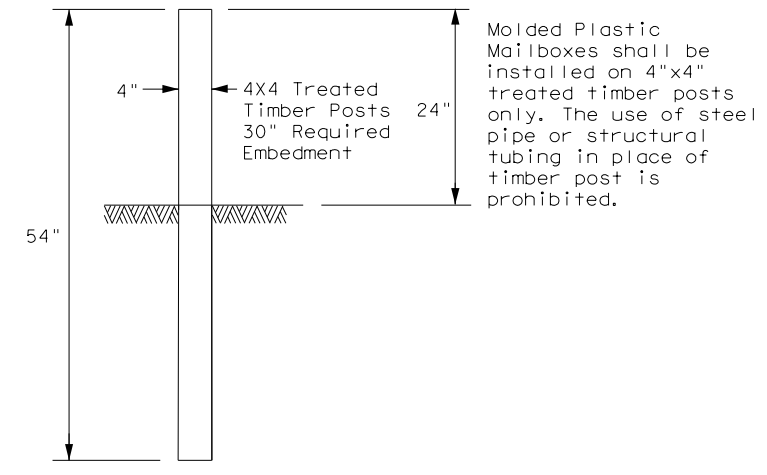


TYPE 3 - SUPPORT/FOUNDATION

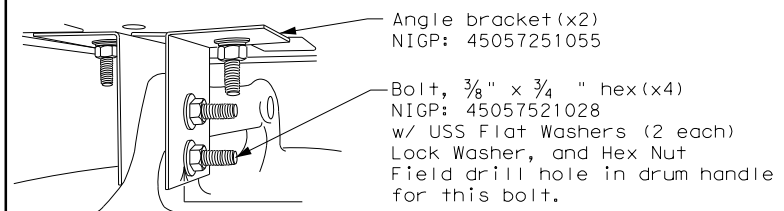


- NOTES:
1. Attach Object Marker (OM) facing direction of traffic.
 2. OM will also be required on opposite side if installed on a 2-Lane, 2-Way roadway.

TYPE 5 - SUPPORT/FOUNDATION



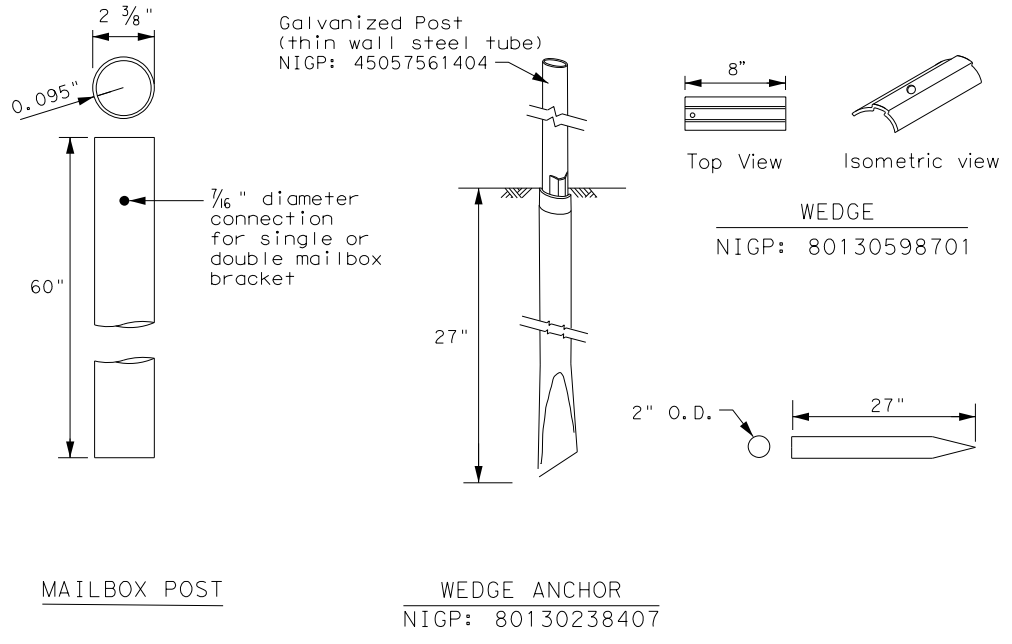
TYPE 6 - TEMPORARY MAILBOX SUPPORT



- 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

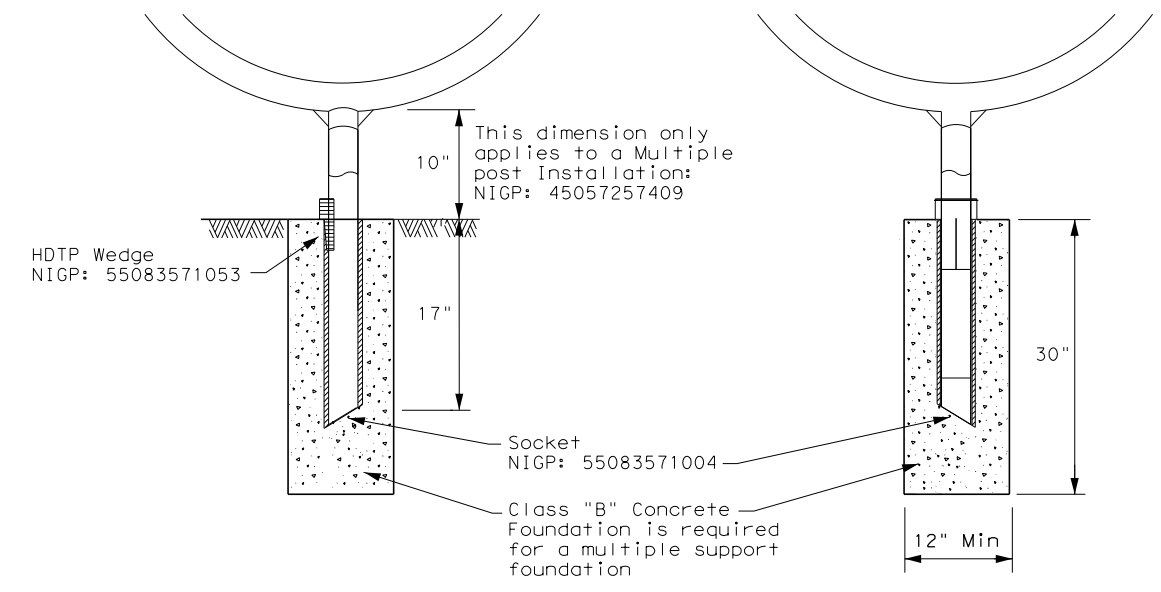


MAILBOX POST

WEDGE ANCHOR
 NIGP: 80130238407

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



MAILBOX SUPPORT AND FOUNDATION

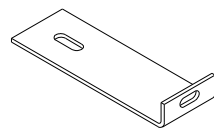
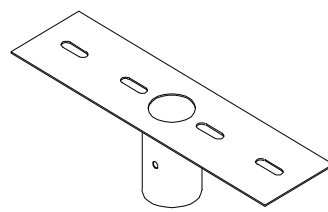
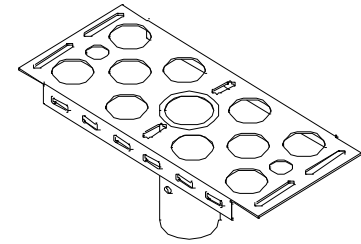
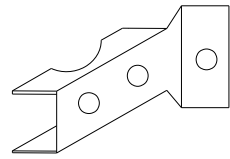
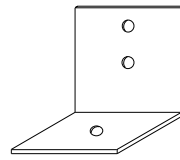
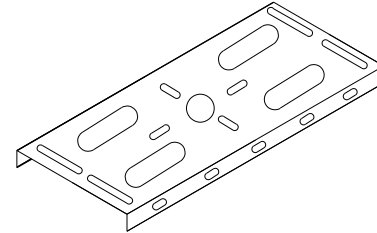
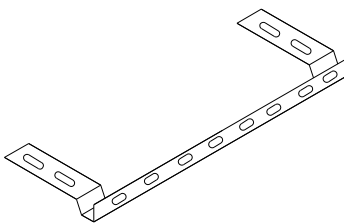
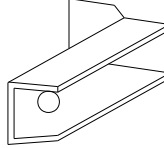
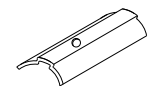

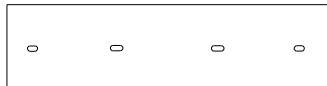
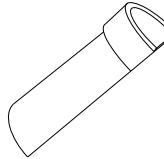
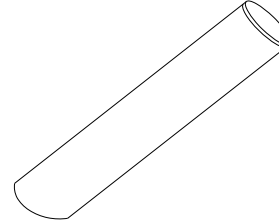

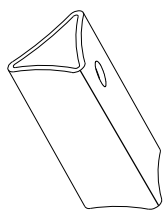
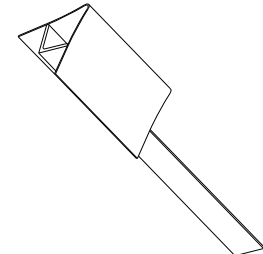
MB (3) - 21

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© TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
2/2005	11/2009	4/2015	DIST	COUNTY
6/2005	1/2011		SAT	SHEET NO.
11/2006	7/2014		GUADALUPE	238

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DATE: 11/17/2023 6:35:39 PM
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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) 45057252251 (Mailbox Bracket x2)	55083571053 (Wedge) 55083571004 (Socket) 45057253002 (Bracket Extension) 45057252350 (Single Mount Bracket) 45057250255 (Plate Washer for XL x2) 45057250263 (L-Bracket for XL x4)
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

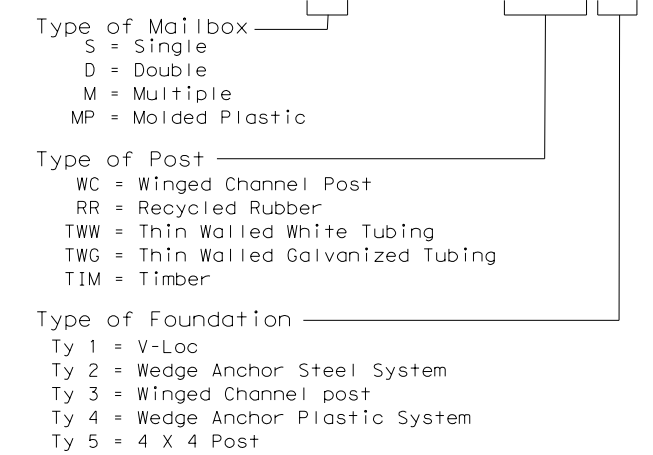
NIGP #	OBJECT MARKERS AND CONFORMABLE SHEETING
55008311759	Type 2 OM 4"x4" (3 Needed) for Type 3 Wing Channel Post
55008312906	Type 2 OM 6"x12" (1 needed) for Type 3 Wing Channel Post
80149872006	12" Conformable Reflective Yellow Sheeting for Flexible Posts

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)



SHEET 4 OF 4

 Texas Department of Transportation		Maintenance Division Standard	
<h2 style="margin: 0;">NIGP PARTS LIST AND COMPATIBILITY</h2> <h3 style="margin: 0;">MB(4) - 21</h3>			
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© TxDOT March 2004	CON: 0915	SECT: 46	JOB: 052
2/2005 6/2005	11/2009 1/2011	4/2015	COUNTY: GUADALUPE
11/2006 7/2014	SAT	SHEET NO. 239	

Plotted on: 11/17/2023

Design Filename: P:\127\75\00\Design\Civil\General\1277500-HaInData-RW.dgn

RW 01

Beginning chain RW01 description
Feature: Struc Wall

Curve Data

Curve RW01 1
P.I. Station 10+50.06 N 13,779,357.68 E 2,279,676.24
Delta = 6° 58' 43.61" (RT)
Degree = 6° 58' 43.61"
Tangent = 50.06
Length = 100.00
Radius = 821.00
External = 1.52
Long Chord = 99.94
Mid. Ord. = 1.52
P.C. Station 10+00.00 N 13,779,345.98 E 2,279,627.56
P.T. Station 11+00.00 N 13,779,363.38 E 2,279,725.98
C.C. N 13,778,547.71 E 2,279,819.48
Back = N 76° 29' 12.37" E
Ahead = N 83° 27' 55.97" E
Chord Bear = N 79° 58' 34.17" E

Course from PT RW01 1 to RW013 N 83° 31' 18.22" E Dist 10.00

Point RW013 N 13,779,364.50 E 2,279,735.91 Sta 11+10.00

Ending chain RW01 description

RW 02

Beginning chain RW02 description
Feature: Struc Wall

Point RW021 N 13,779,381.29 E 2,279,912.35 Sta 10+00.00

Course from RW021 to PC RW02 3 N 89° 05' 40.75" E Dist 93.31

Curve Data

Curve RW02 3
P.I. Station 10+99.83 N 13,779,382.87 E 2,280,012.17
Delta = 7° 10' 30.43" (RT)
Degree = 55° 05' 31.54"
Tangent = 6.52
Length = 13.02
Radius = 104.00
External = 0.20
Long Chord = 13.02
Mid. Ord. = 0.20
P.C. Station 10+93.31 N 13,779,382.77 E 2,280,005.65
P.T. Station 11+06.34 N 13,779,382.16 E 2,280,018.65
C.C. N 13,779,278.78 E 2,280,007.29
Back = N 89° 05' 40.75" E
Ahead = S 83° 43' 48.82" E
Chord Bear = S 87° 19' 04.04" E

Course from PT RW02 3 to PC RW02 6 S 83° 43' 48.82" E Dist 76.24

Curve Data

Curve RW02 6
P.I. Station 11+87.97 N 13,779,373.24 E 2,280,099.79
Delta = 7° 10' 30.43" (LT)
Degree = 66° 37' 22.80"
Tangent = 5.39
Length = 10.77
Radius = 86.00
External = 0.17
Long Chord = 10.76
Mid. Ord. = 0.17
P.C. Station 11+82.58 N 13,779,373.83 E 2,280,094.43
P.T. Station 11+93.34 N 13,779,373.33 E 2,280,105.18
C.C. N 13,779,459.32 E 2,280,103.82
Back = S 83° 43' 48.82" E
Ahead = N 89° 05' 40.75" E
Chord Bear = S 87° 19' 04.04" E

Course from PT RW02 6 to RW028 N 89° 05' 41.07" E Dist 10.67

Point RW028 N 13,779,373.50 E 2,280,115.85 Sta 12+04.02

Ending chain RW02 description

RW 03

Beginning chain RW03 description
Feature: Struc Wall

Point RW031 N 13,779,445.42 E 2,283,773.44 Sta 10+00.00

Course from RW031 to RW033 S 84° 41' 34.23" E Dist 171.69

Point RW033 N 13,779,429.54 E 2,283,944.39 Sta 11+71.69

Course from RW033 to RW034 S 84° 41' 34.23" E Dist 36.08

Point RW034 N 13,779,426.20 E 2,283,980.32 Sta 12+07.77

Ending chain RW03 description

RW 04

Beginning chain RW04 description
Feature: Struc Wall

Point RW041 N 13,779,420.24 E 2,284,044.54 Sta 10+00.00

Course from RW041 to PC RW04 3 S 84° 41' 34.22" E Dist 16.58

Curve Data

Curve RW04 3
P.I. Station 10+70.84 N 13,779,413.69 E 2,284,115.08
Delta = 2° 32' 18.99" (LT)
Degree = 2° 20' 22.41"
Tangent = 54.26
Length = 108.51
Radius = 2,449.00
External = 0.60
Long Chord = 108.50
Mid. Ord. = 0.60
P.C. Station 10+16.58 N 13,779,418.71 E 2,284,061.05
P.T. Station 11+25.08 N 13,779,411.07 E 2,284,169.28
C.C. N 13,781,857.21 E 2,284,287.57
Back = S 84° 41' 34.23" E
Ahead = S 87° 13' 53.21" E
Chord Bear = S 85° 57' 43.72" E

Ending chain RW04 description

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
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SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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RETAINING WALL HORIZONTAL ALIGNMENT DATA

SHEET 1 OF 2

CHK DGN:	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO.			HIGHWAY NO. CORDOVA
DWG:	DIST. SAT	COUNTY GUADALUPE	CONT. NO. 0915	SECT. NO. 46	JOB NO. 052	SHEET NO. 240

Plotted on: 11/17/2023

Design Filename: P:\127\75\00\Design\Civil\General\1277500_HaInData_RW.dgn

RW 05

Beginning chain RW05 description
Feature: Struc Wall

```

=====
Point RW051      N    13,779,329.33 E    2,283,801.51 Sta    10+00.00
Course from RW051 to RW053 S 84° 41' 34.22" E Dist 112.30
Point RW053      N    13,779,318.94 E    2,283,913.32 Sta    11+12.30
Course from RW053 to RW054 S 84° 41' 34.23" E Dist 56.79
Point RW054      N    13,779,313.69 E    2,283,969.87 Sta    11+69.08
=====
Ending chain RW05 description
  
```

RW 06

Beginning chain RW06 description
Feature: Struc Wall

```

=====
Point RW061      N    13,779,307.72 E    2,284,034.09 Sta    10+00.00
Course from RW061 to PC RW06 3 S 84° 41' 34.19" E Dist 16.58
  
```

Curve Data

```

Curve RW06 3
P.I. Station = 10+61.33 N 13,779,302.05 E 2,284,095.16
Delta = 2° 00' 06.23" (LT)
Degree = 2° 14' 10.93"
Tangent = 44.76
Length = 89.51
Radius = 2,562.00
External = 0.39
Long Chord = 89.50
Mid. Ord. = 0.39
P.C. Station = 10+16.58 N 13,779,306.19 E 2,284,050.59
P.T. Station = 11+06.08 N 13,779,299.47 E 2,284,139.84
C.C. = N 13,781,857.21 E 2,284,287.57
Back = S 84° 41' 34.23" E
Ahead = S 86° 41' 40.46" E
Chord Bear = S 85° 41' 37.34" E
  
```

Ending chain RW06 description

DESIGN

INTERIM REVIEW
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ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
----------	------	-------------	----



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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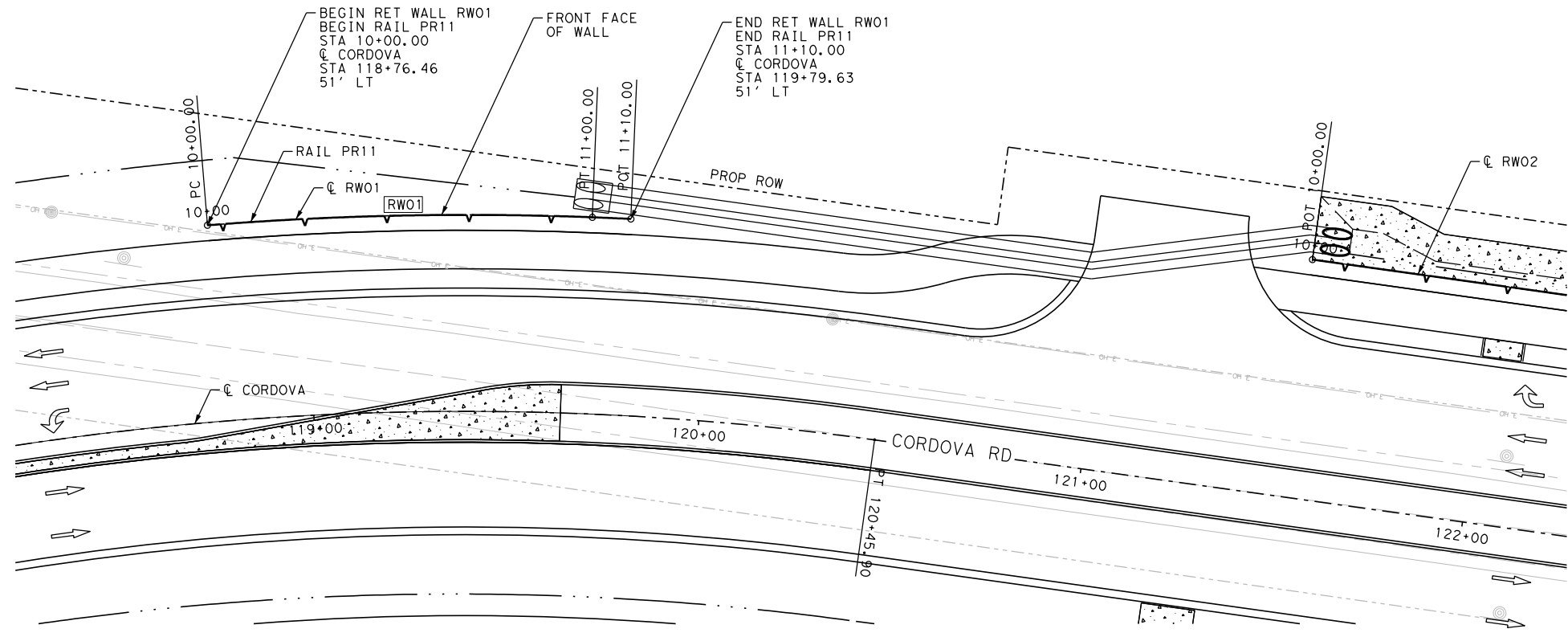
RETAINING WALL
HORIZONTAL ALIGNMENT
DATA

SHEET 2 OF 2

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	241

Plotted on: 11/17/2023

Design File name: P:\1275\00\Design\Civil\Retaining Wall\127500_RW01.dgn



LEGEND

- RETAINING WALL
- PROP ROW
- EXIST ROW
- DITCH FLOW LINE
- TRAFFIC FLOW
- CONC RIPRAP / DRIVEWAYS
- ARMOR CURB SLOTS

NOTES

1. SEE RETAINING WALL HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA.
2. SEE RETAINING WALL AESTHETIC DETAILS FOR AESTHETIC TREATMENTS AND SURFACE FINISHES.
3. ALL RETAINING WALL AESTHETIC TREATMENT AND DETAILS, INCLUDING FORM LINERS, CONCRETE FINISH/PAINT, COPING, ETC. WILL BE CONSIDERED SUBSIDIARY TO THE PAY ITEM 423 "RETAINING WALLS."
4. CONTRACTOR IS RESPONSIBLE FOR ENSURING TOP OF WALL ELEVATIONS ARE CONSTRUCTED TO THE ROADWAY EDGE OF PAVEMENT ELEVATIONS BASED ON FIELD CONDITIONS.
5. THE TOP OF THE LEVELING PAD WILL BE A MINIMUM OF 2'-0" BELOW THE PROPOSED FINISHED GRADE OR EXISTING GROUND, WHICHEVER IS LOWER.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

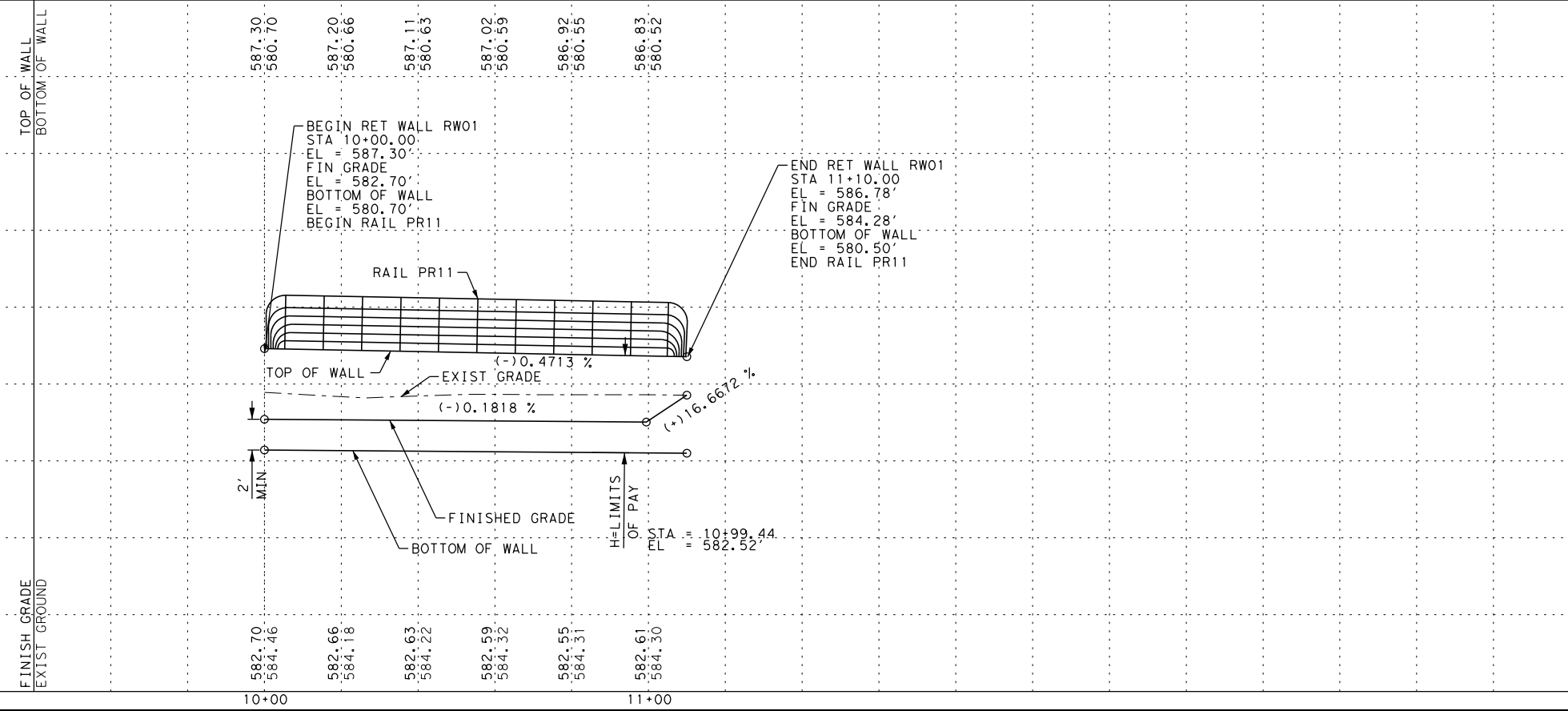
APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 40' PROFILE 1" = 10'



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS
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Texas Department of Transportation
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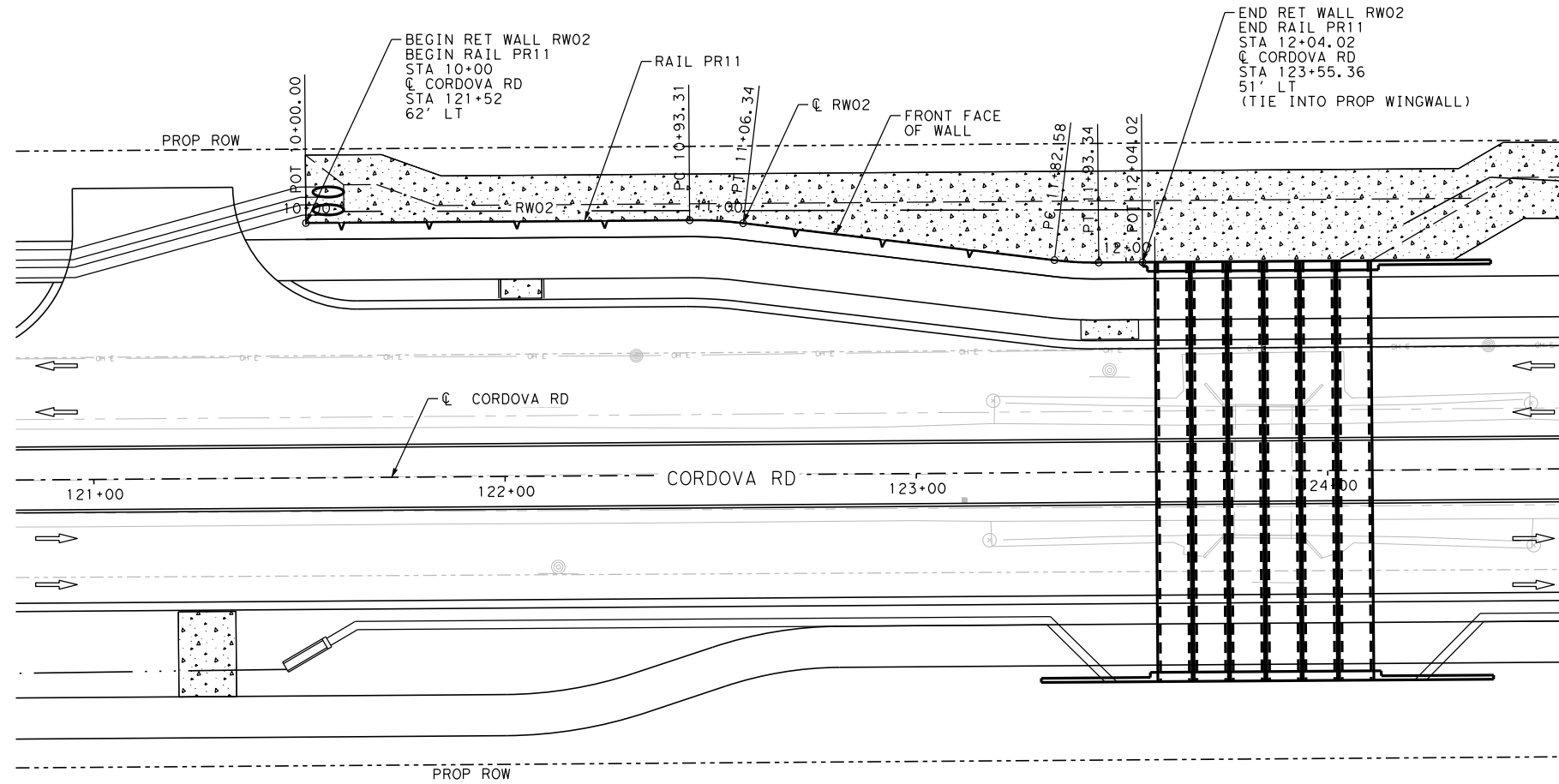
CORDOVA RD

RETAINING WALL
RW 01

SHEET 1 OF 6

CHK	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
DGN:	6	TEXAS		CORDOVA		
CHK	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
DWG:	SAT	GUADALUPE	0915	46	052	242

Plotted on: 11/17/2023



LEGEND

- RETAINING WALL
- PROP ROW
- EXIST ROW
- DITCH FLOW LINE
- TRAFFIC FLOW
- CONC RIPRAP / DRIVEWAYS
- ARMOR CURB SLOTS

NOTES

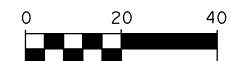
1. SEE RETAINING WALL HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA.
2. SEE RETAINING WALL AESTHETIC DETAILS FOR AESTHETIC TREATMENTS AND SURFACE FINISHES.
3. ALL RETAINING WALL AESTHETIC TREATMENT AND DETAILS, INCLUDING FORM LINERS, CONCRETE FINISH/PAINT, COPING, ETC. WILL BE CONSIDERED SUBSIDIARY TO THE PAY ITEM 423 "RETAINING WALLS."
4. CONTRACTOR IS RESPONSIBLE FOR ENSURING TOP OF WALL ELEVATIONS ARE CONSTRUCTED TO THE ROADWAY EDGE OF PAVEMENT ELEVATIONS BASED ON FIELD CONDITIONS.
5. THE TOP OF THE LEVELING PAD WILL BE A MINIMUM OF 2'-0" BELOW THE PROPOSED FINISHED GRADE OR EXISTING GROUND, WHICHEVER IS LOWER.

DESIGN

INTERIM REVIEW
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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

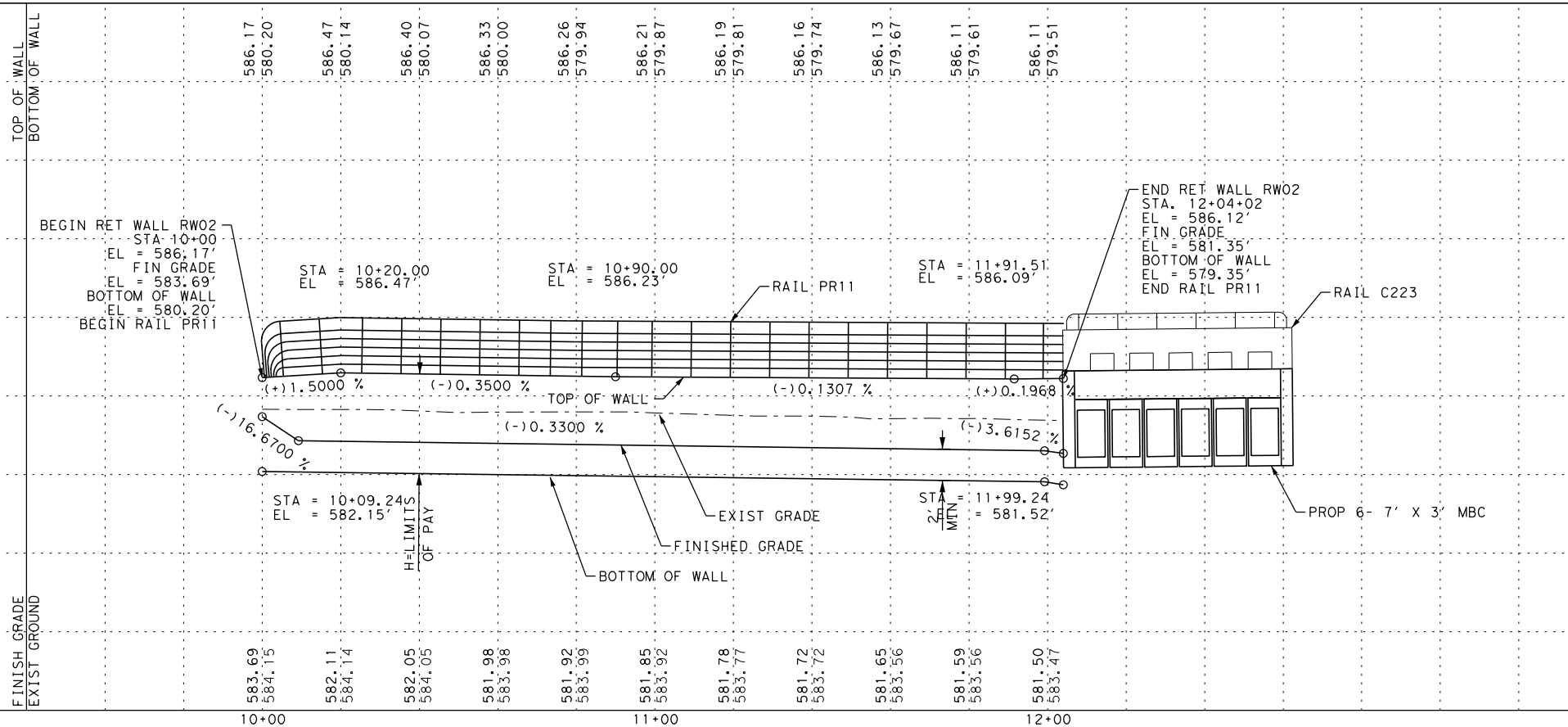
APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 40' PROFILE 1" = 10'

Design File name: P:\127175\00\Design\Civil\Retaining Wall\12717500_RW02.dgn



REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.


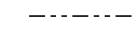
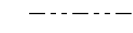
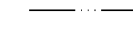

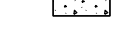
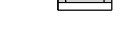


CORDOVA RD
RETAINING WALL
 RW 02

SHEET 2 OF 6

CHK	DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
		6	TEXAS		CORDOVA		
CHK	DGN:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
		SAT	GUADALUPE	0915	46	052	243

LEGEND

-  RETAINING WALL
-  PROP ROW
-  EXIST ROW
-  DITCH FLOW LINE
-  TRAFFIC FLOW
-  CONC RIPRAP / DRIVEWAYS
-  ARMOR CURB SLOTS

NOTES

1. SEE RETAINING WALL HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA.
2. SEE RETAINING WALL AESTHETIC DETAILS FOR AESTHETIC TREATMENTS AND SURFACE FINISHES.
3. ALL RETAINING WALL AESTHETIC TREATMENT AND DETAILS, INCLUDING FORM LINERS, CONCRETE FINISH/PAINT, COPING, ETC. WILL BE CONSIDERED SUBSIDIARY TO THE PAY ITEM 423 "RETAINING WALLS."
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5. THE TOP OF THE LEVELING PAD WILL BE A MINIMUM OF 2'-0" BELOW THE PROPOSED FINISHED GRADE OR EXISTING GROUND, WHICHEVER IS LOWER.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 40' PROFILE 1" = 10'

REV. NO.	DATE	DESCRIPTION	BY



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 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



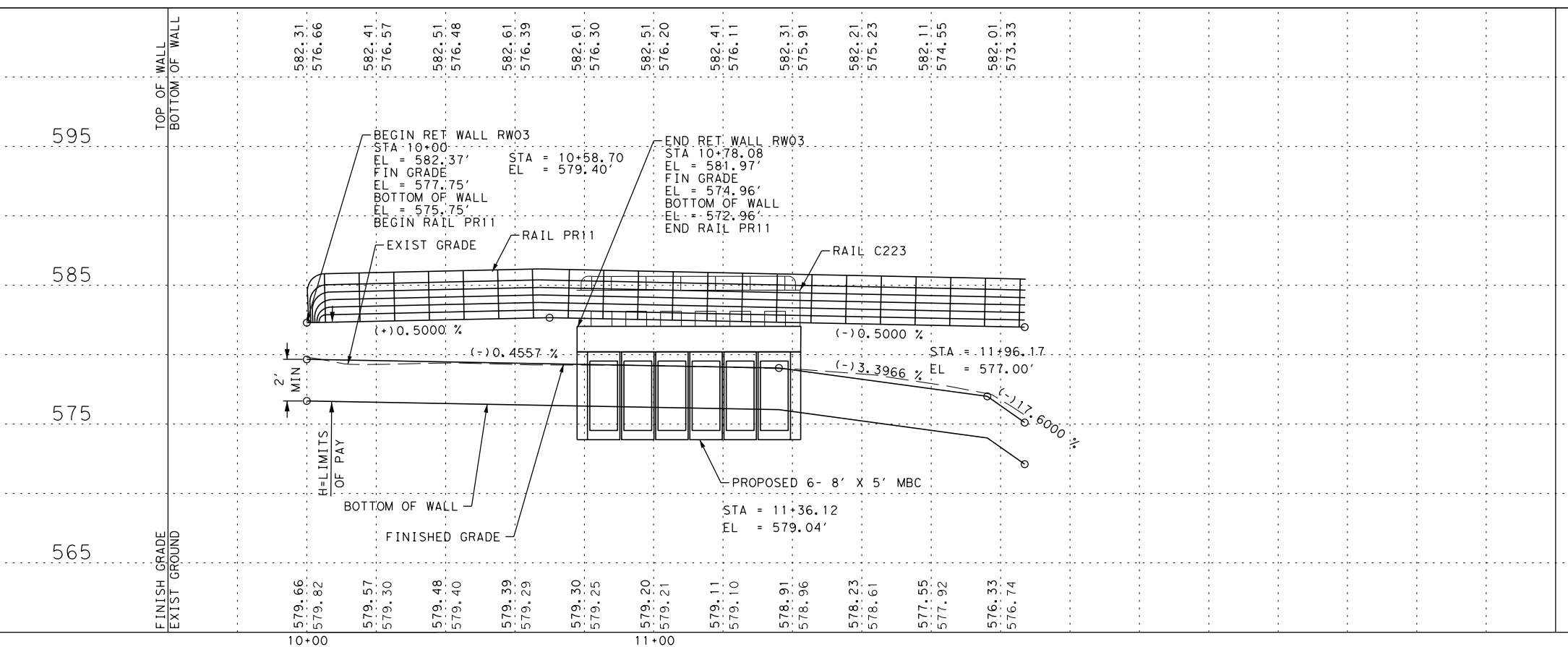
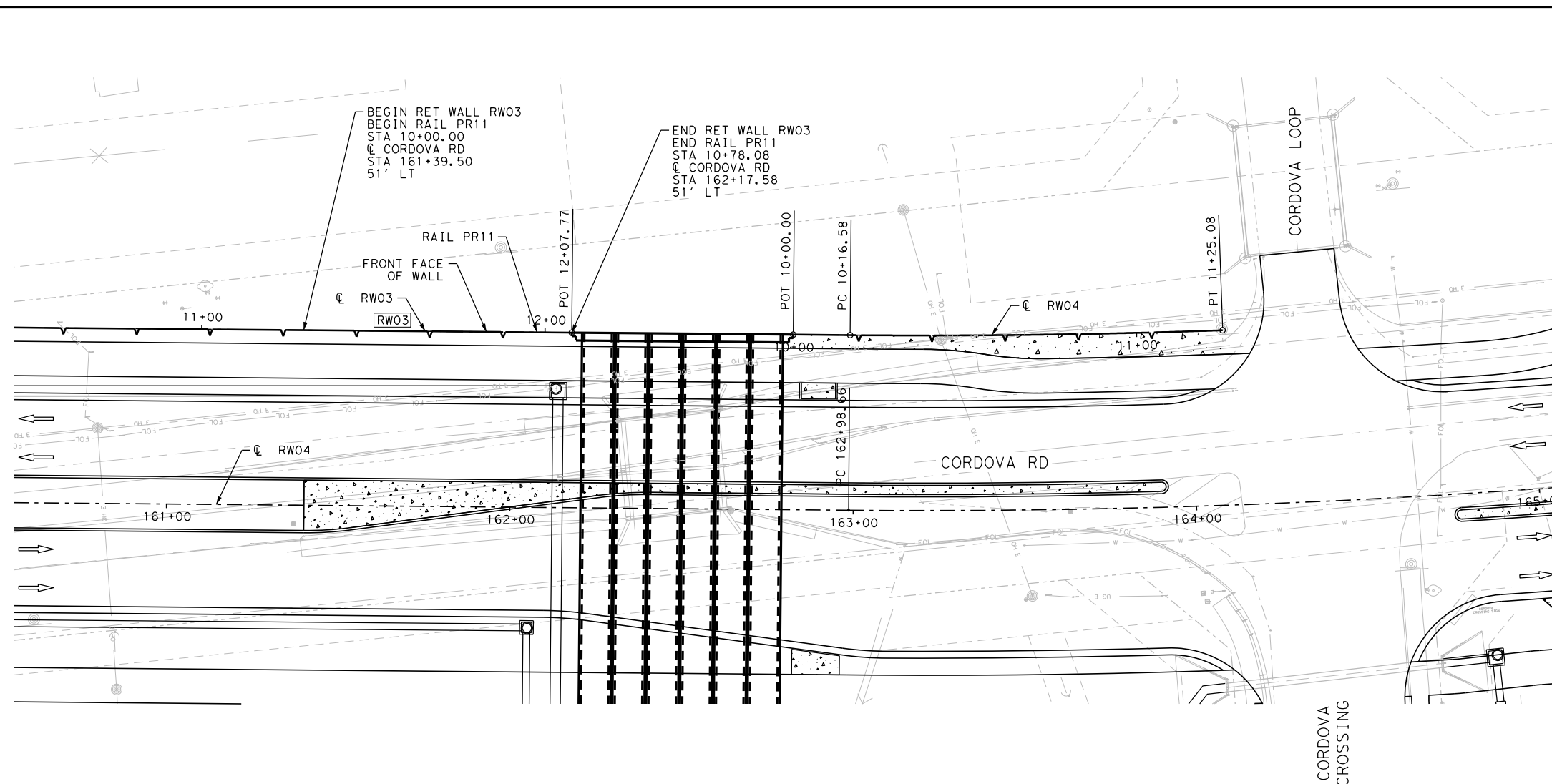
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CORDOVA RD
RETAINING WALL
 RW 03

SHEET 3 OF 6

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DWG:	6	TEXAS		CORDOVA		
CHK DGN:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
DWG:	SAT	GUADALUPE	0915	46	052	244



Plotted on: 11/17/2023

Design File name: P:\1277500\Design\Civil\Retaining Wall\1277500-RW04.dgn

LEGEND

- RETAINING WALL
- PROP ROW
- EXIST ROW
- DITCH FLOW LINE
- TRAFFIC FLOW
- CONC RIPRAP / DRIVEWAYS
- ARMOR CURB SLOTS

NOTES

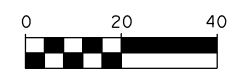
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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 40' PROFILE 1" = 10'

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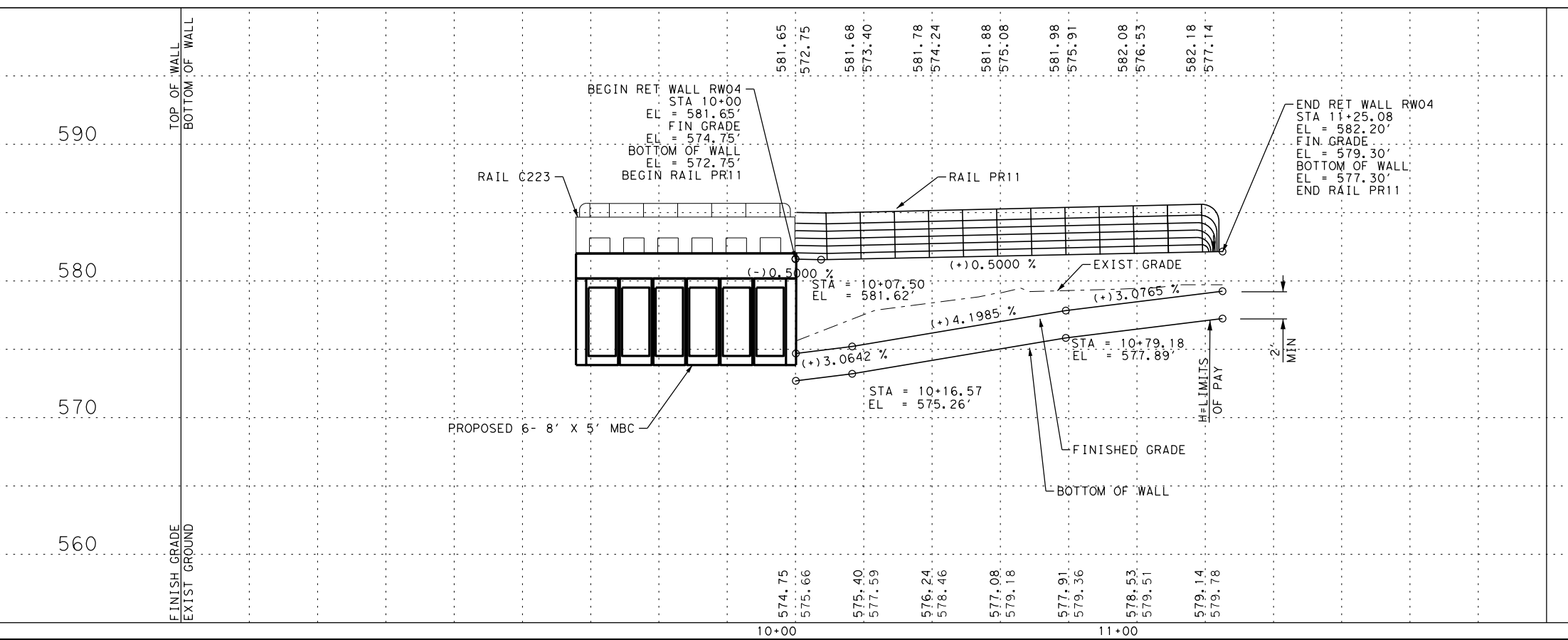
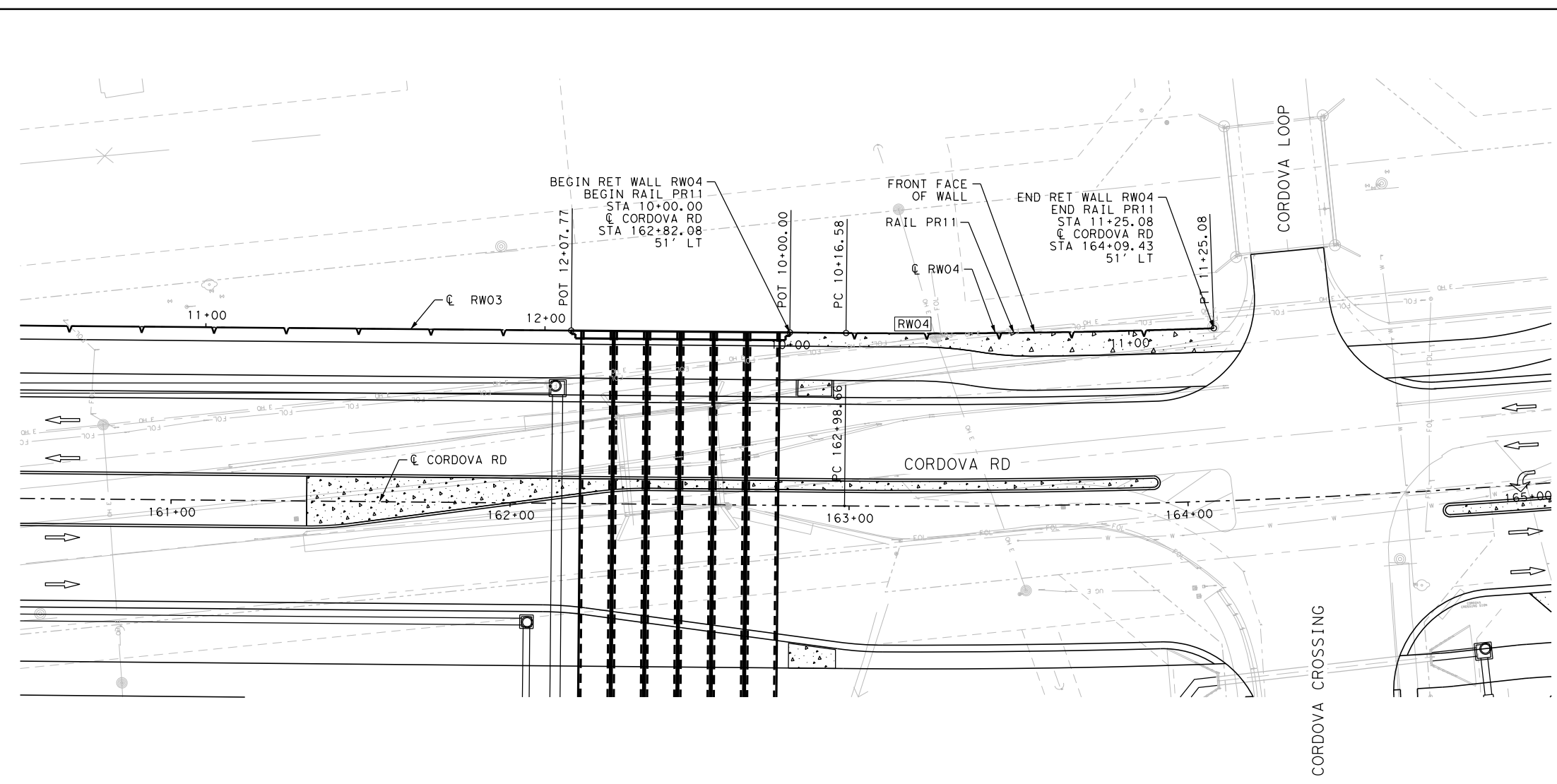
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CORDOVA RD
 RETAINING WALL
 RW 04

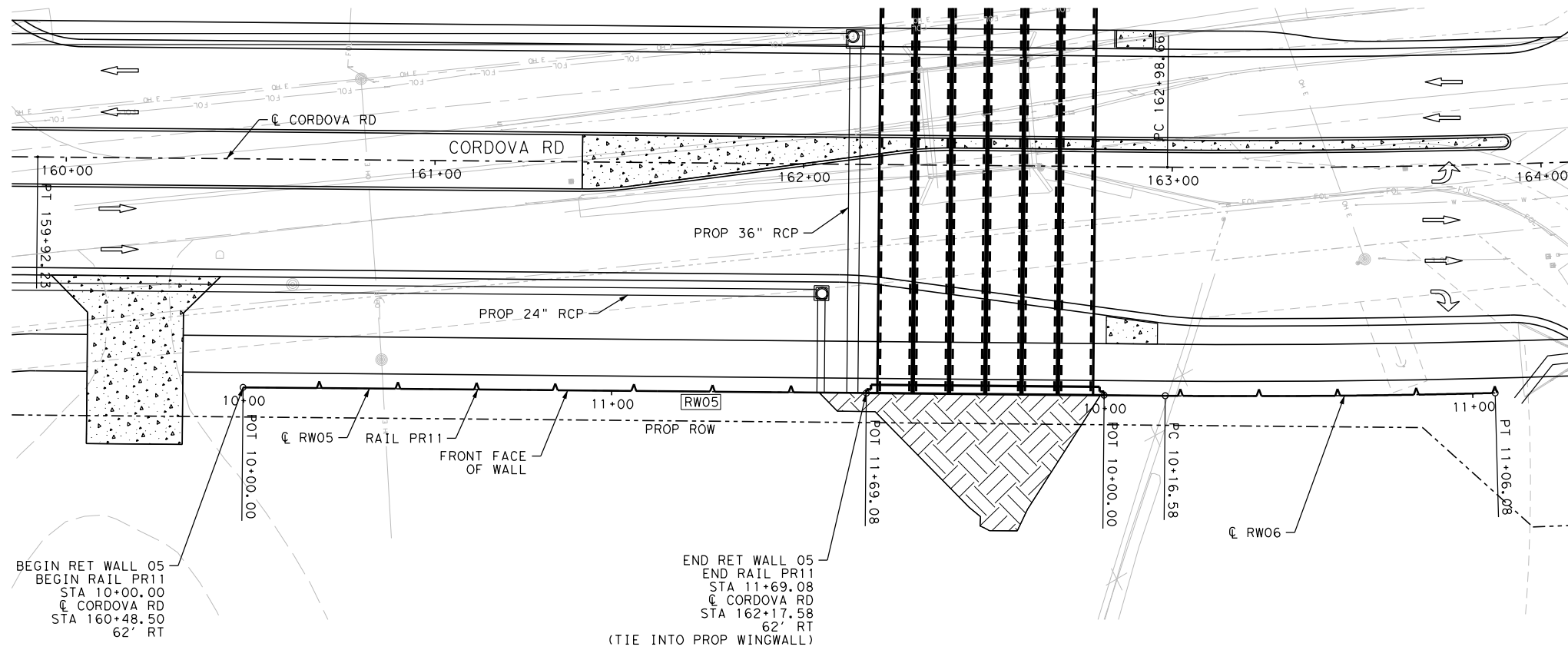
SHEET 4 OF 6

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Plotted on: 11/17/2023

Design File name: P:\12775\00\Design\Civil\Retaining Wall\1277500-RW05.dgn



LEGEND

- RETAINING WALL
- PROP ROW
- EXIST ROW
- DITCH FLOW LINE
- TRAFFIC FLOW
- CONC RIPRAP / DRIVEWAYS
- ARMOR CURB SLOTS

NOTES

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DESIGN

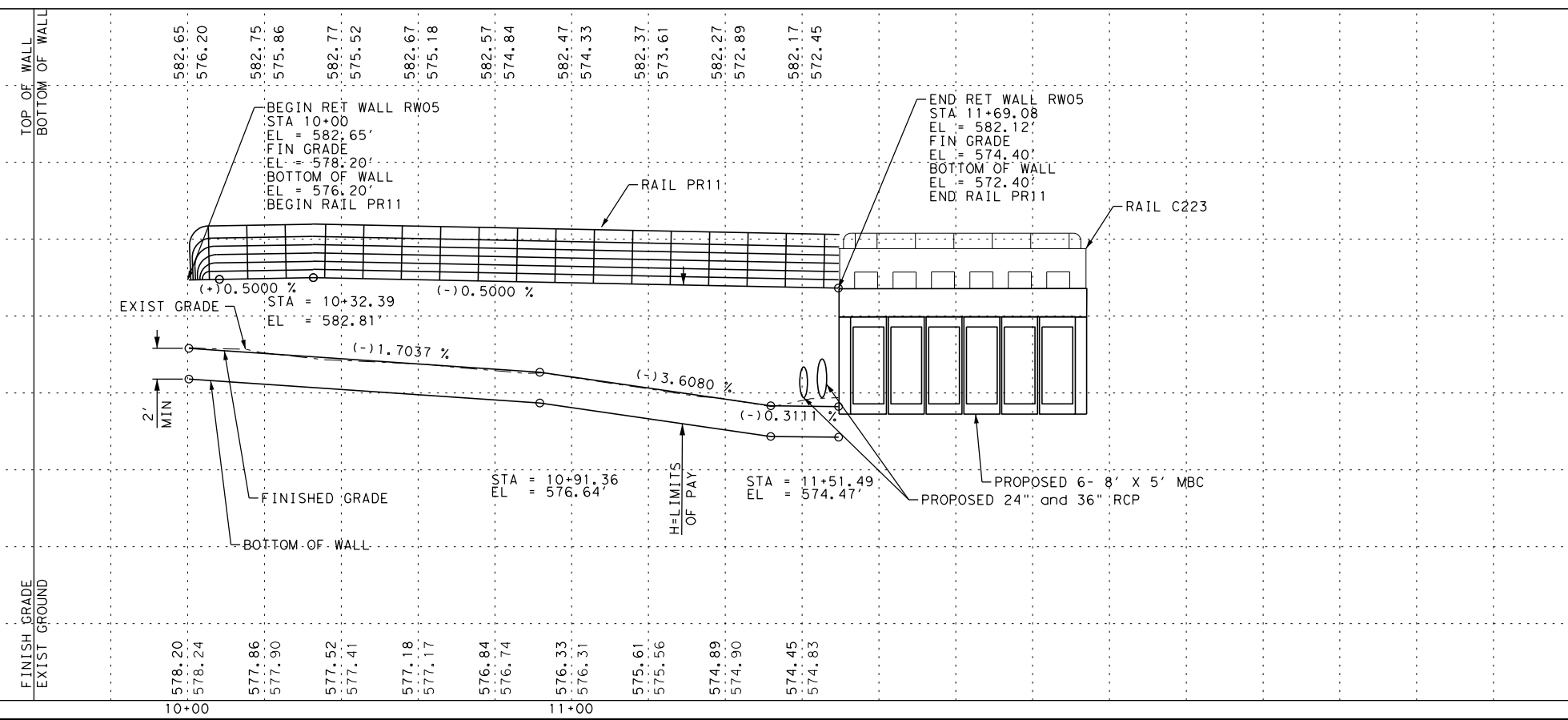
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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 40' PROFILE 1" = 10'



REV. NO.	DATE	DESCRIPTION	BY

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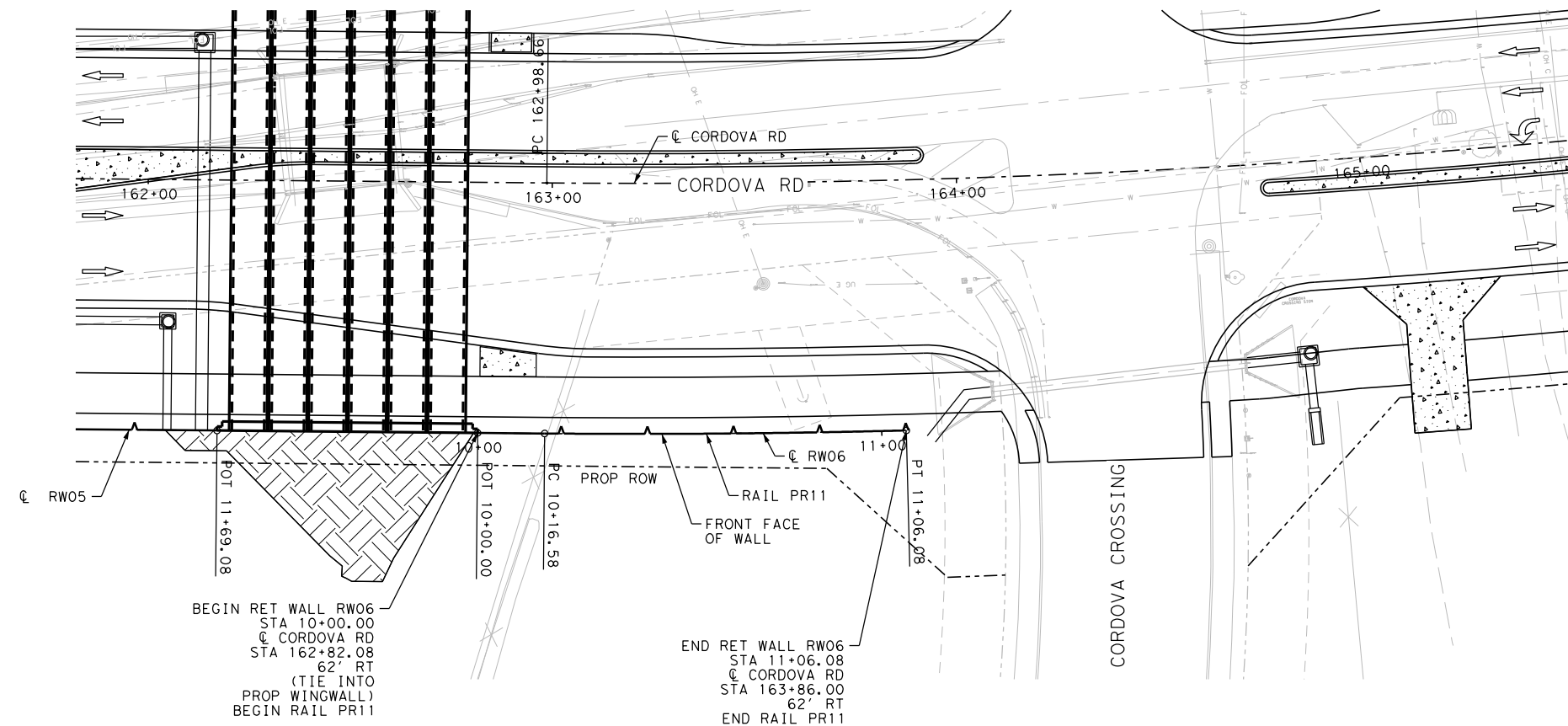
CORDOVA RD
RETAINING WALL
 RW 05

SHEET 5 OF 6

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CHK	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
DWG:	SAT	GUADALUPE	0915	46	052	246

Plotted on: 11/17/2023

Design File name: P:\1275\00\Design\Civil\Retaining Wall\127500_RW06.dgn



LEGEND

- RETAINING WALL
- PROP ROW
- EXIST ROW
- DITCH FLOW LINE
- TRAFFIC FLOW
- CONC RIPRAP / DRIVEWAYS
- ARMOR CURB SLOTS

NOTES

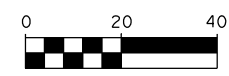
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DESIGN

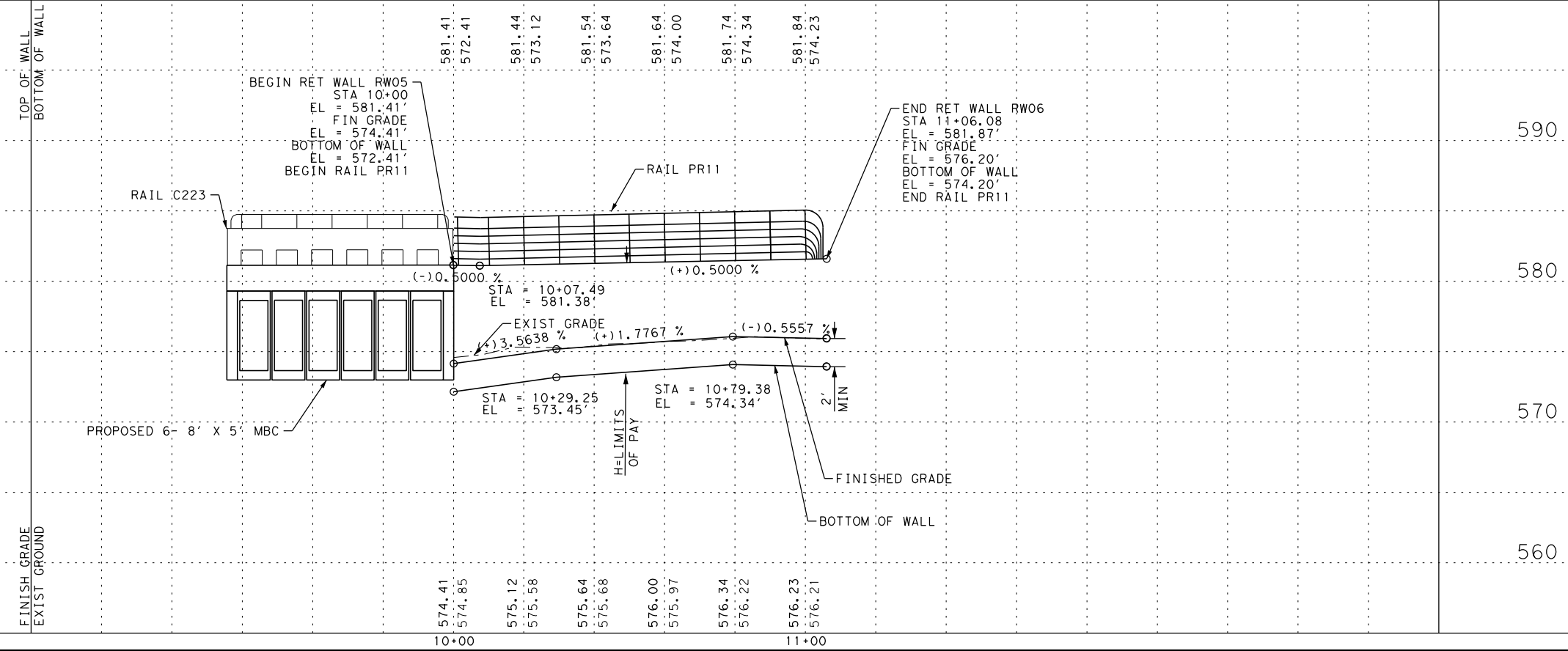
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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

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 P.E. SERIAL NO: 105193
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SCALE: PLAN 1" = 40' PROFILE 1" = 10'



REV. NO.	DATE	DESCRIPTION	BY

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CORDOVA RD
 RETAINING WALL
 RW 06

SHEET 6 OF 6

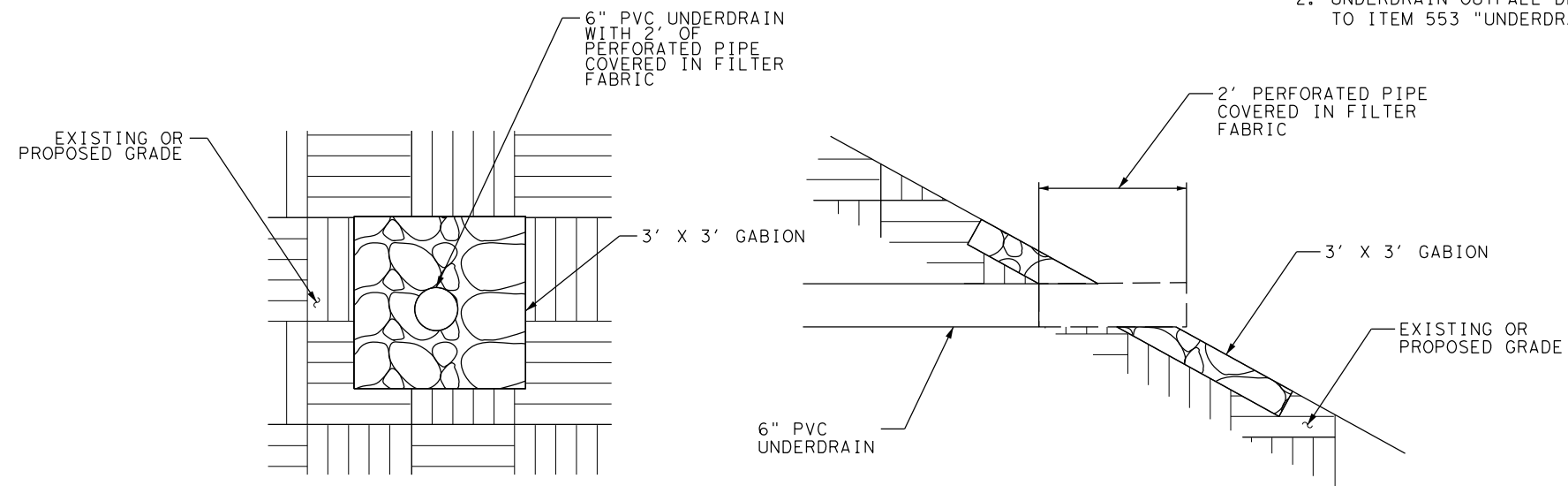
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Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Retaining Wall\1277500-RW-MISCDETAILS.dgn

NOTES:

1. DRAINAGE AT RETAINING WALLS ABUTMENTS SHALL BE CONSIDERED SUBSIDIARY TO ITEM 423 "RETAINING WALLS".
2. UNDERDRAIN OUTFALL DETAIL IS CONSIDERED SUBSIDIARY TO ITEM 553 "UNDERDRAINS".

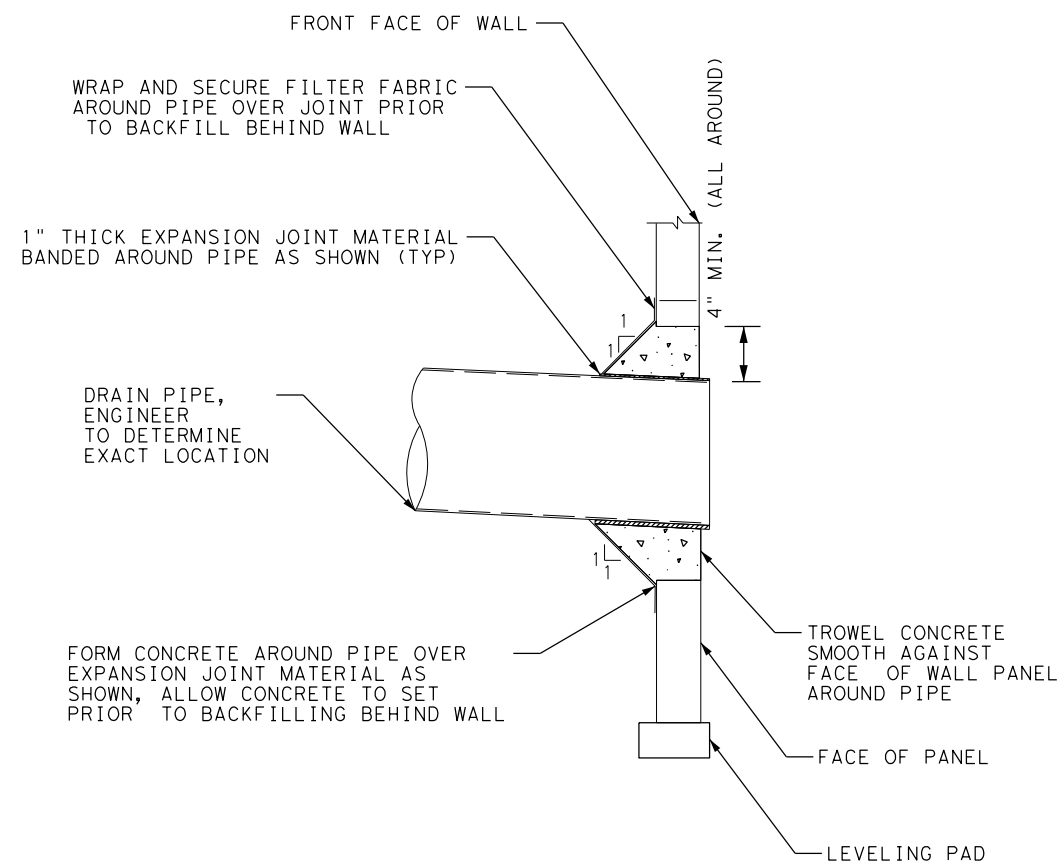


PLAN

PROFILE

UNDERDRAIN OUTFALL PIPE

N. T. S.



PIPE PENETRATION DETAIL AT WALL FACE

N. T. S.

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 11/17/2023

APPROVAL

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ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
DATE: 11/17/2023

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2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
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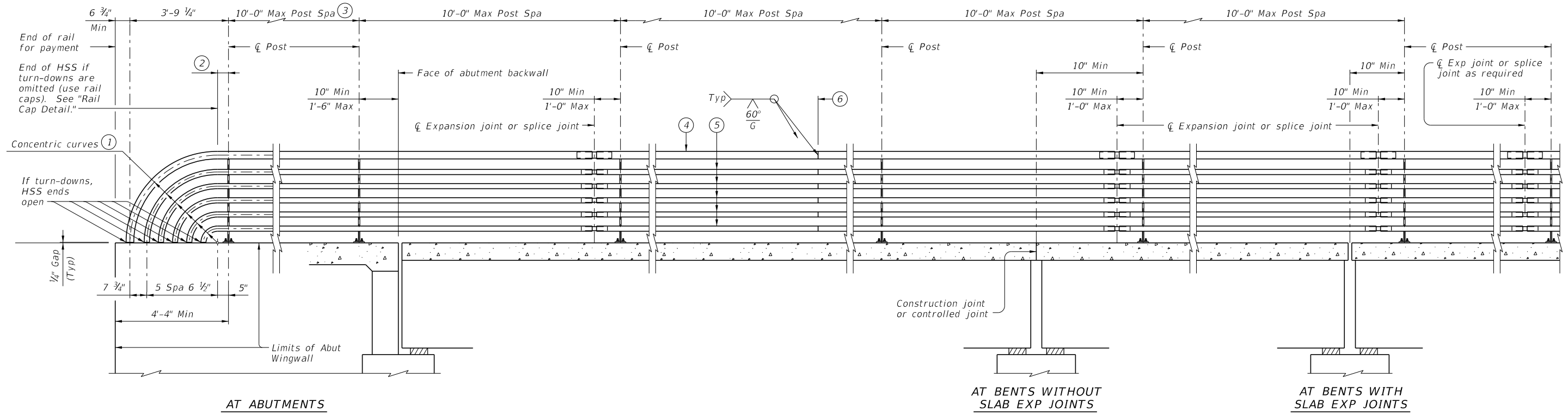


CORDOVA RD
RETAINING WALL
MISCELLANEOUS DETAILS

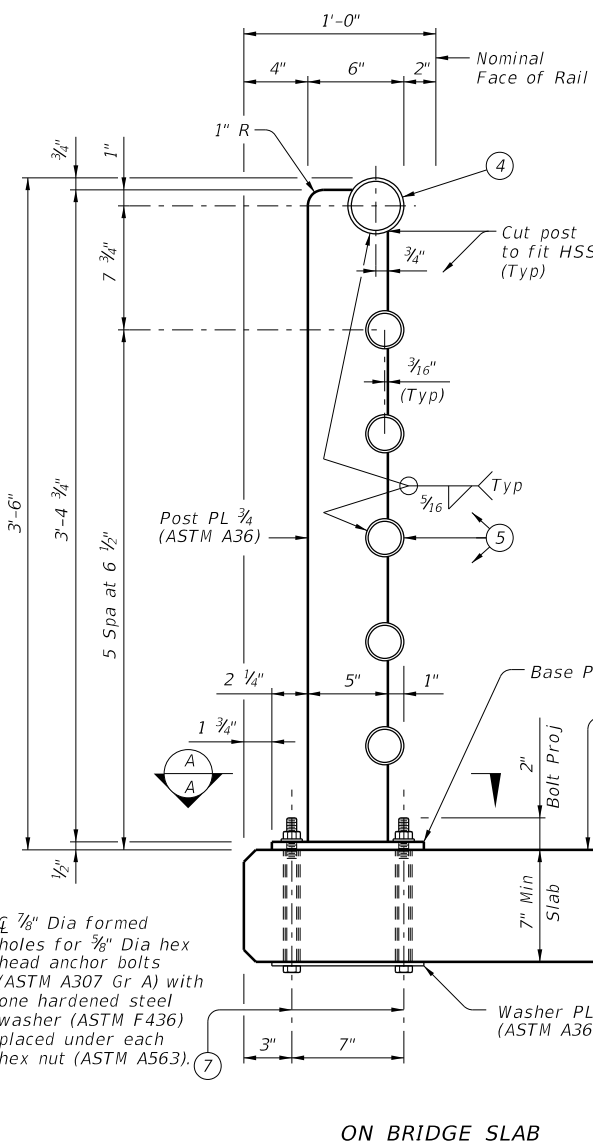
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CHK DWG:	SAT	GUADALUPE	0915	46	052	248

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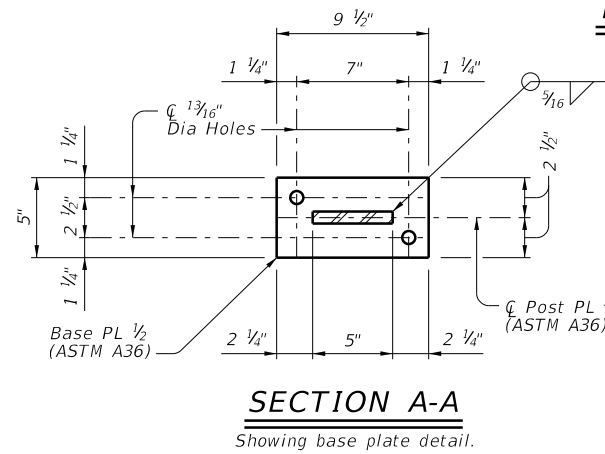
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ROADWAY ELEVATION OF RAIL

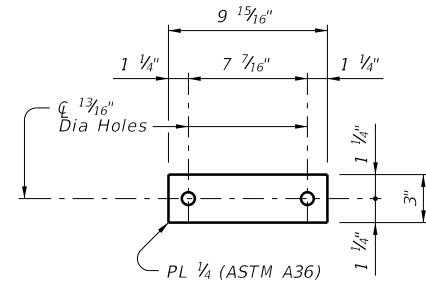


ON BRIDGE SLAB

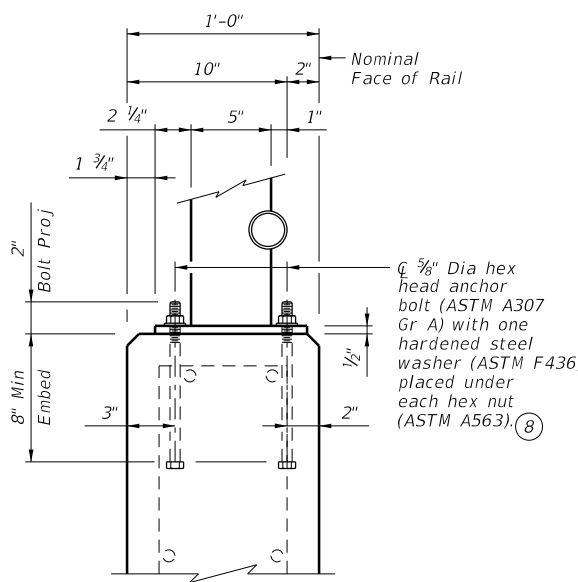


SECTION A-A

Showing base plate detail.

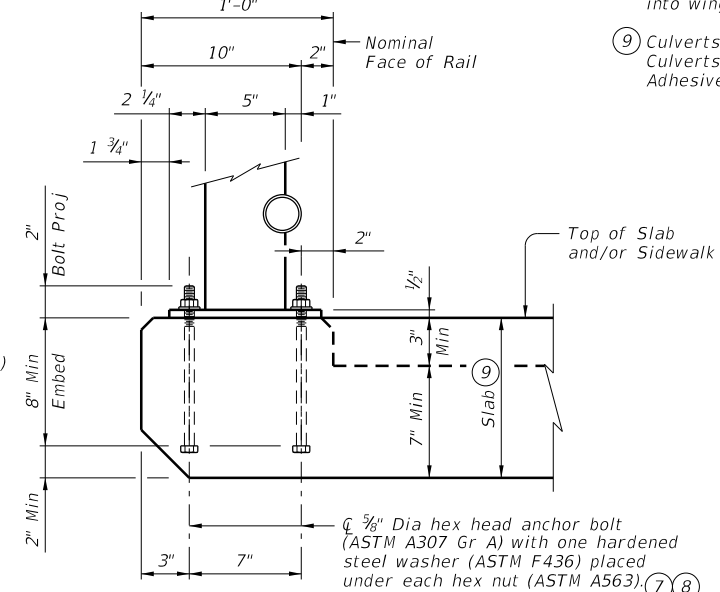


WASHER PLATE DETAIL



ON ABUTMENT WINGWALLS OR CIP RETAINING WALLS

SECTIONS THRU RAIL



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 V 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



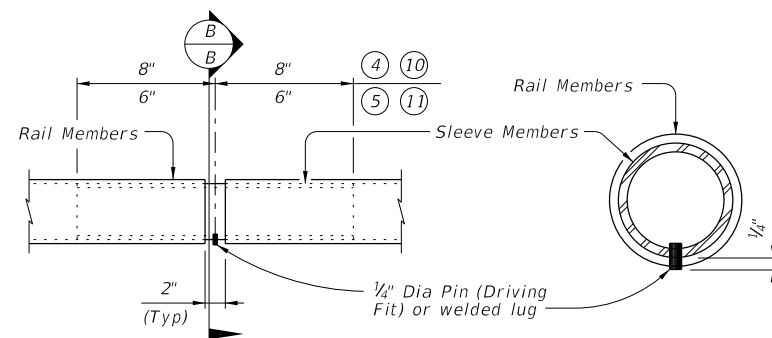
PEDESTRIAN RAIL

TYPE PR11

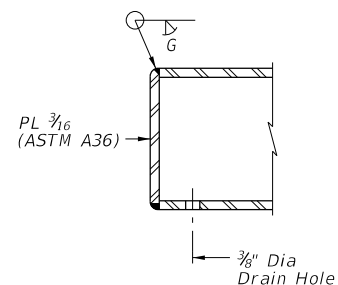
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SAT	GUADALUPE		SHEET NO. 249	

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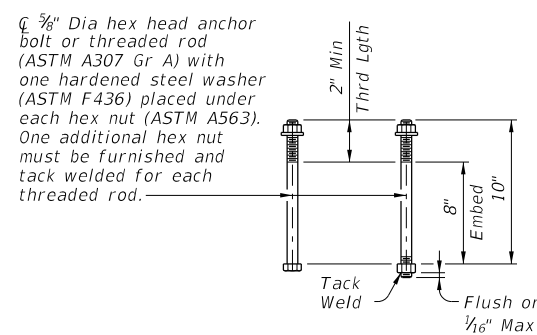


AT SPLICES OR EXP JTS SECTION B-B
PIPE SPLICE DETAIL



RAIL CAP DETAIL

- 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)



CAST-IN-PLACE & FORMED HOLE ANCHOR BOLT OPTIONS

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 3/8" 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 3/8" 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

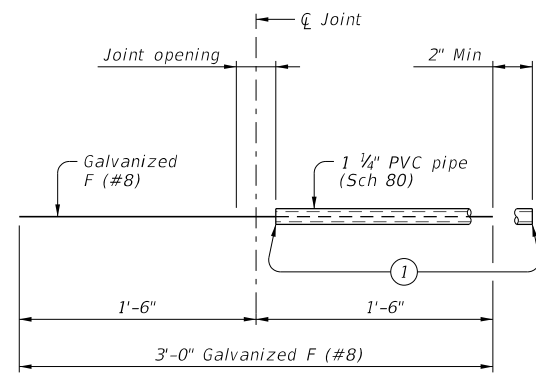


PEDESTRIAN RAIL

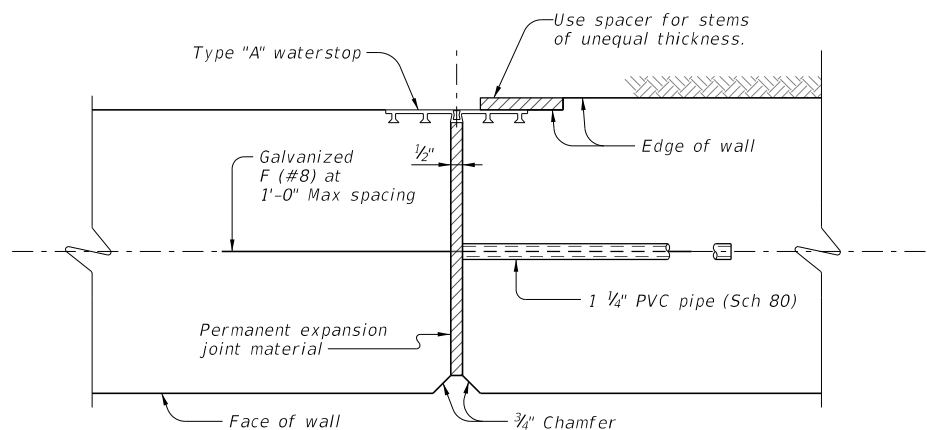
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	SAT	GUADALUPE	250	

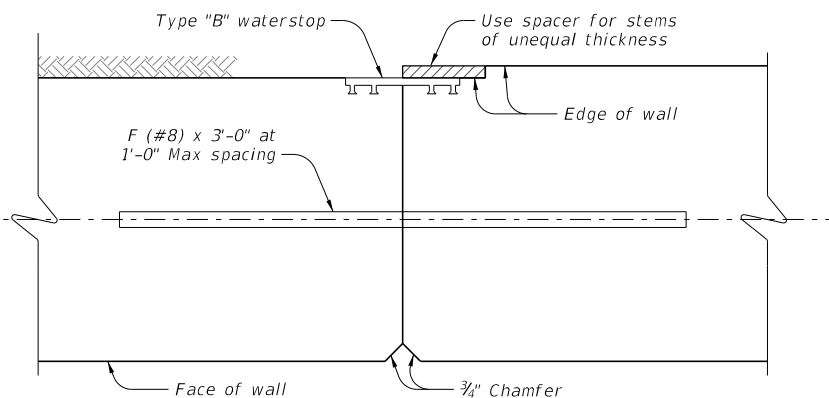
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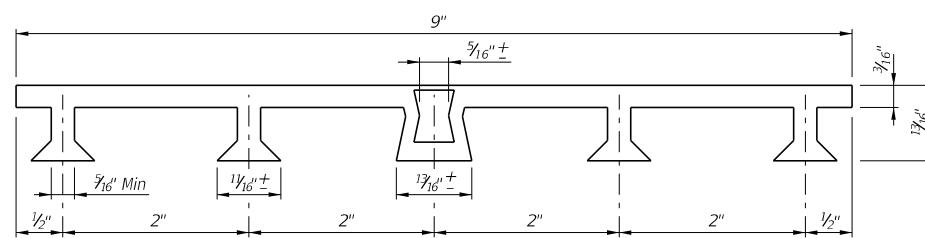
BAR F (#8) ASSEMBLY DETAIL



EXPANSION JOINT

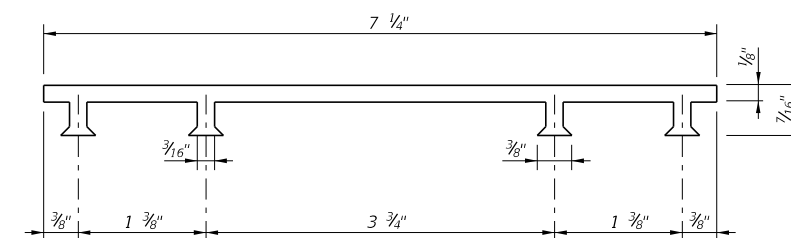


CONSTRUCTION JOINT



PVC WATERSTOP TYPE "A"

Note: Dimensions and shapes may vary slightly depending on manufacturer.



PVC WATERSTOP TYPE "B"

- ① Tape ends of 1 1/4" PVC Schedule 80 to prevent concrete or mortar from seeping in.
- ② Class C unreinforced concrete when difference in top of footing elevations is less than 2 feet. Omit when Dowel Bars F can be placed between adjacent footings with 4-inch cover top and bottom. Footing elevation difference not to exceed 4 feet.
- ③ Underdrain pipe to be in accordance with Item 556, "Pipe Underdrains."

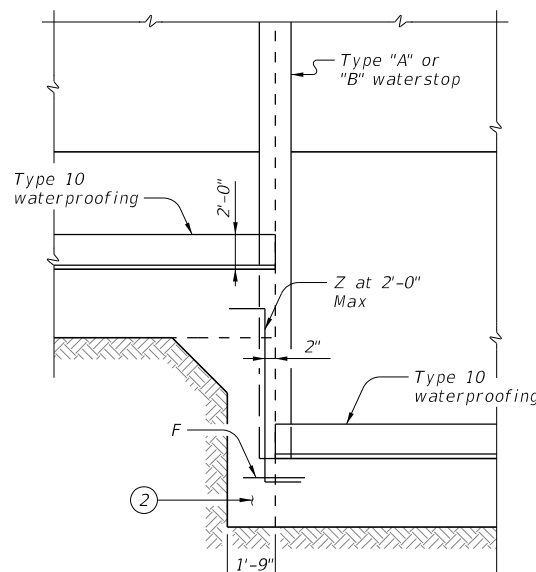
MATERIAL NOTES:

Provide Class C concrete ($f'c=3,600$ psi.)
 Provide Grade 60 reinforcing steel.

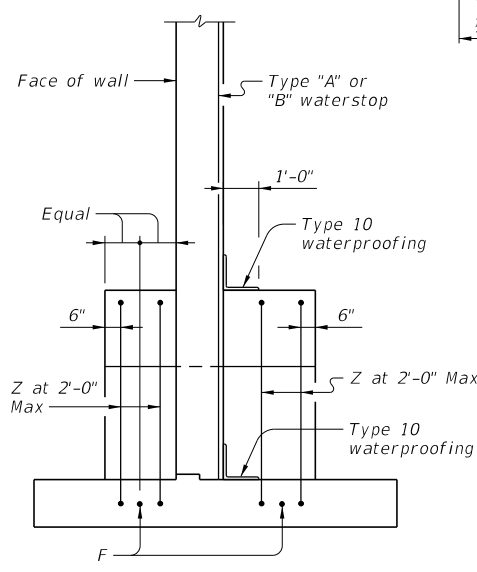
GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
 Walls are designed assuming unit weight of soil = 120 pcf and a friction angle = 30 degrees for foundation and retained soil.
 The undisturbed or compacted soil depth in front of walls must not measure less than $K_d + Ft + 1$ foot as measured upwards from bottom of key.
 Retaining walls are detailed to be placed on grades up to 10% with level footing, with no changes in reinforcing steel. Steeper grades can be accommodated by shortening Bars A and Bars B and increasing the length of legs of Bars U by the same amount. No change in quantities will be required.
 Retaining walls may be placed on horizontal curves by adjusting lengths of Bars T and Bars H in the footing. Minor revisions to concrete quantities may be required as a result.

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

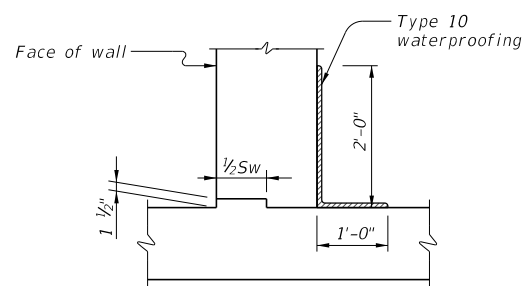


PARTIAL ELEVATION

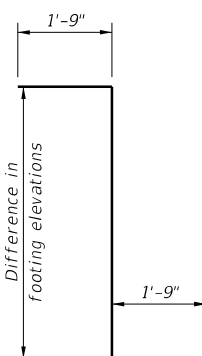


PARTIAL SECTION

SHOWING WATERSTOP AT FOOTING ELEVATION TRANSITION

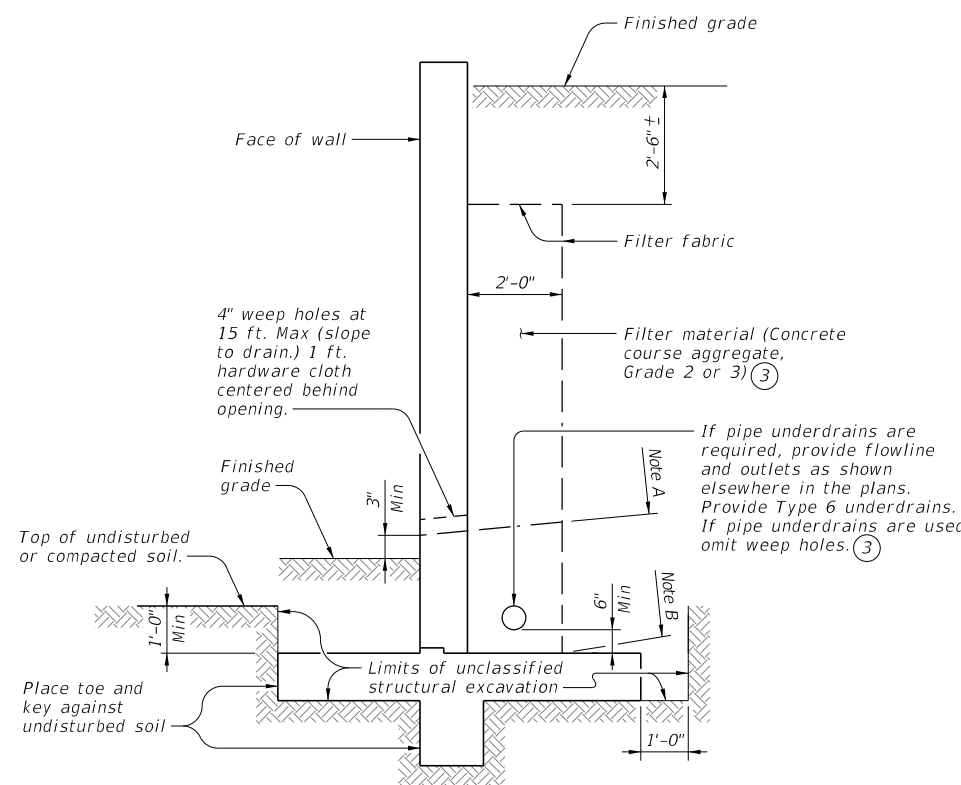


JOINT AND WATERSTOP DETAILS



BARS Z (#5)

(Omit Bars Z when difference in top of footing elevations is less than 2 ft.)



DRAINAGE DETAILS AND EXCAVATION DIAGRAM

Note A: Stop coarse aggregate at this level when weep holes are used.

Note B: Use coarse aggregate to here when underdrains are used.



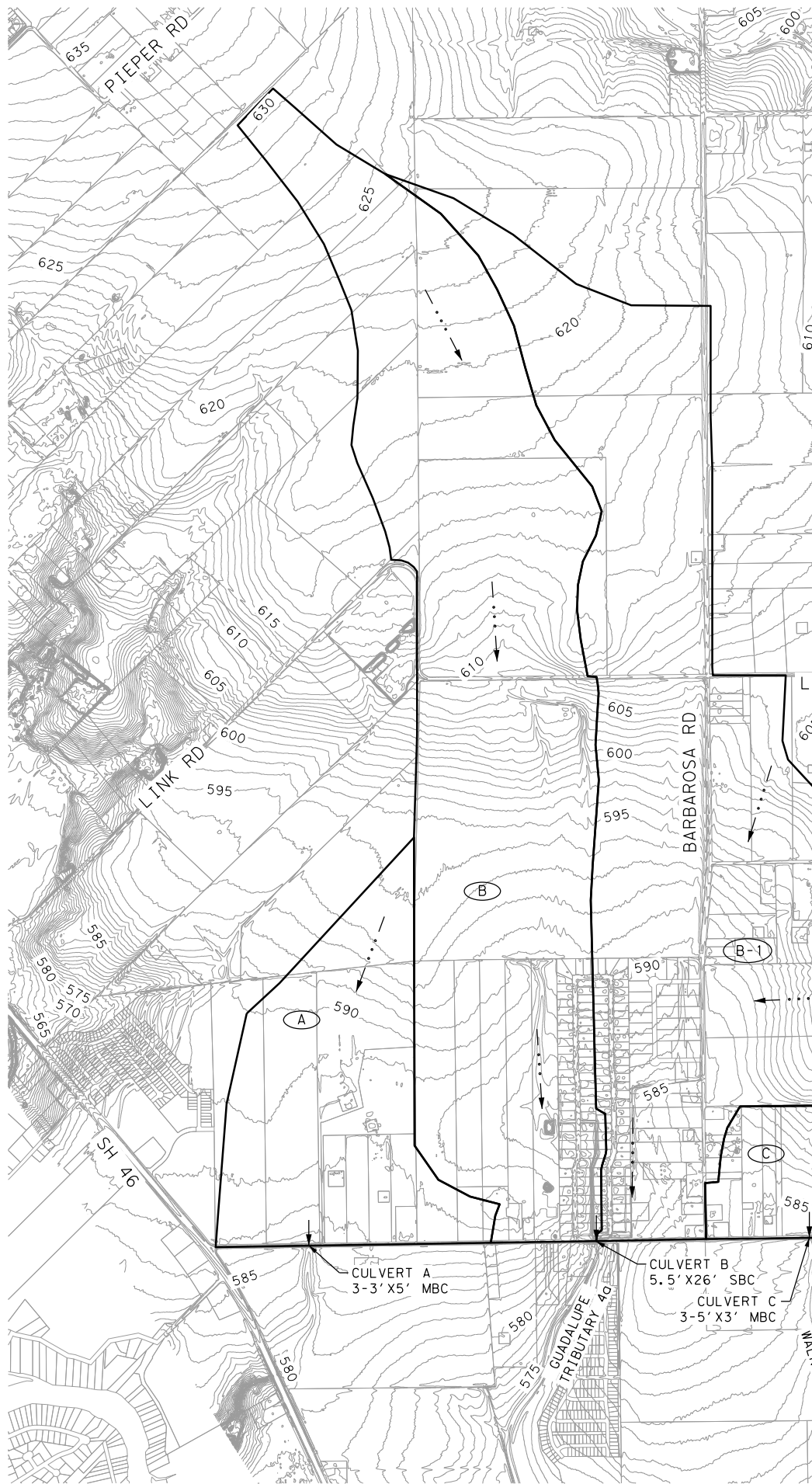
**SPREAD FOOTING
 RETAINING WALL
 MISCELLANEOUS DETAILS**

RW(SF)

FILE: RW-SF-22.dgn	DN: TAR	CK: RLE	DW: JER	CK: TAR
TXDOT June 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
8-22: Updated underdrain requirements.	DIST	COUNTY	SHEET NO.	
SAT	GUADALUPE		251	

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_da_01.dgn



COMPUTATION POINT	CONTRIBUTING DRAINAGE AREAS	DRAINAGE AREA (ACRES)	CONTRIBUTING METHOD	5-YEAR DISCHARGE (CFS)	10-YEAR DISCHARGE (CFS)	25-YEAR DISCHARGE (CFS)	50-YEAR DISCHARGE (CFS)	100-YEAR DISCHARGE (CFS)
CULVERT A	A	258.87	NRCS	212.90	294.80	418.60	522.10	636.60
CULVERT B	B + B-1	1599.91	NRCS	773.10	1087.00	1580.30	2009.90	2501.90
CULVERT B-1	B-1	813.16	NRCS	367.60	519.60	759.50	969.50	1211.10
CULVERT C	C	115.38	NRCS	172.30	235.70	327.80	402.80	481.50
CULVERT D	D	47.99	RATIONAL	65.36	77.46	94.86	108.84	123.95
CULVERT E	E	39.10	RATIONAL	44.27	52.63	64.71	74.47	85.11
CULVERT F	F + F-1	865.56	NRCS	546.10	759.40	1087.90	1368.50	1685.20
CULVERT F-1	F-1	97.35	RATIONAL	114.36	135.87	166.91	191.98	219.25

CONTRIBUTING DRAINAGE AREA	LAG TIME (MIN)	CN
A	78.66	73
B	152.43	74
B-1	177.66	73
C	29.18	72
D	*	*
E	*	*
F	111.55	74
F-1	*	*

* N/A. RATIONAL METHOD USED.

RAINFALL DEPTH (NOAA ATLAS 14, VOL. 11, VER. 2)	
PROFILE	24-HR EVENT DEPTH (IN)
5 YR	5.34
10 YR	6.65
25 YR	8.69
50 YR	10.50
100 YR	12.60

PARTIAL DURATION SERIES RAINFALL DEPTHS OBTAINED AT MID-POINT OF CORDOVA RD USING NATIONAL WEATHER SERVICE PRECIPITATION FREQUENCY DATA SERVER (PFDS).

CONTRIBUTING DRAINAGE AREA	C	Tc (MIN)	5YR INTENSITY (IN/HR)	10YR INTENSITY (IN/HR)	25YR INTENSITY (IN/HR)	50YR INTENSITY (IN/HR)	100YR INTENSITY (IN/HR)
D	0.50	51.22	2.72	3.23	3.95	4.54	5.17
E	0.50	67.70	2.26	2.69	3.31	3.81	4.35
F-1	0.50	64.11	2.35	2.79	3.43	3.94	4.50

LEGEND

- DRAINAGE AREA BOUNDARY
- 850 — CONTOUR
- · · · — FLOW ARROW
- (X) DRAINAGE AREA

NOTES:

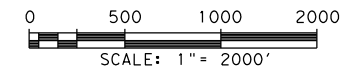
- DRAINAGE AREAS OFF ROW DELINEATED USING EXISTING 1-FT CONTOURS FROM 2017 STRATMAP CENTRAL TEXAS LIDAR DATASET AND FIELD VERIFIED SITE IMPROVEMENTS.
- HEC-HMS VERSION 4.10 AND NRCS FREQUENCY STORM HYDROGRAPH METHOD USED TO CALCULATE FLOWS.
- A CLIMATIC ADJUSTMENT OF -15 APPLIED TO CN, PER TXDOT HYDRAULIC DESIGN MANUAL.
- H&H FILES WERE SENT TO THE LOCAL FLOODPLAIN ADMINISTRATOR (NAME) ON (DATE).

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



EXISTING DRAINAGE AREA MAP

SHEET 1 OF 3

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	253

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_da_02.dgn



COMPUTATION POINT	CONTRIBUTING DRAINAGE AREAS	DRAINAGE AREA (ACRES)	CONTRIBUTING METHOD	5-YEAR DISCHARGE (CFS)	10-YEAR DISCHARGE (CFS)	25-YEAR DISCHARGE (CFS)	50-YEAR DISCHARGE (CFS)	100-YEAR DISCHARGE (CFS)
CULVERT Z	Z	49.73	RATIONAL	38.40	45.93	56.92	65.90	75.83
CULVERT A	A	258.80	NRCS	212.80	294.70	418.50	522.00	636.50
CULVERT B	B + B-1	1600.53	NRCS	773.10	1087.00	1580.30	2010.00	2502.00
CULVERT B-1	B-1	814.10	NRCS	368.00	520.20	760.30	970.60	1212.40
CULVERT C	C	116.83	NRCS	174.40	238.60	331.80	407.70	487.30
CULVERT D	D	48.10	RATIONAL	65.51	77.64	95.07	109.08	124.23
CULVERT E	E	39.91	RATIONAL	45.19	53.72	66.05	76.01	86.87
CULVERT F	F	783.93	NRCS	521.70	724.00	1034.20	1297.70	1593.90
CULVERT F-1	F-1	83.43	RATIONAL	98.01	116.44	143.04	164.53	187.90
DS OF F	F + F-1	867.36	NRCS	551.40	766.40	1097.70	1380.50	1699.50

CONTRIBUTING DRAINAGE AREA	LAG TIME (MIN)	CN
Z	*	*
A	78.66	73
B	152.43	74
B-1	177.66	73
C	29.18	72
D	*	*
E	*	*
F	111.55	74
F-1	*	*

* N/A. RATIONAL METHOD USED.

RAINFALL DEPTH (NOAA ATLAS 14, VOL. 11, VER. 2)	
PROFILE	24-HR EVENT DEPTH (IN)
5 YR	5.34
10 YR	6.65
25 YR	8.69
50 YR	10.50
100 YR	12.60

PARTIAL DURATION SERIES RAINFALL DEPTHS OBTAINED AT MID-POINT OF CORDOVA RD USING NATIONAL WEATHER SERVICE PRECIPITATION FREQUENCY DATA SERVER (PFDS).

CONTRIBUTING DRAINAGE AREA	C	Tc (MIN)	5YR INTENSITY (IN/HR)	10YR INTENSITY (IN/HR)	25YR INTENSITY (IN/HR)	50YR INTENSITY (IN/HR)	100YR INTENSITY (IN/HR)
Z	0.50	116.71	1.54	1.85	2.29	2.65	3.05
D	0.50	51.22	2.72	3.23	3.95	4.54	5.17
E	0.50	67.70	2.26	2.69	3.31	3.81	4.35
F-1	0.50	64.11	2.35	2.79	3.43	3.94	4.50

LEGEND

- DRAINAGE AREA BOUNDARY
- > FLOW ARROW
- 850- CONTOUR
- (X) DRAINAGE AREA

NOTES:

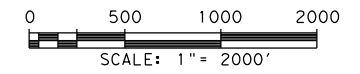
- DRAINAGE AREAS OFF ROW DELINEATED USING EXISTING 1-FT CONTOURS FROM 2017 STRATMAP CENTRAL TEXAS LIDAR DATASET AND FIELD VERIFIED SITE IMPROVEMENTS.
- HEC-HMS VERSION 4.10 AND NRCS FREQUENCY STORM HYDROGRAPH METHOD USED TO CALCULATE FLOWS.
- A CLIMATIC ADJUSTMENT OF -15 APPLIED TO CN, PER TXDOT HYDRAULIC DESIGN MANUAL.
- H&H FILES WERE SENT TO THE LOCAL FLOODPLAIN ADMINISTRATOR (NAME) ON (DATE).

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



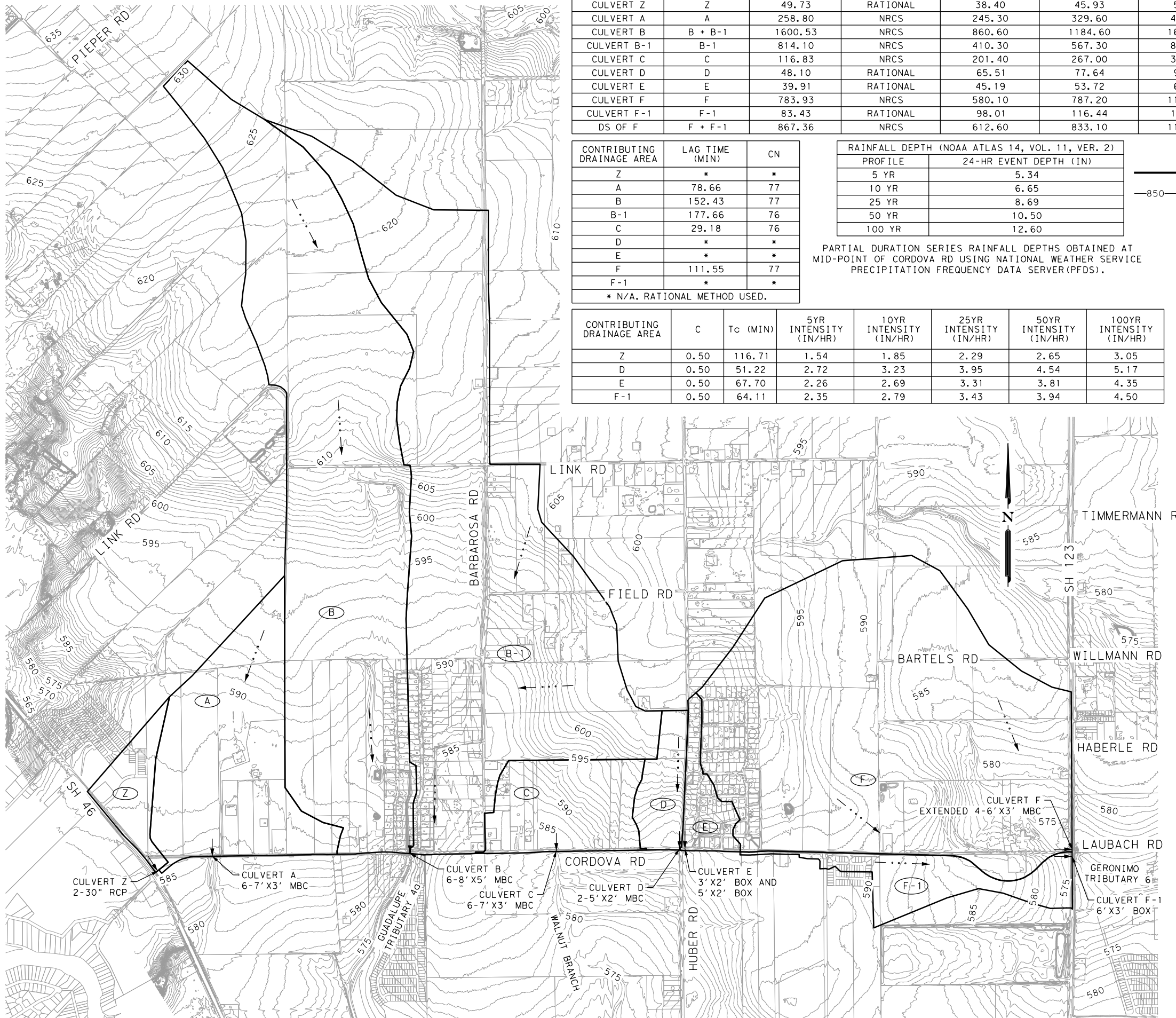
PROPOSED DRAINAGE AREA MAP

SHEET 2 OF 3

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	254

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_da_03.dgn



COMPUTATION POINT	CONTRIBUTING DRAINAGE AREAS	DRAINAGE AREA (ACRES)	CONTRIBUTING METHOD	5-YEAR DISCHARGE (CFS)	10-YEAR DISCHARGE (CFS)	25-YEAR DISCHARGE (CFS)	50-YEAR DISCHARGE (CFS)	100-YEAR DISCHARGE (CFS)
CULVERT Z	Z	49.73	RATIONAL	38.40	45.93	56.92	65.90	75.83
CULVERT A	A	258.80	NRCS	245.30	329.60	454.90	558.50	672.00
CULVERT B	B + B-1	1600.53	NRCS	860.60	1184.60	1686.00	2118.10	2610.40
CULVERT B-1	B-1	814.10	NRCS	410.30	567.30	811.90	1023.90	1266.10
CULVERT C	C	116.83	NRCS	201.40	267.00	360.30	435.40	514.50
CULVERT D	D	48.10	RATIONAL	65.51	77.64	95.07	109.08	124.23
CULVERT E	E	39.91	RATIONAL	45.19	53.72	66.05	76.01	86.87
CULVERT F	F	783.93	NRCS	580.10	787.20	1100.70	1364.20	1659.10
CULVERT F-1	F-1	83.43	RATIONAL	98.01	116.44	143.04	164.53	187.90
DS OF F	F + F-1	867.36	NRCS	612.60	833.10	1167.80	1450.80	1768.50

CONTRIBUTING DRAINAGE AREA	LAG TIME (MIN)	CN
Z	*	*
A	78.66	77
B	152.43	77
B-1	177.66	76
C	29.18	76
D	*	*
E	*	*
F	111.55	77
F-1	*	*

* N/A. RATIONAL METHOD USED.

RAINFALL DEPTH (NOAA ATLAS 14, VOL. 11, VER. 2)	
PROFILE	24-HR EVENT DEPTH (IN)
5 YR	5.34
10 YR	6.65
25 YR	8.69
50 YR	10.50
100 YR	12.60

PARTIAL DURATION SERIES RAINFALL DEPTHS OBTAINED AT MID-POINT OF CORDOVA RD USING NATIONAL WEATHER SERVICE PRECIPITATION FREQUENCY DATA SERVER (PFDS).

CONTRIBUTING DRAINAGE AREA	C	Tc (MIN)	5YR INTENSITY (IN/HR)	10YR INTENSITY (IN/HR)	25YR INTENSITY (IN/HR)	50YR INTENSITY (IN/HR)	100YR INTENSITY (IN/HR)
Z	0.50	116.71	1.54	1.85	2.29	2.65	3.05
D	0.50	51.22	2.72	3.23	3.95	4.54	5.17
E	0.50	67.70	2.26	2.69	3.31	3.81	4.35
F-1	0.50	64.11	2.35	2.79	3.43	3.94	4.50

LEGEND

- DRAINAGE AREA BOUNDARY
- > FLOW ARROW
- 850- CONTOUR
- (X) DRAINAGE AREA

NOTES:

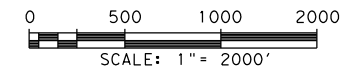
- DRAINAGE AREAS OFF ROW DELINEATED USING EXISTING 1-FT CONTOURS FROM 2017 STRATMAP CENTRAL TEXAS LIDAR DATASET AND FIELD VERIFIED SITE IMPROVEMENTS.
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- A CLIMATIC ADJUSTMENT OF -15 APPLIED TO CN, PER TXDOT HYDRAULIC DESIGN MANUAL.
- H&H FILES WERE SENT TO THE LOCAL FLOODPLAIN ADMINISTRATOR (NAME) ON (DATE).

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



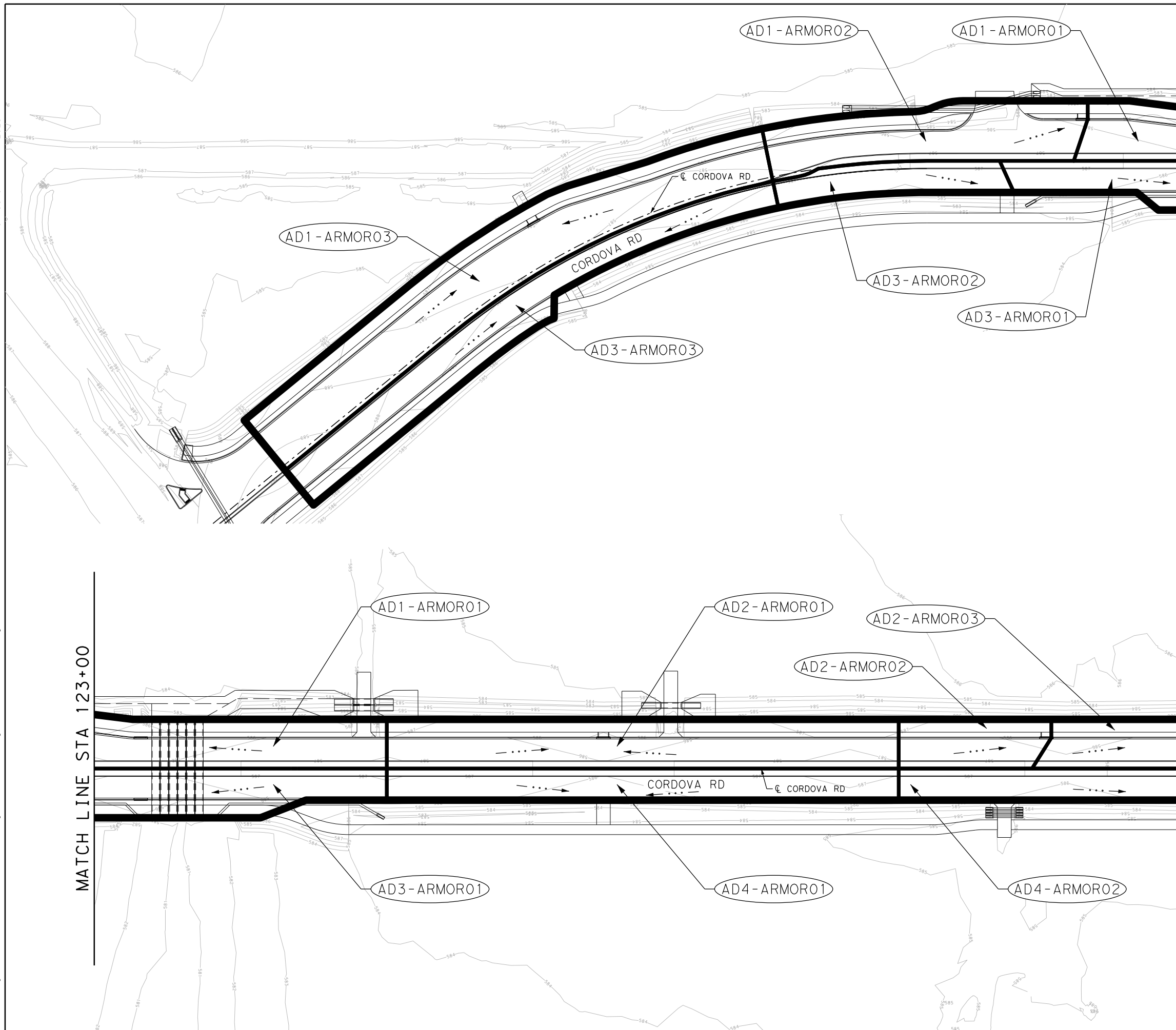
ULTIMATE DRAINAGE AREA MAP

SHEET 3 OF 3

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	255

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_da_A01.dgn



LEGEND

- R.O.W.
- INLET DRAINAGE AREA BOUNDARY
- SYSTEM DRAINAGE AREA BOUNDARY
- 850- EXISTING CONTOUR
- >->- FLOW ARROW
- (X-X) DRAINAGE AREA

NOTES:

1. DRAINAGE AREAS OFF ROW DELINEATED USING EXISTING 1-FT CONTOURS FROM 2017 GIS DATA AND FIELD VERIFIED SITE IMPROVEMENTS.
2. ALL UTILITY LOCATIONS ARE APPROXIMATE. CONTRACTOR SHALL VERIFY DEPTHS AND LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
3. ALL PIPES ARE NORMAL TO AND STRAIGHT FROM STRUCTURE UNLESS OTHERWISE SHOWN.
4. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK, I.E. FADED

DESIGN

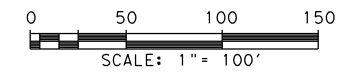
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



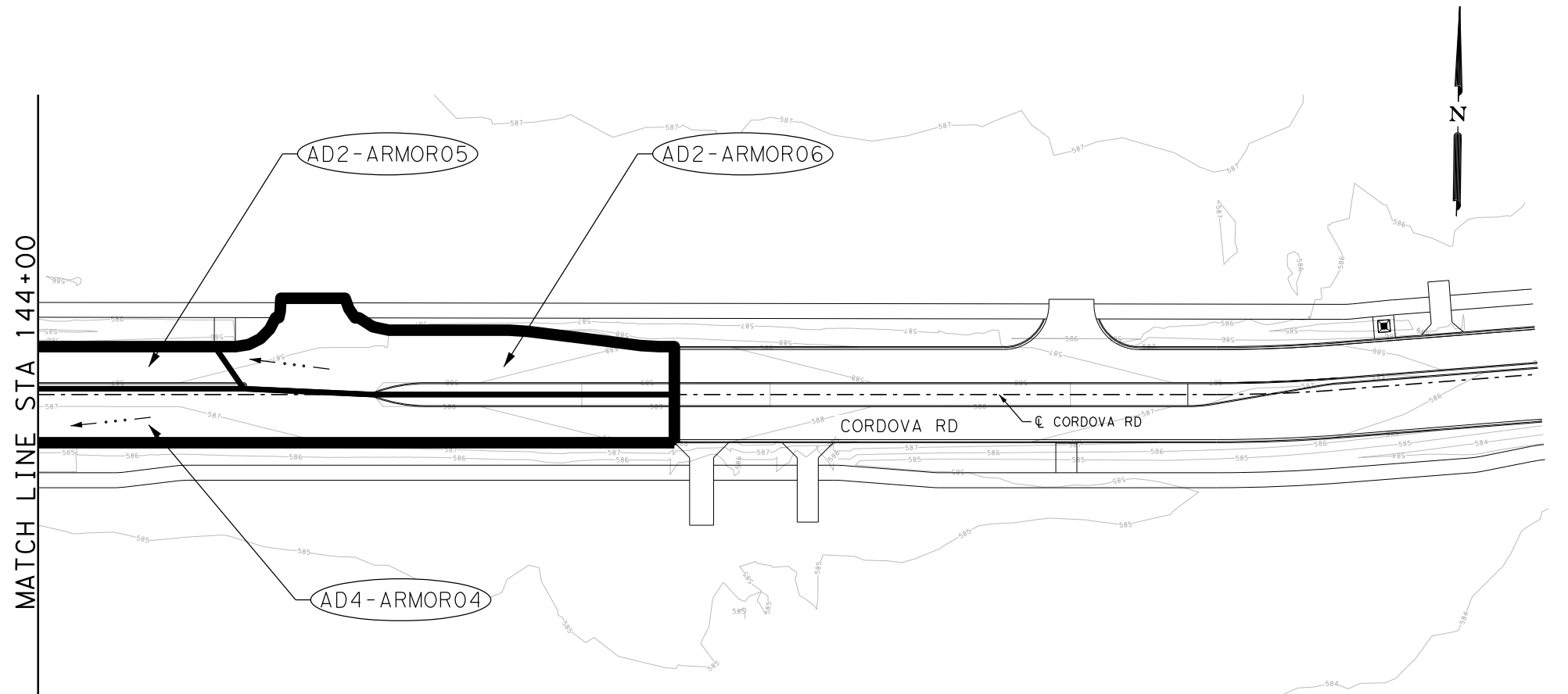
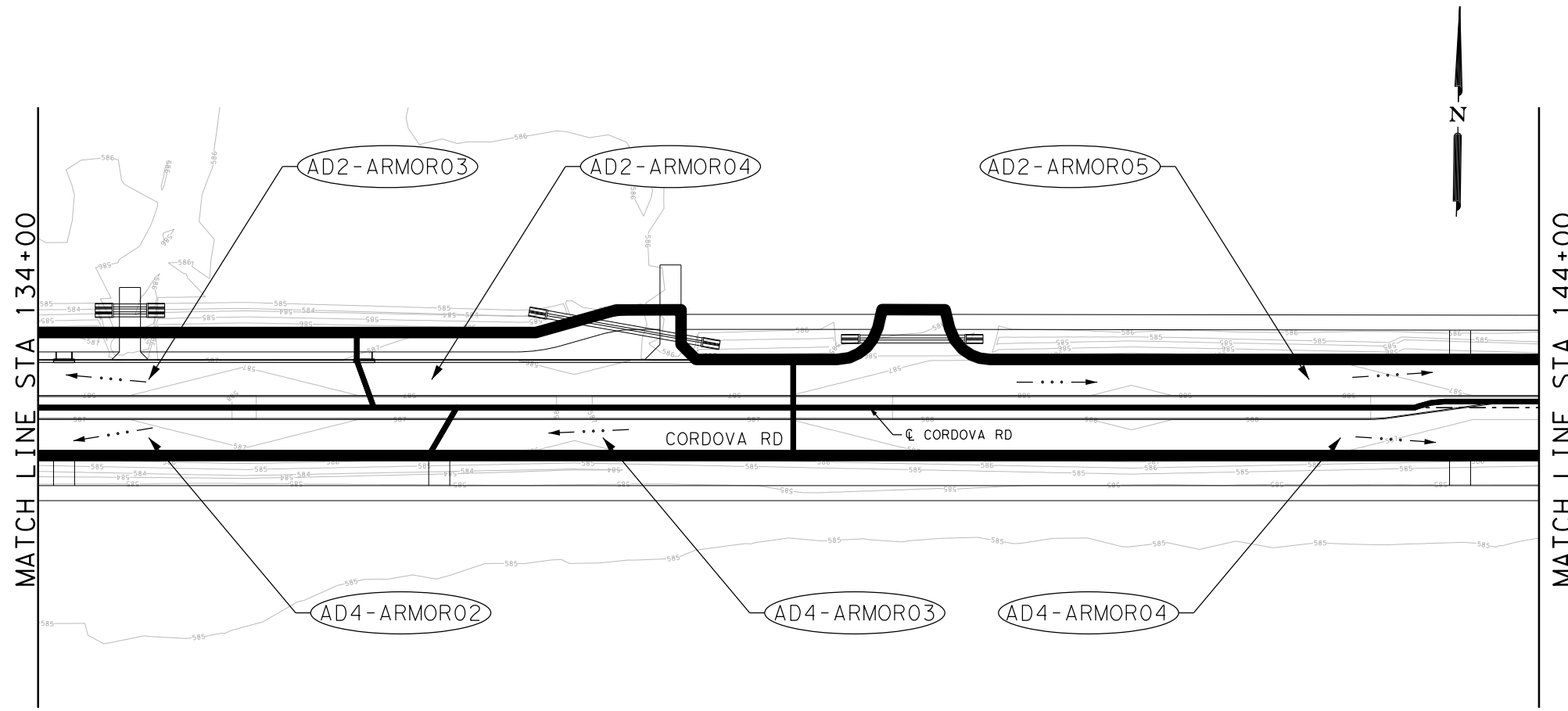
DRAINAGE AREA MAP SYSTEM A

BEGIN PROJECT TO STA 134+00
 SHEET 1 OF 2

CHK	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
CHK	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	256

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civi\1\Drainage\1277500_da_A02.dgn



LEGEND

- R.O.W.
- INLET DRAINAGE AREA BOUNDARY
- SYSTEM DRAINAGE AREA BOUNDARY
- 850— EXISTING CONTOUR
- · - · - FLOW ARROW
- (X-X) DRAINAGE AREA

NOTES:

1. DRAINAGE AREAS OFF ROW DELINEATED USING EXISTING 1-FT CONTOURS FROM 2017 GIS DATA AND FIELD VERIFIED SITE IMPROVEMENTS.
2. ALL UTILITY LOCATIONS ARE APPROXIMATE. CONTRACTOR SHALL VERIFY DEPTHS AND LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
3. ALL PIPES ARE NORMAL TO AND STRAIGHT FROM STRUCTURE UNLESS OTHERWISE SHOWN.
4. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK, i.e. FADED

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JACOB J. POWELL

P.E. SERIAL NO: 108825

DATE: 11/17/2023

APPROVAL

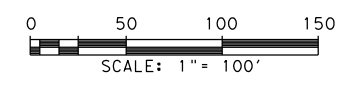
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



**DRAINAGE AREA MAP
SYSTEM A**

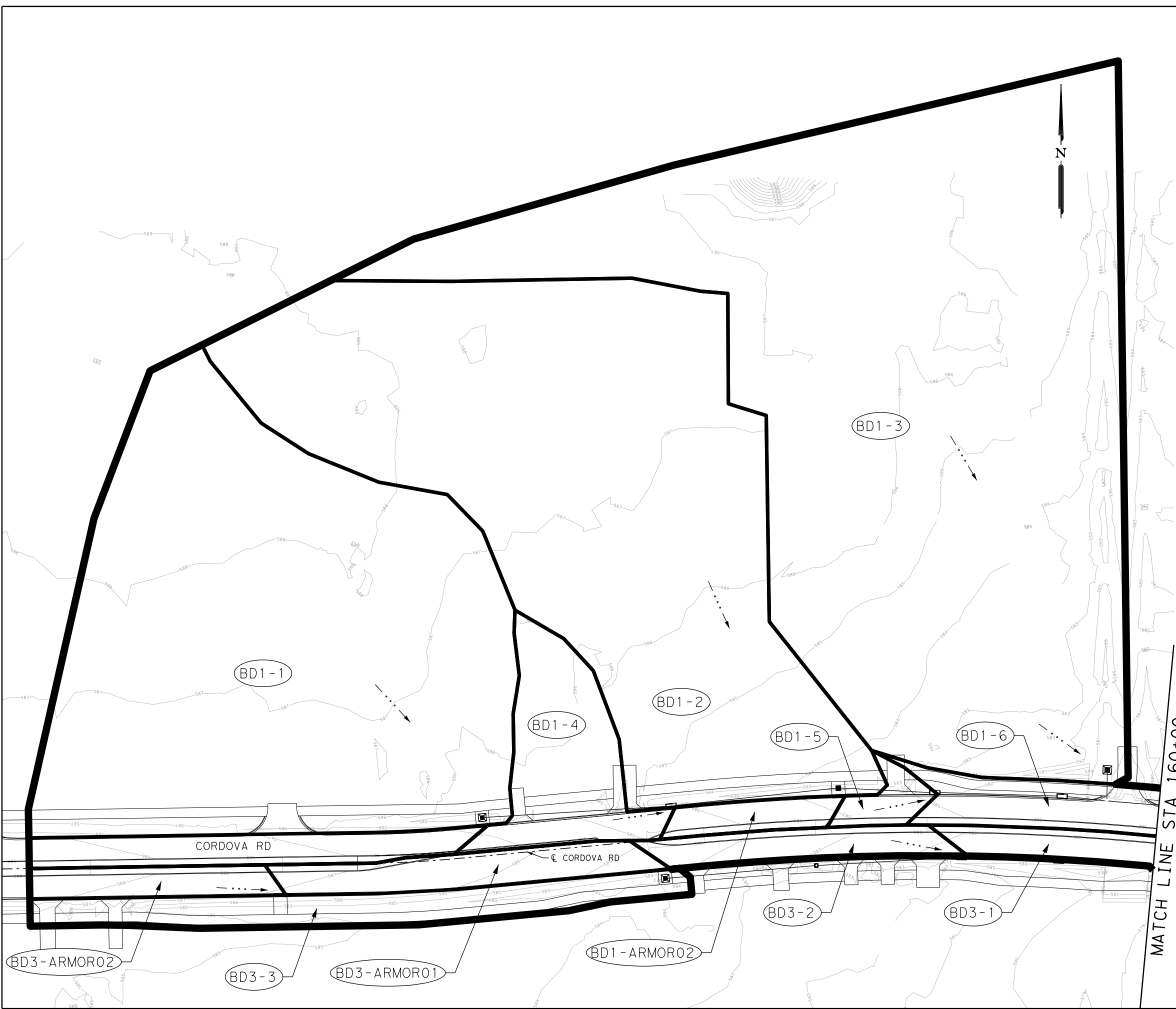
STA 134+00 TO STA 154+00

SHEET 2 OF 2

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	257

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_da_B01.dgn



NOTES:

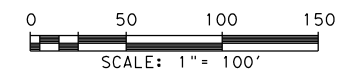
1. DRAINAGE AREAS OFF ROW DELINEATED USING EXISTING 1-FT CONTOURS FROM 2017 GIS DATA AND FIELD VERIFIED SITE IMPROVEMENTS.
2. ALL UTILITY LOCATIONS ARE APPROXIMATE. CONTRACTOR SHALL VERIFY DEPTHS AND LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
3. ALL PIPES ARE NORMAL TO AND STRAIGHT FROM STRUCTURE UNLESS OTHERWISE SHOWN.
4. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK, i.e. FADED





DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

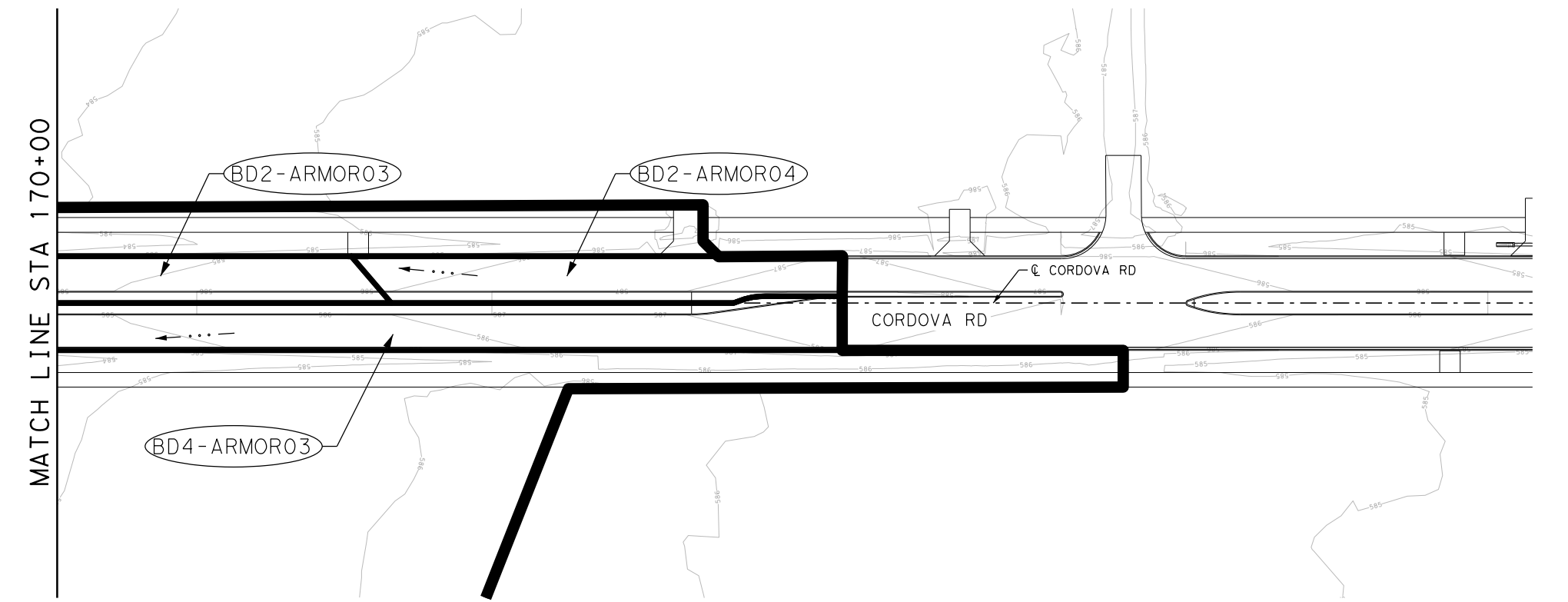
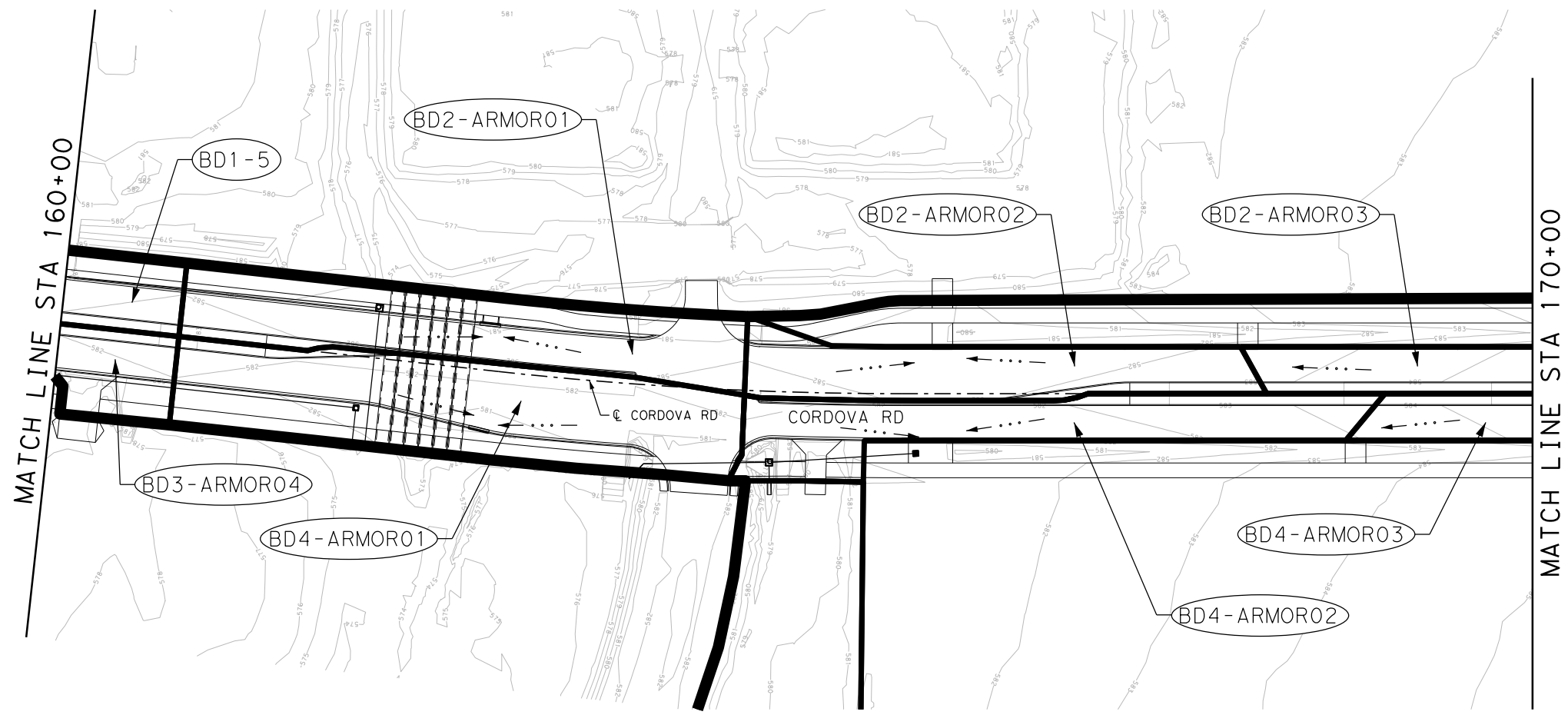
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
 It's real.			
 Texas Department of Transportation ©2023			
DRAINAGE AREA MAP SYSTEM B STA XX+XX TO STA 160+00 SHEET 1 OF 2			
CHK DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.
DWG:	DIST.	COUNTY	CONT. NO.
CHK DWG:	SAT	GUADALUPE	0915
			46
			052
			258

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_da_B02.dgn



LEGEND

- R.O.W.
- INLET DRAINAGE AREA BOUNDARY
- SYSTEM DRAINAGE AREA BOUNDARY
- 850- EXISTING CONTOUR
- - - - FLOW ARROW
- (X-X) DRAINAGE AREA

NOTES:

1. DRAINAGE AREAS OFF ROW DELINEATED USING EXISTING 1-FT CONTOURS FROM 2017 GIS DATA AND FIELD VERIFIED SITE IMPROVEMENTS.
2. ALL UTILITY LOCATIONS ARE APPROXIMATE. CONTRACTOR SHALL VERIFY DEPTHS AND LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
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DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JACOB J. POWELL

P.E. SERIAL NO: 108825

DATE: 11/17/2023

APPROVAL

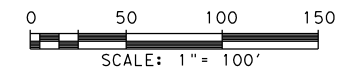
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



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 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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**DRAINAGE AREA MAP
SYSTEM B**

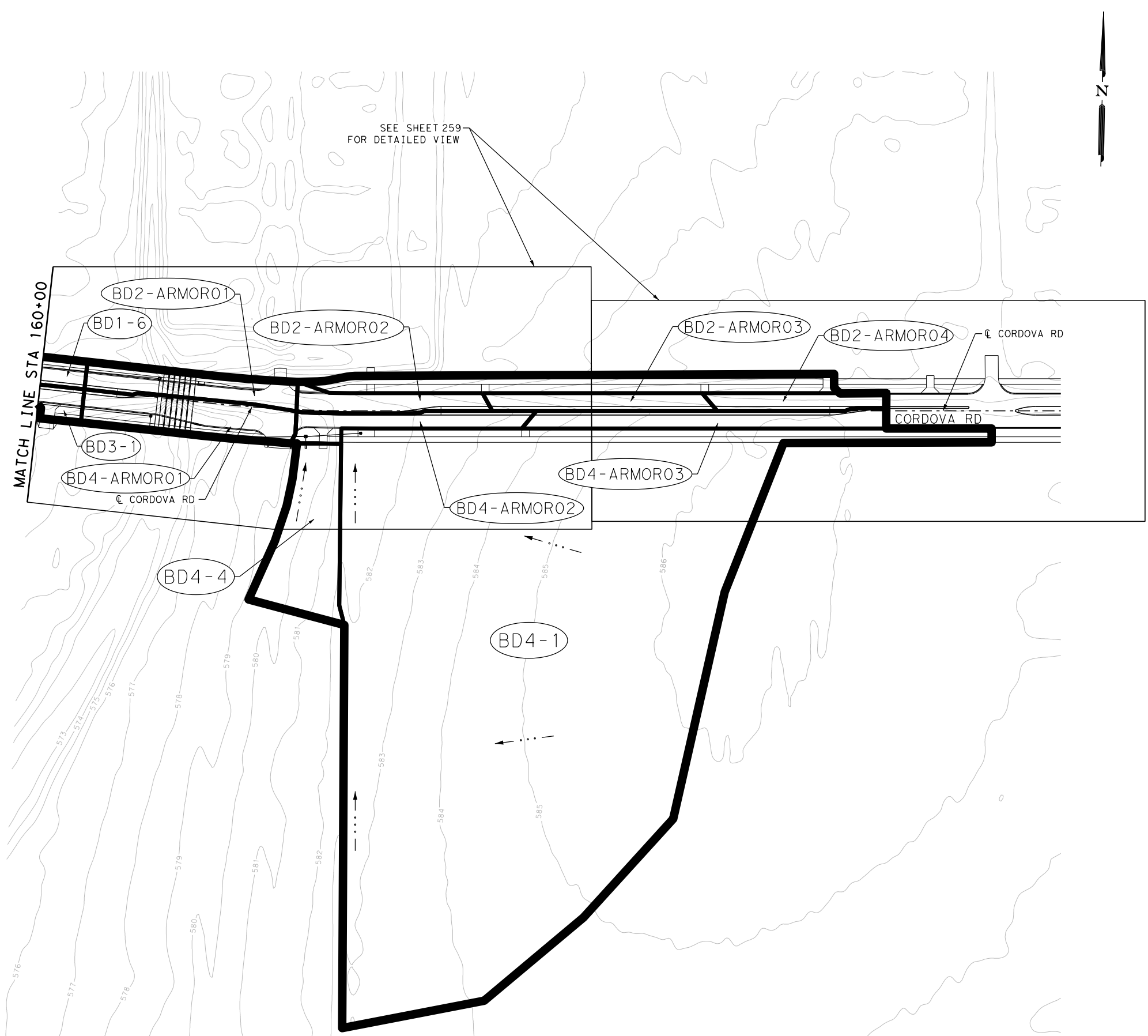
STA 160+00 TO STA 180+00

SHEET 2 OF 3

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	259

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_da_B03.dgn



LEGEND

- R.O.W.
- INLET DRAINAGE AREA BOUNDARY
- SYSTEM DRAINAGE AREA BOUNDARY
- 850— EXISTING CONTOUR
- · · · → FLOW ARROW
- (X-X) DRAINAGE AREA

- NOTES:**
1. DRAINAGE AREAS OFF ROW DELINEATED USING EXISTING 1-FT CONTOURS FROM 2017 GIS DATA AND FIELD VERIFIED SITE IMPROVEMENTS.
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DESIGN

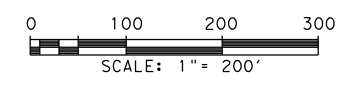
INTERIM REVIEW

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 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS

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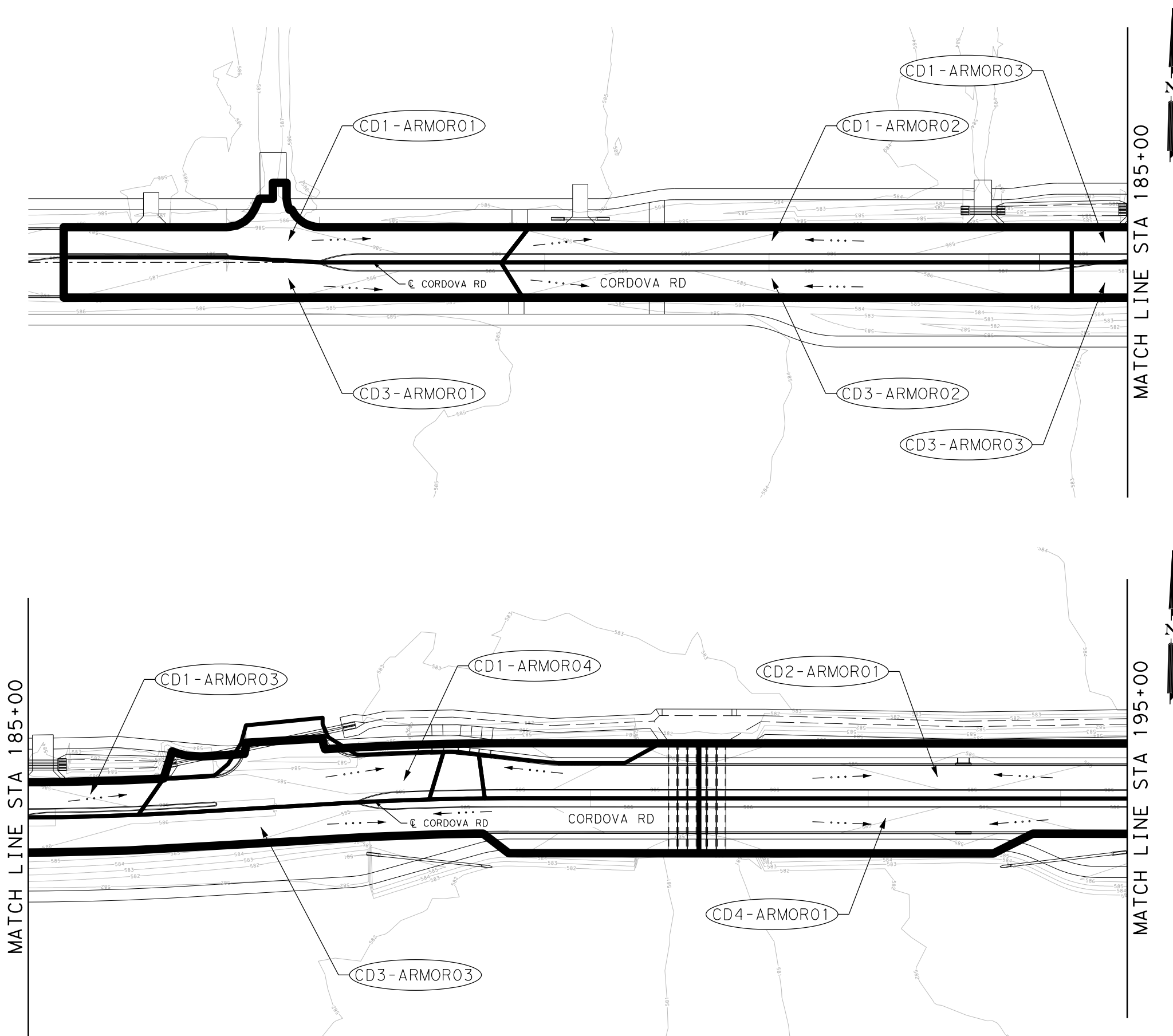
DRAINAGE AREA MAP SYSTEM B

STA 160+00 TO STA 180+00
 SHEET 3 OF 3

CHK	DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK	DGN:	6	TEXAS		CORDOVA		
CHK	DGN:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK	DGN:	SAT	GUADALUPE	0915	46	052	260

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_da_c01.dgn



LEGEND

- R.O.W.
- INLET DRAINAGE AREA BOUNDARY
- SYSTEM DRAINAGE AREA BOUNDARY
- 850- EXISTING CONTOUR
- >->- FLOW ARROW
- (X-X) DRAINAGE AREA

- NOTES:**
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DESIGN

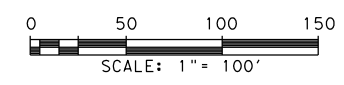
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

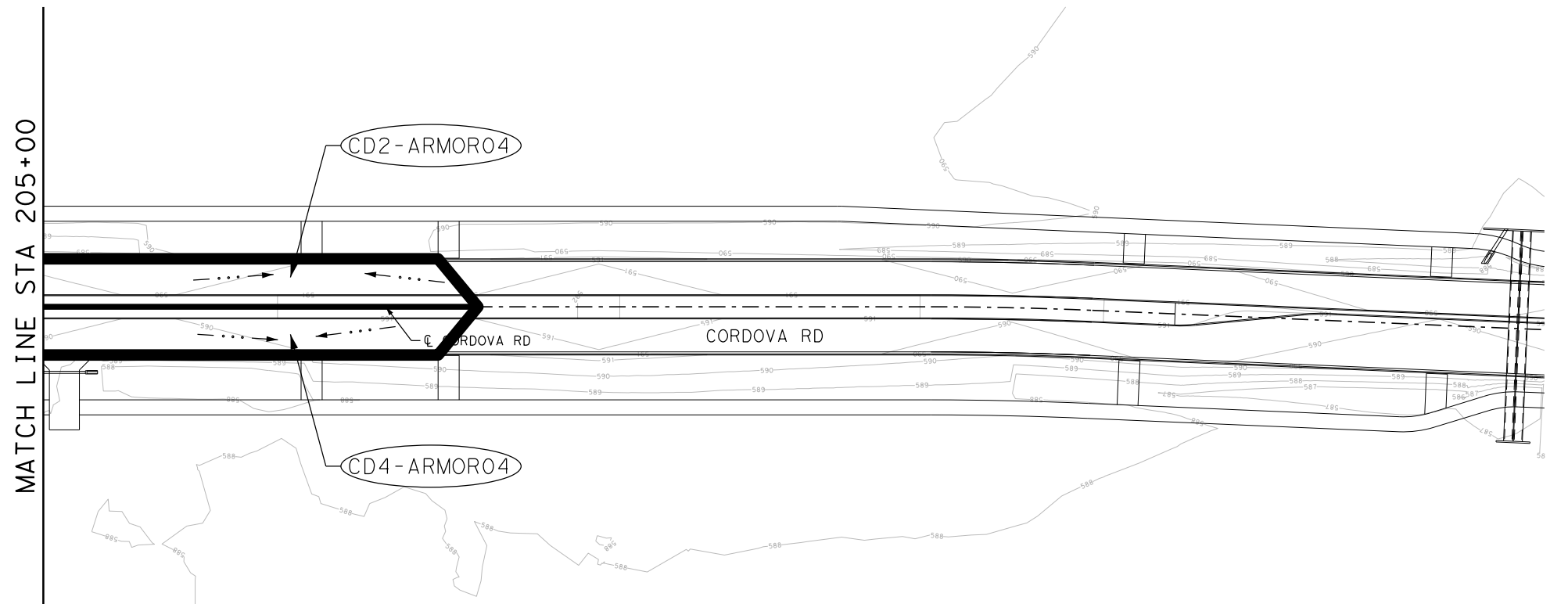
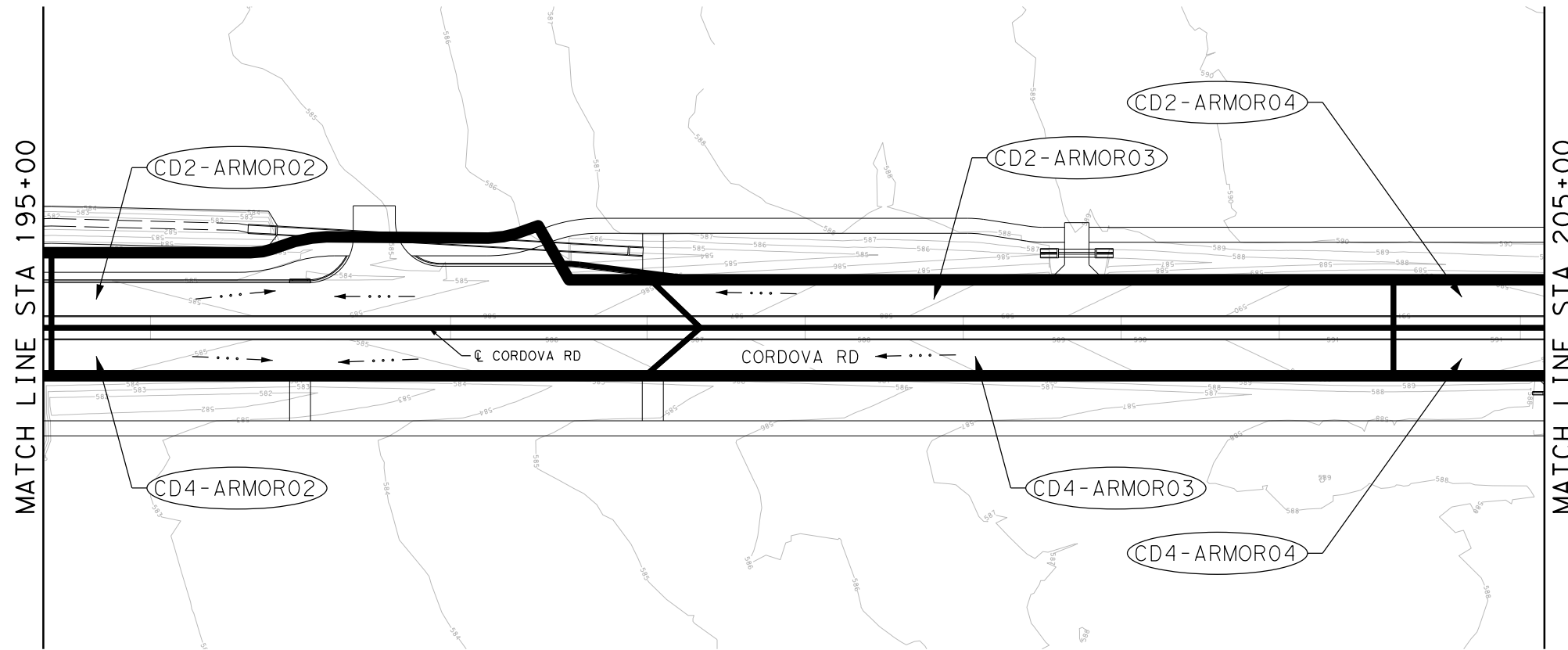
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
<p>PAPE-DAWSON ENGINEERS</p> <p>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</p>			
<p>SEGUIN TEXAS</p> <p>It's real.</p>			
<p>Texas Department of Transportation © 2023</p>			
<p>DRAINAGE AREA MAP SYSTEM C</p> <p>STA 175+00 TO STA 195+00</p> <p style="text-align: right;">SHEET 1 OF 2</p>			
DN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.
CHK DN:	6	TEXAS	
DW:	DIST.	COUNTY	CONT. NO.
CHK DW:	SAT	GUADALUPE	0915
			SECT. NO.
			46
			JOB NO.
			052
			SHEET NO.
			261

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civi\Drainage\1277500_da_C02.dgn



LEGEND

- R.O.W.
- INLET DRAINAGE AREA BOUNDARY
- SYSTEM DRAINAGE AREA BOUNDARY
- 850— EXISTING CONTOUR
- · · · — FLOW ARROW
- (X-X) DRAINAGE AREA

NOTES:

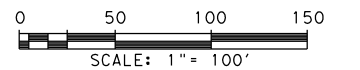
1. DRAINAGE AREAS OFF ROW DELINEATED USING EXISTING 1-FT CONTOURS FROM 2017 GIS DATA AND FIELD VERIFIED SITE IMPROVEMENTS.
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
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SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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DRAINAGE AREA MAP
 SYSTEM C

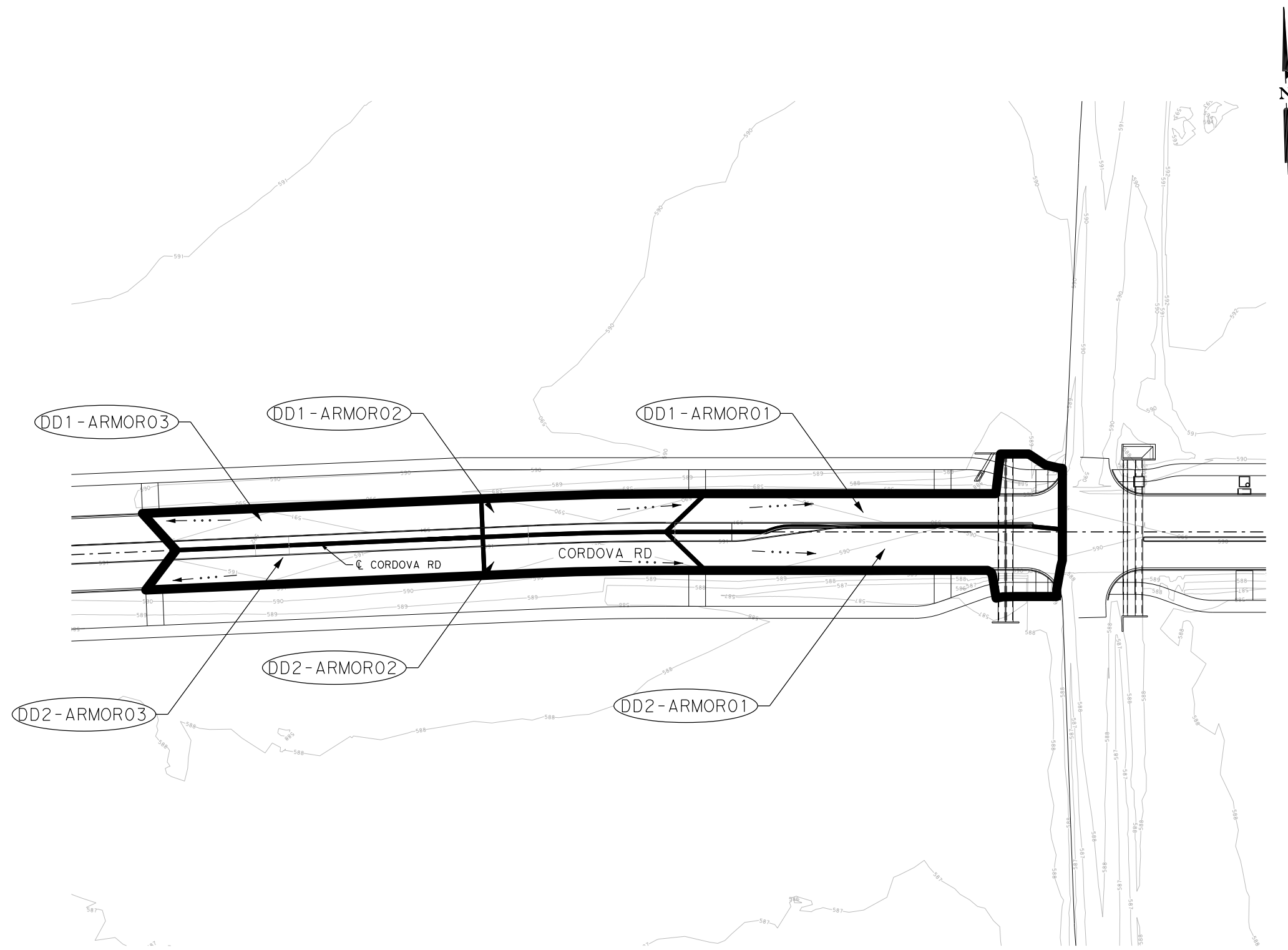
STA 195+00 TO STA 215+00

SHEET 2 OF 2

CHK	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
DGN:	6	TEXAS		CORDOVA		
CHK	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
DWG:	SAT	GUADALUPE	0915	46	052	262

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_da_D01.dgn



LEGEND

- R.O.W.
- INLET DRAINAGE AREA BOUNDARY
- SYSTEM DRAINAGE AREA BOUNDARY
- 850— EXISTING CONTOUR
- · · · — FLOW ARROW
- (X-X) DRAINAGE AREA

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DESIGN

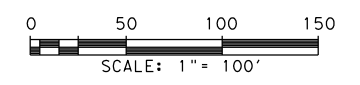
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 <small>TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</small>			

 It's real.	
 © 2023	

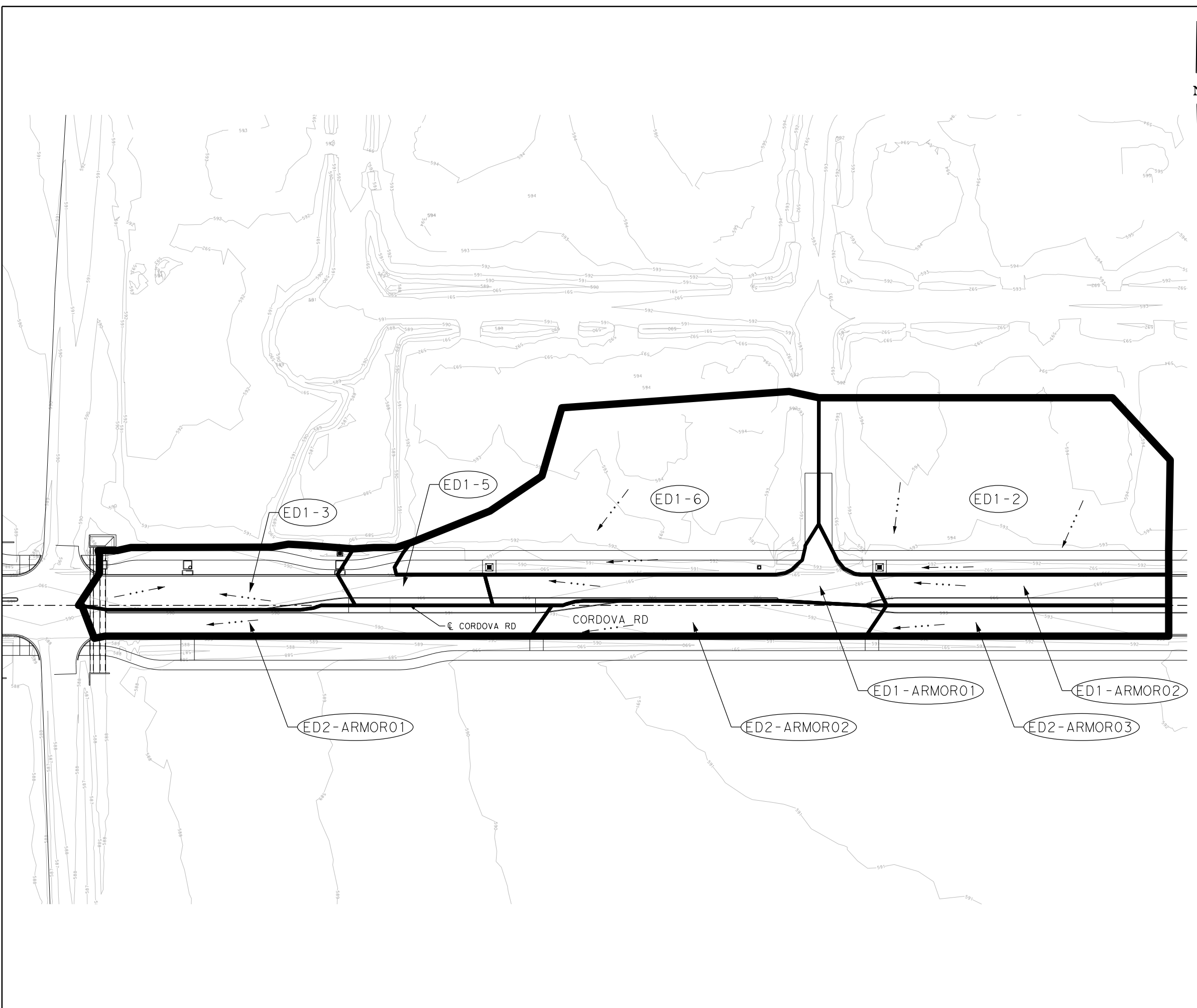
DRAINAGE AREA MAP
SYSTEM D

STA 207+00 TO STA 217+00
 SHEET 1 OF 1

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				263

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_da.E01.dgn



LEGEND

- R.O.W.
- INLET DRAINAGE AREA BOUNDARY
- SYSTEM DRAINAGE AREA BOUNDARY
- 850— EXISTING CONTOUR
- · · · — FLOW ARROW
- (X-X) DRAINAGE AREA

NOTES:

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DESIGN

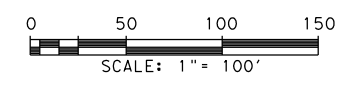
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
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Pape-Dawson Engineers

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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Texas Department of Transportation
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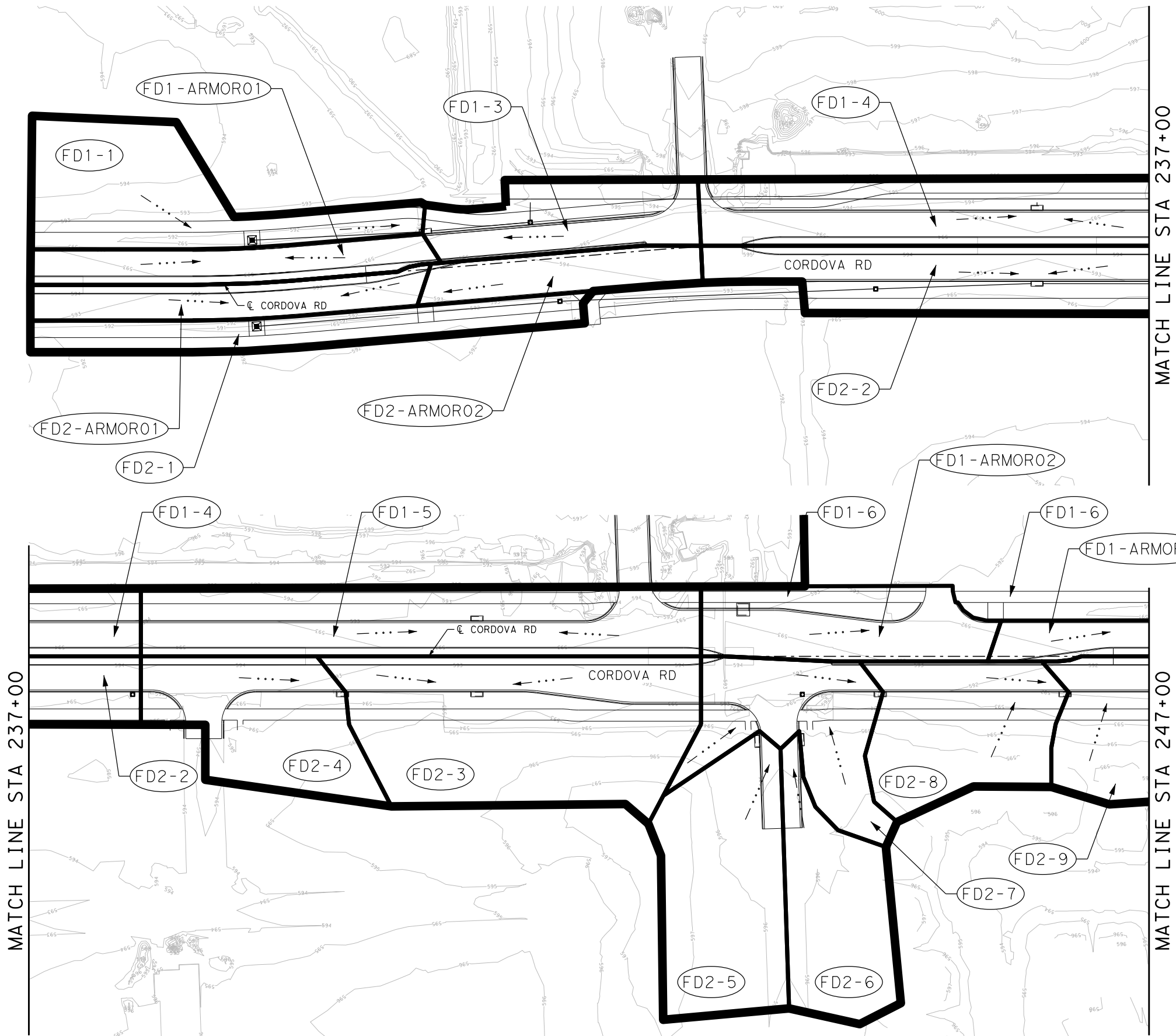
DRAINAGE AREA MAP SYSTEM E

STA XX+XX TO STA XX+XX
SHEET 1 OF 1

CHK	DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
		6	TEXAS		CORDOVA		
CHK	DGN:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
		SAT	GUADALUPE	0915	46	052	264

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_da_F01.dgn



LEGEND

- R.O.W.
- INLET DRAINAGE AREA BOUNDARY
- SYSTEM DRAINAGE AREA BOUNDARY
- 850— EXISTING CONTOUR
- · · · -> FLOW ARROW
- (X-X) DRAINAGE AREA

NOTES:

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DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JACOB J. POWELL

P.E. SERIAL NO: 108825

DATE: 11/17/2023

APPROVAL

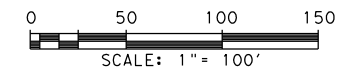
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
----------	------	-------------	----



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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**DRAINAGE AREA MAP
SYSTEM F**

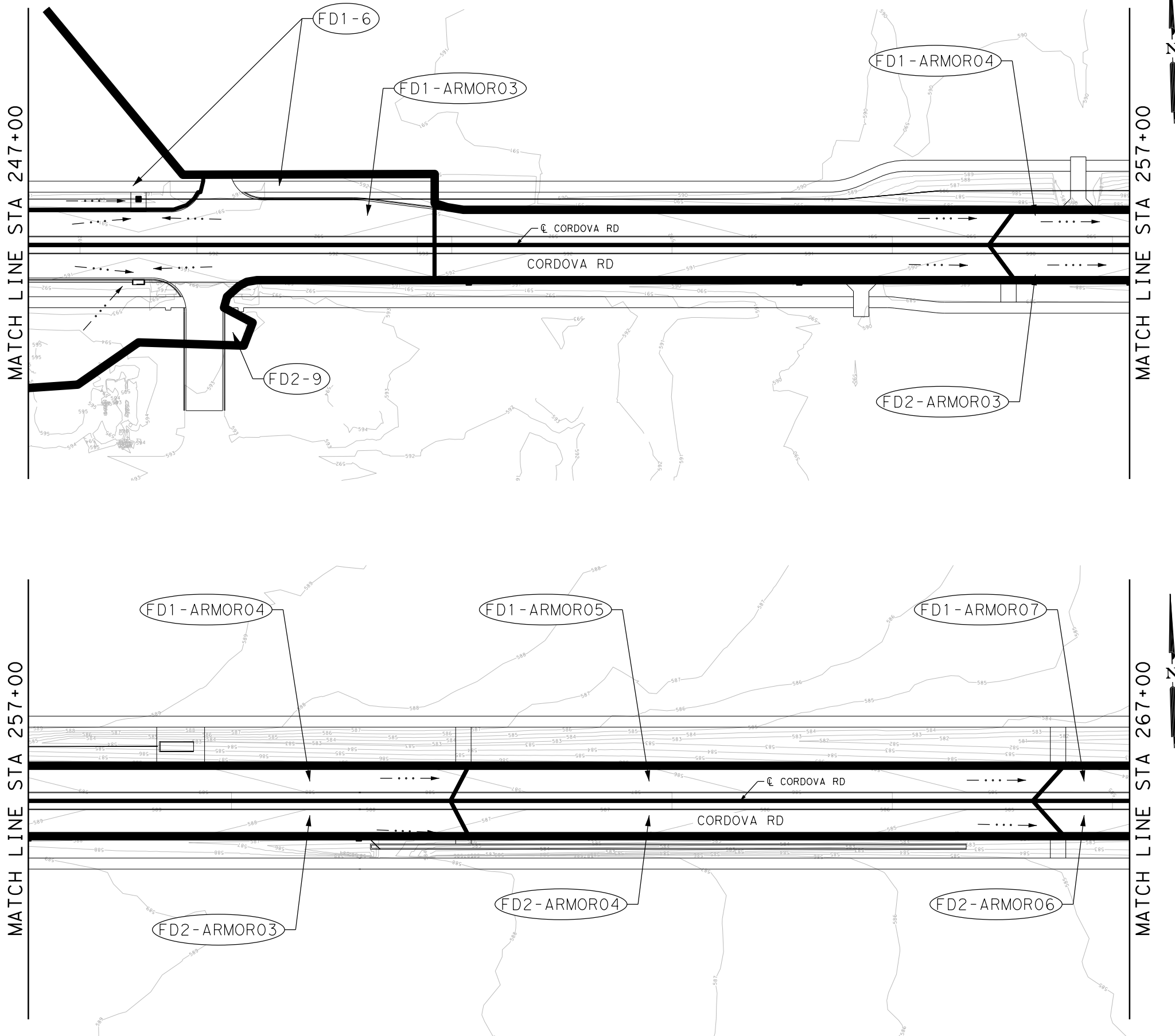
STA 227+00 TO STA 247+00

SHEET 1 OF 4

CHK	DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK	6	TEXAS		CORDOVA		
CHK	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK	SAT	GUADALUPE	0915	46	052	265

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_da_F02.dgn



LEGEND

- R.O.W.
- INLET DRAINAGE AREA BOUNDARY
- SYSTEM DRAINAGE AREA BOUNDARY
- 850- EXISTING CONTOUR
- ...-> FLOW ARROW
- (X-X) DRAINAGE AREA

- NOTES:**
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DESIGN

INTERIM REVIEW

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ENGINEER: JACOB J. POWELL

P.E. SERIAL NO: 108825

DATE: 11/17/2023

APPROVAL

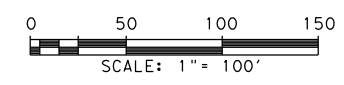
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
<p>PAPE-DAWSON ENGINEERS</p> <p>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</p>			
<p>It's real.</p>			
<p>Texas Department of Transportation © 2023</p>			

DRAINAGE MAP AREA SYSTEM F

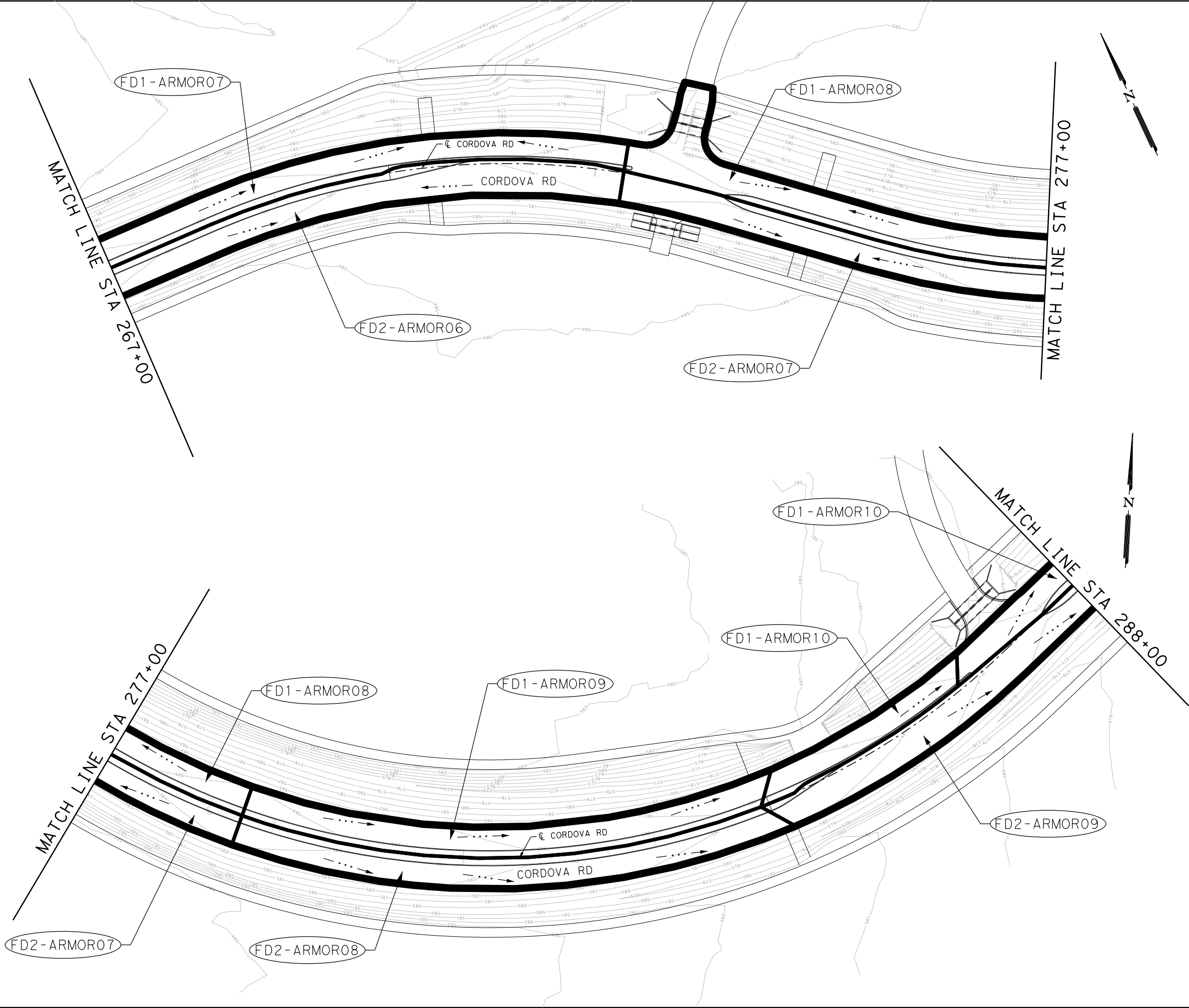
STA 247+00 TO STA 267+00

SHEET 2 OF 4

CHK DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
	SAT	GUADALUPE	0915	46
CHK DWG:			JOB NO.:	SHEET NO.:
			052	266

Plotted on: 11/17/2023

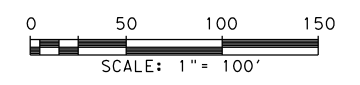
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DESIGN
INTERIM REVIEW
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 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			

It's real.

Texas Department of Transportation
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**DRAINAGE AREA MAP
 SYSTEM F**

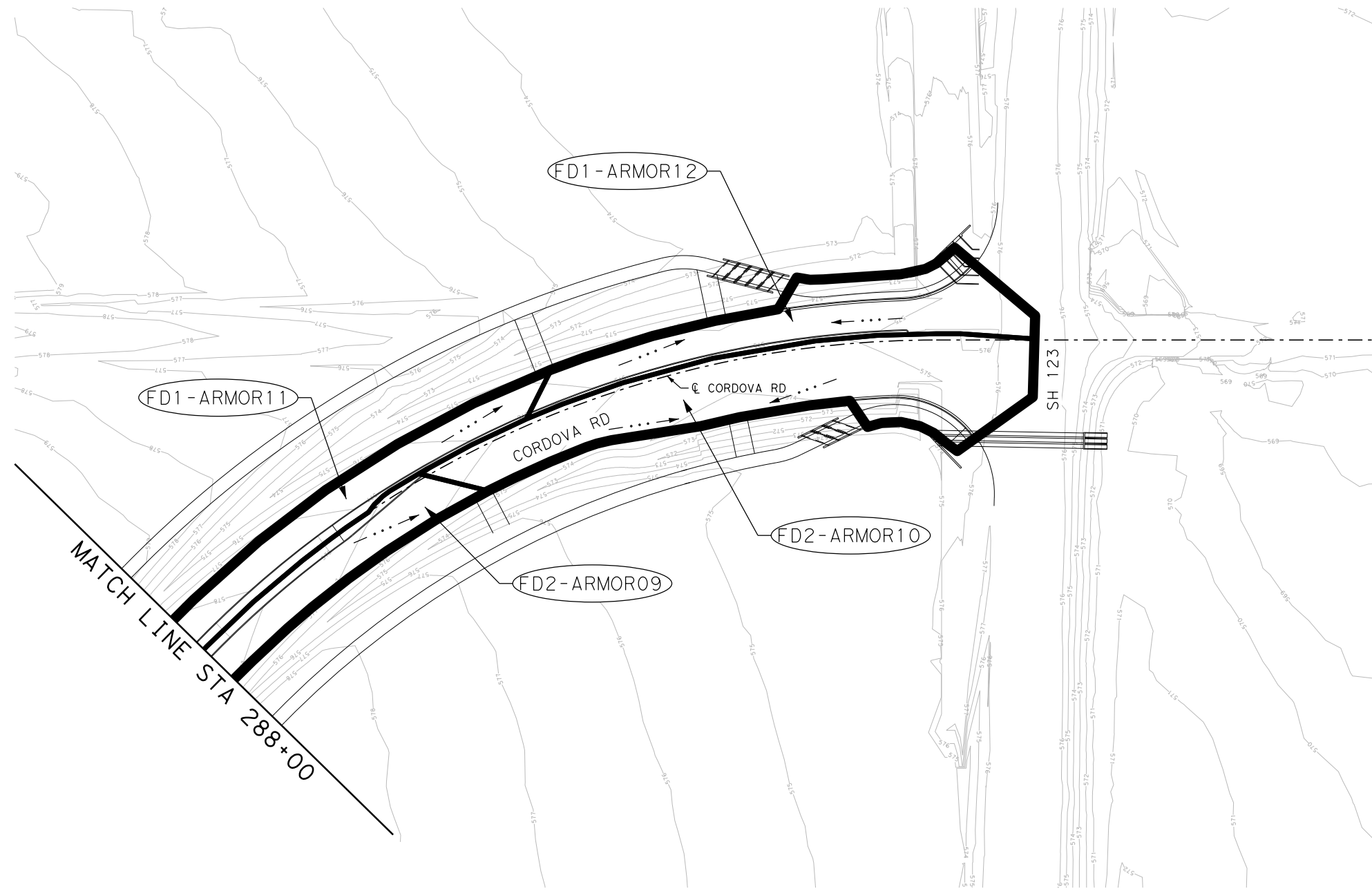
STA 267+00 TO STA 288+00

SHEET 3 OF 4

CHK	DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK	DGN:	6	TEXAS		CORDOVA		
CHK	DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK	DWG:	SAT	GUADALUPE	0915	46	052	267

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_da_F04.dgn



LEGEND

- R.O.W.
- INLET DRAINAGE AREA BOUNDARY
- SYSTEM DRAINAGE AREA BOUNDARY
- 850— EXISTING CONTOUR
- · · · → FLOW ARROW
- (X-X) DRAINAGE AREA

NOTES:

1. DRAINAGE AREAS OFF ROW DELINEATED USING EXISTING 1-FT CONTOURS FROM 2017 GIS DATA AND FIELD VERIFIED SITE IMPROVEMENTS.
2. ALL UTILITY LOCATIONS ARE APPROXIMATE. CONTRACTOR SHALL VERIFY DEPTHS AND LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
3. ALL PIPES ARE NORMAL TO AND STRAIGHT FROM STRUCTURE UNLESS OTHERWISE SHOWN.
4. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK, i.e. FADED

DESIGN

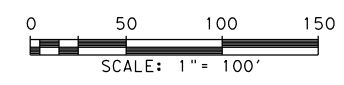
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS

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DRAINAGE AREA MAP SYSTEM F

STA 288+00 TO END PROJECT

SHEET 4 OF 4

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	268

Plotted on: 11/17/2023

Design File Name: P:\1275\00\Design\Civil\Drainage\127500_hyd_z1.dgn

Crossing Discharge Data

Discharge Selection Method: Recurrence

Rating Curve Plot for Crossing: Culvert_Z_Prop

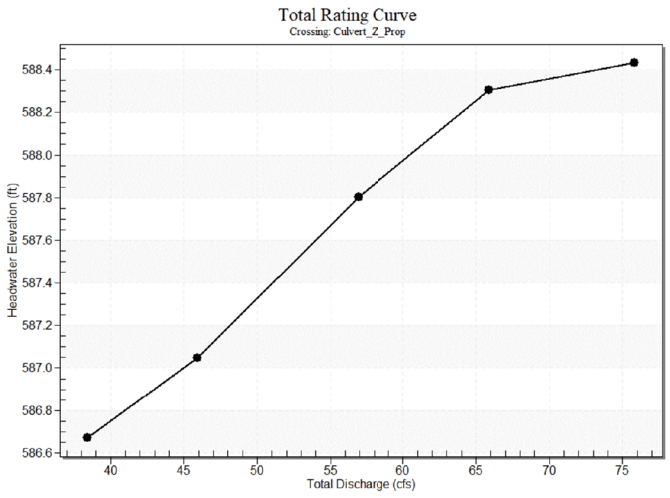


Table 1 - Summary of Culvert Flows at Crossing: Culvert_Z_Prop

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Culvert_Z_Prop Discharge (cfs)	Roadway Discharge (cfs)	Iterations
586.67	5 year	38.40	38.40	0.00	1
587.05	10 year*	45.93	45.93	0.00	1
587.80	25 year	56.92	56.92	0.00	1
588.30	50 year	65.90	63.30	2.55	16
588.43	100 year†	75.83	64.72	11.06	7
588.20	Overtopping	61.98	61.98	0.00	Overtopping

*Design Storm
†Check Storm

Culvert Data: Culvert_Z_Prop

Table 2 - Culvert Summary Table: Culvert_Z_Prop

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
5 year	38.40 cfs	38.40 cfs	586.67	2.28	2.821	7-M2c	2.50	1.49	1.49	0.48	6.31	0.90
10 year*	45.93 cfs	45.93 cfs	587.05	3.22	3.754	7-M2c	2.50	1.82	1.82	0.54	7.44	0.92
25 year	56.92 cfs	56.92 cfs	587.80	3.62	4.254	7-M2c	2.50	1.92	1.92	0.56	7.84	0.94
50 year	65.90 cfs	63.30 cfs	588.30	3.72	4.382	7-M2c	2.50	1.94	1.94	0.59	7.93	0.92
100 year†	75.83 cfs	64.72 cfs	588.43									

*Design Storm
†Check Storm

Culvert Barrel Data

Culvert Barrel Type: Straight Culvert
 Inlet Elevation (invert): 584.05 ft
 Outlet Elevation (invert): 583.87 ft
 Culvert Length: 193.00 ft, (Between SET ends)
 Culvert Slope: 0.0009

Roadway Data for Crossing: Culvert_Z_Prop

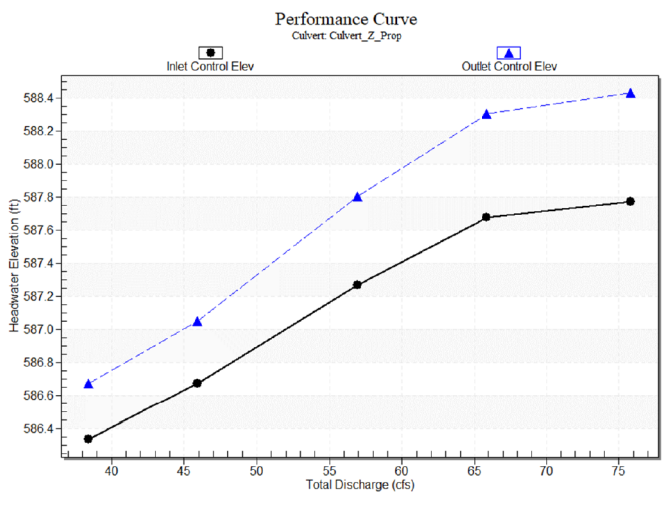
Roadway Profile Shape: Irregular Roadway Shape (coordinates)

Irregular Roadway Cross-Section

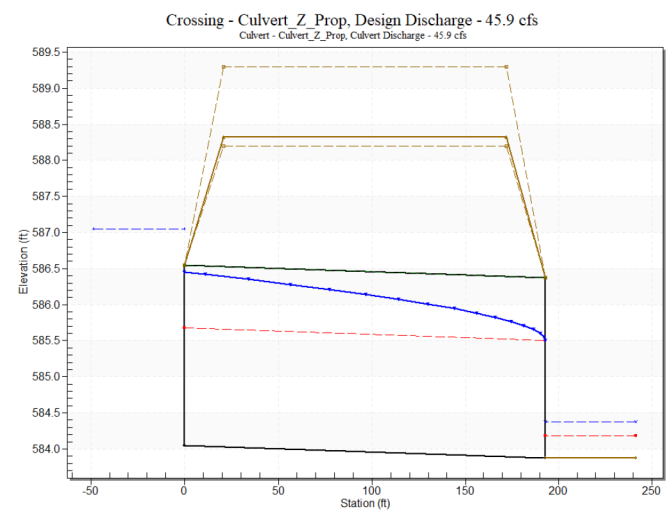
Coord No.	Station (ft)	Elevation (ft)
0	0.00	588.20
1	20.00	588.20
2	40.00	588.32
3	60.00	588.69
4	80.00	588.98
5	100.00	589.19
6	120.00	589.30

Roadway Surface: Paved
 Roadway Top Width: 151.33 ft

Culvert Performance Curve Plot: Culvert_Z_Prop



Water Surface Profile Plot for Culvert: Culvert_Z_Prop



Site Data - Culvert_Z_Prop

Site Data Option: Culvert Invert Data
 Inlet Station: 0.00 ft
 Inlet Elevation: 584.05 ft
 Outlet Station: 193.00 ft (Between SET ends)
 Outlet Elevation: 583.87 ft
 Number of Barrels: 2

Culvert Data Summary - Culvert_Z_Prop

Barrel Shape: Circular
 Barrel Diameter: 2.50 ft
 Barrel Material: Concrete
 Embedment: 0.00 in
 Barrel Manning's n: 0.0130
 Culvert Type: Straight
 Inlet Configuration: Mitered to Conform to Slope (Ke=0.7)
 Inlet Depression: None

Tailwater Data for Crossing: Culvert_Z_Prop

Table 3 - Downstream Channel Rating Curve (Crossing: Culvert_Z_Prop)

Flow (cfs)	Water Surface Elev (ft)	Velocity (ft/s)	Depth (ft)	Shear (psf)	Froude Number
38.40	584.35	0.48	0.90	0.09	0.43
45.93*	584.38	0.51	0.91	0.09	0.41
56.92	584.41	0.54	0.92	0.10	0.40
65.90	584.43	0.56	0.94	0.11	0.39
75.83†	584.46	0.59	0.92	0.11	0.39

*Design Storm
†Check Storm

Tailwater Channel Data - Culvert_Z_Prop

Tailwater Channel Option: Irregular Channel
 Channel Slope: Irregular Channel

User Defined Channel Cross-Section

Coord No.	Station (ft)	Elevation (ft)	Manning's n
1	0.00	584.51	0.0350
2	60.00	584.50	0.0350
3	120.00	584.44	0.0350
4	180.00	584.44	0.0350
5	240.00	584.39	0.0350
6	300.00	584.33	0.0350
7	360.00	584.34	0.0350
8	420.00	584.30	0.0350
9	480.00	584.28	0.0350
10	540.00	583.87	0.0320
11	555.00	583.87	0.0320
12	570.00	583.96	0.0300
13	585.00	584.08	0.0300
14	600.00	586.46	0.0160
15	615.00	587.94	0.0000

DESIGN

INTERIM REVIEW
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 P. E. SERIAL NO: 108825
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APPROVAL

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 ENGINEER: JOHN A. TYLER
 P. E. SERIAL NO: 105193
 DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY

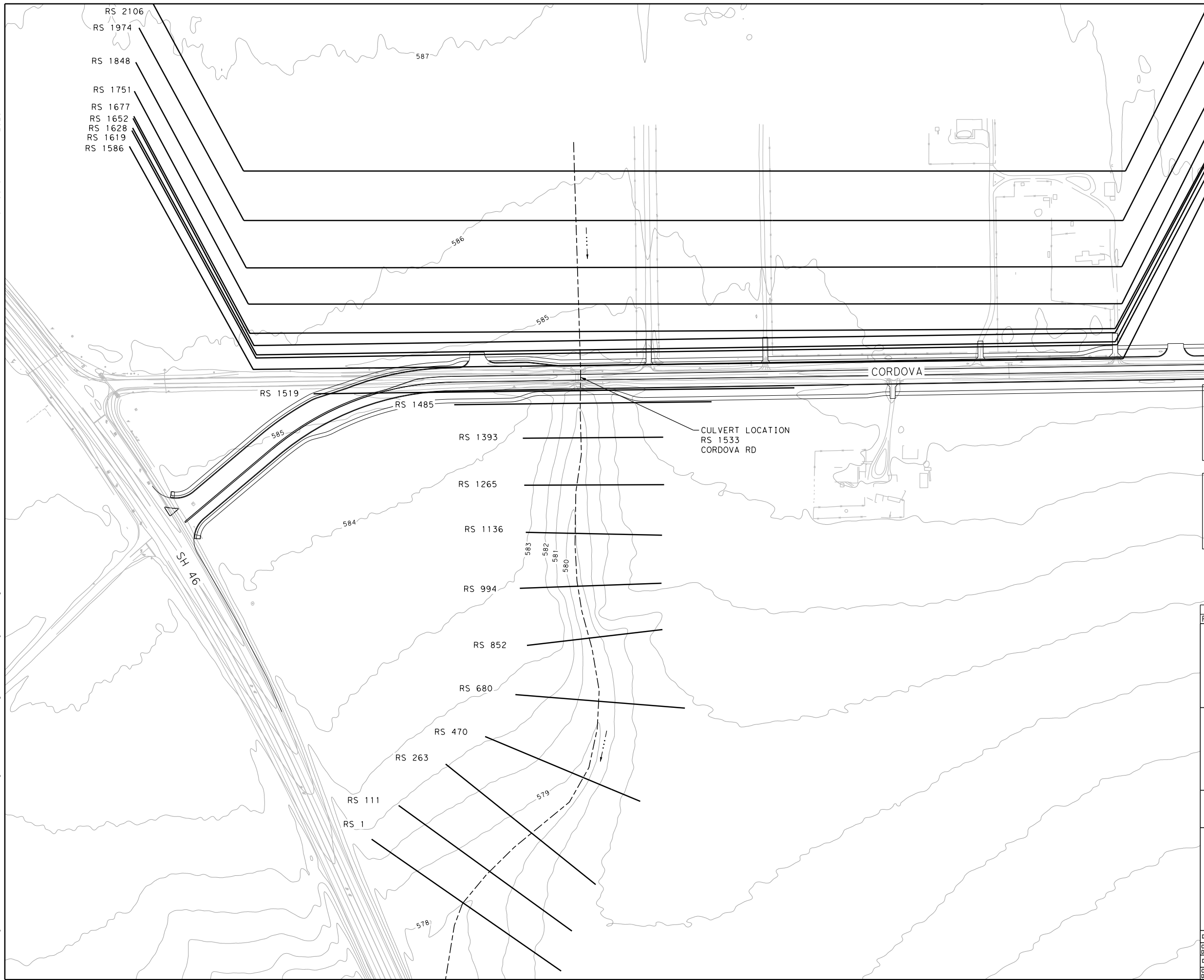
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HYDRAULIC DATA SHEET CULVERT Z

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	269

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_hyd_A01.dgn



- NOTES:
1. HEC-RAS VERSION 6.3.1 USED FOR HYDRAULIC CALCULATIONS.
 2. TOPOGRAPHIC DATA BASED ON 1-FT CONTOURS FROM 2017 STRATMAP CENTRAL TEXAS LIDAR DATASET ABD FIELD SURVEY.
 3. FOR CULVERTS CROSSING CORDOVA RD, 25YR AEP STORM USED FOR DESIGN, PER CITY OF SEGUIN CRITERIA.

DESIGN

INTERIM REVIEW

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ENGINEER: JACOB J. POWELL

P.E. SERIAL NO: 108825

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ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
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HYDRAULIC DATA SHEET
CULVERT A

SHEET 1 OF 5

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
			JOB NO.:	SHEET NO.:
			052	270

HEC-RAS OUTPUT

Plotted on: 11/17/2023
Design File Name: P:\1275\00\Design\Civil\Drainage\127500_hyd_A02.dgn

River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1136	5yr	PRE	212.9	580.05	581.45		581.52	0.002035	2.09	105.48	128.13	0.39
1136	5yr	POST_EX	212.9	580.05	581.45		581.52	0.002035	2.09	105.48	128.13	0.39
1136	5yr	POST_ULI	245.3	580.05	581.54		581.61	0.001993	2.18	117.4	135.89	0.39
1136	10yr	PRE	294.8	580.05	581.66		581.74	0.001963	2.33	133.4	145.19	0.39
1136	10yr	POST_EX	294.8	580.05	581.66		581.74	0.001963	2.33	133.4	145.19	0.39
1136	10yr	POST_ULI	329.6	580.05	581.73		581.82	0.001955	2.42	144.2	151.13	0.4
1136	25yr (Design)	PRE	418.6	580.05	581.9		582	0.001938	2.64	171.28	164.71	0.4
1136	25yr (Design)	POST_EX	418.6	580.05	581.9		582	0.001938	2.64	171.28	164.71	0.4
1136	25yr (Design)	POST_ULI	454.9	580.05	581.96		582.07	0.00194	2.73	182.01	171.88	0.41
1136	50yr	PRE	522.1	580.05	582.07		582.19	0.001937	2.87	201.32	180.54	0.41
1136	50yr	POST_EX	522.1	580.05	582.07		582.19	0.001937	2.87	201.32	180.54	0.41
1136	50yr	POST_ULI	558.5	580.05	582.13		582.25	0.001938	2.94	211.69	185.67	0.41
1136	100yr (Check)	PRE	636.6	580.05	582.24		582.38	0.001936	3.08	233.52	195.77	0.42
1136	100yr (Check)	POST_EX	636.6	580.05	582.24		582.38	0.001936	3.08	233.52	195.77	0.42
1136	100yr (Check)	POST_ULI	672	580.05	582.29		582.43	0.001935	3.14	243.33	200.59	0.42

River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
111	5yr	PRE	212.9	577.96	579.21		578.81	0.002307	1.66	128.38	220.51	0.38
111	5yr	POST_EX	212.9	577.96	579.21		578.81	0.002307	1.66	128.38	220.51	0.38
111	5yr	POST_ULI	245.3	577.96	579.26		578.85	0.00237	1.75	140.54	230.13	0.39
111	10yr	PRE	294.8	577.96	579.33		579.38	0.002444	1.88	157.03	251.4	0.4
111	10yr	POST_EX	294.8	577.96	579.33		579.38	0.002444	1.88	157.03	251.4	0.4
111	10yr	POST_ULI	329.6	577.96	579.37		578.97	0.002492	1.98	168.11	257.03	0.41
111	25yr (Design)	PRE	418.6	577.96	579.47		579.07	0.002603	2.19	194.38	276.61	0.43
111	25yr (Design)	POST_EX	418.6	577.96	579.47		579.07	0.002603	2.19	194.38	276.61	0.43
111	25yr (Design)	POST_ULI	454.9	577.96	579.51		579.11	0.002628	2.27	204.87	279.63	0.44
111	50yr	PRE	522.1	577.96	579.57		579.17	0.002706	2.42	222.81	295.18	0.45
111	50yr	POST_EX	522.1	577.96	579.57		579.17	0.002706	2.42	222.81	295.18	0.45
111	50yr	POST_ULI	558.5	577.96	579.6		579.2	0.002742	2.49	232.48	302.66	0.45
111	100yr (Check)	PRE	636.6	577.96	579.67		579.26	0.002816	2.64	252.77	318.51	0.46
111	100yr (Check)	POST_EX	636.6	577.96	579.67		579.26	0.002816	2.64	252.77	318.51	0.46
111	100yr (Check)	POST_ULI	672	577.96	579.7		579.29	0.002851	2.71	261.72	326.5	0.47

- EXPLANATION OF PLANS:
1. PRE: PRE-PROJECT (EXISTING) GEOMETRY WITH EXISTING FLOWS.
 2. POST_EX: POST-PROJECT (PROPOSED) GEOMETRY WITH EXISTING FLOWS.
 3. POST_ULI: POST-PROJECT (PROPOSED) GEOMETRY WITH ULTIMATE DEVELOPMENT CONDITION FLOWS. SEE ULTIMATE DRAINAGE AREA SHEET FOR COMPUTATION DETAILS.

DESIGN





INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
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APPROVAL

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REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #1028800			
 			
 ©2023			
<h2>HYDRAULIC DATA SHEET</h2> <h3>CULVERT A</h3>			
SHEET 3 OF 5			
DN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.
CH DGN:	6	TEXAS	
DWG:	DIST.	COUNTY	CONT. NO. SECT. NO. JOB NO.
CH DGN:	SAT	GUADALUPE	0915 46 052
			HIGHWAY NO. SHEET NO.
			CORDOVA 272

HEC-RAS CULVERT OUTPUT DATA - EXISTING

Plan: PRE	River 1	Reach 1	RS: 1533	Culv Group:	Culvert #1	Profile: 25yr (Design)
Q Culv Group (cfs)				372.52		Culv Full Len (ft)
# Barrels				3		Culv Vel US (ft/s)
Q Barrel (cfs)				124.17		Culv Vel DS (ft/s)
E.G. US. (ft)				586.19		Culv Inv El Up (ft)
W.S. US. (ft)				586.15		Culv Inv El Dn (ft)
E.G. DS (ft)				583.9		Culv Frctn Ls (ft)
W.S. DS (ft)				583.03		Culv Exit Loss (ft)
Delta EG (ft)				2.29		Culv Entr Loss (ft)
Delta WS (ft)				3.12		Q Weir (cfs)
E.G. IC (ft)				586.19		Weir Sta Lft (ft)
E.G. OC (ft)				585.47		Weir Sta Rgt (ft)
Culvert Control				Inlet		Weir Submerg
Culv WS Inlet (ft)				584.4		Weir Max Depth (ft)
Culv WS Outlet (ft)				582.76		Weir Avg Depth (ft)
Culv Nml Depth (ft)				1.82		Weir Flow Area (sq ft)
Culv Crt Depth (ft)				2.68		Min El Weir Flow (ft)

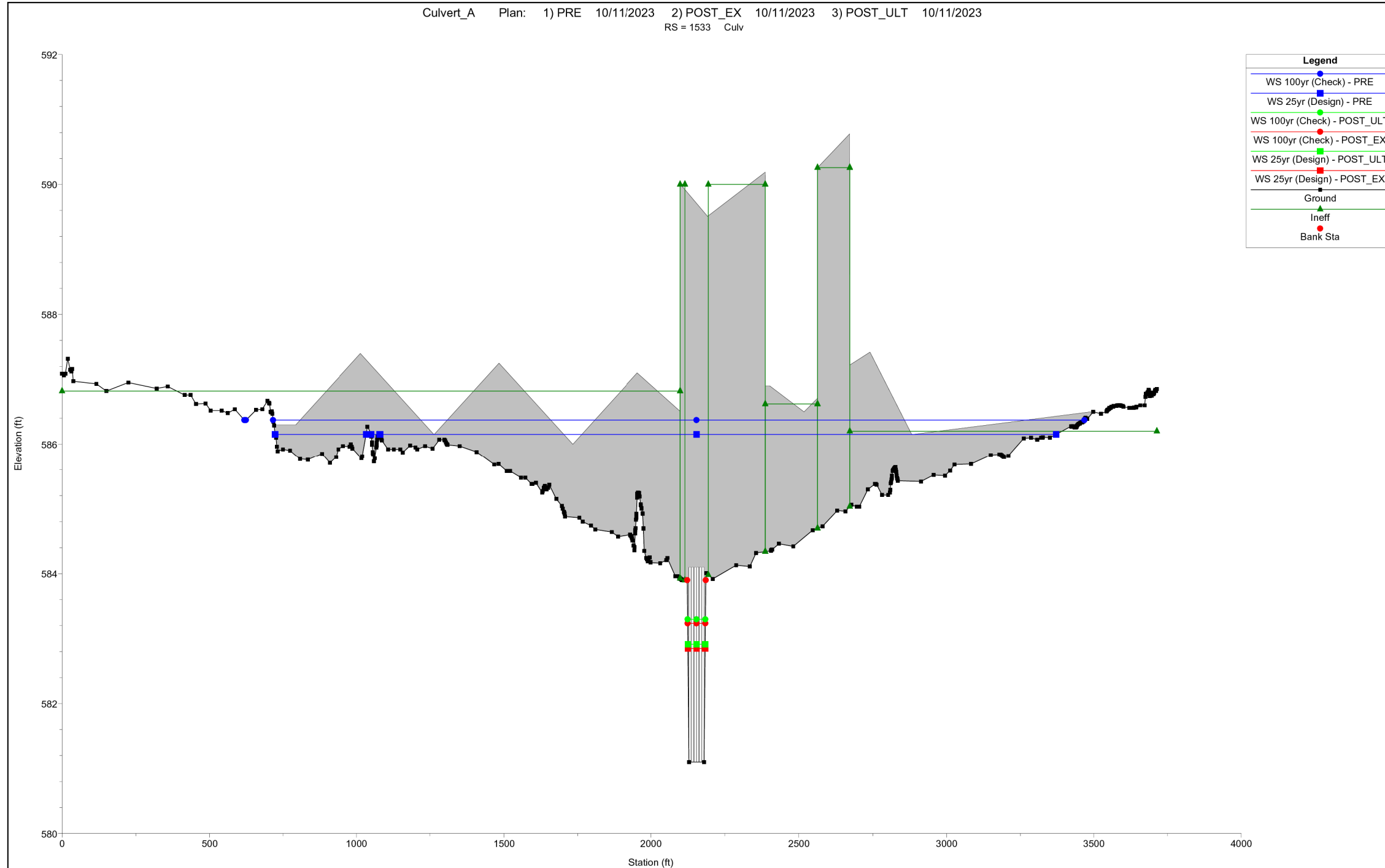
Plan: PRE	River 1	Reach 1	RS: 1533	Culv Group:	Culvert #1	Profile: 100yr (Check)
Q Culv Group (cfs)				503.6		Culv Full Len (ft)
# Barrels				3		Culv Vel US (ft/s)
Q Barrel (cfs)				167.87		Culv Vel DS (ft/s)
E.G. US. (ft)				586.42		Culv Inv El Up (ft)
W.S. US. (ft)				586.37		Culv Inv El Dn (ft)
E.G. DS (ft)				584.73		Culv Frctn Ls (ft)
W.S. DS (ft)				583.58		Culv Exit Loss (ft)
Delta EG (ft)				1.69		Culv Entr Loss (ft)
Delta WS (ft)				2.79		Q Weir (cfs)
E.G. IC (ft)				586.54		Weir Sta Lft (ft)
E.G. OC (ft)				586.42		Weir Sta Rgt (ft)
Culvert Control				Outlet		Weir Submerg
Culv WS Inlet (ft)				584.4		Weir Max Depth (ft)
Culv WS Outlet (ft)				583.96		Weir Avg Depth (ft)
Culv Nml Depth (ft)				2.27		Weir Flow Area (sq ft)
Culv Crt Depth (ft)				3		Min El Weir Flow (ft)

HEC-RAS CULVERT OUTPUT DATA - ULTIMATE PROPOSED

Plan: POST_ULT	River 1	Reach 1	RS: 1533	Culv Group:	Culvert #1	Profile: 25yr (Design)
Q Culv Group (cfs)				454.9		Culv Full Len (ft)
# Barrels				6		Culv Vel US (ft/s)
Q Barrel (cfs)				75.82		Culv Vel DS (ft/s)
E.G. US. (ft)				583.58		Culv Inv El Up (ft)
W.S. US. (ft)				583.34		Culv Inv El Dn (ft)
E.G. DS (ft)				583.07		Culv Frctn Ls (ft)
W.S. DS (ft)				582.85		Culv Exit Loss (ft)
Delta EG (ft)				0.51		Culv Entr Loss (ft)
Delta WS (ft)				0.5		Q Weir (cfs)
E.G. IC (ft)				583.52		Weir Sta Lft (ft)
E.G. OC (ft)				583.58		Weir Sta Rgt (ft)
Culvert Control				Outlet		Weir Submerg
Culv WS Inlet (ft)				582.91		Weir Max Depth (ft)
Culv WS Outlet (ft)				582.85		Weir Avg Depth (ft)
Culv Nml Depth (ft)				1.63		Weir Flow Area (sq ft)
Culv Crt Depth (ft)				1.54		Min El Weir Flow (ft)

Plan: POST_ULT	River 1	Reach 1	RS: 1533	Culv Group:	Culvert #1	Profile: 100yr (Check)
Q Culv Group (cfs)				672		Culv Full Len (ft)
# Barrels				6		Culv Vel US (ft/s)
Q Barrel (cfs)				112		Culv Vel DS (ft/s)
E.G. US. (ft)				584.29		Culv Inv El Up (ft)
W.S. US. (ft)				584		Culv Inv El Dn (ft)
E.G. DS (ft)				583.46		Culv Frctn Ls (ft)
W.S. DS (ft)				583.13		Culv Exit Loss (ft)
Delta EG (ft)				0.83		Culv Entr Loss (ft)
Delta WS (ft)				0.87		Q Weir (cfs)
E.G. IC (ft)				584.24		Weir Sta Lft (ft)
E.G. OC (ft)				584.29		Weir Sta Rgt (ft)
Culvert Control				Outlet		Weir Submerg
Culv WS Inlet (ft)				583.3		Weir Max Depth (ft)
Culv WS Outlet (ft)				583.13		Weir Avg Depth (ft)
Culv Nml Depth (ft)				2.14		Weir Flow Area (sq ft)
Culv Crt Depth (ft)				2		Min El Weir Flow (ft)

PROPOSED CULVERT UPSTREAM HEC-RAS CROSS SECTION OUTPUT



EXPLANATION OF PLANS:

- PRE: PRE-PROJECT (EXISTING) GEOMETRY WITH EXISTING FLOWS.
- POST_EX: POST-PROJECT (PROPOSED) GEOMETRY WITH EXISTING FLOWS.
- POST_ULT: POST-PROJECT (PROPOSED) GEOMETRY WITH ULTIMATE DEVELOPMENT CONDITION FLOWS. SEE ULTIMATE DRAINAGE AREA SHEET FOR COMPUTATION DETAILS.

DESIGN

INTERIM REVIEW
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ENGINEER: JACOB J. POWELL
P. E. SERIAL NO: 108825
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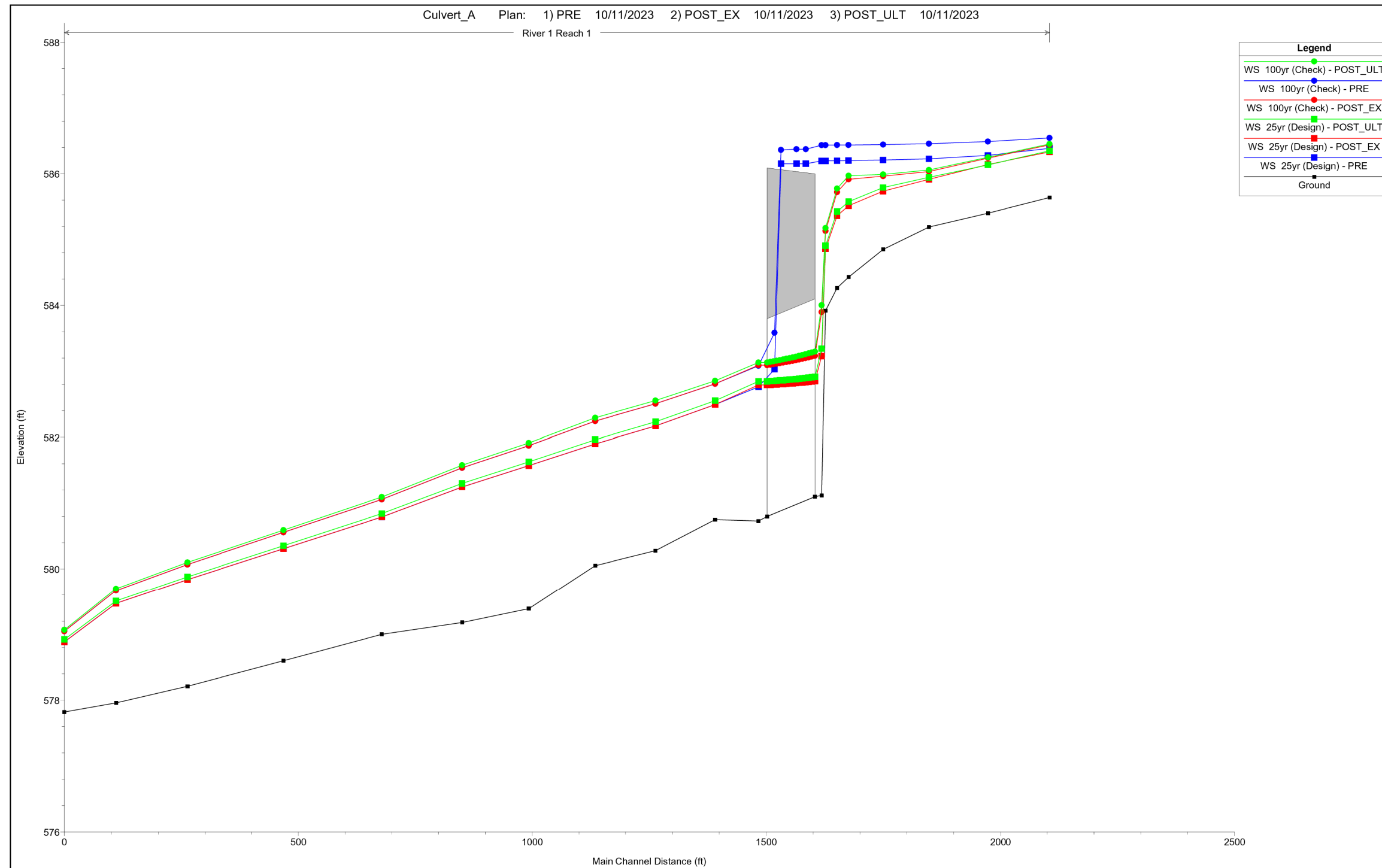
REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
 It's real.			
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HYDRAULIC DATA SHEET CULVERT A			
SHEET 4 OF 5			
DON:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
CHK DGN:	6	TEXAS	
DWG:	DIST.:	COUNTY:	CONT. NO. SECT. NO. JOB NO. SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915 46 052 273

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civi\Drainage\1277500_hyd_A03.dgn

Plotted on: 11/17/2023

HEC-RAS PROFILE PLOT OUTPUT



EXPLANATION OF PLANS:

1. PRE: PRE-PROJECT (EXISTING) GEOMETRY WITH EXISTING FLOWS.
2. POST_EX: POST-PROJECT (PROPOSED) GEOMETRY WITH EXISTING FLOWS.
3. POST_UL: POST-PROJECT (PROPOSED) GEOMETRY WITH ULTIMATE DEVELOPMENT CONDITION FLOWS. SEE ULTIMATE DRAINAGE AREA SHEET FOR COMPUTATION DETAILS.

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JACOB J. POWELL
P. E. SERIAL NO: 108825
DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P. E. SERIAL NO: 105193
DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
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SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



HYDRAULIC DATA SHEET
CULVERT A

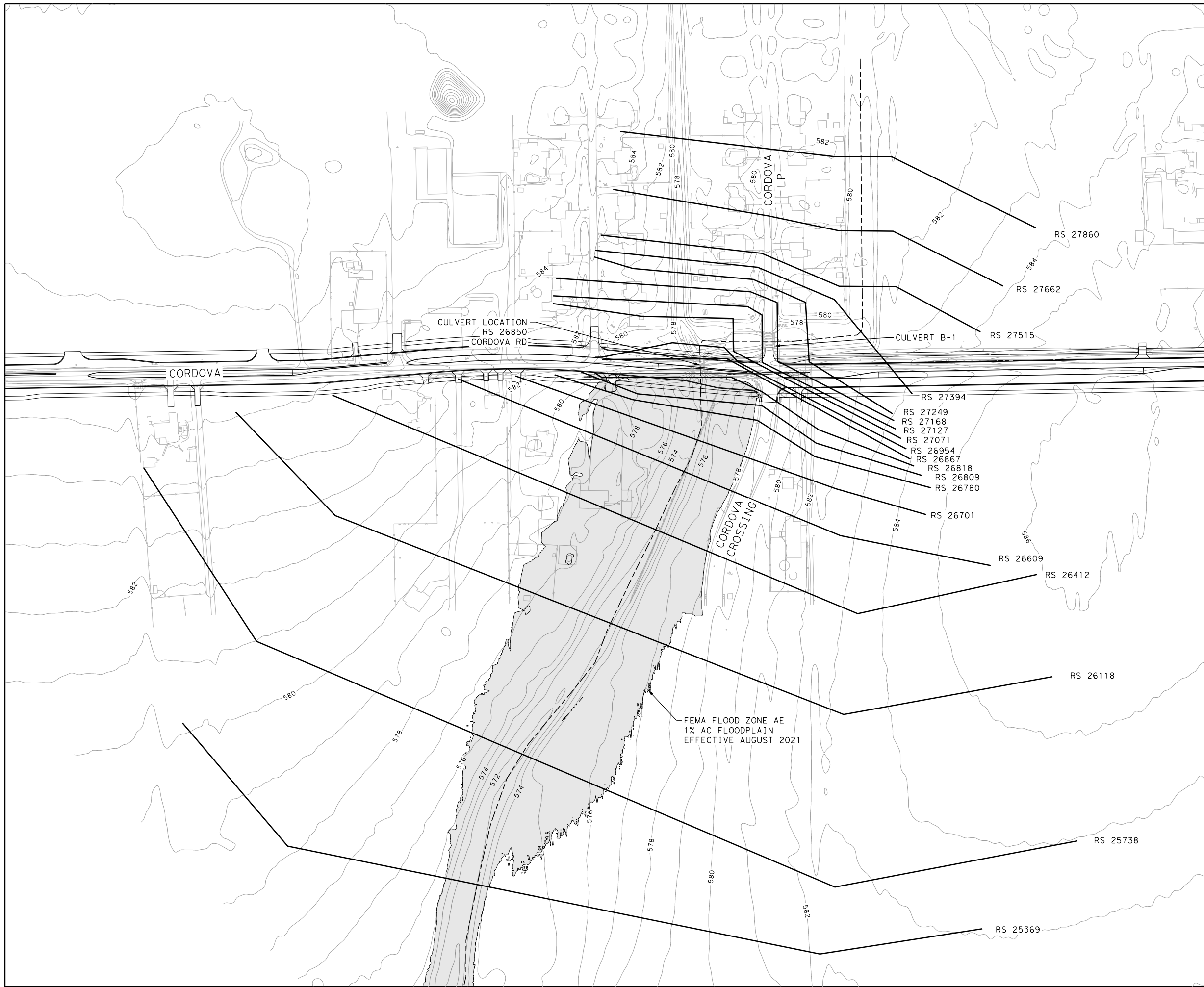
SHEET 5 OF 5

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	274

Design File name: P:\127\75\00\Design\Civi\Drainage\1277500_hyd_A04.dgn

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_hyd_B01.dgn



NOTES:

1. HEC-RAS VERSION 6.3.1 USED FOR HYDRAULIC CALCULATIONS.
2. TOPOGRAPHIC DATA BASED ON 1-FT CONTOURS FROM 2017 STRATMAP CENTRAL TEXAS LIDAR DATASET AND FIELD SURVEY.
3. FOR CULVERTS CROSSING CORDOVA RD, 25YR AEP STORM USED FOR DESIGN, PER CITY OF SEGUIN CRITERIA.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
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SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



**HYDRAULIC DATA SHEET
CULVERT B**

SHEET 1 OF 5

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	275

HEC-RAS OUTPUT

Plotted on: 11/17/2023

Design File name: P:\127.75\00\Design\Civil\Drainage\1277500_hyd_B02.dgn

River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W. S. Elev (ft)	Crit W. S. (ft)	E. G. Elev (ft)	E. G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
27860	5yr	CEM	367.6	579.24	581.04		581.11	0.002132	2.34	192.96	363.15	0.39
27860	5yr	POST_EX	367.6	579.24	581.04		581.11	0.002133	2.34	192.95	363.15	0.39
27860	5yr	POST_ULT	410.3	579.24	581.12		581.19	0.001991	2.34	223.16	407.02	0.38
27860	10yr	CEM	519.6	579.24	581.32		581.39	0.001679	2.3	310.44	511.31	0.35
27860	10yr	POST_EX	519.6	579.24	581.33		581.39	0.001666	2.3	311.65	512.61	0.35
27860	10yr	POST_ULT	567.3	579.24	581.37		581.44	0.001699	2.36	336.45	535.82	0.36
27860	25yr (Design)	CEM	759.5	579.24	581.76		581.8	0.000964	1.99	574.48	711.78	0.28
27860	25yr (Design)	POST_EX	759.5	579.24	581.58		581.64	0.001782	2.5	454.58	627.31	0.37
27860	25yr (Design)	POST_ULT	811.9	579.24	581.62		581.69	0.001733	2.51	483.91	640.66	0.36
27860	50yr	CEM	969.5	579.24	582.15		582.18	0.00055	1.73	876.99	859.22	0.22
27860	50yr	POST_EX	969.5	579.24	581.78		581.84	0.001487	2.49	587.06	715.27	0.34
27860	50yr	POST_ULT	1023.9	579.24	581.85		581.91	0.001318	2.41	640.89	729.93	0.32
27860	100yr (Check)	CEM	1211.1	579.24	582.53		582.55	0.000356	1.57	1221.35	939.66	0.18
27860	100yr (Check)	POST_EX	1211.1	579.24	582.25		582.28	0.000695	2.01	960.95	886.67	0.24
27860	100yr (Check)	POST_ULT	1266.1	579.24	582.35		582.38	0.000584	1.91	1056.9	908.83	0.23

River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W. S. Elev (ft)	Crit W. S. (ft)	E. G. Elev (ft)	E. G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
27127	5yr	CEM	367.6	576.24	579.01		577.83	0.001631	3.68	99.96	152.33	0.41
27127	5yr	POST_EX	367.6	576.24	578.31		577.83	0.004647	5.08	72.38	97.97	0.66
27127	5yr	POST_ULT	410.3	576.24	578.41		577.94	0.004882	5.37	76.37	108.46	0.68
27127	10yr	CEM	519.6	576.24	580.32		578.21	0.000477	2.08	270.4	230.71	0.22
27127	10yr	POST_EX	519.6	576.24	578.75		578.21	0.00465	5.78	89.85	127.68	0.68
27127	10yr	POST_ULT	567.3	576.24	578.93		578.33	0.00433	5.86	96.76	134.94	0.66
27127	25yr (Design)	CEM	759.5	576.24	581.43		578.74	0.000173	1.5	789.41	676.14	0.14
27127	25yr (Design)	POST_EX	759.5	576.24	579.83		578.74	0.002088	3.8	212.11	185.5	0.45
27127	25yr (Design)	POST_ULT	811.9	576.24	580.04		578.83	0.001718	3.66	236.98	200.54	0.42
27127	50yr	CEM	969.5	576.24	581.95		579.13	0.000125	1.4	1180.34	837.53	0.12
27127	50yr	POST_EX	969.5	576.24	580.79		579.13	0.000743	2.72	445.03	345.45	0.28
27127	50yr	POST_ULT	1023.9	576.24	581.16		579.31	0.000492	2.4	620.09	593.34	0.23
27127	100yr (Check)	CEM	1211.1	576.24	582.38		579.44	0.000108	1.39	1562.17	927.35	0.12
27127	100yr (Check)	POST_EX	1211.1	576.24	581.97		579.43	0.000191	1.73	1192.36	852.76	0.15
27127	100yr (Check)	POST_ULT	1266.1	576.24	582.11		579.48	0.000176	1.7	1319.03	889.32	0.15

EXPLANATION OF PLANS:

1. PRE: PRE-PROJECT (EXISTING) GEOMETRY WITH EXISTING FLOWS.
2. POST_EX: POST-PROJECT (PROPOSED) GEOMETRY WITH EXISTING FLOWS.
3. POST_ULT: POST-PROJECT (PROPOSED) GEOMETRY WITH ULTIMATE DEVELOPMENT CONDITION FLOWS. SEE ULTIMATE DRAINAGE AREA SHEET FOR COMPUTATION DETAILS.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P. E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P. E. SERIAL NO: 105193
 DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

It's real.

Texas Department of Transportation
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HYDRAULIC DATA SHEET CULVERT B

SHEET 2 OF 5

DON:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHG DGN:	6	TEXAS		CORDOVA		
DWN:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHG DGN:	SAT	GUADALUPE	0915	46	052	276

Plotted on: 11/17/2023

Design File Name: P:\127.75\00\Design\Civil\Drainage\1277500_hyd_B02.dgn

River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W. S. Elev (ft)	Crit W. S. (ft)	E. G. Elev (ft)	E. G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
26701	5yr	CEM	773.1	573.88	576.44		576.54	0.001232	2.63	323.05	204.86	0.34
26701	5yr	POST_EX	773.1	573.88	576.44		576.54	0.001232	2.63	323.05	204.86	0.34
26701	5yr	POST_ULI	860.6	573.88	576.54		576.65	0.001274	2.75	343.68	207.3	0.35
26701	10yr	CEM	1087	573.88	576.78		576.91	0.0014	3.01	393.9	216.57	0.37
26701	10yr	POST_EX	1087	573.88	576.78		576.91	0.0014	3.01	393.92	216.58	0.37
26701	10yr	POST_ULI	1184.6	573.88	576.88		577.01	0.001456	3.1	415.01	221.88	0.38
26701	25yr (Design)	CEM	1580.3	573.88	577.22		577.39	0.00151	3.48	493.71	240.8	0.39
26701	25yr (Design)	POST_EX	1580.3	573.88	577.22		577.39	0.001509	3.48	493.76	240.8	0.39
26701	25yr (Design)	POST_ULI	1686	573.88	577.3		577.48	0.001524	3.58	513.63	246.36	0.4
26701	50yr	CEM	2009.9	573.88	577.53		577.74	0.001568	3.85	577.3	303.82	0.41
26701	50yr	POST_EX	2009.9	573.88	577.53		577.74	0.001568	3.85	577.34	303.82	0.41
26701	50yr	POST_ULI	2118.1	573.88	577.6		577.82	0.001575	3.93	599.81	305.66	0.41
26701	100yr (Check)	CEM	2501.9	573.88	577.85		578.09	0.001595	4.18	675.76	311.4	0.42
26701	100yr (Check)	POST_EX	2501.9	573.88	577.85		578.09	0.001595	4.18	675.76	311.4	0.42
26701	100yr (Check)	POST_ULI	2610.4	573.88	577.92		578.16	0.001597	4.24	696.62	312.18	0.42
26609	5yr	CEM	773.1	573.66	576.36		576.43	0.000962	2.25	362.39	229.5	0.3
26609	5yr	POST_EX	773.1	573.66	576.36		576.43	0.000962	2.25	362.41	229.51	0.3
26609	5yr	POST_ULI	860.6	573.66	576.46		576.54	0.000985	2.36	385.36	235.82	0.3
26609	10yr	CEM	1087	573.66	576.69		576.79	0.001038	2.62	440.89	244.15	0.32
26609	10yr	POST_EX	1087	573.66	576.69		576.79	0.001038	2.62	440.92	244.16	0.32
26609	10yr	POST_ULI	1184.6	573.66	576.78		576.89	0.001056	2.72	463.85	248.52	0.32
26609	25yr (Design)	CEM	1580.3	573.66	577.12		577.26	0.001127	3.09	549.68	262.2	0.34
26609	25yr (Design)	POST_EX	1580.3	573.66	577.12		577.26	0.001126	3.09	549.73	262.21	0.34
26609	25yr (Design)	POST_ULI	1686	573.66	577.2		577.35	0.001144	3.18	571.14	265.68	0.35
26609	50yr	CEM	2009.9	573.66	577.43		577.6	0.001195	3.43	633.33	274.58	0.36
26609	50yr	POST_EX	2009.9	573.66	577.43		577.6	0.001195	3.43	633.36	274.59	0.36
26609	50yr	POST_ULI	2118.1	573.66	577.5		577.68	0.00121	3.51	653.6	282.26	0.36
26609	100yr (Check)	CEM	2501.9	573.66	577.75		577.95	0.001261	3.78	725.86	320.74	0.38
26609	100yr (Check)	POST_EX	2501.9	573.66	577.75		577.95	0.001261	3.78	725.88	320.75	0.38
26609	100yr (Check)	POST_ULI	2610.4	573.66	577.81		578.02	0.001286	3.87	746.39	327.24	0.38
26412	5yr	CEM	773.1	572.44	576.1		576.21	0.001878	2.87	315.27	231.4	0.36
26412	5yr	POST_EX	773.1	572.44	576.1		576.21	0.001878	2.87	315.23	231.41	0.36
26412	5yr	POST_ULI	860.6	572.44	576.19		576.31	0.001914	2.98	336.95	239.17	0.37
26412	10yr	CEM	1087	572.44	576.41		576.55	0.001988	3.25	391.3	257.49	0.38
26412	10yr	POST_EX	1087	572.44	576.41		576.55	0.001988	3.25	391.27	257.5	0.38
26412	10yr	POST_ULI	1184.6	572.44	576.5		576.64	0.002005	3.35	414.71	264.97	0.38
26412	25yr (Design)	CEM	1580.3	572.44	576.82		577	0.00208	3.72	504.69	291.92	0.4
26412	25yr (Design)	POST_EX	1580.3	572.44	576.82		577	0.00208	3.72	504.68	291.93	0.4
26412	25yr (Design)	POST_ULI	1686	572.44	576.9		577.08	0.0021	3.8	527.69	298.45	0.4
26412	50yr	CEM	2009.9	572.44	577.12		577.33	0.002159	4.06	595.84	316.96	0.41
26412	50yr	POST_EX	2009.9	572.44	577.12		577.33	0.002159	4.06	595.81	316.97	0.41
26412	50yr	POST_ULI	2118.1	572.44	577.19		577.4	0.002176	4.14	618.21	322.84	0.42
26412	100yr (Check)	CEM	2501.9	572.44	577.43		577.66	0.002227	4.4	696.01	342.39	0.43
26412	100yr (Check)	POST_EX	2501.9	572.44	577.43		577.66	0.002228	4.4	695.98	342.4	0.43
26412	100yr (Check)	POST_ULI	2610.4	572.44	577.49		577.73	0.002241	4.47	717.55	347.62	0.43
26118	5yr	CEM	773.1	573.82	575.43		575.55	0.003094	2.79	285.64	238.4	0.43
26118	5yr	POST_EX	773.1	573.82	575.43		575.55	0.003094	2.79	285.64	238.4	0.43
26118	5yr	POST_ULI	860.6	573.82	575.52		575.65	0.003007	2.88	308.23	240.76	0.43
26118	10yr	CEM	1087	573.82	575.75		575.89	0.002874	3.11	362.21	246.35	0.43
26118	10yr	POST_EX	1087	573.82	575.75		575.89	0.002874	3.11	362.21	246.35	0.43
26118	10yr	POST_ULI	1184.6	573.82	575.83		575.99	0.002841	3.21	383.82	248.53	0.43
26118	25yr (Design)	CEM	1580.3	573.82	576.13		576.32	0.002885	3.59	458.35	264.68	0.45
26118	25yr (Design)	POST_EX	1580.3	573.82	576.13		576.32	0.002885	3.59	458.35	264.68	0.45
26118	25yr (Design)	POST_ULI	1686	573.82	576.2		576.4	0.002898	3.69	477.3	271.45	0.45
26118	50yr	CEM	2009.9	573.82	576.4		576.63	0.002941	3.96	534.35	290.94	0.46
26118	50yr	POST_EX	2009.9	573.82	576.4		576.63	0.002941	3.96	534.35	290.94	0.46
26118	50yr	POST_ULI	2118.1	573.82	576.46		576.7	0.002955	4.04	553.14	297.08	0.47
26118	100yr (Check)	CEM	2501.9	573.82	576.68		576.95	0.002998	4.32	618.98	317.58	0.48
26118	100yr (Check)	POST_EX	2501.9	573.82	576.68		576.95	0.002998	4.32	618.98	317.58	0.48
26118	100yr (Check)	POST_ULI	2610.4	573.82	576.74		577.01	0.003009	4.39	637.35	323.09	0.48
25738	5yr	CEM	773.1	572	574.6	573.67	574.66	0.001461	2	390.92	299.04	0.3
25738	5yr	POST_EX	773.1	572	574.6	573.67	574.66	0.001461	2	390.92	299.04	0.3
25738	5yr	POST_ULI	860.6	572	574.69	573.72	574.76	0.001508	2.08	418.37	309.29	0.31
25738	10yr	CEM	1087	572	574.9	573.86	574.98	0.001604	2.27	486.59	333.38	0.32
25738	10yr	POST_EX	1087	572	574.9	573.86	574.98	0.001604	2.27	486.59	333.38	0.32
25738	10yr	POST_ULI	1184.6	572	574.98	573.92	575.07	0.001642	2.34	514.36	342.69	0.33
25738	25yr (Design)	CEM	1580.3	572	575.26	574.14	575.36	0.001739	2.64	609.62	356.23	0.34
25738	25yr (Design)	POST_EX	1580.3	572	575.26	574.14	575.36	0.001739	2.64	609.62	356.23	0.34
25738	25yr (Design)	POST_ULI	1686	572	575.32	574.2	575.43	0.001757	2.72	632.81	357.97	0.35
25738	50yr	CEM	2009.9	572	575.51	574.36	575.64	0.00181	2.94	700.11	362.94	0.36
25738	50yr	POST_EX	2009.9	572	575.51	574.36	575.64	0.00181	2.94	700.11	362.94	0.36
25738	50yr	POST_ULI	2118.1	572	575.57	574.4	575.7	0.001827	3.01	721.47	364.51	0.36
25738	100yr (Check)	CEM	2501.9	572	575.77	574.59	575.93	0.001871	3.23	795.38	369.88	0.37
25738	100yr (Check)	POST_EX	2501.9	572	575.77	574.59	575.93	0.001871	3.23	795.38	369.88	0.37
25738	100yr (Check)	POST_ULI	2610.4	572	575.82	574.63	575.99	0.001884	3.29	815.24	371.31	0.38
25369	5yr	CEM	773.1	571.95	572.95	572.95	573.27	0.021499	4.53	170.63	274.65	1.01
25369	5yr	POST_EX	773.1	571.95	572.95	572.95	573.27	0.021499	4.53	170.63	274.65	1.01
25369	5yr	POST_ULI	860.6	571.95	573.01	573.01	573.34	0.020901	4.66	184.74	279.27	1.01
25369	10yr	CEM	1087	571.95	573.12	573.12	573.51	0.02011	4.98	218.34	290.21	1.01
25369	10yr	POST_EX	1087	571.95	573.12	573.12	573.51	0.02011	4.98	218.34	290.21	1.01
25369	10yr	POST_ULI	1184.6	571.95	573.17	573.17	573.58	0.019695	5.09	232.78	294.73	1.01
25369	25yr (Design)	CEM	1580.3	571.95	573.35	573.35	573.82	0.018661	5.5	287.54	311.48	1.01
25369	25yr (Design)	POST_EX	1580.3	571.95	573.35	573.35	573.82	0.018661	5.5	287.54	311.48	1.01
25369	25yr (Design)	POST_ULI	1686	571.95	573.4	573.4	573.88	0.018498	5.6	301.2	315.33	1.01
25369	50yr	CEM	2009.9	571.95	573.52	573.52	574.06	0.0179	5.91	340.02	320.18	1.01
25369	50yr	POST_EX	2009.9	571.95	573.52	573.52	574.06	0.0179	5.91	340.02	320.18	1.01
25369	50yr	POST_ULI	2118.1	571.95	573.56	573.56	574.12	0.017685	6.01	352.73	321.57	1.01
25369	100yr (Check)	CEM	2501.9	571.95	573.69	573.69	574.31	0.016998	6.31	396.57	326.17	1.01
25369	100yr (Check)	POST_EX	2501.9	571.95	573.69	573.69	574.31	0.016998	6.31	396.57	326.17	1.01
25369	100yr (Check)	POST_ULI	2610.4	571.95	573.73	573.73	574.37	0.016913	6.4	407.97	327.35	1.01

EXPLANATION OF PLANS:

1. PRE: PRE-PROJECT (EXISTING) GEOMETRY WITH EXISTING FLOWS.
2. POST_EX: POST-PROJECT (PROPOSED) GEOMETRY WITH EXISTING

HEC-RAS CULVERT OUTPUT DATA - EXISTING

Plan: CEM	Guadalupe River	Tributary 4a	RS: 26850	Culv Group: Culvert #1	Profile: 25yr (Design)
Q Culv Group (cfs)		1312.8		Culv Full Len (ft)	
# Barrels		1		Culv Vel US (ft/s)	11.76
Q Barrel (cfs)		1312.8		Culv Vel DS (ft/s)	14.67
E.G. US. (ft)		581.22		Culv Inv El Up (ft)	573.95
W.S. US. (ft)		580.58		Culv Inv El Dn (ft)	573.5
E.G. DS (ft)		578.66		Culv Frctn Ls (ft)	0.11
W.S. DS (ft)		576.94		Culv Exit Loss (ft)	1.63
Delta EG (ft)		2.57		Culv Entr Loss (ft)	0.83
Delta WS (ft)		3.64		Q Weir (cfs)	267.5
E.G. IC (ft)		581.22		Weir Sta Lft (ft)	399.16
E.G. OC (ft)		580.82		Weir Sta Rgt (ft)	817.33
Culvert Control		Inlet		Weir Submerg	0
Culv WS Inlet (ft)		578.25		Weir Max Depth (ft)	0.89
Culv WS Outlet (ft)		576.94		Weir Avg Depth (ft)	0.53
Culv Nml Depth (ft)		2.3		Weir Flow Area (sq ft)	131.14
Culv Crt Depth (ft)		4.3		Min El Weir Flow (ft)	580.52

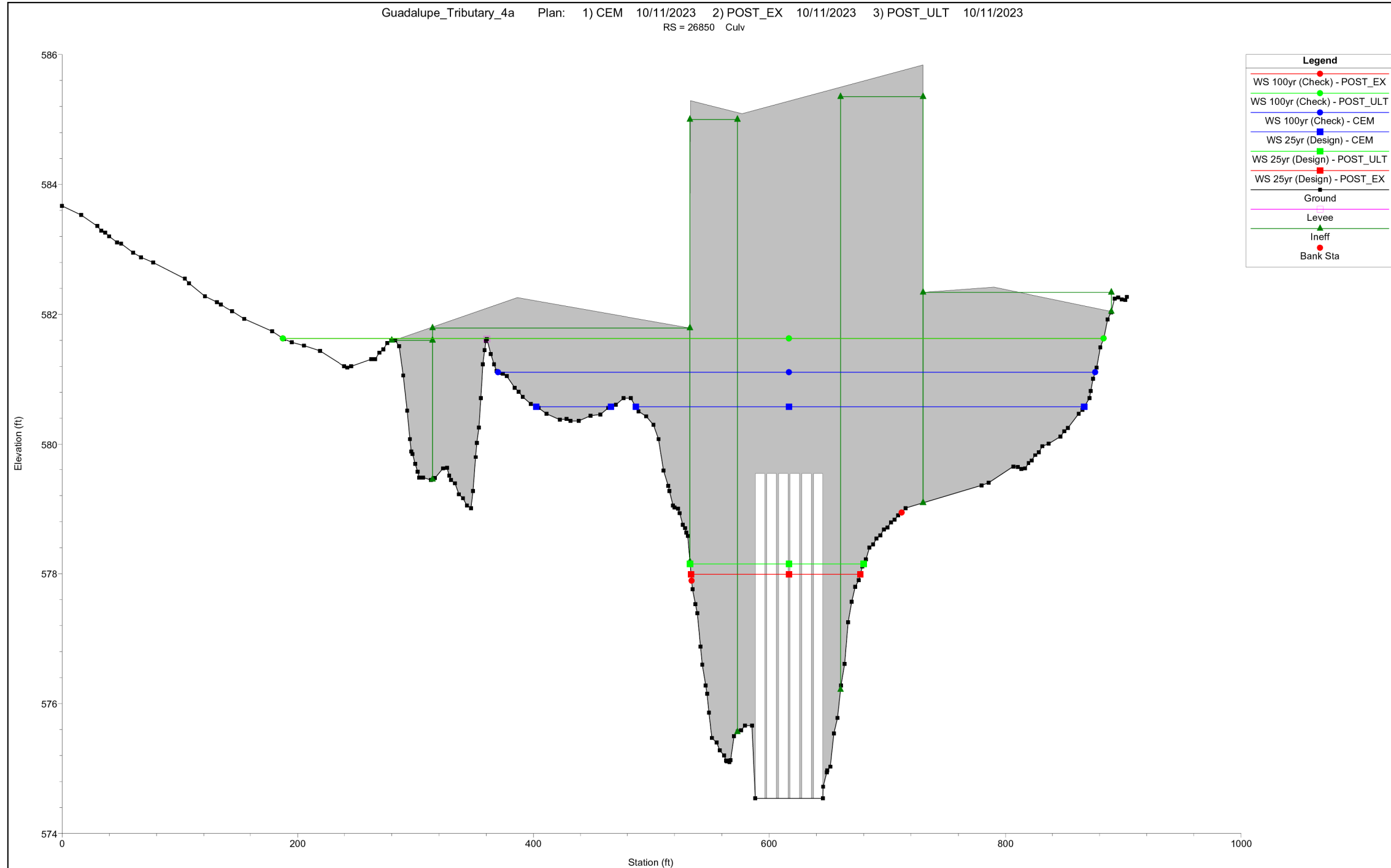
Plan: CEM	Guadalupe River	Tributary 4a	RS: 26850	Culv Group: Culvert #1	Profile: 100yr (Check)
Q Culv Group (cfs)		1447.89		Culv Full Len (ft)	
# Barrels		1		Culv Vel US (ft/s)	12.15
Q Barrel (cfs)		1447.89		Culv Vel DS (ft/s)	15.06
E.G. US. (ft)		581.92		Culv Inv El Up (ft)	573.95
W.S. US. (ft)		581.11		Culv Inv El Dn (ft)	573.5
E.G. DS (ft)		580.5		Culv Frctn Ls (ft)	0.1
W.S. DS (ft)		578.17		Culv Exit Loss (ft)	0.22
Delta EG (ft)		1.42		Culv Entr Loss (ft)	1.09
Delta WS (ft)		2.94		Q Weir (cfs)	1081.56
E.G. IC (ft)		581.92		Weir Sta Lft (ft)	174.36
E.G. OC (ft)		581.29		Weir Sta Rgt (ft)	887.4
Culvert Control		Inlet		Weir Submerg	0
Culv WS Inlet (ft)		578.54		Weir Max Depth (ft)	1.6
Culv WS Outlet (ft)		577.2		Weir Avg Depth (ft)	0.78
Culv Nml Depth (ft)		2.45		Weir Flow Area (sq ft)	419.82
Culv Crt Depth (ft)		4.59		Min El Weir Flow (ft)	580.52

HEC-RAS CULVERT OUTPUT DATA - ULTIMATE PROPOSED

Plan: POST_ULT	Guadalupe River	Tributary 4a	RS: 26850	Culv Group: Culvert #1	Profile: 25yr (Design)
Q Culv Group (cfs)		1686		Culv Full Len (ft)	
# Barrels		6		Culv Vel US (ft/s)	9.73
Q Barrel (cfs)		281		Culv Vel DS (ft/s)	10.42
E.G. US. (ft)		579.92		Culv Inv El Up (ft)	574.54
W.S. US. (ft)		579.54		Culv Inv El Dn (ft)	574.2
E.G. DS (ft)		578.54		Culv Frctn Ls (ft)	0.36
W.S. DS (ft)		577.26		Culv Exit Loss (ft)	0.72
Delta EG (ft)		1.37		Culv Entr Loss (ft)	0.29
Delta WS (ft)		2.28		Q Weir (cfs)	
E.G. IC (ft)		579.85		Weir Sta Lft (ft)	
E.G. OC (ft)		579.92		Weir Sta Rgt (ft)	
Culvert Control		Outlet		Weir Submerg	
Culv WS Inlet (ft)		578.15		Weir Max Depth (ft)	
Culv WS Outlet (ft)		577.57		Weir Avg Depth (ft)	
Culv Nml Depth (ft)		3.64		Weir Flow Area (sq ft)	
Culv Crt Depth (ft)		3.37		Min El Weir Flow (ft)	581.63

Plan: POST_ULT	Guadalupe River	Tributary 4a	RS: 26850	Culv Group: Culvert #1	Profile: 100yr (Check)
Q Culv Group (cfs)		2473.88		Culv Full Len (ft)	
# Barrels		6		Culv Vel US (ft/s)	10.88
Q Barrel (cfs)		412.31		Culv Vel DS (ft/s)	11.84
E.G. US. (ft)		581.98		Culv Inv El Up (ft)	574.54
W.S. US. (ft)		581.59		Culv Inv El Dn (ft)	574.2
E.G. DS (ft)		579.83		Culv Frctn Ls (ft)	0.39
W.S. DS (ft)		578.13		Culv Exit Loss (ft)	0.9
Delta EG (ft)		2.14		Culv Entr Loss (ft)	0.86
Delta WS (ft)		3.46		Q Weir (cfs)	136.52
E.G. IC (ft)		581.98		Weir Sta Lft (ft)	150.32
E.G. OC (ft)		581.67		Weir Sta Rgt (ft)	533
Culvert Control		Inlet		Weir Submerg	0
Culv WS Inlet (ft)		579.28		Weir Max Depth (ft)	0.8
Culv WS Outlet (ft)		578.55		Weir Avg Depth (ft)	0.31
Culv Nml Depth (ft)		4.87		Weir Flow Area (sq ft)	78.61
Culv Crt Depth (ft)		4.35		Min El Weir Flow (ft)	581.63

PROPOSED CULVERT HEC-RAS CROSS SECTION OUTPUT



EXPLANATION OF PLANS:

1. PRE: PRE-PROJECT (EXISTING) GEOMETRY WITH EXISTING FLOWS.
2. POST_EX: POST-PROJECT (PROPOSED) GEOMETRY WITH EXISTING FLOWS.
3. POST_ULT: POST-PROJECT (PROPOSED) GEOMETRY WITH ULTIMATE DEVELOPMENT CONDITION FLOWS. SEE ULTIMATE DRAINAGE AREA SHEET FOR COMPUTATION DETAILS.

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JACOB J. POWELL
P. E. SERIAL NO: 108825
DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P. E. SERIAL NO: 105193
DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



HYDRAULIC DATA SHEET
CULVERT B

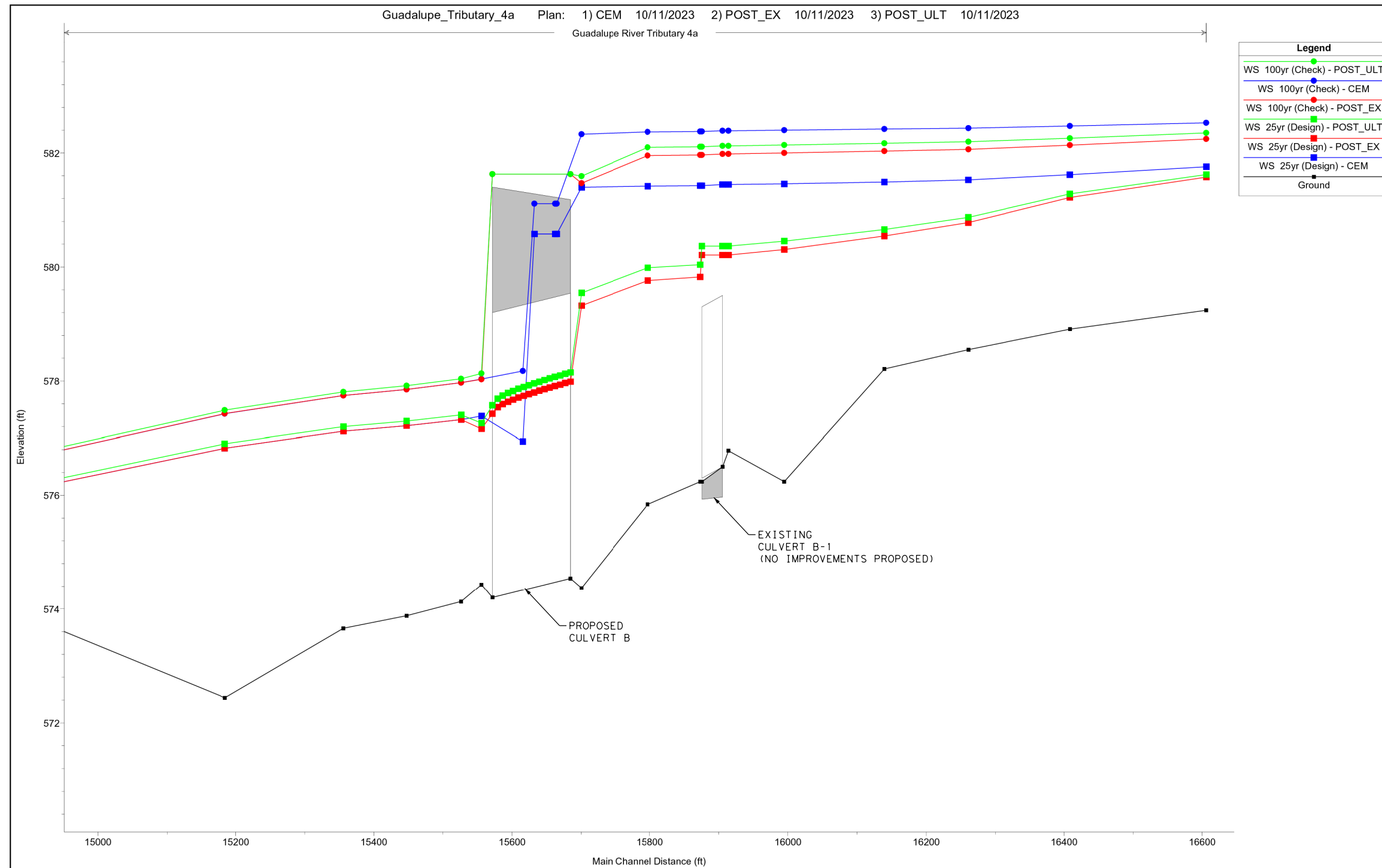
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	278

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_hyd_B03.dgn

Plotted on: 11/17/2023

HEC-RAS PROFILE PLOT OUTPUT



EXPLANATION OF PLANS:

1. PRE: PRE-PROJECT (EXISTING) GEOMETRY WITH EXISTING FLOWS.
2. POST_EX: POST-PROJECT (PROPOSED) GEOMETRY WITH EXISTING FLOWS.
3. POST_ULT: POST-PROJECT (PROPOSED) GEOMETRY WITH ULTIMATE DEVELOPMENT CONDITION FLOWS. SEE ULTIMATE DRAINAGE AREA SHEET FOR COMPUTATION DETAILS.

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
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SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



HYDRAULIC DATA SHEET
 CULVERT B

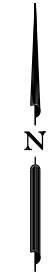
SHEET 5 OF 5

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
			JOB NO.:	SHEET NO.:
			052	279

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_hyd_B04.dgn

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_hyd_B05.dgn



NOTES:

1. HEC-RAS VERSION 6.3.1 USED FOR HYDRAULIC CALCULATIONS.
2. TOPOGRAPHIC DATA BASED ON 1-FT CONTOURS FROM 2017 STRATMAP CENTRAL TEXAS LIDAR DATASET ABD FIELD SURVEY.
3. FOR CULVERTS CROSSING CORDOVA RD, 25YR AEP STORM USED FOR DESIGN, PER CITY OF SEGUIN CRITERIA.

DESIGN

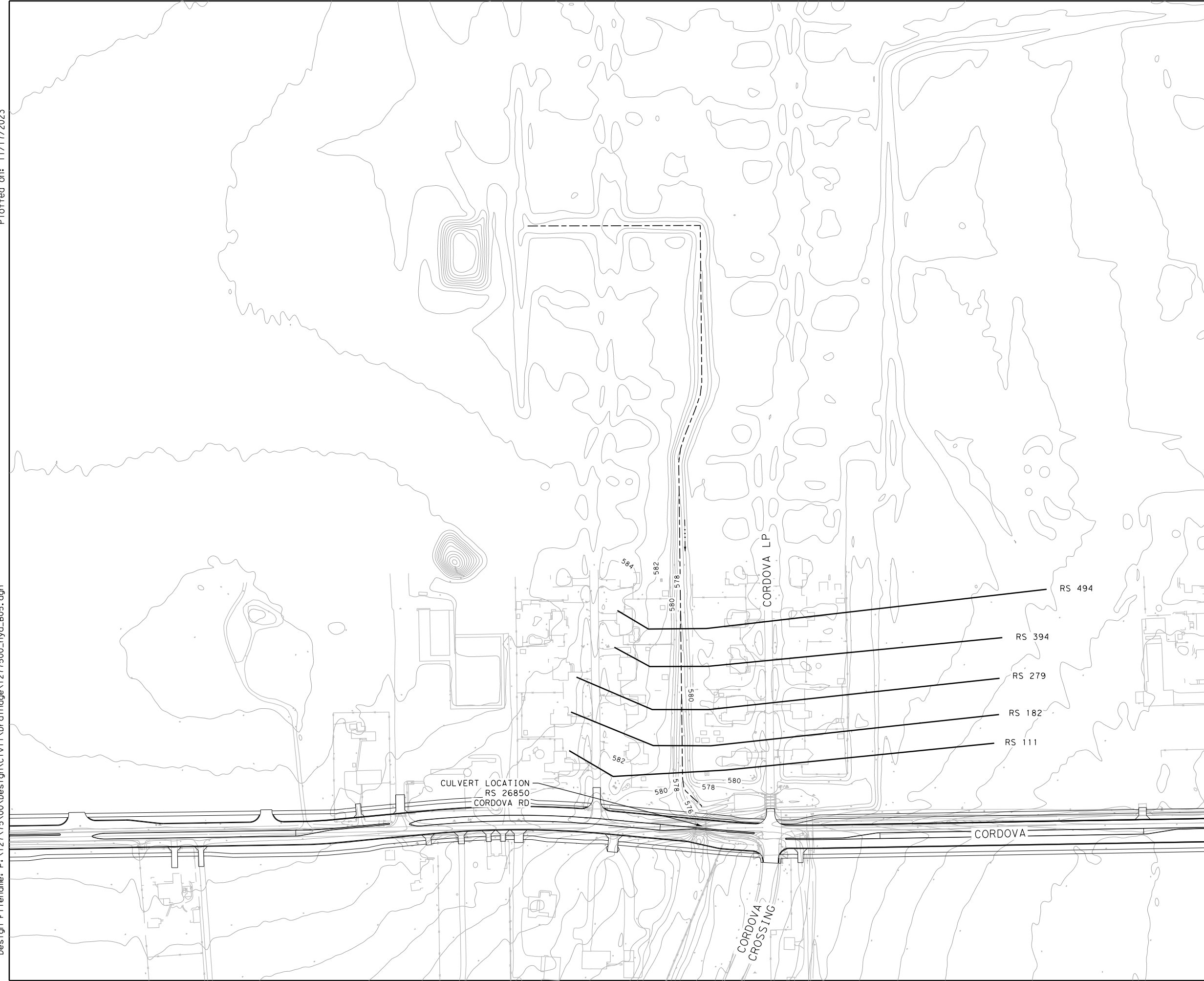
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
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SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



**HYDRAULIC DATA SHEET
 CULVERT B - WEST DRAIN**

SHEET 1 OF 3

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	280

HEC-RAS OUTPUT

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_hyd_B06.dgn

River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W. S. Elev (ft)	Crit W. S. (ft)	E. G. Elev (ft)	E. G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
494	5yr	PRE	415.1	577.33	580.72		580.98	0.0034	4.23	114.2	219.96	0.5
494	5yr	POST_EX	415.1	577.33	580.72		580.98	0.003406	4.24	114.08	219.73	0.5
494	5yr	POST_ULI	461.2	577.33	580.86	580.04	581.12	0.003228	4.29	140.07	284.1	0.49
494	10yr	PRE	580.6	577.33	581.21		581.36	0.001989	3.69	267.84	444.34	0.39
494	10yr	POST_EX	580.6	577.33	581.18		581.35	0.002149	3.81	255.81	431.46	0.41
494	10yr	POST_ULI	631.1	577.33	581.29		581.43	0.001882	3.65	304.55	476.3	0.38
494	25yr (Design)	PRE	838.6	577.33	581.74		581.81	0.000974	2.9	556.95	642.29	0.28
494	25yr (Design)	POST_EX	838.6	577.33	581.62		581.72	0.001335	3.32	485.51	606.16	0.33
494	25yr (Design)	POST_ULI	892.3	577.33	581.7		581.78	0.001241	3.24	529.1	621.81	0.32
494	50yr	PRE	1061.7	577.33	582.11		582.16	0.000687	2.62	850.62	922.98	0.24
494	50yr	POST_EX	1061.7	577.33	581.85		581.94	0.001208	3.3	635.36	747.15	0.32
494	50yr	POST_ULI	1116	577.33	581.89		581.97	0.001212	3.33	663.14	781.75	0.32
494	100yr (Check)	PRE	1316	577.33	582.48		582.51	0.00042	2.18	1209.05	1010.6	0.19
494	100yr (Check)	POST_EX	1316	577.33	582.19		582.25	0.000837	2.93	929.26	937.02	0.27
494	100yr (Check)	POST_ULI	1369.9	577.33	582.3		582.35	0.00069	2.71	1029.66	956.19	0.24
394	5yr	PRE	415.1	577.08	580.22		580.57	0.004835	4.75	90.7	147.56	0.58
394	5yr	POST_EX	415.1	577.08	580.21		580.56	0.004873	4.76	90.36	147.03	0.58
394	5yr	POST_ULI	461.2	577.08	580.35		580.71	0.004741	4.9	101.31	161.37	0.58
394	10yr	PRE	580.6	577.08	580.77		581.08	0.003528	4.74	151.87	239.04	0.52
394	10yr	POST_EX	580.6	577.08	580.63	579.93	581.02	0.004548	5.2	132.23	216.31	0.58
394	10yr	POST_ULI	631.1	577.08	580.73		581.13	0.004448	5.28	146.61	232.34	0.58
394	25yr (Design)	PRE	838.6	577.08	581.54		581.68	0.001492	3.67	416.42	647.1	0.35
394	25yr (Design)	POST_EX	838.6	577.08	581.09	580.79	581.48	0.004021	5.47	214.84	343.02	0.56
394	25yr (Design)	POST_ULI	892.3	577.08	581.17	580.87	581.55	0.003904	5.49	236.22	379.69	0.56
394	50yr	PRE	1061.7	577.08	582.03		582.09	0.000717	2.78	784.93	836.63	0.25
394	50yr	POST_EX	1061.7	577.08	581.4	581.3	581.72	0.003402	5.38	331.37	491.73	0.53
394	50yr	POST_ULI	1116	577.08	581.51	581.35	581.78	0.002877	5.06	394.25	620.97	0.49
394	100yr (Check)	PRE	1316	577.08	582.43		582.47	0.000433	2.31	1158.06	964.19	0.2
394	100yr (Check)	POST_EX	1316	577.08	582.08		582.16	0.000971	3.26	829.9	858.56	0.29
394	100yr (Check)	POST_ULI	1369.9	577.08	582.21		582.27	0.000792	3.01	943.73	913.77	0.26
279	5yr	PRE	415.1	576.31	579.65		579.97	0.005424	4.53	95.44	133.63	0.6
279	5yr	POST_EX	415.1	576.31	579.63		579.95	0.005614	4.59	94.04	132.56	0.61
279	5yr	POST_ULI	461.2	576.31	579.77		580.1	0.005808	4.67	103.15	140.57	0.62
279	10yr	PRE	580.6	576.31	580.48		580.69	0.002849	3.8	173.52	209.23	0.45
279	10yr	POST_EX	580.6	576.31	580.04		580.41	0.006131	4.95	124.67	164.34	0.64
279	10yr	POST_ULI	631.1	576.31	580.15		580.52	0.006146	5.05	134.49	175.1	0.65
279	25yr (Design)	PRE	838.6	576.31	581.47		581.54	0.000808	2.59	553.43	633.46	0.26
279	25yr (Design)	POST_EX	838.6	576.31	580.48		580.91	0.005994	5.5	172.94	208.82	0.66
279	25yr (Design)	POST_ULI	892.3	576.31	580.6		581.02	0.005484	5.45	188.79	225.66	0.63
279	50yr	PRE	1061.7	576.31	581.98		582.02	0.000436	2.1	914.5	802.36	0.19
279	50yr	POST_EX	1061.7	576.31	580.98	580.44	581.31	0.003847	5.06	289.63	427.19	0.54
279	50yr	POST_ULI	1116	576.31	581.28		581.47	0.002169	4.08	438.54	564.32	0.42
279	100yr (Check)	PRE	1316	576.31	582.4		582.43	0.00029	1.84	1279.96	918.55	0.16
279	100yr (Check)	POST_EX	1316	576.31	582.01		582.06	0.00063	2.54	938.7	813.87	0.23
279	100yr (Check)	POST_ULI	1369.9	576.31	582.15		582.19	0.000514	2.35	1056.95	855.87	0.21
182	5yr	PRE	415.1	576.18	579.33		579.53	0.003288	3.87	127.82	174.94	0.48
182	5yr	POST_EX	415.1	576.18	579.27	578.63	579.49	0.003667	4.05	121.14	166.44	0.5
182	5yr	POST_ULI	461.2	576.18	579.43	578.76	579.64	0.003459	3.98	139.11	184.51	0.49
182	10yr	PRE	580.6	576.18	580.38		580.47	0.001335	2.83	292.66	382.81	0.32
182	10yr	POST_EX	580.6	576.18	579.76	579.06	579.95	0.003036	3.84	181.74	205.72	0.46
182	10yr	POST_ULI	631.1	576.18	579.88	579.14	580.07	0.002947	3.85	197.73	214.09	0.46
182	25yr (Design)	PRE	838.6	576.18	581.46		581.48	0.000262	1.59	862.85	647.96	0.15
182	25yr (Design)	POST_EX	838.6	576.18	580.24		580.45	0.002986	4.08	257.9	289.52	0.47
182	25yr (Design)	POST_ULI	892.3	576.18	580.36		580.57	0.003032	4.24	286.81	374.82	0.48
182	50yr	PRE	1061.7	576.18	581.97		581.98	0.000178	1.43	1245.74	851.29	0.13
182	50yr	POST_EX	1061.7	576.18	580.94		581.04	0.001306	3.2	545.59	589.97	0.32
182	50yr	POST_ULI	1116	576.18	581.26		581.32	0.00071	2.52	738.61	603.34	0.24
182	100yr (Check)	PRE	1316	576.18	582.39		582.4	0.000144	1.38	1629.46	950.38	0.11
182	100yr (Check)	POST_EX	1316	576.18	581.99		582.02	0.000264	1.75	1266.49	860.25	0.15
182	100yr (Check)	POST_ULI	1369.9	576.18	582.13		582.15	0.000233	1.69	1391.2	905.2	0.14
111	5yr	PRE	415.1	575.78	579	578.19	579.3	0.003154	4.44	102.77	130.12	0.55
111	5yr	POST_EX	415.1	575.78	578.19	578.19	579.01	0.011566	7.23	57.46	36.79	1.01
111	5yr	POST_ULI	461.2	575.78	578.36	578.36	579.17	0.010967	7.24	64.18	43.35	0.99
111	10yr	PRE	580.6	575.78	580.3	578.75	580.4	0.000851	2.77	265.19	254.36	0.3
111	10yr	POST_EX	580.6	575.78	578.75	578.75	579.54	0.009165	7.2	85.17	95.45	0.92
111	10yr	POST_ULI	631.1	575.78	578.89	578.88	579.67	0.008674	7.2	94.55	119.35	0.9
111	25yr (Design)	PRE	838.6	575.78	581.42	579.43	581.46	0.000288	2.03	736.72	693.16	0.18
111	25yr (Design)	POST_EX	838.6	575.78	579.76	579.43	580.17	0.00449	5.48	182.82	197.27	0.66
111	25yr (Design)	POST_ULI	892.3	575.78	579.99	579.54	580.33	0.003359	5.07	214.76	220.82	0.58
111	50yr	PRE	1061.7	575.78	581.94	579.69	581.97	0.000208	1.88	1130.57	846.21	0.16
111	50yr	POST_EX	1061.7	575.78	580.75	579.69	580.93	0.001401	3.94	387.07	421.48	0.39
111	50yr	POST_ULI	1116	575.78	581.13	579.74	581.25	0.000887	3.38	548.56	578.93	0.32
111	100yr (Check)	PRE	1316	575.78	582.37	579.95	582.39	0.000158	1.74	1510.91	934.29	0.14
111	100yr (Check)	POST_EX	1316	575.78	581.95	579.95	581.99	0.000313	2.31	1139.05	847.24	0.2
111	100yr (Check)	POST_ULI	1369.9	575.78	582.1	580	582.14	0.000258	2.15	1267.73	867.51	0.18

EXPLANATION OF PLANS:

- PRE: PRE-PROJECT (EXISTING) GEOMETRY WITH EXISTING FLOWS.
- POST_EX: POST-PROJECT (PROPOSED) GEOMETRY WITH EXISTING FLOWS.
- POST_ULI: POST-PROJECT (PROPOSED) GEOMETRY WITH ULTIMATE DEVELOPMENT CONDITION FLOWS. SEE ULTIMATE DRAINAGE AREA SHEET FOR COMPUTATION DETAILS.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JACOB J. POWELL

P. E. SERIAL NO: 108825

DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P. E. SERIAL NO: 105193

DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.

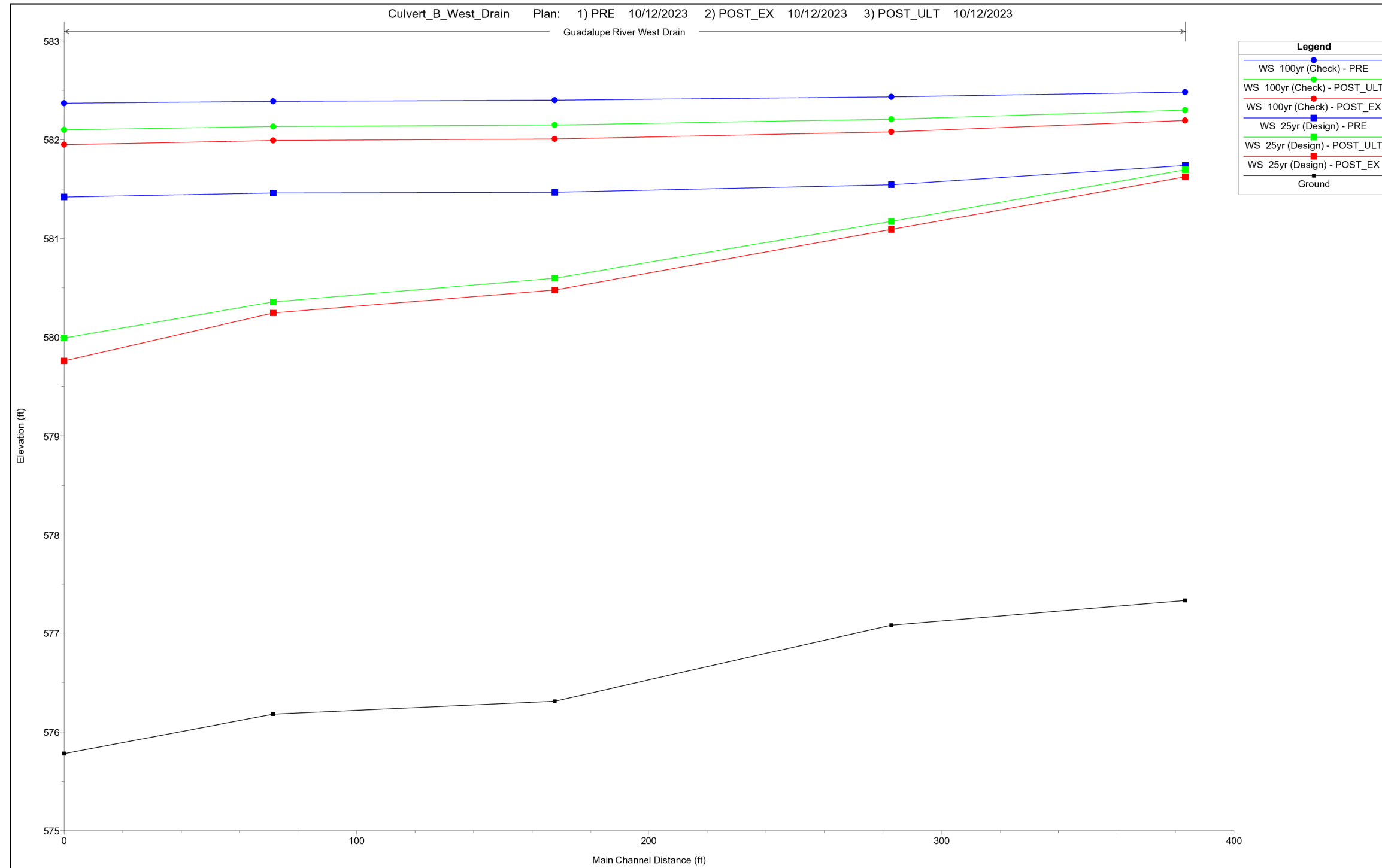


HYDRAULIC DATA SHEET
CULVERT B - WEST DRAIN

DON:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	281

Plotted on: 11/17/2023

HEC-RAS PROFILE PLOT OUTPUT



EXPLANATION OF PLANS:

1. PRE: PRE-PROJECT (EXISTING) GEOMETRY WITH EXISTING FLOWS.
2. POST_EX: POST-PROJECT (PROPOSED) GEOMETRY WITH EXISTING FLOWS.
3. POST_ULT: POST-PROJECT (PROPOSED) GEOMETRY WITH ULTIMATE DEVELOPMENT CONDITION FLOWS. SEE ULTIMATE DRAINAGE AREA SHEET FOR COMPUTATION DETAILS.

DESIGN

INTERIM REVIEW

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 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



HYDRAULIC DATA SHEET
 CULVERT B - WEST DRAIN

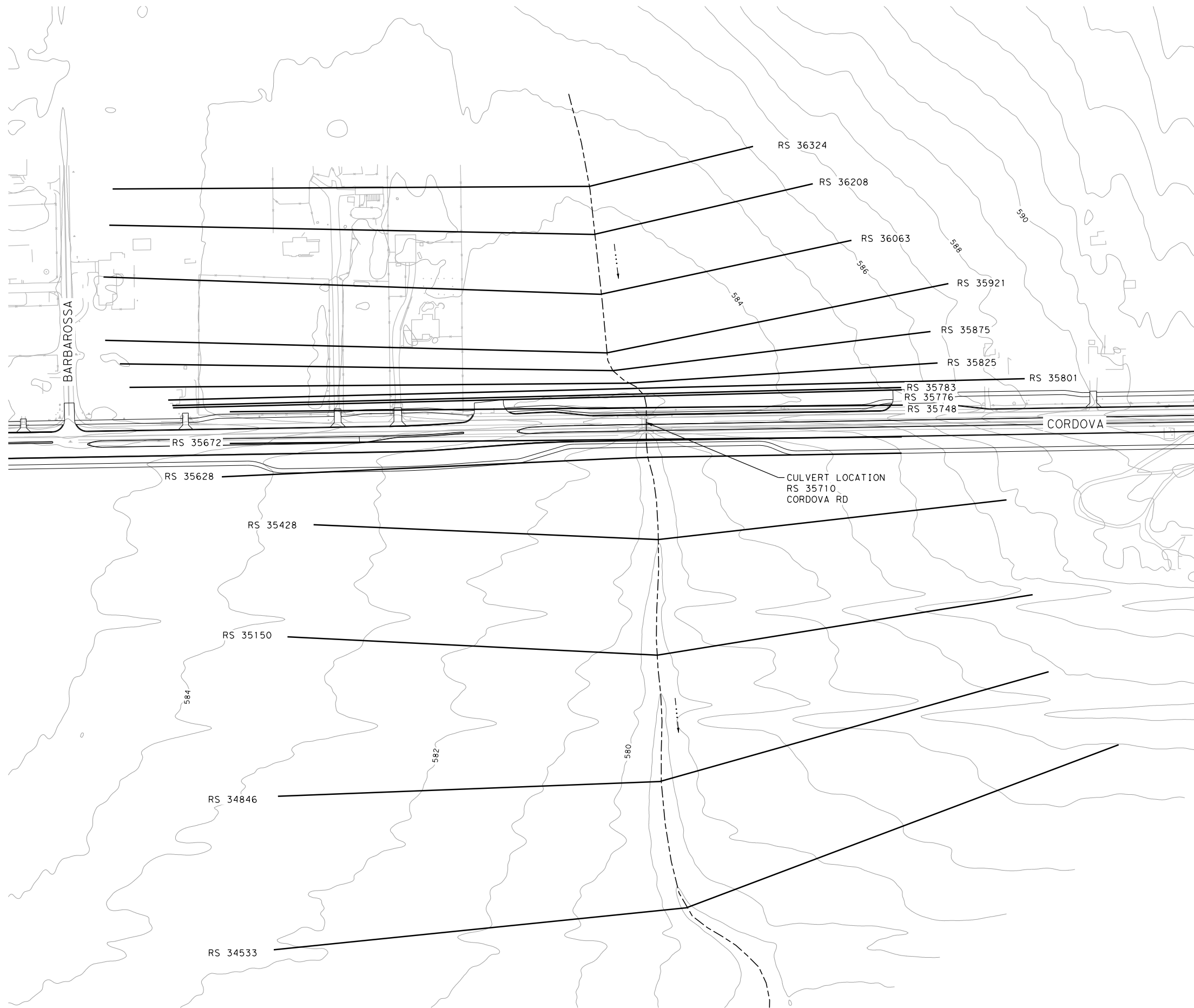
SHEET 3 OF 3

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:			HIGHWAY NO.:
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	282

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_hyd_B07.dgn

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_hyd_C01.dgn



NOTES:

1. HEC-RAS VERSION 6.3.1 USED FOR HYDRAULIC CALCULATIONS.
2. TOPOGRAPHIC DATA BASED ON 1-FT CONTOURS FROM 2017 STRATMAP CENTRAL TEXAS LIDAR DATASET ABD FIELD SURVEY.
3. FOR CULVERTS CROSSING CORDOVA RD, 25YR AEP STORM USED FOR DESIGN, PER CITY OF SEGUIN CRITERIA.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



**HYDRAULIC DATA SHEET
CULVERT C**

SHEET 1 OF 5

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	283

HEC-RAS OUTPUT

Plotted on: 11/17/2023

Design File name: P:\1275\00\Design\Civil\Drainage\127500_hyd_C02.dgn

River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W. S. Elev (ft)	Crit W. S. (ft)	E. G. Elev (ft)	E. G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude #	Chl
36324	5yr	CEM	172.3	584.06	584.4		584.41	0.002648	1	201.58	754.03	0.32	
36324	5yr	POST_EX	172.3	584.06	584.4		584.41	0.002479	0.98	206.02	760.61	0.31	
36324	5yr	POST_ULT	201.4	584.06	584.43		584.44	0.002588	1.05	225.42	787.19	0.32	
36324	10yr	CEM	235.7	584.06	584.45		584.47	0.002768	1.14	245.78	839.77	0.33	
36324	10yr	POST_EX	235.7	584.06	584.45		584.47	0.002751	1.14	246.29	840.27	0.33	
36324	10yr	POST_ULT	267	584.06	584.48		584.5	0.00272	1.19	270.49	901.16	0.33	
36324	25yr (Design)	CEM	327.8	584.06	584.53		584.55	0.002609	1.26	317.41	950.04	0.33	
36324	25yr (Design)	POST_EX	327.8	584.06	584.53		584.55	0.002655	1.27	315.5	948.45	0.34	
36324	25yr (Design)	POST_ULT	360.3	584.06	584.56		584.57	0.002617	1.31	340.05	970.89	0.34	
36324	50yr	CEM	402.8	584.06	584.61		584.62	0.002222	1.29	388.8	1003.28	0.32	
36324	50yr	POST_EX	402.8	584.06	584.59		584.61	0.002553	1.35	370.24	985.63	0.34	
36324	50yr	POST_ULT	435.4	584.06	584.61		584.63	0.002499	1.38	394.08	1009.34	0.34	
36324	100yr (Check)	CEM	481.5	584.06	584.68		584.7	0.002105	1.37	466.36	1057.89	0.31	
36324	100yr (Check)	POST_EX	481.5	584.06	584.65		584.67	0.002397	1.41	430.28	1040.16	0.33	
36324	100yr (Check)	POST_ULT	514.5	584.06	584.68		584.7	0.002439	1.47	463.66	1053.98	0.34	

River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W. S. Elev (ft)	Crit W. S. (ft)	E. G. Elev (ft)	E. G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude #	Chl
35801	5yr	CEM	172.3	582.85	583.62		583.26	0.002224	1.63	107.92	942.31	0.34	
35801	5yr	POST_EX	172.3	582.85	582.78		582.78	0.021182	4.49	38.93	64.56	1.01	
35801	5yr	POST_ULT	201.4	582.85	582.9		583.18	0.024465	4.25	48.44	233.3	1.05	
35801	10yr	CEM	235.7	582.85	583.95		583.34	0.000096	0.43	652.24	1131.26	0.07	
35801	10yr	POST_EX	235.7	582.85	582.99		583.26	0.01986	4.25	58.25	331.5	0.97	
35801	10yr	POST_ULT	267	582.85	583.02		583.34	0.021849	4.6	61.51	343.33	1.02	
35801	25yr (Design)	CEM	327.8	582.85	584.21		583.44	0.000081	0.46	897.54	1338.25	0.07	
35801	25yr (Design)	POST_EX	327.8	582.85	583.16		583.44	0.015499	4.43	80.82	505.12	0.89	
35801	25yr (Design)	POST_ULT	360.3	582.85	583.2		583.5	0.015417	4.56	86.27	575.69	0.9	
35801	50yr	CEM	402.8	582.85	584.35		583.52	0.000008	0.49	1031.1	1396.93	0.07	
35801	50yr	POST_EX	402.8	582.85	583.25		583.57	0.015435	4.74	92.85	616.98	0.91	
35801	50yr	POST_ULT	435.4	582.85	583.28		583.62	0.015166	4.84	98.27	629.46	0.9	
35801	100yr (Check)	CEM	481.5	582.85	584.43		583.59	0.000065	0.46	1402.04	1433.91	0.06	
35801	100yr (Check)	POST_EX	481.5	582.85	583.33		583.69	0.015082	5.01	105.08	645.79	0.91	
35801	100yr (Check)	POST_ULT	514.5	582.85	583.4		583.74	0.013283	4.91	114.19	694.98	0.86	

- EXPLANATION OF PLANS:
1. PRE: PRE-PROJECT (EXISTING) GEOMETRY WITH EXISTING FLOWS.
 2. POST_EX: POST-PROJECT (PROPOSED) GEOMETRY WITH EXISTING FLOWS.
 3. POST_ULT: POST-PROJECT (PROPOSED) GEOMETRY WITH ULTIMATE DEVELOPMENT CONDITION FLOWS. SEE ULTIMATE DRAINAGE AREA SHEET FOR COMPUTATION DETAILS.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P. E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P. E. SERIAL NO: 105193
 DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS

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Texas Department of Transportation
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**HYDRAULIC DATA SHEET
 CULVERT C**

SHEET 2 OF 5

DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
SAT	GUADALUPE	0915	46	052	284

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_hyd_CO2.dgn

River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W. S. Elev (ft)	Crit W. S. (ft)	E. G. Elev (ft)	E. G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
35150	5yr	CEM	172.3	579.27	580.51		580.55	0.002257	1.62	106.27	185.78	0.38
35150	5yr	POST_EX	172.3	579.27	580.51		580.55	0.002257	1.62	106.27	185.78	0.38
35150	5yr	POST_ULT	201.4	579.27	580.6		580.65	0.002138	1.62	124.46	209.54	0.37
35150	10yr	CEM	235.7	579.27	580.68		580.72	0.002154	1.67	140.83	229.79	0.37
35150	10yr	POST_EX	235.7	579.27	580.68		580.72	0.002154	1.67	140.83	229.79	0.37
35150	10yr	POST_ULT	267	579.27	580.73		580.78	0.00208	1.74	154.34	260.24	0.37
35150	25yr (Design)	CEM	327.8	579.27	580.83		580.89	0.001957	1.85	183.12	321.7	0.37
35150	25yr (Design)	POST_EX	327.8	579.27	580.83		580.89	0.001957	1.85	183.12	321.7	0.37
35150	25yr (Design)	POST_ULT	360.3	579.27	580.88		580.93	0.001938	1.91	198.13	349.4	0.37
35150	50yr	CEM	402.8	579.27	580.94		581	0.001881	1.97	219.94	388.4	0.37
35150	50yr	POST_EX	402.8	579.27	580.94		581	0.001881	1.97	219.94	388.4	0.37
35150	50yr	POST_ULT	435.4	579.27	580.98		581.04	0.001866	2.02	235.9	418.19	0.37
35150	100yr (Check)	CEM	481.5	579.27	581.03		581.09	0.001859	2.09	258.88	474.94	0.37
35150	100yr (Check)	POST_EX	481.5	579.27	581.03		581.09	0.001859	2.09	258.88	474.94	0.37
35150	100yr (Check)	POST_ULT	514.5	579.27	581.07		581.13	0.001836	2.13	276.73	503.75	0.37
34846	5yr	CEM	172.3	578.42	579.84		579.89	0.00213	1.72	100.19	153.5	0.38
34846	5yr	POST_EX	172.3	578.42	579.84		579.89	0.00213	1.72	100.19	153.5	0.38
34846	5yr	POST_ULT	201.4	578.42	579.93		579.98	0.002214	1.77	113.98	172.58	0.38
34846	10yr	CEM	235.7	578.42	580		580.05	0.002293	1.87	126.2	180.55	0.39
34846	10yr	POST_EX	235.7	578.42	580		580.05	0.002293	1.87	126.2	180.55	0.39
34846	10yr	POST_ULT	267	578.42	580.06		580.12	0.00231	1.93	138.12	188.73	0.4
34846	25yr (Design)	CEM	327.8	578.42	580.18		580.24	0.002342	2.04	161.1	223.54	0.41
34846	25yr (Design)	POST_EX	327.8	578.42	580.18		580.24	0.002342	2.04	161.1	223.54	0.41
34846	25yr (Design)	POST_ULT	360.3	578.42	580.22		580.29	0.002349	2.12	171.41	240.65	0.41
34846	50yr	CEM	402.8	578.42	580.28		580.35	0.002352	2.21	185.31	255.25	0.41
34846	50yr	POST_EX	402.8	578.42	580.28		580.35	0.002352	2.21	185.31	255.25	0.41
34846	50yr	POST_ULT	435.4	578.42	580.31		580.4	0.002362	2.28	195.51	262.26	0.42
34846	100yr (Check)	CEM	481.5	578.42	580.37		580.45	0.002391	2.38	209.71	289.02	0.43
34846	100yr (Check)	POST_EX	481.5	578.42	580.37		580.45	0.002391	2.38	209.71	289.02	0.43
34846	100yr (Check)	POST_ULT	514.5	578.42	580.4		580.49	0.002396	2.44	220.93	315.27	0.43
34533	5yr	CEM	172.3	577.7	578.95		579.01	0.003907	1.97	87.37	171.83	0.49
34533	5yr	POST_EX	172.3	577.7	578.95		579.01	0.003907	1.97	87.37	171.83	0.49
34533	5yr	POST_ULT	201.4	577.7	579	578.68	579.06	0.003975	2.09	96.5	186.14	0.5
34533	10yr	CEM	235.7	577.7	579.05	578.76	579.13	0.003903	2.21	107.59	200.71	0.5
34533	10yr	POST_EX	235.7	577.7	579.05	578.76	579.13	0.003903	2.21	107.59	200.71	0.5
34533	10yr	POST_ULT	267	577.7	579.1	578.83	579.18	0.003937	2.33	116.68	208.69	0.51
34533	25yr (Design)	CEM	327.8	577.7	579.17	578.91	579.27	0.004181	2.56	131.48	221.69	0.53
34533	25yr (Design)	POST_EX	327.8	577.7	579.17	578.91	579.27	0.004181	2.56	131.48	221.69	0.53
34533	25yr (Design)	POST_ULT	360.3	577.7	579.2	578.94	579.31	0.004274	2.68	139.5	230.09	0.54
34533	50yr	CEM	402.8	577.7	579.25	578.99	579.37	0.004272	2.79	151.06	242.94	0.55
34533	50yr	POST_EX	402.8	577.7	579.25	578.99	579.37	0.004272	2.79	151.06	242.94	0.55
34533	50yr	POST_ULT	435.4	577.7	579.29	579.02	579.41	0.004314	2.88	159.46	254.72	0.56
34533	100yr (Check)	CEM	481.5	577.7	579.34	579.07	579.48	0.004182	2.97	174.23	275.27	0.55
34533	100yr (Check)	POST_EX	481.5	577.7	579.34	579.07	579.48	0.004182	2.97	174.23	275.27	0.55
34533	100yr (Check)	POST_ULT	514.5	577.7	579.37	579.1	579.51	0.004215	3.05	182.71	282.41	0.56

EXPLANATION OF PLANS:

1. PRE: PRE-PROJECT (EXISTING) GEOMETRY WITH EXISTING FLOWS.
2. POST_EX: POST-PROJECT (PROPOSED) GEOMETRY WITH EXISTING FLOWS.
3. POST_ULT: POST-PROJECT (PROPOSED) GEOMETRY WITH ULTIMATE DEVELOPMENT CONDITION FLOWS. SEE ULTIMATE DRAINAGE AREA SHEET FOR COMPUTATION DETAILS.

DESIGN





INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P. E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P. E. SERIAL NO: 105193
 DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
 <p>PAPE-DAWSON ENGINEERS</p> <p>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 <small>TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</small></p>			
  <p>SEGWIN TEXAS</p> <p>It's real.</p>			
 <p>Texas Department of Transportation ©2023</p>			
<h2>HYDRAULIC DATA SHEET</h2> <h3>CULVERT C</h3>			
SHEET 3 OF 5			
CHK DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO. / HIGHWAY NO.
	6	TEXAS	CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO. / SECT. NO. / JOB NO. / SHEET NO.
	SAT	GUADALUPE	0915 / 46 / 052 / 285

HEC-RAS CULVERT OUTPUT DATA - EXISTING

Plan: CEM	WALNUT BRANCH	Reach-1 RS: 35710	Culv Group: Culvert #1	Profile: 25yr (Design)
Q Culv Group (cfs)		272.66	Culv Full Len (ft)	
# Barrels	3		Culv Vel US (ft/s)	8.36
Q Barrel (cfs)	90.89		Culv Vel DS (ft/s)	11.11
E.G. US. (ft)	584.2		Culv Inv El Up (ft)	580.5
W.S. US. (ft)	584.13		Culv Inv El Dn (ft)	579.95
E.G. DS (ft)	582.73		Culv Frctn Ls (ft)	0.26
W.S. DS (ft)	582.07		Culv Exit Loss (ft)	0.78
Delta EG (ft)	1.47		Culv Entr Loss (ft)	0.43
Delta WS (ft)	2.06		Q Weir (cfs)	55.14
E.G. IC (ft)	584.01		Weir Sta Lft (ft)	705.31
E.G. OC (ft)	584.2		Weir Sta Rgt (ft)	977.45
Culvert Control	Outlet		Weir Submerg	0
Culv WS Inlet (ft)	582.67		Weir Max Depth (ft)	0.3
Culv WS Outlet (ft)	581.59		Weir Avg Depth (ft)	0.18
Culv Nml Depth (ft)	1.35		Weir Flow Area (sq ft)	48.19
Culv Crt Depth (ft)	2.17		Min El Weir Flow (ft)	583.91

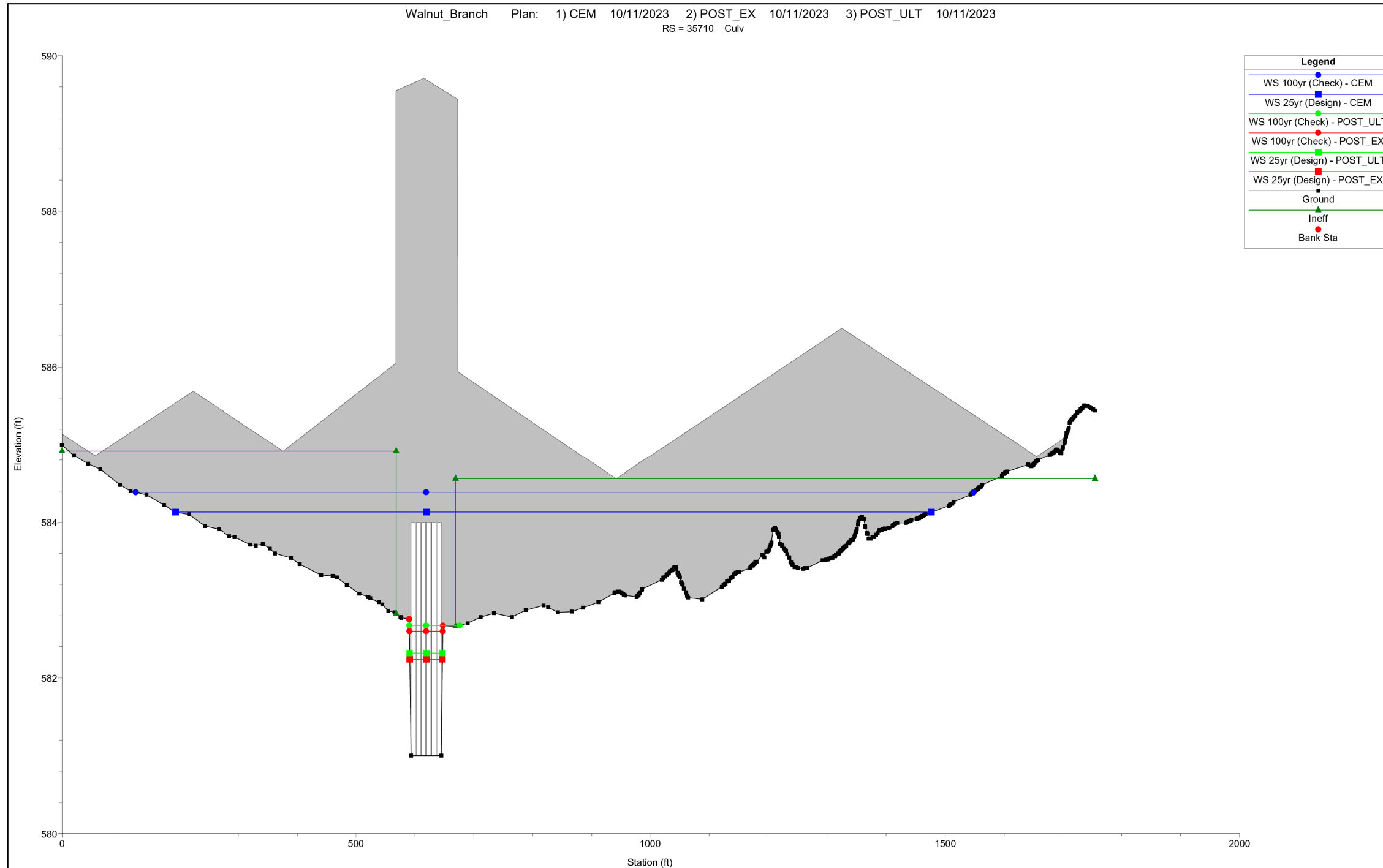
Plan: CEM	WALNUT BRANCH	Reach-1 RS: 35710	Culv Group: Culvert #1	Profile: 100yr (Check)
Q Culv Group (cfs)		297.6	Culv Full Len (ft)	
# Barrels	3		Culv Vel US (ft/s)	8.61
Q Barrel (cfs)	99.2		Culv Vel DS (ft/s)	11.36
E.G. US. (ft)	584.42		Culv Inv El Up (ft)	580.5
W.S. US. (ft)	584.38		Culv Inv El Dn (ft)	579.95
E.G. DS (ft)	583.3		Culv Frctn Ls (ft)	0.25
W.S. DS (ft)	582.44		Culv Exit Loss (ft)	0.41
Delta EG (ft)	1.12		Culv Entr Loss (ft)	0.46
Delta WS (ft)	1.94		Q Weir (cfs)	183.9
E.G. IC (ft)	584.35		Weir Sta Lft (ft)	549.03
E.G. OC (ft)	584.42		Weir Sta Rgt (ft)	1056.23
Culvert Control	Outlet		Weir Submerg	0
Culv WS Inlet (ft)	582.8		Weir Max Depth (ft)	0.52
Culv WS Outlet (ft)	581.7		Weir Avg Depth (ft)	0.32
Culv Nml Depth (ft)	1.43		Weir Flow Area (sq ft)	120.76
Culv Crt Depth (ft)	2.3		Min El Weir Flow (ft)	583.91

HEC-RAS CULVERT OUTPUT DATA - ULTIMATE PROPOSED

Plan: POST_ULT	WALNUT BRANCH	Reach-1 RS: 35710	Culv Group: Culvert #1	Profile: 25yr (Design)
Q Culv Group (cfs)		360.3	Culv Full Len (ft)	
# Barrels	6		Culv Vel US (ft/s)	6.51
Q Barrel (cfs)	60.05		Culv Vel DS (ft/s)	5.43
E.G. US. (ft)	583.07		Culv Inv El Up (ft)	581
W.S. US. (ft)	582.83		Culv Inv El Dn (ft)	580.6
E.G. DS (ft)	582.39		Culv Frctn Ls (ft)	0.34
W.S. DS (ft)	582.18		Culv Exit Loss (ft)	0.25
Delta EG (ft)	0.68		Culv Entr Loss (ft)	0.1
Delta WS (ft)	0.65		Q Weir (cfs)	
E.G. IC (ft)	583.07		Weir Sta Lft (ft)	
E.G. OC (ft)	583.11		Weir Sta Rgt (ft)	
Culvert Control	Inlet		Weir Submerg	
Culv WS Inlet (ft)	582.32		Weir Max Depth (ft)	
Culv WS Outlet (ft)	582.18		Weir Avg Depth (ft)	
Culv Nml Depth (ft)	1.26		Weir Flow Area (sq ft)	
Culv Crt Depth (ft)	1.32		Min El Weir Flow (ft)	584.57

Plan: POST_ULT	WALNUT BRANCH	Reach-1 RS: 35710	Culv Group: Culvert #1	Profile: 100yr (Check)
Q Culv Group (cfs)		514.5	Culv Full Len (ft)	
# Barrels	6		Culv Vel US (ft/s)	7.33
Q Barrel (cfs)	85.75		Culv Vel DS (ft/s)	6.9
E.G. US. (ft)	583.63		Culv Inv El Up (ft)	581
W.S. US. (ft)	583.39		Culv Inv El Dn (ft)	580.6
E.G. DS (ft)	582.7		Culv Frctn Ls (ft)	0.39
W.S. DS (ft)	582.38		Culv Exit Loss (ft)	0.41
Delta EG (ft)	0.93		Culv Entr Loss (ft)	0.13
Delta WS (ft)	1.01		Q Weir (cfs)	
E.G. IC (ft)	583.63		Weir Sta Lft (ft)	
E.G. OC (ft)	583.67		Weir Sta Rgt (ft)	
Culvert Control	Inlet		Weir Submerg	
Culv WS Inlet (ft)	582.67		Weir Max Depth (ft)	
Culv WS Outlet (ft)	582.38		Weir Avg Depth (ft)	
Culv Nml Depth (ft)	1.6		Weir Flow Area (sq ft)	
Culv Crt Depth (ft)	1.67		Min El Weir Flow (ft)	584.57

PROPOSED CULVERT UPSTREAM HEC-RAS CROSS SECTION OUTPUT



EXPLANATION OF PLANS:

1. PRE: PRE-PROJECT (EXISTING) GEOMETRY WITH EXISTING FLOWS.
2. POST_EX: POST-PROJECT (PROPOSED) GEOMETRY WITH EXISTING FLOWS.
3. POST_ULT: POST-PROJECT (PROPOSED) GEOMETRY WITH ULTIMATE DEVELOPMENT CONDITION FLOWS. SEE ULTIMATE DRAINAGE AREA SHEET FOR COMPUTATION DETAILS.

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JACOB J. POWELL
P. E. SERIAL NO: 108825
DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P. E. SERIAL NO: 105193
DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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HYDRAULIC DATA SHEET
CULVERT C

SHEET 4 OF 5

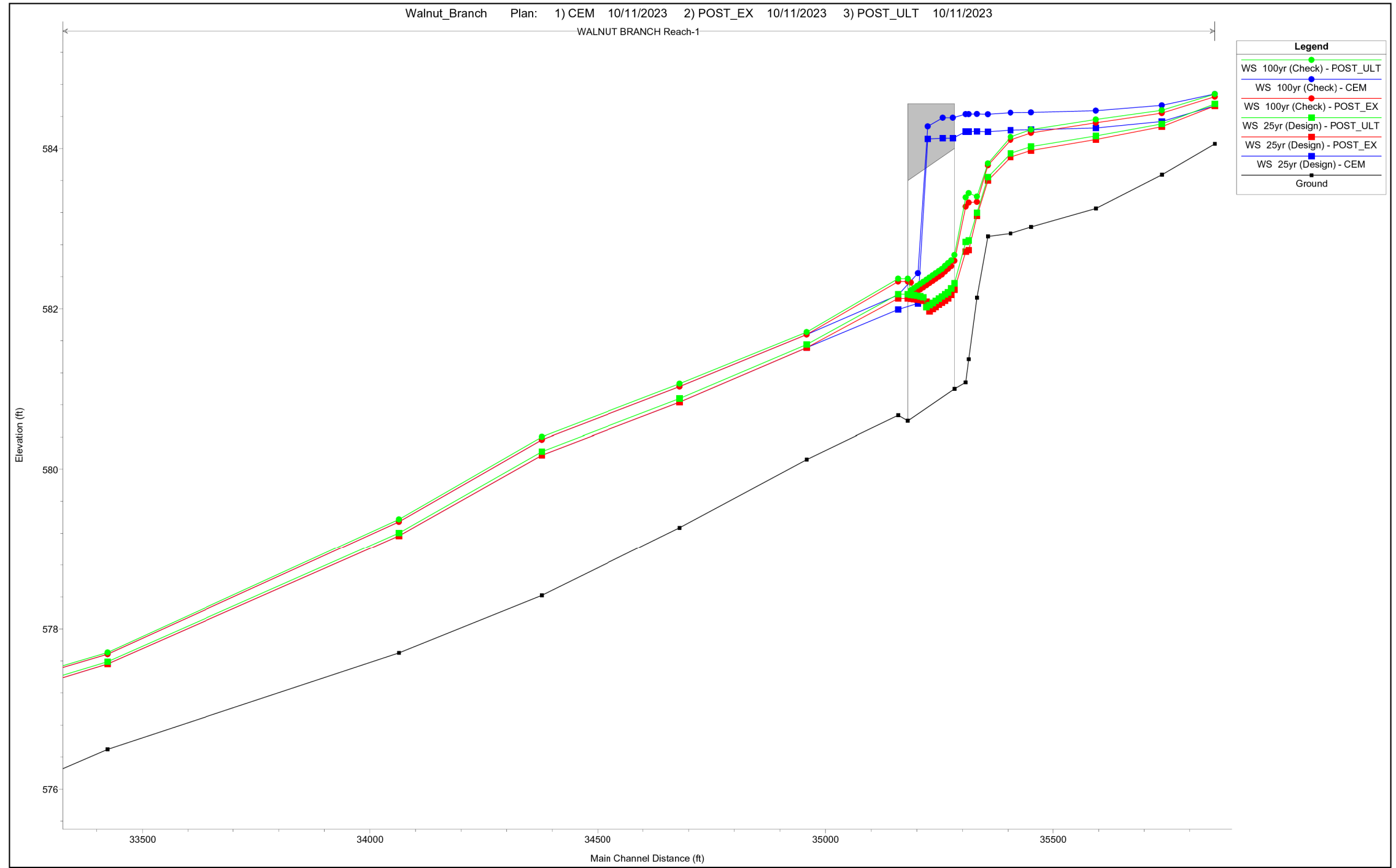
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CHK	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK	SAT	GUADALUPE	0915	46	052	286

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civi\Drainage\1277500_hyd_C03.dgn

Plotted on: 11/17/2023

HEC-RAS PROFILE PLOT OUTPUT



- EXPLANATION OF PLANS:
1. PRE: PRE-PROJECT (EXISTING) GEOMETRY WITH EXISTING FLOWS.
 2. POST_EX: POST-PROJECT (PROPOSED) GEOMETRY WITH EXISTING FLOWS.
 3. POST_ULTR: POST-PROJECT (PROPOSED) GEOMETRY WITH ULTIMATE DEVELOPMENT CONDITION FLOWS. SEE ULTIMATE DRAINAGE AREA SHEET FOR COMPUTATION DETAILS.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P. E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

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 ENGINEER: JOHN A. TYLER
 P. E. SERIAL NO: 105193
 DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
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HYDRAULIC DATA SHEET
CULVERT C

SHEET 5 OF 5

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:			HIGHWAY NO.:
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	287

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Plotted on: 11/17/2023

Design File name: P:\1275\00\Design\Civil\Drainage\127500_hyd_D01.dgn

Crossing Discharge Data

Discharge Selection Method: Recurrence

Rating Curve Plot for Crossing: Culvert_D_Exist

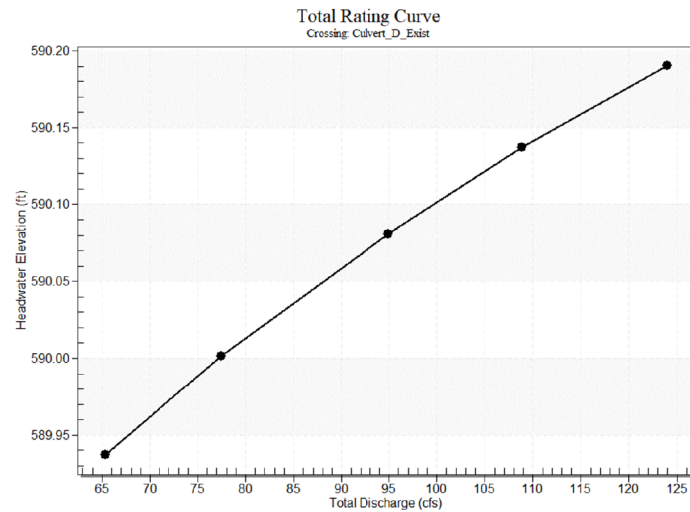


Table 1 - Summary of Culvert Flows at Crossing: Culvert_D_Exist

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Culvert_D_Exist Discharge (cfs)	Roadway Discharge (cfs)	Iterations
589.94	5 year	65.36	23.21	42.13	9
590.00	10 year	77.46	22.75	54.67	5
590.08	25 year*	94.86	22.12	72.73	5
590.14	50 year	108.84	21.64	87.19	4
590.19	100 year†	123.95	21.14	102.81	4
589.44	Overtopping	28.45	28.45	0.00	Overtopping

*Design Storm

†Check Storm

Culvert Data: Culvert_D_Exist

Table 2 - Culvert Summary Table: Culvert_D_Exist

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
5 year	65.36 cfs	23.21 cfs	589.94	2.56	3.777	4-FFF	-1.00	1.27	1.85	2.03	5.29	2.33
10 year	77.46 cfs	22.75 cfs	590.00	2.51	3.841	4-FFF	-1.00	1.25	1.85	2.16	5.18	2.43
25 year*	94.86 cfs	22.12 cfs	590.08	2.43	3.921	4-FFF	-1.00	1.23	1.85	2.33	5.04	2.56
50 year	108.84 cfs	21.64 cfs	590.14	2.38	3.977	4-FFF	-1.00	1.22	1.85	2.45	4.93	2.65
100 year†	123.95 cfs	21.14 cfs	590.19	2.32	4.030	4-FFF	-1.00	1.20	1.85	2.58	4.82	2.73

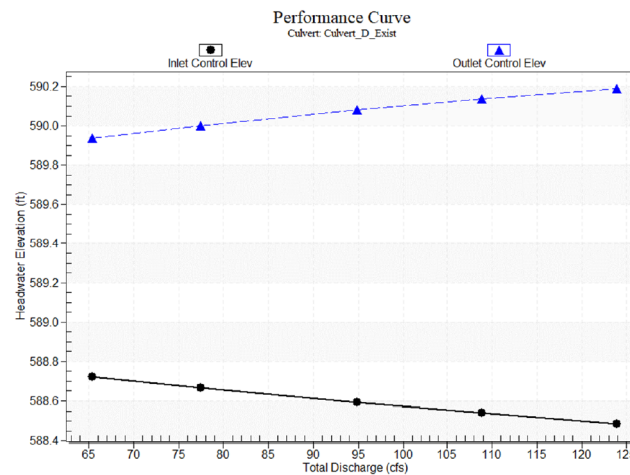
*Design Storm

†Check Storm

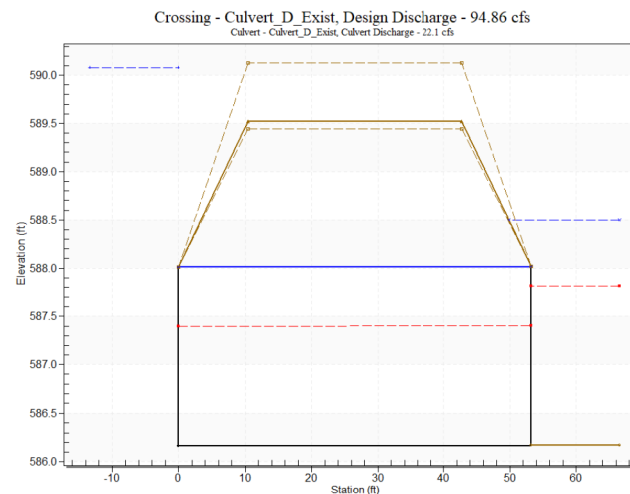
Culvert Barrel Data

Culvert Barrel Type: Straight Culvert
 Inlet Elevation (invert): 586.16 ft
 Outlet Elevation (invert): 586.17 ft
 Culvert Length: 53.20 ft
 Culvert Slope: -0.0002

Culvert Performance Curve Plot: Culvert_D_Exist



Water Surface Profile Plot for Culvert: Culvert_D_Exist



Site Data - Culvert_D_Exist

Site Data Option: Culvert Invert Data
 Inlet Station: 0.00 ft
 Inlet Elevation: 586.16 ft
 Outlet Station: 53.20 ft
 Outlet Elevation: 586.17 ft
 Number of Barrels: 1

Culvert Data Summary - Culvert_D_Exist

Barrel Shape: Pipe Arch
 Barrel Span: 36.10 in
 Barrel Rise: 22.20 in
 Barrel Material: Steel or Aluminum
 Embedment: 0.00 in
 Barrel Manning's n: 0.0250
 Culvert Type: Straight
 Inlet Configuration: Projecting
 Inlet Depression: None

Tailwater Data for Crossing: Culvert_D_Exist

Table 3 - Downstream Channel Rating Curve (Crossing: Culvert_D_Exist)

Flow (cfs)	Water Surface Elev. (ft)	Velocity (ft/s)	Depth (ft)	Shear (psf)	Froude Number
65.36	588.20	2.03	2.33	0.38	0.41
77.46	588.33	2.16	2.43	0.40	0.41
94.86*	588.50	2.33	2.56	0.44	0.42
108.84	588.62	2.45	2.65	0.46	0.42
123.95†	588.75	2.58	2.73	0.48	0.42

*Design Storm

†Check Storm

Tailwater Channel Data - Culvert_D_Exist

Tailwater Channel Option: Triangular Channel
 Side Slope (H:V): 6.83 (:1)
 Channel Slope: 0.0030
 Channel Manning's n: 0.0350
 Channel Invert Elevation: 586.17 ft

Roadway Data for Crossing: Culvert_D_Exist

Roadway Profile Shape: Irregular Roadway Shape (coordinates)

Irregular Roadway Cross-Section

Coord No.	Station (ft)	Elevation (ft)
0	0.00	589.63
1	20.00	590.13
2	40.00	589.87
3	60.00	589.60
4	80.00	589.44
5	100.00	589.54

Roadway Surface: Paved

Roadway Top Width: 32.30 ft

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P. E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P. E. SERIAL NO: 105193
 DATE: 11/17/2023

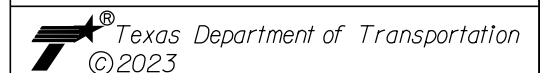
REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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**HYDRAULIC DATA SHEET
 CULVERT D EXIST**

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	288

Plotted on: 11/17/2023

Design File Name: P:\127\75\00\Design\Civil\Drainage\1277500_hyd_D02.dgn

Crossing Discharge Data

Discharge Selection Method: Recurrence

Rating Curve Plot for Crossing: Culvert_D_Ult

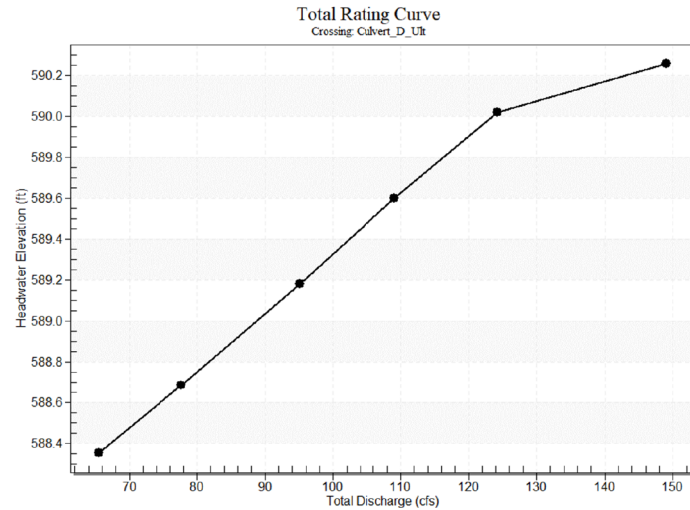


Table 1 - Summary of Culvert Flows at Crossing: Culvert_D_Ult

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Culvert_D_Ult Discharge (cfs)	Roadway Discharge (cfs)	Iterations
588.36	5 year	65.51	65.51	0.00	1
588.69	10 year	77.64	77.64	0.00	1
589.18	25 year*	95.07	95.07	0.00	1
589.60	50 year	109.08	109.08	0.00	1
590.02	100 year†	124.23	121.43	2.65	16
589.72	Overtopping	112.93	112.93	0.00	Overtopping

*Design Storm

†Check Storm

Culvert Data: Culvert_D_Ult

Table 2 - Culvert Summary Table: Culvert_D_Ult

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
5 year	65.51 cfs	65.51 cfs	588.36	1.74	2.256	4-FFF	1.78	1.10	2.00	2.01	3.28	1.91
10 year	77.64 cfs	77.64 cfs	588.69	1.95	2.587	4-FFF	2.00	1.23	2.00	2.19	3.88	2.00
25 year*	95.07 cfs	95.07 cfs	589.18	2.27	3.081	4-FFF	2.00	1.41	2.00	2.42	4.75	2.11
50 year	109.08 cfs	109.08 cfs	589.60	2.53	3.500	4-FFF	2.00	1.55	2.00	2.58	5.45	2.19
100 year†	124.23 cfs	121.43 cfs	590.02	2.77	3.918	4-FFF	2.00	1.66	2.00	2.75	6.07	2.26

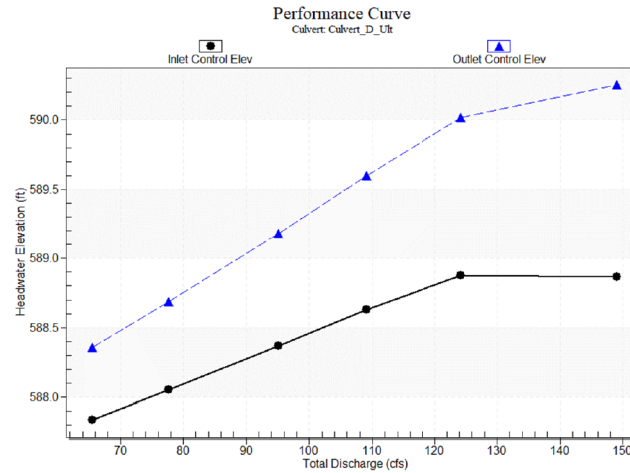
*Design Storm

†Check Storm

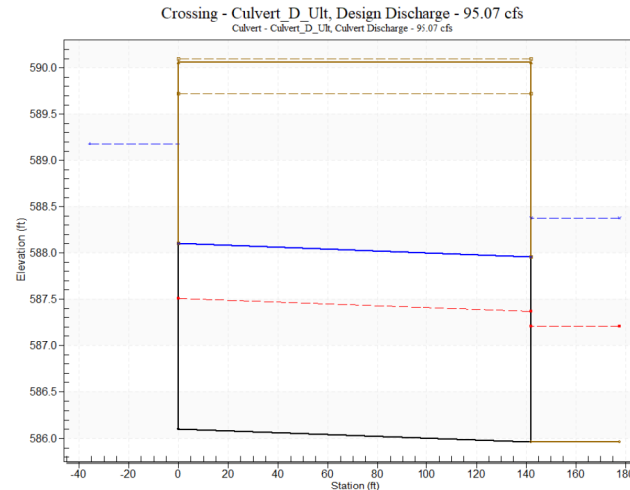
Culvert Barrel Data

Culvert Barrel Type: Straight Culvert
 Inlet Elevation (invert): 586.10 ft
 Outlet Elevation (invert): 585.96 ft
 Culvert Length: 142.00 ft
 Culvert Slope: 0.0010

Culvert Performance Curve Plot: Culvert_D_Ult



Water Surface Profile Plot for Culvert: Culvert_D_Ult



Site Data - Culvert_D_Ult

Site Data Option: Culvert Invert Data
 Inlet Station: 0.00 ft
 Inlet Elevation: 586.10 ft
 Outlet Station: 142.00 ft
 Outlet Elevation: 585.96 ft
 Number of Barrels: 2

Culvert Data Summary - Culvert_D_Ult

Barrel Shape: Concrete Box
 Barrel Span: 5.00 ft
 Barrel Rise: 2.00 ft
 Barrel Material: Concrete
 Embedment: 0.00 in
 Barrel Manning's n: 0.0130
 Culvert Type: Straight
 Inlet Configuration: 1:1 Bevel Headwall
 Inlet Depression: None

Tailwater Data for Crossing: Culvert_D_Ult

Flow (cfs)	Water Surface Elev (ft)	Velocity (ft/s)	Depth (ft)	Shear (psf)	Froude Number
65.51	587.97	2.01	1.91	0.13	0.29
77.64	588.15	2.19	2.00	0.14	0.29
95.07*	588.38	2.42	2.11	0.15	0.29
109.08	588.54	2.58	2.19	0.16	0.30
124.23†	588.71	2.75	2.26	0.17	0.30

*Design Storm

†Check Storm

Tailwater Channel Data - Culvert_D_Ult

Tailwater Channel Option: Trapezoidal Channel
 Bottom Width: 9.00 ft
 Side Slope (H:V): 4.00 (1:1)
 Channel Slope: 0.0010
 Channel Manning's n: 0.0300
 Channel Invert Elevation: 585.96 ft

Roadway Data for Crossing: Culvert_D_Ult

Roadway Profile Shape: Irregular Roadway Shape (coordinates)

Irregular Roadway Cross-Section

Coord No.	Station (ft)	Elevation (ft)
0	0.00	590.06
1	20.00	590.08
2	40.00	590.10
3	60.00	590.10
4	80.00	590.10
5	100.00	589.72

Roadway Surface: Paved

Roadway Top Width: 142.00 ft

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P. E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P. E. SERIAL NO: 105193
 DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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**HYDRAULIC DATA SHEET
 CULVERT D ULT**

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	289

Plotted on: 11/17/2023

Design File Name: P:\12775\00\Design\Civil\Drainage\1277500_hyd_E01.dgn

Crossing Discharge Data

Discharge Selection Method: Recurrence

Rating Curve Plot for Crossing: Culvert_E_Exist

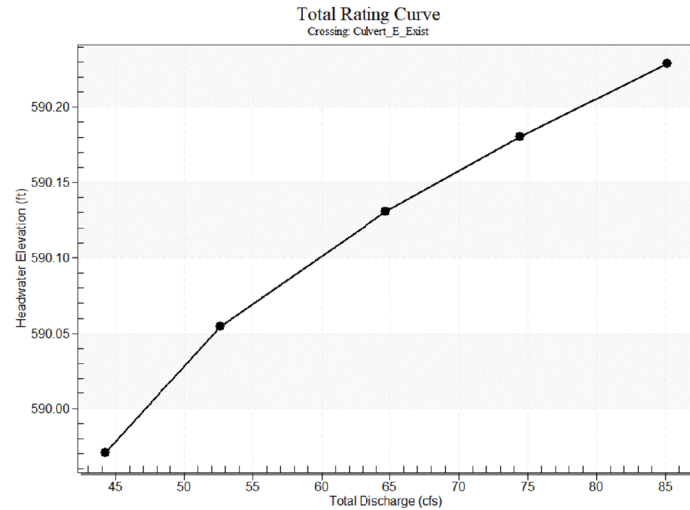


Table 1 - Summary of Culvert Flows at Crossing: Culvert_E_Exist

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Culvert_E_Exist Discharge (cfs)	Roadway Discharge (cfs)	Iterations
589.97	5 year	44.27	40.97	3.18	22
590.05	10 year	52.63	41.45	11.08	7
590.13	25 year*	64.71	41.85	22.84	6
590.18	50 year	74.47	41.84	32.62	5
590.23	100 year†	85.11	41.62	43.47	4
589.87	Overtopping	40.17	40.17	0.00	Overtopping

*Design Storm

†Check Storm

Culvert Data: Culvert_E_Exist

Table 2 - Culvert Summary Table: Culvert_E_Exist

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
5 year	44.27 cfs	40.97 cfs	589.97	3.50	3.611	7-M2c	2.22	1.62	1.62	1.60	7.91	2.61
10 year	52.63 cfs	41.45 cfs	590.05	3.55	3.694	7-M2t	2.22	1.63	1.70	1.70	7.69	2.73
25 year	64.71 cfs*	41.85 cfs	590.13	3.59	3.771	7-M2t	2.22	1.64	1.84	1.84	7.33	2.87
50 year	74.47 cfs	41.84 cfs	590.18	3.59	3.820	7-M2t	2.22	1.64	1.94	1.94	7.07	2.98
100 year	85.11 cfs†	41.62 cfs	590.23	3.56	3.869	7-M2t	2.22	1.64	2.04	2.04	6.83	3.08

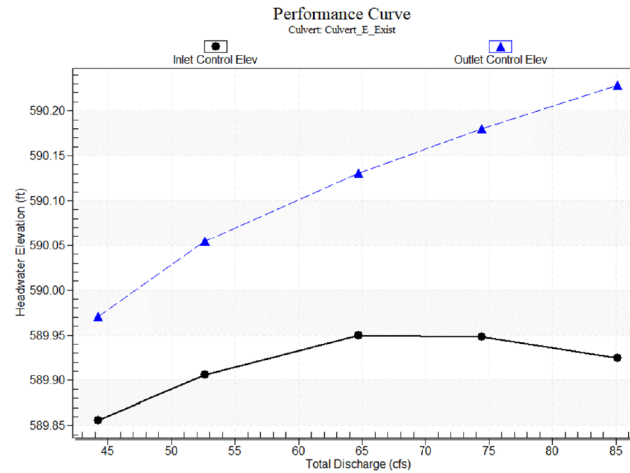
*Design Storm

†Check Storm

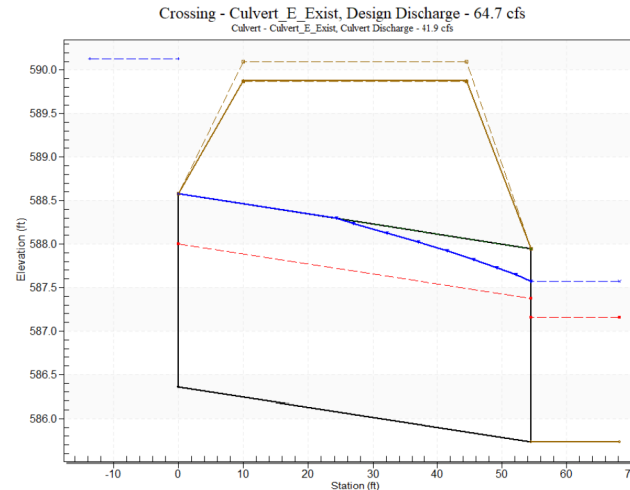
Culvert Barrel Data

Culvert Barrel Type: Straight Culvert
 Inlet Elevation (invert): 586.36 ft
 Outlet Elevation (invert): 585.73 ft
 Culvert Length: 54.51 ft
 Culvert Slope: 0.0116

Culvert Performance Curve Plot: Culvert_E_Exist



Water Surface Profile Plot for Culvert: Culvert_E_Exist



Site Data - Culvert_E_Exist

Site Data Option: Culvert Invert Data
 Inlet Station: 0.00 ft
 Inlet Elevation: 586.36 ft
 Outlet Station: 54.51 ft
 Outlet Elevation: 585.73 ft
 Number of Barrels: 1

Culvert Data Summary - Culvert_E_Exist

Barrel Shape: Pipe Arch
 Barrel Span: 43.30 in
 Barrel Rise: 26.60 in
 Barrel Material: Steel or Aluminum
 Embedment: 0.00 in
 Barrel Manning's n: 0.0250
 Culvert Type: Straight
 Inlet Configuration: Projecting (Ke=0.9)
 Inlet Depression: None

Tailwater Data for Crossing: Culvert_E_Exist

Table 3 - Downstream Channel Rating Curve (Crossing: Culvert_E_Exist)

Flow (cfs)	Water Surface Elev (ft)	Velocity (ft/s)	Depth (ft)	Shear (psf)	Froude Number
44.27	587.33	1.60	2.61	0.52	0.52
52.63	587.43	1.70	2.73	0.55	0.52
64.71*	587.57	1.84	2.87	0.60	0.53
74.47	587.67	1.94	2.98	0.63	0.53
85.11†	587.77	2.04	3.08	0.66	0.54

*Design Storm

†Check Storm

Tailwater Channel Data - Culvert_E_Exist

Tailwater Channel Option: Triangular Channel
 Side Slope (H:V): 6.65 (:1)
 Channel Slope: 0.0052
 Channel Manning's n: 0.0350
 Channel Invert Elevation: 585.73 ft

Roadway Data for Crossing: Culvert_E_Exist

Roadway Profile Shape: Irregular Roadway Shape (coordinates)

Irregular Roadway Cross-Section

Coord No.	Station (ft)	Elevation (ft)
0	0.00	589.94
1	20.00	589.88
2	40.00	589.87
3	60.00	590.00
4	80.00	590.10
5	100.00	589.92

Roadway Surface: Paved

Roadway Top Width: 34.50 ft

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P. E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P. E. SERIAL NO: 105193
 DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



**HYDRAULIC DATA SHEET
 CULVERT E EXIST**

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	290

Plotted on: 11/17/2023

Crossing Discharge Data

Discharge Selection Method: Recurrence

Rating Curve Plot for Crossing: Culvert_E_Ult

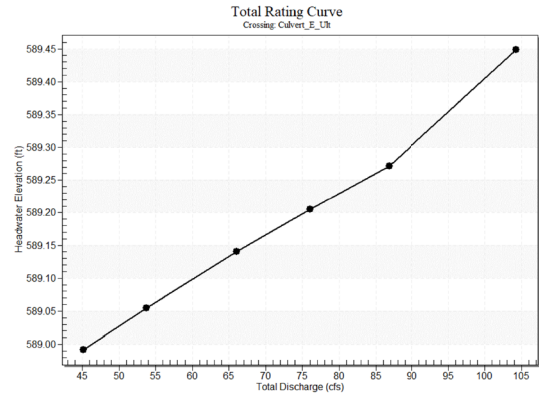


Table 1 - Summary of Culvert Flows at Crossing: Culvert_E_Ult

Table with 7 columns: Headwater Elevation (ft), Discharge Names, Total Discharge (cfs), Culvert_E_Ult_West Discharge (cfs), Culvert_E_Ult_East Discharge (cfs), Roadway Discharge (cfs), Iterations.

*Design Storm
†Check Storm

Culvert Data: Culvert_E_Ult_West

Table 3 - Culvert Summary Table: Culvert_E_Ult_West

Table with 13 columns: Discharge Names, Total Discharge (cfs), Culvert Discharge (cfs), Headwater Elevation (ft), Inlet Control Depth (ft), Outlet Control Depth (ft), Flow Type, Normal Depth (ft), Critical Depth (ft), Outlet Depth (ft), Tailwater Depth (ft), Outlet Velocity (ft/s), Tailwater Velocity (ft/s).

*Design Storm
†Check Storm

Culvert Barrel Data

Culvert Barrel Type Straight Culvert
Inlet Elevation (invert): 585.14 ft,
Outlet Elevation (invert): 585.00 ft
Culvert Length: 132.04 ft,
Culvert Slope: 0.0011
Inlet Throat Elevation: 585.14 ft,
Inlet Crest Elevation: 588.48 ft

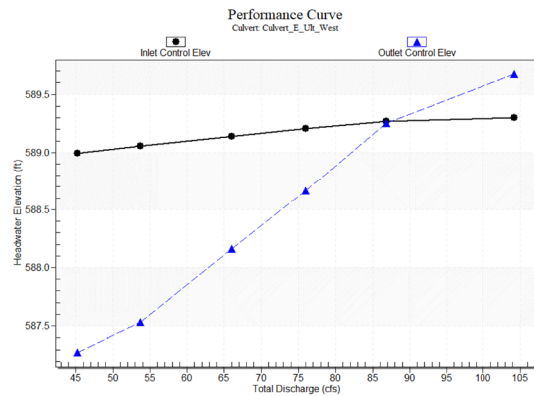
Site Data - Culvert_E_Ult_West

Site Data Option: Culvert Invert Data
Inlet Station: 0.00 ft
Inlet Elevation: 588.21 ft
Outlet Station: 132.00 ft
Outlet Elevation: 585.00 ft
Number of Barrels: 1

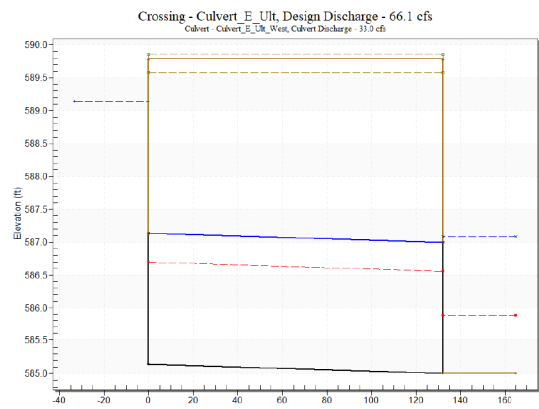
Culvert Data Summary - Culvert_E_Ult_West

Barrel Shape: Concrete Box
Barrel Span: 3.00 ft
Barrel Rise: 2.00 ft
Barrel Material: Concrete
Embedment: 0.00 in
Barrel Manning's n: 0.0120
Culvert Type: Straight
Inlet Configuration: 1:1 Bevel Headwall (Ke=0.2)
Inlet Depression: Yes

Culvert Performance Curve Plot: Culvert_E_Ult_West



Water Surface Profile Plot for Culvert: Culvert_E_Ult_West



Tailwater Data for Crossing: Culvert_E_Ult

Table 2 - Downstream Channel Rating Curve (Crossing: Culvert_E_Ult)

Table with 6 columns: Flow (cfs), Water Surface Elev (ft), Velocity (ft/s), Depth (ft), Shear (psf), Froude Number.

*Design Storm
†Check Storm

Tailwater Channel Data - Culvert_E_Ult

Tailwater Channel Option: Trapezoidal Channel
Bottom Width: 12.00 ft
Side Slope (H:V): 4.00 (:1)
Channel Slope: 0.0006
Channel Manning's n: 0.0300
Channel Invert Elevation: 585.00 ft

Roadway Data for Crossing: Culvert_E_Ult

Roadway Profile Shape: Irregular Roadway Shape (coordinates)

Irregular Roadway Cross-Section

Table with 3 columns: Coord No., Station (ft), Elevation (ft).

Roadway Surface: Paved
Roadway Top Width: 132.00 ft

Culvert Data: Culvert_E_Ult_East

Table 4 - Culvert Summary Table: Culvert_E_Ult_East

Table with 13 columns: Discharge Names, Total Discharge (cfs), Culvert Discharge (cfs), Headwater Elevation (ft), Inlet Control Depth (ft), Outlet Control Depth (ft), Flow Type, Normal Depth (ft), Critical Depth (ft), Outlet Depth (ft), Tailwater Depth (ft), Outlet Velocity (ft/s), Tailwater Velocity (ft/s).

*Design Storm
†Check Storm

Culvert Barrel Data

Culvert Barrel Type Straight Culvert
Inlet Elevation (invert): 585.14 ft,
Outlet Elevation (invert): 585.00 ft
Culvert Length: 132.04 ft,
Culvert Slope: 0.0011
Inlet Throat Elevation: 585.14 ft,
Inlet Crest Elevation: 588.48 ft

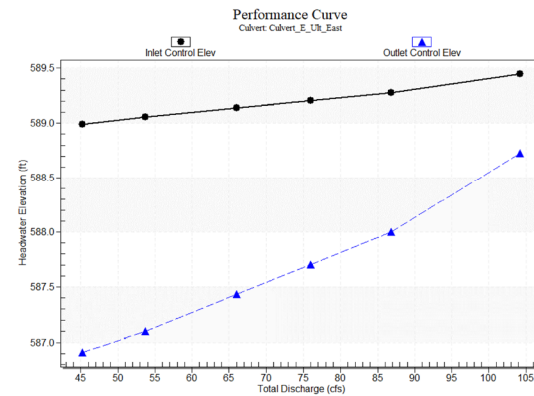
Site Data - Culvert_E_Ult_East

Site Data Option: Culvert Invert Data
Inlet Station: 0.00 ft
Inlet Elevation: 588.21 ft
Outlet Station: 132.00 ft
Outlet Elevation: 585.00 ft
Number of Barrels: 1

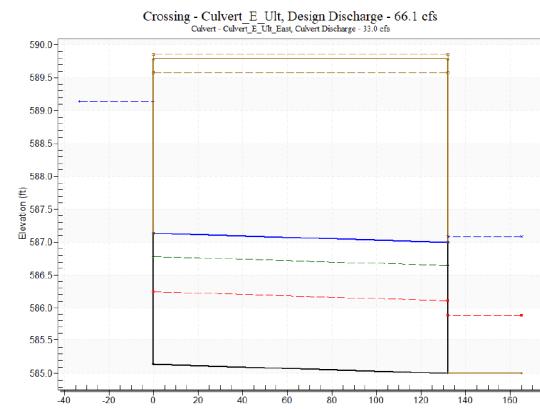
Culvert Data Summary - Culvert_E_Ult_East

Barrel Shape: Concrete Box
Barrel Span: 5.00 ft
Barrel Rise: 2.00 ft
Barrel Material: Concrete
Embedment: 0.00 in
Barrel Manning's n: 0.0120
Culvert Type: Straight
Inlet Configuration: 1:1 Bevel Headwall
Inlet Depression: Yes

Culvert Performance Curve Plot: Culvert_E_Ult_East



Water Surface Profile Plot for Culvert: Culvert_E_Ult_East



DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JACOB J. POWELL
P. E. SERIAL NO: 108825
DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P. E. SERIAL NO: 105193
DATE: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_hyd_E02.dgn

Table with 4 columns: REV. NO., DATE, DESCRIPTION, BY.

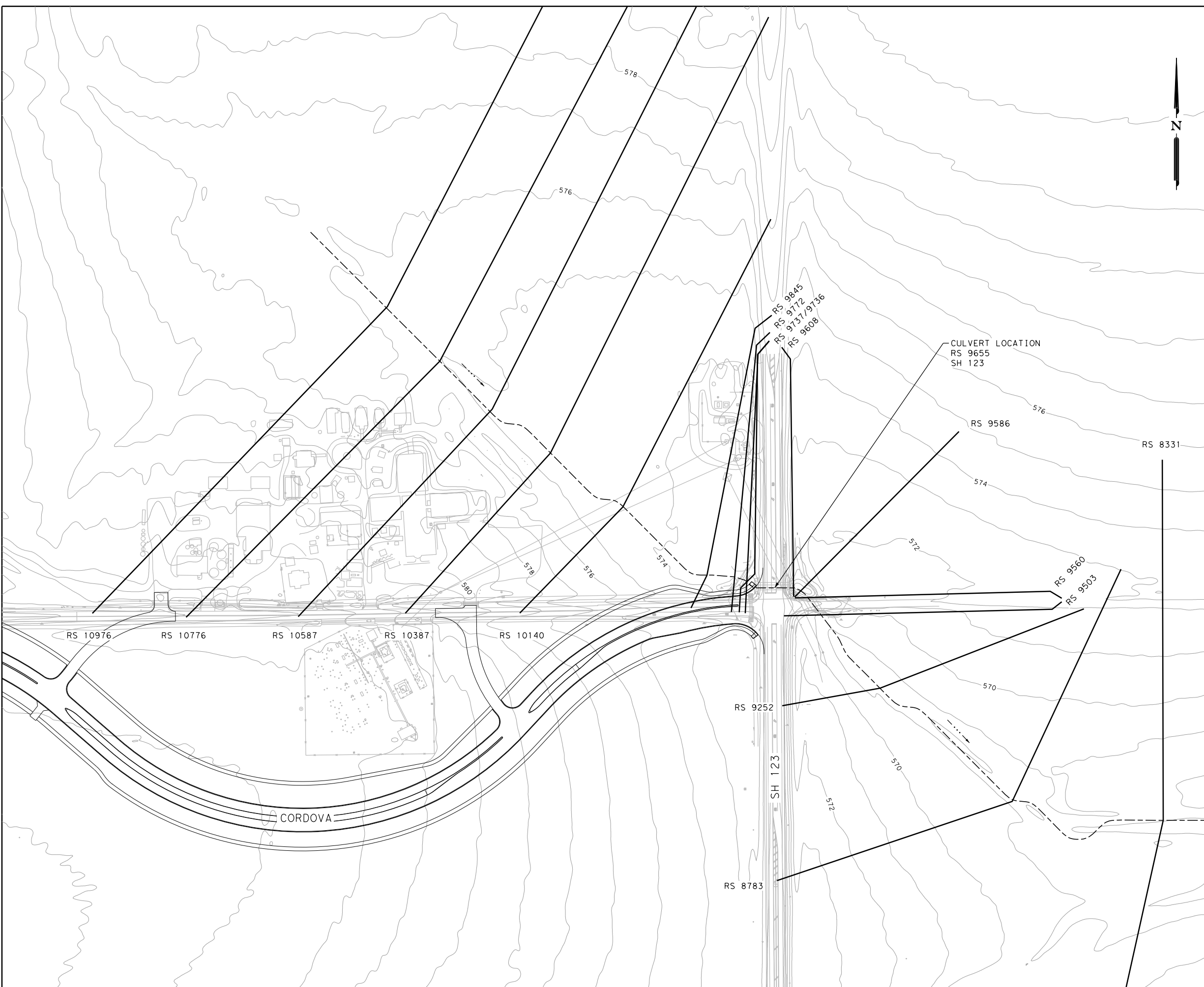


HYDRAULIC DATA SHEET
CULVERT E ULT

Table with 5 columns: DGN#, FED. RD. DIV. NO., STATE, FEDERAL AID PROJECT NO., HIGHWAY NO., and 4 sub-columns for DIST., COUNTY, CONT. NO., SECT. NO., JOB NO., SHEET NO.

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_hyd_F01.dgn



- NOTES:
1. HEC-RAS VERSION 6.3.1 USED FOR HYDRAULIC CALCULATIONS.
 2. TOPOGRAPHIC DATA BASED ON 1-FT CONTOURS FROM 2017 STRATMAP CENTRAL TEXAS LIDAR DATASET AND FIELD SURVEY.
 3. FOR CULVERTS CROSSING CORDOVA RD, 25YR AEP STORM USED FOR DESIGN, PER CITY OF SEGUIN CRITERIA.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JACOB J. POWELL

P.E. SERIAL NO: 108825

DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
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PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS

It's real.

Texas Department of Transportation
 © 2023

HYDRAULIC DATA SHEET
 CULVERT F

SHEET 1 OF 4

CHK DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:			HIGHWAY NO.:
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	292

HEC-RAS OUTPUT

Plotted on: 11/17/2023

Design File name: P:\1275\00\Design\Civil\Drainage\127500_hyd_F02.dgn

River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W. S. Elev (ft)	Crit W. S. (ft)	E. G. Elev (ft)	E. G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
10976	5yr	PRE	546.1	575.33	576.54	576.2	576.58	0.003239	1.62	339.8	645.56	0.39
10976	5yr	POST	521.7	575.33	576.52		576.56	0.003293	1.6	327.58	637.43	0.39
10976	10yr (Design)	PRE	759.4	575.33	576.68	576.31	576.73	0.003204	1.74	440.34	750.25	0.39
10976	10yr (Design)	POST	724	575.33	576.67		576.71	0.003144	1.71	427.83	739.24	0.39
10976	25yr	PRE	1087.9	575.33	576.87	576.43	576.92	0.002955	1.89	586.32	845.94	0.39
10976	25yr	POST	1034.2	575.33	576.84		576.9	0.002943	1.86	566	832.85	0.38
10976	50yr	PRE	1368.5	575.33	577.04	576.53	577.09	0.002509	1.89	740.8	953.03	0.36
10976	50yr	POST	1297.7	575.33	577.01		577.06	0.00254	1.86	713.42	947.98	0.36
10976	100yr (Check)	PRE	1685.2	575.33	577.23	576.62	577.28	0.001913	1.87	927.04	989.2	0.33
10976	100yr (Check)	POST	1593.9	575.33	577.18		577.23	0.002026	1.86	878.53	983.12	0.33
10776	5yr	PRE	546.1	574.91	576.02	575.73	576.06	0.002178	1.41	386.76	642.77	0.32
10776	5yr	POST	521.7	574.91	576.03	575.64	576.06	0.001955	1.34	388.81	643.12	0.3
10776	10yr (Design)	PRE	759.4	574.91	576.17	575.74	576.21	0.002167	1.58	479.29	668.08	0.33
10776	10yr (Design)	POST	724	574.91	576.11	575.73	576.15	0.002534	1.64	440.22	651.9	0.35
10776	25yr	PRE	1087.9	574.91	576.47	575.85	576.51	0.001477	1.56	698.65	761.87	0.28
10776	25yr	POST	1034.2	574.91	576.47	575.84	576.51	0.001327	1.48	700.55	763.57	0.27
10776	50yr	PRE	1368.5	574.91	576.72	575.92	576.75	0.001188	1.54	897.05	863.25	0.26
10776	50yr	POST	1297.7	574.91	576.69	575.91	576.73	0.001148	1.49	876.44	858.88	0.26
10776	100yr (Check)	PRE	1685.2	574.91	576.99	576.02	577.02	0.000892	1.49	1145.31	940.98	0.23
10776	100yr (Check)	POST	1593.9	574.91	576.93	575.99	576.96	0.000929	1.48	1088.25	930.2	0.24
10587	5yr	PRE	546.1	574.38	575.83	575.24	575.85	0.000652	0.95	574.59	699.64	0.18
10587	5yr	POST	521.7	574.38	575.86	575.13	575.88	0.000528	0.87	598.12	707.61	0.17
10587	10yr (Design)	PRE	759.4	574.38	575.92	575.4	575.95	0.000918	1.19	640.83	724.5	0.22
10587	10yr (Design)	POST	724	574.38	575.74	575.22	575.78	0.001578	1.41	515.13	677.16	0.28
10587	25yr	PRE	1087.9	574.38	576.31	575.57	576.34	0.000591	1.16	942.33	834.83	0.19
10587	25yr	POST	1034.2	574.38	576.34	575.34	576.35	0.000513	1.08	961.12	855.34	0.17
10587	50yr	PRE	1368.5	574.38	576.59	575.73	576.61	0.000512	1.17	1184.92	942.54	0.18
10587	50yr	POST	1297.7	574.38	576.57	575.43	576.59	0.000479	1.12	1168.96	939.07	0.17
10587	100yr (Check)	PRE	1685.2	574.38	576.89	575.73	576.91	0.000418	1.16	1477.06	1011.62	0.16
10587	100yr (Check)	POST	1593.9	574.38	576.82	575.52	576.84	0.000431	1.14	1411.41	1007.8	0.17
10387	5yr	PRE	546.1	573.98	575.78	574.89	575.78	0.000177	0.6	903.64	815.71	0.1
10387	5yr	POST	521.7	573.98	575.82	574.61	575.82	0.000143	0.56	939.86	822.92	0.09
10387	10yr (Design)	PRE	759.4	573.98	575.84	575.04	575.85	0.000289	0.8	954.34	824.97	0.13
10387	10yr (Design)	POST	724	573.98	575.59	574.7	575.6	0.000503	0.95	758.67	756.42	0.17
10387	25yr	PRE	1087.9	573.98	576.25	575.24	576.26	0.000231	0.83	1314.85	918.89	0.12
10387	25yr	POST	1034.2	573.98	576.28	574.82	576.29	0.000194	0.77	1344.13	922.2	0.11
10387	50yr	PRE	1368.5	573.98	576.53	575.44	576.54	0.000211	0.87	1577.48	979.52	0.12
10387	50yr	POST	1297.7	573.98	576.52	574.9	576.53	0.000194	0.83	1564.93	978.42	0.11
10387	100yr (Check)	PRE	1685.2	573.98	576.84	575.62	576.85	0.000187	0.9	1890.14	1051.52	0.11
10387	100yr (Check)	POST	1593.9	573.98	576.77	574.99	576.78	0.000188	0.88	1821.29	1037.14	0.11
10140	5yr	PRE	546.1	573.49	575.76	574.53	575.76	0.000042	0.4	1432.32	916.63	0.05
10140	5yr	POST	521.7	573.49	575.8	574.05	575.8	0.000055	0.47	1106.46	919.34	0.06
10140	10yr (Design)	PRE	759.4	573.49	575.81	574.68	575.81	0.000073	0.54	1477.61	919.84	0.07
10140	10yr (Design)	POST	724	573.49	575.53	574.14	575.54	0.000173	0.77	943.94	894.57	0.11
10140	25yr	PRE	1087.9	573.49	576.22	574.89	576.23	0.000072	0.62	1873.55	993.16	0.07
10140	25yr	POST	1034.2	573.49	576.26	574.25	576.26	0.000062	0.58	1909.05	997.68	0.07
10140	50yr	PRE	1368.5	573.49	576.5	575.04	576.51	0.000075	0.68	2152.23	1014.49	0.08
10140	50yr	POST	1297.7	573.49	576.49	574.33	576.5	0.000068	0.65	2141.58	1013.76	0.07
10140	100yr (Check)	PRE	1685.2	573.49	576.81	575.2	576.82	0.000074	0.73	2470.6	1042.39	0.08
10140	100yr (Check)	POST	1593.9	573.49	576.75	574.43	576.75	0.000072	0.71	2402.51	1036.61	0.08
9845	5yr	PRE	546.1	573.09	575.7	574.2	575.73	0.000362	1.47	391.81	701.47	0.17
9845	5yr	POST	521.7	573.09	575.79	575.79	575.79	0.000339	0.53	981.52	706.84	0.06
9845	10yr (Design)	PRE	759.4	573.09	575.7	574.39	575.76	0.000705	2.05	391.12	701.33	0.24
9845	10yr (Design)	POST	724	573.09	575.48	575.49	575.49	0.000114	0.84	860.34	689.05	0.1
9845	25yr	PRE	1087.9	573.09	576.2	574.61	576.21	0.00007	0.75	1651.49	757.45	0.08
9845	25yr	POST	1034.2	573.09	576.23	576.24	576.24	0.000084	0.87	1292.54	758.2	0.09
9845	50yr	PRE	1368.5	573.09	576.48	574.78	576.49	0.000077	0.84	1861.88	773.59	0.08
9845	50yr	POST	1297.7	573.09	576.46	576.47	576.47	0.000098	0.99	1465.64	773.07	0.1
9845	100yr (Check)	PRE	1685.2	573.09	576.78	574.96	576.8	0.00008	0.91	2102.22	781.63	0.09
9845	100yr (Check)	POST	1593.9	573.09	576.71	576.73	576.73	0.000108	1.09	1660.92	780.75	0.1
9772	5yr	PRE	546.1	573.13	575.58	574.37	575.68	0.001176	2.62	232.02	718.86	0.31
9772	5yr	POST	521.7	573.13	575.78	573.7	575.79	0.000058	0.66	805.85	720.34	0.07
9772	10yr (Design)	PRE	759.4	573.13	575.43	574.6	575.64	0.002897	3.92	212.23	711.57	0.48
9772	10yr (Design)	POST	724	573.13	575.47	573.8	575.48	0.000173	1.05	705.41	717.89	0.12
9772	25yr	PRE	1087.9	573.13	576.2	574.93	576.2	0.000063	0.72	1698.03	723.35	0.08
9772	25yr	POST	1034.2	573.13	576.23	573.95	576.24	0.000055	0.72	1647.62	723.64	0.07
9772	50yr	PRE	1368.5	573.13	576.47	575.19	576.48	0.00007	0.81	1897	726.14	0.08
9772	50yr	POST	1297.7	573.13	576.45	574.06	576.46	0.000066	0.82	1799.02	725.99	0.08
9772	100yr (Check)	PRE	1685.2	573.13	576.78	575.41	576.79	0.000074	0.88	2121.23	729.61	0.08
9772	100yr (Check)	POST	1593.9	573.13	576.71	574.18	576.72	0.000069	0.89	2061.66	728.65	0.08
9737	5yr	POST	521.7	571.55	575.77	573.29	575.78	0.000018	1.14	1291.05	707.16	0.1
9737	10yr (Design)	POST	724	571.55	575.01	573.71	575.43	0.000397	5.21	139.08	658.17	0.49
9737	25yr	POST	1034.2	571.55	576.22	574.29	576.23	0.000036	1.59	1738.48	710.53	0.13
9737	50yr	POST	1297.7	571.55	576.44	574.75	576.46	0.000043	1.81	1897.17	712.76	0.14
9737	100yr (Check)	POST	1593.9	571.55	576.69	575.21	576.71	0.00005	2.01	2074.6	716.91	0.16
9736	5yr	PRE	546.1	572.66	575.53	574.08	575.63	0.001156	2.83	220.87	692.65	0.31
9736	10yr (Design)	PRE	759.4	572.66	575.27	574.36	575.53	0.003255	4.42	191.57	686.12	0.52
9736	25yr	PRE	1087.9	572.66	576.19	574.75	576.2	0.00006	0.72	1709	697.58	0.07
9736	50yr	PRE	1368.5	572.66	576.46	575.06	576.47	0.000067	0.81	1900.54	700.4	0.08
9736	100yr (Check)	PRE	1685.2	572.66	576.77	575.56	576.78	0.000072	0.89	2116.87	706.27	0.08
9655												

River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W. S. Elev (ft)	Crit W. S. (ft)	E. G. Elev (ft)	E. G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
9608	5yr	PRE	546.1	569.2	572.25	572.25	573.27	0.01268	8.17	67.7	85.46	1
9608	5yr	POST	521.7	569.2	572.19	572.19	573.18	0.012774	8.04	65.71	79.14	0.99
9608	10yr (Design)	PRE	759.4	569.2	572.74	572.74	574.03	0.012115	9.19	83.75	370.7	1.01
9608	10yr (Design)	POST	724	569.2	572.66	572.66	573.91	0.012174	9.03	81.26	330.24	1.01
9608	25yr	PRE	1087.9	569.2	573.44	573.44	575.07	0.011079	10.32	106.84	488.79	1
9608	25yr	POST	1034.2	569.2	573.33	573.33	574.9	0.011195	10.15	103.31	441.25	1
9608	50yr	PRE	1368.5	569.								

HEC-RAS CULVERT OUTPUT DATA - EXISTING

Plan: PRE	GERONIMO TRIBUTA	Reach 1 RS: 9655	Culv Group: Culvert #1	Profile: 10yr (Design)
Q Culv Group (cfs)		740.7	Culv Full Len (ft)	84
# Barrels	4		Culv Vel US (ft/s)	10.29
Q Barrel (cfs)	185.18		Culv Vel DS (ft/s)	10.29
E.G. US. (ft)	575.35		Culv Inv El Up (ft)	571.37
W.S. US. (ft)	575.06		Culv Inv El Dn (ft)	569.57
E.G. DS (ft)	573.97		Culv Frctn Ls (ft)	1.67
W.S. DS (ft)	572.7		Culv Exit Loss (ft)	0.38
Delta EG (ft)	1.39		Culv Entr Loss (ft)	0.33
Delta WS (ft)	2.36		Q Weir (cfs)	
E.G. IC (ft)	577.15		Weir Sta Lft (ft)	
E.G. OC (ft)	575.35		Weir Sta Rgt (ft)	
Culvert Control	Outlet		Weir Submerg	
Culv WS Inlet (ft)	574.37		Weir Max Depth (ft)	
Culv WS Outlet (ft)	572.57		Weir Avg Depth (ft)	
Culv Nml Depth (ft)	1.73		Weir Flow Area (sq ft)	
Culv Crt Depth (ft)	3		Min El Weir Flow (ft)	575.86

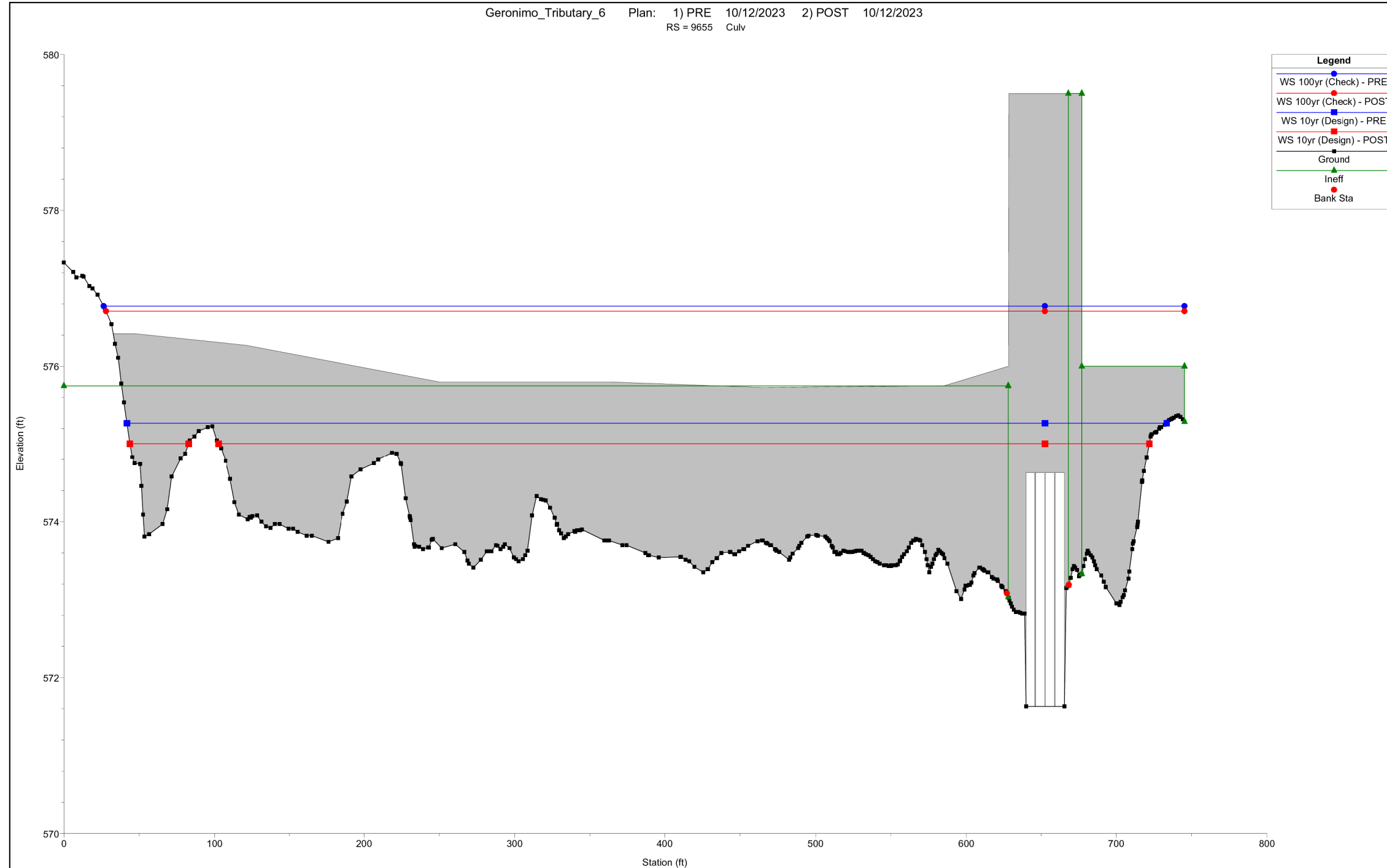
Plan: PRE	GERONIMO TRIBUTA	Reach 1 RS: 9655	Culv Group: Culvert #1	Profile: 100yr (Check)
Q Culv Group (cfs)		190.43	Culv Full Len (ft)	84
# Barrels	4		Culv Vel US (ft/s)	2.64
Q Barrel (cfs)	47.61		Culv Vel DS (ft/s)	2.64
E.G. US. (ft)	576.78		Culv Inv El Up (ft)	571.37
W.S. US. (ft)	576.77		Culv Inv El Dn (ft)	569.57
E.G. DS (ft)	576.72		Culv Frctn Ls (ft)	0.05
W.S. DS (ft)	574.54		Culv Exit Loss (ft)	0
Delta EG (ft)	0.07		Culv Entr Loss (ft)	0.02
Delta WS (ft)	2.23		Q Weir (cfs)	1494.77
E.G. IC (ft)	576.72		Weir Sta Lft (ft)	27.01
E.G. OC (ft)	576.78		Weir Sta Rgt (ft)	733.5
Culvert Control	Outlet		Weir Submerg	0
Culv WS Inlet (ft)	574.37		Weir Max Depth (ft)	1.05
Culv WS Outlet (ft)	572.57		Weir Avg Depth (ft)	0.86
Culv Nml Depth (ft)			Weir Flow Area (sq ft)	606.02
Culv Crt Depth (ft)	1.25		Min El Weir Flow (ft)	575.86

HEC-RAS CULVERT OUTPUT DATA - PROPOSED

Plan: POST	GERONIMO TRIBUTA	Reach 1 RS: 9655	Culv Group: Culvert #1	Profile: 10yr (Design)
Q Culv Group (cfs)		705.9	Culv Full Len (ft)	114
# Barrels	4		Culv Vel US (ft/s)	9.8
Q Barrel (cfs)	176.48		Culv Vel DS (ft/s)	9.8
E.G. US. (ft)	575.25		Culv Inv El Up (ft)	571.55
W.S. US. (ft)	574.79		Culv Inv El Dn (ft)	569.57
E.G. DS (ft)	573.85		Culv Frctn Ls (ft)	1.93
W.S. DS (ft)	572.62		Culv Exit Loss (ft)	0.26
Delta EG (ft)	1.4		Culv Entr Loss (ft)	0.3
Delta WS (ft)	2.18		Q Weir (cfs)	
E.G. IC (ft)	577.29		Weir Sta Lft (ft)	
E.G. OC (ft)	575.25		Weir Sta Rgt (ft)	
Culvert Control	Outlet		Weir Submerg	
Culv WS Inlet (ft)	574.55		Weir Max Depth (ft)	
Culv WS Outlet (ft)	572.57		Weir Avg Depth (ft)	
Culv Nml Depth (ft)	1.8		Weir Flow Area (sq ft)	
Culv Crt Depth (ft)	3		Min El Weir Flow (ft)	575.86

Plan: POST	GERONIMO TRIBUTA	Reach 1 RS: 9655	Culv Group: Culvert #1	Profile: 100yr (Check)
Q Culv Group (cfs)		313.41	Culv Full Len (ft)	114
# Barrels	4		Culv Vel US (ft/s)	4.35
Q Barrel (cfs)	78.35		Culv Vel DS (ft/s)	4.35
E.G. US. (ft)	576.7		Culv Inv El Up (ft)	571.55
W.S. US. (ft)	576.69		Culv Inv El Dn (ft)	569.57
E.G. DS (ft)	576.48		Culv Frctn Ls (ft)	0.17
W.S. DS (ft)	574.38		Culv Exit Loss (ft)	0
Delta EG (ft)	0.22		Culv Entr Loss (ft)	0.06
Delta WS (ft)	2.31		Q Weir (cfs)	1280.49
E.G. IC (ft)	576.57		Weir Sta Lft (ft)	28.04
E.G. OC (ft)	576.7		Weir Sta Rgt (ft)	745.3
Culvert Control	Outlet		Weir Submerg	0
Culv WS Inlet (ft)	574.55		Weir Max Depth (ft)	0.97
Culv WS Outlet (ft)	572.57		Weir Avg Depth (ft)	0.76
Culv Nml Depth (ft)			Weir Flow Area (sq ft)	548.03
Culv Crt Depth (ft)	1.74		Min El Weir Flow (ft)	575.86

PROPOSED CULVERT UPSTREAM HEC-RAS CROSS SECTION OUTPUT



EXPLANATION OF PLANS:

1. PRE: PRE-PROJECT (EXISTING) GEOMETRY WITH EXISTING FLOWS.
2. POST: POST-PROJECT (PROPOSED) GEOMETRY WITH PROPOSED FLOWS.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P. E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P. E. SERIAL NO: 105193
 DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1022800



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HYDRAULIC DATA SHEET
 CULVERT F

SHEET 3 OF 4

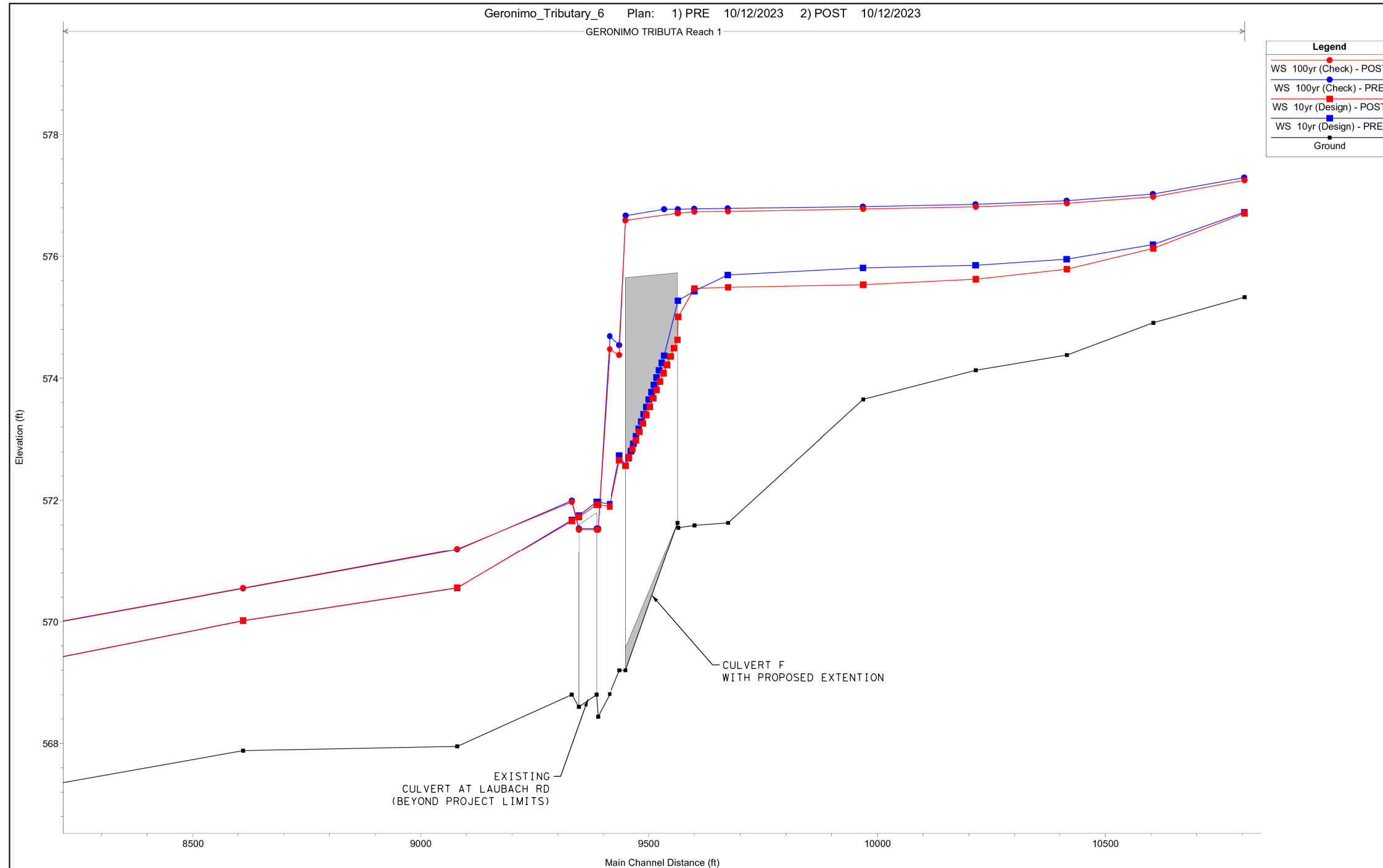
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	294

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_hyd_F03.dgn

Plotted on: 11/17/2023

HEC-RAS PROFILE PLOT OUTPUT



EXPLANATION OF PLANS:

1. PRE: PRE-PROJECT (EXISTING) GEOMETRY WITH EXISTING FLOWS.
2. POST: POST-PROJECT (PROPOSED) GEOMETRY WITH PROPOSED FLOWS.

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
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SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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HYDRAULIC DATA SHEET
 CULVERT F

SHEET 4 OF 4

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:			HIGHWAY NO.:
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	295

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_hyd_F04.dgn

Plotted on: 11/17/2023

Design File Name: P:\127\75\00\Design\Civil\Drainage\1277500_hyd_F101.dgn

Crossing Discharge Data

Discharge Selection Method: Recurrence

Rating Curve Plot for Crossing: Culvert_F-1

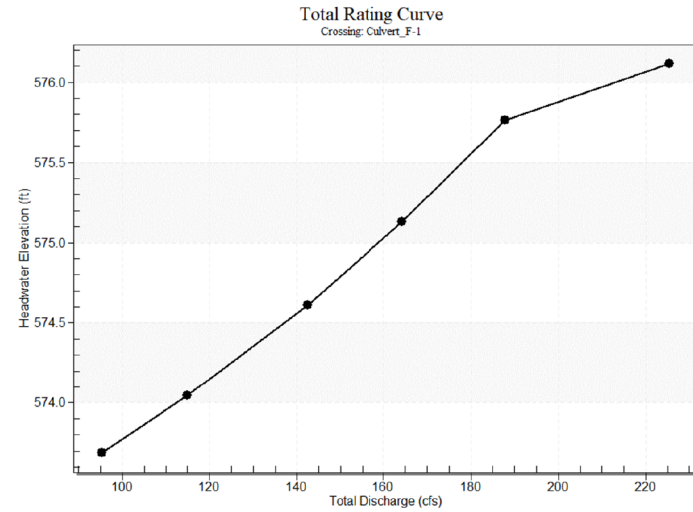


Table 1 - Summary of Culvert Flows at Crossing: Culvert_F-1

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Culvert_F-1_Prop Discharge (cfs)	Roadway Discharge (cfs)	Iterations
573.69	5 year	95.26	95.26	0.00	1
574.05	10 year	114.98	114.98	0.00	1
574.61	25 year*	142.44	142.44	0.00	1
575.13	50 year	164.20	164.20	0.00	1
575.76	100 year†	187.90	187.04	0.82	11
575.70	Overtopping	184.82	184.82	0.00	Overtopping

*Design Storm
†Check Storm

Culvert Data: Culvert_F-1_Prop

Table 2 - Culvert Summary Table: Culvert_F-1_Prop

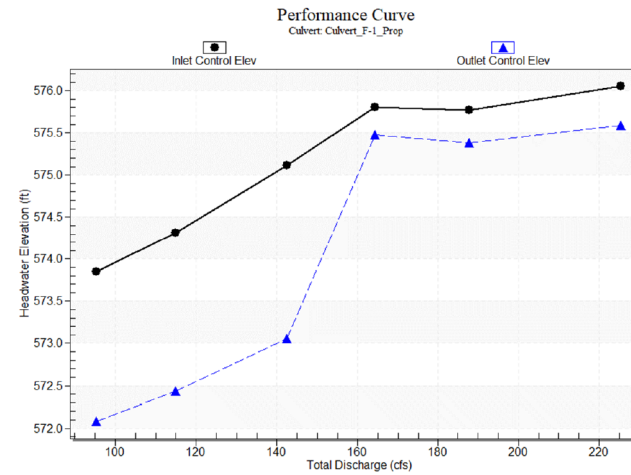
Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
5 year	95.26 cfs	95.26 cfs	573.69	2.85	1.079	1-S2n	0.00	0.00	1.47	0.51	9.13	2.56
10 year	114.98 cfs	114.98 cfs	574.05	3.32	1.439	5-S2n	0.00	0.00	1.65	0.56	9.63	2.68
25 year*	142.44 cfs	142.44 cfs	574.61	4.12	2.053	5-S2n	0.00	0.00	1.89	0.61	10.13	2.83
50 year	164.20 cfs	164.20 cfs	575.13	4.80	4.475	7-M2c	0.00	0.00	2.04	0.64	10.56	2.93
100 year†	187.90 cfs	187.04 cfs	575.76	4.76	4.385	7-M2c	3.00	2.54	2.54	0.68	9.75	3.03

*Design Storm
†Check Storm

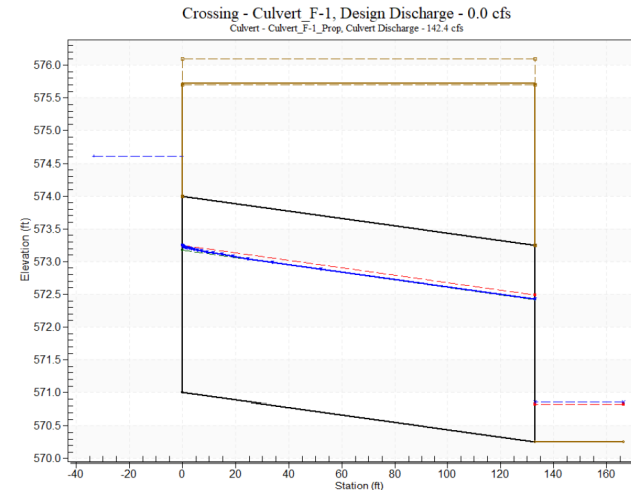
Culvert Barrel Data

Culvert Barrel Type: Straight Culvert
 Inlet Elevation (invert): 571.00 ft
 Outlet Elevation (invert): 570.25 ft
 Culvert Length: 133.00 ft, (End of SET)
 Culvert Slope: 0.0056

Culvert Performance Curve Plot: Culvert_F-1_Prop



Water Surface Profile Plot for Culvert: Culvert_F-1_Prop



Site Data - Culvert_F-1_Prop

Site Data Option: Culvert Invert Data
 Inlet Station: 0.00 ft
 Inlet Elevation: 571.00 ft
 Outlet Station: 133.00 ft
 Outlet Elevation: 570.25 ft
 Number of Barrels: 3

Culvert Data Summary - Culvert_F-1_Prop

Barrel Shape: Circular
 Barrel Diameter: 3.00 ft
 Barrel Material: Concrete
 Embedment: 0.00 in
 Barrel Manning's n: 0.0120
 Culvert Type: Straight
 Inlet Configuration: Beveled Edge (1:1) (Ke=0.2)
 Inlet Depression: None

Tailwater Data for Crossing: Culvert_F-1

Table 3 - Downstream Channel Rating Curve (Crossing: Culvert_F-1)

Flow (cfs)	Water Surface Elev. (ft)	Velocity (ft/s)	Depth (ft)	Shear (psf)	Froude Number
95.26	570.76	0.51	2.56	0.64	0.85
114.98	570.81	0.56	2.68	0.69	0.86
142.44*	570.86	0.61	2.83	0.76	0.88
164.20	570.89	0.64	2.93	0.80	0.88
187.90†	570.93	0.68	3.03	0.84	0.89

*Design Storm
†Check Storm

Tailwater Channel Data - Culvert_F-1

Tailwater Channel Option: Trapezoidal Channel
 Bottom Width: 10.58 ft
 Side Slope (H:V): 120.00 (:1)
 Channel Slope: 0.0200
 Channel Manning's n: 0.0350
 Channel Invert Elevation: 570.25 ft

Roadway Data for Crossing: Culvert_F-1

Roadway Profile Shape: Irregular Roadway Shape (coordinates)

Irregular Roadway Cross-Section

Coord No.	Station (ft)	Elevation (ft)
0	0.00	575.72
1	20.00	575.70
2	40.00	576.00
3	60.00	576.00
4	80.00	576.10
5	100.00	576.10

Roadway Surface: Paved
 Roadway Top Width: 133.00 ft

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P. E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P. E. SERIAL NO: 105193
 DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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**HYDRAULIC DATA SHEET
 CULVERT F-1 PROP**

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:			HIGHWAY NO.:
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	296

SYSTEM A CALCULATIONS

RUNOFF COMPUTATIONS - RATIONAL METHOD							
AREA - ID	AREA (ac)	C	CA	Tc (MIN)	I10 (IN/HR)	Q10 (CFS)	TO INLET/JUNCTION
AD1-ARMOR01	0.47	0.78	0.37	10	7.26	2.7	AD1-ARMOR01
AD1-ARMOR02	0.41	0.87	0.36	10	7.26	2.6	AD1-ARMOR02
AD1-ARMOR03	0.86	0.87	0.75	10	7.26	5.4	AD1-ARMOR03
AD2-ARMOR01	0.60	0.77	0.46	10	7.26	3.3	AD2-ARMOR01
AD2-ARMOR02	0.17	0.77	0.13	10	7.26	1.0	AD2-ARMOR02
AD2-ARMOR03	0.40	0.77	0.31	10	7.26	2.2	AD2-ARMOR03
AD2-ARMOR04	0.32	0.76	0.25	10	7.26	1.8	AD2-ARMOR04
AD2-ARMOR05	0.48	0.87	0.42	10	7.26	3.0	AD2-ARMOR05
AD2-ARMOR06	0.29	0.89	0.26	10	7.26	1.9	AD2-ARMOR06
AD3-ARMOR01	0.44	0.78	0.34	10	7.26	2.5	AD3-ARMOR01
AD3-ARMOR02	0.17	0.86	0.14	10	7.26	1.1	AD3-ARMOR02
AD3-ARMOR03	0.49	0.88	0.43	10	7.26	3.1	AD3-ARMOR03
AD4-ARMOR01	0.38	0.81	0.31	10	7.26	2.3	AD4-ARMOR01
AD4-ARMOR02	0.41	0.81	0.33	10	7.26	2.4	AD4-ARMOR02
AD4-ARMOR03	0.17	0.82	0.14	10	7.26	1.0	AD4-ARMOR03
AD4-ARMOR04	0.70	0.87	0.61	10	7.26	4.4	AD4-ARMOR04





CURB INLET COMPUTATIONS																
INLET				DRAINAGE AREA NO	Q10 FROM AREA CFS	CARRY OVER FLOW CFS	TOTAL Q10 CFS	LONGITUDINAL ROAD SLOPE FT/FT	DEPTH OF FLOW FT	ALLOWABLE PONDED WIDTH FT	PONDED WIDTH FT	LENGTH INLET REQ'D FT	LENGTH INLET ACTUAL FT	BY PASS FLOW CFS	REMARKS	
NO	TYPE	CONTROL	STATION													
AD1-ARMOR01	(1-ARM CURB)	31.33' LT CORDOVA	123+47.30	AD1-ARMOR01	2.7	0.04	2.7	---	0.20	11.33	10.11	0.0	10.0		*SUMP	
AD1-ARMOR02	(1-ARM CURB)	42.33' LT CORDOVA	122+04.25	AD1-ARMOR02	2.6	0.00	2.6	0.0035	0.25	22.33	12.26	11.1	10.0	0.04	C.O. TO AD1-ARMOR01	
AD1-ARMOR03	(1-ARM CURB)	42.33' LT CORDOVA	116+50.00	AD1-ARMOR03	5.4	0.00	5.4	---	0.31	33.33	15.56	0.0	10.0		*SUMP	
AD2-ARMOR01	(1-ARM CURB)	31.33' LT CORDOVA	128+17.30	AD2-ARMOR01	3.3	0.00	3.3	---	0.23	11.33	11.23	0.0	10.0		*SUMP	
AD2-ARMOR02	(1-ARM CURB)	31.33' LT CORDOVA	132+67.30	AD2-ARMOR02	1.0	0.00	1.0	0.0035	0.17	11.33	8.43	6.4	10.0			
AD2-ARMOR03	(1-ARM CURB)	31.33' LT CORDOVA	134+17.30	AD2-ARMOR03	2.2	0.00	2.2	---	0.17	11.33	9.41	0.0	10.0		*SUMP	
AD2-ARMOR04	(1-ARM CURB)	31.33' LT CORDOVA	136+17.30	AD2-ARMOR04	1.8	0.00	1.8	0.0035	0.21	11.33	10.68	9.1	10.0			
AD2-ARMOR05	(1-ARM CURB)	31.33' LT CORDOVA	143+47.30	AD2-ARMOR05	3.0	0.00	3.0	---	0.21	11.33	10.58	0.0	10.0		*SUMP	
AD2-ARMOR06	(1-ARM CURB)	31.33' LT CORDOVA	145+24.50	AD2-ARMOR06	1.9	0.00	1.9	0.0050	0.20	11.33	10.19	10.1	10.0			
AD3-ARMOR01	(1-ARM CURB)	31.33' RT CORDOVA	123+47.30	AD3-ARMOR01	2.5	0.00	2.5	---	0.19	11.33	9.23	0.0	10.0		*SUMP	
AD3-ARMOR02	(1-ARM CURB)	31.33' RT CORDOVA	121+27.30	AD3-ARMOR02	1.1	0.00	1.1	0.0035	0.18	11.33	8.75	6.8	10.0			
AD3-ARMOR03	(1-ARM CURB)	31.33' RT CORDOVA	116+50.21	AD3-ARMOR03	3.1	0.00	3.1	---	0.22	11.33	10.80	0.0	10.0		*SUMP	
AD4-ARMOR01	(1-ARM CURB)	31.33' RT CORDOVA	128+17.30	AD4-ARMOR01	2.3	0.00	2.3	---	0.17	11.33	8.75	0.0	10.0		*SUMP	
AD4-ARMOR02	(1-ARM CURB)	31.33' RT CORDOVA	134+17.30	AD4-ARMOR02	2.4	0.00	2.4	---	0.18	11.33	9.51	0.0	10.0			
AD4-ARMOR03	(1-ARM CURB)	31.33' RT CORDOVA	136+67.30	AD4-ARMOR03	1.0	0.00	1.0	0.0035	0.17	11.33	8.64	6.6	10.0			
AD4-ARMOR04	(1-ARM CURB)	31.33' RT CORDOVA	143+47.30	AD4-ARMOR04	4.4	0.00	4.4	---	0.27	11.33	13.53	0.0	10.0		*SUMP	

NOTE:

10 YR DESIGN STORM WAS ANALYZED USING GEOPAK DRAINAGE FOR STORM DRAIN CALCULATIONS

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JACOB J. POWELL
P.E. SERIAL NO: 108825
DATE: 11/17/2023

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
 It's real.			
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<h2>STORM DRAIN COMPUTATIONS</h2>			
SHEET 1 OF 6			
CHK DGN:	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO. CORDOVA
CHK DWG:	DIST. SAT	COUNTY GUADALUPE	CONT. NO. 0915 SECT. NO. 46 JOB NO. 052 SHEET NO. 297

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_hyd_storm_01.dgn

SYSTEM B CALCULATIONS

RUNOFF COMPUTATIONS - RATIONAL METHOD							
AREA - ID	AREA (ac)	C	CA	Tc (MIN)	I10 (IN/HR)	Q10 (CFS)	TO INLET/JUNCTION
BD1-1	4.61	0.53	2.45	27.4	4.62	11.3	DI-BD1-1
BD1-2	4.55	0.56	2.55	31.5	4.27	10.9	DI-BD1-2
BD1-3	6.72	0.54	3.65	32.9	4.17	15.2	DI-BD1-3
BD1-4	0.57	0.63	0.36	10	7.26	2.6	CI-BD1-4
BD1-5	0.10	0.80	0.08	10	7.26	0.6	CI-BD1-5
BD1-6	0.39	0.78	0.30	10	7.26	2.2	CI-BD1-6
BD3-1	0.27	0.79	0.21	10	7.26	1.5	CI-BD3-1
BD3-2	0.23	0.83	0.19	10	7.26	1.4	CI-BD3-2
BD3-3	1.00	0.72	0.72	10	7.26	5.2	DI-BD3-3
BD4-1	15.65	0.52	8.16	43.3	3.54	28.9	DI-BD4-1
BD4-4	0.81	0.50	0.40	16.3	5.97	2.4	SET-BD4-4
BD1-ARMOR01	0.33	0.85	0.28	10	7.26	2.0	BD1-ARMOR01
BD1-ARMOR02	0.13	0.81	0.11	10	7.26	0.8	BD1-ARMOR01
BD2-ARMOR01	0.41	0.89	0.37	10	7.26	2.7	BD2-ARMOR01
BD2-ARMOR02	0.29	0.91	0.26	10	7.26	1.9	BD2-ARMOR02
BD2-ARMOR03	0.30	0.81	0.24	10	7.26	1.7	BD2-ARMOR03
BD2-ARMOR04	0.23	0.86	0.20	10	7.26	1.4	BD2-ARMOR04
BD3-ARMOR01	0.31	0.92	0.29	10	7.26	2.1	BD3-ARMOR01
BD3-ARMOR02	0.19	0.82	0.15	10	7.26	1.1	BD3-ARMOR02
BD4-ARMOR01	0.56	0.84	0.47	10	7.26	3.4	BD4-ARMOR01
BD4-ARMOR02	0.34	0.86	0.29	10	7.26	2.1	BD4-ARMOR02
BD4-ARMOR03	0.48	0.84	0.40	10	7.26	2.9	BD4-ARMOR03

CURB INLET COMPUTATIONS															
INLET				DRAINAGE AREA	Q10 FROM AREA	CARRY OVER FLOW	TOTAL Q10	LONGITUDINAL ROAD SLOPE	DEPTH OF FLOW	ALLOWABLE PONDED WIDTH	PONDED WIDTH	LENGTH INLET REQ'D	LENGTH INLET ACTUAL	BY FLOW	REMARKS
NO	TYPE	CONTROL	STATION												
CI-BD1-4	COSA TY C-I Inlet	31.33' LT CORDOVA	154+97.00	BD1-4	2.6	0.00	2.6	0.0086	0.21	11.33	10.43	13.5	10.0	0.24	C.O. TO BD1-ARMOR02
CI-BD1-5	COSA TY C-I Inlet	31.33' LT CORDOVA	157+69.00	BD1-5	0.6	0.00	0.6	0.0086	0.12	11.33	5.83	5.6	10.0		
CI-BD1-6	COSA TY C-I Inlet	31.33' LT CORDOVA	159+00.00	BD1-6	2.2	0.00	2.2	---	0.18	11.33	9.07	0.0	10.0		*SUMP
CI-BD3-1	COSA TY C-I Inlet	31.33' RT CORDOVA	159+00.19	BD3-1	1.5	0.00	1.5	---	0.14	11.33	7.11	9.1	10.0		*SUMP
CI-BD3-2	COSA TY C-I Inlet	31.33' RT CORDOVA	157+97.17	BD3-2	1.4	0.10	1.5	0.0086	0.17	11.33	8.35	9.7	10.0		
BD1-ARMOR01	(1-ARM CURB)	31.33' LT CORDOVA	153+00.00	BD1-ARMOR01	2.0	0.00	2.0	0.0050	0.21	11.33	10.45	10.5	10.0		
BD1-ARMOR02	(1-ARM CURB)	31.33' LT CORDOVA	156+70.00	BD1-ARMOR02	0.8	0.24	1.0	0.0086	0.15	11.33	7.26	8.1	10.0		
BD2-ARMOR01	(1-ARM CURB)	31.33' LT CORDOVA	162+89.58	BD2-ARMOR01	2.7	0.00	2.7	---	0.19	11.33	9.66	8.5	10.0		*SUMP
BD2-ARMOR02	(1-ARM CURB)	31.33' LT CORDOVA	166+00.00	BD2-ARMOR02	1.9	0.04	1.9	---	0.16	11.33	7.85	8.5	10.0		*SUMP
BD2-ARMOR03	(1-ARM CURB)	31.33' LT CORDOVA	168+07.00	BD2-ARMOR03	1.7	0.00	1.7	0.0100	0.17	11.33	8.67	11.4	10.0		
BD2-ARMOR04	(1-ARM CURB)	31.33' LT CORDOVA	172+04.00	BD2-ARMOR04	1.4	0.00	1.4	0.0050	0.18	11.33	9.15	8.7	10.0		
BD3-ARMOR01	(1-ARM CURB)	31.33' RT CORDOVA	154+84.00	BD3-ARMOR01	2.1	0.00	2.1	0.0086	0.19	11.33	9.56	12.2	10.0		
BD3-ARMOR02	(1-ARM CURB)	31.33' RT CORDOVA	150+85.00	BD3-ARMOR02	1.1	0.00	1.1	0.0086	0.15	11.33	7.56	8.7	10.0		
BD4-ARMOR01	(1-ARM CURB)	40.57' RT CORDOVA	162+89.58	BD4-ARMOR01	3.4	0.00	3.4	---	0.23	22.33	11.36	14.6	10.0		*SUMP
BD4-ARMOR02	(1-ARM CURB)	31.33' RT CORDOVA	166+00.00	BD4-ARMOR02	2.1	0.42	2.5	---	0.19	11.33	9.69	14.6	10.0		*SUMP
BD4-ARMOR03	(1-ARM CURB)	31.33' RT CORDOVA	168+80.00	BD4-ARMOR03	2.9	0.00	2.9	0.0100	0.21	11.33	10.55	15.2	10.0		

NOTE:

10 YR DESIGN STORM WAS ANALYZED USING GEOPAK DRAINAGE FOR STORM DRAIN CALCULATIONS

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JACOB J. POWELL
P.E. SERIAL NO: 108825
DATE: 11/17/2023

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
DATE: 11/17/2023

TRAFFIC INLET COMPUTATIONS													
INLET				DRAINAGE AREA	Q10	INLET HEAD	REQ'D AREA	INLET AREA	INLET TYPE	CARRY OVER		BY PASS FLOW	
NO	TYPE	CONTROL	STATION							NO	CFS	FT	SQ FT
DI-BD1-1	0	40.00' RT CORDOVA	153+00.00	BD1-1	11.3	0.51	5.65	n/a	PAZD FG CZ 3x3-3	0.01	C.O. FROM	BD1-ARMOR01	
DI-BD1-2	0	40.00' RT CORDOVA	156+70.00	BD1-2	10.9	0.44	5.82	n/a	PAZD FG 4x4-4				
DI-BD1-3	0	21.00' RT CORDLP_E	10+65.00	BD1-3	15.2	0.52	7.50	n/a	PAZD FG CZ 4x4-4				
DI-BD3-3	0	41.00' RT CORDOVA	154+84.00	BD3-3	5.2	0.30	3.38	n/a	PAZD FG CZ 3x3-3				
DI-BD4-1	0	40.50' RT CORDOVA	165+81.84	BD4-1	28.9	0.80	11.48	n/a	PAZD FG 3x3-3				

STORM DRAIN COMPUTATIONS													
LINE NO	FROM	TO	LENGTH (FT)	TC (MIN)	I10 (in/hr)	Q10 (CFS)	DESIGN						
							STR SIZE	SLOPE %	CAP (CFS)	VEL (FT/SEC)	FREQ (YR)		
LAT-B1-1	DI-BD1-3	JCT-BD1-JB1	28.25	33.01	4.16	15.2	24" RCP	0.07	7.0	4.8	10		
LAT-B4-1	SET-BD4-4	MH-BD4-M1	10.96	43.58	3.53	2.4	18" RCP	9.58	37.9	1.4	10		
LINE-B1-1	DI-BD1-1	CI-BD1-4	190.60	27.96	4.57	11.3	24" RCP	0.50	18.6	5.9	10		
LINE-B1-2	CI-BD1-4	DI-BD1-2	168.24	31.50	4.27	12.6	30" RCP	0.50	33.8	2.6	10		
LINE-B1-3	DI-BD1-2	CI-BD1-5	93.66	31.87	4.24	22.7	30" RCP	1.00	47.8	4.6	10		
LINE-B1-4	CI-BD1-5	CI-BD1-6	122.76	32.34	4.21	22.8	30" RCP	0.86	44.2	4.7	10		
LINE-B1-5	CI-BD1-6	JCT-BD1-JB1	39.65	33.01	4.16	23.9	30" RCP	0.08	13.1	4.9	10		
LINE-B1-6	JCT-BD1-JB1	MH-BD1-M1	264.35	33.83	4.16	38.8	36" RCP	0.10	24.8	5.5	10		
LINE-B1-7	MH-BD1-M1	OUT-BD1	94.00	34.07	---	38.8	36" RCP	0.11	25.4	7.6	10		
LINE-B3-1	MH-BD3-M1	OUT-BD3	25.50	15.14	---	7.6	24" RCP	0.12	9.0	2.4	10		
LINE-B3-2	CI-BD3-1	MH-BD3-M1	297.21	14.93	6.73	7.6	24" RCP	0.10	8.2	2.4	10		
LINE-B3-3	CI-BD3-2	CI-BD3-1	91.62	12.23	6.73	6.4	24" RCP	0.50	18.7	2.0	10		
LINE-B3-4	MH-BD3-M2	CI-BD3-2	144.83	11.42	6.91	5.2	24" RCP	0.80	23.6	5.7	10		
LINE-B3-5	DI-BD3-3	MH-BD3-M2	154.79	10.69	7.26	5.2	24" RCP	0.80	23.6	5.7	10		
LINE-B4-2	DI-BD4-1	MH-BD4-M1	96.11	43.58	3.53	28.9	30" RCP	0.10	15.4	5.9	10		
LINE-B4-1A	BD4-EXPIPE-DS	OUT-BD4	20.00	43.84	---	30.2	30" RCP	0.30	26.2	7.7	10		
LINE-B4-EXPIPE	BD4-EXPIPE-US	BD4-EXPIPE-DS	63.97	43.79	3.53	30.2	30" RCP	0.44	31.6	6.2	10		
LINE-B4-1C	MH-BD4-M1	BD4-EXPIPE-US	13.18	43.62	3.53	30.2	30" RCP	0.23	22.8	6.3	10		

REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
 			
 © 2023			
<h2>STORM DRAIN COMPUTATIONS</h2>			
SHEET 2 OF 6			
DON:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
CHK DGN:	6	TEXAS	
DWG:	DIST.:	COUNTY:	CONT. NO. SECT. NO. JOB NO.
CHK DWG:	SAT	GUADALUPE	0915 46 052
			CORDOVA SHEET NO. 298

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_hyd_storm_02.dgn

SYSTEM C CALCULATIONS

RUNOFF COMPUTATIONS - RATIONAL METHOD							
AREA - ID	AREA (ac)	C	CA	Tc (MIN)	I10 (IN/HR)	Q10 (CFS)	TO INLET/JUNCTION
CD1-ARMOR01	0.31	0.90	0.28	10	7.26	2.0	CD1-ARMOR01
CD1-ARMOR02	0.37	0.82	0.30	10	7.26	2.2	CD1-ARMOR02
CD1-ARMOR03	0.12	0.95	0.11	10	7.26	0.8	CD1-ARMOR03
CD1-ARMOR04	0.31	0.92	0.28	10	7.26	2.1	CD1-ARMOR04
CD1-ARMOR05	0.04	0.83	0.03	10	7.26	0.2	CD1-ARMOR05
CD1-ARMOR06	0.17	0.80	0.14	10	7.26	1.0	CD1-ARMOR06
CD2-ARMOR01	0.28	0.81	0.22	10	7.26	1.6	CD2-ARMOR01
CD2-ARMOR02	0.35	0.82	0.29	10	7.26	2.1	CD2-ARMOR02
CD2-ARMOR03	0.50	0.79	0.39	10	7.26	2.9	CD2-ARMOR03
CD2-ARMOR04	0.46	0.76	0.35	10	7.26	2.5	CD2-ARMOR04
CD3-ARMOR01	0.32	0.90	0.29	10	7.26	2.1	CD3-ARMOR01
CD3-ARMOR02	0.37	0.82	0.31	10	7.26	2.2	CD3-ARMOR02
CD3-ARMOR03	0.56	0.86	0.48	10	7.26	3.5	CD3-ARMOR03
CD4-ARMOR01	0.28	0.77	0.21	10	7.26	1.6	CD4-ARMOR01
CD4-ARMOR02	0.35	0.80	0.28	10	7.26	2.0	CD4-ARMOR02
CD4-ARMOR03	0.30	0.81	0.25	10	7.26	1.8	CD4-ARMOR03
CD4-ARMOR04	0.41	0.77	0.32	10	7.26	2.3	CD4-ARMOR04

CURB INLET COMPUTATIONS															
INLET				DRAINAGE AREA NO	Q10 FROM AREA CFS	CARRY OVER FLOW CFS	TOTAL Q10 CFS	LONGITUDINAL ROAD SLOPE FT/FT	DEPTH OF FLOW FT	ALLOWABLE PONDED WIDTH FT	PONDED WIDTH FT	LENGTH INLET REQ'D FT	LENGTH INLET ACTUAL FT	BY FLOW CFS	REMARKS
NO	TYPE	CONTROL	STATION												
CD1-ARMOR01	(1-ARM CURB)	31.33' LT CORDOVA	179+47.00	CD1-ARMOR01	2.0	0.00	2.0	0.0050	0.21	11.33	10.45	10.5	10.0	0.01	C.O. TO CD1-ARMOR02
CD1-ARMOR02	(1-ARM CURB)	31.33' LT CORDOVA	180+71.75	CD1-ARMOR02	2.2	0.01	2.2	---	0.17	11.33	8.93	8.5	10.0		*SUMP
CD1-ARMOR03	(1-ARM CURB)	31.33' LT CORDOVA	186+18.00	CD1-ARMOR03	0.8	0.00	0.8	0.0050	0.15	11.33	7.46	6.4	10.0		
CD1-ARMOR04	(1-ARM CURB)	42.33' LT CORDOVA	188+74.00	CD1-ARMOR04	2.1	0.00	2.1	0.0028	0.24	22.33	11.73	9.3	10.0		
CD1-ARMOR05	(1-ARM CURB)	41.14' LT CORDOVA	188+97.00	CD1-ARMOR05	0.2	0.00	0.2	---	0.04	21.15	4.90	13.9	10.0		*SUMP
CD1-ARMOR06	(1-ARM CURB)	38.73' LT CORDOVA	189+15.55	CD1-ARMOR06	1.0	0.00	1.0	0.0025	0.18	18.73	9.17	6.1	10.0		
CD2-ARMOR01	(1-ARM CURB)	31.33' LT CORDOVA	206+78.69	CD2-ARMOR01	1.6	0.00	1.6	---	0.14	11.33	8.50	12.4	10.0		*SUMP
CD2-ARMOR02	(1-ARM CURB)	35.39' LT CORDOVA	199+06.00	CD2-ARMOR02	2.1	0.00	2.1	0.0095	0.19	15.40	9.39	12.5	10.0	0.12	C.O. TO CD2-ARMOR03
CD2-ARMOR03	(1-ARM CURB)	31.33' LT CORDOVA	196+71.00	CD2-ARMOR03	2.9	0.12	3.0	---	0.21	11.33	10.42	8.5	10.0		*SUMP
CD2-ARMOR04	(1-ARM CURB)	31.33' LT CORDOVA	193+51.01	CD2-ARMOR04	2.5	0.00	2.5	---	0.19	11.33	9.39	8.5	10.0		*SUMP
CD3-ARMOR01	(1-ARM CURB)	31.33' RT CORDOVA	179+44.00	CD3-ARMOR01	2.1	0.00	2.1	0.0050	0.21	11.33	10.59	10.7	10.0	0.02	C.O. TO CD3-ARMOR02
CD3-ARMOR02	(1-ARM CURB)	31.33' RT CORDOVA	180+71.75	CD3-ARMOR02	2.2	0.02	2.2	---	0.17	11.33	9.50	10.7	10.0		*SUMP
CD3-ARMOR03	(1-ARM CURB)	31.33' RT CORDOVA	188+97.00	CD3-ARMOR03	3.5	0.00	3.5	---	0.23	11.33	11.62	10.7	10.0		*SUMP
CD4-ARMOR01	(1-ARM CURB)	31.33' RT CORDOVA	206+78.69	CD4-ARMOR01	1.6	0.00	1.6	---	0.14	11.33	7.81	12.3	10.0		*SUMP
CD4-ARMOR02	(1-ARM CURB)	31.33' RT CORDOVA	199+06.00	CD4-ARMOR02	2.0	0.00	2.0	0.0095	0.19	11.33	9.31	12.3	10.0	0.10	C.O. TO CD4-ARMOR03
CD4-ARMOR03	(1-ARM CURB)	31.33' RT CORDOVA	196+71.00	CD4-ARMOR03	1.8	0.10	1.9	---	0.15	11.33	7.85	10.7	10.0		*SUMP
CD4-ARMOR04	(1-ARM CURB)	31.33' RT CORDOVA	193+51.01	CD4-ARMOR04	2.3	0.00	2.3	---	0.18	11.33	9.05	10.7	10.0		*SUMP

NOTE:

10 YR DESIGN STORM WAS ANALYZED USING GEOPAK DRAINAGE FOR STORM DRAIN CALCULATIONS

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023

SYSTEM D CALCULATIONS

RUNOFF COMPUTATIONS - RATIONAL METHOD							
AREA - ID	AREA (ac)	C	CA	Tc (MIN)	I10 (IN/HR)	Q10 (CFS)	TO INLET/JUNCTION
DD1-ARMOR01	0.20	0.82	0.16	10	7.26	1.2	DD1-ARMOR01
DD1-ARMOR02	0.13	0.82	0.10	10	7.26	0.7	DD1-ARMOR02
DD1-ARMOR03	0.24	0.85	0.21	10	7.26	1.5	DD1-ARMOR03
DD2-ARMOR01	0.20	0.78	0.15	10	7.26	1.1	DD2-ARMOR01
DD2-ARMOR02	0.12	0.78	0.10	10	7.26	0.7	DD2-ARMOR02
DD2-ARMOR03	0.26	0.90	0.23	10	7.26	1.7	DD2-ARMOR03

CURB INLET COMPUTATIONS															
INLET				DRAINAGE AREA NO	Q10 FROM AREA CFS	CARRY OVER FLOW CFS	TOTAL Q10 CFS	LONGITUDINAL ROAD SLOPE FT/FT	DEPTH OF FLOW FT	ALLOWABLE PONDED WIDTH FT	PONDED WIDTH FT	LENGTH INLET REQ'D FT	LENGTH INLET ACTUAL FT	BY FLOW CFS	REMARKS
NO	TYPE	CONTROL	STATION												
DD1-ARMOR01	(1-ARM CURB)	31.33' LT CORDOVA	207+70.00	DD1-ARMOR01	1.2	0.00	1.2	0.0035	0.18	11.33	9.12	7.2	10.0		
DD1-ARMOR02	(1-ARM CURB)	31.33' LT CORDOVA	212+25.00	DD1-ARMOR02	0.7	0.00	0.7	0.0035	0.15	11.33	7.69	5.6	10.0		
DD1-ARMOR03	(1-ARM CURB)	31.33' LT CORDOVA	214+30.00	DD1-ARMOR03	1.5	0.00	1.5	---	0.13	11.33	8.25	0.0	10.0		*SUMP
DD2-ARMOR01	(1-ARM CURB)	31.33' RT CORDOVA	207+70.00	DD2-ARMOR01	1.1	0.00	1.1	0.0035	0.18	11.33	8.96	7.0	10.0		
DD2-ARMOR02	(1-ARM CURB)	31.33' RT CORDOVA	212+25.00	DD2-ARMOR02	0.7	0.00	0.7	0.0035	0.15	11.33	7.53	5.4	10.0		
DD2-ARMOR03	(1-ARM CURB)	31.33' RT CORDOVA	214+30.00	DD2-ARMOR03	1.7	0.00	1.7	---	0.14	11.33	8.63	0.0	10.0		*SUMP

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



STORM DRAIN COMPUTATIONS

SHEET 3 OF 6

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	299

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_hyd_storm_03.dgn

SYSTEM E CALCULATIONS

RUNOFF COMPUTATIONS - RATIONAL METHOD							
AREA - ID	AREA (ac)	C	CA	Tc (MIN)	I10 (IN/HR)	Q10 (CFS)	TO INLET/JUNCTION
ED1-1	1.69	0.56	0.94	10	7.26	6.8	DI-ED1-1
ED1-2	1.67	0.60	0.99	10	7.26	7.2	DI-ED1-2
ED1-3	0.32	0.63	0.20	10	7.26	1.5	CI-ED1-3
ED1-5	0.39	0.78	0.31	10	7.26	2.2	CI-ED1-5
ED1-ARMOR01	0.31	0.93	0.28	10	7.26	2.1	ED1-ARMOR01
ED1-ARMOR02	0.22	0.82	0.18	10	7.26	1.3	ED1-ARMOR02
ED2-ARMOR01	0.32	0.89	0.29	10	7.26	2.1	ED2-ARMOR01
ED2-ARMOR02	0.28	0.95	0.27	10	7.26	1.9	ED2-ARMOR02
ED2-ARMOR03	0.22	0.82	0.18	10	7.26	1.3	ED2-ARMOR03

CURB INLET COMPUTATIONS															
INLET				DRAINAGE AREA	Q10 FROM AREA	CARRY OVER FLOW	TOTAL Q10	LONGITUDINAL ROAD SLOPE	DEPTH OF FLOW	ALLOWABLE PONDED WIDTH	PONDED WIDTH	LENGTH INLET REQ'D	LENGTH INLET ACTUAL	BY FLOW	REMARKS
NO	TYPE	CONTROL	STATION	NO	CFS	CFS	CFS	FT/FT	FT	FT	FT	FT	FT	CFS	
CI-ED1-3	COSA TY C-I Inlet	31.33 'LT CORDOVA	218+40.00	ED1-3	1.5	0.00	1.5	0.0040	0.19	11.33	9.65	8.2	10.0		
CI-ED1-5	COSA TY C-I Inlet	31.33 'LT CORDOVA	216+81.94	ED1-5	2.2	0.00	2.2	---	0.18	11.33	9.11	0.0	10.0		*SUMP
ED1-ARMOR01	(1-ARM CURB)	31.33 'LT CORDOVA	219+95.00	ED1-ARMOR01	2.1	0.00	2.1	0.0040	0.22	11.33	10.98	10.1	10.0		
ED1-ARMOR02	(1-ARM CURB)	31.33 'LT CORDOVA	224+00.00	ED1-ARMOR02	1.3	0.00	1.3	0.0040	0.19	11.33	9.25	7.9	10.0		
ED2-ARMOR01	(1-ARM CURB)	31.33 'RT CORDOVA	216+81.94	ED2-ARMOR01	2.1	0.00	2.1	---	0.16	11.33	10.13	0.0	10.0		*SUMP
ED2-ARMOR02	(1-ARM CURB)	31.33 'RT CORDOVA	220+44.00	ED2-ARMOR02	1.9	0.00	1.9	0.0040	0.22	11.33	10.74	9.8	10.0		
ED2-ARMOR03	(1-ARM CURB)	31.33 'RT CORDOVA	223+92.00	ED2-ARMOR03	1.3	0.00	1.3	0.0040	0.19	11.33	9.29	7.9	10.0		

TRAFFIC INLET COMPUTATIONS											
INLET				DRAINAGE AREA	Q10	INLET HEAD	REQ'D AREA	INLET AREA	INLET TYPE	CARRY OVER	BY PASS FLOW
NO	TYPE	CONTROL	STATION	NO	CFS	FT	SQ FT	SQ FT			
DI-ED1-1	0	39.50 'RT CORDOVA	224+00.00	ED1-1	6.8	0.36	4.03	n/a	PAZD FG CZ 3x3-3		
DI-ED1-2	0	39.50 'RT CORDOVA	219+95.00	ED1-2	7.2	0.38	4.19	n/a	PAZD FG CZ 3x3-3		
DI-ED1-4	0	54.00 'RT CORDOVA	218+40.00	n/a	46.6	0.75	19.13	n/a	PAZD FG 5x5-3		

STORM DRAIN COMPUTATIONS												
LINE NO	FROM	TO	LENGTH (FT)	TC (MIN)	I10 (in/hr)	Q10 (CFS)	DESIGN					
							STR SIZE	SLOPE %	CAP (CFS)	VEL (FT/SEC)	FREQ (YR)	
LAT-E1-1	DI-ED1-4	MH-ED1-M2	5.50	12.37	6.70	46.6	3'S x 2'H Box Culv	0.50	46.8	7.8	10	
LAT-E1-2	CI-ED1-3	MH-ED1-M2	2.42	12.37	6.70	1.5	24" RCP	0.50	18.6	0.5	10	
LAT-E1-3	CI-ED1-5	MH-ED1-M3	2.42	12.80	6.61	2.2	18" RCP	0.50	8.7	1.3	10	
LINE-E1-1	DI-ED1-1	MH-ED1-M1	122.00	10.54	7.26	6.8	18" RCP	0.30	6.7	3.9	10	
LINE-E1-2	MH-ED1-M1	DI-ED1-2	277.00	11.75	6.84	6.8	18" RCP	0.30	6.7	3.9	10	
LINE-E1-3	DI-ED1-2	MH-ED1-M2	149.52	12.37	6.70	13.2	24" RCP	0.50	18.6	4.2	10	
LINE-E1-4	MH-ED1-M2	MH-ED1-M3	150.06	12.80	6.61	60.9	5'S x 2'H Box Culv	0.10	41.4	6.1	10	
LINE-E1-5	MH-ED1-M3	OF-ED1-M4	80.04	13.02	---	62.7	5'S x 2'H Box Culv	0.10	41.4	7.4	10	

NOTE:





10 YR DESIGN STORM WAS ANALYZED USING GEOPAK DRAINAGE FOR STORM DRAIN CALCULATIONS

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY			
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800						
 It's real.						
 ©2023						
<h2>STORM DRAIN COMPUTATIONS</h2>						
SHEET 4 OF 6						
DN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	300

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_hyd_storm_04.dgn

SYSTEM F CALCULATIONS

RUNOFF COMPUTATIONS - RATIONAL METHOD							
AREA - ID	AREA (ac)	C	CA	Tc (MIN)	I10 (IN/HR)	Q10 (CFS)	TO INLET/JUNCTION
FD1-1	0.80	0.63	0.50	10	7.26	3.6	DI-FD1-1
FD1-2	0.32	0.76	0.24	10	7.26	1.8	CI-FD1-2
FD1-3	0.69	0.71	0.49	10	7.26	3.5	CI-FD1-3
FD1-4	0.71	0.72	0.50	10	7.26	3.7	CI-FD1-4
FD1-5	4.70	0.60	2.80	19.7	5.47	15.3	DI-FD1-5
FD2-1	0.79	0.76	0.59	10	7.26	4.3	DI-FD2-1
FD2-2	0.63	0.71	0.45	10	7.26	3.3	CI-FD2-2
FD2-3	0.45	0.65	0.29	10	7.26	2.1	CI-FD2-3
FD2-4	0.91	0.61	0.56	10	7.26	4.1	CI-FD2-4
FD2-5	0.58	0.56	0.32	10	7.26	2.3	CI-FD2-5
FD2-6	0.40	0.57	0.23	10	7.26	1.7	CI-FD2-6
FD2-7	0.40	0.66	0.26	10	7.26	1.9	CI-FD2-7
FD2-8	0.46	0.61	0.28	10	7.26	2.0	CI-FD2-8
FD2-9	0.83	0.66	0.55	10	7.26	4.0	CI-FD2-9
FD1-ARMOR01	0.26	0.83	0.22	10	7.26	1.6	FD1-ARMOR01
FD1-ARMOR02	0.38	0.85	0.32	10	7.26	2.3	FD1-ARMOR02
FD1-ARMOR03	0.54	0.82	0.44	10	7.26	3.2	FD1-ARMOR03
FD1-ARMOR04	0.38	0.82	0.31	10	7.26	2.2	FD1-ARMOR04
FD1-ARMOR05	0.37	0.81	0.30	10	7.26	2.2	FD1-ARMOR05
FD1-ARMOR06	0.39	0.81	0.32	10	7.26	2.3	FD1-ARMOR06
FD1-ARMOR07	0.44	0.87	0.38	10	7.26	2.8	FD1-ARMOR07
FD1-ARMOR08	0.50	0.78	0.39	10	7.26	2.8	FD1-ARMOR08
FD1-ARMOR09	0.41	0.81	0.33	10	7.26	2.4	FD1-ARMOR09
FD1-ARMOR10	0.15	0.94	0.14	10	7.26	1.0	FD1-ARMOR10
FD1-ARMOR11	0.32	0.90	0.29	10	7.26	2.1	FD1-ARMOR11
FD1-ARMOR12	0.32	0.91	0.29	10	7.26	2.1	FD1-ARMOR12
FD2-ARMOR01	0.26	0.83	0.22	10	7.26	1.6	FD2-ARMOR01
FD2-ARMOR02	0.21	0.95	0.20	10	7.26	1.4	FD2-ARMOR02
FD2-ARMOR03	0.38	0.82	0.31	10	7.26	2.2	FD2-ARMOR03
FD2-ARMOR04	0.37	0.81	0.30	10	7.26	2.2	FD2-ARMOR04
FD2-ARMOR05	0.39	0.81	0.32	10	7.26	2.3	FD2-ARMOR05
FD2-ARMOR06	0.48	0.87	0.42	10	7.26	3.0	FD2-ARMOR06
FD2-ARMOR07	0.45	0.83	0.37	10	7.26	2.7	FD2-ARMOR07
FD2-ARMOR08	0.42	0.81	0.34	10	7.26	2.5	FD2-ARMOR08
FD2-ARMOR09	0.49	0.91	0.45	10	7.26	3.2	FD2-ARMOR09
FD2-ARMOR10	0.52	0.93	0.48	10	7.26	3.5	FD2-ARMOR10

NOTE:

10 YR DESIGN STORM WAS ANALYZED USING GEOPAK DRAINAGE FOR STORM DRAIN CALCULATIONS

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JACOB J. POWELL
P.E. SERIAL NO: 108825
DATE: 11/17/2023

CURB INLET COMPUTATIONS															
INLET				DRAINAGE AREA	Q10 FROM AREA CFS	CARRY OVER FLOW CFS	TOTAL Q10 CFS	LONGITUDINAL ROAD SLOPE FT/FT	DEPTH OF FLOW FT	ALLOWABLE PONDED WIDTH FT	PONDED WIDTH FT	LENGTH INLET REQ'D FT	LENGTH INLET ACTUAL FT	BY FLOW CFS	REMARKS
NO	TYPE	CONTROL	STATION												
CI-FD1-2	COSA TY C-I Inlet	31.33'LT	CORDOVA	230+56.00	FD1-2	1.8	0.00	1.8	0.0050	0.20	11.33	9.96	9.6	10.0	
CI-FD1-3	COSA TY C-I Inlet	31.33'LT	CORDOVA	236+00.00	FD1-3	3.5	0.00	3.5	---	0.25	11.33	12.45	0.0	10.0	*SUMP
CI-FD1-4	COSA TY C-I Inlet	31.33'LT	CORDOVA	241+00.00	FD1-4	3.7	0.00	3.7	---	0.25	11.33	12.72	0.0	10.0	*SUMP
CI-FD2-2	COSA TY C-I Inlet	31.33'RT	CORDOVA	236+00.00	FD2-2	3.3	0.00	3.3	---	0.24	11.33	11.84	8.7	10.0	*SUMP
CI-FD2-3	COSA TY C-I Inlet	31.33'RT	CORDOVA	239+80.00	FD2-3	2.1	0.00	2.1	0.0050	0.21	11.33	10.63	10.6	10.0	0.01 C.O. TO FD2-4
CI-FD2-4	COSA TY C-I Inlet	31.33'RT	CORDOVA	241+00.00	FD2-4	4.1	0.01	4.1	---	0.27	11.33	13.67	8.7	10.0	*SUMP
CI-FD2-5	COSA TY C-I Inlet	17.33'LT	ALBERT	10+78.50	FD2-5	2.3	0.00	2.3	0.0250	0.13	18.00	12.60	21.2	10.0	0.74 C.O. TO FD2-7
CI-FD2-6	COSA TY C-I Inlet	17.33'RT	ALBERT	10+78.50	FD2-6	1.7	0.00	1.7	0.0250	0.11	18.00	11.09	17.4	10.0	0.36 C.O. TO FD2-7
CI-FD2-7	COSA TY C-I Inlet	31.33'RT	CORDOVA	244+60.00	FD2-7	1.9	1.10	3.0	0.0050	0.24	11.33	12.13	12.8	10.0	0.20 C.O. TO FD2-8
CI-FD2-8	COSA TY C-I Inlet	31.33'RT	CORDOVA	246+25.00	FD2-8	2.0	0.20	2.2	0.0050	0.22	11.33	10.82	10.8	10.0	0.02 C.O. TO FD2-9
CI-FD2-9	COSA TY C-I Inlet	31.33'RT	CORDOVA	248+00.00	FD2-9	4.0	0.02	4.0	---	0.27	11.33	13.50	9.6	10.0	*SUMP
FD1-ARMOR01	(1-ARM CURB)	31.33'LT	CORDOVA	229+00.00	FD1-ARMOR01	1.6	0.00	1.6	---	0.14	11.33	7.35	0.0	10.0	*SUMP
FD1-ARMOR02	(1-ARM CURB)	31.33'LT	CORDOVA	245+63.00	FD1-ARMOR02	2.3	0.00	2.3	0.0050	0.22	11.33	11.00	11.4	10.0	
FD1-ARMOR03	(1-ARM CURB)	31.33'LT	CORDOVA	248+00.00	FD1-ARMOR03	3.2	0.05	3.3	---	0.22	11.33	11.05	0.0	10.0	*SUMP
FD1-ARMOR04	(1-ARM CURB)	31.33'LT	CORDOVA	255+90.00	FD1-ARMOR04	2.2	0.00	2.2	0.0050	0.22	11.33	10.87	11.2	10.0	
FD1-ARMOR05	(1-ARM CURB)	31.33'LT	CORDOVA	260+95.00	FD1-ARMOR05	2.2	0.04	2.2	0.0050	0.22	11.33	10.85	11.1	10.0	
FD1-ARMOR06	(1-ARM CURB)	31.33'LT	CORDOVA	266+35.00	FD1-ARMOR06	2.3	0.04	2.4	0.0050	0.22	11.33	11.07	11.5	10.0	
FD1-ARMOR07	(1-ARM CURB)	31.33'LT	CORDOVA	270+50.00	FD1-ARMOR07	2.8	0.06	2.8	---	0.20	11.33	10.89	11.5	10.0	*SUMP
FD1-ARMOR08	(1-ARM CURB)	31.33'LT	CORDOVA	274+50.00	FD1-ARMOR08	2.8	0.00	2.8	---	0.20	11.33	10.37	11.5	10.0	*SUMP
FD1-ARMOR09	(1-ARM CURB)	31.33'LT	CORDOVA	284+20.00	FD1-ARMOR09	2.4	0.00	2.4	0.0050	0.22	11.33	11.13	11.6	10.0	
FD1-ARMOR10	(1-ARM CURB)	31.33'LT	CORDOVA	286+56.00	FD1-ARMOR10	1.0	0.06	1.1	0.0100	0.15	11.33	7.31	8.9	10.0	
FD1-ARMOR11	(1-ARM CURB)	31.33'LT	CORDOVA	291+26.00	FD1-ARMOR11	2.1	0.00	2.1	0.0100	0.19	11.33	9.30	12.6	10.0	
FD1-ARMOR12	(1-ARM CURB)	31.33'LT	CORDOVA	292+56.00	FD1-ARMOR12	2.1	0.12	2.2	---	0.17	11.33	8.59	11.2	10.0	*SUMP
FD2-ARMOR01	(1-ARM CURB)	31.33'RT	CORDOVA	229+00.00	FD2-ARMOR01	1.6	0.00	1.6	---	0.14	11.33	7.86	9.2	10.0	*SUMP
FD2-ARMOR02	(1-ARM CURB)	31.33'RT	CORDOVA	230+50.00	FD2-ARMOR02	1.4	0.00	1.4	0.0050	0.18	11.33	9.18	8.7	10.0	
FD2-ARMOR03	(1-ARM CURB)	31.33'RT	CORDOVA	255+90.00	FD2-ARMOR03	2.2	0.00	2.2	0.0050	0.22	11.33	10.86	11.1	10.0	
FD2-ARMOR04	(1-ARM CURB)	31.33'RT	CORDOVA	260+95.00	FD2-ARMOR04	2.2	0.04	2.2	0.0050	0.22	11.33	10.85	11.1	10.0	
FD2-ARMOR05	(1-ARM CURB)	31.33'RT	CORDOVA	266+35.00	FD2-ARMOR05	2.3	0.04	2.4	0.0050	0.22	11.33	11.07	11.5	10.0	
FD2-ARMOR06	(1-ARM CURB)	31.33'RT	CORDOVA	270+50.00	FD2-ARMOR06	3.0	0.06	3.1	---	0.21	11.33	11.27	11.1	10.0	*SUMP
FD2-ARMOR07	(1-ARM CURB)	31.33'RT	CORDOVA	274+50.00	FD2-ARMOR07	2.7	0.00	2.7	---	0.19	11.33	9.70	11.1	10.0	*SUMP
FD2-ARMOR08	(1-ARM CURB)	31.33'RT	CORDOVA	284+20.00	FD2-ARMOR08	2.5	0.00	2.5	0.0050	0.23	11.33	11.29	11.8	10.0	
FD2-ARMOR09	(1-ARM CURB)	31.33'RT	CORDOVA	290+45.00	FD2-ARMOR09	3.2	0.08	3.3	0.0100	0.22	11.33	11.07	16.3	10.0	
FD2-ARMOR10	(1-ARM CURB)	42.33'RT	CORDOVA	292+56.00	FD2-ARMOR10	3.5	0.60	4.1	---	0.26	22.33	12.91	16.1	10.0	*SUMP

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



STORM DRAIN COMPUTATIONS

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	301

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_hyd_storm_05.dgn

SYSTEM F CALCULATIONS CONT.

TRAFFIC INLET COMPUTATIONS												
INLET				DRAINAGE AREA	Q10	INLET HEAD	REQ'D AREA	INLET AREA	INLET TYPE	CARRY OVER	BY PASS FLOW	
NO	TYPE	CONTROL	STATION	NO	CFS	FT	SQ FT	SQ FT				
DI-FD1-1	0	38.50' RT	CORDOVA	229+00.00	FD1-1	3.6	0.24	2.64	n/a	PAZD FG CZ 3x3-3		
DI-FD1-5	0	41.75' RT	CORDOVA	248+00.00	FD1-5	15.3	0.56	7.30	n/a	PAZD FG 4x4-4		
DI-FD2-1	0	38.50' RT	CORDOVA	229+00.00	FD2-1	4.3	0.27	2.97	n/a	PAZD FG CZ 3x3-3		

STORM DRAIN COMPUTATIONS												
LINE NO	FROM	TO	LENGTH (FT)	TC (MIN)	I10 (in/hr)	Q10 (CFS)	DESIGN					
							STR SIZE	SLOPE %	CAP (CFS)	VEL (FT/SEC)	FREQ (YR)	
LAT-F1-1	HW-FD1-H1	JCT-FD1-J1	25.11	13.46	6.48	99.2	6'S x 3'H Box Culv	0.12	99.6	5.5	10	
LAT-F1-2	MH-FD1-M1	JCT-FD1-J1	16.29	13.46	6.48	5.0	24" RCP	9.33	80.5	1.6	10	
LAT-F1-3	CI-FD1-3	MH-FD1-M2	3.17	14.76	6.24	3.5	24" RCP	5.05	59.3	1.1	10	
LAT-F1-4	CI-FD1-4	MH-FD1-M3	3.17	16.17	5.99	3.7	24" RCP	5.05	59.3	1.2	10	
LAT-F1-5	HW-FD1-H2	JCT-FD1-J2	18.25	16.82	5.89	81.7	6'S x 2'H Box Culv	33.21	953.4	23.6	10	
LINE-F1-1	DI-FD1-1	CI-FD1-2	148.35	12.25	6.73	3.6	24" RCP	0.30	14.5	1.2	10	
LINE-F1-2	CI-FD1-2	MH-FD1-M1	87.51	13.24	6.73	5.0	24" RCP	0.30	14.4	1.6	10	
LINE-F1-3	JCT-FD1-J1	MH-FD1-M2	452.43	14.76	6.24	104.0	6'S x 3'H Box Culv	0.10	90.9	5.8	10	
LINE-F1-4	MH-FD1-M2	MH-FD1-M3	500.00	16.17	5.99	106.9	6'S x 3'H Box Culv	0.10	91.1	5.9	10	
LINE-F1-5	MH-FD1-M3	JCT-FD1-J2	232.67	16.82	5.89	109.6	6'S x 3'H Box Culv	0.10	90.6	6.1	10	
LINE-F1-6	JCT-FD1-J2	DI-FD1-5	455.33	19.70	5.47	191.1	8'S x 4'H Box Culv	0.10	197.3	6.1	10	
LINE-F1-7	DI-FD1-5	OUT-F1	1015.82	22.05	---	205.7	8'S x 4'H Box Culv	0.10	196.7	9.4	10	
LINE-F2-01	DI-FD2-1	MH-FD2-M1	268.61	13.30	7.26	4.3	24" RCP	0.10	8.3	1.4	10	
LINE-F2-02	MH-FD2-M1	MH-FD2-M2	279.10	16.73	7.26	4.3	24" RCP	0.10	8.3	1.4	10	
LINE-F2-03	MH-FD2-M2	CI-FD2-2	137.64	18.50	5.63	4.3	24" RCP	0.10	8.3	1.4	10	
LINE-F2-04	CI-FD2-2	MH-FD2-M3	186.11	20.22	5.63	5.9	24" RCP	0.10	8.3	1.9	10	
LINE-F2-05	MH-FD2-M3	CI-FD2-3	180.89	21.91	5.19	5.9	24" RCP	0.10	8.3	1.9	10	
LINE-F2-06	CI-FD2-3	CI-FD2-4	110.00	22.82	5.08	6.9	24" RCP	0.10	8.3	2.2	10	
LINE-F2-07	CI-FD2-4	MH-FD2-M4	283.94	24.40	4.91	9.7	24" RCP	0.10	8.3	3.1	10	
LINE-F2-08	MH-FD2-M4	CI-FD2-7	63.06	24.74	4.87	10.9	24" RCP	0.10	8.3	3.5	10	
LINE-F2-09	CI-FD2-7	CI-FD2-8	155.00	25.40	4.81	13.0	24" RCP	0.10	8.3	4.1	10	
LINE-F2-10	CI-FD2-8	CI-FD2-9	165.00	26.05	4.74	14.4	24" RCP	0.10	8.3	4.6	10	
LINE-F2-11	CI-FD2-9	MH-FD2-M5	293.00	26.98	4.74	16.8	24" RCP	0.10	8.3	6.1	10	
LINE-F2-12	MH-FD2-M5	MH-FD2-M6	296.00	28.46	4.74	16.8	3'S x 2'H Box Culv	0.10	20.9	3.5	10	
LINE-F2-13	MH-FD2-M6	MH-FD2-M7	296.00	29.88	4.74	16.8	3'S x 2'H Box Culv	0.10	20.9	3.6	10	
LINE-F2-14	MH-FD2-M7	MH-FD2-M8	296.00	31.19	4.74	16.8	3'S x 2'H Box Culv	0.10	20.9	4.2	10	
LINE-F2-15	MH-FD2-M8	OUT-F2	22.14	31.27	---	16.8	3'S x 2'H Box Culv	0.10	20.9	5.6	10	
LINE-F2A-1	CI-FD2-5	CI-FD2-6	35.83	10.18	7.21	1.6	24" RCP	0.50	18.6	3.4	10	
LINE-F2A-2	CI-FD2-6	MH-FD2-M4	33.93	24.40	4.91	2.9	24" RCP	0.50	18.6	4.1	10	

NOTE:

10 YR DESIGN STORM WAS ANALYZED USING GEOPAK DRAINAGE FOR STORM DRAIN CALCULATIONS

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



STORM DRAIN COMPUTATIONS

SHEET 6 OF 6

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	302

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_hyd_storm_06.dgn

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500-di+ch_comps_01.dgn

COMPUTATION POINT	LT/RT	DITCH PROPERTIES						COMPUTATION POINT HYDROLOGY		DITCH HYDRAULIC OUTPUT	
		FORESLOPE H:V	BACKSLOPE H:V	LONG. SLOPE ft+/ft	MANNINGS COEFF.	BOT. WIDTH (ft)	DITCH DEPTH (ft)	DRAINAGE AREA	Q(10YR) (cfs)	FLOW DEPTH (ft)	VELOCITY (fps)
116+50.21	LT	4	4	0.0045	0.012	0	1.44	AD1-N4	21	1.01	5.16
118+05.20	LT	4	4	0.0045	0.012	0	1.53	AD1-N3	29	1.14	5.59
120+23.00	LT	0.00001	4	0.0017	0.012	4	2.00	AD1-N2	37.2	1.29	4.40
123+47.30	LT	0.00001	4	0.005	0.012	11	2.56	AD1	45.4	0.63	5.84
144+25.00	LT	6	7.12	0.001	0.03	0	1.36	AD2-N4	10.7	1.21	1.11
137+57.30	LT	4	4	0.001	0.012	0	1.80	AD2-N3	35.2	1.62	3.34
132+87.30	LT	4	4	0.001	0.012	0	2.48	AD2-N2	44.8	1.78	3.55
128+17.30	LT	4	4	0.001	0.012	0	2.01	AD2-N1	59.8	1.98	3.81
CULVERT A	LT	4	4	0.008	0.012	0	2.55	AD2	111.3	1.69	9.71
116+50.21	RT	4	4	0.0016	0.03	0	0.84	AD3-N3	2.6	0.79	1.04
118+05.20	RT	4	4	0.0016	0.03	0	1.13	AD3-N2	3	0.83	1.08
120+23.00	RT	4	6	0.0015	0.03	0	1.25	AD3-N1	5.3	0.96	1.16
121+37.11	RT	4	4	0.0015	0.03	0	1.17	AD3	5.8	1.08	1.25
144+25.00	RT	4	6	0.00128	0.03	10.8	0.48	AD4-N4	4.9	0.42	0.90
137+57.30	RT	4	11	0.001	0.03	0	1.14	AD4-N3	9.8	1.11	1.05
132+87.30	RT	4	6	0.001	0.03	0	1.60	AD4-N2	13.1	1.45	1.25
128+17.30	RT	4	11	0.001	0.03	0	1.35	AD4-N1	16.2	1.35	1.19
125+97.30	RT	4	6.5	0.001	0.012	0	1.27	AD4	16.4	1.10	2.59
159+00.19	LT	4	4.25	0.009	0.012	0	1.28	BD1-N1	28	0.98	7.14
CULVERT B DRAIN	LT	4	4.25	0.009	0.012	0	1.28	BD1	28.4	0.98	7.17
166+00.00	LT	6	7.24	0.0051	0.03	0	0.86	BD2-N1	8.7	0.82	1.94
CULVERT B DRAIN	LT	4.1	7.4	0.0051	0.03	0	0.87	BD2	8.5	0.86	1.99
159+00.19	RT	4	7.8	0.01	0.03	0	1.28	BD3-N1	9.6	0.79	2.63
CULVERT B DRAIN	RT	4	7.8	0.01	0.03	0	1.28	BD3	9.9	0.80	2.65
166+00.00	RT	4	5	0.001	0.03	0	1.50	BD4-N2	10.6	1.39	1.21
166+00.00	RT	4	5	0.001	0.012	0	1.50	BD4-N1	25	1.36	2.99
166+00.00	RT	4	5	0.001	0.012	0	1.50	BD4	26.5	1.39	3.03
180+71.75	LT	6	12.78	0.0064	0.03	0	1.20	CD1-N3	6.5	0.62	1.81
184+02.56	LT	4	4.2	0.0064	0.03	0	2.06	CD1-N2	16.4	1.20	2.77
191+06.12	LT	4	4	0.001	0.012	0	1.55	CD1	23.3	1.39	3.01
205+70.00	LT	4	10.27	0.003	0.03	0	1.45	CD2-N3	6.9	0.81	1.47
196+71.34	LT	4	3	0.001	0.03	5	2.95	CD2-N2	40.5	1.94	1.77
193+51.08	LT	4	3	0.001	0.03	5	2.26	CD2-N1	45.9	2.06	1.82
191+08.83	LT	4	3	0.001	0.012	5	1.85	CD2	52.3	1.42	3.71
180+71.75	RT	6	15.63	0.005	0.03	0	0.60	CD3-N2	5.7	0.59	1.54
187+90.40	RT	4.2	22.75	0.001	0.012	0	0.89	CD3-N1	11.6	0.67	1.89
CULVERT C DRAIN	RT	4.2	22.75	0.001	0.012	0	0.89	CD3	12	0.68	1.91
205+70.00	RT	4	51.76	0.003	0.03	0	0.42	CD4-N3	3	0.35	0.86
196+71.34	RT	4	11.97	0.0128	0.03	0	1.52	CD4-N2	10.6	0.69	2.75
195+05.38	RT	4	8.63	0.0065	0.03	0	1.39	CD4-N1	10.9	0.87	2.27
211+45.25	LT	4	14	0.003	0.03	0	0.91	DD1-N2	3.2	0.56	1.15
211+45.25	RT	6	30	0.005	0.03	0	0.76	DD2-N2	2.7	0.37	1.13
214+30.00	RT	6	8.75	0.005	0.03	0	1.04	DD2-N1	4.8	0.63	1.62
220+13.19	LT	6	4	0.01	0.03	0	1.07	ED1-N2	10.5	0.87	2.80
220+13.19	RT	6	15.33	0.003	0.03	0	0.67	ED2-N2	5.9	0.66	1.29
216+30.00	RT	6	4.12	0.0064	0.03	0	1.36	ED2-N1	9.1	0.89	2.28
CULVERT E	RT	6	4	0.0064	0.03	0	1.36	ED2	9.1	0.89	2.28
270+50.00	LT	6	5.93	0.00167	0.03	0	3.99	FD1-N4	270	3.83	3.09
274+50.00	LT	6	6.58	0.00179	0.03	0	4.43	FD1-N3	266.8	3.69	3.12
284+37.75	LT	4	1.37	0.001925	0.03	0	5.26	FD1-N2	260.3	5.04	3.82
270+50.00	RT	6	4.71	0.001	0.012	0	2.13	FD2-N3	40.9	1.53	3.24
274+50.00	RT	6	3.66	0.001	0.012	0	2.53	FD2-N2	92.4	2.17	4.07
292+56.00	RT	4	5.1	0.001	0.012	0	2.66	FD2-N1	91.2	2.21	4.12
EAST END	RT	4	5.1	0.001	0.012	0	2.66	FD2	90.9	2.20	4.11

- NOTES:
 1. 10-YR DESIGN STORM WAS ANALYZED USING MANNINGS EQUATION FOR DITCH CALCULATIONS
 2. SLOPES OF 0.0001 REPRESENT A VERTICAL SLOPE (i.e. RETAINING WALL) DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.

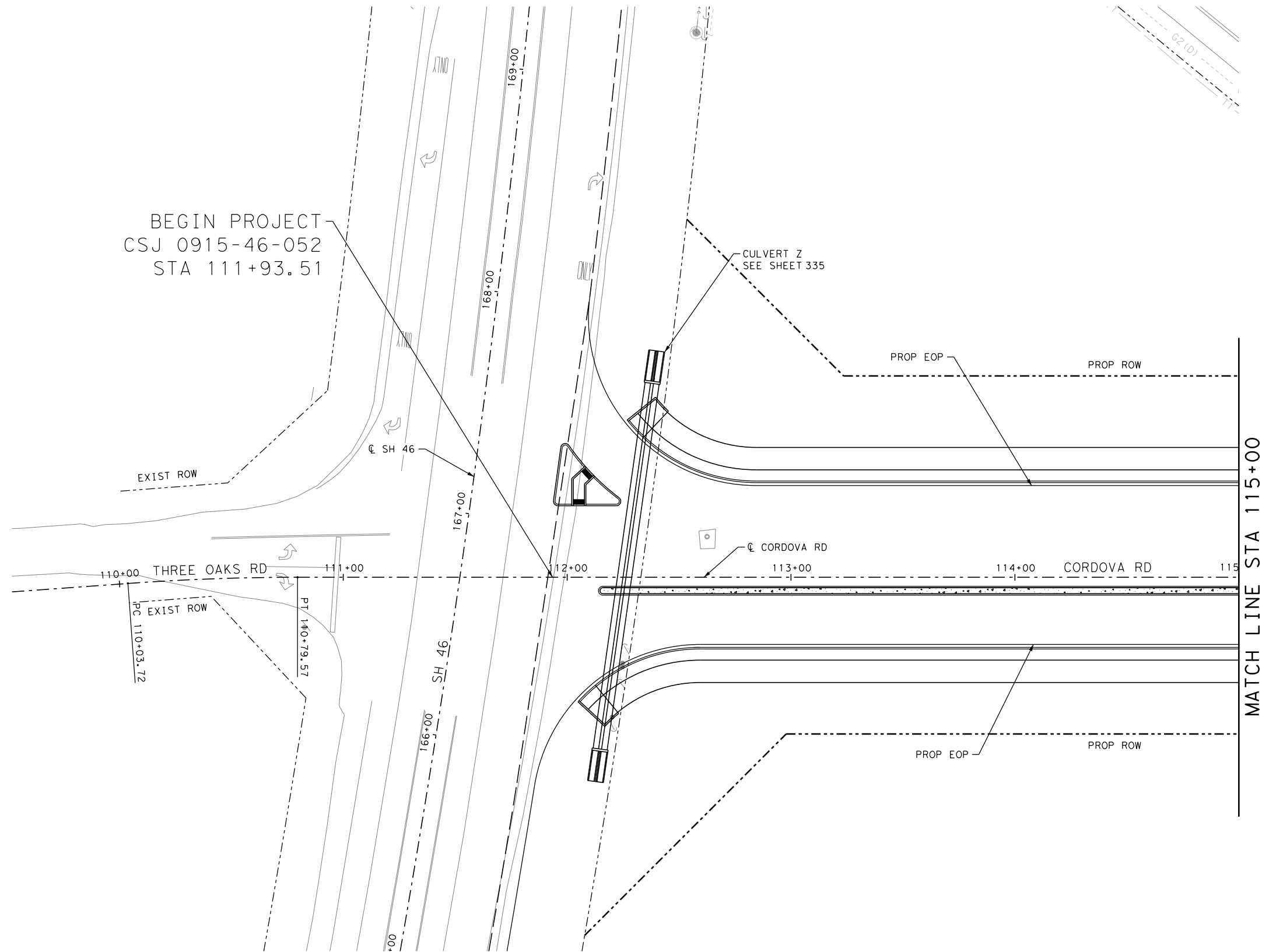


DITCH HYDRAULIC DATA SHEET

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:			HIGHWAY NO.:
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	303

Plotted on: 11/17/2023

Design Filename: P:\127\75\00\Design\Civil\Drainage\1277500_sd_01.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- ED1-1 STRUCTURE DESIGNATION

NOTES

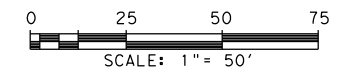
1. ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS. CONTRACTOR SHALL VERIFY DEPTHS AND LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
2. SEE PERTINENT STRUCTURE LAYOUT OR PROFILE FOR ADDITIONAL DETAILS OF EACH STRUCTURE.
3. ALL PIPES ARE NORMAL TO AND STRAIGHT FROM STRUCTURE TO STRUCTURE UNLESS OTHERWISE SHOWN.
4. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK, i.e. FADED.
5. MANHOLE & GRATE INLET STATION, OFFSET, AND ELEVATIONS REFERENCES ARE TO THE CENTER AND TOP OF STRUCTURE.
6. CURB INLET STATION, OFFSET, AND ELEVATION REFERENCES ARE TO THE TOP FACE OF CURB OF INLET STRUCTURE.

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



CORDOVA RD

DRAINAGE LAYOUT

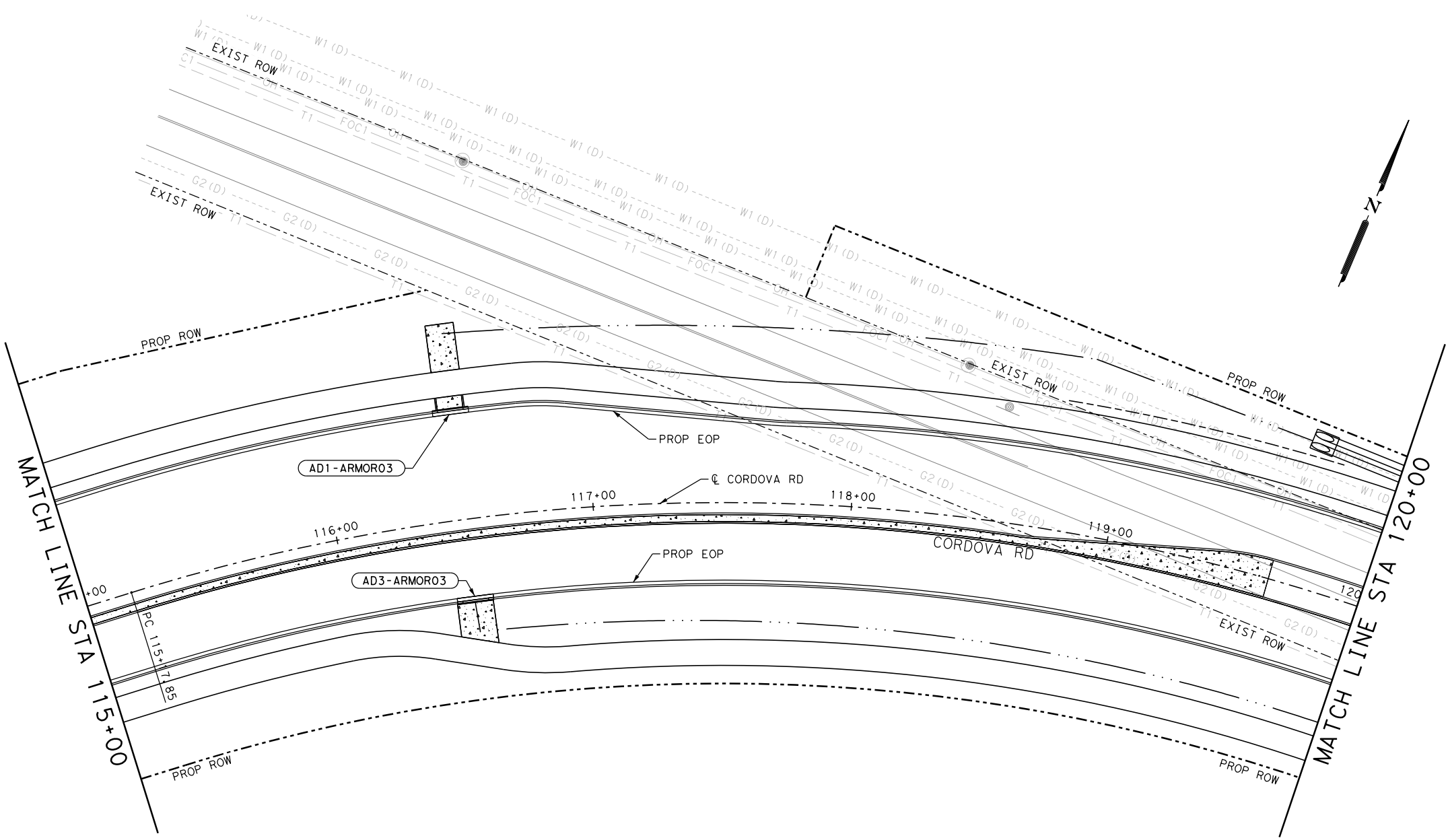
BEGIN PROJECT TO STA 115+00

SHEET 1 OF 29

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	304

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_sd_02.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- ED1-1 STRUCTURE DESIGNATION

NOTES

1. ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS. CONTRACTOR SHALL VERIFY DEPTHS AND LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
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DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JACOB J. POWELL

P.E. SERIAL NO: 108825

DATE: 11/17/2023

APPROVAL

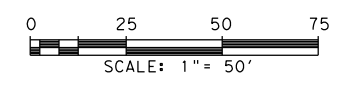
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



CORDOVA RD

DRAINAGE LAYOUT

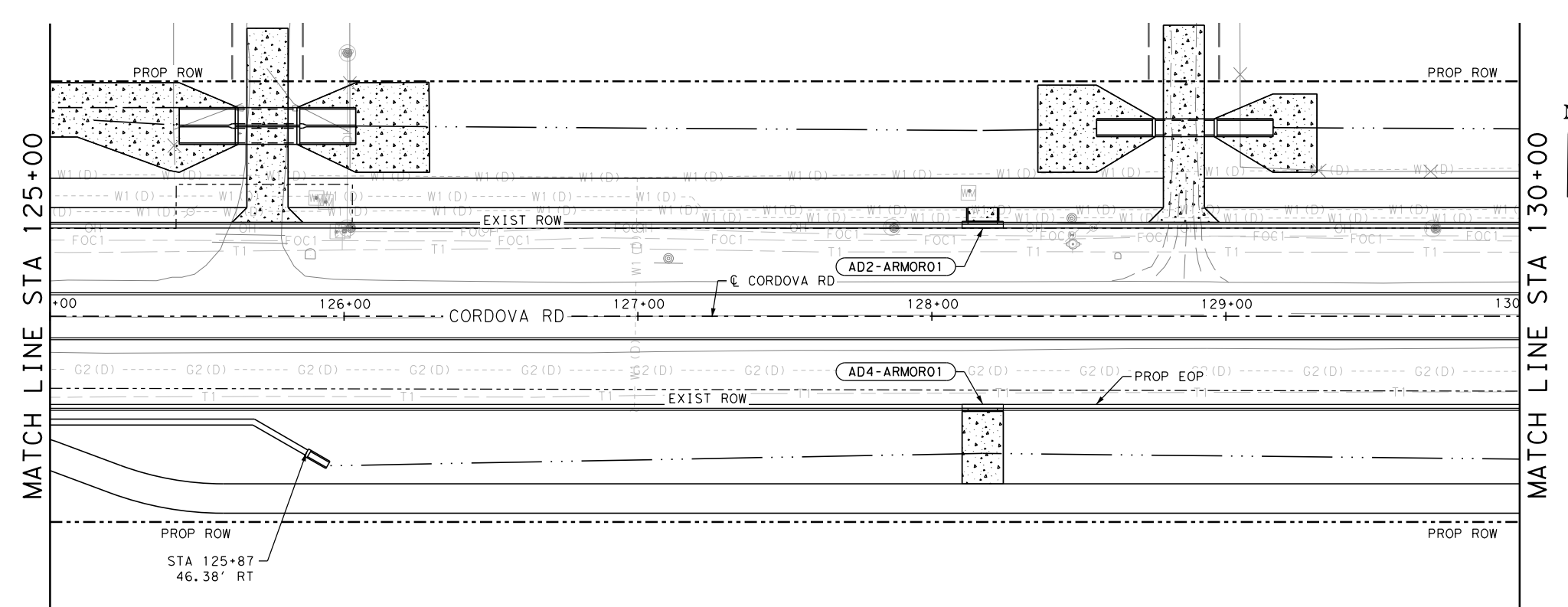
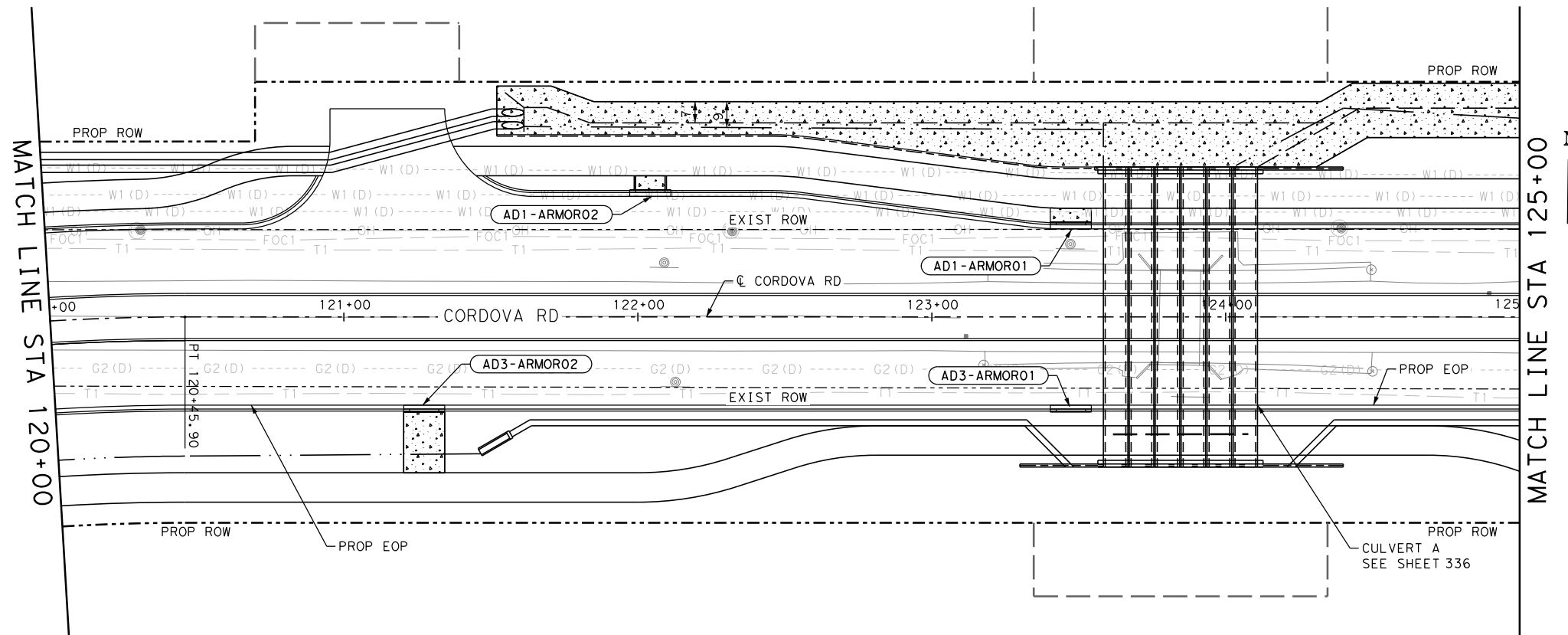
STA 115+00 TO STA 120+00

SHEET 2 OF 29

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				305

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civi\Drainage\1277500_sd_03.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- ED1-1 STRUCTURE DESIGNATION

NOTES

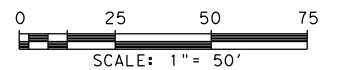
1. ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS. CONTRACTOR SHALL VERIFY DEPTHS AND LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
2. SEE PERTINENT STRUCTURE LAYOUT OR PROFILE FOR ADDITIONAL DETAILS OF EACH STRUCTURE.
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5. MANHOLE & GRATE INLET STATION, OFFSET, AND ELEVATIONS REFERENCES ARE TO THE CENTER AND TOP OF STRUCTURE.
6. CURB INLET STATION, OFFSET, AND ELEVATION REFERENCES ARE TO THE TOP FACE OF CURB OF INLET STRUCTURE.

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



CORDOVA RD

DRAINAGE LAYOUT

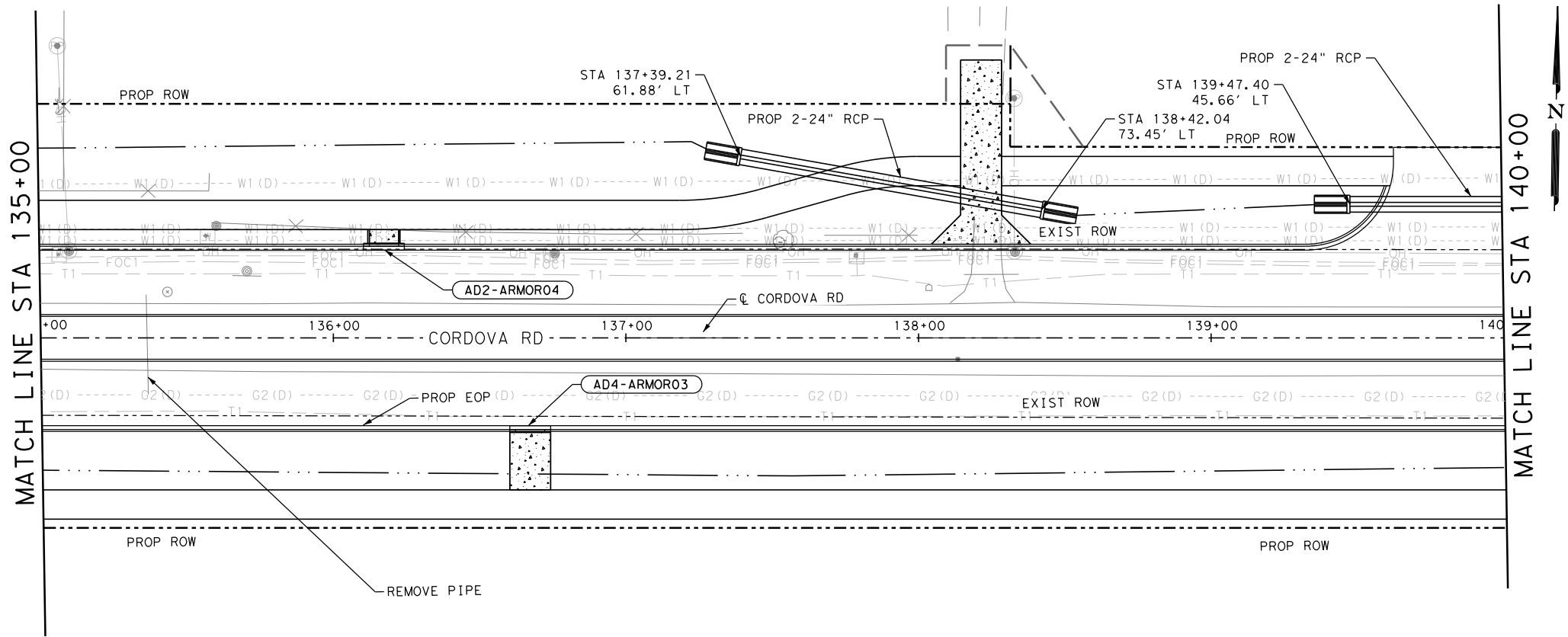
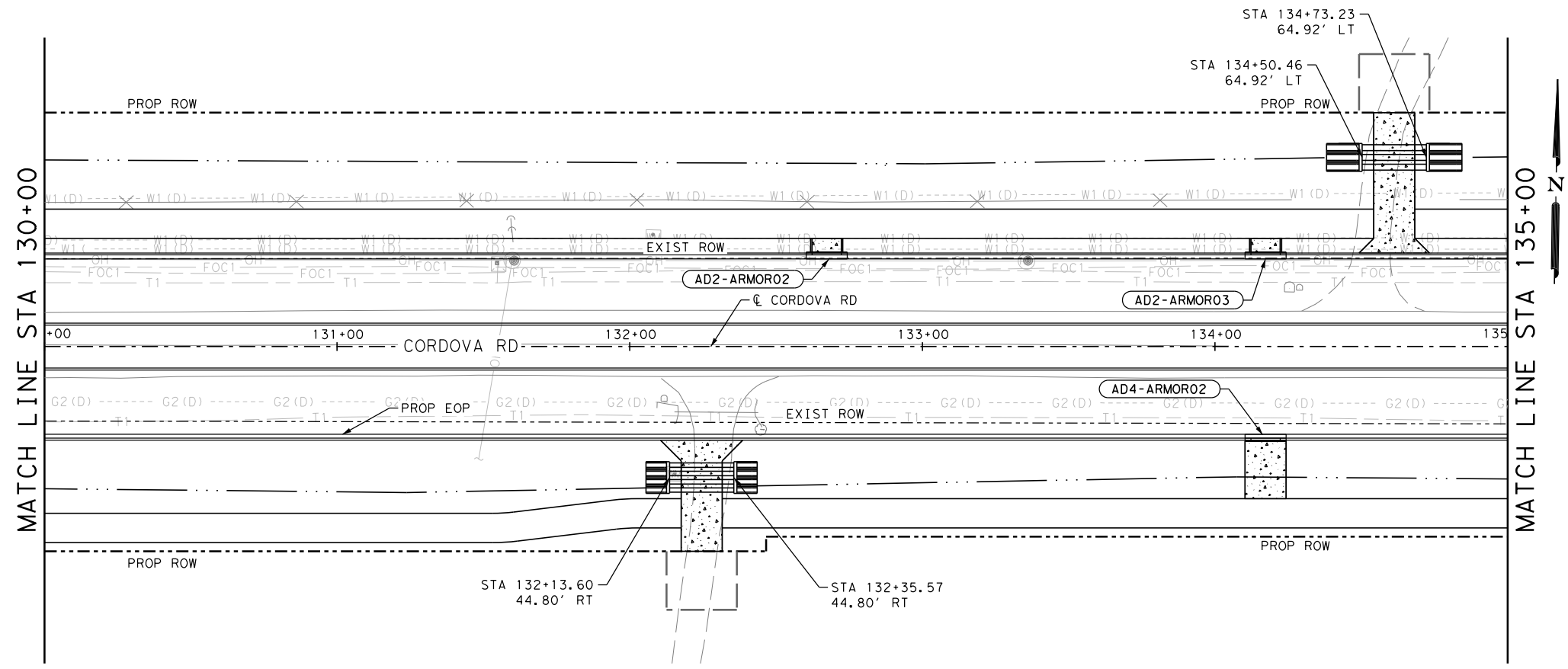
STA 120+00 TO STA 130+00

SHEET 3 OF 29

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	306

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_sd_04.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- ED1-1 STRUCTURE DESIGNATION

NOTES

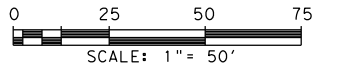
1. ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS. CONTRACTOR SHALL VERIFY DEPTHS AND LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
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SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



CORDOVA RD

DRAINAGE LAYOUT

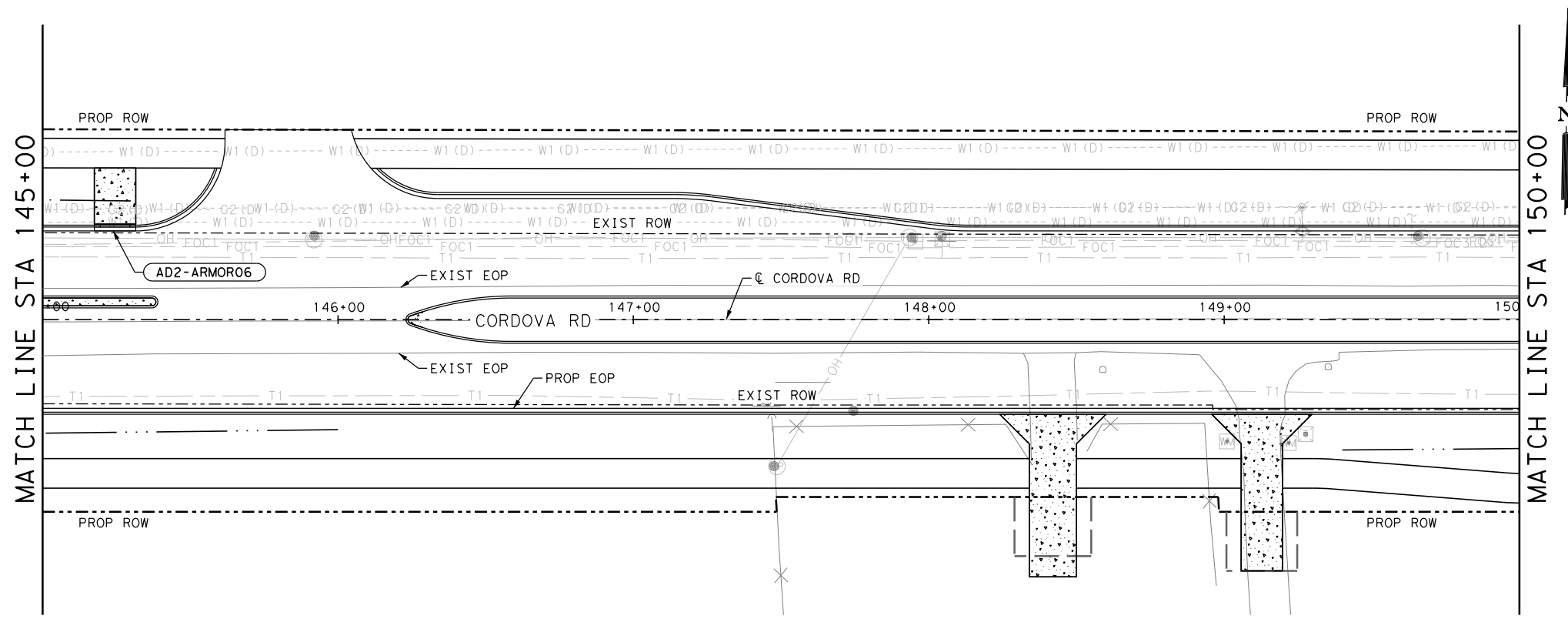
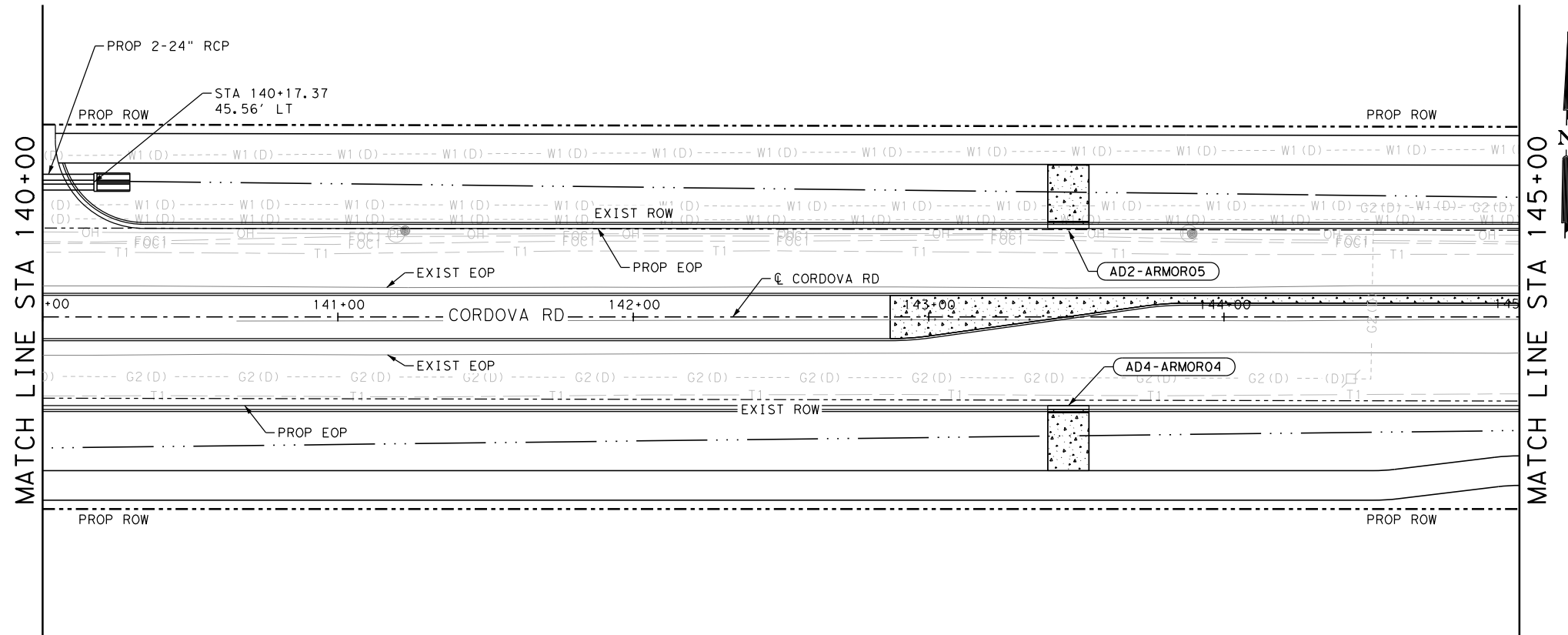
STA 130+00 TO STA 140+00

SHEET 4 OF 29

CHK	DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK	DGN:	6	TEXAS		CORDOVA		
CHK	DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK	DWG:	SAT	GUADALUPE	0915	46	052	307

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_sd_05.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- ED1-1 STRUCTURE DESIGNATION

NOTES

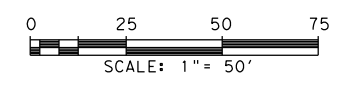
1. ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS. CONTRACTOR SHALL VERIFY DEPTHS AND LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
----------	------	-------------	----



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



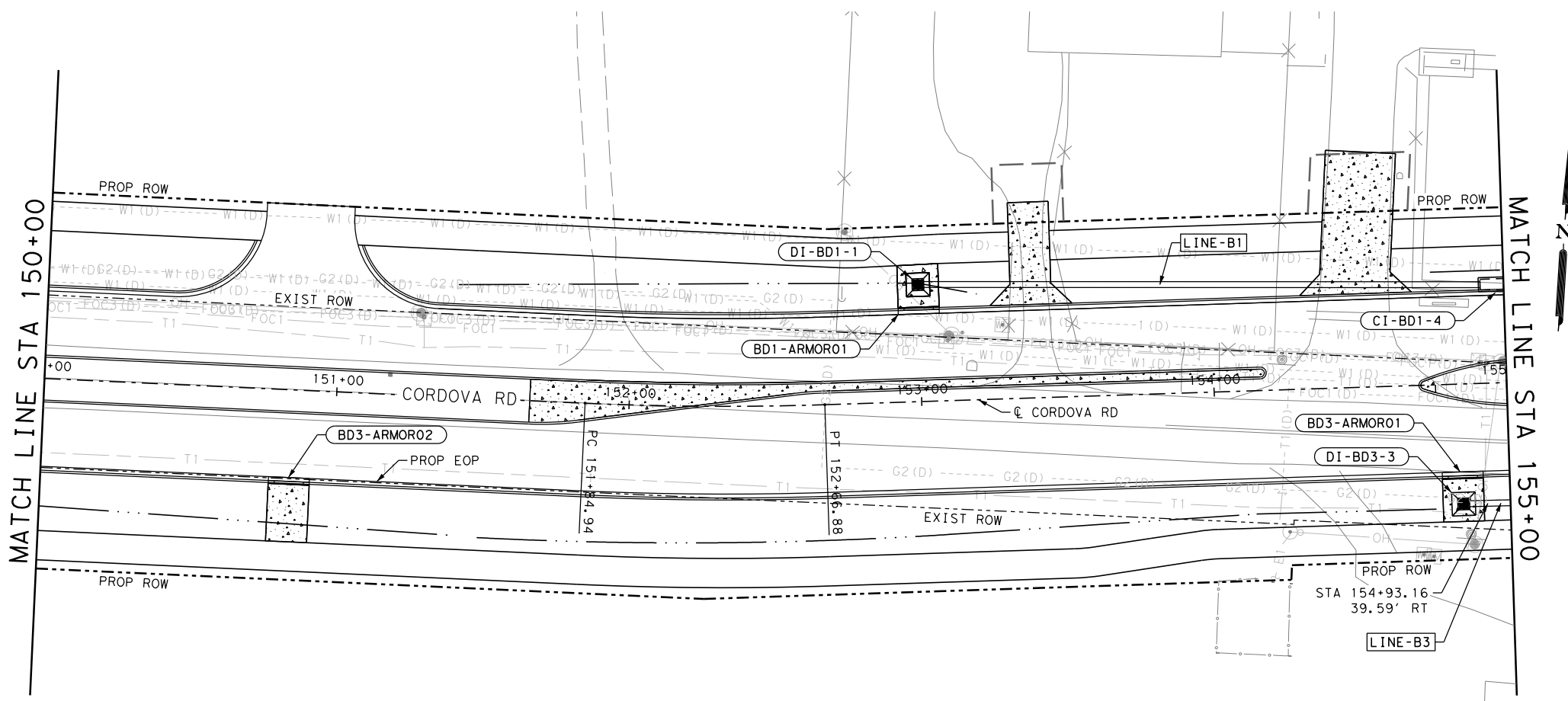
CORDOVA RD
DRAINAGE LAYOUT
 STA 140+00 TO STA 150+00

SHEET 5 OF 29

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	308

Plotted on: 11/17/2023

Design File name: P:\127175\00\Design\Civil\Drainage\1277500_sd_06.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- ED1-1 STRUCTURE DESIGNATION

NOTES

1. ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS. CONTRACTOR SHALL VERIFY DEPTHS AND LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
2. SEE PERTINENT STRUCTURE LAYOUT OR PROFILE FOR ADDITIONAL DETAILS OF EACH STRUCTURE.
3. ALL PIPES ARE NORMAL TO AND STRAIGHT FROM STRUCTURE TO STRUCTURE UNLESS OTHERWISE SHOWN.
4. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK, I.E. FADED.
5. MANHOLE & GRATE INLET STATION, OFFSET, AND ELEVATIONS REFERENCES ARE TO THE CENTER AND TOP OF STRUCTURE.
6. CURB INLET STATION, OFFSET, AND ELEVATION REFERENCES ARE TO THE TOP FACE OF CURB OF INLET STRUCTURE.

DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 10'

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



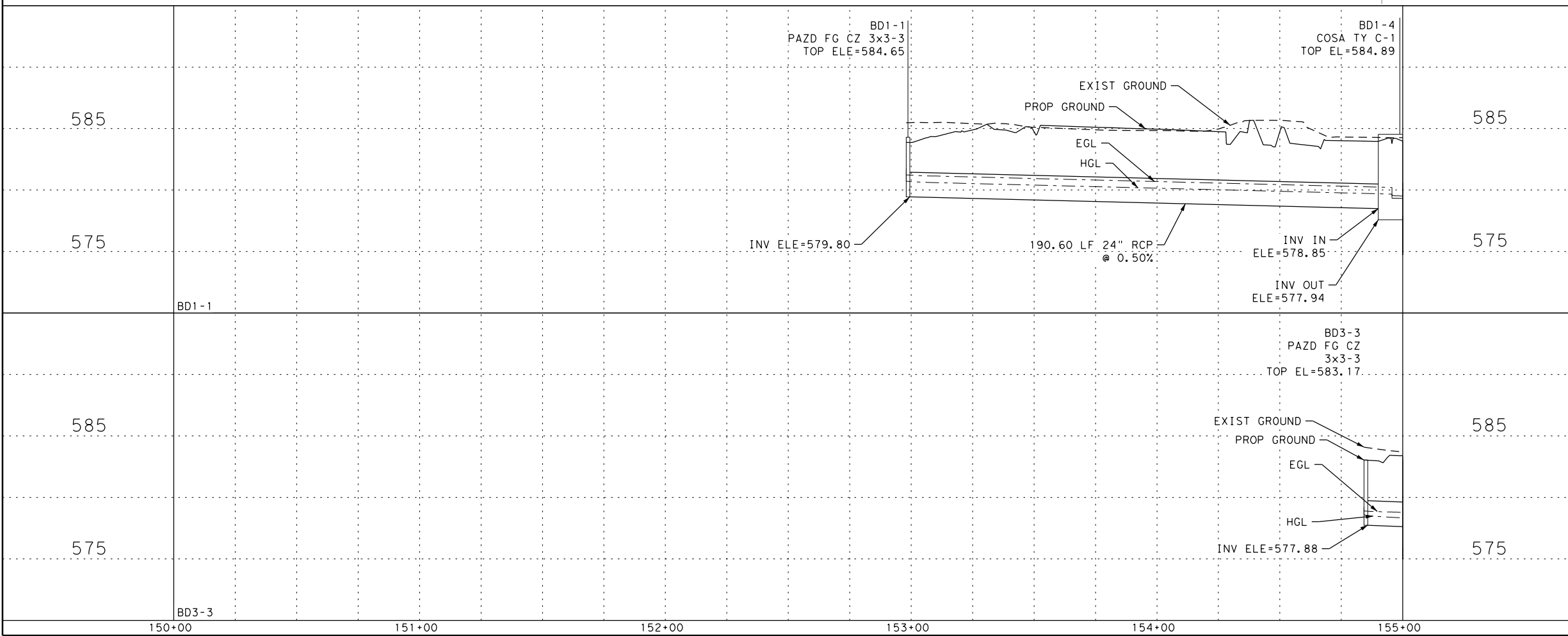
It's real.



CORDOVA RD
DRAINAGE LAYOUT
 STA 150+00 TO STA 160+00

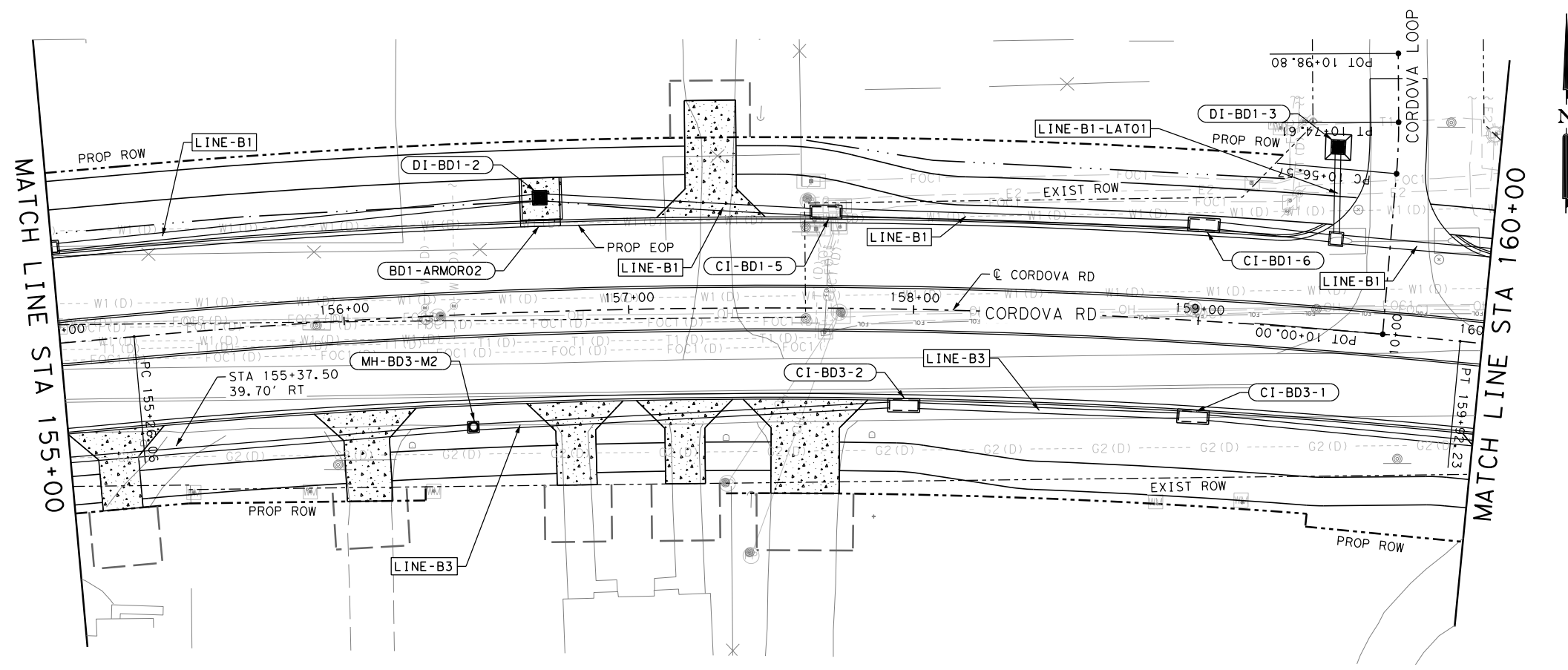
SHEET 6 OF 29

CHK DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
	6	TEXAS		CORDOVA		
CHK DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
	SAT	GUADALUPE	0915	46	052	309



Plotted on: 11/17/2023

Design File name: P:\12775\00\Design\Civil\Drainage\1277500_sd_07.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- ED1-1 STRUCTURE DESIGNATION

NOTES

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INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 10'

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.

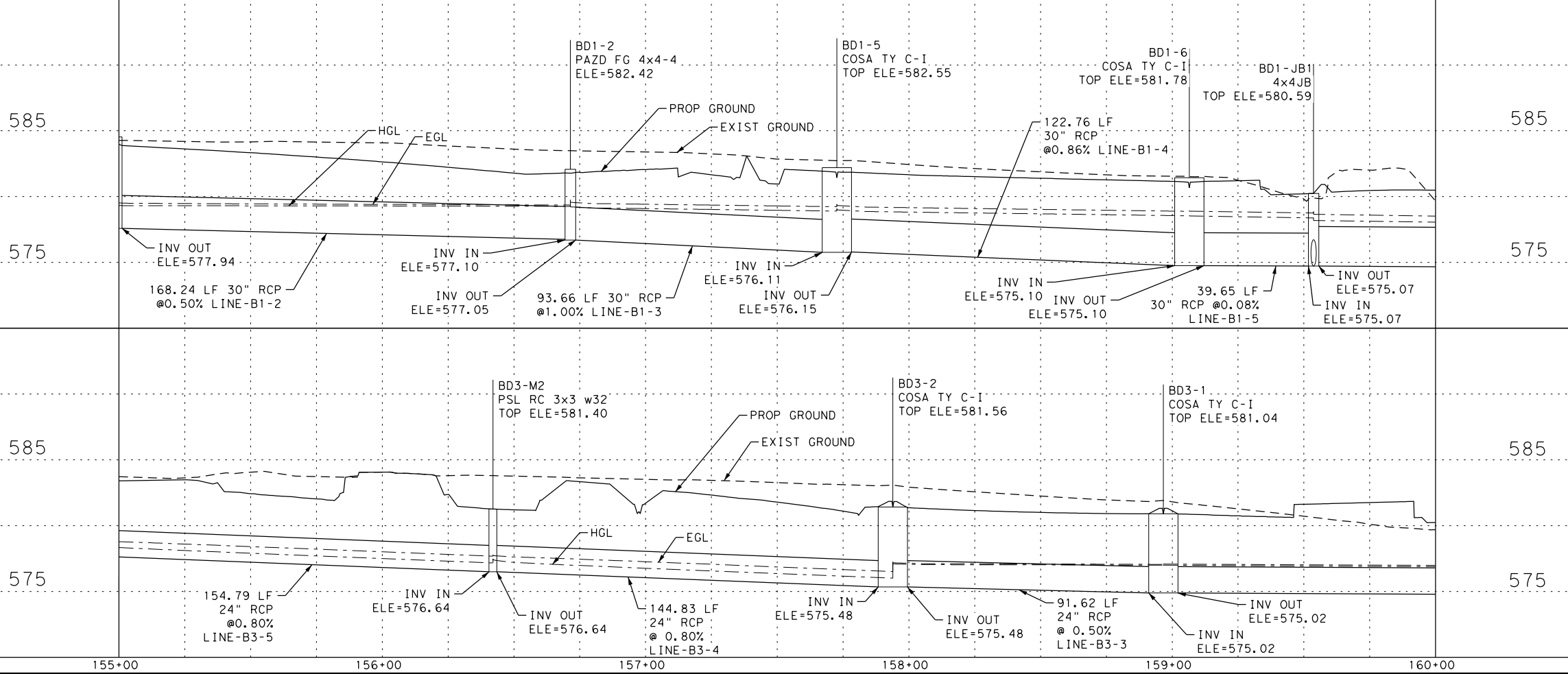


CORDOVA RD

DRAINAGE LAYOUT

STA 155+00 TO STA 160+00

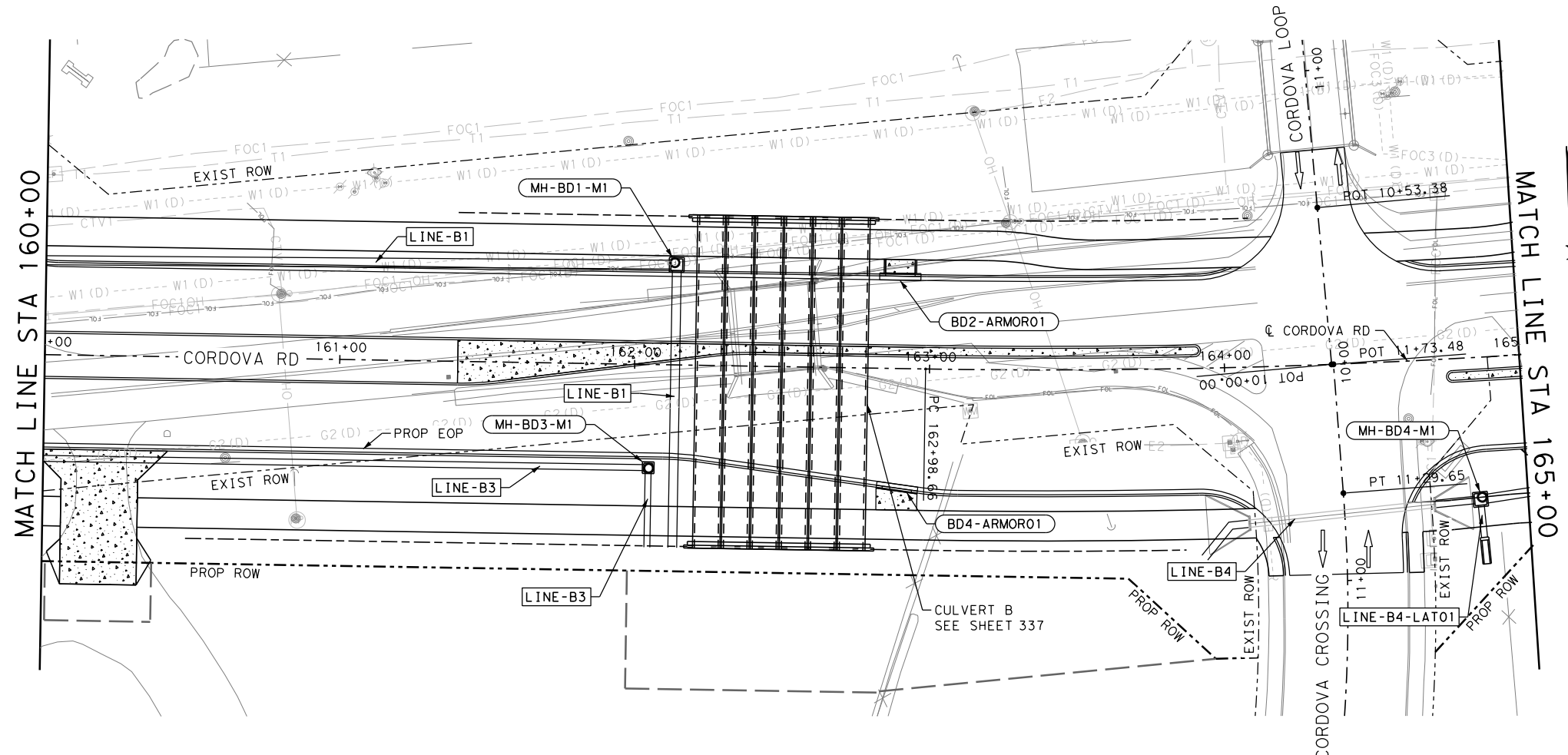
SHEET 7 OF 29



DWG:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DWG:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	310

Plotted on: 11/17/2023

Design File name: P:\1275\00\Design\Civil\Drainage\127500_sd_08.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- ED1-1 STRUCTURE DESIGNATION

NOTES

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DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JACOB J. POWELL

P.E. SERIAL NO: 108825

DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 10'

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



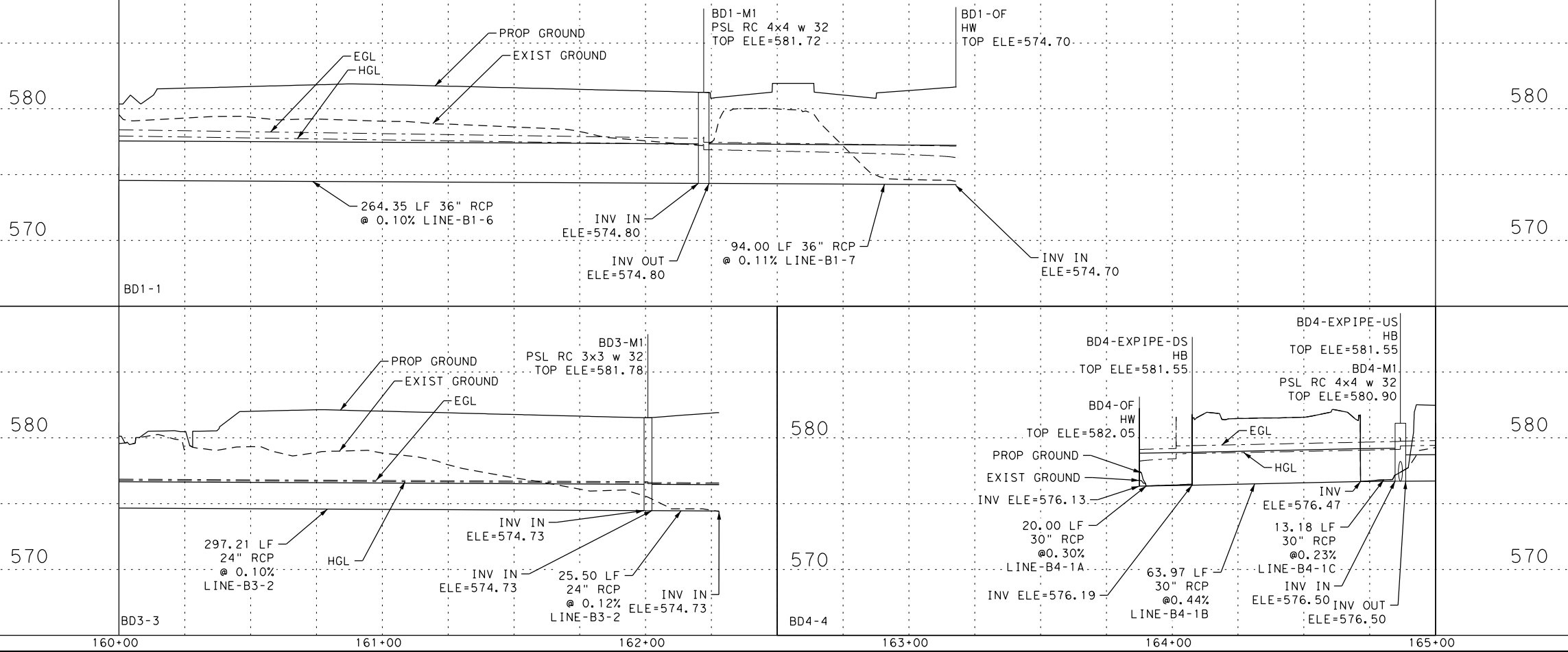
It's real.



CORDOVA RD
DRAINAGE LAYOUT

STA 160+00 TO STA 165+00

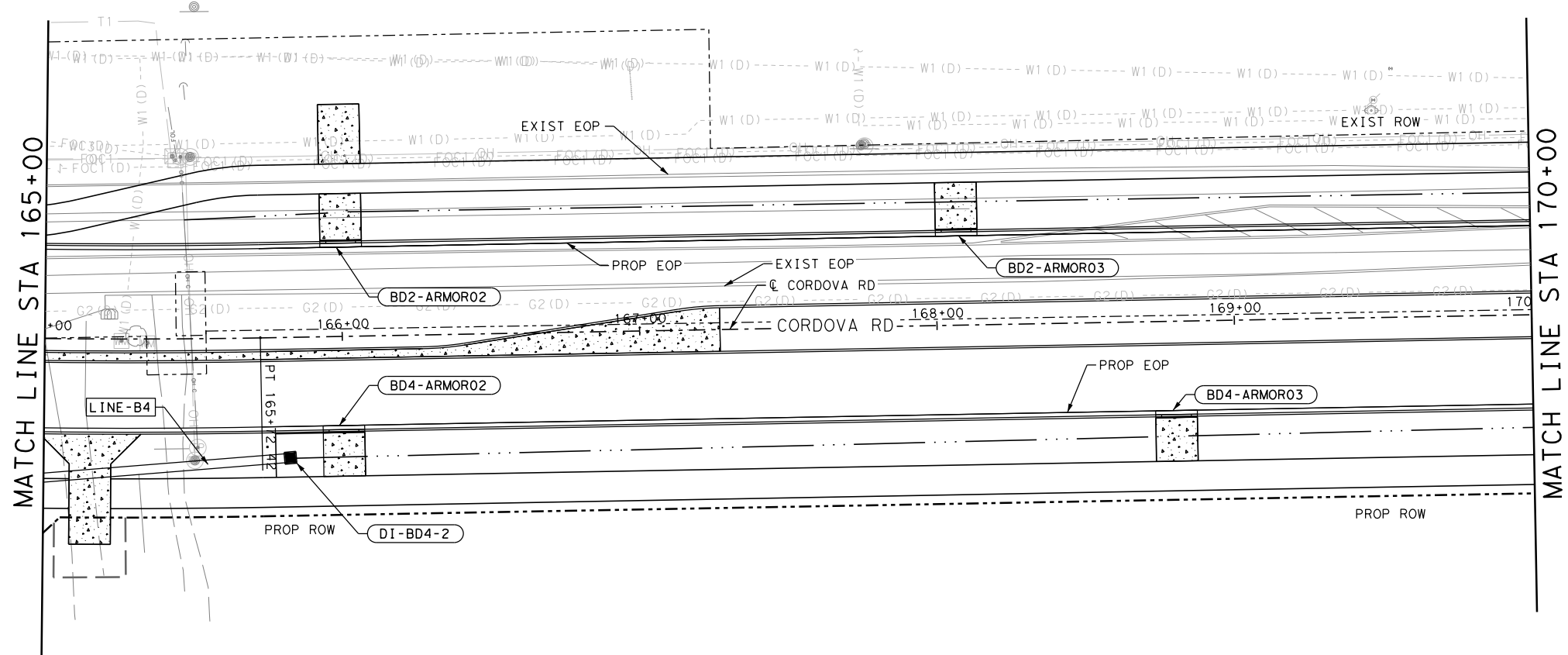
SHEET 8 OF 29



DN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	SAT	GUADALUPE	0915	46
DWG:				052
				311

Plotted on: 11/17/2023

Design File name: P:\12775\00\Design\Civil\Drainage\1277500_sd_09.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- EDI-1 STRUCTURE DESIGNATION

NOTES

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DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 10'

600

600

595

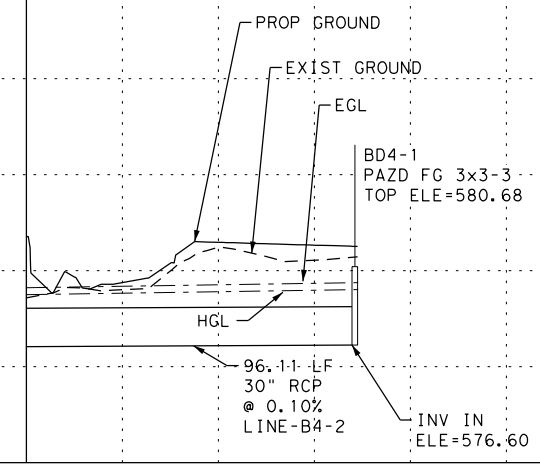
595

585

585

575

575



REV. NO.	DATE	DESCRIPTION	BY
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SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



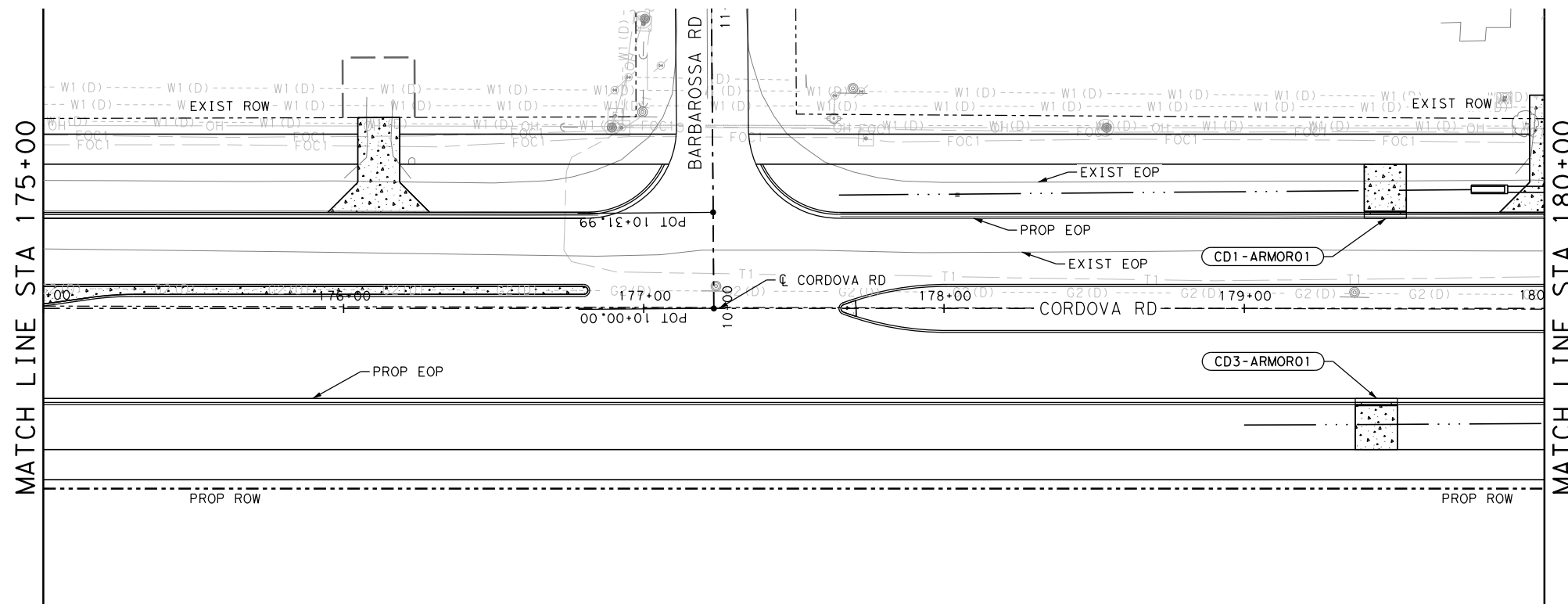
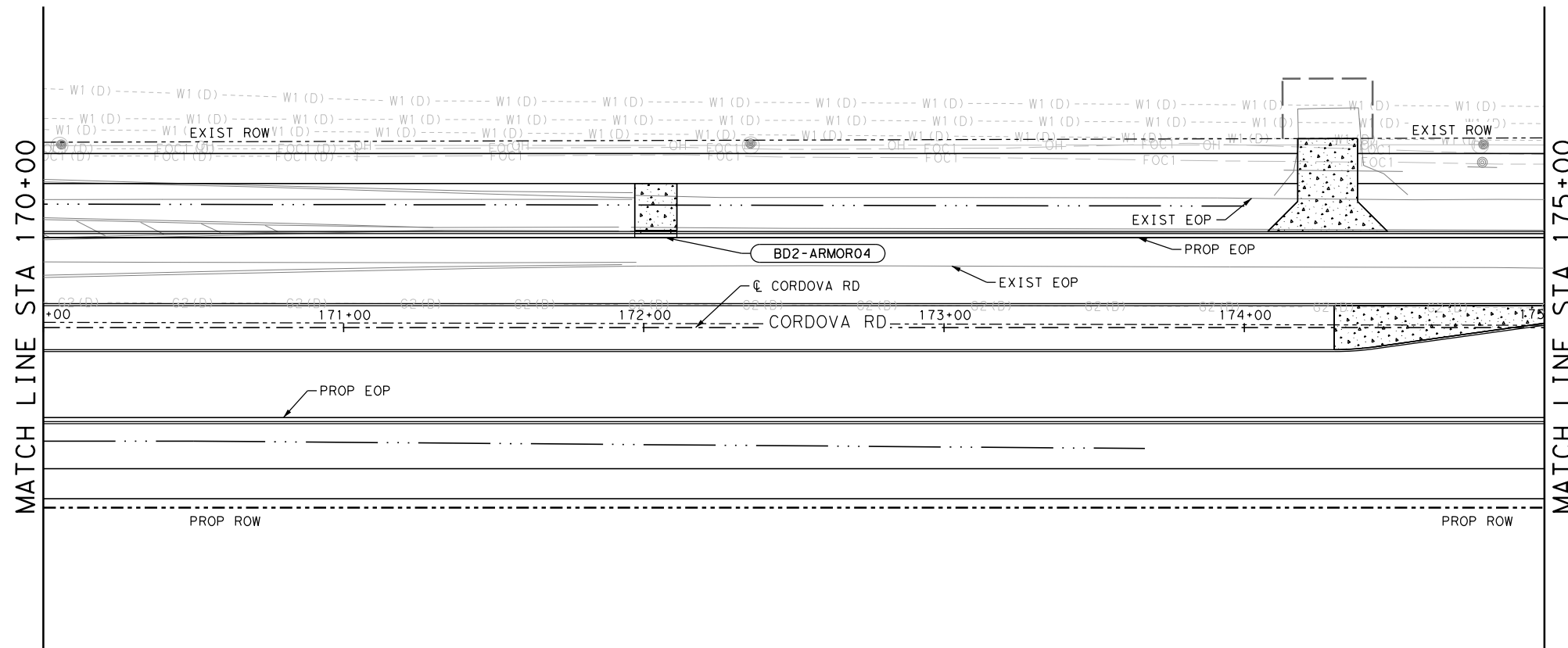
CORDOVA RD
DRAINAGE LAYOUT
 STA 165+00 TO STA 170+00

SHEET 9 OF 29

CHK DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:			HIGHWAY NO.:
	6	TEXAS				CORDOVA
CHK DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
	SAT	GUADALUPE	0915	46	052	312

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_sd_10.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- ED1-1 STRUCTURE DESIGNATION

NOTES

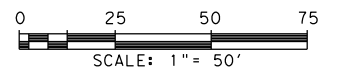
1. ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS. CONTRACTOR SHALL VERIFY DEPTHS AND LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



CORDOVA RD

DRAINAGE LAYOUT

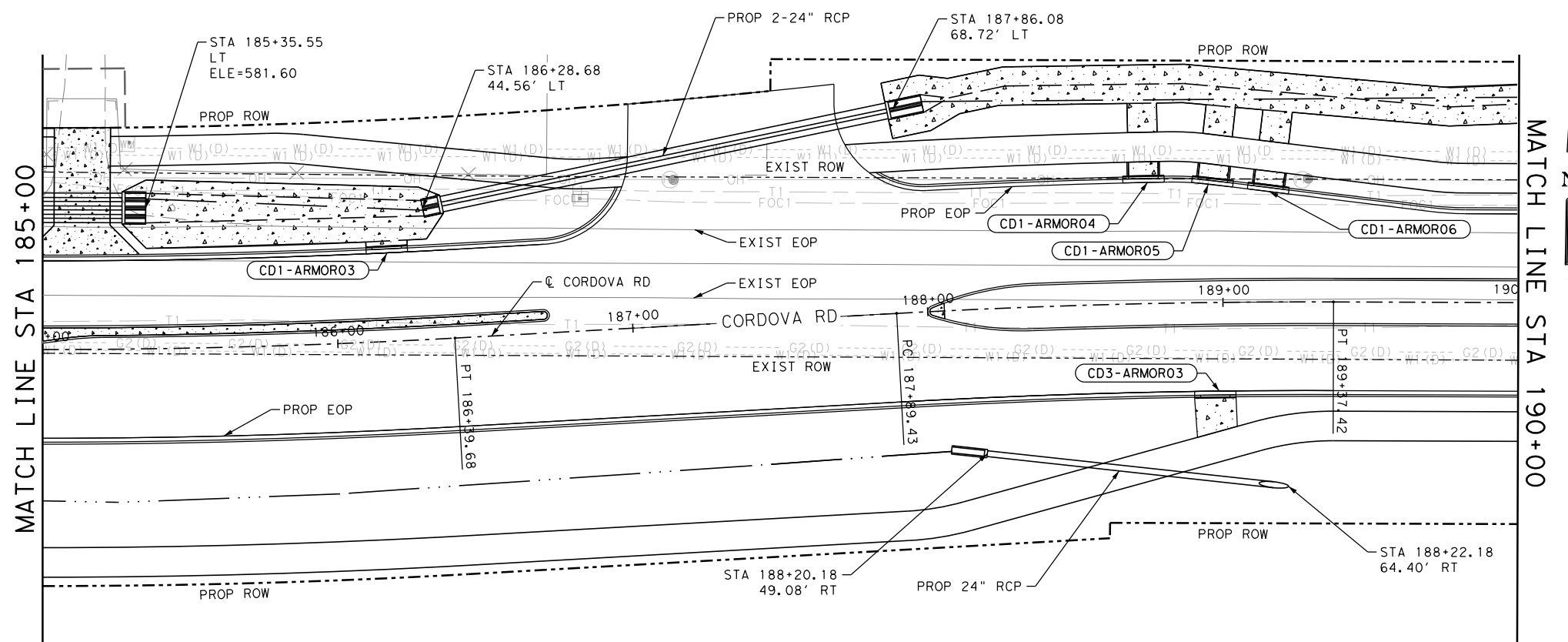
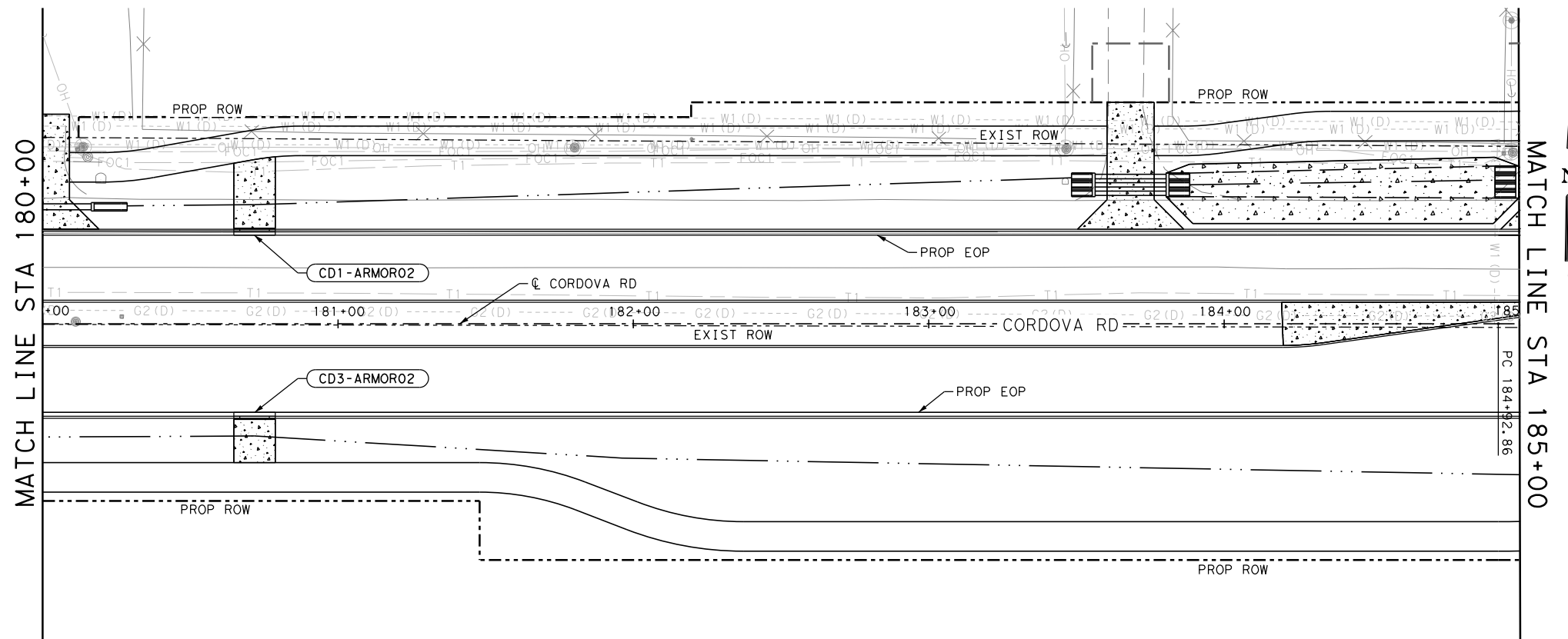
STA 170+00 TO STA 180+00

SHEET 10 OF 29

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	313

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_sd_11.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- ED1-1 STRUCTURE DESIGNATION

NOTES

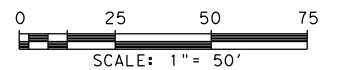
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



CORDOVA RD

DRAINAGE LAYOUT

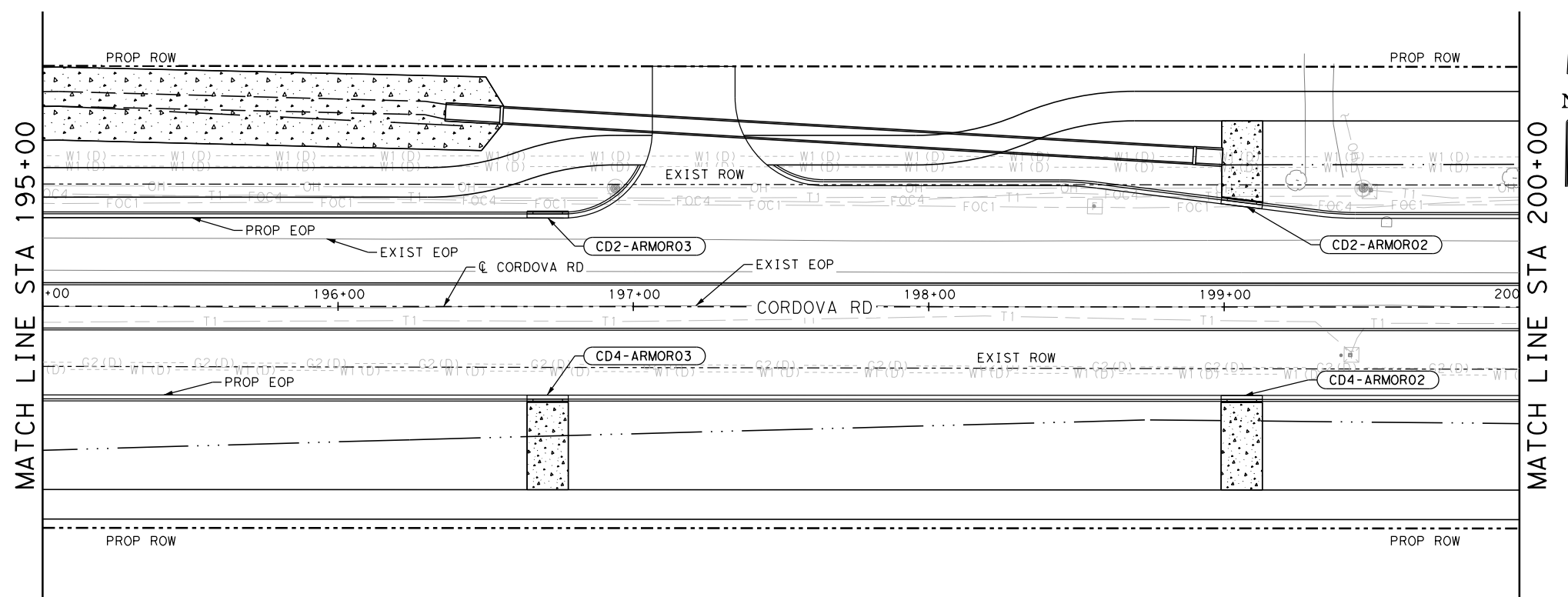
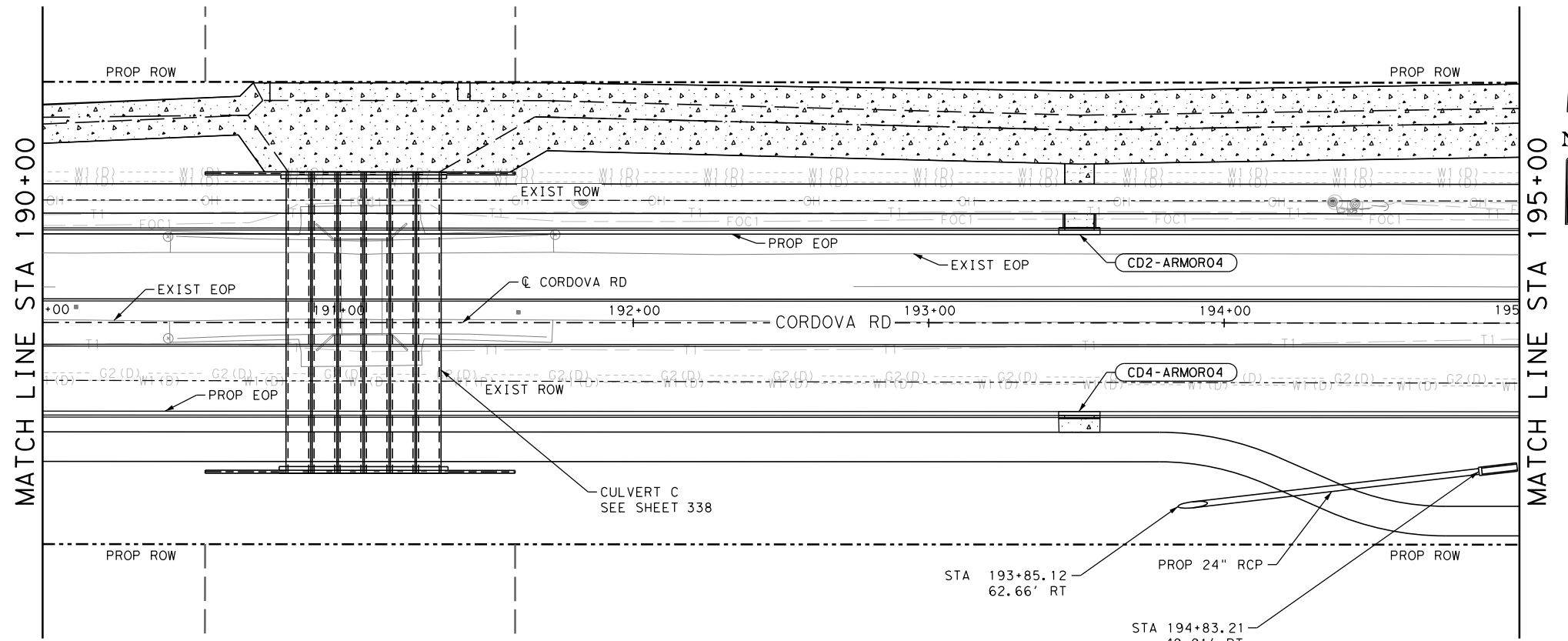
STA 180+00 TO STA 190+00

SHEET 11 OF 29

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	314

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civi\Drainage\1277500_sd_12.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- ED1-1 STRUCTURE DESIGNATION

NOTES

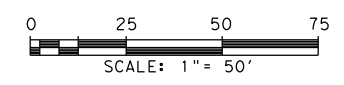
1. ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS. CONTRACTOR SHALL VERIFY DEPTHS AND LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



CORDOVA RD

DRAINAGE LAYOUT

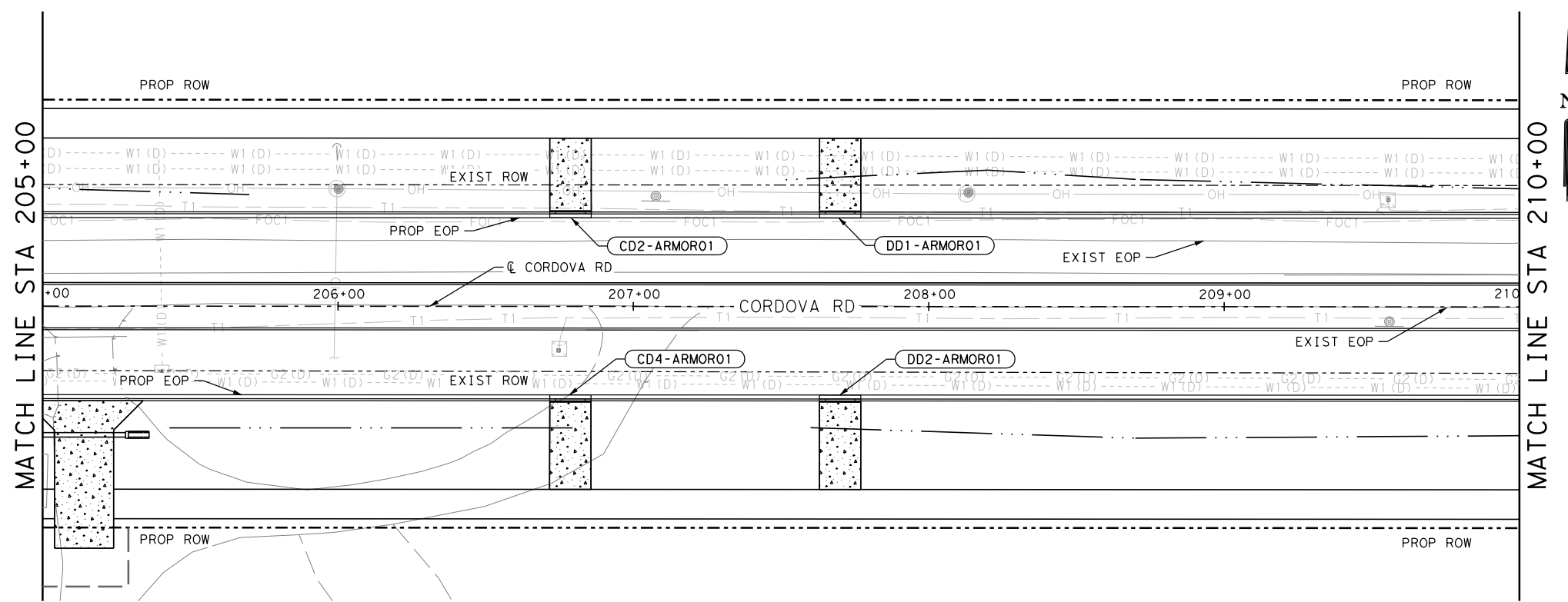
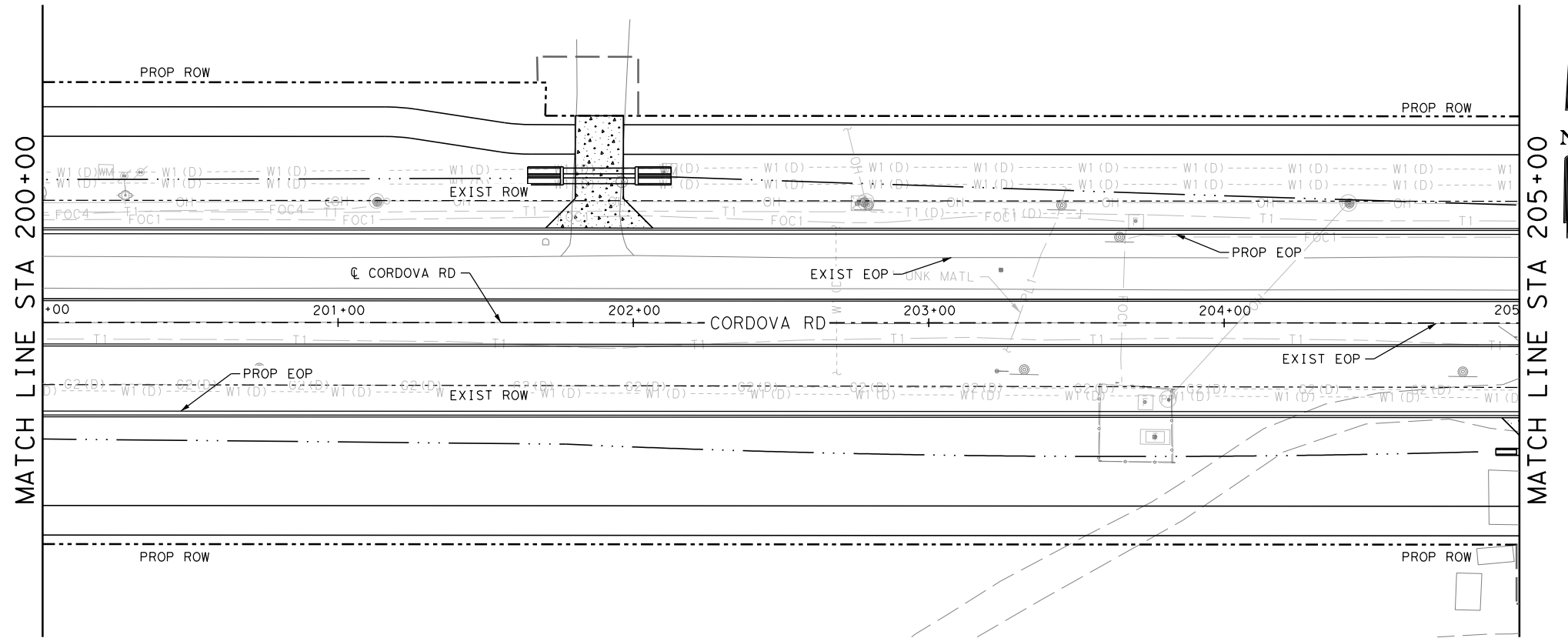
STA 190+00 TO STA 200+00

SHEET 12 OF 29

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	315

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civi\Drainage\1277500_sd_13.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- ED1-1 STRUCTURE DESIGNATION

NOTES

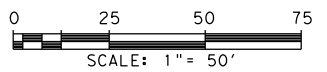
1. ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS. CONTRACTOR SHALL VERIFY DEPTHS AND LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
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DESIGN

INTERIM REVIEW
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 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



CORDOVA RD

DRAINAGE LAYOUT

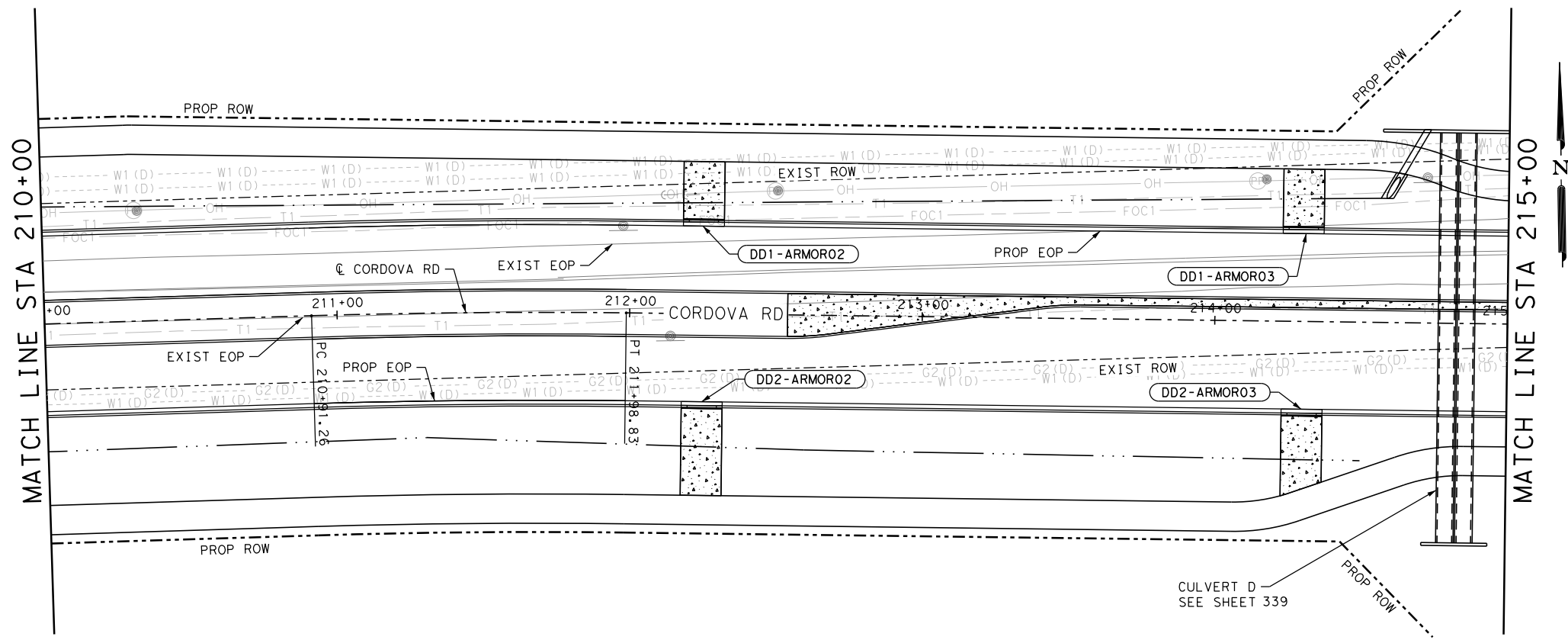
STA 200+00 TO STA 210+00

SHEET 13 OF 29

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	316

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_sd_14.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- ED1-1 STRUCTURE DESIGNATION

NOTES

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 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
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APPROVAL

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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 10'

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



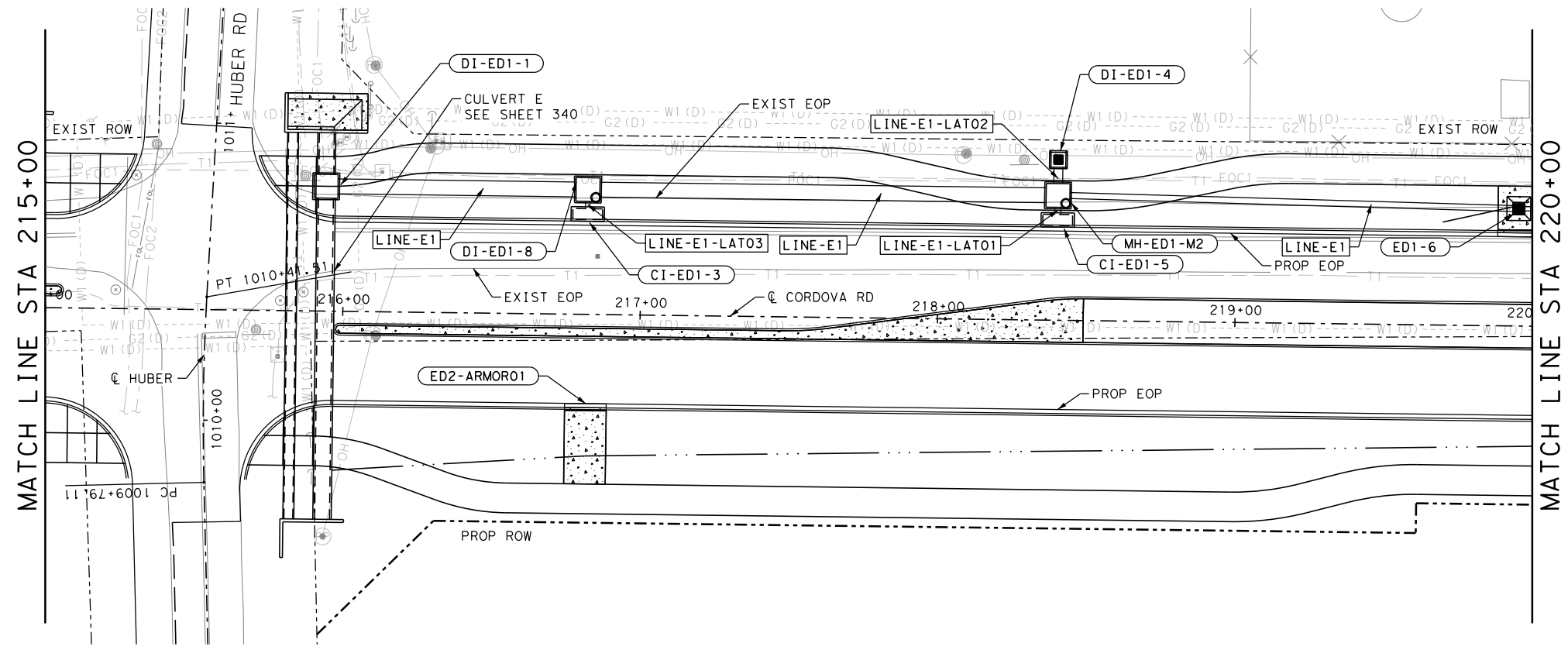
CORDOVA RD
DRAINAGE LAYOUT
 STA 210+00 TO STA 215+00

SHEET 14 OF 29

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				317

Plotted on: 11/17/2023

Design File name: P:\127175\00\Design\Civil\Drainage\1277500_sd_15.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- ED1-1 STRUCTURE DESIGNATION

NOTES

1. ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS. CONTRACTOR SHALL VERIFY DEPTHS AND LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
2. SEE PERTINENT STRUCTURE LAYOUT OR PROFILE FOR ADDITIONAL DETAILS OF EACH STRUCTURE.
3. ALL PIPES ARE NORMAL TO AND STRAIGHT FROM STRUCTURE TO STRUCTURE UNLESS OTHERWISE SHOWN.
4. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK, I.E. FADED.
5. MANHOLE & GRATE INLET STATION, OFFSET, AND ELEVATIONS REFERENCES ARE TO THE CENTER AND TOP OF STRUCTURE.
6. CURB INLET STATION, OFFSET, AND ELEVATION REFERENCES ARE TO THE TOP FACE OF CURB OF INLET STRUCTURE.

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 10'

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



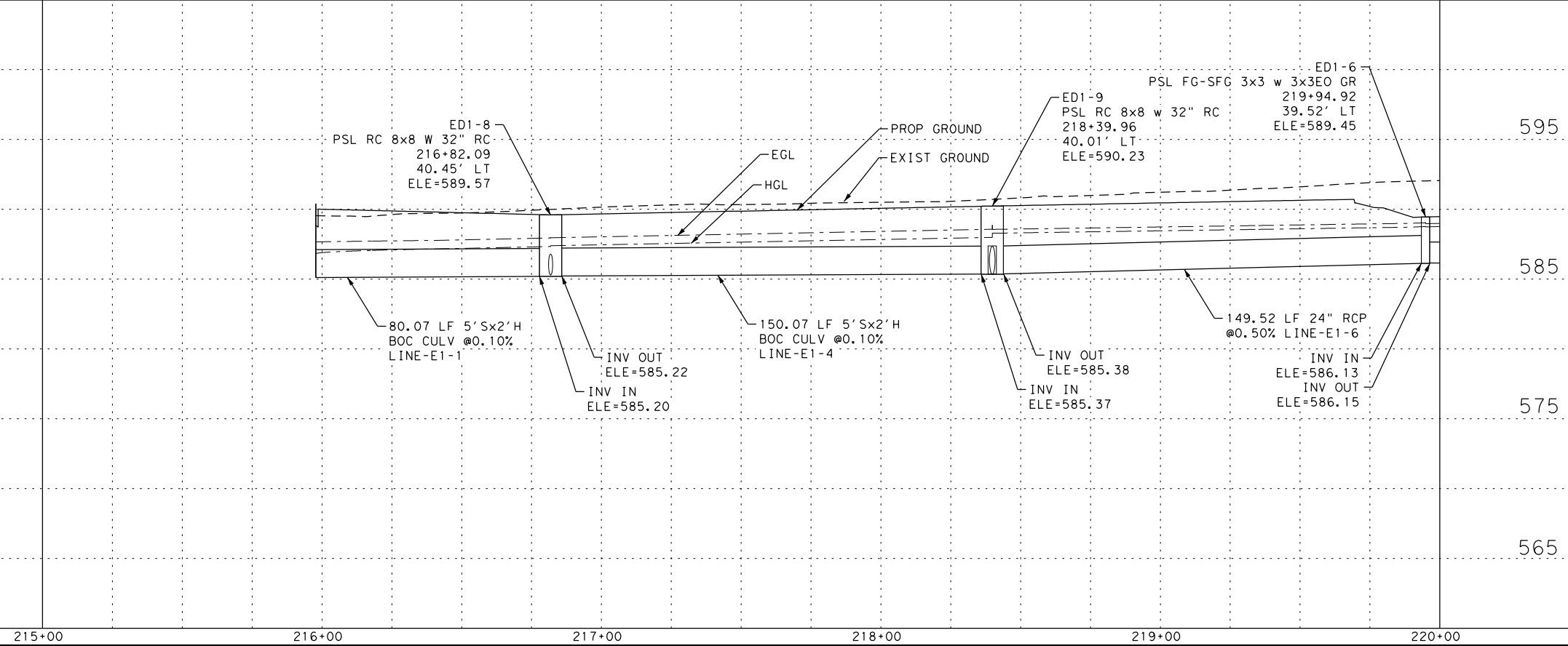
It's real.



CORDOVA RD
DRAINAGE LAYOUT
 STA 215+00 TO STA 220+00

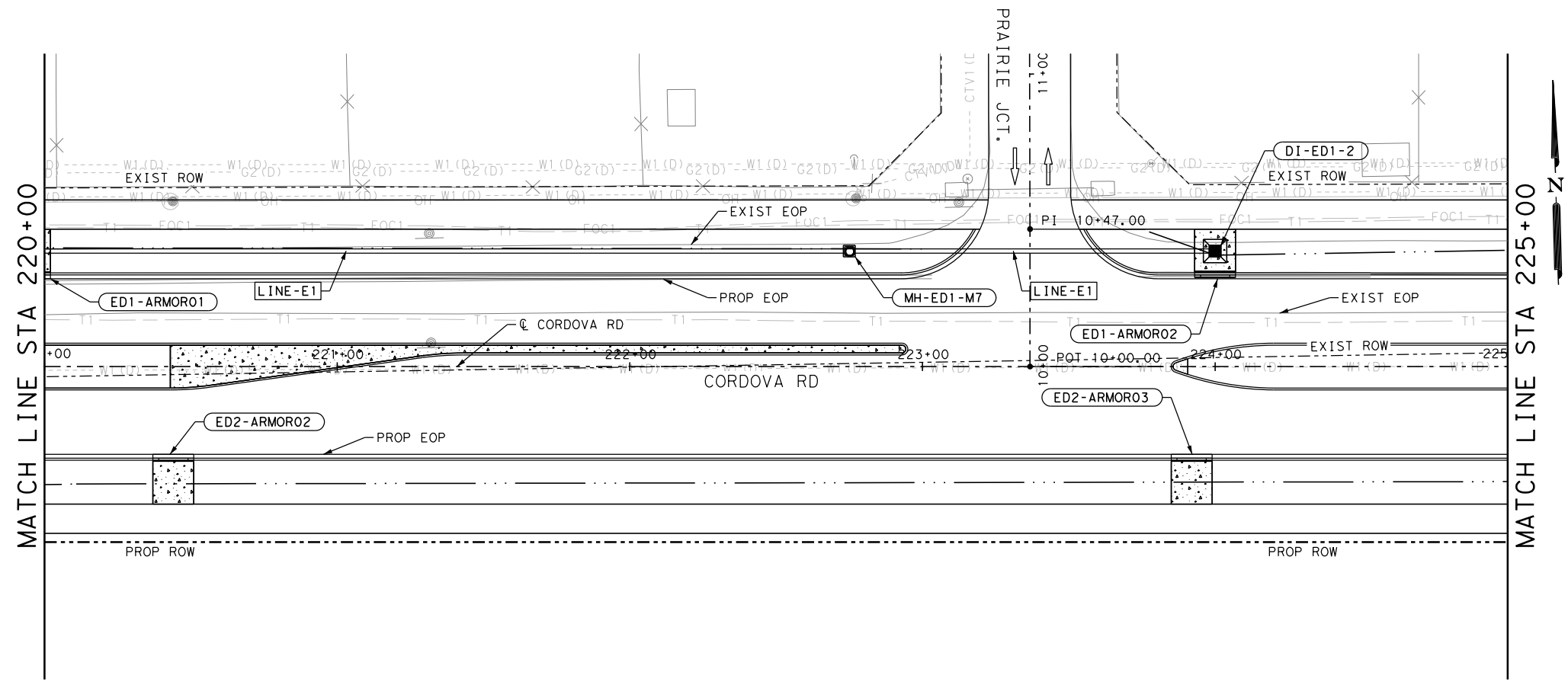
SHEET 15 OF 29

CHK	DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK	DGN:	6	TEXAS		CORDOVA		
CHK	DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK	DWG:	SAT	GUADALUPE	0915	46	052	318



Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_sd_16.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- ED1-1 STRUCTURE DESIGNATION

NOTES

1. ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS. CONTRACTOR SHALL VERIFY DEPTHS AND LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 10'

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



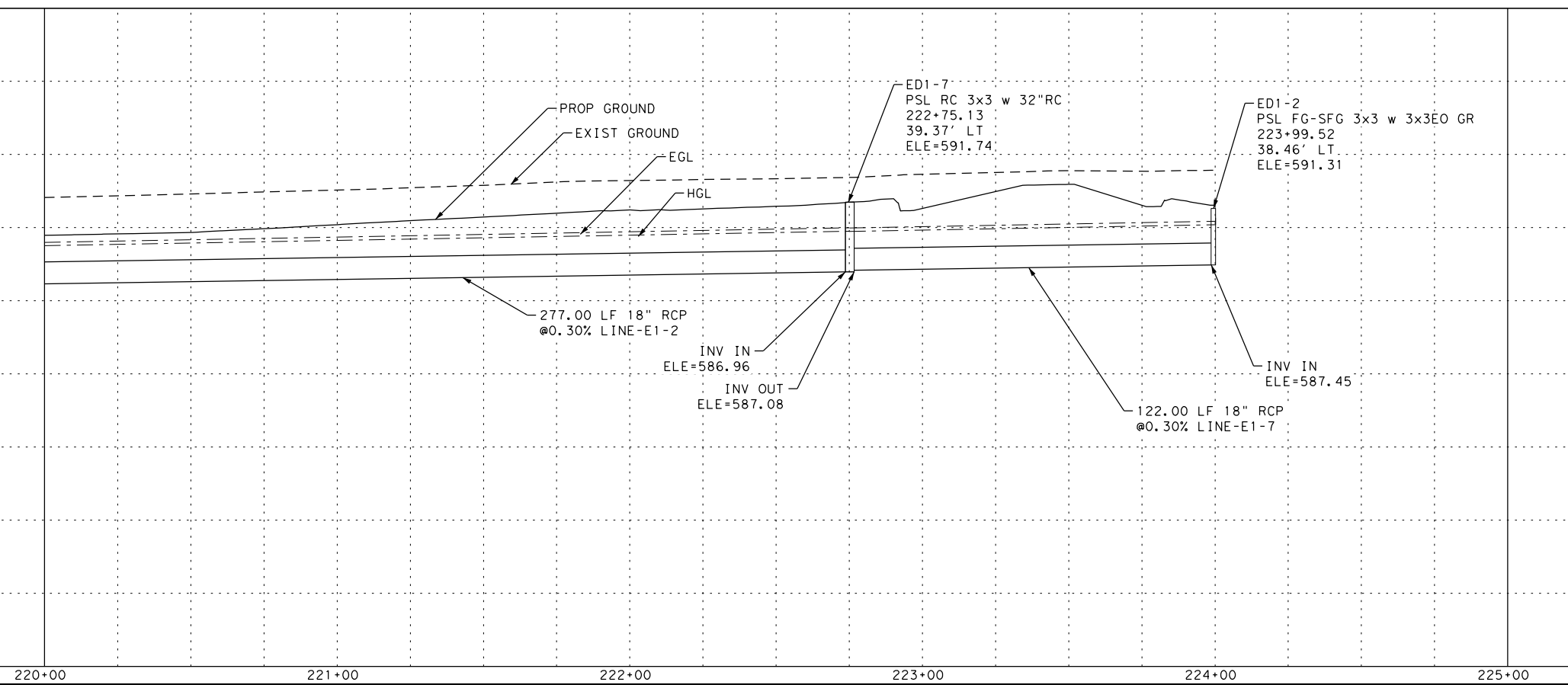
CORDOVA RD

DRAINAGE LAYOUT

STA 220+00 TO STA 225+00

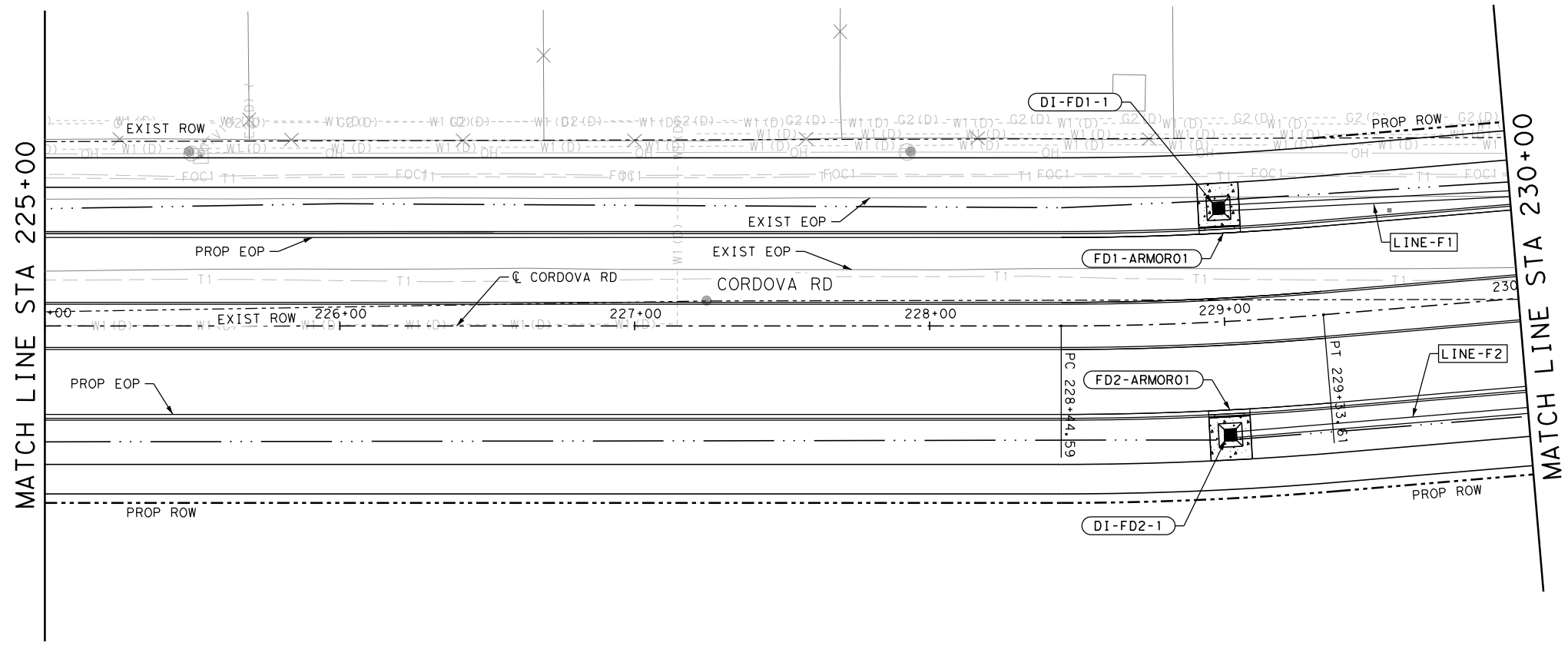
SHEET 16 OF 29

CHK	DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
		6	TEXAS		CORDOVA		
CHK	DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
		SAT	GUADALUPE	0915	46	052	319



Plotted on: 11/17/2023

Design File name: P:\12775\00\Design\Civil\Drainage\1277500_sd_17.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- ED1-1 STRUCTURE DESIGNATION

NOTES

1. ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS. CONTRACTOR SHALL VERIFY DEPTHS AND LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 10'

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



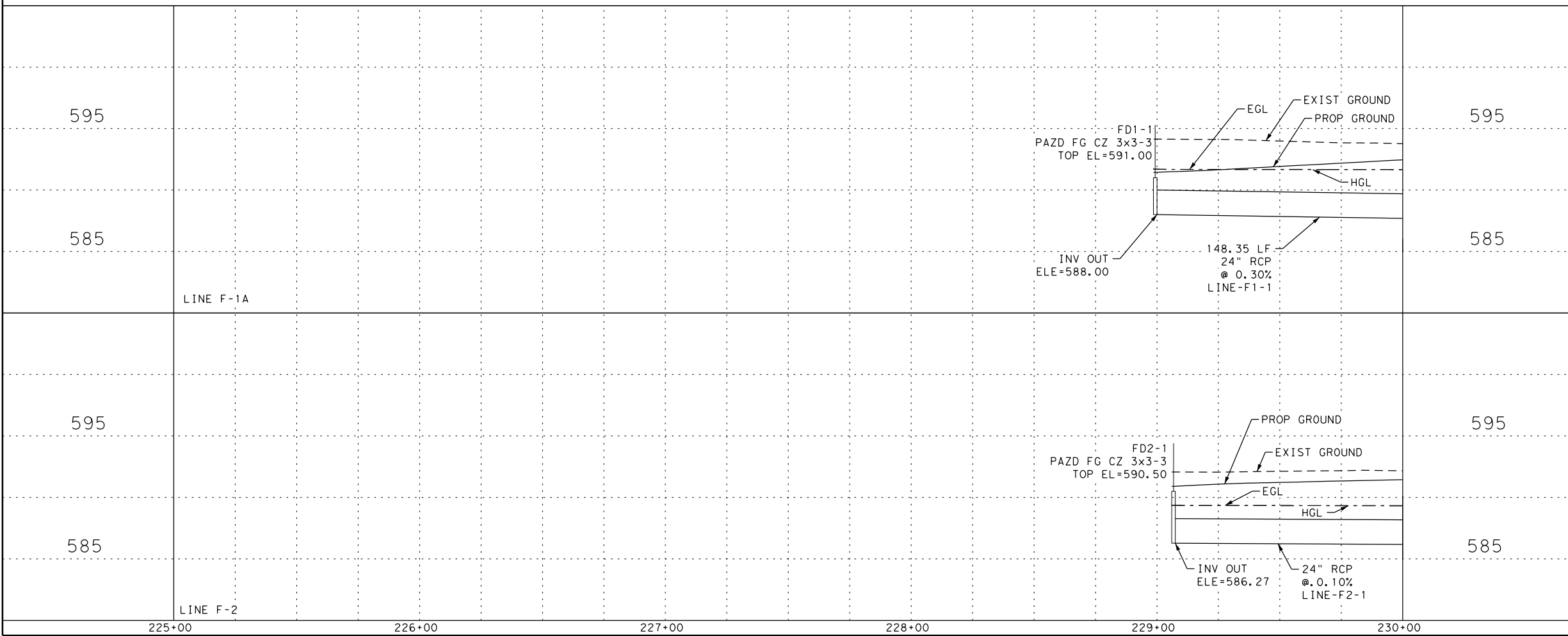
CORDOVA RD

DRAINAGE LAYOUT

STA 225+00 TO STA 230+00

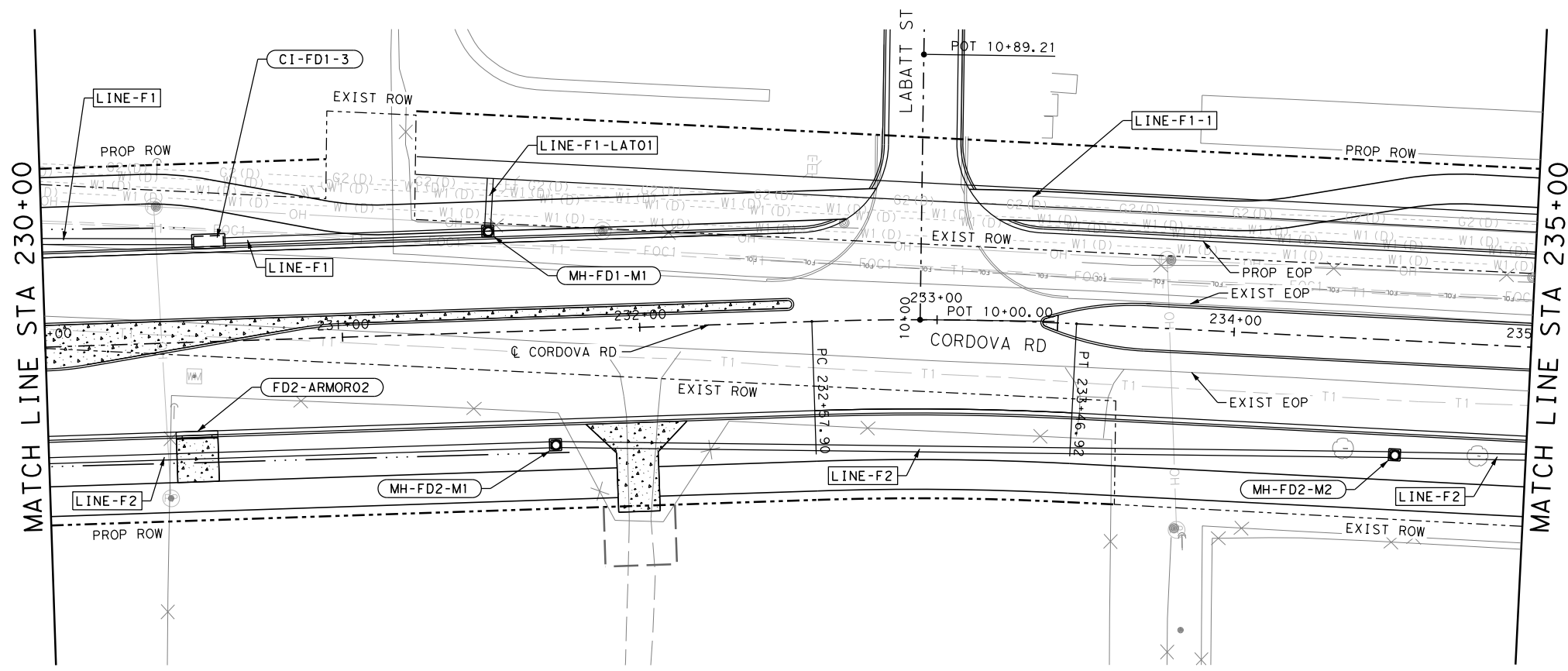
SHEET 17 OF 29

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				320



Plotted on: 11/17/2023

Design File name: P:\12775\00\Design\Civil\Drainage\1277500_sd_18.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- ED1-1 STRUCTURE DESIGNATION

NOTES

1. ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS. CONTRACTOR SHALL VERIFY DEPTHS AND LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
2. SEE PERTINENT STRUCTURE LAYOUT OR PROFILE FOR ADDITIONAL DETAILS OF EACH STRUCTURE.
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 10'

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.

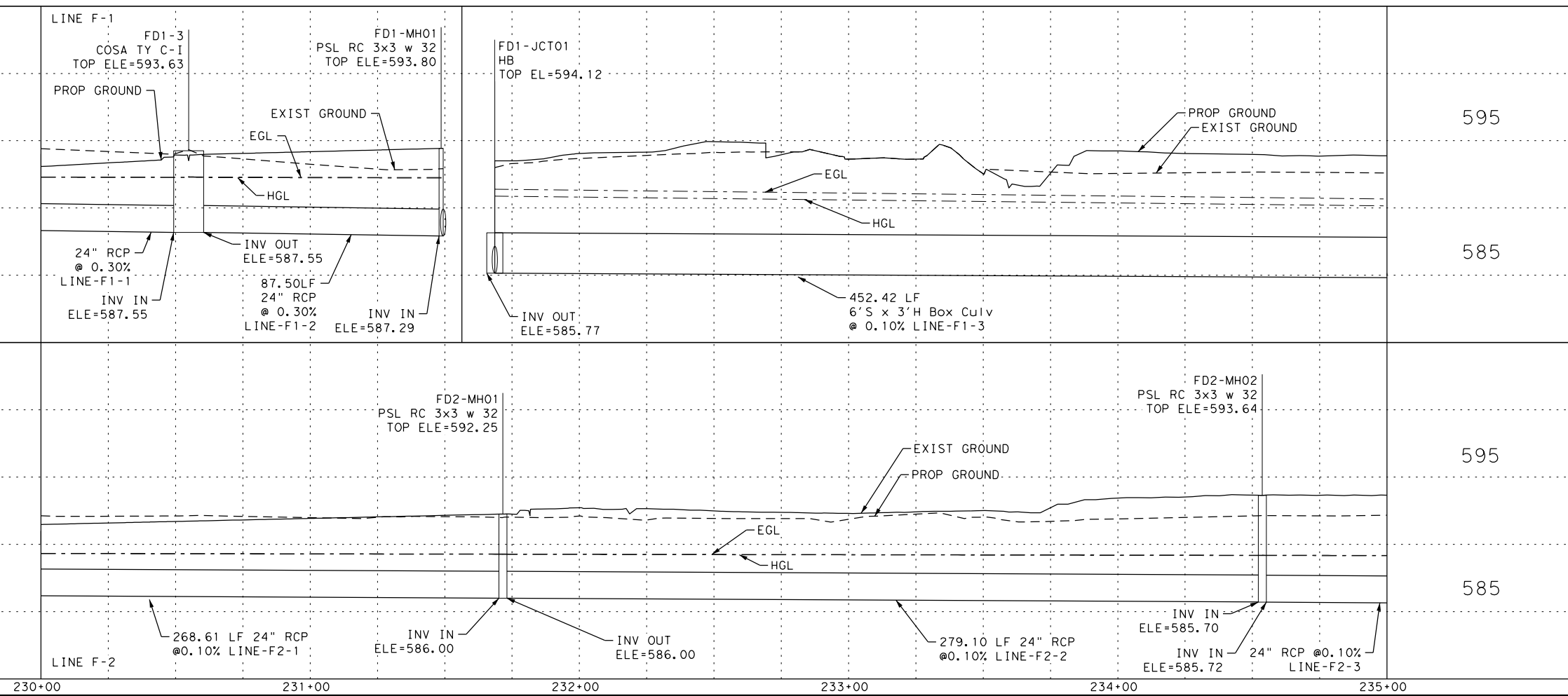


CORDOVA RD

DRAINAGE LAYOUT

STA 230+00 TO STA 240+00

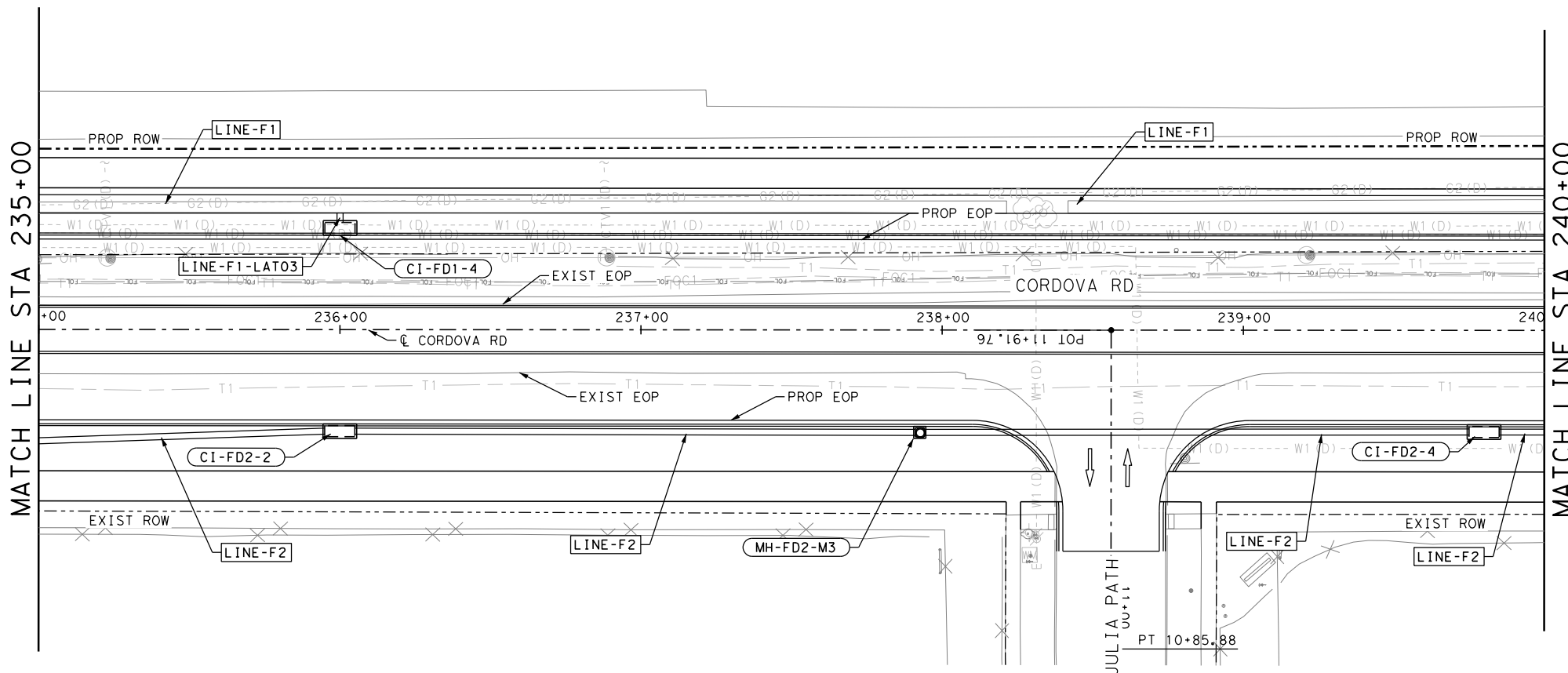
SHEET 18 OF 29



DON:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				321

Plotted on: 11/17/2023

Design File name: P:\12775\00\Design\Civil\Drainage\1277500_sd_19.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- ED1-1 STRUCTURE DESIGNATION

NOTES

1. ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS. CONTRACTOR SHALL VERIFY DEPTHS AND LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
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DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JACOB J. POWELL

P.E. SERIAL NO: 108825

DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 10'

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.

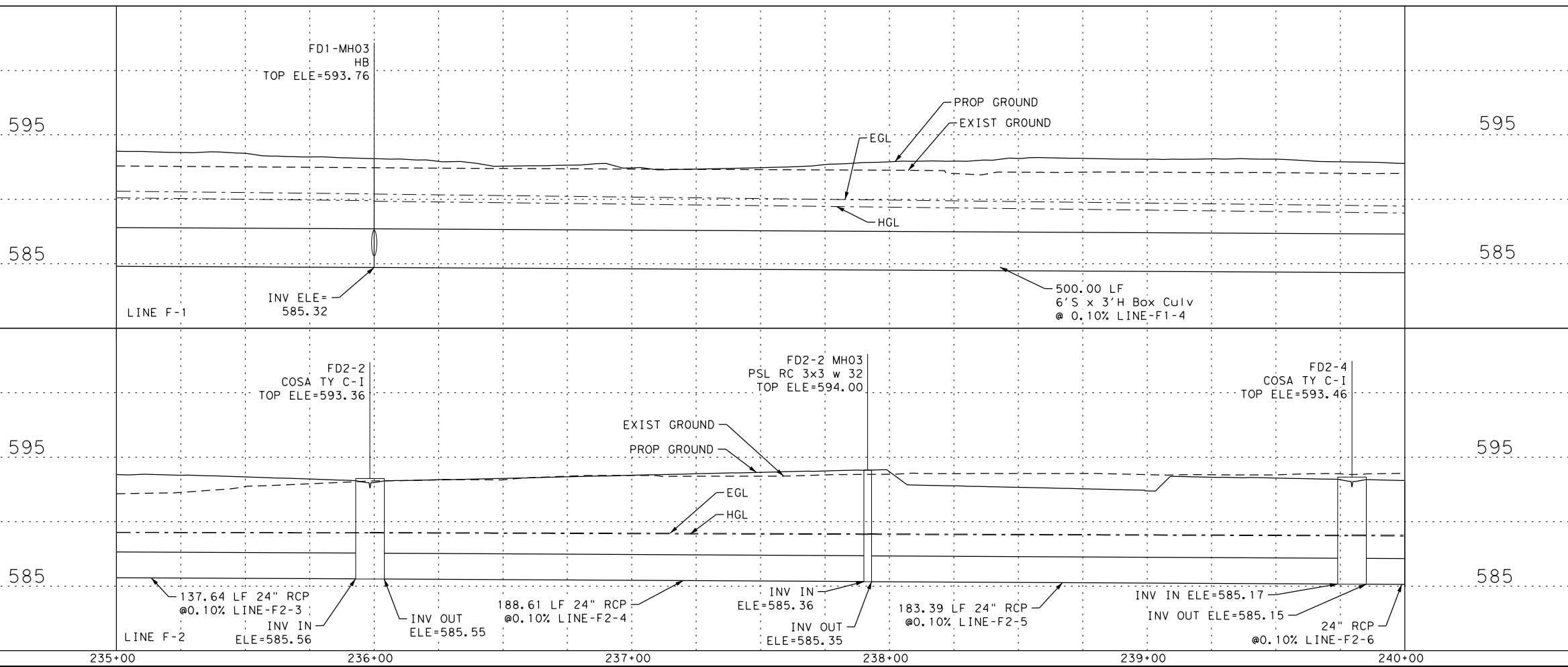


CORDOVA RD

DRAINAGE LAYOUT

STA 235+00 TO STA 240+00

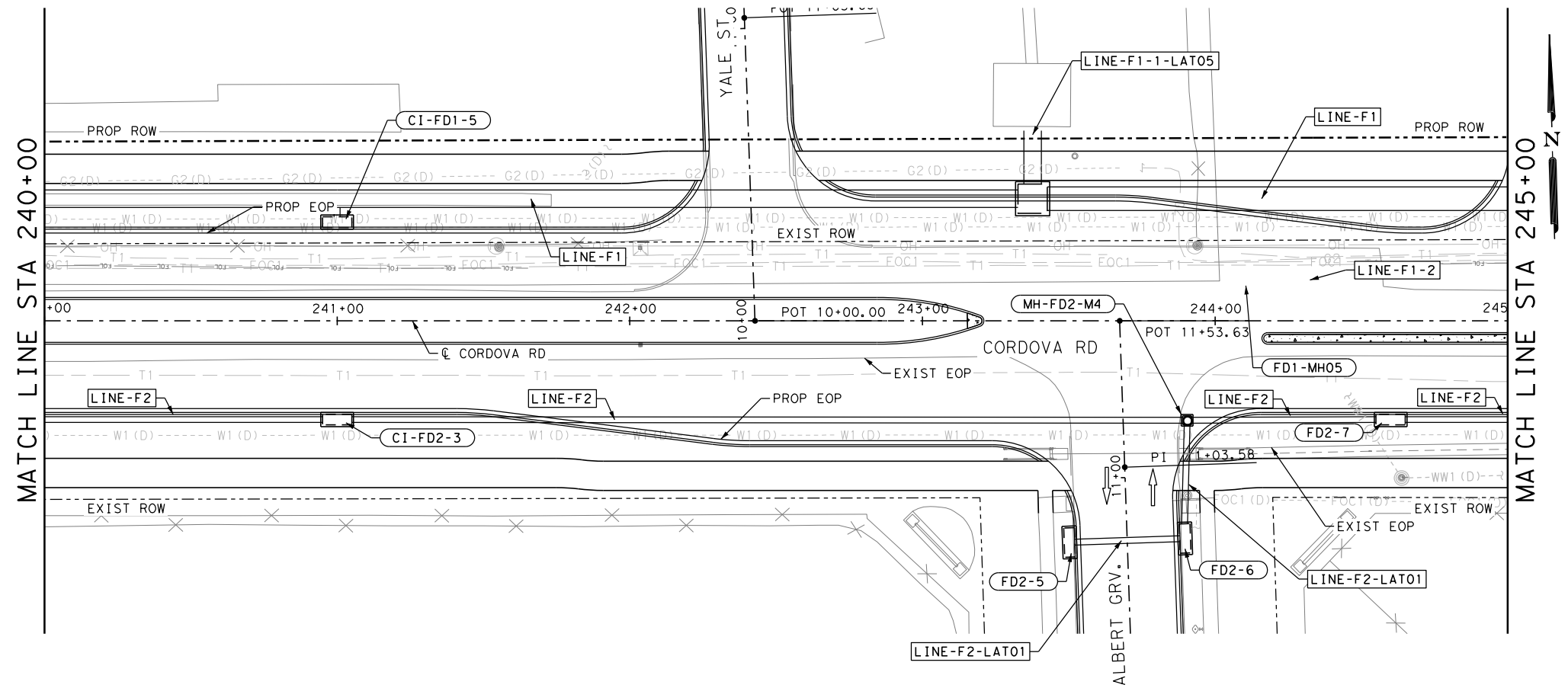
SHEET 19 OF 29



DIST:	SAT	COUNTY:	GUADALUPE	CONT. NO.:	0915	SECT. NO.:	46	JOB NO.:	052	SHEET NO.:	322	
CHK DGN:	6	STATE:	TEXAS	FEDERAL AID PROJECT NO.:							HIGHWAY NO.:	CORDOVA

Plotted on: 11/17/2023

Design File name: P:\1275\00\Design\Civil\Drainage\127500_sd_20.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- ED1-1 STRUCTURE DESIGNATION

NOTES

1. ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS. CONTRACTOR SHALL VERIFY DEPTHS AND LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
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DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JACOB J. POWELL

P.E. SERIAL NO: 108825

DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 10'

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.

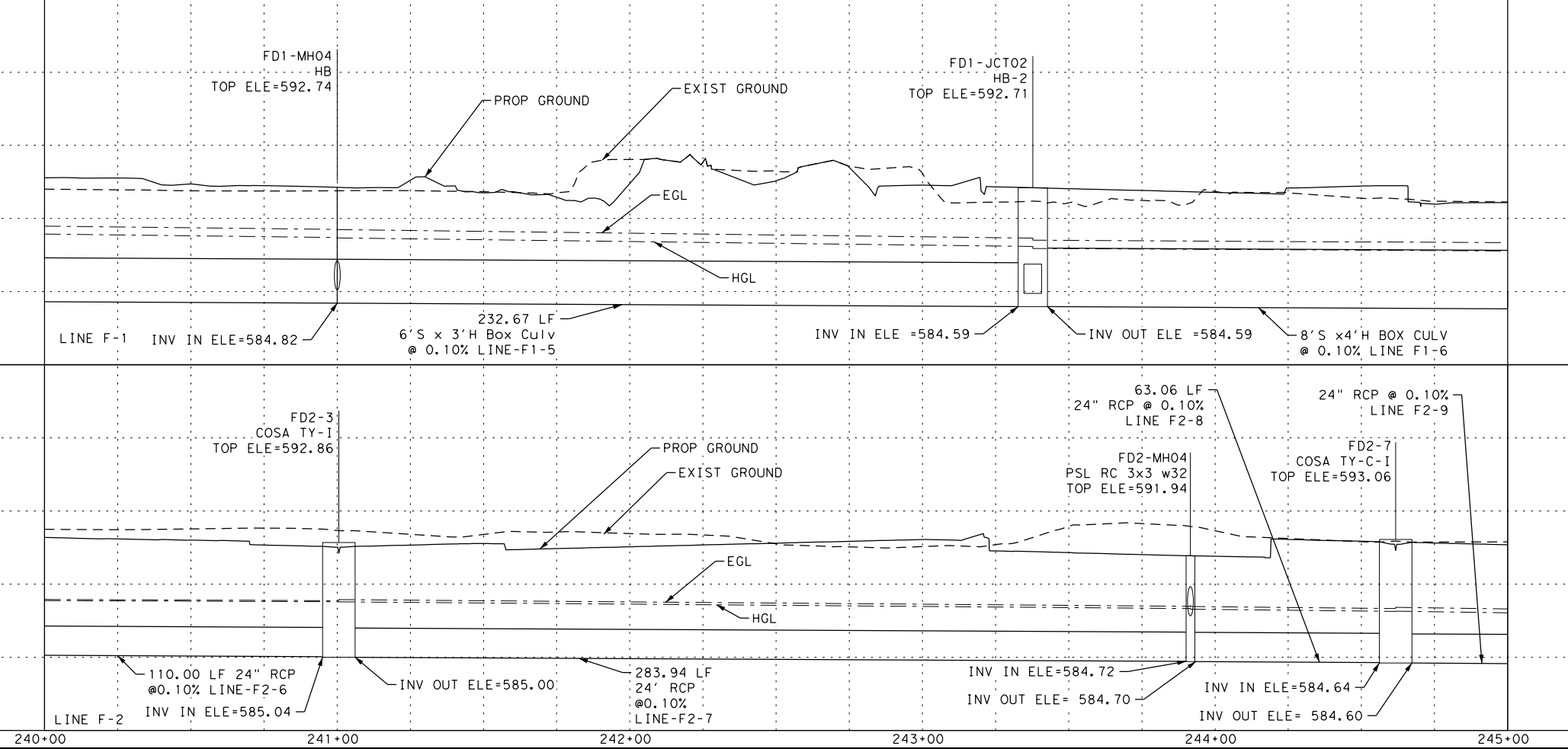


CORDOVA RD

DRAINAGE LAYOUT

STA 240+00 TO STA 245+00

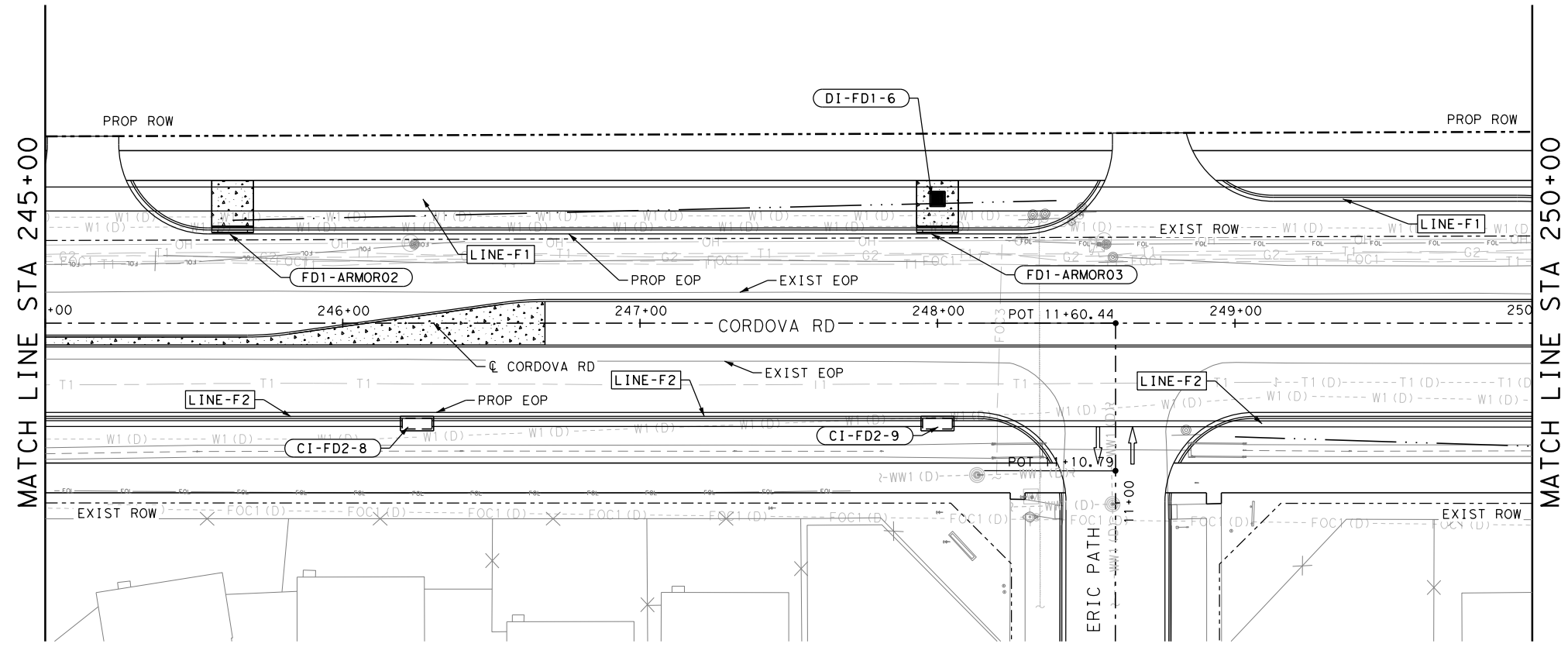
SHEET 20 OF 29



DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
SAT	GUADALUPE	0915	46	052	323

Plotted on: 11/17/2023

Design File name: P:\127175\00\Design\Civil\Drainage\1277500_sd_21.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- EDI-1 STRUCTURE DESIGNATION

NOTES

1. ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS. CONTRACTOR SHALL VERIFY DEPTHS AND LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
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DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 10'

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.

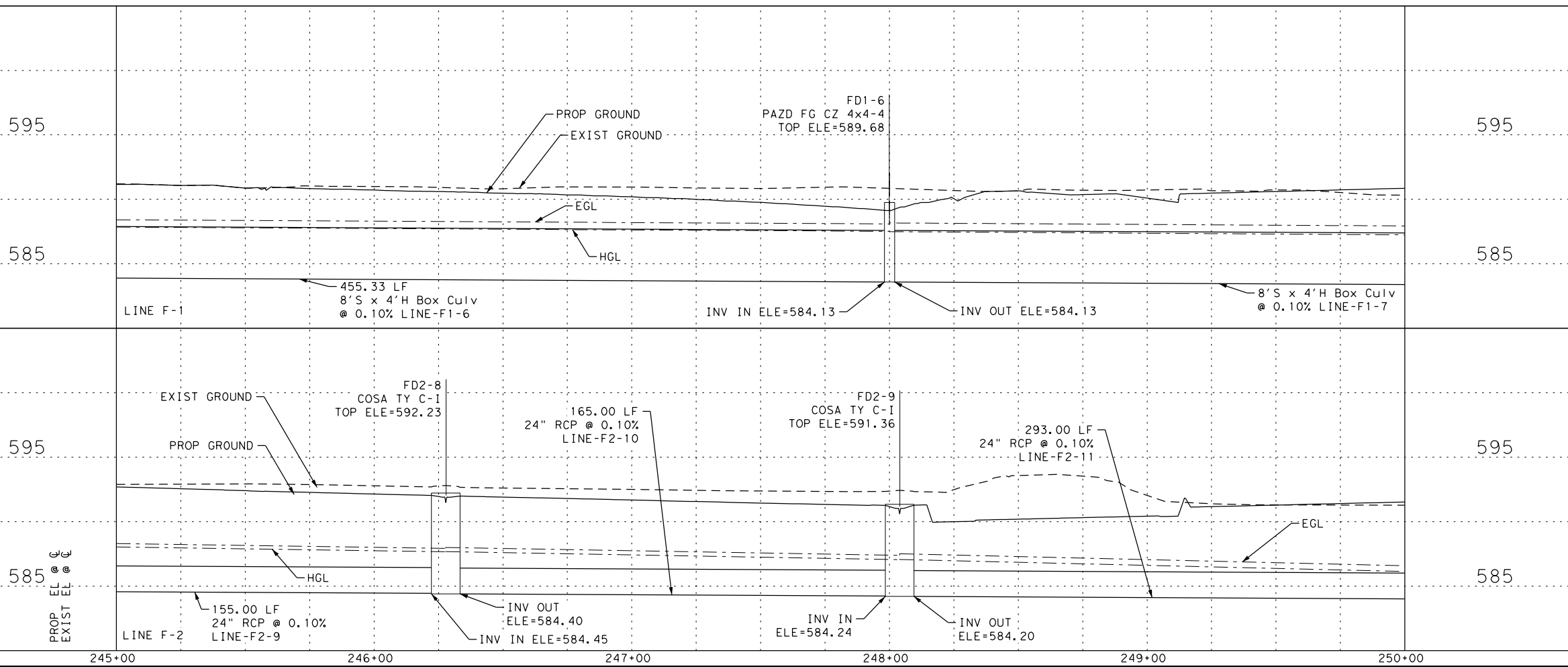


CORDOVA RD

DRAINAGE LAYOUT

STA 245+00 TO STA 250+00

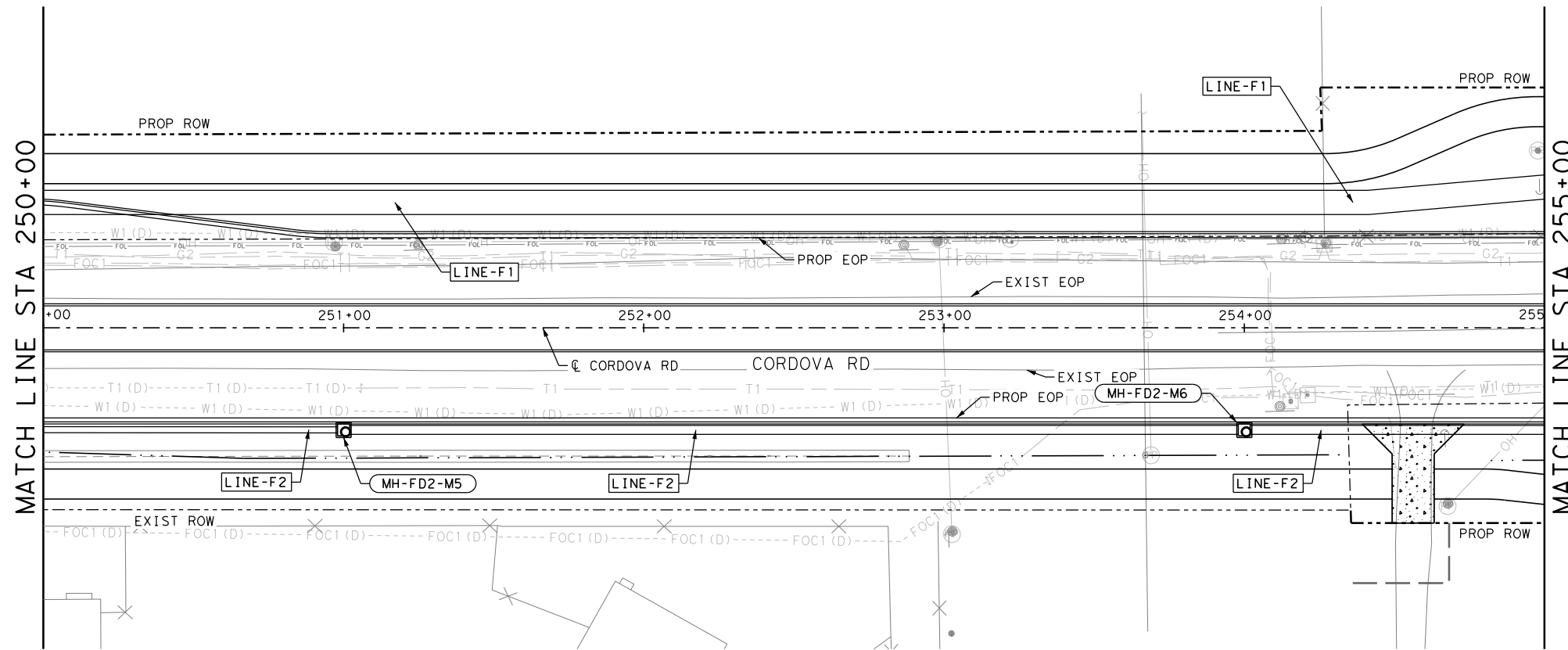
SHEET 21 OF 29



DWG:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DWG:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				324

Plotted on: 11/17/2023

Design File name: P:\127175\00\Design\Civil\Drainage\1277500_sd_22.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- ED1-1 STRUCTURE DESIGNATION

NOTES

1. ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS. CONTRACTOR SHALL VERIFY DEPTHS AND LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 5'

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.

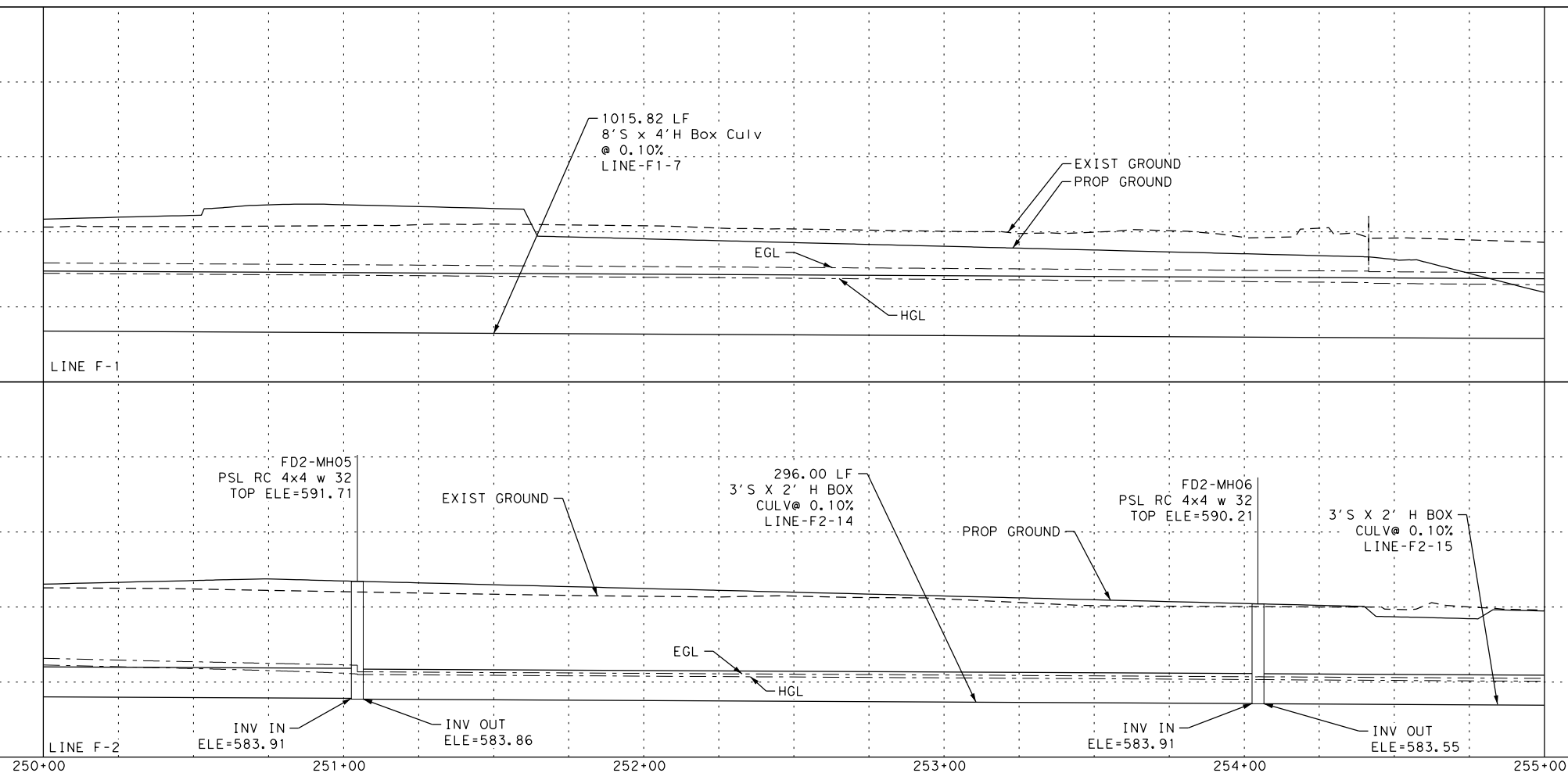


CORDOVA RD

DRAINAGE LAYOUT

STA 250+00 TO STA 255+00

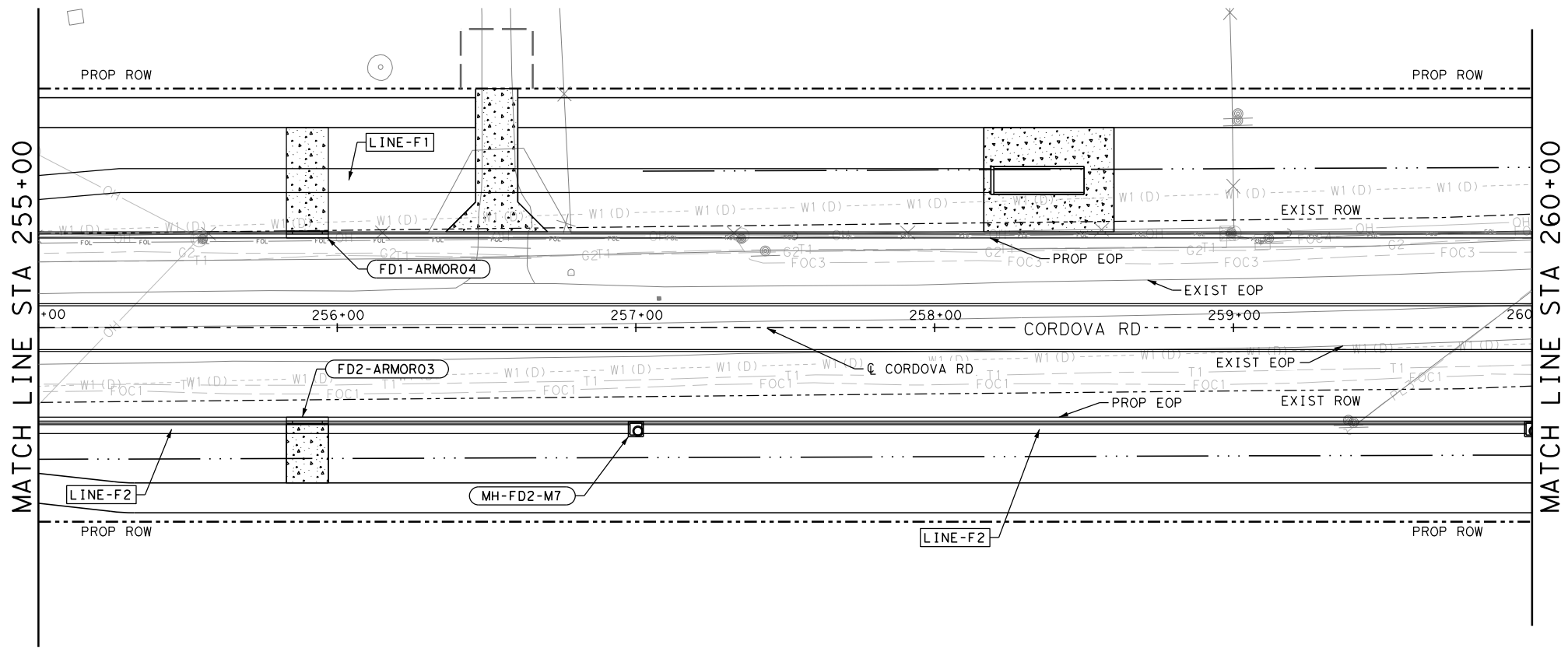
SHEET 22 OF 29



CHK DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
	6	TEXAS		CORDOVA		
CHK DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
	SAT	GUADALUPE	0915	46	052	325

Plotted on: 11/17/2023

Design File name: P:\12775\00\Design\Civil\Drainage\1277500_sd_23.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- ED1-1 STRUCTURE DESIGNATION

NOTES

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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 10'

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.

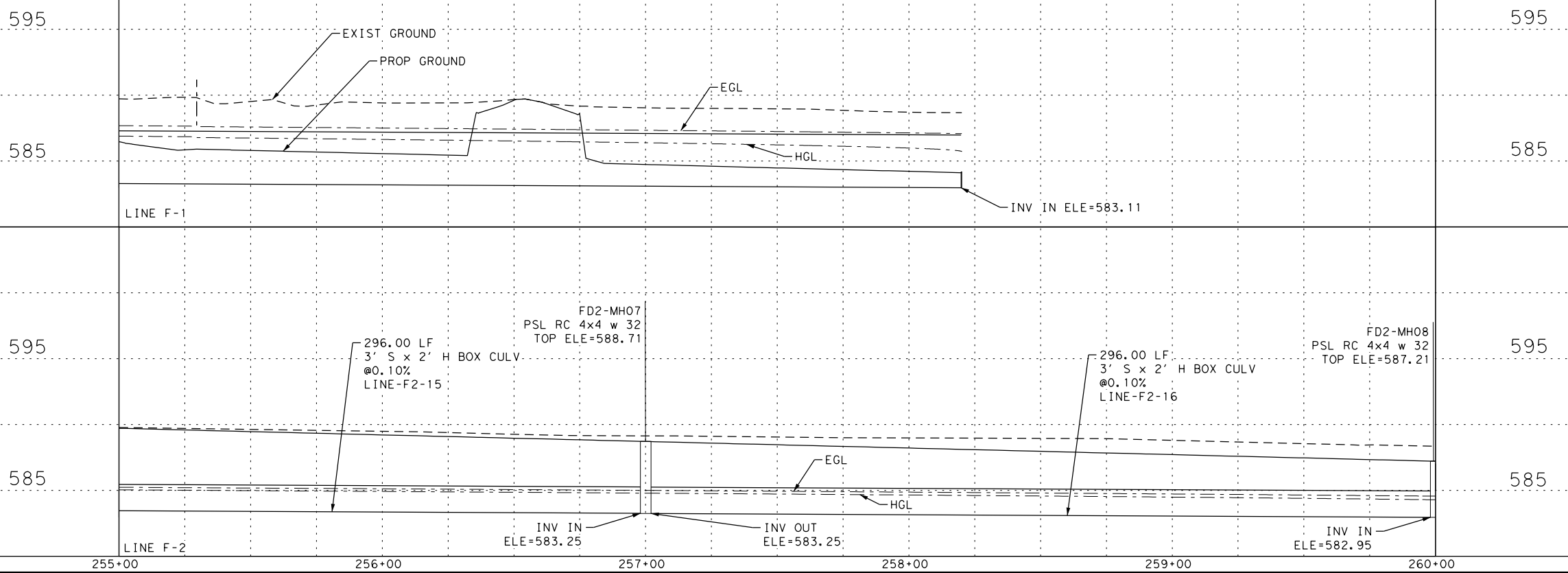


CORDOVA RD

DRAINAGE LAYOUT

STA 255+00 TO STA 260+00

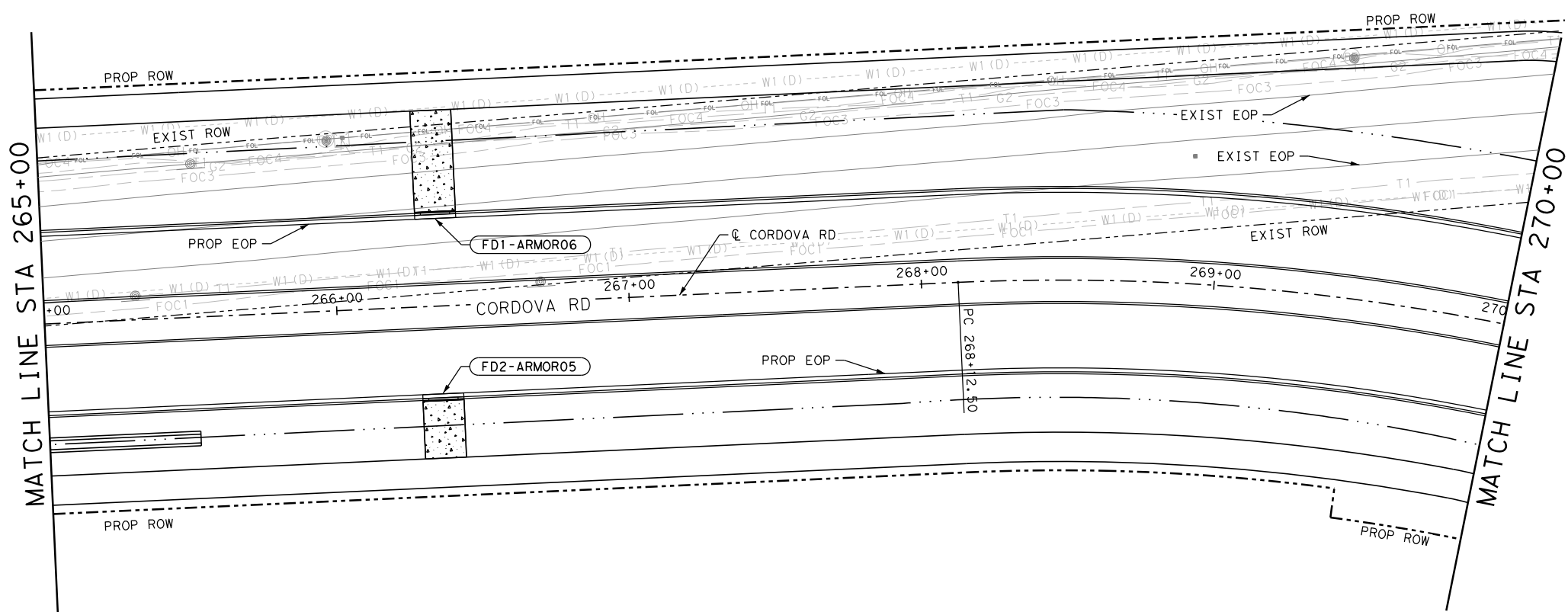
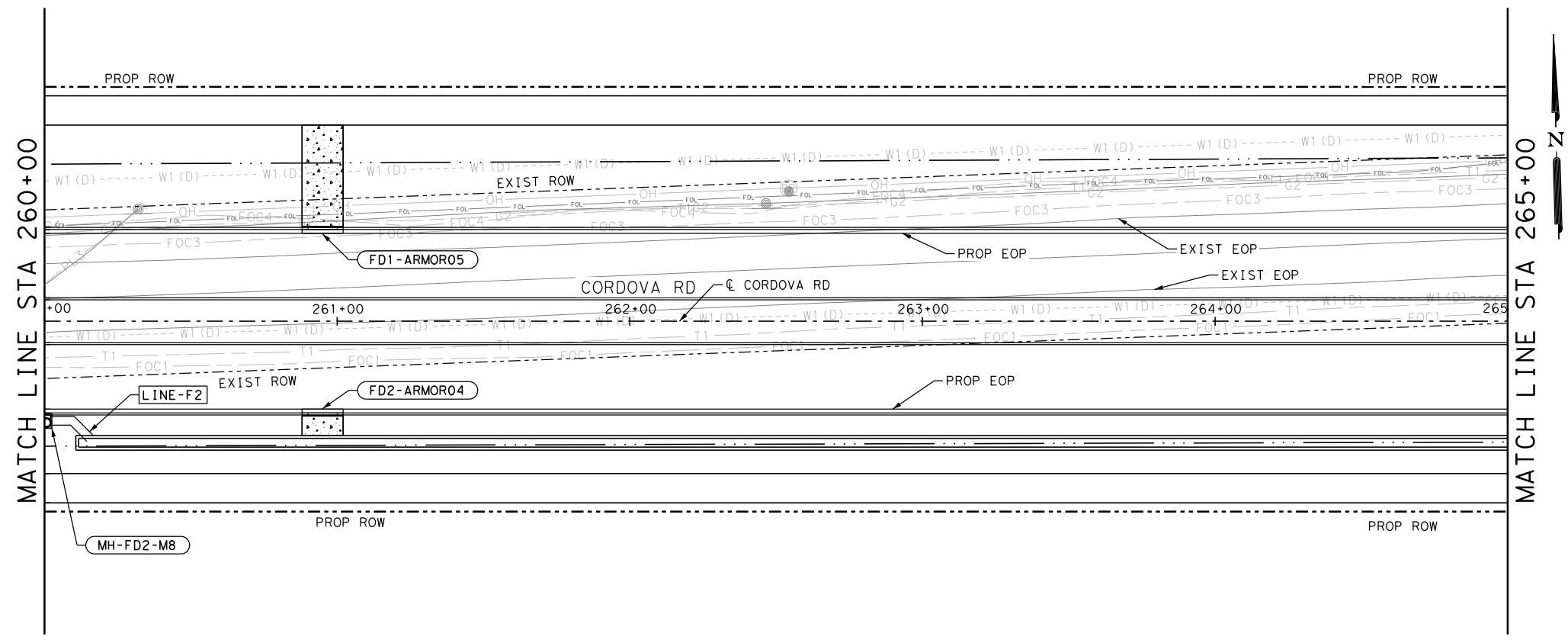
SHEET 23 OF 29



CHK	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
DGN:	6	TEXAS		CORDOVA		
CHK	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
DWG:	SAT	GUADALUPE	0915	46	052	326

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_sd_24.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- ED1-1 STRUCTURE DESIGNATION

NOTES

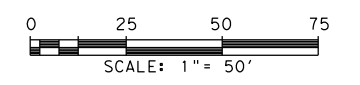
1. ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS. CONTRACTOR SHALL VERIFY DEPTHS AND LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
2. SEE PERTINENT STRUCTURE LAYOUT OR PROFILE FOR ADDITIONAL DETAILS OF EACH STRUCTURE.
3. ALL PIPES ARE NORMAL TO AND STRAIGHT FROM STRUCTURE TO STRUCTURE UNLESS OTHERWISE SHOWN.
4. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK, I.E. FADED.
5. MANHOLE & GRATE INLET STATION, OFFSET, AND ELEVATIONS REFERENCES ARE TO THE CENTER AND TOP OF STRUCTURE.
6. CURB INLET STATION, OFFSET, AND ELEVATION REFERENCES ARE TO THE TOP FACE OF CURB OF INLET STRUCTURE.

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



CORDOVA RD

DRAINAGE LAYOUT

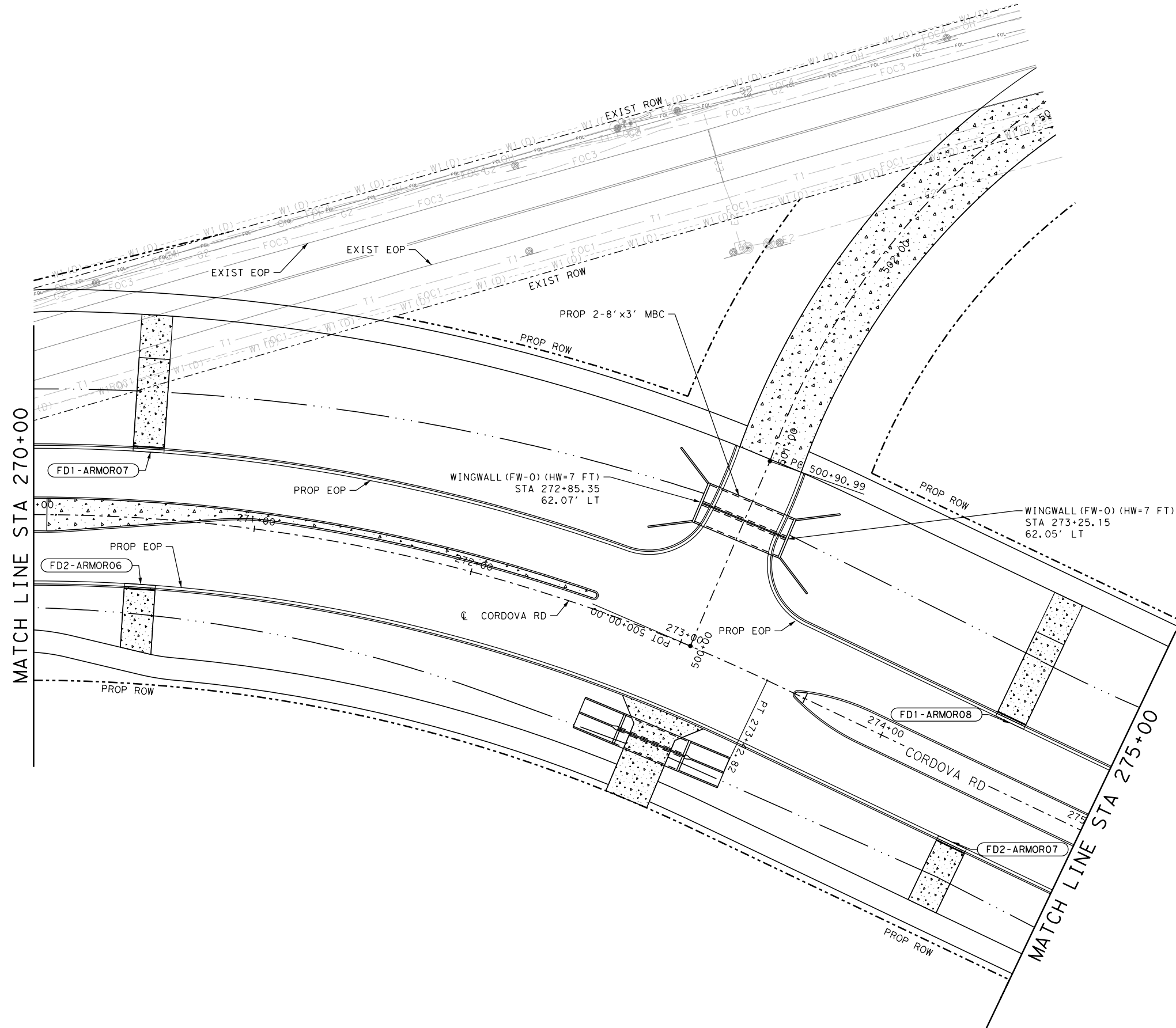
STA 260+00 TO STA 270+00

SHEET 24 OF 29

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	327

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_sd_25.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- ED1-1 STRUCTURE DESIGNATION

NOTES

1. ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS. CONTRACTOR SHALL VERIFY DEPTHS AND LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
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DESIGN

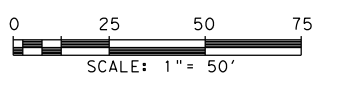
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



CORDOVA RD

DRAINAGE LAYOUT

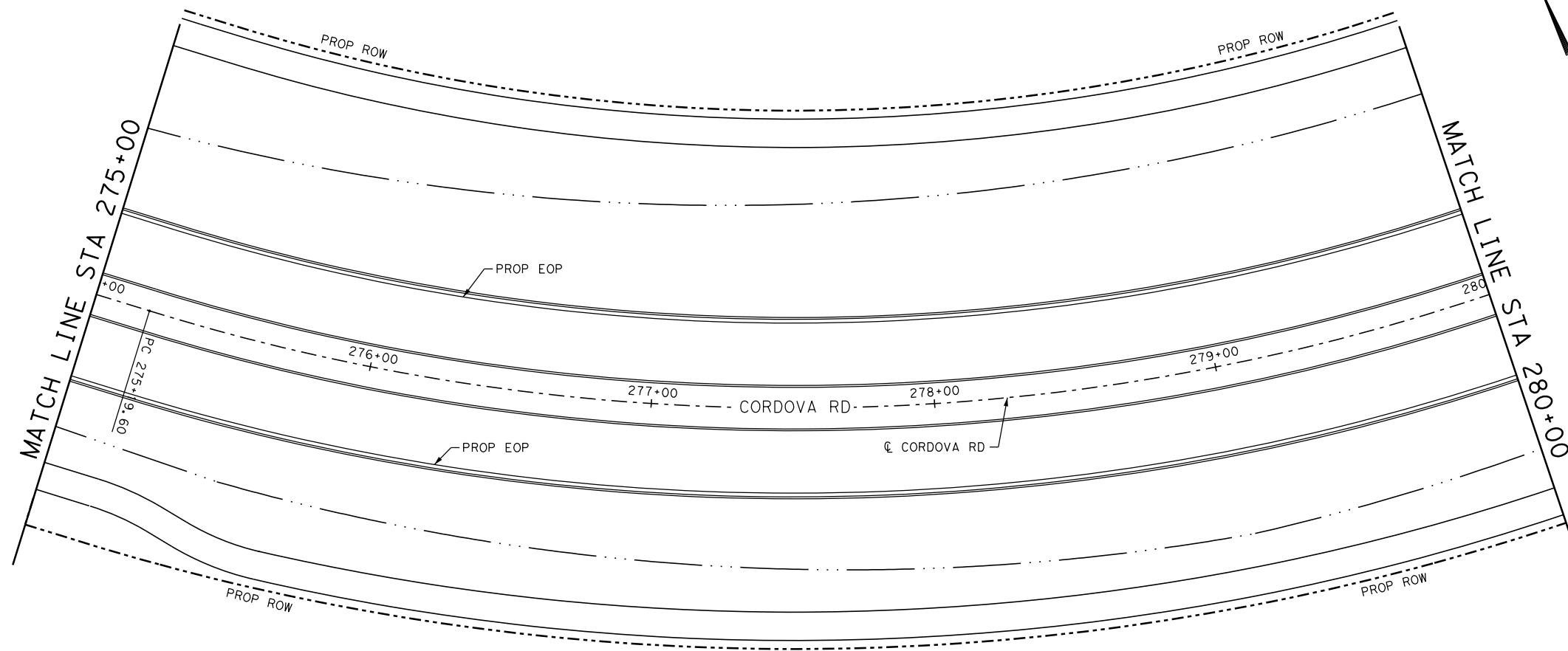
STA 270+00 TO STA 275+00

SHEET 25 OF 29

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	328

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_sd_26.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- ED1-1 STRUCTURE DESIGNATION

NOTES

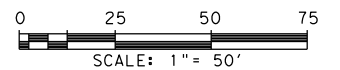
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



CORDOVA RD

DRAINAGE LAYOUT

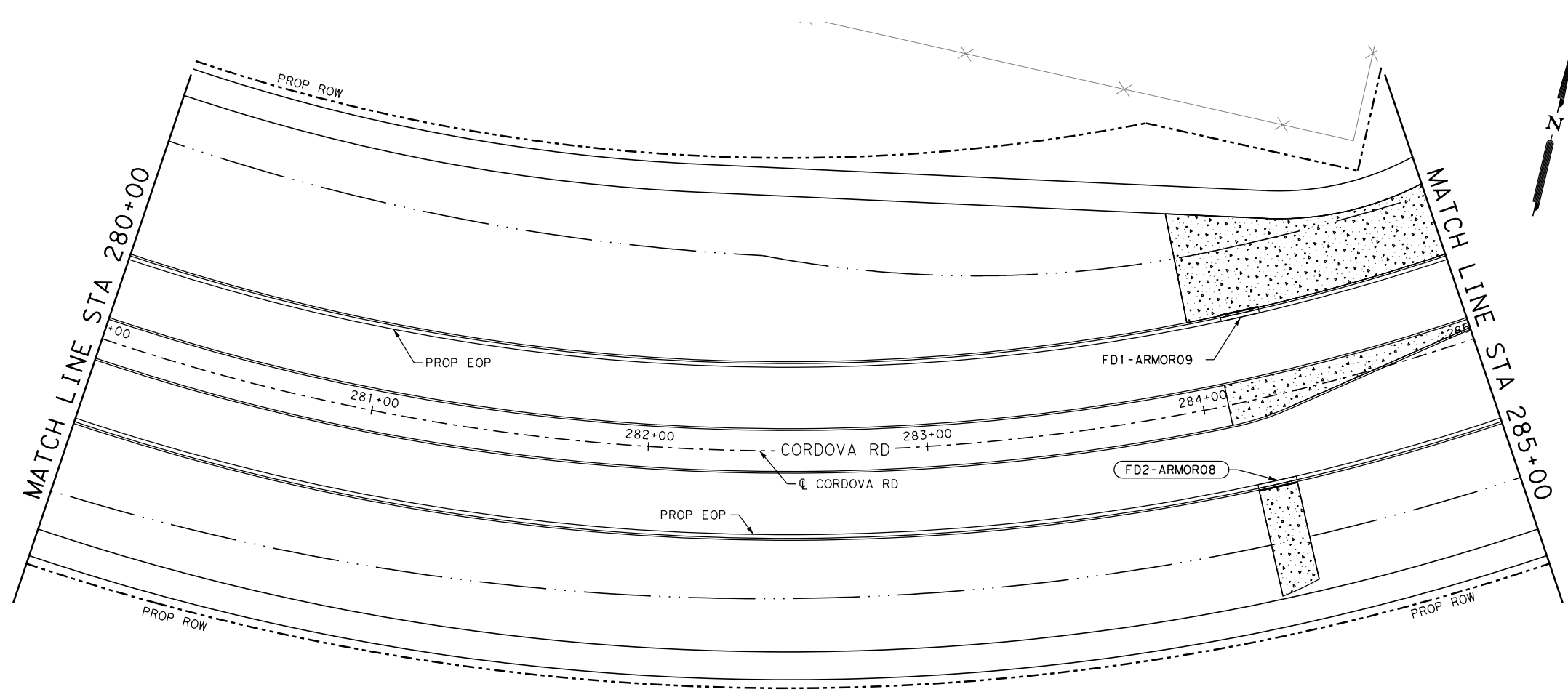
STA 275+00 TO STA 280+00

SHEET 26 OF 29

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	329

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_sd_27.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- ED1-1 STRUCTURE DESIGNATION

NOTES

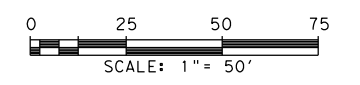
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



CORDOVA RD

DRAINAGE LAYOUT

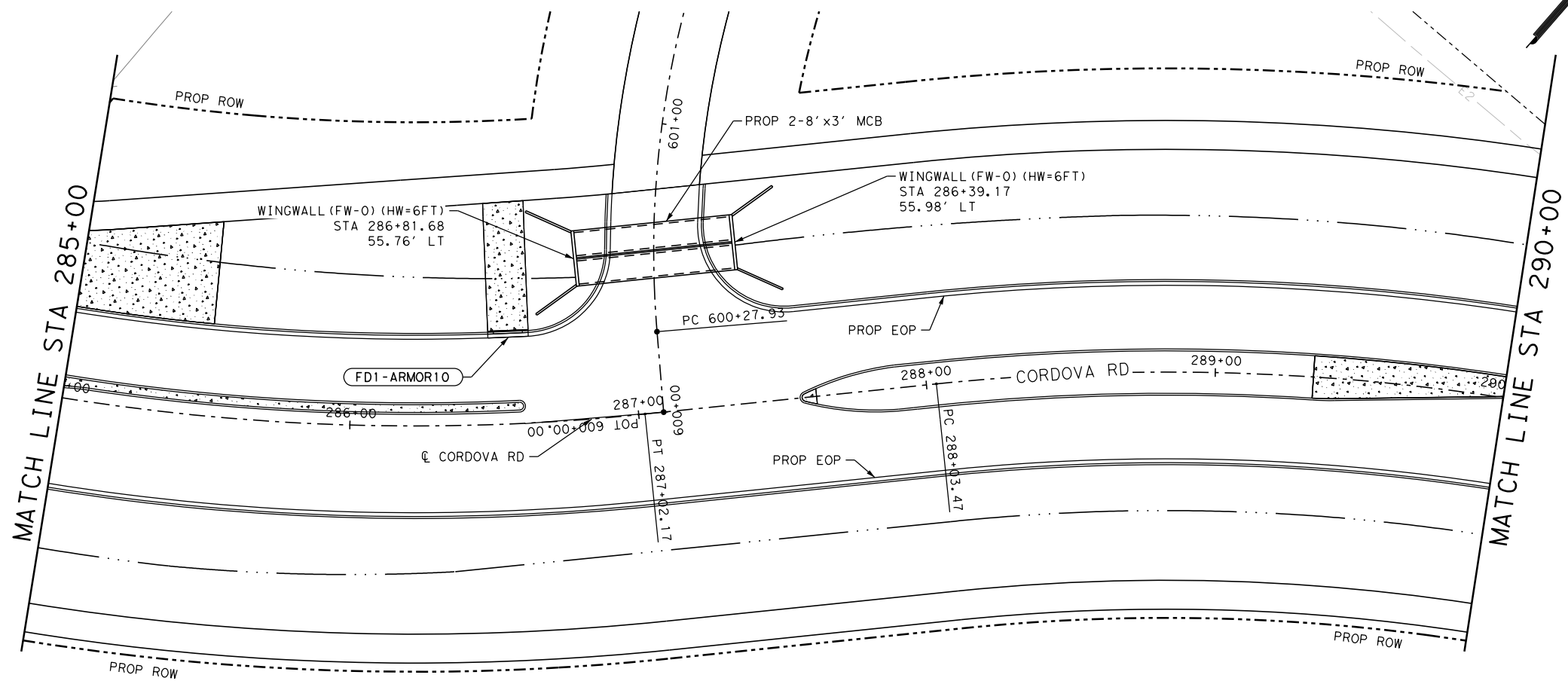
STA 280+00 TO STA 285+00

SHEET 27 OF 29

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	330

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_sd_28.dgn



LEGEND

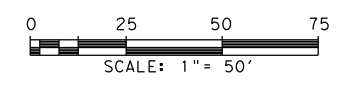
- LINE-E1 STORM DRAIN DESIGNATION
- ED1-1 STRUCTURE DESIGNATION

NOTES

1. ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS. CONTRACTOR SHALL VERIFY DEPTHS AND LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
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DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
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Pape-Dawson Engineers
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS
 It's real.

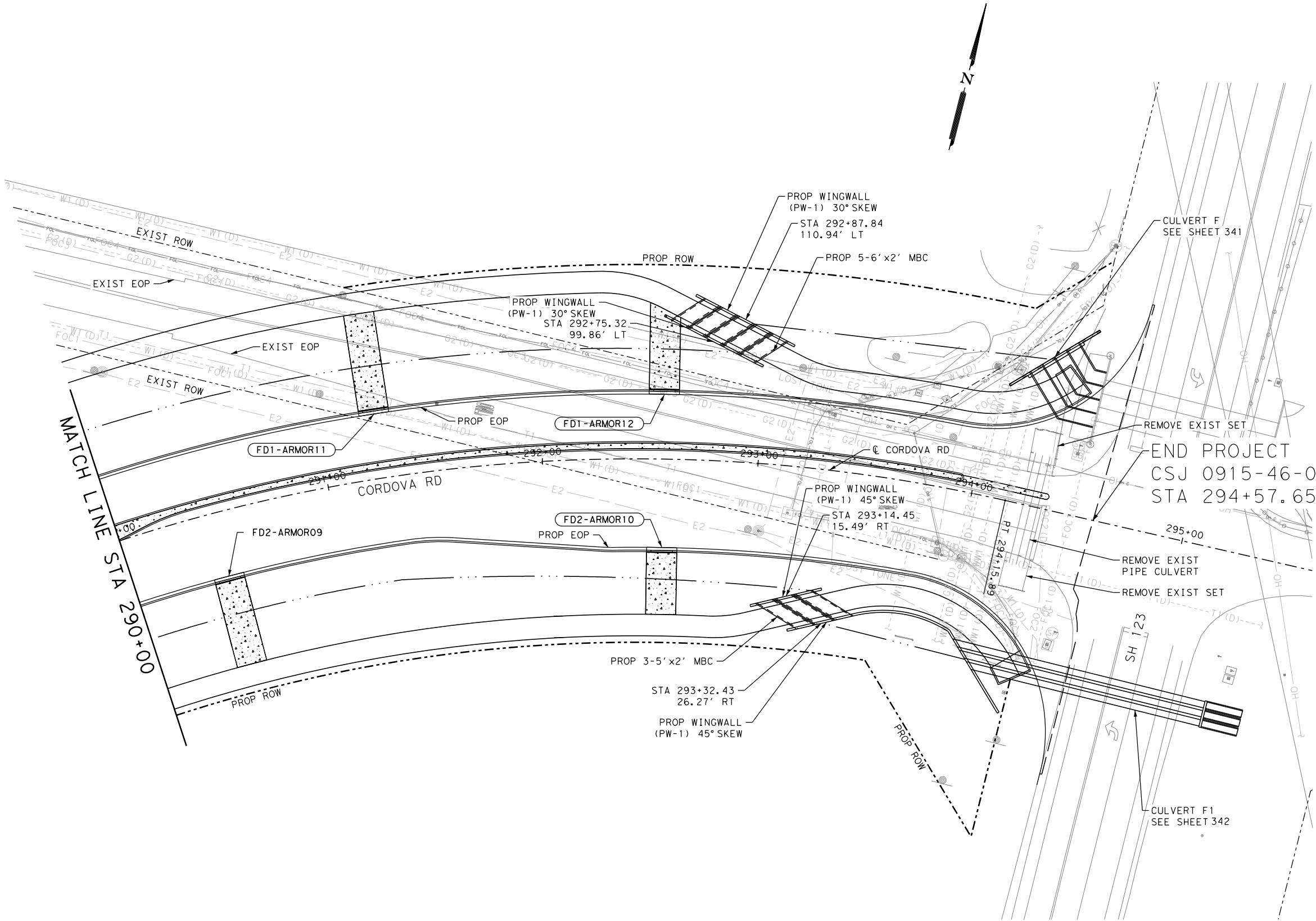
Texas Department of Transportation
 © 2023

CORDOVA RD
DRAINAGE LAYOUT
 STA 285+00 TO STA 290+00
 SHEET 28 OF 29

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
			JOB NO.:	SHEET NO.:
			052	331

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_sd_29.dgn



LEGEND

- LINE-E1 STORM DRAIN DESIGNATION
- ED1-1 STRUCTURE DESIGNATION

NOTES

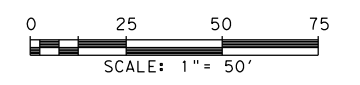
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS
 It's real.

THE STATE OF TEXAS
 GUADALUPE COUNTY

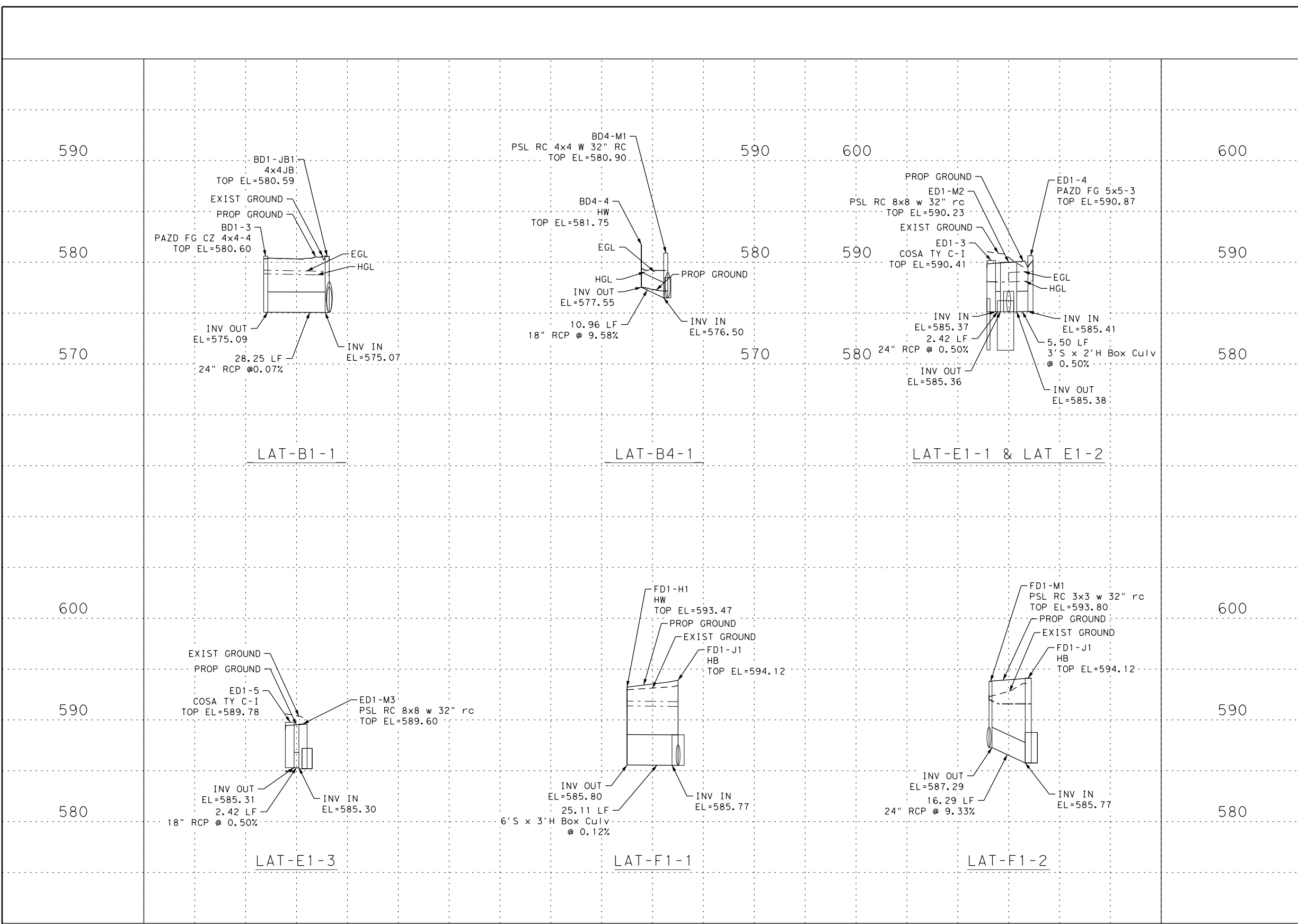
Texas Department of Transportation
 © 2023

CORDOVA RD
DRAINAGE LAYOUT
 STA 290+00 TO END OF PROJECT
 SHEET 29 OF 29

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	332

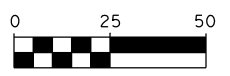
Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_sd_lat_01.dgn



DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 50' PROFILE 1" = 10'

REV. NO.	DATE	DESCRIPTION	BY



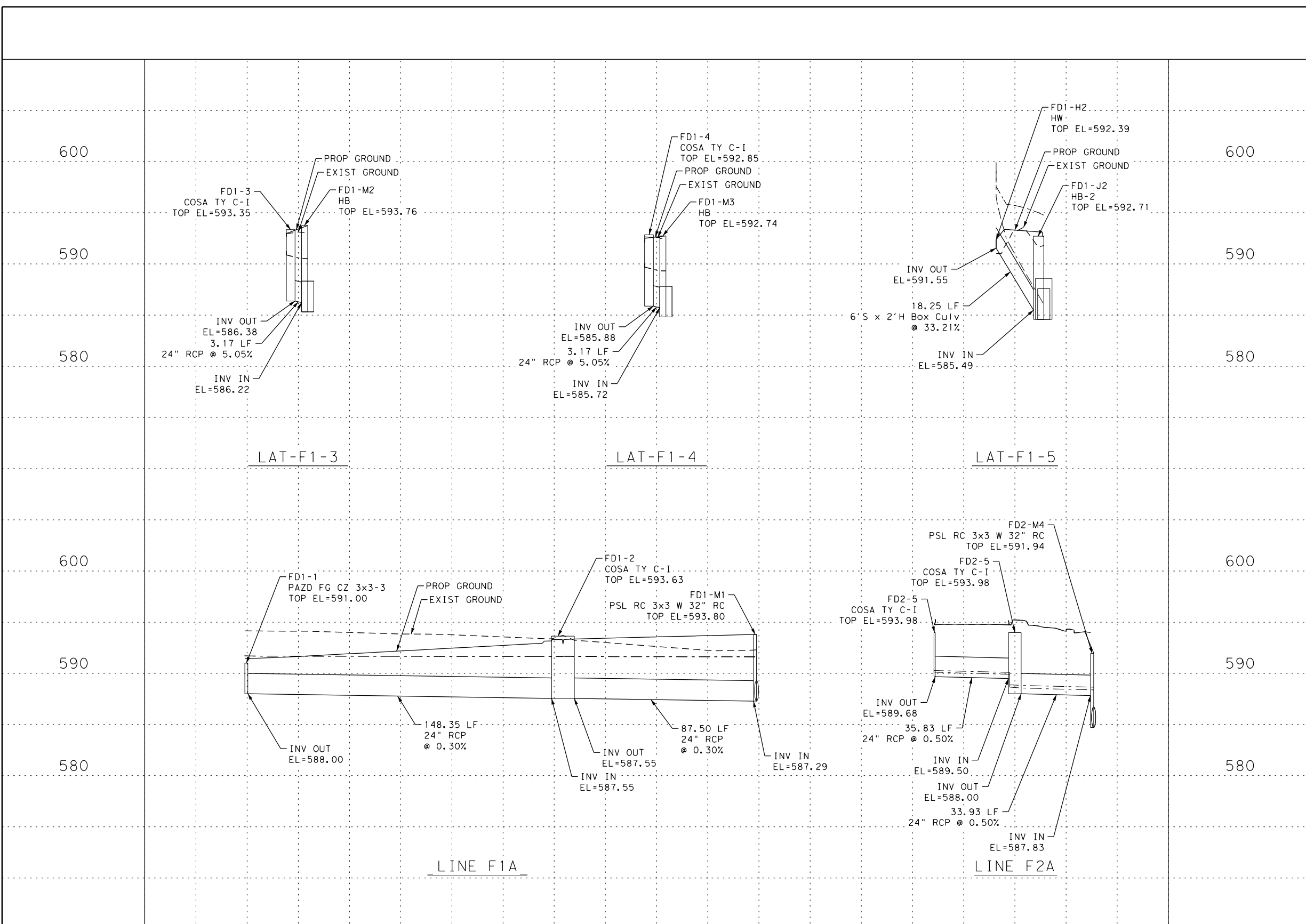
CORDOVA RD
**STORM DRAIN
 LATERALS**

SHEET 1 OF 2

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	333

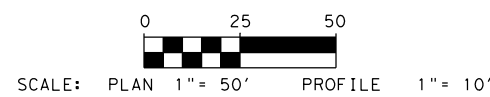
Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_sd_lat_02.dgn



DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

Pape-Dawson Engineers
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS
 It's real.

Texas Department of Transportation
 © 2023

CORDOVA RD
STORM DRAIN LATERALS


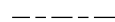
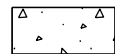

SHEET 2 OF 2

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	334

Plotted on: 11/17/2023

Design File name: P:\12775\00\Design\Civil\Drainage\1277500_str_01.dgn

LEGEND

-  FLOW ARROW
-  FLOW LINE
-  CONC RIPRAP
-  EARTH GRADING

NOTES

1. THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES INDICATED IN THE PLANS ARE APPROXIMATED FROM RECORDS AND SUE INFORMATION. CONTRACTOR SHALL VERIFY EXACT LOCATION PRIOR TO CONSTRUCTION.
2. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK, i.e. FADED.
3. ALL CULVERT BOXES SHALL BE PRECAST UNLESS OTHERWISE INDICATED IN PLANS.

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 30' PROFILE 1" = 5'

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



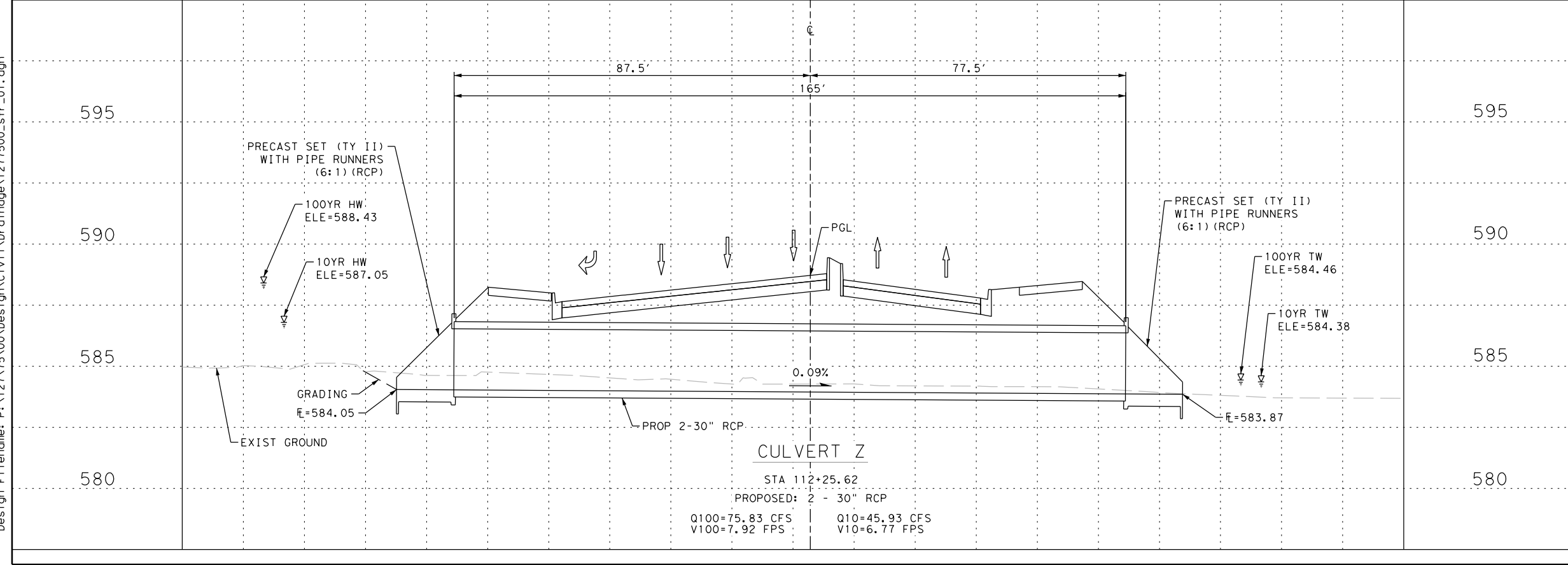
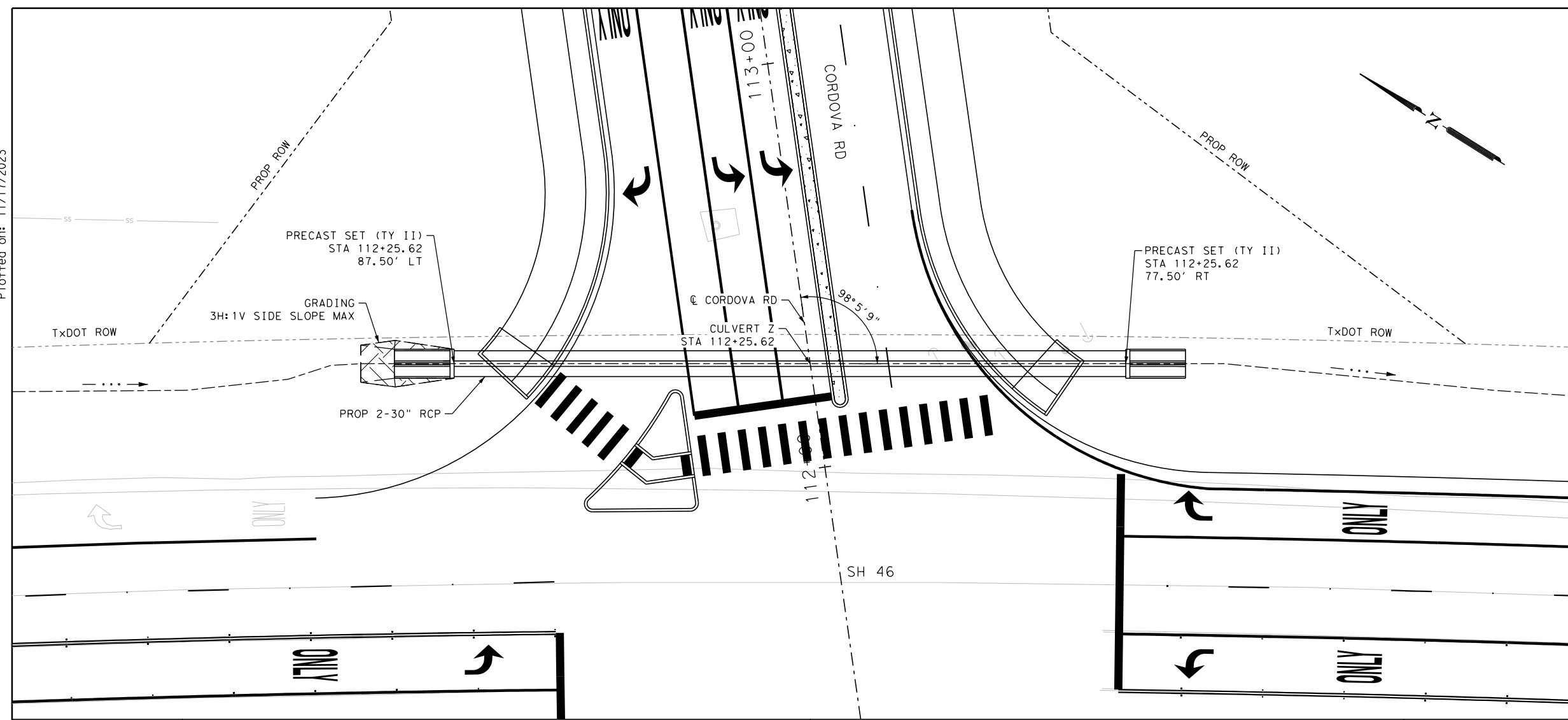
It's real.



CORDOVA RD

**CULVERT Z
 PLAN AND PROFILE**

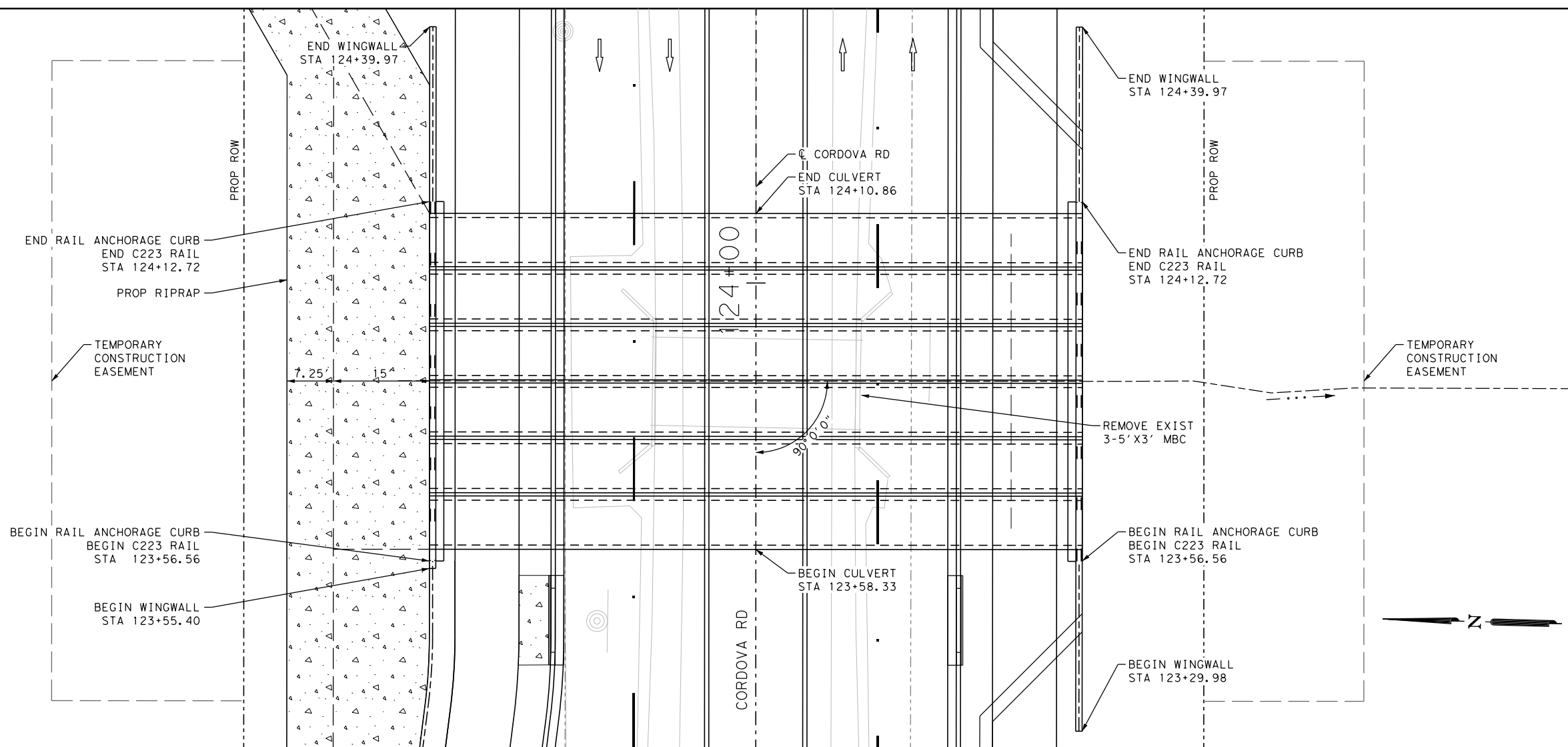
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:			HIGHWAY NO.:
CHK	6	TEXAS				CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK	SAT	GUADALUPE	0915	46	052	335



CULVERT Z
 STA 112+25.62
 PROPOSED: 2 - 30" RCP
 Q100=75.83 CFS Q10=45.93 CFS
 V100=7.92 FPS V10=6.77 FPS

Plotted on: 11/17/2023

Design File name: P:\12775\00\Design\Civil\Drainage\1277500_str_02.dgn



LEGEND

- > FLOW ARROW
- FLOW LINE
- [Symbol] CONC RIPRAP
- [Symbol] EARTH GRADING

NOTES

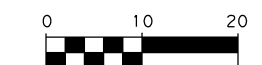
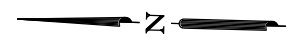
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 20' PROFILE 1" = 5'

REV. NO.	DATE	DESCRIPTION	BY



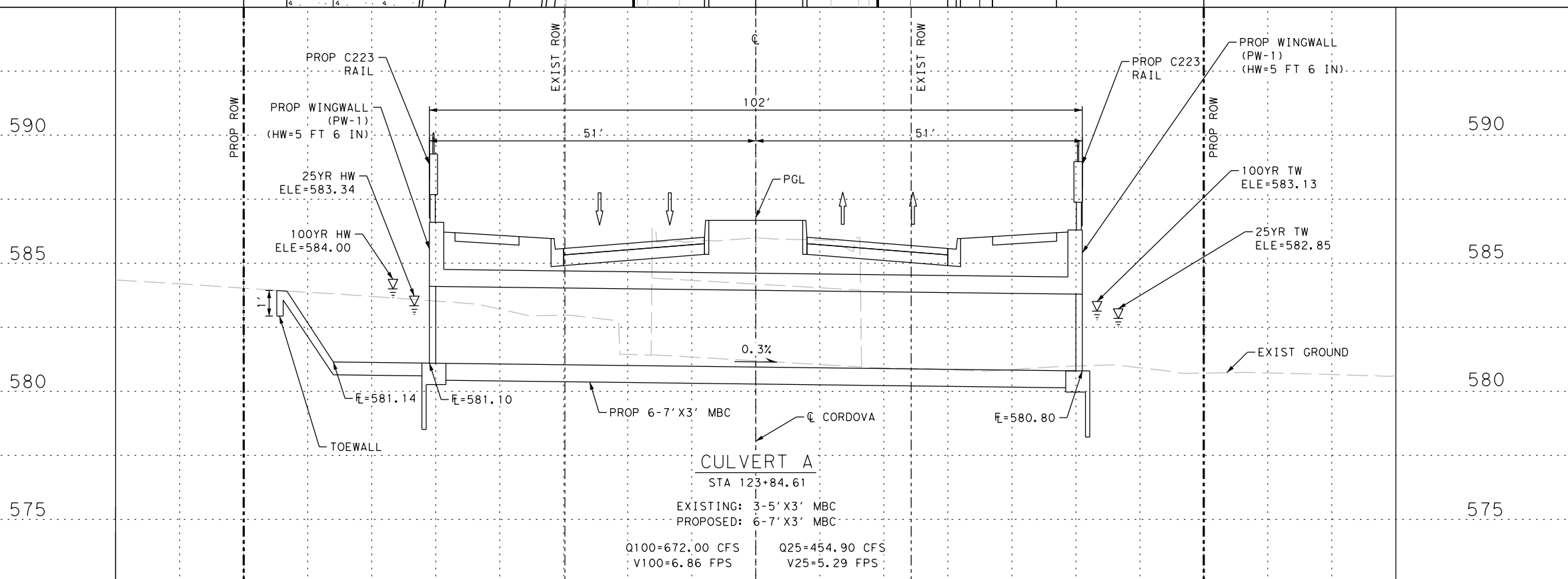
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



**CORDOVA RD
 CULVERT A
 BRIDGE CLASS STRUCTURE
 PLAN AND PROFILE**

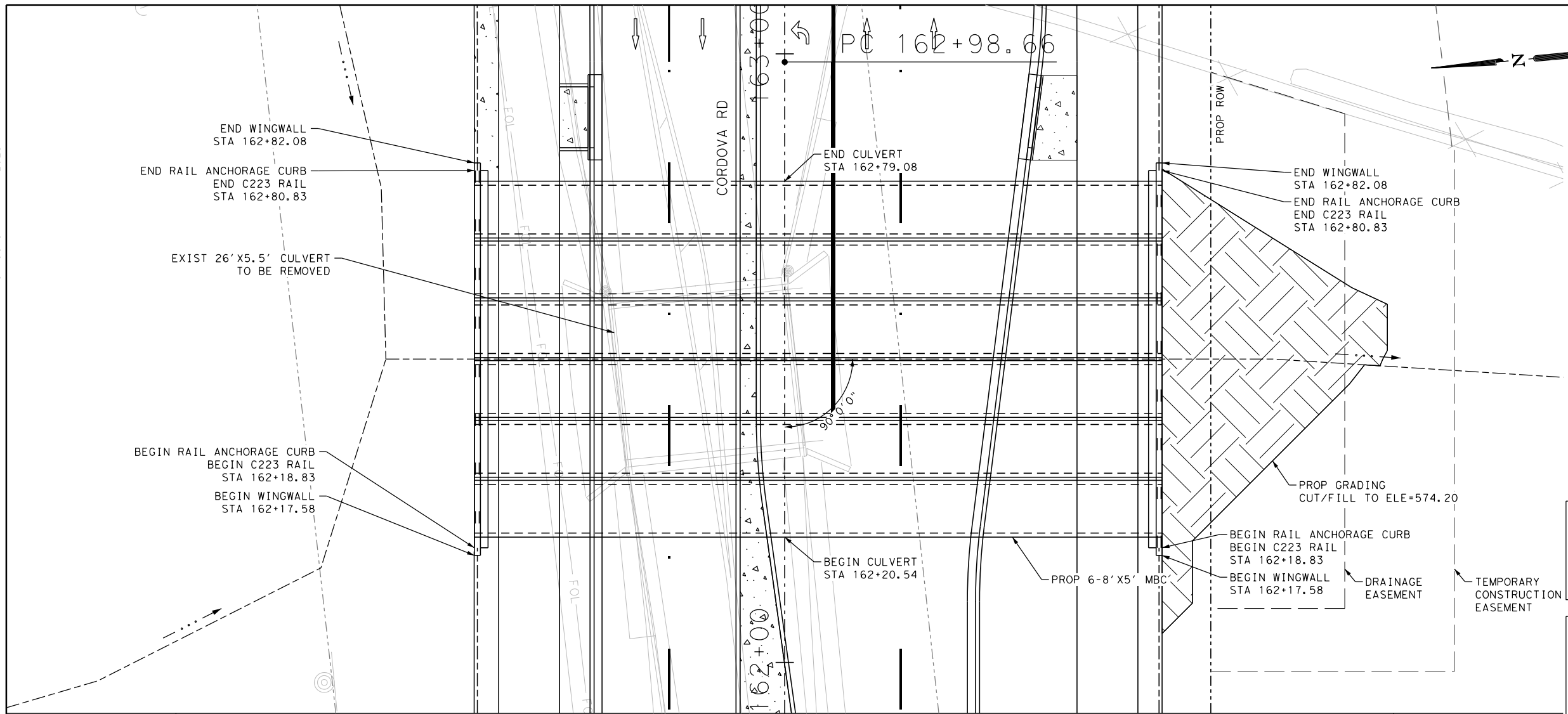


CULVERT A
 STA 123+84.61
 EXISTING: 3-5' X3' MBC
 PROPOSED: 6-7' X3' MBC
 Q100=672.00 CFS Q25=454.90 CFS
 V100=6.86 FPS V25=5.29 FPS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	336

Plotted on: 11/17/2023

Design File name: P:\12775\00\Design\Civil\Drainage\1277500_str_03.dgn



LEGEND

- FLOW ARROW
- FLOW LINE
- CONC RIPRAP
- EARTH GRADING

NOTES

1. THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES INDICATED IN THE PLANS ARE APPROXIMATED FROM RECORDS AND SUE INFORMATION. CONTRACTOR SHALL VERIFY EXACT LOCATION PRIOR TO CONSTRUCTION.
2. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK, i.e. FADED.
3. ALL CULVERT BOXES SHALL BE PRECAST UNLESS OTHERWISE INDICATED IN PLANS.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

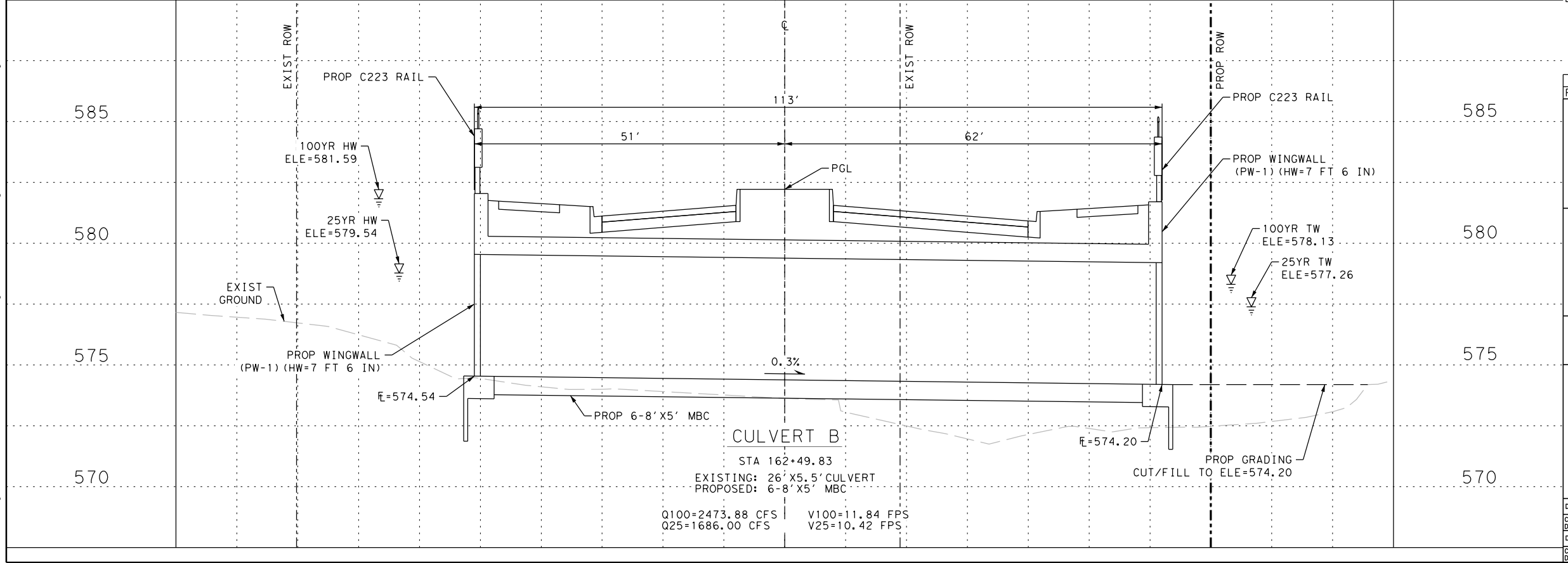
APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 20' PROFILE 1" = 5'



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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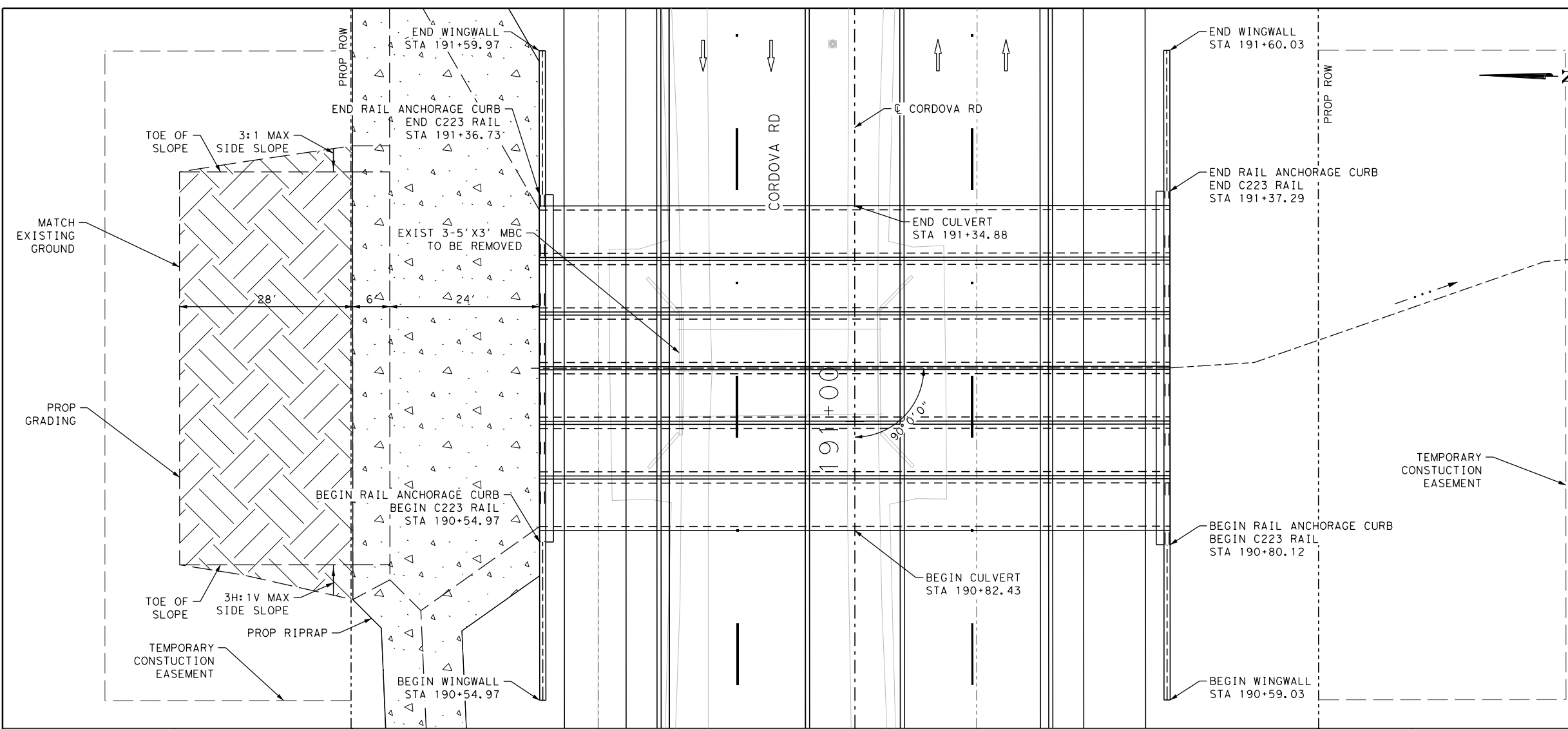
**CORDOVA RD
 CULVERT B
 BRIDGE CLASS STRUCTURE
 PLAN AND PROFILE**

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:			HIGHWAY NO.:
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	337

Q100=2473.88 CFS V100=11.84 FPS
 Q25=1686.00 CFS V25=10.42 FPS

Plotted on: 11/17/2023

Design File name: P:\1275\00\Design\Civil\Drainage\127500_str_04.dgn



LEGEND

- FLOW ARROW
- FLOW LINE
- CONC RIPRAP
- EARTH GRADING

NOTES

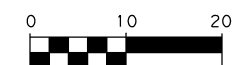
1. THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES INDICATED IN THE PLANS ARE APPROXIMATED FROM RECORDS AND SUE INFORMATION. CONTRACTOR SHALL VERIFY EXACT LOCATION PRIOR TO CONSTRUCTION.
2. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK, I.E. FADED.
3. ALL CULVERT BOXES SHALL BE PRECAST UNLESS OTHERWISE INDICATED IN PLANS.

DESIGN

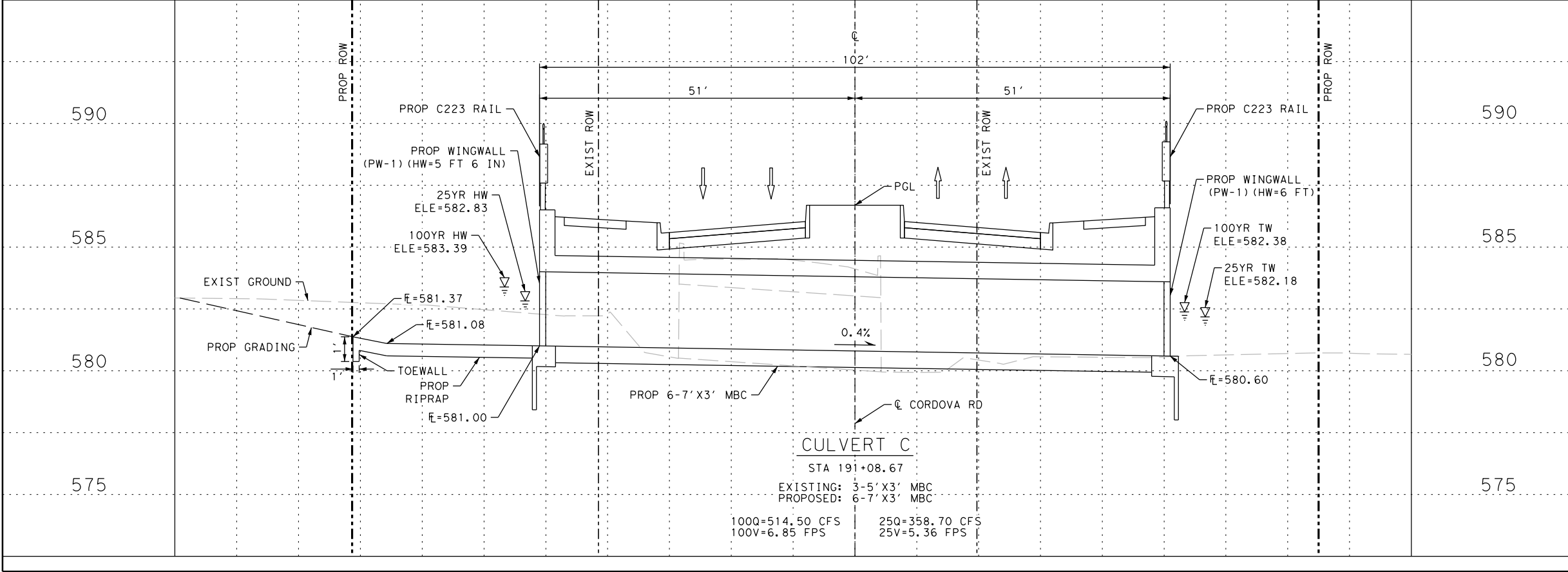
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 20' PROFILE 1" = 5'



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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THE STATE OF TEXAS
 GUADALUPE COUNTY

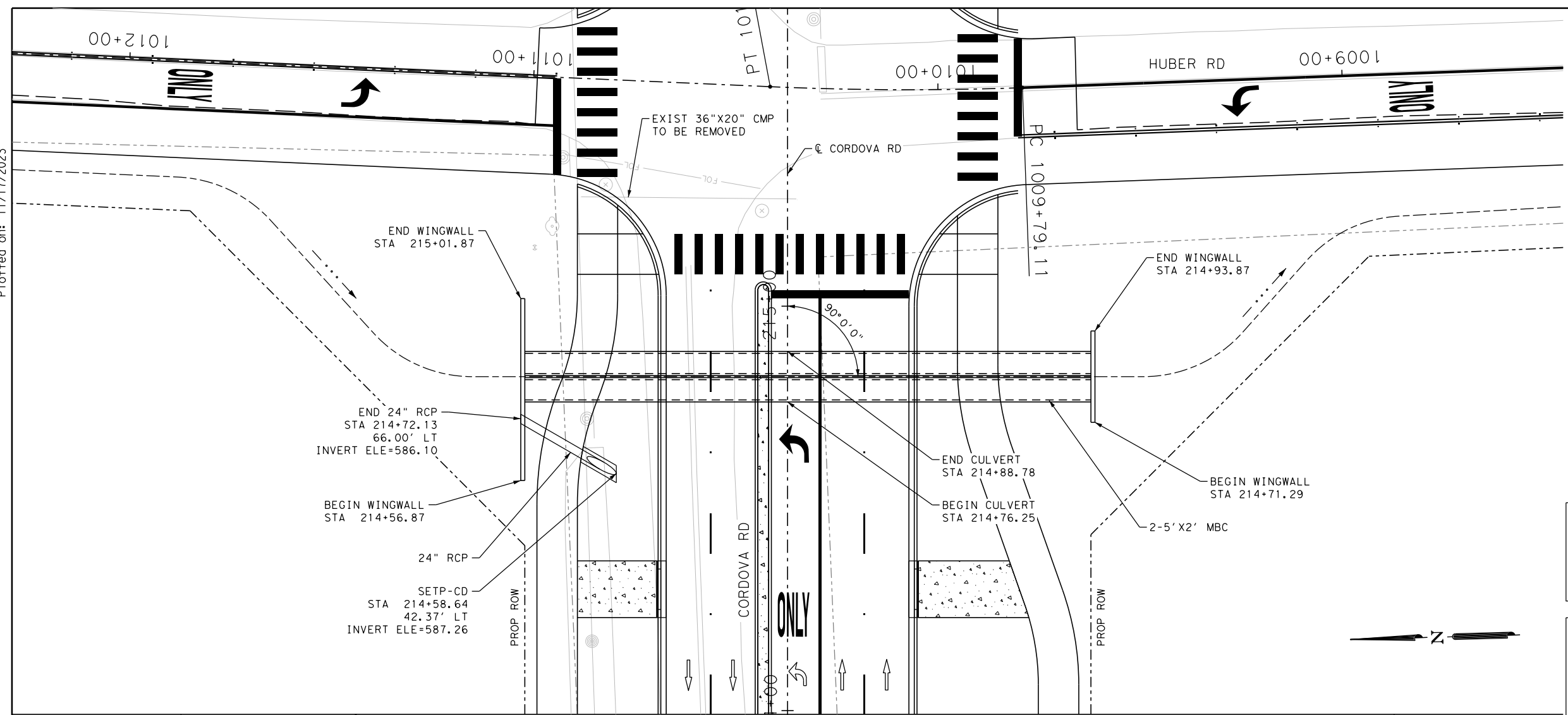
Texas Department of Transportation
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CORDOVA RD
CULVERT C
BRIDGE CLASS STRUCTURE
PLAN AND PROFILE

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				052
				338

Plotted on: 11/17/2023

Design File name: P:\12775\00\Design\Civil\Drainage\1277500_str_05.dgn



LEGEND

- > FLOW ARROW
- FLOW LINE
- [Symbol] CONC RIPRAP
- [Symbol] EARTH GRADING

NOTES

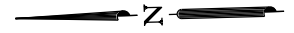
1. THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES INDICATED IN THE PLANS ARE APPROXIMATED FROM RECORDS AND SUE INFORMATION. CONTRACTOR SHALL VERIFY EXACT LOCATION PRIOR TO CONSTRUCTION.
2. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK, i.e. FADED.
3. ALL CULVERT BOXES SHALL BE PRECAST UNLESS OTHERWISE INDICATED IN PLANS.

DESIGN

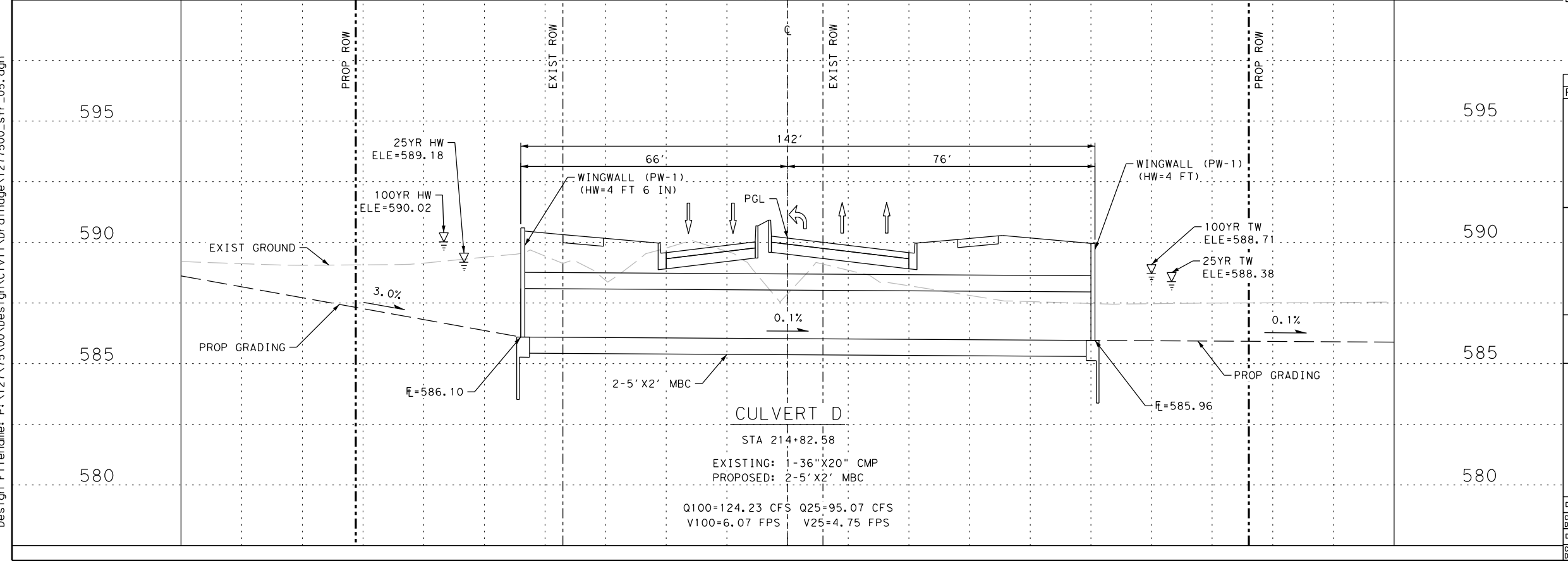
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 30' PROFILE 1" = 5'



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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 It's real.



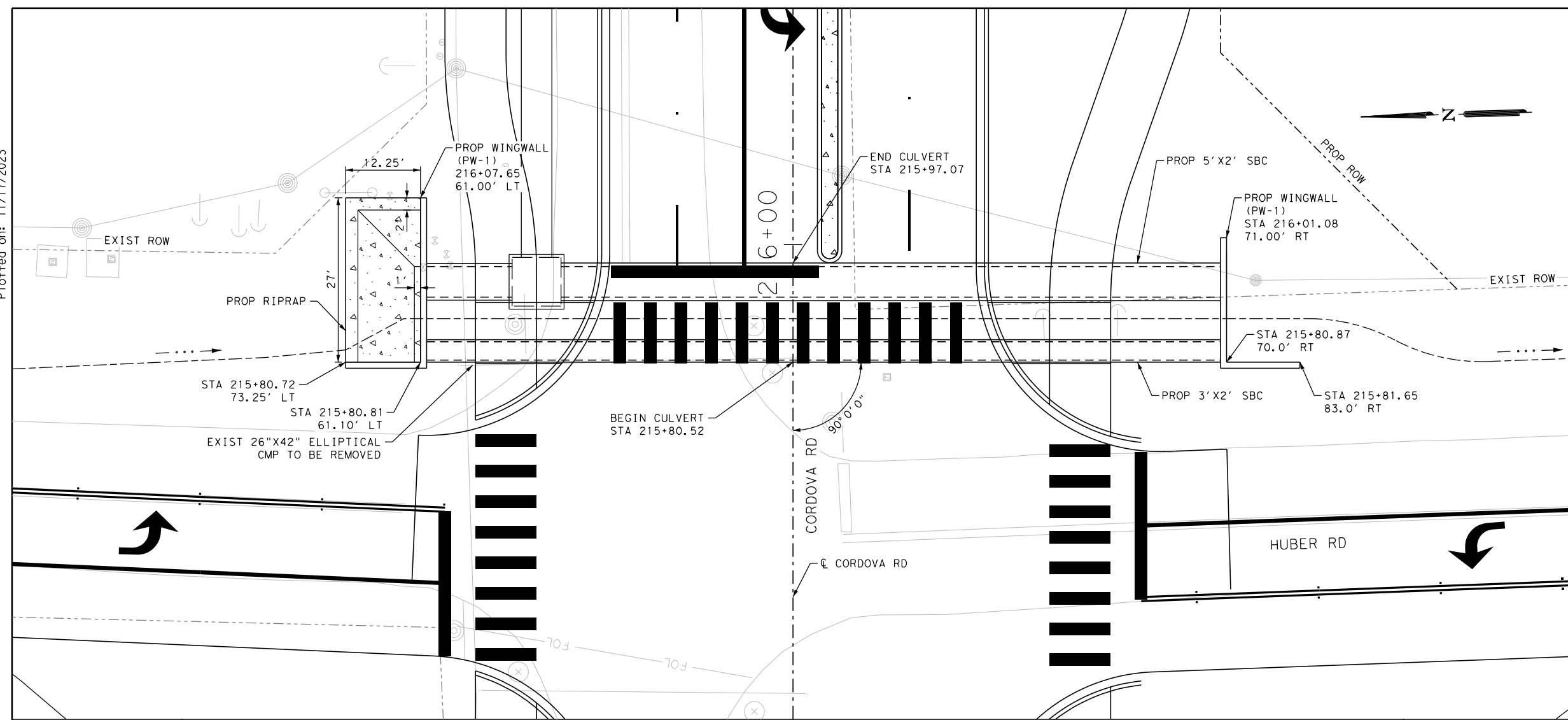
Texas Department of Transportation
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CORDOVA RD
**CULVERT D
 PLAN AND PROFILE**

CHK DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:			HIGHWAY NO.:
	6	TEXAS				CORDOVA
CHK DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
	SAT	GUADALUPE	0915	46	052	339

Plotted on: 11/17/2023

Design File name: P:\1275\00\Design\Civil\Drainage\1277500_str_06.dgn



LEGEND

- > FLOW ARROW
- FLOW LINE
- [Symbol] CONC RIPRAP
- [Symbol] EARTH GRADING

NOTES

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2. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK, I.E. FADED.
3. ALL CULVERT BOXES SHALL BE PRECAST UNLESS OTHERWISE INDICATED IN PLANS.

DESIGN

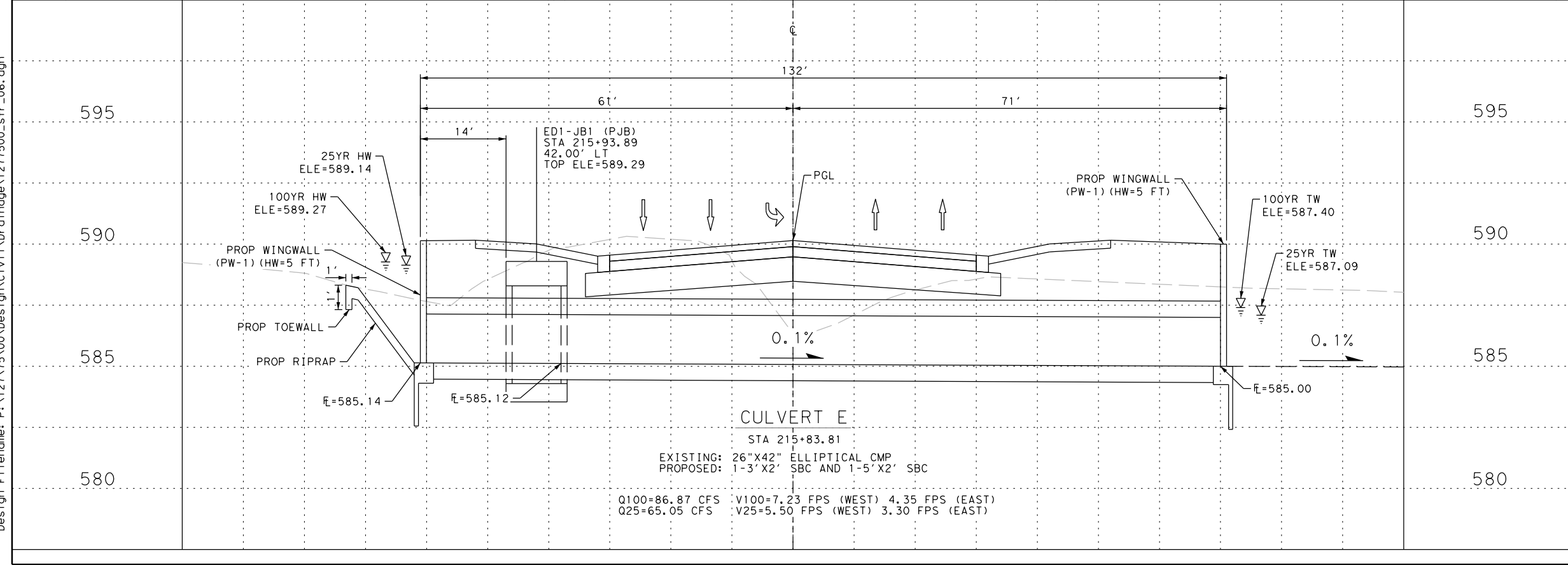
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 20' PROFILE 1" = 5'



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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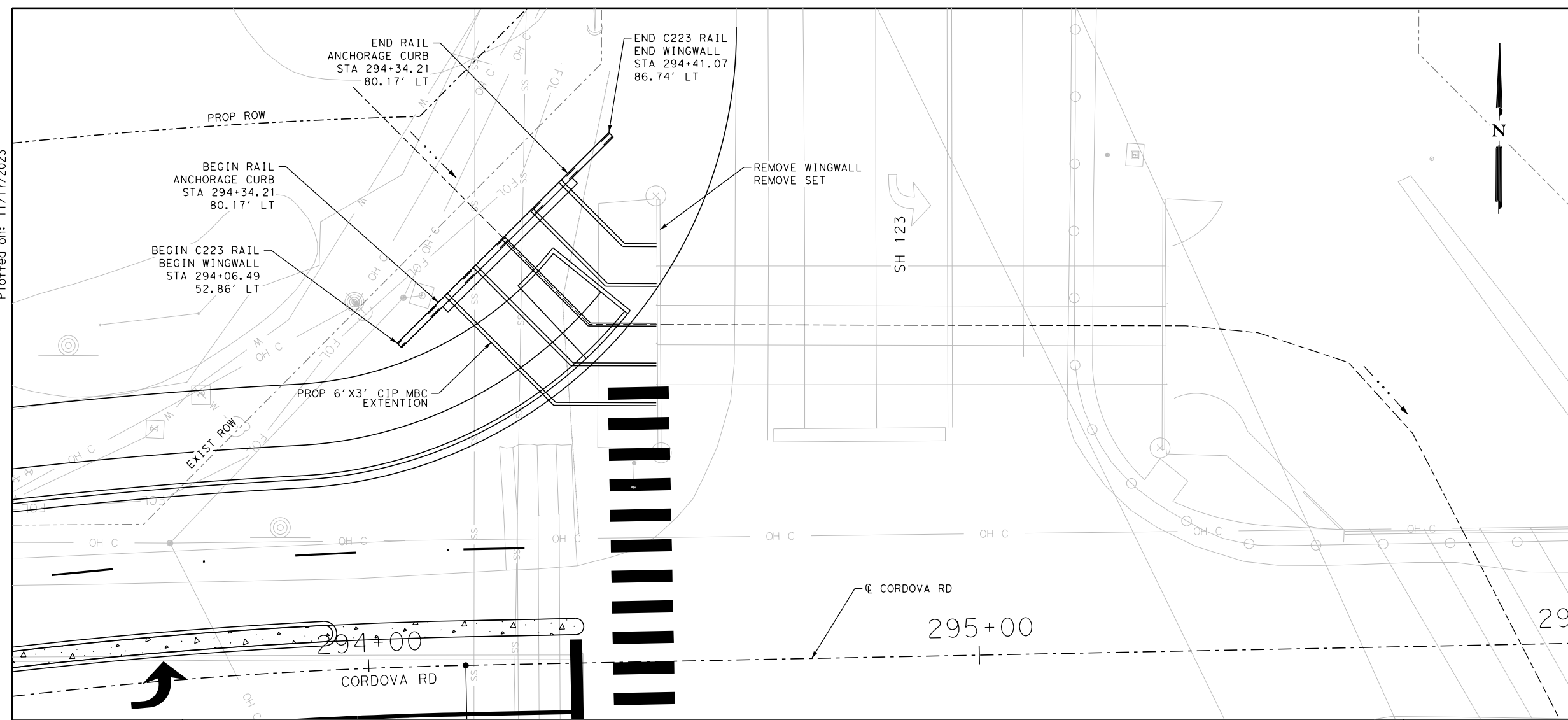
**CULVERT E
 PLAN AND PROFILE**

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				340

CULVERT E
 STA 215+83.81
 EXISTING: 26"X42" ELLIPTICAL CMP
 PROPOSED: 1-3'X2' SBC AND 1-5'X2' SBC
 Q100=86.87 CFS V100=7.23 FPS (WEST) 4.35 FPS (EAST)
 Q25=65.05 CFS V25=5.50 FPS (WEST) 3.30 FPS (EAST)

Plotted on: 11/17/2023

Design File name: P:\127500\Design\Civil\Drainage\1277500_str_07.dgn



LEGEND

- FLOW ARROW
- FLOW LINE
- CONC RIPRAP
- EARTH GRADING

NOTES

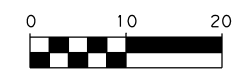
1. THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES INDICATED IN THE PLANS ARE APPROXIMATED FROM RECORDS AND SUE INFORMATION. CONTRACTOR SHALL VERIFY EXACT LOCATION PRIOR TO CONSTRUCTION.
2. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK, i.e. FADED.
3. ALL CULVERT BOXES SHALL BE PRECAST UNLESS OTHERWISE INDICATED IN PLANS.

DESIGN

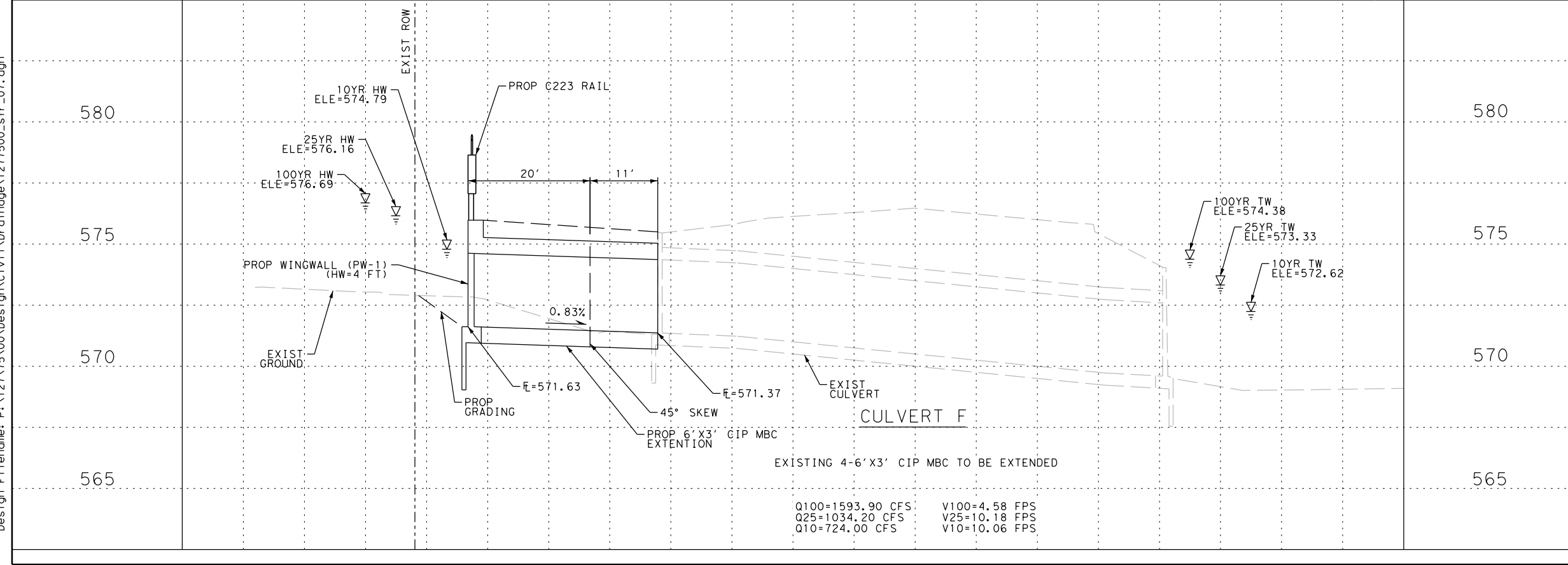
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 20' PROFILE 1" = 5'



Q100=1593.90 CFS V100=4.58 FPS
 Q25=1034.20 CFS V25=10.18 FPS
 Q10=724.00 CFS V10=10.06 FPS

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS
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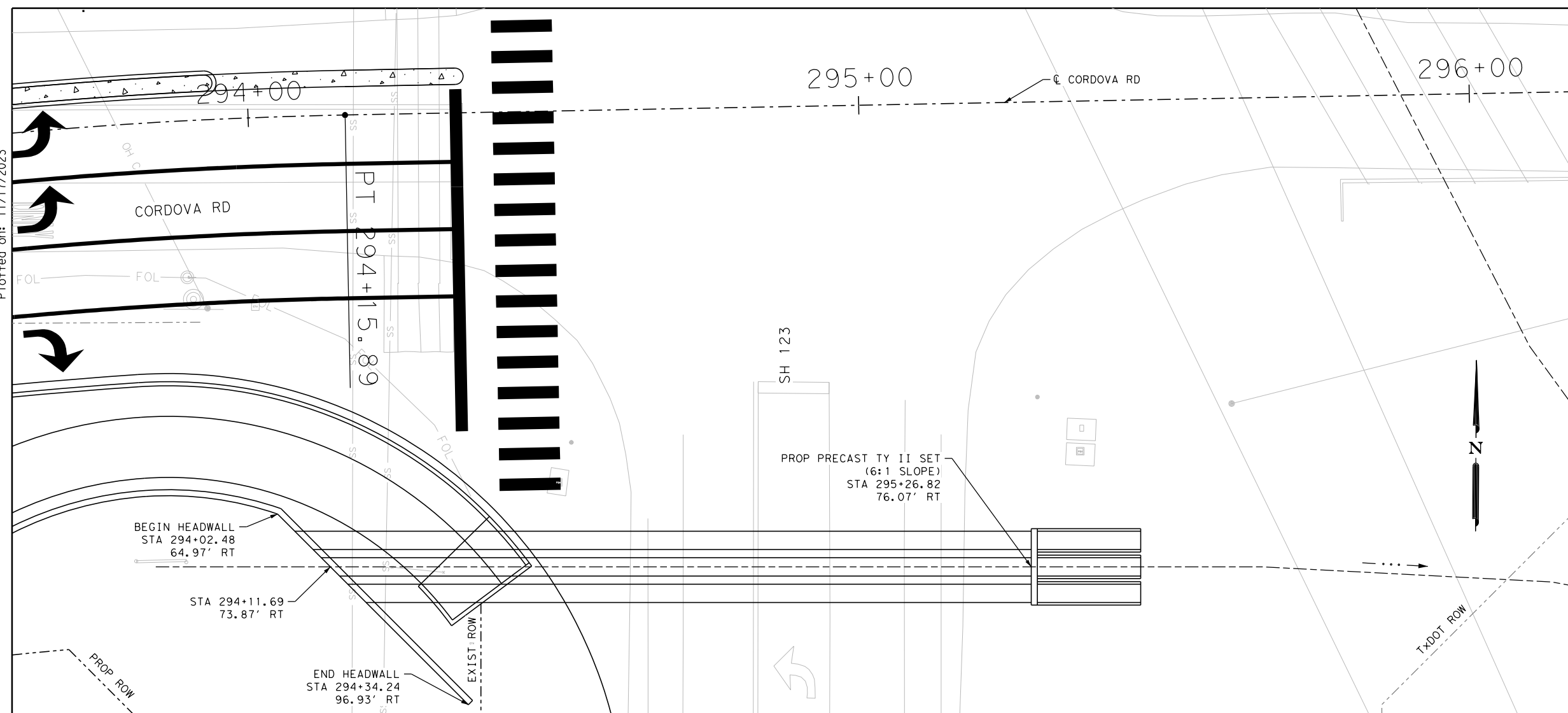
Texas Department of Transportation
 ©2023

CORDOVA RD
CULVERT F
BRIDGE CLASS STRUCTURE
PLAN AND PROFILE

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:			HIGHWAY NO.:
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	341

Plotted on: 11/17/2023

Design File name: P:\12775\00\Design\Civil\Drainage\1277500_str_08.dgn



LEGEND

- > FLOW ARROW
- FLOW LINE
- [Symbol] CONC RIPRAP
- [Symbol] EARTH GRADING

NOTES

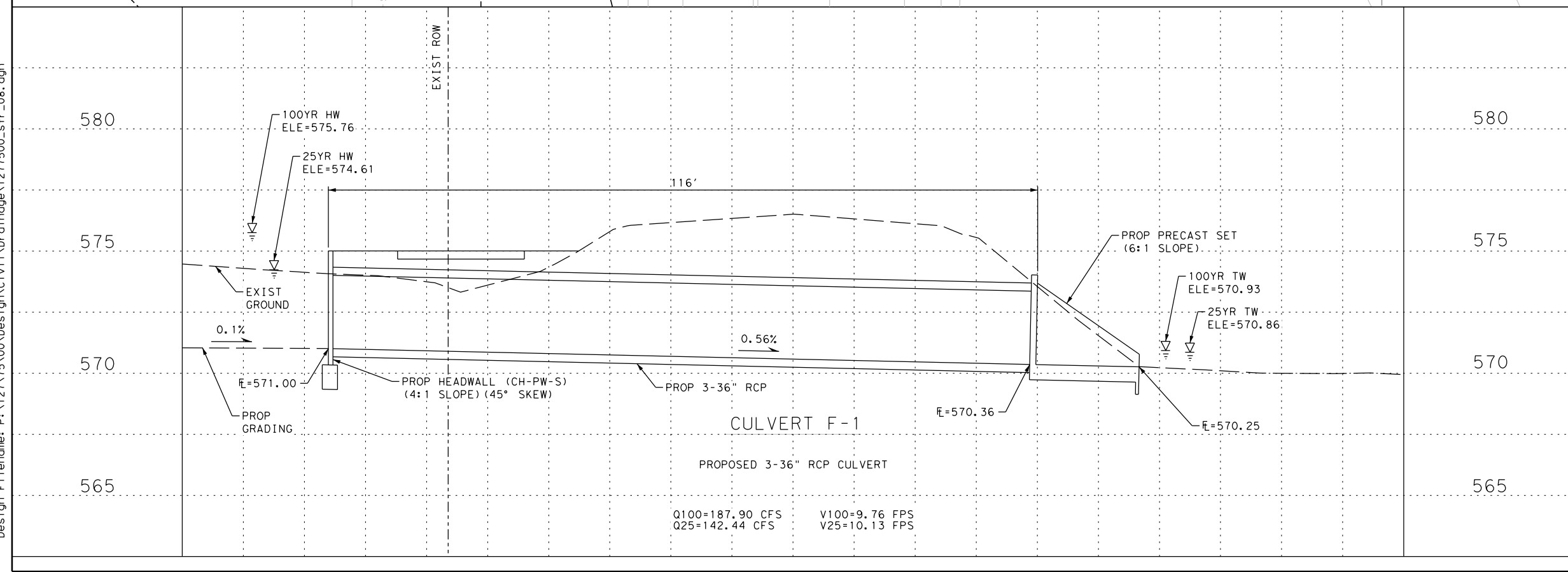
1. THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES INDICATED IN THE PLANS ARE APPROXIMATED FROM RECORDS AND SUE INFORMATION. CONTRACTOR SHALL VERIFY EXACT LOCATION PRIOR TO CONSTRUCTION.
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DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 20' PROFILE 1" = 5'



REV. NO.	DATE	DESCRIPTION	BY
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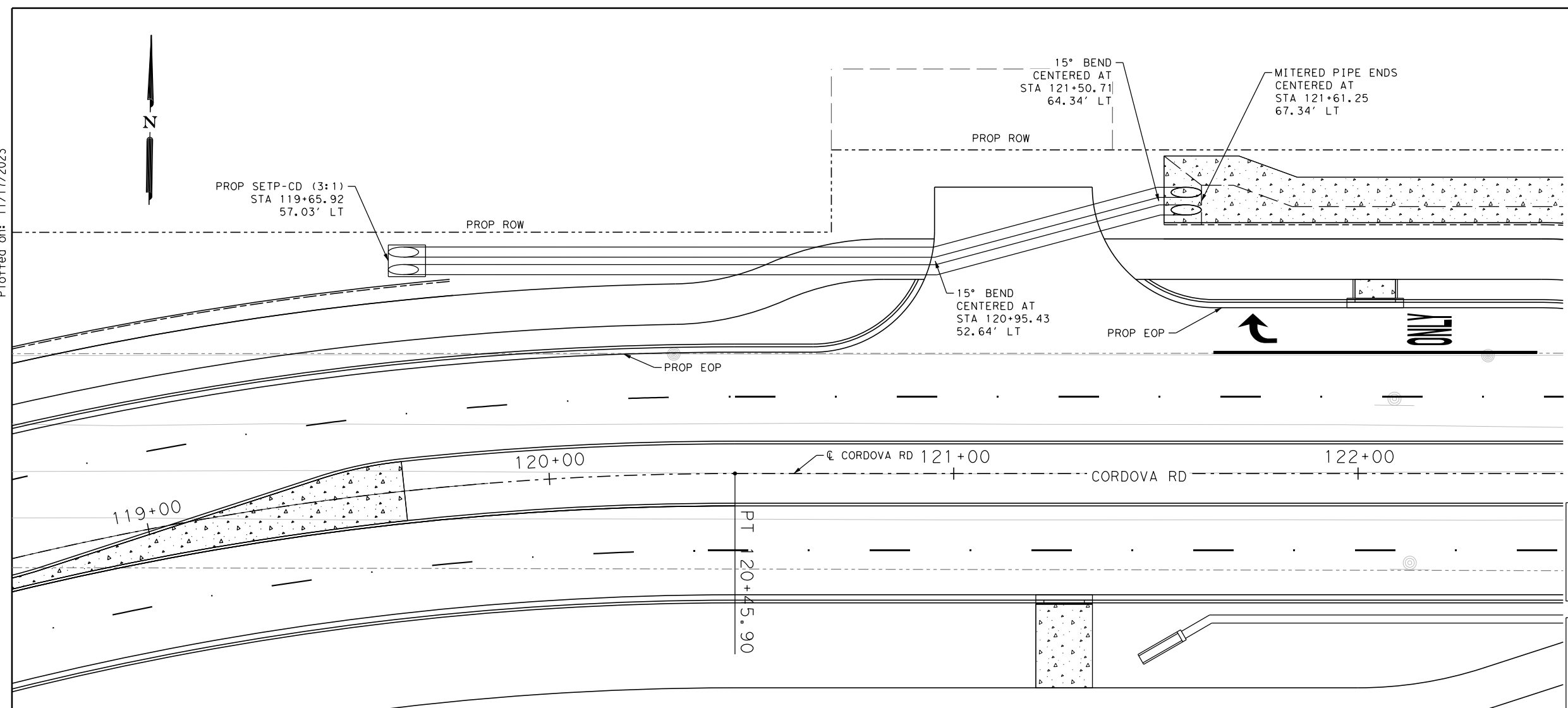
CORDOVA RD
**CULVERT F-1
 PLAN AND PROFILE**

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:		HIGHWAY NO.:
CHK DGN:	6	TEXAS			CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052

Q100=187.90 CFS V100=9.76 FPS
 Q25=142.44 CFS V25=10.13 FPS

Plotted on: 11/17/2023

Design File name: P:\12775\00\Design\Civil\Drainage\1277500_str_09.dgn



LEGEND

- > FLOW ARROW
- FLOW LINE
- [Symbol] CONC RIPRAP
- [Symbol] EARTH GRADING

NOTES

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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 30' PROFILE 1" = 5'

REV. NO.	DATE	DESCRIPTION	BY



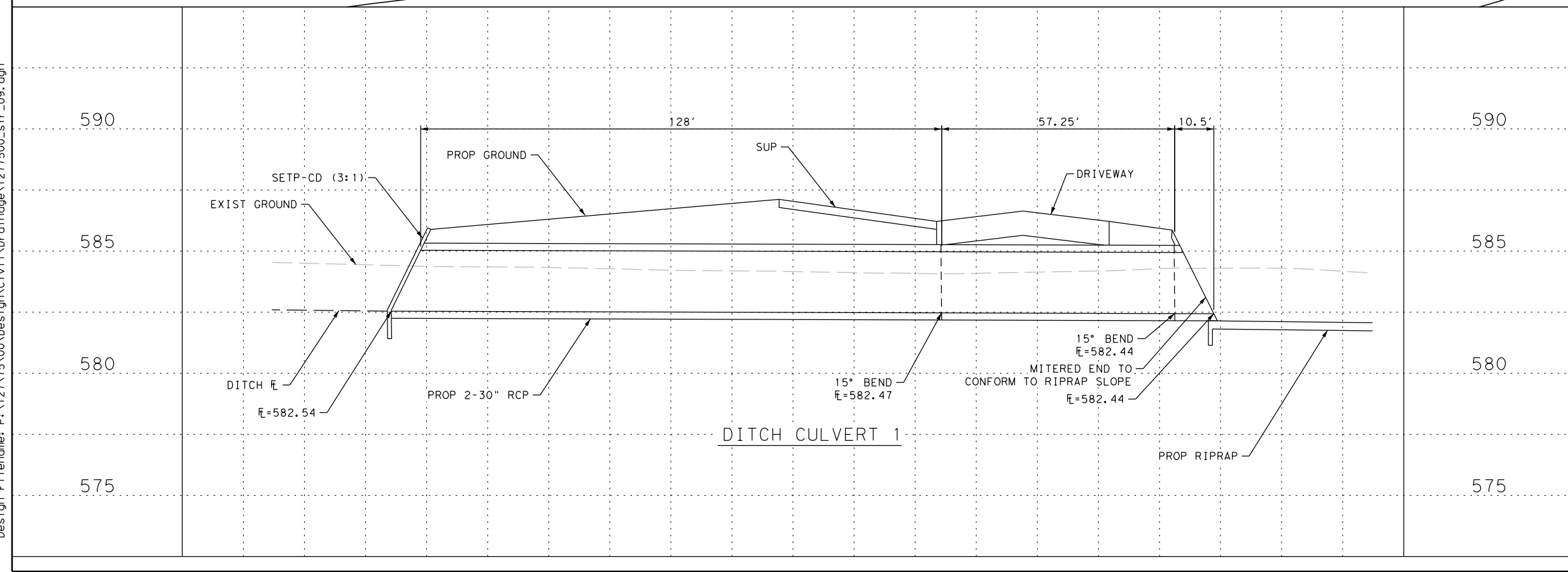
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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**CORDOVA RD
 DITCH CULVERT 1
 PLAN AND PROFILE**




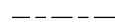
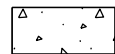

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DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	343

Plotted on: 11/17/2023

Design File name: P:\12775\00\Design\Civil\Drainage\1277500_str_10.dgn



LEGEND

-  FLOW ARROW
-  FLOW LINE
-  CONC RIPRAP
-  EARTH GRADING

NOTES

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3. ALL CULVERT BOXES SHALL BE PRECAST UNLESS OTHERWISE INDICATED IN PLANS.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P.E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



SCALE: PLAN 1" = 30' PROFILE 1" = 5'

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

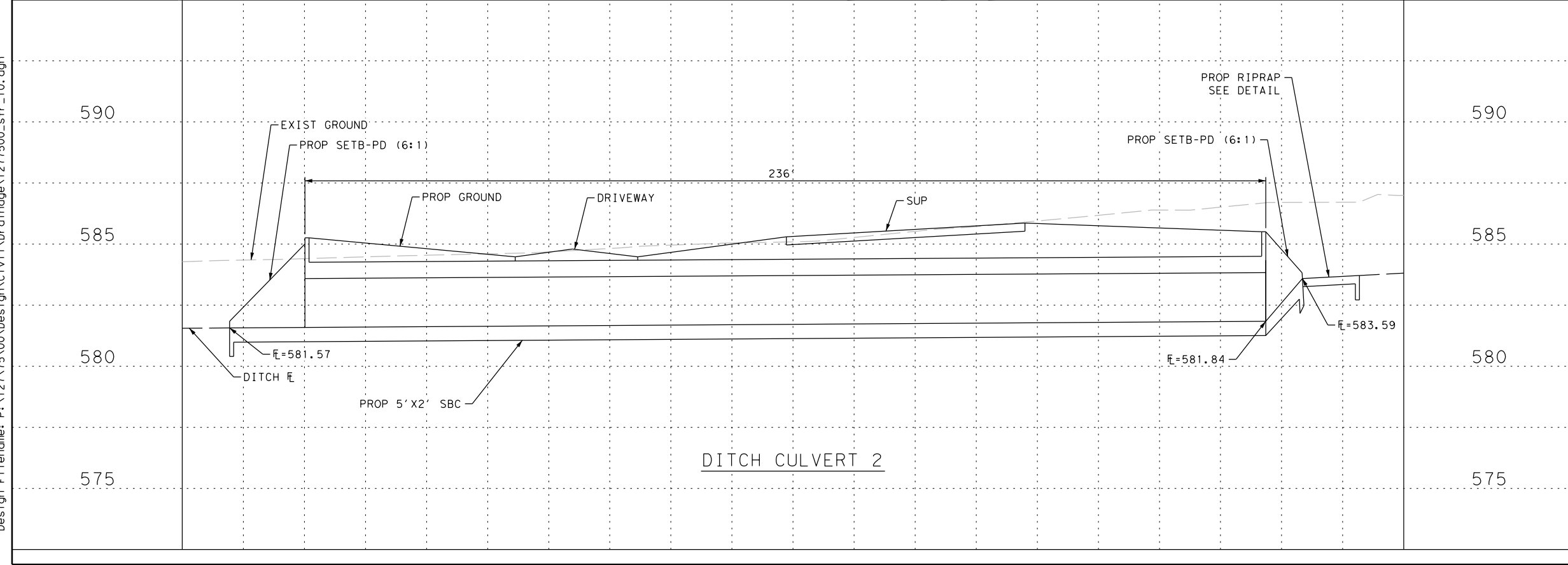
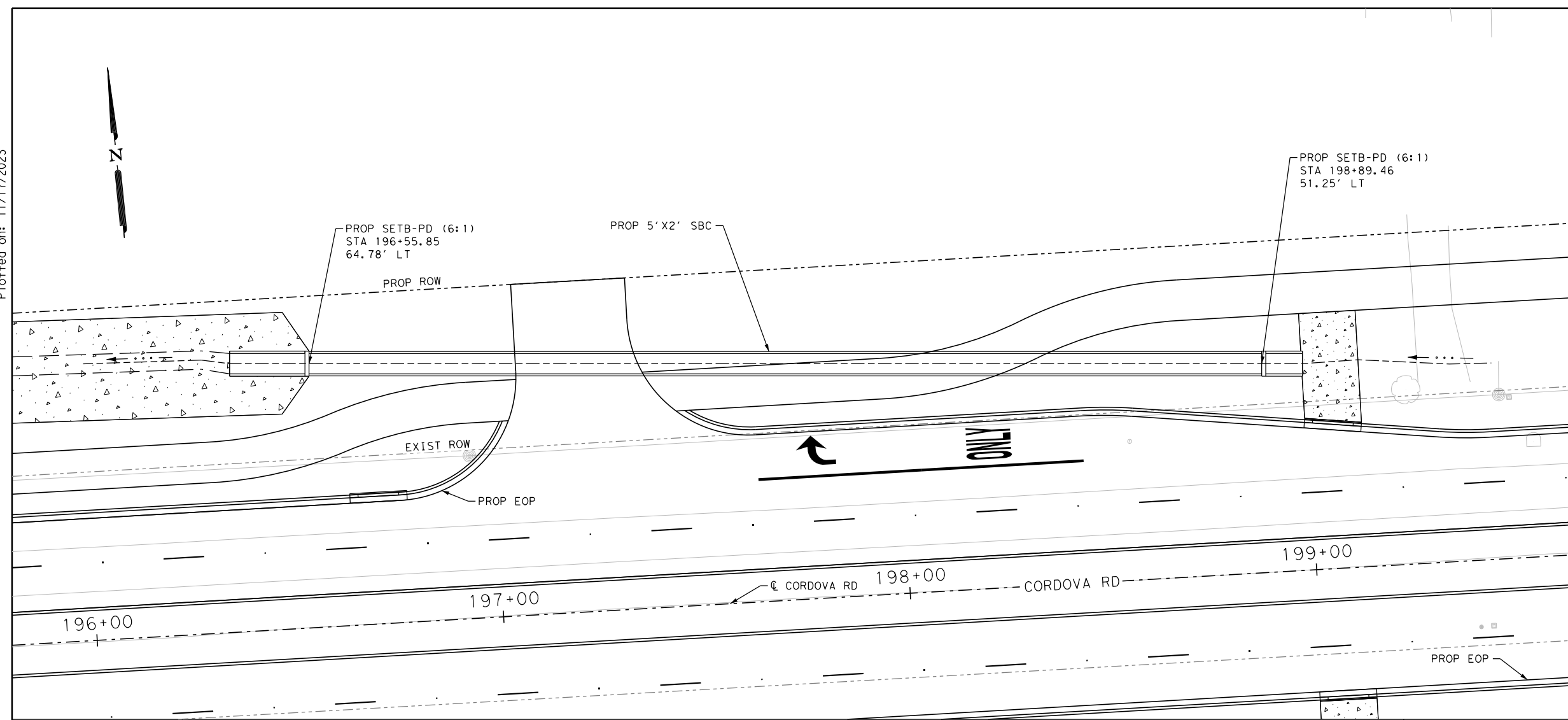


It's real.



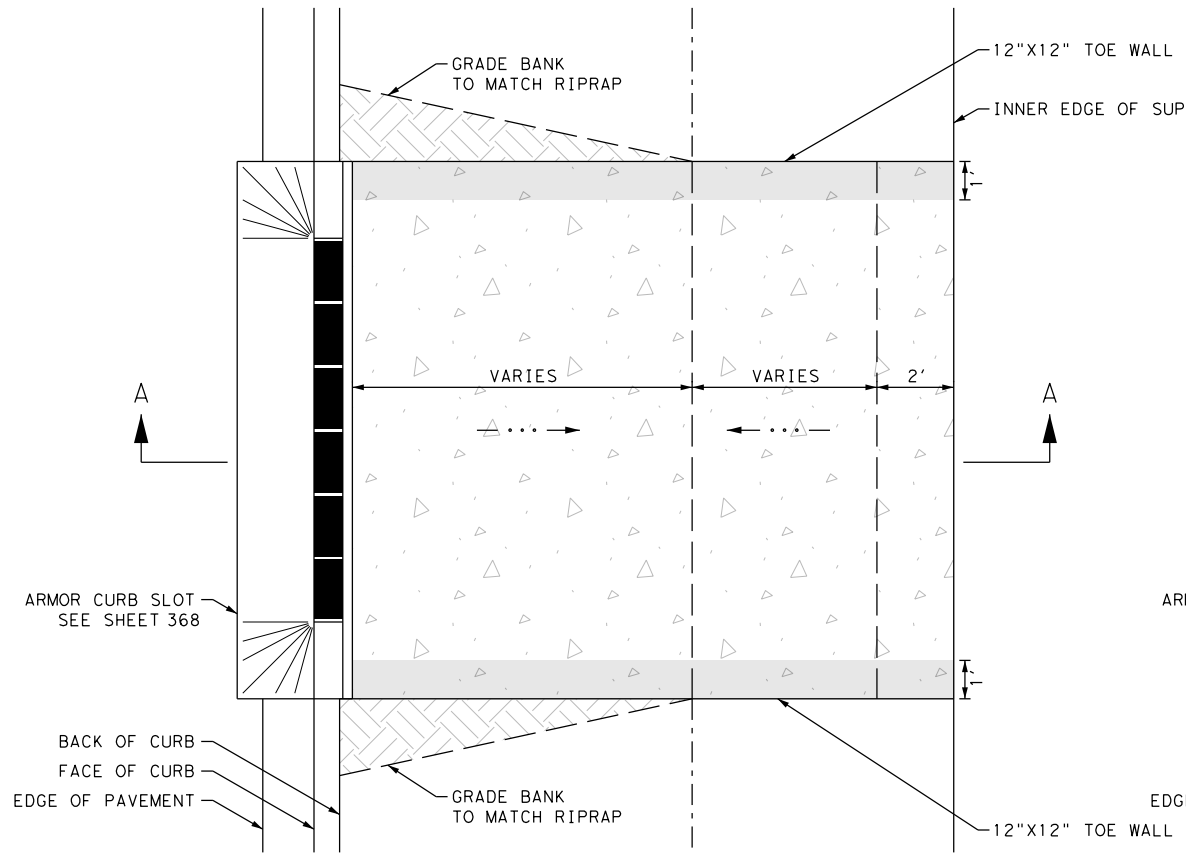
**CORDOVA RD
 DITCH CULVERT 2
 PLAN AND PROFILE**

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		SAT	GUADALUPE	0915	46	052	344

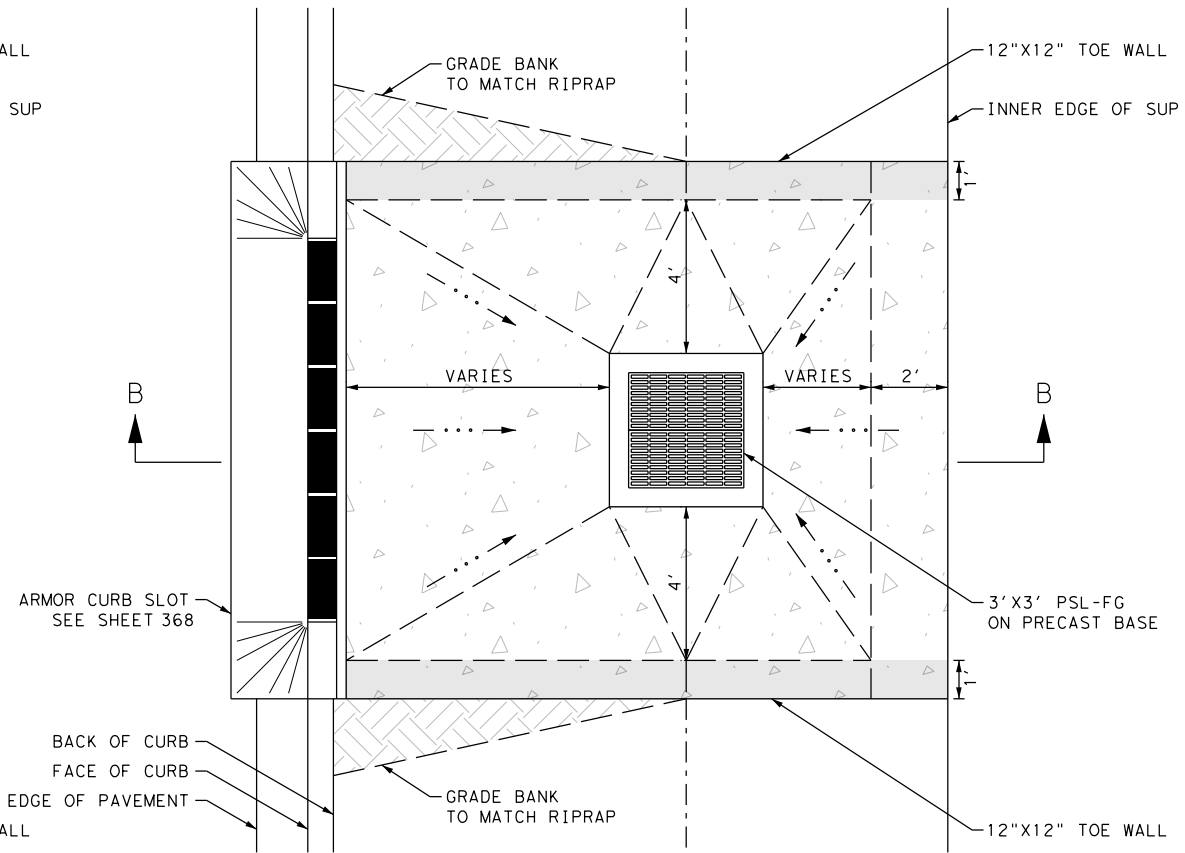


Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_drndet_01.dgn



ARMOR CURB W/
RIPRAP CHANNEL LINING



ARMOR CURB W/ PGL-FG INLET

ARMOR CURB SLOT
SEE SHEET 368

ARMOR CURB SLOT
SEE SHEET 368

BACK OF CURB
FACE OF CURB
EDGE OF PAVEMENT

BACK OF CURB
FACE OF CURB
EDGE OF PAVEMENT

LEGEND

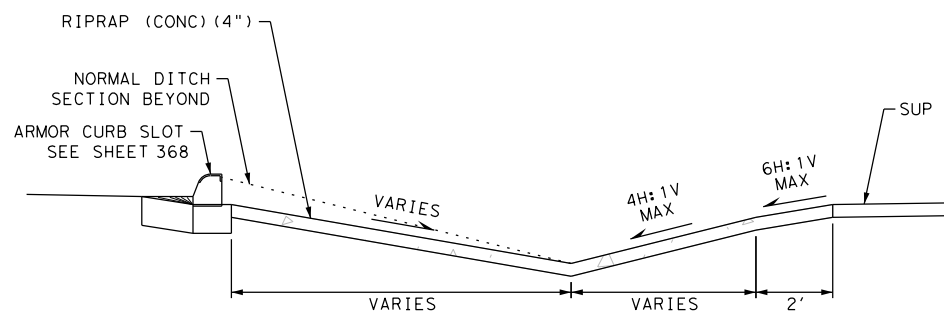
- > FLOW ARROW
- - - - FLOW LINE
- - - - GRADE BREAK
- TOE WALL
- △ CONC RIPRAP

DESIGN

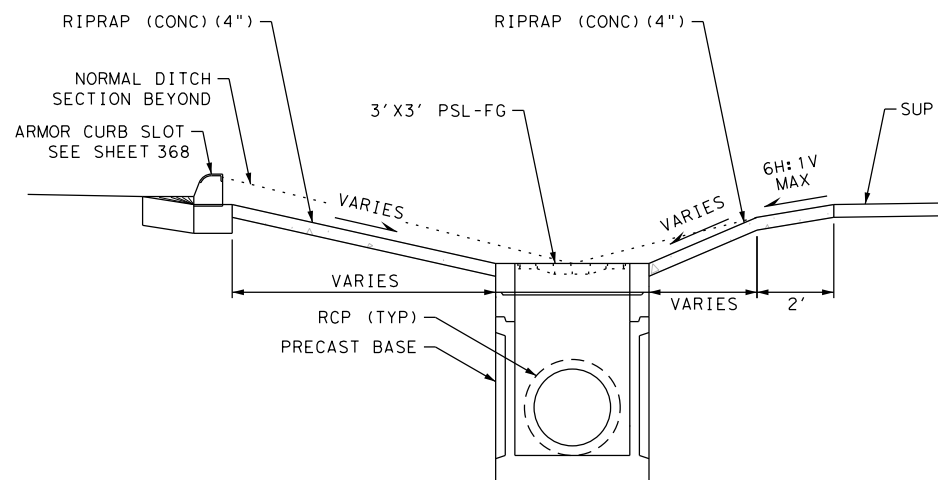
INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JOHN A. TYLER
P.E. SERIAL NO: 105193
DATE: 11/17/2023



SECTION A-A



SECTION B-B

REV. NO.	DATE	DESCRIPTION	BY
----------	------	-------------	----



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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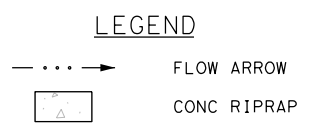
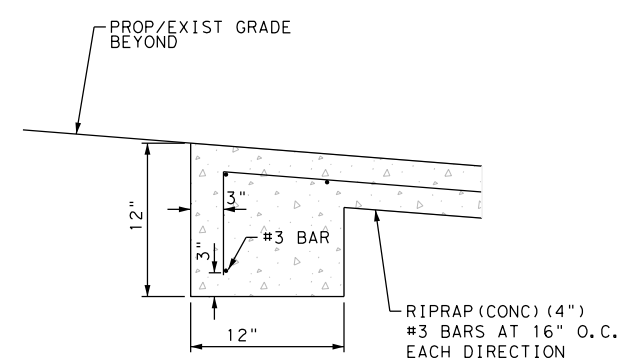
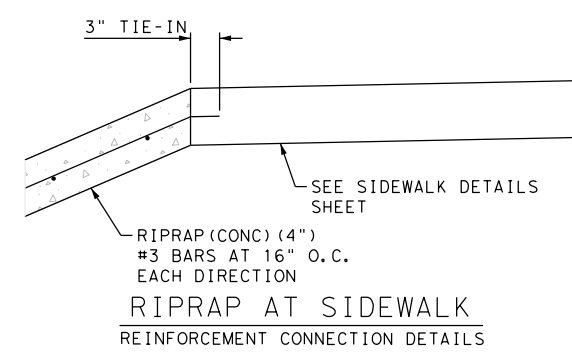
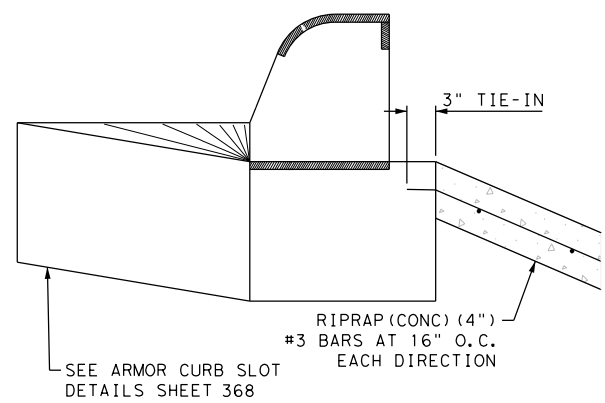
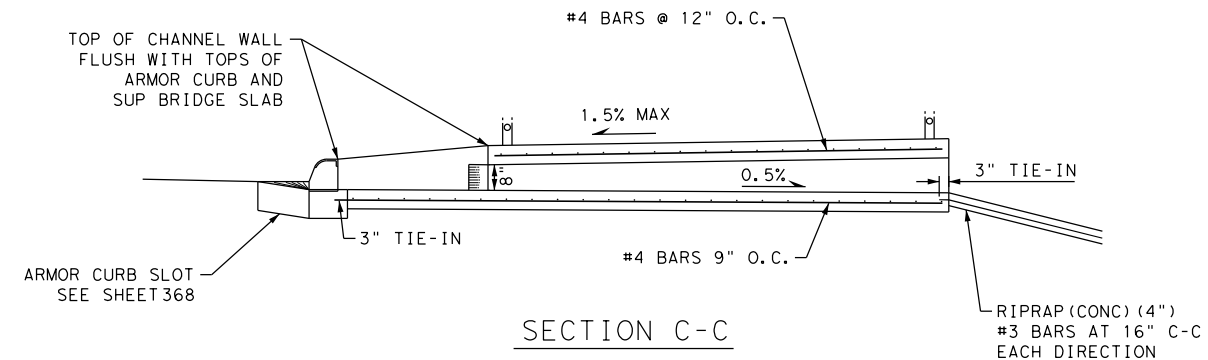
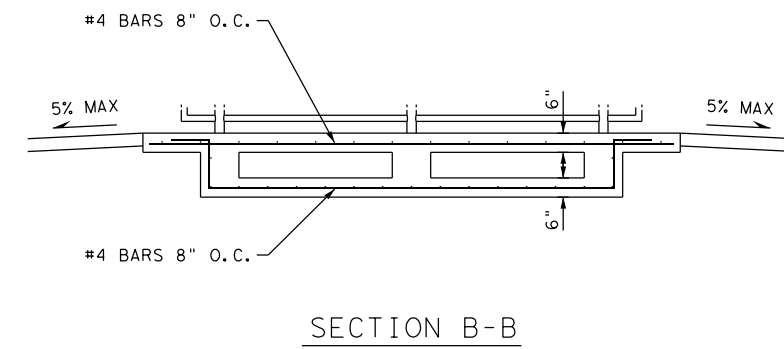
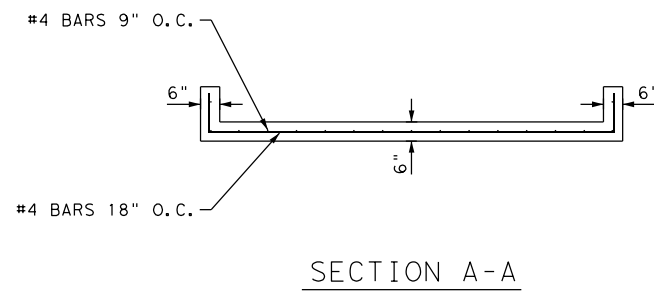
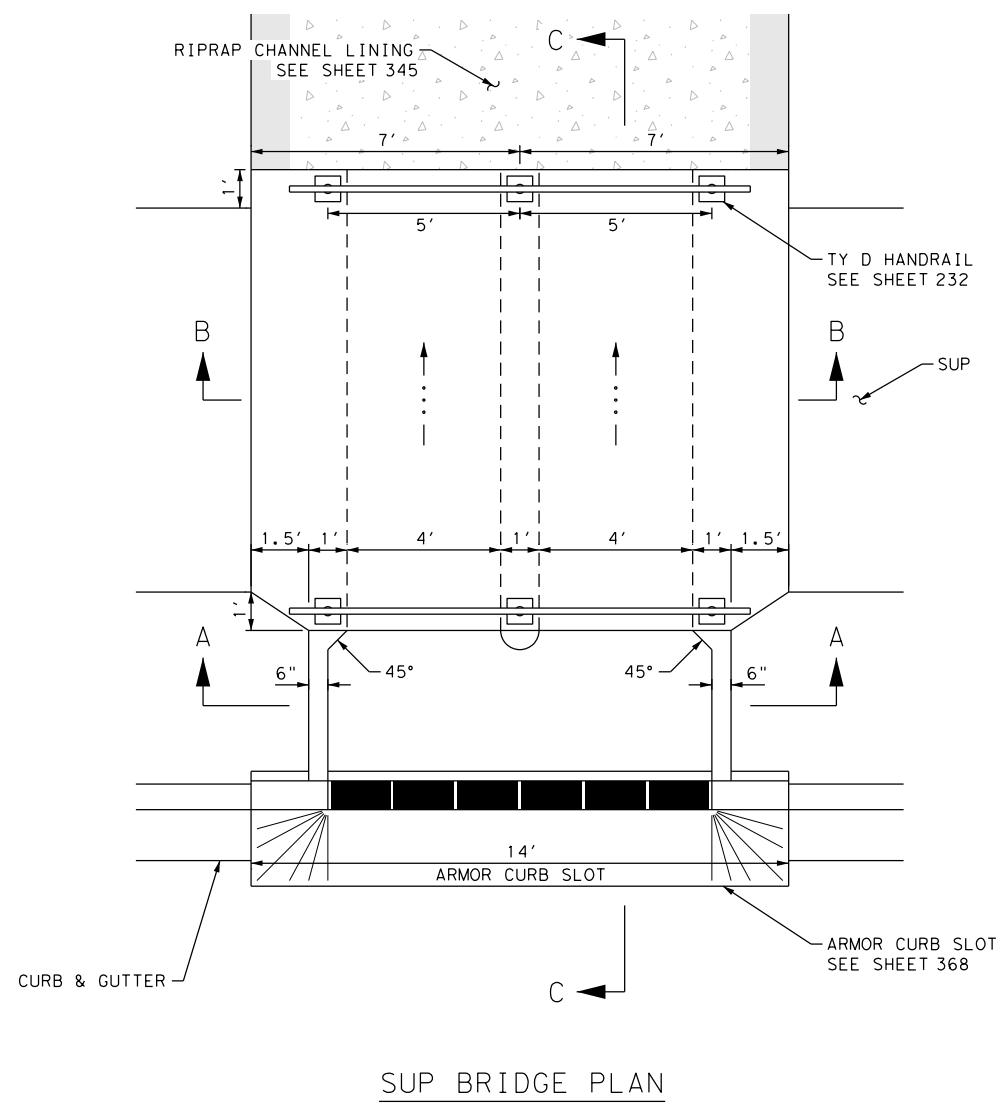
DRAINAGE DETAILS

SHEET 1 OF 2

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:			HIGHWAY NO.:
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	345

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Drainage\1277500_drndet_02.dgn



DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023

REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			

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DRAINAGE DETAILS

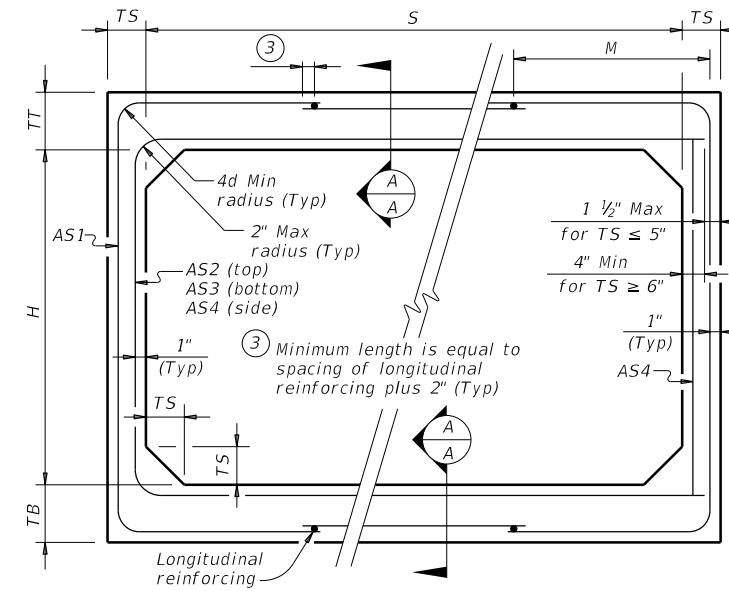
SHEET 2 OF 2

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				346

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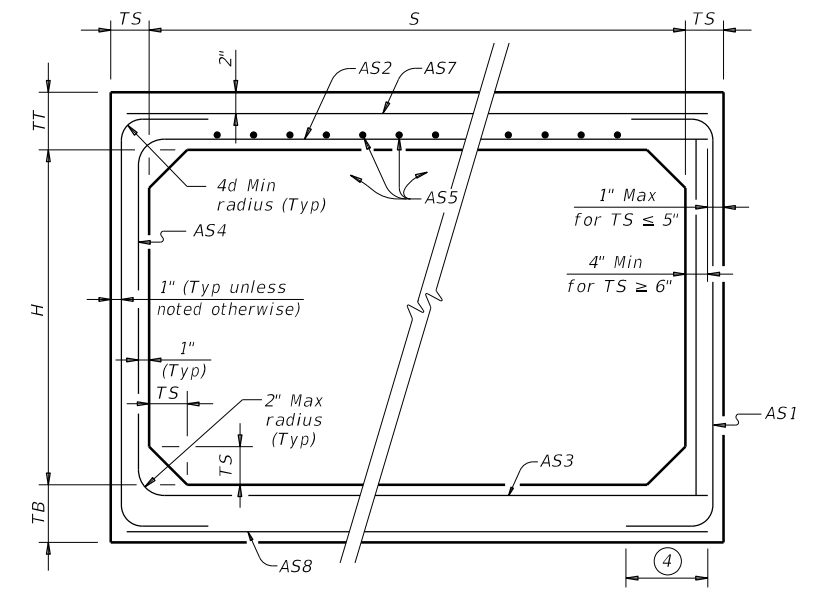
BOX DATA

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



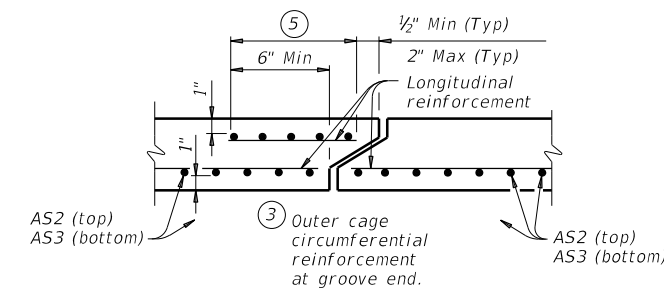
CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT



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



SINGLE BOX CULVERTS
PRECAST
3'-0" SPAN

SCP-3

FILE: CD-SCP03-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
	DIST	COUNTY	SHEET NO.	
	SAT	GUADALUPE	347	

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.

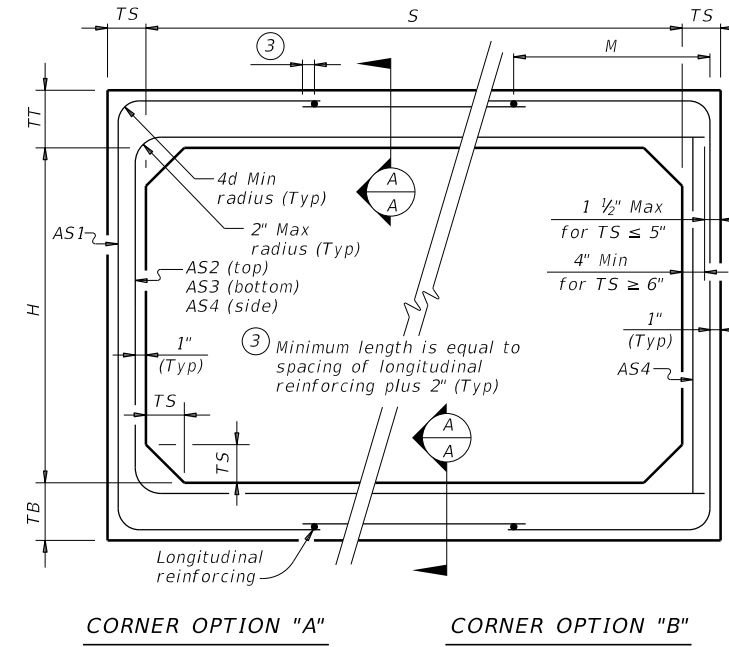
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FILE:

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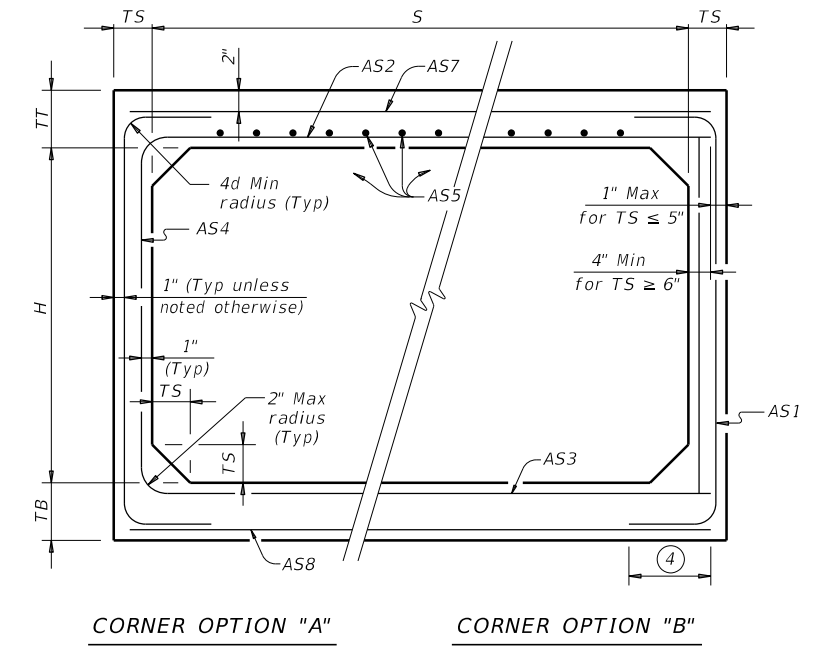
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BOX DATA

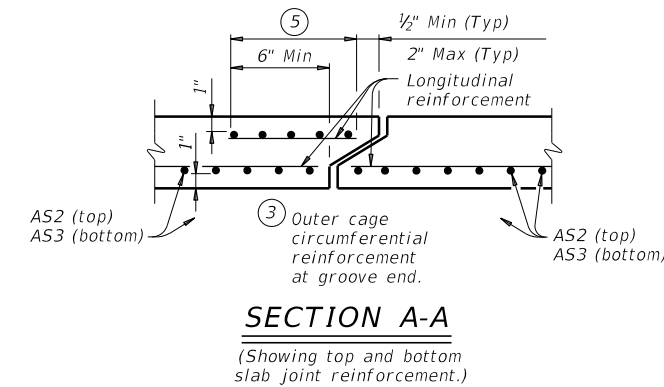
SECTION DIMENSIONS					Fill Height (ft.)	M (Min) (in.)	REINFORCING (sq. in. / ft.) ^②						① Lift Weight (tons)	
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)			AS1	AS2	AS3	AS4	AS5	AS7		AS8
4	2	7.5	6	5	< 2	-	0.18	0.27	0.15	0.12	0.18	0.18	0.14	4.5
4	2	5	5	5	2 < 3	38	0.18	0.19	0.17	0.12	-	-	-	3.6
4	2	5	5	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



FILL HEIGHT 2 FT AND GREATER



FILL HEIGHT LESS THAN 2 FT



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



**SINGLE BOX CULVERTS
 PRECAST
 4'-0" SPAN**

SCP-4

FILE: CD-SCP04-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
	DIST	COUNTY	SHEET NO.	
	SAT	GUADALUPE	348	

① For box length = 8'-0"

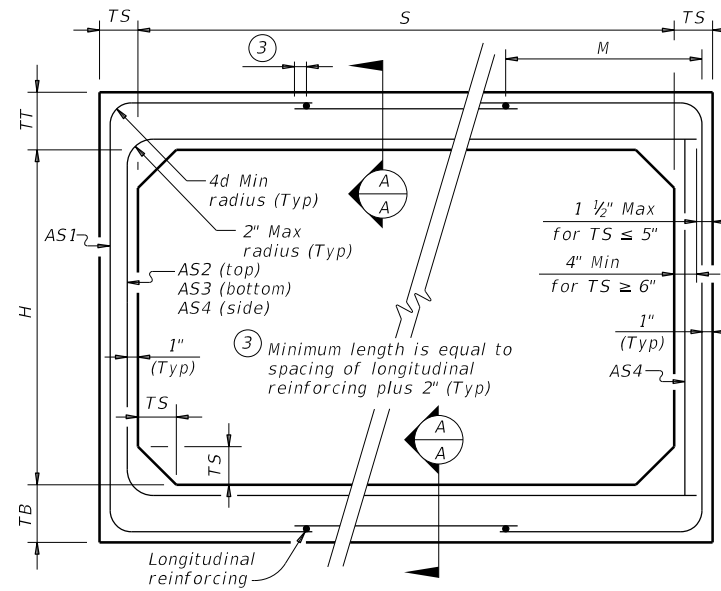
② AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.

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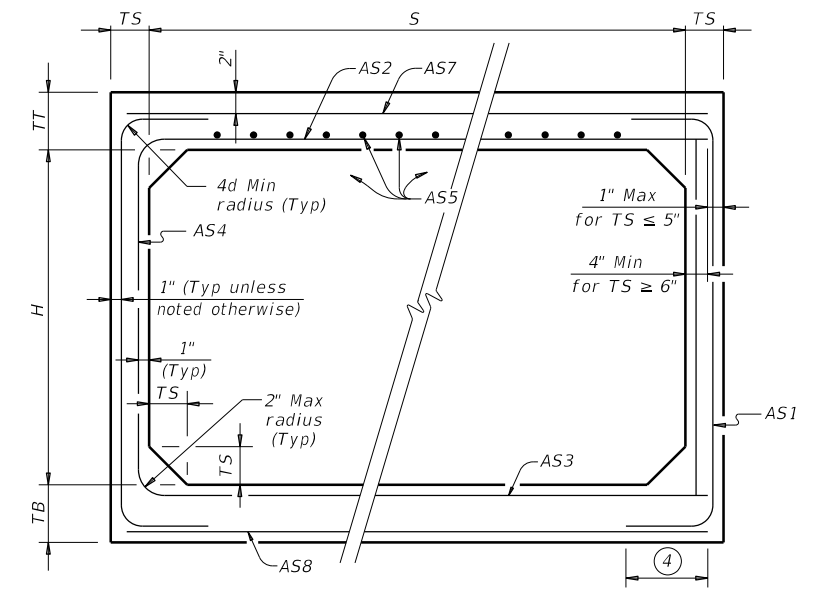
BOX DATA

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	
5	2	8	7	6	< 2	-	0.19	0.27	0.18	0.14	0.19	0.19	0.17	6.0
5	2	6	6	6	2 < 3	44	0.22	0.20	0.16	0.14	-	-	-	5.1
5	2	6	6	6	3 - 5	44	0.16	0.14	0.14	0.14	-	-	-	5.1
5	2	6	6	6	10	36	0.15	0.14	0.14	0.14	-	-	-	5.1
5	2	6	6	6	15	36	0.20	0.18	0.18	0.14	-	-	-	5.1
5	2	6	6	6	20	36	0.26	0.23	0.24	0.14	-	-	-	5.1
5	2	6	6	6	25	36	0.33	0.29	0.29	0.14	-	-	-	5.1
5	2	6	6	6	30	36	0.39	0.34	0.35	0.14	-	-	-	5.1
5	3	8	7	6	< 2	-	0.19	0.31	0.21	0.14	0.19	0.19	0.17	6.6
5	3	6	6	6	2 < 3	45	0.18	0.24	0.19	0.14	-	-	-	5.7
5	3	6	6	6	3 - 5	36	0.14	0.17	0.16	0.14	-	-	-	5.7
5	3	6	6	6	10	36	0.14	0.16	0.17	0.14	-	-	-	5.7
5	3	6	6	6	15	35	0.16	0.21	0.22	0.14	-	-	-	5.7
5	3	6	6	6	20	35	0.21	0.27	0.28	0.14	-	-	-	5.7
5	3	6	6	6	25	35	0.26	0.34	0.34	0.14	-	-	-	5.7
5	3	6	6	6	30	35	0.31	0.41	0.41	0.14	-	-	-	5.7
5	4	8	7	6	< 2	-	0.19	0.33	0.24	0.14	0.19	0.19	0.17	7.2
5	4	6	6	6	2 < 3	45	0.16	0.27	0.22	0.14	-	-	-	6.3
5	4	6	6	6	3 - 5	45	0.14	0.19	0.18	0.14	-	-	-	6.3
5	4	6	6	6	10	36	0.14	0.18	0.18	0.14	-	-	-	6.3
5	4	6	6	6	15	35	0.14	0.23	0.24	0.14	-	-	-	6.3
5	4	6	6	6	20	35	0.17	0.30	0.31	0.14	-	-	-	6.3
5	4	6	6	6	25	35	0.21	0.37	0.38	0.14	-	-	-	6.3
5	4	6	6	6	30	35	0.25	0.44	0.45	0.14	-	-	-	6.3
5	5	8	7	6	< 2	-	0.19	0.35	0.26	0.14	0.19	0.19	0.17	7.8
5	5	6	6	6	2 < 3	45	0.14	0.29	0.24	0.14	-	-	-	6.9
5	5	6	6	6	3 - 5	45	0.14	0.21	0.20	0.14	-	-	-	6.9
5	5	6	6	6	10	45	0.14	0.19	0.20	0.14	-	-	-	6.9
5	5	6	6	6	15	36	0.14	0.24	0.25	0.14	-	-	-	6.9
5	5	6	6	6	20	35	0.15	0.31	0.32	0.14	-	-	-	6.9
5	5	6	6	6	25	35	0.18	0.38	0.39	0.14	-	-	-	6.9
5	5	6	6	6	30	35	0.21	0.46	0.47	0.14	-	-	-	6.9



CORNER OPTION "A" CORNER OPTION "B"

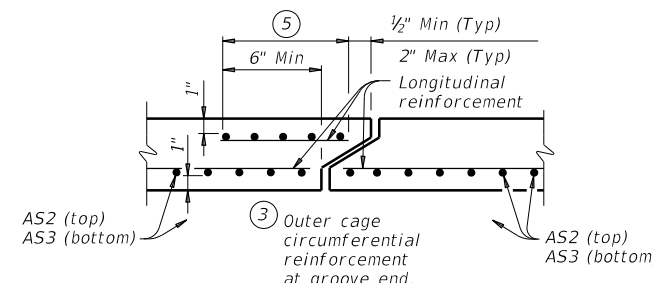
FILL HEIGHT 2 FT AND GREATER



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 minimal 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 5'-0" SPAN			
SCP-5			
FILE: CD-SCP05-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
©TxDOT February 2020	CONT	SECT	JOB
REVISIONS	0915	46	052
DIST	COUNTY		SHEET NO.
SAT	GUADALUPE		349

① For box length = 8'-0"

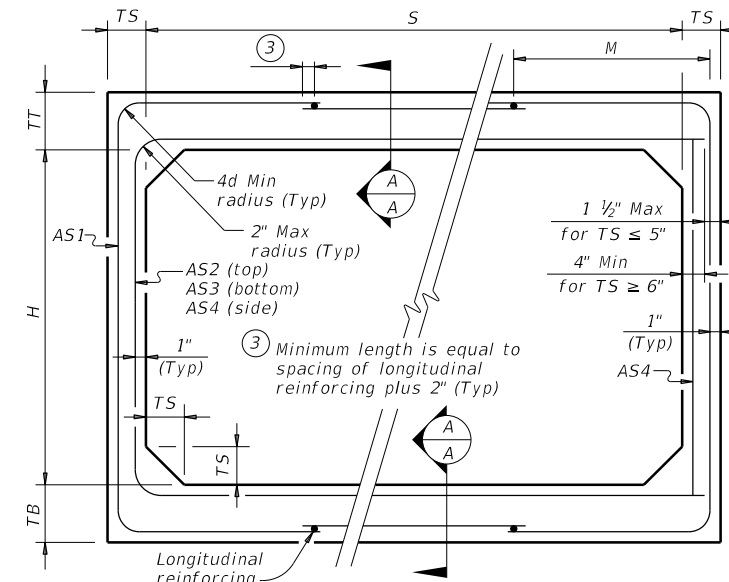
② AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcing per linear foot of box length. AS5 is minimum required area of reinforcing per linear foot of box width.

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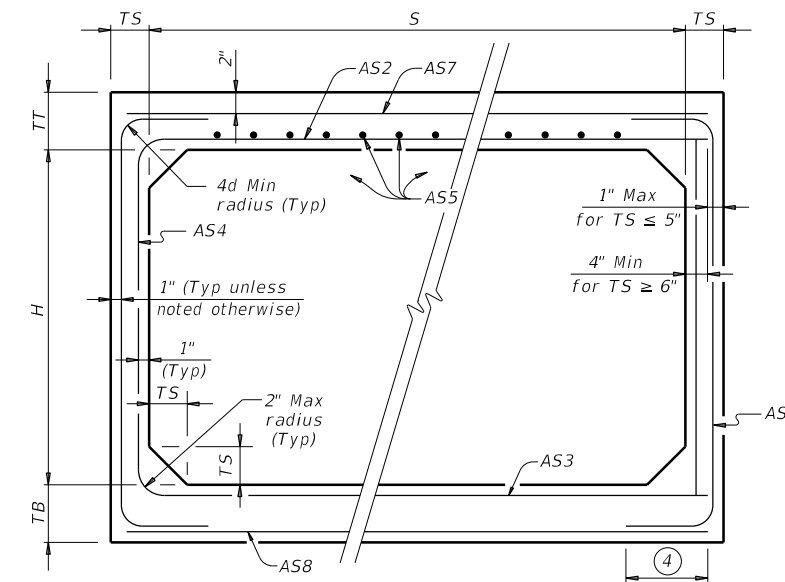
BOX DATA

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	
6	2	8	7	7	< 2	-	0.23	0.27	0.19	0.17	0.19	0.17	7.2
6	2	7	7	7	2 < 3	43	0.25	0.21	0.17	0.17	-	-	6.8
6	2	7	7	7	3 - 5	43	0.20	0.17	0.17	0.17	-	-	6.8
6	2	7	7	7	10	39	0.20	0.17	0.17	0.17	-	-	6.8
6	2	7	7	7	15	39	0.26	0.20	0.20	0.17	-	-	6.8
6	2	7	7	7	20	39	0.34	0.26	0.26	0.17	-	-	6.8
6	2	7	7	7	25	39	0.43	0.32	0.32	0.17	-	-	6.8
6	2	7	7	7	30	39	0.52	0.38	0.39	0.17	-	-	6.8
6	3	8	7	7	< 2	-	0.20	0.31	0.22	0.17	0.19	0.19	7.9
6	3	7	7	7	2 < 3	43	0.21	0.24	0.19	0.17	-	-	7.5
6	3	7	7	7	3 - 5	39	0.17	0.18	0.17	0.17	-	-	7.5
6	3	7	7	7	10	39	0.17	0.18	0.19	0.17	-	-	7.5
6	3	7	7	7	15	38	0.22	0.24	0.24	0.17	-	-	7.5
6	3	7	7	7	20	38	0.28	0.31	0.31	0.17	-	-	7.5
6	3	7	7	7	25	38	0.35	0.38	0.39	0.17	-	-	7.5
6	3	7	7	7	30	38	0.42	0.46	0.46	0.17	-	-	7.5
6	4	8	7	7	< 2	-	0.19	0.34	0.25	0.17	0.19	0.19	8.6
6	4	7	7	7	2 < 3	43	0.19	0.27	0.21	0.17	-	-	8.2
6	4	7	7	7	3 - 5	39	0.17	0.21	0.19	0.17	-	-	8.2
6	4	7	7	7	10	39	0.17	0.20	0.21	0.17	-	-	8.2
6	4	7	7	7	15	38	0.18	0.27	0.27	0.17	-	-	8.2
6	4	7	7	7	20	38	0.24	0.34	0.35	0.17	-	-	8.2
6	4	7	7	7	25	38	0.29	0.43	0.42	0.17	-	-	8.2
6	4	7	7	7	30	38	0.35	0.51	0.52	0.17	-	-	8.2
6	5	8	7	7	< 2	-	0.19	0.37	0.28	0.17	0.19	0.19	9.3
6	5	7	7	7	2 < 3	43	0.17	0.30	0.24	0.17	-	-	8.9
6	5	7	7	7	3 - 5	43	0.17	0.23	0.21	0.17	-	-	8.9
6	5	7	7	7	10	39	0.17	0.22	0.23	0.17	-	-	8.9
6	5	7	7	7	15	38	0.17	0.28	0.29	0.17	-	-	8.9
6	5	7	7	7	20	38	0.20	0.37	0.38	0.17	-	-	8.9
6	5	7	7	7	25	38	0.25	0.45	0.46	0.17	-	-	8.9
6	5	7	7	7	30	38	0.30	0.54	0.55	0.17	-	-	8.9
6	6	8	7	7	< 2	-	0.19	0.38	0.30	0.17	0.19	0.19	10
6	6	7	7	7	2 < 3	52	0.17	0.32	0.26	0.17	-	-	9.6
6	6	7	7	7	3 - 5	52	0.17	0.24	0.22	0.17	-	-	9.6
6	6	7	7	7	10	43	0.17	0.23	0.24	0.17	-	-	9.6
6	6	7	7	7	15	39	0.17	0.29	0.31	0.17	-	-	9.6
6	6	7	7	7	20	39	0.18	0.38	0.39	0.17	-	-	9.6
6	6	7	7	7	25	38	0.23	0.46	0.48	0.17	-	-	9.6
6	6	7	7	7	30	38	0.27	0.55	0.57	0.17	-	-	9.6



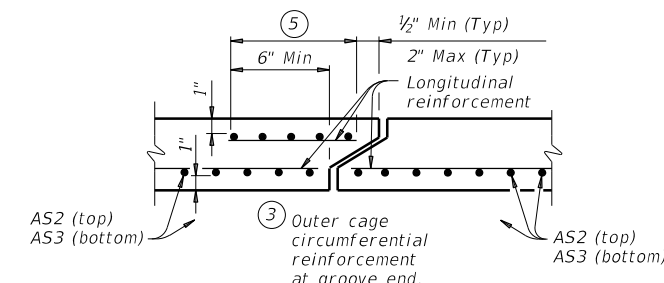
CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT



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



**SINGLE BOX CULVERTS
 PRECAST
 6'-0" SPAN**

SCP-6

FILE: CD-SCP06-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
	DIST	COUNTY	SHEET NO.	
	SAT	GUADALUPE	350	

① For box length = 8'-0"

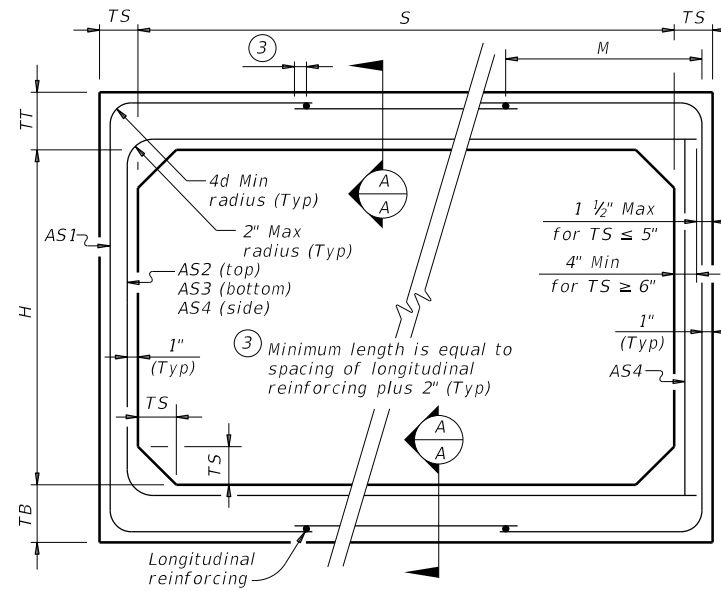
② AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.

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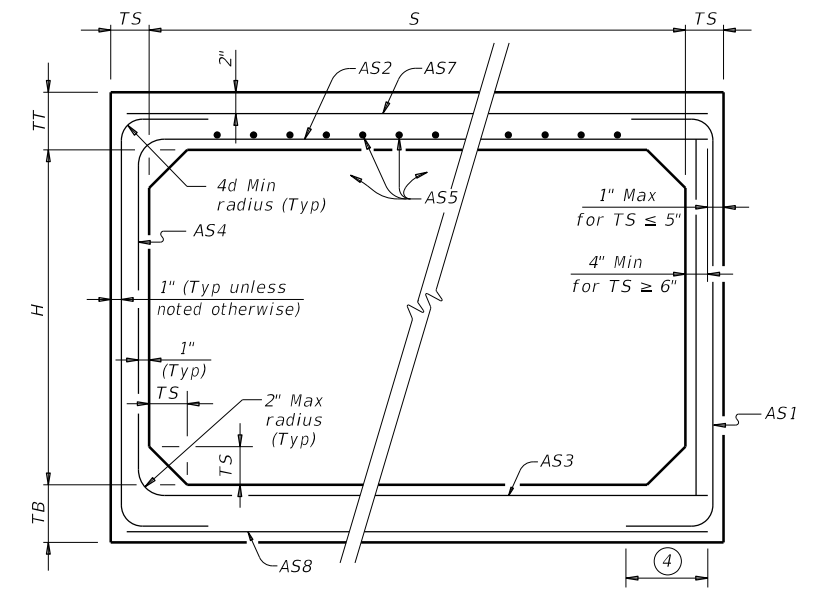
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BOX DATA

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	
7	3	8	8	8	< 2	-	0.23	0.31	0.22	0.19	0.19	0.19	0.19	9.6
7	3	8	8	8	2 < 3	47	0.27	0.25	0.24	0.19	-	-	-	9.6
7	3	8	8	8	3 - 5	43	0.19	0.19	0.19	0.19	-	-	-	9.6
7	3	8	8	8	10	43	0.21	0.20	0.21	0.19	-	-	-	9.6
7	3	8	8	8	15	43	0.28	0.26	0.27	0.19	-	-	-	9.6
7	3	8	8	8	20	43	0.36	0.34	0.35	0.19	-	-	-	9.6
7	3	8	8	8	25	43	0.45	0.42	0.43	0.19	-	-	-	9.6
7	3	8	8	8	30	43	0.54	0.50	0.51	0.19	-	-	-	9.6
7	4	8	8	8	< 2	-	0.21	0.34	0.25	0.19	0.19	0.19	0.19	10.4
7	4	8	8	8	2 < 3	43	0.23	0.28	0.28	0.19	-	-	-	10.4
7	4	8	8	8	3 - 5	43	0.19	0.22	0.19	0.19	-	-	-	10.4
7	4	8	8	8	10	43	0.19	0.23	0.23	0.19	-	-	-	10.4
7	4	8	8	8	15	41	0.24	0.30	0.30	0.19	-	-	-	10.4
7	4	8	8	8	20	41	0.31	0.38	0.39	0.19	-	-	-	10.4
7	4	8	8	8	25	41	0.38	0.47	0.48	0.19	-	-	-	10.4
7	4	8	8	8	30	41	0.46	0.57	0.57	0.19	-	-	-	10.4
7	5	8	8	8	< 2	-	0.19	0.36	0.27	0.19	0.19	0.19	0.19	11.2
7	5	8	8	8	2 < 3	47	0.21	0.31	0.31	0.19	-	-	-	11.2
7	5	8	8	8	3 - 5	43	0.19	0.24	0.21	0.19	-	-	-	11.2
7	5	8	8	8	10	43	0.19	0.25	0.26	0.19	-	-	-	11.2
7	5	8	8	8	15	41	0.21	0.32	0.33	0.19	-	-	-	11.2
7	5	8	8	8	20	41	0.27	0.41	0.42	0.19	-	-	-	11.2
7	5	8	8	8	25	41	0.33	0.51	0.52	0.19	-	-	-	11.2
7	5	8	8	8	30	41	0.40	0.61	0.62	0.19	-	-	-	11.2
7	6	8	8	8	< 2	-	0.19	0.38	0.30	0.19	0.19	0.19	0.19	12.0
7	6	8	8	8	2 < 3	59	0.19	0.33	0.34	0.19	-	-	-	12.0
7	6	8	8	8	3 - 5	47	0.19	0.25	0.23	0.19	-	-	-	12.0
7	6	8	8	8	10	43	0.19	0.26	0.27	0.19	-	-	-	12.0
7	6	8	8	8	15	41	0.19	0.34	0.35	0.19	-	-	-	12.0
7	6	8	8	8	20	41	0.24	0.43	0.45	0.19	-	-	-	12.0
7	6	8	8	8	25	41	0.29	0.53	0.55	0.19	-	-	-	12.0
7	6	8	8	8	30	41	0.35	0.64	0.65	0.19	-	-	-	12.0
7	7	8	8	8	< 2	-	0.19	0.40	0.33	0.19	0.19	0.19	0.19	12.8
7	7	8	8	8	2 < 3	59	0.19	0.36	0.37	0.19	-	-	-	12.8
7	7	8	8	8	3 - 5	59	0.19	0.27	0.25	0.19	-	-	-	12.8
7	7	8	8	8	10	47	0.19	0.27	0.29	0.19	-	-	-	12.8
7	7	8	8	8	15	43	0.19	0.35	0.37	0.19	-	-	-	12.8
7	7	8	8	8	20	43	0.22	0.44	0.46	0.19	-	-	-	12.8
7	7	8	8	8	25	43	0.27	0.54	0.57	0.19	-	-	-	12.8
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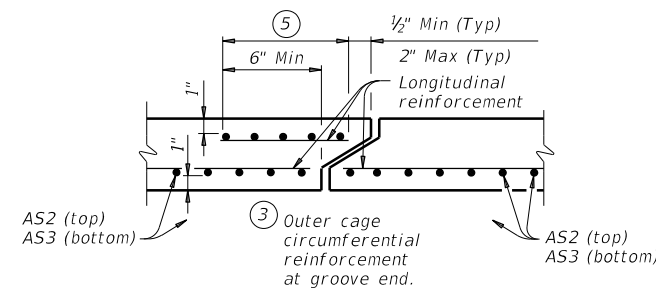
CORNER OPTION "A" CORNER OPTION "B"



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT 2 FT AND GREATER

FILL HEIGHT LESS THAN 2 FT



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 minimal 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 7'-0" SPAN			
SCP-7			
FILE: CD-SCP07-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
©TxDOT February 2020	CONT	SECT	JOB
REVISIONS	0915	46	052
	DIST	COUNTY	SHEET NO.
	SAT	GUADALUPE	351

① For box length = 8'-0"

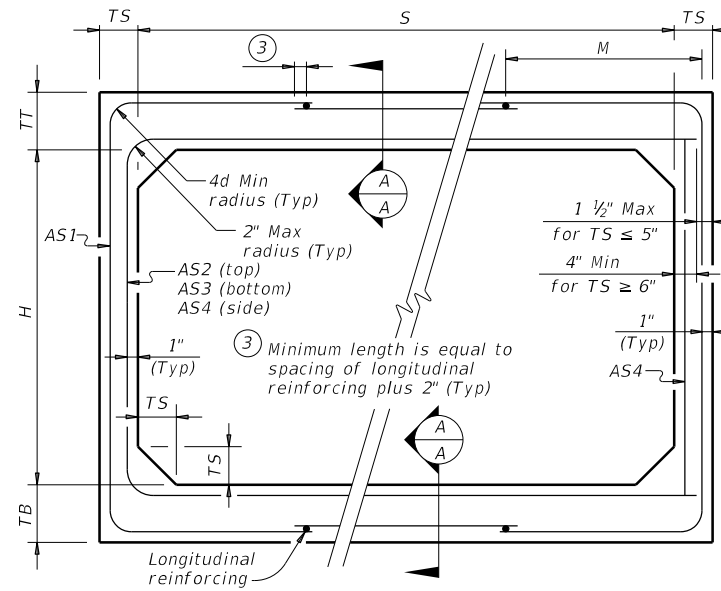
② AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcing per linear foot of box length. AS5 is minimum required area of reinforcing per linear foot of box width.

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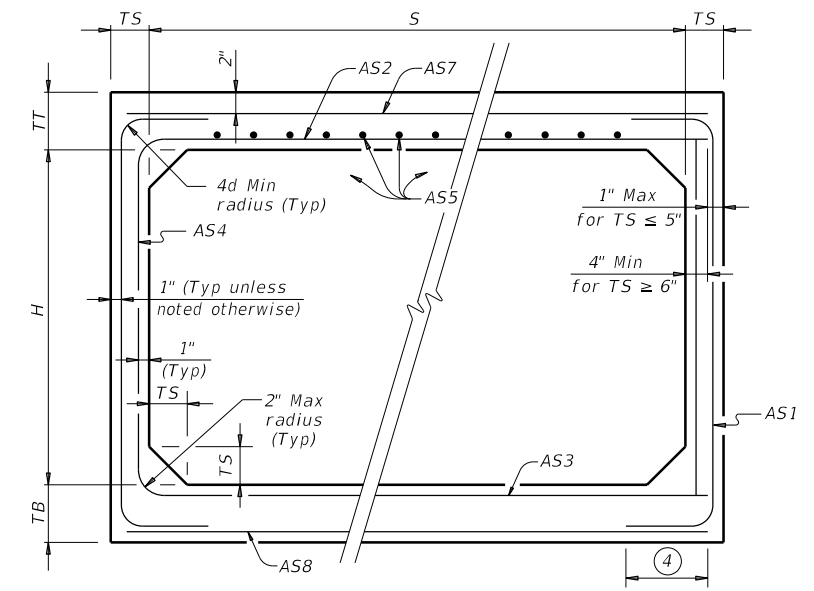
BOX DATA

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	
8	3	8	8	8	< 2	-	0.31	0.35	0.25	0.19	0.19	0.19	0.19	10.4
8	3	8	8	8	2 < 3	55	0.35	0.29	0.28	0.19	-	-	-	10.4
8	3	8	8	8	3 - 5	50	0.28	0.23	0.24	0.19	-	-	-	10.4
8	3	8	8	8	10	45	0.29	0.25	0.26	0.19	-	-	-	10.4
8	3	8	8	8	15	45	0.39	0.33	0.34	0.19	-	-	-	10.4
8	3	8	8	8	20	45	0.51	0.43	0.44	0.19	-	-	-	10.4
8	3	8	8	8	25	45	0.63	0.53	0.54	0.19	-	-	-	10.4
8	4	8	8	8	< 2	-	0.27	0.38	0.29	0.19	0.19	0.19	0.19	11.2
8	4	8	8	8	2 < 3	50	0.31	0.34	0.32	0.19	-	-	-	11.2
8	4	8	8	8	3 - 5	50	0.25	0.27	0.27	0.19	-	-	-	11.2
8	4	8	8	8	10	45	0.26	0.28	0.29	0.19	-	-	-	11.2
8	4	8	8	8	15	41	0.34	0.37	0.38	0.19	-	-	-	11.2
8	4	8	8	8	20	41	0.44	0.48	0.49	0.19	-	-	-	11.2
8	5	8	8	8	< 2	-	0.24	0.40	0.32	0.19	0.19	0.19	0.19	12.0
8	5	8	8	8	2 < 3	50	0.28	0.37	0.35	0.19	-	-	-	12.0
8	5	8	8	8	3 - 5	45	0.23	0.29	0.30	0.19	-	-	-	12.0
8	5	8	8	8	10	45	0.23	0.31	0.32	0.19	-	-	-	12.0
8	5	8	8	8	15	41	0.30	0.41	0.42	0.19	-	-	-	12.0
8	5	8	8	8	20	41	0.39	0.52	0.54	0.19	-	-	-	12.0
8	6	8	8	8	< 2	-	0.22	0.42	0.35	0.19	0.19	0.19	0.19	12.8
8	6	8	8	8	2 < 3	50	0.25	0.40	0.38	0.19	-	-	-	12.8
8	6	8	8	8	3 - 5	50	0.21	0.32	0.33	0.19	-	-	-	12.8
8	6	8	8	8	10	45	0.22	0.33	0.34	0.19	-	-	-	12.8
8	6	8	8	8	15	41	0.28	0.43	0.45	0.19	-	-	-	12.8
8	6	8	8	8	20	41	0.36	0.55	0.57	0.19	-	-	-	12.8
8	7	8	8	8	< 2	-	0.20	0.44	0.37	0.19	0.19	0.19	0.19	13.6
8	7	8	8	8	2 < 3	55	0.23	0.43	0.41	0.19	-	-	-	13.6
8	7	8	8	8	3 - 5	55	0.19	0.34	0.35	0.19	-	-	-	13.6
8	7	8	8	8	10	50	0.20	0.34	0.36	0.19	-	-	-	13.6
8	7	8	8	8	15	41	0.26	0.45	0.47	0.19	-	-	-	13.6
8	7	8	8	8	20	41	0.33	0.57	0.60	0.19	-	-	-	13.6
8	8	8	8	8	< 2	-	0.20	0.45	0.40	0.19	0.19	0.19	0.19	14.4
8	8	8	8	8	2 < 3	65	0.21	0.45	0.44	0.19	-	-	-	14.4
8	8	8	8	8	3 - 5	65	0.19	0.36	0.38	0.19	-	-	-	14.4
8	8	8	8	8	10	55	0.19	0.35	0.38	0.19	-	-	-	14.4
8	8	8	8	8	15	45	0.24	0.46	0.49	0.19	-	-	-	14.4
8	8	8	8	8	20	45	0.31	0.59	0.62	0.19	-	-	-	14.4



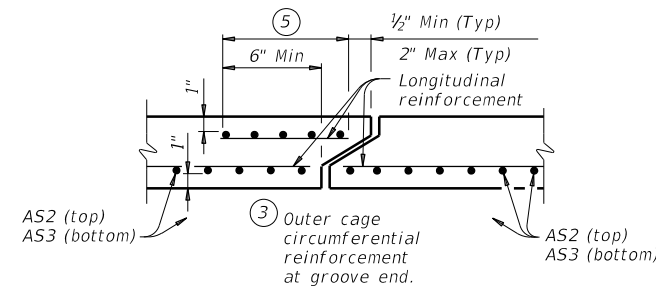
CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT



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.
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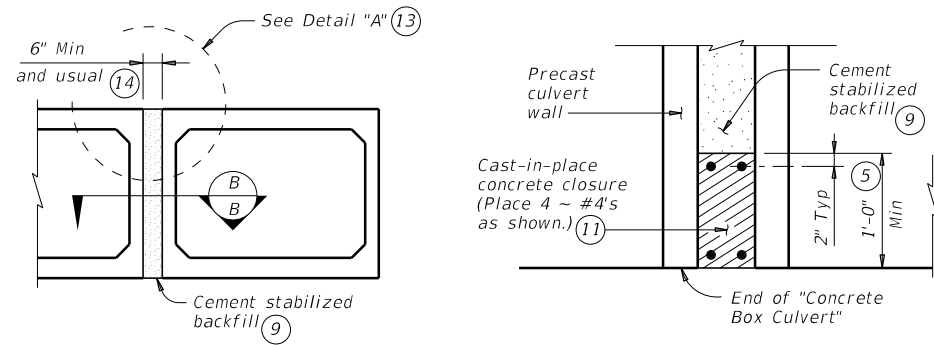
① For box length = 8'-0"
 ② AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.

HL93 LOADING

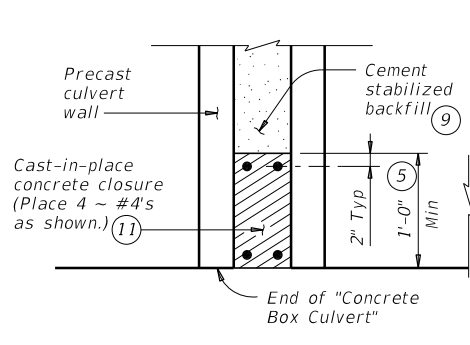
		Bridge Division Standard	
SINGLE BOX CULVERTS PRECAST 8'-0" SPAN			
SCP-8			
FILE: CD-SCP08-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
©TxDOT February 2020	CONT	SECT	JOB
REVISIONS	0915	46	052
	DIST	COUNTY	SHEET NO.
	SAT	GUADALUPE	352

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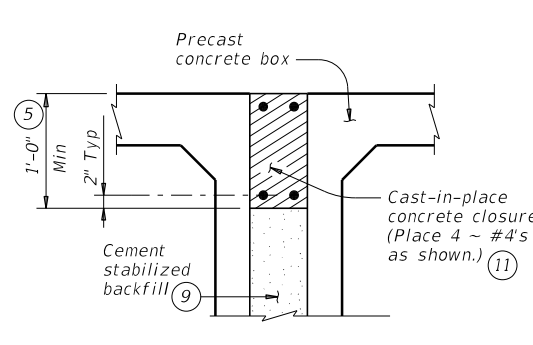
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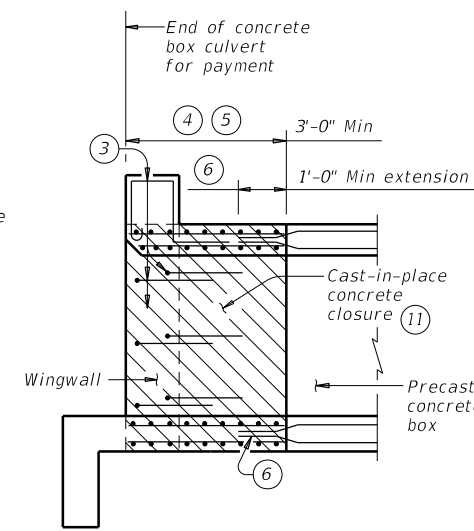
MULTIPLE UNIT PLACEMENT



SECTION B-B

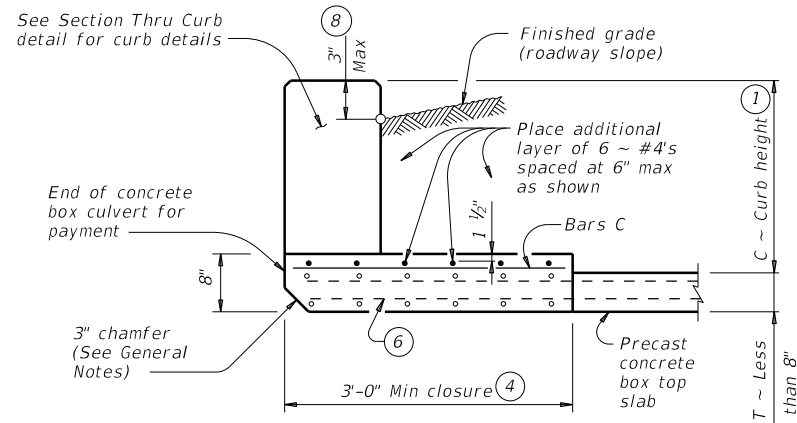


DETAIL "A"

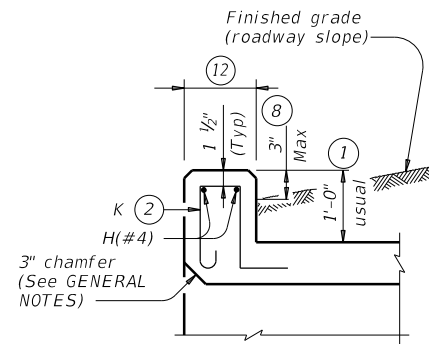


WINGWALL CONNECTION

(Also applies to safety end treatment.)

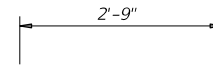


SECTION THRU TOP SLABS LESS THAN 8"

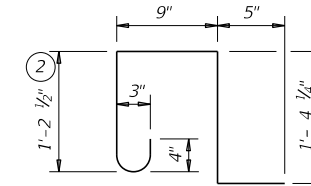


SECTION THRU CURB

QUANTITIES PER FOOT OF CURB (10)	
Reinforcing Steel	4.12 Lb
Concrete	0.037 CY



BARS C (#4)
(Spa = 1'-0" Max)



BARS K (#4)
(Spa = 1'-0" Max)
(Length = 4'-2")

- 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.

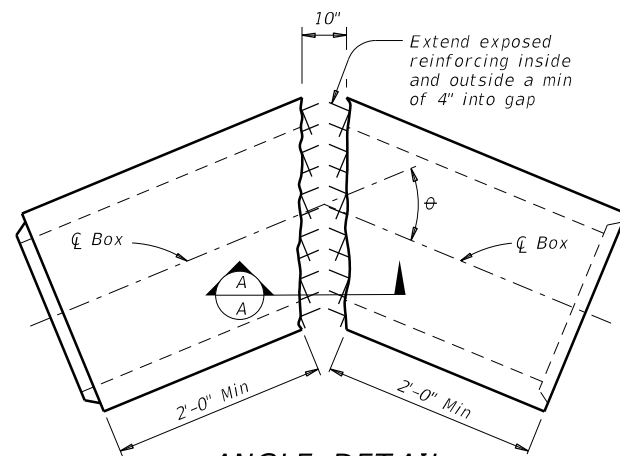
MATERIAL NOTES:

- 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.

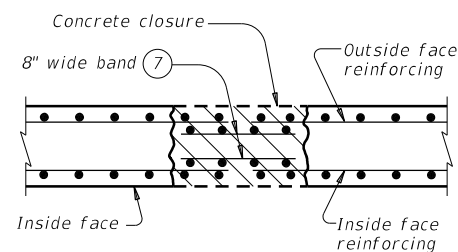
GENERAL NOTES:

- 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.

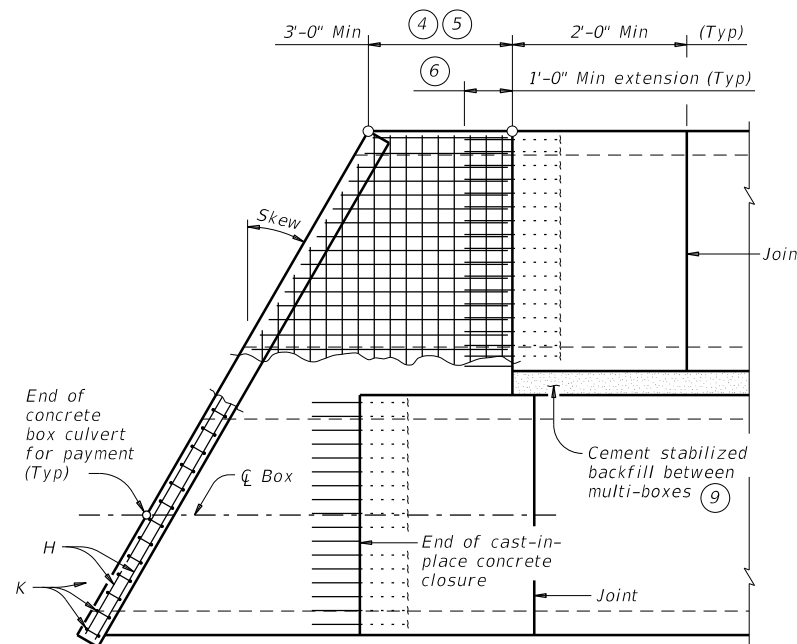
Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing bars dimensions are out-to-out of bars.



ANGLE DETAIL



SECTION A-A



PLAN OF SKEWED ENDS

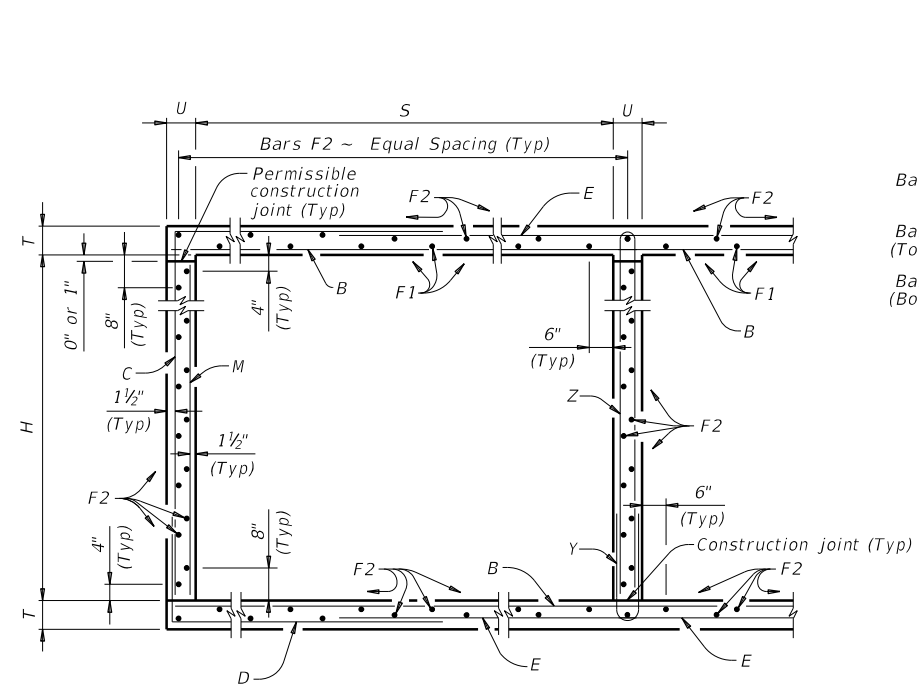
(Showing multi-box placement.)

HL93 LOADING

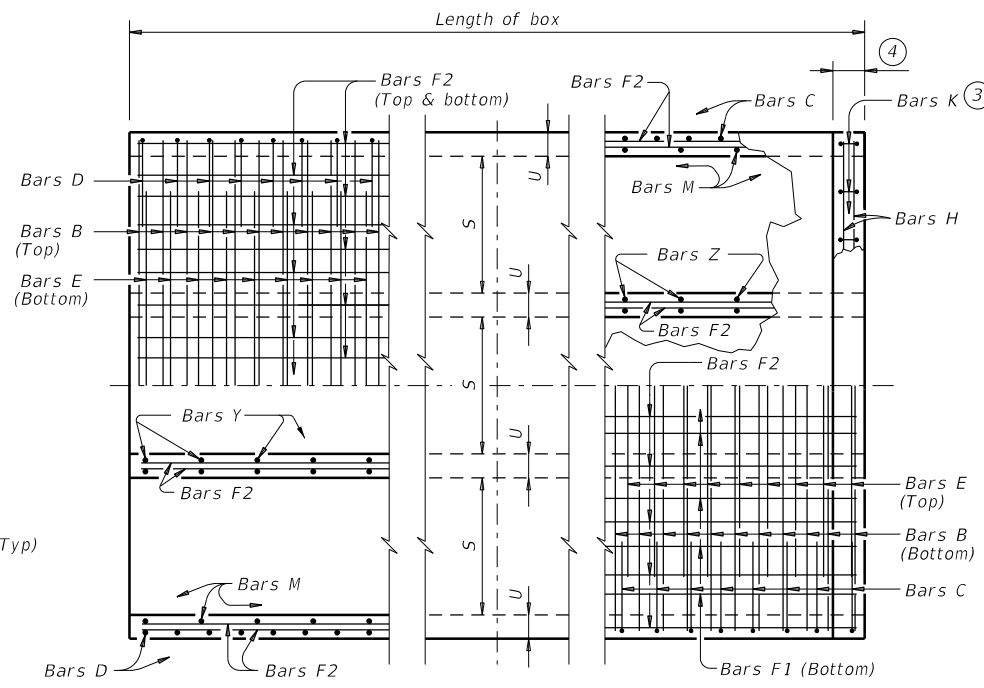
		Bridge Division Standard	
BOX CULVERTS PRECAST MISCELLANEOUS DETAILS			
SCP-MD			
FILE: CD-SCP-MD-20.dgn	DN: GAF	CK: LMW	DW: BWH/TxDOT
©TxDOT	February 2020	CONTRACT NO. 0915	SECTION NO. 46
REVISIONS		JOB NO. 052	HIGHWAY NO. CORDOVA
DIST. SAT	COUNTY. GUADALUPE	SHEET NO. 353	

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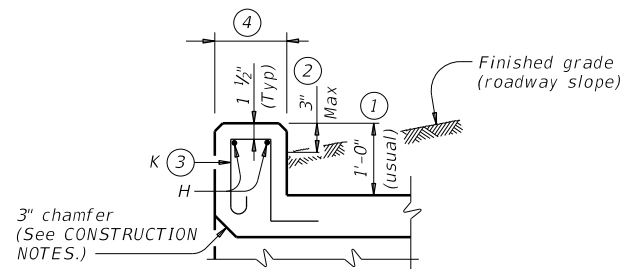
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TYPICAL SECTION

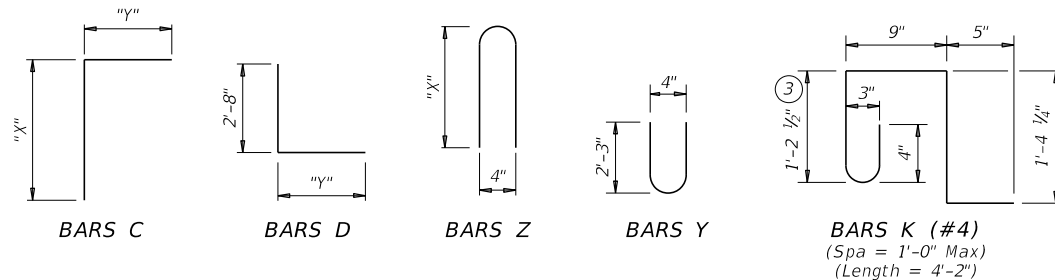


BOTTOM SLAB
PART PLANS
TOP SLAB



SECTION THRU CURB

TABLE OF BAR DIMENSIONS		
H	"X"	"Y"
2'-0"	2'-7 1/2"	4'-1"
3'-0"	3'-7 1/2"	4'-1"
4'-0"	4'-7 1/2"	4'-1"
5'-0"	5'-7 1/2"	4'-1"
6'-0"	6'-7 1/2"	4'-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.
- 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.
- 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.
- 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, and Bars Y and Z 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

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications for the range of fill heights shown.
 See the Multiple Box Culverts Cast-In-Place Miscellaneous Detail (MC-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



**MULTIPLE BOX CULVERTS
 CAST-IN-PLACE
 6'-0" SPAN
 0' TO 16' FILL
 MC-6-16**

FILE: CD-MC616-20.dgn	DN: TBE	CK: BMP	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
	DIST	COUNTY	SHEET NO.	
	SAT	GUADALUPE	354	

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DATE: 11/17/2023 6:34:00 PM
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NUMBER OF SPANS	SECTION DIMENSIONS				BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																																QUANTITIES												
					Bars B				Bars C & D				Bars E				Bars F1 ~ #4				Bars F2 ~ #4				Bars M ~ #4				Bars Y & Z ~ #4				Bars H 4 ~ #4		Bars K		Per Foot of Barrel		Curb		Total								
	S	H	T	U	No.	Size	Spa	Length	Wt	No.	Size	Spa	Bars C		Bars D		No.	Size	Spa	Length	Wt	No.	Spa	Length	Wt	No.	Spa	Length	Wt	No.	Spa	Length	Wt	No.	Spa	Bars Y		Bars Z		Length	Wt	No.	Wt	Conc (CY)	Ref (Lb)	Conc (CY)	Ref (Lb)	Conc (CY)	Ref (Lb)
2	6'-0"	2'-0"	9"	7"	108	#6	9"	13'-6"	2,190	108	#5	9"	6'-8"	751	6'-9"	760	108	#6	9"	10'-2"	1,649	10	18"	39'-9"	266	44	18"	39'-9"	1,168	108	9"	2'-0"	144	54	9"	4'-9"	171	5'-5"	195	13'-6"	36	30	84	0.894	182.4	1.0	120	36.8	7,414
3	6'-0"	2'-0"	9"	7"	108	#6	9"	20'-1"	3,258	108	#5	9"	6'-8"	751	6'-9"	760	108	#6	9"	16'-9"	2,717	15	18"	39'-9"	398	63	18"	39'-9"	1,673	108	9"	2'-0"	144	108	9"	4'-9"	343	5'-5"	391	20'-1"	54	44	122	1.302	260.9	1.5	176	53.6	10,611
4	6'-0"	2'-0"	9"	7"	108	#6	9"	26'-8"	4,326	108	#5	9"	6'-8"	751	6'-9"	760	108	#6	9"	23'-4"	3,785	20	18"	39'-9"	531	82	18"	39'-9"	2,177	108	9"	2'-0"	144	162	9"	4'-9"	514	5'-5"	586	26'-8"	71	56	156	1.711	339.4	2.0	227	70.4	13,801
5	6'-0"	2'-0"	9"	7"	108	#6	9"	33'-3"	5,394	108	#5	9"	6'-8"	751	6'-9"	760	108	#6	9"	29'-11"	4,853	25	18"	39'-9"	664	101	18"	39'-9"	2,682	108	9"	2'-0"	144	216	9"	4'-9"	685	5'-5"	782	33'-3"	89	70	195	2.120	417.9	2.5	284	87.3	16,999
6	6'-0"	2'-0"	9"	7"	108	#6	9"	39'-10"	6,462	108	#5	9"	6'-8"	751	6'-9"	760	108	#6	9"	36'-6"	5,921	30	18"	39'-9"	797	120	18"	39'-9"	3,186	108	9"	2'-0"	144	270	9"	4'-9"	857	5'-5"	977	39'-10"	106	82	228	2.529	496.4	3.0	334	104.1	20,189
2	6'-0"	3'-0"	9"	7"	108	#6	9"	13'-6"	2,190	108	#5	9"	7'-8"	864	6'-9"	760	108	#6	9"	10'-2"	1,649	10	18"	39'-9"	266	50	18"	39'-9"	1,328	108	9"	3'-0"	216	54	9"	4'-9"	171	7'-5"	268	13'-6"	36	30	84	0.958	192.8	1.0	120	39.3	7,832
3	6'-0"	3'-0"	9"	7"	108	#6	9"	20'-1"	3,258	108	#5	9"	7'-8"	864	6'-9"	760	108	#6	9"	16'-9"	2,717	15	18"	39'-9"	398	71	18"	39'-9"	1,885	108	9"	3'-0"	216	108	9"	4'-9"	343	7'-5"	535	20'-1"	54	44	122	1.389	274.4	1.5	176	57.1	11,152
4	6'-0"	3'-0"	9"	7"	108	#6	9"	26'-8"	4,326	108	#5	9"	7'-8"	864	6'-9"	760	108	#6	9"	23'-4"	3,785	20	18"	39'-9"	531	92	18"	39'-9"	2,443	108	9"	3'-0"	216	162	9"	4'-9"	514	7'-5"	803	26'-8"	71	56	156	1.819	356.1	2.0	227	74.7	14,469
5	6'-0"	3'-0"	9"	7"	108	#6	9"	33'-3"	5,394	108	#5	9"	7'-8"	864	6'-9"	760	108	#6	9"	29'-11"	4,853	25	18"	39'-9"	664	113	18"	39'-9"	3,000	108	9"	3'-0"	216	216	9"	4'-9"	685	7'-5"	1,070	33'-3"	89	70	195	2.250	437.7	2.5	284	92.5	17,790
6	6'-0"	3'-0"	9"	7"	108	#6	9"	39'-10"	6,462	108	#5	9"	7'-8"	864	6'-9"	760	108	#6	9"	36'-6"	5,921	30	18"	39'-9"	797	134	18"	39'-9"	3,558	108	9"	3'-0"	216	270	9"	4'-9"	857	7'-5"	1,338	39'-10"	106	82	228	2.681	519.3	3.0	334	110.2	21,107
2	6'-0"	4'-0"	9"	7"	108	#6	9"	13'-6"	2,190	108	#5	9"	8'-8"	976	6'-9"	760	108	#6	9"	10'-2"	1,649	10	18"	39'-9"	266	50	18"	39'-9"	1,328	108	9"	4'-0"	289	54	9"	4'-9"	171	9'-5"	340	13'-6"	36	30	84	1.023	199.2	1.0	120	41.9	8,089
3	6'-0"	4'-0"	9"	7"	108	#6	9"	20'-1"	3,258	108	#5	9"	8'-8"	976	6'-9"	760	108	#6	9"	16'-9"	2,717	15	18"	39'-9"	398	71	18"	39'-9"	1,885	108	9"	4'-0"	289	108	9"	4'-9"	343	9'-5"	679	20'-1"	54	44	122	1.475	282.6	1.5	176	60.5	11,481
4	6'-0"	4'-0"	9"	7"	108	#6	9"	26'-8"	4,326	108	#5	9"	8'-8"	976	6'-9"	760	108	#6	9"	23'-4"	3,785	20	18"	39'-9"	531	92	18"	39'-9"	2,443	108	9"	4'-0"	289	162	9"	4'-9"	514	9'-5"	1,019	26'-8"	71	56	156	1.927	366.1	2.0	227	79.1	14,870
5	6'-0"	4'-0"	9"	7"	108	#6	9"	33'-3"	5,394	108	#5	9"	8'-8"	976	6'-9"	760	108	#6	9"	29'-11"	4,853	25	18"	39'-9"	664	113	18"	39'-9"	3,000	108	9"	4'-0"	289	216	9"	4'-9"	685	9'-5"	1,359	33'-3"	89	70	195	2.380	449.5	2.5	284	97.7	18,264
6	6'-0"	4'-0"	9"	7"	108	#6	9"	39'-10"	6,462	108	#5	9"	8'-8"	976	6'-9"	760	108	#6	9"	36'-6"	5,921	30	18"	39'-9"	797	134	18"	39'-9"	3,558	108	9"	4'-0"	289	270	9"	4'-9"	857	9'-5"	1,698	39'-10"	106	82	228	2.832	533.0	3.0	334	116.2	21,652
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3	6'-0"	5'-0"	9"	7"	108	#6	9"	20'-1"	3,258	108	#5	9"	9'-8"	1,089	6'-9"	760	108	#6	9"	16'-9"	2,717	15	18"	39'-9"	398	79	18"	39'-9"	2,098	108	9"	5'-0"	361	108	9"	4'-9"	343	11'-5"	824	20'-1"	54	44	122	1.562	296.2	1.5	176	64.0	12,024
4	6'-0"	5'-0"	9"	7"	108	#6	9"	26'-8"	4,326	108	#5	9"	9'-8"	1,089	6'-9"	760	108	#6	9"	23'-4"	3,785	20	18"	39'-9"	531	102	18"	39'-9"	2,708	108	9"	5'-0"	361	162	9"	4'-9"	514	11'-5"	1,235	26'-8"	71	56	156	2.035	382.7	2.0	227	83.4	15,536
5	6'-0"	5'-0"	9"	7"	108	#6	9"	33'-3"	5,394	108	#5	9"	9'-8"	1,089	6'-9"	760	108	#6	9"	29'-11"	4,853	25	18"	39'-9"	664	125	18"	39'-9"	3,319	108	9"	5'-0"	361	216	9"	4'-9"	685	11'-5"	1,647	33'-3"	89	70	195	2.509	469.3	2.5	284	102.8	19,056
6	6'-0"	5'-0"	9"	7"	108	#6	9"	39'-10"	6,462	108	#5	9"	9'-8"	1,089	6'-9"	760	108	#6	9"	36'-6"	5,921	30	18"	39'-9"	797	148	18"	39'-9"	3,930	108	9"	5'-0"	361	270	9"	4'-9"	857	11'-5"	2,059	39'-10"	106	82	228	2.983	555.9	3.0	334	122.3	22,570
2	6'-0"	6'-0"	9"	7"	108	#6	9"	13'-6"	2,190	108	#5	9"	10'-8"	1,202	6'-9"	760	108	#6	9"	10'-2"	1,649	10	18"	39'-9"	266	62	18"	39'-9"	1,646	108	9"	6'-0"	433	54	9"	4'-9"	171	13'-5"	484	13'-6"	36	30	84	1.153	220.0	1.0	120	47.1	8,921
3	6'-0"	6'-0"	9"	7"	108	#6	9"	20'-1"	3,258	108	#5	9"	10'-8"	1,202	6'-9"	760	108	#6	9"	16'-9"	2,717	15	18"	39'-9"	398	87	18"	39'-9"	2,310	108	9"	6'-0"	433	108	9"	4'-9"	343	13'-5"	968	20'-1"	54	44	122	1.648	309.7	1.5	176	67.4	12,565
4	6'-0"	6'-0"	9"	7"	108	#6	9"	26'-8"	4,326	108	#5	9"	10'-8"	1,202	6'-9"	760	108	#6	9"	23'-4"	3,785	20	18"	39'-9"	531	112	18"	39'-9"	2,974	108	9"	6'-0"	433	162	9"	4'-9"	514	13'-5"	1,452	26'-8"	71	56	156	2.144	399.4	2.0	227	87.7	16,204
5	6'-0"	6'-0"	9"	7"	108	#6	9"	33'-3"	5,394	108	#5	9"	10'-8"	1,202	6'-9"	760	108	#6	9"	29'-11"	4,853	25	18"	39'-9"	664	137	18"	39'-9"	3,638	108	9"	6'-0"	433	216	9"	4'-9"	685	13'-5"	1,936	33'-3"	89	70	195	2.639	489.1	2.5	284	108.0	19,849
6	6'-0"	6'-0"	9"	7"	108	#6	9"	39'-10"	6,462	108	#5	9"	10'-8"	1,202	6'-9"	760	108	#6	9"	36'-6"	5,921	30	18"	39'-9"	797	162	18"	39'-9"	4,302	108	9"	6'-0"	433	270	9"	4'-9"	857	13'-5"	2,420	39'-10"	106	82	228	3.134	578.9	3.0	334	128.3	23,488

HL93 LOADING SHEET 2 OF 2

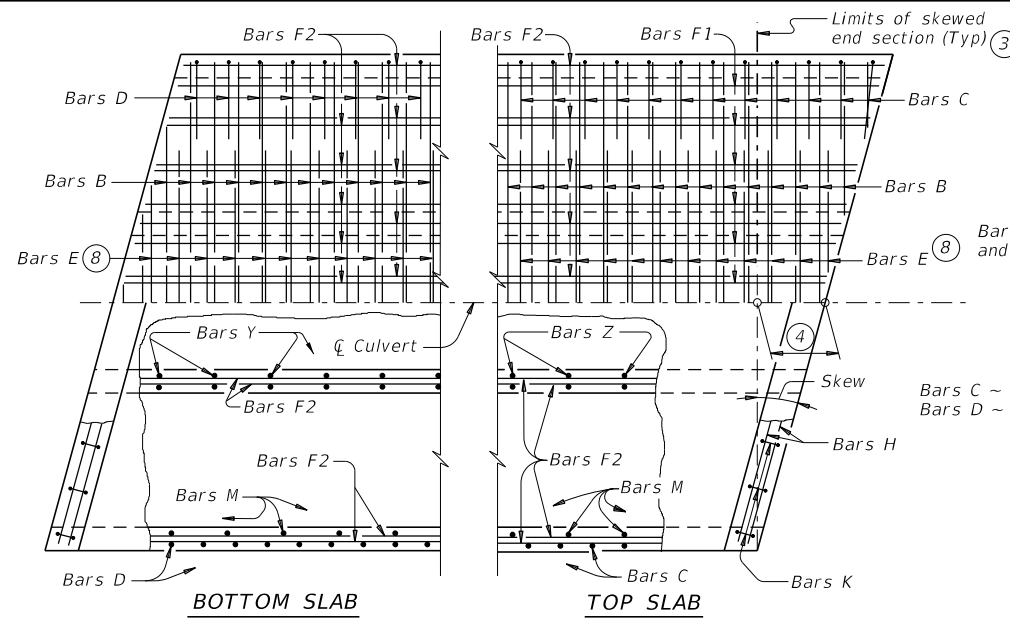


**MULTIPLE BOX CULVERTS
 CAST-IN-PLACE
 6'-0" SPAN
 0' TO 16' FILL
 MC-6-16**

FILE: CD-MC616-20.dgn	DN: TBE	CK: BMP	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
	DIST	COUNTY		SHEET NO.
	SAT	GUADALUPE		355

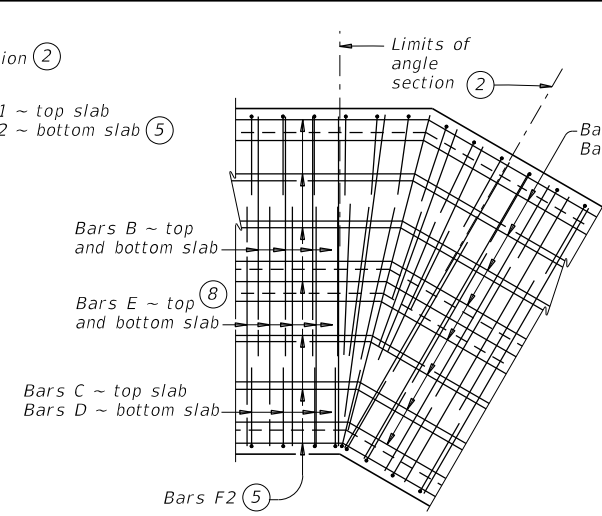
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DATE: 11/17/2023 6:34:01 PM
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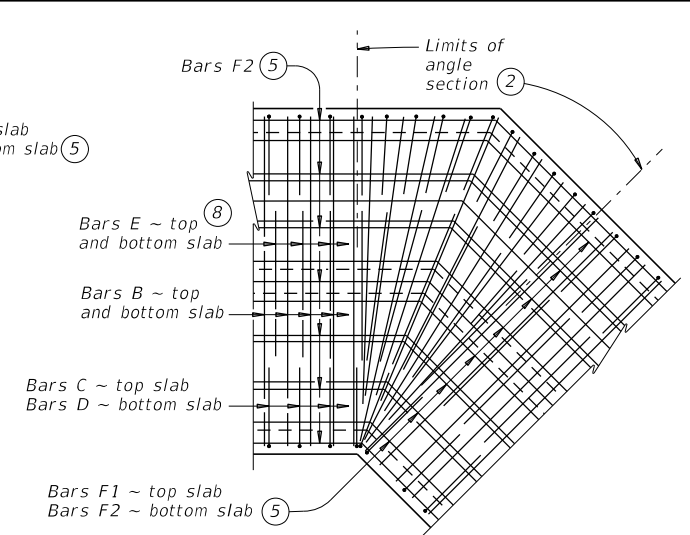


PLAN OF SKEWED ENDS ~ FROM 0° TO 15°

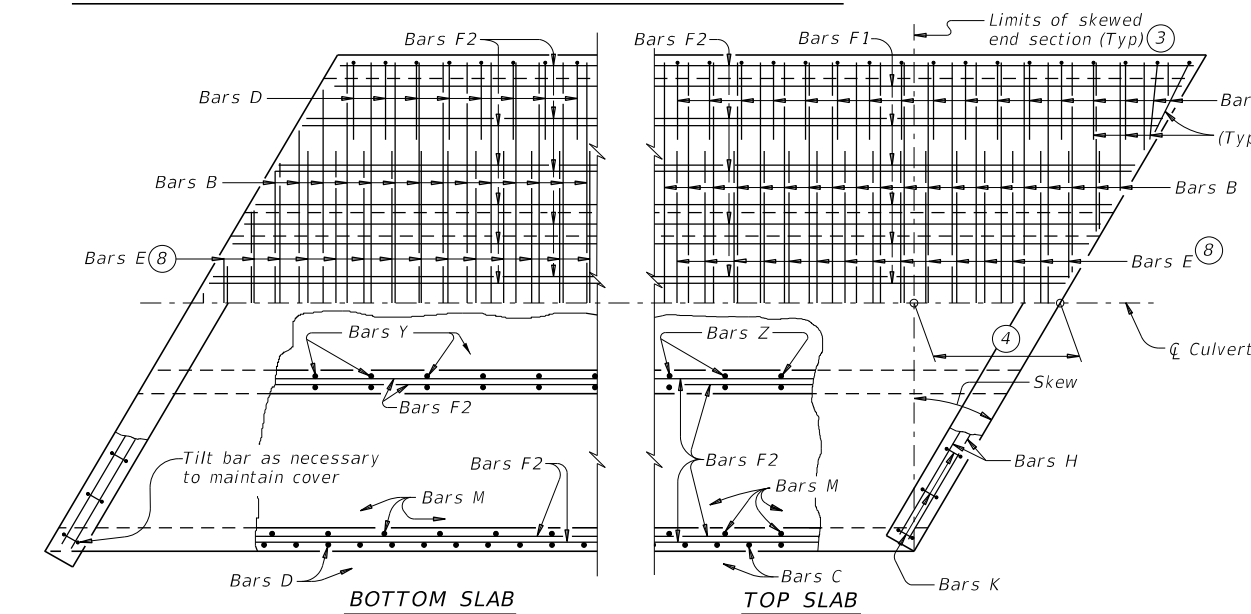
PLAN OF ANGLE SECTION ~ FROM 0° TO 15°



PLAN OF ANGLE SECTION ~ OVER 15° TO 30°



PLAN OF ANGLE SECTION ~ OVER 30° TO 45°



PLAN OF SKEWED ENDS ~ OVER 15° TO 30°

- 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, Class 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, N_{ba}, 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 or Bars E becomes less than half of the normal spacing, cut bars to avoid conflict.
- ③ The length of Bars B and Bars E will vary in the skewed end sections.
- ④ $[0.5 \times \text{overall width}] \times [\text{tangent of the skew angle}]$
- 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, D, and E parallel to the skewed end while maintaining spacing along centerline of box. Increase lengths of Bars B and Bars E shown on the Multiple Box Culverts Cast-In-Place (MC) standard sheets to accommodate the skew.
- ⑧ Extend Bars E as shown on the MC standard sheet for direct traffic culverts.

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.

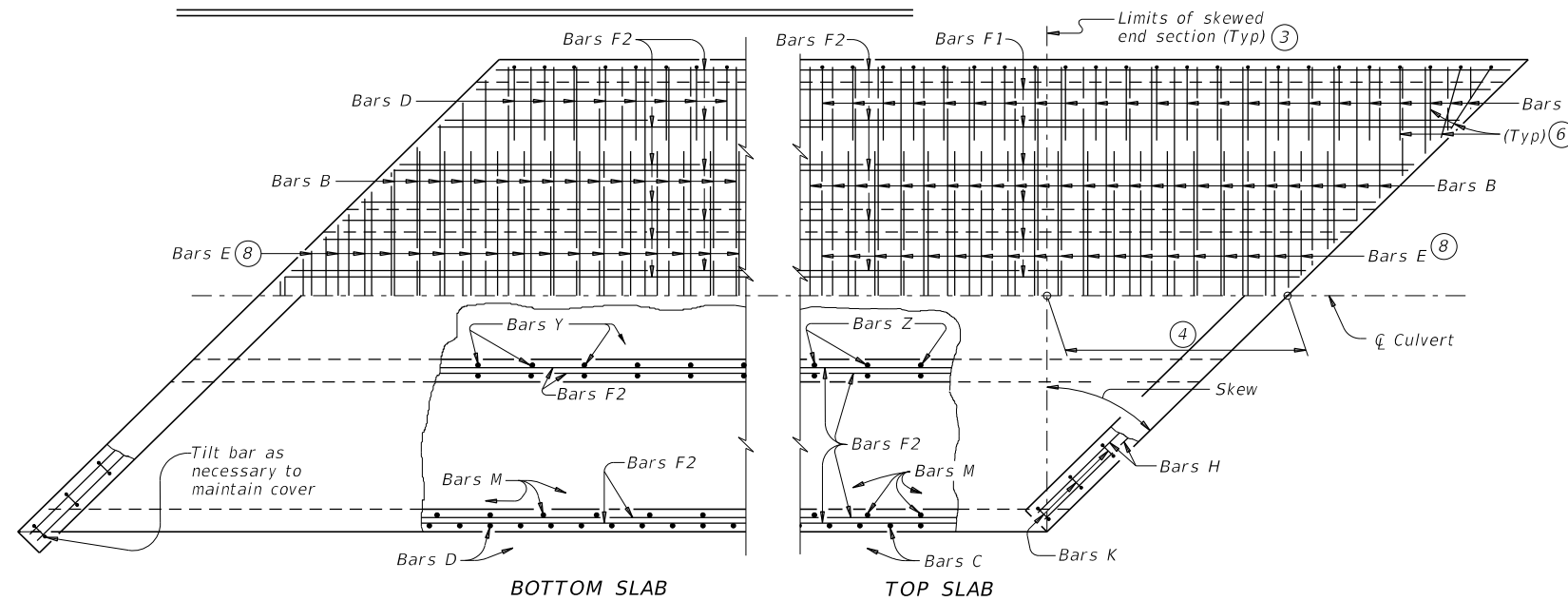
MATERIAL NOTES:

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 5 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.

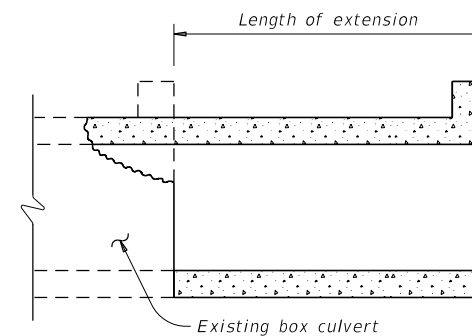
GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
 Refer to Multiple Box Culverts Cast-in-Place (MC) standard sheets for details of straight sections of culvert.
 For skewed sections and angle sections, refer to Multiple Box Culverts Cast-in-Place (MC) 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 Multiple Box Culverts Cast-In-Place (MC) standard sheets by the cosine of the skew angle.

Cover dimensions are clear dimensions, unless noted otherwise.



PLAN OF SKEWED ENDS ~ OVER 30° TO 45°



LENGTHENING DETAIL

HL93 LOADING

		Bridge Division Standard	
MULTIPLE BOX CULVERTS CAST-IN-PLACE MISCELLANEOUS DETAILS			
MC-MD			
FILE: CD-MC-MD-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
©TxDOT February 2020	CONT SECT	JOB	HIGHWAY
REVISIONS	0915 46	052	CORDOVA
	DIST	COUNTY	SHEET NO.
	SAT	GUADALUPE	356

11/17/2023 6:34:03 PM
 DATE: 11/17/2023 6:34:03 PM
 FILE: P:\127\75\00\Des\ign\C:\i\Standards\Drainage\CD-PW-20.dgn
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TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for one structure end)

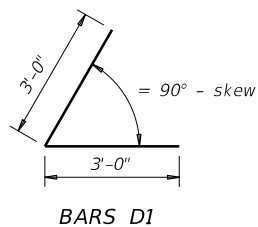
Maximum Wingwall Height Hw	Dimensions				Variable Reinforcing				Estimated Quantities per ft of wing (2-wings) (4)	Estimated Quantities per ft of Toewall (1-toewall)		
	W	X	Y	Z	Bars J1		Bars J2					
2'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	48.64	0.406	6.85	0.071
2'-9"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#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)

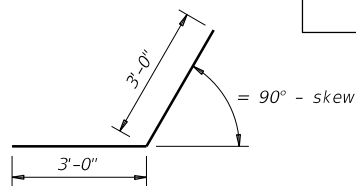
Bar	Size	No.	Spa
D1	#6	~	1'-0"
D2	#6	~	1'-0"
E1	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	~	8"
M1	#4	4	~
P	#4	~	1'-0"
V	#4	~	1'-0"

TABLE OF TOEWALL REINFORCING

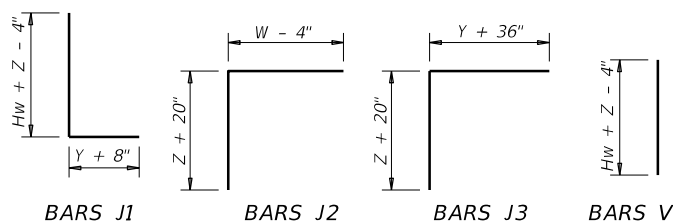
Bar	Size	No.	Spa
J3	#4	~	1'-0"
M2	#4	2	~
E2	#4	~	1'-0"



BARS D1



BARS D2



BARS J1

BARS J2

BARS J3

BARS V

WING DIMENSION FORMULAS:

(All values are in feet.)

$$\begin{aligned}
 Hw &= H + T + C \\
 Lw &= (Hw)(SL) \div \cosine(\theta) \text{ for Type PW-1} \\
 &= (Hw - 1')(SL) \div \cosine(\theta) \text{ for Type PW-2 and } Hw \ge 4' \\
 &= (Hw - 0.5')(SL) \div \cosine(\theta) \text{ for Type PW-2 and } Hw < 4'
 \end{aligned}$$

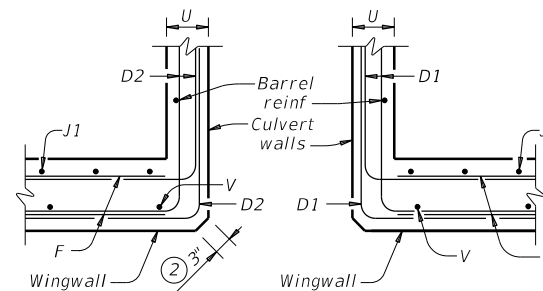
For cast-in-place culverts:
 $Ltw = [(N)(S) + (N + 1)(U)] \div \cosine(\theta)$

For precast culverts:
 $Ltw = [(N)(2U + S) + (N - 1)(0.5')] \div \cosine(\theta)$
 Total Wingwall Area (two wings ~ SF)
 $= (2)(Hw)(Lw)$ for Type PW-1
 $= (2)(Hw)(Lw) - 6 \text{ SF}$ for Type PW-2 and $Hw \ge 4'$
 $= (2)(Hw)(Lw) - 1.5 \text{ SF}$ 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

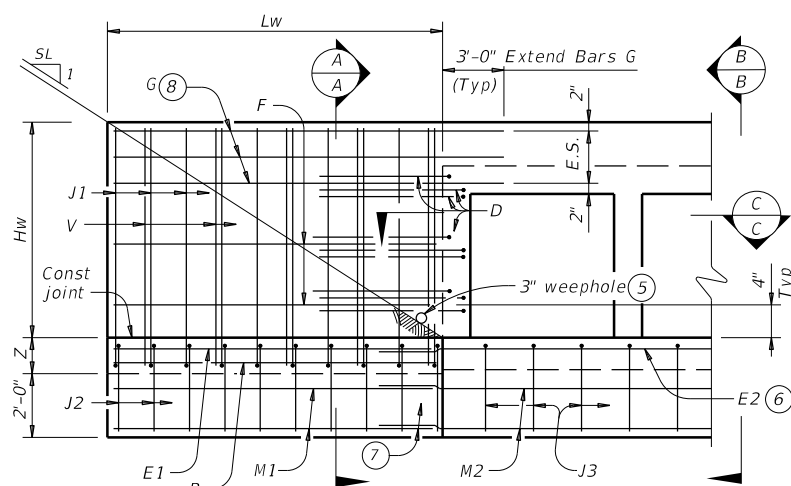
See applicable box culvert standard sheet for S, H, T, and U values.

- 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'.

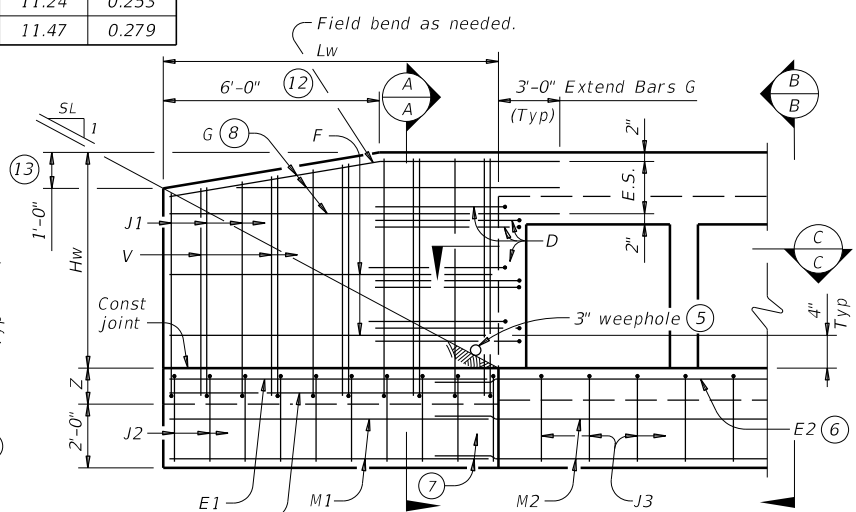


SECTION C-C - PW-1

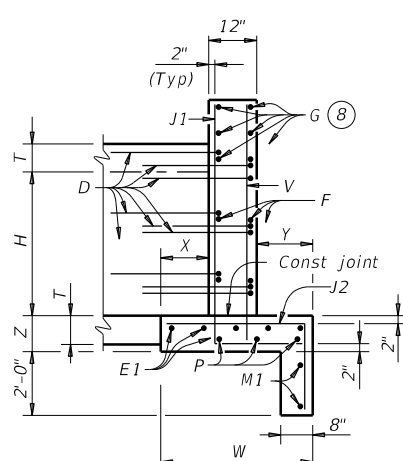
SECTION C-C - PW-2



PARTIAL ELEVATION - PW-1

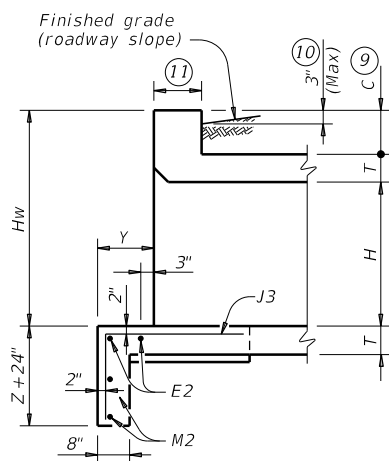


PARTIAL ELEVATION - PW-2



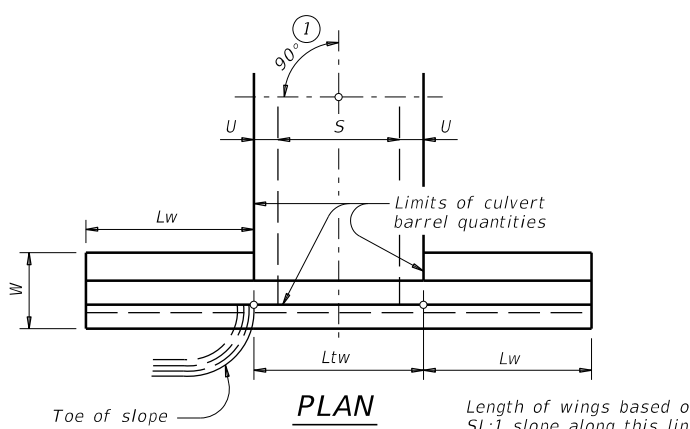
SECTION A-A

(Showing wing reinforcement.)



SECTION B-B

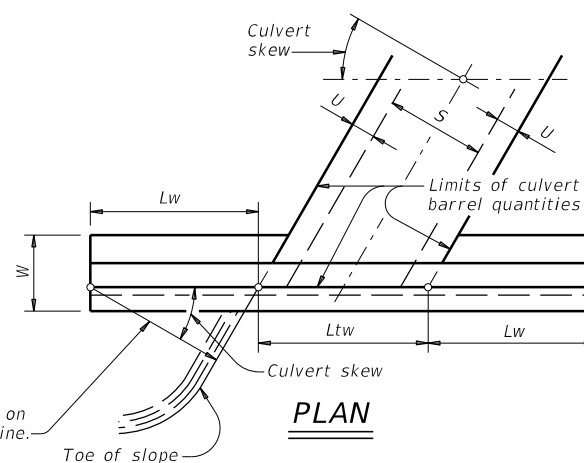
(Showing wing reinforcement.)



PLAN

DETAILS FOR NON-SKEWED BOX CULVERTS

Length of wings based on SL:1 slope along this line.



PLAN

DETAILS FOR SKEWED BOX CULVERTS

(Showing 30° skew.)

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



CONCRETE WINGWALLS WITH PARALLEL WINGS FOR BOX CULVERTS TYPES PW-1 AND PW-2

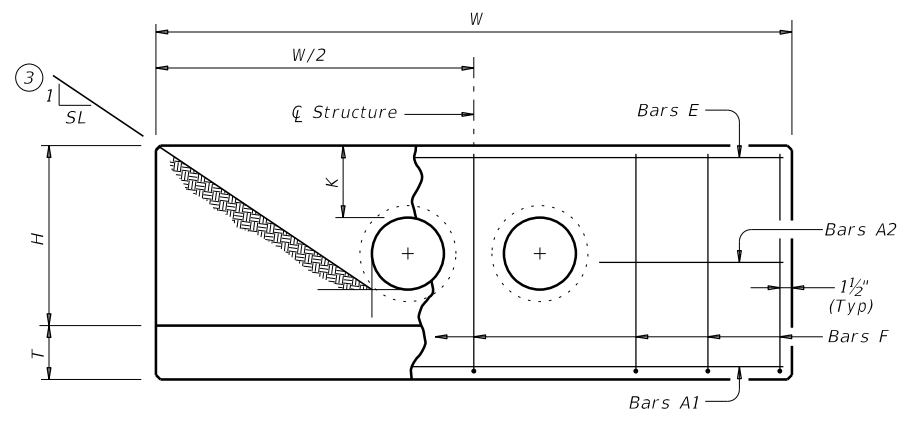
PW

FILE: CD-PW-20.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT SECT	JOB	HIGHWAY	
REVISIONS	0915 46	052	CORDOVA	
DIST	COUNTY	SHEET NO.		
SAT	GUADALUPE	357		

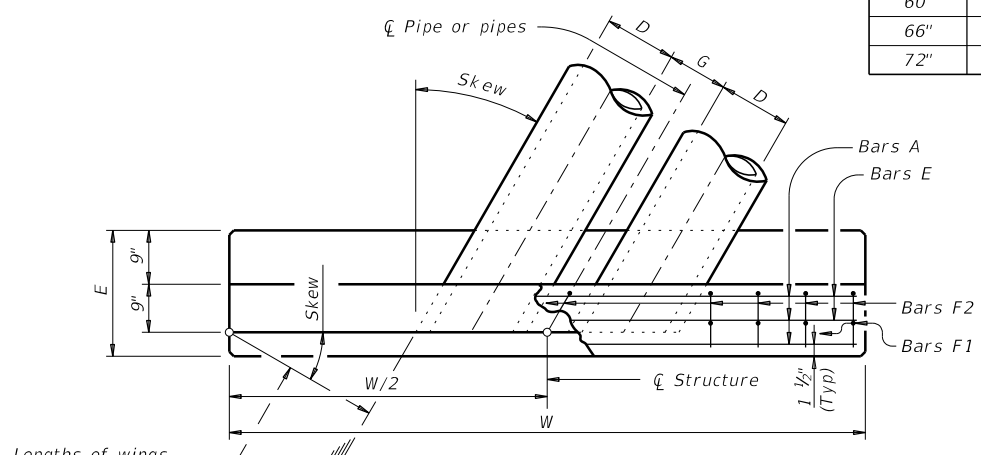
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TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL ⑤

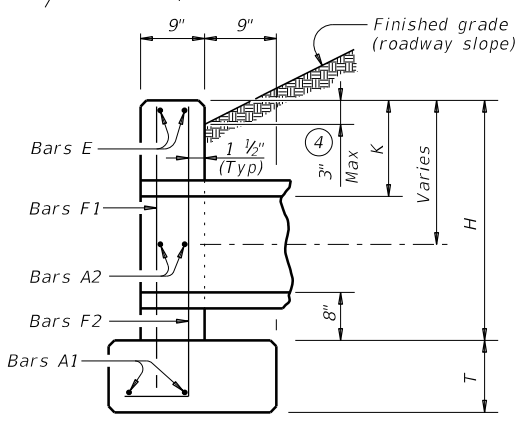
Slope	15° Skew						30° Skew						45° Skew						
	Values for One Pipe			Values To Be Added For Each Add'l Pipe			Values for One Pipe			Values To Be Added For Each Add'l Pipe			Values for One Pipe			Values To Be Added For Each Add'l Pipe			
	W	Reinf (Lbs) ①	Conc (CY) ②	W	Reinf (Lbs) ①	Conc (CY) ②	W	Reinf (Lbs) ①	Conc (CY) ②	W	Reinf (Lbs) ①	Conc (CY) ②	W	Reinf (Lbs) ①	Conc (CY) ②	W	Reinf (Lbs) ①	Conc (CY) ②	
2:1	12"	9'-4"	124	1.1	1'-9 3/4"	15	0.2	10'-5"	130	1.2	2'-0"	16	0.2	12'-9"	159	1.5	2'-5 3/4"	17	0.3
	15"	10'-7"	136	1.3	2'-3"	17	0.2	11'-10"	159	1.5	2'-6"	18	0.2	14'-6"	191	1.8	3'-0 3/4"	20	0.3
	18"	11'-11"	165	1.5	2'-9"	19	0.3	13'-3"	174	1.7	3'-1"	29	0.3	16'-3"	207	2.1	3'-9 1/4"	33	0.4
	21"	13'-2"	203	1.9	3'-2 1/4"	31	0.4	14'-9"	233	2.1	3'-6 3/4"	33	0.4	18'-0"	276	2.6	4'-4 1/4"	36	0.5
	24"	14'-6"	240	2.1	3'-8 1/4"	34	0.4	16'-2"	251	2.4	4'-1 3/4"	36	0.5	19'-10"	318	2.9	5'-0 3/4"	39	0.6
	27"	15'-9"	258	2.5	4'-0 3/4"	38	0.5	17'-7"	292	2.8	4'-6 1/4"	39	0.6	21'-7"	342	3.4	5'-6 1/4"	44	0.7
	30"	17'-1"	297	2.8	4'-5 3/4"	40	0.6	19'-1"	311	3.1	5'-0"	42	0.6	23'-4"	388	3.8	6'-1 3/4"	47	0.8
	33"	18'-5"	320	3.3	4'-9 3/4"	43	0.6	20'-6"	358	3.6	5'-4 3/4"	46	0.7	25'-1"	439	4.4	6'-7 1/4"	51	0.9
	36"	19'-8"	401	4.0	5'-3"	47	0.9	21'-11"	422	4.5	5'-10 3/4"	50	0.9	26'-10"	517	5.5	7'-2 1/4"	55	1.2
	42"	22'-3"	476	5.0	6'-0 3/4"	53	1.1	24'-10"	528	5.6	6'-8 3/4"	56	1.2	30'-5"	634	6.9	8'-3"	76	1.4
	48"	25'-11"	577	6.6	6'-9 3/4"	60	1.3	28'-10"	637	7.3	7'-7 1/4"	79	1.5	35'-4"	791	9.0	9'-3 3/4"	88	1.8
	54"	28'-6"	711	7.8	7'-9"	83	1.6	31'-9"	781	8.7	8'-8"	81	1.8	38'-11"	958	10.7	10'-7 1/4"	97	2.2
60"	31'-1"	805	9.2	8'-6 1/4"	91	1.9	34'-8"	881	10.2	9'-6 1/4"	97	2.1	42'-5"	1,113	12.5	11'-8"	124	2.6	
66"	33'-8"	907	10.6	9'-0 3/4"	98	2.1	37'-6"	1,028	11.8	10'-1 1/4"	102	2.4	46'-0"	1,235	14.5	12'-4 1/4"	132	2.9	
72"	36'-3"	1,071	12.1	9'-8"	105	2.4	40'-5"	1,207	13.5	10'-9 1/4"	110	2.6	49'-6"	1,446	16.6	13'-2 1/4"	141	3.2	
3:1	12"	13'-6"	178	1.6	1'-9 3/4"	15	0.2	15'-0"	189	1.8	2'-0"	15	0.2	18'-5"	237	2.2	2'-5 3/4"	17	0.2
	15"	15'-3"	212	1.9	2'-3"	17	0.2	17'-0"	223	2.1	2'-6"	17	0.3	20'-10"	276	2.6	3'-0 3/4"	20	0.3
	18"	17'-1"	231	2.3	2'-9"	19	0.3	19'-1"	259	2.5	3'-1"	29	0.3	23'-4"	318	3.1	3'-9 1/4"	32	0.4
	21"	18'-11"	306	2.7	3'-2 1/4"	31	0.4	21'-1"	339	3.0	3'-6 3/4"	33	0.4	25'-10"	413	3.7	4'-4 1/4"	36	0.5
	24"	20'-8"	345	3.1	3'-8 3/4"	35	0.4	23'-1"	384	3.5	4'-1 3/4"	36	0.5	28'-3"	462	4.2	5'-0 3/4"	40	0.6
	27"	22'-6"	376	3.7	4'-0 3/4"	38	0.5	25'-1"	438	4.1	4'-6 1/4"	39	0.6	30'-9"	522	5.0	5'-6 1/4"	44	0.7
	30"	24'-4"	422	4.1	4'-5 3/4"	40	0.6	27'-2"	466	4.6	5'-0"	42	0.6	33'-3"	578	5.6	6'-1 3/4"	47	0.8
	33"	26'-2"	476	4.8	4'-10"	43	0.6	29'-2"	522	5.3	5'-4 3/4"	46	0.7	35'-9"	644	6.5	6'-7 1/4"	51	0.9
	36"	27'-11"	590	5.9	5'-3"	47	0.8	31'-2"	645	6.6	5'-10 3/4"	50	0.9	38'-2"	787	8.0	7'-2 1/4"	56	1.2
	42"	31'-7"	684	7.3	6'-0 1/4"	53	1.1	35'-3"	776	8.2	6'-8 3/4"	56	1.2	43'-2"	933	10.0	8'-3"	79	1.4
	48"	36'-9"	880	9.6	6'-9 3/4"	61	1.3	41'-0"	953	10.7	7'-7 1/4"	81	1.5	50'-2"	1,166	13.1	9'-3 3/4"	88	1.8
	54"	40'-5"	1,065	11.4	7'-9"	85	1.6	45'-0"	1,185	12.7	8'-8"	89	1.8	55'-2"	1,435	15.5	10'-7 1/4"	97	2.2
60"	44'-0"	1,224	13.3	8'-6 1/4"	93	1.9	49'-1"	1,356	14.8	9'-6 1/4"	96	2.1	60'-1"	1,635	18.2	11'-8"	124	2.6	
66"	47'-7"	1,357	15.4	9'-1"	98	2.1	53'-1"	1,497	17.2	10'-1 1/4"	103	2.3	65'-1"	1,892	21.1	12'-4 1/4"	130	2.9	
72"	51'-3"	1,624	17.7	9'-8"	105	2.3	57'-2"	1,787	19.7	10'-9 1/4"	109	2.6	70'-0"	2,218	24.1	13'-2 1/4"	139	3.2	
4:1	12"	17'-7"	232	2.1	1'-9 3/4"	15	0.2	19'-8"	259	2.4	2'-0"	16	0.2	24'-0"	314	2.9	2'-5 3/4"	18	0.2
	15"	19'-11"	272	2.5	2'-3"	17	0.2	22'-3"	301	2.8	2'-6"	18	0.3	27'-3"	361	3.5	3'-0 3/4"	21	0.3
	18"	22'-3"	313	3.0	2'-9"	19	0.3	24'-10"	344	3.3	3'-1"	29	0.3	30'-5"	427	4.0	3'-9 1/4"	32	0.4
	21"	24'-7"	407	3.6	3'-2 1/4"	31	0.4	27'-5"	446	4.0	3'-6 3/4"	33	0.4	33'-7"	549	4.9	4'-4 1/4"	36	0.5
	24"	26'-11"	455	4.1	3'-8 3/4"	35	0.4	30'-0"	499	4.5	4'-1 3/4"	36	0.5	36'-9"	609	5.6	5'-0 3/4"	40	0.6
	27"	29'-3"	514	4.8	4'-0 3/4"	38	0.5	32'-7"	562	5.4	4'-6 1/4"	40	0.6	39'-11"	703	6.6	5'-6 1/4"	43	0.7
	30"	31'-7"	568	5.4	4'-5 3/4"	40	0.6	35'-3"	620	6.0	5'-0"	42	0.6	43'-2"	768	7.4	6'-1 3/4"	49	0.8
	33"	33'-11"	634	6.2	4'-10"	43	0.7	37'-10"	710	7.0	5'-4 3/4"	46	0.7	46'-4"	848	8.5	6'-7 1/4"	52	0.9
	36"	36'-3"	776	7.7	5'-3"	48	0.9	40'-5"	868	8.6	5'-10 3/4"	49	0.9	49'-6"	1,058	10.6	7'-2 1/4"	56	1.1
	42"	40'-11"	921	9.6	6'-0 1/4"	53	1.0	45'-7"	1,022	10.7	6'-8 3/4"	57	1.2	55'-10"	1,262	13.1	8'-3"	78	1.4
	48"	47'-7"	1,152	12.6	6'-10"	61	1.3	53'-1"	1,268	14.0	7'-7 1/4"	80	1.5	65'-1"	1,587	17.2	9'-3 3/4"	86	1.8
	54"	52'-3"	1,416	14.9	7'-9 1/4"	86	1.6	58'-4"	1,589	16.6	8'-8"	89	1.8	71'-5"	1,924	20.4	10'-7 1/4"	95	2.2
60"	56'-11"	1,606	17.5	8'-6 3/4"	92	1.9	63'-6"	1,806	19.5	9'-6 1/4"	95	2.1	77'-9"	2,192	23.9	11'-8"	122	2.6	
66"	61'-7"	1,819	20.2	9'-0 3/4"	97	2.1	68'-8"	2,019	22.5	10'-1 1/4"	101	2.4	84'-2"	2,472	27.6	12'-4 1/4"	131	2.9	
72"	66'-3"	2,150	23.2	9'-8"	104	2.4	73'-11"	2,379	25.9	10'-9 1/4"	108	2.6	90'-6"	2,937	31.7	13'-2 1/4"	138	3.2	
6:1	12"	25'-11"	342	3.1	1'-9 3/4"	15	0.2	28'-10"	374	3.5	2'-0"	16	0.2	35'-4"	456	4.3	2'-5 3/4"	17	0.2
	15"	29'-3"	390	3.7	2'-3"	17	0.2	32'-7"	442	4.2	2'-6"	18	0.2	39'-11"	549	5.1	3'-0 3/4"	20	0.3
	18"	32'-7"	459	4.4	2'-9"	20	0.3	36'-4"	515	4.9	3'-1"	29	0.3	44'-7"	629	6.0	3'-9 1/4"	33	0.4
	21"	36'-0"	608	5.3	3'-2 1/4"	31	0.4	40'-2"	660	5.9	3'-6 3/4"	33	0.4	49'-2"	823	7.2	4'-4 1/4"	38	0.5
	24"	39'-4"	672	6.0	3'-8 3/4"	35	0.4	43'-11"	748	6.7	4'-1 3/4"	36	0.5	53'-9"	920	8.2	5'-0 3/4"	42	0.6
	27"	42'-8"	770	7.1	4'-0 3/4"	38	0.5	47'-8"	852	8.0	4'-6 1/4"	41	0.5	58'-4"	1,039	9.7	5'-6 1/4"	45	0.7
	30"	46'-1"	839	8.0	4'-5 3/4"	40	0.6	51'-5"	949	8.9	5'-0"	44	0.6	62'-11"	1,162	10.9	6'-1 3/4"	48	0.8
	33"	49'-5"	947	9.2	4'-10"	45	0.7	55'-2"	1,040	10.3	5'-4 3/4"	48	0.7	67'-6"	1,292	12.6	6'-7 1/4"	50	0.9
	36"	52'-10"	1,151	11.4	5'-3"	49	0.8	58'-11"	1,287	12.7	5'-10 3/4"	51	1.0	72'-1"	1,583	15.6	7'-2 1/4"	55	1.1
	42"	59'-6"	1,365	14.2	6'-0 1/4"	55	1.0	66'-5"	1,530	15.8	6'-8 3/4"	57	1.2	81'-4"	1,875	19.4	8'-3"	76	1.4
	48"	69'-4"	1,737	18.5	6'-10"	59	1.3	77'-4"	1,942	20.7	7'-7 1/4"	79	1.5	94'-9"	2,368	25.3	9'-3 3/4"	86	1.8
	54"	76'-1"	2,138	22.0	7'-9 1/4"	83	1.6	84'-10"	2,378	24.6	8'-8"	87	1.8	103'-11"	2,912	30.1	10'-7 1/4"	95	2.2
60"	82'-10"	2,426	25.8	8'-6 3/4"	90	1.9	92'-5"	2,681	28.8	9'-6 1/4"	94	2.1	113'-2"	3,294	35.3	11'-8"	122	2.6	
66"	89'-7"	2,730	29.9	9'-0 3/4"	96	2.1	99'-11"	3,038	33.3	10'-1 1/4"	101	2.4	122'-4"	3,697	40.8	12'-4 1/4"	130	2.9	
72"	96'-3"	3,218	34.2	9'-8"	102	2.4	107'-5"	3,580	38.2	10'-9 1/4"	108	2.6	131'-6"	4,372	46.8	13'-2 1/4"	139	3.2	



ELEVATION



PLAN OF SKEWED PIPES



SECTION AT CENTER OF PIPE

- Total quantities include one 3'-1" lap for bars over 60' in length.
- Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.
- Indicated slope is perpendicular to centerline pipe or pipes.
- For vehicle safety, construct curbs no more than 3" above finished grade. Reduce curb heights, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
- Dimensions shown are usual and maximum.
- Quantities shown are for one structure end only (one headwall).

TABLE OF CONSTANT DIMENSIONS

Dia of Pipe (D)	G	K ⑤	H	T	E
12"	0'-9"	1'-0"	2'-8"	0'-9"	1'-9"
15"	0'-11"	1'-0"	2'-11"	0'-9"	1'-9"
18"	1'-2"	1'-0"	3'-2"	0'-9"	1'-9"
21"	1'-4"	1'-0"	3'-5"	0'-9"	2'-0"
24"	1'-7"	1'-0"	3'-8"	0'-9"	2'-0"
27"	1'-8"	1'-0"	3'-11"	0'-9"	2'-3"
30"	1'-10"	1'-0"	4'-2"	0'-9"	2'-3"
33"	1'-11"	1'-0"	4'-5"	0'-9"	2'-6"
36"	2'-1"	1'-0"	4'-8"	1'-0"	2'-6"
42"	2'-4"	1'-0"	5'-2"	1'-0"	2'-9"
48"	2'-7"	1'-3"	5'-11"	1'-0"	3'-0"
54"	3'-0"	1'-3"	6'-5"	1'-0"	3'-3"
60"	3'-3"	1'-3"	6'-11"	1'-0"	3'-6"
66"	3'-3"	1'-3"	7'-5"	1'-0"	3'-9"
72"	3'-4"	1'-3"	7'-11"	1'-0"	4'-0"

TABLE OF REINFORCING STEEL

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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 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)	Class "C" Conc (Wingwall) (CY)	Total Wingwall Area (SF)
123+84.61 (CULVERT A) (Both)	6 ~ 7' x 3'	2'	SCP-7	PW-1	0°	4:1	8"	8"	1.837'	5.500'	N/A	N/A	22.000'	52.500'	N/A	0.0	7.2	37.2	484
125+73.96 (Both)	2 ~ 5' x 2'	0.5'	SCP-5	SETB-PD	0°	6:1	8"	6"	0.000'	2.417'	N/A	N/A	13.000'	N/A	12.667'	0.0	0.0	10.0	N/A
128+86.05 (Both)	1 ~ 5' x 2'	0.5'	SCP-5	SETB-PD	0°	6:1	8"	6"	0.000'	2.417'	N/A	N/A	13.000'	N/A	6.167'	0.0	0.0	5.2	N/A
162+49.83 (GUADALUPE TRIB 4A) (Both)	6 ~ 8' x 5'	2.25'	SCP-8	PW-1	0°	4:1	8"	8"	1.750'	7.417'	N/A	N/A	29.667'	58.500'	N/A	0.0	7.6	64.4	880
191+08.67 (CULVERT C) (Lt)	6 ~ 7' x 3'	2.25'	SCP-7	PW-1	0°	4:1	8"	8"	1.843'	5.500'	N/A	N/A	22.000'	52.500'	N/A	0.0	3.6	18.6	242
191+08.67 (CULVERT C) (Rt)	6 ~ 7' x 3'	2.25'	SCP-7	PW-1	0°	4:1	8"	8"	2.323'	6.000'	N/A	N/A	24.000'	52.500'	N/A	0.0	4.5	21.6	288
197+72.45 (DITCH CULVERT 2) (Both)	1 ~ 5' x 2'	1.5'	SCP-5	SETB-PD	0°	6:1	8"	6"	1.000'	3.417'	N/A	N/A	19.000'	N/A	6.167'	0.0	0.4	8.4	N/A
214+82.58 (CULVERT D) (Lt)	2 ~ 5' x 2'	3.32'	SCP-5	PW-1	0°	4:1	6"	6"	2.750'	5.250'	N/A	N/A	21.000'	12.500'	N/A	0.0	1.3	15.0	221
214+82.58 (CULVERT D) (Rt)	2 ~ 5' x 2'	3.32'	SCP-5	PW-1	0°	4:1	6"	6"	2.000'	4.500'	N/A	N/A	18.000'	12.500'	N/A	0.0	0.9	11.1	162
215+82.56 (CULVERT E (WEST)) (Both)	1 ~ 3' x 2'	2.4'	SCP-3	PW-1	0°	3:1	4"	4"	2.333'	4.667'	N/A	N/A	14.000'	3.667'	N/A	0.0	0.6	18.2	262
215+93.89 (CULVERT E (EAST)) (Both)	1 ~ 5' x 2'	2.4'	SCP-5	PW-1	0°	3:1	6"	6"	2.333'	4.833'	N/A	N/A	14.500'	6.000'	N/A	0.0	1.0	19.2	280
258+34.42 (Lt)	1 ~ 8' x 4'	1'	SCP-8	SETB-PD	0°	6:1	8"	8"	0.000'	4.417'	N/A	N/A	25.000'	N/A	9.333'	0.0	0.0	7.8	N/A
273+05.25 (Lt)	2 ~ 8' x 3'	2'	SCP-8	FW-0	0°	4:1	8"	8"	1.500'	4.917'	18.333'	10.585'	21.170'	19.167'	N/A	0.0	1.1	8.0	111
273+05.36 (Rt)	2 ~ 6' x 3'	0.5'	SCP-6	SETB-CD	0°	6:1	8"	7"	0.000'	3.417'	N/A	N/A	18.500'	N/A	14.833'	0.0	0.0	8.6	N/A
287+11.14 (Lt)	2 ~ 8' x 3'	0.5'	SCP-8	FW-0	0°	4:1	8"	8"	0.000'	3.417'	12.333'	7.121'	14.241'	19.167'	N/A	0.0	0.0	4.6	53
292+83.64 (Lt)	5 ~ 6' x 2'	0.5'	SCP-6	PW-1	30°	4:1	8"	7"	0.000'	2.667'	N/A	N/A	12.317'	43.686'	N/A	0.0	0.0	8.3	66
293+28.82 (Rt)	3 ~ 5' x 2'	0.5'	SCP-5	PW-1	45°	4:1	8"	6"	0.000'	2.667'	N/A	N/A	15.085'	26.870'	N/A	0.0	0.0	8.3	80
294+23.40 (GERONIMO TRIB 6) (Lt)	4 ~ 6' x 3'	0.7'	MC-6-16	PW-1	0°	4:1	9"	7"	0.707'	4.458'	N/A	N/A	17.833'	26.917'	N/A	0.0	0.7	12.0	159

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.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JACOB J. POWELL
 P. E. SERIAL NO: 108825
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P. E. SERIAL NO: 105193
 DATE: 11/17/2023



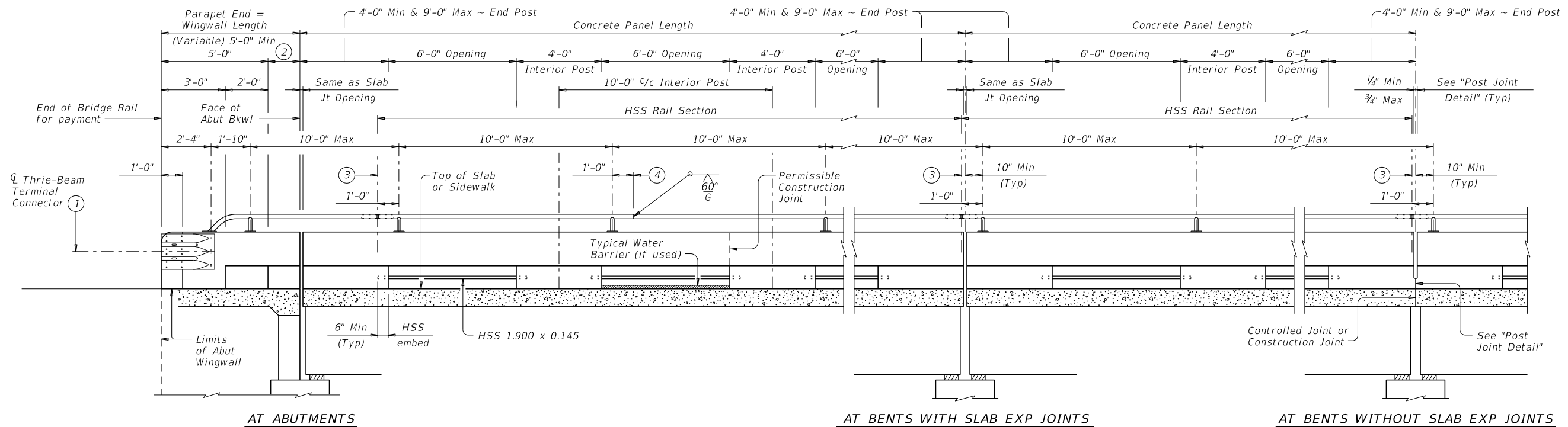
BOX CULVERT SUPPLEMENT
 WINGS AND END TREATMENTS

BCS

FILE:	DN: TxDOT	CK: TxDOT	OW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
	DIST	COUNTY	SHEET NO.	
	SAT	GUADALUPE	359	

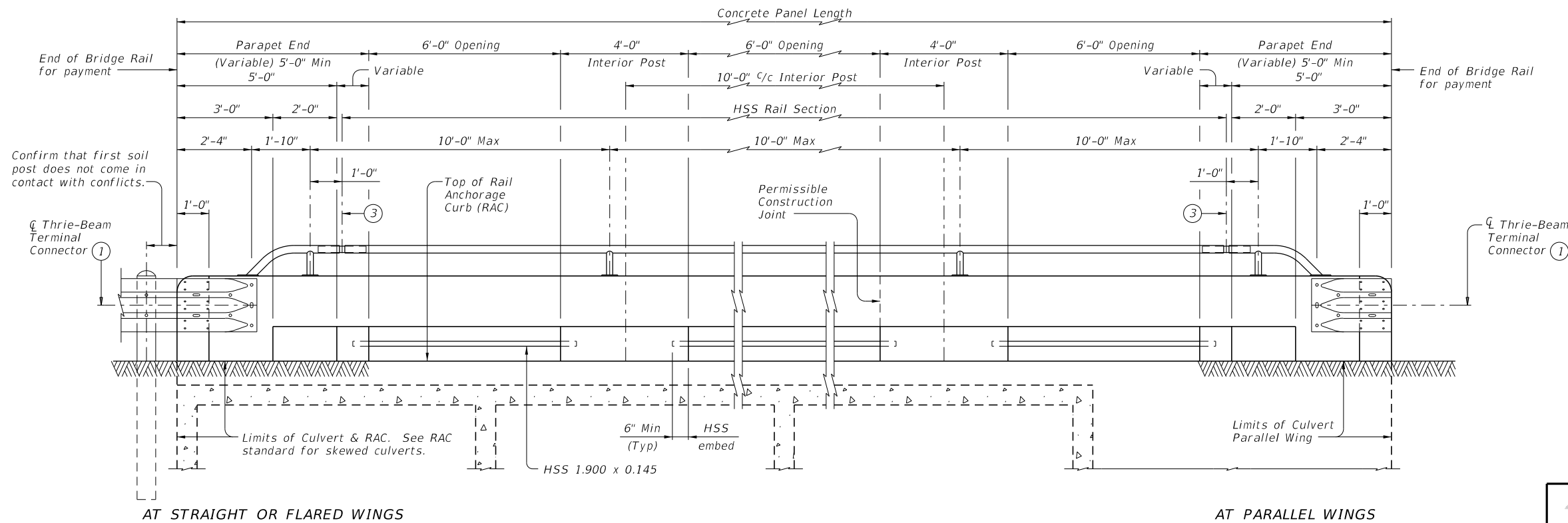
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ROADWAY ELEVATION OF RAIL ON BRIDGE

(Showing without raised sidewalk)



ROADWAY ELEVATION OF RAIL ON BOX CULVERTS

Showing 0° skew culvert. Skewed culverts similar. See RAC standard for details not shown. Vertical joints in concrete rail are not required, unless shown elsewhere.

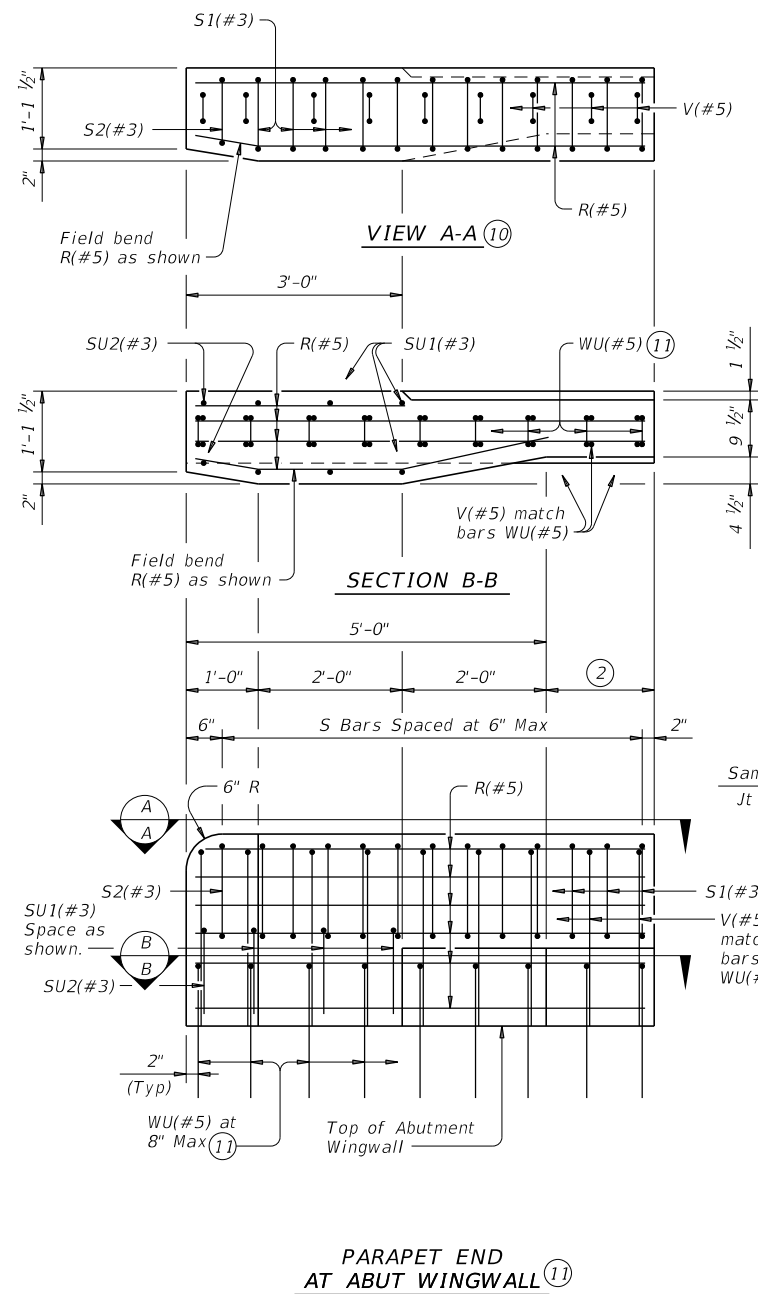
- ① Terminal Connectors and associated hardware are to be paid for under the Item "Metal Beam Guard Fence." Attach Metal Beam Guard Fence Transitions to the bridge rail and extend along the embankment unless otherwise shown in the plans.
- ② Wingwall Length minus 5'-0" (Varies)
- ③ ϕ Splice joint or expansion joint
- ④ One shop splice per HSS rail section is permitted with minimum 85 percent penetration. The weld may be square groove or single V groove. Grind smooth.

SHEET 1 OF 4

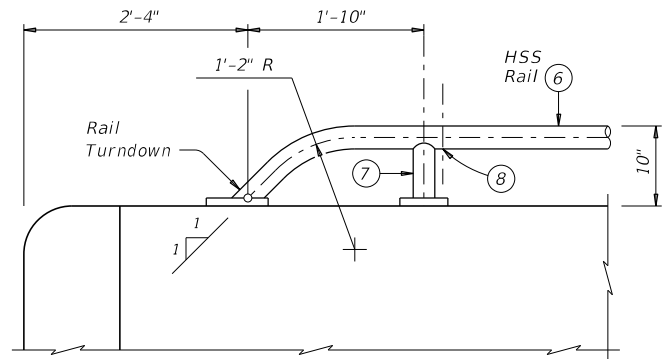
		Bridge Division Standard	
<h2>COMBINATION RAIL</h2>			
<h3>TYPE C223</h3>			
FILE: RL-C223-19.dgn	DN: TxDOT	CK: TxDOT	DW: JTR
©TxDOT September 2019	CONT	SECT	JOB
REVISIONS	0915	46	052
	DIST	COUNTY	SHEET NO.
SAT	GUADALUPE		360

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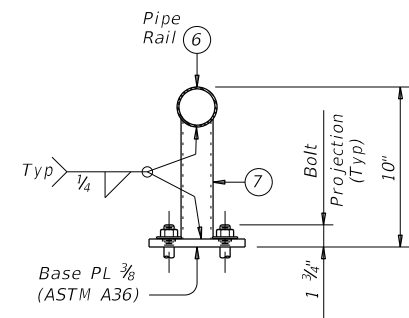


PARAPET END AT ABUT WINGWALL (1)

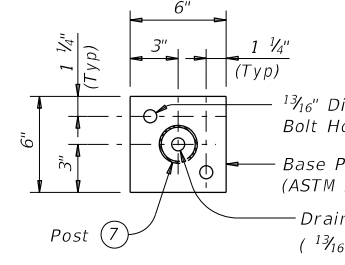


Note that at least two anchor points (as shown) are required for the Bridge Rail on the Abutment Wingwall. Longer Wingwalls may require more than two Rail anchorages.

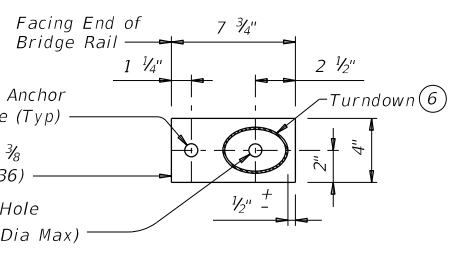
HSS RAIL TERMINAL DETAIL



TRANSVERSE SECTION

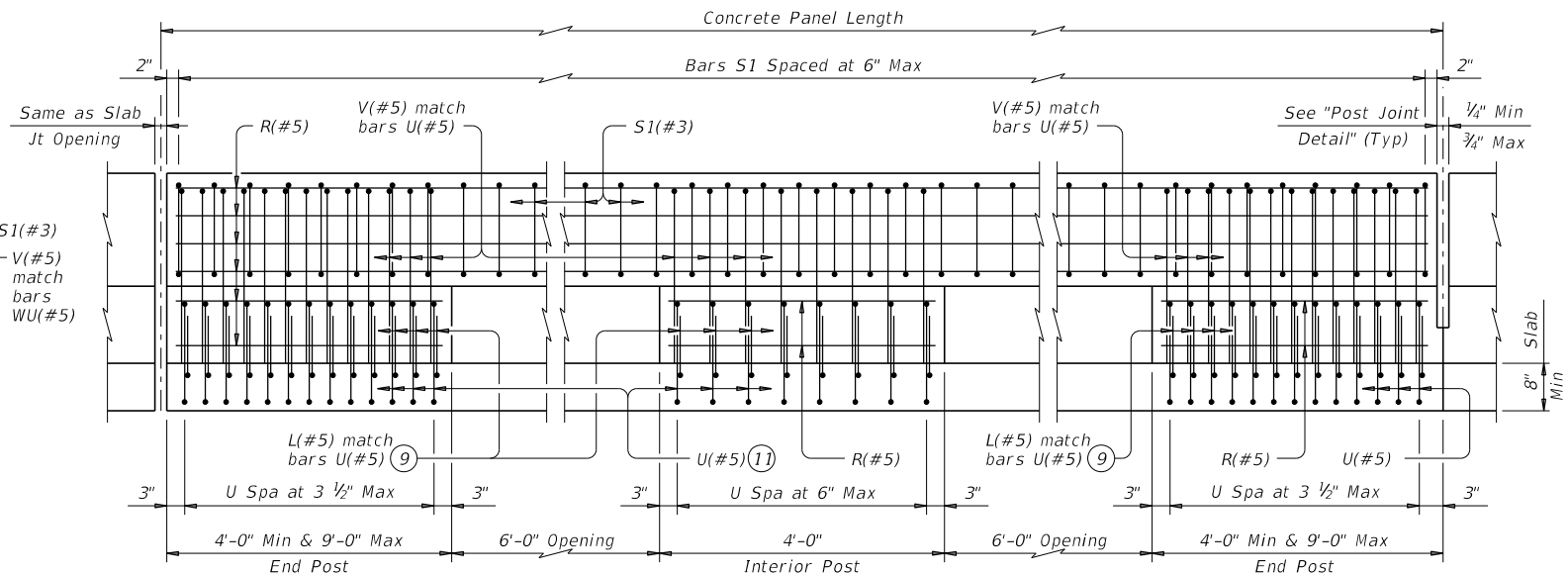


POST BASE PLATE PLAN



RAIL TURNDOWN BASE PLATE PLAN

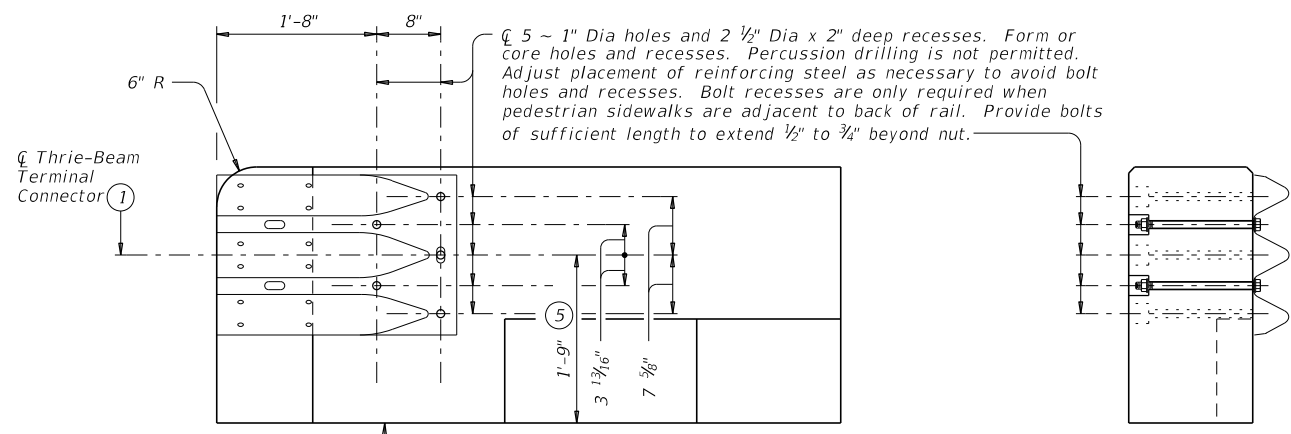
HSS RAIL DETAILS



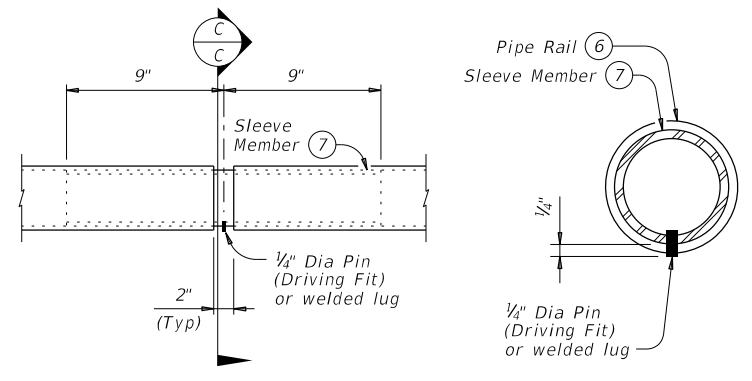
ELEVATION SHOWING TYPICAL REINFORCING PLACEMENT

Showing rail on slab and without raised sidewalk. Rail on box culvert similar. HSS not shown for clarity.

- (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) Wingwall Length minus 5'-0" (Varies)
- (5) Increase 2" for structures with overlay.
- (6) HSS 2.875 x 0.203
- (7) HSS 2.375 x 0.154
- (8) 3/8" Dia Hole in bottom of HSS rail (Minimum 1 hole between posts - Typ)
- (9) Bars L(#5) are part of rail reinforcing and are included in unit price bid for railing. Space with Bars U. Bars L match slab bar cover. Bars L may be bundled with top slab reinforcing if spacing is equivalent.
- (10) Bars SU1(#3), SU2(#3) and WU(#5) not shown for clarity.
- (11) Substitute Bars U(#5) for Bars WU(#5) when parapet end is located on anchorage curb over culvert top slab. Use Bars WU(#5) in culvert parallel wings.



TERMINAL CONNECTION DETAILS



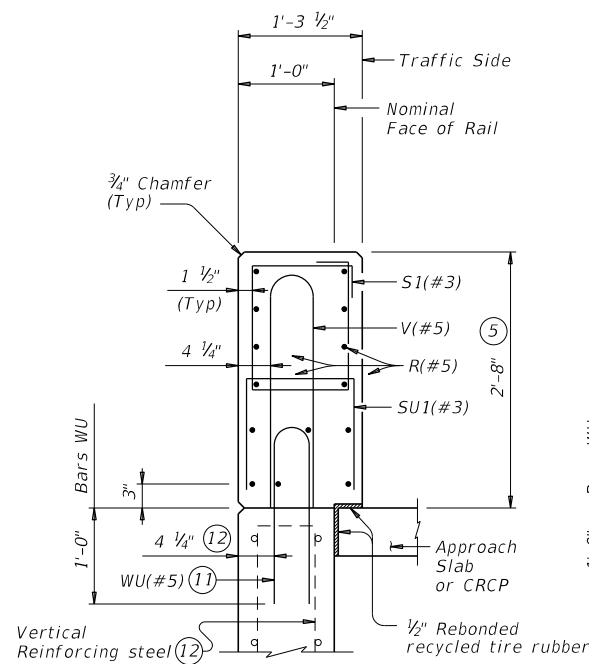
PIPE SPLICE DETAILS

SHEET 2 OF 4

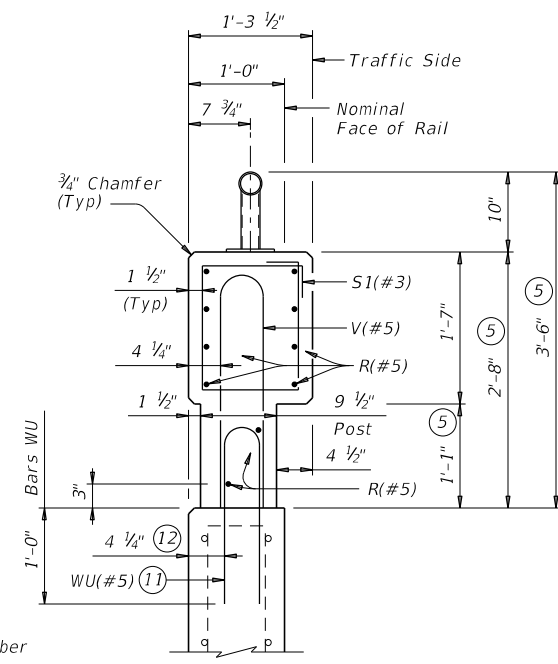
		Bridge Division Standard	
<h2>COMBINATION RAIL</h2>			
<h3>TYPE C223</h3>			
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REV: 0915	SECT: 46	JOB: 052	HIGHWAY: CORDOVA
SAT	COUNTY: GUADALUPE	SHEET NO. 361	

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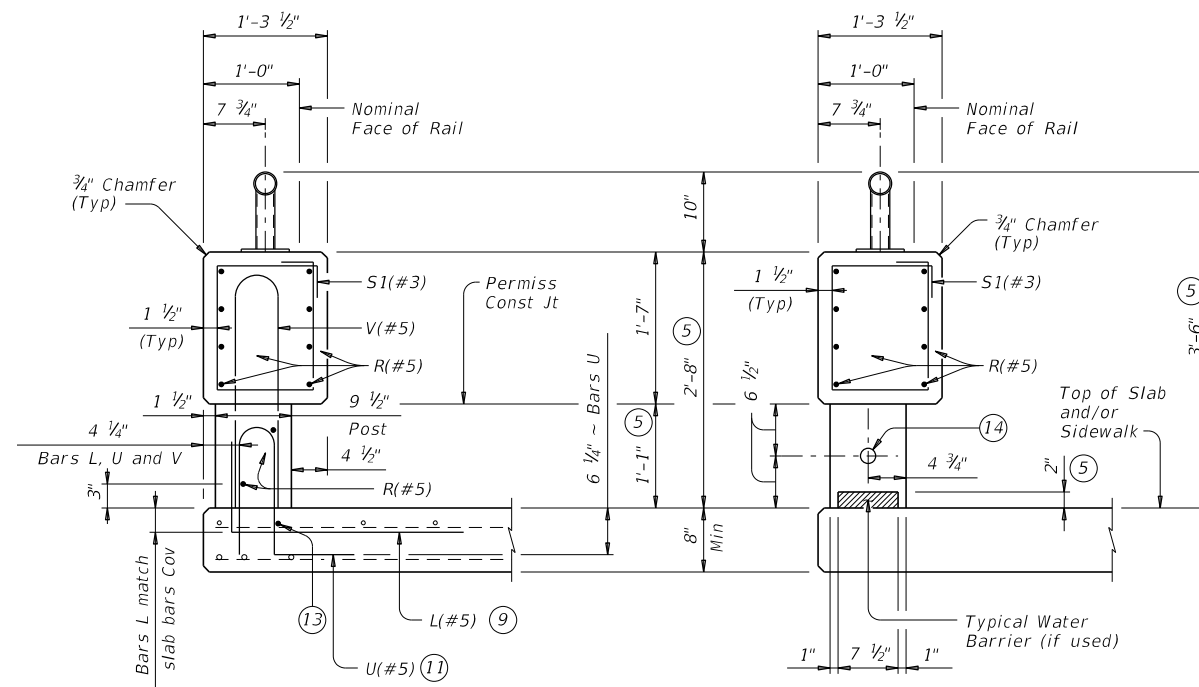
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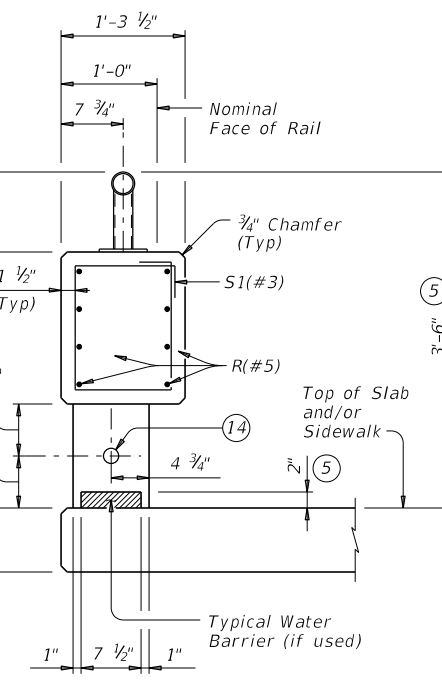
SECTION D-D
ON ABUTMENT WINGWALLS
OR CIP RETAINING WALLS



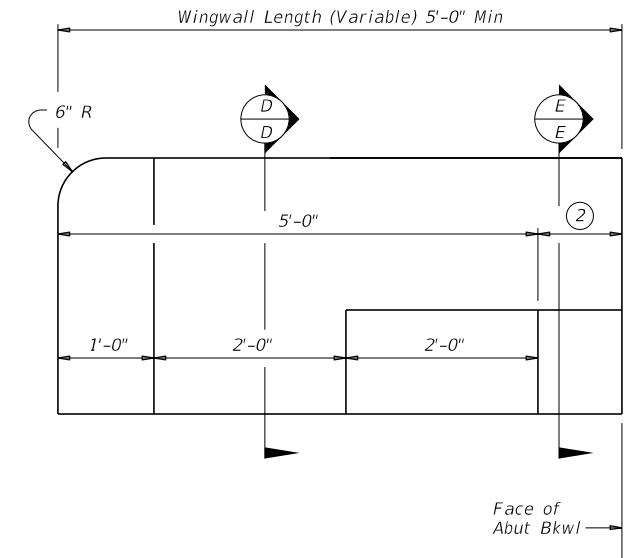
SECTION E-E
ON ABUTMENT WINGWALLS
OR CIP RETAINING WALLS



AT POST
ON BRIDGE SLAB



AT OPENING
ON BRIDGE SLAB

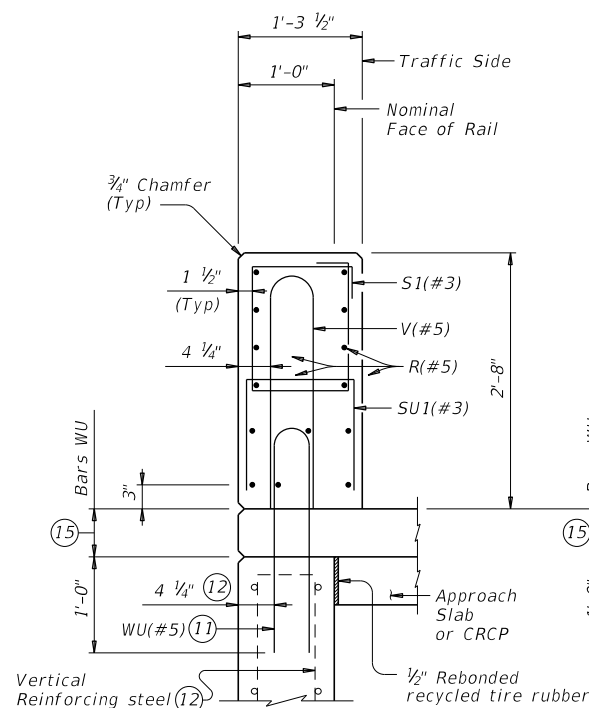


ELEVATION AT
ABUTMENT WINGWALL

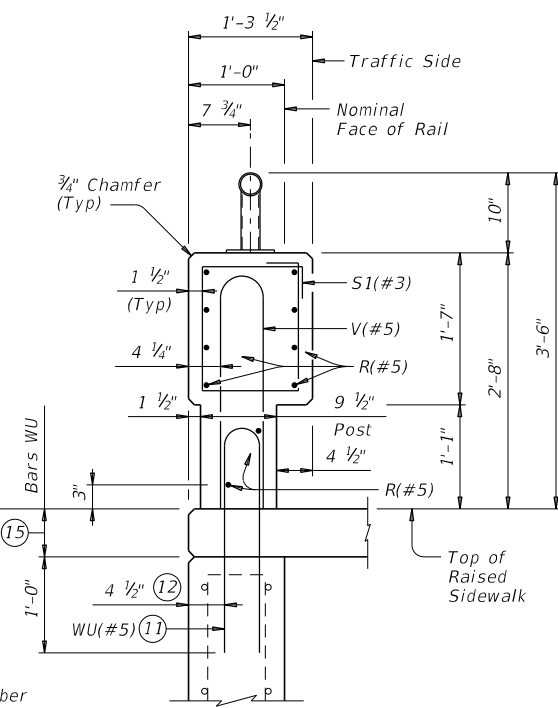
Box culvert parallel wings or rail anchorage curb similar.
HSS rail not shown for clarity.

SECTIONS THRU RAIL WITHOUT RAISED SIDEWALK

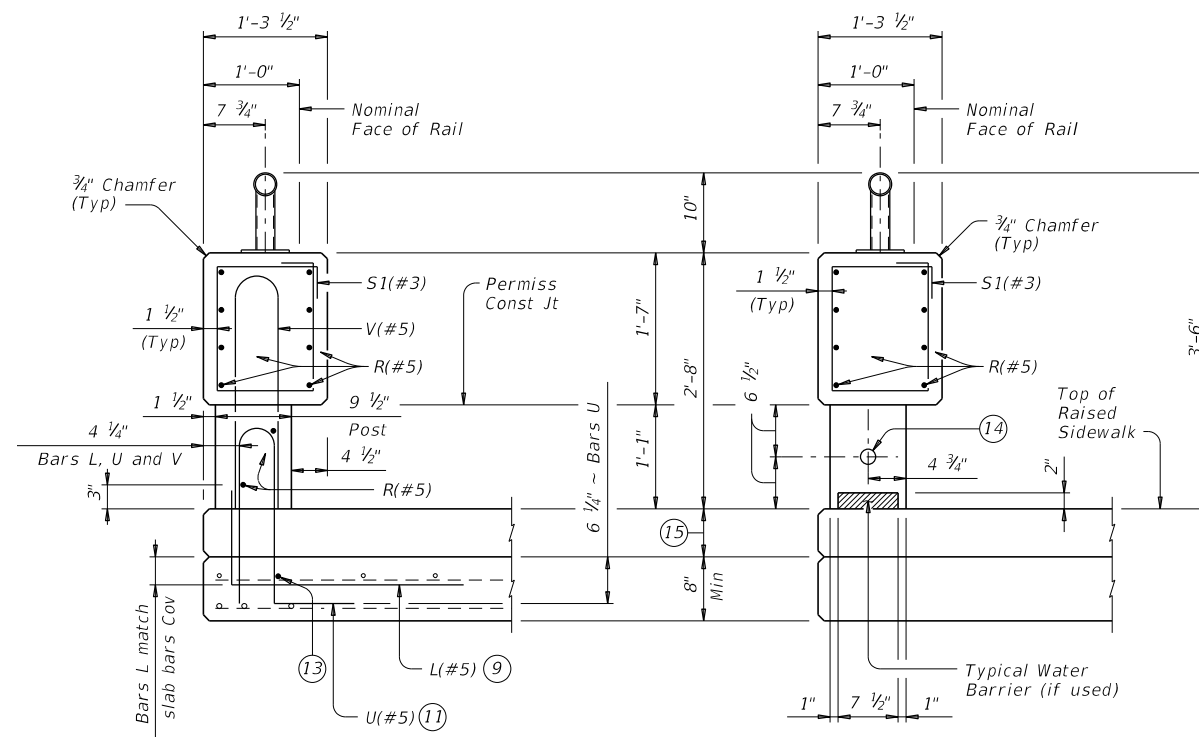
Sections on box culvert similar.



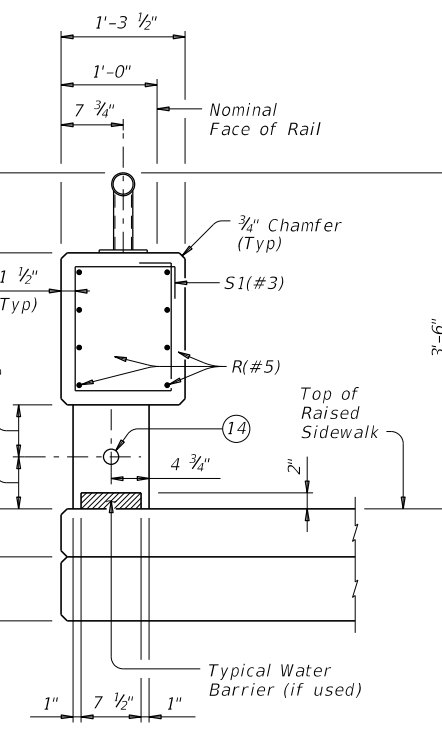
SECTION D-D
ON ABUTMENT WINGWALLS
OR CIP RETAINING WALLS



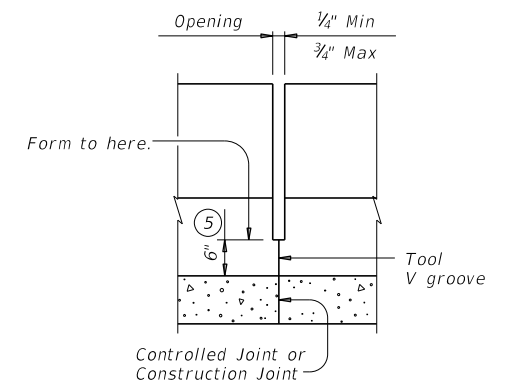
SECTION E-E
ON ABUTMENT WINGWALLS
OR CIP RETAINING WALLS



AT POST
ON BRIDGE SLAB



AT OPENING
ON BRIDGE SLAB



POST JOINT DETAIL

(Showing without raised sidewalk)
Provide at all interior bents without slab expansion joints.

SECTIONS THRU RAIL WITH RAISED SIDEWALK

Sections on box culvert similar.

- ② Wingwall Length minus 5'-0" (Varies)
- ⑤ Increase 2" for structures with overlay.
- ⑨ Bars L(#5) are part of rail reinforcing and are included in unit price bid for railing. Space with Bars U. Bars L match slab bar cover. Bars L may be bundled with top slab reinforcing if spacing is equivalent.
- ⑩ Substitute Bars U(#5) for Bars WU(#5) when parapet end is located on anchorage curb over culvert top slab. Use Bars WU(#5) in culvert parallel wings.
- ⑫ When vertical reinforcing has closer clear cover over horizontal reinforcing in abutment wingwalls on traffic side of wall, move the horizontal wingwall/retaining wall reinforcing to the inside of Bars WU where bars conflict.
- ⑬ Top longitudinal slab bar may be adjusted laterally 3" plus or minus to tie reinforcing.
- ⑭ HSS 1.900 x 0.145
- ⑮ Raised Sidewalk.

SHEET 3 OF 4



COMBINATION RAIL

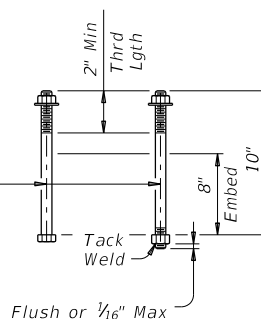
TYPE C223

FILE: RL-C223-19.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: AES
REVISIONS	CONT	SECT	JOB	HIGHWAY
	0915	46	052	CORDOVA
	DIST	COUNTY	SHEET NO.	
	SAT	GUADALUPE	362	

RAIL DATA FOR HORIZONTAL CURVES

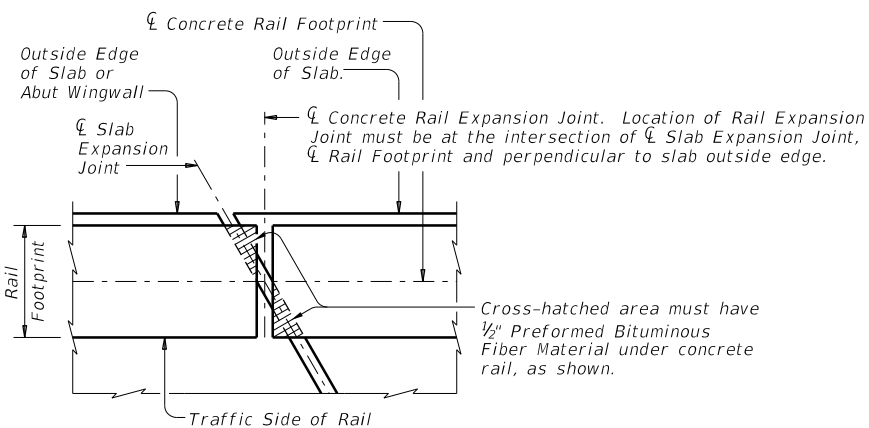
	RADIUS TO FACE OF RAIL	MAX CHORD LENGTH	CONSTRUCT OR FABRICATE
HSS Rail	Over 2800'	29'-0"	Straight rail sections
	Over 1400' thru 2800'	14'-6"	To required radius or to chords shown
	Over 700' thru 1400'	7'-3"	
	Thru 700'	Zero	To required radius

⊕ 5/8" 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.



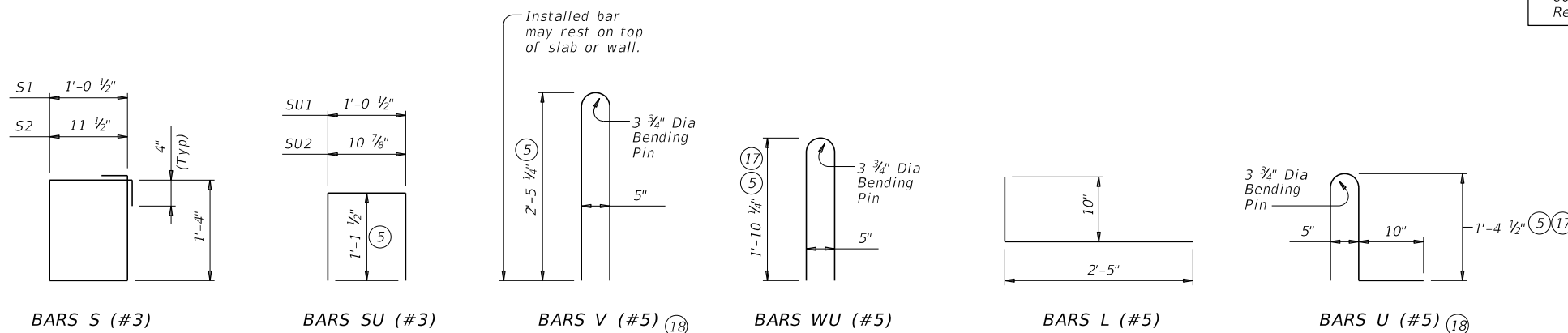
CAST-IN-PLACE ANCHOR BOLT OPTIONS ⑩

- ⑤ Increase 2" for structures with overlay.
- ⑩ See "Material Notes" for anchor bolt information.
- ⑰ For raised sidewalks, add sidewalk height to total bar height. Use sidewalk height at rail's location.
- ⑱ At the Contractor's option, Bars V may be replaced by extending Bars U to 2'-5 1/4" above the roadway/sidewalk surface without overlay.



PLAN OF RAIL AT EXPANSION JOINTS

Example showing Slab Expansion Joints without breakbacks.



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

CONSTRUCTION NOTES:

Face of rail, posts and parapet must be vertical transversely unless otherwise approved by the Engineer. HSS rail posts and opening end faces must be perpendicular to top of adjacent concrete parapet grade. Use epoxy mortar under HSS rail post base plates if gaps larger than 1/16" exist.

Provide water barriers at openings draining onto undercrossing roadways and sidewalks. They may be cast-in-place or precast in convenient lengths and bonded to the bridge deck with an approved epoxy cement.

HSS rail sections must not include less than two posts, and no more than four (except at Abutments).

Round or chamfer exposed edges of HSS rail and HSS rail posts to approximately 1/16" by grinding.

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." Chamfer all 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, 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 Reinforcing (WWR) (ASTM A1064) of equal size and spacing may be substituted for Bars U, V, and WU unless noted otherwise.

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 ~ #5 = 2'-0"
Epoxy coated ~ #5 = 3'-0"

GENERAL NOTES:

This rail has been evaluated by full-scale crash test 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, HSS rail post spacing, and anchor bolt setting to the Engineer for approval.

Average weight of railing with no overlay:

370 plf total
358 plf (Conc)
12 plf (Steel)

SHEET 4 OF 4



COMBINATION RAIL

TYPE C223

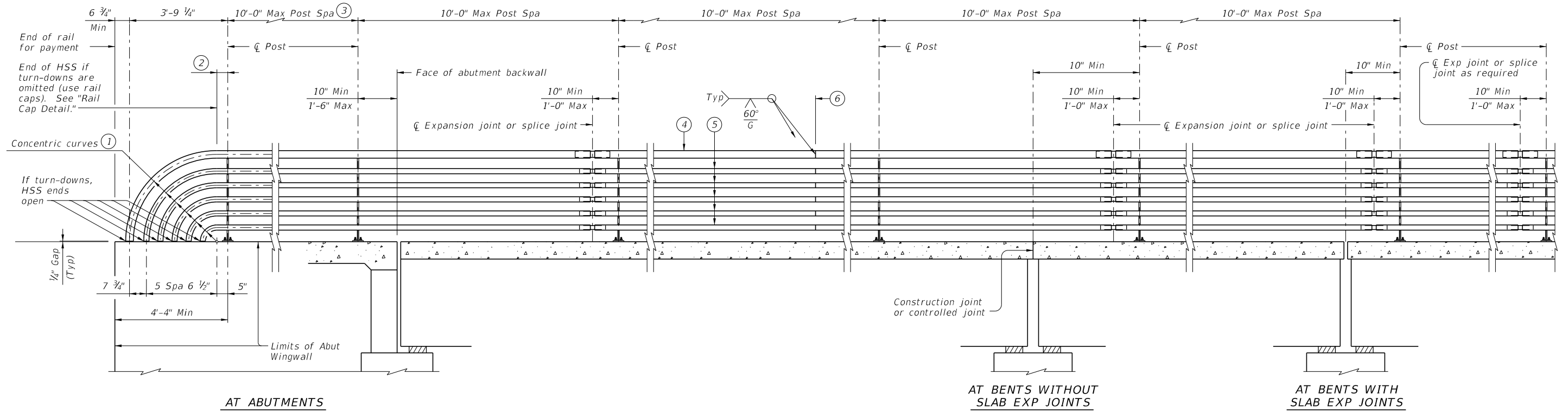
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©TxDOT September 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
	DIST	COUNTY	SHEET NO.	
	SAT	GUADALUPE	363	

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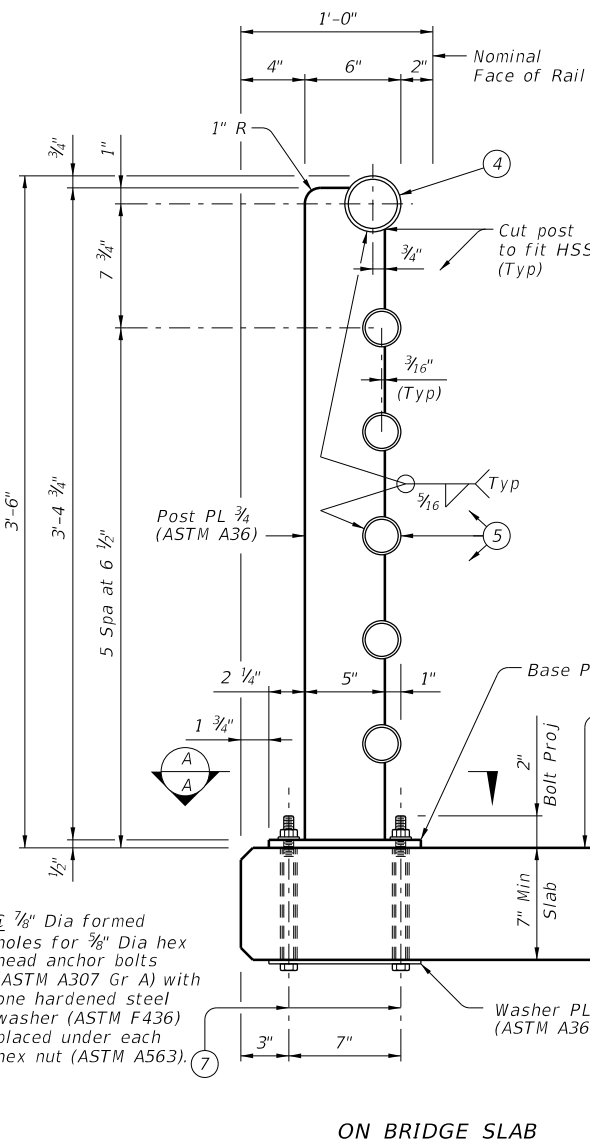
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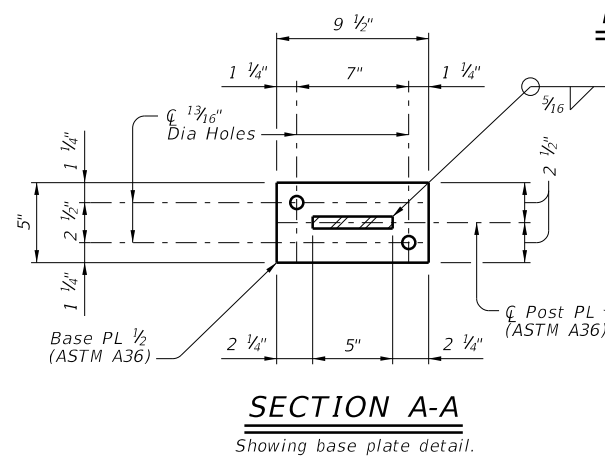
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ROADWAY ELEVATION OF RAIL

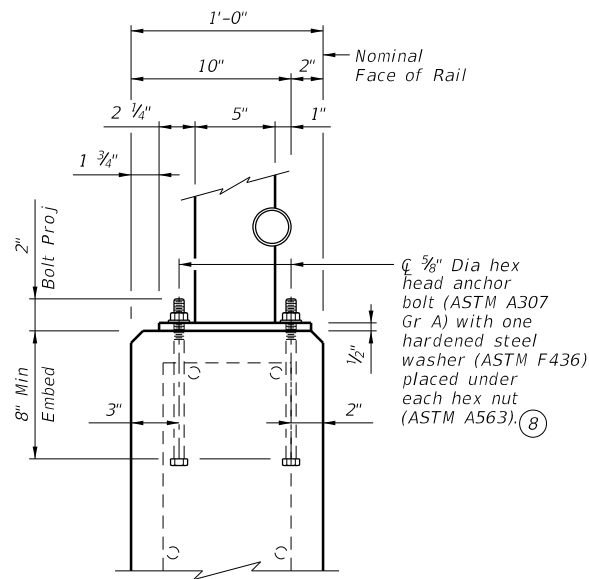


ON BRIDGE SLAB



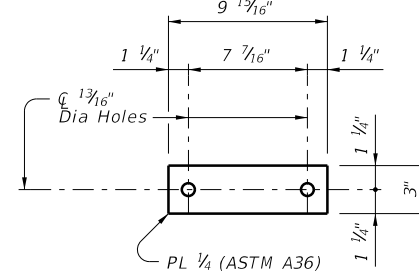
SECTION A-A

Showing base plate detail.

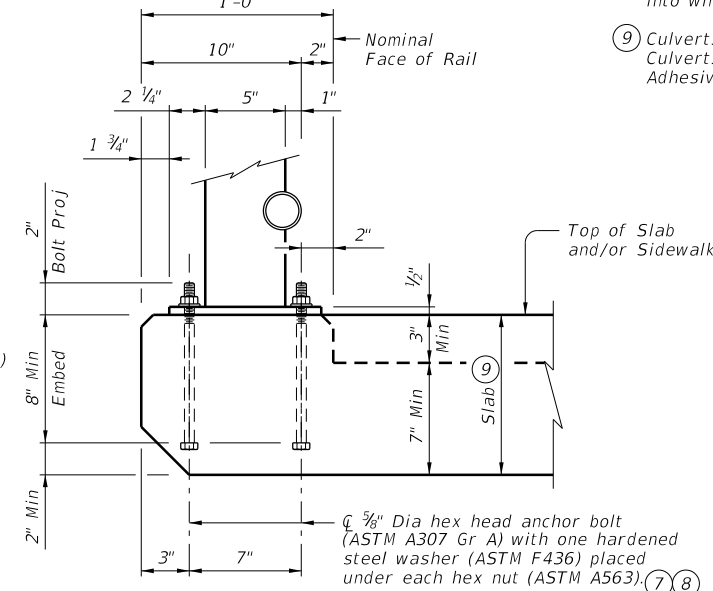


ON ABUTMENT WINGWALLS OR CIP RETAINING WALLS

SECTIONS THRU RAIL



WASHER PLATE DETAIL



ON CULVERTS WITH OR WITHOUT CURBS

Used with 1'-0" Min thick parallel wings on culverts.

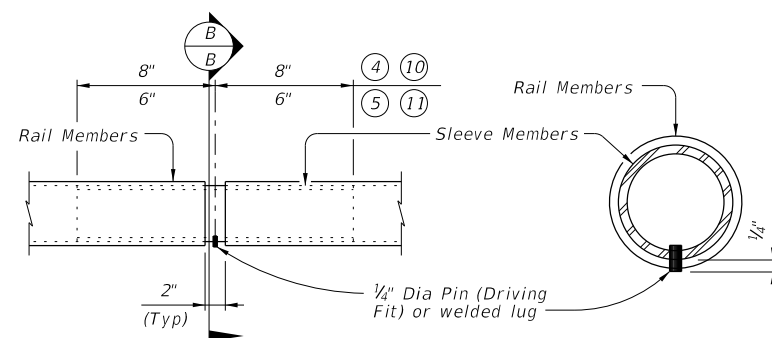
- ① Portion of railing with turn-downs to be used or omitted as indicated on Bridge Layout.
- ② 10" Min ~ 1'-6" Max if turn-downs are omitted.
- ③ Min of 2 posts required on wingwall.
- ④ HSS 3.500 x 0.216 (Rail Member)
- ⑤ HSS 2.375 x 0.154 (Rail Member)
- ⑥ One shop splice per panel is permitted (with minimum 85 percent penetration). The weld may be square groove or single V 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

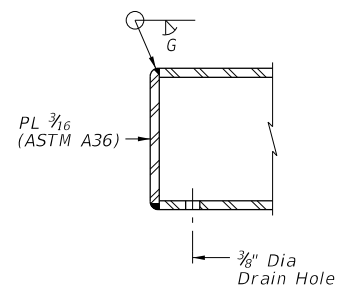
		Bridge Division Standard	
<h2>PEDESTRIAN RAIL</h2>			
<h3>TYPE PR11</h3>			
FILE: RL-PR11-19.dgn	DN: TAR	CK: TBE	DW: JTR
©TxDOT	REVISIONS	CONTRACT NO. 0915 46	JOB NO. 052
SEPTEMBER 2019		COUNTY	SHEET NO.
		SAT	GUADALUPE
			364

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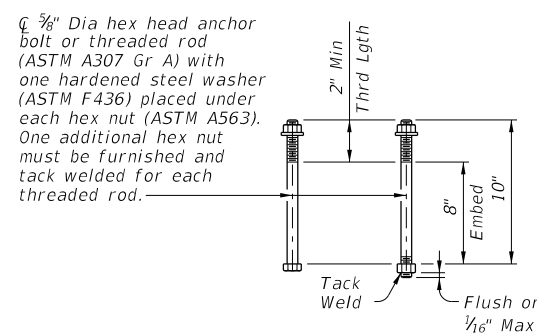


AT SPLICES OR EXP JTS SECTION B-B
PIPE SPLICE DETAIL



RAIL CAP DETAIL

- 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)



CAST-IN-PLACE & FORMED HOLE ANCHOR BOLT OPTIONS

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 1/8" 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 3/8" 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 3/8" 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



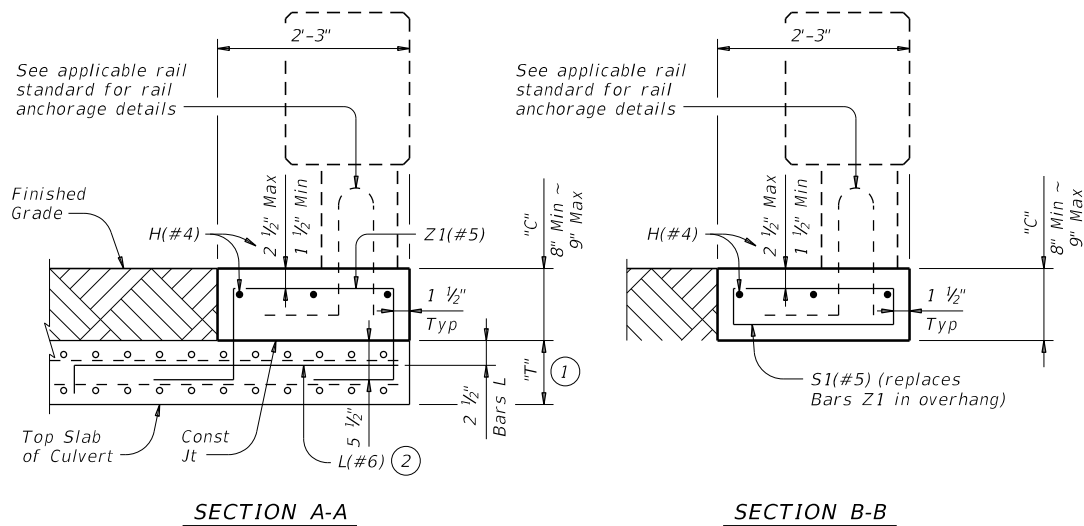
PEDESTRIAN RAIL

TYPE PR11

FILE: RL-PR11-19.dgn	DN: TAR	CK: TBE	DW: JTR	CK: TAR
©TxDOT September 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
	DIST	COUNTY	SHEET NO.	
	SAT	GUADALUPE	365	

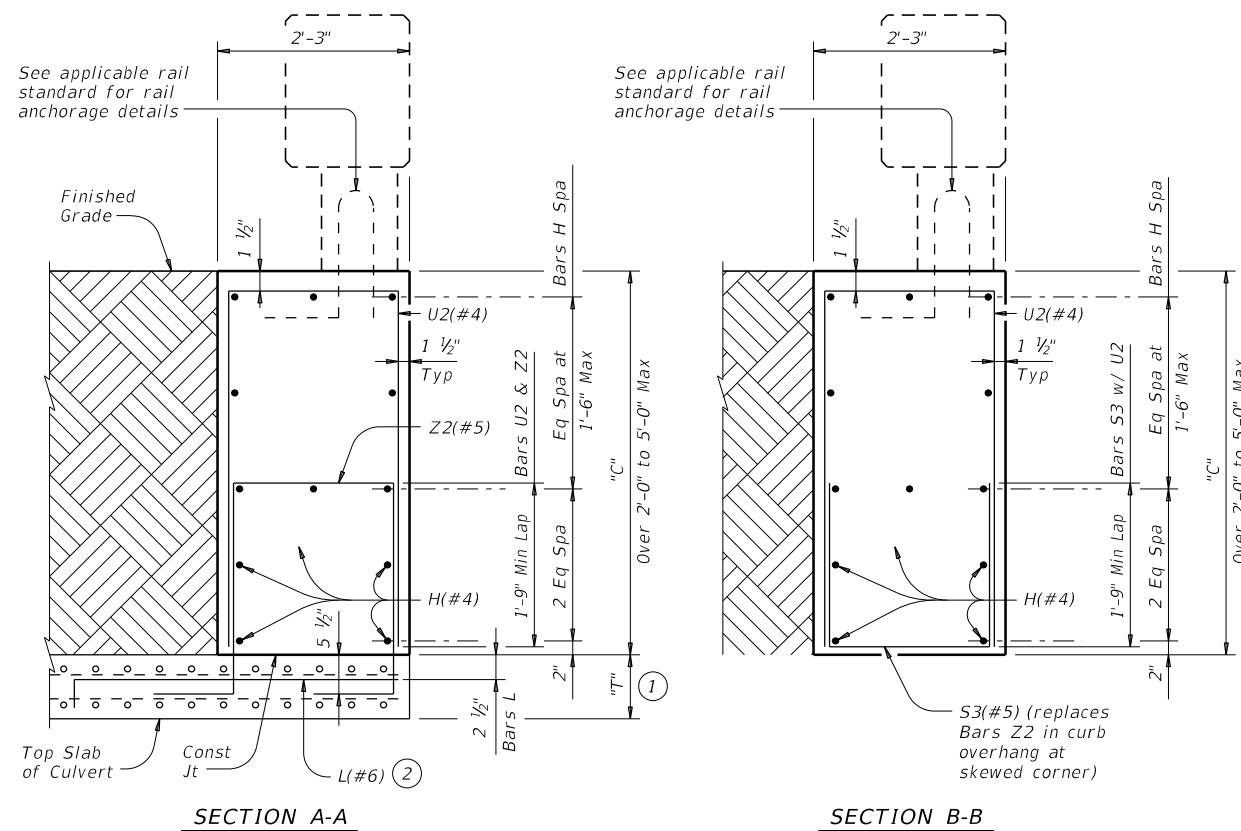
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DATE: 11/17/2023 6:34:14 PM
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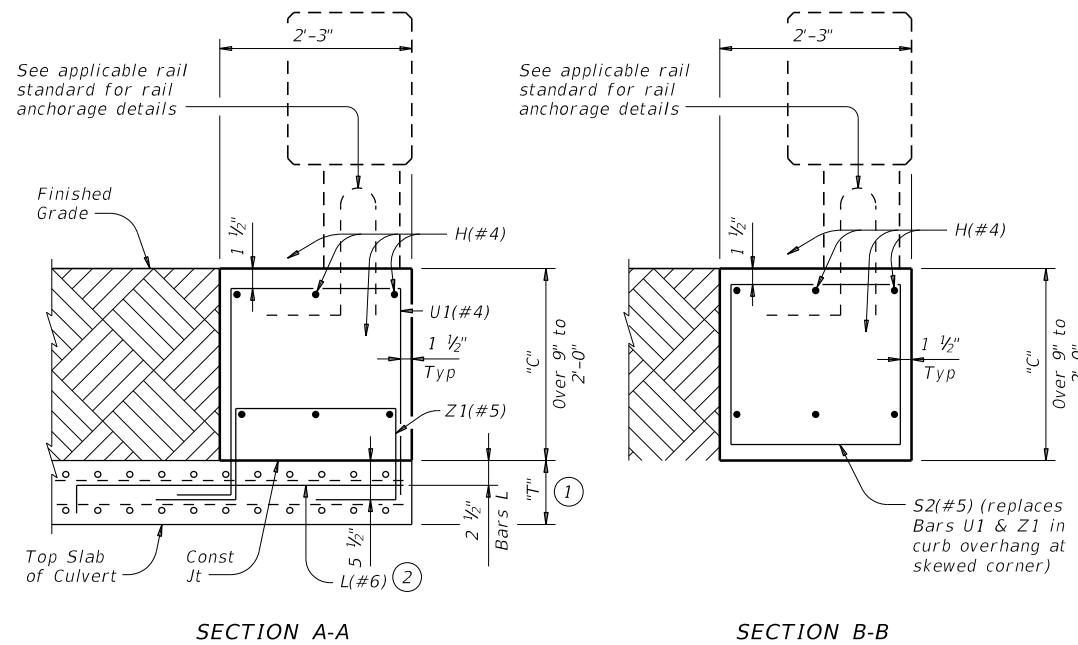
SECTION A-A
TYPE 1 CURB

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.



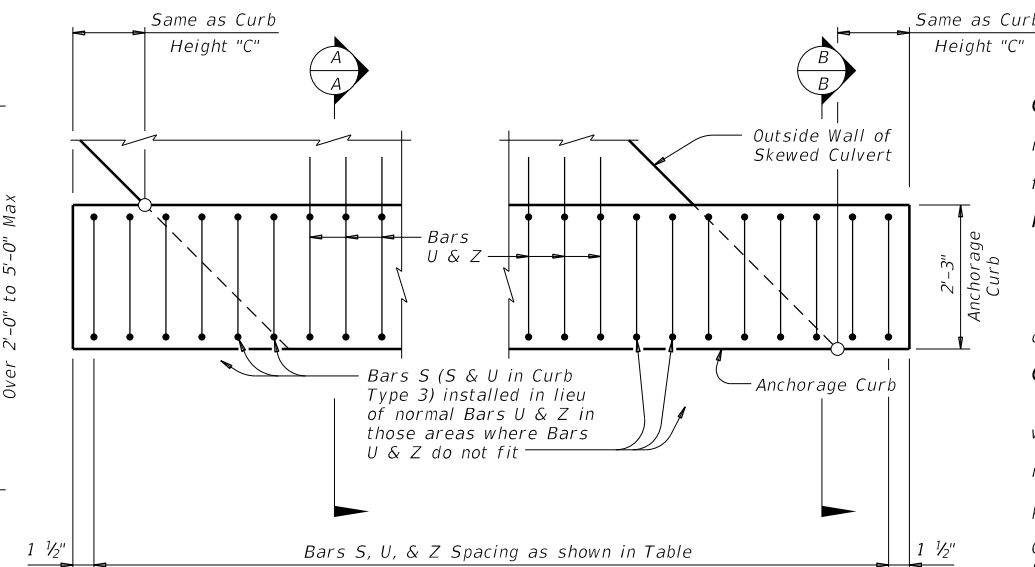
SECTION A-A
TYPE 3 CURB

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.



SECTION A-A
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.



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.

TABLE OF REINFORCING SPACING

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"

TABLE OF ESTIMATED QUANTITIES ④

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:

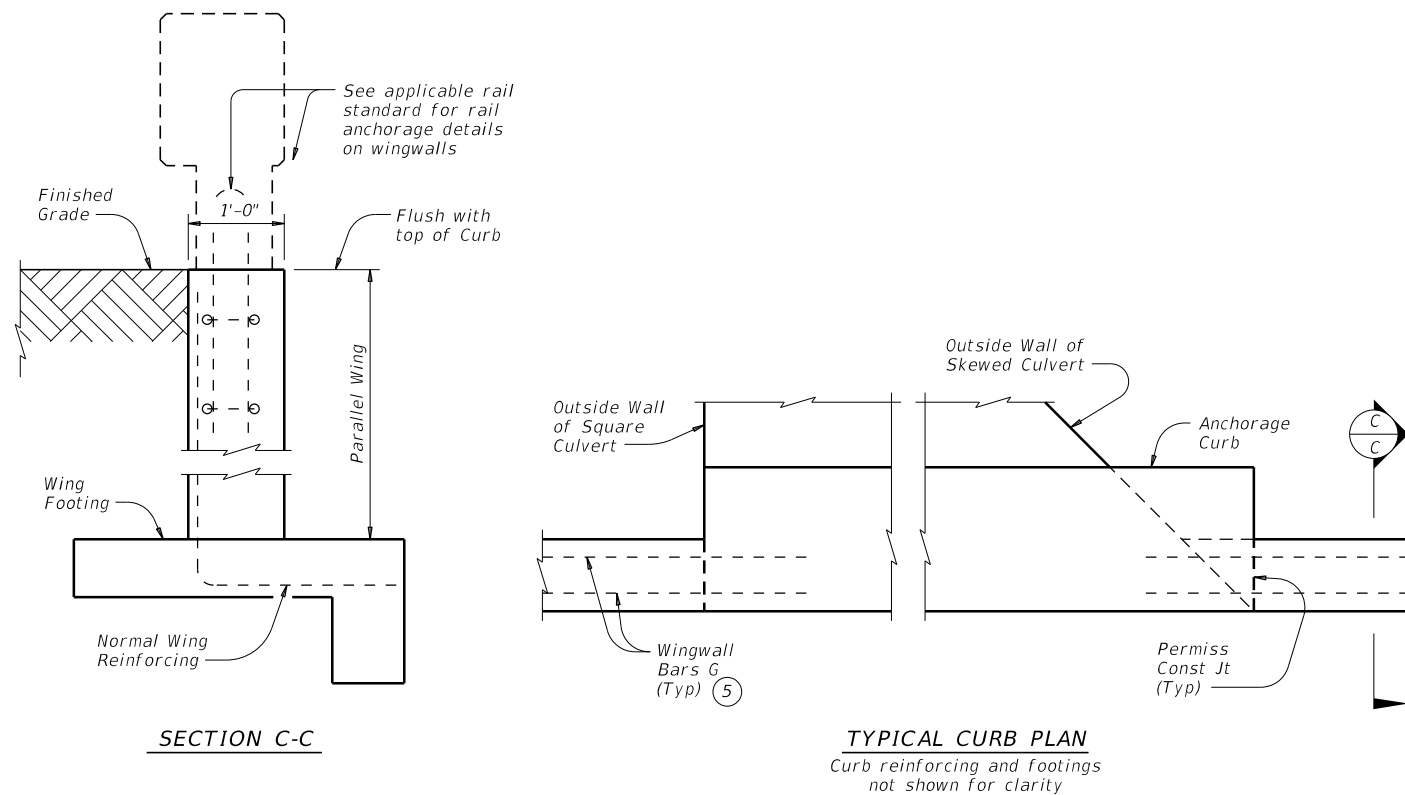
Designed according to AASHTO LRFD Bridge Design Specifications. The rail anchorage curb details have sufficient strength for use with all standard rail types. See appropriate rail standard for approved design speed restrictions, notes and details not shown. This anchorage curb is considered part of the 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: CD-RAC-20.dgn	DN: GAF	CK: TxDOT	DW: TxDOT
REVISIONS	CONT	SECT	JOB
	0915	46	052
	DIST	COUNTY	SHEET NO.
	SAT	GUADALUPE	366

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INSTALLATION AT PARALLEL CULVERT WINGWALLS
 See culvert wingwall standard for bars and details not shown.

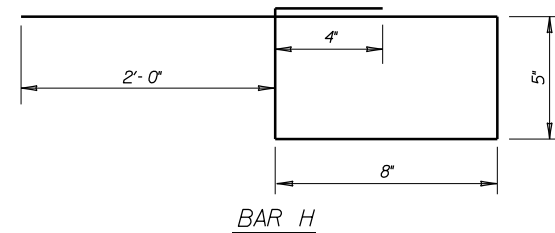
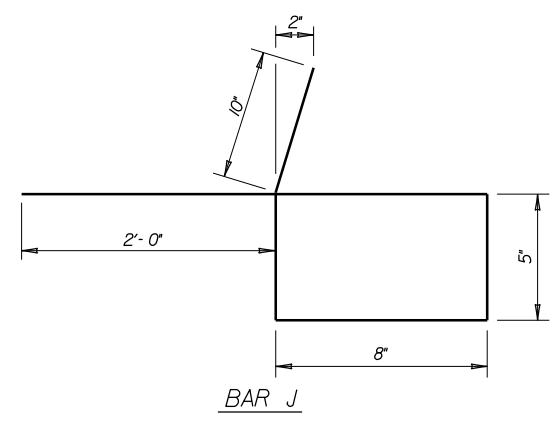
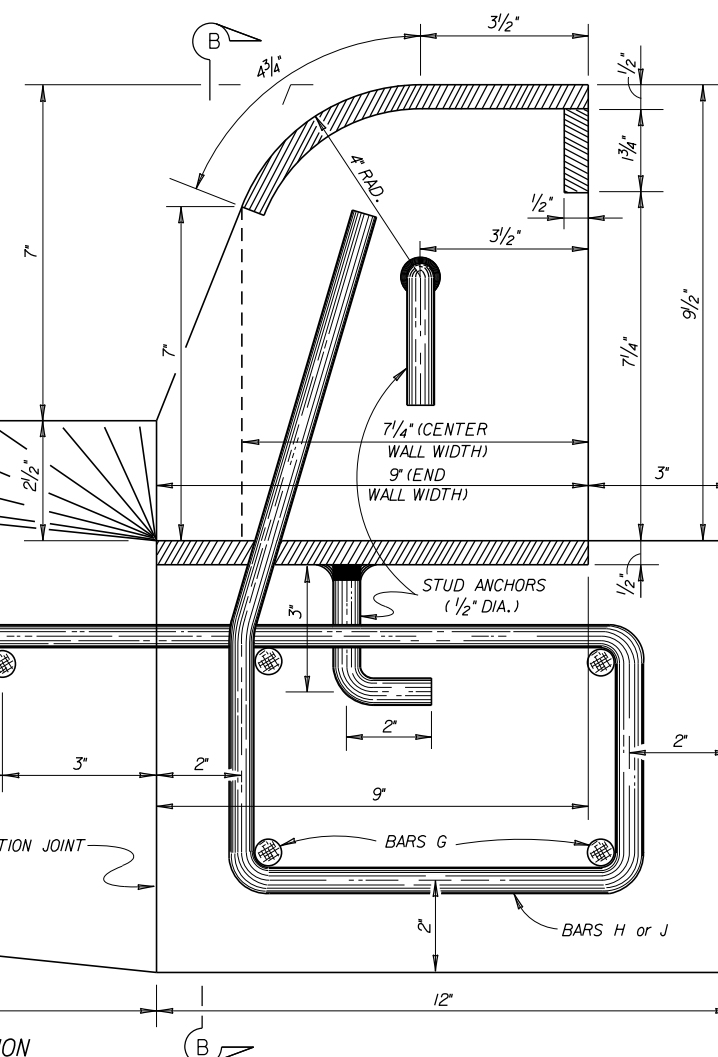
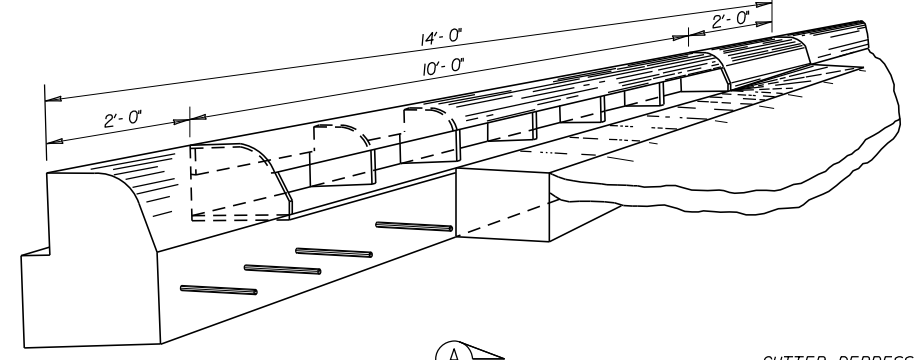
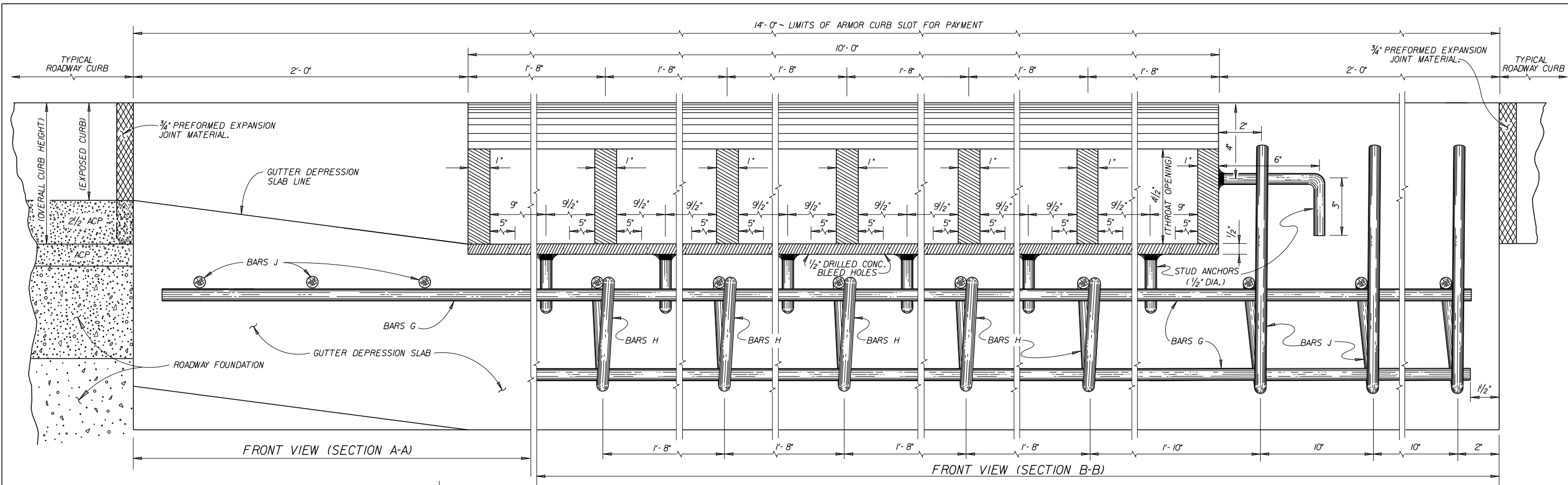
⑤ Bars G (#5), as identified on the PARALLEL WINGS PW standard sheet, must extend 1'-6" into the Anchorage Curb similar to that shown for a normal culvert curb.



**RAIL ANCHORAGE CURB
 BOX CULVERT
 RAIL MOUNTING DETAILS
 (CURBS 8" TO 5'-0" TALL ONLY)**

RAC

FILE: CD-RAC-20.dgn	DN: GAF	CK: TxDOT	DW: TxDOT	CK: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
	DIST	COUNTY	SHEET NO.	
	SAT	GUADALUPE	367	



ESTIMATED QUANTITIES FOR REINFORCING STEEL & CONCRETE

BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
G	7	#4	SHOWN	13'-9"	64
H	5	#4	1'-8"	4'-6"	15
J	6	#4	8"	5'-0"	20
TOTAL WEIGHT *					LBS. 99
CONCRETE FOR FOUNDATION *					C.Y. 0.47
CONCRETE FOR GUTTER DEPRESSION * C.Y.					0.78

STRUCTURAL STEEL FOR ARMOR CURB SLOT

STUD ANCHORS (1/2" DIA.)	LBS.	3.5
STEEL PLATE	LBS.	451
TOTAL WEIGHT *	LBS.	454.5

* FOR CONTRACTORS INFO ONLY.

GENERAL NOTES:
 ALL CONCRETE SHALL BE CL. "A".
 ALL STEEL SHALL BE ASTM A36.
 ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
 ALL SIDES OF ARMOR CURB SLOT AND STUD ANCHORS SHALL BE 1/4" FILLET WELDS.
 ALL EXPOSED STRUCTURAL STEEL (ARMOR) SHALL BE GALVANIZED UNDER ITEM 445.
 ALL EXPOSED EDGES ON ARMOR CURB SHALL RECEIVE A 1/8" BEVEL.
 THE SHAPE OF THE TYPICAL ROADWAY CURB SHALL TRANSITION TO THE ARMOR CURB AS APPROVED BY THE ENGINEER.

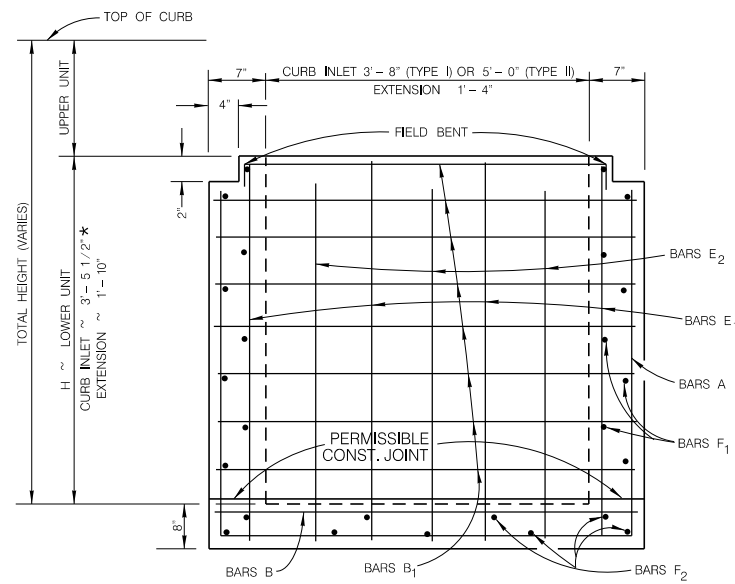
ARMOR CURB SLOT
 WITH CONCRETE FOUNDATION
 SAN ANTONIO DISTRICT STANDARDS

© 1998 Texas Department of Transportation

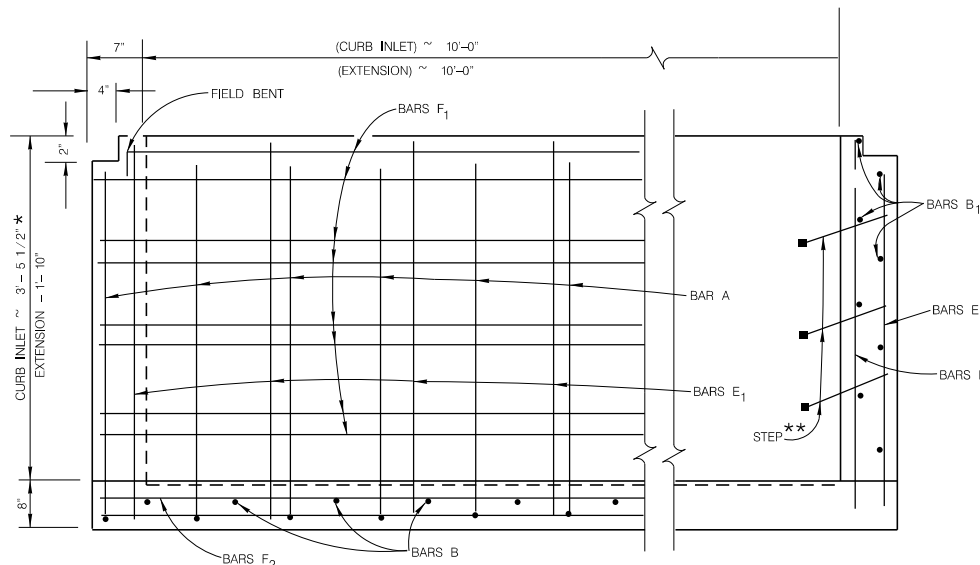
FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.	
6		368	
STATE	STATE DISTRICT	COUNTY	
TEXAS	SAT	GUADALUPE	
CONT.	SECT.	JOB	HIGHWAY NO.
0915	46	052	CORDOVA

10/95
 REV. 07/01
 REV. 12/04

STRUCTURE DESIGN / BRIDGE / STDS / ARMORCURB.DGN



SECTION A-A



SECTION B-B

LOWER UNIT 10' X 3'-8" (TYPE I)				
BAR	NO.	SIZE	SPAC.	LENGTH
A	12	#4	12"	VARIES
B	11	#4	12"	4'-6"
B ₁	VARIES	#4	12"	4'-6"
E ₁	20	#4	18"±	VARIES
E ₂	6	#4	18"±	VARIES
F ₁	VARIES	#4	12"±	10'-10"
F ₂	9	#4	—	10'-10"

LOWER UNIT 10' X 5'-0" (TYPE II)				
BAR	NO.	SIZE	SPAC.	LENGTH
A	12	#4	12"	VARIES
B	11	#4	12"	5'-10"
B ₁	VARIES	#4	12"	5'-10"
E ₁	22	#4	18"±	VARIES
E ₂	8	#4	18"±	VARIES
F ₁	VARIES	#4	12"±	10'-10"
F ₂	11	#4	—	10'-10"

REINFORCING STEEL

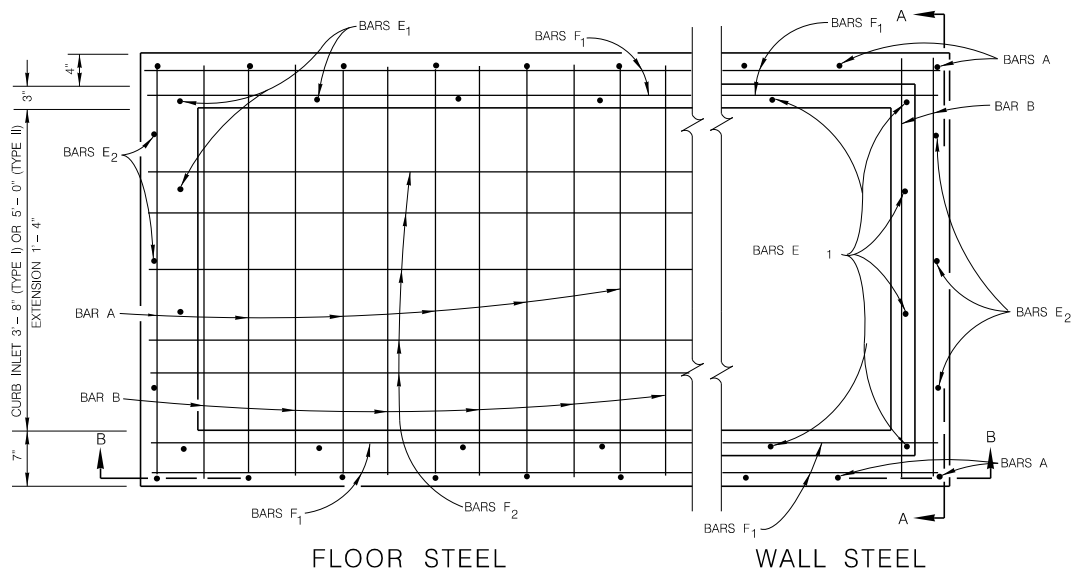
GENERAL NOTES

- 5' INLETS AND 5' EXTENSIONS MUST BE IN ACCORDANCE WITH THE LATEST TXDOT CURB INLET TYPE "C" AND EXTENSION TYPE E (IL-C).
- TYPE C-II INLET TO BE USED ONLY WHEN STORM DRAIN PIPE IS IN-LINE WITH CURB INLET AND APPROVED BY THE ENGINEER.
- QUANTITIES SHOWN ARE FOR CONTRACTORS INFORMATION ONLY.
- CONCRETE FOR STRUCTURES SHALL BE CLASS "A", 3000 PSI IN 28 DAYS.
- ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
- ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 1 1/2".
- ALL REINFORCING STEEL SHALL CONFORM TO A.S.T.M. A-615, GRADE 60 REQUIREMENTS.
- ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4".
- DEPRESSION SLAB SHALL RECEIVE A WOOD FLOAT FINISH.
- FACE OF INLET TO CONFORM TO FACE OF CURB LINE.
- ALL BARS INTERCEPTING MANHOLE RING & COVER SHALL BE CUT OR BENT.
- PAYMENT FOR ALL EXCAVATION, BACK-FILLING, CONCRETE, REINFORCING STEEL, RING AND COVER, CURB ARMOR AND STEPS SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 "STORM SEWER JUNCTION BOXES AND INLETS".
- CAST IRON MANHOLE RING AND COVER TO BE PLACED NEXT TO OUTLET PIPE, EXCEPT FOR VERTICAL OUTLET PIPE IN WHICH CASE MANHOLE RING AND COVER WILL BE OFFSET.
- GALVANIZED BOLTS, NUTS, WASHERS, PLATES AND GASKETS ARE SUBSIDIARY TO INLETS.
- THE CONTRACTOR SHALL PROVIDE AN ADEQUATE MEANS TO LIFT AND PLACE THE INLETS, WHEN USING PRECAST UNITS.
- ALL BARS AT PIPE BLOCKOUT LOCATIONS SHALL BE CUT OR BEND.
- ALL LOWER UNITS SHALL RECEIVE INVERT MORTAR SHAPING.
- PIPE BLOCKOUTS IN INLET WALLS SHOULD NOT EXCEED 3" BEYOND THE OUTER SHELL OF THE PIPE, TAKING INTO ACCOUNT THE SKEW OF THE PIPE AS NECESSARY. CONSTRUCTION JOINT MAY BE RAISED A MAXIMUM OF 6".

* VARIES FOR EXTRA DEPTH INLETS

* VARIES FOR EXTRA DEPTH INLETS

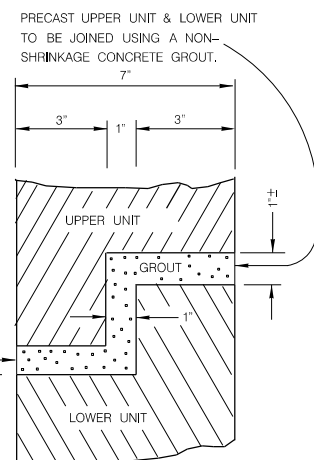
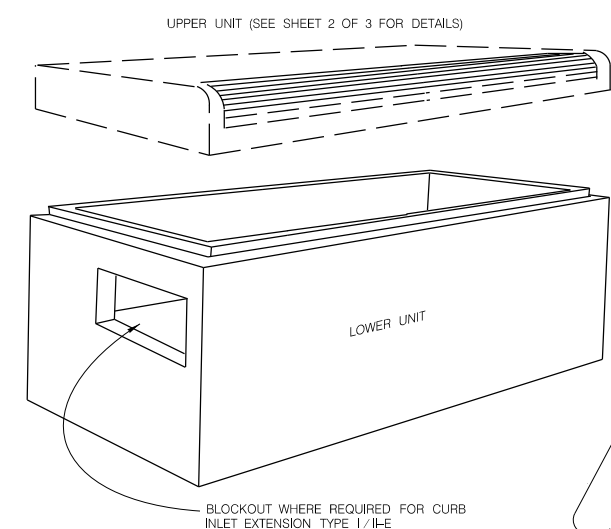
** LOCATION OF STEPS IN CURB INLET (LOWER UNIT) ONLY WILL BE DETERMINED BY THE LOCATION OF RING COVER PLACEMENT, STEPS @ 15" O.C.



FLOOR STEEL

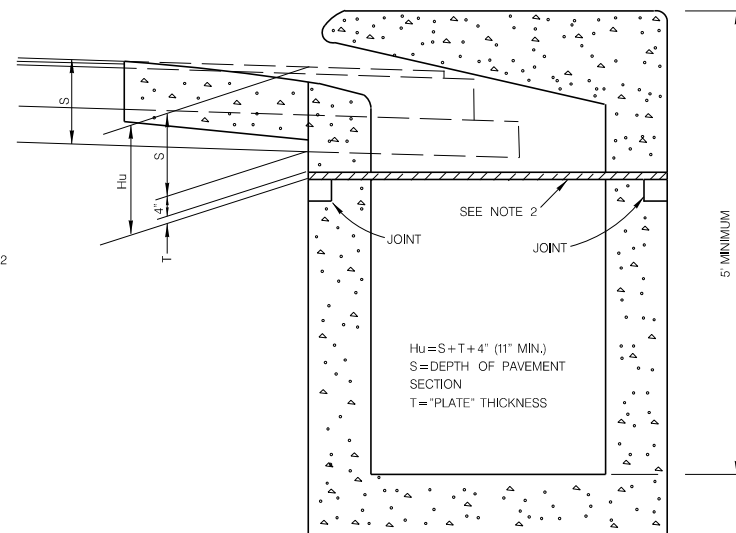
WALL STEEL

PLAN



JOINT DETAIL

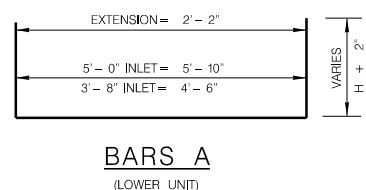
WHEN USING PRECAST UPPER UNIT, THIS SPACE IS FOR MAKING MINOR HORIZONTAL AND VERTICAL ADJUSTMENTS TO ACCOMMODATE A FIT BETWEEN THE UPPER AND LOWER UNIT THAT ALLOWS FOR A MATCH LINE AND GRADE BETWEEN THE ROADWAY CURB AND THE UPPER UNIT OF THE INLET.



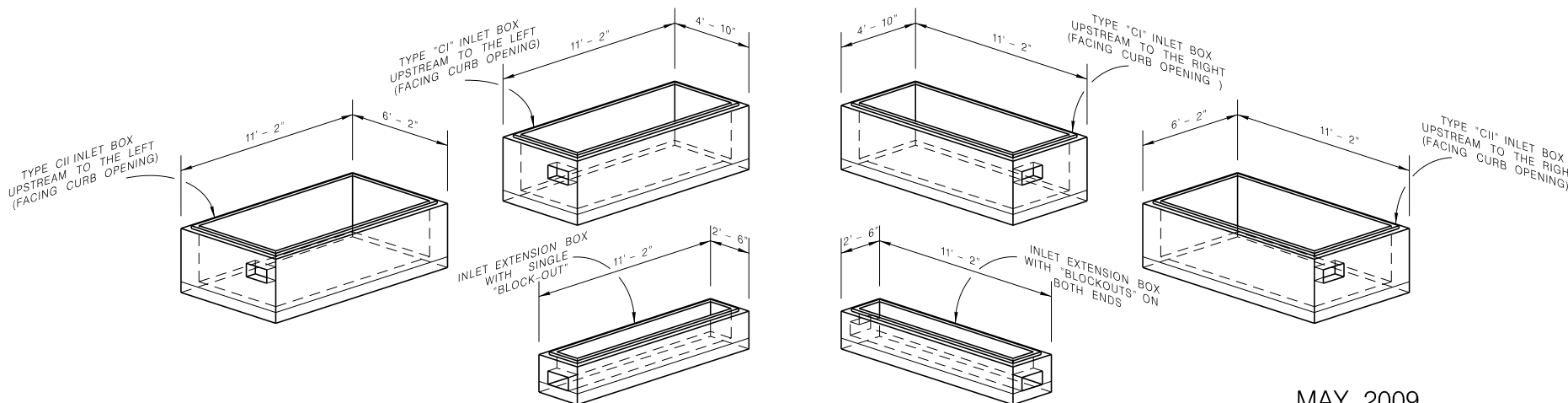
PHASE CONSTRUCTION

NOTES FOR PHASE CONSTRUCTION (WHEN DIRECTED BY THE ENGINEER):

- THE CURB INLET AND EXTENSION SHALL BE CONSTRUCTED TO A DEPTH "Hu" BELOW THE INLET AND EXTENSION GUTTER LINE ELEVATION.
- CAP THE CURB INLET AND EXTENSION WITH A STEEL PLATE APPROVED BY THE ENGINEER AND CONSTRUCT THE ROADWAY OVER THE PLATE.
- AFTER THE ROADWAY IS COMPLETED, BUT PRIOR TO THE FINAL HMA OVERLAY, SAW CUT THE PAVEMENT, REMOVE THE PLATE AND COMPLETE THE UPPER PORTION OF THE CURB INLET AND /OR EXTENSION.



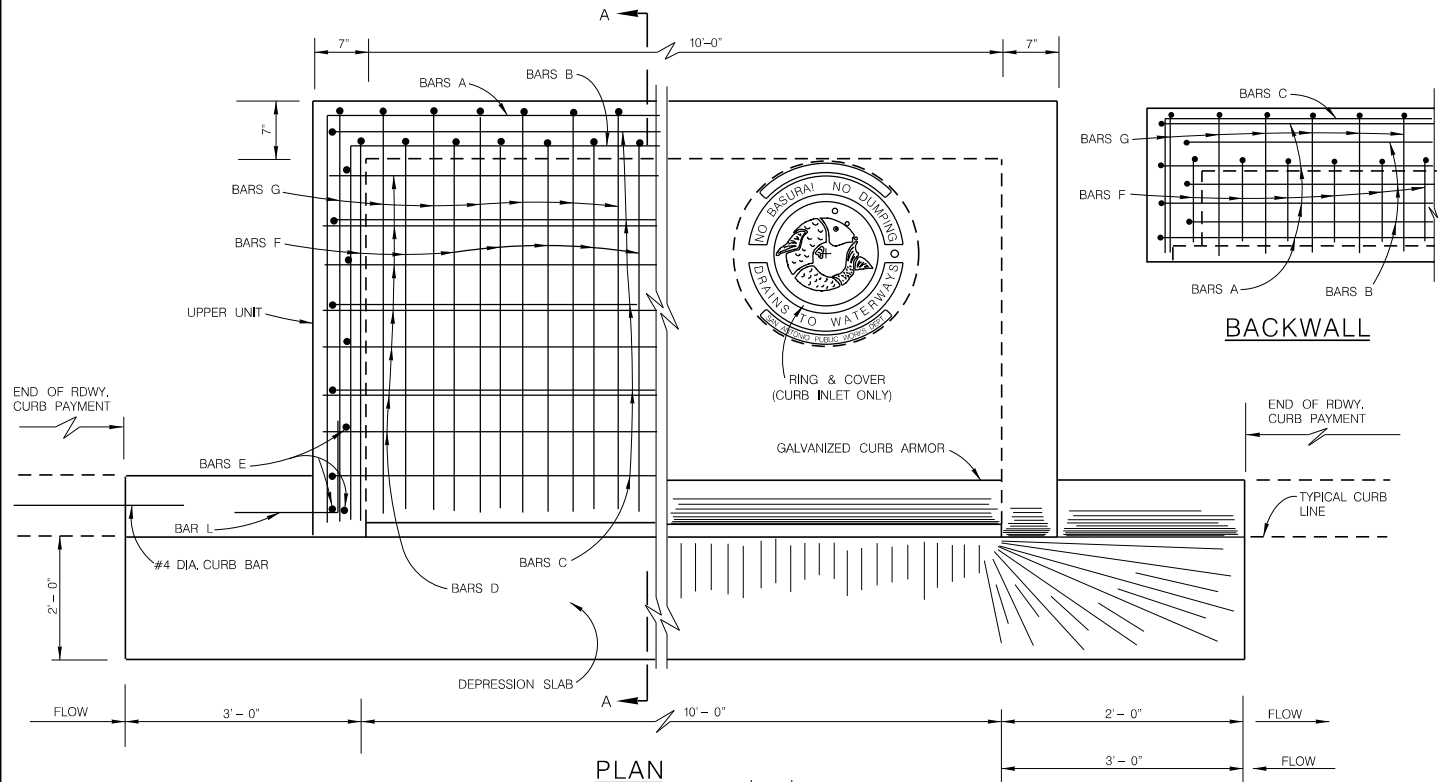
BARS A (LOWER UNIT)



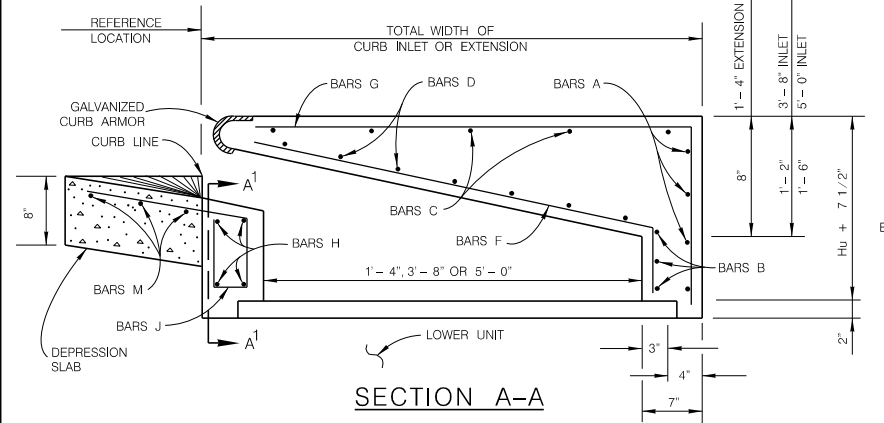
CONCRETE INLET BOX CONFIGURATIONS (LOWER UNITS)

MAY 2009

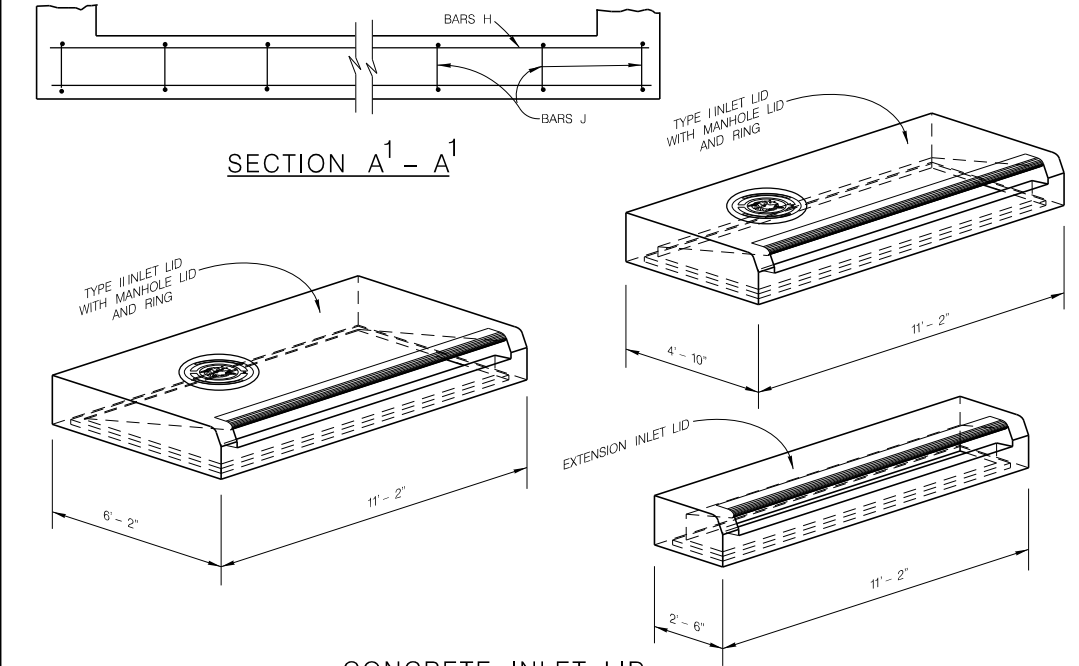
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT
TYPE "C" INLET (TYPE I & II)
& INLET EXTENSION STANDARDS
SHEET 1 OF 3



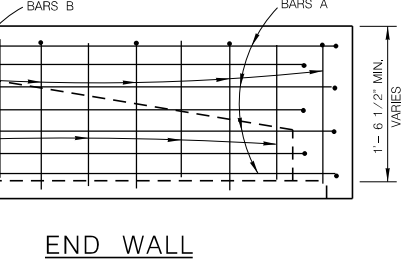
PLAN



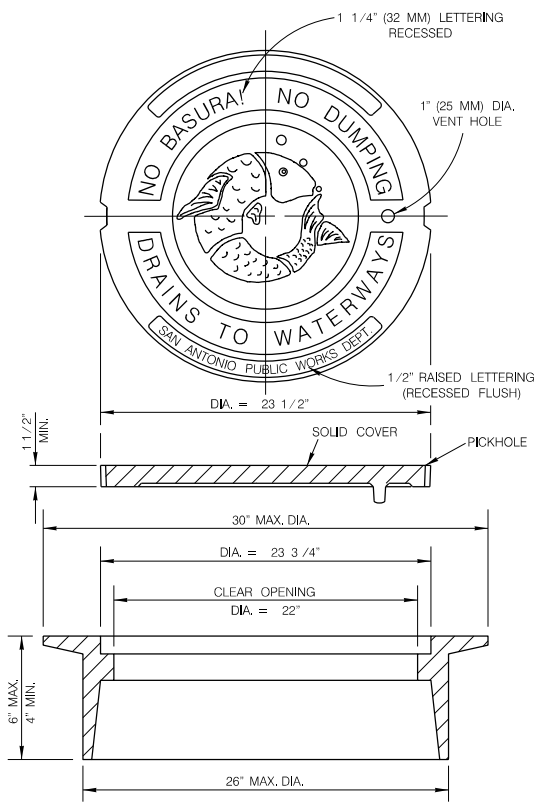
SECTION A-A



CONCRETE INLET LID CONFIGURATIONS (UPPER UNITS)



END WALL

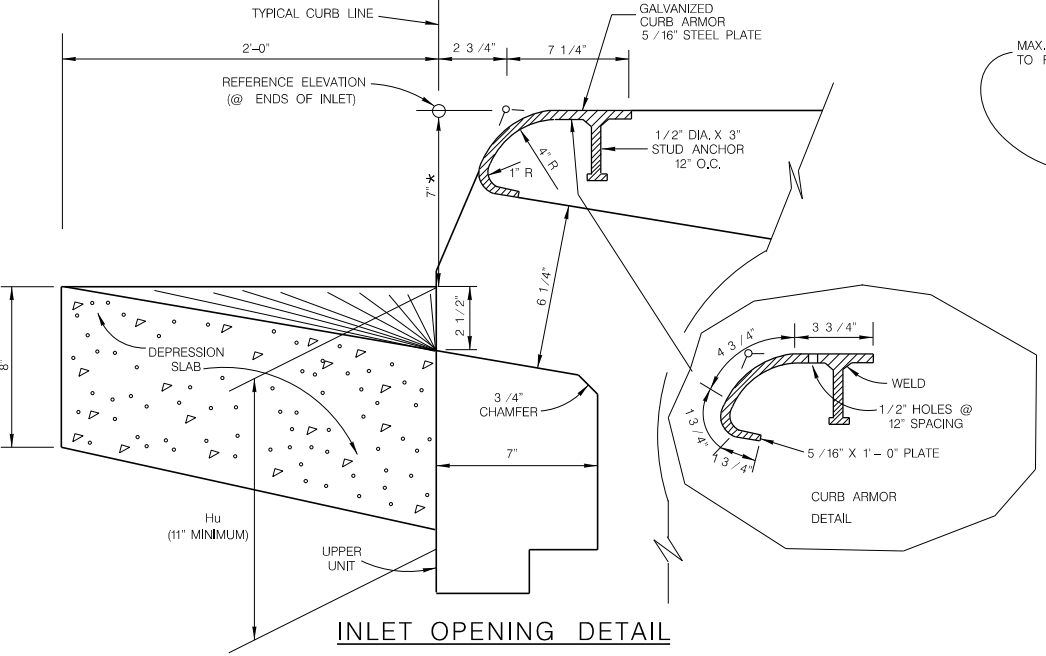


MANHOLE LID & RING DETAIL (ITEM 409)

NOTES FOR MANHOLE LID AND RING

1. FOR LID DESIGN OUTSIDE OF CITY OF SAN ANTONIO, DELETE "SAN ANTONIO PUBLIC WORKS DEPT."
2. CASTING NUMBER AND MANUFACTURER'S ID, ON LID AND RING.
3. LOAD BEARING CAPABILITY OF HS-20 MINIMUM.
4. THE LOAD BEARING SURFACES SHALL BE MACHINE GROUND.
5. THE COMBINED WEIGHT OF THE MANHOLE RING AND COVER MUST BE AT LEAST 260 LBS.

SEE SHEET 1 OF 3 FOR GENERAL NOTES.



INLET OPENING DETAIL

REINFORCING STEEL (FOR Hu=11")

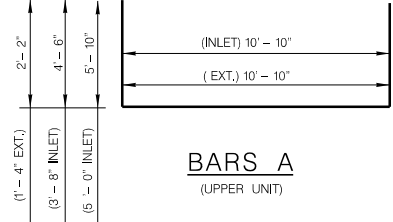
UPPER UNIT 10' X 3'-8" (TYPE I)					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	19'-10"	53
B	3	#4	—	18'-10"	38
C	5	#4	11"	13'-2"	44
D	7	#4	6"	10'-10"	51
E	12	#4	11"	1'-2"	9
F	21	#6	6"	4'-8"	147
G	22	#6	6"	5'-8"	187
H	4	#4	—	10'-10"	29
J	12	#4	12"	3'-6"	28
L	4	#4	—	2'-0"	5
M	3	#4	—	14'-8"	29
TOTAL WEIGHT					620 LBS.

UPPER UNIT 10' X 5' (TYPE II)					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	22'-6"	60
B	3	#4	—	21'-6"	43
C	7	#4	11"	13'-2"	62
D	11	#4	6"	10'-10"	80
E	16	#4	11"	1'-2"	13
F	21	#6	6"	5'-8"	179
G	22	#6	6"	7'-0"	231
H	4	#4	—	10'-10"	29
J	12	#4	12"	3'-6"	28
L	4	#4	—	2'-0"	5
M	3	#4	—	14'-8"	29
TOTAL WEIGHT					759 LBS.

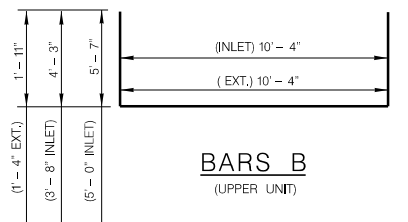
CLASS "A" CONCRETE QUANTITIES (FOR Hu = 11")

DEPRESSION SLAB	C.Y.
10' INLET	0.7
10' EXTENSION	0.7

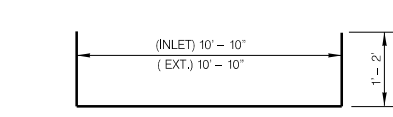
UPPER UNIT (ONLY)	C.Y.
10' X 3'-8" CURB INLET	1.9
10' X 5'-0" CURB INLET	2.7
10' EXTENSION	1.0



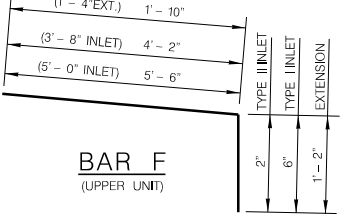
BAR A (UPPER UNIT)



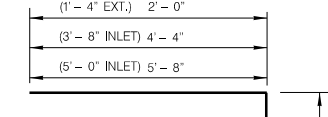
BAR B (UPPER UNIT)



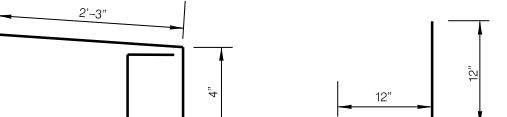
BAR C (UPPER UNIT)



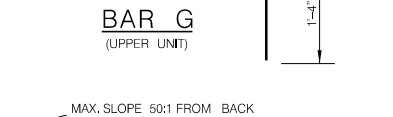
BAR F (UPPER UNIT)



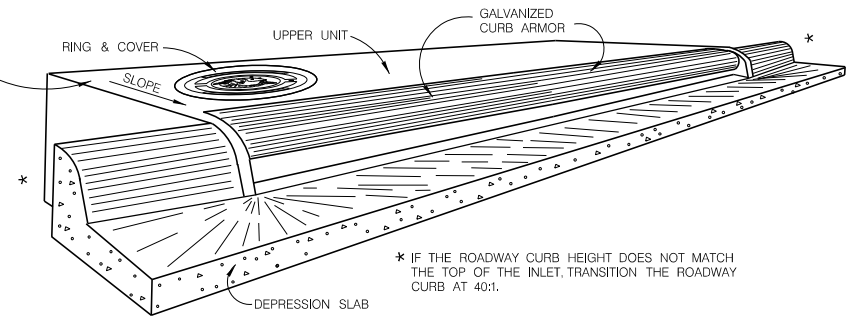
BAR G (UPPER UNIT)



BAR J (UPPER UNIT)



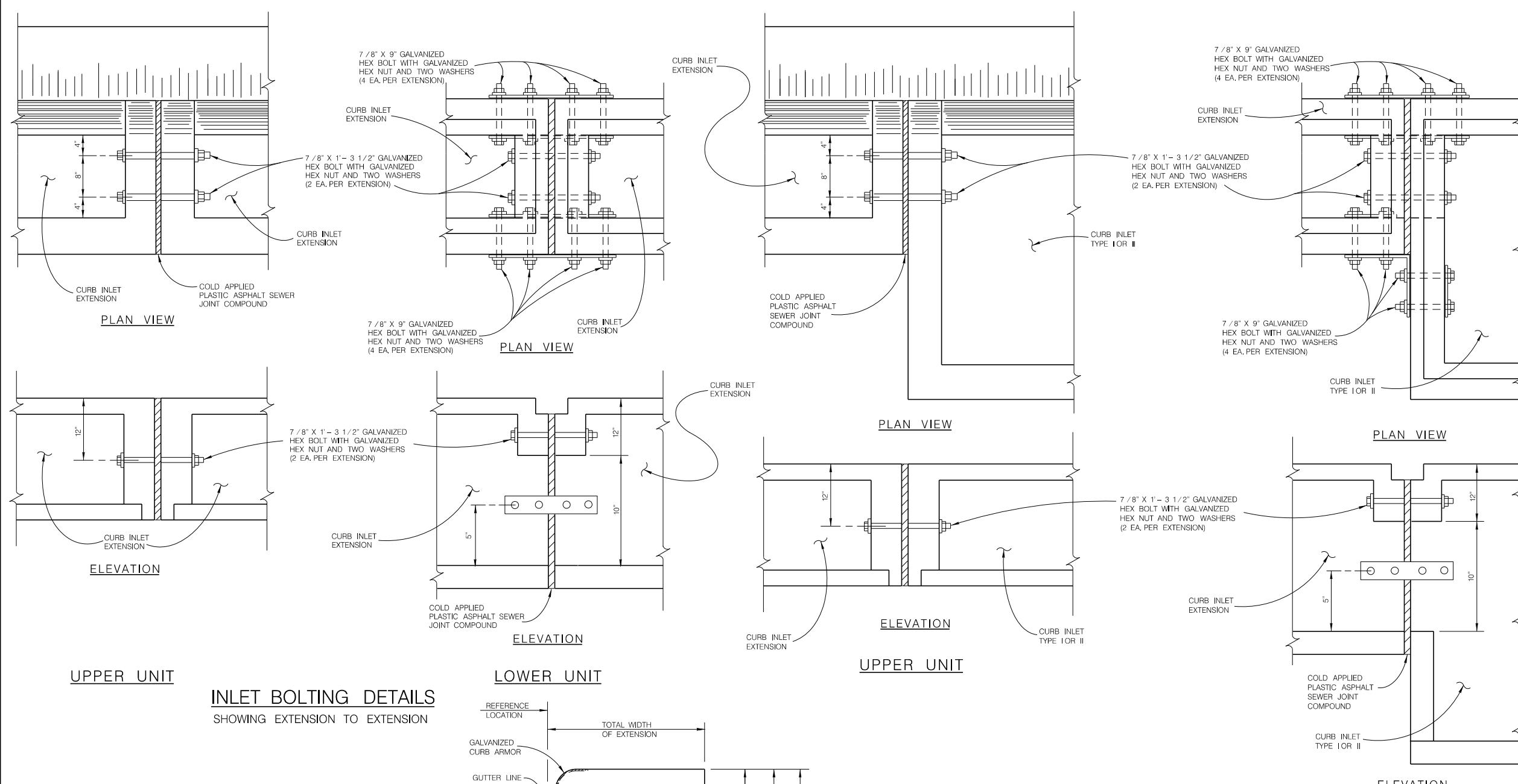
BAR L (UPPER UNIT)



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CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TYPE "C" INLET (TYPE I & II)
& INLET EXTENSION STANDARDS
SHEET 2 OF 3



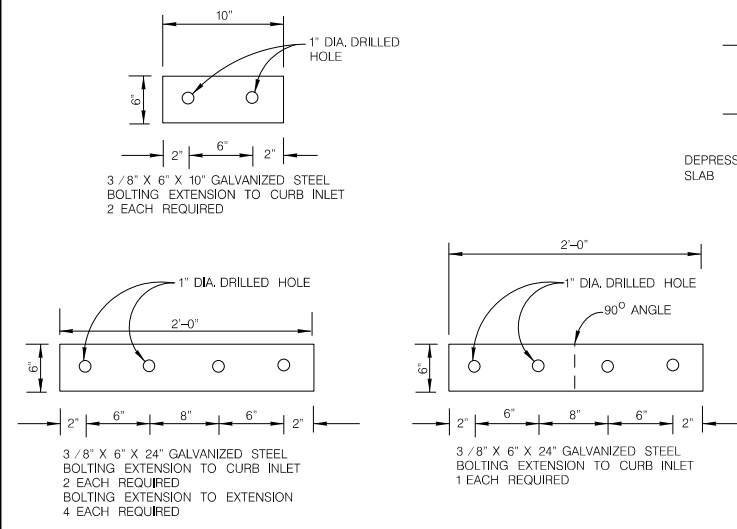
UPPER UNIT EXTENSION (FOR H _u = 11")					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	15'-2"	41
B	3	#4	—	14'-2"	28
C	3	#4	11"	13'-2"	26
D	3	#4	6"	10'-10"	22
E	8	#4	11"	1'-2"	6
F	21	#6	6"	2'-0"	63
G	22	#6	6"	3'-4"	110
H	4	#4	—	10'-10"	29
J	12	#4	12"	3'-6"	28
L	4	#4	—	2'-0"	5
M	3	#4	—	14'-8"	29
REINFORCING STEEL					LBS. 387
CLASS "A" CONCRETE					C.Y. 1.0

LOWER UNIT EXTENSION					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	12	#4	12"	6'-2"	49
B	11	#4	12"	2'-2"	16
B ₁	3	#4	12"	2'-2"	4
E ₁	18	#4	18" ±	2'-3"	27
E ₂	4	#4	18" ±	2'-1"	6
F ₁	16	#4	12" ±	10'-10"	116
F ₂	5	#4	—	10'-10"	36
REINFORCING STEEL					LBS. 254
CLASS "A" CONCRETE					C.Y. 1.4

GENERAL NOTES

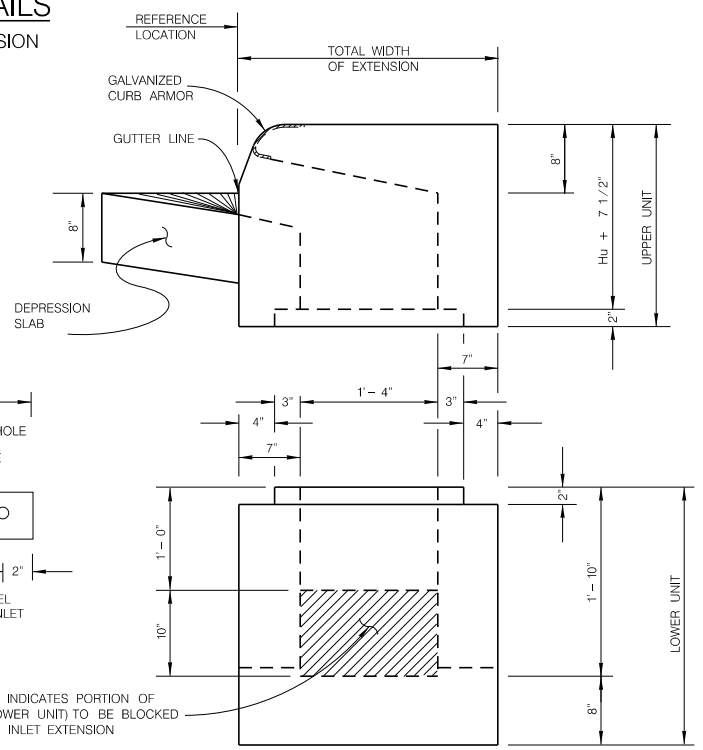
1. WHEN INLET EXTENSIONS ARE REQUIRED FOR ON GRADE INLETS THE EXTENSION(S) SHALL BE PLACED ON THE UPSTREAM END OF THE INLET.
2. FOR CURB INLET EXTENSION REINFORCING STEEL NOTES & VARIOUS OTHER APPLICABLE DETAILS NOT FOUND ON THIS SHEET REFER TO SHEETS 1 & 2.

UPPER UNIT INLET BOLTING DETAILS SHOWING EXTENSION TO EXTENSION



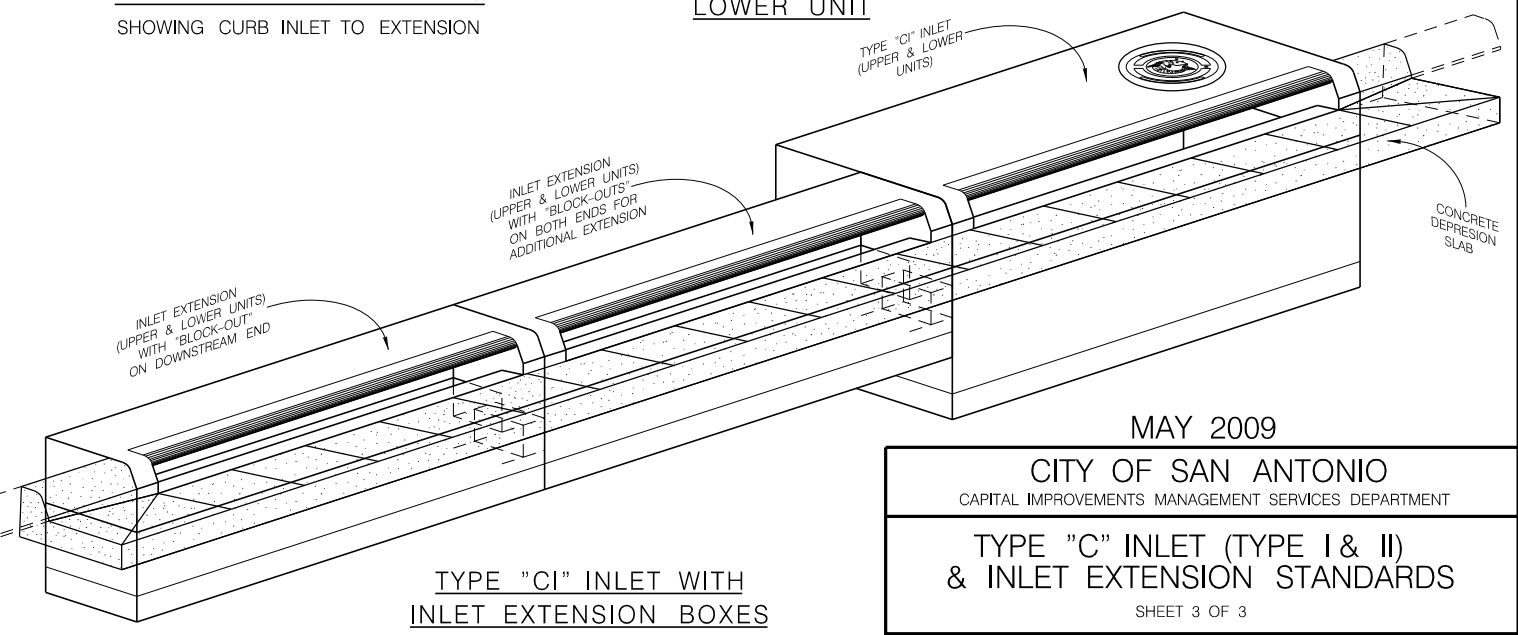
PLATES

LOWER UNIT



SECTION A-A CURB INLET EXTENSION TYPE E

INLET BOLTING DETAILS SHOWING CURB INLET TO EXTENSION



TYPE "CI" INLET WITH INLET EXTENSION BOXES

MAY 2009

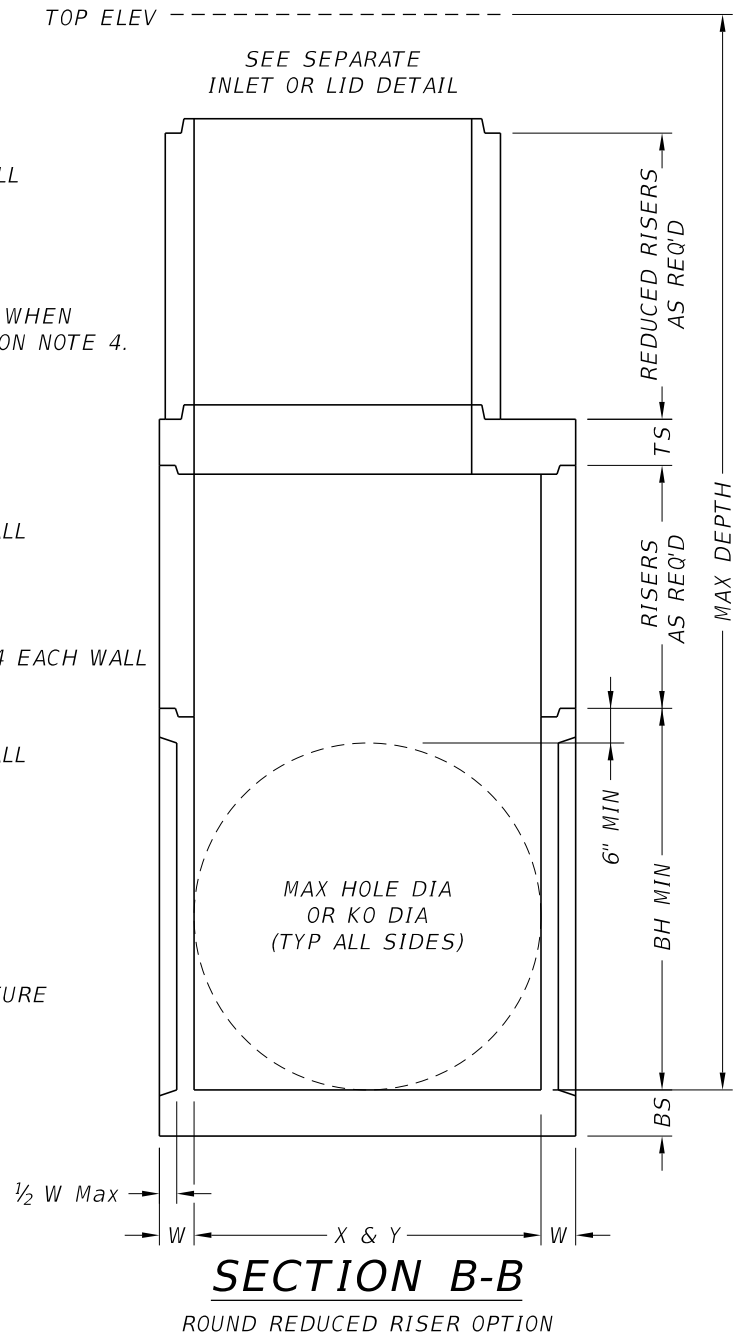
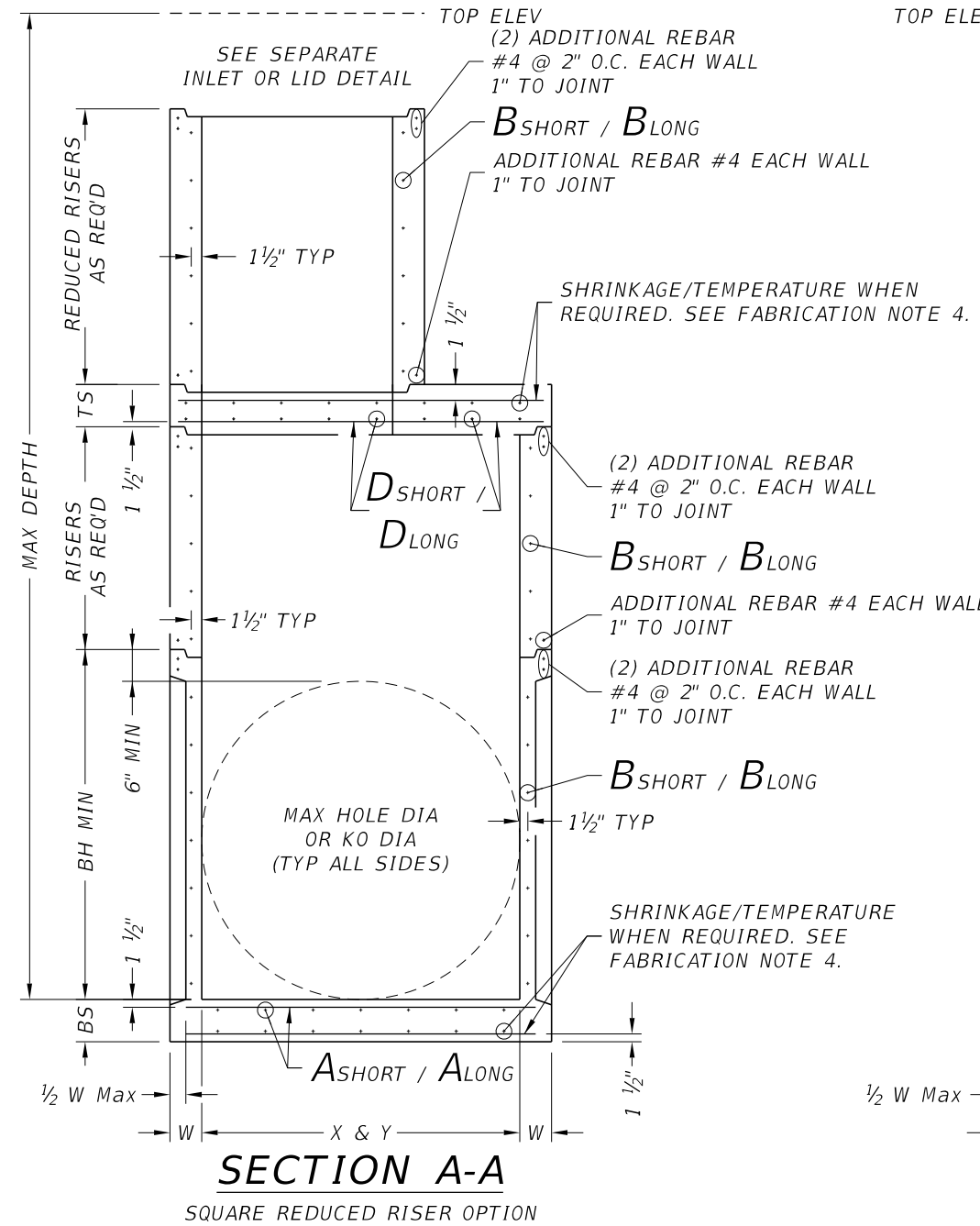
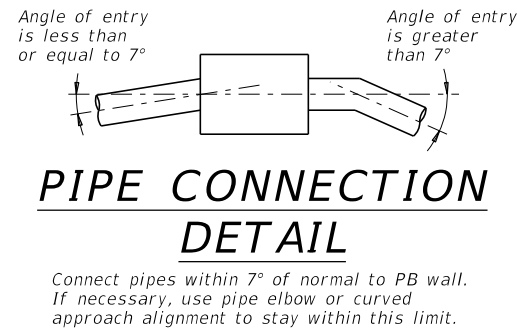
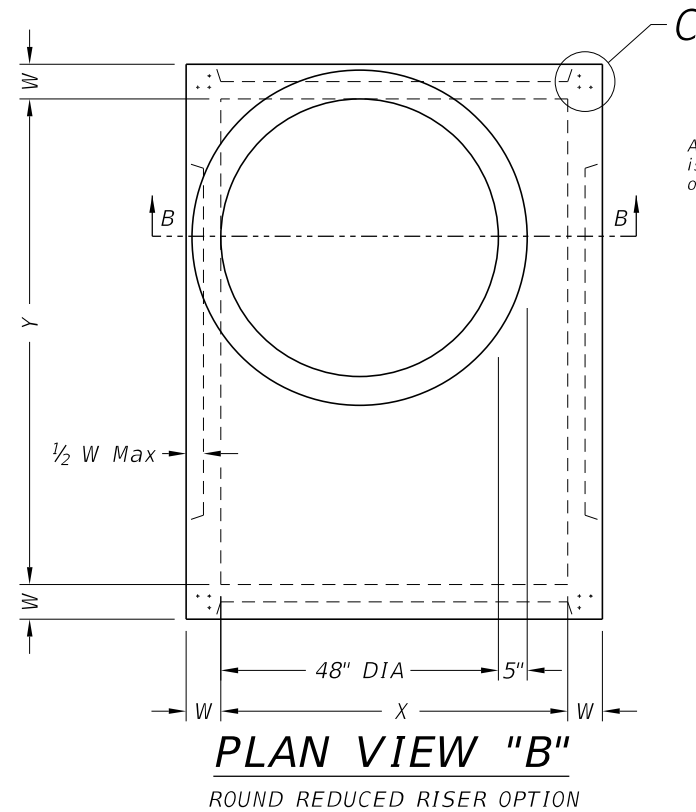
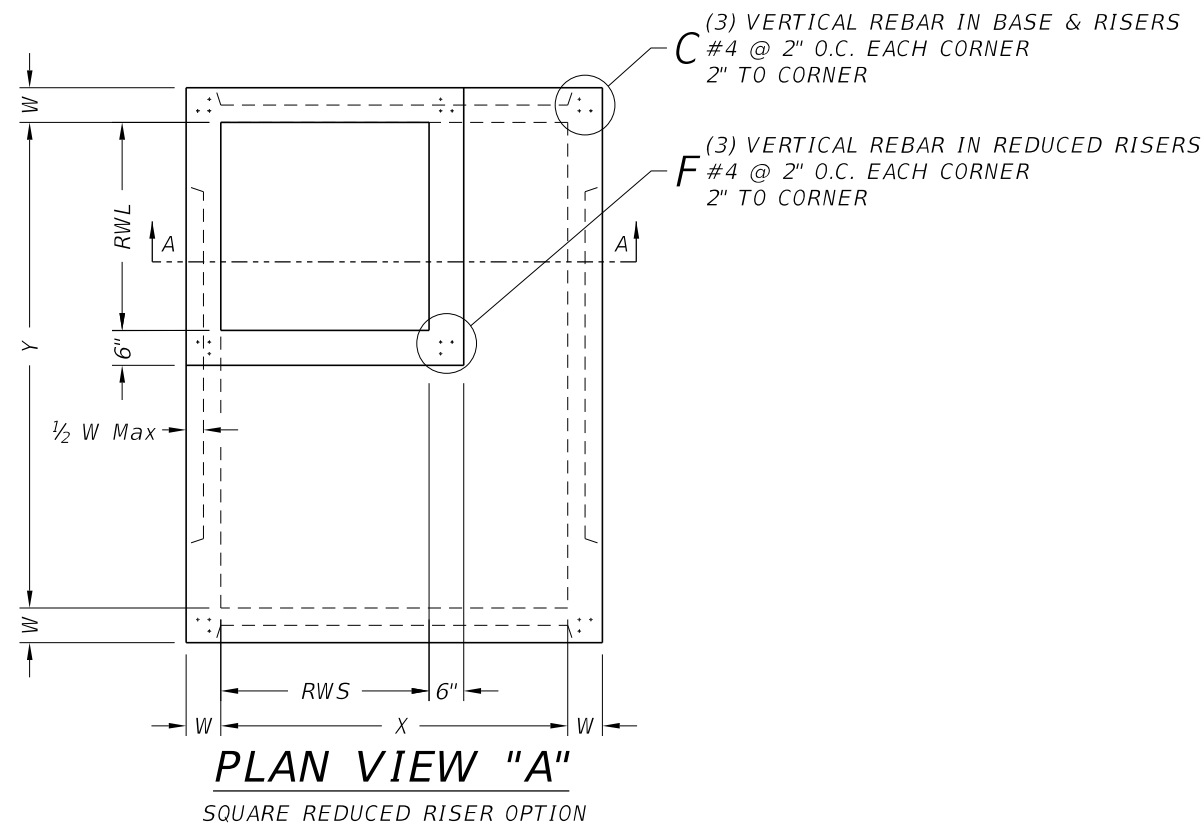
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TYPE "C" INLET (TYPE I & II) & INLET EXTENSION STANDARDS

SHEET 3 OF 3

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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



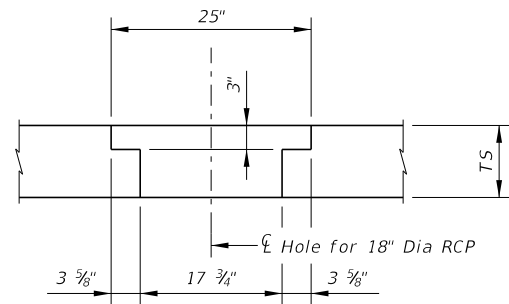
PRECAST BASE

PB

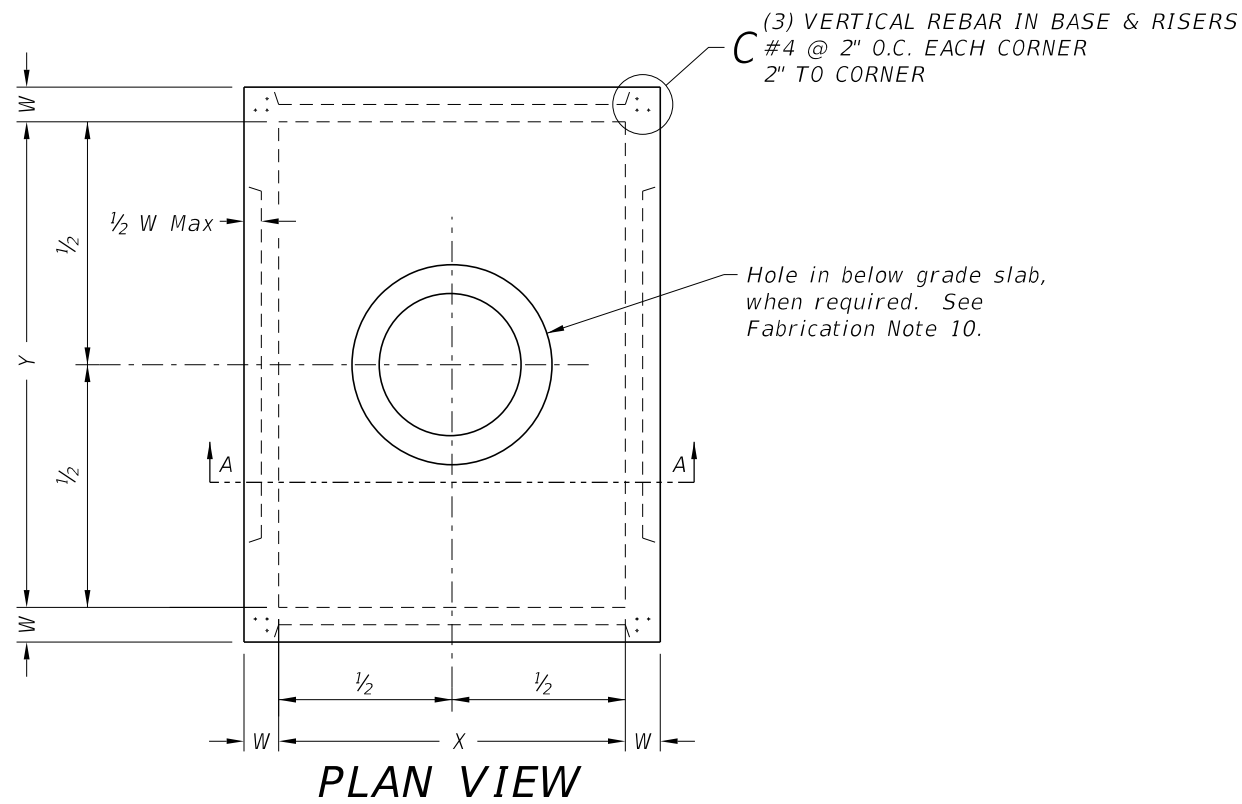
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©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
	DIST	COUNTY	SHEET NO.	
	SAT	GUADALUPE	372	

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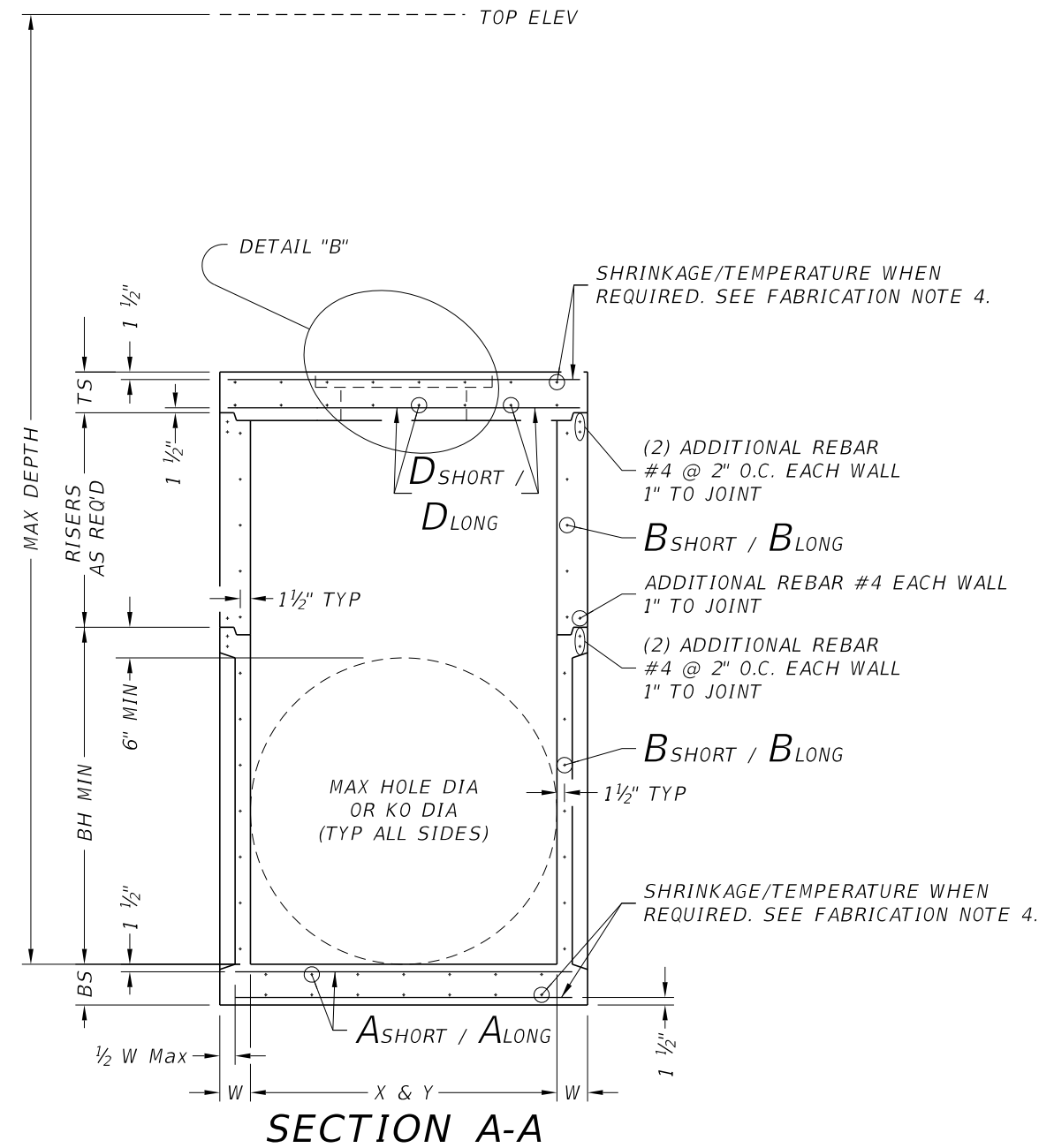
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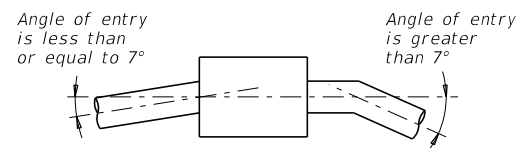
DETAIL "B"



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

		Bridge Division Standard	
PRECAST JUNCTION BOX			
PJB			
FILE: CD-PJB-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
©TxDOT February 2020	CONT	SECT	JOB
REVISIONS	0915	46	052
	DIST	COUNTY	SHEET NO.
	SAT	GUADALUPE	373

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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 or ID	Short Span Reinf. Steel Area	Long Span Reinf. Steel Area	Thickness	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 or ID	Short Span Reinf. Steel Area	Long Span Reinf. Steel Area	Thickness	Short Span Reinf. Steel Area	Long Span Reinf. Steel Area			
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



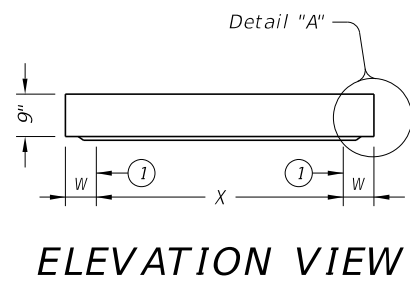
**DESIGN DATA FOR
 PRECAST BASE AND
 JUNCTION BOX**

PDD

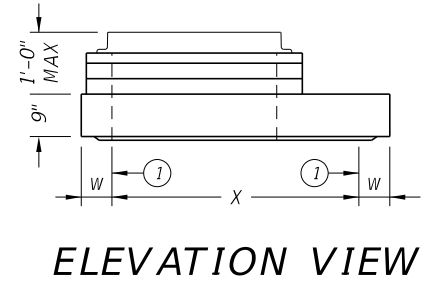
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©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
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	DIST	COUNTY		SHEET NO.
	SAT	GUADALUPE		374

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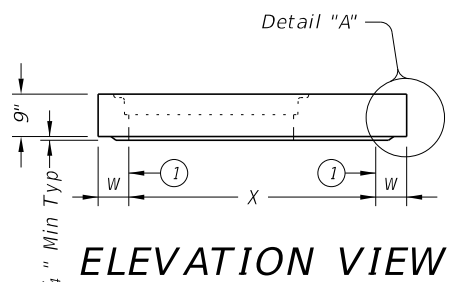
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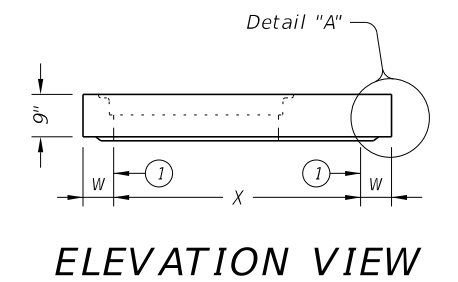
ELEVATION VIEW



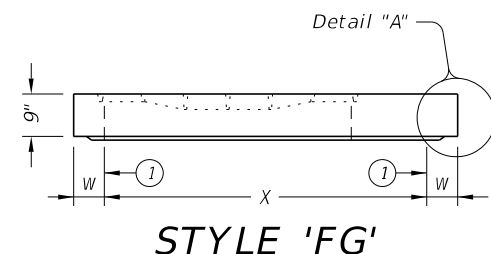
ELEVATION VIEW



ELEVATION VIEW

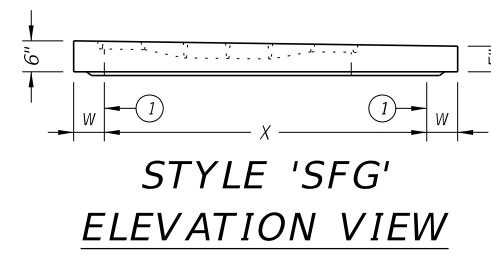


ELEVATION VIEW

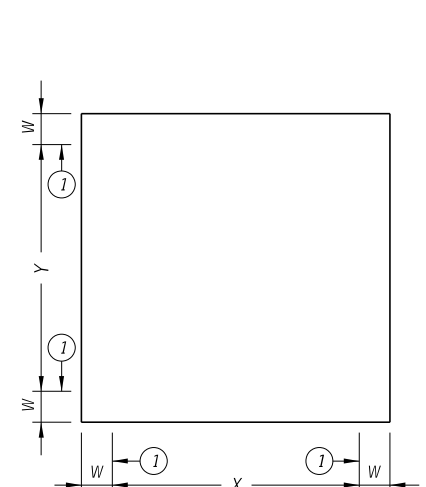


STYLE 'FG'

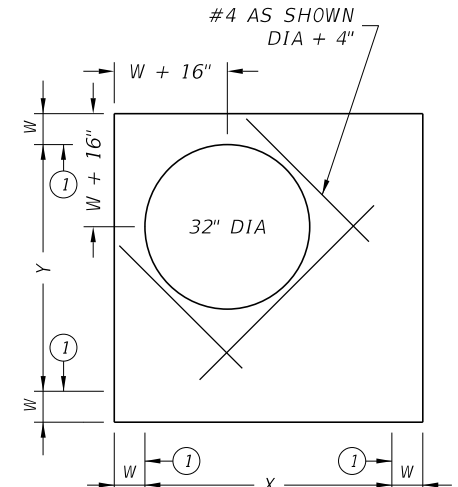
ORIENT TAPER TO CORRESPOND WITH ROADWAY CROSS-SLOPE.



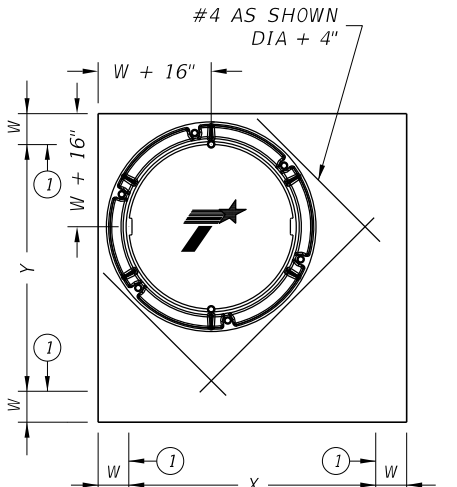
STYLE 'SFG'
ELEVATION VIEW



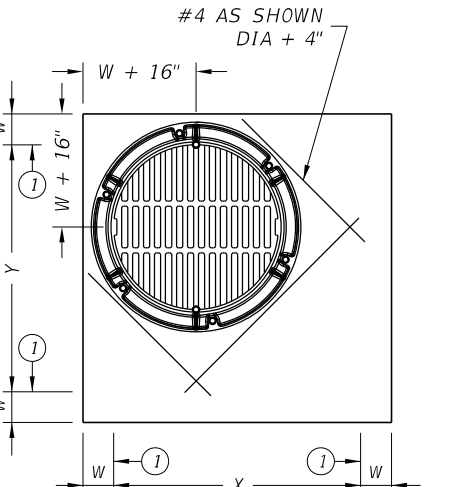
PLAN VIEW
NO OPENINGS
STYLE 'SL'



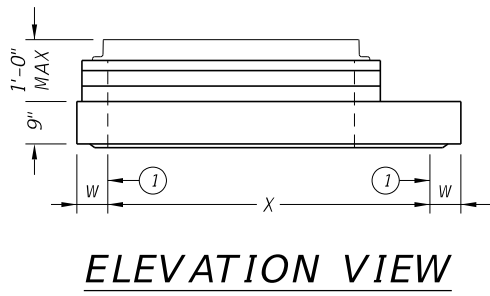
PLAN VIEW
SHIP LOOSE RING & COVER
STYLE 'RH'



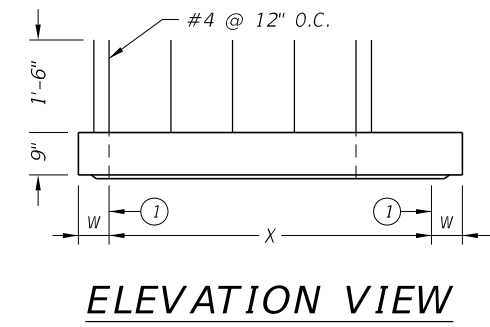
PLAN VIEW
32" DIA CAST-IN RING & COVER
STYLE 'RC'



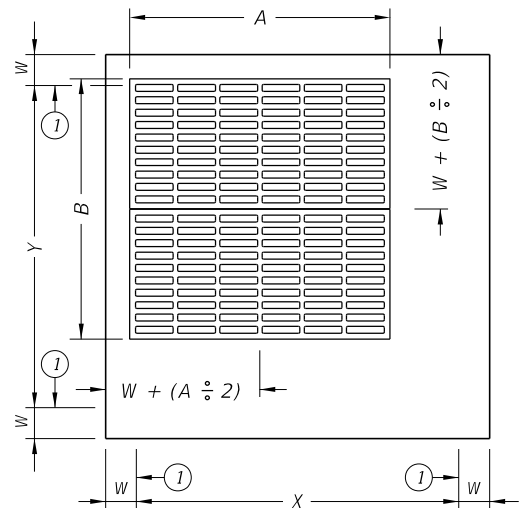
PLAN VIEW
32" DIA CAST-IN RING & GRATE
STYLE 'RG'



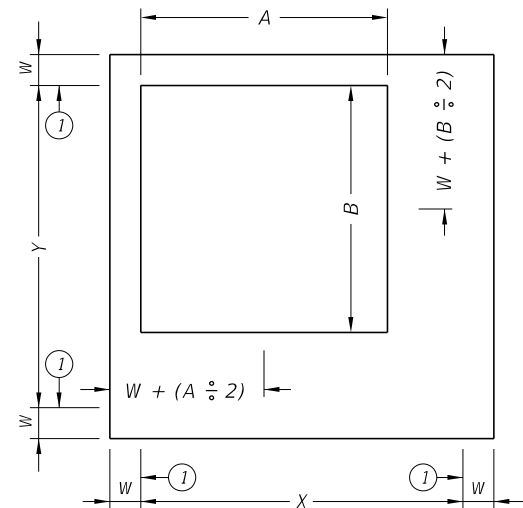
ELEVATION VIEW



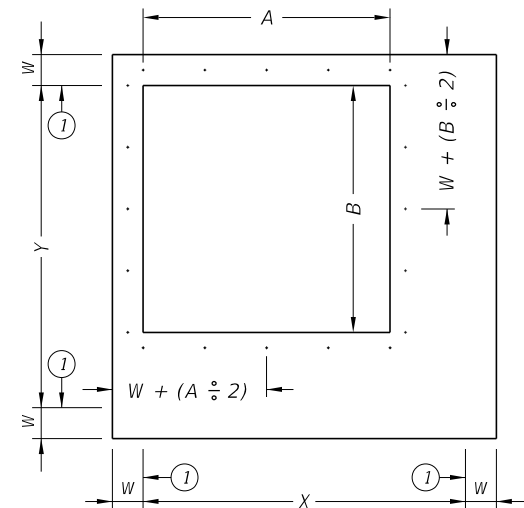
ELEVATION VIEW



PLAN VIEW
CAST-IN FRAME & GRATE
STYLES 'FG' & 'SFG'



PLAN VIEW
SHIP LOOSE FRAME & GRATE
STYLE 'SH'



PLAN VIEW
EXPOSED REBAR
STYLE 'SI'

① Matches inside face of wall of precast base or riser below inlet.

HL93 LOADING		SHEET 1 OF 2	
		Bridge Division Standard	
PRECAST SLAB LID			
PSL			
FILE: CD-PSL-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
©TxDOT February 2020	CONT 0915	SECT 46	JOB 052
REVISIONS	COUNTY		HIGHWAY
SAT	GUADALUPE		SHEET NO. 375

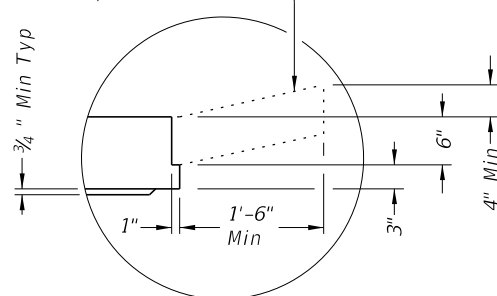
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Style	Size (X x Y)	W ^②	A x B (nominal)	Short Span Reinf Steel Area	Long Span Reinf Steel Area
SL	3'x3'	6"	n/a	0.37 in ² /ft	0.37 in ² /ft
RH,RC,RG,SH,S1,FG	3'x3'	6"	3'x3' or 32" Dia	0.37 in ² /ft	0.37 in ² /ft
SFG	3'x3'	6"	3'x3'	0.32 in ² /ft	0.32 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



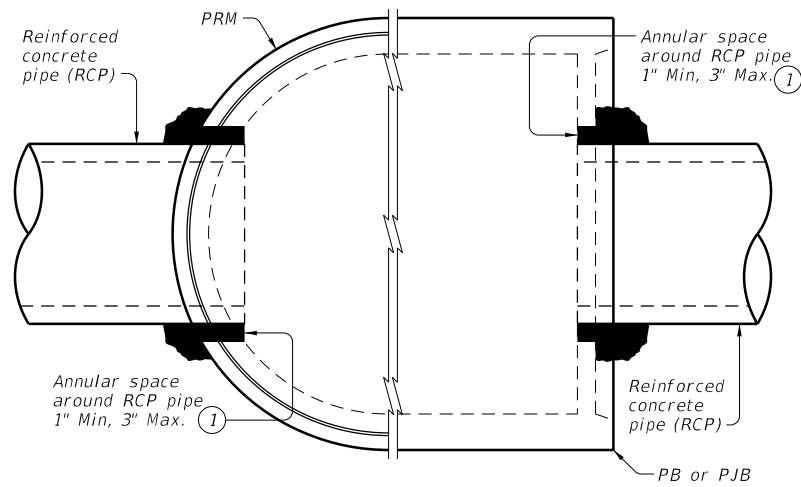
PRECAST SLAB LID

PSL

FILE: CD-PSL-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
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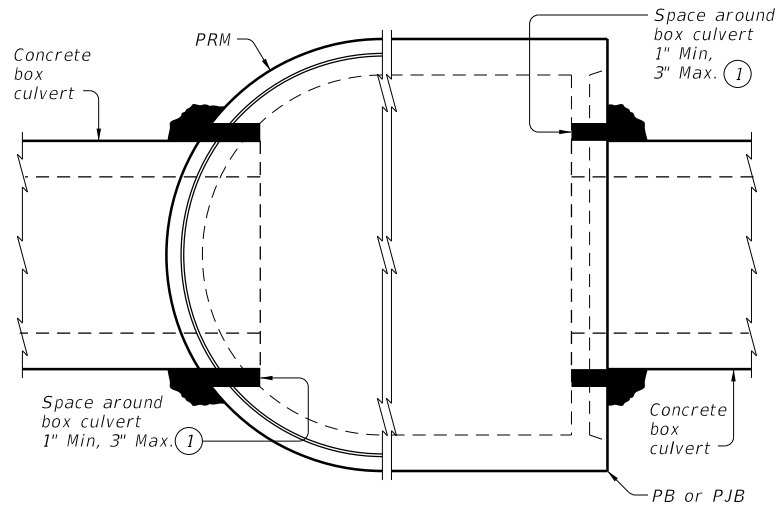
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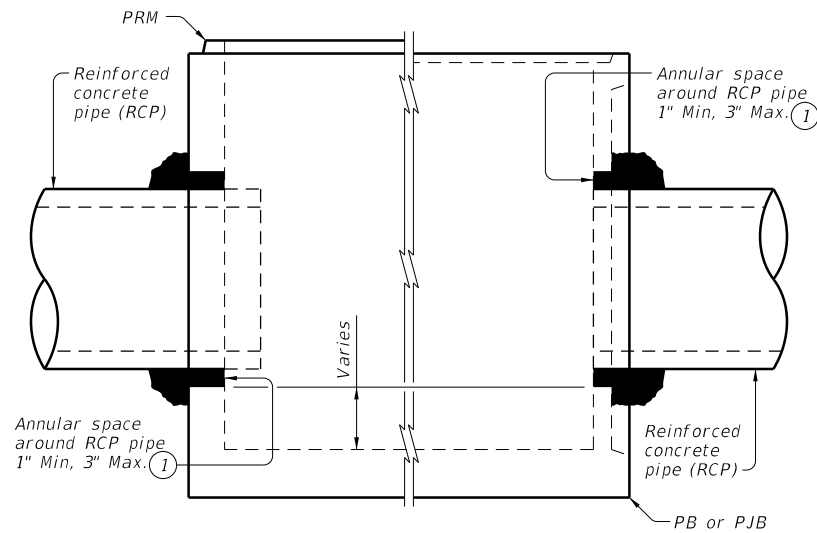
PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE
 PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

TYPICAL HALF PLAN



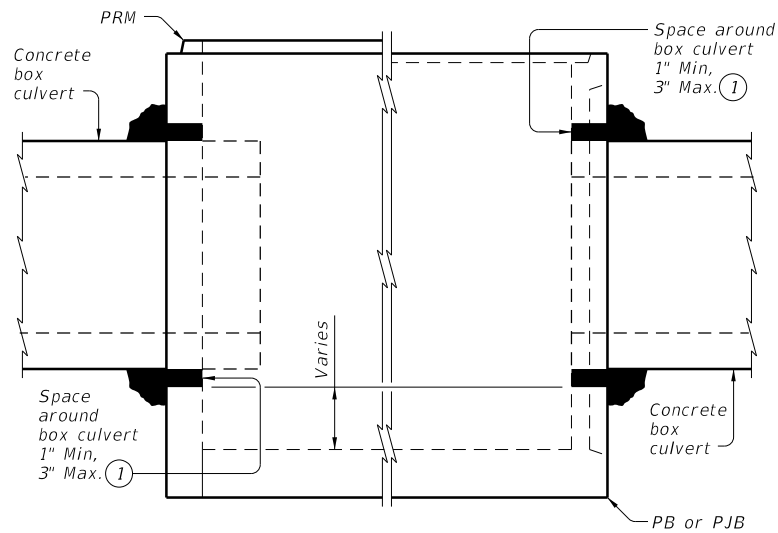
PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE
 PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

TYPICAL HALF PLAN



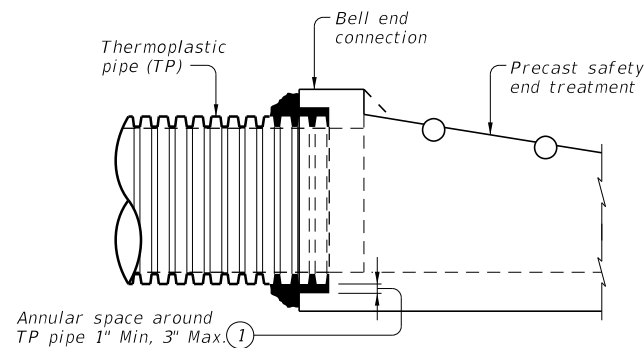
PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE
 PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

TYPICAL HALF ELEVATION



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE
 PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

TYPICAL HALF ELEVATION



TYPICAL PARTIAL ELEVATION OF PRECAST SAFETY END TREATMENTS

Showing square PSET for parallel drainage, cross drainage shown similar.

① Completely fill the void between the precast structure and the connecting pipe or box with cementitious grouts and mortars in accordance with DMS-4675 "Cementitious Grouts and Mortars for Miscellaneous Application."

CONSTRUCTION NOTES:

Do not grout rubber gasket joints without Manufacturer's recommendations.
 Do not use bricks, masonry blocks, native stone, or similar materials in conjunction with grouted connections when filling void spaces around pipes or box culverts.

MATERIAL NOTES:

Provide grouted connections in accordance with DMS-4675 "Cementitious Grouts and Mortars for Miscellaneous Application."

GENERAL NOTES:

See applicable standards for notes and details not shown:
 Precast Base (PB)
 Precast Junction Box (PJB)
 Precast Round Manhole (PRM)
 Precast Safety End Treatments C/D Square (PSET-SC)
 Precast Safety End Treatments P/D Square (PSET-SP)
 Provide Concrete Box Culverts in accordance with Item 462 "Concrete Box Culverts and Drains."
 Provide Reinforced Concrete Pipe (RCP) in accordance with Item 464 "Reinforced Concrete Pipe."
 Provide Thermoplastic Pipe (TP) in accordance with Special Specification Thermoplastic Pipe.
 Payment for grouted connections is considered subsidiary to other bid items.



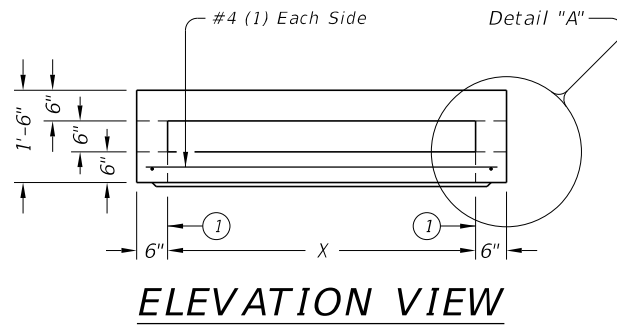
PIPE AND BOX GROUTED CONNECTIONS FOR PRECAST STRUCTURES

PBGC

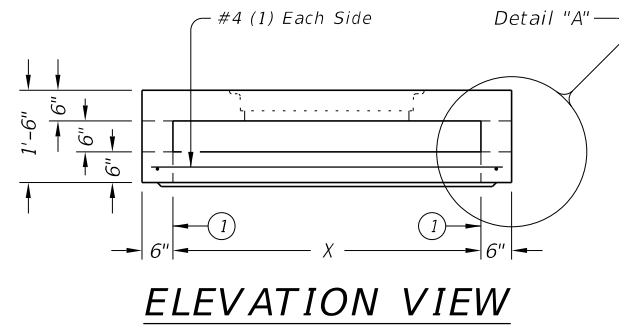
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©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
	DIST	COUNTY		SHEET NO.
	SAT	GUADALUPE		377

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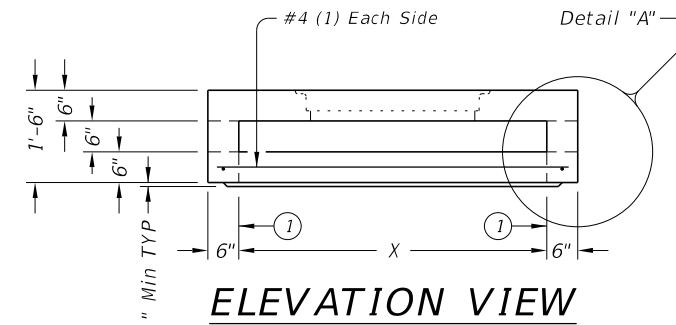
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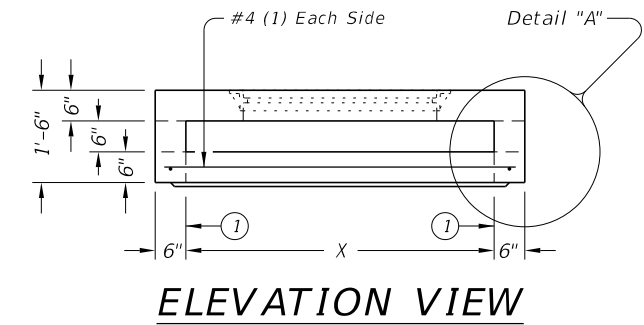
ELEVATION VIEW



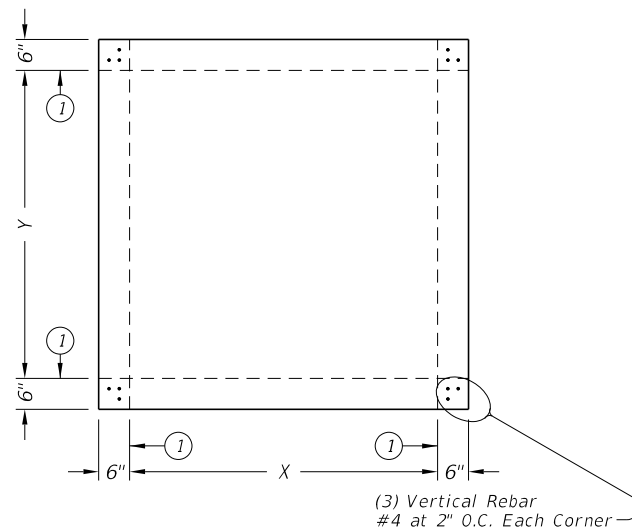
ELEVATION VIEW



ELEVATION VIEW



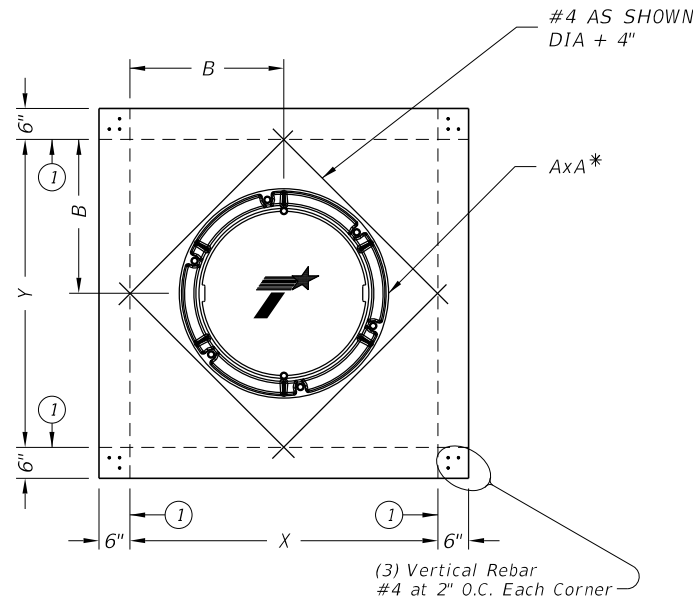
ELEVATION VIEW



PLAN VIEW

NO OPENINGS

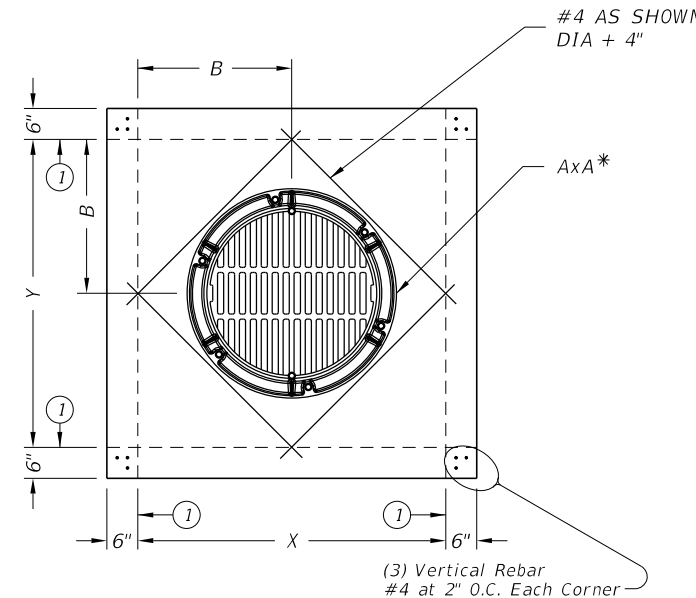
STYLE 'SL'



PLAN VIEW

32" DIA CAST-IN RING & COVER

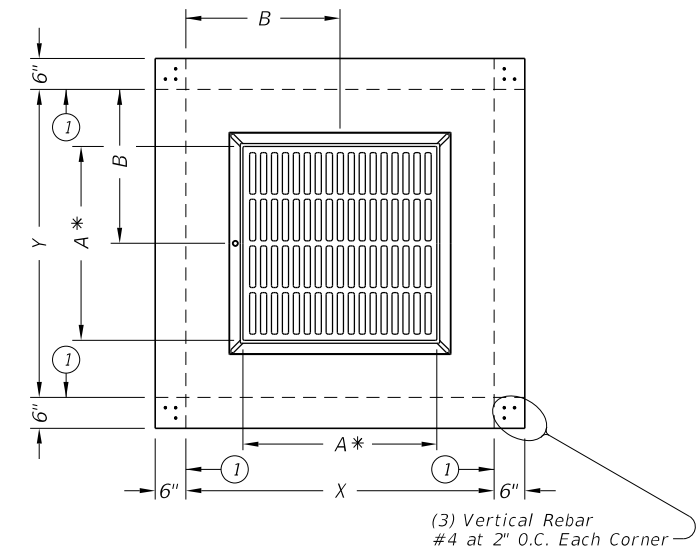
STYLE 'RC'



PLAN VIEW

32" DIA CAST-IN RING & GRATE

STYLE 'RG'



PLAN VIEW

CAST-IN FRAME & GRATE

STYLE 'FG'

① Matches inside face of wall of precast base or riser below inlet.

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 clear cover of 3/4" to reinforcing from bottom of slab for structural reinforcement. Place short span reinforcing closest to surface.
4. No substitution is allowed for diagonal #4 bars around openings.
5. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is 3/4".
6. Provide lifting devices in conformance with Manufacturer's recommendations.

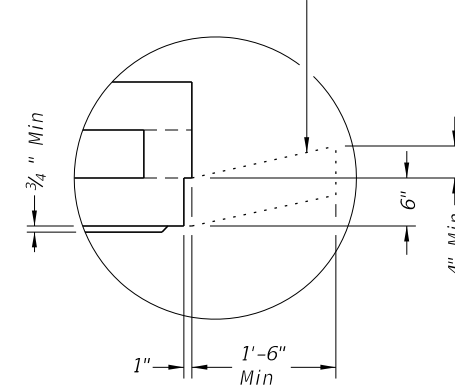
INSTALLATION NOTES:

1. PAZD is for use in ditches and medians outside of the horizontal clearance (clear zone). Precast Area Zone Drain is not intended for direct traffic and may not 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.

GENERAL NOTES:

1. Designed according to ASTM C913.
2. Payment for inlet is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, style, size, and opening size (when applicable).

Construct cast-in-place reinforced concrete apron when shown elsewhere in plans. Use Class "A" concrete. Apron is subsidiary to PAZD. 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 PAZD, use detail above to create an apron ledge on all 4 sides.

Style	Size (X x Y)	A x A *	B x B	Short Span Reinf Steel Area	Long Span Reinf Steel Area
SL	3'x3'	n/a	n/a	0.37 in ² /ft	0.37 in ² /ft
RC, RG	3'x3'	32" Dia	1.5'x1.5'	0.37 in ² /ft	0.37 in ² /ft
FG	3'x3'	3'x3'	1.5'x1.5'	0.37 in ² /ft	0.37 in ² /ft
SL	4'x4'	n/a	n/a	0.34 in ² /ft	0.34 in ² /ft
RC, RG	4'x4'	32" Dia	2'x2'	0.34 in ² /ft	0.34 in ² /ft
FG	4'x4'	3'x3'	2'x2'	0.34 in ² /ft	0.34 in ² /ft
FG	4'x4'	4'x4'	2'x2'	0.34 in ² /ft	0.34 in ² /ft
SL	5'x5'	n/a	n/a	0.43 in ² /ft	0.43 in ² /ft
RC, RG	5'x5'	32" Dia	2.5'x2.5'	0.68 in ² /ft	0.68 in ² /ft
FG	5'x5'	3'x3'	2.5'x2.5'	0.43 in ² /ft	0.43 in ² /ft
FG	5'x5'	4'x4'	2.5'x2.5'	0.43 in ² /ft	0.43 in ² /ft

* Nominal frame/grate or ring/cover size.

Texas Department of Transportation Bridge Division Standard

PRECAST AREA ZONE DRAIN

PAZD

FILE: CD-PAZD-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0915	46	052	CORDOVA
	DIST	COUNTY	SHEET NO.	
	SAT	GUADALUPE	378	

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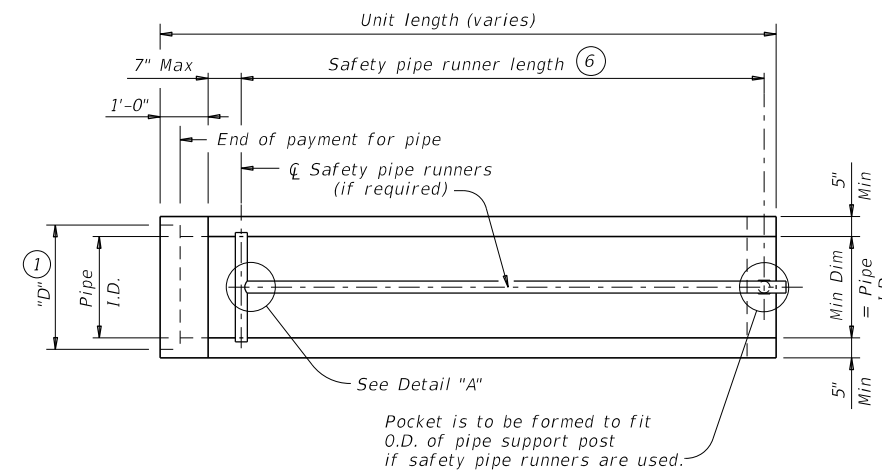
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REQUIREMENTS FOR CULVERT PIPES AND SAFETY PIPE RUNNERS

Pipe I.D.	RCP Wall "B" Thickness	TP Wall Thickness (8)	"D" (1)	Slope	Min Length of Unit	Single Pipe		Multiple Pipes	
						Skew	Pipe Runners Required	Skew	Pipe Runners Required
12"	2"	1.15"	17.00"	3:1	2' - 11"	≤ 45°	No	≤ 45°	No
				4:1	3' - 6"				
				6:1	4' - 9"				
15"	2 1/4"	1.30"	20.50"	3:1	3' - 8"	≤ 45°	No	≤ 45°	No
				4:1	4' - 7"				
				6:1	6' - 5"				
18"	2 1/2"	1.60"	24.00"	3:1	4' - 6"	≤ 45°	No	≤ 45°	No
				4:1	5' - 8"				
				6:1	8' - 0"				
24"	3"	1.95"	31.00"	3:1	6' - 2"	≤ 45°	No	= 30°	No
				4:1	7' - 10"				
				6:1	11' - 3"				
30"	3 1/2"	2.65"	38.50"	3:1	7' - 10"	= 15°	No	= 15°	No
				4:1	10' - 1"				
				6:1	14' - 8"				
36"	4"	2.75"	45.50"	3:1	9' - 5"	= 0°	No	≥ 0°	Yes
				4:1	12' - 3"				
				6:1	17' - 11"				
42"	4 1/2"	2.7"	52.50"	3:1	11' - 1"	≥ 0°	Yes	≥ 0°	Yes
				4:1	14' - 5"				
				6:1	21' - 2"				

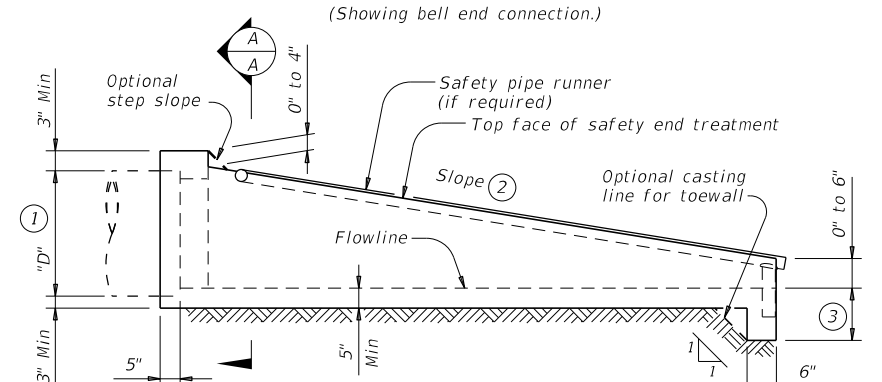
SAFETY PIPE RUNNER DIMENSIONS

Max Safety Pipe Runner Length	Required Pipe Runner Size		
	Pipe Size	Pipe O.D.	Pipe I.D.
11' - 2"	3" STD	3.500"	3.068"
15' - 6"	3 1/2" STD	4.000"	3.548"
20' - 10"	4" STD	4.500"	4.026"
35' - 4"	5" STD	5.563"	5.047"



PLAN

(Showing bell end connection.)



LONGITUDINAL ELEVATION

(Showing bell end connection.)

- ① Dimension "D" is based on reinforced concrete pipe (RCP) meeting the requirements of ASTM C-76, Class III, (RCP Wall "B" thickness). Adjust "D" for any other wall thickness used. For thermoplastic pipe (TP) take into account the annular space requirements for grouted connections.
- ② Slope as shown elsewhere in plans. Slope of 3:1 or flatter is required for vehicle safety.
- ③ Toewall to be used only when dimension is shown elsewhere in the plans.
- ④ 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."
- ⑤ Adjust clear distance between pipes to provide for the minimum distance between safety end treatments.
- ⑥ Measured along slope.
- ⑦ Provide cement stabilized bedding and backfill in accordance with the Item 400, "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.
- ⑧ Thermoplastic pipe wall thickness may vary. Adjust accordingly. Thermoplastic pipe requires the safety end treatments to have a bell end for grouted connections.

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe (RCP), and thermoplastic pipe (TP) may be used for TYPE II end treatment as specified in Item "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.

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.

Manufacture this product in accordance with Item 467, "Safety End Treatment" except as noted below:

- A. Provide minimum reinforcing of #4 at 6" (Grade 40) or #4 at 9" (Grade 60) each way or 6"x6" - D12 x D12 or 5"x5" - D10 x D10 welded wire reinforcement (WWR).
- B. For precast (steel formed) sections, provide Class "C" concrete (f'c = 3,600 psi).

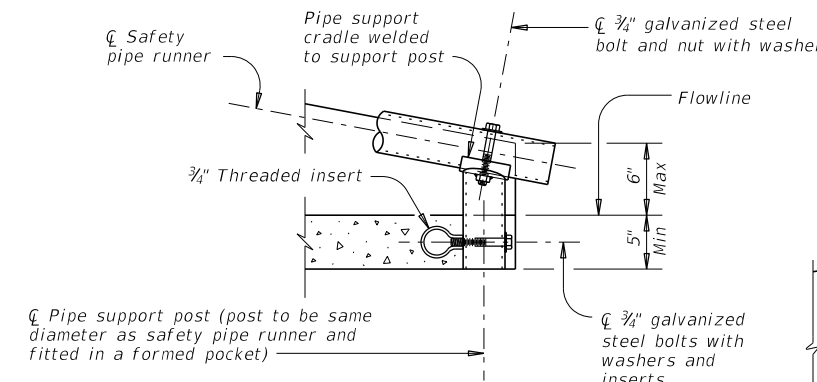
At the option and expense of the Contractor, the next larger size of safety end treatment may be furnished as long as the "D" dimension cast is that of the required size of pipe.

Pipe runners are designed for a traversing load of 1,800 Lbs at yield as recommended by Research Report 280-1, "Safety Treatment of Roadside Cross-Drainage Structures", Texas Transportation Institute, March 1981.

Provide safety pipe runners, cross pipes, pipe support posts, and pipe stubs meeting the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

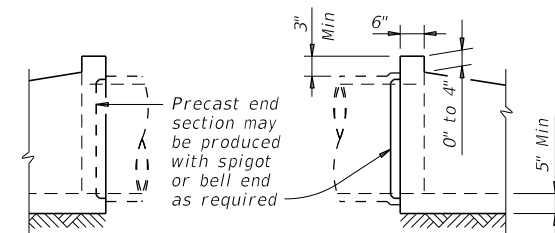
Galvanize all steel components except reinforcing steel after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

Connect RCP using the Optional Joint for RCP detail shown or in accordance with Item 464 "Reinforced Concrete Pipe." Connect TP by grouting. See Pipe and Box Grouted Connections (PBGC) standard for grouted connections with TP and precast safety end treatment.



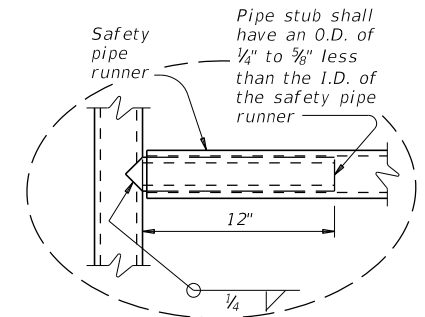
END DETAIL FOR INSTALLATION OF SAFETY PIPE RUNNERS

(If required)

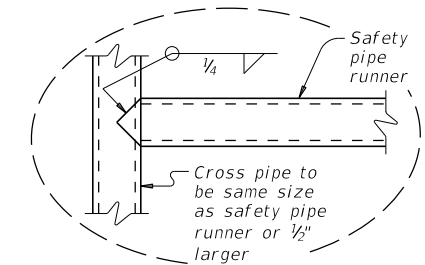


OPTIONAL JOINT FOR RCP

(Showing joint between RCP and precast safety end treatment)



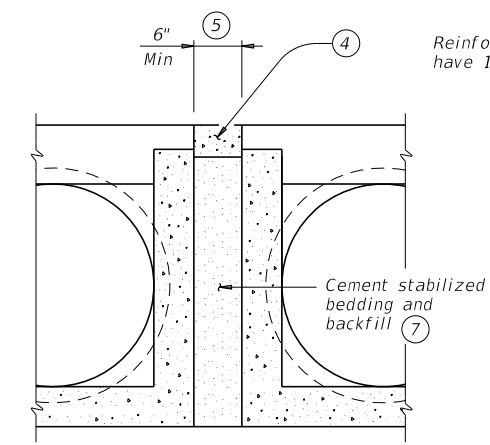
OPTION A



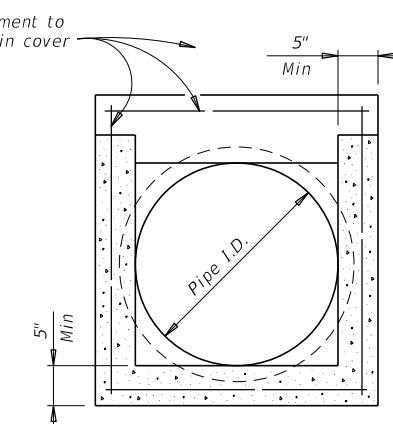
OPTION B

DETAIL A

(If required)

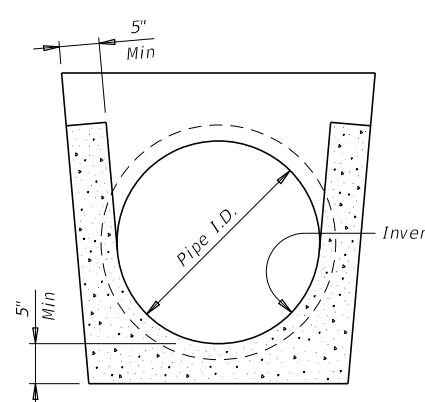


MULTIPLE PIPE INSTALLATION

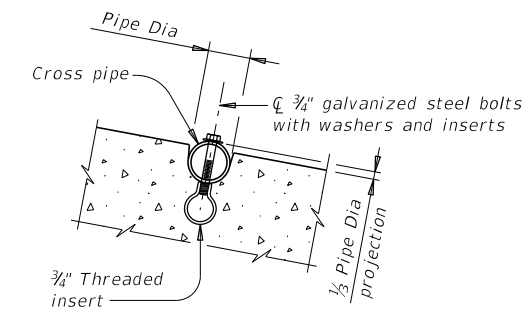


OPTION WITH SQUARE BOTTOM

SECTION A-A



OPTION WITH INVERT BOTTOM



INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS

(If required)

Bridge Division Standard

PRECAST SAFETY END TREATMENT

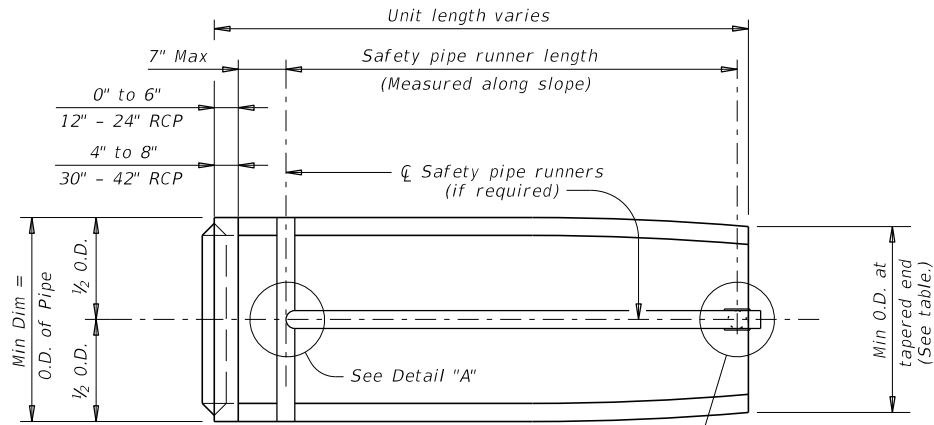
TYPE II ~ CROSS DRAINAGE

PSET-SC

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©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
12-21: Added 42" TP	DIST	COUNTY		SHEET NO.
	SAT	GUADALUPE		379

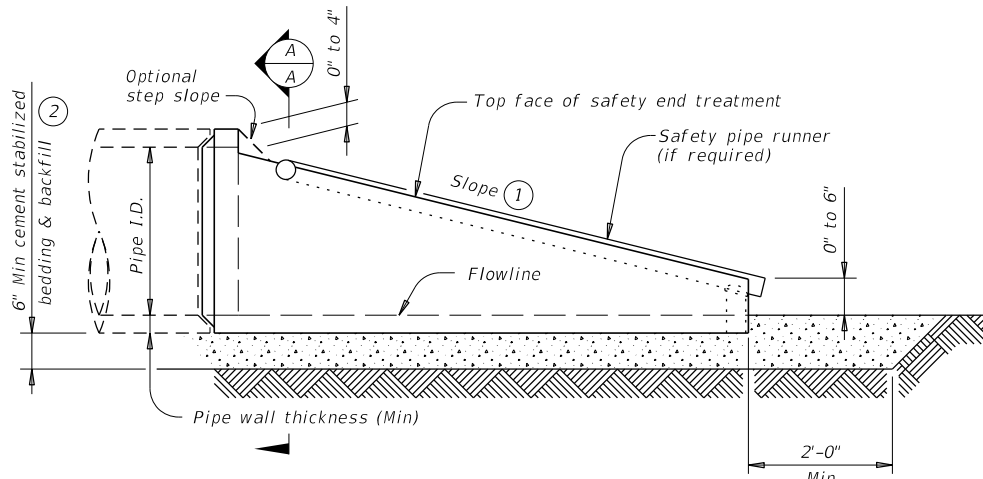
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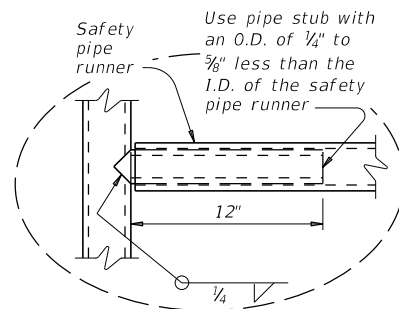
PLAN VIEW

(Showing spigot end connection.)

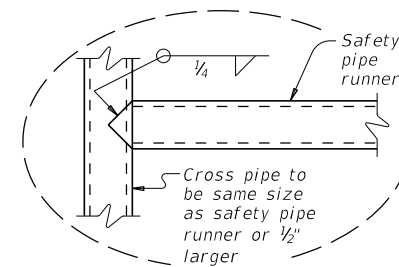


LONGITUDINAL ELEVATION

(Showing spigot end connection.)

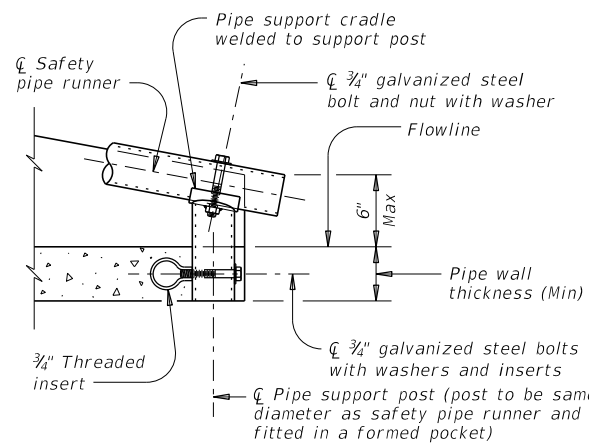


OPTION A



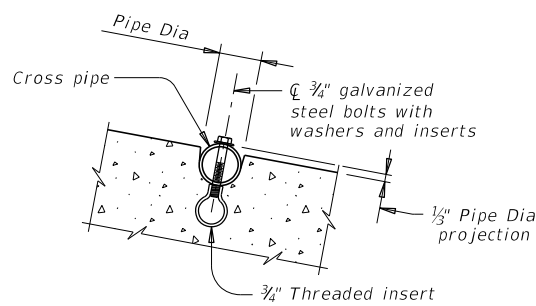
OPTION B

DETAIL A



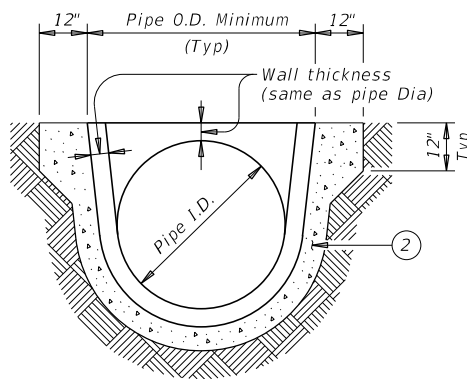
END DETAIL FOR INSTALLATION OF SAFETY PIPE RUNNERS

(If required)

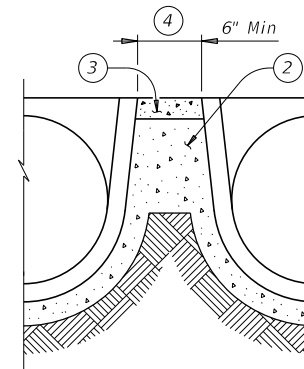


INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS

(If required)



SECTION A-A



MULTIPLE PIPE INSTALLATION

MAX SAFETY PIPE RUNNER LENGTHS AND REQUIRED SAFETY PIPE RUNNER SIZES

Max Safety Pipe Runner Length	Required Pipe Runner Size		
	Pipe Size	Pipe O.D.	Pipe I.D.
11' - 2"	3" STD	3.500"	3.068"
15' - 6"	3 1/2" STD	4.000"	3.548"
20' - 10"	4" STD	4.500"	4.026"
35' - 4"	5" STD	5.563"	5.047"

- Slope as shown elsewhere in the plans. Slope of 3:1 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 "Safety End Treatment." When concrete riprap is specified around the safety end treatment, backfill as directed by Engineer.
- Fill the top 4" of void between precast end treatments with concrete riprap. Concrete riprap be considered subsidiary to the Item "Safety End Treatment."
- Adjust clear distance between pipes to provide for the minimum distance between safety end treatments.

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. / ft. of pipe)	Slope	Minimum Length of Unit	Single Pipe		Multiple Pipe			
							Skew	Pipe Runners Required	Skew	Pipe Runners Required		
12"	2"	16"	16"	0.07 Circ.	3:1	2' - 0"	≤ 45°	No	≤ 45°	No		
											4:1	2' - 8"
											6:1	4' - 0"
15"	2 1/4"	19 1/2"	19"	0.07 Circ.	3:1	2' - 10"	≤ 45°	No	≤ 45°	No		
											4:1	3' - 9"
											6:1	5' - 8"
18"	2 1/2"	23"	21 1/2"	0.07 Circ.	3:1	3' - 8"	≤ 45°	No	≤ 45°	No		
											4:1	4' - 10"
											6:1	7' - 3"
24"	3"	30"	27"	0.07 Circ.	3:1	5' - 3"	≤ 45°	No	≤ 30°	No		
									4:1	7' - 0"	> 30°	Yes
									6:1	10' - 6"	> 15°	Yes
30"	3 1/2"	37"	31"	0.18 Circ.	3:1	6' - 3"	≤ 15°	No	≤ 15°	No		
									4:1	8' - 2"	> 15°	Yes
									6:1	12' - 1"	> 15°	Yes
36"	4"	44"	36"	0.19 Ellip.	3:1	7' - 10"	= 0°	No	≥ 0°	Yes		
									4:1	10' - 4"	> 0°	Yes
									6:1	15' - 4"	> 0°	Yes
42"	4 1/2"	51"	41 1/2"	0.23 Ellip.	3:1	9' - 6"	≥ 0°	Yes	≥ 0°	Yes		
									4:1	12' - 6"	> 0°	Yes
									6:1	18' - 7"	> 0°	Yes

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 safety pipe runners, cross pipes, pipe support posts, and pipe stubs meeting the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 Gr B, or API 5LX52.
 Galvanize all 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 (CRP) 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 1,800 Lbs at yield as recommended by Research Report 280-1, "Safety Treatment of Roadside Cross-Drainage Structures", Texas Transportation Institute, March 1981.

Texas Department of Transportation Bridge Division Standard

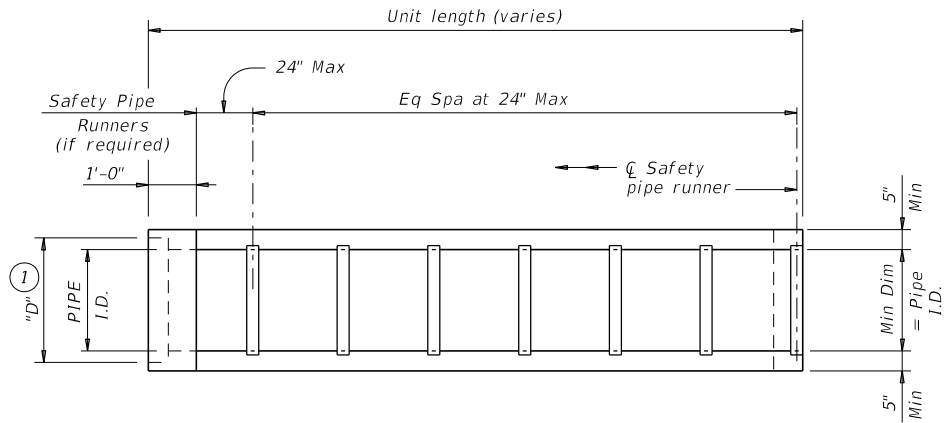
PRECAST SAFETY END TREATMENT TYPE II ~ CROSS DRAINAGE

PSET-RC

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REVISIONS	0915	46	052	CORDOVA
	DIST	COUNTY	SHEET NO.	
	SAT	GUADALUPE	380	

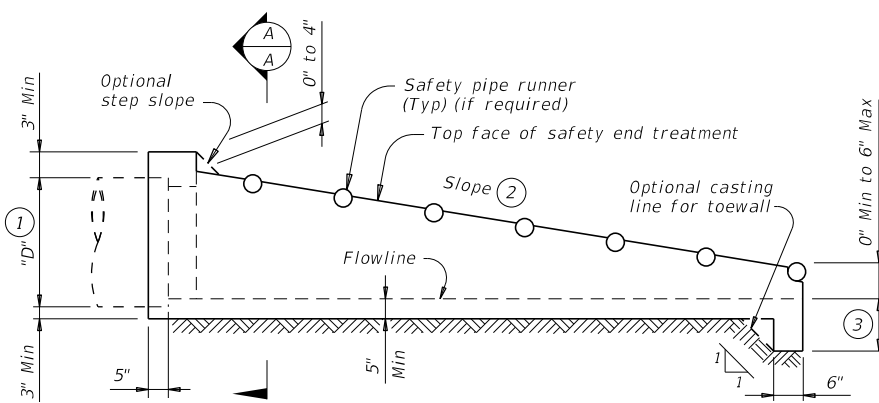
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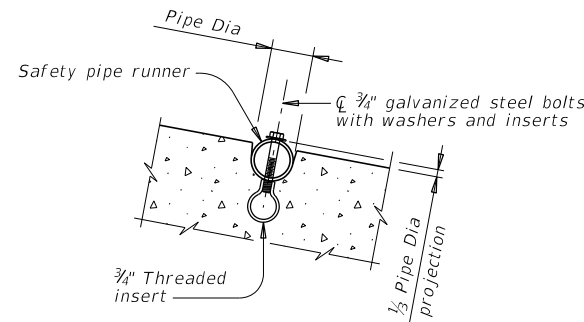
PLAN

(Showing bell end connection.)



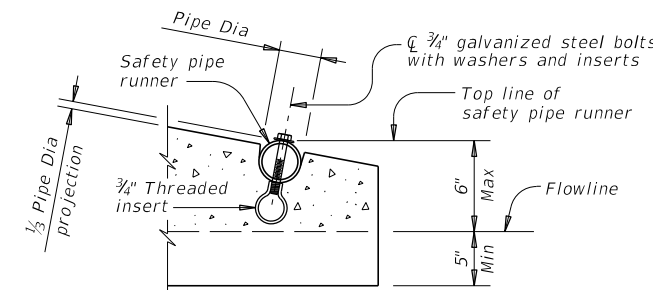
LONGITUDINAL ELEVATION

(Showing bell end connection.)

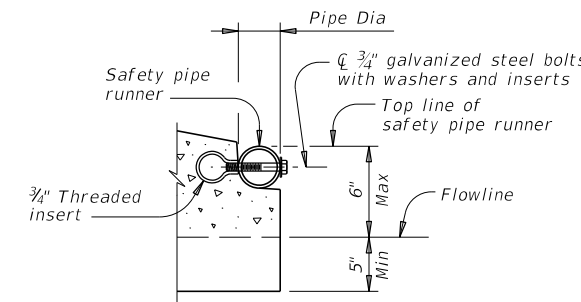


INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS

(If required)



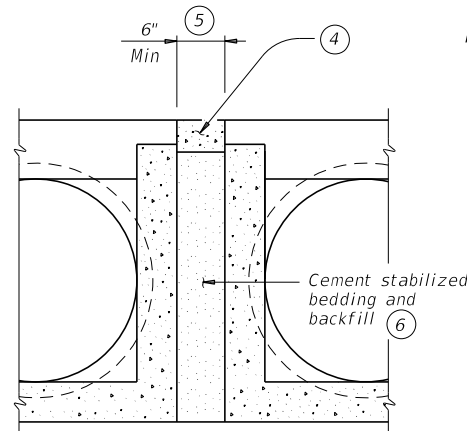
OPTION A



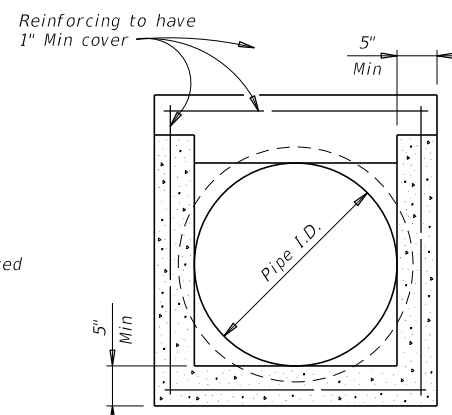
OPTION B

END DETAILS FOR INSTALLATION OF SAFETY PIPE RUNNERS

(If required)

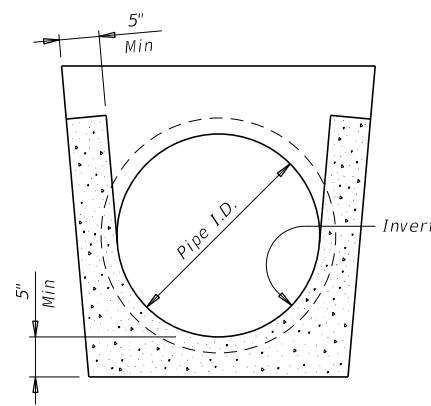


MULTIPLE PIPE INSTALLATION

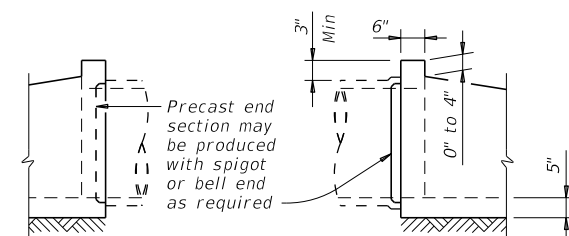


OPTION WITH SQUARE BOTTOM

SECTION A-A



OPTION WITH INVERT BOTTOM



OPTIONAL JOINT FOR RCP

(Showing joint between RCP and precast safety end treatment.)

REQUIREMENTS FOR CULVERT PIPES AND SAFETY PIPE RUNNERS

Pipe I.D.	RCP Wall "B" Thickness	TP Wall Thickness (7)	"D" (1)	Slope	Min Length	Pipe Runners Required		Required Pipe Runner Size		
						Single Pipe	Multiple Pipe	Nominal Dia.	O.D.	I.D.
12"	2"	1.15"	17.00"	6:1	4' - 9"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
15"	2 1/4"	1.30"	20.50"	6:1	6' - 5"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
18"	2 1/2"	1.60"	24.00"	6:1	8' - 0"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
24"	3"	1.95"	31.00"	6:1	11' - 3"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
30"	3 1/2"	2.65"	38.50"	6:1	14' - 8"	No	Yes	4" STD	4.500"	4.026"
36"	4"	2.75"	45.50"	6:1	17' - 11"	Yes	Yes	4" STD	4.500"	4.026"
42"	4 1/2"	2.7"	52.50"	6:1	21' - 2"	Yes	Yes	4" STD	4.500"	4.026"

- Dimension "D" is based on reinforced concrete pipe (RCP) meeting the requirements of ASTM C-76, Class III, (RCP Wall "B" thickness). Adjust "D" for any other wall thickness used. For thermoplastic pipe (TP) take into account the annular space requirements for grouted connections.
- Slope as shown elsewhere in the plans. Slope of 6:1 or flatter is required for vehicle safety.
- Toewall to be used only when dimension is shown elsewhere in the plans.
- 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."
- Adjust clear distance between pipes to provide for the minimum distance between safety end treatments.
- Provide cement stabilized bedding and backfill in accordance with the Item 400, "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.
- Thermoplastic pipe wall thickness may vary. Adjust accordingly. Thermoplastic pipe requires the safety end treatments to have a bell end for grouted connections.

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe (RCP), and thermoplastic pipe (TP) may be used for TYPE II end treatment as specified in Item "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.
 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.
 Manufacture this product in accordance with Item 467, "Safety End Treatment" except as noted below:
 A. Provide minimum reinforcing of #4 at 6" (Grade 40) or #4 at 9" (Grade 60) each way or 6"x6" - D12 x D12 or 5"x5" - D10 x D10 welded wire reinforcement (WWR).
 B. For precast (steel formed) sections, provide Class "C" concrete (f'c = 3,600 psi).
 At the option and expense of the Contractor the next larger size of safety end treatment may be furnished; as long as the "D" dimension cast is that of the required size of pipe.
 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.
 Provide pipe runners meeting the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.
 Galvanize all steel components except reinforcing steel after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.
 Connect RCP using the Optional Joint for RCP detail shown or in accordance with Item 464, "Reinforced Concrete Pipe." Connect TP by grouting. See Pipe and Box Grouted Connections (PBG) standard for grouted connections with TP and precast safety end treatment.

Texas Department of Transportation Bridge Division Standard

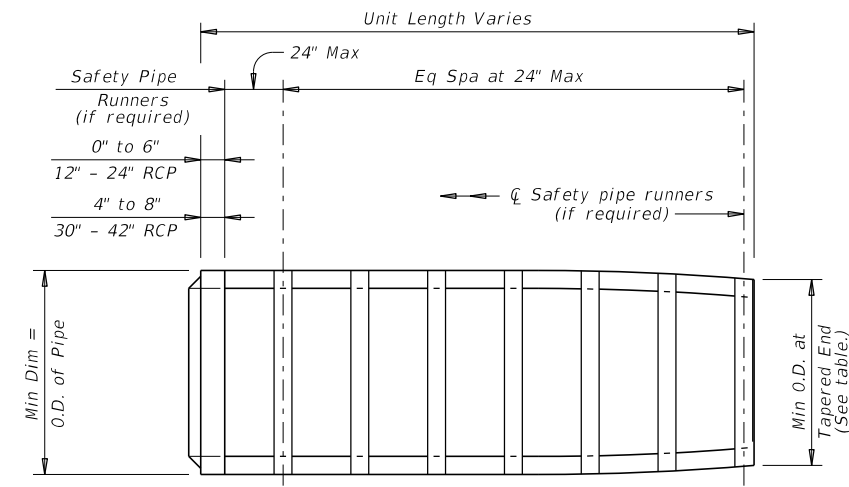
PRECAST SAFETY END TREATMENT
 TYPE II ~ PARALLEL DRAINAGE

PSET-SP

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©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
12-21: Added 42" TP	DIST	COUNTY	SHEET NO.	
SAT	GUADALUPE	381		

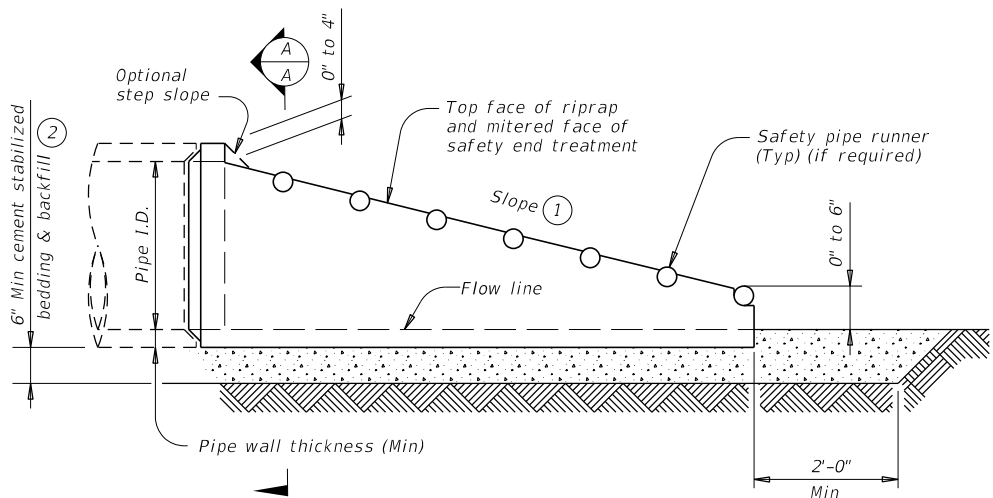
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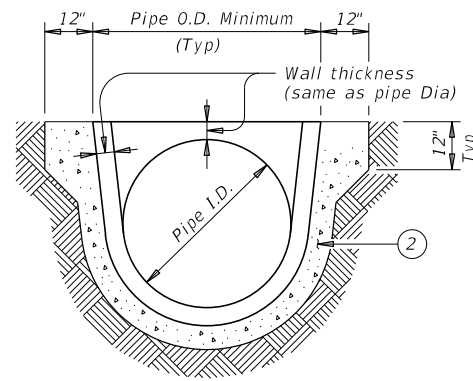
PLAN VIEW - 12" THRU 24"

(Showing spigot end connection.)

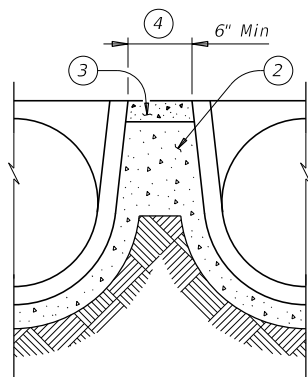


LONGITUDINAL ELEVATION - 12" THRU 24"

(Showing spigot end connection.)

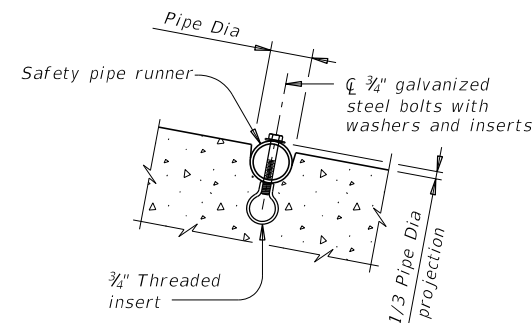


SECTION A-A



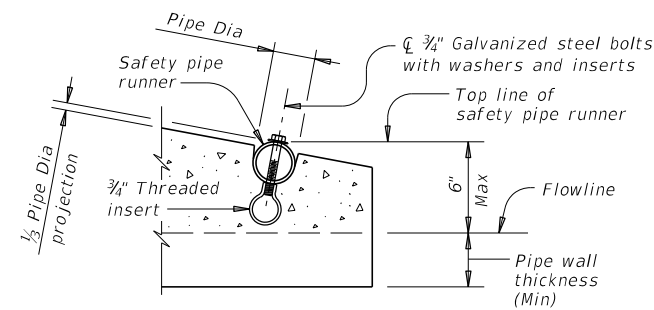
MULTIPLE PIPE INSTALLATION

- ① Slope as shown elsewhere in the plans. Slope of 6:1 or flatter is required for vehicle safety.
- ② 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.

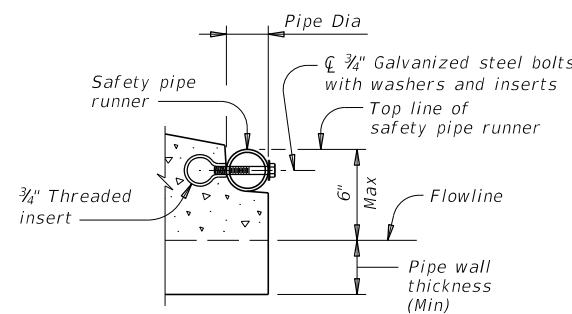


INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS

(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.



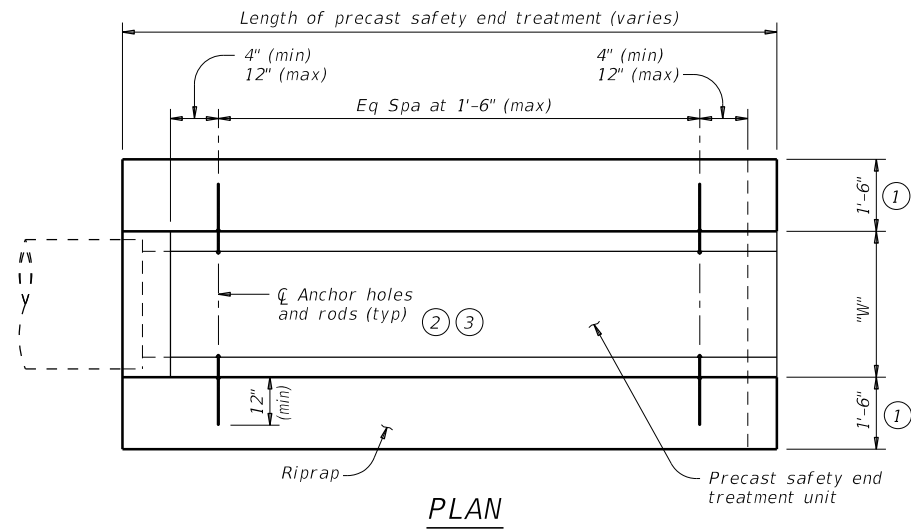
PRECAST SAFETY END TREATMENT TYPE II ~ PARALLEL DRAINAGE

PSET-RP

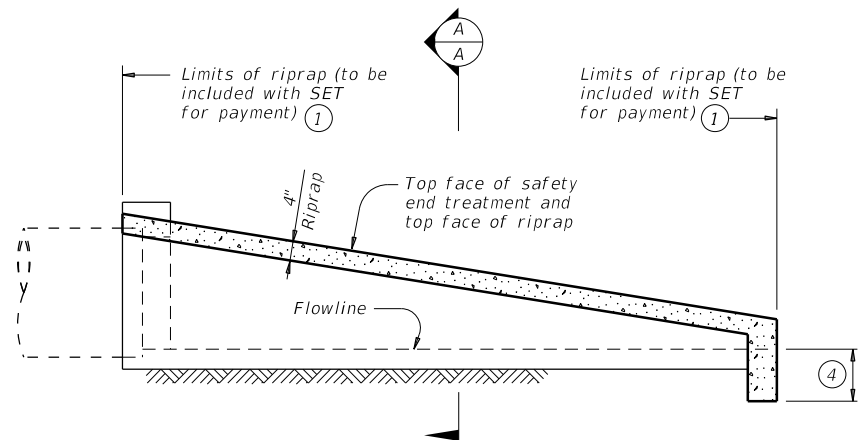
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©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
	DIST	COUNTY	SHEET NO.	
	SAT	GUADALUPE	382	

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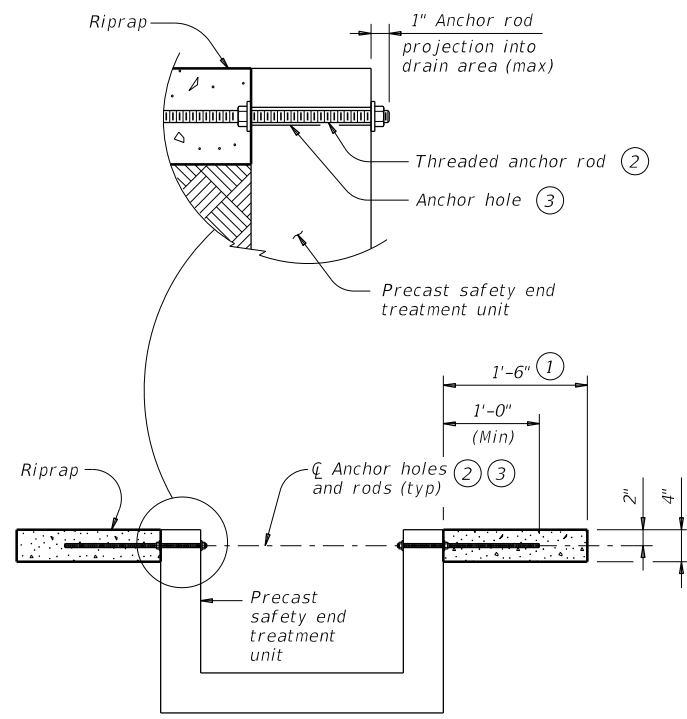
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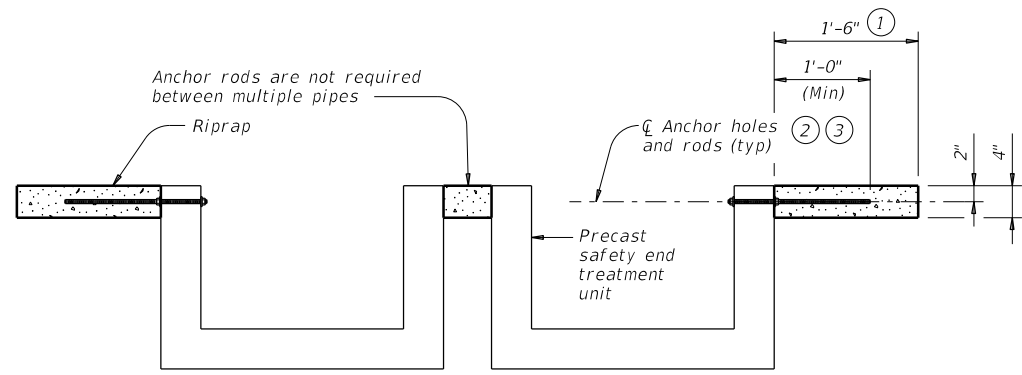
PLAN



LONGITUDINAL ELEVATION



SECTION A-A



MULTIPLE PIPE INSTALLATION

ESTIMATED CONCRETE RIPRAP QUANTITIES (CY) ⑤

Nominal Culvert (Pipe) I.D.	PSET-SC and PSET-SP Standards					PSET-RC and PSET-RP Standards		
	Unit Width "W"	Side Slope			Unit Width "W"	Side Slope		
		3:1	4:1	6:1		3:1	4:1	6:1
12"	23.0"	0.1	0.2	0.2	16.0"	0.1	0.1	0.2
15"	26.5"	0.2	0.2	0.3	19.5"	0.1	0.2	0.2
18"	30.0"	0.2	0.2	0.3	23.0"	0.2	0.2	0.3
24"	37.0"	0.3	0.3	0.5	30.0"	0.2	0.3	0.4
30"	44.5"	0.3	0.4	0.6	37.0"	0.3	0.3	0.5
36"	51.5"	0.4	0.5	0.7	44.0"	0.3	0.4	0.6
42"	58.5"	0.5	0.6	0.8	51.0"	0.4	0.5	0.7

- ① Riprap placed beyond the limits shown will be paid as concrete riprap in accordance with Item 432, "Riprap." When riprap is cast integrally with the precast safety end treatment, this dimension is 1'-0" minimum.
- ② 1#2" Dia ASTM A307 Gr A threaded anchor rod with 2 nuts and 2 washers. Galvanize all components in accordance with Item 445, "Galvanizing." Repair galvanizing that is damaged during transport or construction in accordance with the specifications.
- ③ 3#4" through holes in walls of safety end treatment for riprap anchor rods may be drilled with rotary (coring or masonry) type drilling equipment or may be formed. Do not use percussive (star) type drilling equipment. If holes are drilled, patch spalls in the inside face of the wall exceeding 1#2" from the holes.
- ④ Provide riprap toe wall when dimension is shown elsewhere in the plans or when field conditions require a toe wall.
- ⑤ Quantities shown are for one end of one reinforced concrete pipe culvert. For multiple pipe culverts, quantities will need to be adjusted. Riprap quantities are for Contractor's information only. Quantities are based on the minimum unit lengths shown on the Precast Safety End Treatment (SET) standard sheets.

MATERIAL NOTES:

Provide Class "B" riprap in accordance with Item 432, "Riprap." 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. The anchor rods shown are always required.

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe may be used for TYPE II end treatment as specified in Item 467, "Safety End Treatment." Refer to PSET-SC or PSET-SP standard sheets for details of square safety end treatments not shown. Refer to PSET-RC or PSET-RP standard sheets for details of round safety end treatments not shown. For precast units with integrally cast riprap, substitute reinforcing steel in the amount on 0.26 in./ft. minimum for the threaded anchor rods shown. When requested, submit sealed engineering drawings for approval prior to construction. Shop drawings will not be required. Note that a proprietary precast unit with integral riprap is available from L&R Precast Concrete Works, Inc. (956) 583-6293 or www.lrpccast.com. Payment for riprap and toewalls is included in the price bid for each safety end treatment.

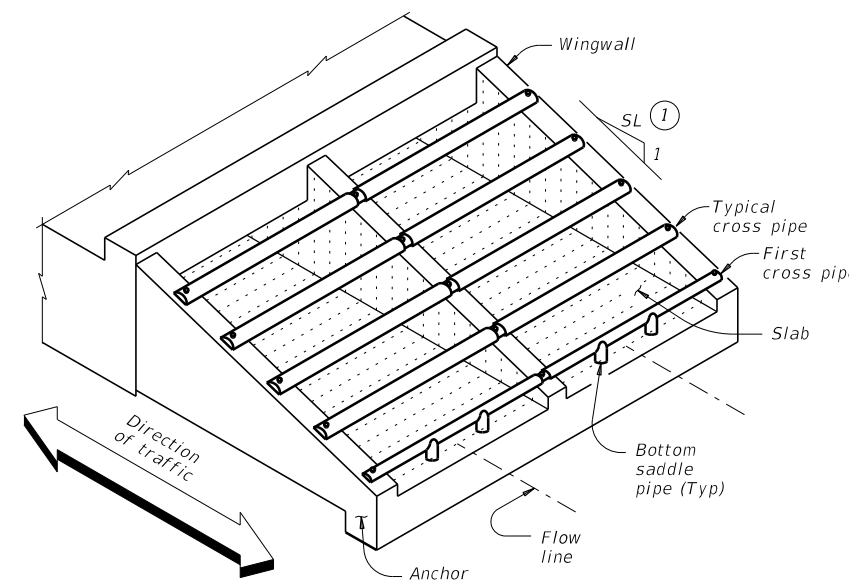
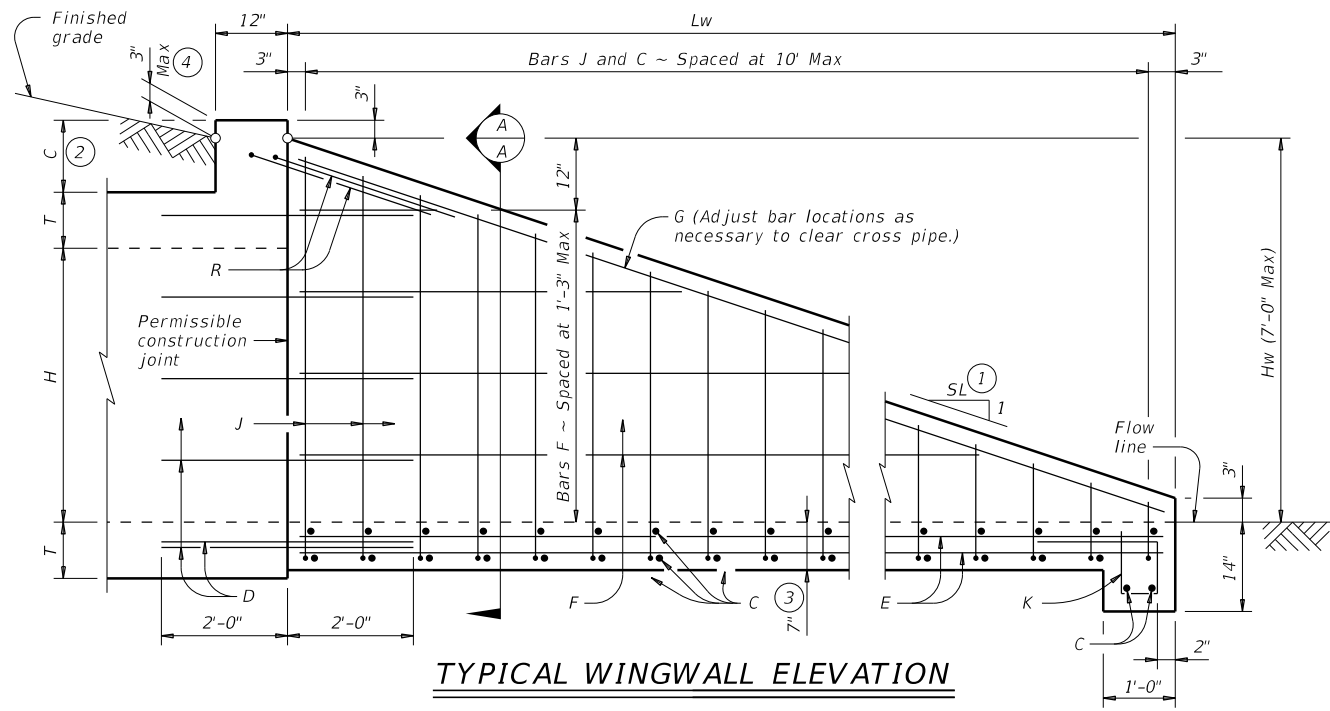
These riprap details are only applicable when notes that require placement of riprap with precast safety end treatments are shown elsewhere in the plans.

Precast units with integrally cast riprap are permitted unless noted otherwise on the plans.

				Bridge Division Standard	
PRECAST SAFETY END TREATMENT TYPE II RIPRAP DETAILS PSET-RR					
FILE: CD-PSET-RR-20.dgn	DN: GAF	CK: TxDOT	DW: JRP	CK: GAF	
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0915	46	052	CORDOVA	
	DIST	COUNTY		SHEET NO.	
	SAT	GUADALUPE		383	

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WING DIMENSION CALCULATIONS:

$H_w = H + T + C - 0.250'$
 $L_w = (H_w - 0.250') (SL)$

For cast-in-place culverts:
 $Atw = (N) (S) + (N + 1) (U)$

For precast culverts:
 $Atw = (N) (2U + S) + (N - 1) (0.500')$

Total Wingwall Area (SF)
 $= (0.5) (H_w + 0.250') (L_w) (N - 1)$

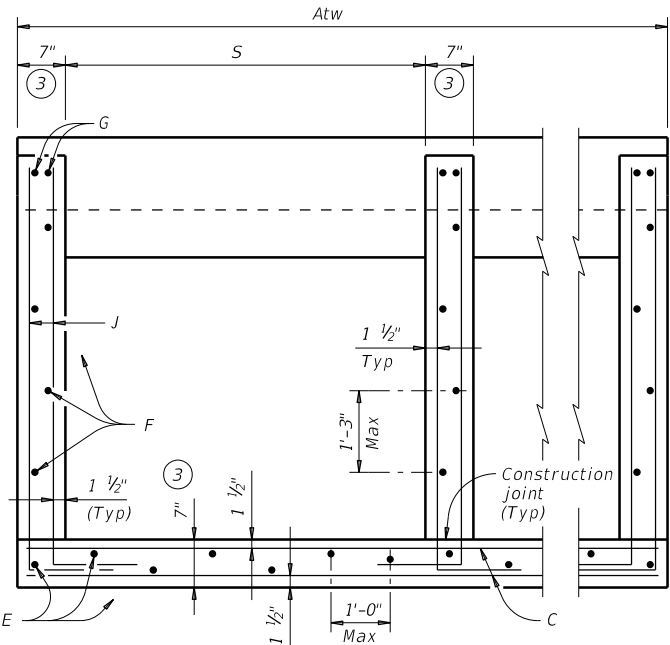
Total Concrete Volume (CY)
 $= [(Wingwall Area) (0.583') + (L_w) (Atw) (0.583') + (Atw) (1.000') (1.167' - 0.583')] \div (27)$

Total Reinforcing (Lb)
 $= (1.55) (L_w) (Atw) + (4.43) (Atw) + (K) (H_w) (N + 1) (\sqrt{L_w})$

C = Height of curb above top of top slab (feet)
 H_w = Height of wingwall (feet)
 K = Constant value for use in formulas
 Slope SL:1 K
 6:1 ~ 10.41

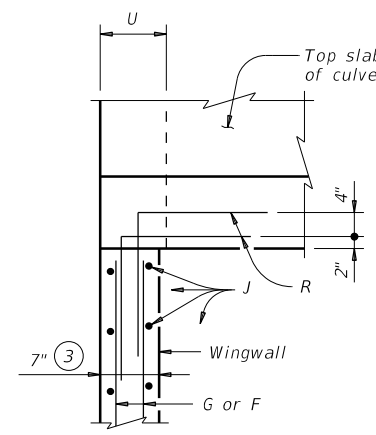
Atw = Anchor toewall length (feet)
 L_w = Length of wingwall (feet)
 N = Number of culvert barrels
 SL:1 = Side slope ratio (horizontal : 1 vertical)

See applicable box culvert standard for H, S, T, and U values.

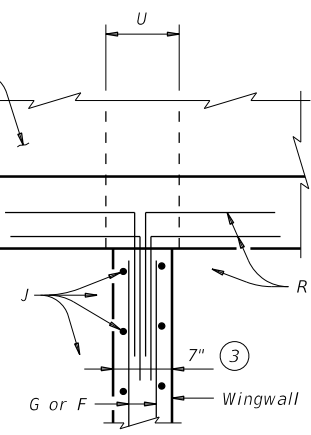


SECTION A-A

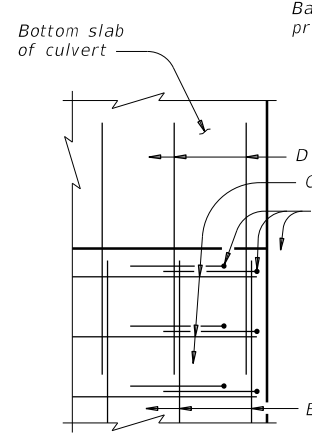
(Showing typical wingwall and wing slab reinforcing. Pipe runners not shown for clarity.)



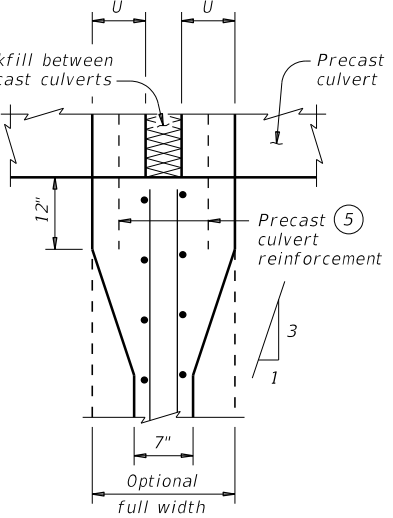
AT TOP OF EXTERIOR WINGWALL
(Cast-in-place culvert)



AT TOP OF INTERIOR WINGWALL
(Cast-in-place culvert)



AT OUTSIDE OF BOTTOM SLAB
(Cast-in-place culvert)



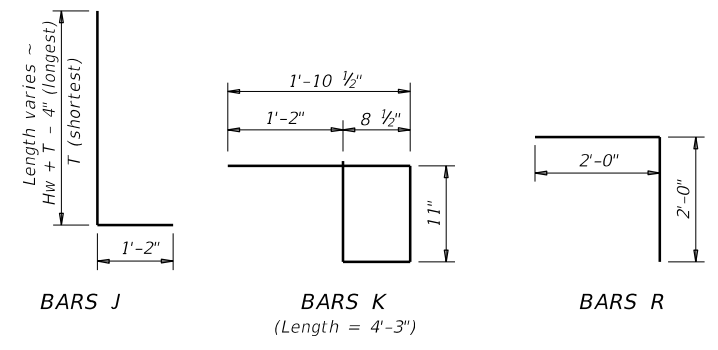
AT INTERIOR WINGWALL
(Precast culvert)

PLAN VIEWS OF CORNER DETAILS

- Provide 6:1 or flatter slope.
- 0" 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 Extended Curb Details the Extended Curb Details (ECD) standard sheet.
- Wingwall and slab thicknesses may be the same as the adjacent culvert wall and slab thicknesses (7" Minimum). If thicknesses greater than the minimum (7") are used, no changes will be made in quantities and no additional compensation will be allowed.
- For vehicle safety, reduce height, 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.
- For culverts with C = 0", the precast culvert reinforcing may extend 1'-0" minimum into wingwall. Wingwall bars D and R may be omitted. Otherwise, refer to the Wingwall Connection detail on the Box Culvert Precast Miscellaneous Details (SCP-MD) standard sheet.

TABLE OF REINFORCING BAR SIZES AND SPACING

Bar	Size	Spacing
C	#4	10" Max
D	#4	Match F and E
E	#4	1'- 0" Max
F	#4	1'- 3" Max
G	#6	As shown
J	#4	10" Max
K	#4	1'- 0" Max
R	#4	As shown



MATERIAL NOTES:

Provide Grade 60 reinforcing steel.
 Provide galvanized reinforcing steel if required elsewhere in the plans. Adjust reinforcing as necessary to provide a minimum clear cover of 1 1/2".
 Provide Class "C" concrete (f'c = 3,600 psi).
 Provide pipe runners, cross pipes, 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.
 Galvanize all steel components, except the concrete reinforcing, unless required elsewhere in the plans, after fabrication.
 Repair galvanizing damaged during transport or construction in accordance with Item 445, "Galvanizing."

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 cross pipes.
 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.
 The quantities for concrete, reinforcing steel, and cross pipes 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.
 Alternate design drawings bearing the seal of a professional engineer will be acceptable for precast construction of the safety end treatments.

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

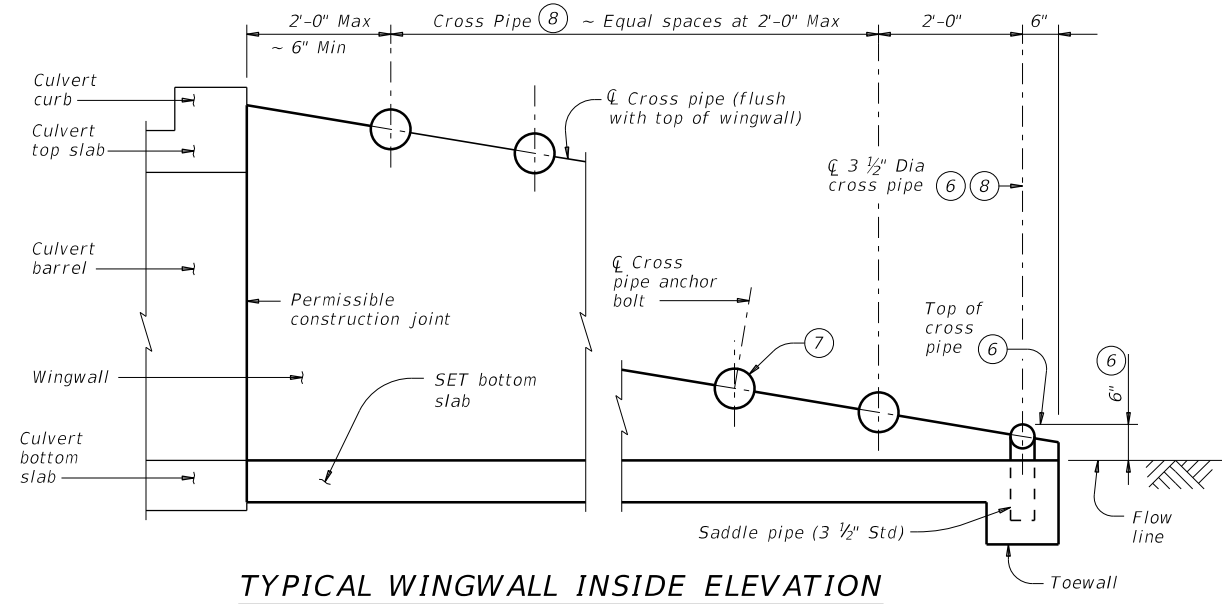
Texas Department of Transportation
 Bridge Division Standard

SAFETY END TREATMENT FOR BOX CULVERTS (MAXIMUM H_w = 7'-0") TYPE I ~ PARALLEL DRAINAGE SETB-PD

FILE: CD-SETBPD-22.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
06-2022 - Wing dimensions	DIST	COUNTY	SHEET NO.	
SAT	GUADALUPE	384		

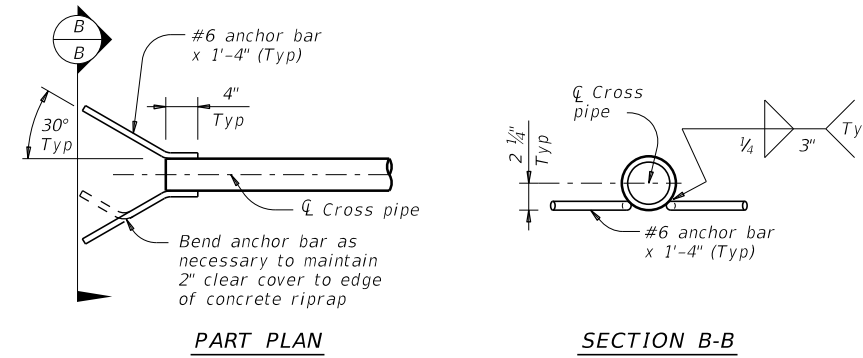
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act." No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

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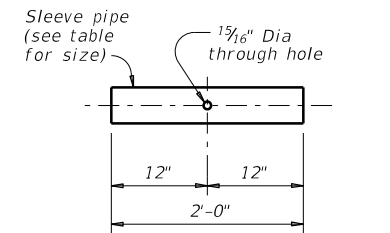


TYPICAL WINGWALL INSIDE ELEVATION

(Showing installation of cross pipes.)



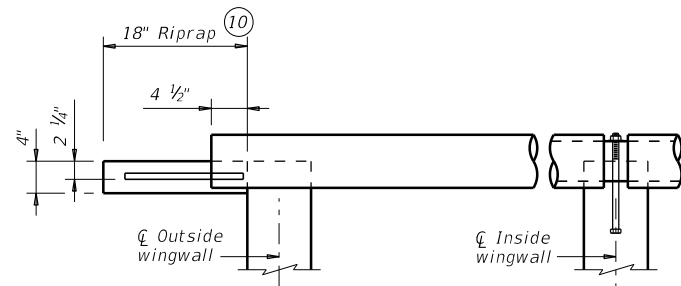
OPTIONAL ANCHOR BAR DETAILS



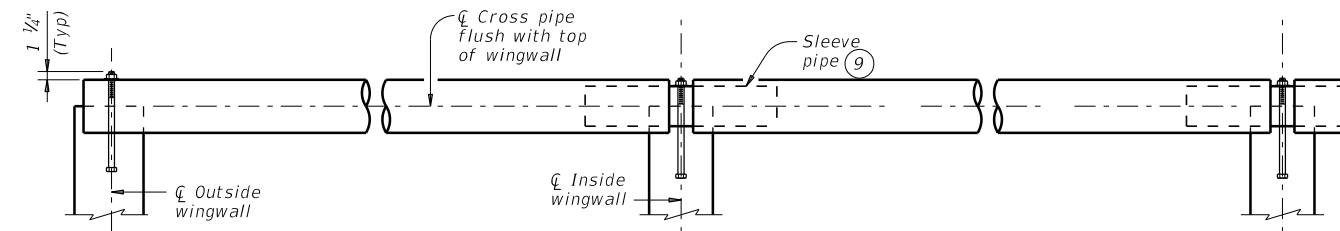
SLEEVE PIPE DETAILS (9)

REQUIRED PIPE SIZES (8)			STANDARD PIPE SIZES		
Culvert Span Sizes	Cross Pipe Size	Sleeve Pipe Size (9)	Pipe Size	Pipe O.D.	Pipe I.D.
First Pipe	3 1/2" STD	2 1/2" STD	2 1/2" STD	2.875"	2.469"
30" to 42"	4" STD	3" STD	3" STD	3.500"	3.068"
48" to 72"	5" STD	4" STD	3 1/2" STD	4.000"	3.548"
78" to 120"	6" STD	5" STD	4" STD	4.500"	4.026"
			5" STD	5.563"	5.047"
			6" STD	6.625"	6.065"

- The proper installation of the first cross pipe is critical for vehicle safety. Place the top of the first cross pipe at no more than 6" above the flow line.
- Always install the third cross pipe from the bottom of the culvert using a bolted connection. Take care to ensure that concrete does not flow into this cross pipe so as to permit disassembly of the bolted connection to allow cleanout access.
- Provide cross pipes and sleeve pipes (if required) as shown in the Required Pipe Sizes table. Provide 3 1#2" saddle pipes for the 3 1#2" first cross pipe.
- At Contractor's option, make the cross pipe continuous across the inside wingwalls. If this option is selected, omit the sleeve pipe and make a 15#16" diameter throughhole in the cross pipe to accept the anchor bolt at the centerline of each interior wingwall.
- Provide riprap when using the Optional Anchor Bar details. Riprap is included in the bid price for Safety End Treatment. Provide riprap in accordance with Item 432, "Riprap."

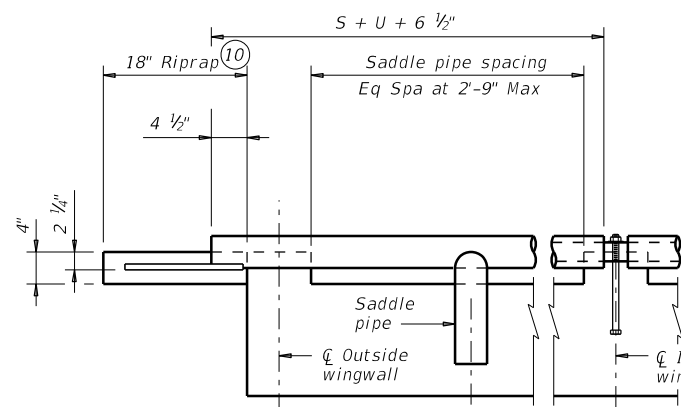


OUTSIDE CULVERT BARREL WITH OPTIONAL ANCHOR BARS & RIPRAP

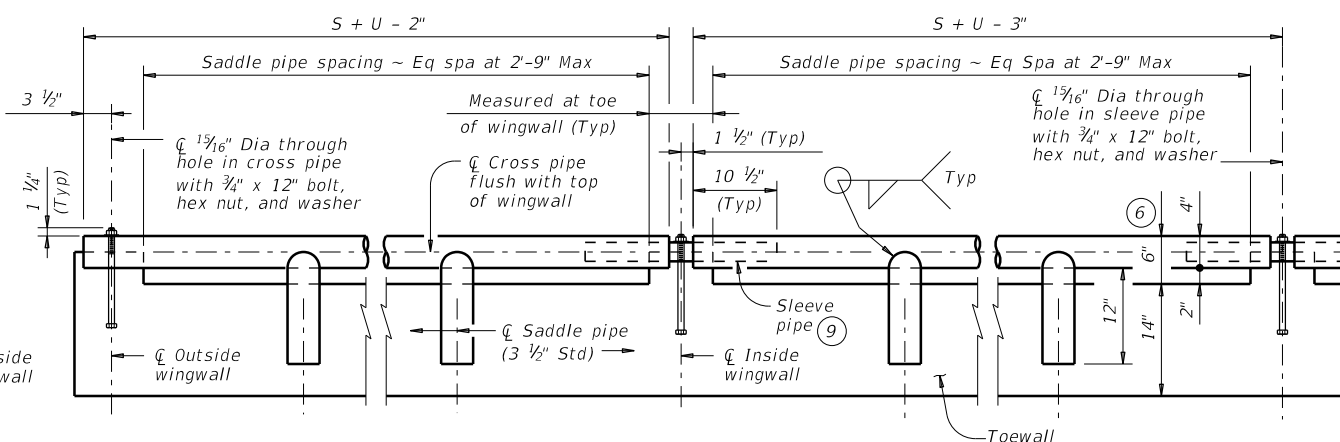


SECTION THROUGH INSTALLATION OF TYPICAL FULL CROSS PIPE

(Anchor details and dimensions are similar to those shown below in Section Through Installation of 3 1/2" First Cross Pipe detail.)



OUTSIDE CULVERT BARREL WITH BOLTED ANCHOR



SECTION THROUGH INSTALLATION OF 3 1/2" FIRST CROSS PIPE

INSIDE CULVERT BARREL

CROSS PIPE INSTALLATION DETAILS

SHEET 2 OF 2



SAFETY END TREATMENT FOR BOX CULVERTS (MAXIMUM Hw = 7'-0") TYPE I ~ PARALLEL DRAINAGE SETB-PD

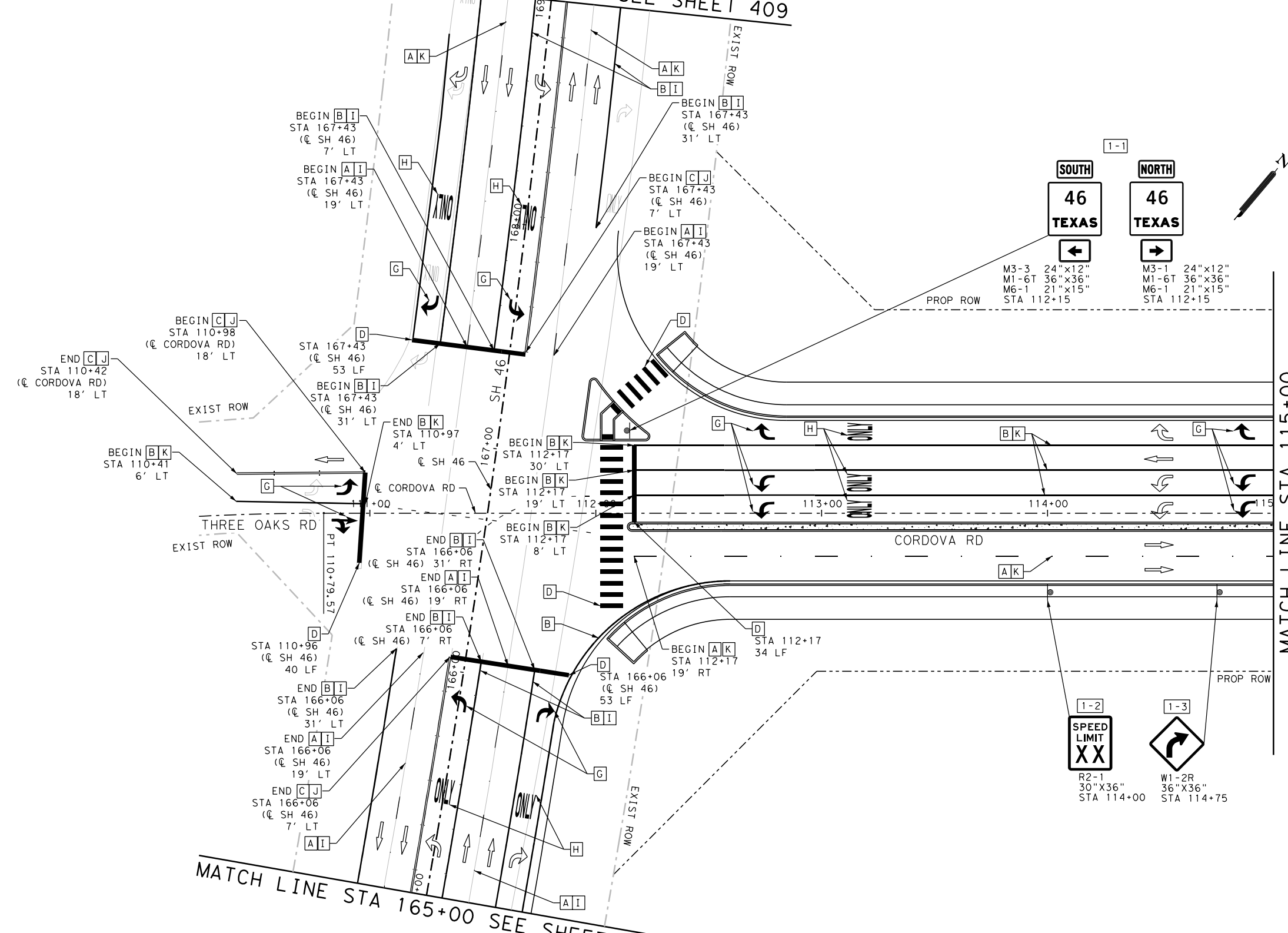
FILE: CD-SETBPD-22.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
06-2022 - Wing dimensions	DIST	COUNTY	SHEET NO.	
	SAT	GUADALUPE	385	

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Traffic\1277500-SPM_01.dgn

MATCH LINE STA 169+00 SEE SHEET 409

MATCH LINE STA 165+00 SEE SHEET 408



LEGEND

A	6" BRK WHITE STRIPE
B	8" SOLID WHITE LINE
C	8" DBL SOLID YELLOW LINE
D	24" SOLID WHITE LINE
E	24" SOLID YELLOW LINE
F	12" SOLID WHITE LINE
G	ARROW
H	WORD
I	REFL PAV MRKR TY I-C
J	REFL PAV MRKR TY II-A-A
K	REFL PAV MRKR TY II-C-R
L	MEDIAN NOSE
—	SIGN
←	TRAFFIC FLOW ARROWS
▨	CONC RIPRAP / DRIVEWAYS

NOTES

- FOR ADDITIONAL DETAILS SEE TxDOT TYPICAL STANDARD SHEETS.
- EXISTING FEATURES ARE SHOWN SCREENED BACK.
- ALL REFLECTIVE PAVEMENT MARKINGS SHALL RECEIVE A TY I AND TY II APPLICATION.
- ALL DIMENSIONS ARE TO FACE OF CURB AND/OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

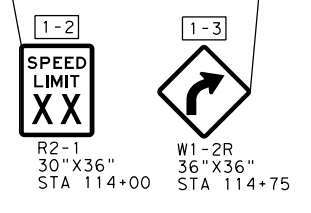
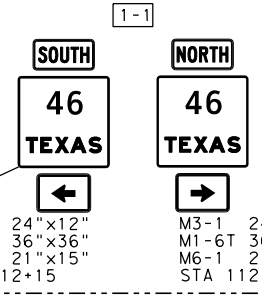
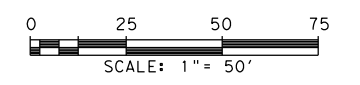
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

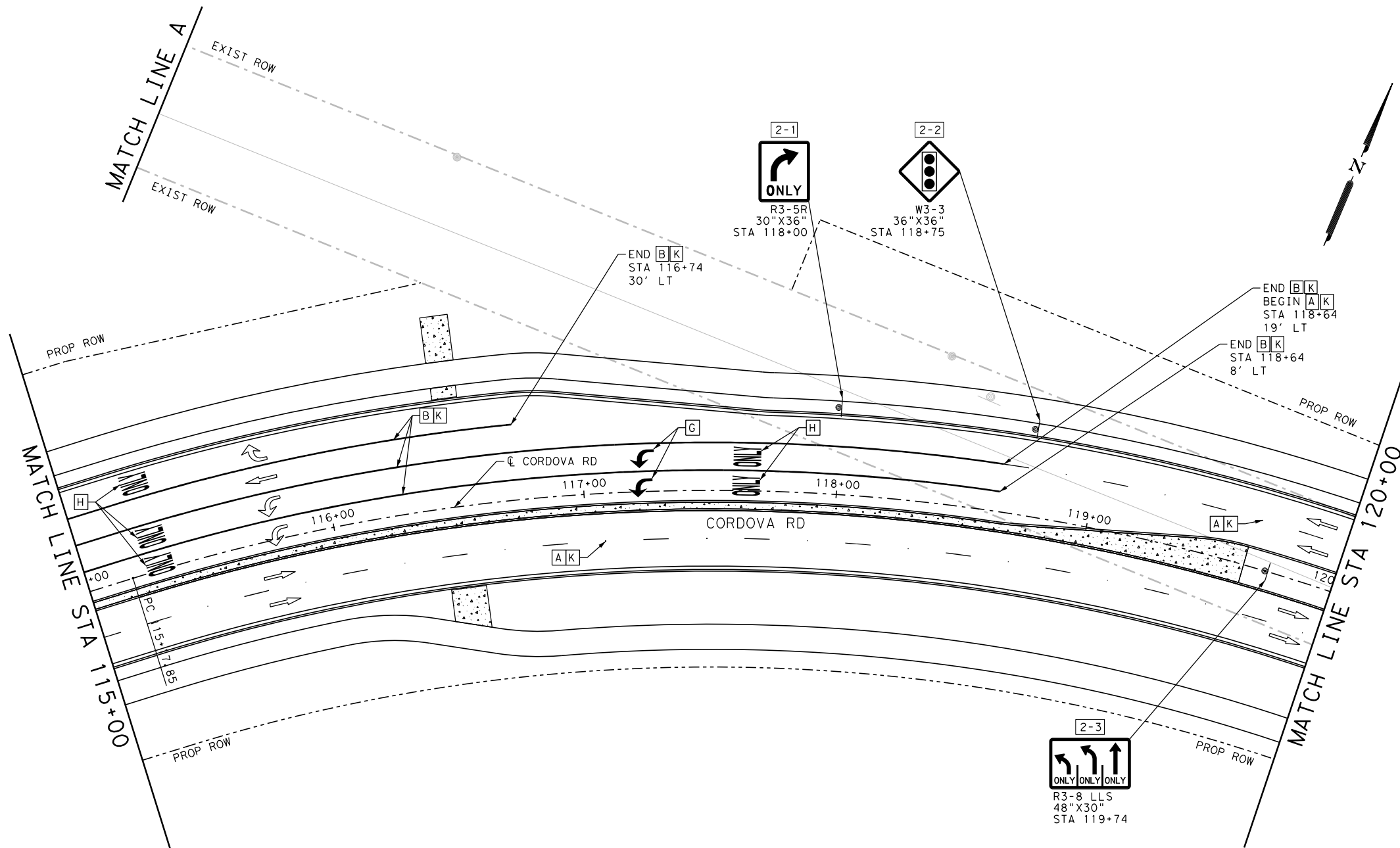
DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
©2023 CORDOVA RD SIGNING AND PAVEMENT MARKING LAYOUT BEGIN PROJECT TO STA 115+00 SHEET 1 OF 26			
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
CHK DGN:	6	TEXAS	
DWG:	DIST.:	COUNTY:	CONT. NO. SECT. NO. JOB NO. SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915 46 052 386

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Traffic\1277500_SPM_02.dgn



LEGEND

A	6" BRK WHITE STRIPE
B	8" SOLID WHITE LINE
C	8" DBL SOLID YELLOW LINE
D	24" SOLID WHITE LINE
E	24" SOLID YELLOW LINE
F	12" SOLID WHITE LINE
G	ARROW
H	WORD
I	REFL PAV MRKR TY I-C
J	REFL PAV MRKR TY II-A-A
K	REFL PAV MRKR TY II-C-R
L	MEDIAN NOSE
	SIGN
	TRAFFIC FLOW ARROWS
	CONC RIPRAP / DRIVEWAYS

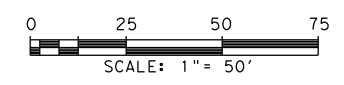
- NOTES**
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DESIGN

INTERIM REVIEW
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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 <small>TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</small>			

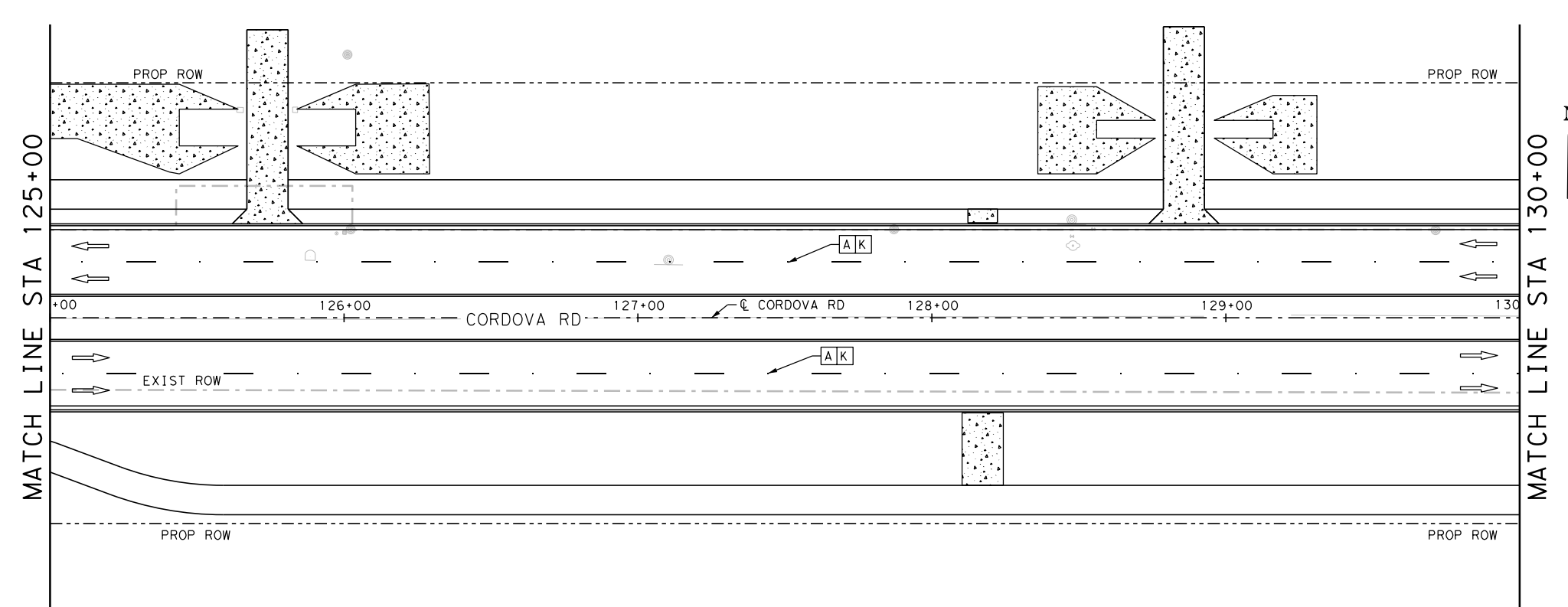
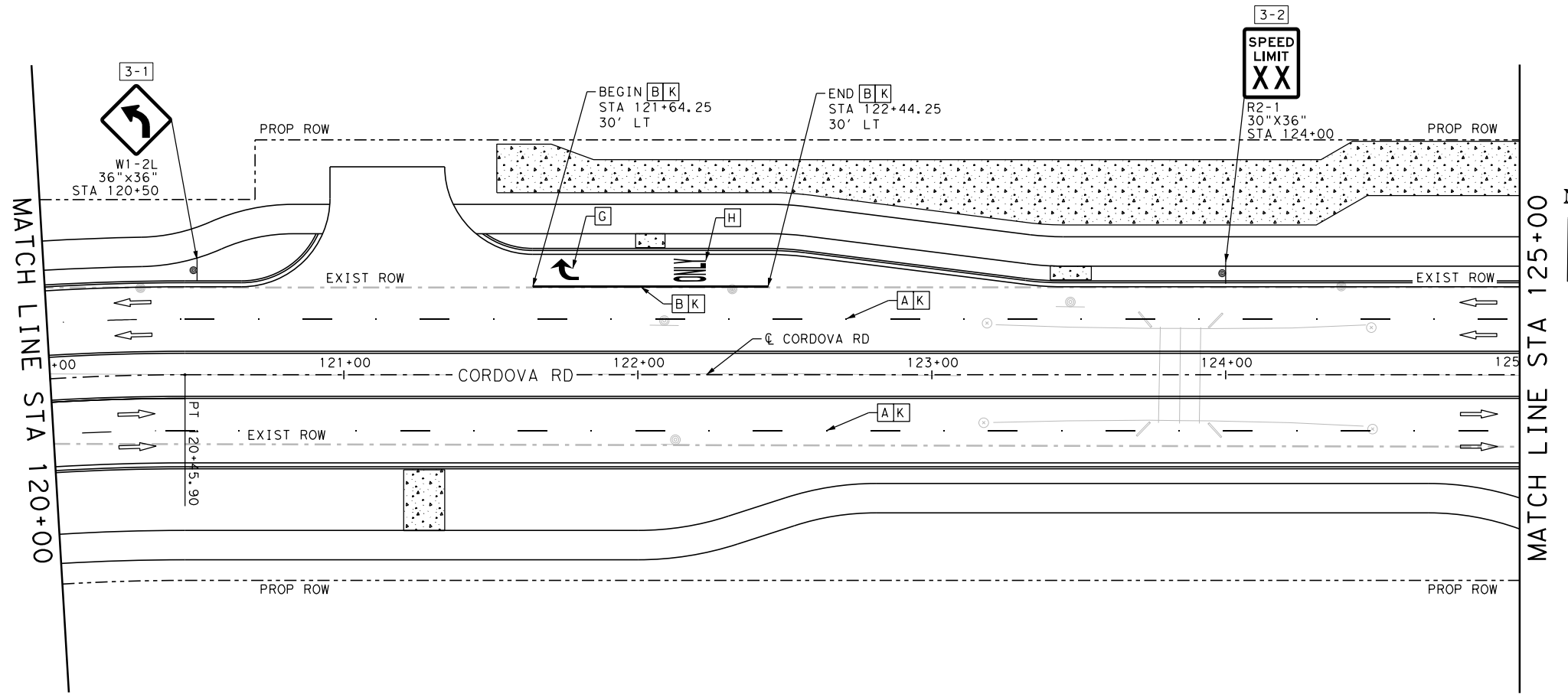
 It's real.	
 ©2023	

CORDOVA RD
SIGNING AND PAVEMENT MARKING LAYOUT
 STA 115+00 TO STA 120+00
 SHEET 2 OF 26

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				387

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Traffic\1277500_SPM_03.dgn



LEGEND

A	6" BRK WHITE STRIPE
B	8" SOLID WHITE LINE
C	8" DBL SOLID YELLOW LINE
D	24" SOLID WHITE LINE
E	24" SOLID YELLOW LINE
F	12" SOLID WHITE LINE
G	ARROW
H	WORD
I	REFL PAV MRKR TY I-C
J	REFL PAV MRKR TY II-A-A
K	REFL PAV MRKR TY II-C-R
L	MEDIAN NOSE
	SIGN
	TRAFFIC FLOW ARROWS
	CONC RIPRAP / DRIVEWAYS

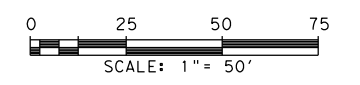
- NOTES**
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

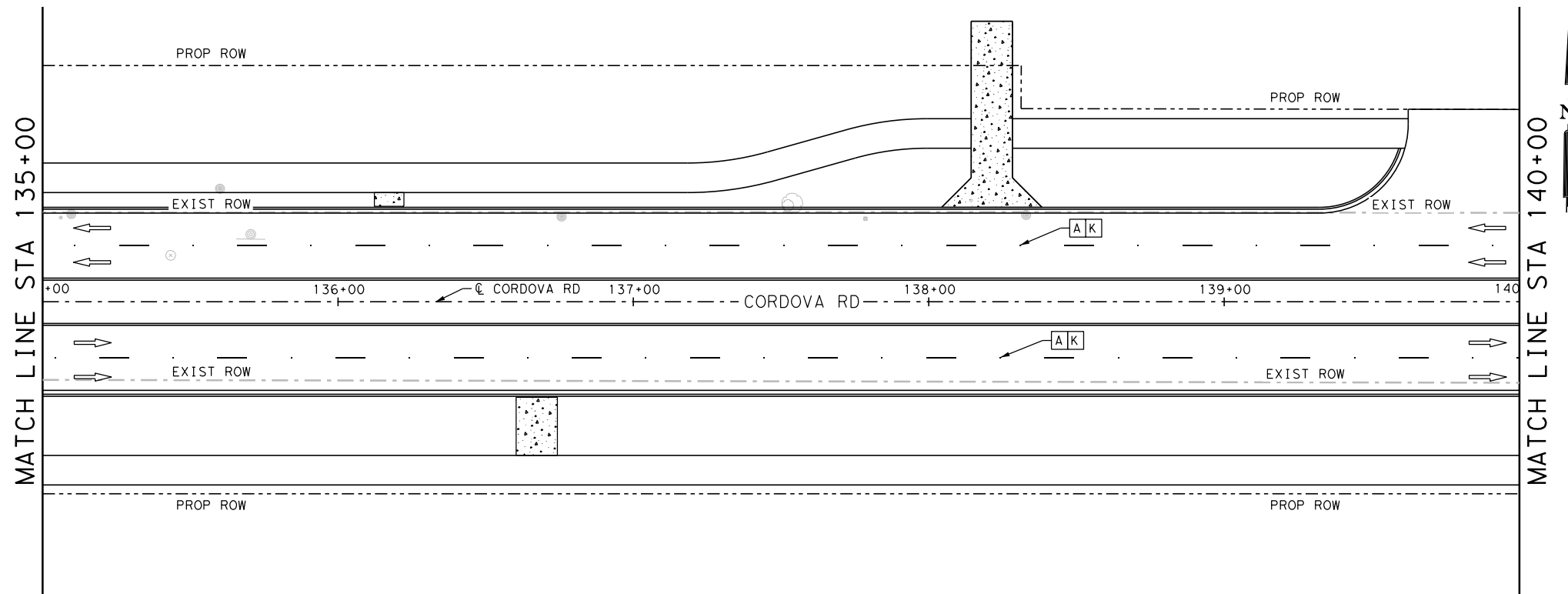
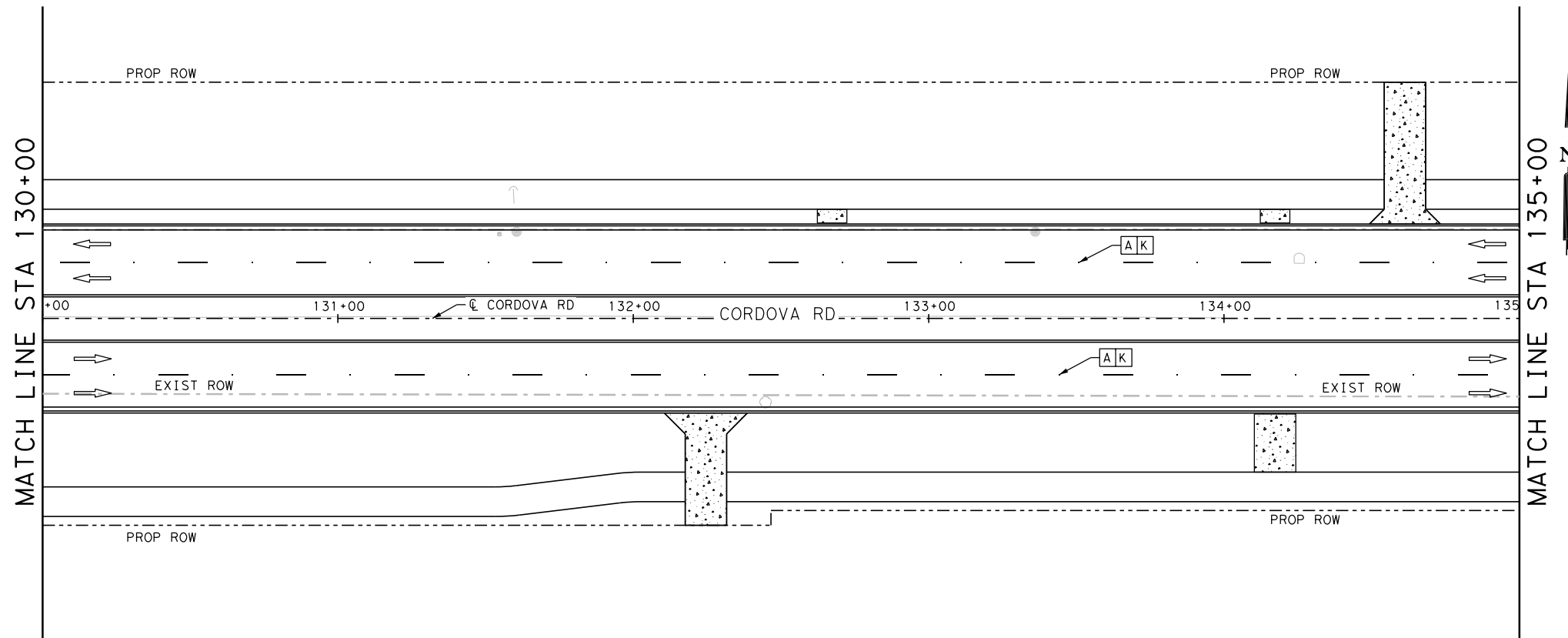
INTERIM REVIEW
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
<p>PAPE-DAWSON ENGINEERS</p> <p>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</p>			
<p>SEGUIN TEXAS</p> <p>It's real.</p>			
<p>Texas Department of Transportation ©2023</p>			
<p>CORDOVA RD</p> <p>SIGNING AND PAVEMENT MARKING LAYOUT</p> <p>STA 120+00 TO STA 130+00</p> <p>SHEET 3 OF 26</p>			
CHK DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
DWG:	DIST.:	COUNTY:	CONT. NO.:
CHK DWG:	SAT	GUADALUPE	0915
			46
			052
			388

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Traffic\1277500_SPM_04.dgn



LEGEND

A	6" BRK WHITE STRIPE
B	8" SOLID WHITE LINE
C	8" DBL SOLID YELLOW LINE
D	24" SOLID WHITE LINE
E	24" SOLID YELLOW LINE
F	12" SOLID WHITE LINE
G	ARROW
H	WORD
I	REFL PAV MRKR TY I-C
J	REFL PAV MRKR TY II-A-A
K	REFL PAV MRKR TY II-C-R
L	MEDIAN NOSE
•	SIGN
←	TRAFFIC FLOW ARROWS
▨	CONC RIPRAP / DRIVEWAYS

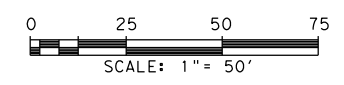
- NOTES**
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DESIGN

INTERIM REVIEW
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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

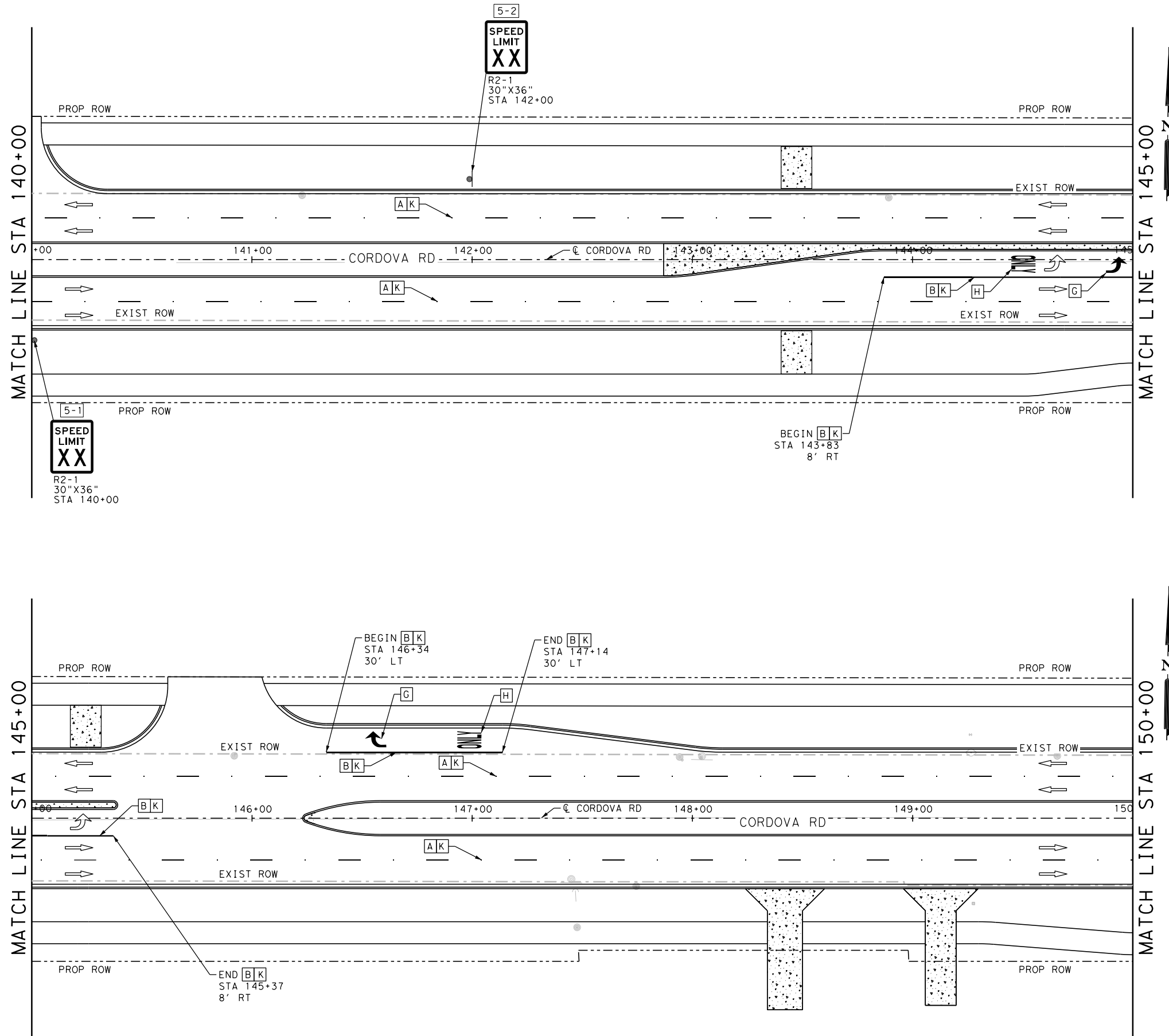
INTERIM REVIEW
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY			
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800						
©2023						
CORDOVA RD SIGNING AND PAVEMENT MARKING LAYOUT STA 130+00 TO STA 140+00 SHEET 4 OF 26						
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	389

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Traffic\1277500_SPM_05.dgn



LEGEND

A	6" BRK WHITE STRIPE
B	8" SOLID WHITE LINE
C	8" DBL SOLID YELLOW LINE
D	24" SOLID WHITE LINE
E	24" SOLID YELLOW LINE
F	12" SOLID WHITE LINE
G	ARROW
H	WORD
I	REFL PAV MRKR TY I-C
J	REFL PAV MRKR TY II-A-A
K	REFL PAV MRKR TY II-C-R
L	MEDIAN NOSE
	SIGN
	TRAFFIC FLOW ARROWS
	CONC RIPRAP / DRIVEWAYS

NOTES

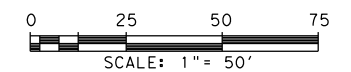
1. FOR ADDITIONAL DETAILS SEE TxDOT TYPICAL STANDARD SHEETS.
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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

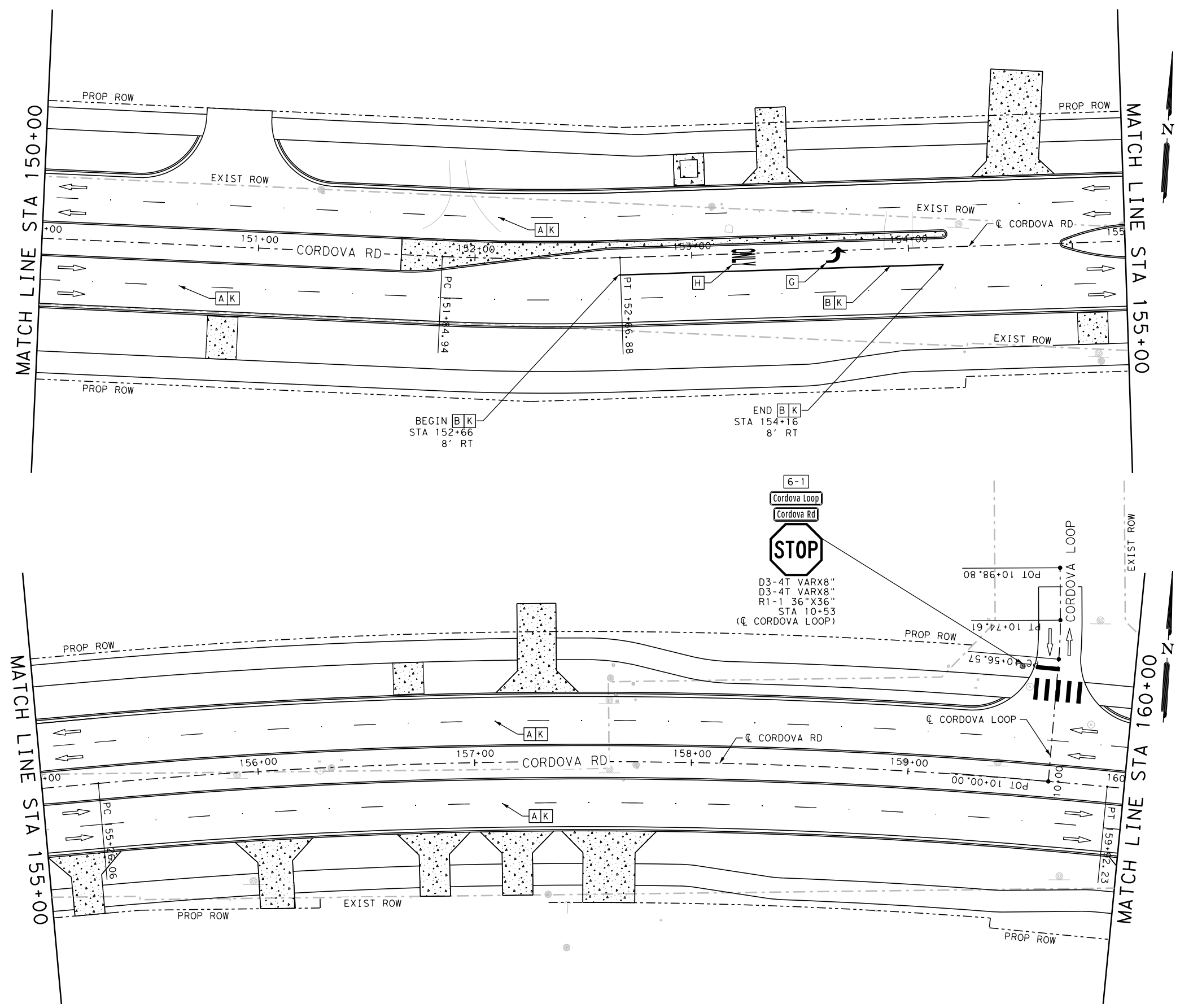
INTERIM REVIEW
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
<p>PAPE-DAWSON ENGINEERS SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</p>			
<p>SEGUIN TEXAS It's real.</p>			
<p>Texas Department of Transportation © 2023</p>			
<p>CORDOVA RD SIGNING AND PAVEMENT MARKING LAYOUT STA 140+00 TO STA 150+00</p>			
SHEET 5 OF 26			
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
CHK DGN:	6	TEXAS	
DWG:	DIST.:	COUNTY:	CONT. NO. SECT. NO. JOB NO. SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915 46 052 390

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Traffic\1277500_SPM_06.dgn



LEGEND

A	6" BRK WHITE STRIPE
B	8" SOLID WHITE LINE
C	8" DBL SOLID YELLOW LINE
D	24" SOLID WHITE LINE
E	24" SOLID YELLOW LINE
F	12" SOLID WHITE LINE
G	ARROW
H	WORD
I	REFL PAV MRKR TY I-C
J	REFL PAV MRKR TY II-A-A
K	REFL PAV MRKR TY II-C-R
L	MEDIAN NOSE
	SIGN
	TRAFFIC FLOW ARROWS
	CONC RIPRAP / DRIVEWAYS

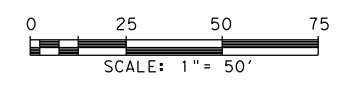
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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

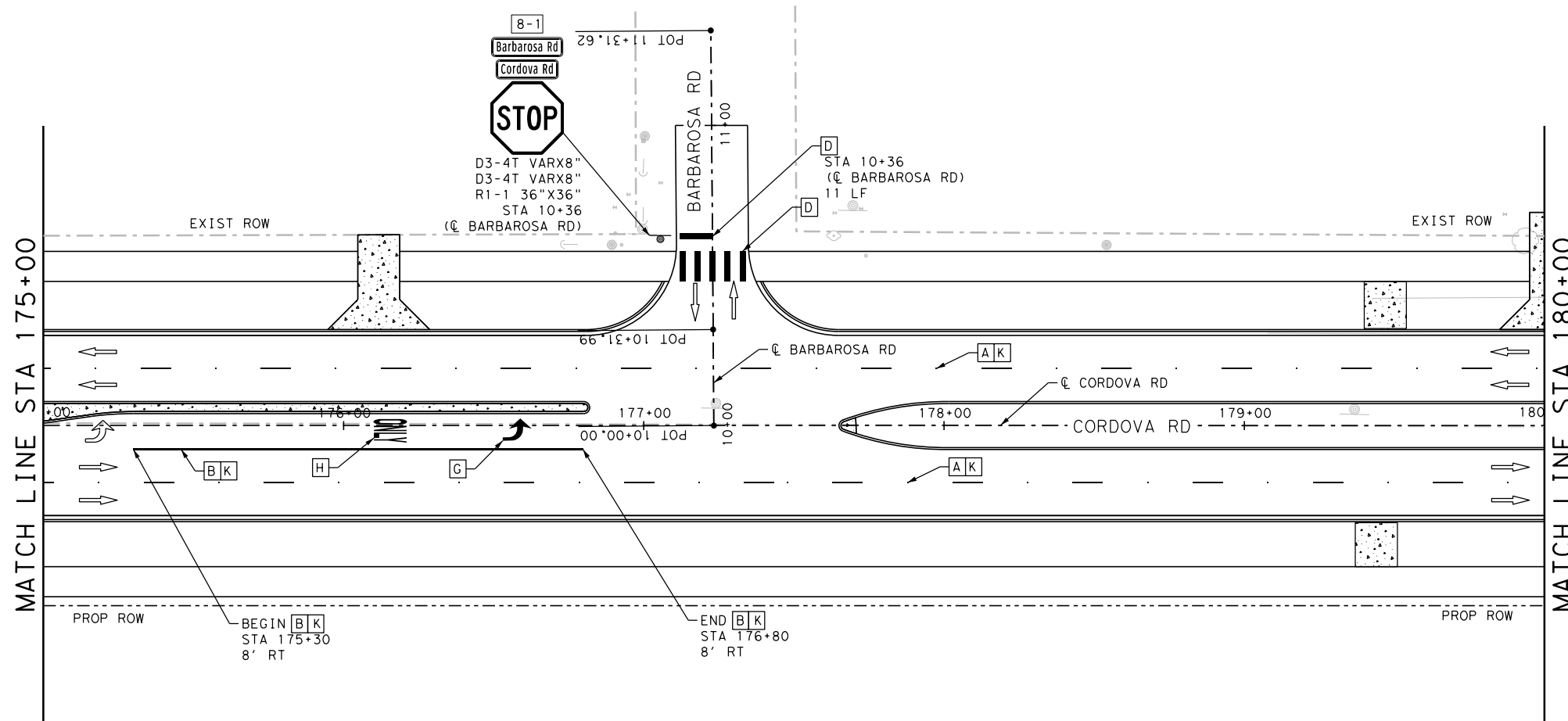
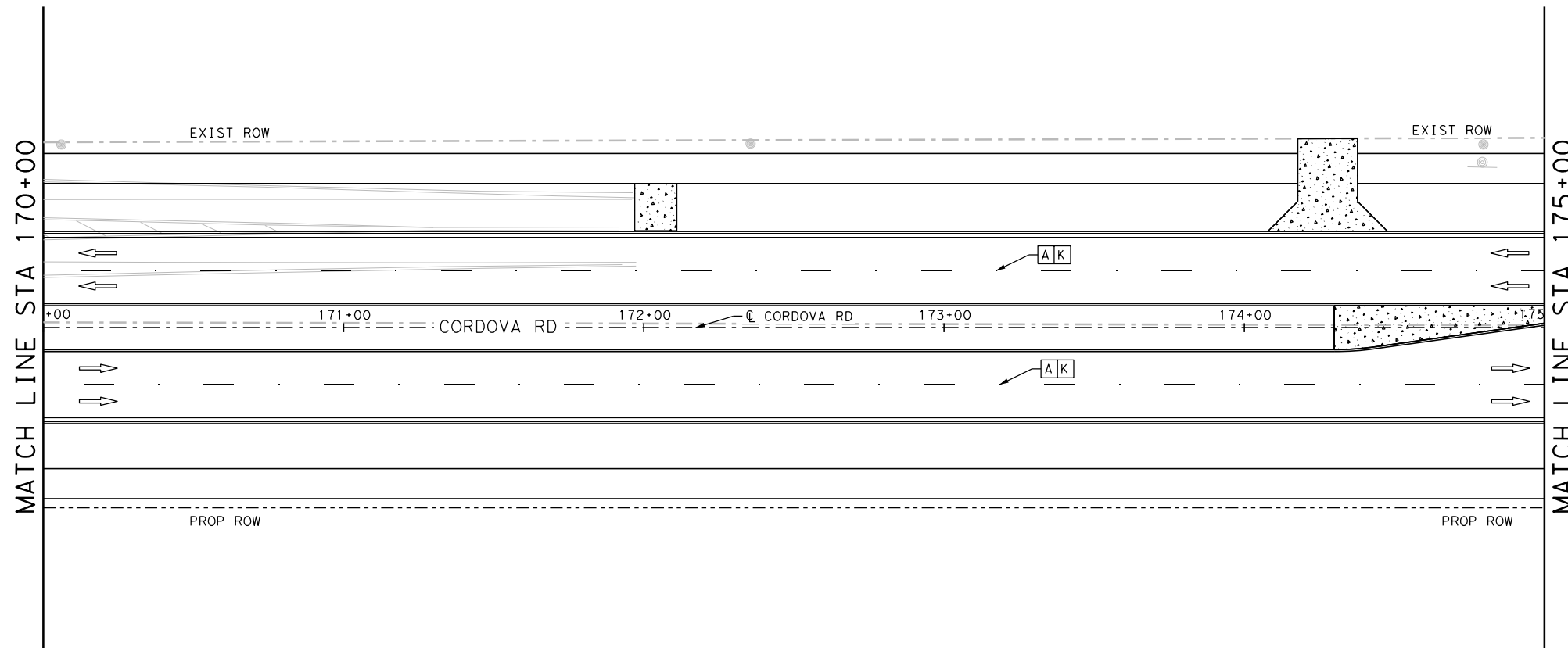
INTERIM REVIEW
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
<p>PAPE-DAWSON ENGINEERS</p> <p>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</p>			
<p>SEGUIN TEXAS</p> <p>It's real.</p>			
<p>Texas Department of Transportation © 2023</p>			
<p>CORDOVA RD</p> <p>SIGNING AND PAVEMENT MARKING LAYOUT</p> <p>STA 150+00 TO STA 160+00</p> <p>SHEET 6 OF 26</p>			
DN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.
CHK:	6	TEXAS	CORDOVA
DWG:	DIST.	COUNTY	CONT. NO. SECT. NO. JOB NO.
CHK:	SAT	GUADALUPE	0915 46 052 391

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Traffic\1277500_SPM_08.dgn



LEGEND

A	6" BRK WHITE STRIPE
B	8" SOLID WHITE LINE
C	8" DBL SOLID YELLOW LINE
D	24" SOLID WHITE LINE
E	24" SOLID YELLOW LINE
F	12" SOLID WHITE LINE
G	ARROW
H	WORD
I	REFL PAV MRKR TY I-C
J	REFL PAV MRKR TY II-A-A
K	REFL PAV MRKR TY II-C-R
L	MEDIAN NOSE
•	SIGN
←	TRAFFIC FLOW ARROWS
▨	CONC RIPRAP / DRIVEWAYS

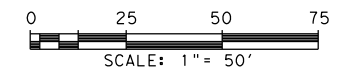
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 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

Pape-Dawson Engineers
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS
 It's real.

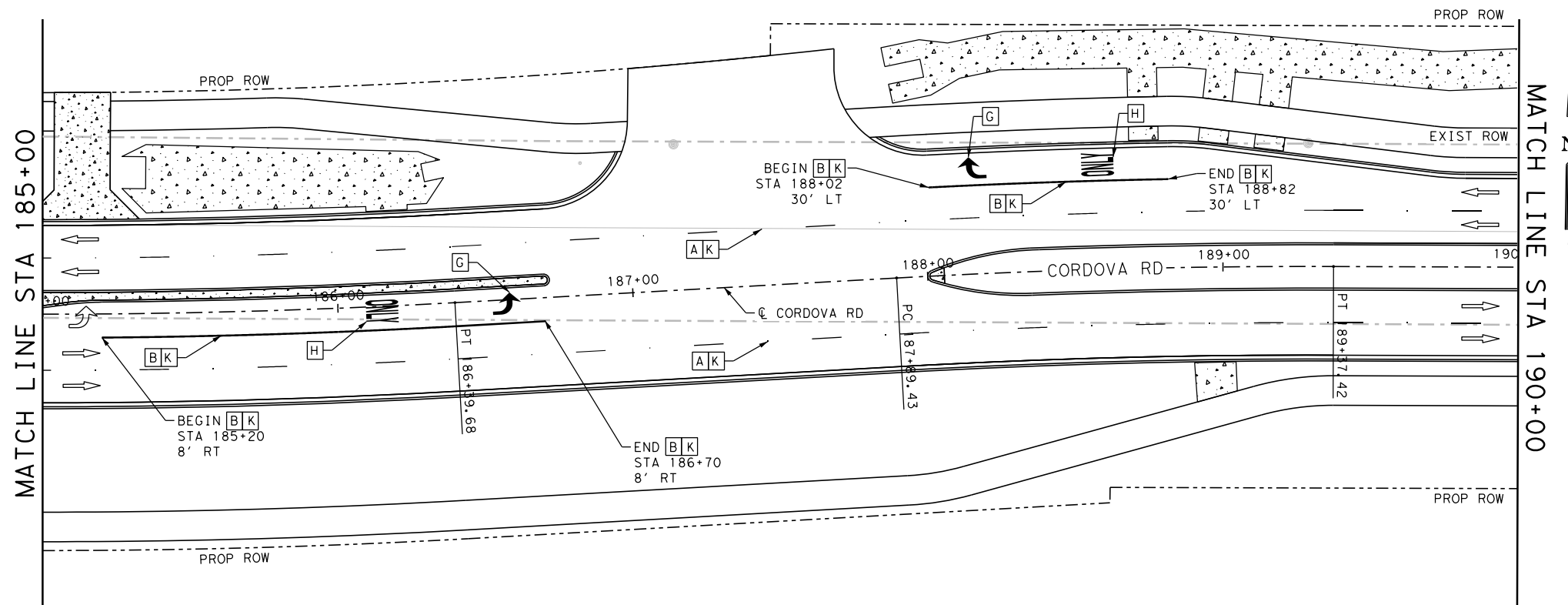
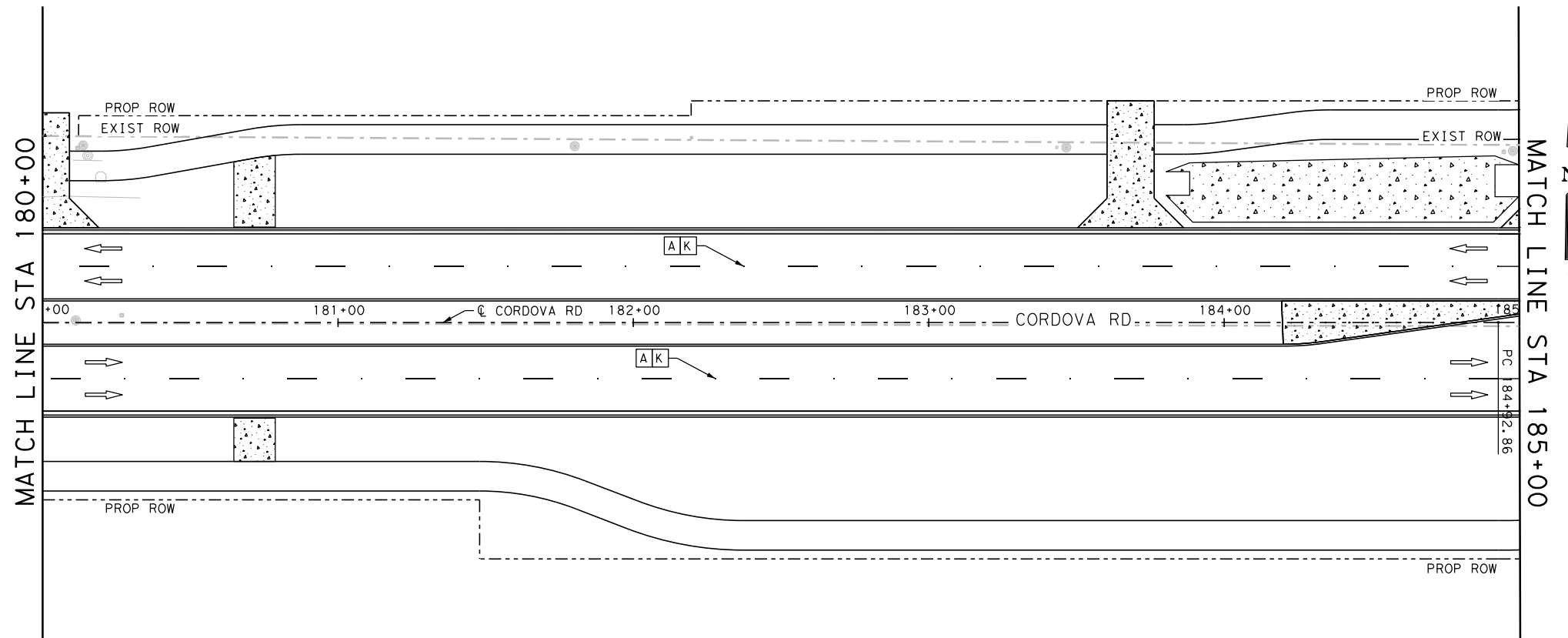
Texas Department of Transportation
 © 2023

CORDOVA RD
SIGNING AND PAVEMENT MARKING LAYOUT
 STA 170+00 TO STA 180+00
 SHEET 8 OF 26

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				393

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Traffic\1277500_SPM_09.dgn



LEGEND

A	6" BRK WHITE STRIPE
B	8" SOLID WHITE LINE
C	8" DBL SOLID YELLOW LINE
D	24" SOLID WHITE LINE
E	24" SOLID YELLOW LINE
F	12" SOLID WHITE LINE
G	ARROW
H	WORD
I	REFL PAV MRKR TY I-C
J	REFL PAV MRKR TY II-A-A
K	REFL PAV MRKR TY II-C-R
L	MEDIAN NOSE
	SIGN
	TRAFFIC FLOW ARROWS
	CONC RIPRAP / DRIVEWAYS

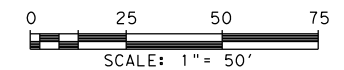
- NOTES**
- FOR ADDITIONAL DETAILS SEE TxDOT TYPICAL STANDARD SHEETS.
 - EXISTING FEATURES ARE SHOWN SCREENED BACK.
 - ALL REFLECTIVE PAVEMENT MARKINGS SHALL RECEIVE A TY I AND TY II APPLICATION.
 - ALL DIMENSIONS ARE TO FACE OF CURB AND/OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

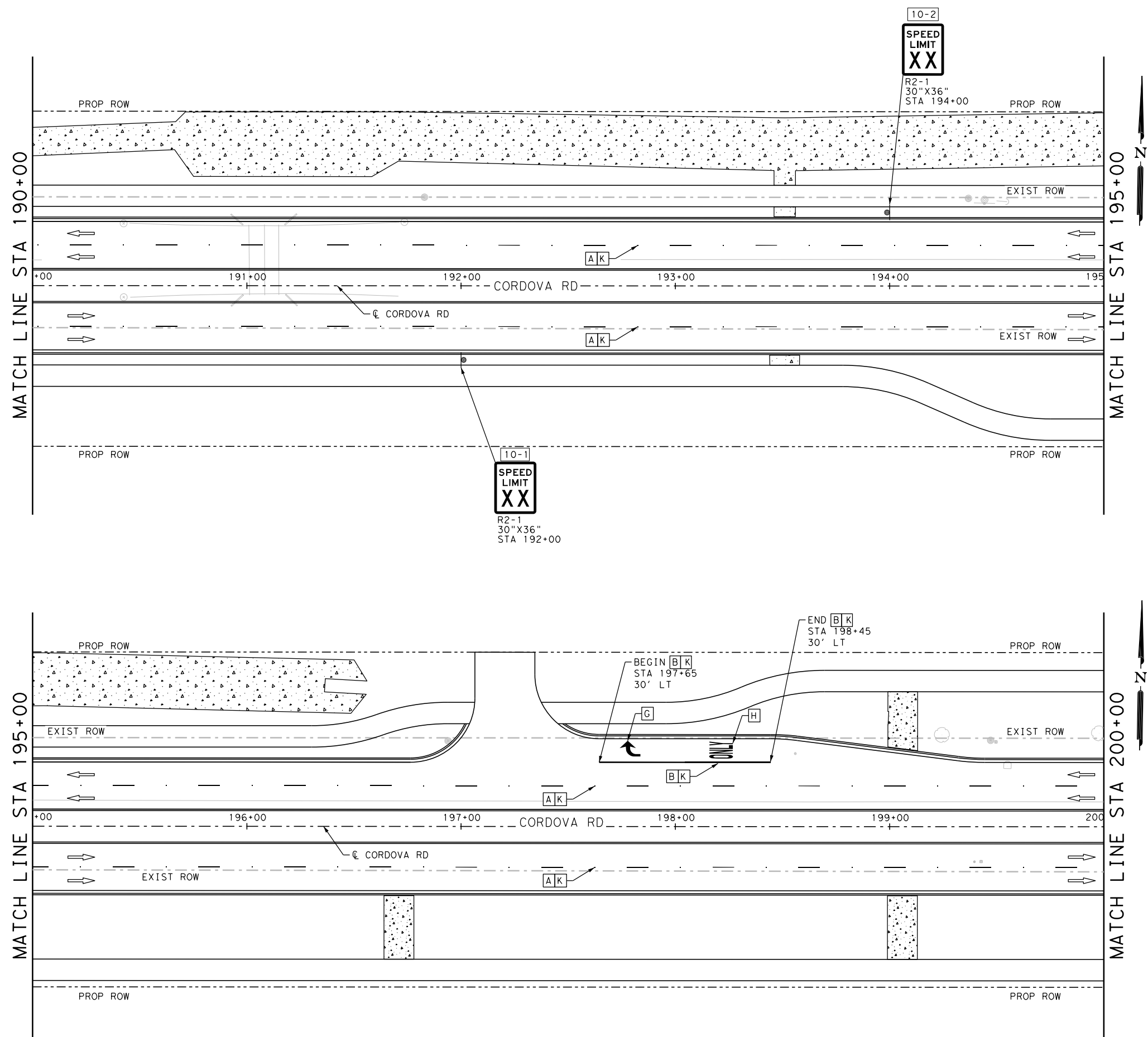
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY			
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800						
©2023						
CORDOVA RD SIGNING AND PAVEMENT MARKING LAYOUT STA 180+00 TO STA 190+00 SHEET 9 OF 26						
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	394

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Traffic\1277500_SPM_10.dgn



LEGEND

A	6" BRK WHITE STRIPE
B	8" SOLID WHITE LINE
C	8" DBL SOLID YELLOW LINE
D	24" SOLID WHITE LINE
E	24" SOLID YELLOW LINE
F	12" SOLID WHITE LINE
G	ARROW
H	WORD
I	REFL PAV MRKR TY I-C
J	REFL PAV MRKR TY II-A-A
K	REFL PAV MRKR TY II-C-R
L	MEDIAN NOSE
M	SIGN
N	TRAFFIC FLOW ARROWS
O	CONC RIPRAP / DRIVEWAYS

NOTES

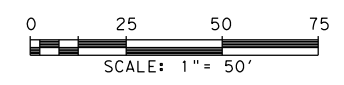
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

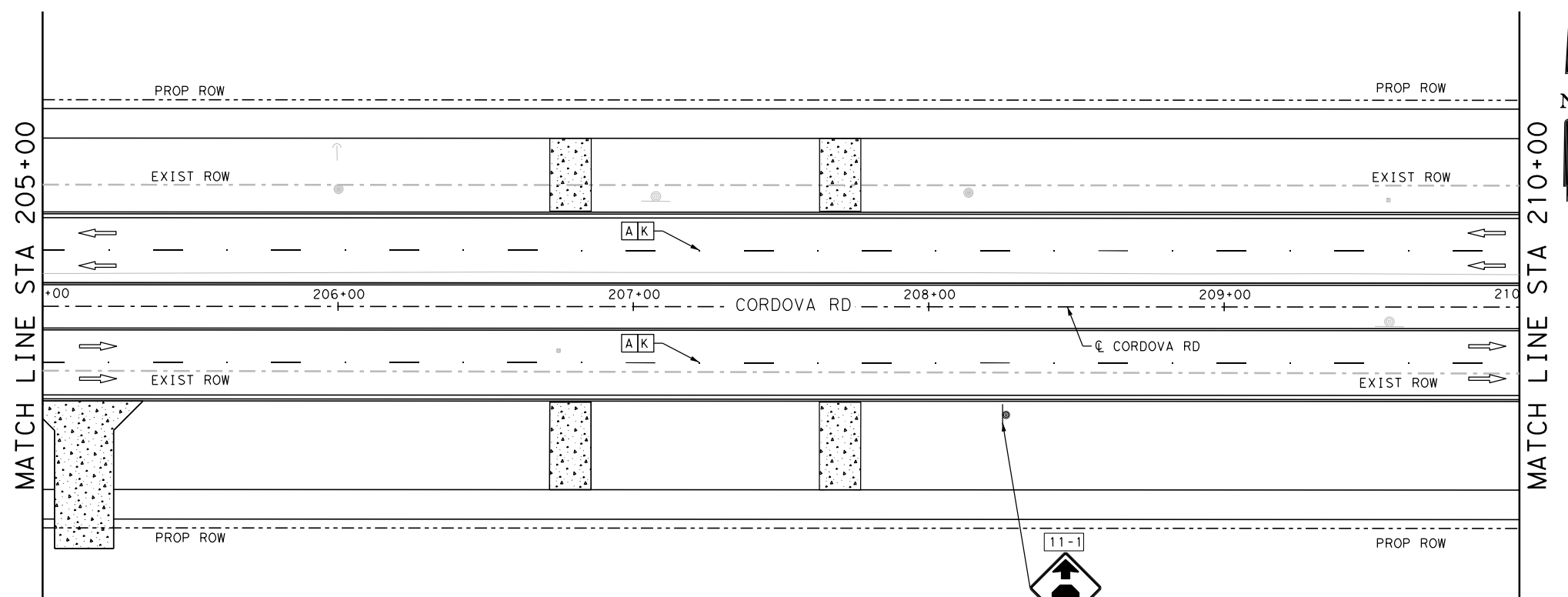
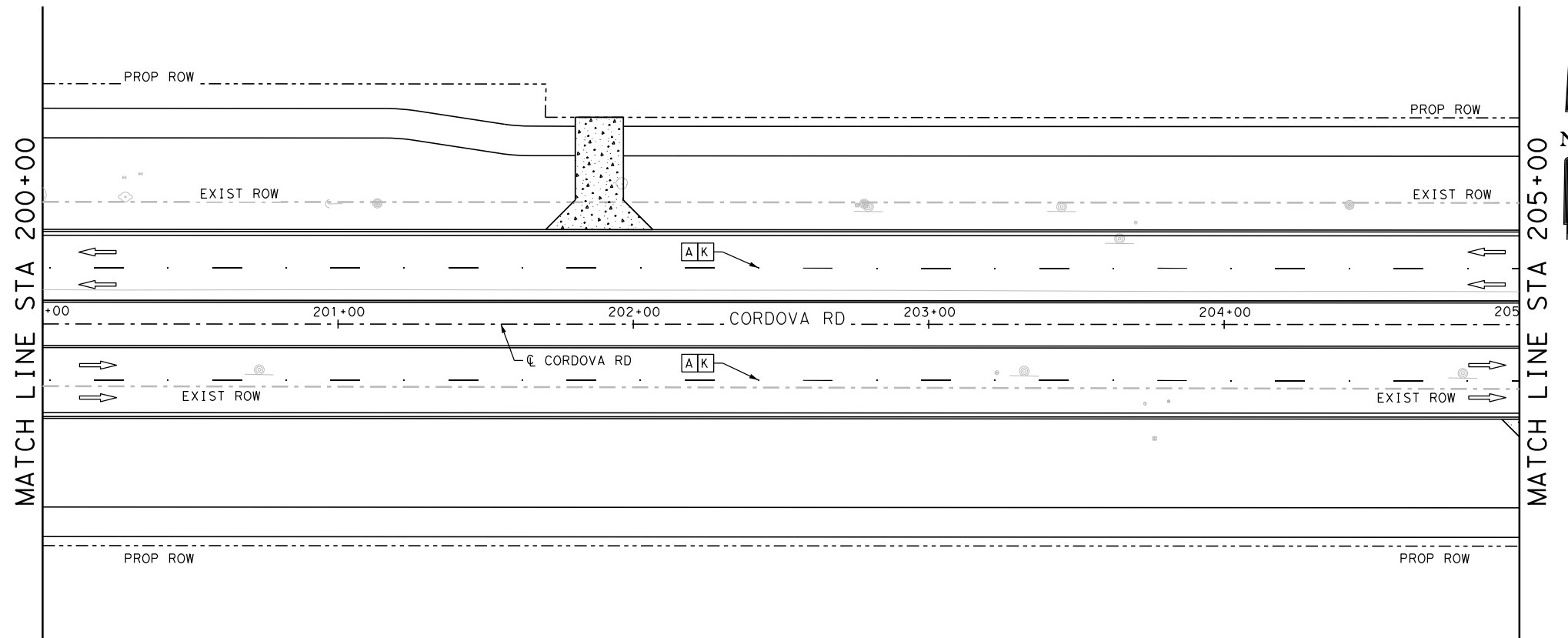
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
© 2023			
CORDOVA RD SIGNING AND PAVEMENT MARKING LAYOUT STA 190+00 TO STA 200+00 SHEET 10 OF 26			
CHK DGN:	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO. CORDOVA
DWG:	DIST. SAT	COUNTY GUADALUPE	CONT. NO. 0915
CHK DWG:			SECT. NO. 46
			JOB NO. 052
			SHEET NO. 395

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Traffic\1277500_SPM_11.dgn



LEGEND

A	6" BRK WHITE STRIPE
B	8" SOLID WHITE LINE
C	8" DBL SOLID YELLOW LINE
D	24" SOLID WHITE LINE
E	24" SOLID YELLOW LINE
F	12" SOLID WHITE LINE
G	ARROW
H	WORD
I	REFL PAV MRKR TY I-C
J	REFL PAV MRKR TY II-A-A
K	REFL PAV MRKR TY II-C-R
L	MEDIAN NOSE
	SIGN
	TRAFFIC FLOW ARROWS
	CONC RIPRAP / DRIVEWAYS

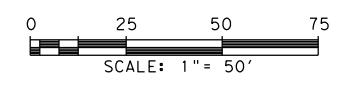
- NOTES**
- FOR ADDITIONAL DETAILS SEE TxDOT TYPICAL STANDARD SHEETS.
 - EXISTING FEATURES ARE SHOWN SCREENED BACK.
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
©2023 CORDOVA RD SIGNING AND PAVEMENT MARKING LAYOUT STA 200+00 TO STA 210+00 SHEET 11 OF 26			
CHK DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
DWG:	DIST.:	COUNTY:	CONT. NO.:
CHK DWG:	SAT:	GUADALUPE:	0915
			46
			052
			396

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Traffic\1277500_SPM_12.dgn

LEGEND

- A 6" BRK WHITE STRIPE
- B 8" SOLID WHITE LINE
- C 8" DBL SOLID YELLOW LINE
- D 24" SOLID WHITE LINE
- E 24" SOLID YELLOW LINE
- F 12" SOLID WHITE LINE
- G ARROW
- H WORD
- I REFL PAV MRKR TY I-C
- J REFL PAV MRKR TY II-A-A
- K REFL PAV MRKR TY II-C-R
- L MEDIAN NOSE
- M SIGN
- N TRAFFIC FLOW ARROWS
- O CONC RIPRAP / DRIVEWAYS

NOTES

1. FOR ADDITIONAL DETAILS SEE TxDOT TYPICAL STANDARD SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. ALL REFLECTIVE PAVEMENT MARKINGS SHALL RECEIVE A TY I AND TY II APPLICATION.
4. ALL DIMENSIONS ARE TO FACE OF CURB AND/OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

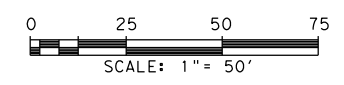
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

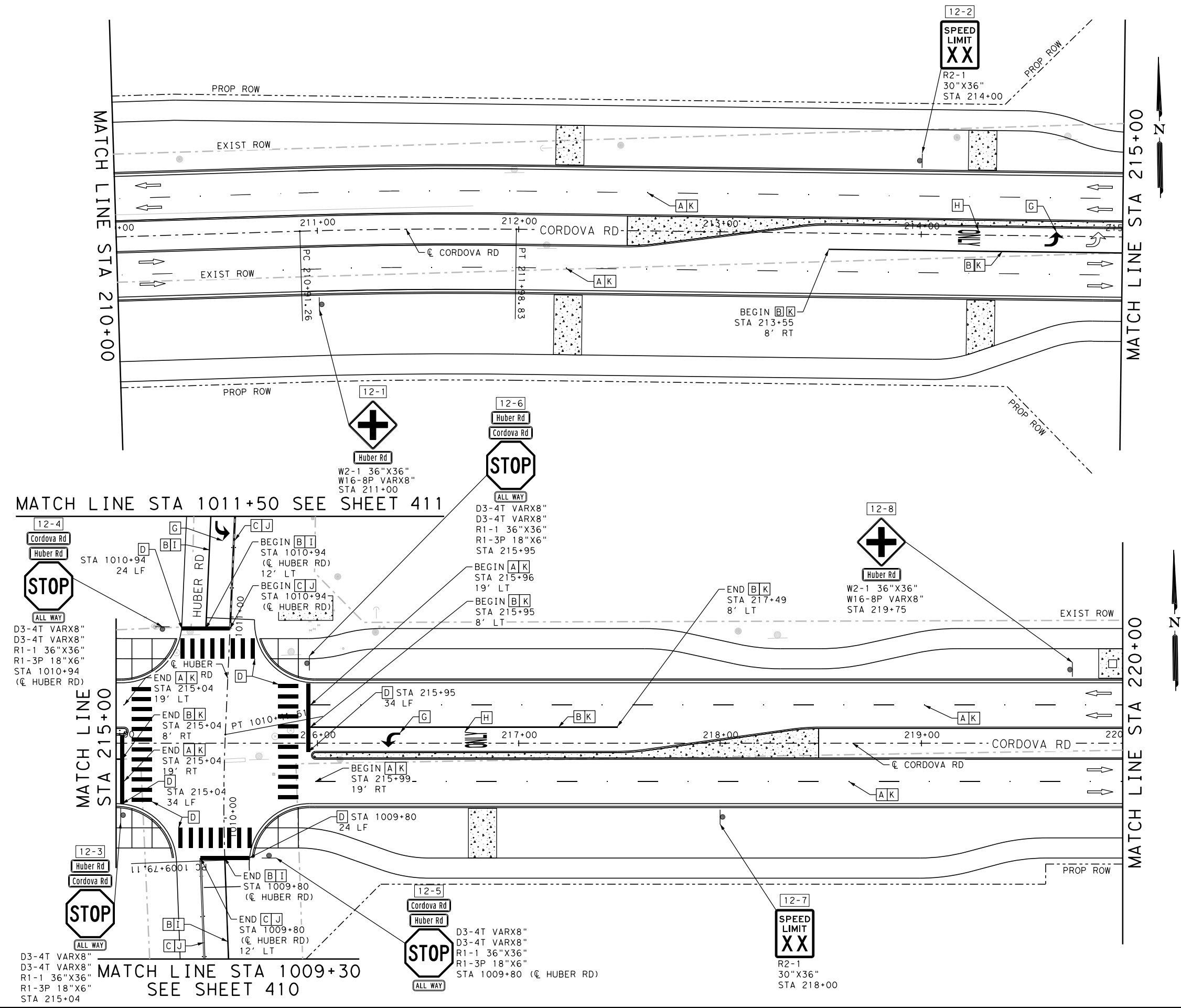
ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
<p style="text-align: center; font-size: small;">SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</p>			
<p style="text-align: center; font-weight: bold;">It's real.</p>			
<p style="text-align: center;">© 2023</p>			
<p>CORDOVA RD</p> <p style="font-size: large; font-weight: bold;">SIGNING AND PAVEMENT MARKING LAYOUT</p> <p>STA 210+00 TO STA 220+00</p> <p style="text-align: right;">SHEET 12 OF 26</p>			
DN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
CHK DGN:	6	TEXAS	
DWG:	DIST.:	COUNTY:	CONT. NO. SECT. NO. JOB NO. SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915 46 052 397



MATCH LINE STA 1011+50 SEE SHEET 411

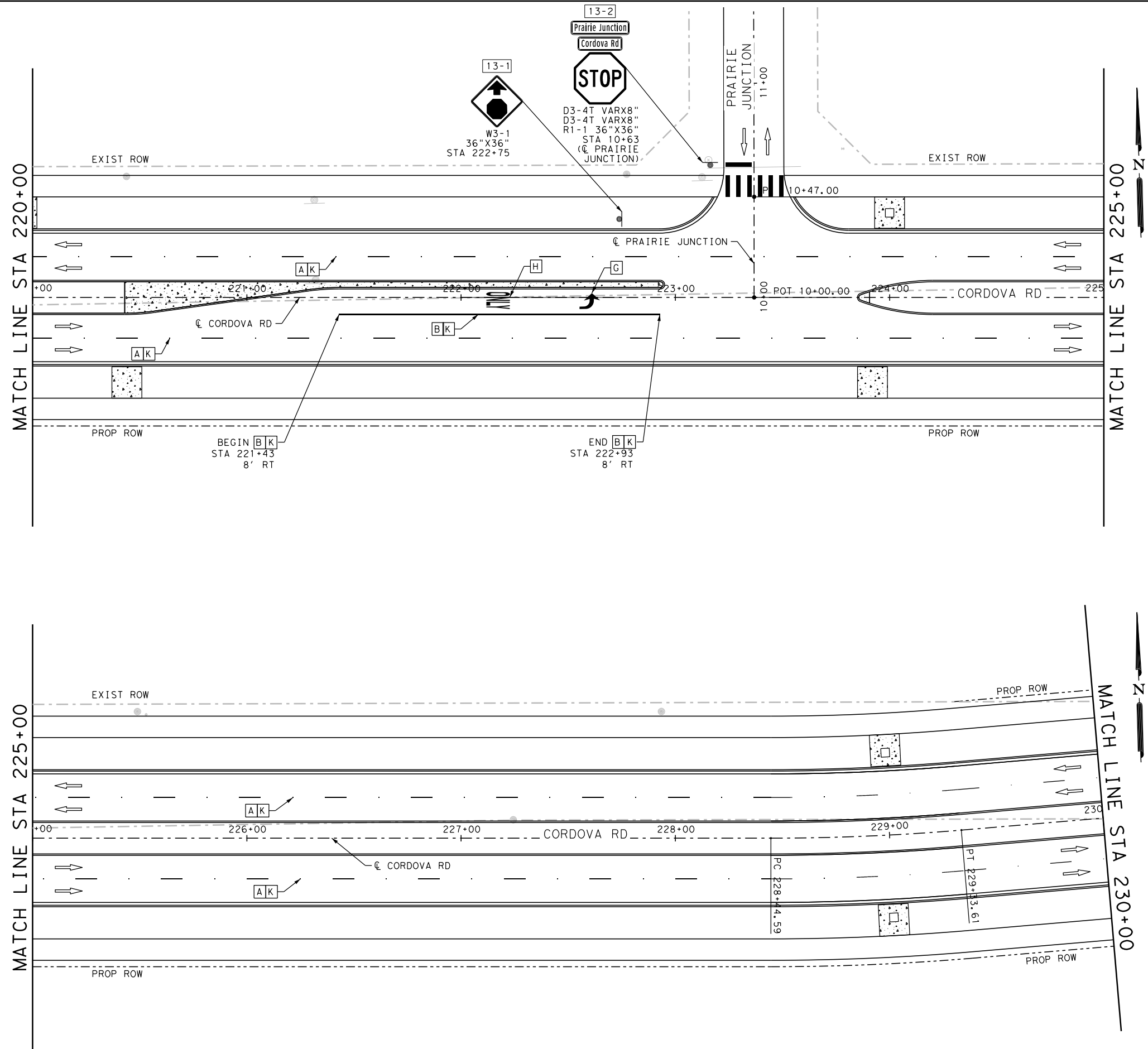
MATCH LINE STA 220+00

MATCH LINE STA 215+00

MATCH LINE STA 1009+30 SEE SHEET 410

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Traffic\1277500_SPM_13.dgn



LEGEND

A	6" BRK WHITE STRIPE
B	8" SOLID WHITE LINE
C	8" DBL SOLID YELLOW LINE
D	24" SOLID WHITE LINE
E	24" SOLID YELLOW LINE
F	12" SOLID WHITE LINE
G	ARROW
H	WORD
I	REFL PAV MRKR TY I-C
J	REFL PAV MRKR TY II-A-A
K	REFL PAV MRKR TY II-C-R
L	MEDIAN NOSE
	SIGN
	TRAFFIC FLOW ARROWS
	CONC RIPRAP / DRIVEWAYS

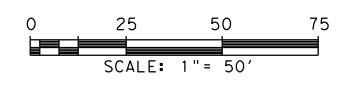
- NOTES**
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

Pape-Dawson Engineers
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS
 It's real.

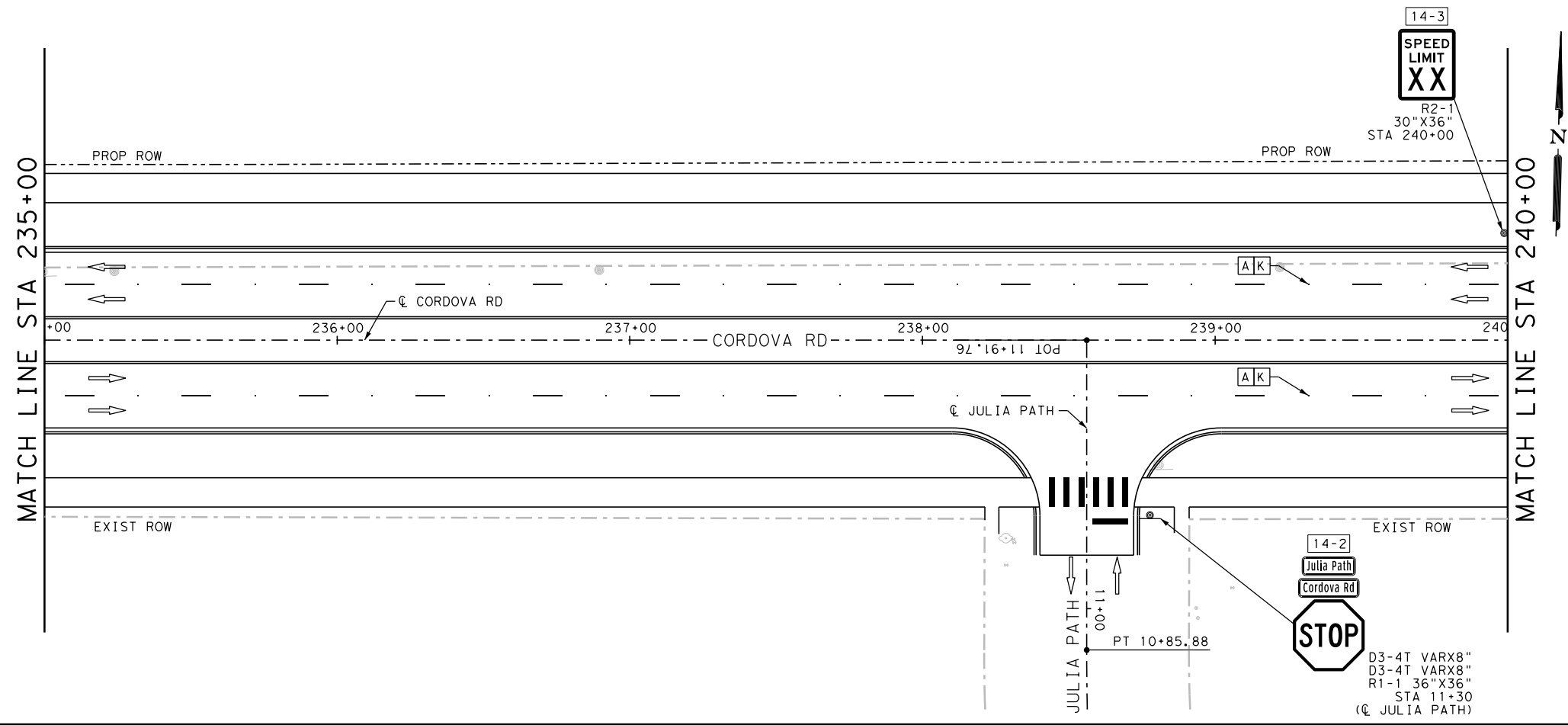
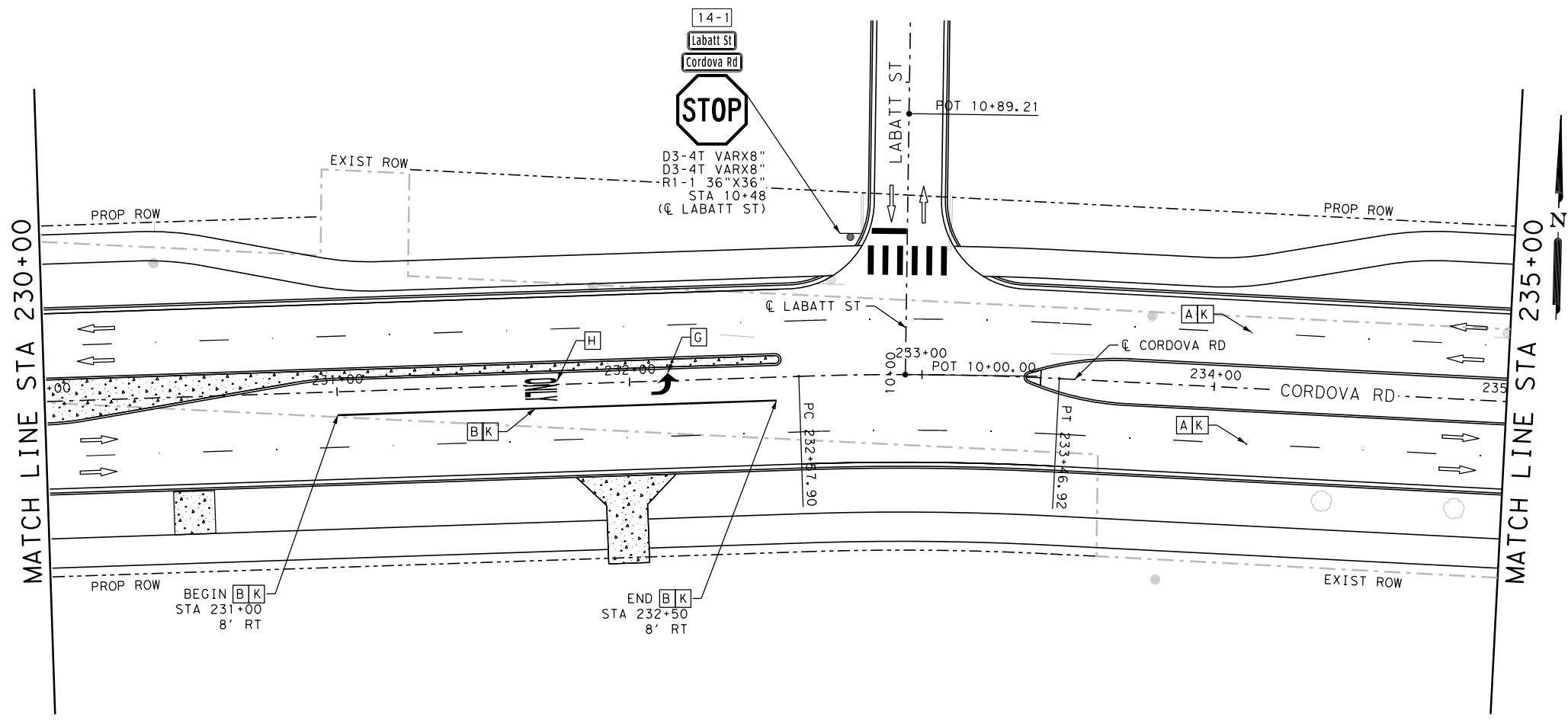
Texas Department of Transportation
 © 2023

CORDOVA RD
SIGNING AND PAVEMENT MARKING LAYOUT
 STA 220+00 TO STA 230+00
 SHEET 13 OF 26

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				398

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Traffic\1277500_SPM_14.dgn



LEGEND

A	6" BRK WHITE STRIPE
B	8" SOLID WHITE LINE
C	8" DBL SOLID YELLOW LINE
D	24" SOLID WHITE LINE
E	24" SOLID YELLOW LINE
F	12" SOLID WHITE LINE
G	ARROW
H	WORD
I	REFL PAV MRKR TY I-C
J	REFL PAV MRKR TY II-A-A
K	REFL PAV MRKR TY II-C-R
L	MEDIAN NOSE
	SIGN
	TRAFFIC FLOW ARROWS
	CONC RIPRAP / DRIVEWAYS

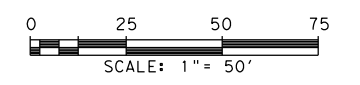
- NOTES**
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 - EXISTING FEATURES ARE SHOWN SCREENED BACK.
 - ALL REFLECTIVE PAVEMENT MARKINGS SHALL RECEIVE A TY I AND TY II APPLICATION.
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

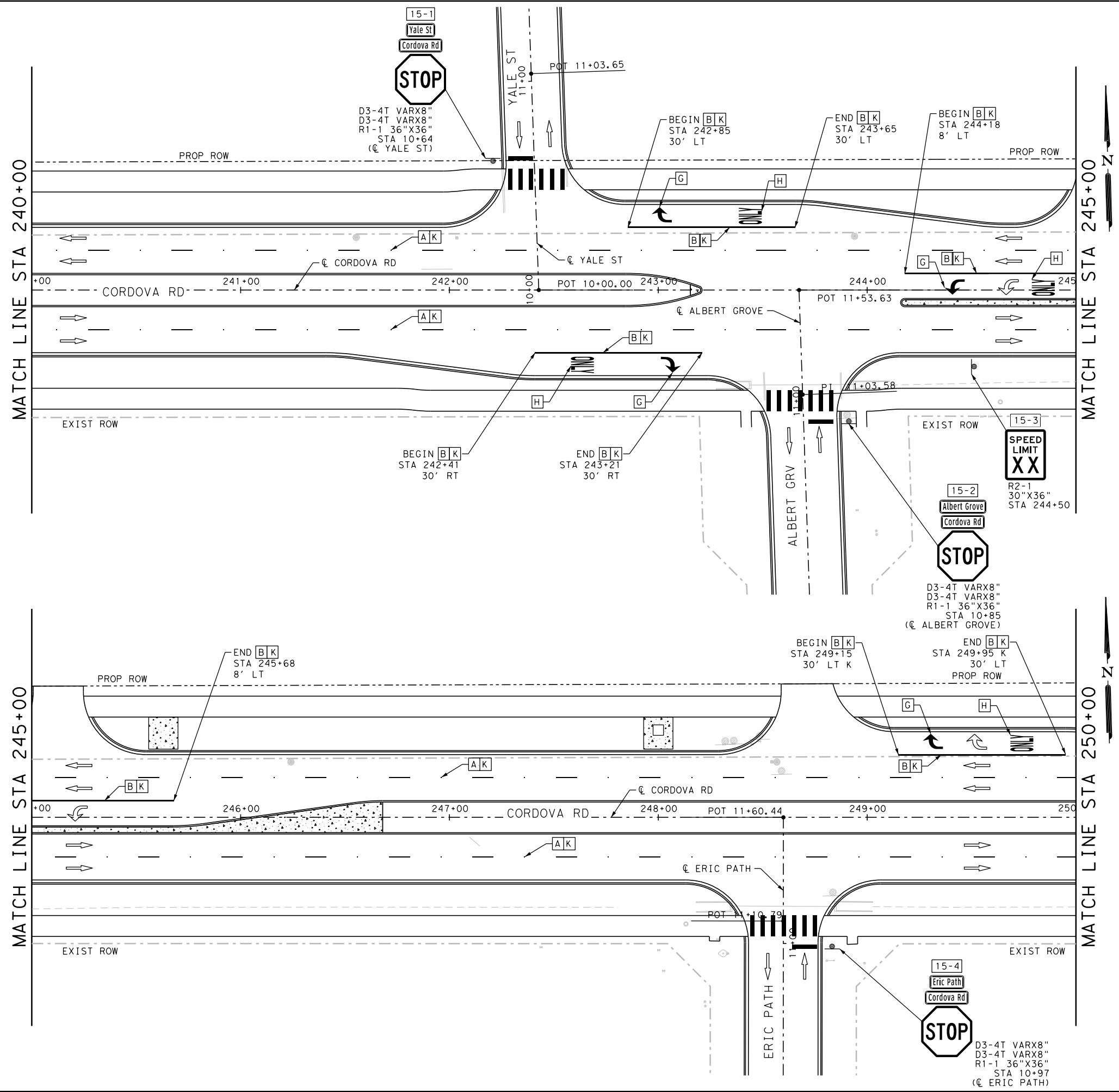
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
©2023			
CORDOVA RD SIGNING AND PAVEMENT MARKING LAYOUT STA 230+00 TO STA 240+00 SHEET 14 OF 26			
CHK DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
	6	TEXAS	
CHK DWG:	DIST.:	COUNTY:	CONT. NO.:
	SAT	GUADALUPE	0915
			SECT. NO.:
			46
			JOB NO.:
			052
			SHEET NO.:
			399

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Traffic\1277500_SPM_15.dgn



LEGEND

A	6" BRK WHITE STRIPE
B	8" SOLID WHITE LINE
C	8" DBL SOLID YELLOW LINE
D	24" SOLID WHITE LINE
E	24" SOLID YELLOW LINE
F	12" SOLID WHITE LINE
G	ARROW
H	WORD
I	REFL PAV MRKR TY I-C
J	REFL PAV MRKR TY II-A-A
K	REFL PAV MRKR TY II-C-R
L	MEDIAN NOSE
M	SIGN
N	TRAFFIC FLOW ARROWS
O	CONC RIPRAP / DRIVEWAYS

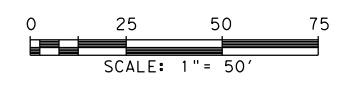
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

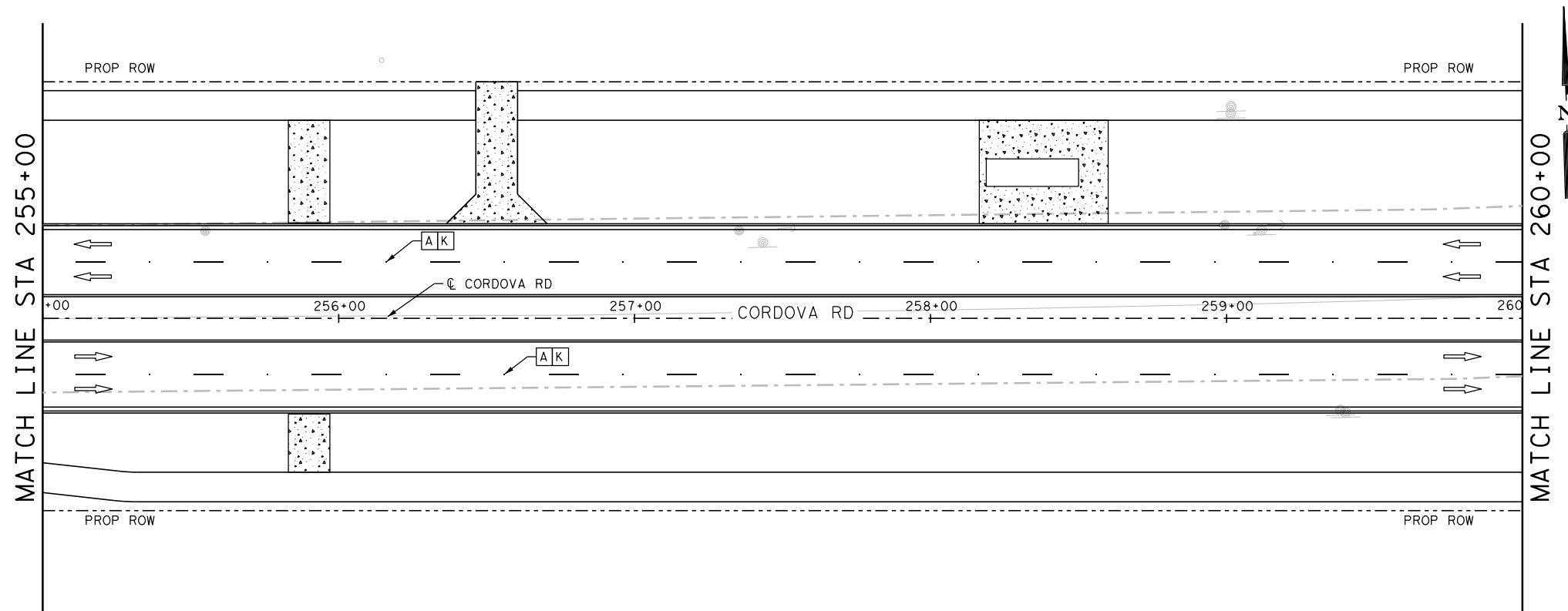
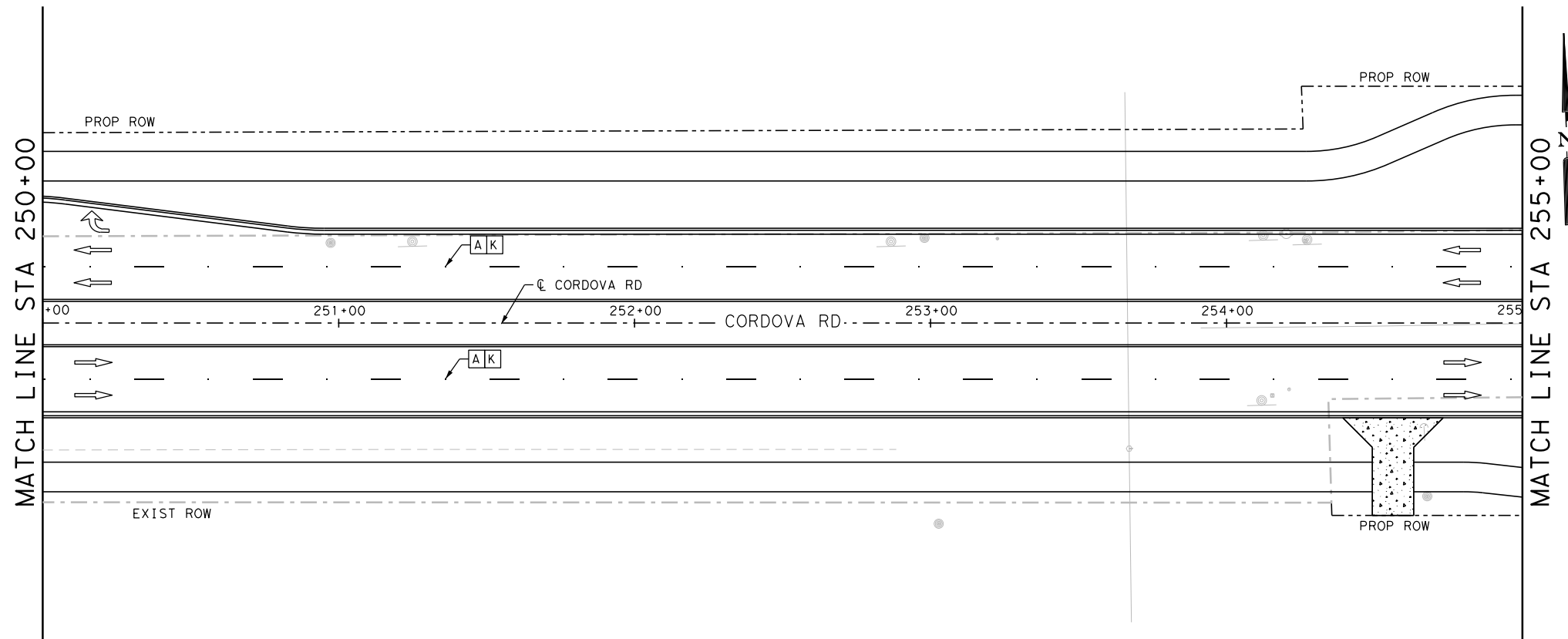
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
©2023			
CORDOVA RD SIGNING AND PAVEMENT MARKING LAYOUT STA 240+00 TO STA 250+00 SHEET 15 OF 26			
CHK DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
DWG:	DIST.:	COUNTY:	CONT. NO. SECT. NO. JOB NO. SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915 46 052 400

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Traffic\1277500_SPM_16.dgn



LEGEND

A	6" BRK WHITE STRIPE
B	8" SOLID WHITE LINE
C	8" DBL SOLID YELLOW LINE
D	24" SOLID WHITE LINE
E	24" SOLID YELLOW LINE
F	12" SOLID WHITE LINE
G	ARROW
H	WORD
I	REFL PAV MRKR TY I-C
J	REFL PAV MRKR TY II-A-A
K	REFL PAV MRKR TY II-C-R
L	MEDIAN NOSE
	SIGN
	TRAFFIC FLOW ARROWS
	CONC RIPRAP / DRIVEWAYS

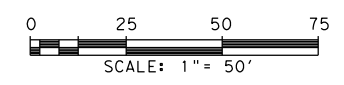
- NOTES**
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

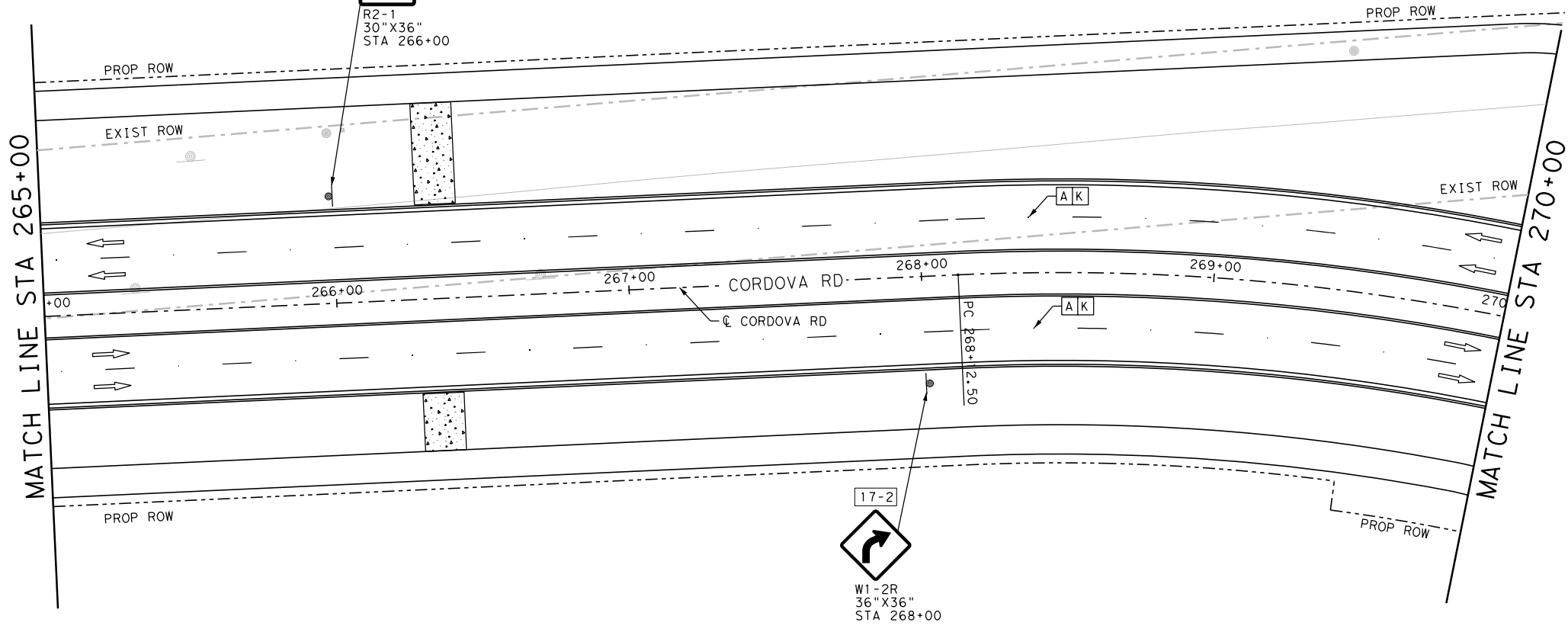
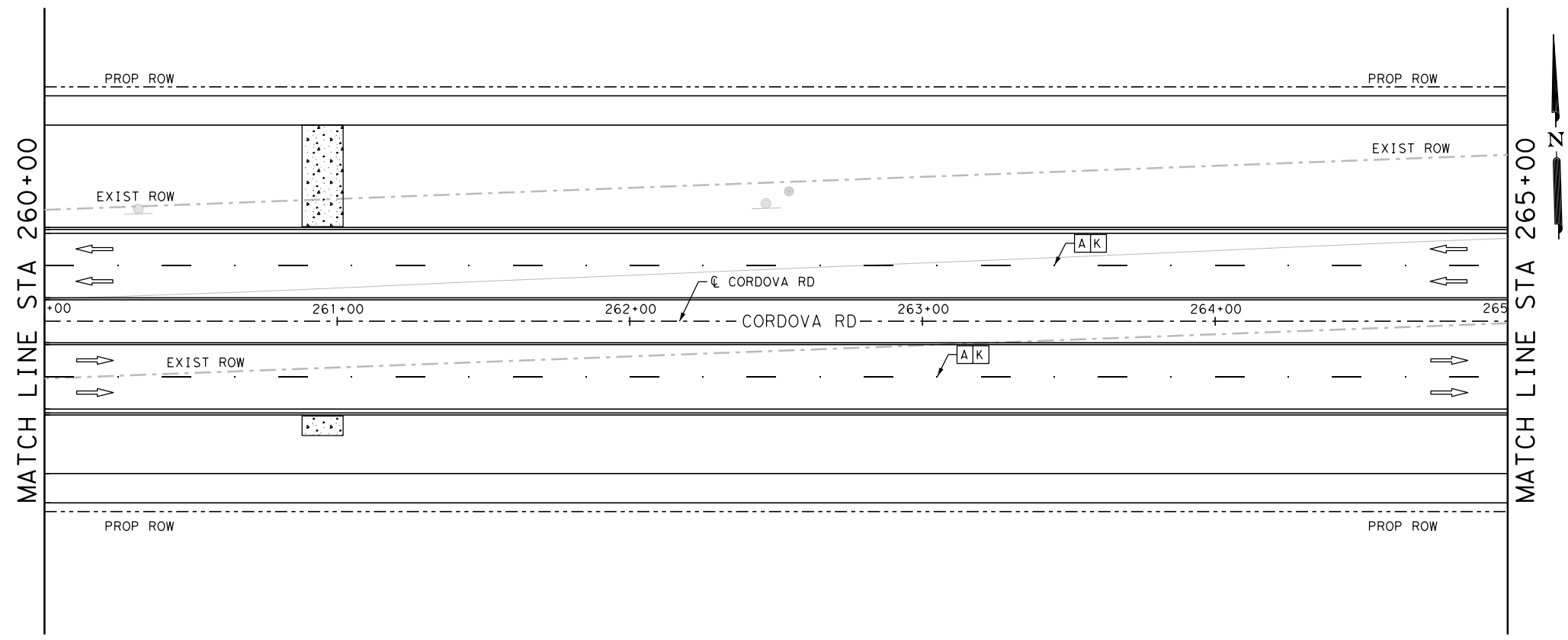
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY			
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800						
©2023						
CORDOVA RD SIGNING AND PAVEMENT MARKING LAYOUT STA 250+00 TO STA 260+00 SHEET 16 OF 26						
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	401

Plotted on: 11/17/2023

Design Filename: P:\127\75\00\Design\Civil\Traffic\1277500_SPM_17.dgn



LEGEND

A	6" BRK WHITE STRIPE
B	8" SOLID WHITE LINE
C	8" DBL SOLID YELLOW LINE
D	24" SOLID WHITE LINE
E	24" SOLID YELLOW LINE
F	12" SOLID WHITE LINE
G	ARROW
H	WORD
I	REFL PAV MRKR TY I-C
J	REFL PAV MRKR TY II-A-A
K	REFL PAV MRKR TY II-C-R
L	MEDIAN NOSE
	SIGN
	TRAFFIC FLOW ARROWS
	CONC RIPRAP / DRIVEWAYS

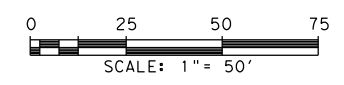
- NOTES**
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

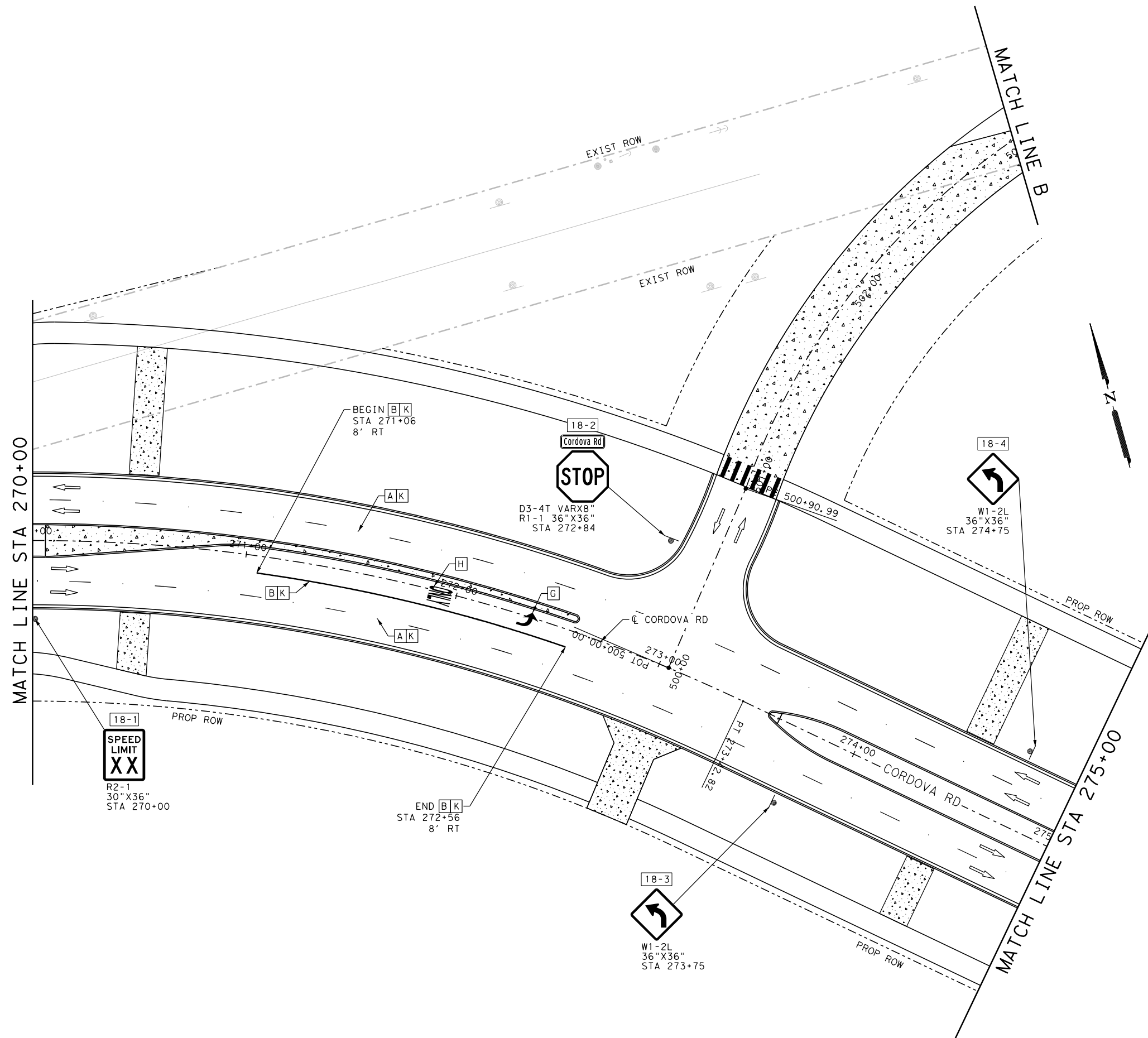
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY			
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800						
©2023						
CORDOVA RD SIGNING AND PAVEMENT MARKING LAYOUT STA 260+00 TO STA 270+00 SHEET 17 OF 26						
DON:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	402

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Traffic\1277500-SPM_18.dgn



LEGEND

A	6" BRK WHITE STRIPE
B	8" SOLID WHITE LINE
C	8" DBL SOLID YELLOW LINE
D	24" SOLID WHITE LINE
E	24" SOLID YELLOW LINE
F	12" SOLID WHITE LINE
G	ARROW
H	WORD
I	REFL PAV MRKR TY I-C
J	REFL PAV MRKR TY II-A-A
K	REFL PAV MRKR TY II-C-R
L	MEDIAN NOSE
▲	SIGN
→	TRAFFIC FLOW ARROWS
▨	CONC RIPRAP / DRIVEWAYS

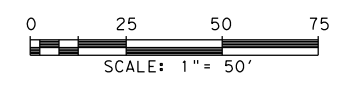
- NOTES**
- FOR ADDITIONAL DETAILS SEE TxDOT TYPICAL STANDARD SHEETS.
 - EXISTING FEATURES ARE SHOWN SCREENED BACK.
 - ALL REFLECTIVE PAVEMENT MARKINGS SHALL RECEIVE A TY I AND TY II APPLICATION.
 - ALL DIMENSIONS ARE TO FACE OF CURB AND/OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

Pape-Dawson Engineers
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS
 It's real.

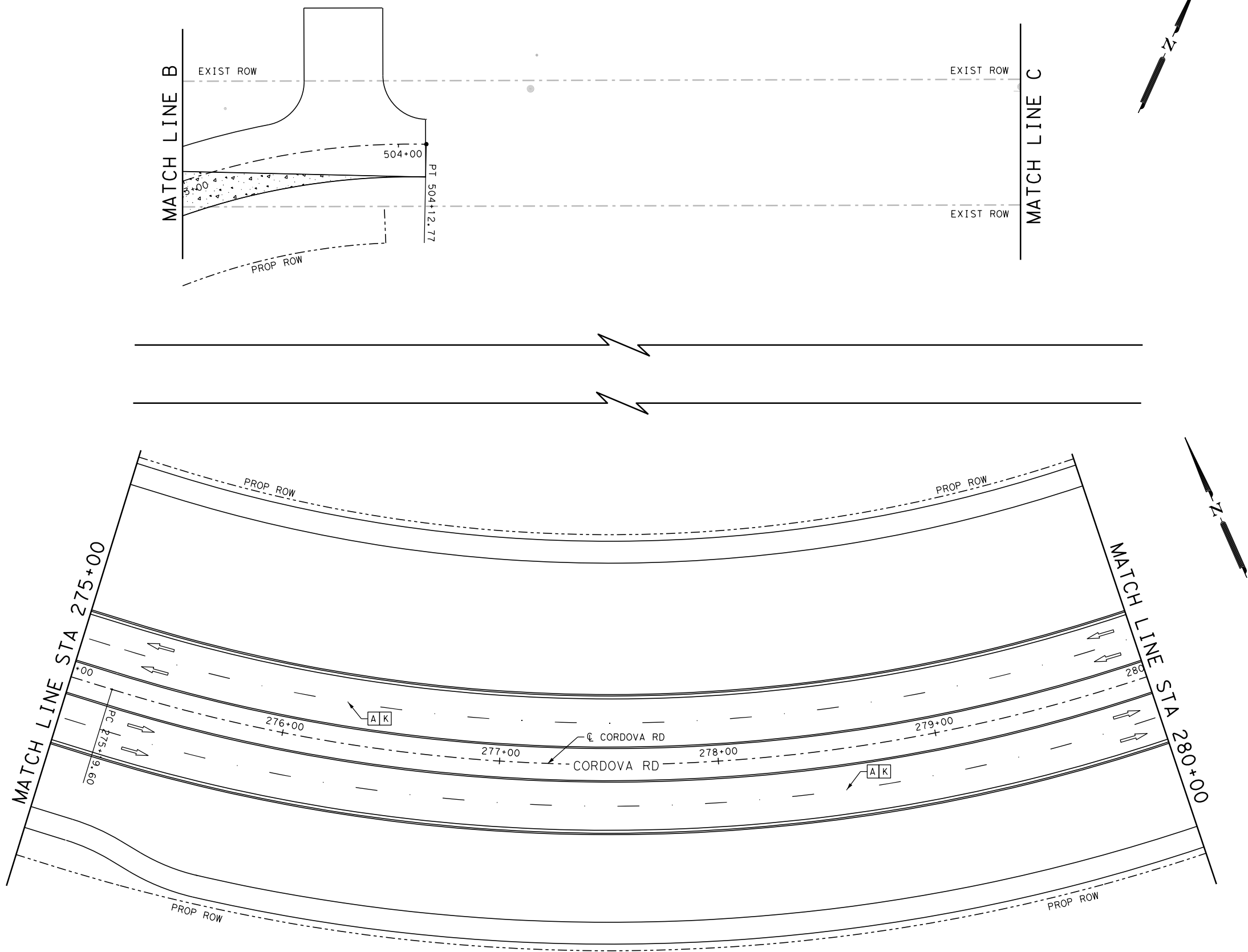
Texas Department of Transportation
 © 2023

CORDOVA RD
SIGNING AND PAVEMENT MARKING LAYOUT
 STA 270+00 TO STA 275+00
 SHEET 18 OF 26

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				403

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Traffic\1277500_SPM_19.dgn



LEGEND

A	6" BRK WHITE STRIPE
B	8" SOLID WHITE LINE
C	8" DBL SOLID YELLOW LINE
D	24" SOLID WHITE LINE
E	24" SOLID YELLOW LINE
F	12" SOLID WHITE LINE
G	ARROW
H	WORD
I	REFL PAV MRKR TY I-C
J	REFL PAV MRKR TY II-A-A
K	REFL PAV MRKR TY II-C-R
L	MEDIAN NOSE
▲	SIGN
←	TRAFFIC FLOW ARROWS
▨	CONC RIPRAP / DRIVEWAYS

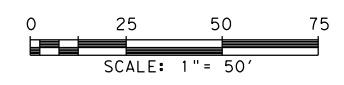
- NOTES**
- FOR ADDITIONAL DETAILS SEE TxDOT TYPICAL STANDARD SHEETS.
 - EXISTING FEATURES ARE SHOWN SCREENED BACK.
 - ALL REFLECTIVE PAVEMENT MARKINGS SHALL RECEIVE A TY I AND TY II APPLICATION.
 - ALL DIMENSIONS ARE TO FACE OF CURB AND/OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

Pape-Dawson Engineers

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS
 It's real.

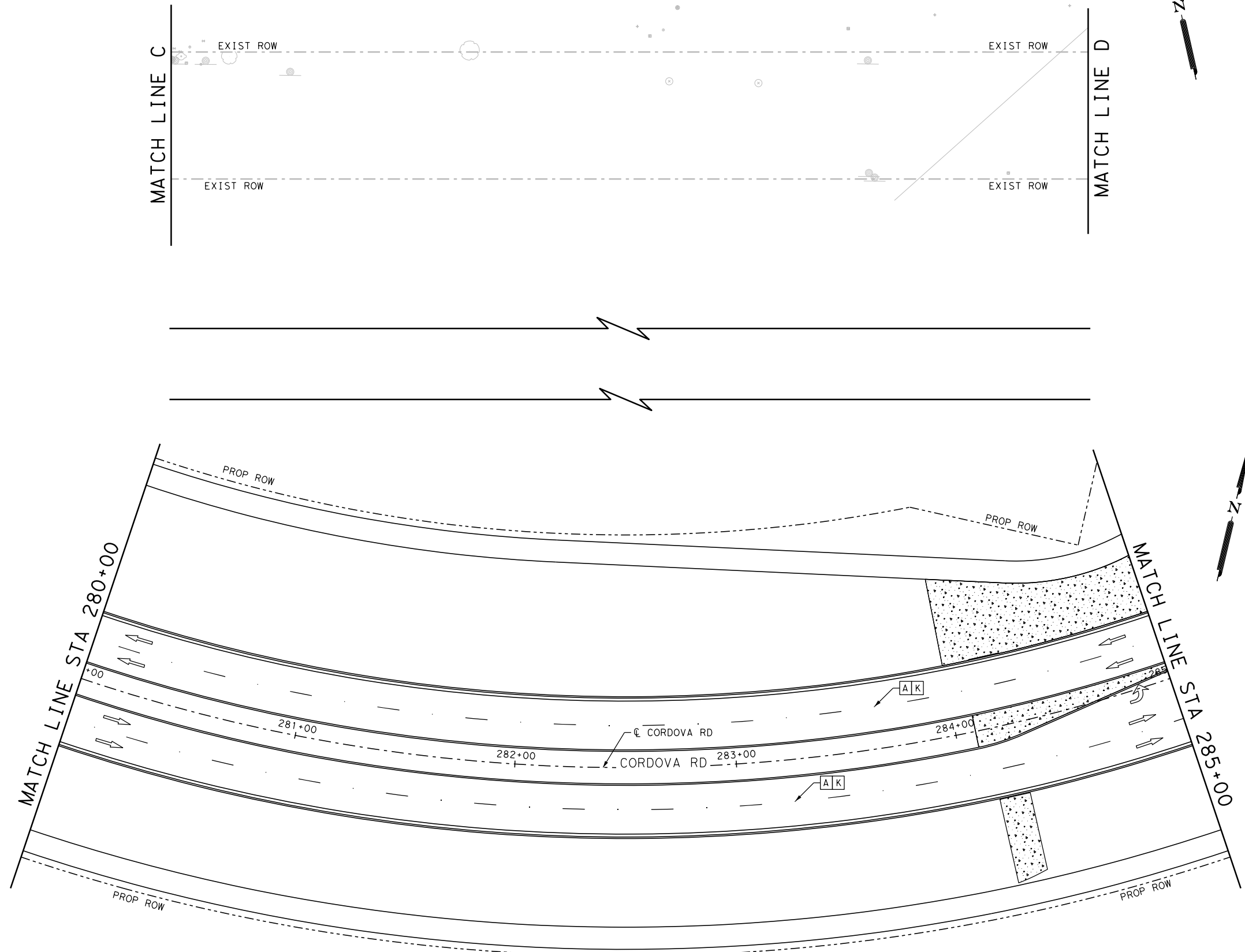
Texas Department of Transportation
 © 2023

CORDOVA RD
SIGNING AND PAVEMENT MARKING LAYOUT
 STA 275+00 TO STA 280+00
 SHEET 19 OF 26

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				404

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Traffic\1277500_SPM_20.dgn



LEGEND

- A 6" BRK WHITE STRIPE
- B 8" SOLID WHITE LINE
- C 8" DBL SOLID YELLOW LINE
- D 24" SOLID WHITE LINE
- E 24" SOLID YELLOW LINE
- F 12" SOLID WHITE LINE
- G ARROW
- H WORD
- I REFL PAV MRKR TY I-C
- J REFL PAV MRKR TY II-A-A
- K REFL PAV MRKR TY II-C-R
- L MEDIAN NOSE
- ARROW SIGN
- ← TRAFFIC FLOW ARROWS
- CONC RIPRAP / DRIVEWAYS

NOTES

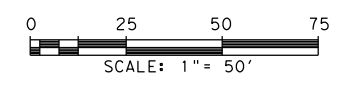
1. FOR ADDITIONAL DETAILS SEE TxDOT TYPICAL STANDARD SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. ALL REFLECTIVE PAVEMENT MARKINGS SHALL RECEIVE A TY I AND TY II APPLICATION.
4. ALL DIMENSIONS ARE TO FACE OF CURB AND/OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



CORDOVA RD
SIGNING AND PAVEMENT MARKING LAYOUT

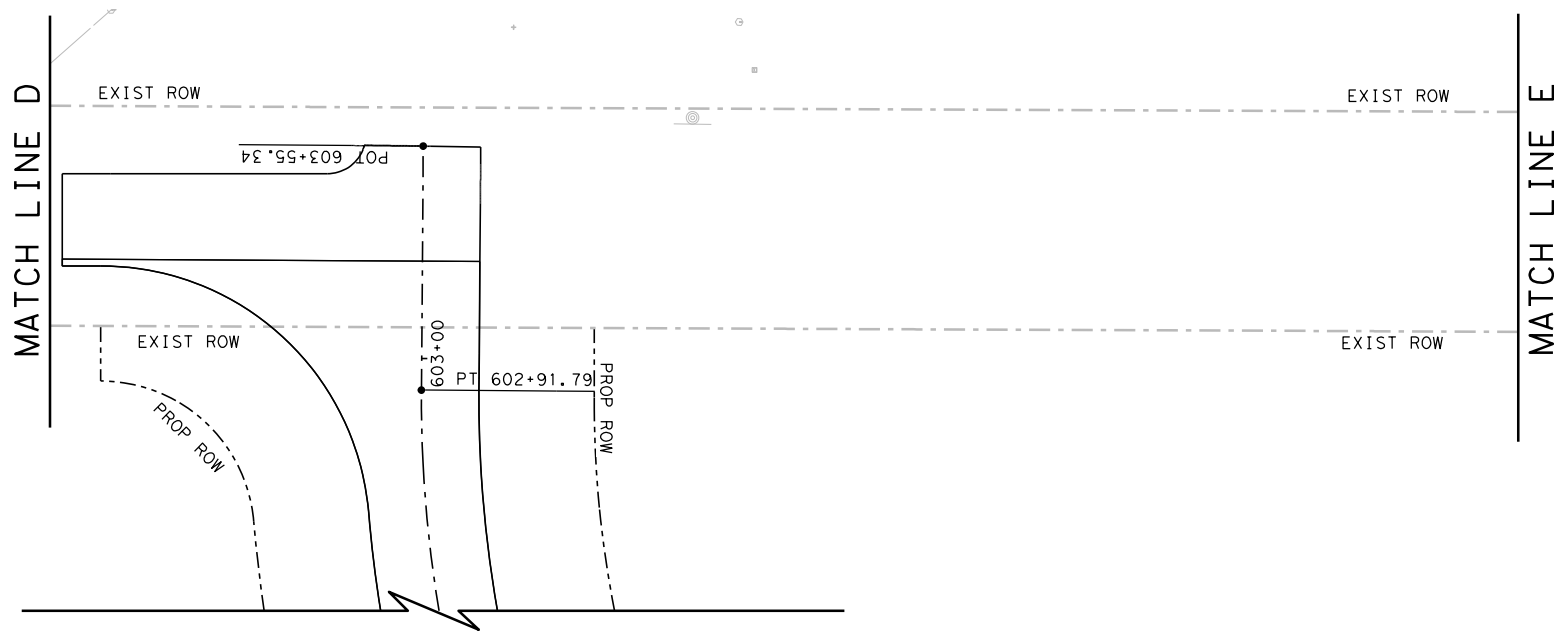
STA 280+00 TO STA 285+00

SHEET 20 OF 26

CHK DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
	6	TEXAS		CORDOVA
CHK DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
	SAT	GUADALUPE	0915	46
CHK DWG:				JOB NO.:
				052
				SHEET NO.:
				405

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Traffic\1277500_SPM_21.dgn



LEGEND

A	6" BRK WHITE STRIPE
B	8" SOLID WHITE LINE
C	8" DBL SOLID YELLOW LINE
D	24" SOLID WHITE LINE
E	24" SOLID YELLOW LINE
F	12" SOLID WHITE LINE
G	ARROW
H	WORD
I	REFL PAV MRKR TY I-C
J	REFL PAV MRKR TY II-A-A
K	REFL PAV MRKR TY II-C-R
L	MEDIAN NOSE
•	SIGN
←	TRAFFIC FLOW ARROWS
▨	CONC RIPRAP / DRIVEWAYS

NOTES

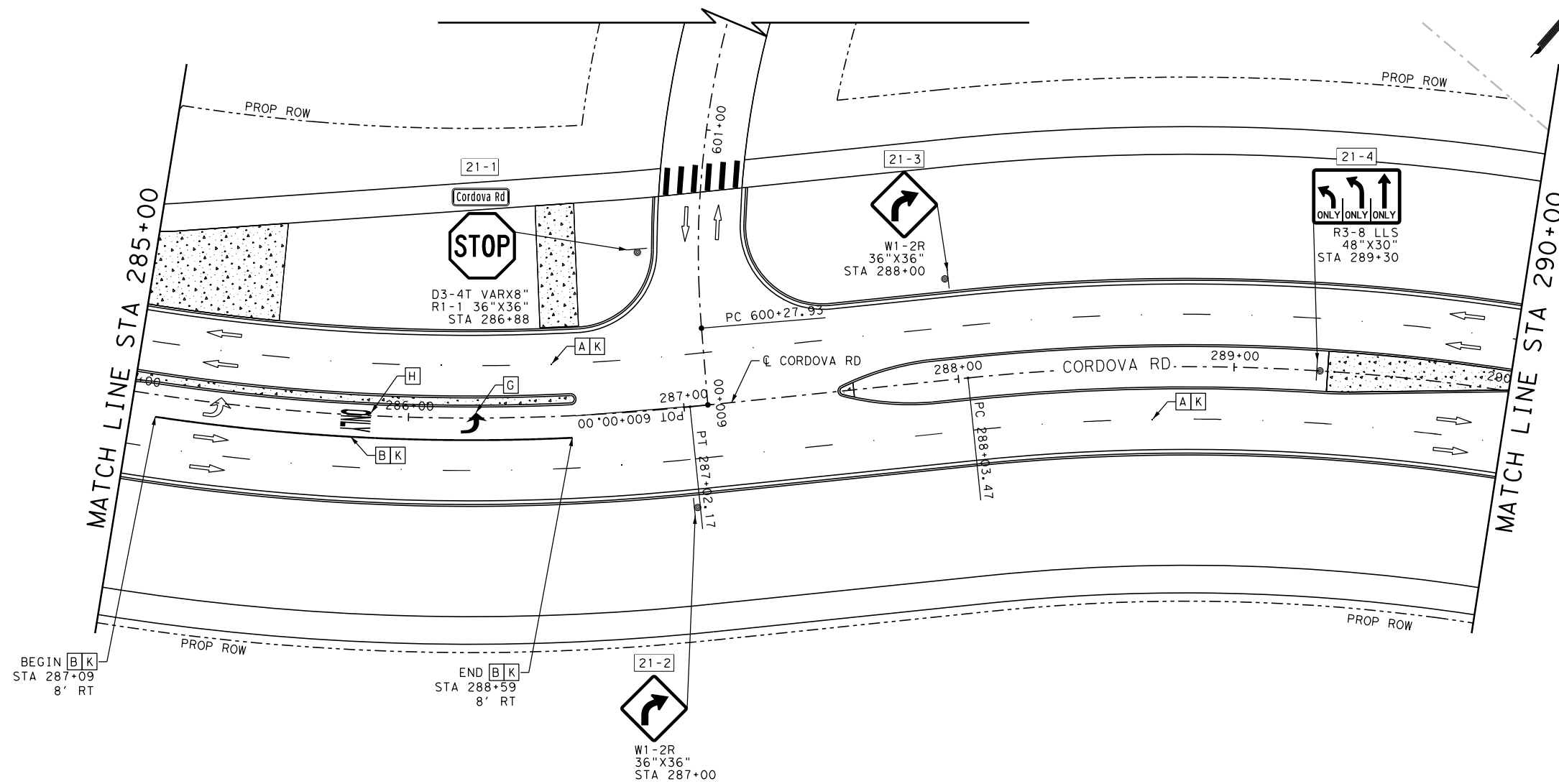
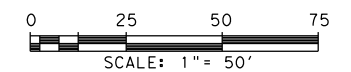
- FOR ADDITIONAL DETAILS SEE TxDOT TYPICAL STANDARD SHEETS.
- EXISTING FEATURES ARE SHOWN SCREENED BACK.
- ALL REFLECTIVE PAVEMENT MARKINGS SHALL RECEIVE A TY I AND TY II APPLICATION.
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY			
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800						
©2023						
CORDOVA RD SIGNING AND PAVEMENT MARKING LAYOUT STA 285+00 TO STA 290+00 SHEET 21 OF 26						
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	406

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Traffic\1277500-SPM_22.dgn

LEGEND

- A 6" BRK WHITE STRIPE
- B 8" SOLID WHITE LINE
- C 8" DBL SOLID YELLOW LINE
- D 24" SOLID WHITE LINE
- E 24" SOLID YELLOW LINE
- F 12" SOLID WHITE LINE
- G ARROW
- H WORD
- I REFL PAV MRKR TY I-C
- J REFL PAV MRKR TY II-A-A
- K REFL PAV MRKR TY II-C-R
- L MEDIAN NOSE
- SIGN
- TRAFFIC FLOW ARROWS
- CONC RIPRAP / DRIVEWAYS

NOTES

1. FOR ADDITIONAL DETAILS SEE TxDOT TYPICAL STANDARD SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. ALL REFLECTIVE PAVEMENT MARKINGS SHALL RECEIVE A TY I AND TY II APPLICATION.
4. ALL DIMENSIONS ARE TO FACE OF CURB AND/OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.

DESIGN

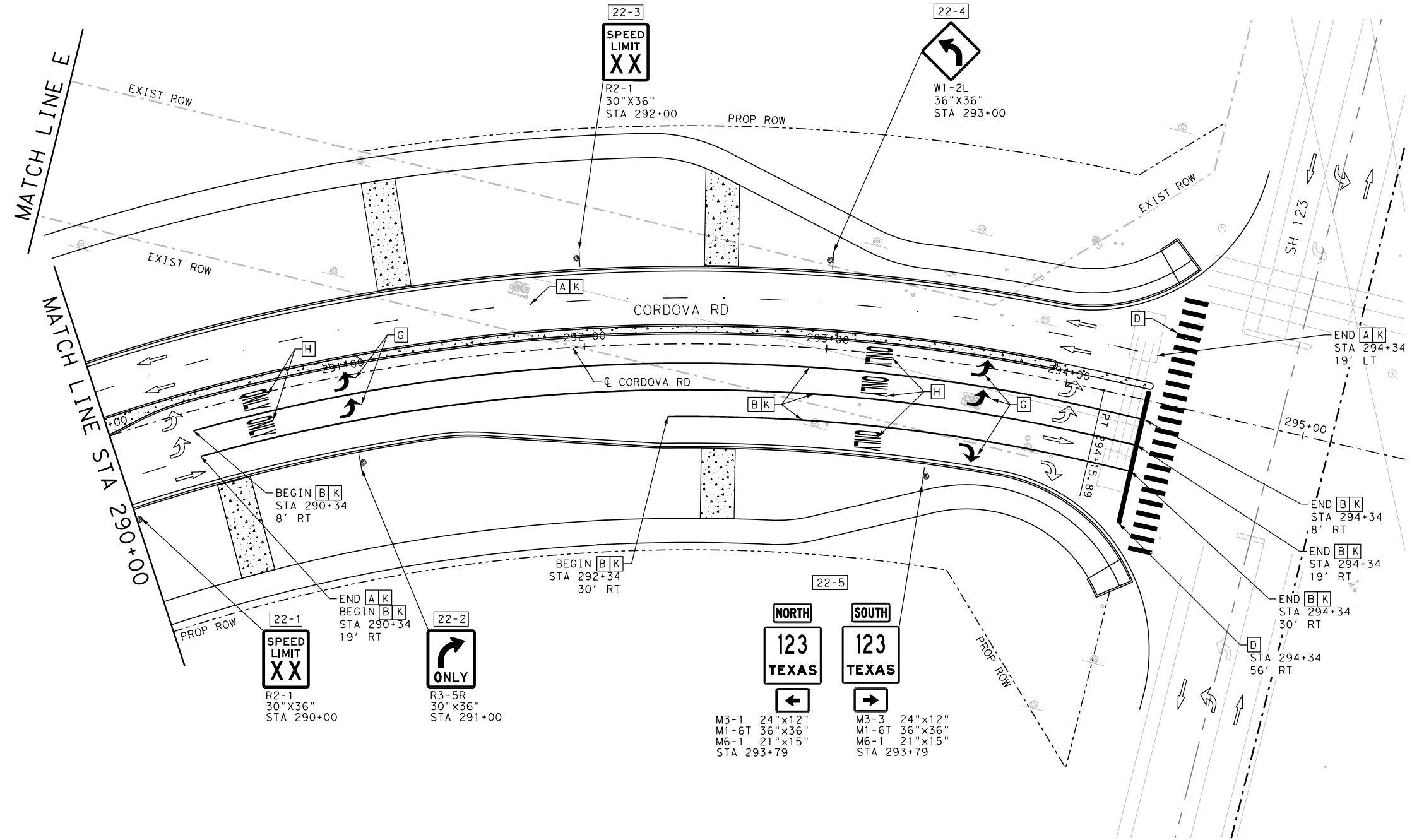
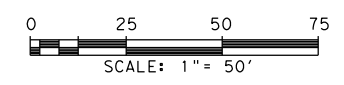
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS

It's real.

THE STATE OF TEXAS
GUADALUPE COUNTY

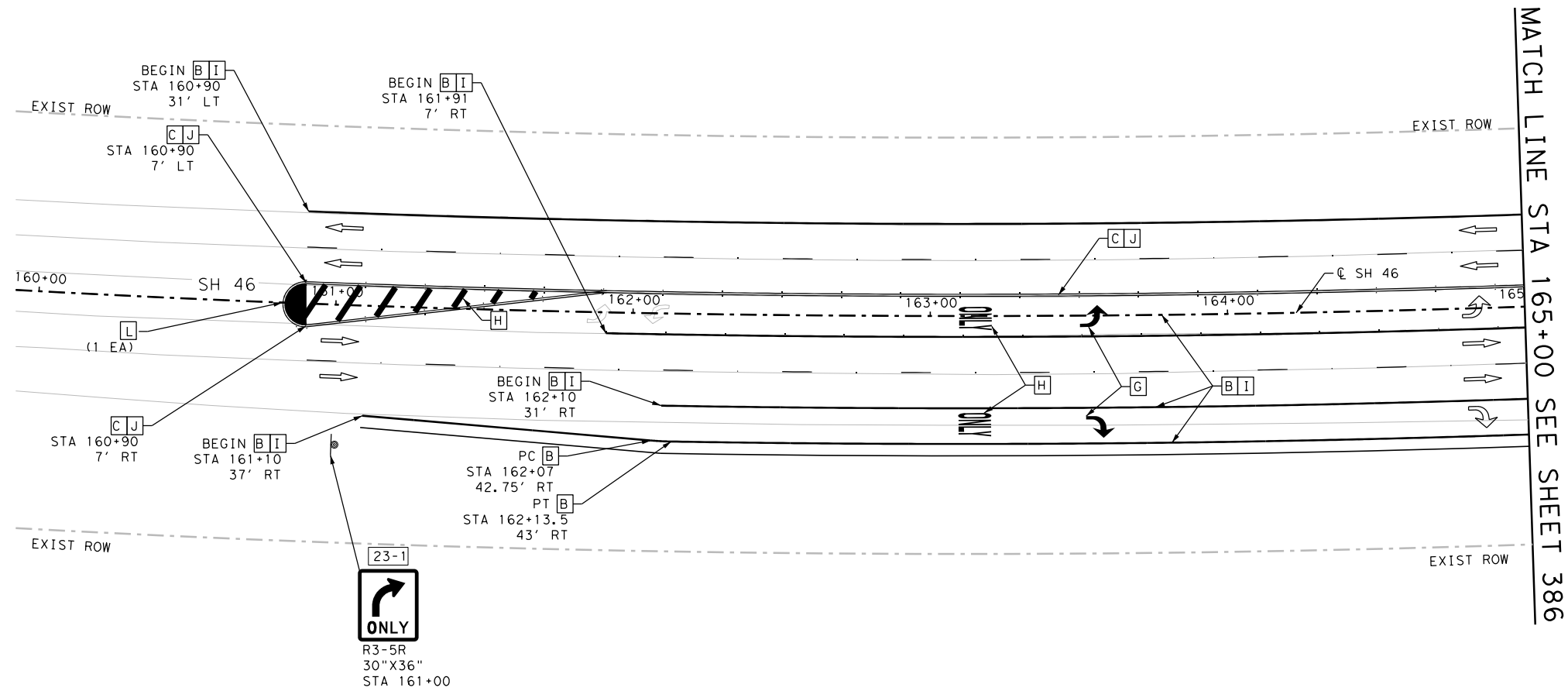
Texas Department of Transportation
© 2023

CORDOVA RD
SIGNING AND PAVEMENT MARKING LAYOUT
 STA 290+00 TO END OF PROJECT
 SHEET 22 OF 26

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	407

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Traffic\1277500_SPM_SH46_01.dgn



LEGEND

A	6" BRK WHITE STRIPE
B	8" SOLID WHITE LINE
C	8" DBL SOLID YELLOW LINE
D	24" SOLID WHITE LINE
E	24" SOLID YELLOW LINE
F	12" SOLID WHITE LINE
G	ARROW
H	WORD
I	REFL PAV MRKR TY I-C
J	REFL PAV MRKR TY II-A-A
K	REFL PAV MRKR TY II-C-R
L	MEDIAN NOSE
	SIGN
←	TRAFFIC FLOW ARROWS
▨	CONC RIPRAP / DRIVEWAYS

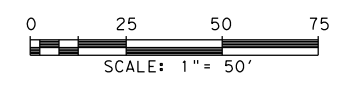
- NOTES**
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DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023

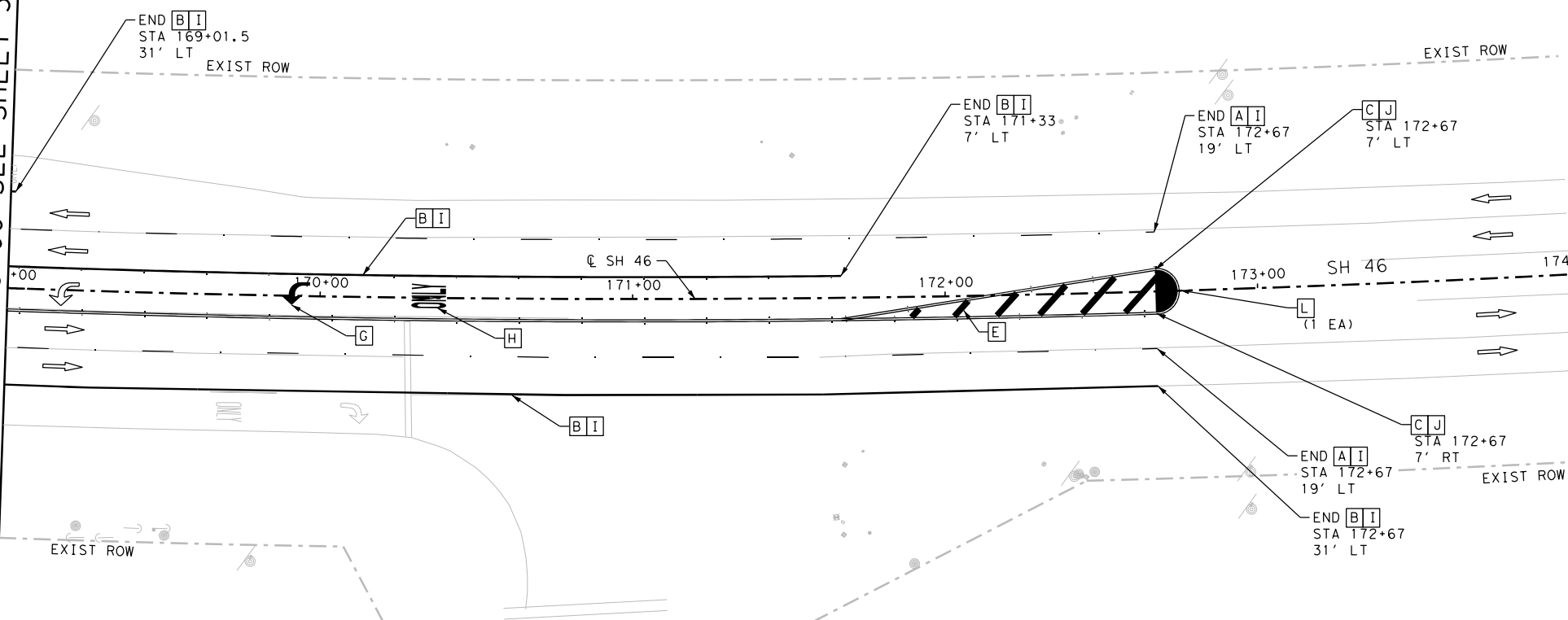


REV. NO.	DATE	DESCRIPTION	BY			
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 <small>TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</small>						
 It's real.						
 ©2023						
SH 46 SIGNING AND PAVEMENT MARKING LAYOUT						
SHEET 23 OF 26						
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	408

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Traffic\1277500_SPM_SH46_02.dgn

MATCH LINE STA 169+00 SEE SHEET 386



LEGEND

- [A] 6" BRK WHITE STRIPE
- [B] 8" SOLID WHITE LINE
- [C] 8" DBL SOLID YELLOW LINE
- [D] 24" SOLID WHITE LINE
- [E] 24" SOLID YELLOW LINE
- [F] 12" SOLID WHITE LINE
- [G] WORD
- [H] ARROW
- [I] REFL PAV MRKR TY I-C
- [J] REFL PAV MRKR TY II-A-A
- [K] REFL PAV MRKR TY II-C-R
- [L] MEDIAN NOSE
- SIGN
- ← TRAFFIC FLOW ARROWS
- ▨ CONC RIPRAP / DRIVEWAYS

NOTES

1. FOR ADDITIONAL DETAILS SEE TxDOT TYPICAL STANDARD SHEETS.
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4. ALL DIMENSIONS ARE TO FACE OF CURB AND/OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.

DESIGN

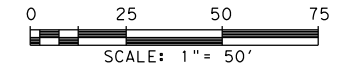
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



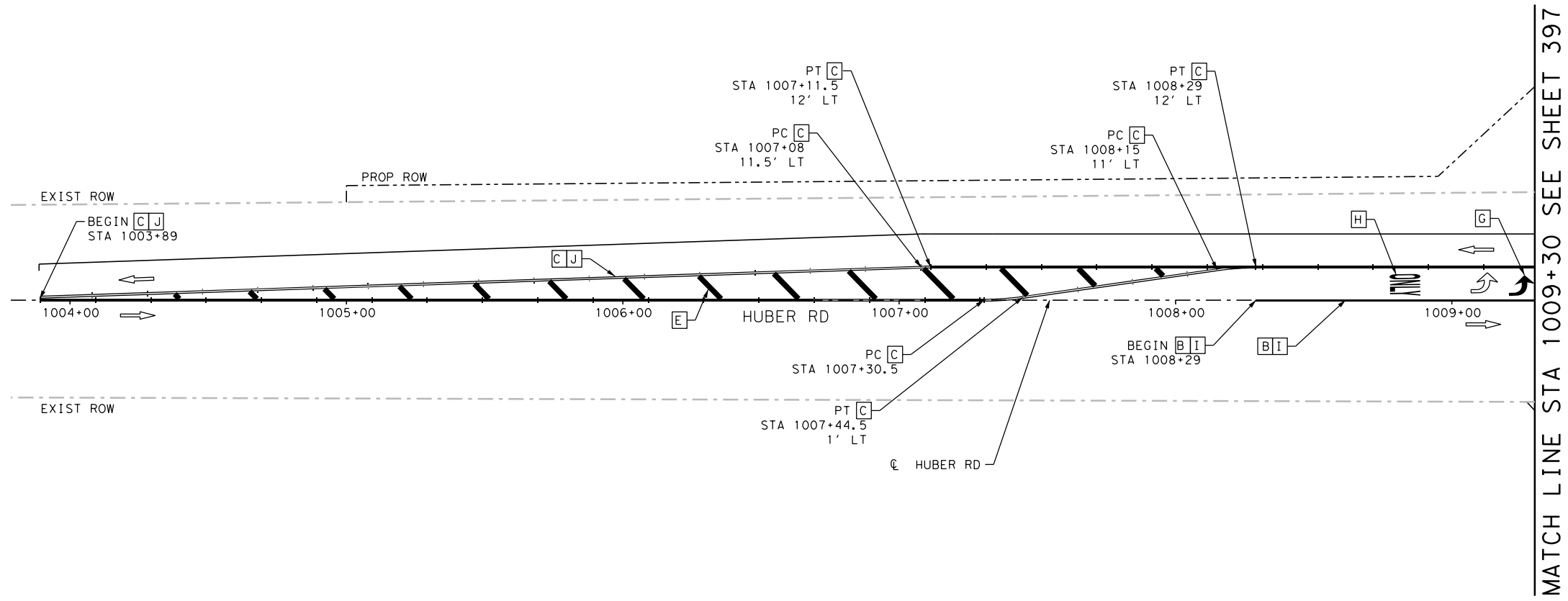
SH 46
SIGNING AND PAVEMENT MARKING LAYOUT

SHEET 24 OF 26

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	409

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Traffic\1277500_SPM_HuberRd01.dgn



LEGEND

- A 6" BRK WHITE STRIPE
- B 8" SOLID WHITE LINE
- C 8" DBL SOLID YELLOW LINE
- D 24" SOLID WHITE LINE
- E 24" SOLID YELLOW LINE
- F 12" SOLID WHITE LINE
- G ARROW
- H WORD
- I REFL PAV MRKR TY I-C
- J REFL PAV MRKR TY II-A-A
- K REFL PAV MRKR TY II-C-R
- L MEDIAN NOSE
- M SIGN
- N TRAFFIC FLOW ARROWS
- O CONC RIPRAP / DRIVEWAYS

NOTES

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DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

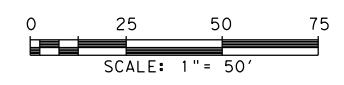
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



HUBER RD
SIGNING AND PAVEMENT MARKING LAYOUT

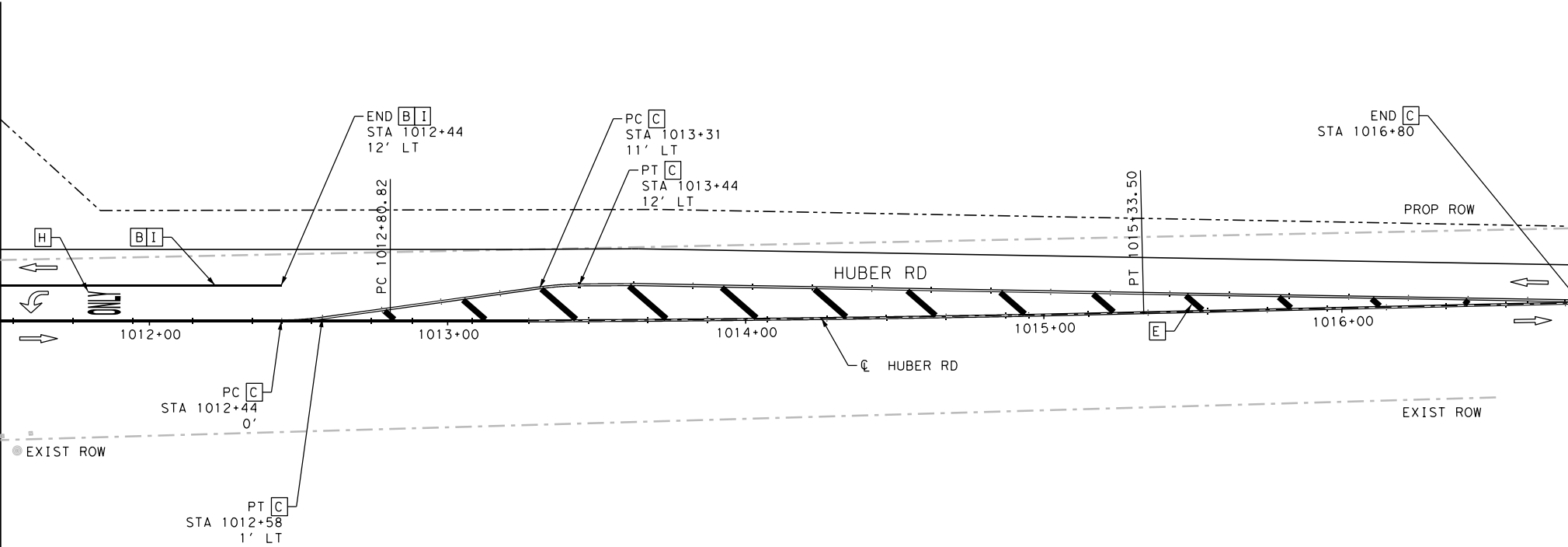
SHEET 25 OF 26

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
			JOB NO.:	SHEET NO.:
			052	410

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Traffic\1277500_SPM_HuberRd02.dgn

MATCH LINE STA 1011+50 SEE SHEET 397



LEGEND

A	6" BRK WHITE STRIPE
B	8" SOLID WHITE LINE
C	8" DBL SOLID YELLOW LINE
D	24" SOLID WHITE LINE
E	24" SOLID YELLOW LINE
F	12" SOLID WHITE LINE
G	ARROW
H	WORD
I	REFL PAV MRKR TY I-C
J	REFL PAV MRKR TY II-A-A
K	REFL PAV MRKR TY II-C-R
L	MEDIAN NOSE
▲	SIGN
←	TRAFFIC FLOW ARROWS
▨	CONC RIPRAP / DRIVEWAYS

- NOTES**
- FOR ADDITIONAL DETAILS SEE TxDOT TYPICAL STANDARD SHEETS.
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 - ALL REFLECTIVE PAVEMENT MARKINGS SHALL RECEIVE A TY I AND TY II APPLICATION.
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DESIGN

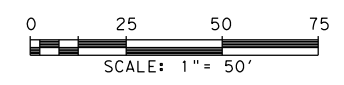
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

Pape-Dawson ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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HUBER RD
SIGNING AND PAVEMENT MARKING LAYOUT

SHEET 26 OF 26

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
			JOB NO.:	SHEET NO.:
			052	411

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REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS				DELINEATORS				D & OM DESCRIPTIVE CODES	
DEVICE	SIZE 1	SIZE 2	SIZE 3	SIZE 4	SINGLE		DOUBLE		
									INSTL 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 BRFL = 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			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.			POST TYPE	WC	YFLX, WFLX	WC	YFLX, WFLX	
				MOUNT TYPE	GND	GND, SRF	GND	GND, SRF	

OBJECT MARKERS								D & OM DESCRIPTIVE CODES	
DEVICE	Type 1 (OM-1)	Type 2 (OM-2)			Type 3 (OM-3)			Type 4 (OM-4)	INSTL 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 2 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
		OM-1	OM-2X	OM-2Y	OM-2Z	OM-3L	OM-3R	OM-3C	
SHEETING	Yellow-Type B _{FL} or C _{FL} Sheeting	Yellow - Type B or C Sheeting			Alternating acrylic black and retroreflective yellow - Type B _{FL} or C _{FL} Sheeting			Red -Type B _{FL} or C _{FL} Sheeting	
POST TYPE	TWT	WC	WC	WFLX	TWT			TWT	
MOUNT TYPE	WAS, WAP	GND	GND	GND, SRF	WAS, WAP			WAS, WAP	

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.		
DEVICE	GF1	GF2	CTB	 W1-8				 W1-6			
SHEETING	Yellow, White, Red			SIZE (W x L)	18" x 24" (Conventional)	24" x 30" (Conventional Oversize)	30" x 36" (Expressway)	36" x 48" (Freeway)	SIZE (W x L)	48" x 24" (Conventional)	60" x 30" (Expressway & Freeway)
NOTE	1. Barrier reflectors shall meet the requirements of DMS 8600. 2. Approved Barrier Reflectors are listed on the "Barrier Reflectors" Material Producer List at: www.txdot.gov.			MOUNTING HEIGHT	4'-0" or 7'-0"		7'-0" Only		MOUNTING HEIGHT	7'-0"	
				NOTE	1. CHEVRON (W1-8) signs and ONE DIRECTION LARGE ARROW (W1-6) Signs shall be installed per Sign Mounting Details (SMD) Standard Sheets and paid under Item 644 (Small Roadside Sign Assemblies). 2. When there is a need to increase conspicuity, the Texas version of the ONE DIRECTION LARGE ARROW sign (W1-9T) may be used instead of the ONE DIRECTION LARGE ARROW (W1-6).						

Texas Department of Transportation
 Traffic Safety Division Standard

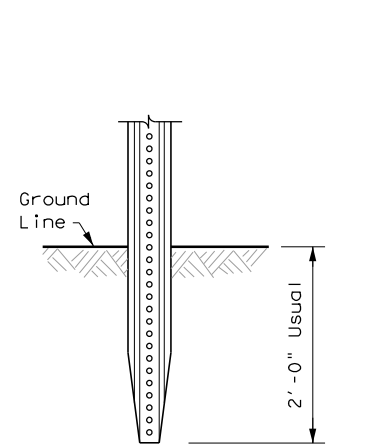
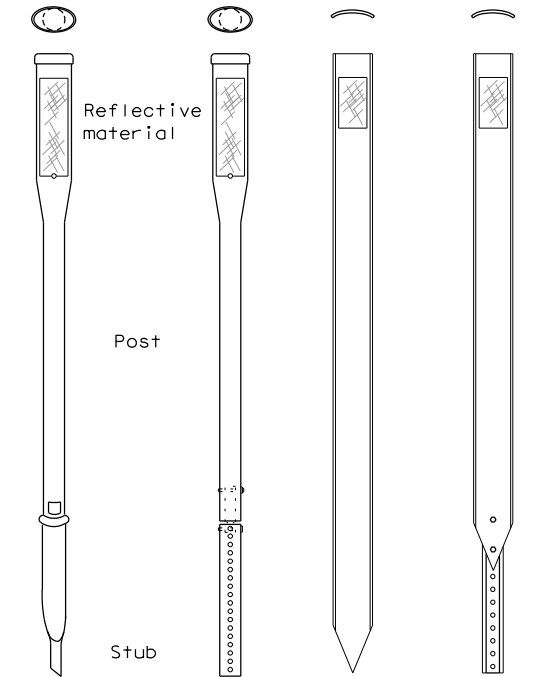
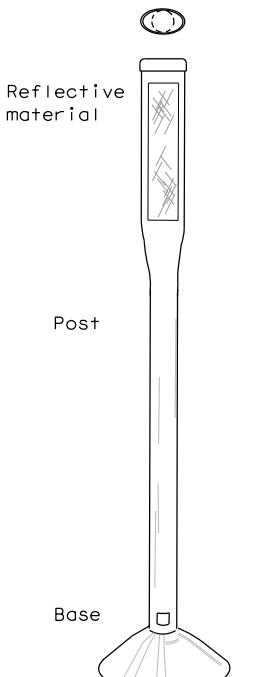
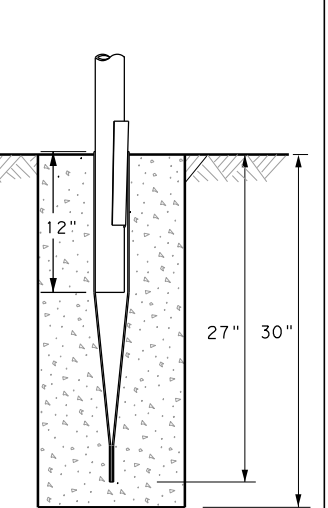
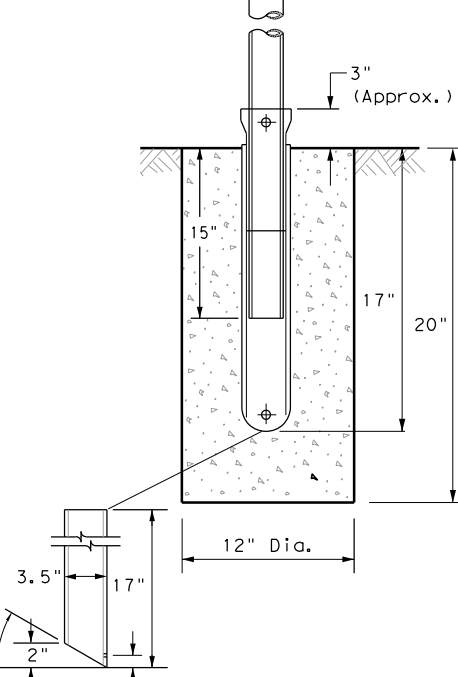
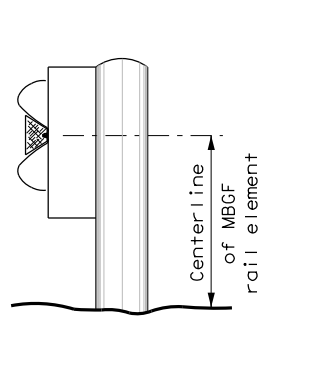
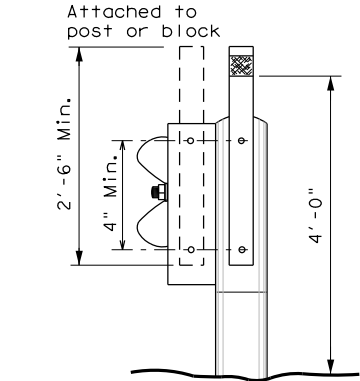
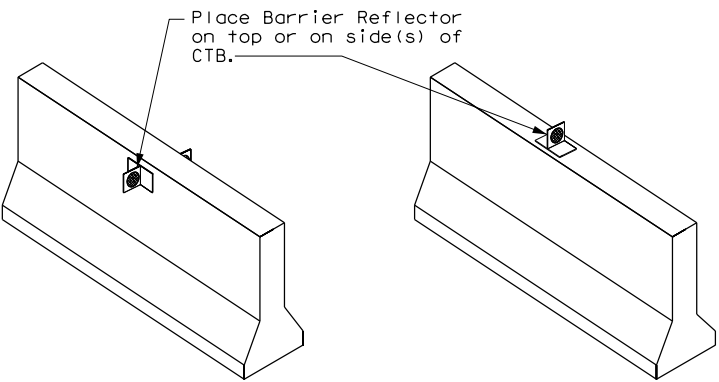
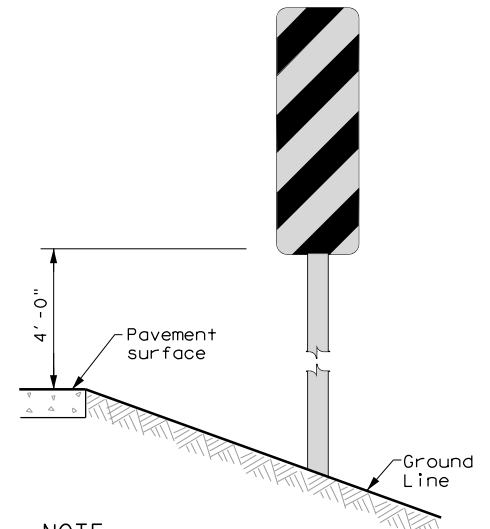
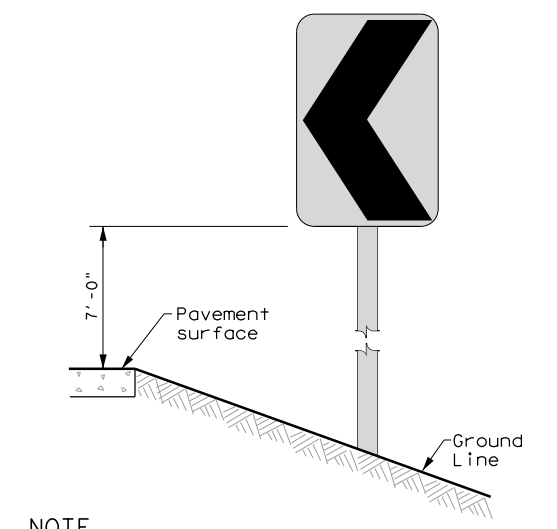
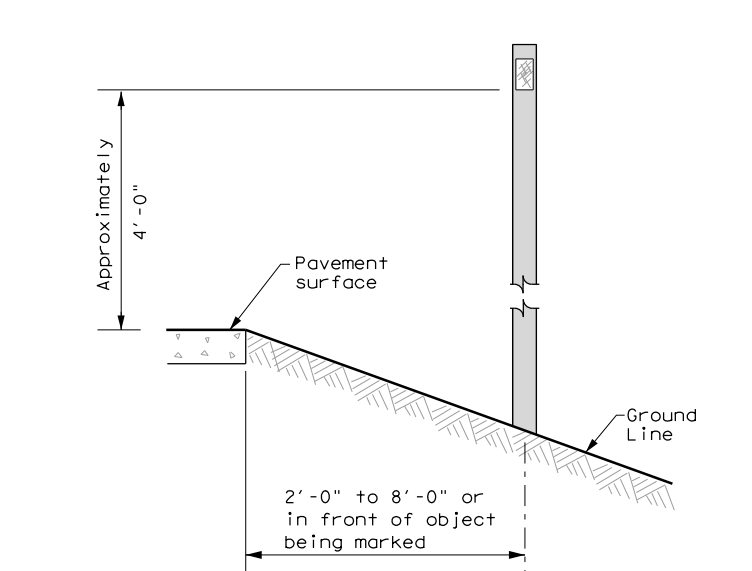
DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION
 D & OM(1)-20


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REVISIONS	0915	46	052	CORDOVA
10-09 3-15	DIST	COUNTY	SHEET NO.	
4-10 7-20	SAT	GUADALUPE	412	

20A

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POST TYPE AND SUPPORT FOUNDATION DETAILS				TYPE OF BARRIER MOUNTS		
WING CHANNEL (WC)	FLEXIBLE POSTS (YFLX, WFLX)		WEDGE ANCHOR SYSTEMS		GUARD FENCE ATTACHMENT	
GND	GND	SRF	WAS	WAP	GF 1	
						
	EMBEDDED	SURFACE MOUNT	STEEL	PLASTIC	CONCRETE TRAFFIC BARRIER (CTB)	
<p>NOTES</p> <ol style="list-style-type: none"> 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. 			<p>NOTE</p> <ol style="list-style-type: none"> 1. Install per manufacturer's recommendations. 			
<p>NOTES</p> <ol style="list-style-type: none"> 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. 					<p>GENERAL NOTES</p> <ol style="list-style-type: none"> 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		
						
<p>NOTE</p> <p>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)</p>		<p>NOTE</p> <p>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.</p>		<p>See general notes 1, 2 and 3.</p>		



Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER INSTALLATION

D & OM(2) - 20

FILE: dom2-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0915	46	052	CORDOVA
10-09 3-15	DIST	COUNTY	SHEET NO.	
4-10 7-20	SAT	GUADALUPE	413	

20B

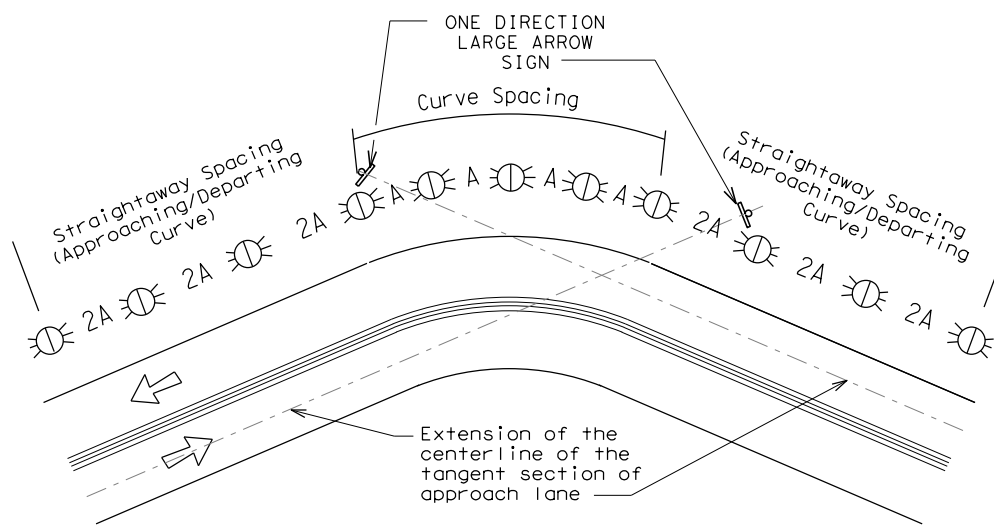
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MINIMUM WARNING DEVICES AT CURVES WITH ADVISORY SPEEDS

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

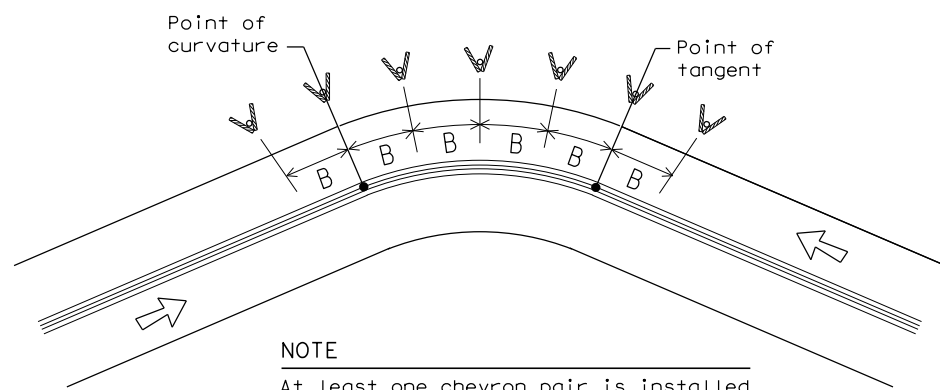
SUGGESTED SPACING FOR DELINEATORS ON HORIZONTAL CURVES



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

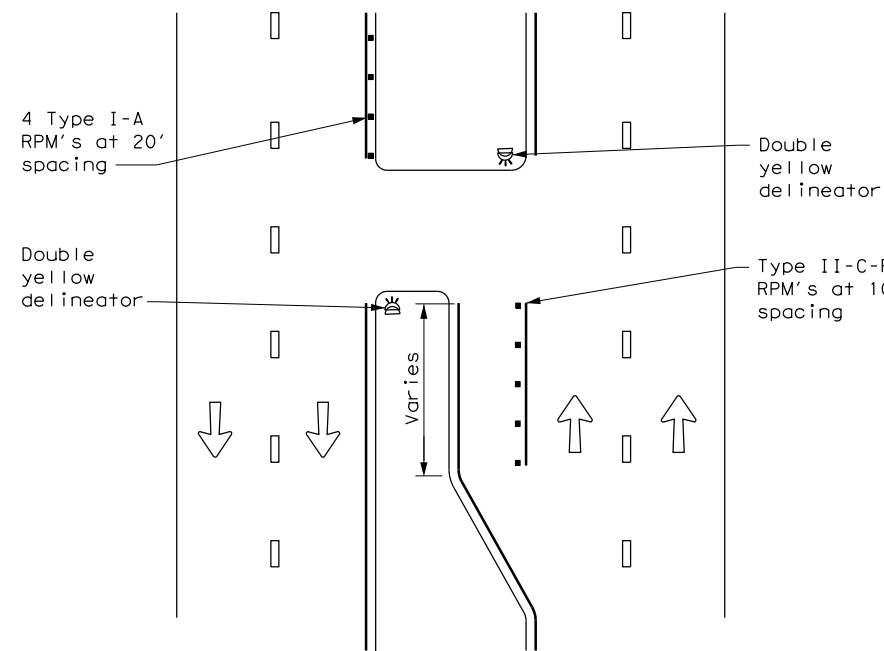
D & OM(3) -20

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3-15 8-15	DIST	COUNTY	SHEET NO.	
8-15 7-20	SAT	GUADALUPE	414	

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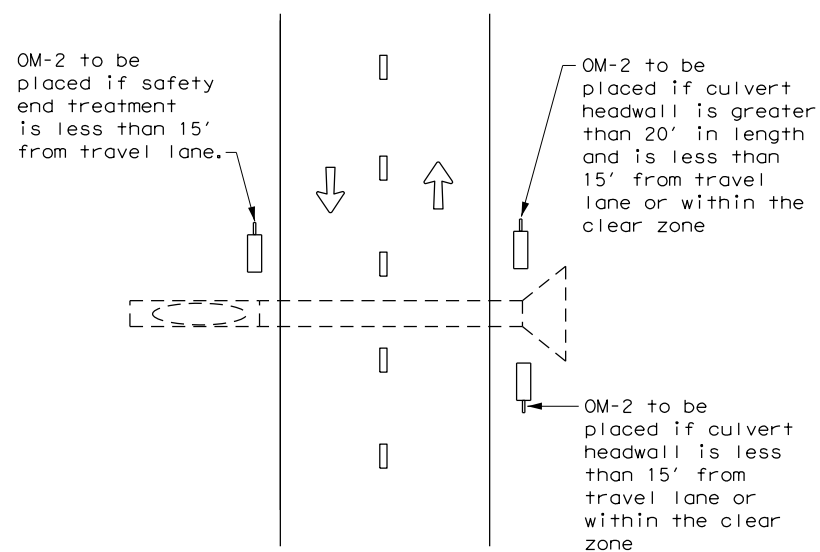
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CROSSOVERS



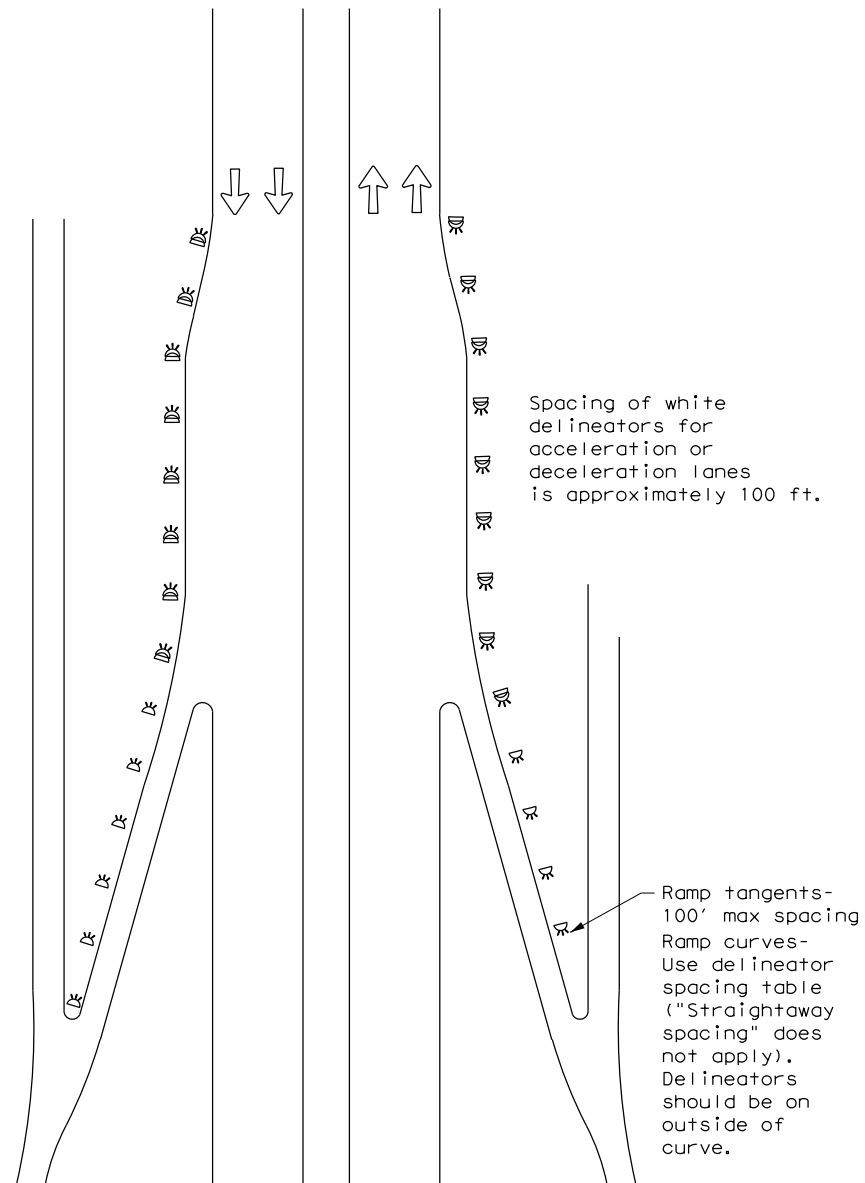
DETAIL 1

FOR CULVERTS WITHOUT MBGF



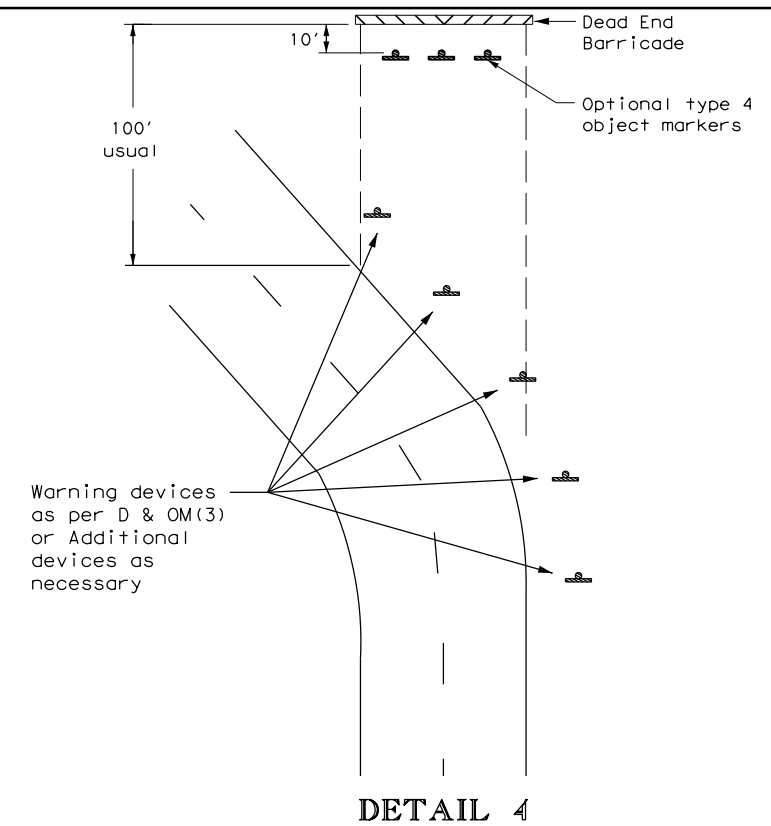
DETAIL 2

FREEWAY DELINEATION FOR RAMPS AND ACCELERATION/DECELERATION LANES



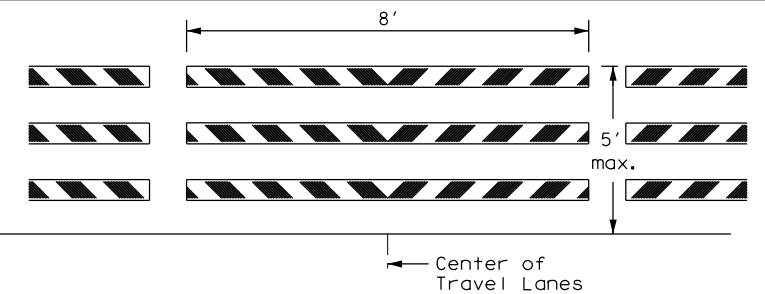
DETAIL 3

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

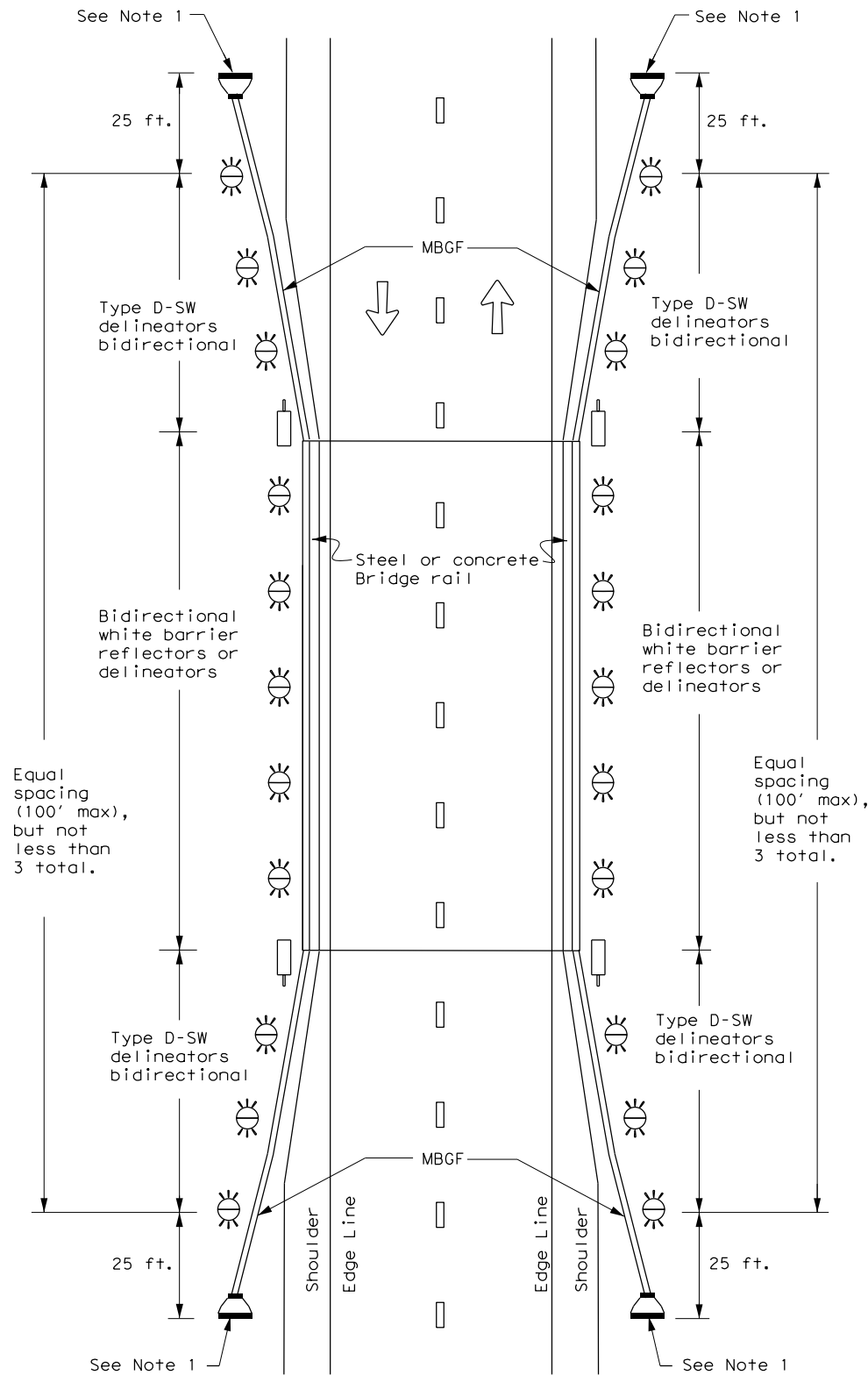


DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(4) - 20

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3-15	DIST	COUNTY	SHEET NO.	
7-20	SAT	GUADALUPE	415	

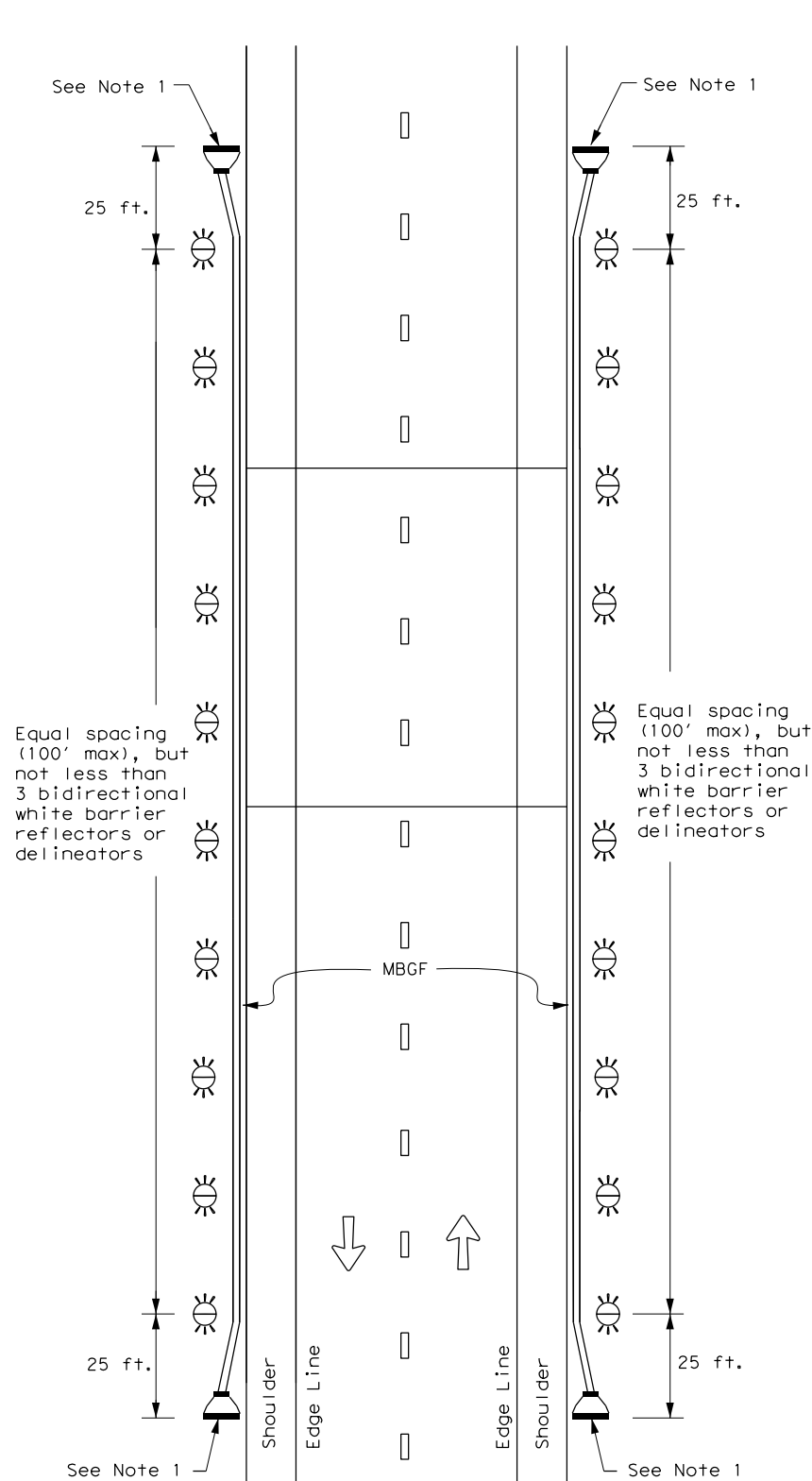
**TWO-WAY, TWO LANE ROADWAY
WITH REDUCED WIDTH APPROACH RAIL**



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.

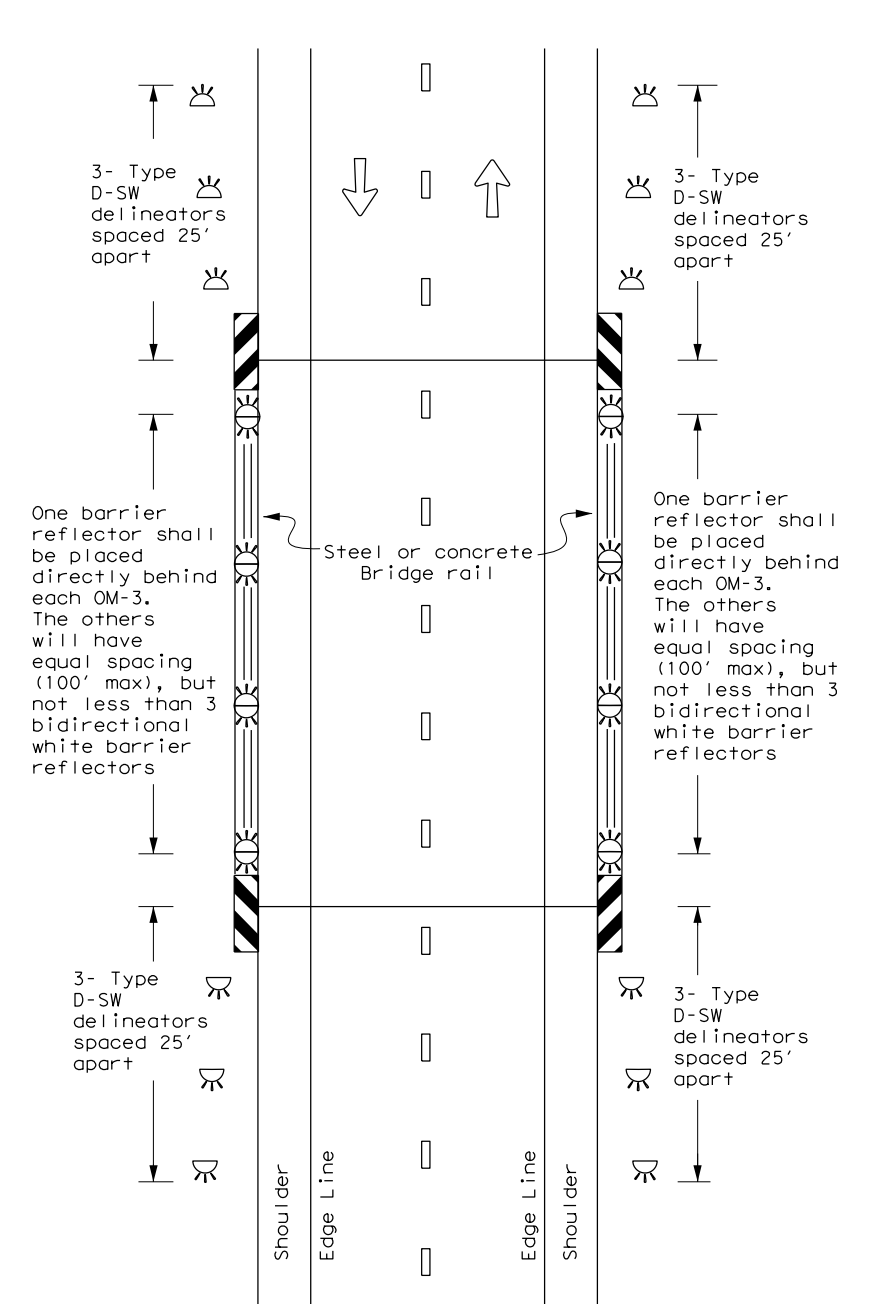
**TWO-WAY, TWO LANE ROADWAY
WITH METAL BEAM GUARD FENCE (MBGF)**



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



**DELINEATOR &
OBJECT MARKER
PLACEMENT DETAILS**

D & OM(5) - 20

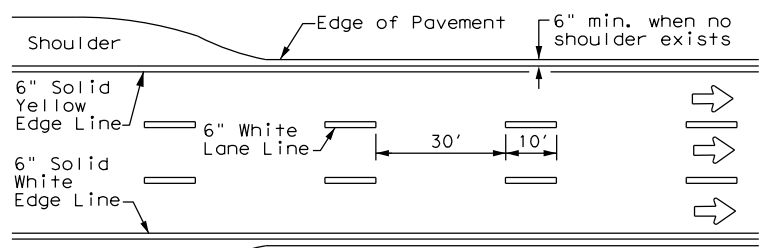
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© TxDOT August 2015	CON: 0915	SECT: 46	JOB: 052	HIGHWAY: CORDOVA
7-20	DIST: SAT	COUNTY: GUADALUPE	SHEET NO. 416	

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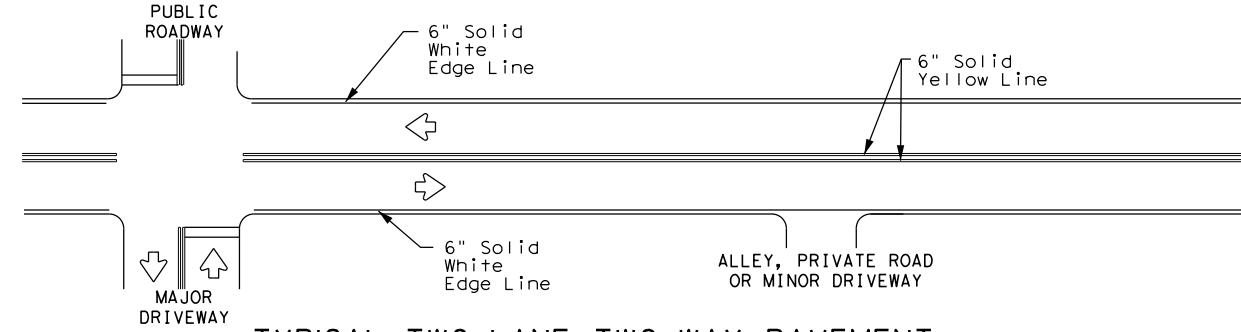
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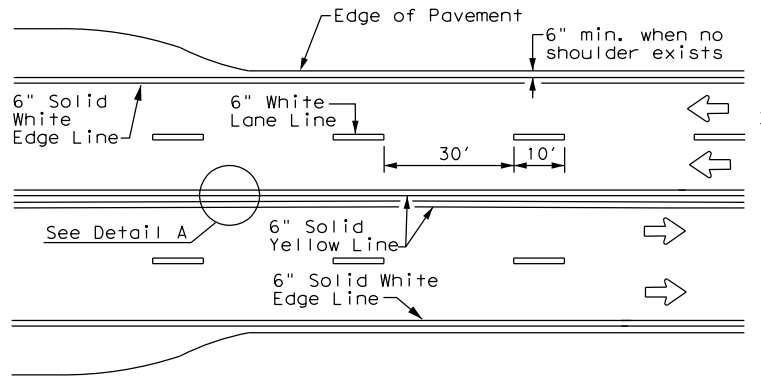
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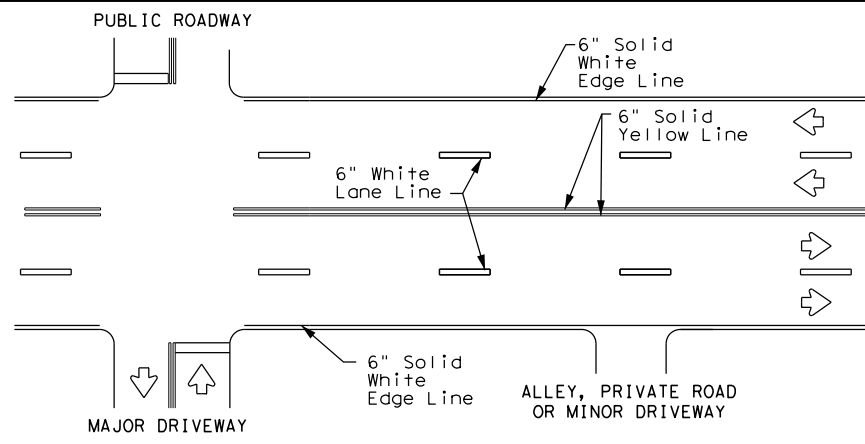
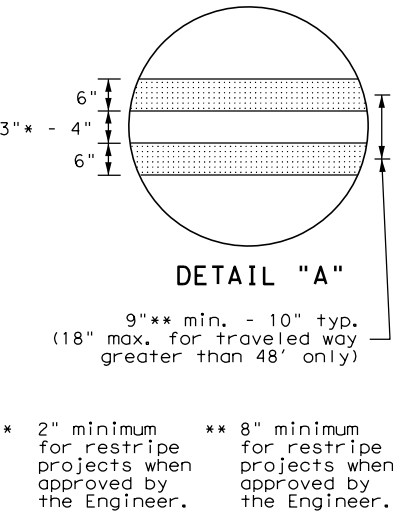
**EDGE LINE AND LANE LINES
ONE-WAY ROADWAY
WITH OR WITHOUT SHOULDERS**



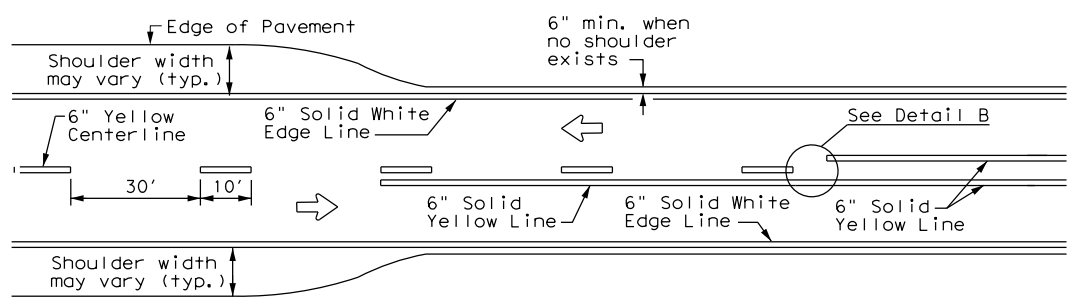
**TYPICAL TWO-LANE, TWO-WAY PAVEMENT
MARKINGS THROUGH INTERSECTIONS**



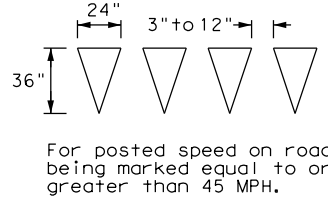
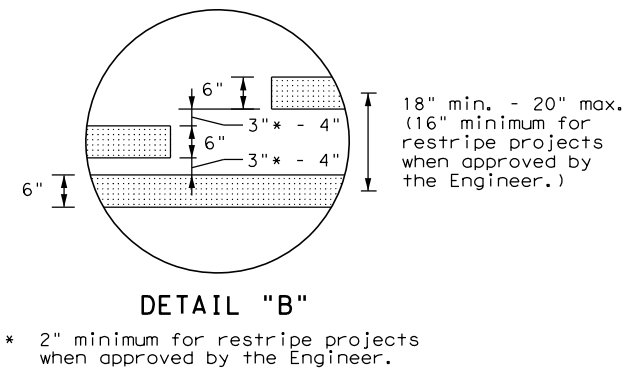
**CENTERLINE AND LANE LINES
FOUR LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS**



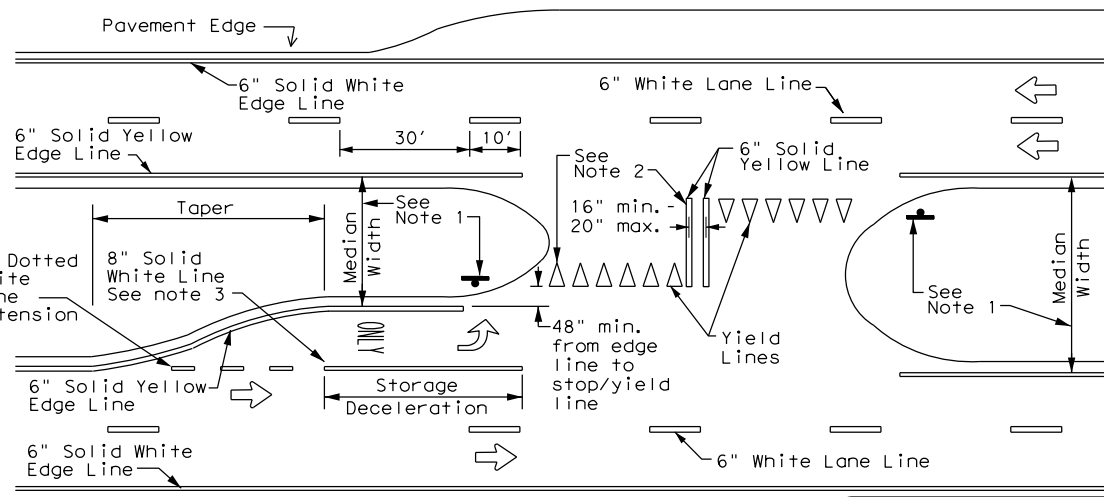
**TYPICAL MULTI-LANE, TWO-WAY PAVEMENT
MARKINGS THROUGH INTERSECTIONS**



**TWO LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS**



YIELD LINES



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

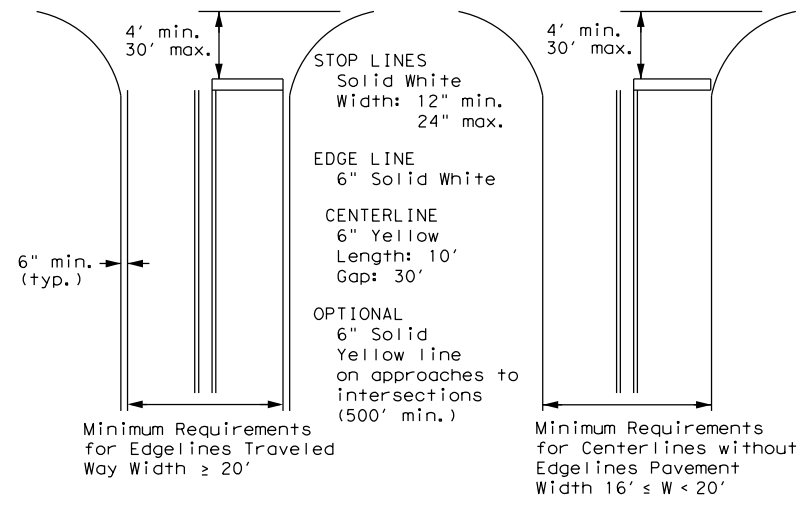
- Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling 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.

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.



NOTE: Traveled way is exclusive of shoulder widths. Refer to General Note 2 for additional details.



**TYPICAL STANDARD
PAVEMENT MARKINGS**

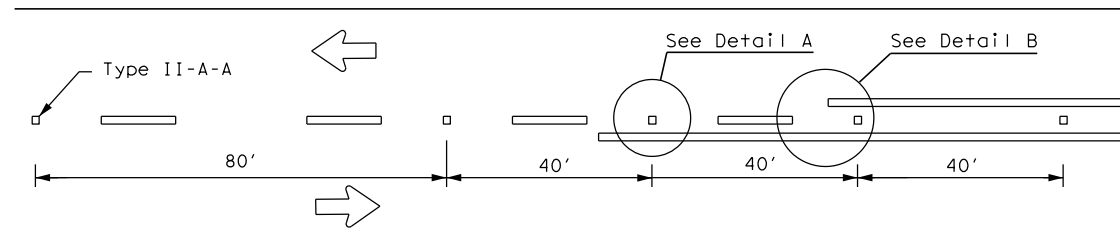
PM(1) - 22

FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
11-78 8-00 6-20	DIST	COUNTY	SHEET NO.	
8-95 3-03 12-22	SAT	GUADALUPE	417	
5-00 2-12				

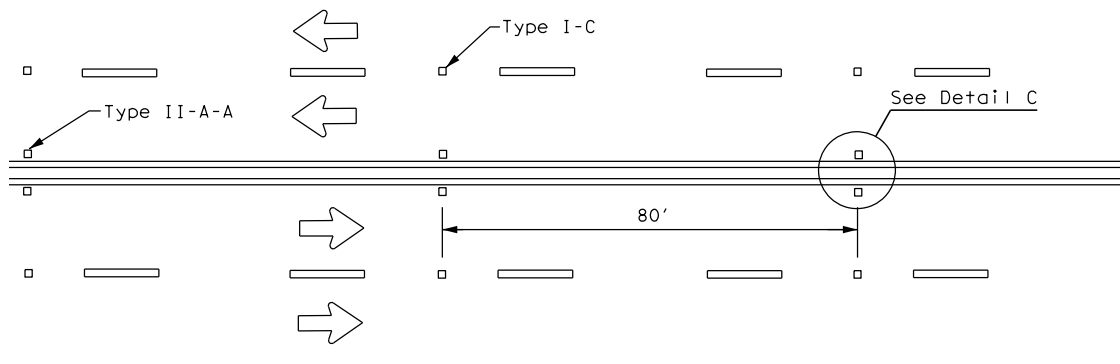
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

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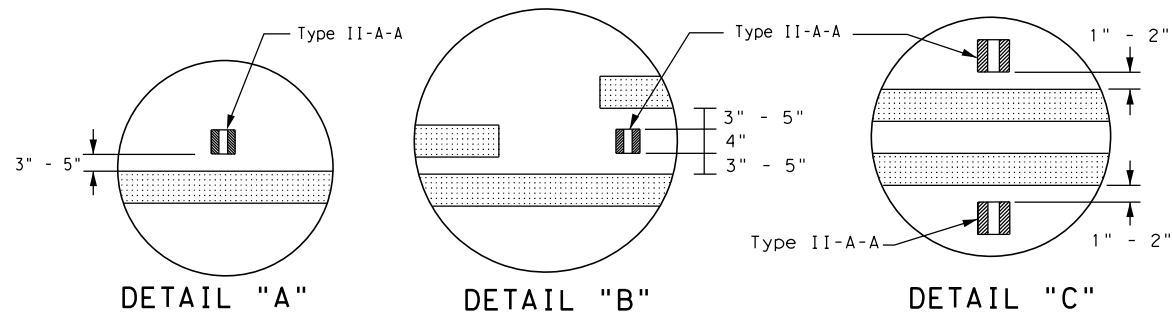
DATE: 11/17/2023 6:30:51 PM
FILE: P:\127\75\00\Design\Civil\Standards\Signing\pm2-22 (1).dgn



CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS



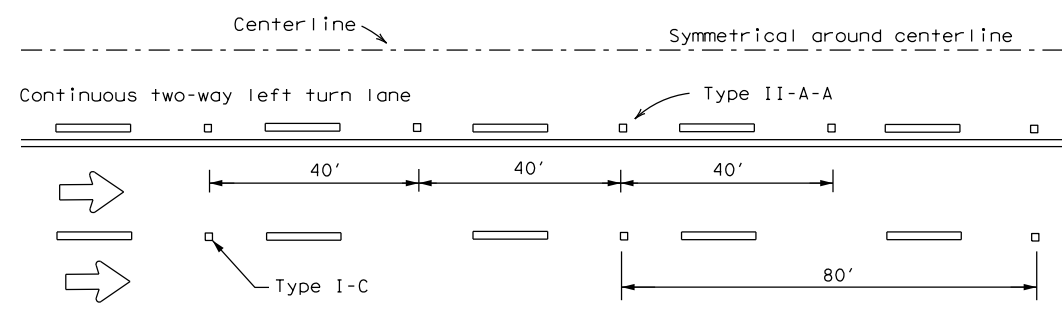
CENTERLINE & LANE LINES
FOR FOUR LANE TWO-WAY ROADWAYS



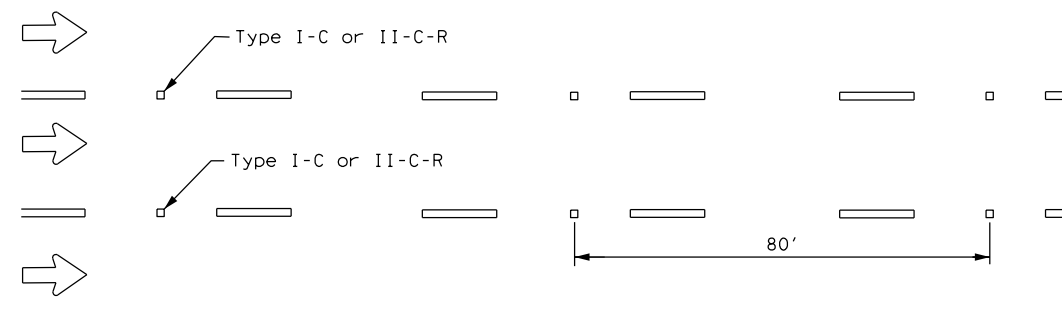
DETAIL "A"

DETAIL "B"

DETAIL "C"

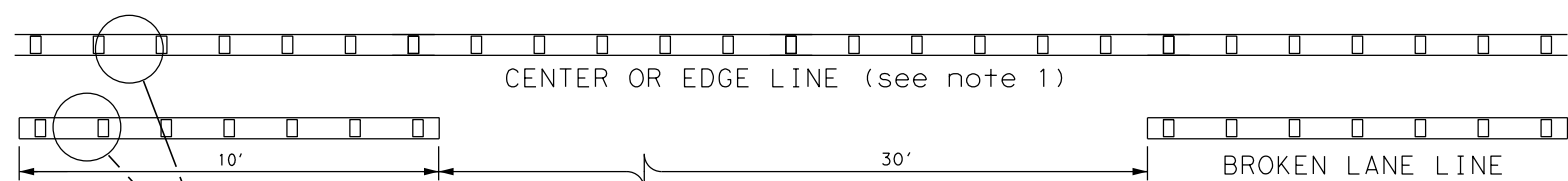


CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



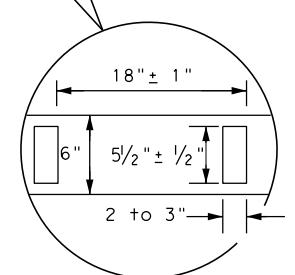
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.
See Note 3.



CENTER OR EDGE LINE (see note 1)

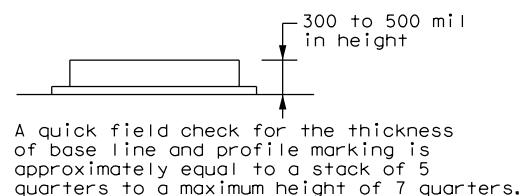
BROKEN LANE LINE



REFLECTORIZED PROFILE
PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

6" EDGE LINE, 6" CENTERLINE
OR 6" LANE LINE



NOTES

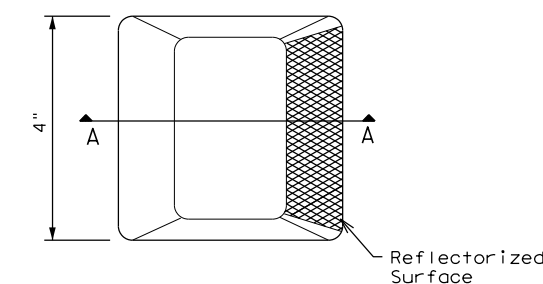
1. Edge lines should typically be 6" wide and the materials shall be specified in the plans.
2. Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

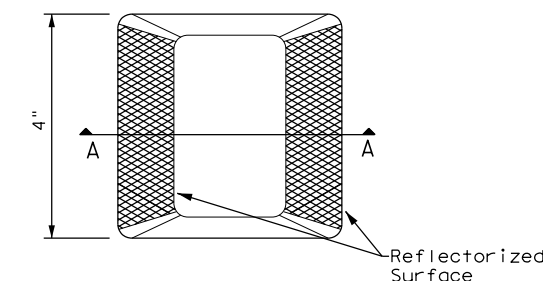
1. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.
3. Use raised pavement marker Type I-C with undivided roadways, flush medians 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

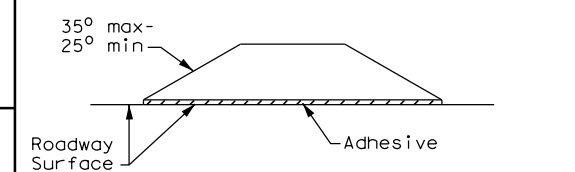
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS

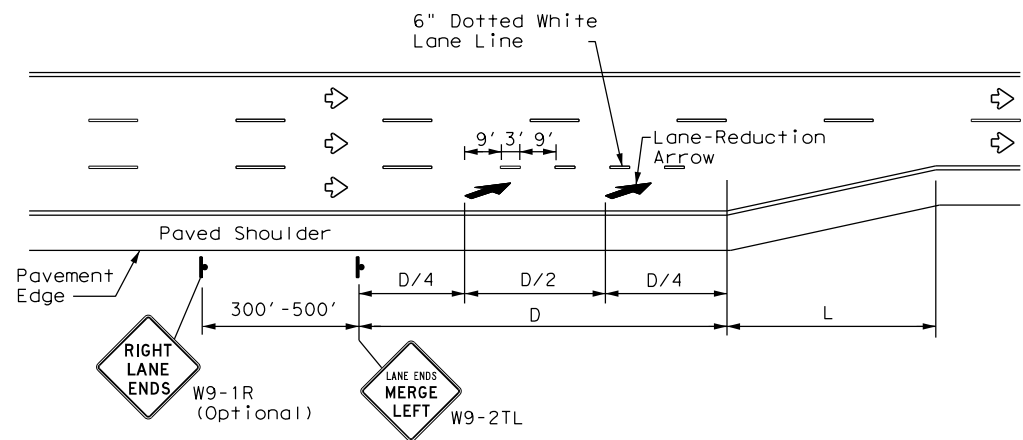


**POSITION GUIDANCE USING
RAISED MARKERS
REFLECTORIZED PROFILE
MARKINGS
PM(2) - 22**

FILE: pm2-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
4-77 8-00 6-20	DIST	COUNTY	SHEET NO.	
4-92 2-10 12-22	SAT	GUADALUPE	418	
5-00 2-12				

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DATE: 11/17/2023 6:30:53 PM
 FILE: P:\127\75\00\Design\Civil\Standards\Signing\pm3-22 (1).dgn



LANE REDUCTION

NOTES

1. 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.
2. 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.
3. 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.
4. For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.

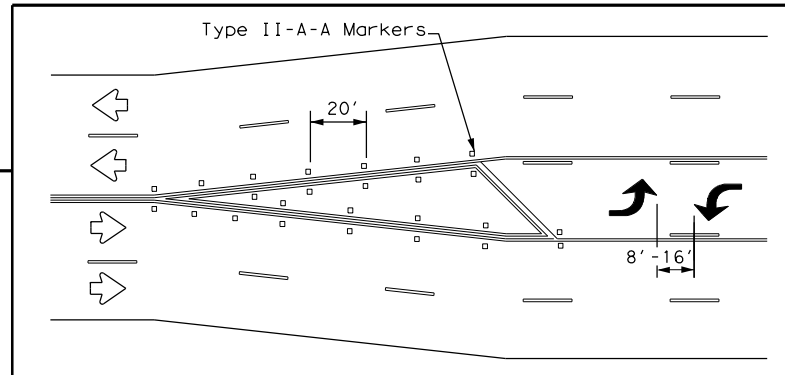
ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
30 MPH	460	$L = \frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	L=WS
45 MPH	775	
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	

GENERAL NOTES

1. 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.
2. 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.
3. 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.
4. 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.

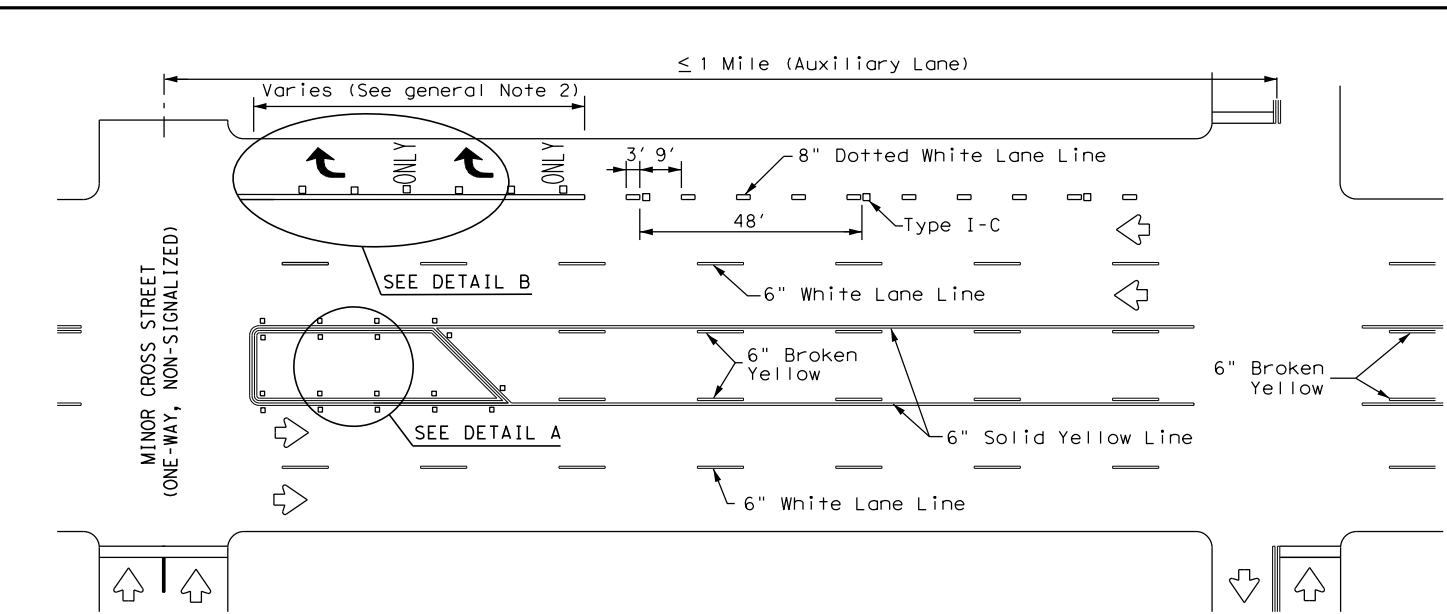
MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.

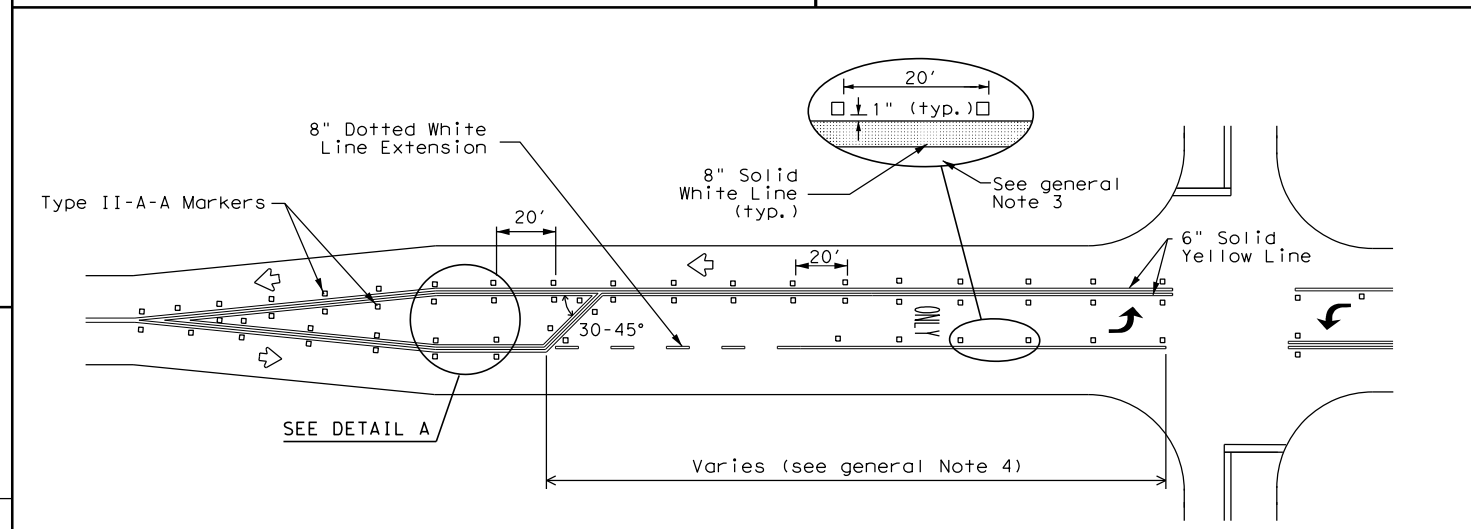


A two-way left-turn (TWLTL) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

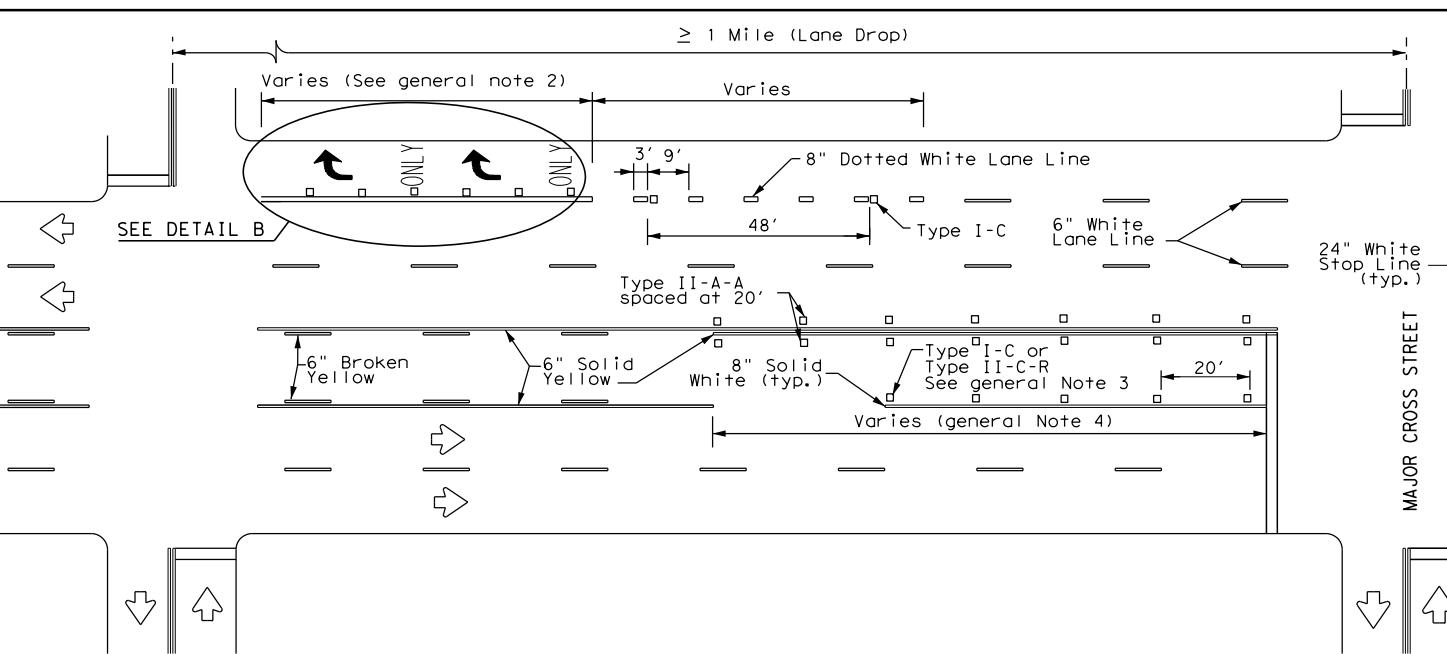
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY



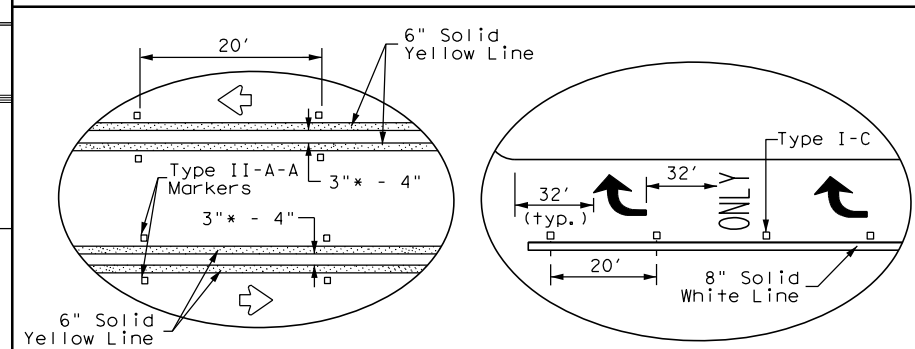
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS



TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



DETAIL A

DETAIL B

* 2" minimum allowed for restripe projects when approved by the Engineer.

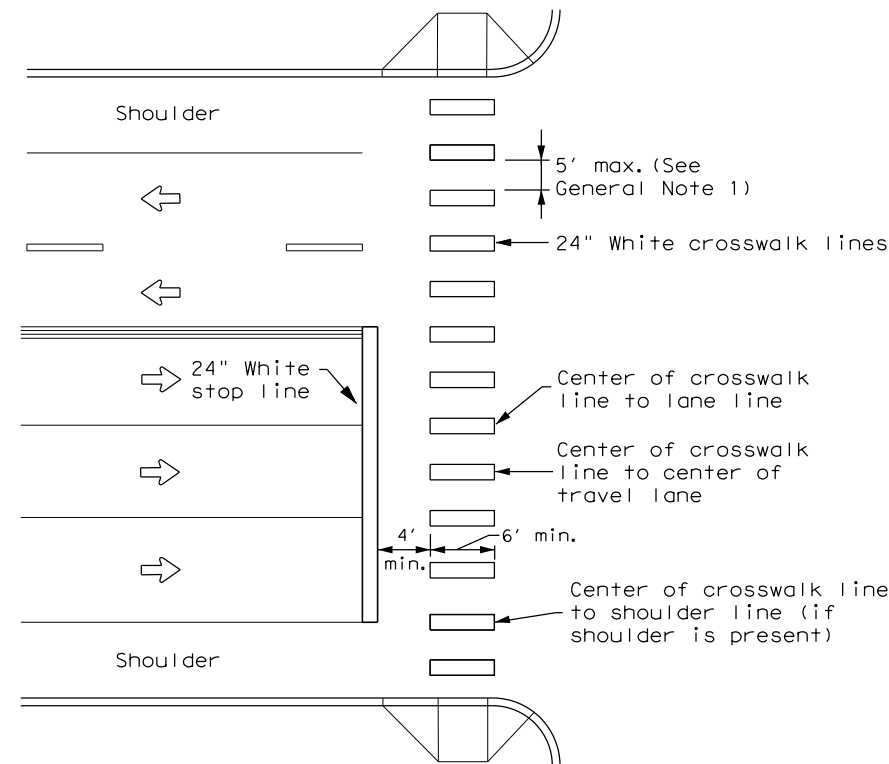
Texas Department of Transportation
 Traffic Safety Division Standard

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 DEVISIONS 2022	CONT	SECT	JOB	HIGHWAY
4-98 3-03 6-20	0915	46	052	CORDOVA
5-00 2-10 12-22	DIST	COUNTY	SHEET NO.	
8-00 2-12	SAT	GUADALUPE	419	

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DATE: 11/17/2023 6:30:54 PM
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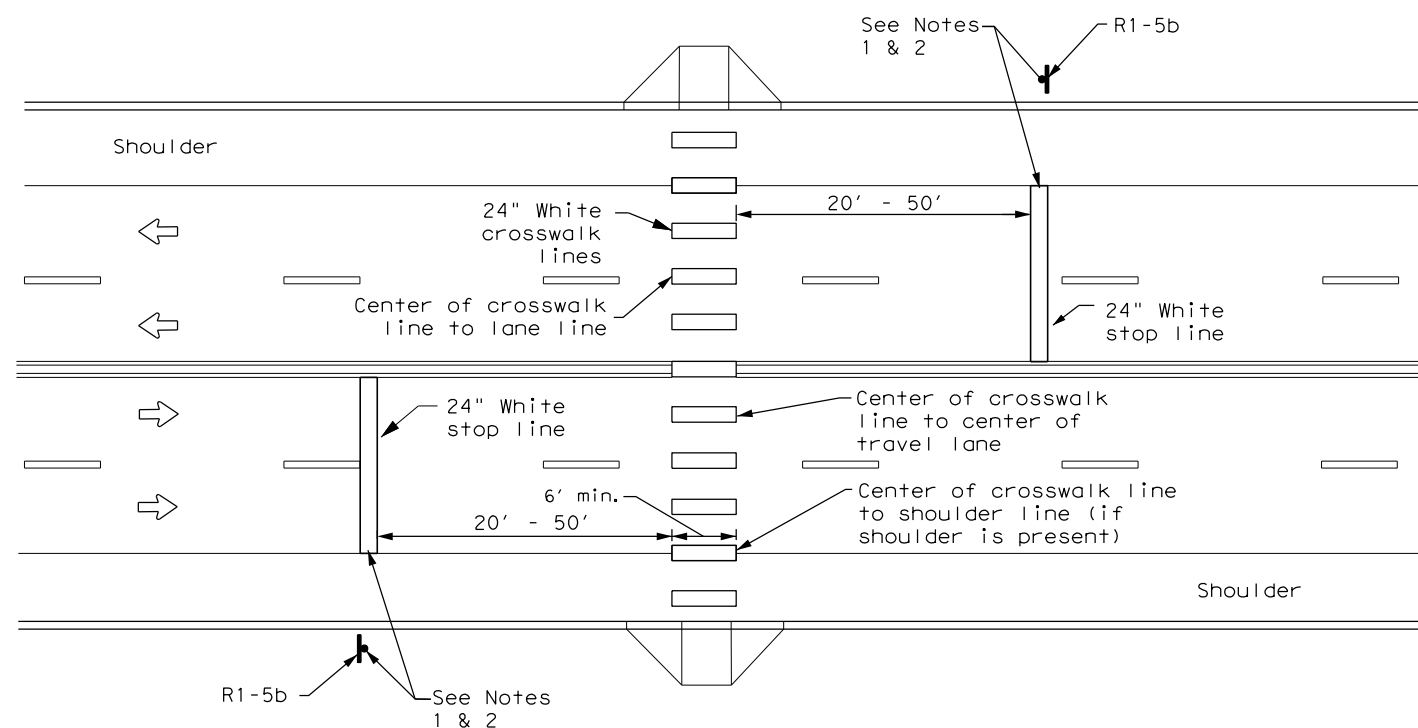
HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

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.



CROSSWALK PAVEMENT MARKINGS

PM(4) - 22A

FILE: pm4-22a.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
6-20	DIST	COUNTY	SHEET NO.	
6-22	SAT	GUADALUPE	420	
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)

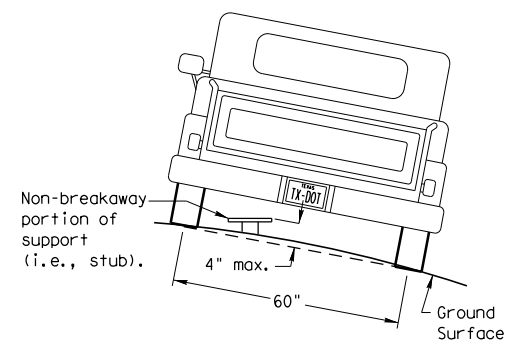
SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)

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))

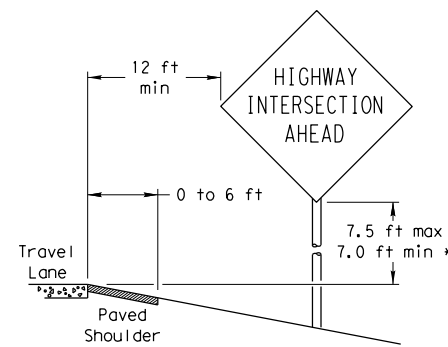
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



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).

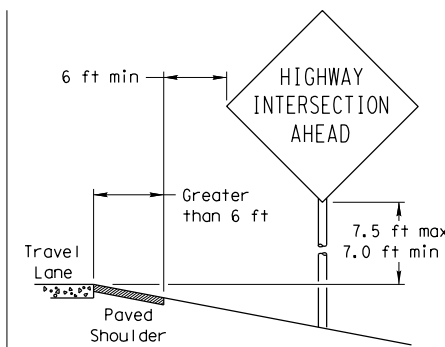
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

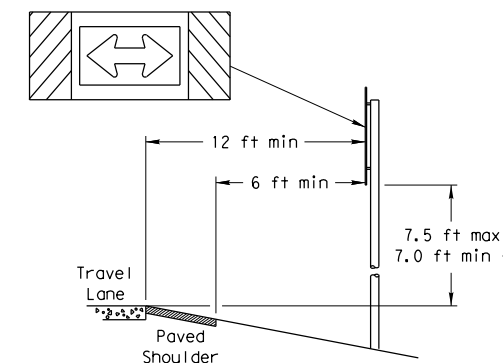
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



GREATER THAN 6 FT. WIDE

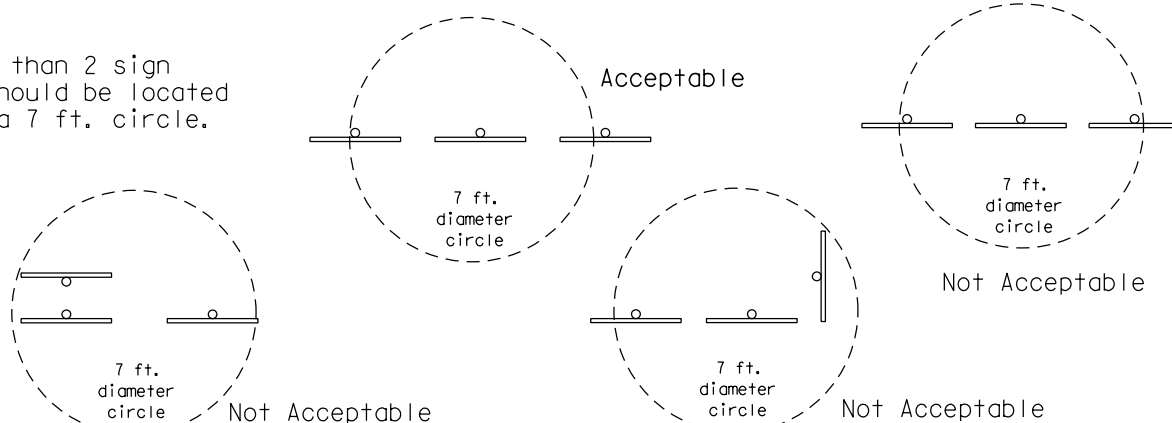
When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

T-INTERSECTION

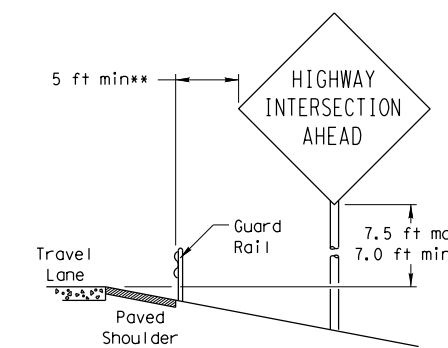


When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.

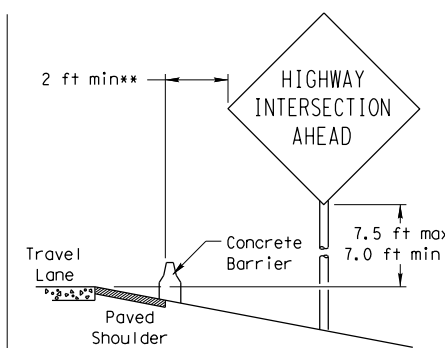
No more than 2 sign posts should be located within a 7 ft. circle.



BEHIND BARRIER



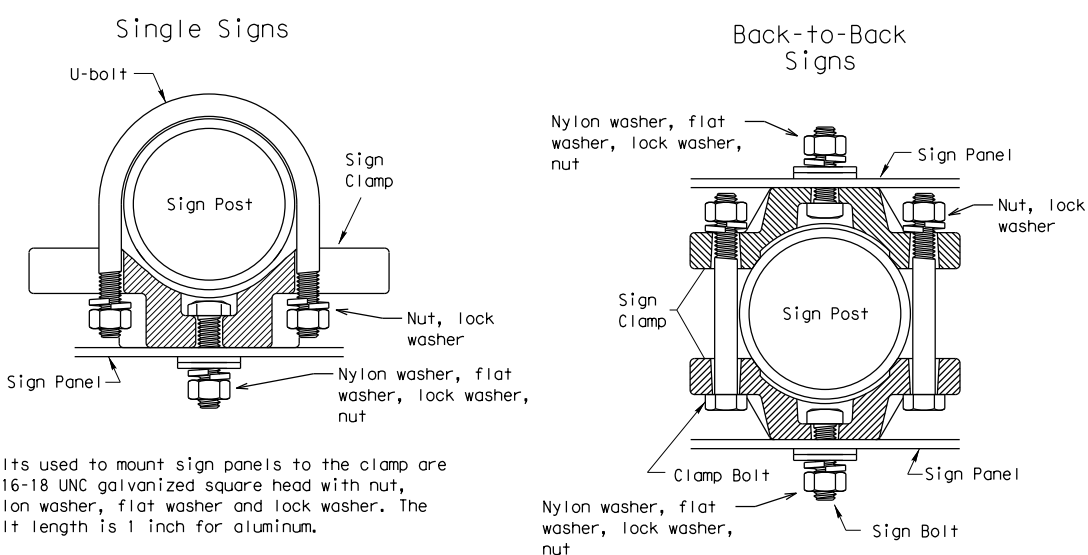
BEHIND GUARDRAIL



BEHIND CONCRETE BARRIER

**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

TYPICAL SIGN ATTACHMENT DETAIL



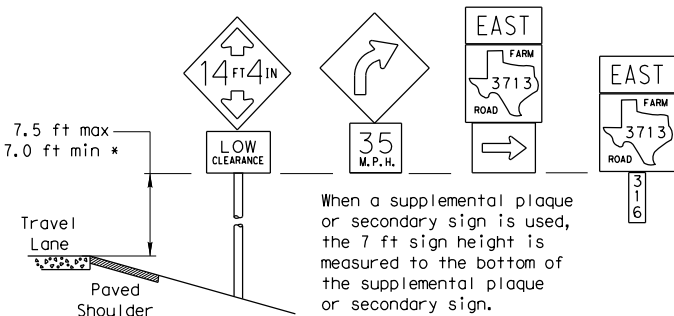
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

Sign clamps may be either the specific size clamp or the universal clamp.

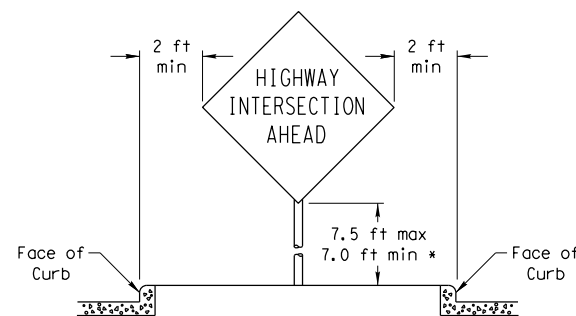
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES

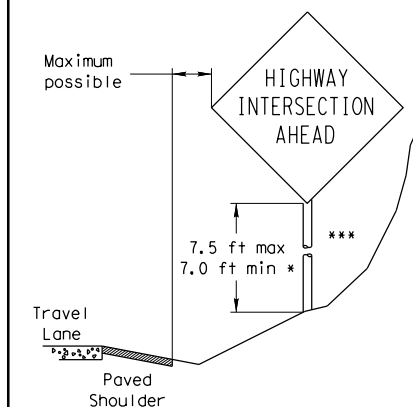


When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



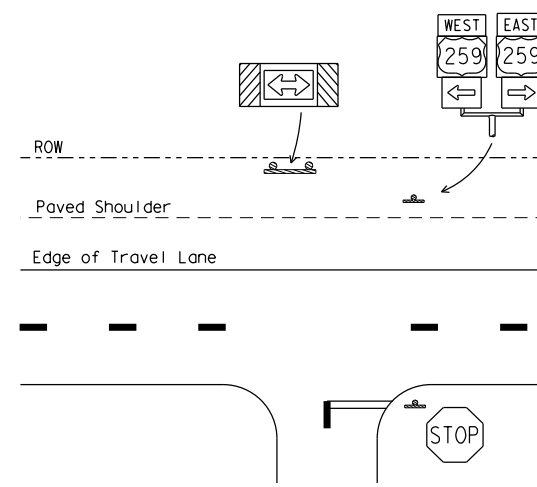
RESTRICTED RIGHT-OF-WAY (When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.



* 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>



SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

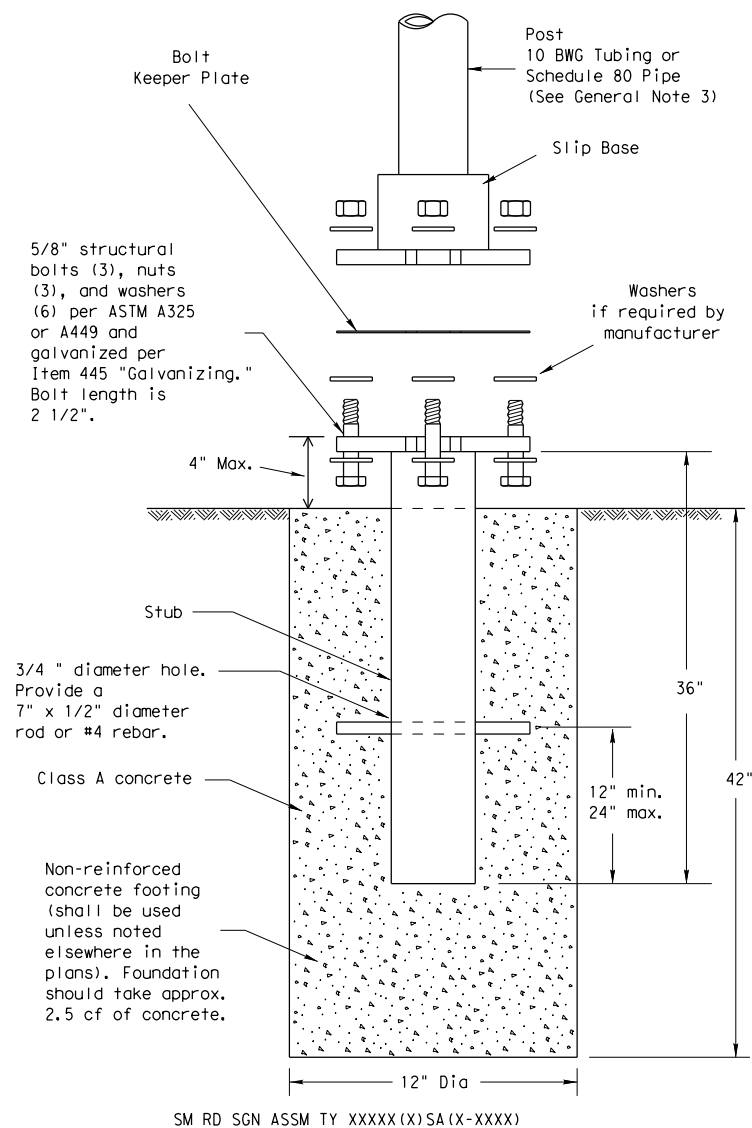
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9-08	REVISIONS	CONT	SECT	JOB
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				421

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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

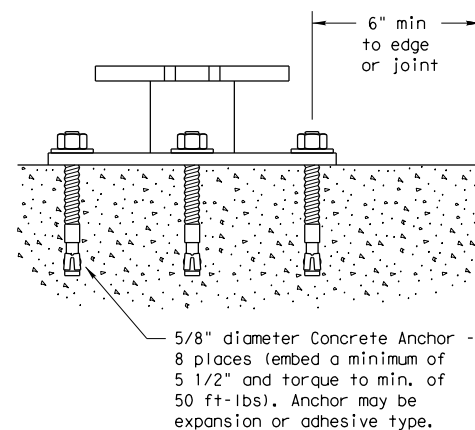
Foundation

- 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.

 Texas Department of Transportation
Traffic Operations Division

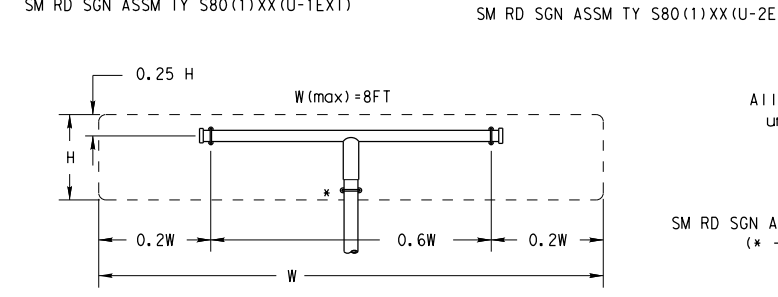
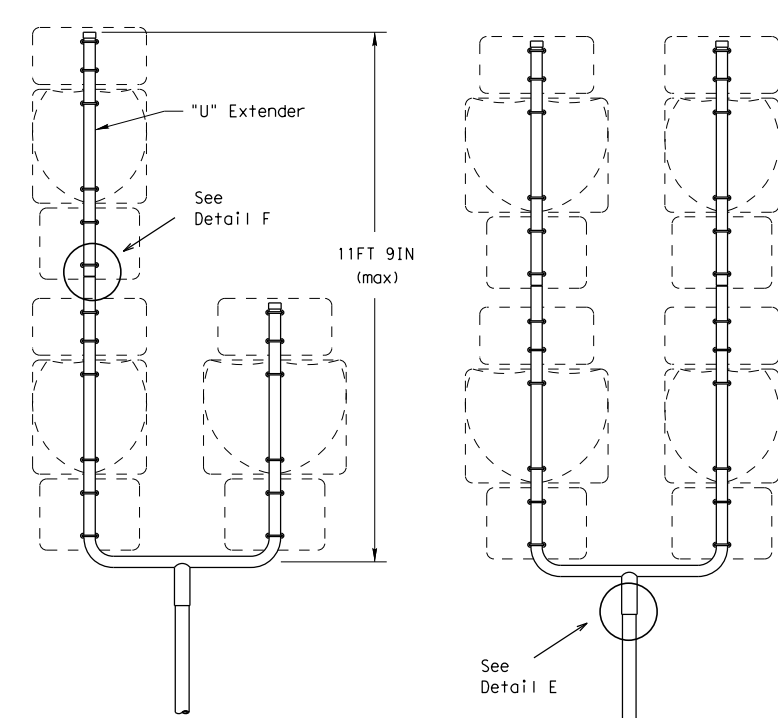
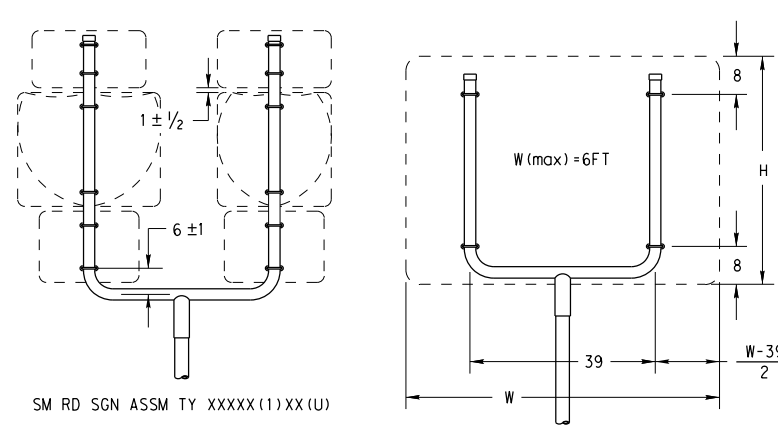
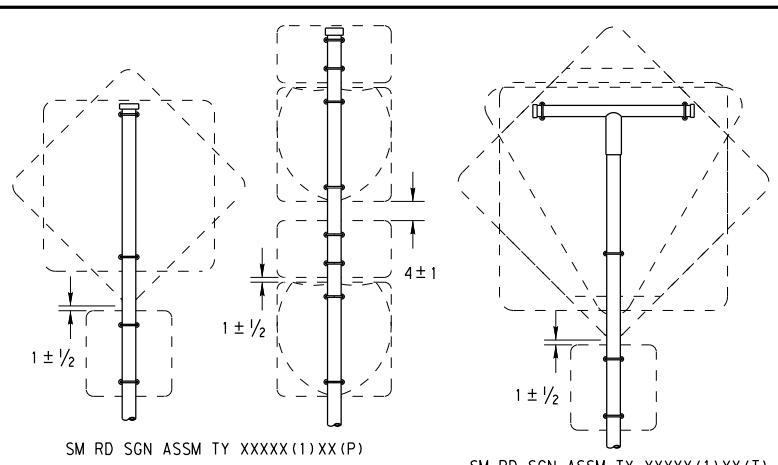
SIGN MOUNTING DETAILS
 SMALL ROADSIDE SIGNS
 TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

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		SAT	GUADALUPE	422	

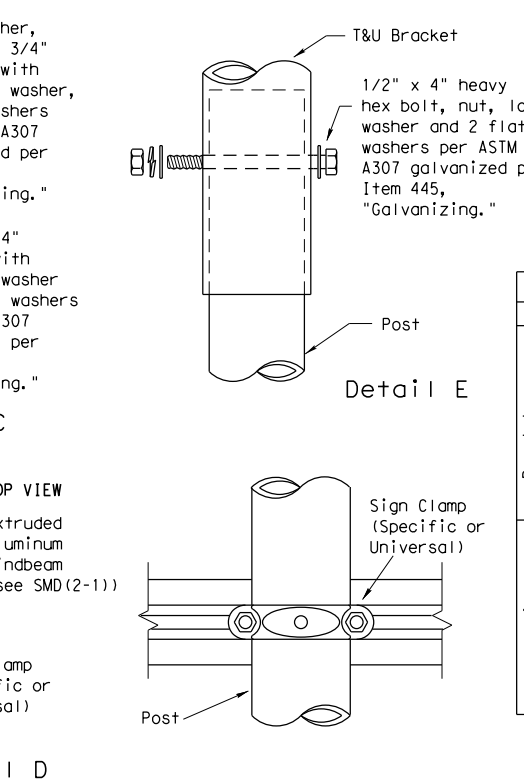
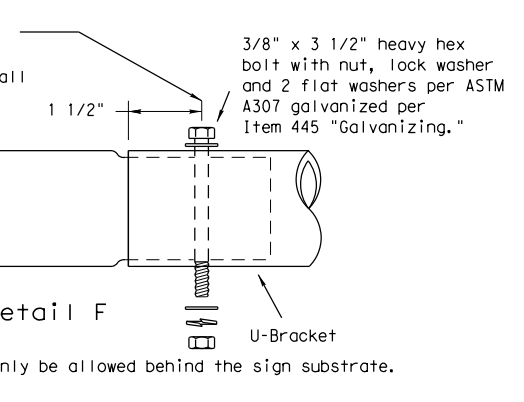
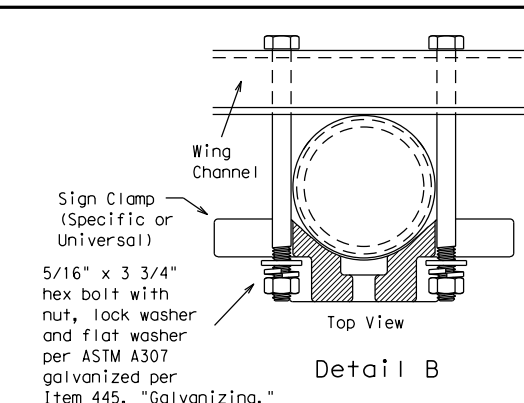
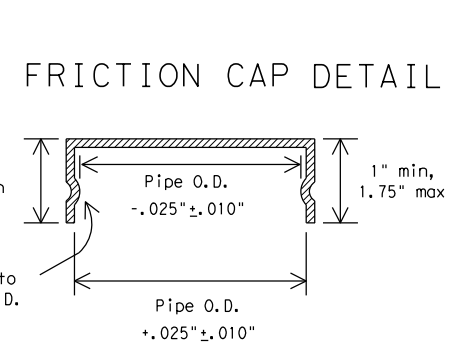
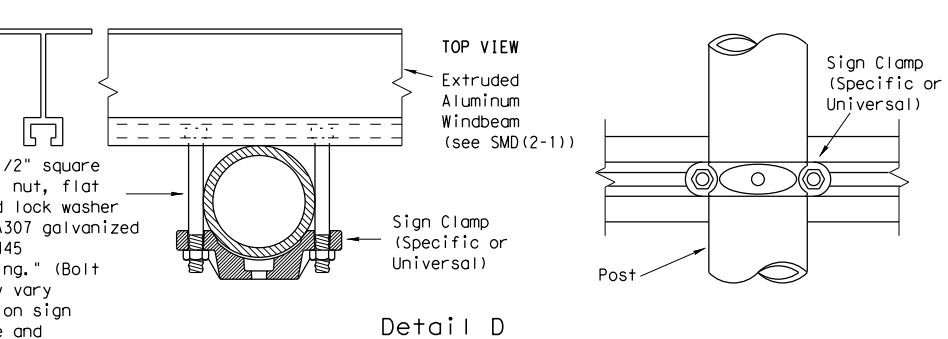
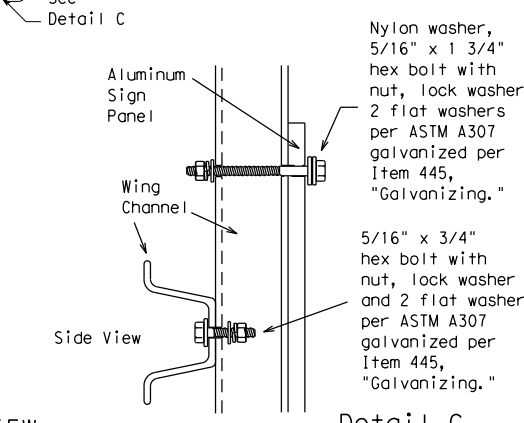
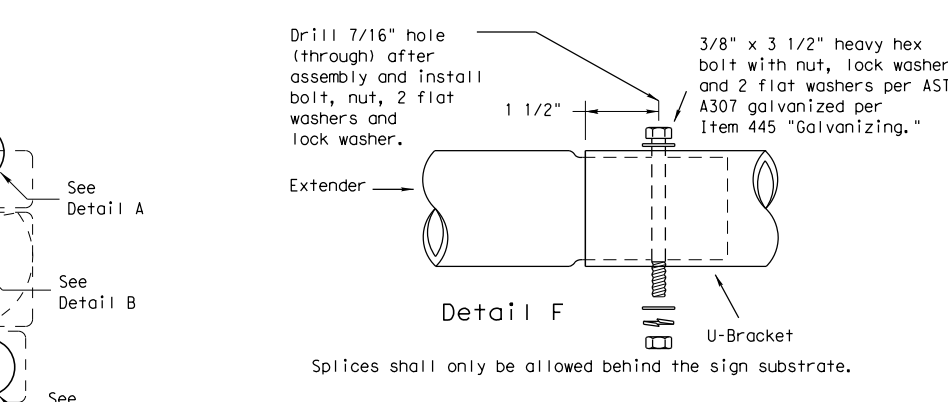
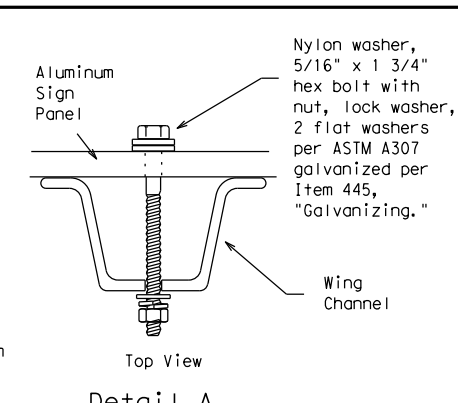
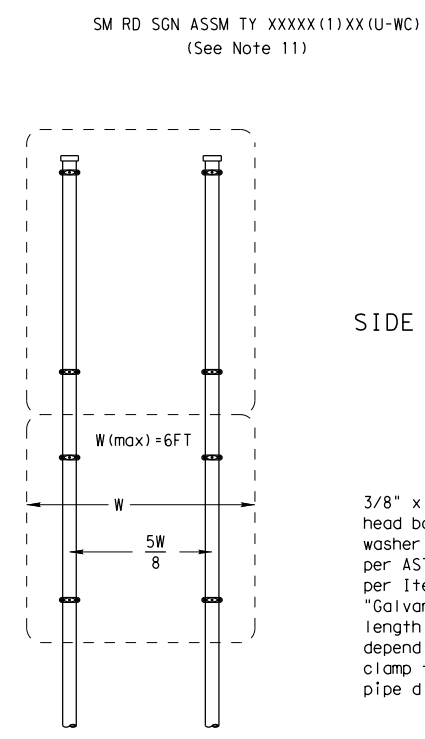
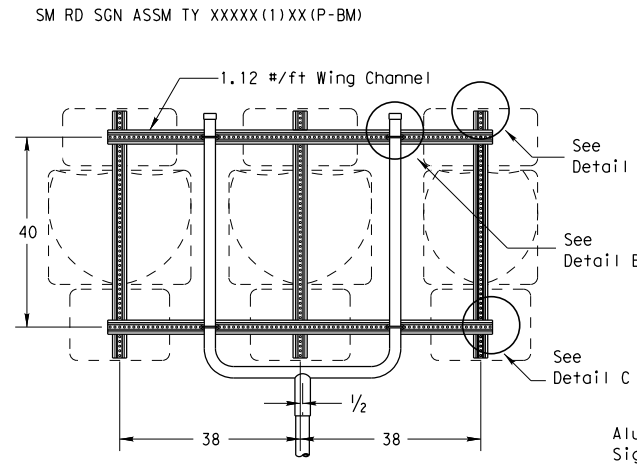
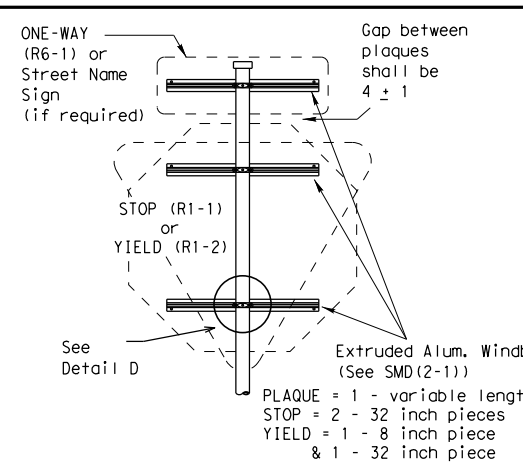
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All dimensions are in english unless detailed otherwise.

SM RD SGN ASSM TY XXXXX(1)XX(T) (* - See Note 12)



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		
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)
Warning	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	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)	

Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes. The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture. Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.

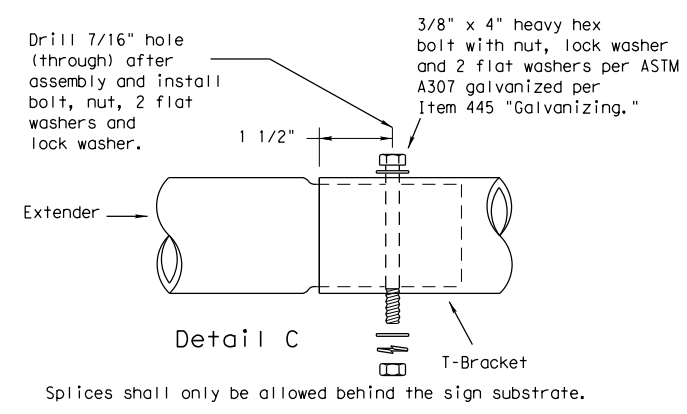
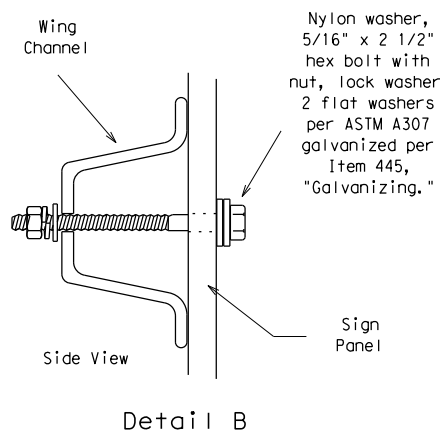
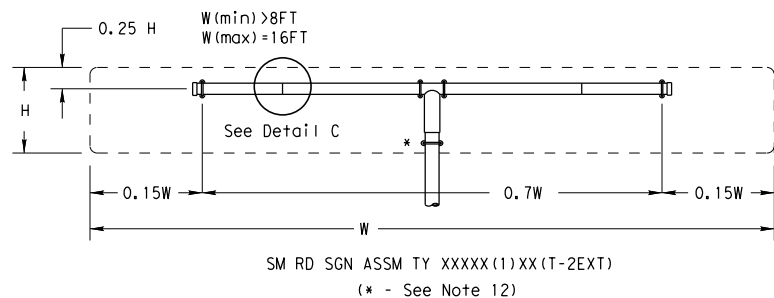
Texas Department of Transportation
 Traffic Operations Division

SIGN MOUNTING DETAILS
 SMALL ROADSIDE SIGNS
 TRIANGULAR SLIPBASE SYSTEM
 SMD(SLIP-2)-08

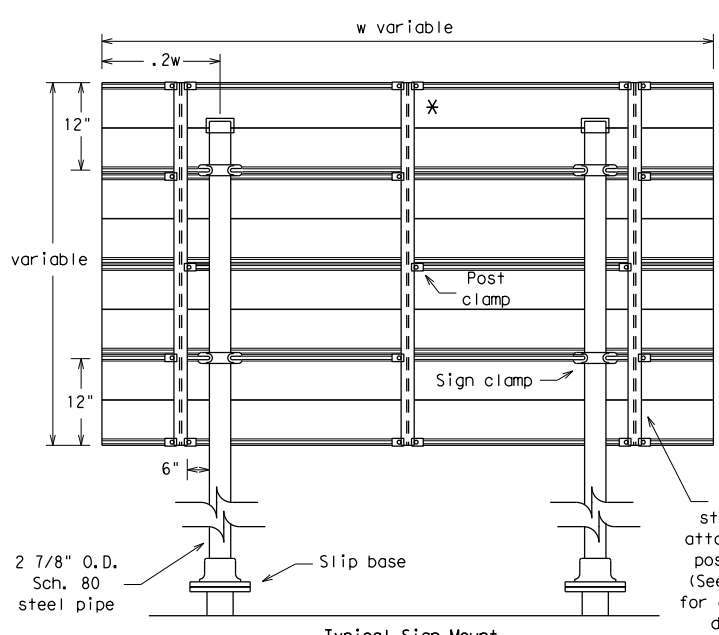
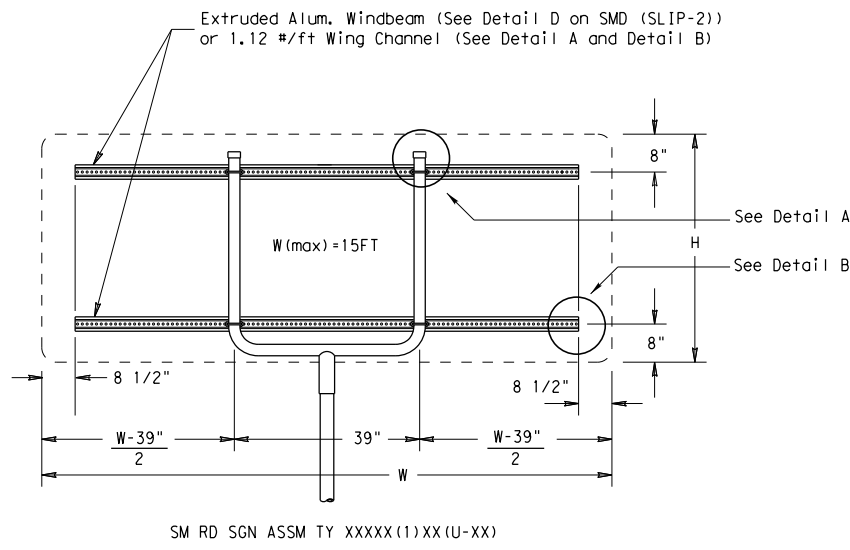
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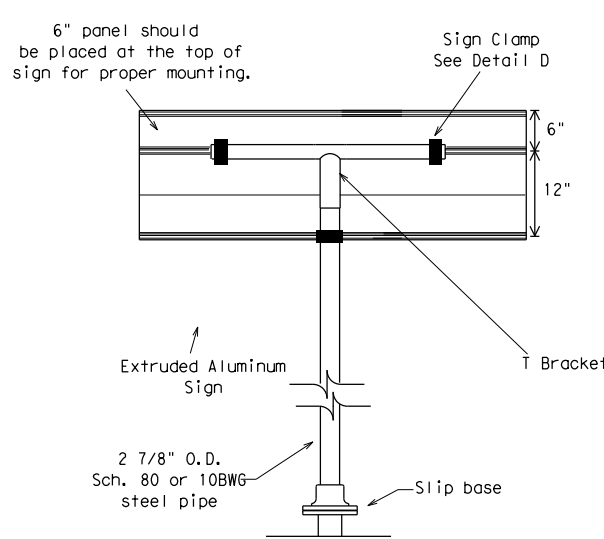
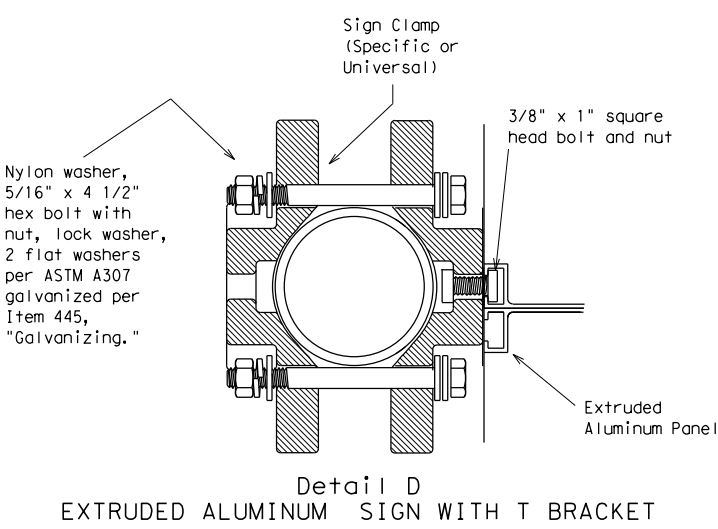
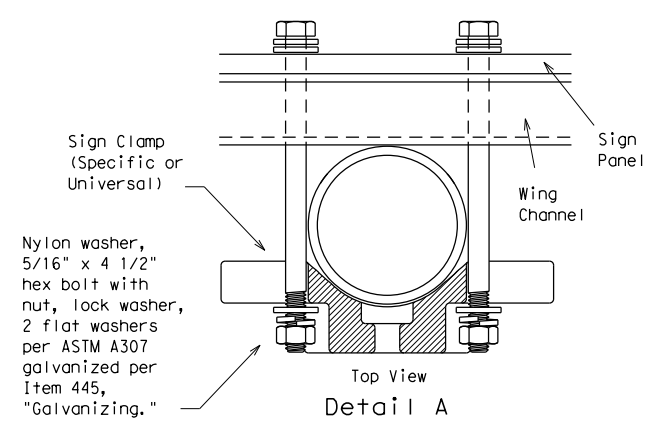
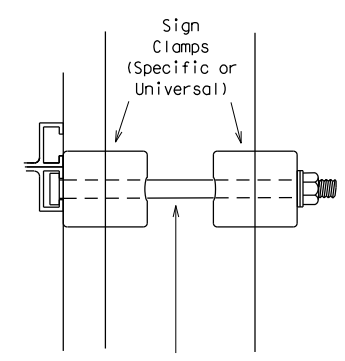
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Splices shall only be allowed behind the sign substrate.



* 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)



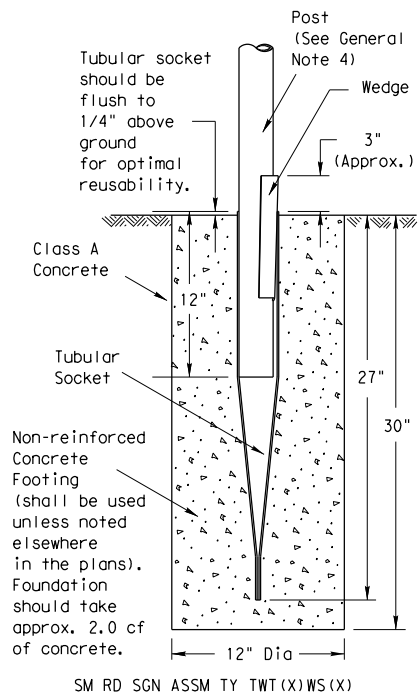
SIGN MOUNTING DETAILS
 SMALL ROADSIDE SIGNS
 TRIANGULAR SLIPBASE SYSTEM
 SMD(SLIP-3) -08

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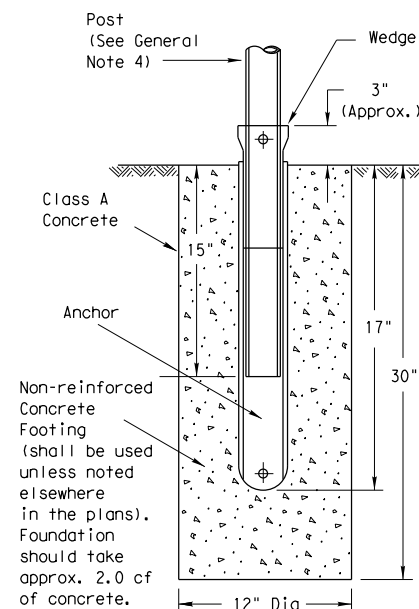
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Wedge Anchor Steel System



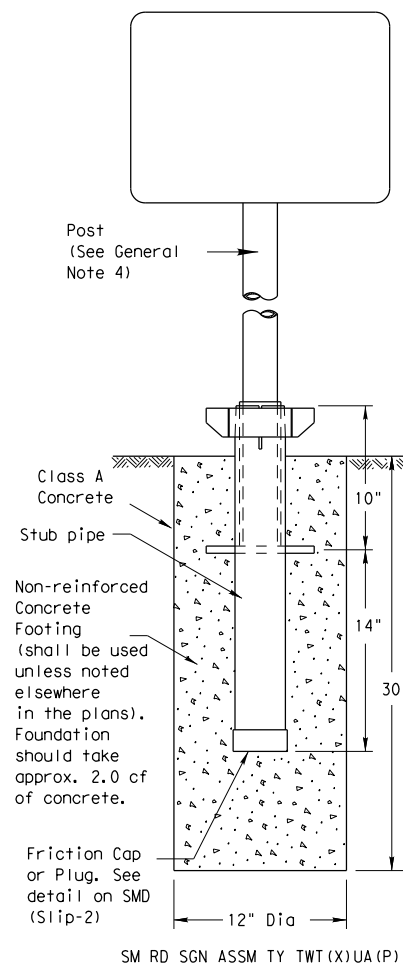
SM RD SGN ASSM TY TWT(X)WS(X)

Wedge Anchor High Density Polyethylene (HDPE) System

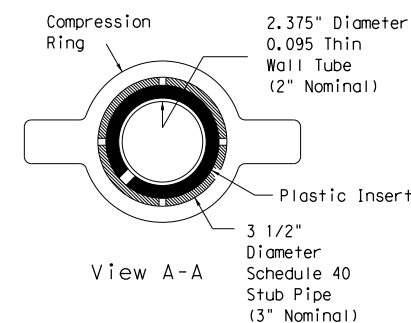
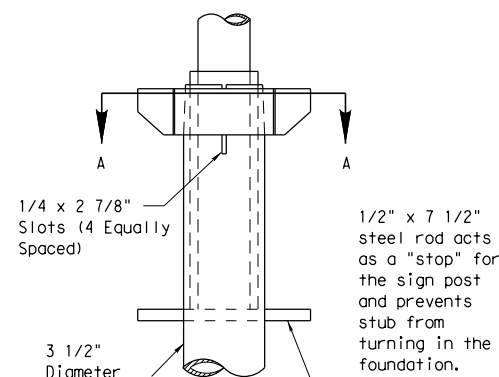


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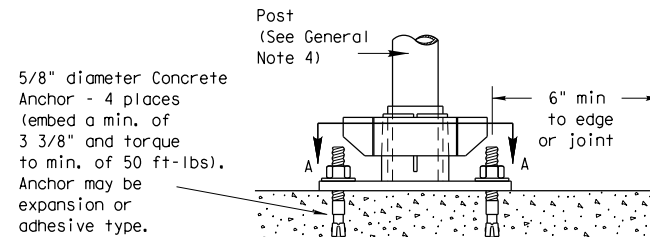
Universal Anchor System with Thin-Walled Tubing Post



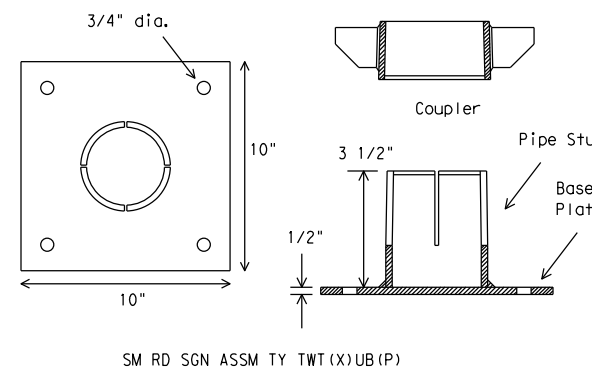
SM RD SGN ASSM TY TWT(X)UA(P)



Plastic insert must be used when using the TWT with either the Universal Anchor System or the Bolt Down Universal Anchor System. The insert should be approx. 10" long and cover the tubing from just above the top of the stub pipe to the bottom of the sign post when using the Universal Anchor System. The insert should be cut to approx. 4 1/2" when used with the Bolt Down Universal Anchor System.

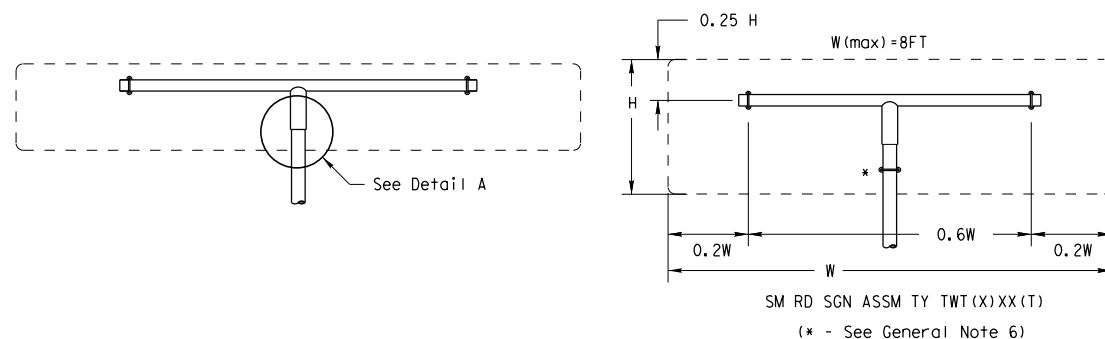


Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxy and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.

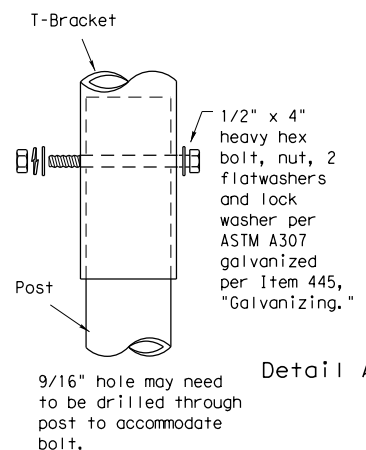


SM RD SGN ASSM TY TWT(X)UB(P)

Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post



SM RD SGN ASSM TY TWT(X)XX(T)
 (* - See General Note 6)



Detail A

NOTE

The devices shall be installed per manufacturer's recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

- The Wedge Anchor System and the Universal Anchor System with thin wall tubing post may be used to support up to 10 square feet of sign area.
- The tubular socket, wedge and prefabricated T-bracket shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
- Except for posts (13 BWG Tubing), clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is: http://www.txdot.gov/business/producer_list.htm
- Material used as post with this system shall conform to the following specifications:
 - 13 BWG Tubing (2.375" outside diameter) (TWT)
 - 0.095" nominal wall thickness
 - Seamless or electric-resistance welded steel tubing
 - 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
 - 18% minimum elongation in 2"
 - Wall thickness (uncoated) shall be within the range of .083" to .099"
 - Outside diameter (uncoated) shall be within the range of 2.369" to 2.381"
 - Galvanization per ASTM 123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
- Sign blanks shall be the sizes and shapes shown on the plans.
- Additional sign clamp required on the "T-bracket" post for 24" high signs. Place clamp at least 3" above bottom of sign when possible.
- Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
- See the Traffic Operations Division website for detailed drawings of sign clamps and Wedge Anchor System components. The website address is: <http://www.txdot.gov/publications/traffic.htm>

WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE

- Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
- 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. Place concrete into hole until it is approximately flush with the ground. Concrete shall be Class A.
- Insert tubular socket into concrete until top of socket is approximately 1/4" above the concrete footing.
- Plumb the socket. Allow a minimum 4 days for concrete to set, unless otherwise directed by Engineer.
- Attach the sign to the sign post.
- Insert the sign post into socket and align sign face with roadway.
- Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE

- Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
- Insert base post in hole to depths shown and backfill hole with concrete.
- Level and plumb the base post using a torpedo level and allow concrete adequate time to set. The bottom of the slots provided in the stub pipe shall remain above the top of the concrete foundation.
- Attach the sign to the sign post.
- Install plastic insert around bottom of post.
- Insert sign post into base post. Lower until the post comes to rest on steel rod.
- Seat compression ring using a hammer. Typically, the top of compression ring will be approximately level with top of stub post when optimally installed.
- Check sign post by hand to ensure it is unable to turn. If loose, increase the tightening of the compression ring.



SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST SMD(TWT) - 08

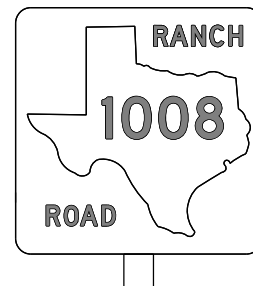
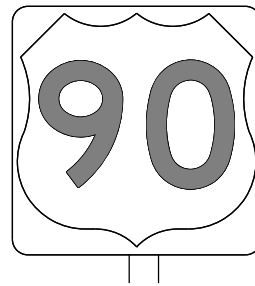
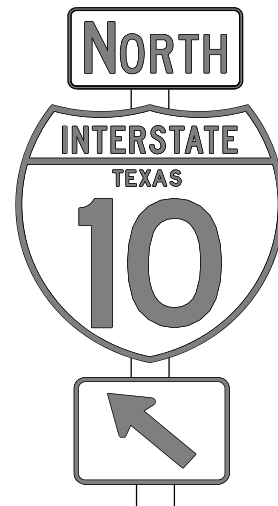
© TxDOT July 2002	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT	
9-08	REVISIONS	CON	SECT	JOB	HIGHWAY
		0915	46	052	CORDOVA
		DIST	COUNTY	SHEET NO.	
		SAT	GUADALUPE	425	

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REQUIREMENTS FOR INDEPENDENT MOUNTED ROUTE SIGNS

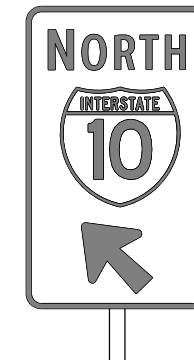
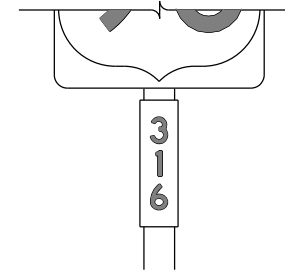
SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE A SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B or C SHEETING



TYPICAL EXAMPLES

REQUIREMENTS FOR BLUE, BROWN & GREEN D AND I SERIES GUIDE SIGNS

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	ALL	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE D SHEETING
LEGEND, SYMBOLS & BORDERS	ALL OTHERS	TYPE B OR C SHEETING



TYPICAL EXAMPLES

GENERAL NOTES

- 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

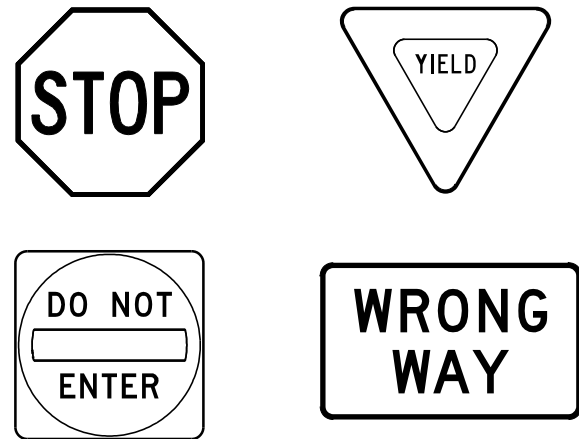
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© TxDOT	October 2003	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0915	46	052	CORDOVA				
12-03	7-13	DIST	COUNTY	SHEET NO.					
9-08		SAT	GUADALUPE	426					

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REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS

(STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	WHITE	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE B OR C SHEETING
LEGEND	RED	TYPE B OR C SHEETING

REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS

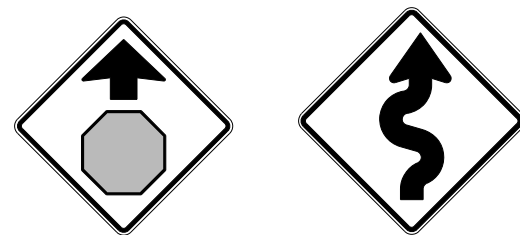
(EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND, BORDERS AND SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR WARNING SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	FLOURESCENT YELLOW	TYPE B _{FL} OR C _{FL} SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR SCHOOL SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	FLOURESCENT YELLOW GREEN	TYPE B _{FL} OR C _{FL} SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
SYMBOLS	RED	TYPE B OR C SHEETING

GENERAL NOTES

- 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

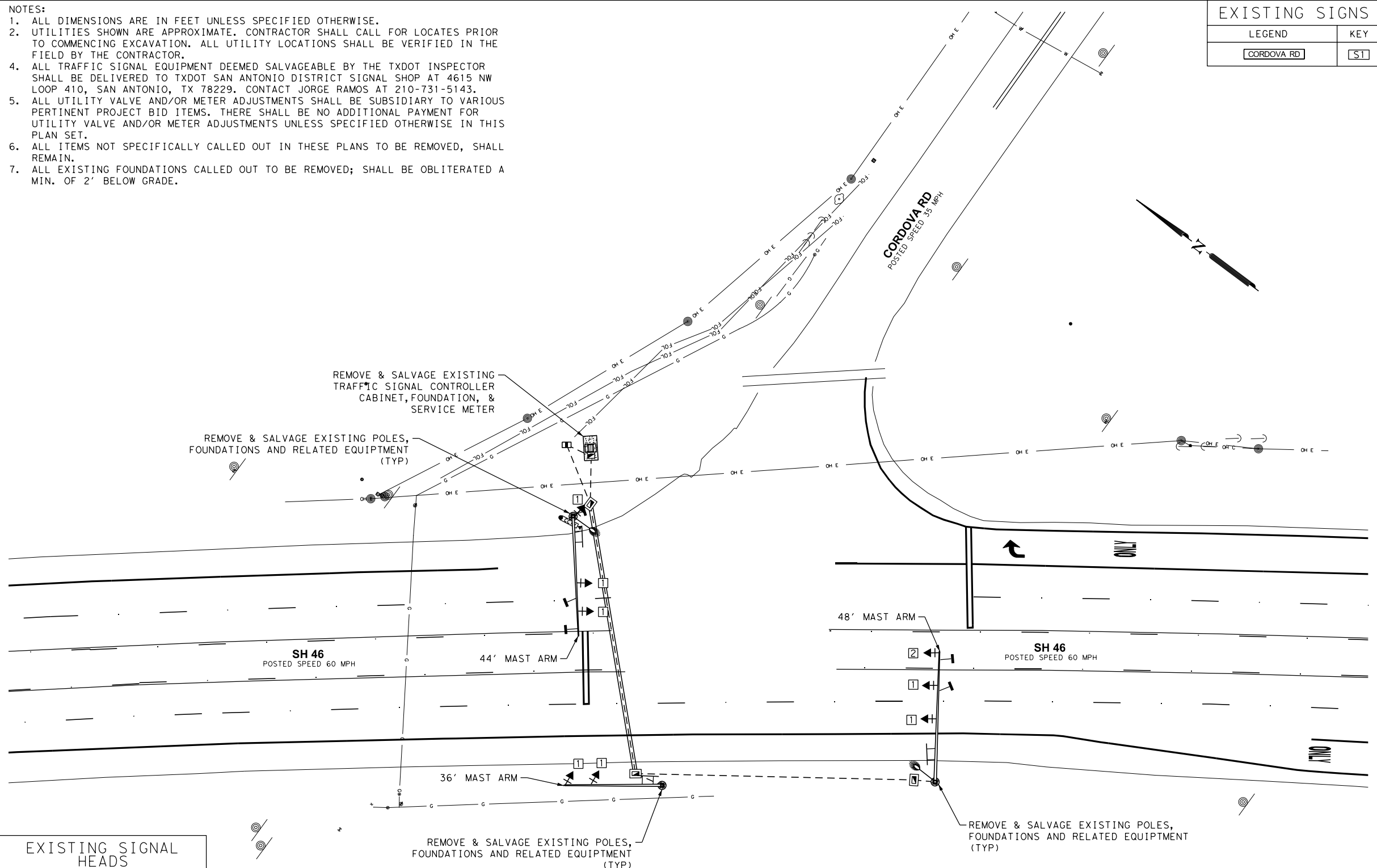
The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website:
<http://www.txdot.gov/>

				Traffic Operations Division Standard	
<h2>TYPICAL SIGN REQUIREMENTS</h2> <h3>TSR(4) - 13</h3>					
FILE:	tsr4-13.dgn	DN:	TxDOT	CK:	TxDOT
© TxDOT	October 2003	CONT:	SECT:	JOB:	HIGHWAY:
REVISIONS		0915	46	052	CORDOVA
12-03	7-13	DIST:	COUNTY:		SHEET NO.
9-08		SAT	GUADALUPE		427

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Traffic\1277500_TRAFF_EXIST_01.dgn

- NOTES:
1. ALL DIMENSIONS ARE IN FEET UNLESS SPECIFIED OTHERWISE.
 2. UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR SHALL CALL FOR LOCATES PRIOR TO COMMENCING EXCAVATION. ALL UTILITY LOCATIONS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR.
 4. ALL TRAFFIC SIGNAL EQUIPMENT DEEMED SALVAGEABLE BY THE TXDOT INSPECTOR SHALL BE DELIVERED TO TXDOT SAN ANTONIO DISTRICT SIGNAL SHOP AT 4615 NW LOOP 410, SAN ANTONIO, TX 78229. CONTACT JORGE RAMOS AT 210-731-5143.
 5. ALL UTILITY VALVE AND/OR METER ADJUSTMENTS SHALL BE SUBSIDIARY TO VARIOUS PERTINENT PROJECT BID ITEMS. THERE SHALL BE NO ADDITIONAL PAYMENT FOR UTILITY VALVE AND/OR METER ADJUSTMENTS UNLESS SPECIFIED OTHERWISE IN THIS PLAN SET.
 6. ALL ITEMS NOT SPECIFICALLY CALLED OUT IN THESE PLANS TO BE REMOVED, SHALL REMAIN.
 7. ALL EXISTING FOUNDATIONS CALLED OUT TO BE REMOVED; SHALL BE OBLITERATED A MIN. OF 2' BELOW GRADE.



EXISTING SIGNAL HEADS	
KEY	QTY
1	7
2	1

ELECTRICAL SERVICE DATA											
Elec. Service ID	Electrical Service Description (see ED (5) - 14)	Service Conduit Size	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole / Amp	Two - Pole Contactor Amps	Panel/bd/ Load center Amp Rating	Circuit No.	Branch Ckt. Bkr. Pole / Amps	Branch Circuit Amps	KVA Load
TL-1	ELEC SERV TY D (120/240)070(NS)AL(E)TP(O)	2"	3/#6	N/A	2P/70	30	100	A(SIGNAL) B(LUM)	1P/50 1P/20	40	6.4

CONTRACTOR SHALL CONTACT DIGTESS @ 1-800-DIG-TESS OR TEXAS-811 FOR UTILITY LOCATION AT LEAST 72 HOURS PRIOR TO BEGINNING CONSTRUCTION

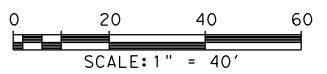
CAUTION: THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT UNDERGROUND UTILITIES INCLUDING GAS ARE KNOWN TO EXIST IN THE VICINITY OF THIS WORK. CONTRACTOR SHALL CALL FOR LOCATES PRIOR TO BEGINNING WORK AND SHALL EXERCISE CAUTION WHEN INSTALLING SIGNAL EQUIPMENT INCLUDING POLE FOUNDATIONS AND CONDUITS

EXISTING SIGNS	
LEGEND	KEY
CORDOVA RD	S1

LEGEND	
(A)	EQUIPMENT ID
(01)	CABLE RUN ID
⊕	SIGNAL POLE
→	VEHICLE SIGNAL HEAD
⊥	MAST ARM SIGN
⊥	STREET NAME SIGN
CCTV	CCTV
☀	LUMINAIRE
⊙	PEDESTAL POLE
⊥	PEDESTRIAN SIGNAL
⊥	ELECTRIC SERVICE
---	CABLE RUN (TRENCH)
====	CABLE RUN (BORE)
□	GROUND BOX
⊕	GROUND MOUNTED SIGN
⊕	SIGNAL CONTROLLER

DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JUSTIN W. CLARK
 P.E. SERIAL NO: 118715
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: GILMER D. GASTON
 P.E. SERIAL NO: 80472
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

Pape-Dawson Engineers
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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SH 46 AT CORDOVA RD
EXISTING CONDITIONS

DON:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	SAT	GUADALUPE	0915	46	052	428

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Traffic\1277500_TRAFO1.dgn

PROPOSED TRAFFIC SIGNAL HEADS

	12" LED SIGNAL SECTIONS WITH VENTED ALUMINUM BACKPLATES	12" LED SIGNAL SECTIONS WITH VENTED ALUMINUM BACKPLATES	12" LED SIGNAL SECTIONS WITH VENTED ALUMINUM BACKPLATES	LED COUNTDOWN PEDESTRIAN SIGNALS
SIGNAL FACES				
KEY	1	2	3	W1 THRU W2
QTY	9	4	1	2

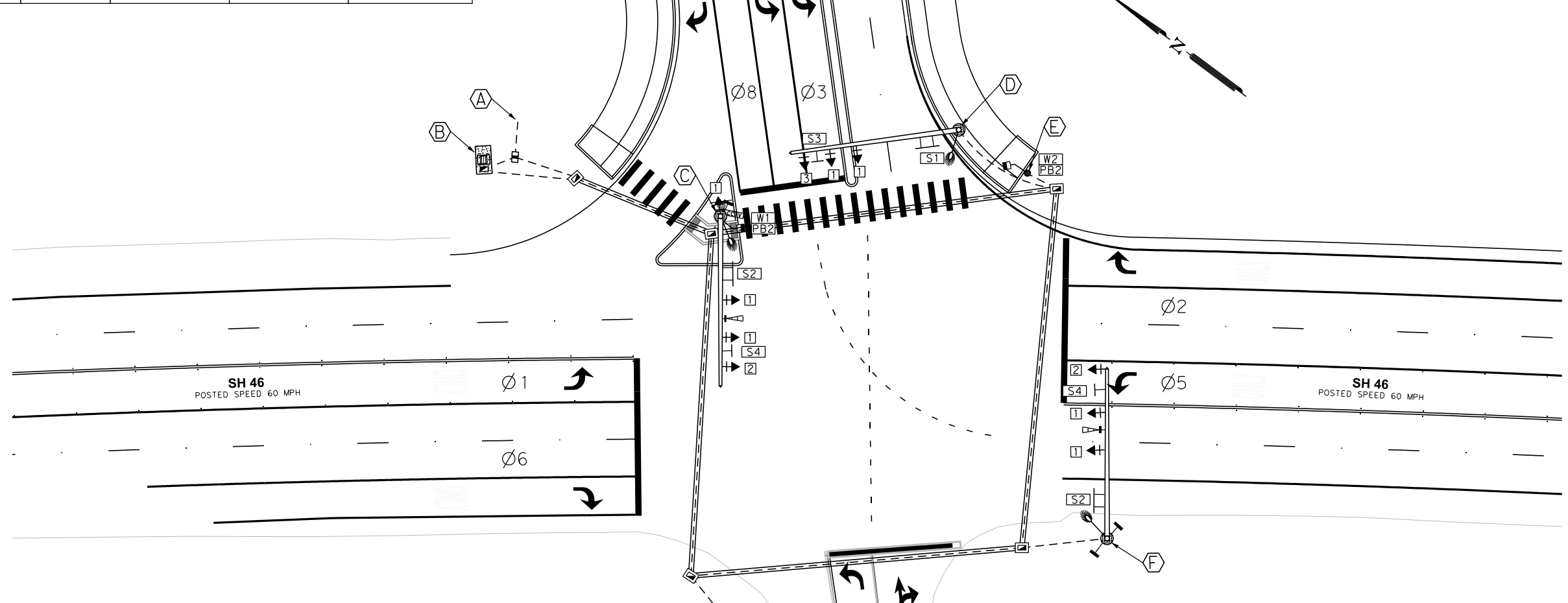
CAUTION:
THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT UNDERGROUND UTILITIES INCLUDING GAS ARE KNOWN TO EXIST IN THE VICINITY OF THIS WORK. CONTRACTOR SHALL CALL FOR LOCATES PRIOR TO BEGINNING WORK AND SHALL EXERCISE CAUTION WHEN INSTALLING SIGNAL EQUIPMENT INCLUDING POLE FOUNDATIONS AND CONDUITS

PROPOSED SIGNS

LEGEND	TYPE	KEY
	SEE SIGNING DETAILS	S1
		S2
	R10-17T (30" x 30")	S3
	R3-5L (36" x 30")	S4
	R10-3E L (9" x 15")	PB1
	R10-3E R (9" x 15")	PB2

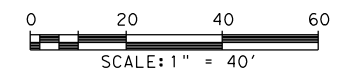
LEGEND

	EQUIPMENT ID
	CABLE RUN ID
	SIGNAL POLE
	VEHICLE SIGNAL HEAD
	MAST ARM SIGN
	STREET NAME SIGN
	CCTV
	LUMINAIRE
	PEDESTAL POLE
	PEDESTRIAN SIGNAL
	ELECTRIC SERVICE
	CABLE RUN (TRENCH)
	CABLE RUN (BORE)
	GROUND BOX
	GROUND MOUNTED SIGN
	SIGNAL CONTROLLER



DESIGN
INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JUSTIN W. CLARK
P.E. SERIAL NO: 118715
DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: GILMER D. GASTON
P.E. SERIAL NO: 80472
DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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GUADALUPE COUNTY

Texas Department of Transportation
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SH 46 AT CORDOVA RD

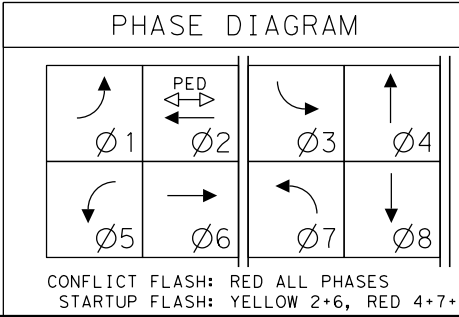
TRAFFIC SIGNAL LAYOUT

SHEET 2 OF 4

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				429

- NOTES:
- CONTRACTOR SHALL POTHOLE SIGNAL POLE FOUNDATION LOCATIONS NEAR UNDERGROUND UTILITIES PRIOR TO INSTALLING POLE FOUNDATION.
 - UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR SHALL CALL FOR LOCATES PRIOR TO COMMENCING EXCAVATION. ALL UTILITY LOCATIONS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR.
 - LOCATION OF TRAFFIC SIGNAL POLES, CABINET AND ELECTRICAL SERVICE SHALL BE VERIFIED AND APPROVED BY TXDOT PRIOR TO CONSTRUCTION.
 - CONTRACTOR SHALL CONNECT FIELD WIRING TO CONTROLLER.
 - LUMINAIRES ARE SHOWN FOR CLARITY PURPOSES ONLY; ORIENT THEM AS DIRECTED BY THE ENGINEER.
 - THE CONTRACTOR SHALL BE REQUIRED TO KEEP THE EXISTING TRAFFIC SIGNAL EQUIPMENT OPERATIONAL OR HAVE A POLICE OFFICER PRESENT DURING CONSTRUCTION OF THE PROPOSED TRAFFIC SIGNAL.
 - AN ADDITIONAL 2" SCHEDULE 80 PVC SHALL BE INSTALLED AT EACH POLE FOUNDATION STUBBED OUT 2' FROM THE FACE OF THE FOUNDATION. STUB OUTS SHALL BE APPROPRIATELY CAPPED BELOW GRADE FOR FUTURE USE.
 - CONTRACTOR SHALL REMOVE AND DELIVER ANY EQUIPMENT DEEMED SALVAGEABLE TO TXDOT SIGNAL SHOP LOCATED AT 4615 NW LOOP 410 SAN ANTONIO TEXAS 78229. CONTACT JORGE RAMOS AT 210-668-3245
 - THE CONTRACTOR SHALL SUPPLY AND INSTALL THE ADDRESS IN PERMANENT NUMBERS AND LETTERS TO THE STREET SIDE OF THE SERVICE ENCLOSURE. SAID ADDRESS SHALL ALSO BE RECORDED AND GIVEN TO THE TXDOT INSPECTOR FOR THEIR RECORDS.
 - NEATLY CAP/COIL ALL WIRES AND CABLES IN GROUND BOX OR AT TERMINATION.
 - SIGNAL OPERATION WILL BE MONITORED AFTER CONSTRUCTION AND MODIFIED AS NECESSARY.

CONTRACTOR SHALL CONTACT DIGTESS @ 1-800-DIG-TESS OR TEXAS-811 FOR UTILITY LOCATION AT LEAST 72 HOURS PRIOR TO BEGINNING CONSTRUCTION



Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\Traffic\1277500_TRAFF_EX1ST_02.dgn

NOTES:

1. ALL DIMENSIONS ARE IN FEET UNLESS SPECIFIED OTHERWISE.
2. UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR SHALL CALL FOR LOCATES PRIOR TO COMMENCING EXCAVATION. ALL UTILITY LOCATIONS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR.
4. ALL TRAFFIC SIGNAL EQUIPMENT DEEMED SALVAGEABLE BY THE TXDOT INSPECTOR SHALL BE DELIVERED TO TXDOT SAN ANTONIO DISTRICT SIGNAL SHOP AT 4615 NW LOOP 410, SAN ANTONIO, TX 78229. CONTACT JORGE RAMOS AT 210-731-5143.
5. ALL UTILITY VALVE AND/OR METER ADJUSTMENTS SHALL BE SUBSIDIARY TO VARIOUS PERTINENT PROJECT BID ITEMS. THERE SHALL BE NO ADDITIONAL PAYMENT FOR UTILITY VALVE AND/OR METER ADJUSTMENTS UNLESS SPECIFIED OTHERWISE IN THIS PLAN SET.
6. ALL ITEMS NOT SPECIFICALLY CALLED OUT IN THESE PLANS TO BE REMOVED, SHALL REMAIN.
7. ALL EXISTING FOUNDATIONS CALLED OUT TO BE REMOVED; SHALL BE OBLITERATED A MIN. OF 2' BELOW GRADE.

CONTRACTOR SHALL CONTACT DIGTESS @ 1-800-DIG-TESS OR TEXAS-811 FOR UTILITY LOCATION AT LEAST 72 HOURS PRIOR TO BEGINNING CONSTRUCTION

CAUTION:
THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT UNDERGROUND UTILITIES INCLUDING GAS ARE KNOWN TO EXIST IN THE VICINITY OF THIS WORK. CONTRACTOR SHALL CALL FOR LOCATES PRIOR TO BEGINNING WORK AND SHALL EXERCISE CAUTION WHEN INSTALLING SIGNAL EQUIPMENT INCLUDING POLE FOUNDATIONS AND CONDUITS

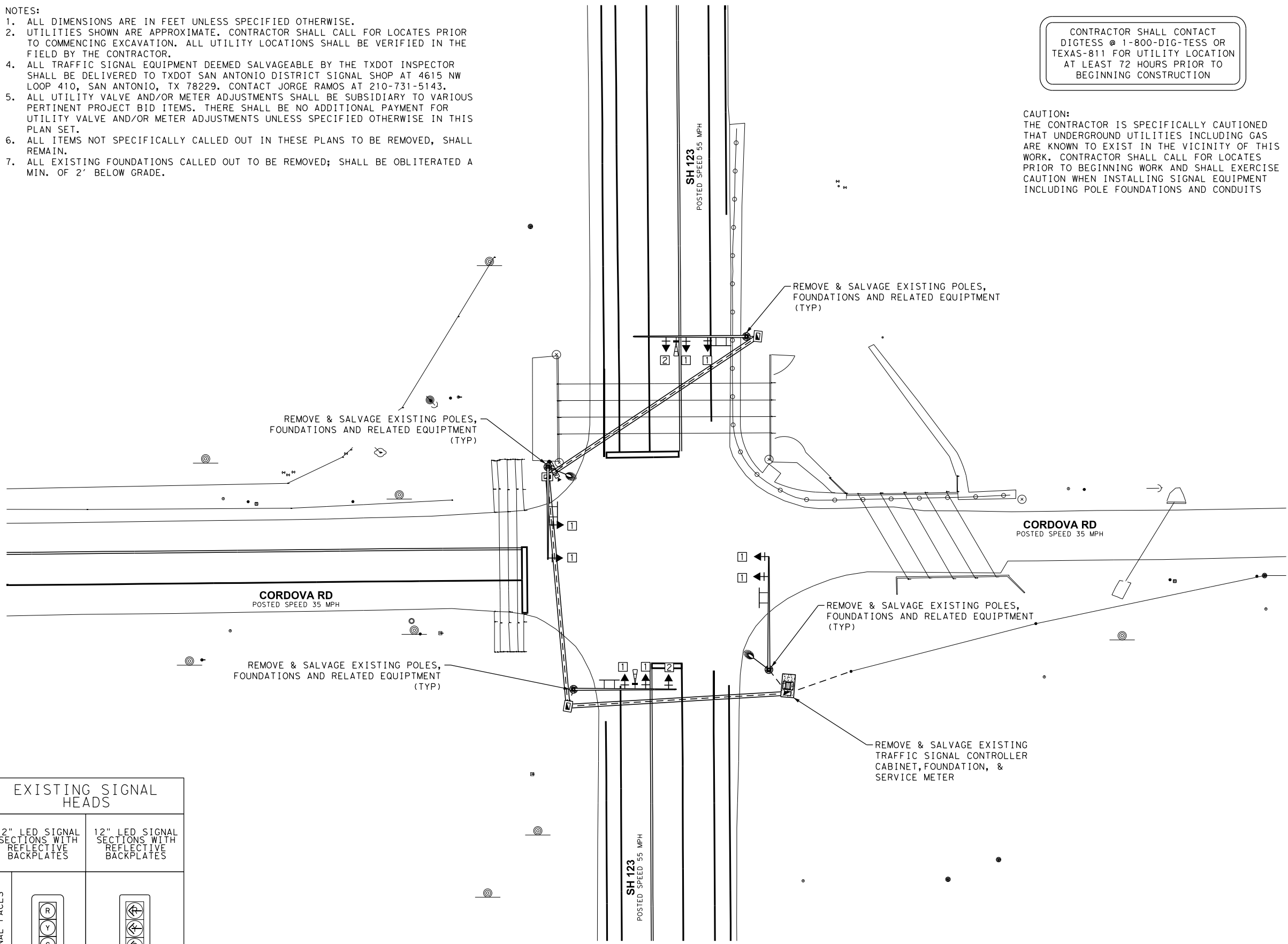
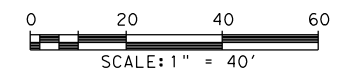
LEGEND	
	EQUIPMENT ID
	CABLE RUN ID
	SIGNAL POLE
	VEHICLE SIGNAL HEAD
	MAST ARM SIGN
	STREET NAME SIGN
	CCTV
	LUMINAIRE
	PEDESTAL POLE
	PEDESTRIAN SIGNAL
	ELECTRIC SERVICE
	CABLE RUN (TRENCH)
	CABLE RUN (BORE)
	GROUND BOX
	GROUND MOUNTED SIGN
	SIGNAL CONTROLLER

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JUSTIN W. CLARK
P.E. SERIAL NO: 118715
DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: GILMER D. GASTON
P.E. SERIAL NO: 80472
DATE: 11/17/2023



EXISTING SIGNAL HEADS	
12" LED SIGNAL SECTIONS WITH REFLECTIVE BACKPLATES	12" LED SIGNAL SECTIONS WITH REFLECTIVE BACKPLATES
KEY	1 2
QTY	8 2

ELECTRICAL SERVICE DATA											
Elec. Service ID	Electrical Service Description (see ED (5) - 14)	Service Conduit Size	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole / Amp	Two - Pole Contactor Amps	Panel/bd/Load center Amp Rating	Circuit No.	Branch Ckt. Bkr. Pole / Amps	Branch Circuit Amps	KVA Load
TL-1	ELEC SERV TY D (120/240) 070 (NS) AL (E) TP (O)	2"	3/#6	N/A	2P/70	30	100	A (SIGNAL) B (LUM)	1P/50 1P/20	40	6.4

REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
©2023			
SH 123 AT CORDOVA RD			
EXISTING CONDITIONS			
SHEET 3 OF 4			
DN:	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO. CORDOVA
CHK DGN:	DIST. COUNTY	CONT. NO. SECT. NO.	JOB NO. SHEET NO.
CHK DWG:	SAT GUADALUPE	0915 46	052 430

Plotted on: 11/17/2023

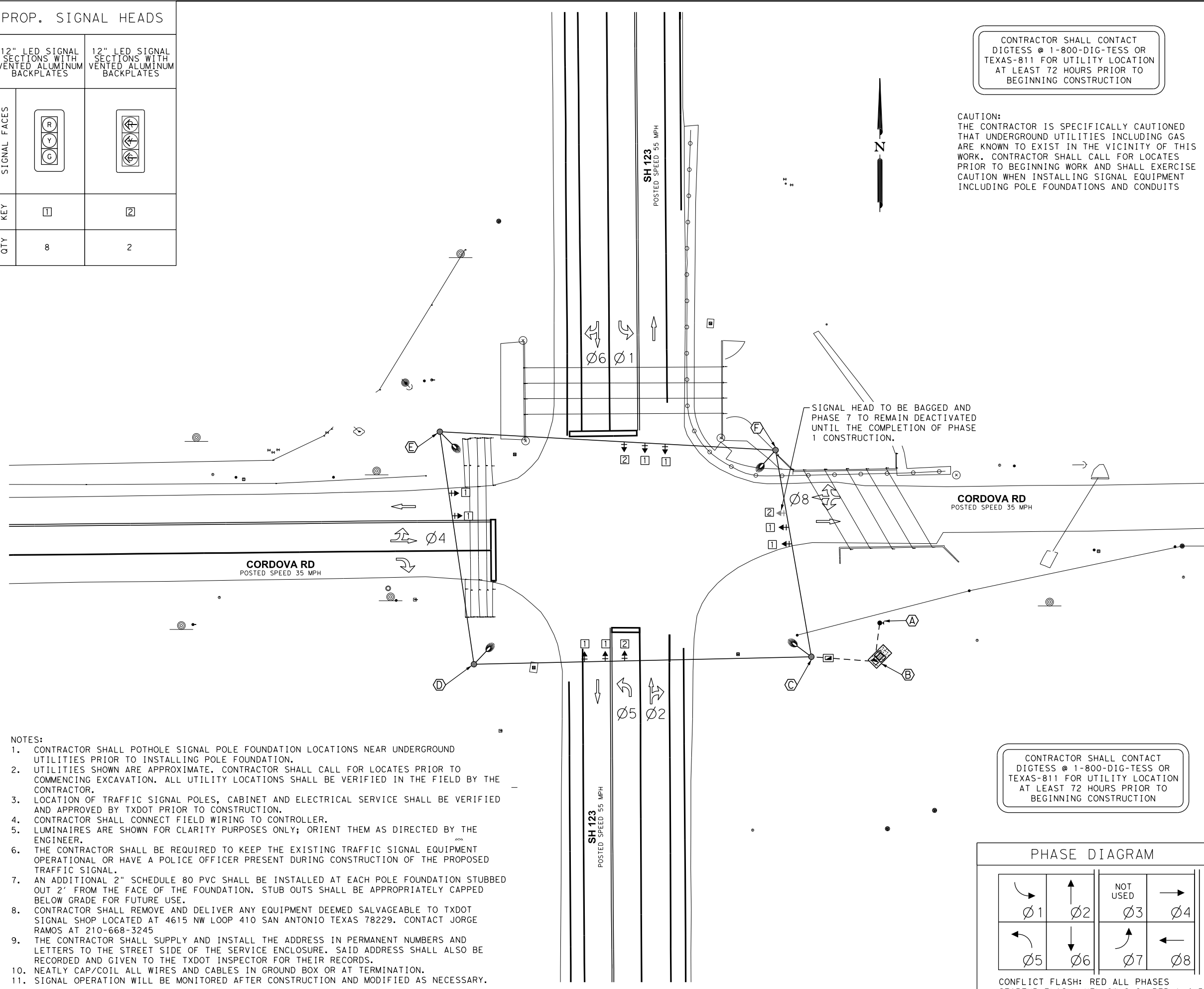
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PROP. SIGNAL HEADS	
12" LED SIGNAL SECTIONS WITH VENTED ALUMINUM BACKPLATES	12" LED SIGNAL SECTIONS WITH VENTED ALUMINUM BACKPLATES
KEY	KEY
1	2
QTY	QTY
8	2

CONTRACTOR SHALL CONTACT DIGTESS @ 1-800-DIG-TESS OR TEXAS-811 FOR UTILITY LOCATION AT LEAST 72 HOURS PRIOR TO BEGINNING CONSTRUCTION

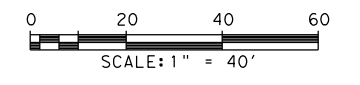
CAUTION: THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT UNDERGROUND UTILITIES INCLUDING GAS ARE KNOWN TO EXIST IN THE VICINITY OF THIS WORK. CONTRACTOR SHALL CALL FOR LOCATES PRIOR TO BEGINNING WORK AND SHALL EXERCISE CAUTION WHEN INSTALLING SIGNAL EQUIPMENT INCLUDING POLE FOUNDATIONS AND CONDUITS

LEGEND	
	EQUIPMENT ID
	CABLE RUN ID
	SIGNAL POLE
	VEHICLE SIGNAL HEAD
	MAST ARM SIGN
	STREET NAME SIGN
	CCTV
	LUMINAIRE
	TIMBER POLE
	PEDESTRIAN SIGNAL
	ELECTRIC SERVICE
	CABLE RUN (TRENCH)
	CABLE RUN (BORE)
	GROUND BOX
	GROUND MOUNTED SIGN
	SIGNAL CONTROLLER



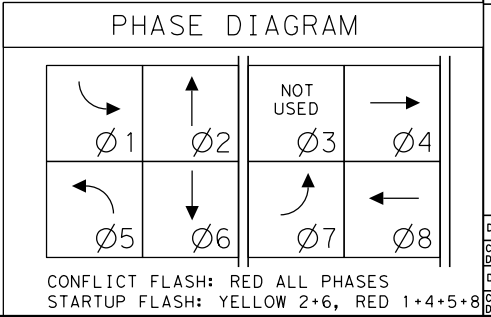
DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JUSTIN W. CLARK
 P.E. SERIAL NO: 118715
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: GILMER D. GASTON
 P.E. SERIAL NO: 80472
 DATE: 11/17/2023



- NOTES:
- CONTRACTOR SHALL POTHOLE SIGNAL POLE FOUNDATION LOCATIONS NEAR UNDERGROUND UTILITIES PRIOR TO INSTALLING POLE FOUNDATION.
 - UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR SHALL CALL FOR LOCATES PRIOR TO COMMENCING EXCAVATION. ALL UTILITY LOCATIONS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR.
 - LOCATION OF TRAFFIC SIGNAL POLES, CABINET AND ELECTRICAL SERVICE SHALL BE VERIFIED AND APPROVED BY TXDOT PRIOR TO CONSTRUCTION.
 - CONTRACTOR SHALL CONNECT FIELD WIRING TO CONTROLLER.
 - LUMINAIRES ARE SHOWN FOR CLARITY PURPOSES ONLY; ORIENT THEM AS DIRECTED BY THE ENGINEER.
 - THE CONTRACTOR SHALL BE REQUIRED TO KEEP THE EXISTING TRAFFIC SIGNAL EQUIPMENT OPERATIONAL OR HAVE A POLICE OFFICER PRESENT DURING CONSTRUCTION OF THE PROPOSED TRAFFIC SIGNAL.
 - AN ADDITIONAL 2" SCHEDULE 80 PVC SHALL BE INSTALLED AT EACH POLE FOUNDATION STUBBED OUT 2' FROM THE FACE OF THE FOUNDATION. STUB OUTS SHALL BE APPROPRIATELY CAPPED BELOW GRADE FOR FUTURE USE.
 - CONTRACTOR SHALL REMOVE AND DELIVER ANY EQUIPMENT DEEMED SALVAGEABLE TO TXDOT SIGNAL SHOP LOCATED AT 4615 NW LOOP 410 SAN ANTONIO TEXAS 78229. CONTACT JORGE RAMOS AT 210-668-3245
 - THE CONTRACTOR SHALL SUPPLY AND INSTALL THE ADDRESS IN PERMANENT NUMBERS AND LETTERS TO THE STREET SIDE OF THE SERVICE ENCLOSURE. SAID ADDRESS SHALL ALSO BE RECORDED AND GIVEN TO THE TXDOT INSPECTOR FOR THEIR RECORDS.
 - NEATLY CAP/COIL ALL WIRES AND CABLES IN GROUND BOX OR AT TERMINATION.
 - SIGNAL OPERATION WILL BE MONITORED AFTER CONSTRUCTION AND MODIFIED AS NECESSARY.

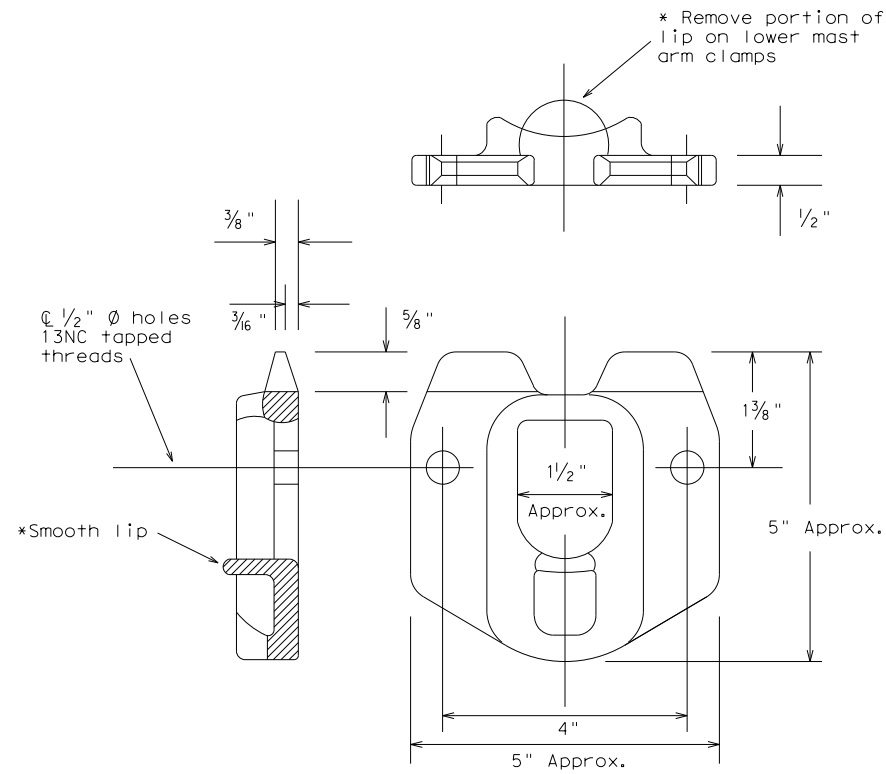
CONTRACTOR SHALL CONTACT DIGTESS @ 1-800-DIG-TESS OR TEXAS-811 FOR UTILITY LOCATION AT LEAST 72 HOURS PRIOR TO BEGINNING CONSTRUCTION



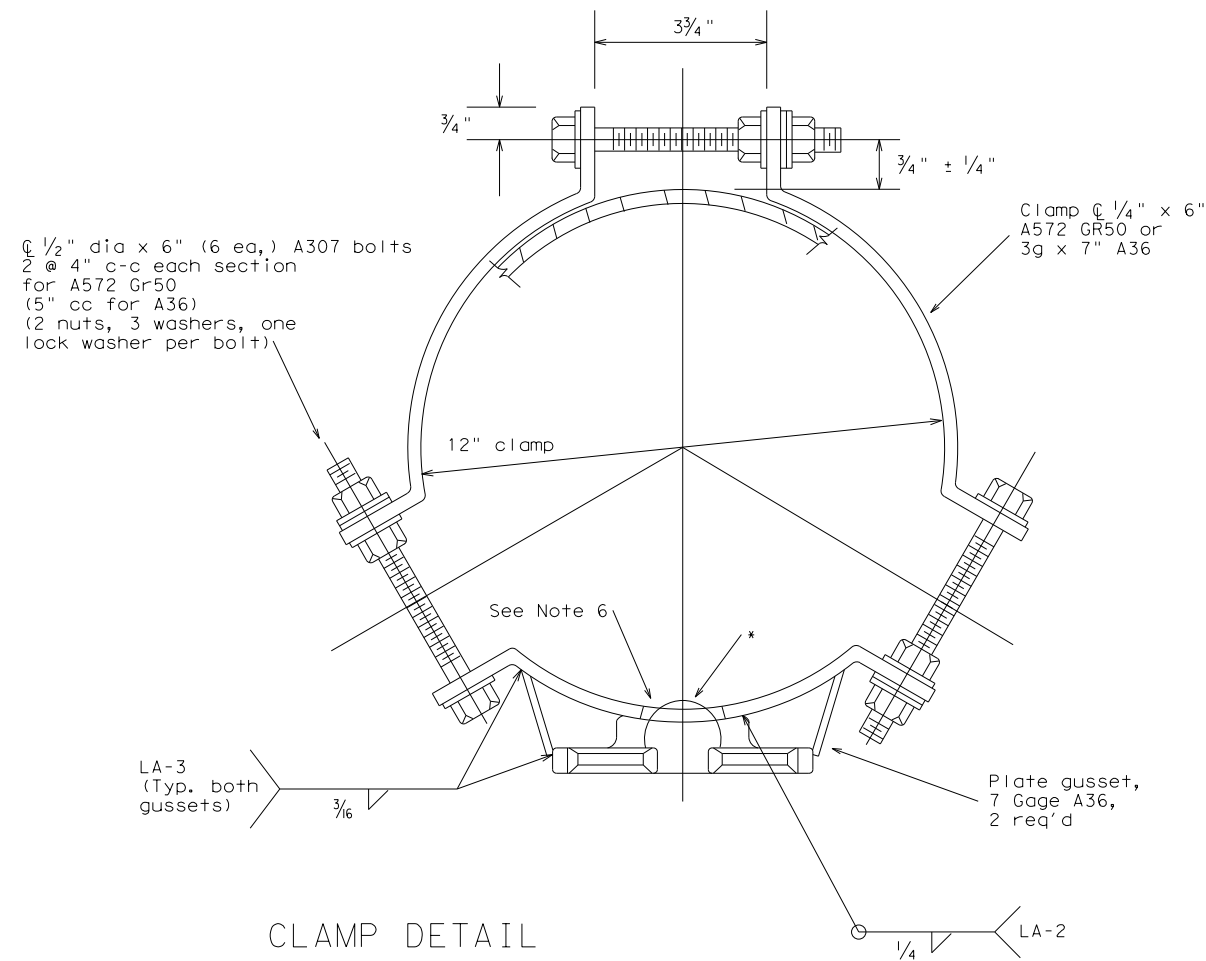
REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
©2023			
SH 123 AT CORDOVA RD			
TRAFFIC SIGNAL LAYOUT			
SHEET 4 OF 4			
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
CHK DGN:	6	TEXAS	
DWG:	DIST.:	COUNTY:	CONT. NO. SECT. NO. JOB NO. SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915 46 052 431

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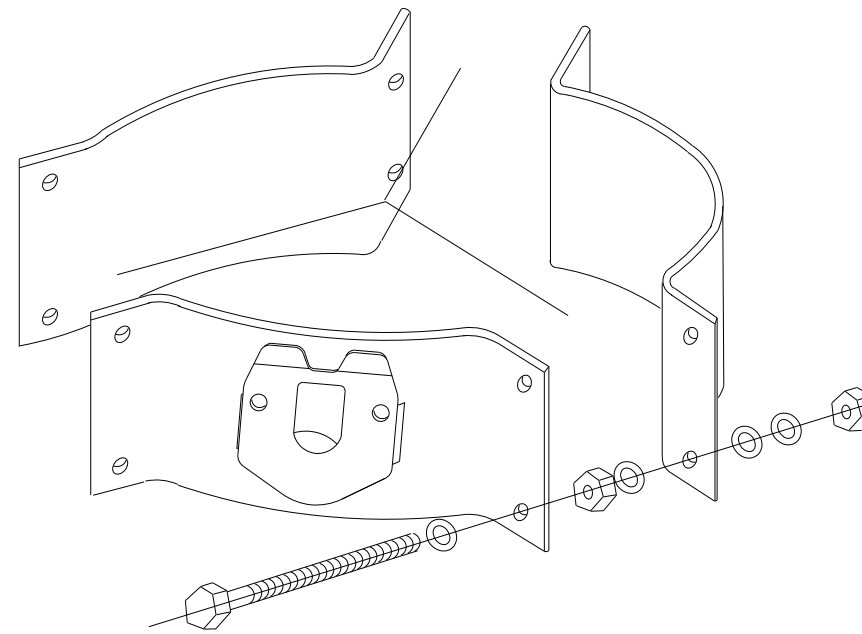
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POLE SIMPLEX DETAILS



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 11-99 1-12	REVISIONS				DN: KAB	CK: RES	DW: FDN	CK: CAL
	CONT	SECT	JOB	HIGHWAY	0915	46	052	CORDOVA
	DIST	COUNTY		SHEET NO.	SAT	GUADALUPE		432

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GENERAL NOTES FOR ALL ELECTRICAL WORK

- The location of all conduits, junction boxes, ground boxes, and electrical services is diagrammatic and may be shifted to accommodate field conditions.
- 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.
- 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.
- 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.
- 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.
- 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

- 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.
- Provide galvanized steel RMC for all exposed conduits, unless otherwise shown on the plans. Properly bond all metal conduits.
- 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"

- 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.
- 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.
- 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.
- Provide PVC junction boxes intended for outdoor use on PVC conduit systems, unless otherwise noted on the plans.

- 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.
- 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.
- 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

- 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.
- 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.
- Do not attach conduit supports directly to pre-stressed concrete beams except as shown specifically in the plans or as approved by the Engineer.
- 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.
- 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."
- Provide and place warning tape approximately 10 in. above all trenched conduit as per Item 618.
- 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.
- 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.
- 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.
- 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.
- At all electrical services, install a 6 AWG solid copper grounding electrode conductor.
- 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).
- 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.
- 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.

				Traffic Operations Division Standard	
<h2>ELECTRICAL DETAILS CONDUITS & NOTES</h2> <h3>ED(1) - 14</h3>					
FILE:	ed1-14.dgn	DN:	CK:	DW:	CK:
© TxDOT	October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS		0915	46	052	CORDOVA
		DIST	COUNTY		SHEET NO.
		SAT	GUADALUPE		433

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.

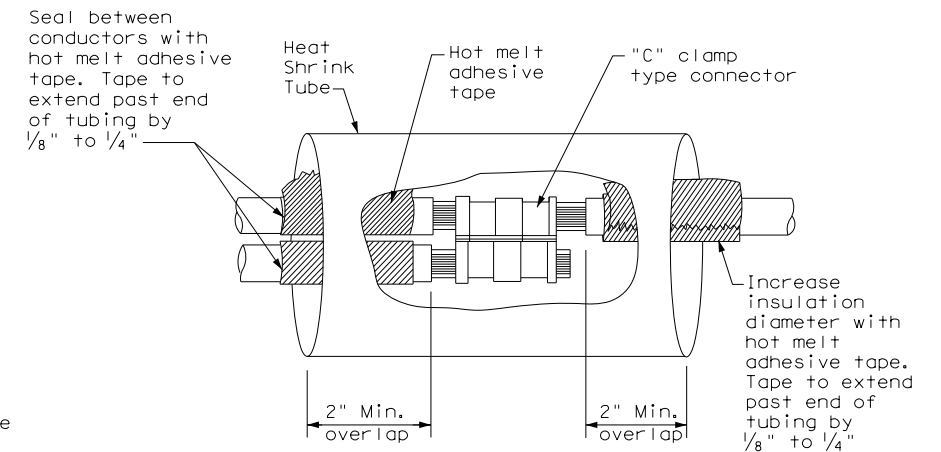
GROUND RODS & GROUNDING ELECTRODES

A. MATERIAL INFORMATION

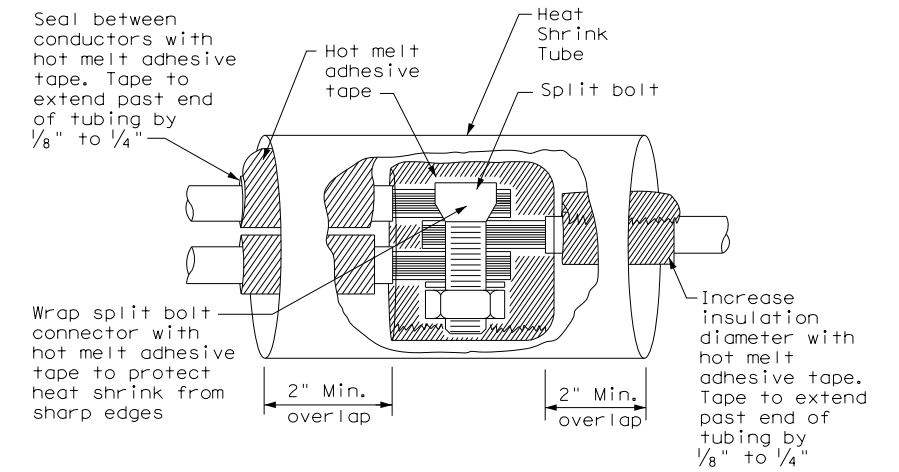
1. Provide and install a grounding electrode at electrical services. Provide ground rods according to DMS 11040 and the plans. Larger diameter or longer length rods may be called for in some specific locations, see the individual plans sheets. Concrete encased grounding electrodes may be called for in specific locations including electrical service, see individual plan sheets.

B. CONSTRUCTION METHODS

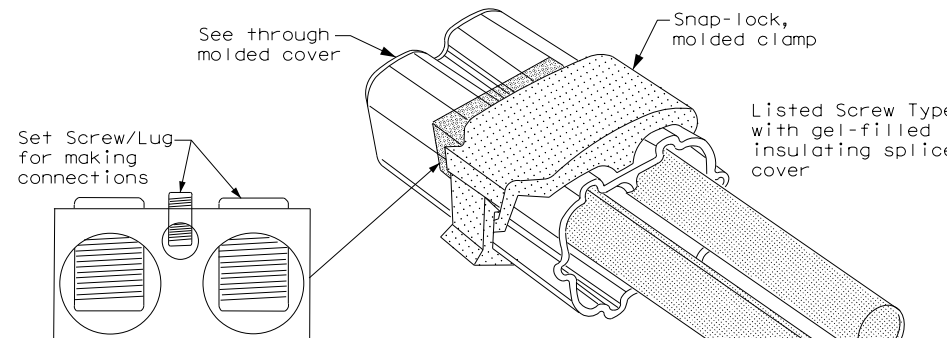
1. Furnish auxiliary ground rods for lightning protection and install in soil, concrete, or both, as called for in the plans. For ground rods installed in concrete, ensure the connection of the conductor to the ground rod is readily accessible for inspection or repairs. For ground rods installed in soil, 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



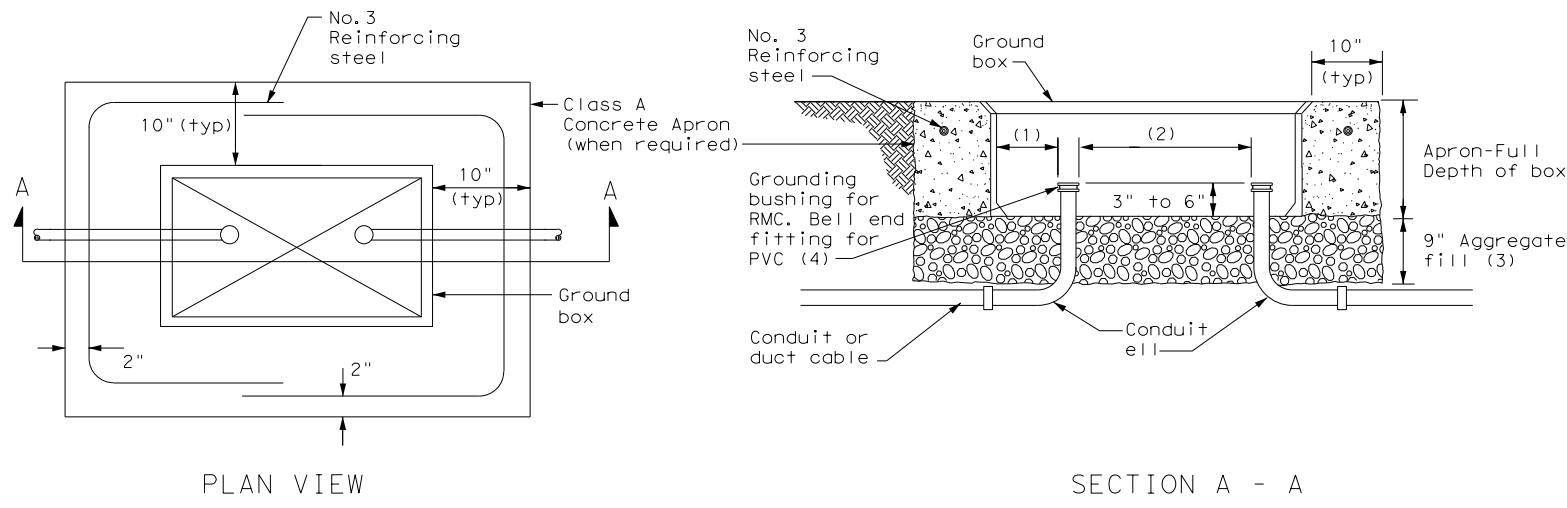
SPLICE OPTION 3
Listed Screw Type

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<h2>ELECTRICAL DETAILS CONDUCTORS</h2>			
<h3>ED(3) - 14</h3>			
FILE: ed3-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
© TxDOT October 2014	CON: 0915	SECT: 46	JOB: 052
REVISIONS	COUNTY: GUADALUPE		HIGHWAY: CORDOVA
	SAT		SHEET NO. 434

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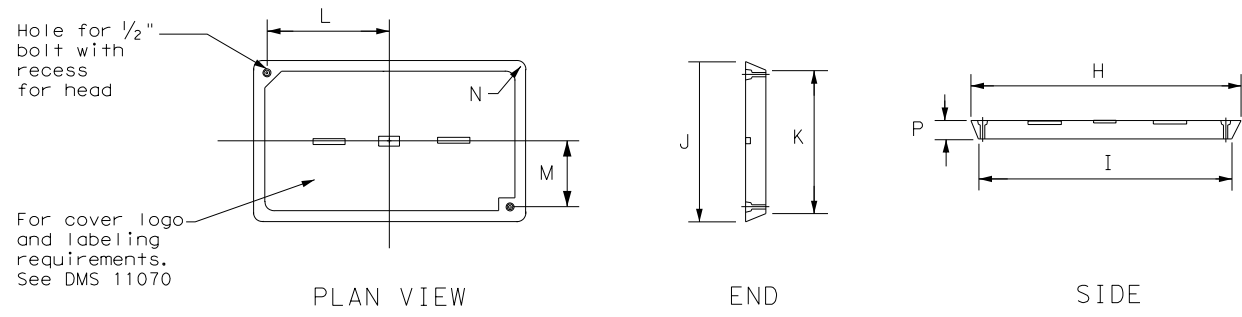


APRON FOR GROUND BOX

- (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 bushing.
- (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



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 on 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
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REVISIONS		JOB:	052	HIGHWAY:	CORDOVA
DIST:	SAT	COUNTY:	GUADALUPE	SHEET NO.:	435

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.

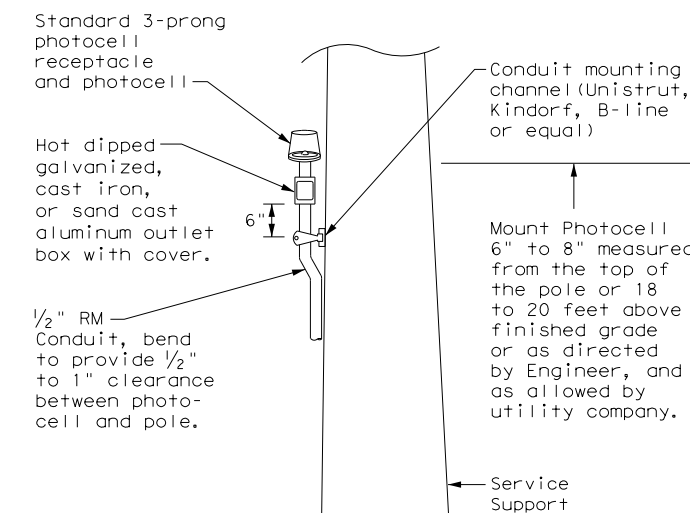
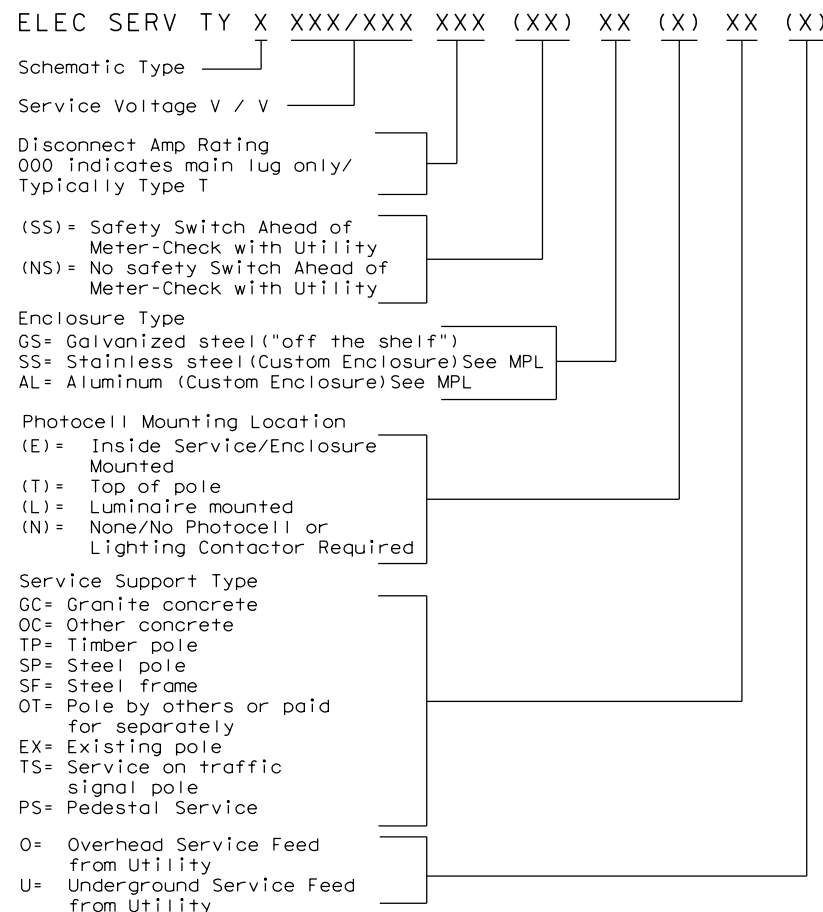
PHOTOELECTRIC CONTROL

- 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 *xS Size	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.

Texas Department of Transportation Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE NOTES & DATA

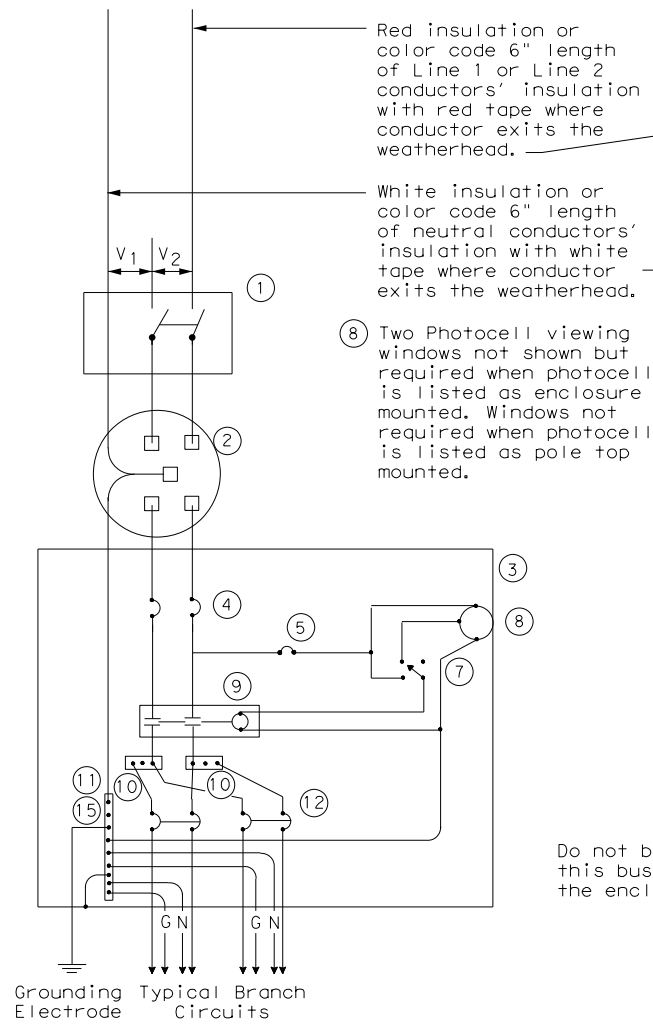
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	SAT	GUADALUPE		436	

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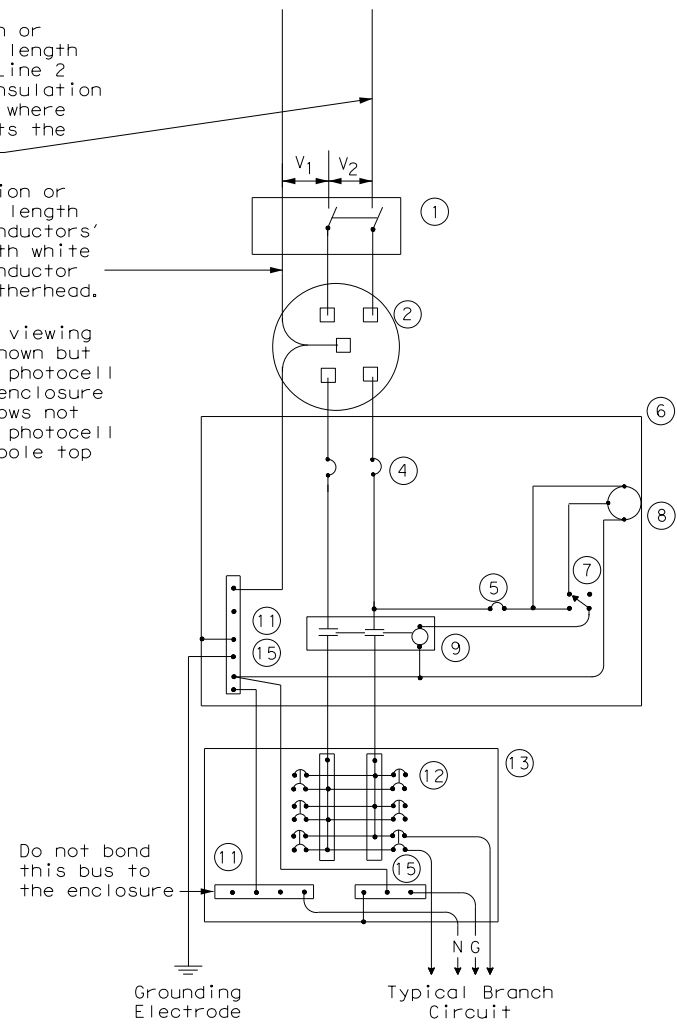
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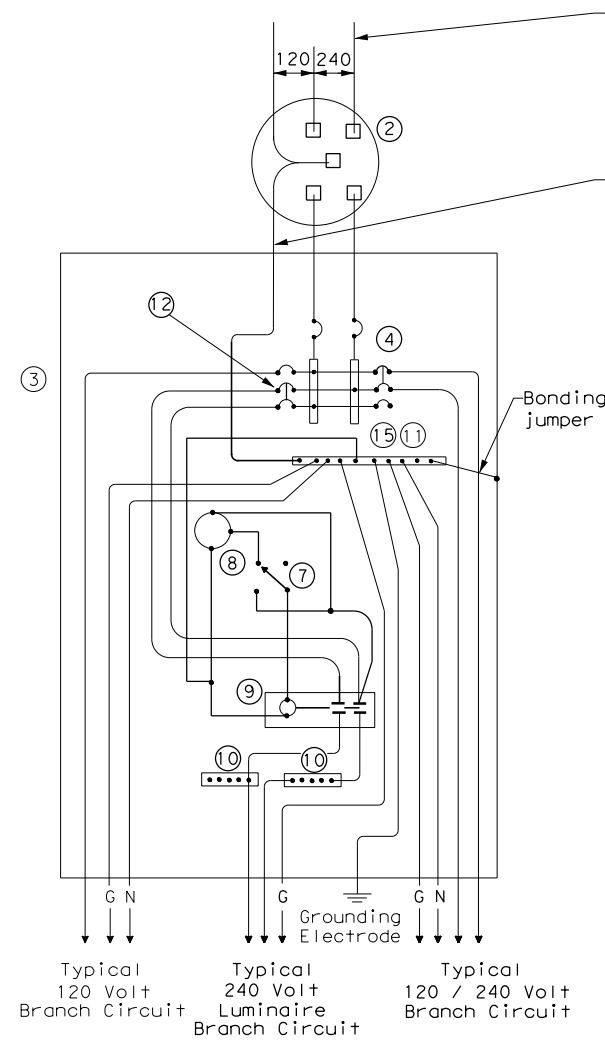


SCHEMATIC TYPE A
THREE WIRE

WIRING LEGEND	
————	Power Wiring
- - - - -	Control Wiring
—N—	Neutral Conductor
—G—	Equipment grounding conductor-always required

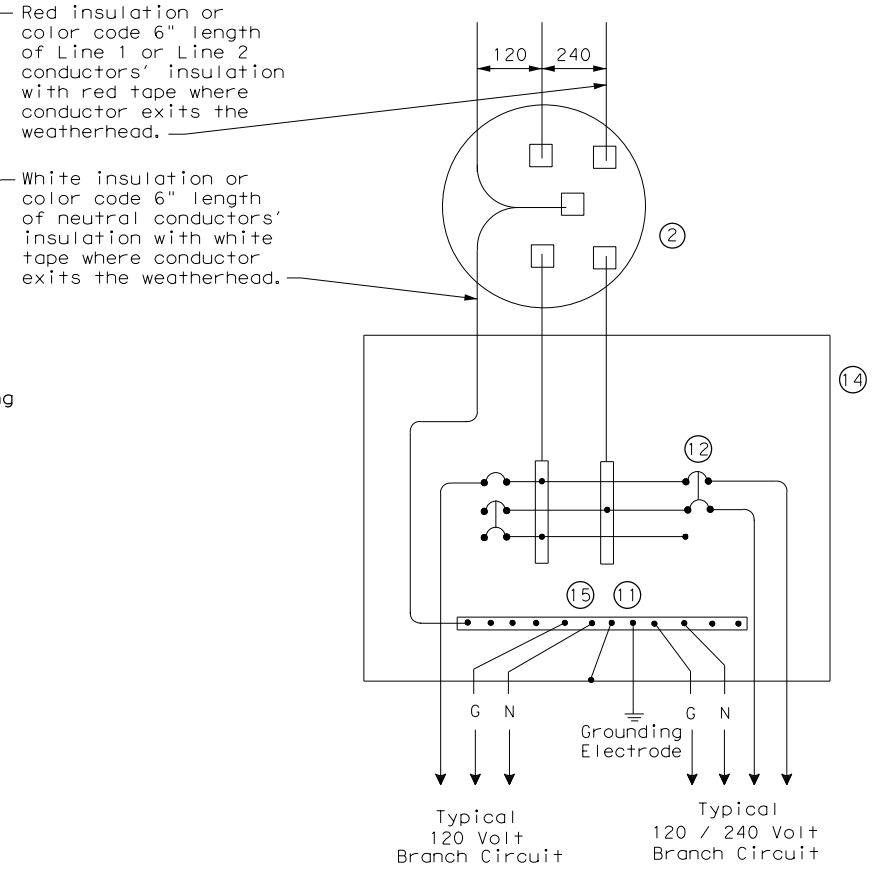


SCHEMATIC TYPE C
THREE WIRE



SCHEMATIC TYPE D - CUSTOM
120/240 VOLTS - THREE WIRE

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



SCHEMATIC TYPE T
120/240 VOLTS - THREE WIRE
Galvanized steel-"Buy Off The Shelf" only. When required install photo cell top of the pole or on luminaire only, no lighting contractor will be installed.

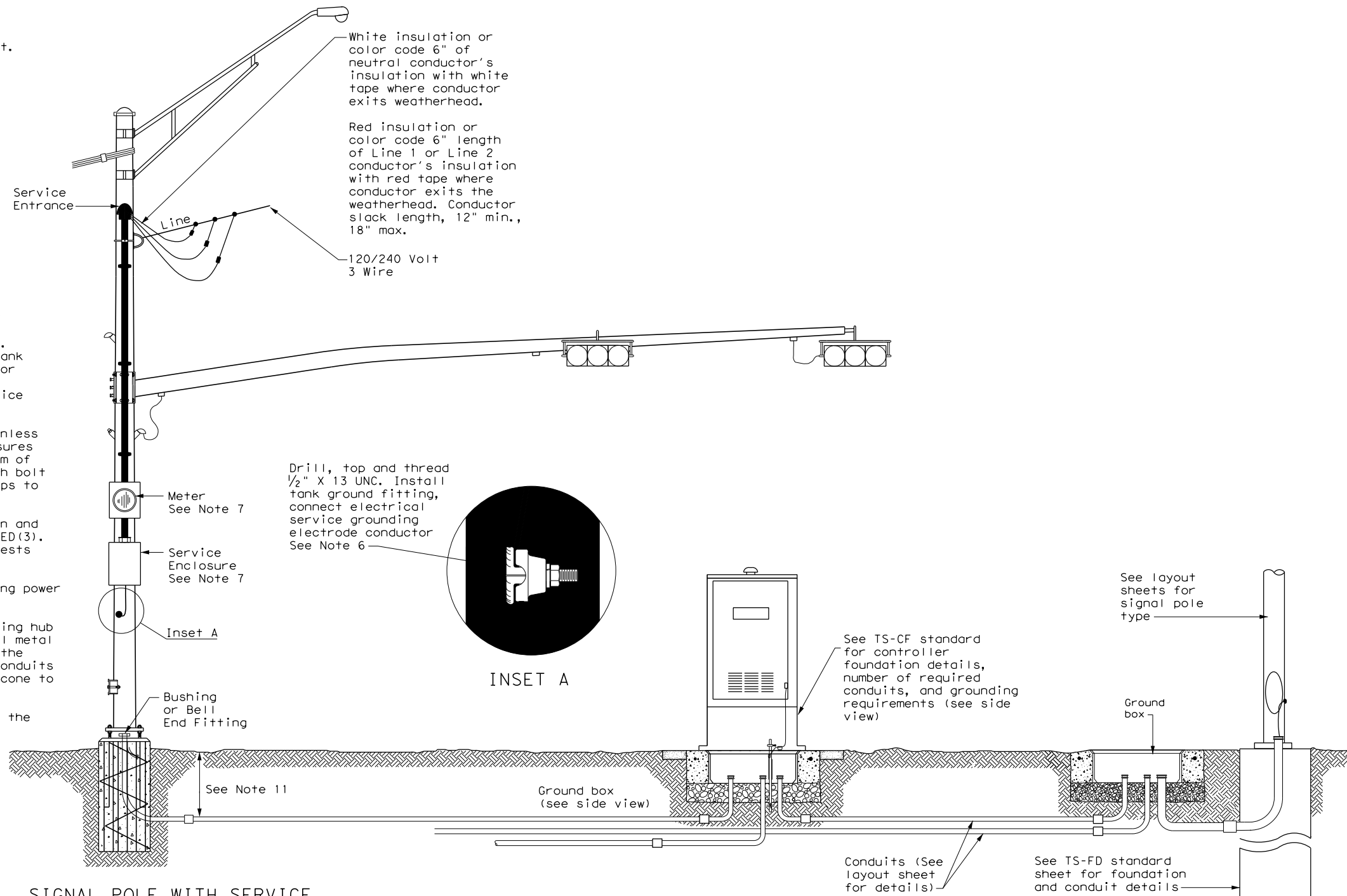
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ELECTRICAL DETAILS SERVICE ENCLOSURE AND NOTES					
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TRAFFIC SIGNAL NOTES

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".

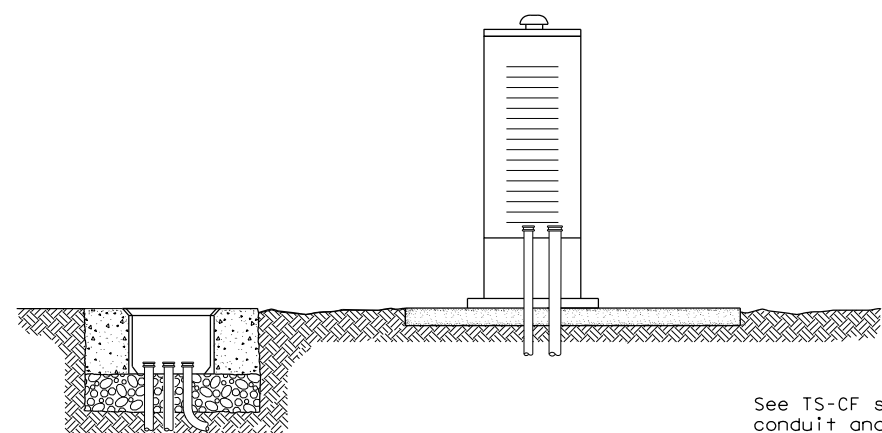


SIGNAL POLE WITH SERVICE

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**

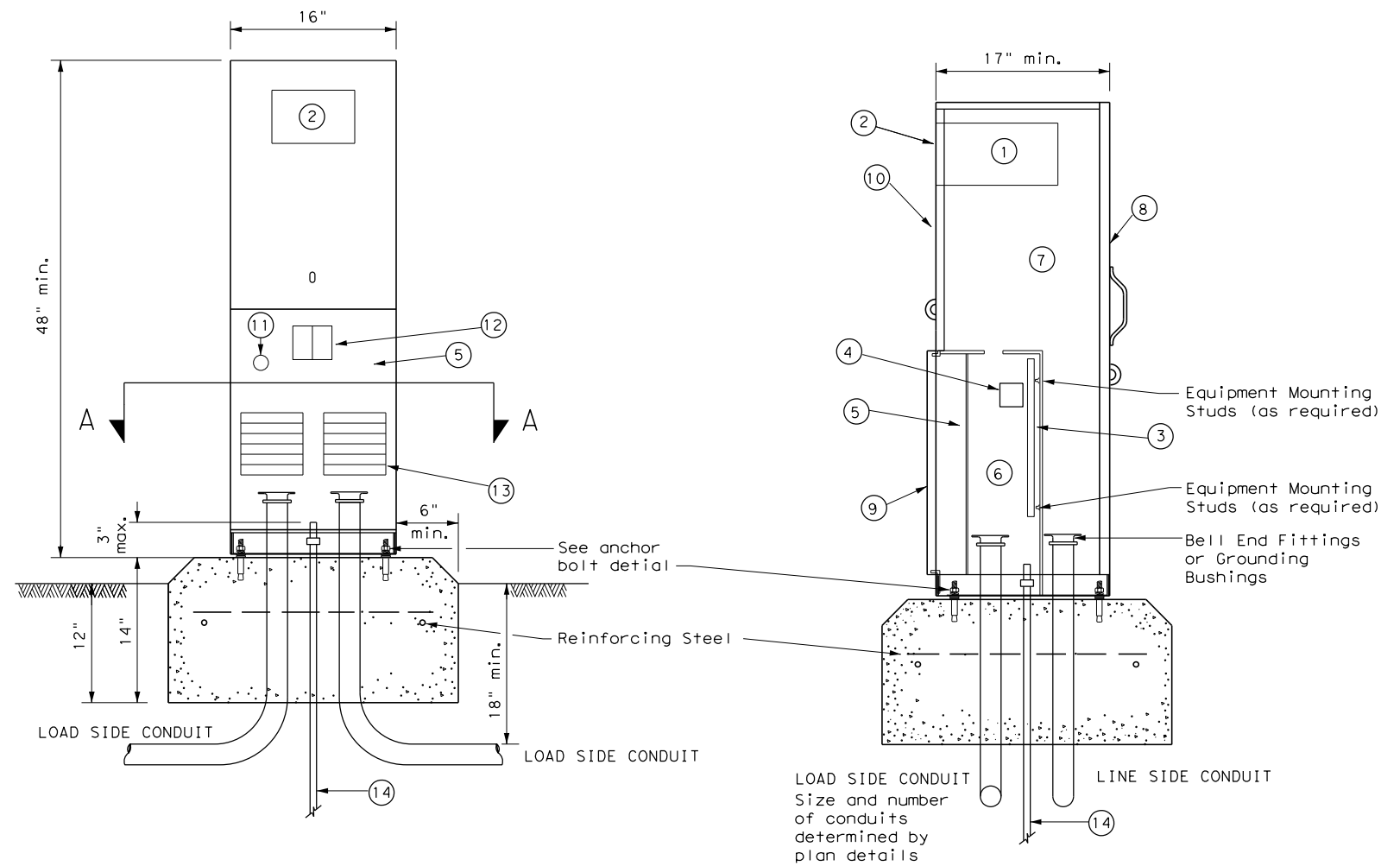
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PEDESTAL SERVICE NOTES

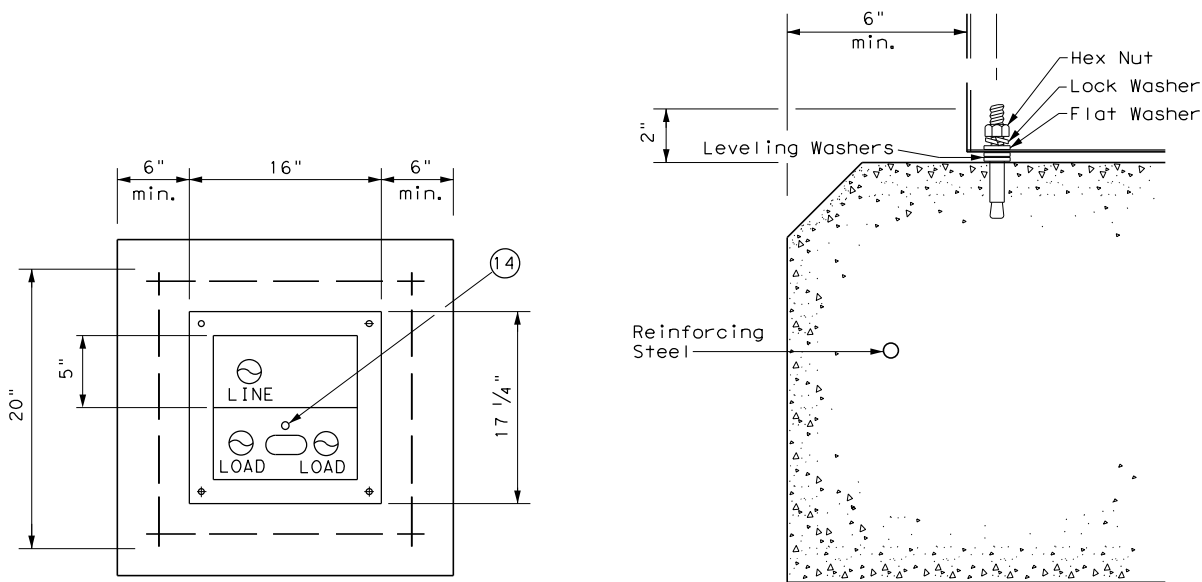
1. Manufacture pedestal electrical services in accordance with Departmental Material Specifications (DMS)11080 "Electrical Services", 11085 "Electrical Services-Pedestal (PS)" and Item 628 "Electrical Services." Provide pedestal electrical services as listed on the Material Producers list (MPL) on the 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 1/16 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

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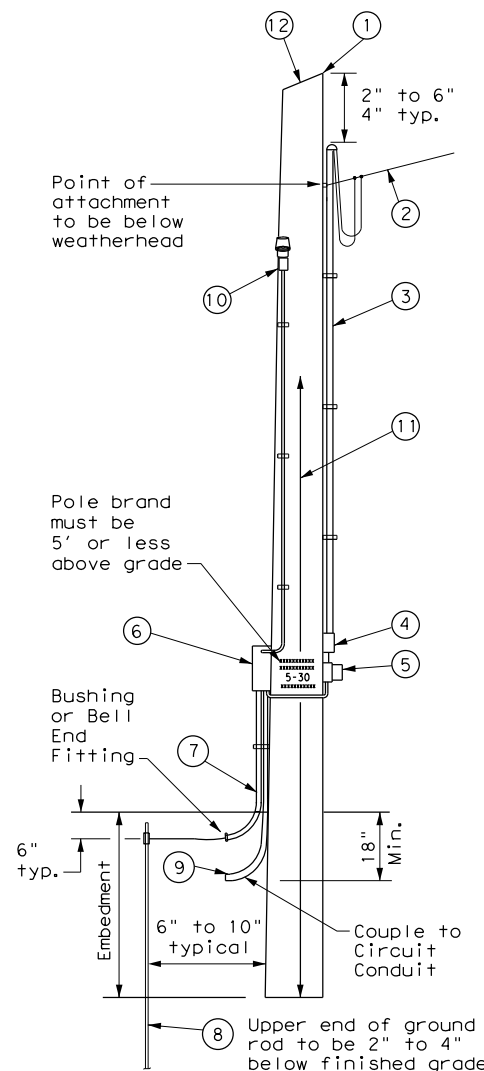
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TIMBER POLE (TP) SERVICE SUPPORT NOTES

1. Ensure electrical service support is a class 5 treated timber pole as per Item 627 "Treated Timber Poles." Embed timber pole to depth required in Item 627.
2. Conduit and electrical conductors attached to the electrical service pole and underground within 12 in. of service pole are not paid for directly but are subsidiary to the electrical service.
3. Install pole-top mounted photocell (T) on north side of pole, or in service enclosure (E) as required. See Electrical Service Data chart in plan set.
4. Gain pole as required to provide flat surface for each channel. Gain timber pole to 3/8 in. max. depth and 1 7/8 in. max. height. Gain pole in a neat and workmanlike manner.
5. Mount meter and service equipment on stainless steel or galvanized channel (Unistrut, Kindorf, or equal). Provide channel sized 1 in. to 3 3/4 in. maximum depth, and 1 1/2 in. to 1 5/8 in. maximum width. File smooth the cut ends of galvanized channel and paint with zinc rich paint before installing on pole. Secure each channel section to timber pole with two galvanized or SS lag bolts, 1/4 in. minimum diameter by 1 1/2 in. minimum length. Use a galvanized or SS flat washer on each lag bolt. Do not stack channel.
6. When excess length must be trimmed from poles, trim from the top end only.

- 1 Class 5 pole, height as required
- 2 Service drop from utility company (attached below weatherhead)
- 3 Service conduit (RMC) and service entrance conductors - One Red, One Black, One White (See Electrical Service Data)
- 4 Safety switch (when required)
- 5 Meter (when required)
- 6 Service enclosure
- 7 6 AWG bare grounding electrode conductor in 1/2 in. PVC to ground rod - extend 1/2 in. PVC 6 in. underground.
- 8 5/8 in. x 8 ft. Copper clad ground rod - drive ground rod to a depth of 2 in. to 4 in. below grade.
- 9 RMC same size as branch circuit conduit.
- 10 See pole-top mounted photocell detail on ED(5).
- 11 When required by the serving utility provide bare 6 AWG copper conductor. Run wire from pole top to butt wrap or copper butt plate. Protect conductor with non-conductive material to a height of 8 ft. above finished grade.
- 12 When required by utility, cut top of pole at an angle to enhance rain run off.

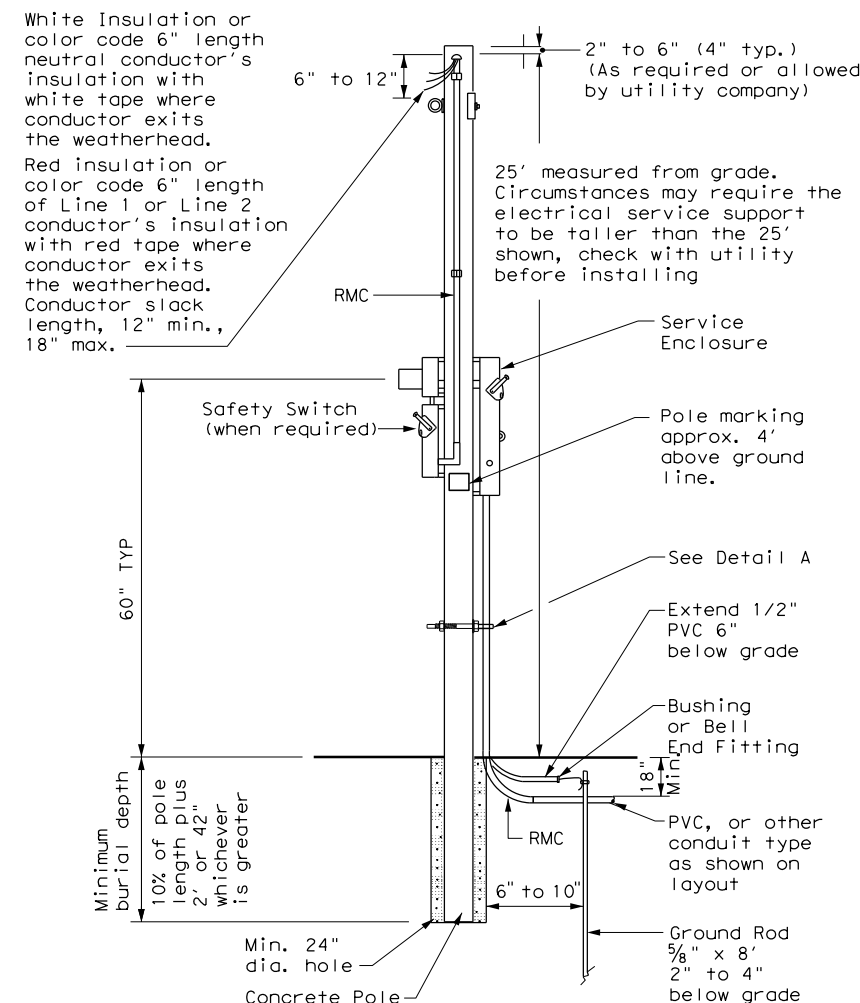


SERVICE SUPPORT TYPE TP (O)

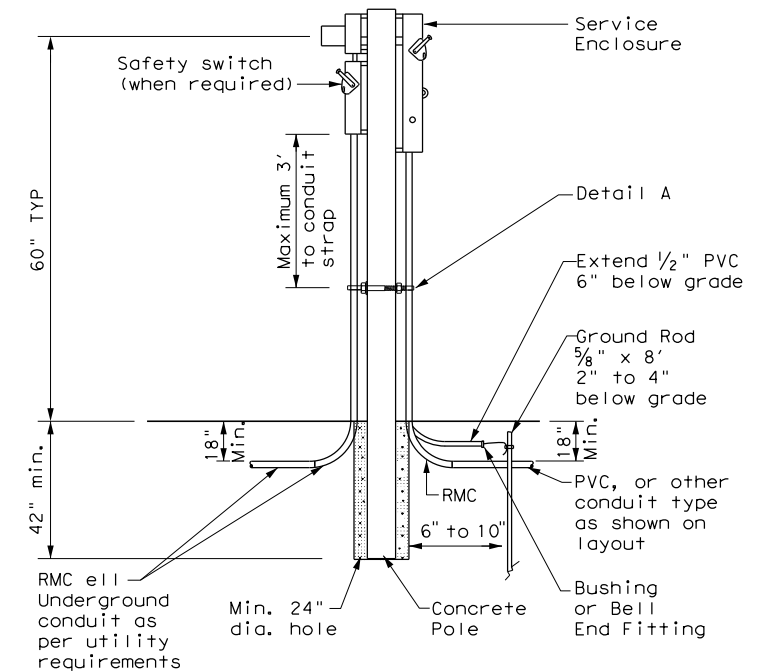
GRANITE CONCRETE (GC) & OTHER CONCRETE (OC) NOTES

Ensure electrical service support structures bid as type Granite Concrete (GC) or Other Concrete (OC) meet the following requirements.

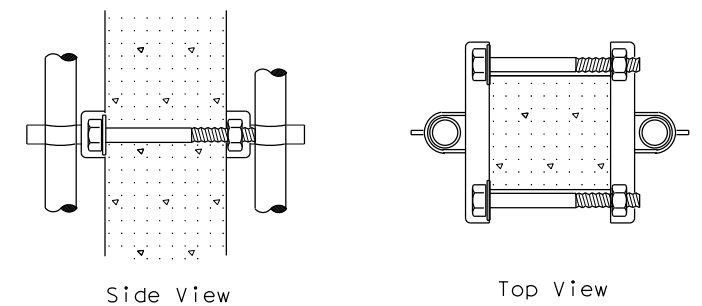
1. Provide GC and OC poles that meet the requirements of DMS 11080 "Electrical Services."
2. Provide prestressed concrete poles suitable for direct embedment into the ground without special foundations.
3. Verify poles are marked as required on DMS 11080. Location of marking should be approximately 4' above final grade. Use the two-point pickup locations when handling pole in horizontal position, and one-point pickup location for use in raising the pole to a vertical position. These marks are small but conspicuous.
4. Embed poles 42 in. or 10% of the length plus 2 ft., whichever is greater.
5. Ensure all installation details of services are in accordance with utility company specifications.
6. Install a one point rack or eye bolt bracket 6 inches to 12 inches below the weatherhead as an overhead service drop anchoring point for the electric utility.
7. Furnish and install galvanized or stainless steel channel strut 1 1/2 in. or 1 5/8 in. wide by 1 in. up to 3 3/4 in. deep (Unistrut, Kindorf, B-line or equal). Attach channel strut with stainless steel concrete anchors (max. 1" depth), square U-bolts or back to back channel strut with long bolts, or other secure mounting as approved by the Engineer. Ensure bolts are galvanized in accordance with ASTM A153. Do not stack channel struts.
8. Backfill the holes thoroughly by tamping in 6 in. lifts. After tamping to grade, place additional backfill material in a 6 inch high cone around the pole to allow for settling. Use material equal in composition and density to the surrounding area. Backfilling will not be paid for directly but is subsidiary to various bid items.



CONCRETE SERVICE SUPPORT Overhead (O)



CONCRETE SERVICE SUPPORT Underground (U)



DETAIL A

See Note 7. Before installing channel that has been cut, file sharp edges and paint with zinc-rich paint. Ensure there is no paint splatter on the pole.

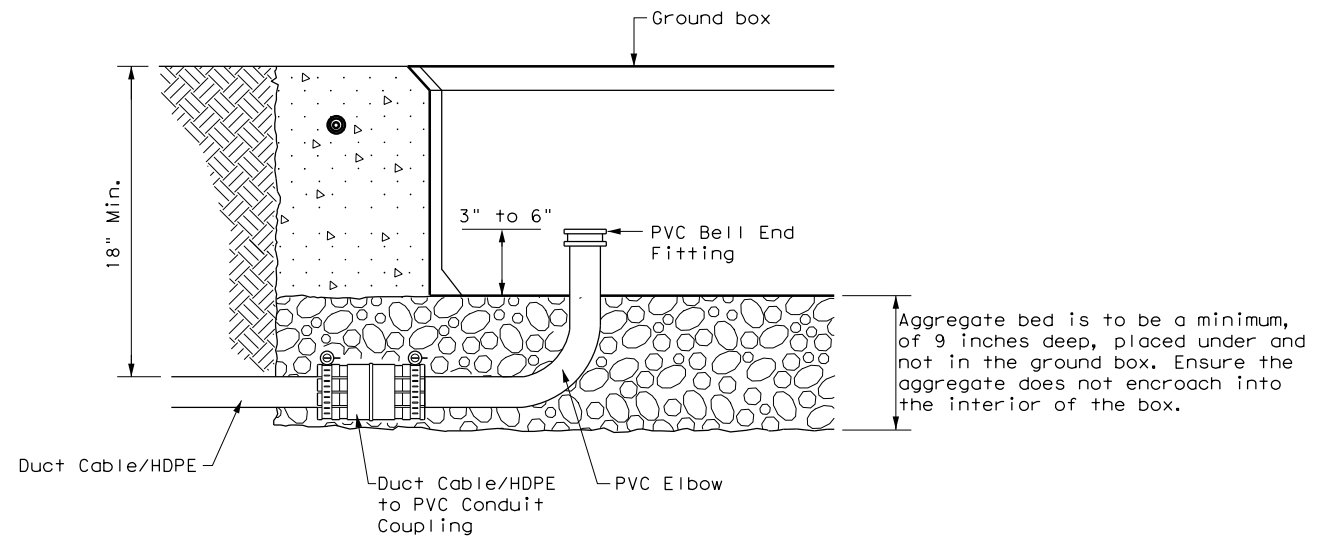
		Traffic Operations Division Standard	
ELECTRICAL DETAILS SERVICE SUPPORT TYPES GC, OC, & TP			
ED(10)-14			
FILE: ed10-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
© TxDOT October 2014	CON: 0915	SECT: 46	JOB: 052
REVISIONS	DIST: COUNTY		SHEET NO.
	SAT GUADALUPE		440

DUCT CABLE & HDPE CONDUIT NOTES

1. Provide duct cable in accordance with Departmental Material Specification (DMS) 11060 "Duct Cable" and Item 622 "Duct Cable." Provide duct cable as listed on the Material Producer List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 622.
2. Provide High-Density Polyethylene (HDPE) conduit in accordance with DMS 11060 and Item 618, "Conduit." Provide HDPE as listed on the MPL on the Department web site under "Roadway Illumination and Electrical Supplies," Item 618.
3. Supply duct cable with a minimum 2 in. diameter, unless otherwise shown in the plans. Provide duct cable and HDPE conduit as shown by descriptive code or on the plans. Bend duct cable and HDPE conduit as recommended by the manufacturer, with a minimum bending radius of 26 in. for 2 in. duct. Follow manufacturers' recommendations when handling duct cable and HDPE conduit reels and during installation of duct cable and HDPE conduit.
4. Do not splice conductors within duct cable or HDPE conduit. Couple duct cable and HDPE entering a ground box or foundation to a PVC elbow. When galvanized steel RMC elbows are called for in the plans and any portion of the RMC elbow is buried less than 18" from possible contact, ground the RMC elbow.
5. Furnish and install duct cable with factory installed conductors, sized as shown in the plans and as required by the National Electrical Code (NEC). The NEC contains specific requirements for duct cable in Article, "Nonmetallic Underground Conduit with Conductors: Type NUCC."
6. When conduit casing is called for in the plans, extend duct cable or HDPE conduit through the conduit casing in one continuous length without connection to the casing.
7. Seal the ends of duct cable or HDPE conduit with duct seal, expandable foam, or other approved method after completing the pull tests required by Item 622.
8. Provide minimum cover of 24 in. under roadways, 18 in. in other locations, or as shown on the plans.
9. Furnish and install listed fittings to couple duct cable or HDPE conduit to other types of conduit. Duct cable and HDPE conduit may be field-threaded and spliced with PVC or RMC threaded couplings; connected with listed tie-wrap fittings; connected using listed coupling made of HDPE with stainless steel external banding clamps and locking rings; connected with approved electrofusion conduit couplings; or connected using an approved chemical fusion method using an epoxy or adhesive specifically designed for HDPE couplings and connectors all installed in accordance with their manufacturer's instructions. Do not use PVC glue on HDPE. Do not use water pipe fittings, or connect conduit with heat shrink tubing.

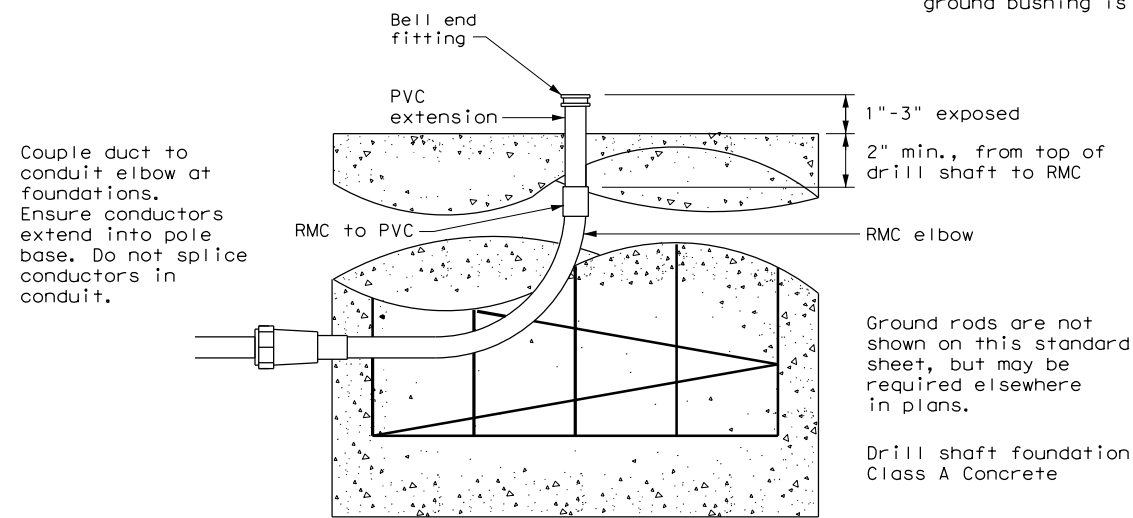
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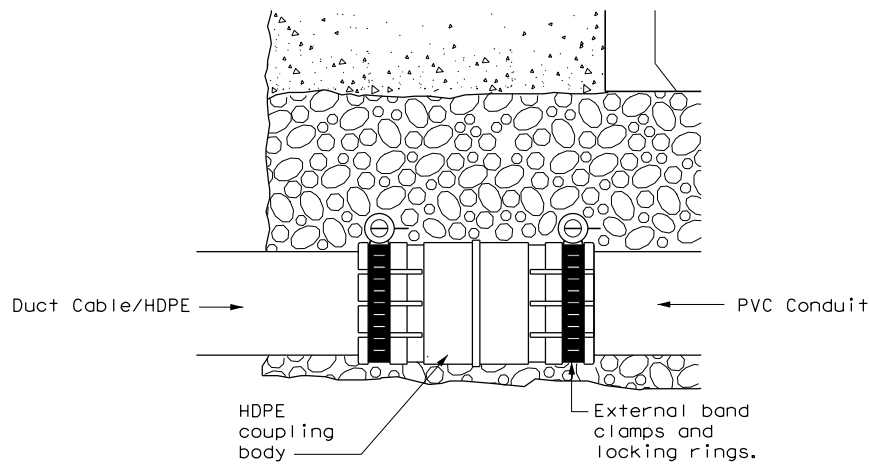


DUCT CABLE/HDPE AT GROUND BOX

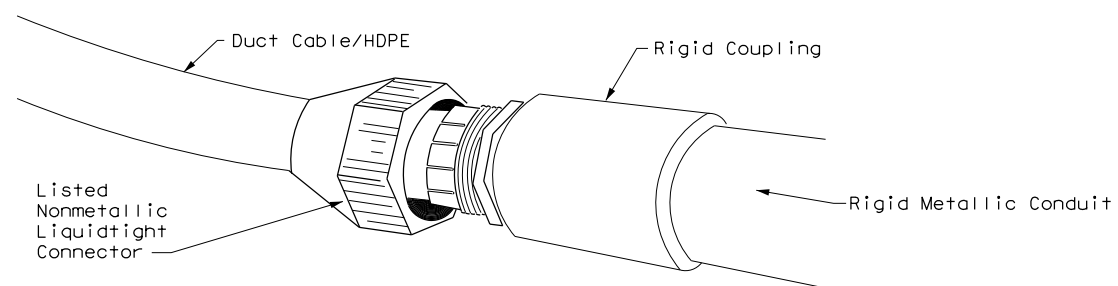
When the upper end of an RMC EII does not enter the ground box, it may be extended with a SCH-40 PVC conduit nipple and bell end, provided there is a minimum of 18" of cover over all parts of the elbow. If not, a rigid extension and ground bushing is required.



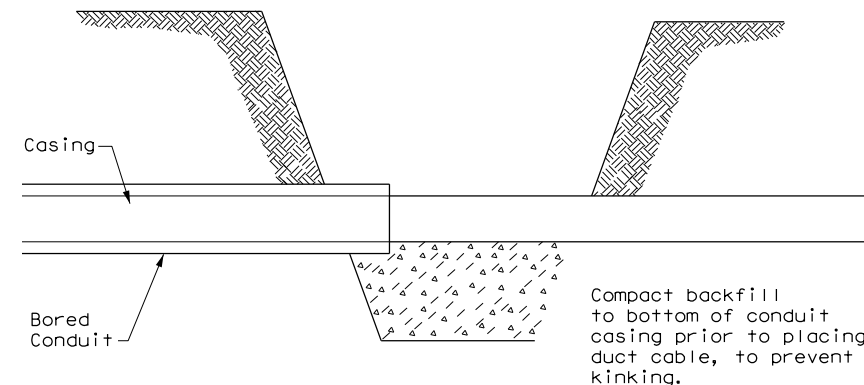
DUCT CABLE / HDPE AT FOUNDATION



DUCT CABLE/HDPE TO PVC



DUCT CABLE/HDPE TO RMC

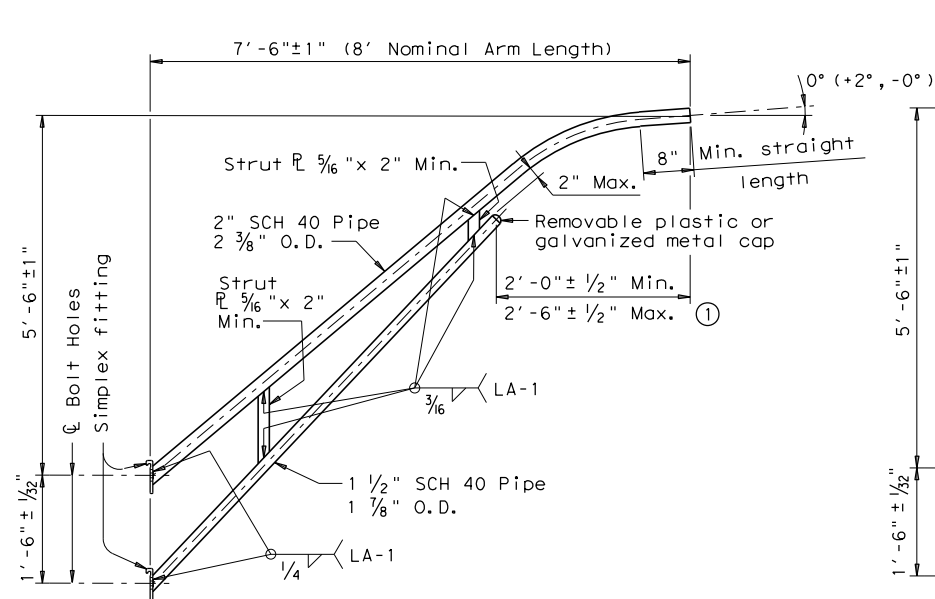


BORE PIT DETAIL

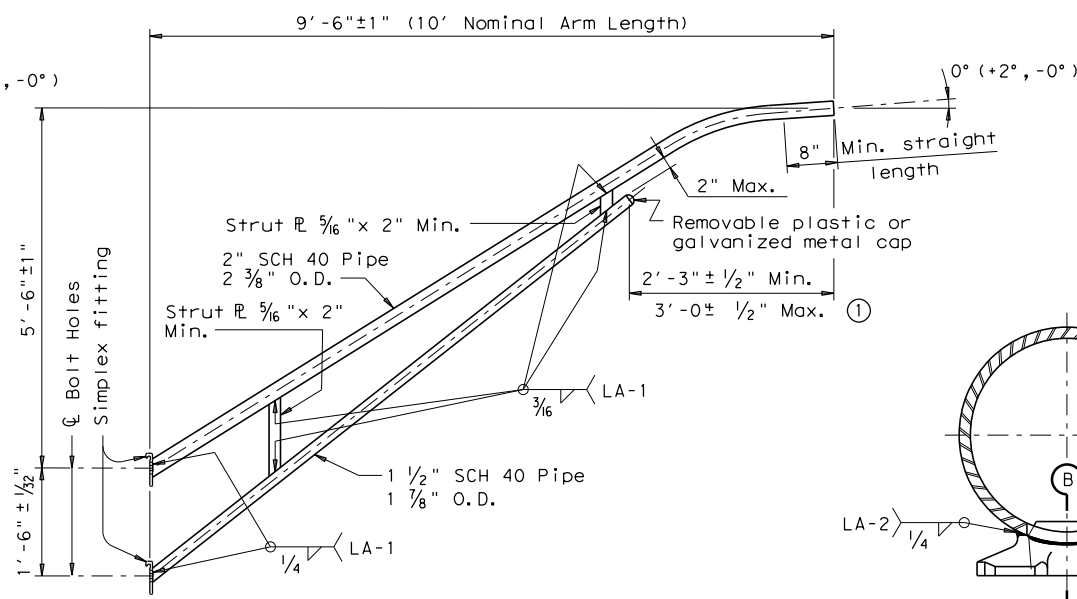
				Traffic Operations Division Standard	
ELECTRICAL DETAILS DUCT CABLE/ HDPE CONDUIT					
ED(11)-14					
FILE: ed11-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT	
© TxDOT October 2014	CONT: 0915	SECT: 46	JOB: 052	HIGHWAY: CORDOVA	
REVISIONS					
	DIST: SAT	COUNTY: GUADALUPE	SHEET NO.: 441		

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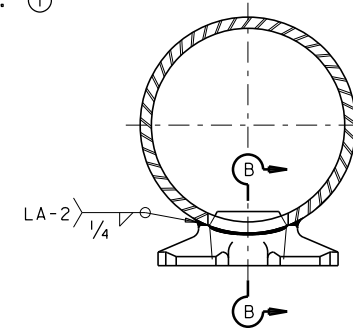
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8-FOOT LUMINAIRE ARM



10-FOOT LUMINAIRE ARM



DIRECT ATTACHMENT DETAIL

MATERIALS	
Pole or Arm Simplex	ASTM A27 Gr. 65-35 or A148 Gr. 80-50, A576 Gr. 1021 (3), or A36 (Arm only)
Arm Pipes	ASTM A53 Gr. B, A501, A1008 HSLAS-F Gr. 50 (4), or A1011 HSLAS-F Gr. 50 (4)
Arm Strut Plates (2)	ASTM A36, A572 Gr. 50 (4), or A588
Misc.	ASTM designations as noted

- ① Dimensional limits are given to show acceptable variation in design. All of a Fabricator's production of a particular arm length shall have the same dimensions within specified tolerances.
- ② Any of the materials listed for plates may be used where the drawings do not specify a particular ASTM designation.
- ③ A576 must be suitable for forging and also meet minimum tensile strength of 65 ksi, minimum yield of 35 ksi, and elongation in 2 inches of 22 percent.
- ④ ASTM A572, A1008 HSLAS-F, and A1011 HSLAS-F may have higher yield strengths but shall not have less elongation than the grade indicated.

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Revisions thereto. Design Wind Speed equals 90 mph plus a 1.3 gust factor. Arms are designed to support a 60 lb. luminaire having an effective projected area (actual area times drag coefficient) of 1.6 sq. ft.

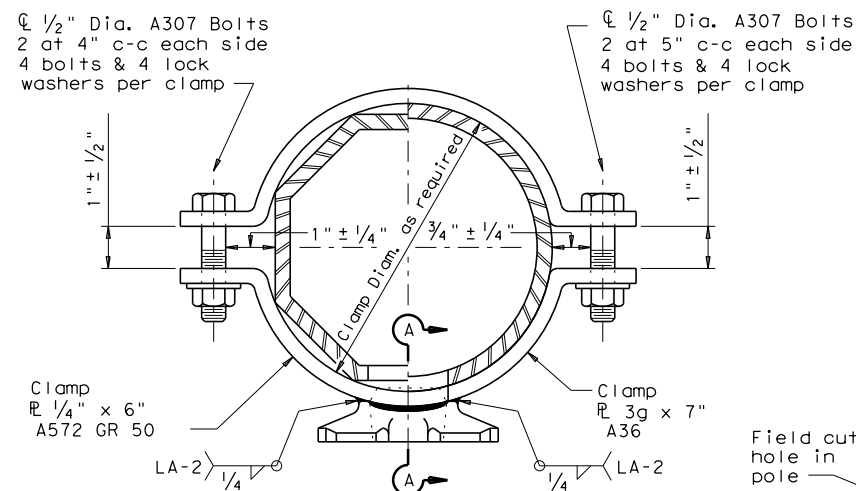
Materials and fabrication shall be in accordance with Item 686, "Traffic Signal Pole Assemblies (Steel)" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. In the absence of specified 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.

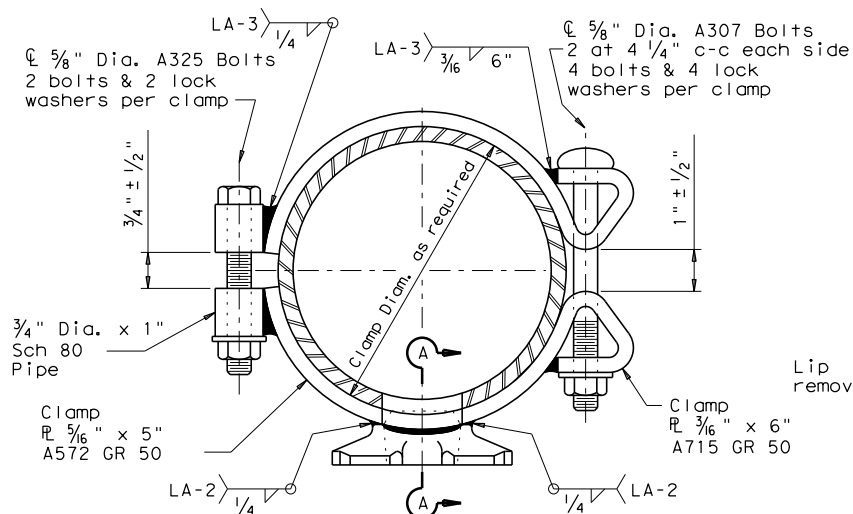
Each pole simplex fitting shall be supplied with 2 ASTM A325 bolts and 2 lock washers of the size specified. The bolts and lock washers shall be secured to the pole with the other hardware items called for in the plans. When clamp attachment is specified, the Fabricator shall ship the clamp assembly 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.



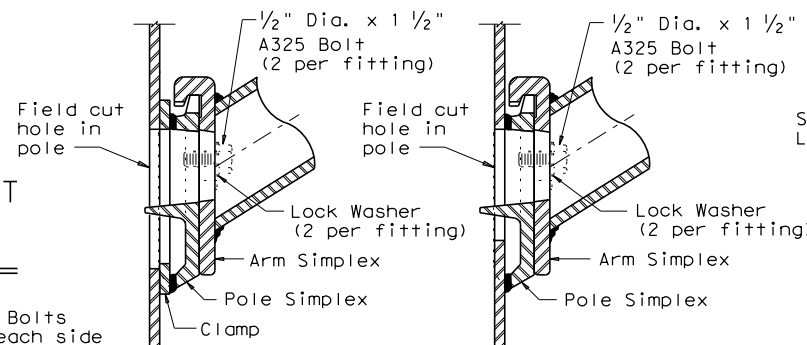
CLAMP ATTACHMENT DETAIL NO. 1 (HALF SECTION)

CLAMP ATTACHMENT DETAIL NO. 2 (HALF SECTION)



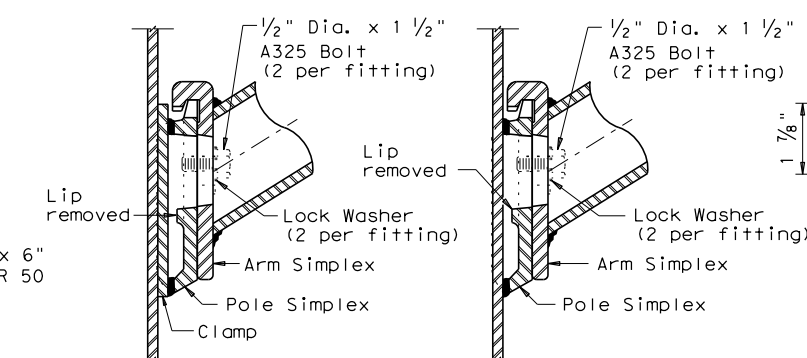
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CLAMP ATTACHMENT DETAIL NO. 4 (HALF SECTION)



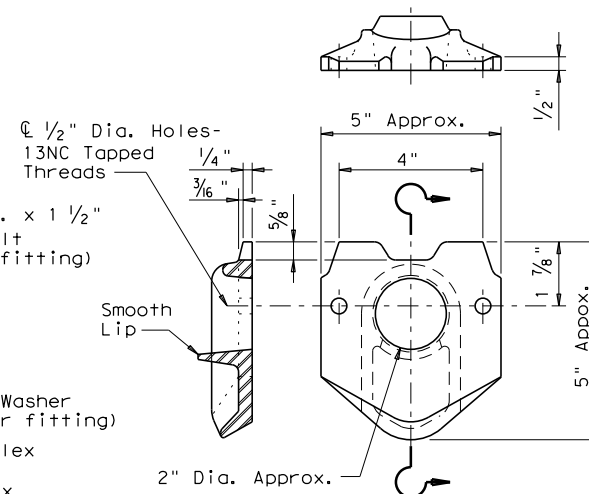
UPPER SIMPLEX FITTING

UPPER SIMPLEX FITTING

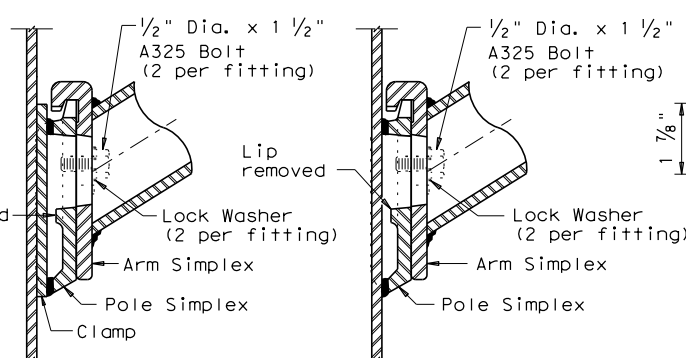


LOWER SIMPLEX FITTING

LOWER SIMPLEX FITTING

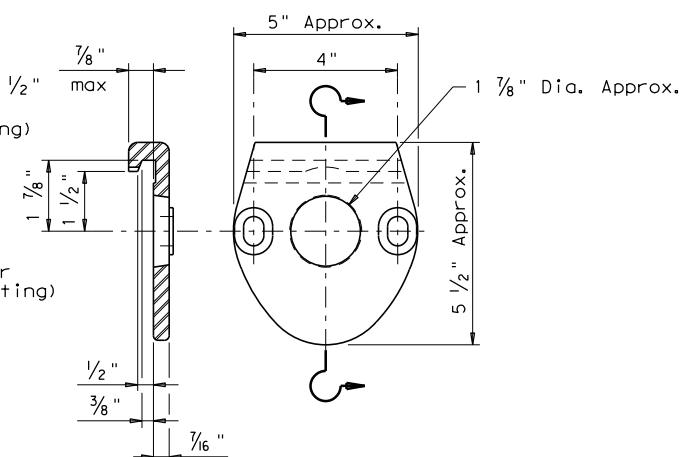


POLE SIMPLEX DETAIL



SECTION A-A

SECTION B-B



ARM SIMPLEX DETAIL

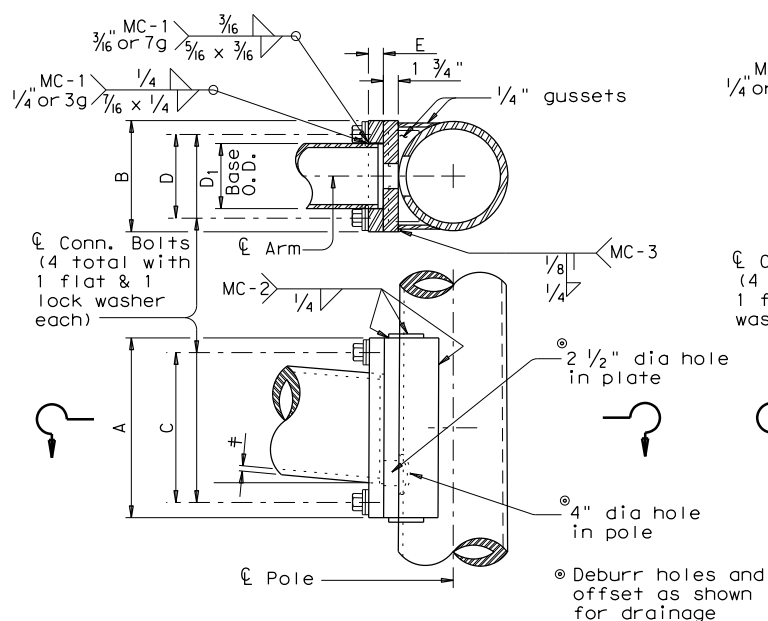
Texas Department of Transportation
 Traffic Operations Division
STANDARD ASSEMBLY DRAWINGS FOR LUMINAIRE SUPPORT STRUCTURES
 ARM DETAILS
LUM-A-12

© TxDOT August 1995		DN: LEH	CK: JSY	DW: LTT	CK: TEB
5-96	REVISIONS	CONT	SECT	JOB	HIGHWAY
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1-12		DIST	COUNTY	SHEET NO.	
		SAT	GUADALUPE	442	

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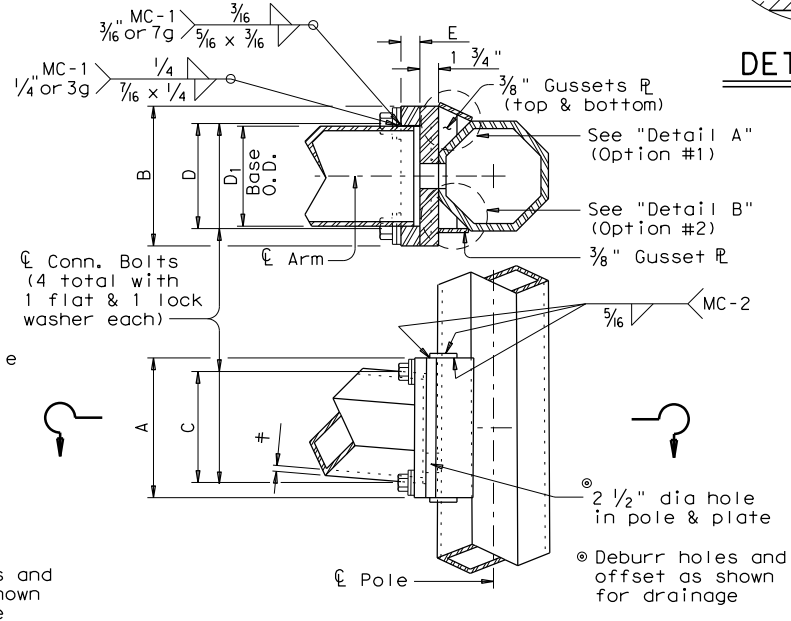
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ARM SIZE		A	B	C	D	E	CONN BOLT DIA
D ₁	Ø	in.	in.	in.	in.	in.	in.
6.5	.179	12	9	9	6	1 3/4	1
7.5	.179	13	9	10	6	1 3/4	1
8.0	.179	14	10	11	7	2	1 1/4
9.0	.179	16	11	13	8	2	1 1/4
9.5	.179	17	12	14	9	2	1 1/4
9.5	.239	18	12	15	9	2	1 1/4
10.0	.239	18	12	15	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

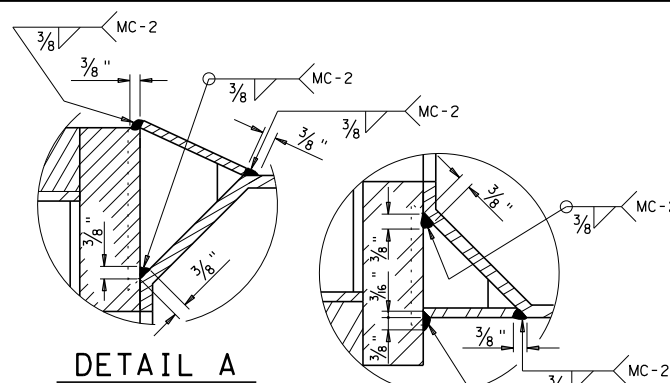


FIXED MOUNT DETAIL 1

ARM SIZE		A	B	C	D	E	CONN BOLT DIA
D ₁	Ø	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

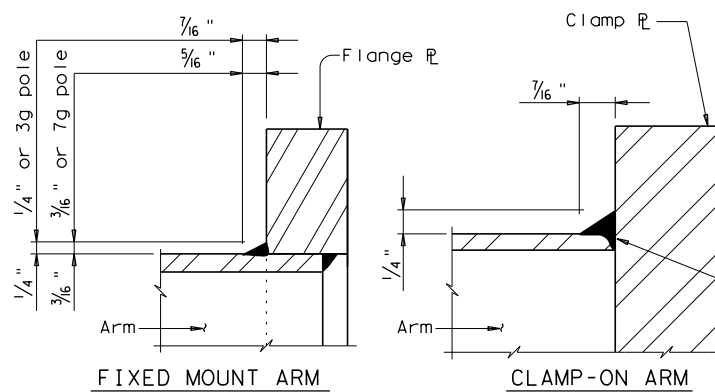


FIXED MOUNT DETAIL 2



DETAIL A

DETAIL B



FIXED MOUNT ARM

CLAMP-ON ARM

ARM BASE WELD DETAILS

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.

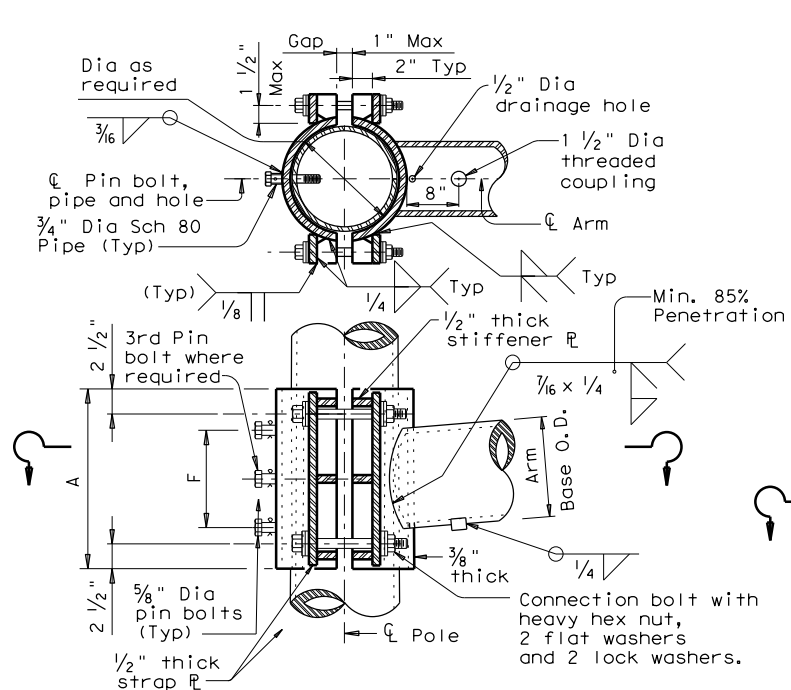
NOTE:

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.

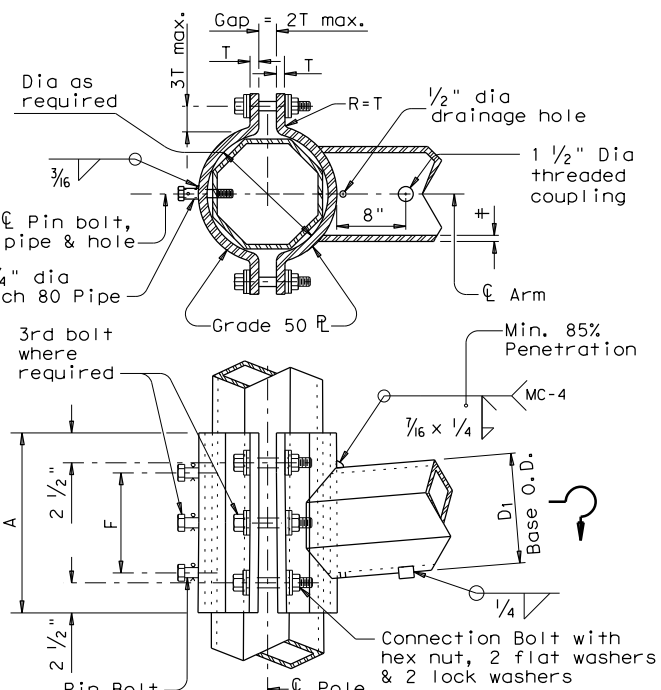
ARM SIZE		A	F	CONN. BOLTS	PIN BOLTS
D ₁	Ø	in.	in.	No. Dia	No. Dia
6.5	.179	12	6	4 1/2	2 5/8
7.5	.179	14	8	4 1/2	2 5/8
8.0	.179	14	8	4 1/2	2 5/8
9.0	.179	16	10	4 1/2	2 5/8
9.5	.179	18	12	4 1/4	3 5/8
9.5	.239	18	12	4 1/4	3 5/8
10.0	.239	18	12	4 1/4	3 5/8

ARM SIZE		A	F	T	CONN. BOLTS	PIN BOLTS
D ₁	Ø	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

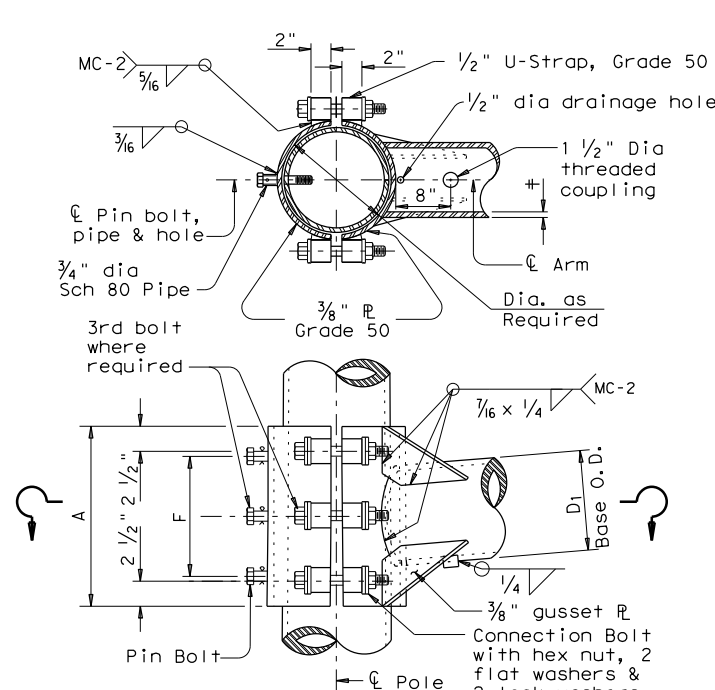
ARM SIZE		A	F	CONN. BOLTS	PIN BOLTS
D ₁	Ø	in.	in.	No. Dia	No. Dia
6.5	.179	12	6	4 1/2	2 5/8
7.5	.179	14	8	4 1/2	2 5/8
8.0	.179	14	8	4 1/2	2 5/8
9.0	.179	16	10	4 1/2	2 5/8
9.5	.179	18	12	6 1/2	3 5/8
9.5	.239	18	12	6 1/2	3 5/8
10.0	.239	18	12	6 1/2	3 5/8



CLAMP-ON DETAIL 1



CLAMP-ON DETAIL 2



CLAMP-ON DETAIL 3

Texas Department of Transportation
 Traffic Operations Division

**STANDARD ASSEMBLY
 FOR TRAFFIC SIGNAL
 SUPPORT STRUCTURES**

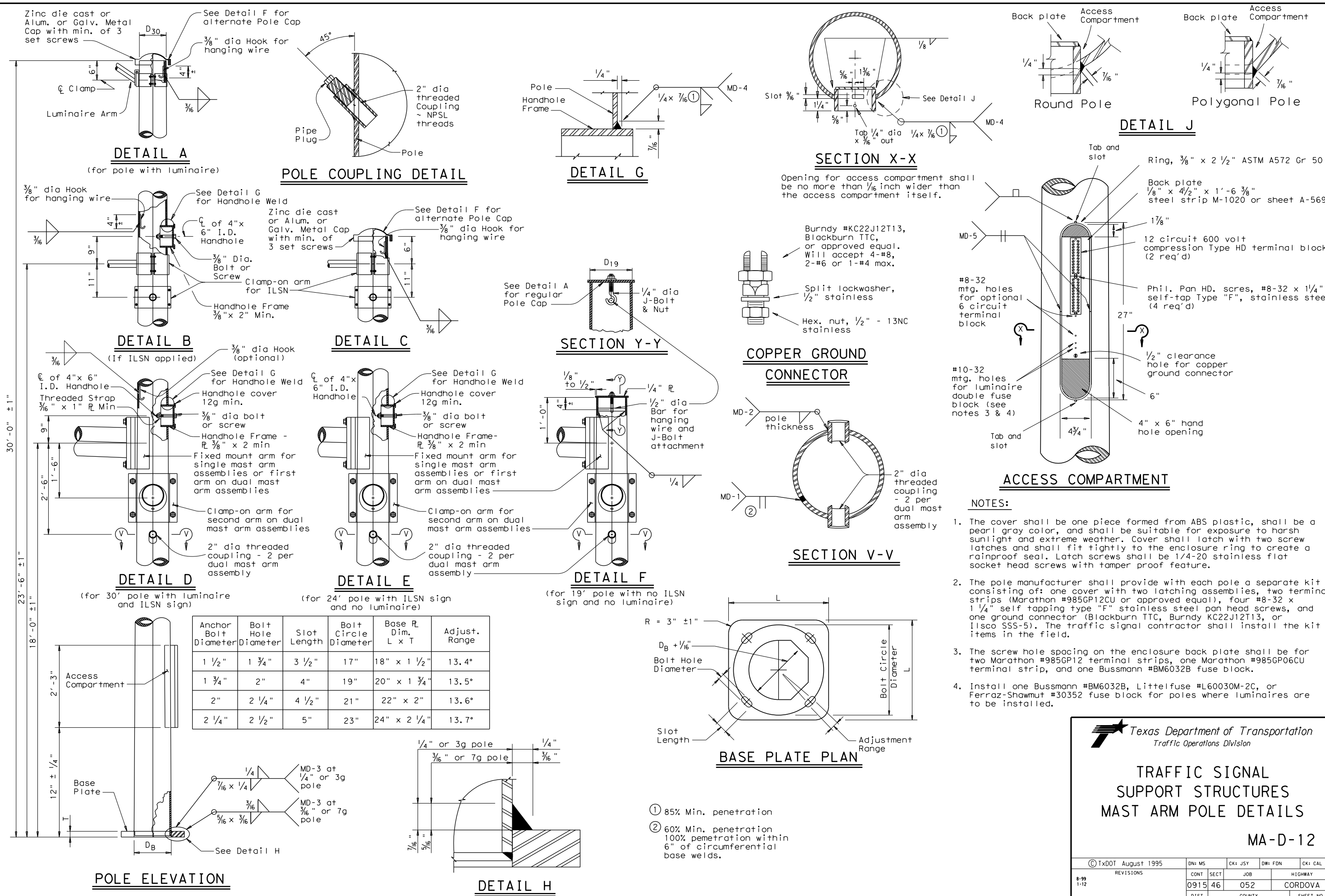
MAST ARM CONNECTIONS

MA-C-12

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5-96 5-09 1-12	REVISIONS	CONT	SECT	JOB
		0915	46	052
		DIST	COUNTY	SHEET NO.
		SAT	GUADALUPE	443

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- 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.

Texas Department of Transportation
 Traffic Operations Division

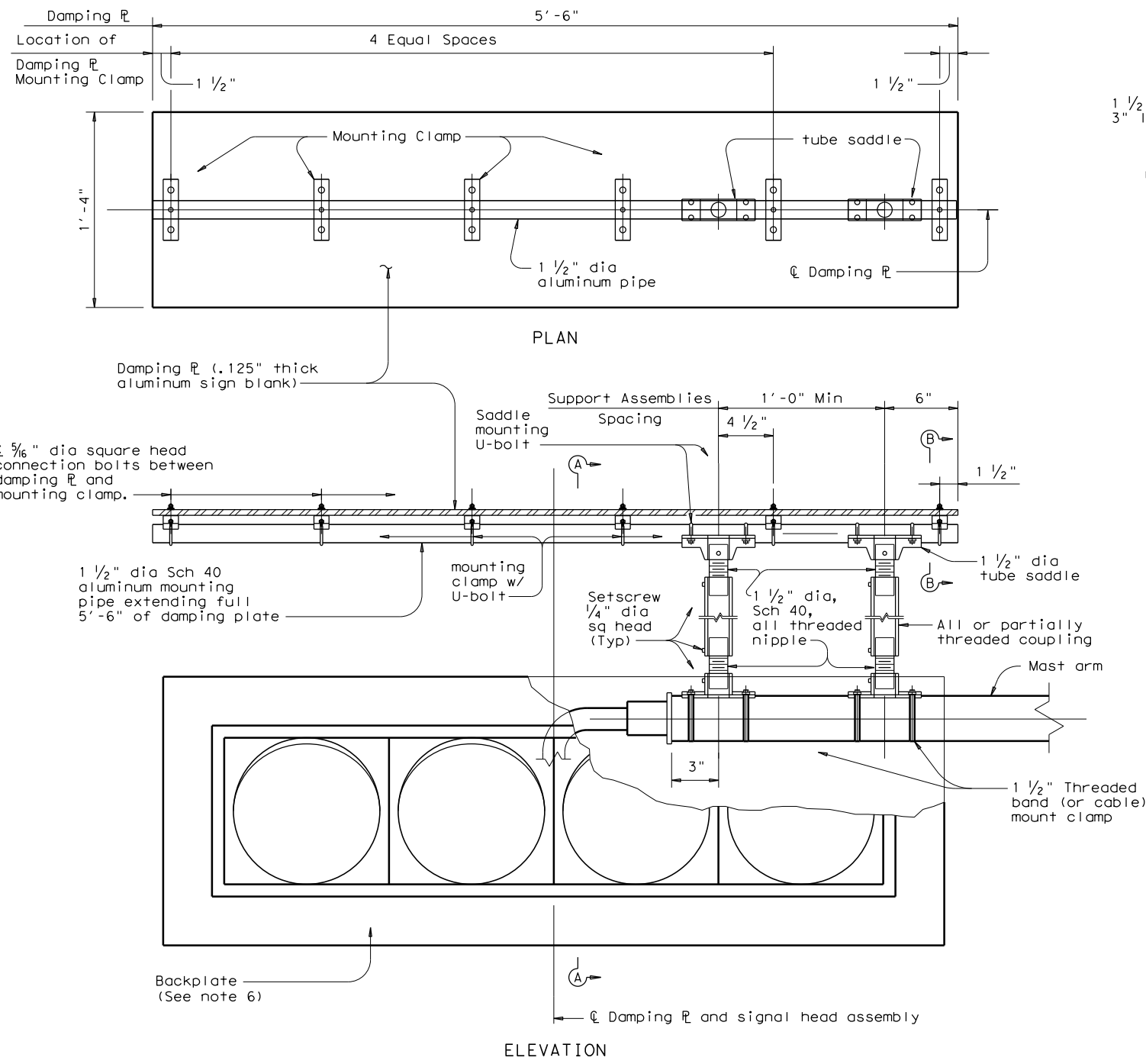
TRAFFIC SIGNAL SUPPORT STRUCTURES MAST ARM POLE DETAILS

MA-D-12

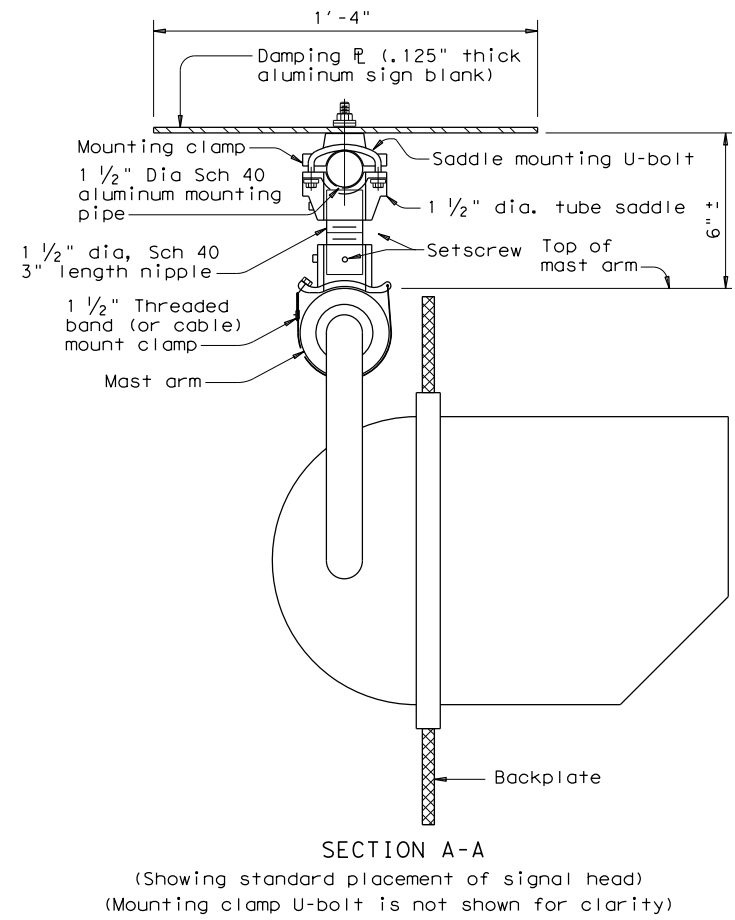
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8-99 1-12	REVISIONS	CONT	SECT	JOB
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		SAT	GUADALUPE	444

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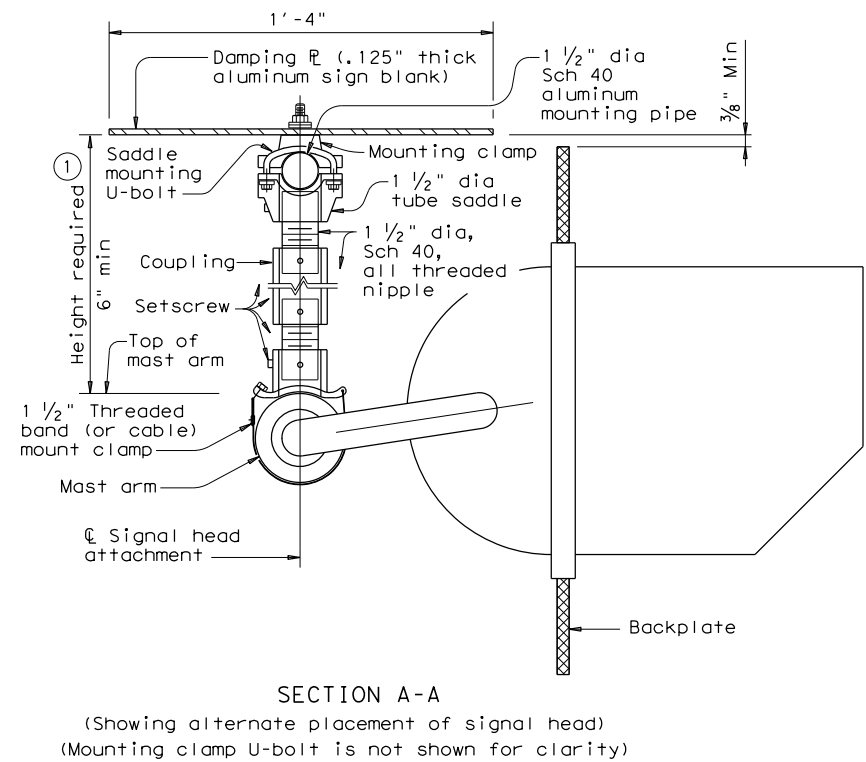
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DAMPING PLATE MOUNTING DETAILS
 (Showing alternate placement of signal head)



SECTION A-A
 (Showing standard placement of signal head)
 (Mounting clamp U-bolt is not shown for clarity)



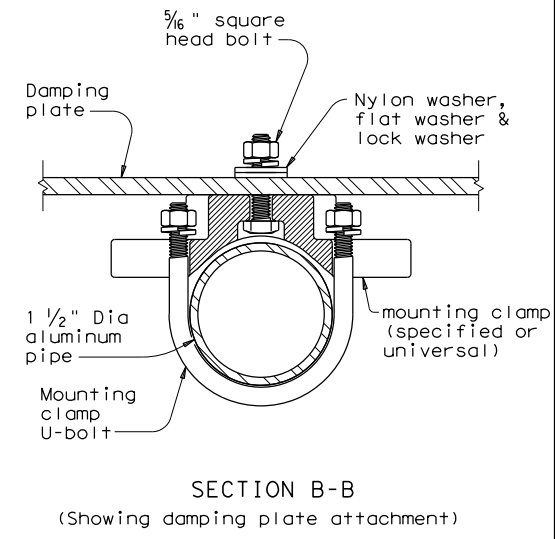
SECTION A-A
 (Showing alternate placement of signal head)
 (Mounting clamp U-bolt is not shown for clarity)

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"

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.



SECTION B-B
 (Showing damping plate attachment)

Texas Department of Transportation
 Traffic Safety Division Standard

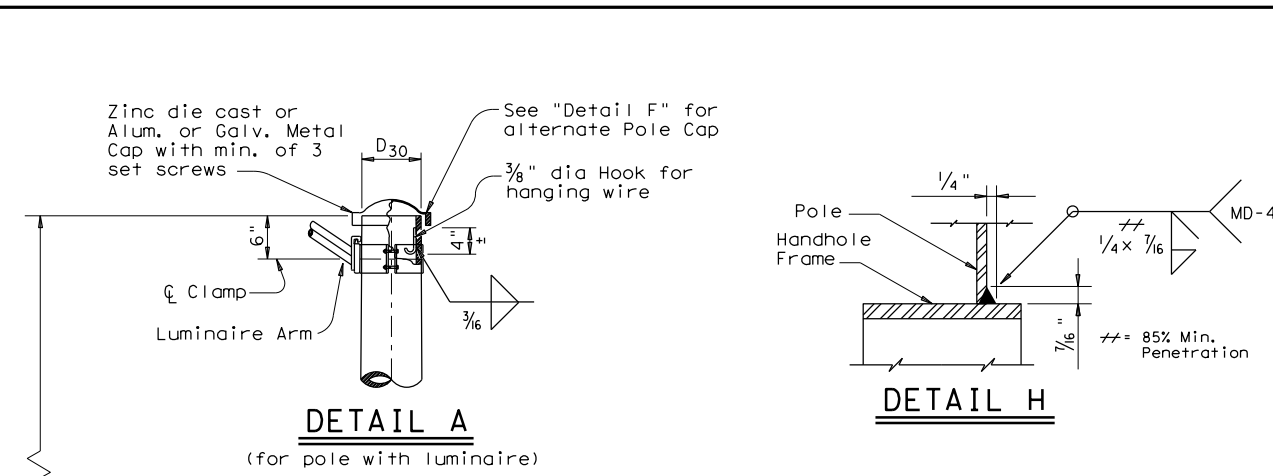
MAST ARM DAMPING PLATE DETAILS

MA-DPD-20

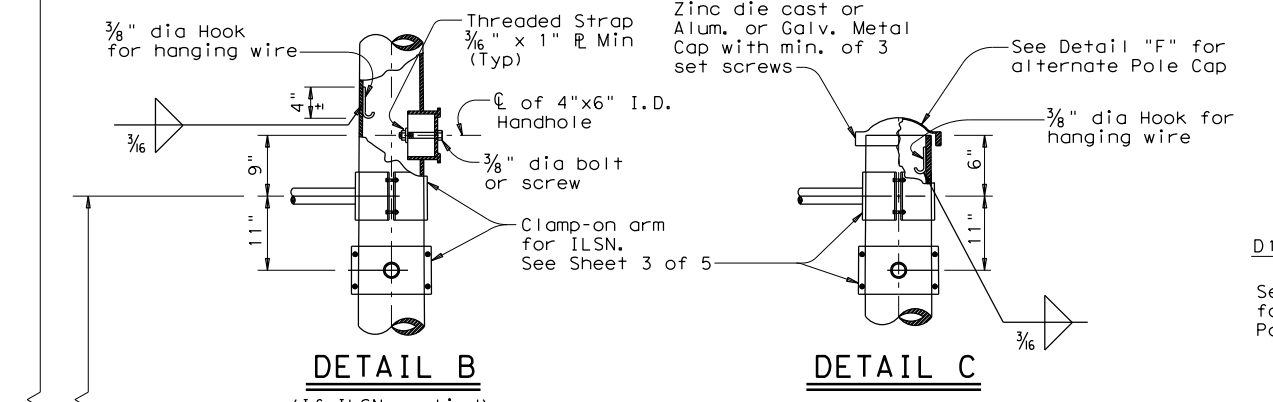
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© TxDOT January 2012	CON: 0915	SECT: 46	JOB: 052	HIGHWAY: CORDOVA
6-20	DIST: SAT	COUNTY: GUADALUPE	SHEET NO.: 445	

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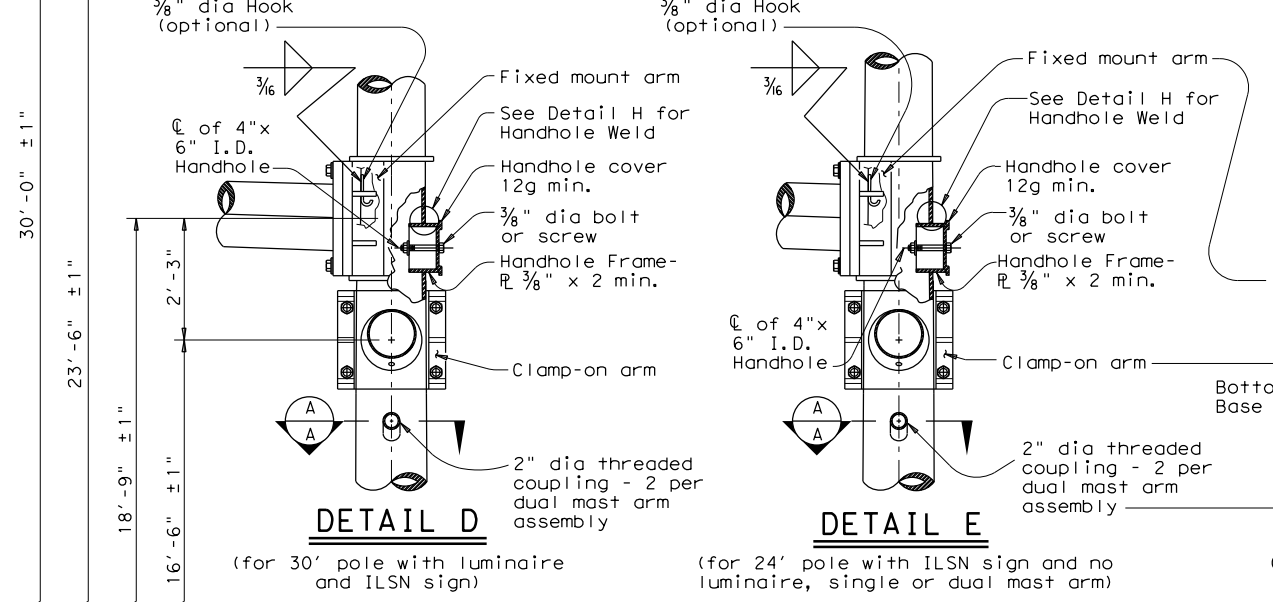
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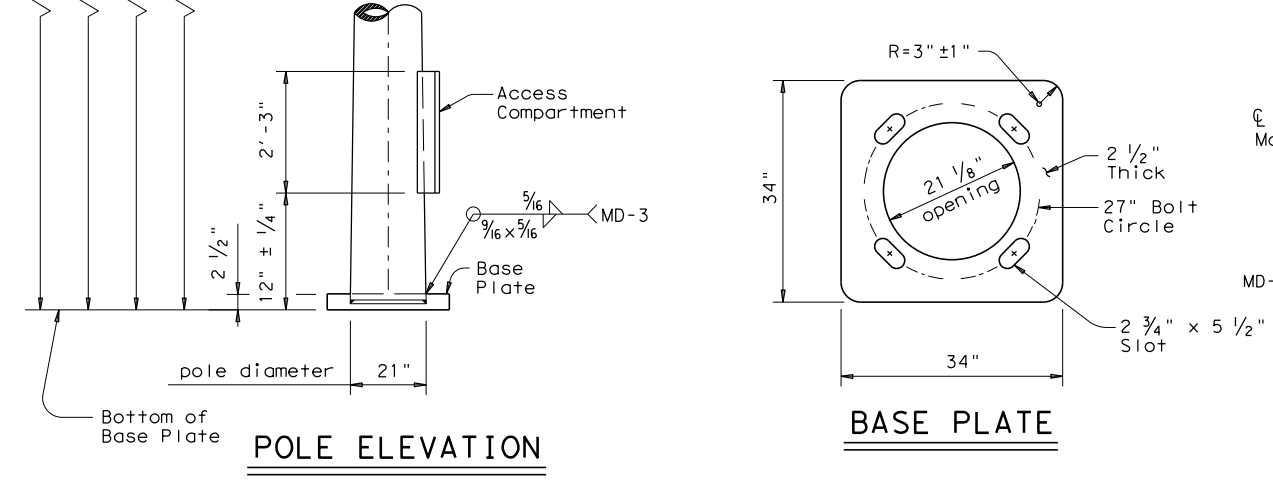
DETAIL A
(for pole with luminaire)



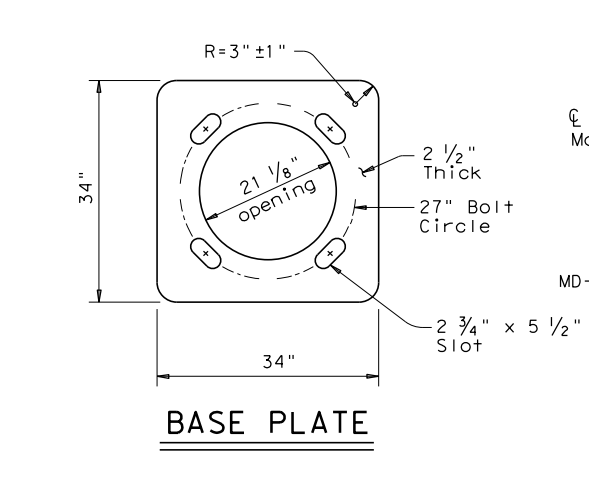
DETAIL B
(If ILSN applied)



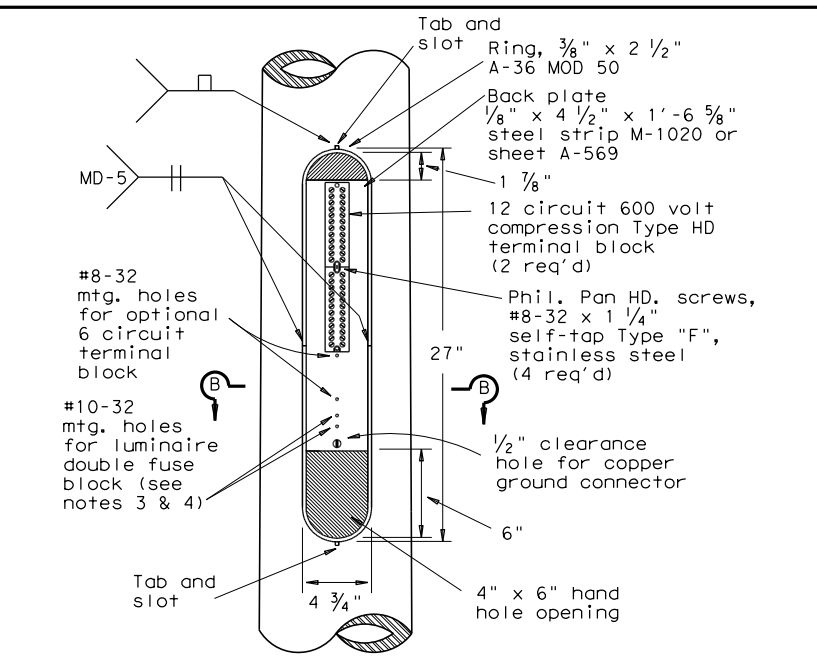
DETAIL C



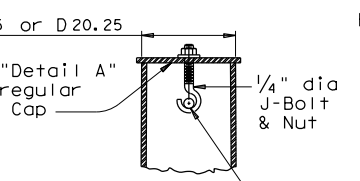
DETAIL D
(for 30' pole with luminaire and ILSN sign)



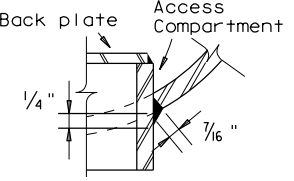
DETAIL E
(for 24' pole with ILSN sign and no luminaire, single or dual mast arm)



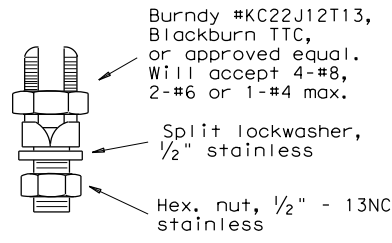
ACCESS COMPARTMENT



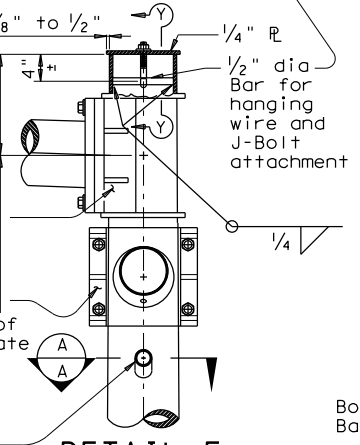
SECTION Y-Y



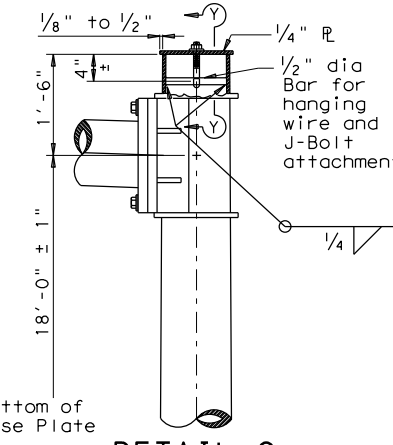
DETAIL J



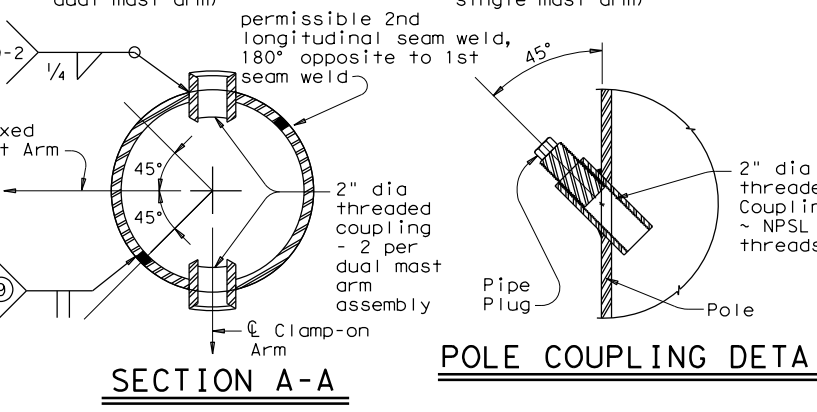
COPPER GROUND CONNECTOR



DETAIL F
(for 20.25' pole with no ILSN sign and no luminaire, dual mast arm)



DETAIL G
(for 19.5' pole with no ILSN sign and no luminaire, single mast arm)



SECTION A-A

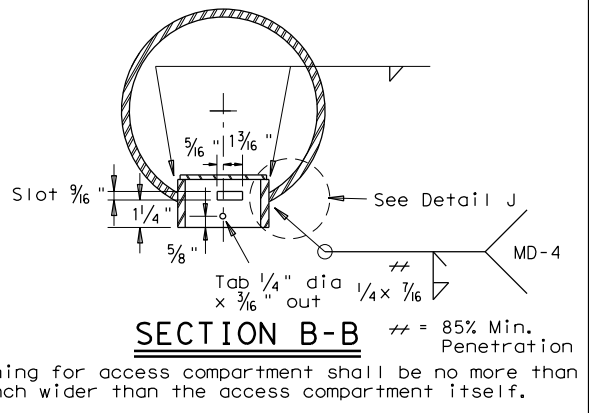
POLE COUPLING DETAIL

⑨ Longitudinal seam weld must be oriented within 90° (45° rotation each side) along the fixed mount arm. 60% min penetration required, 100% penetration within 6" of circumferential base weld.

MATERIALS	
Round Shafts or Polygonal Shafts ⑦	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 ⑧
Plates ⑦	ASTM A36, A588, or A572 Gr.50
Connection Bolts	ASTM A325, or A449 except where noted
Pin Bolts	ASTM A325
Pipe ⑦	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

⑦ 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.

⑧ ASTM A1011 SS Gr.50 shall also have a minimum elongation of 18 percent in 8 inches or 23 percent in 2 inches. Material thickness in excess of those stipulated under A1011 SS will be acceptable providing the material meets all other A1011 SS requirements and the requirements of this item.



SECTION B-B

Opening for access compartment shall be no more than 1/16 inch wider than the access compartment itself.

ACCESS COMPARTMENT 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 #985G12CU 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 Ilco 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 #985G12 terminal strips, one Marathon #985G06CU 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.

Texas Department of Transportation
 Traffic Operations Division

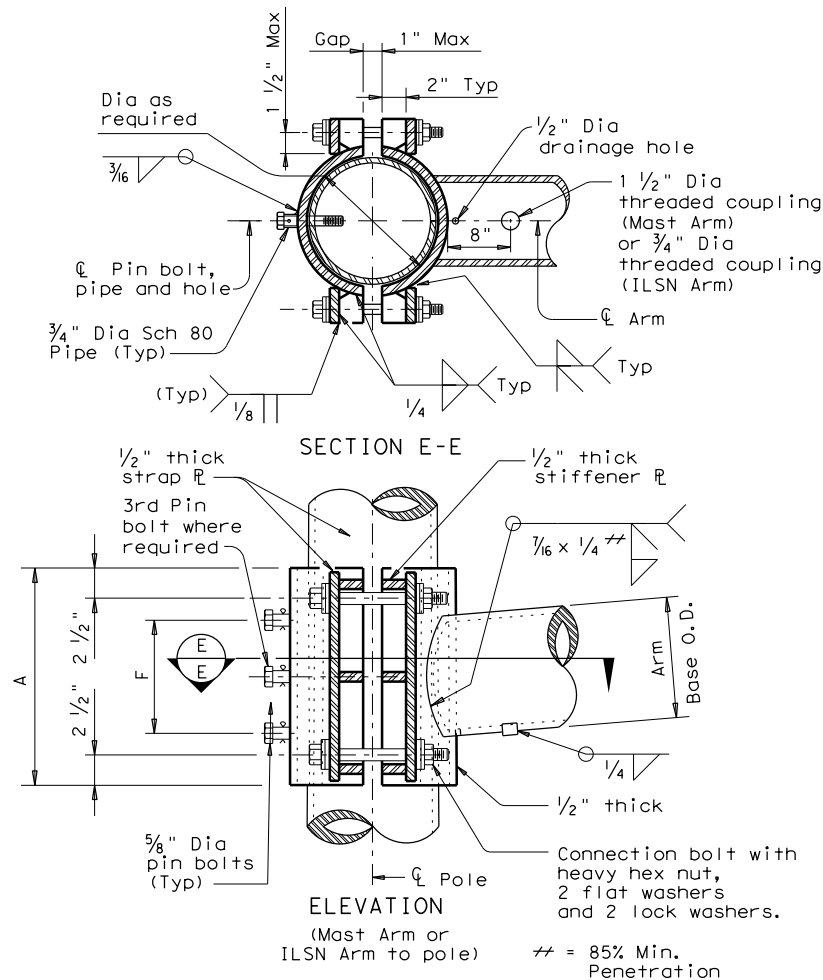
**TRAFFIC SIGNAL SUPPORT STRUCTURES
 LONG MAST ARM ASSEMBLY
 (50 TO 65 FT)
 (80 AND 100 MPH WIND ZONE)
 LMA(2)-12**

Sheet 2 of 5

© TxDOT July 2000		DN: JSY	CK: ARC	DW: TGG	CK: JSY
REVISIONS		CONT	SECT	JOB	HIGHWAY
4-20-01	1-12	0915	46	052	CORDOVA
		DIST	COUNTY	SHEET NO.	
		SAT	GUADALUPE	447	

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CLAMP-ON CONNECTION

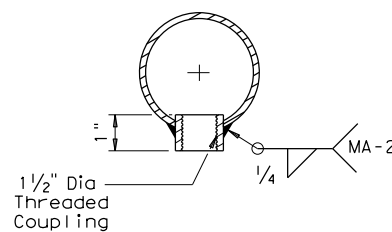
80 MPH WIND											
Clamp-on Arm Lc	ROUND ARMS					Rise	POLYGONAL ARMS				
	L ₁	D ₁	D ₂	thk (12)	Rise		L ₁	D ₁	D ₂	thk (12)	Rise
ft.	ft.	in.	in.	in.		ft.	in.	in.	in.		
20	19.1	6.5	3.8	.179	1'-9"	19.1	7.0	3.5	.179	1'-8"	
24	23.1	7.5	4.3	.179	1'-10"	23.1	7.5	3.5	.179	1'-9"	
28	27.1	8.0	4.2	.179	1'-11"	27.1	8.0	3.5	.179	1'-10"	
32	31.0	9.0	4.7	.179	2'-0"	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"	

100 MPH WIND											
Clamp-on Arm Lc	ROUND ARMS					Rise	POLYGONAL ARMS				
	L ₁	D ₁	D ₂	thk (12)	Rise		L ₁	D ₁	D ₂	thk (12)	Rise
ft.	ft.	in.	in.	in.		ft.	in.	in.	in.		
20	19.1	8.0	5.3	.179	1'-8"	19.1	8.0	3.5	.179	1'-7"	
24	23.1	9.0	5.8	.179	1'-9"	23.1	9.0	3.5	.179	1'-8"	
28	27.1	9.5	5.7	.179	1'-10"	27.1	10.0	3.5	.179	1'-9"	
32	31.0	9.5	5.2	.239	1'-11"	31.0	9.5	3.5	.239	1'-10"	
36	35.0	10.0	5.1	.239	2'-0"	35.0	10.0	3.5	.239	1'-11"	
40	39.0	10.5	5.1	.239	2'-3"	39.0	11.0	3.5	.239	2'-1"	
44	43.0	11.0	5.1	.239	2'-8"	43.0	11.5	4.0	.239	2'-3"	

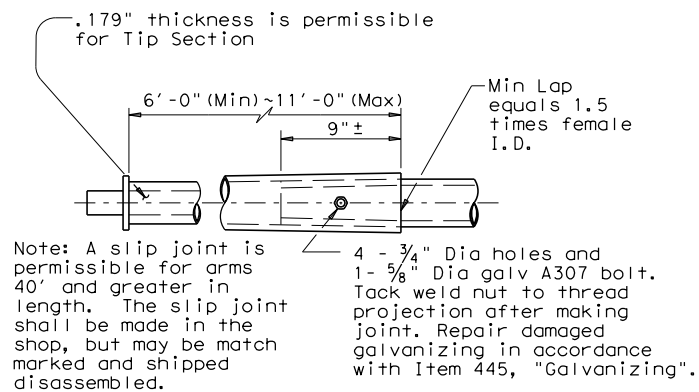
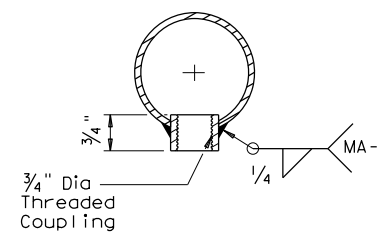
D₁ = Arm Base O.D.
 D₂ = Arm End O.D.
 L₁ = Shaft Length
 Lc = Clamp-on Arm Length

(12) Thickness shown is minimum, thicker materials may be used.

ARM COUPLING DETAIL



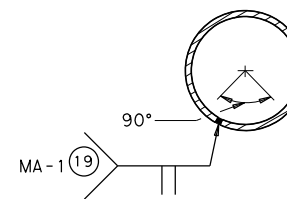
ILSN ARM COUPLING DETAIL



SLIP JOINT DETAIL (CLAMP-ON ARM)

Stainless steel bands (or Cables) and cast bracket as in "Astro-Brac", "Sky Bracket" or "Easy Bracket" with 1 1/2 inch Dia Threaded Coupling.

BRACKET ASSEMBLY



ARM WELD DETAIL

(19) Longitudinal Seam Weld must be oriented within the lower 90° of the signal arm. 60% Min penetration 100% penetration within 6" of circumferential base welds.

CLAMP-ON ARM CONNECTION

ILSN Arm Size		A	F	4 Conn. Bolts	5/8" Dia. Pin Bolts
Sch 40 pipe Dia	Thick				
in.	in.	in.	in.	in.	ea
3	.216	10	4	3/4	2

Mast Arm Size		A	F	4 Conn. Bolts	5/8" Dia. Pin Bolts
Base Dia	Thick				
in.	in.	in.	in.	in.	ea
6.5	.179	12	6	1	2
7.5	.179	14	8	1	2
8.0	.179	14	8	1	2
9.0	.179	16	10	1	2
9.5	.179	18	12	1 1/4	3
9.5	.239	18	12	1 1/4	3
10.0	.239	18	12	1 1/4	3
10.5	.239	18	12	1 1/4	3
11.0	.239	18	12	1 1/4	3
11.5	.239	18	12	1 1/4	3

GENERAL NOTES:

Clamp-on details are used for the second arm on dual mast arm assemblies or ILSN arm support. For a clamp-on mast arm, a maximum 1 1/2 inch wide vertical slotted hole may 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 inch. For an ILSN arm, a 1 1/2 inch diameter hole shall be cut in the front clamp plate for wire access. A matched hole shall be field drilled through the pole to provide wire access after arm is oriented. Deburr both holes.

Where duplicate parts occur on a detail, welds shown for 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. Pin bolts shall be ASTM A325 with threads excluded from the shear plane. Pin bolt and 3/4 inch diameter pipe shall have 3/16 inch diameter holes for a 1/8 inch diameter galvanized cotter pin. Back clamp plate shall be furnished with a 3/4 inch diameter hole for each pin bolt. An 1/16 inch diameter 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

**TRAFFIC SIGNAL SUPPORT STRUCTURES
 LONG MAST ARM ASSEMBLY
 (50 TO 65 FT)
 (80 AND 100 MPH WIND ZONE)**

Sheet 4 of 5 LMA(4)-12

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4-20-01 1-12	REVISIONS		CONT	SECT	JOB
	0915	46	052	CORDOVA	
	DIST		COUNTY	SHEET NO.	
SAT		GUADALUPE	449		

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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		19.50' (Single Mast Arm) 20.25' (Dual Mast Arm) Poles with no Luminaire and no ILSN		
	See note above plus: one (or two if ILSN attached) small hand hole, clamp-on simplex		See note above plus one small hand hole		See note above		
Single Mast Arm							
Lf ft.	Designation	Quantity	Designation	Quantity	Designation	Quantity	
50	50L		50S		50		
55	55L	3	55S		55		
60	60L		60S		60		
65	65L		65S		65		
Dual Mast Arm							
Lf ft.	Lc ft.	Designation	Quantity	Designation	Quantity	Designation	Quantity
50	20	5020L		5020S		5020	
	24	5024L		5024S		5024	
	28	5028L		5028S		5028	
	32	5032L		5032S		5032	
	36	5036L		5036S		5036	
	40	5040L		5040S		5040	
55	20	5520L		5520S		5520	
	24	5524L		5524S		5524	
	28	5528L		5528S		5528	
	32	5532L		5532S		5532	
	36	5536L		5536S		5536	
	40	5540L		5540S		5540	
60	20	6020L		6020S		6020	
	24	6024L		6024S		6024	
	28	6028L		6028S		6028	
	32	6032L		6032S		6032	
	36	6036L		6036S		6036	
	40	6040L		6040S		6040	
65	20	6520L		6520S		6520	
	24	6524L		6524S		6524	
	28	6528L		6528S		6528	
	32	6532L		6532S		6532	
	36	6536L		6536S		6536	
	40	6540L		6540S		6540	
	44	6544L		6544S		6544	

Foundation Summary Table **

Location Ident.	Avg. N Blow/ft.	No. Each	Drill Shaft *** Length (feet)
SH 46 AT CORDOVA - POLE C	17.4		48-A 22
SH 46 AT CORDOVA - POLE D	17.4		22
SH 46 AT CORDOVA - POLE F	17.4		22
Total Drill Shaft Length			


Notes

- ** Foundations may be listed separately or grouped according to similarity of location information only.
- *** Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

Abbreviations

- Lf= Fixed Arm Length
- Lc= Clamp-on Arm Length (44' Max.)

Shipping Parts List								
Traffic Signal Arms (Fixed Mount) (1 per pole)				Luminaire Arms (1 per 30' pole)				
Ship each arm with listed equipment attached								
Nominal Arm Length	Type IV Arm (4 Signals)			Nominal Arm Length	Quantity			
	3 Bracket Assembly and 4 CGB Connectors			8' Arm	3			
ft.	Designation	Quantity		ILSN Arm (Max. 2 per pole) Ship with clamps, bolts and washers				
50	50IV			Nominal Arm Length		Quantity		
55	55IV	3		7' Arm				
60	60IV			9' Arm				
65	65IV							
Traffic Signal Arms (80 MPH Clamp-On Mount) (1 per pole) Ship each arm with listed equipment attached								
Nominal Arm Length	Type I Arm (1 Signal)	Type II Arm (2 Signals)		Type III Arm (3 Signals)				
	2 CGB connector and 1 clamp w/bolts and washers	1 Bracket Assembly and 3 CGB connectors, and 1 clamp w/bolts and washers		2 Bracket Assembly and 4 CGB connectors, and 1 clamp w/bolts and washers				
ft.	Designation	Quantity		Designation	Quantity		Designation	Quantity
20	20I-80							
24	24I-80			24II-80				
28	28I-80			28II-80				
32				32II-80			32III-80	
36				36II-80			36III-80	
40							40III-80	
44							44III-80	
Traffic Signal Arms (100 MPH Clamp-On Mount) (1 per pole) Ship each arm with listed equipment attached								
Nominal Arm Length	Type I Arm (1 Signal)	Type II Arm (2 Signals)		Type III Arm (3 Signals)				
	2 CGB connector and 1 clamp w/bolts and washers	1 Bracket Assembly and 3 CGB connectors, and 1 clamp		2 Bracket Assembly and 4 CGB connectors, and 1 clamp				
ft.	Designation	Quantity		Designation	Quantity		Designation	Quantity
20	20I-100							
24	24I-100			24II-100				
28	28I-100			28II-100				
32				32II-100			32III-100	
36				36II-100			36III-100	
40							40III-100	
44							44III-100	
Anchor Bolt Assemblies (1 per pole)								
Anchor Bolt Diameter	Anchor Bolt Length	Quantity		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.				
2 1/2 "	5' - 3"	3						



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Traffic Operations Division

LONG MAST ARM ASSEMBLY PARTS LIST

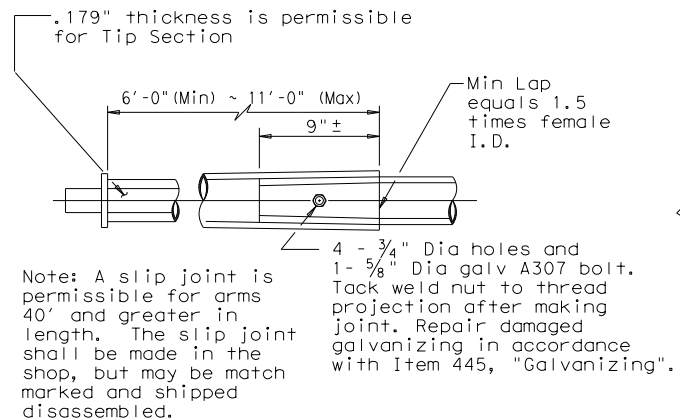
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Sheet 5 of 5

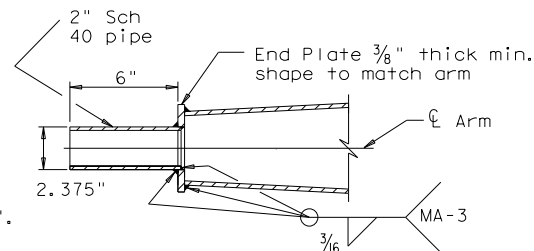
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		DIST	COUNTY		SHEET NO.
		SAT	GUADALUPE		450

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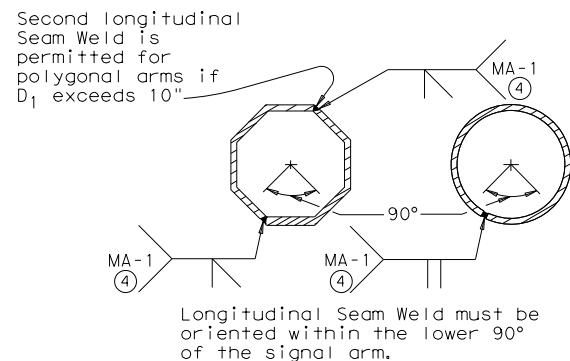
SLIP JOINT DETAIL



TENON DETAIL

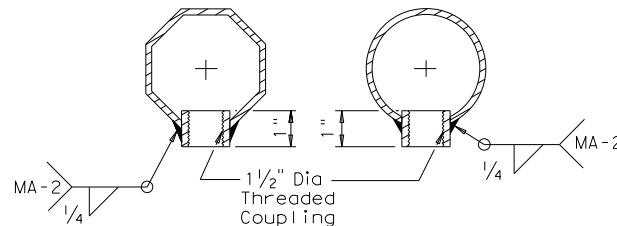
Stainless steel bands (or Cables) and cast bracket as in "Astro-Brac", "Sky Bracket" or "Easy Bracket" with 1 1/2" Dia Threaded Coupling.

BRACKET ASSEMBLY



ARM WELD DETAIL

④ 60% Min. penetration
 100% penetration within
 6" of circumferential
 base welds.



ARM COUPLING DETAILS

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-DPD-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.



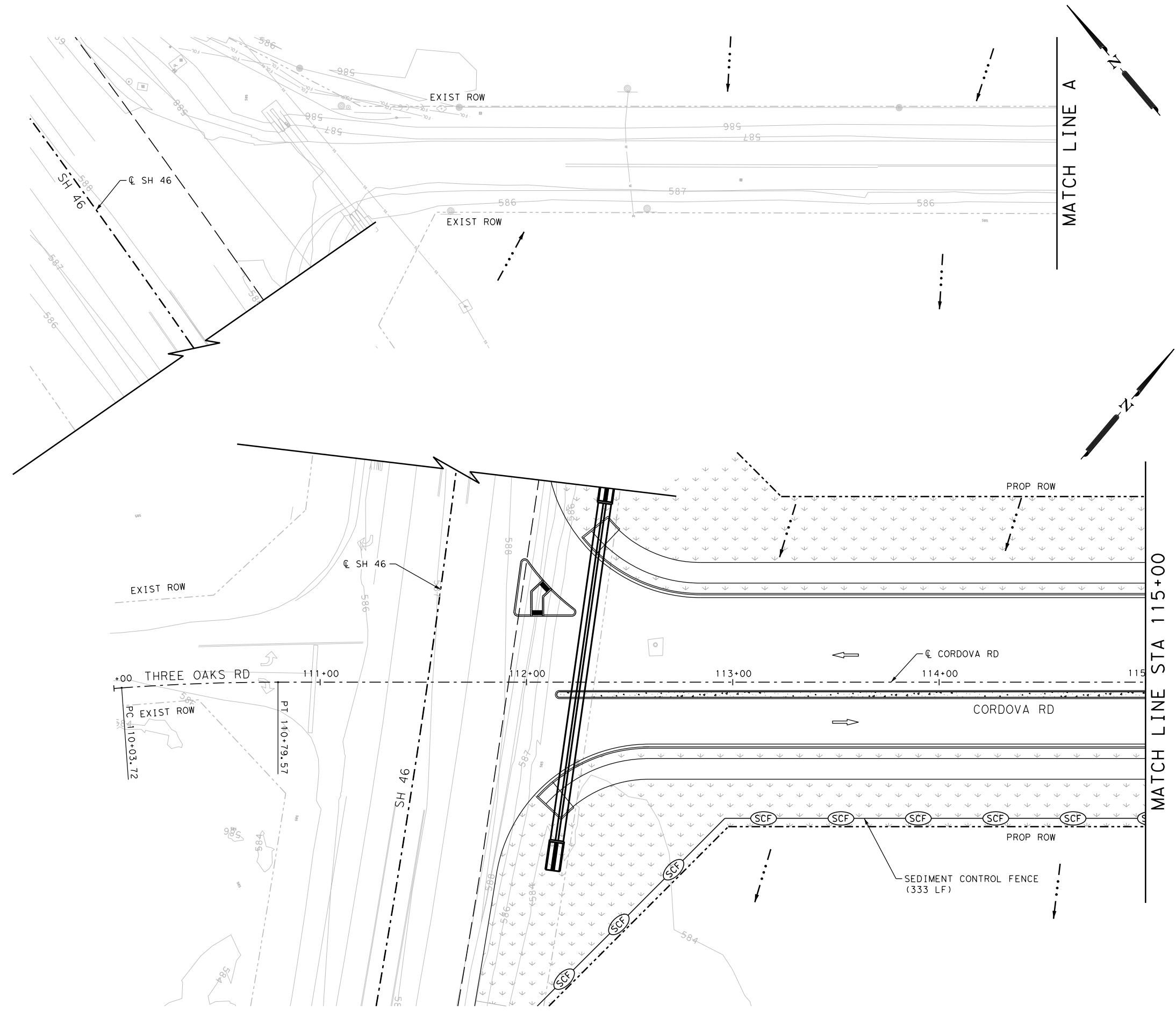
**TRAFFIC SIGNAL
 SUPPORT STRUCTURES
 SINGLE MAST ARM ASSEMBLY
 (80 MPH WIND ZONE)**

SMA-80(2)-12

© TxDOT August 1995		DN: MS	CK: JSY	DW: MMF	CK: JSY
REVISIONS		CONT	SECT	JOB	HIGHWAY
5-96		0915	46	052	CORDOVA
1-12		DIST	COUNTY		SHEET NO.
		SAT	GUADALUPE		452

Plotted on: 11/17/2023

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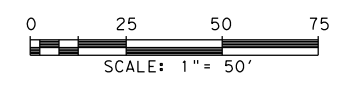
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	ROCK FILTER DAM		SEDIMENT CONTROL FENCE
	FLOW ARROW		TRAFFIC FLOW ARROW
	CONCRETE RIPRAP		SEEDING

- NOTES**
- REFER TO TEMPORARY EROSION CONTROL MEASURE STANDARDS FOR MORE INFORMATION.
 - SW3P CONTROL MEASURES INSTALLED DURING CONSTRUCTION ARE TO REMAIN IN PLACE UNTIL GRASS COVER IS ACHIEVED OR AS APPROVED BY THE ENGINEER.
 - SW3P CONTROL MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED AFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS SHEET AND SIGNED BY THE RESPONSIBLE PARTY.
 - PLACE CONSTRUCTION EXIT AS DIRECTED BY THE ENGINEER.

TEMPORARY SEDIMENT CONTROL FENCE SHOULD BE PLACED ON CONSTRUCTION EASEMENT LIMIT LINE WHENEVER PRESENT. IF NO CONSTRUCTION EASEMENT EXISTS IN AREA THEN PLACE ON RIGHT-OF-WAY LINE. TEMPORARY SEDIMENT CONTROL FENCE IS PURPOSELY SHOWN OFF-SET FROM SAID LINES FOR VISUAL CLARITY.

DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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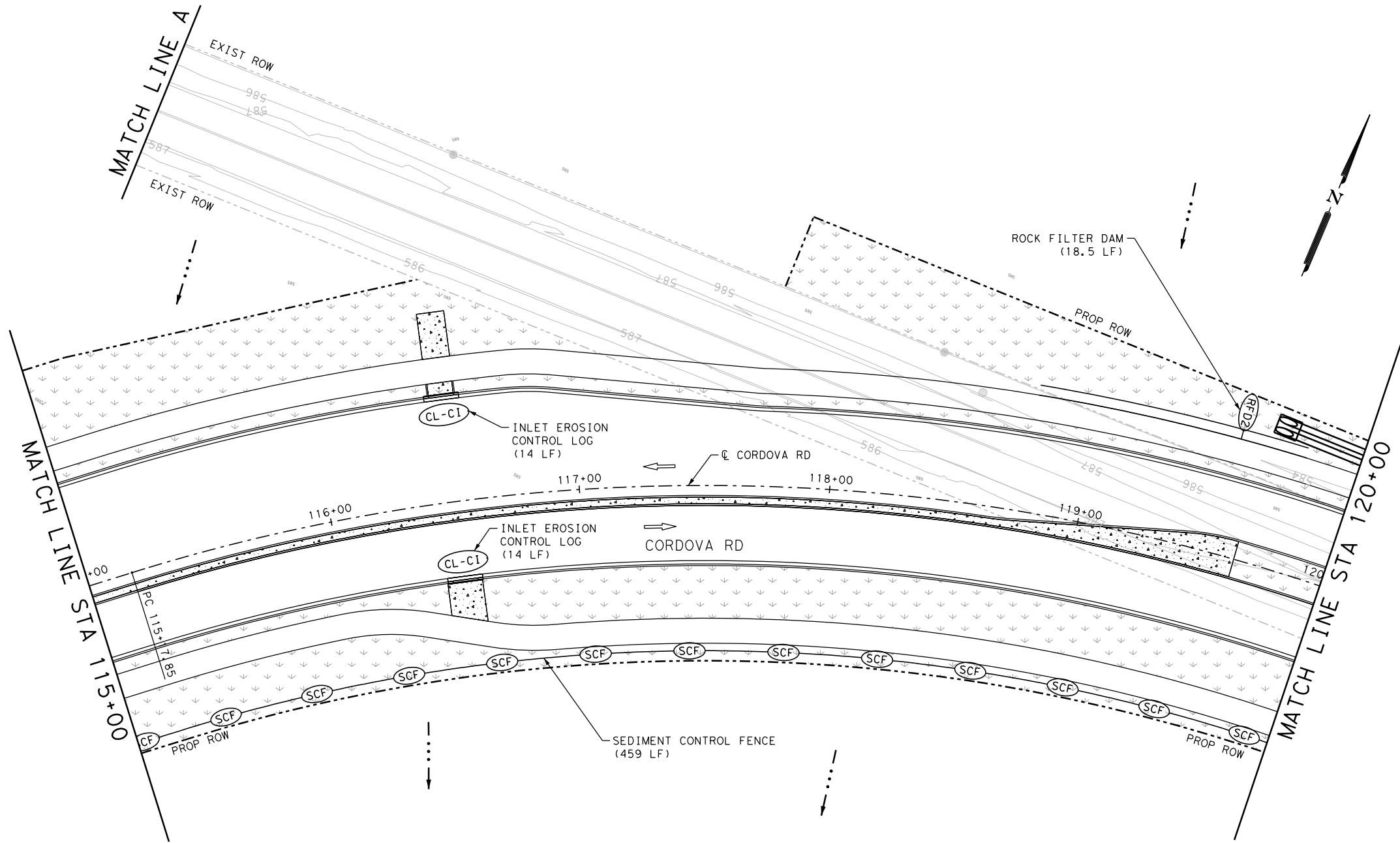
Texas Department of Transportation
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CORDOVA RD
SW3P LAYOUT
 BEGIN PROJECT TO STA 115+00
 SHEET 1 OF 24

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				454

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\SW3P\1277500_SW3P_02.dgn



LEGEND

- EROSION CONTROL LOG AT DROP INLET
- EROSION CONTROL LOG AT CURB INLET
- ROCK FILTER DAM
- SEDIMENT CONTROL FENCE
- FLOW ARROW
- TRAFFIC FLOW ARROW
- CONCRETE RIPRAP
- SEEDING

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DESIGN

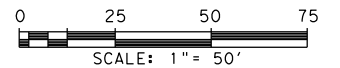
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



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CORDOVA RD

SW3P LAYOUT

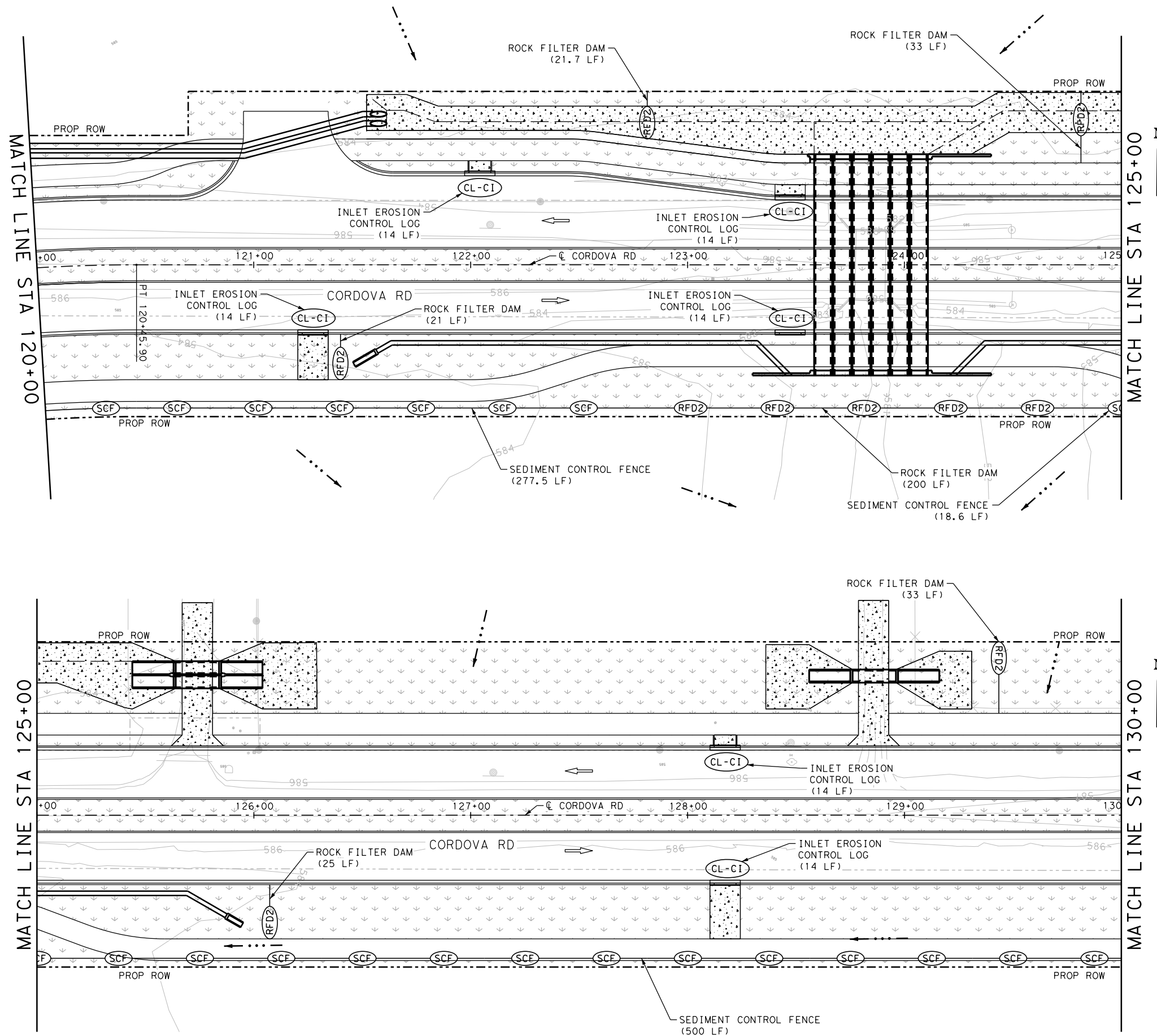
STA 115+00 TO STA 120+00

SHEET 2 OF 24

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
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DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	455

Plotted on: 11/17/2023

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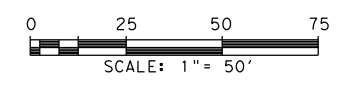
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RFD2	ROCK FILTER DAM	SCF	SEDIMENT CONTROL FENCE
	FLOW ARROW		TRAFFIC FLOW ARROW
	CONCRETE RIPRAP		SEEDING

- NOTES**
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DESIGN
INTERIM REVIEW
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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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THE STATE OF TEXAS
 GUADALUPE COUNTY

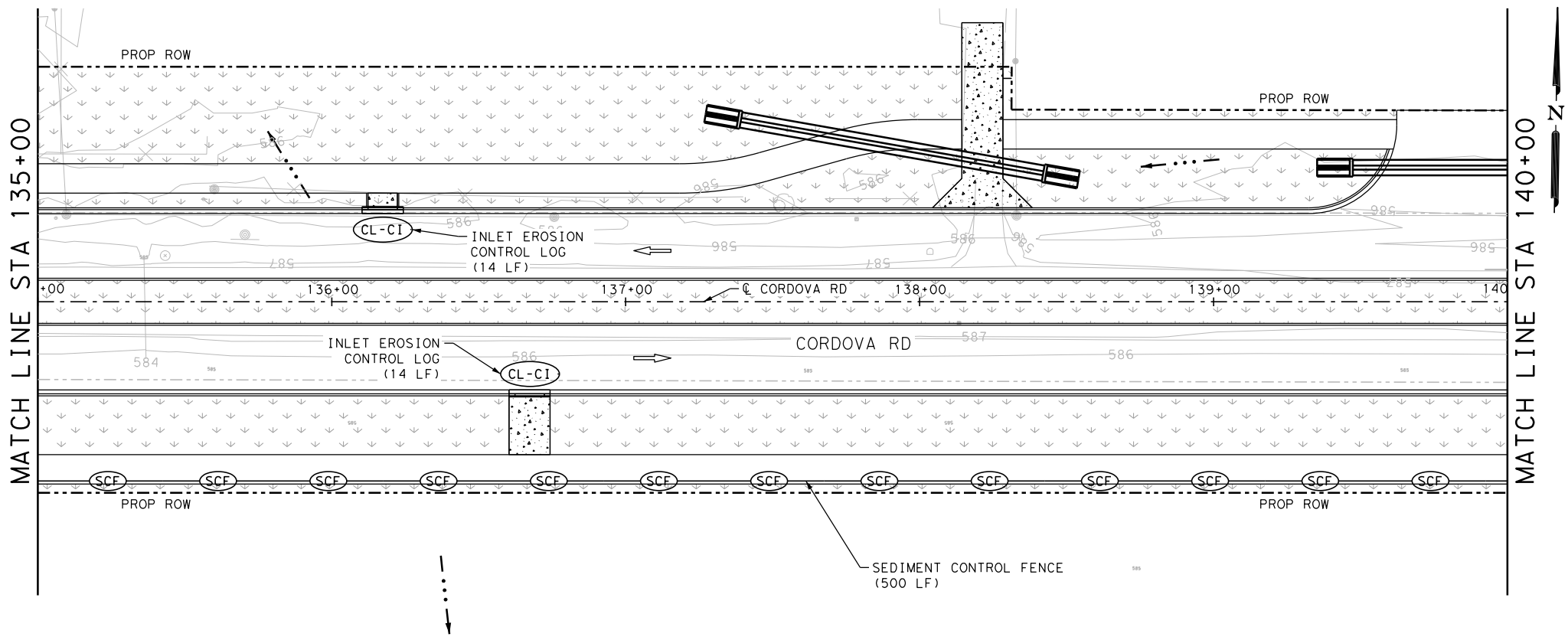
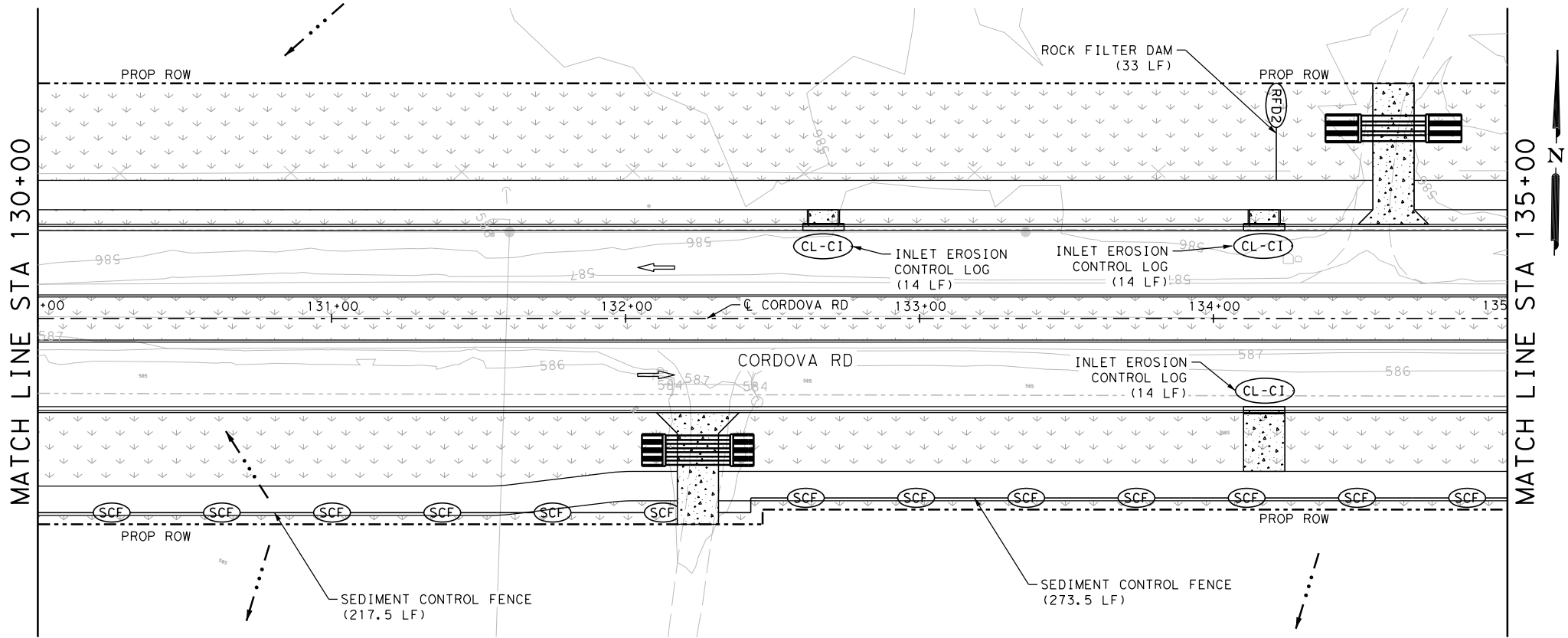
Texas Department of Transportation
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CORDOVA RD
SW3P LAYOUT
 STA 120+00 TO STA 130+00
 SHEET 3 OF 24

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				456

Plotted on: 11/17/2023

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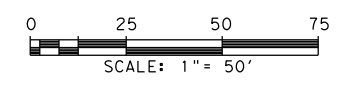
CL-DI	EROSION CONTROL LOG AT DROP INLET	CL-CI	EROSION CONTROL LOG AT CURB INLET
RFD2	ROCK FILTER DAM	SCF	SEDIMENT CONTROL FENCE
	FLOW ARROW		TRAFFIC FLOW ARROW
	CONCRETE RIPRAP		SEEDING

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DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			

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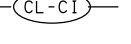


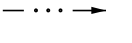
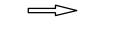
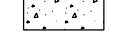

CORDOVA RD
SW3P LAYOUT
 STA 130+00 TO STA 140+00
 SHEET 4 OF 24

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				457

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civi\SW3P\1277500_SW3P_05.dgn

LEGEND

-  EROSION CONTROL LOG AT DROP INLET
-  EROSION CONTROL LOG AT CURB INLET
-  ROCK FILTER DAM
-  SEDIMENT CONTROL FENCE
-  FLOW ARROW
-  TRAFFIC FLOW ARROW
-  CONCRETE RIPRAP
-  SEEDING

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DESIGN

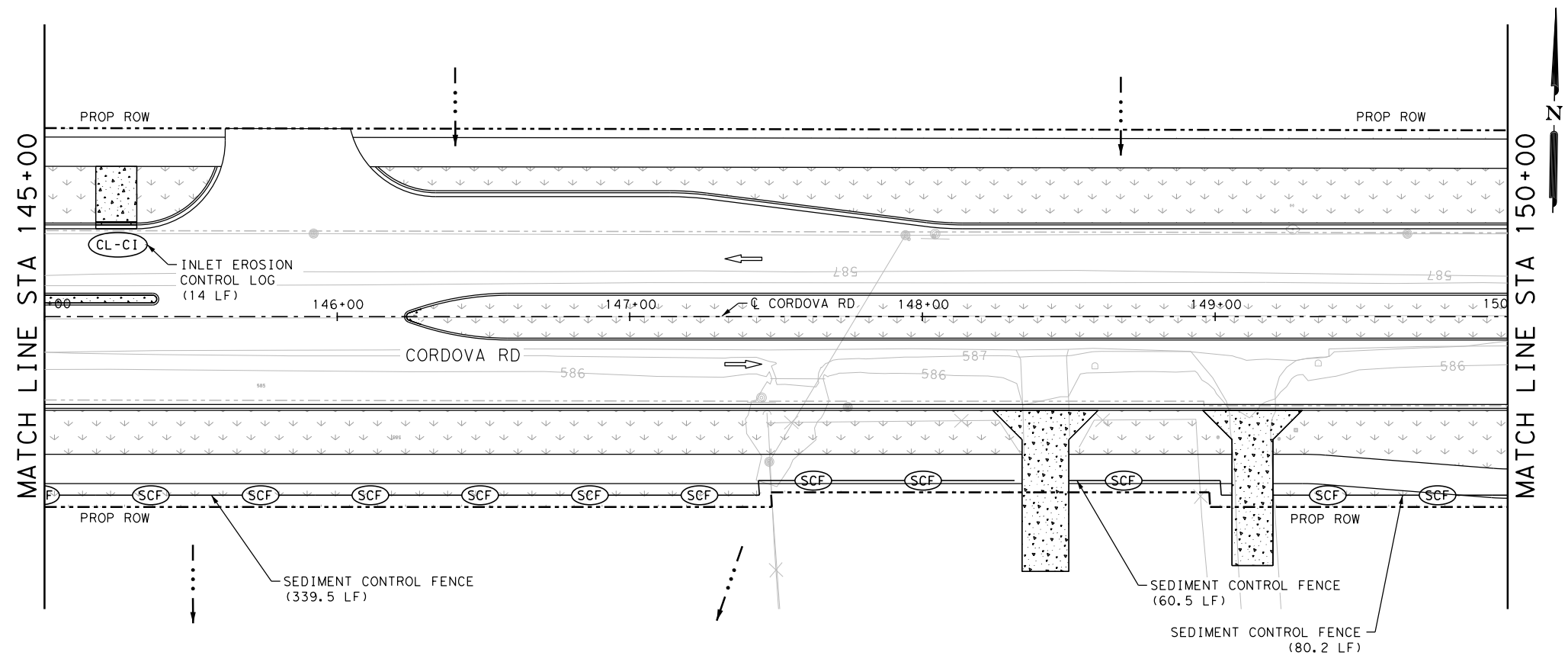
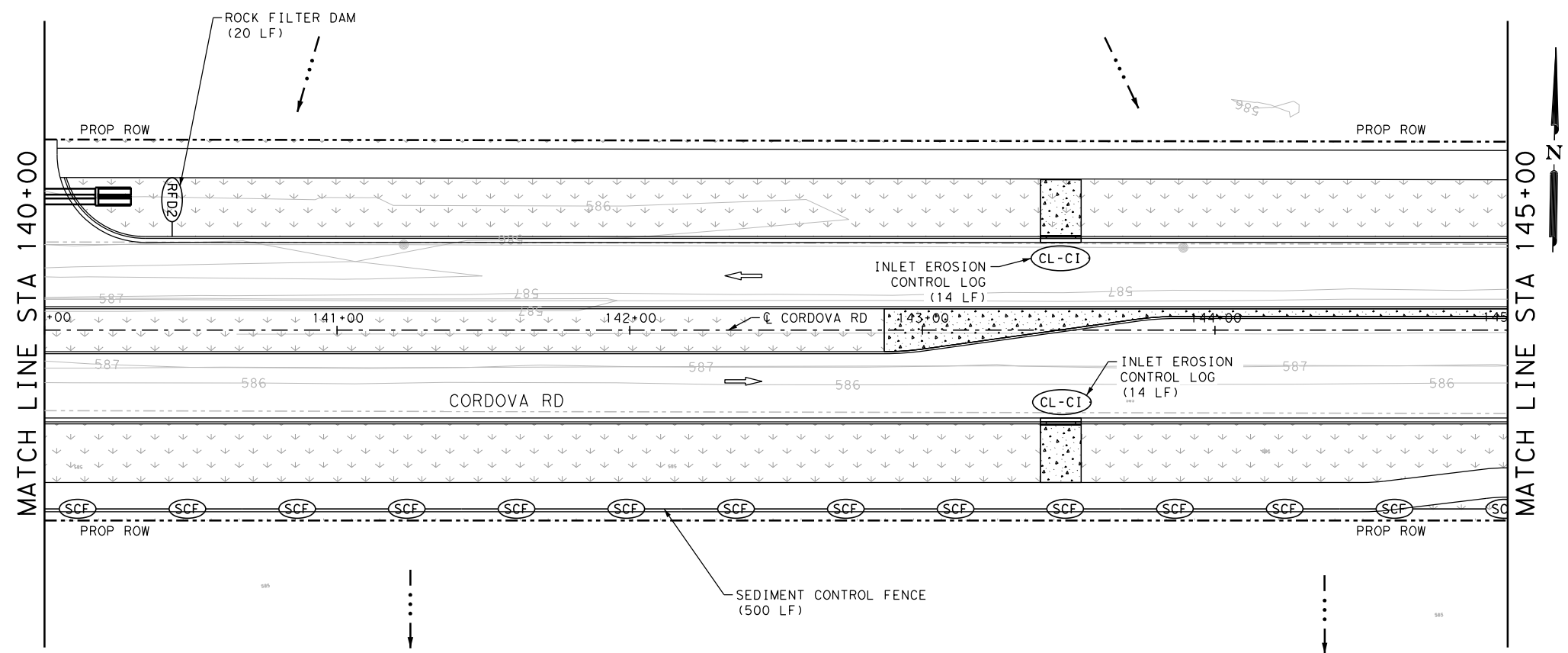
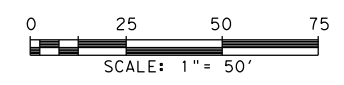
INTERIM REVIEW





DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

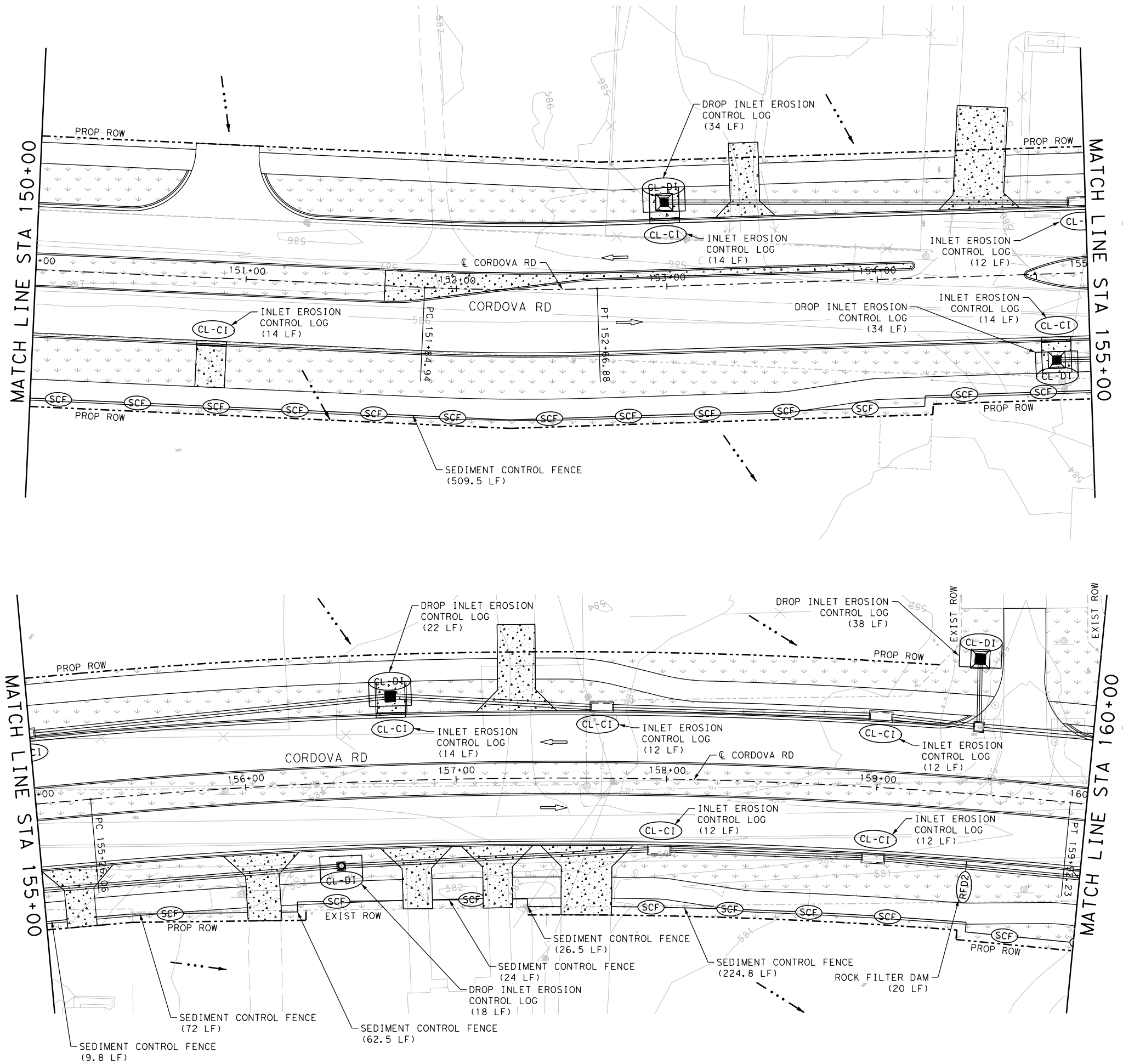
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 <p>PAPE-DAWSON ENGINEERS</p> <p>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</p>			
  <p>SEGUIN TEXAS It's real.</p>			
 <p>Texas Department of Transportation © 2023</p>			
<p>CORDOVA RD</p> <p>SW3P LAYOUT</p> <p>STA 140+00 TO STA 150+00</p> <p>SHEET 5 OF 24</p>			
CHK DGN:	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO. CORDOVA
DWG:	DIST. SAT	COUNTY GUADALUPE	CONT. NO. 0915, SECT. NO. 46, JOB NO. 052, SHEET NO. 458

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\SW3P\1277500_SW3P_06.dgn



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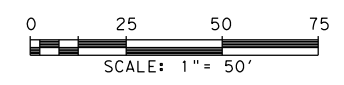
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RFD2	ROCK FILTER DAM	SCF	SEDIMENT CONTROL FENCE
	FLOW ARROW		TRAFFIC FLOW ARROW
	CONCRETE RIPRAP		SEEDING

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INTERIM REVIEW
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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

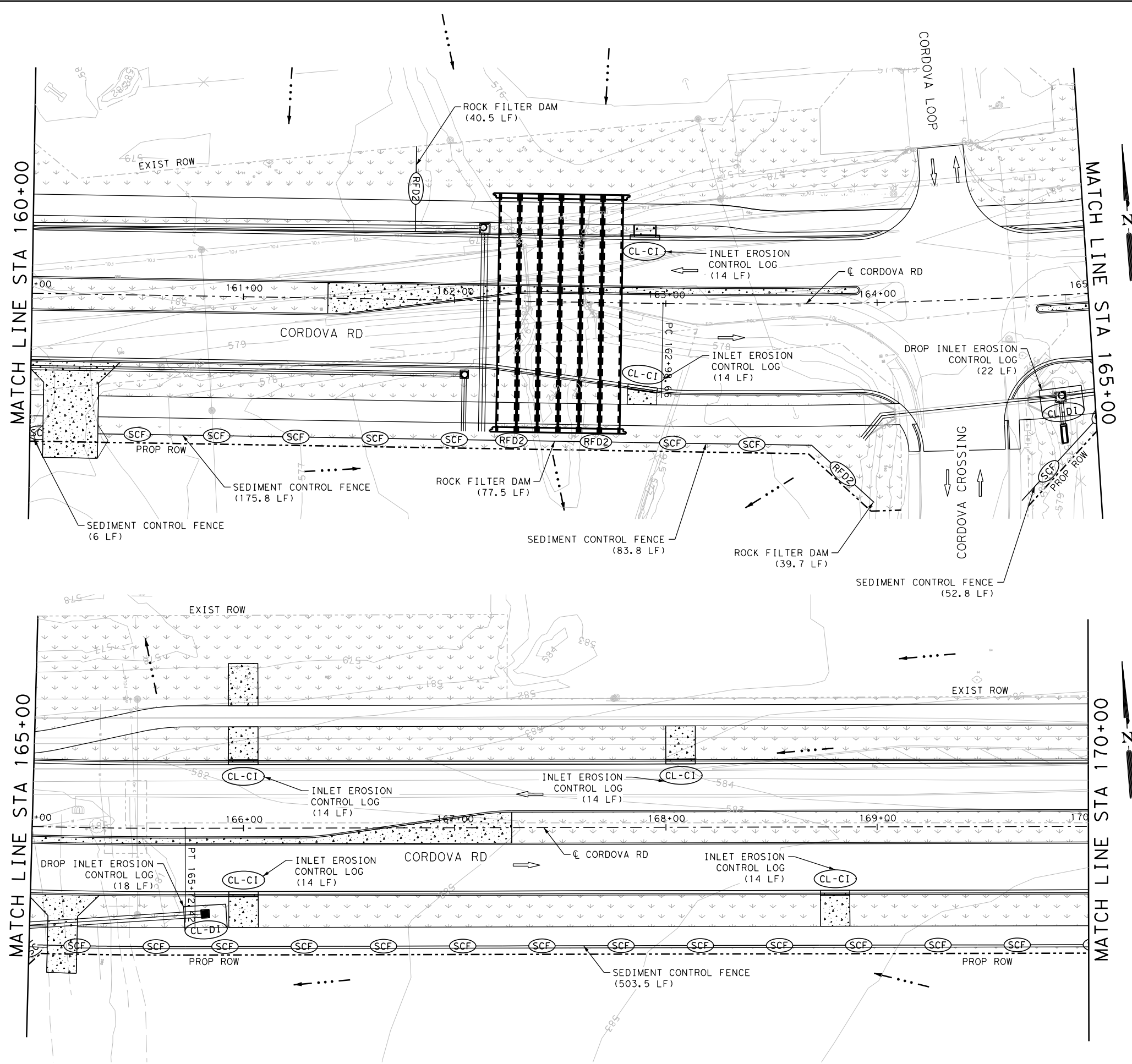
APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
© 2023			
CORDOVA RD SW3P LAYOUT STA 150+00 TO STA 160+00 SHEET 6 OF 24			
CHK DGN:	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO. CORDOVA
DWG:	DIST. SAT	COUNTY GUADALUPE	CONT. NO. 0915, SECT. NO. 46, JOB NO. 052, SHEET NO. 459

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\SW3P\1277500_SW3P_07.dgn



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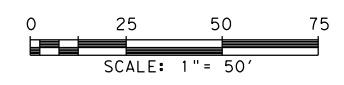
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RFD2	ROCK FILTER DAM	SCF	SEDIMENT CONTROL FENCE
	FLOW ARROW		TRAFFIC FLOW ARROW
	CONCRETE RIPRAP		SEEDING

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DESIGN
INTERIM REVIEW
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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

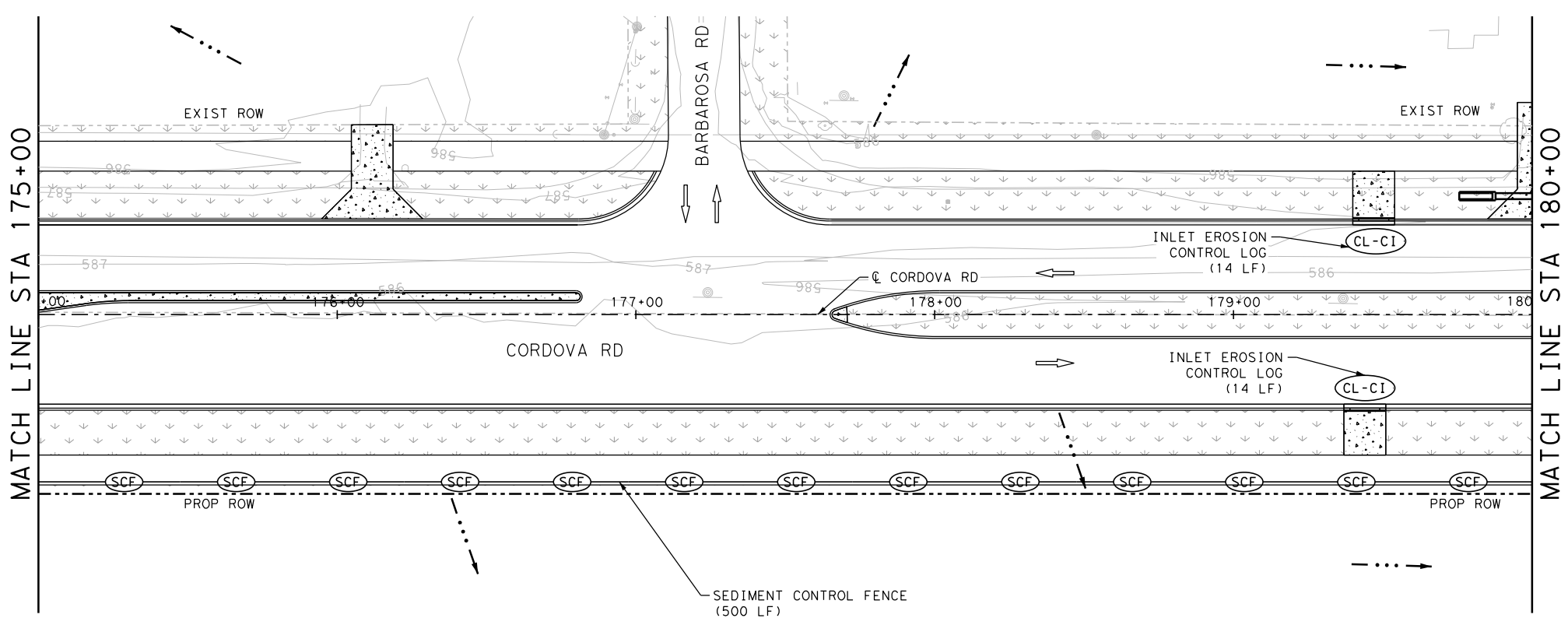
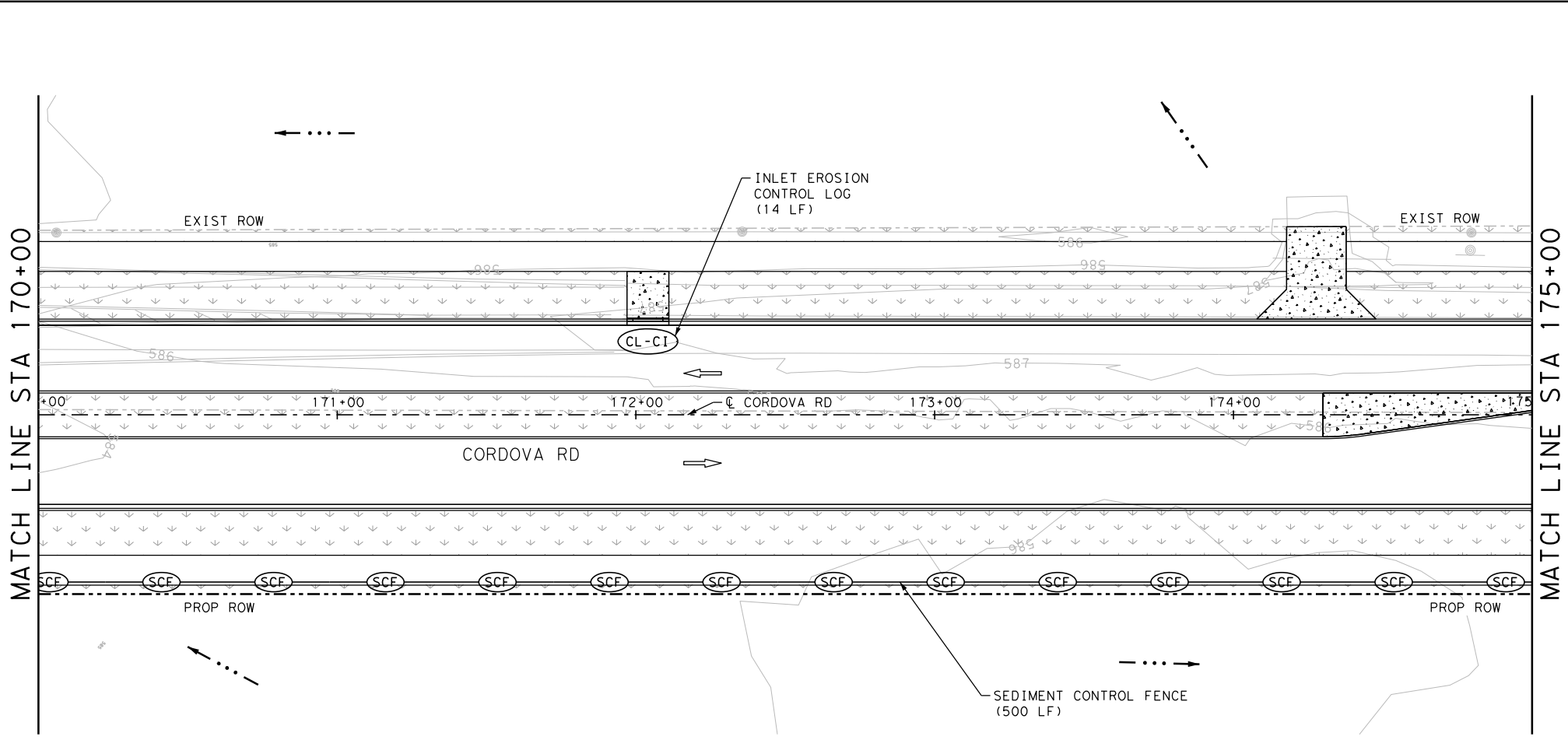
APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
©2023 CORDOVA RD SW3P LAYOUT STA 160+00 TO STA 170+00 SHEET 7 OF 24			
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
CHK DGN:	6	TEXAS	
DWG:	DIST.:	COUNTY:	CONT. NO. SECT. NO. JOB NO.
CHK DWG:	SAT	GUADALUPE	0915 46 052
			HIGHWAY NO. SHEET NO.
			CORDOVA 460

Plotted on: 11/17/2023

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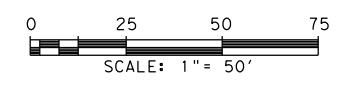
CL-DI	EROSION CONTROL LOG AT DROP INLET	CL-CI	EROSION CONTROL LOG AT CURB INLET
RFD2	ROCK FILTER DAM	SCF	SEDIMENT CONTROL FENCE
	FLOW ARROW		TRAFFIC FLOW ARROW
	CONCRETE RIPRAP		SEEDING

- NOTES**
- REFER TO TEMPORARY EROSION CONTROL MEASURE STANDARDS FOR MORE INFORMATION.
 - SW3P CONTROL MEASURES INSTALLED DURING CONSTRUCTION ARE TO REMAIN IN PLACE UNTIL GRASS COVER IS ACHIEVED OR AS APPROVED BY THE ENGINEER.
 - SW3P CONTROL MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED AFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS SHEET AND SIGNED BY THE RESPONSIBLE PARTY.
 - PLACE CONSTRUCTION EXIT AS DIRECTED BY THE ENGINEER.

TEMPORARY SEDIMENT CONTROL FENCE SHOULD BE PLACED ON CONSTRUCTION EASEMENT LIMIT LINE WHENEVER PRESENT. IF NO CONSTRUCTION EASEMENT EXISTS IN AREA THEN PLACE ON RIGHT-OF-WAY LINE. TEMPORARY SEDIMENT CONTROL FENCE IS PURPOSELY SHOWN OFF-SET FROM SAID LINES FOR VISUAL CLARITY.

DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

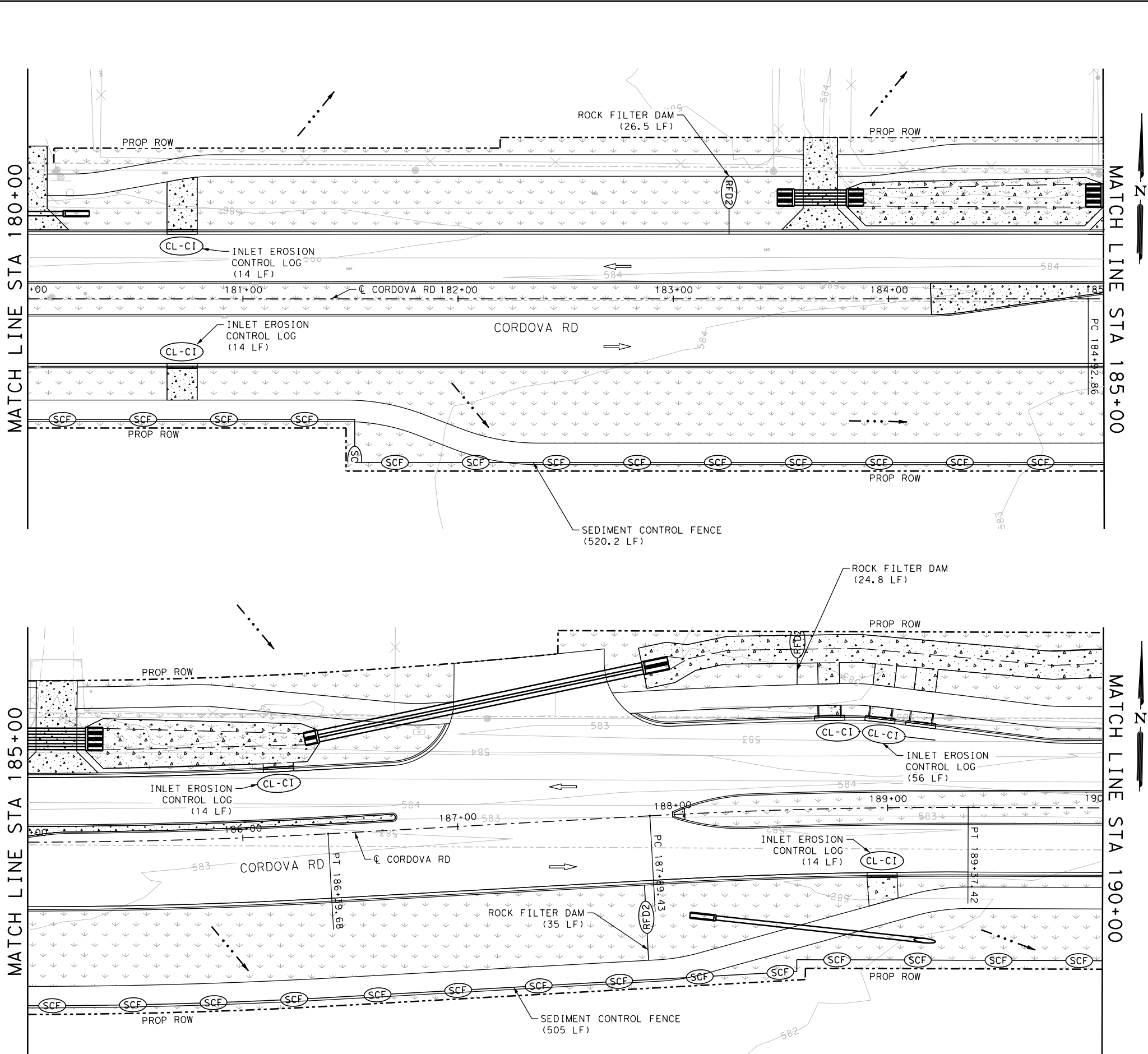
APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
 It's real.			
 © 2023			
CORDOVA RD SW3P LAYOUT STA 170+00 TO STA 180+00 SHEET 8 OF 24			
CHK DGN:	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO. CORDOVA
DWG:	DIST. SAT	COUNTY GUADALUPE	CONT. NO. 0915, SECT. NO. 46, JOB NO. 052, SHEET NO. 461

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\SW3P\1277500_SW3P_09.dgn



LEGEND

CL-DI	EROSION CONTROL LOG AT DROP INLET	CL-CI	EROSION CONTROL LOG AT CURB INLET
RFD2	ROCK FILTER DAM	SCF	SEDIMENT CONTROL FENCE
	FLOW ARROW		TRAFFIC FLOW ARROW
	CONCRETE RIPRAP		SEEDING

- NOTES**
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DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

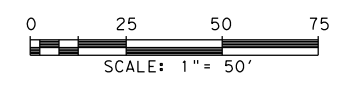
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS

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CORDOVA RD

SW3P LAYOUT

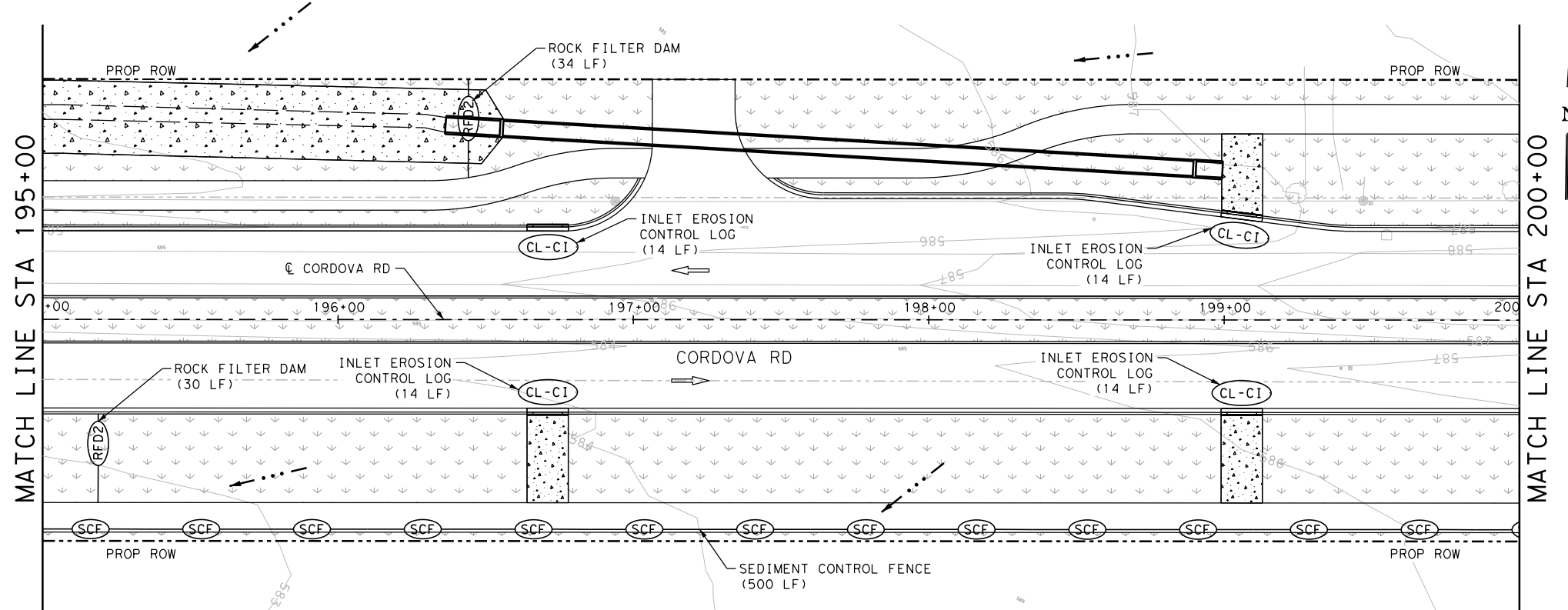
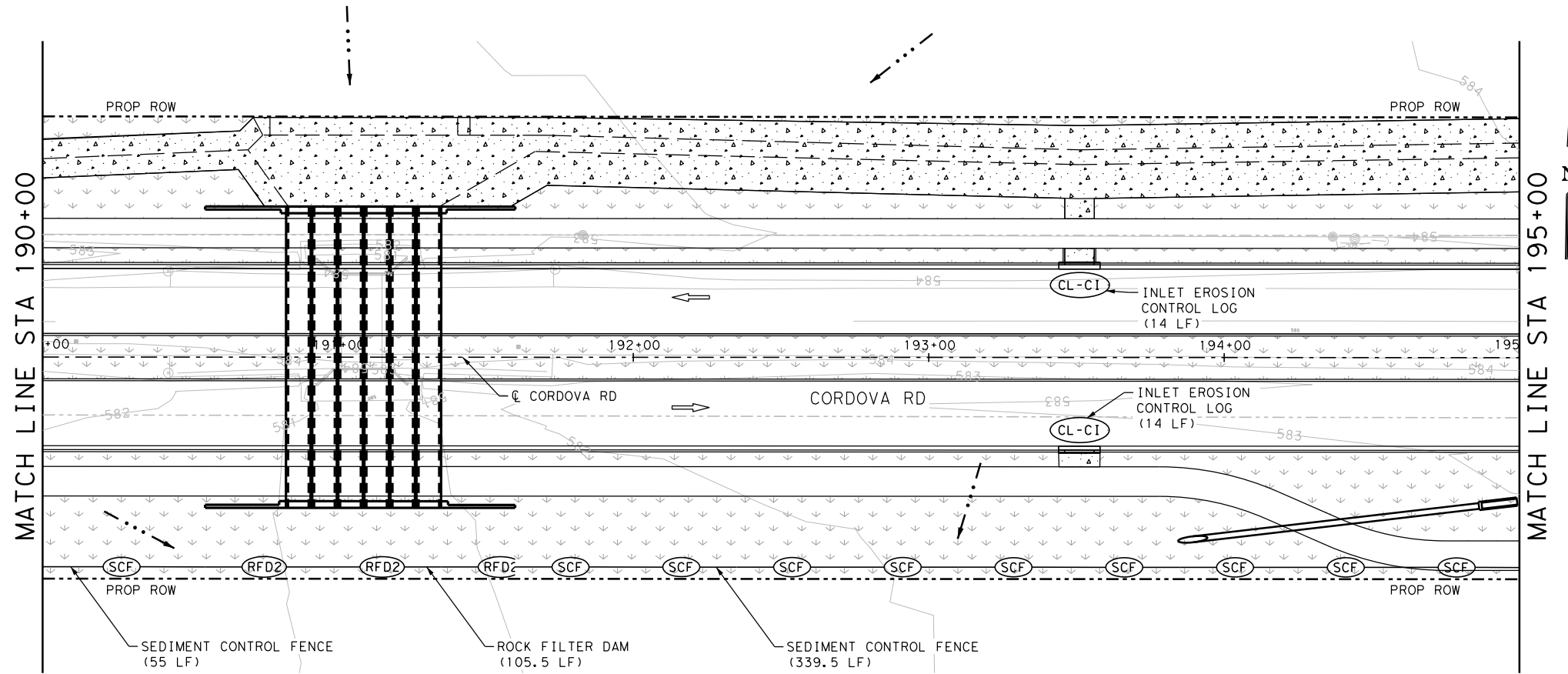
STA 180+00 TO STA 190+00

SHEET 9 OF 24

DON:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				462

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\SW3P\1277500_SW3P_10.dgn



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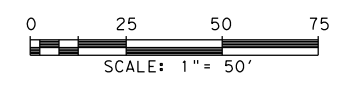
CL-DI	EROSION CONTROL LOG AT DROP INLET	CL-CI	EROSION CONTROL LOG AT CURB INLET
RFD2	ROCK FILTER DAM	SCF	SEDIMENT CONTROL FENCE
	FLOW ARROW		TRAFFIC FLOW ARROW
	CONCRETE RIPRAP		SEEDING

- NOTES**
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DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			

 It's real.	
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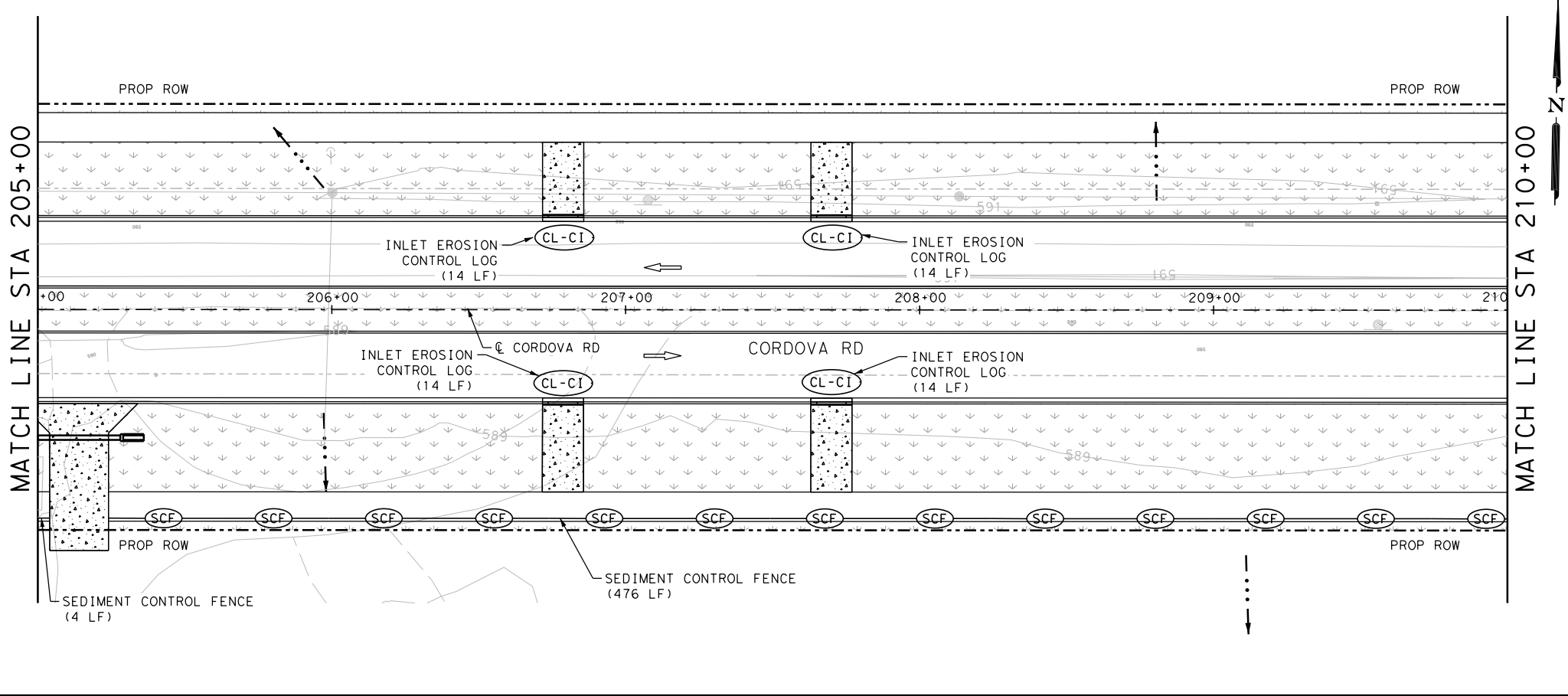
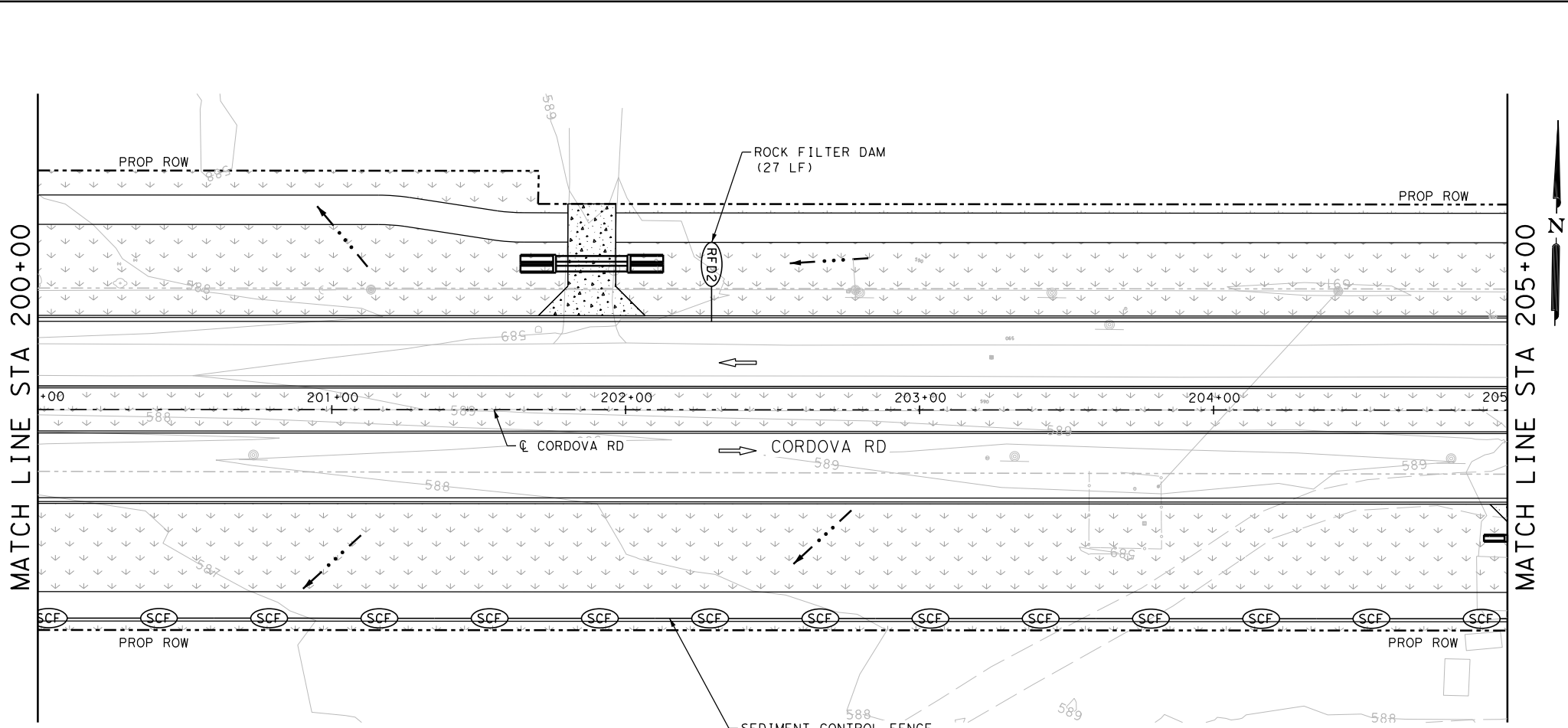
Texas Department of Transportation
 © 2023

CORDOVA RD
SW3P LAYOUT
 STA 190+00 TO STA 200+00
 SHEET 10 OF 24

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				463

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\SW3P\1277500_SW3P_11.dgn



LEGEND

CL-DI	EROSION CONTROL LOG AT DROP INLET	CL-CI	EROSION CONTROL LOG AT CURB INLET
RFD2	ROCK FILTER DAM	SCF	SEDIMENT CONTROL FENCE
	FLOW ARROW		TRAFFIC FLOW ARROW
	CONCRETE RIPRAP		SEEDING

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DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

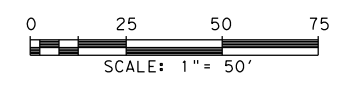
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023

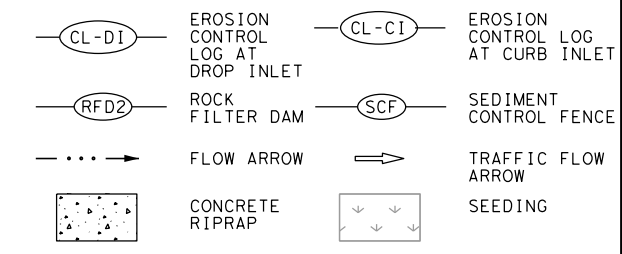


REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
©2023 CORDOVA RD SW3P LAYOUT STA 200+00 TO STA 210+00 SHEET 11 OF 24			
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.
CHK DGN:	6	TEXAS	
DWG:	DIST.	COUNTY	CONT. NO.
CHK DWG:	SAT	GUADALUPE	0915
			SECT. NO.
			46
			JOB NO.
			052
			SHEET NO.
			464

Plotted on: 11/17/2023

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LEGEND



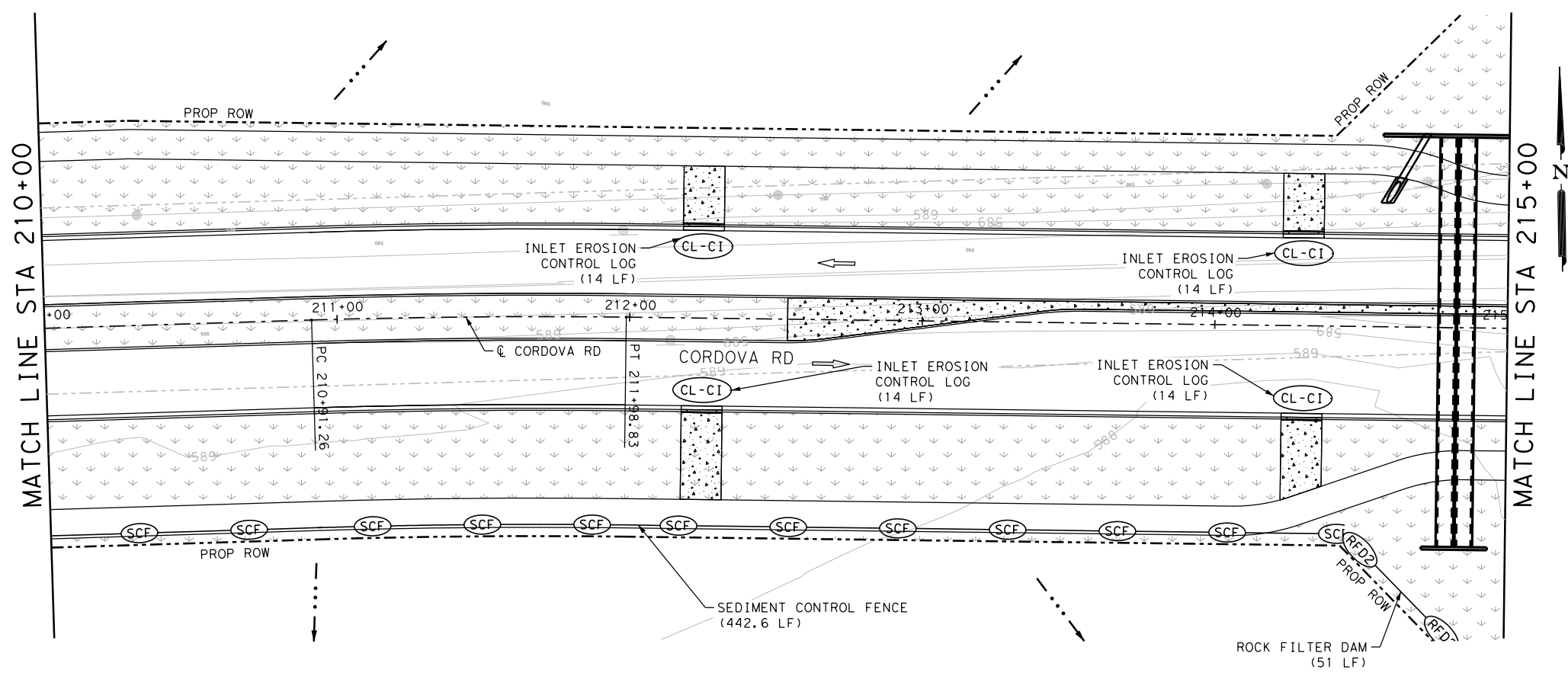
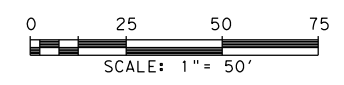
NOTES

1. REFER TO TEMPORARY EROSION CONTROL MEASURE STANDARDS FOR MORE INFORMATION.
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4. PLACE CONSTRUCTION EXIT AS DIRECTED BY THE ENGINEER.

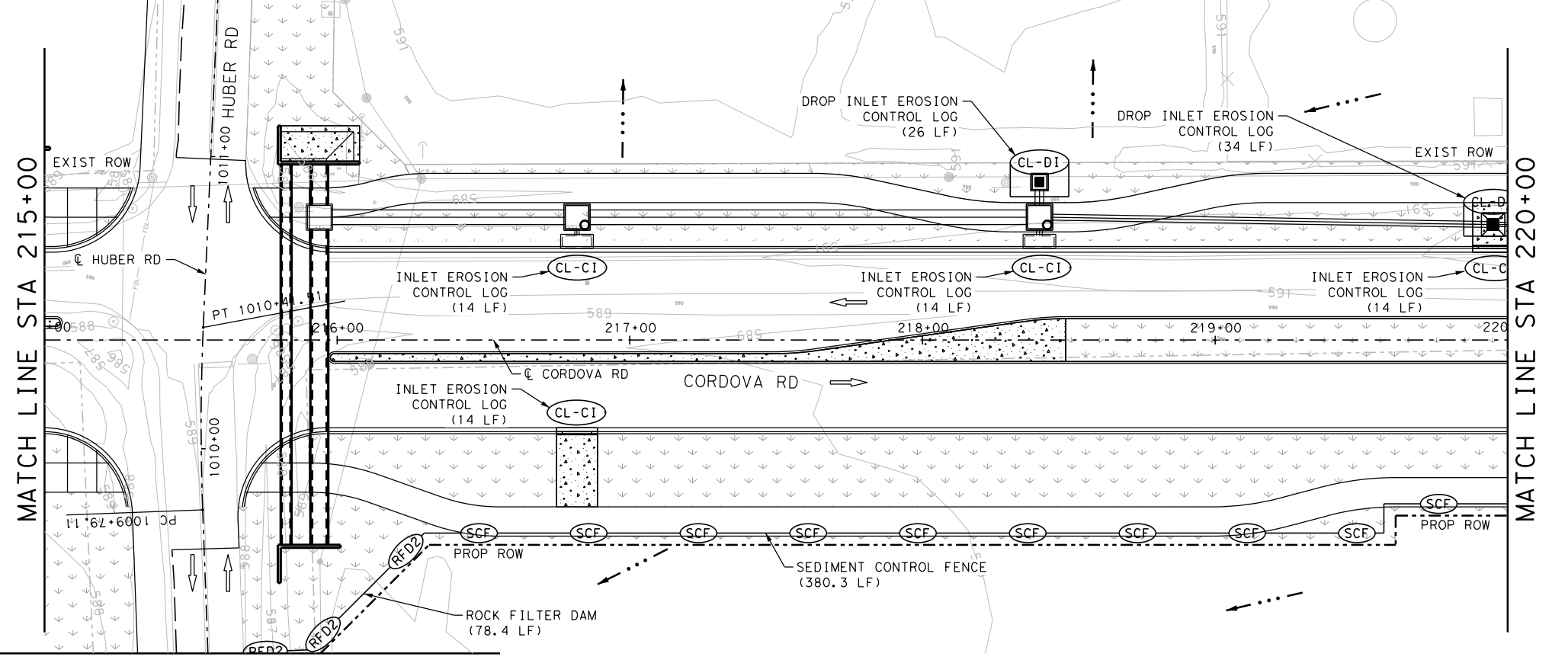
TEMPORARY SEDIMENT CONTROL FENCE SHOULD BE PLACED ON CONSTRUCTION EASEMENT LIMIT LINE WHENEVER PRESENT. IF NO CONSTRUCTION EASEMENT EXISTS IN AREA THEN PLACE ON RIGHT-OF-WAY LINE. TEMPORARY SEDIMENT CONTROL FENCE IS PURPOSELY SHOWN OFF-SET FROM SAID LINES FOR VISUAL CLARITY.

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INTERIM REVIEW
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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



MATCH LINE STA 1011+75 SEE SHEET 477

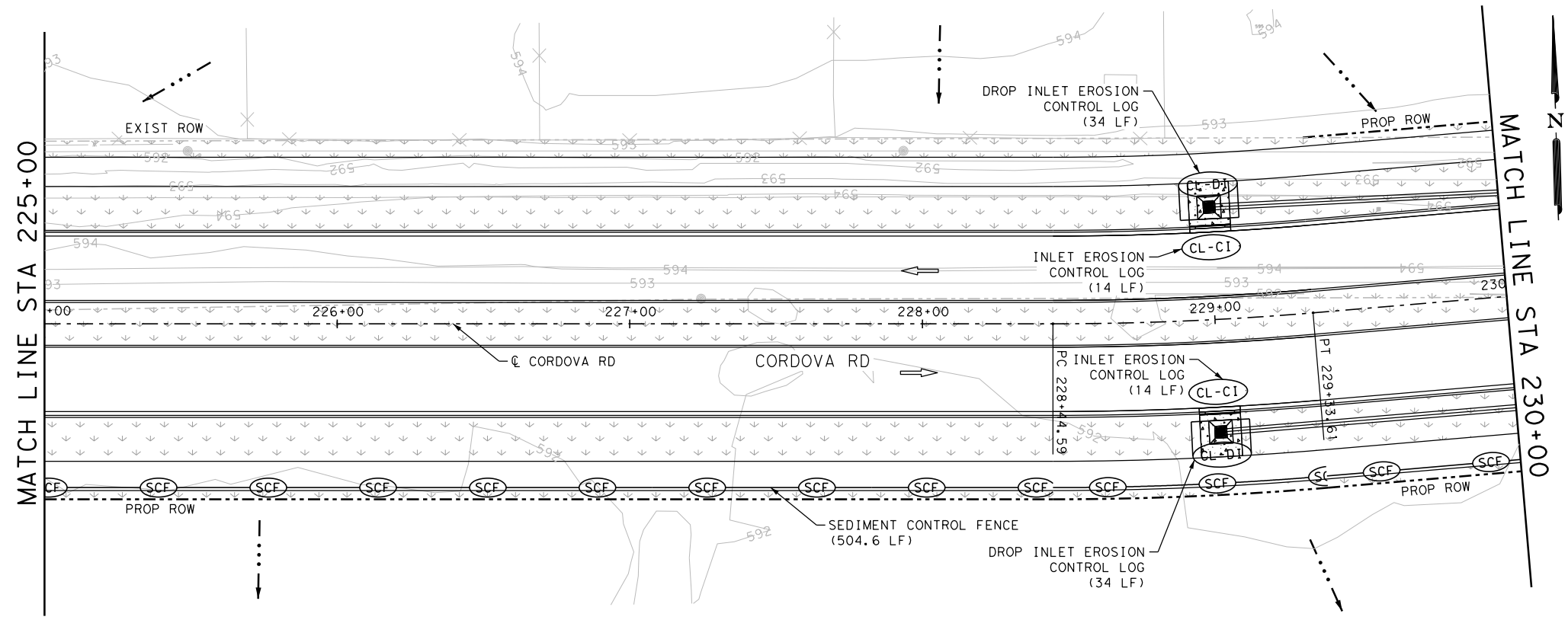
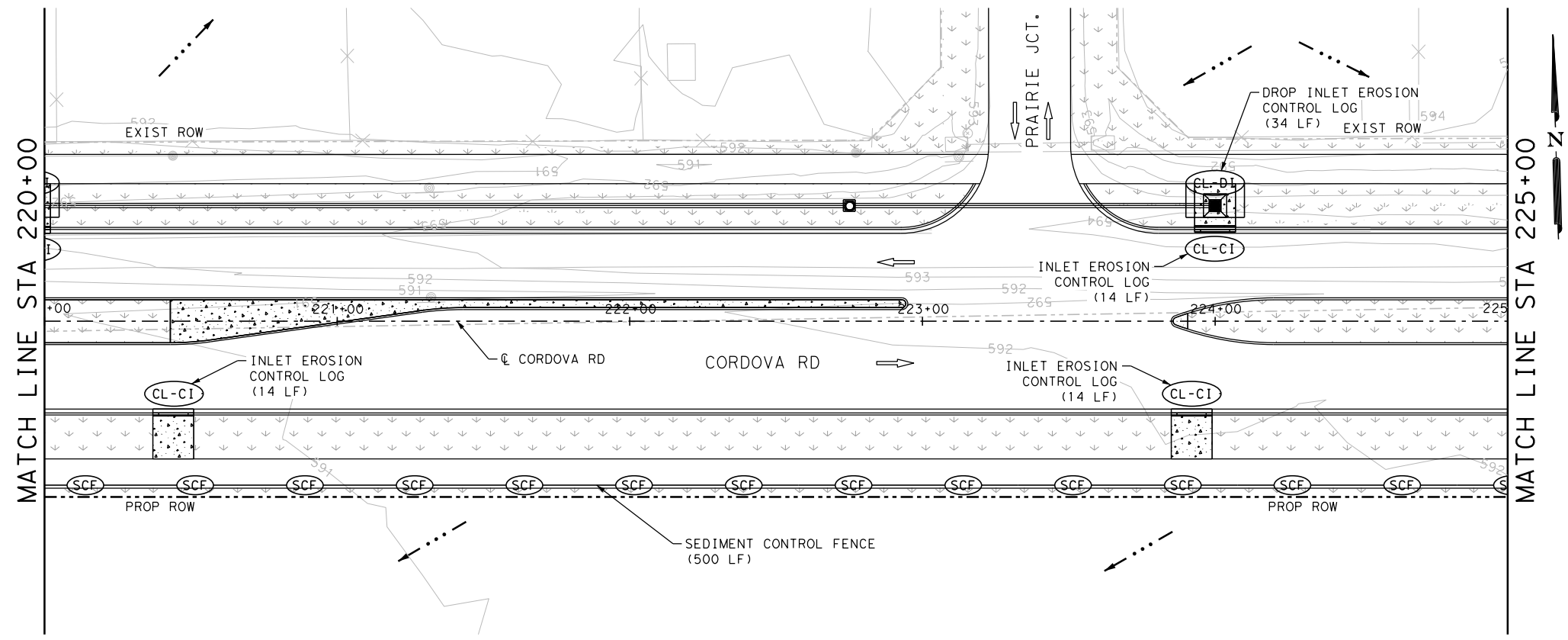


MATCH LINE STA 1009+30 SEE SHEET 476

REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
©2023			
CORDOVA RD SW3P LAYOUT STA 210+00 TO STA 220+00 SHEET 12 OF 24			
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
CHK DGN:	6	TEXAS	
DWG:	DIST.:	COUNTY:	CONT. NO. SECT. NO. JOB NO.
CHK DWG:	SAT	GUADALUPE	0915 46 052 465

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\SW3P\1277500_SW3P_13.dgn



LEGEND

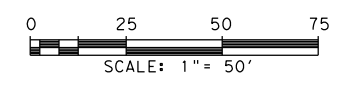
CL-DI	EROSION CONTROL LOG AT DROP INLET	CL-CI	EROSION CONTROL LOG AT CURB INLET
RFD2	ROCK FILTER DAM	SCF	SEDIMENT CONTROL FENCE
	FLOW ARROW		TRAFFIC FLOW ARROW
	CONCRETE RIPRAP		SEEDING

- NOTES**
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DESIGN
INTERIM REVIEW
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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

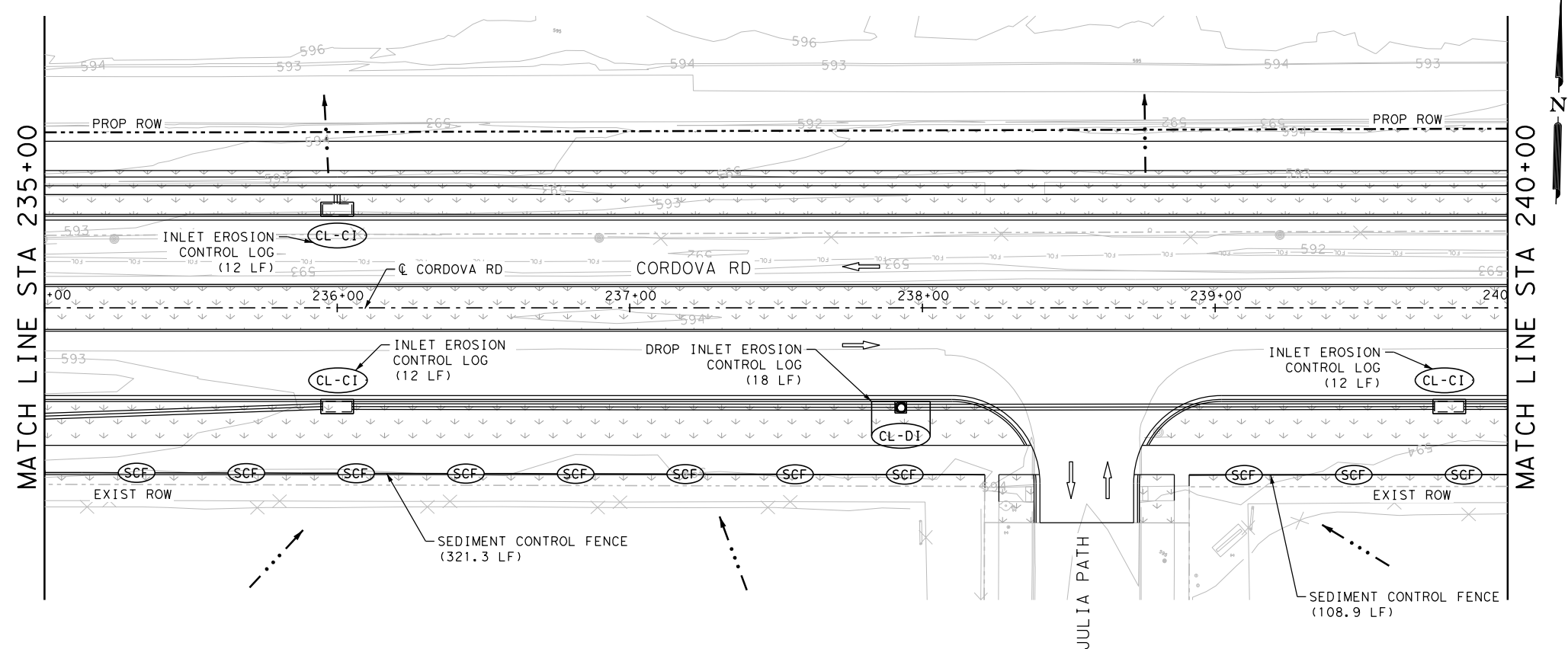
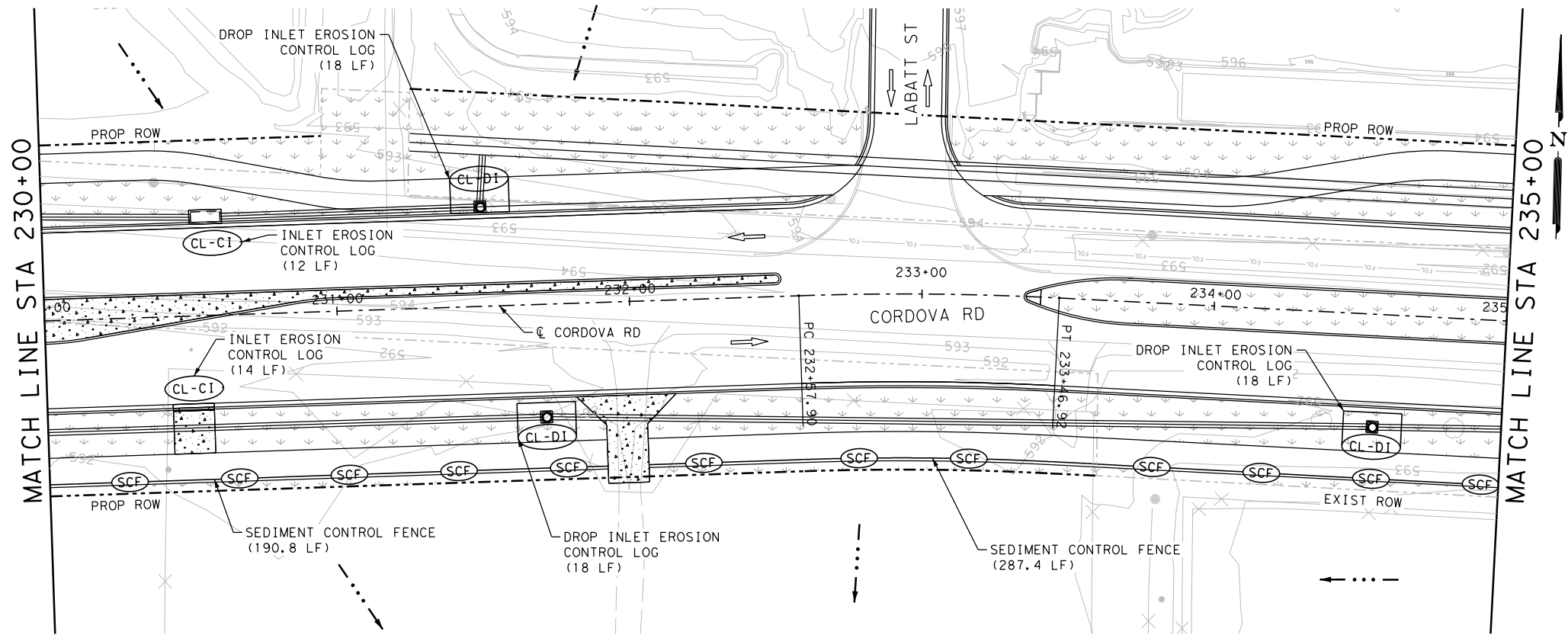
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INTERIM REVIEW
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 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
© 2023 CORDOVA RD SW3P LAYOUT STA 220+00 TO STA 230+00 SHEET 13 OF 24			
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
CHK DGN:	6	TEXAS	
DWG:	DIST.:	COUNTY:	CONT. NO. SECT. NO. JOB NO. SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915 46 052 466

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\SW3P\1277500_SW3P_14.dgn



LEGEND

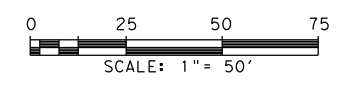
CL-DI	EROSION CONTROL LOG AT DROP INLET	CL-CI	EROSION CONTROL LOG AT CURB INLET
RFD2	ROCK FILTER DAM	SCF	SEDIMENT CONTROL FENCE
	FLOW ARROW		TRAFFIC FLOW ARROW
	CONCRETE RIPRAP		SEEDING

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INTERIM REVIEW
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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

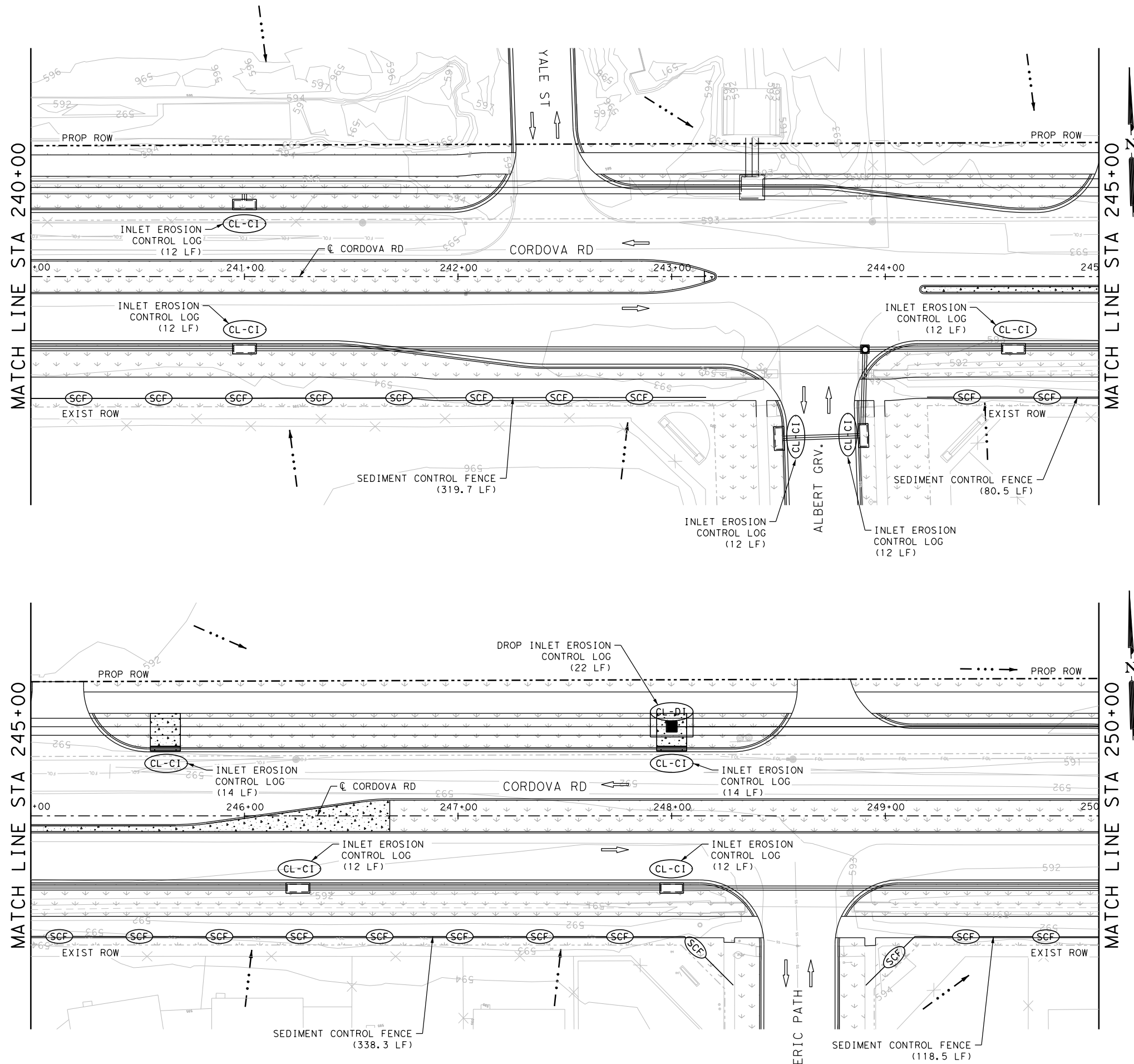
APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
 It's real.			
 © 2023			
CORDOVA RD SW3P LAYOUT STA 230+00 TO STA 240+00 SHEET 14 OF 24			
DON:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
CHK DGN:	6	TEXAS	CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO. SECT. NO. JOB NO. SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915 46 052 467

Plotted on: 11/17/2023

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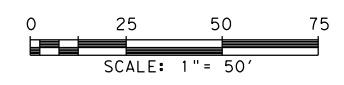
CL-DI	EROSION CONTROL LOG AT DROP INLET	CL-CI	EROSION CONTROL LOG AT CURB INLET
RFD2	ROCK FILTER DAM	SCF	SEDIMENT CONTROL FENCE
	FLOW ARROW		TRAFFIC FLOW ARROW
	CONCRETE RIPRAP		SEEDING

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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

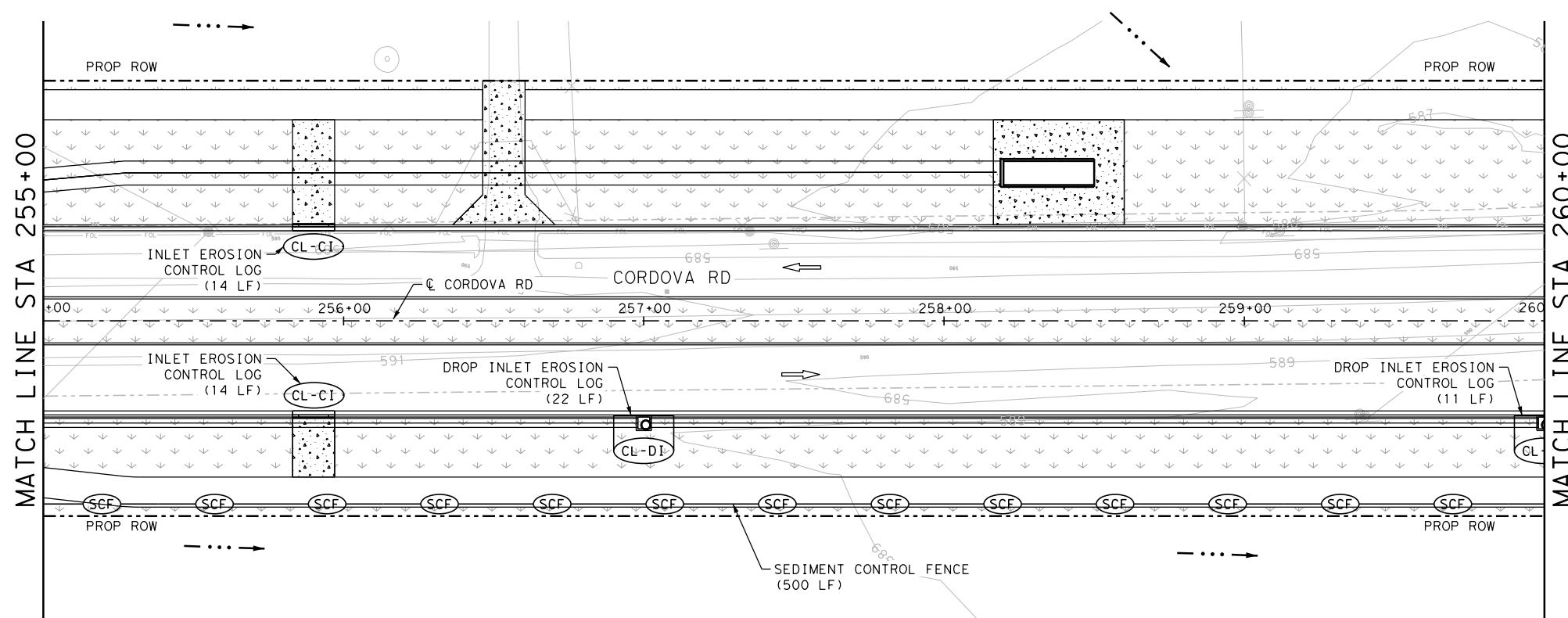
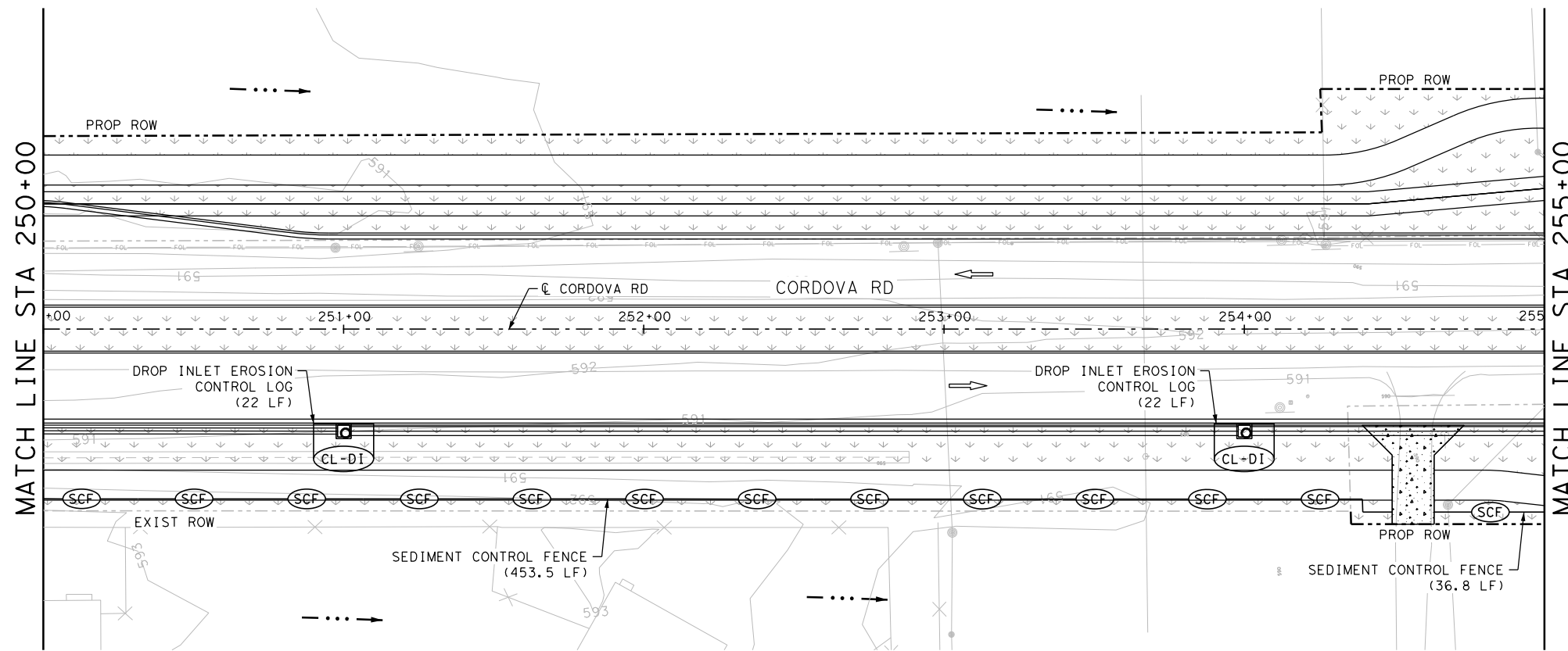
APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
©2023 CORDOVA RD SW3P LAYOUT STA 240+00 TO STA 250+00 SHEET 15 OF 24			
DON:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
CHK DGN:	6	TEXAS	
DWG:	DIST.:	COUNTY:	CONT. NO. SECT. NO. JOB NO. SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915 46 052 468

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\SW3P\1277500_SW3P_16.dgn



LEGEND

CL-DI	EROSION CONTROL LOG AT DROP INLET	CL-CI	EROSION CONTROL LOG AT CURB INLET
RFD2	ROCK FILTER DAM	SCF	SEDIMENT CONTROL FENCE
	FLOW ARROW		TRAFFIC FLOW ARROW
	CONCRETE RIPRAP		SEEDING

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DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

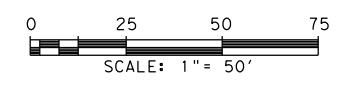
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SEGUIN TEXAS
It's real.

THE STATE OF TEXAS
GUADALUPE COUNTY

Texas Department of Transportation
© 2023

CORDOVA RD

SW3P LAYOUT

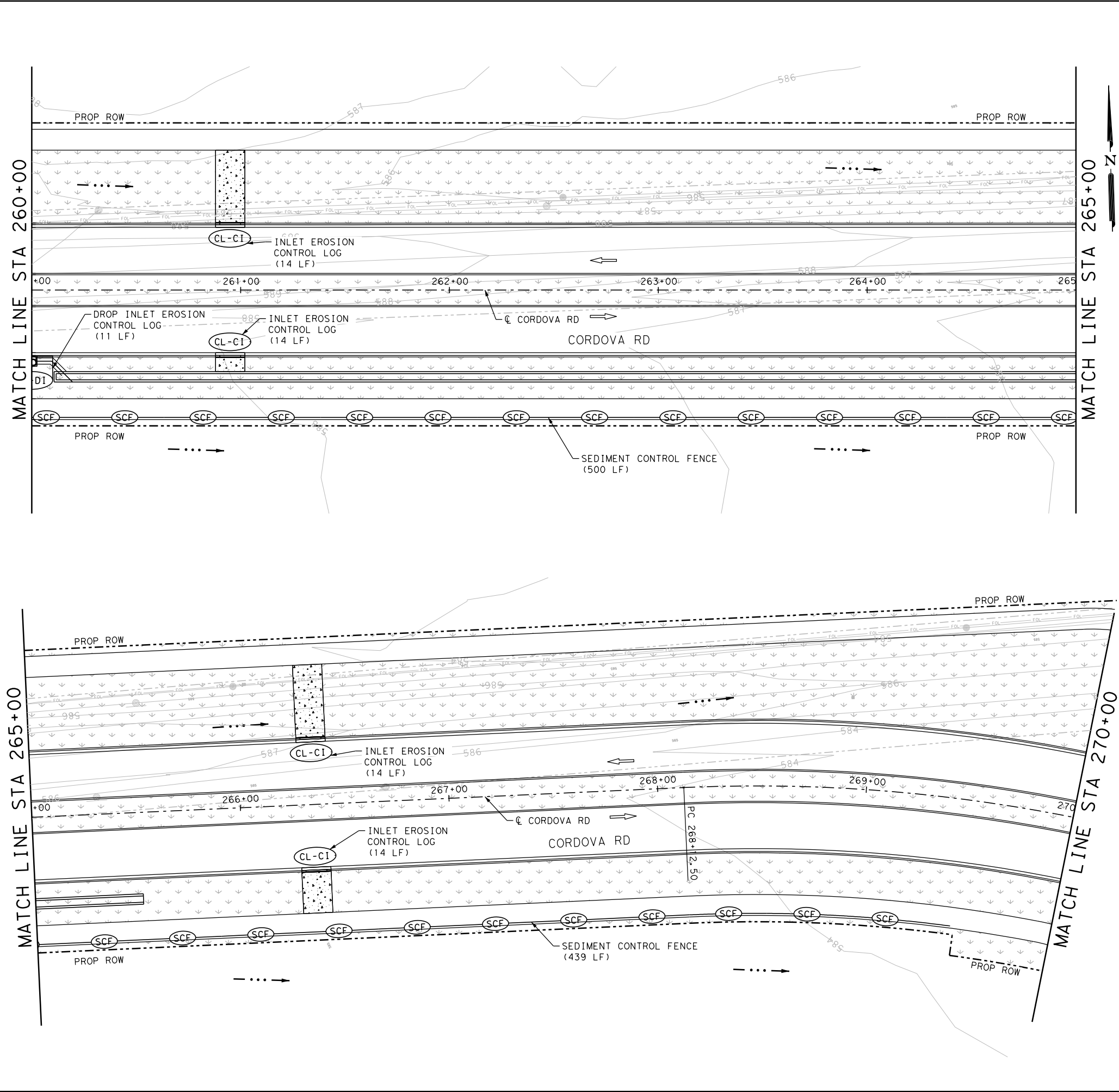
STA 250+00 TO STA 260+00

SHEET 16 OF 24

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		CORDOVA
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	SAT	GUADALUPE	0915	46
				JOB NO.:
				052
				SHEET NO.:
				469

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\SW3P\1277500_SW3P_17.dgn



LEGEND

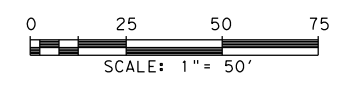
CL-DI	EROSION CONTROL LOG AT DROP INLET	CL-CI	EROSION CONTROL LOG AT CURB INLET
RFD2	ROCK FILTER DAM	SCF	SEDIMENT CONTROL FENCE
	FLOW ARROW		TRAFFIC FLOW ARROW
	CONCRETE RIPRAP		SEEDING

- NOTES**
- REFER TO TEMPORARY EROSION CONTROL MEASURE STANDARDS FOR MORE INFORMATION.
 - SW3P CONTROL MEASURES INSTALLED DURING CONSTRUCTION ARE TO REMAIN IN PLACE UNTIL GRASS COVER IS ACHIEVED OR AS APPROVED BY THE ENGINEER.
 - SW3P CONTROL MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED AFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS SHEET AND SIGNED BY THE RESPONSIBLE PARTY.
 - PLACE CONSTRUCTION EXIT AS DIRECTED BY THE ENGINEER.

TEMPORARY SEDIMENT CONTROL FENCE SHOULD BE PLACED ON CONSTRUCTION EASEMENT LIMIT LINE WHENEVER PRESENT. IF NO CONSTRUCTION EASEMENT EXISTS IN AREA THEN PLACE ON RIGHT-OF-WAY LINE. TEMPORARY SEDIMENT CONTROL FENCE IS PURPOSELY SHOWN OFF-SET FROM SAID LINES FOR VISUAL CLARITY.

DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

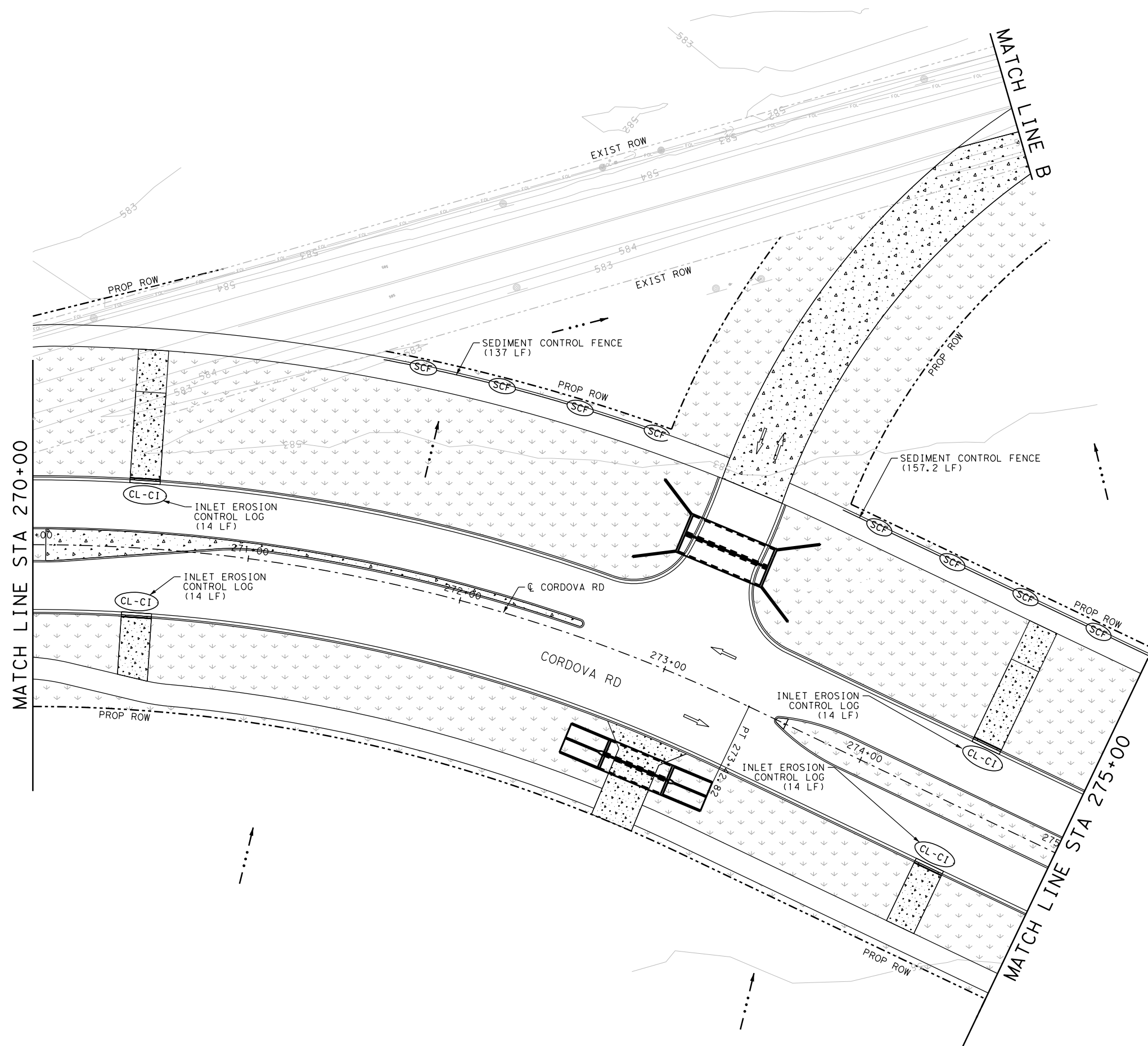
APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
© 2023 CORDOVA RD SW3P LAYOUT STA 260+00 TO STA 270+00 SHEET 17 OF 24			
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
CHK DGN:	6	TEXAS	
DWG:	DIST.:	COUNTY:	CONT. NO. SECT. NO. JOB NO.
CHK DWG:	SAT	GUADALUPE	0915 46 052
			HIGHWAY NO. SHEET NO.
			CORDOVA 470

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\SW3P\1277500_SW3P_18.dgn



LEGEND

- EROSION CONTROL LOG AT DROP INLET
- EROSION CONTROL LOG AT CURB INLET
- ROCK FILTER DAM
- SEDIMENT CONTROL FENCE
- FLOW ARROW
- TRAFFIC FLOW ARROW
- CONCRETE RIPRAP
- SEEDING

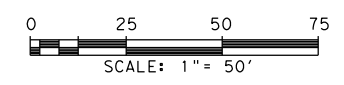
NOTES

1. REFER TO TEMPORARY EROSION CONTROL MEASURE STANDARDS FOR MORE INFORMATION.
2. SW3P CONTROL MEASURES INSTALLED DURING CONSTRUCTION ARE TO REMAIN IN PLACE UNTIL GRASS COVER IS ACHIEVED OR AS APPROVED BY THE ENGINEER.
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DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			

It's real.

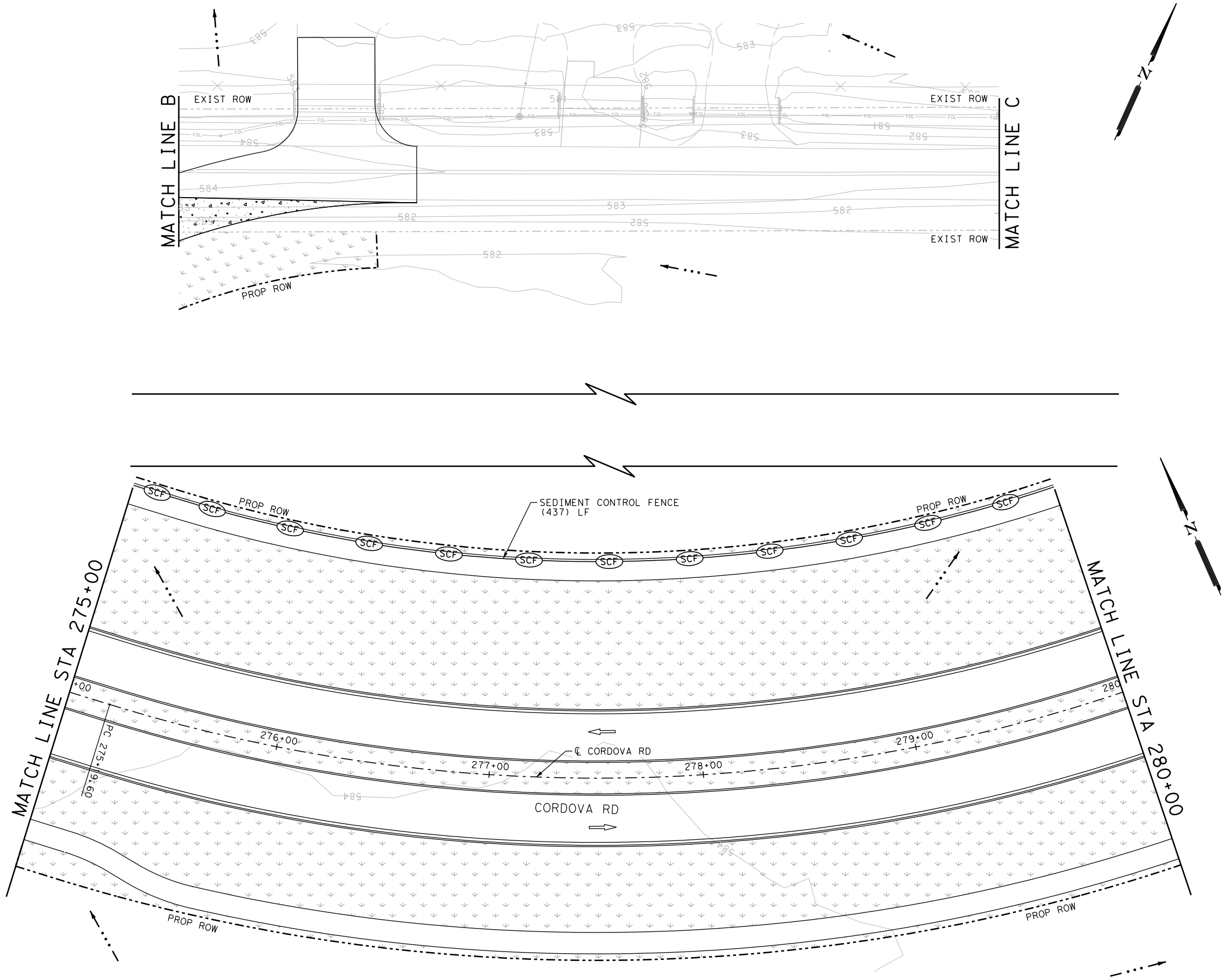
Texas Department of Transportation
 © 2023

CORDOVA RD
SW3P LAYOUT
 STA 270+00 TO STA 275+00
 SHEET 18 OF 24


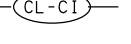


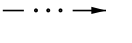
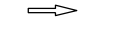
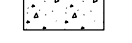

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		CORDOVA		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	471

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\SW3P\1277500_SW3P_19.dgn



LEGEND

-  EROSION CONTROL LOG AT DROP INLET
-  EROSION CONTROL LOG AT CURB INLET
-  ROCK FILTER DAM
-  SEDIMENT CONTROL FENCE
-  FLOW ARROW
-  TRAFFIC FLOW ARROW
-  CONCRETE RIPRAP
-  SEEDING

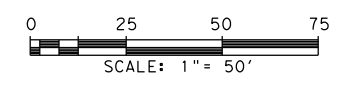
NOTES





1. REFER TO TEMPORARY EROSION CONTROL MEASURE STANDARDS FOR MORE INFORMATION.
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DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023


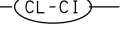


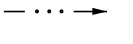
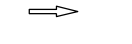




REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
 			
 © 2023			
CORDOVA RD SW3P LAYOUT STA 275+00 TO STA 280+00 SHEET 19 OF 24			
CHK DGN:	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO. CORDOVA
DWG:	DIST. SAT	COUNTY GUADALUPE	CONT. NO. 0915, SECT. NO. 46, JOB NO. 052, SHEET NO. 472

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\SW3P\1277500_SW3P_20.dgn

LEGEND

-  EROSION CONTROL LOG AT DROP INLET
-  EROSION CONTROL LOG AT CURB INLET
-  ROCK FILTER DAM
-  SEDIMENT CONTROL FENCE
-  FLOW ARROW
-  TRAFFIC FLOW ARROW
-  CONCRETE RIPRAP
-  SEEDING

NOTES

1. REFER TO TEMPORARY EROSION CONTROL MEASURE STANDARDS FOR MORE INFORMATION.
2. SW3P CONTROL MEASURES INSTALLED DURING CONSTRUCTION ARE TO REMAIN IN PLACE UNTIL GRASS COVER IS ACHIEVED OR AS APPROVED BY THE ENGINEER.
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DESIGN

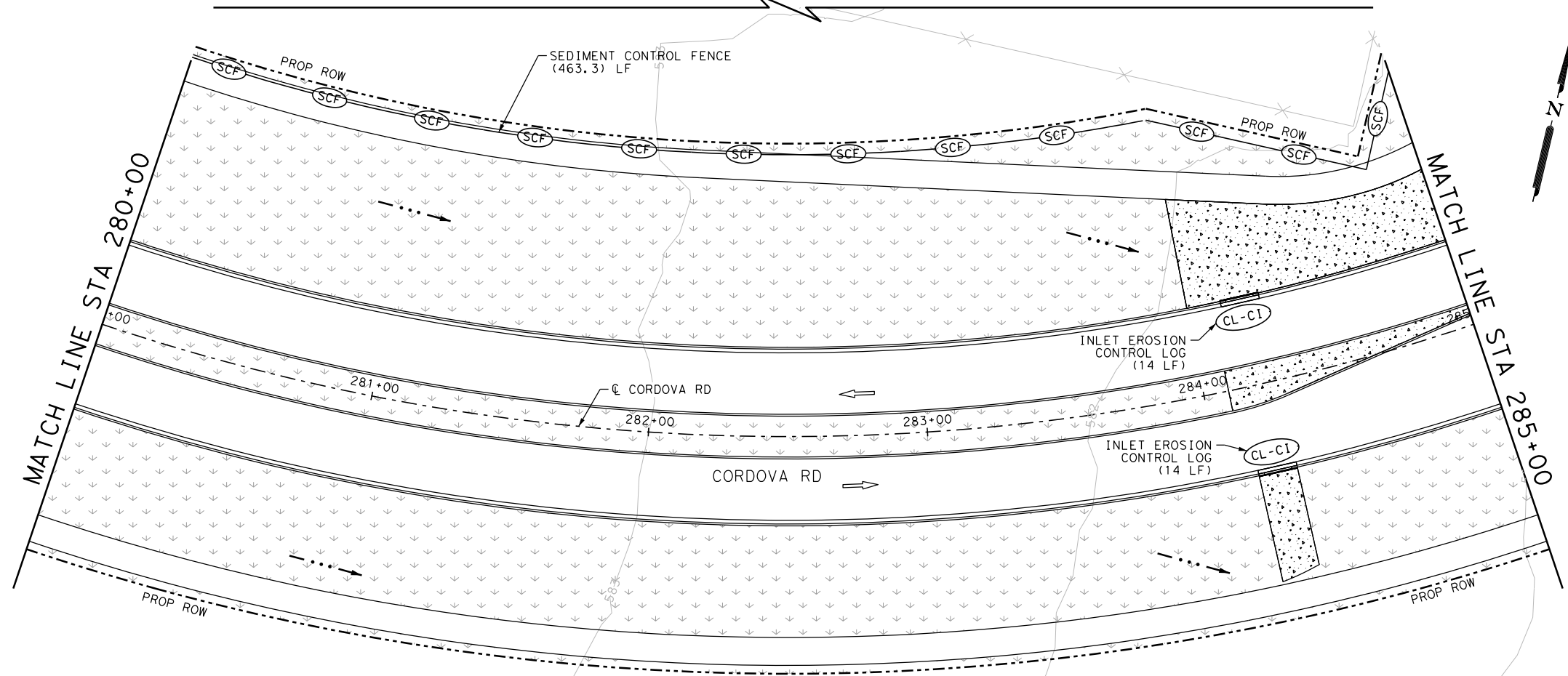
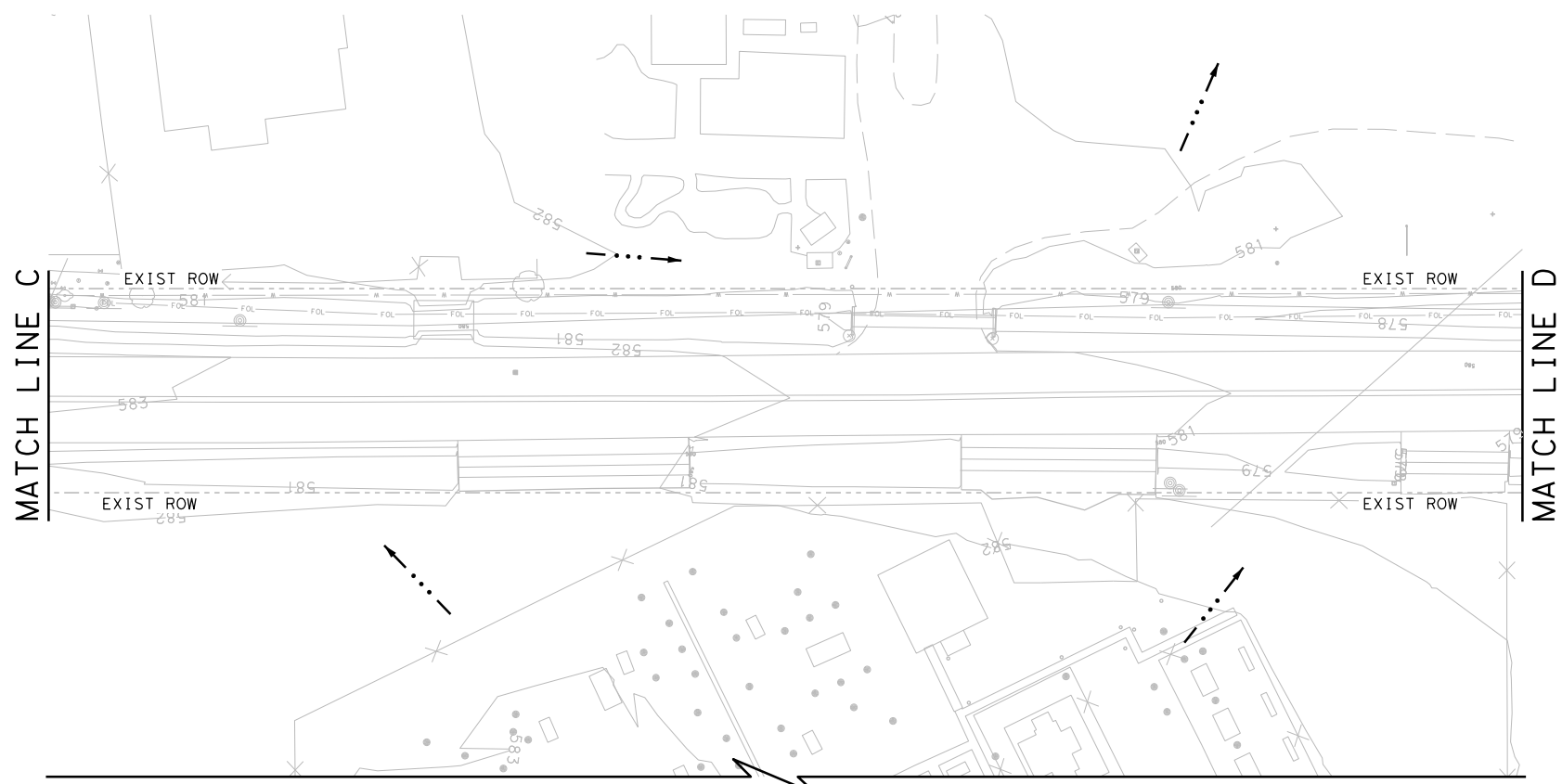
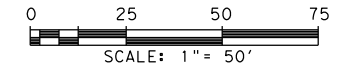
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



CORDOVA RD

SW3P LAYOUT

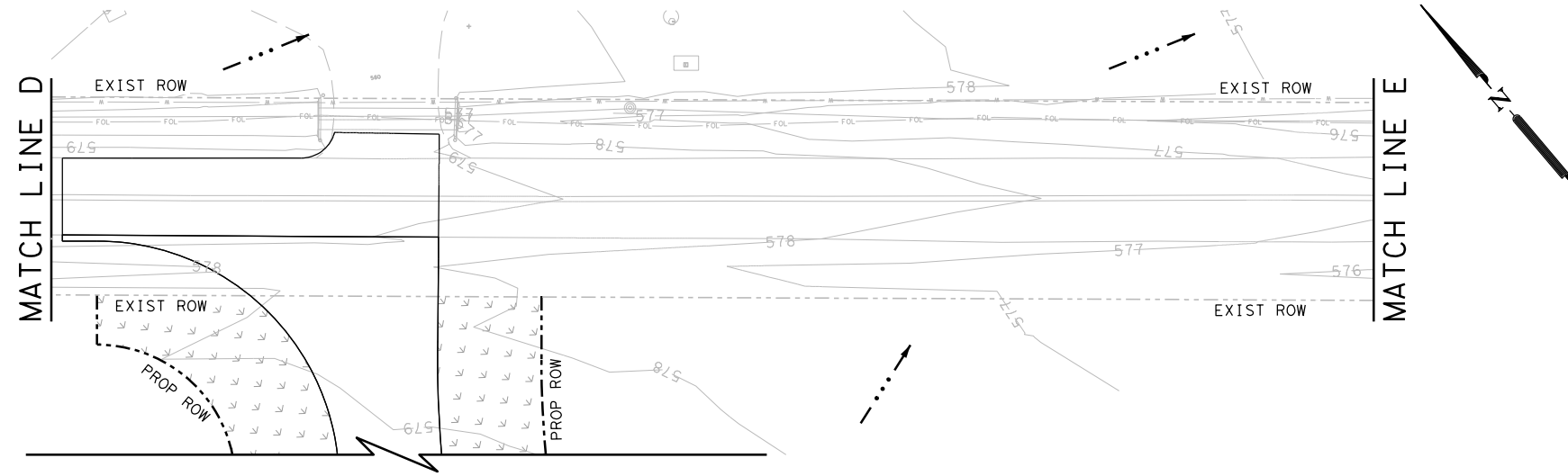
STA 280+00 TO STA 285+00

SHEET 20 OF 24

CHK DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
	6	TEXAS		CORDOVA		
CHK DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
	SAT	GUADALUPE	0915	46	052	473

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\SW3P\1277500_SW3P_21.dgn



LEGEND

CL-DI	EROSION CONTROL LOG AT DROP INLET	CL-CI	EROSION CONTROL LOG AT CURB INLET
RFD2	ROCK FILTER DAM	SCF	SEDIMENT CONTROL FENCE
	FLOW ARROW		TRAFFIC FLOW ARROW
	CONCRETE RIPRAP		SEEDING

- NOTES**
- REFER TO TEMPORARY EROSION CONTROL MEASURE STANDARDS FOR MORE INFORMATION.
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DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

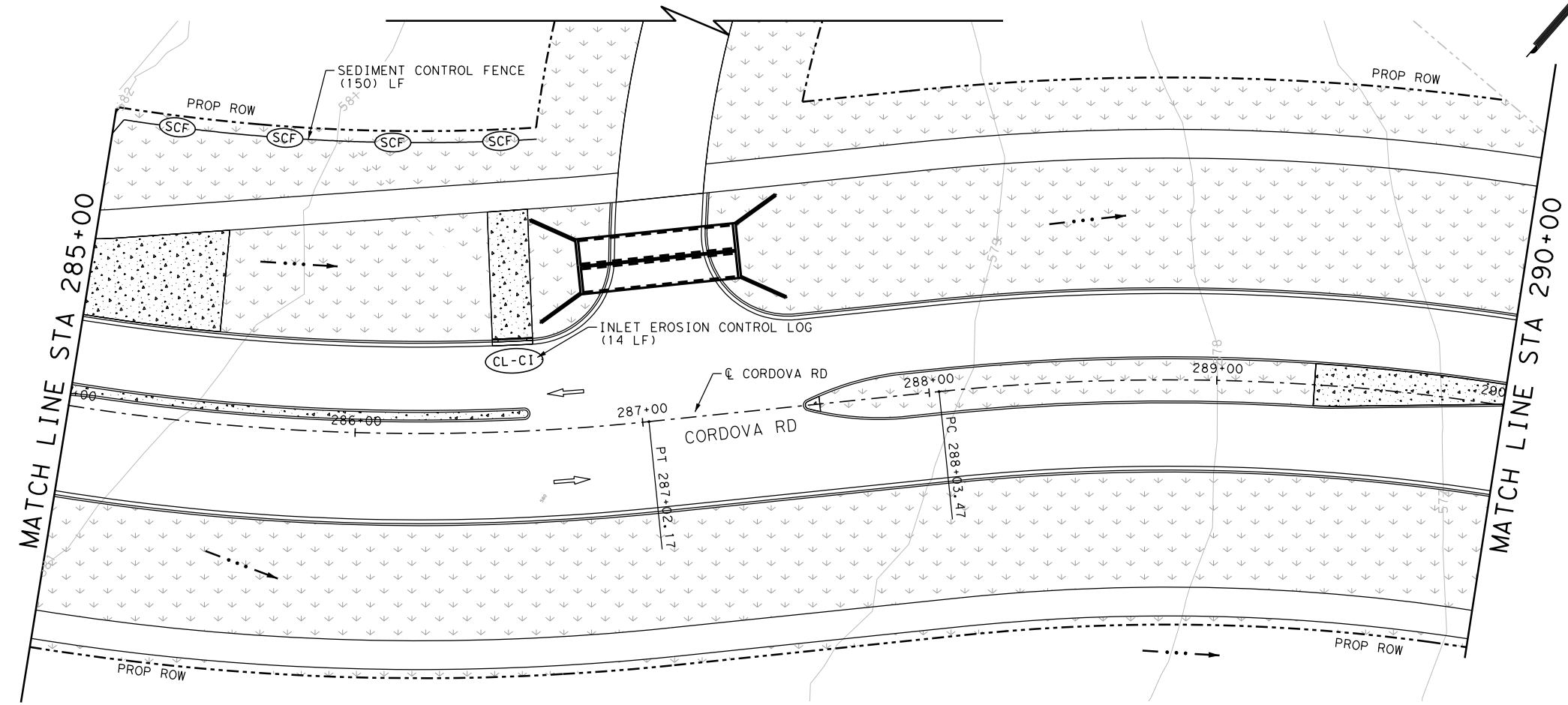
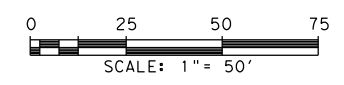
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			
© 2023			
CORDOVA RD SW3P LAYOUT STA 285+00 TO STA 290+00 SHEET 21 OF 24			
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
CHK DGN:	6	TEXAS	
DWG:	DIST.:	COUNTY:	CONT. NO. SECT. NO. JOB NO. SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915 46 052 474

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\SW3P\1277500_SW3P_22.dgn

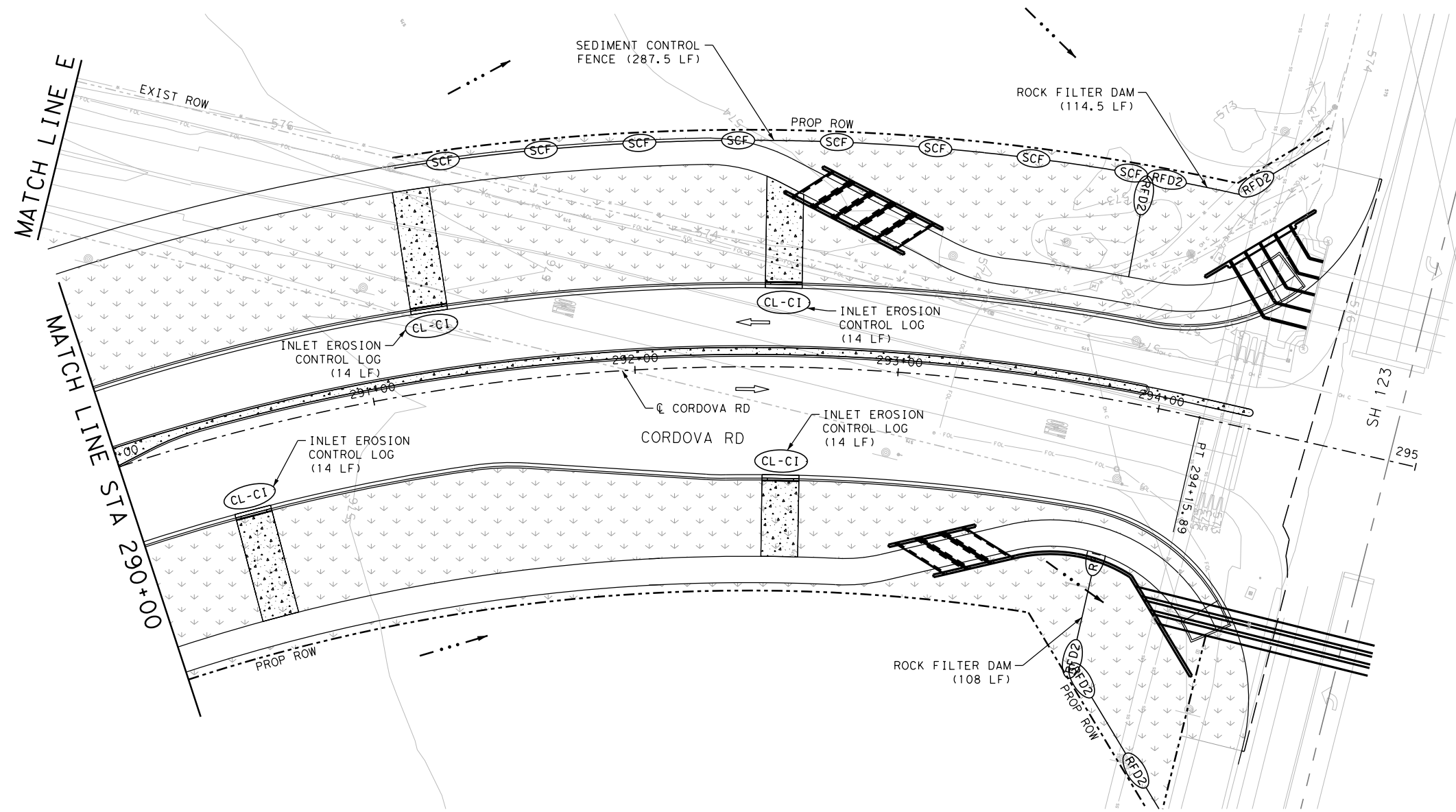
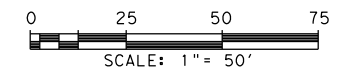
LEGEND			
	EROSION CONTROL LOG AT DROP INLET		EROSION CONTROL LOG AT CURB INLET
	ROCK FILTER DAM		SEDIMENT CONTROL FENCE
	FLOW ARROW		TRAFFIC FLOW ARROW
	CONCRETE RIPRAP		SEEDING

- NOTES**
- REFER TO TEMPORARY EROSION CONTROL MEASURE STANDARDS FOR MORE INFORMATION.
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DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY
 SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800			

 It's real.	
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Texas Department of Transportation
 © 2023

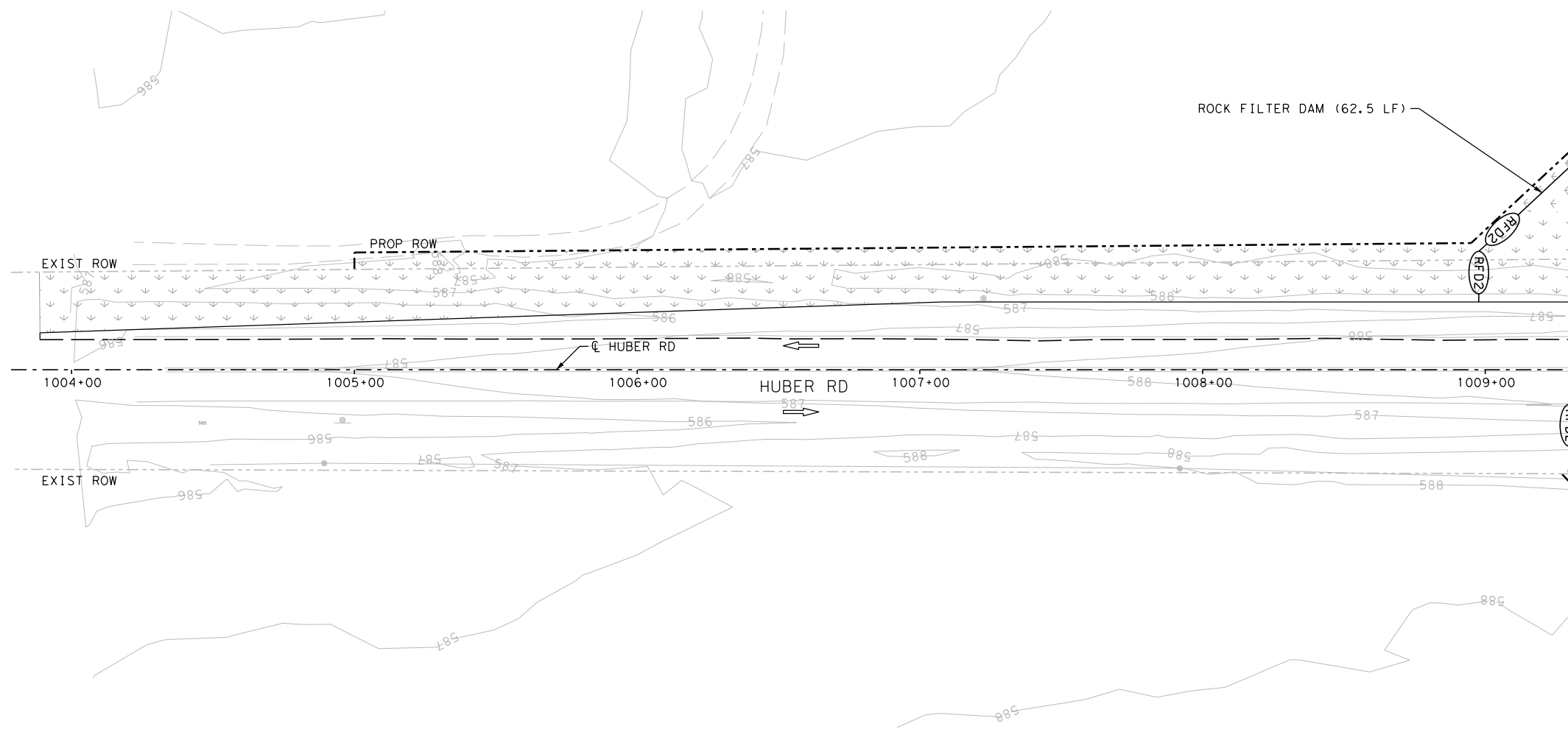
CORDOVA RD
SW3P LAYOUT
 STA 290+00 TO END OF PROJECT
 SHEET 22 OF 24

CHK	DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK	DGN:	6	TEXAS		CORDOVA		
CHK	DGN:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK	DGN:	SAT	GUADALUPE	0915	46	052	475

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\SW3P\1277500_SW3P_HuberRd01.dgn

MATCH LINE STA 1009+30 SEE SHEET 12 OF 12



LEGEND

CL-DI	EROSION CONTROL LOG AT DROP INLET	CL-CI	EROSION CONTROL LOG AT CURB INLET
RFD2	ROCK FILTER DAM	SCF	SEDIMENT CONTROL FENCE
	FLOW ARROW		TRAFFIC FLOW ARROW
	CONCRETE RIPRAP		SEEDING

- NOTES**
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DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 11/17/2023

APPROVAL

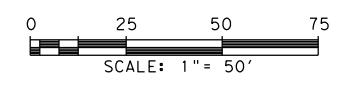
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JOHN A. TYLER

P.E. SERIAL NO: 105193

DATE: 11/17/2023

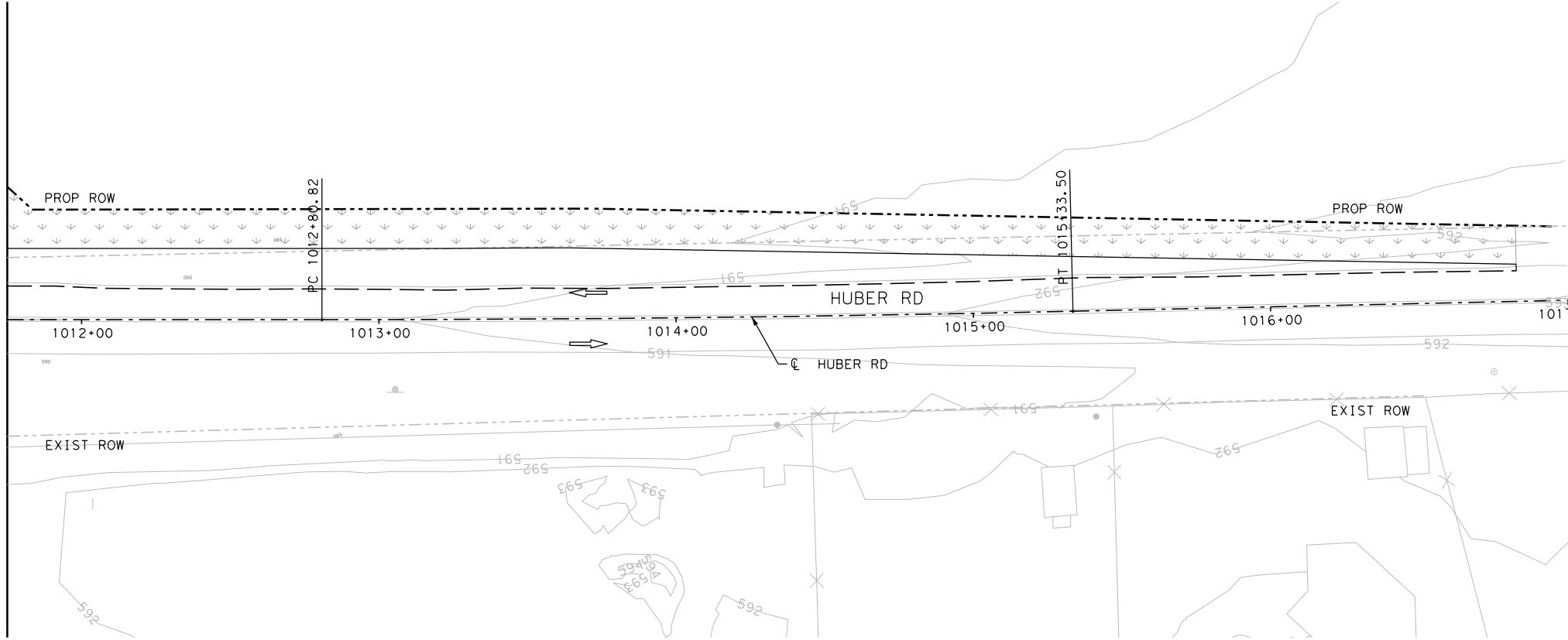


REV. NO.	DATE	DESCRIPTION	BY
 PAPE-DAWSON ENGINEERS <small>SAN ANTONIO AUSTIN HOUSTON FORT WORTH DALLAS 2000 NW LOOP 410 SAN ANTONIO, TX 78213 210.375.9000 TEXAS ENGINEERING FIRM #470 TEXAS SURVEYING FIRM #10028800</small>			
 SEGUIN TEXAS It's real.		 THE STATE OF TEXAS GUADALUPE COUNTY	
 Texas Department of Transportation © 2023			
HUBER RD SW3P LAYOUT			
SHEET 23 OF 24			
CHK DGN:	FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL AID PROJECT NO. CORDOVA
CHK DWG:	DIST. SAT	COUNTY GUADALUPE	CONT. NO. 0915 SECT. NO. 46 JOB NO. 052 SHEET NO. 476

Plotted on: 11/17/2023

Design File name: P:\127\75\00\Design\Civil\SW3P\1277500_SW3P_HuberRd02.dgn

MATCH LINE STA 1011+75 SEE SHEET 465



LEGEND

- EROSION CONTROL LOG AT DROP INLET
- EROSION CONTROL LOG AT CURB INLET
- ROCK FILTER DAM
- SEDIMENT CONTROL FENCE
- FLOW ARROW
- TRAFFIC FLOW ARROW
- CONCRETE RIPRAP
- SEEDING

NOTES

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2. SW3P CONTROL MEASURES INSTALLED DURING CONSTRUCTION ARE TO REMAIN IN PLACE UNTIL GRASS COVER IS ACHIEVED OR AS APPROVED BY THE ENGINEER.
3. SW3P CONTROL MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED AFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS SHEET AND SIGNED BY THE RESPONSIBLE PARTY.
4. PLACE CONSTRUCTION EXIT AS DIRECTED BY THE ENGINEER.

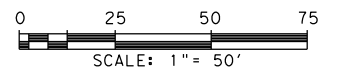
TEMPORARY SEDIMENT CONTROL FENCE SHOULD BE PLACED ON CONSTRUCTION EASEMENT LIMIT LINE WHENEVER PRESENT. IF NO CONSTRUCTION EASEMENT EXISTS IN AREA THEN PLACE ON RIGHT-OF-WAY LINE. TEMPORARY SEDIMENT CONTROL FENCE IS PURPOSELY SHOWN OFF-SET FROM SAID LINES FOR VISUAL CLARITY.

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 11/17/2023

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JOHN A. TYLER
 P.E. SERIAL NO: 105193
 DATE: 11/17/2023



REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



It's real.



HUBER RD
 SW3P LAYOUT

SHEET 24 OF 24

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				CORDOVA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	GUADALUPE	0915	46	052	477

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.

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):

1.2 PROJECT LIMITS:

From: _____

To: _____

1.3 PROJECT COORDINATES:

BEGIN: (Lat)_____,(Long)_____

END: (Lat)_____,(Long)_____

1.4 TOTAL PROJECT AREA (Acres): _____

1.5 TOTAL AREA TO BE DISTURBED (Acres): _____

1.6 NATURE OF CONSTRUCTION ACTIVITY:

1.7 MAJOR SOIL TYPES:

Soil Type	Description

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: _____

 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

* 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

STORMWATER POLLUTION PREVENTION PLAN (SWP3)



FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
				478
STATE	STATE DIST.	COUNTY		
TEXAS	SAT	GUADALUPE		
CONT.	SECT.	JOB	HI GHWAY NO.	
0915	46	052	CORDOVA	

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
- Daily street sweeping
- 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

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 DEWATERING:

2.9 INSPECTIONS:

2.10 MAINTENANCE:

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.

STORMWATER POLLUTION PREVENTION PLAN (SWP3)



FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
				479
STATE	STATE DIST.	COUNTY		
TEXAS	SAT	GUADALUPE		
CONT.	SECT.	JOB	HIGHWAY NO.	
0915	46	052	CORDOVA	

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DATE: 11/17/2023
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I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

TPDES TXR 150000: Stormwater Discharge Permit or Construction General Permit required for projects with 1 or more acres disturbed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506.

List MS4 Operator(s) that may receive discharges from this project. They may need to be notified prior to construction activities.

- 1.
2. No Action Required Required Action

Action No.

1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000
2. Comply with the SW3P and revise when necessary to control pollution or required by the Engineer.
3. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.
4. When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the Engineer.

II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS CLEAN WATER ACT SECTIONS 401 AND 404

USACE Permit required for filling, dredging, excavating or other work in any water bodies, rivers, creeks, streams, wetlands or wet areas.

The Contractor must adhere to all of the terms and conditions associated with the following permit(s):

- No Permit Required
- Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)
- Nationwide Permit 14 - PCN Required (1/10 to <1/2 acre, 1/3 in tidal waters)
- Individual 404 Permit Required
- Other Nationwide Permit Required: NWP# _____

Required Actions: List waters of the US permit applies to, location in project and check Best Management Practices planned to control erosion, sedimentation and post-project TSS.

- 1.
- 2.
- 3.
- 4.

The elevation of the ordinary high water marks of any areas requiring work to be performed in the waters of the US requiring the use of a nationwide permit can be found on the Bridge Layouts.

Best Management Practices:

Erosion	Sedimentation	Post-Construction TSS
<input type="checkbox"/> Temporary Vegetation	<input type="checkbox"/> Silt Fence	<input type="checkbox"/> Vegetative Filter Strips
<input type="checkbox"/> Blankets/Matting	<input type="checkbox"/> Rock Berm	<input type="checkbox"/> Retention/Irrigation Systems
<input type="checkbox"/> Mulch	<input type="checkbox"/> Triangular Filter Dike	<input type="checkbox"/> Extended Detention Basin
<input type="checkbox"/> Sodding	<input type="checkbox"/> Sand Bag Berm	<input type="checkbox"/> Constructed Wetlands
<input type="checkbox"/> Interceptor Swale	<input type="checkbox"/> Straw Bale Dike	<input type="checkbox"/> Wet Basin
<input type="checkbox"/> Diversion Dike	<input type="checkbox"/> Brush Berms	<input type="checkbox"/> Erosion Control Compost
<input type="checkbox"/> Erosion Control Compost	<input type="checkbox"/> Erosion Control Compost	<input type="checkbox"/> Mulch Filter Berm and Socks
<input type="checkbox"/> Mulch Filter Berm and Socks	<input type="checkbox"/> Mulch Filter Berm and Socks	<input type="checkbox"/> Compost Filter Berm and Socks
<input type="checkbox"/> Compost Filter Berm and Socks	<input type="checkbox"/> Compost Filter Berm and Socks	<input type="checkbox"/> Vegetation Lined Ditches
	<input type="checkbox"/> Stone Outlet Sediment Traps	<input type="checkbox"/> Sand Filter Systems
	<input type="checkbox"/> Sediment Basins	<input type="checkbox"/> Grassy Swales

III. CULTURAL RESOURCES

Refer to TxDOT Standard Specifications in the event historical issues or archeological artifacts are found during construction. Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) cease work in the immediate area and contact the Engineer immediately.

- No Action Required Required Action

Action No.

- 1.
- 2.
- 3.
- 4.

IV. VEGETATION RESOURCES

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.

- No Action Required Required Action

Action No.

- 1.
- 2.
- 3.
- 4.

V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES, CRITICAL HABITAT, STATE LISTED SPECIES, CANDIDATE SPECIES AND MIGRATORY BIRDS.

- No Action Required Required Action

Action No.

- 1.
- 2.
- 3.
- 4.

If any of the listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately. The work may not remove active nests from bridges and other structures during nesting season of the birds associated with the nests. If caves or sinkholes are discovered, cease work in the immediate area, and contact the Engineer immediately.

LIST OF ABBREVIATIONS

BMP: Best Management Practice	SPCC: Spill Prevention Control and Countermeasure
CGP: Construction General Permit	SW3P: Storm Water Pollution Prevention Plan
DSHS: Texas Department of State Health Services	PCN: Pre-Construction Notification
FHWA: Federal Highway Administration	PSL: Project Specific Location
MOA: Memorandum of Agreement	TCEQ: Texas Commission on Environmental Quality
MOU: Memorandum of Understanding	TPDES: Texas Pollutant Discharge Elimination System
MS4: Municipal Separate Stormwater Sewer System	TPWD: Texas Parks and Wildlife Department
MBTA: Migratory Bird Treaty Act	TxDOT: Texas Department of Transportation
NOT: Notice of Termination	T&E: Threatened and Endangered Species
NWP: Nationwide Permit	USACE: U.S. Army Corps of Engineers
NOI: Notice of Intent	USFWS: U.S. Fish and Wildlife Service

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

Comply with the Hazard Communication Act (the Act) for personnel who will be working with hazardous materials by conducting safety meetings prior to beginning construction and making workers aware of potential hazards in the workplace. Ensure that all workers are provided with personal protective equipment appropriate for any hazardous materials used. Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act. Maintain an adequate supply of on-site spill response materials, as indicated in the MSDS. In the event of a spill, take actions to mitigate the spill as indicated in the MSDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contact the Engineer if any of the following are detected:

- * Dead or distressed vegetation (not identified as normal)
- * Trash piles, drums, canister, barrels, etc.
- * Undesirable smells or odors
- * Evidence of leaching or seepage of substances

Does the project involve any bridge class structure rehabilitation or replacements (bridge class structures not including box culverts)?

- Yes No

If "No", then no further action is required.

If "Yes", then TxDOT is responsible for completing asbestos assessment/inspection.

Are the results of the asbestos inspection positive (is asbestos present)?

- Yes No

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

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

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

- No Action Required Required Action

Action No.

- 1.
- 2.
- 3.


VII. OTHER ENVIRONMENTAL ISSUES

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

- No Action Required Required Action

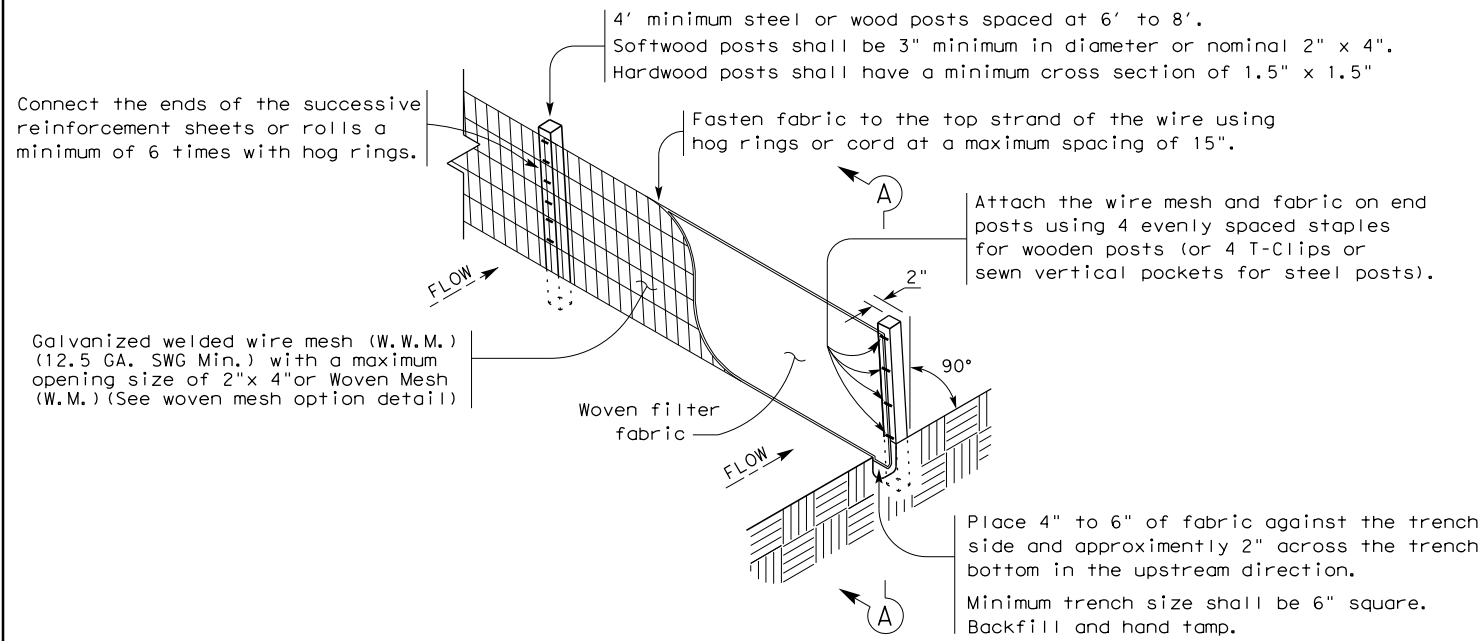
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- 1.
- 2.
- 3.

		Design Division Standard		
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©TxDOT: February 2015	CONT	SECT	JOB	HIGHWAY
12-12-2011 (DS) REVISIONS	0915	46	052	CORDOVA
05-07-14 ADDED NOTE SECTION IV.	DIST	COUNTY	SHEET NO.	
01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.	SAT	GUADALUPE	480	

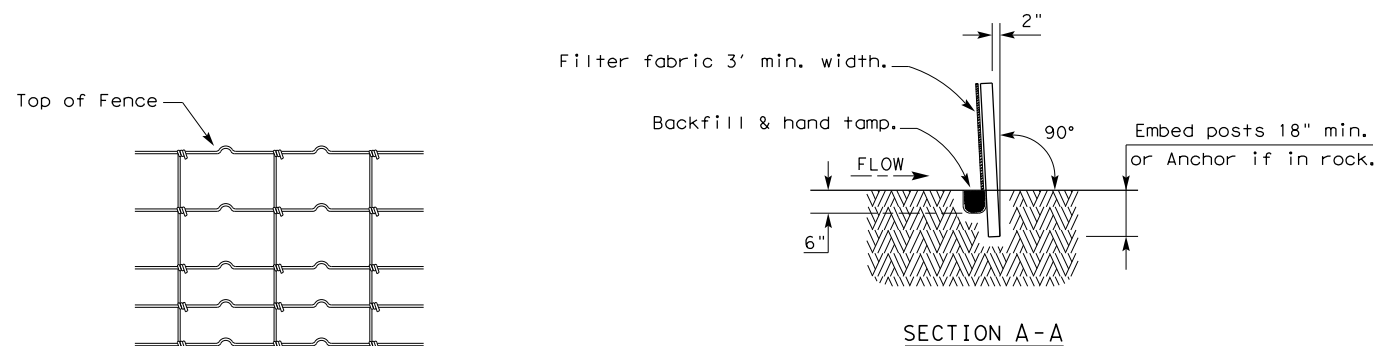
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TEMPORARY SEDIMENT CONTROL FENCE

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.

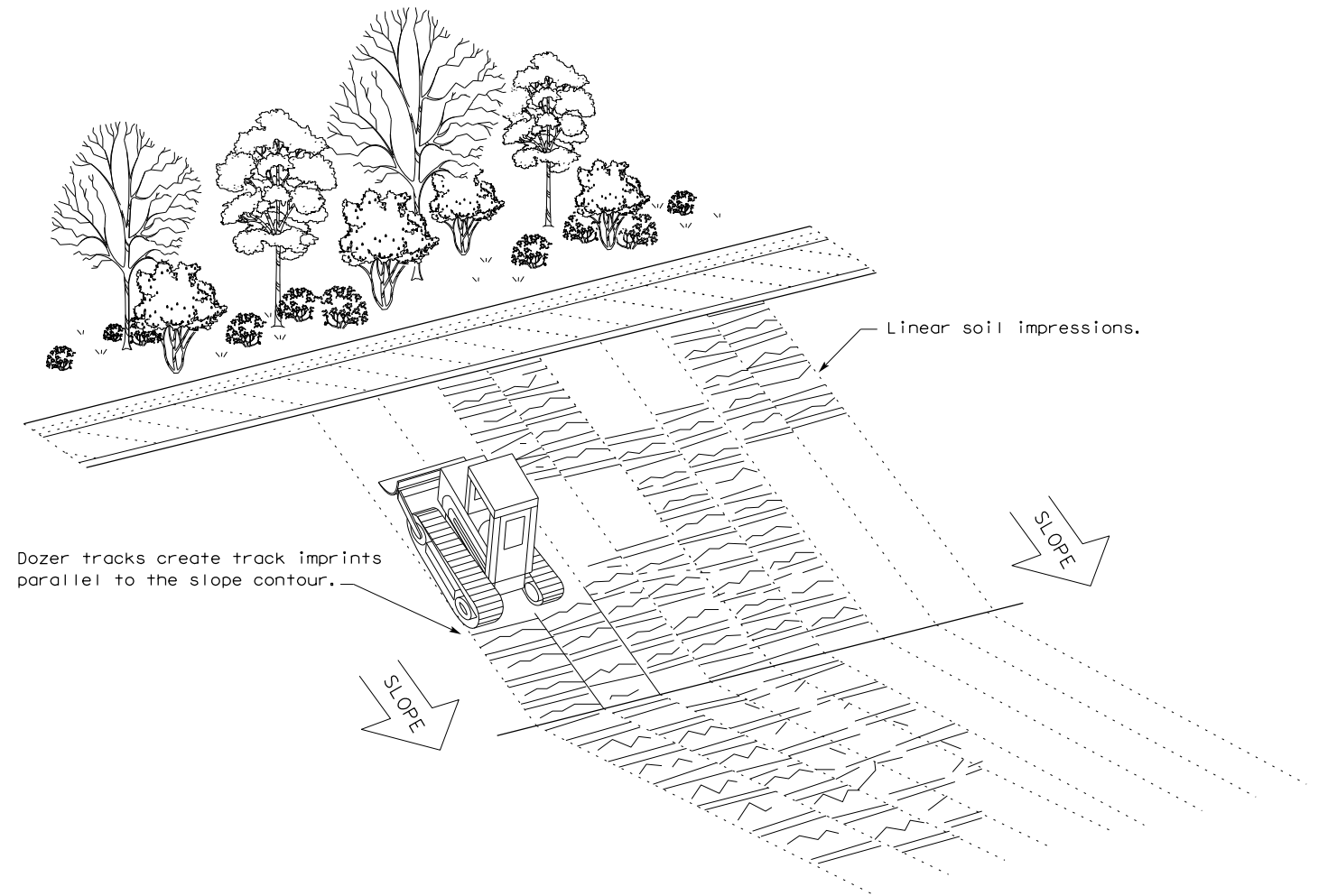
LEGEND

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

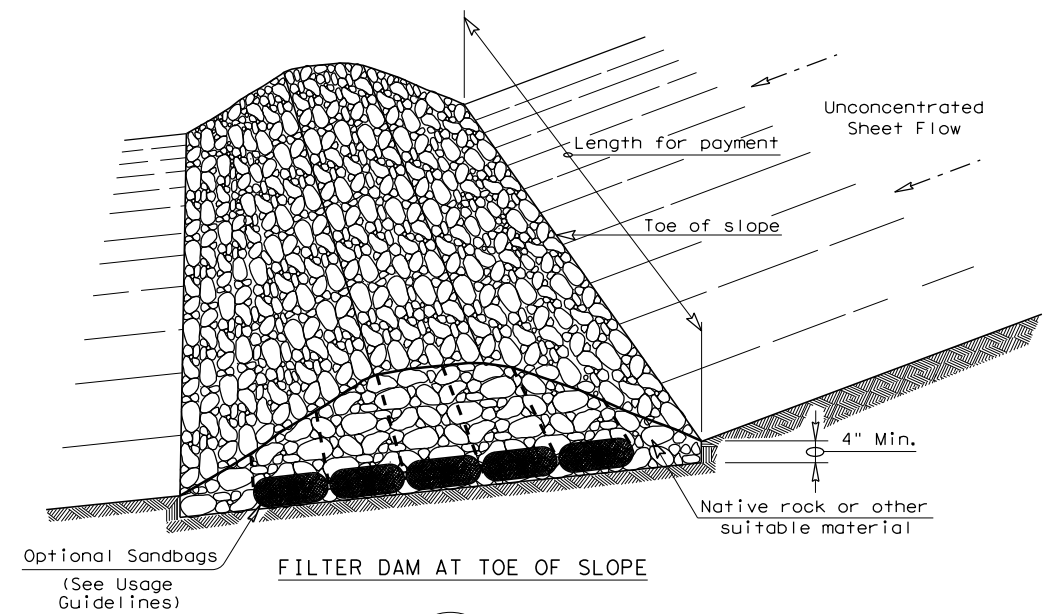


TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES FENCE & VERTICAL TRACKING EC(1)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
	DIST	COUNTY	SHEET NO.	
	SAT	GUADALUPE	481	

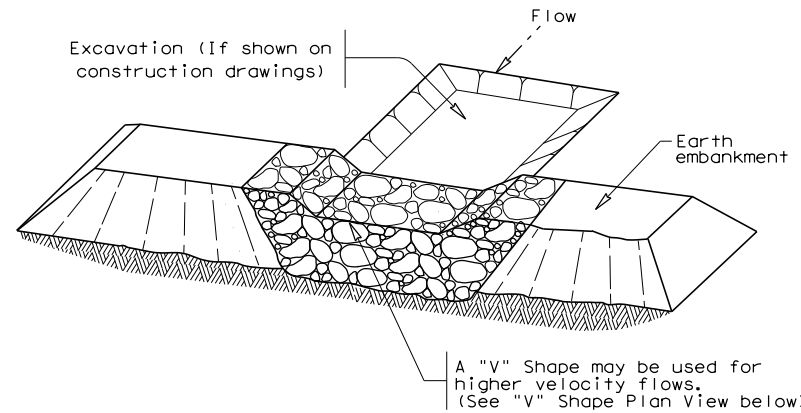
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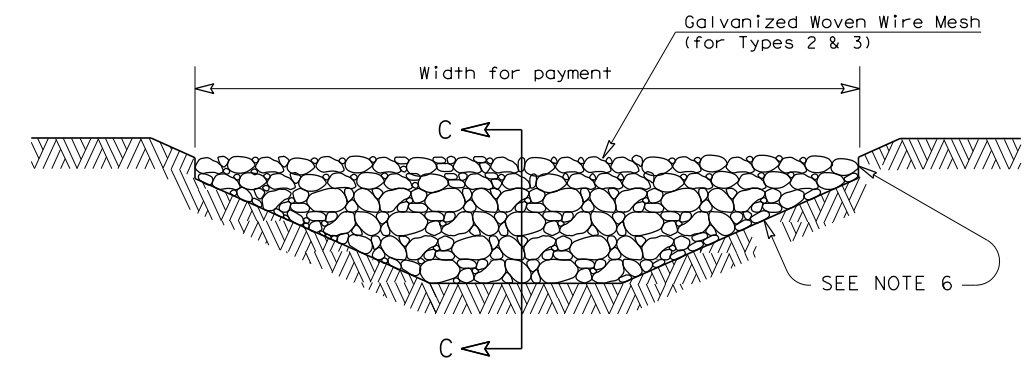
FILTER DAM AT TOE OF SLOPE

RFD1



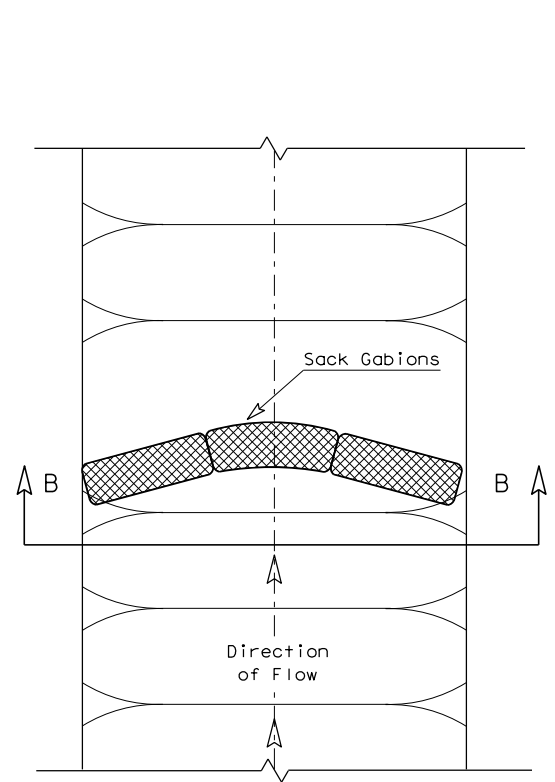
FILTER DAM AT SEDIMENT TRAP

RFD1 OR RFD2

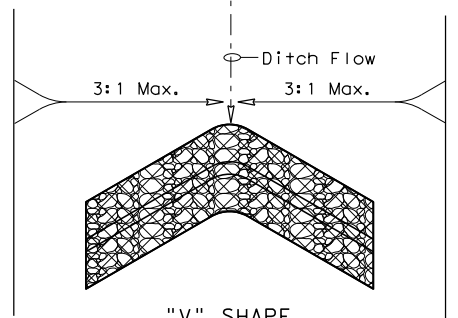


FILTER DAM AT CHANNEL SECTIONS

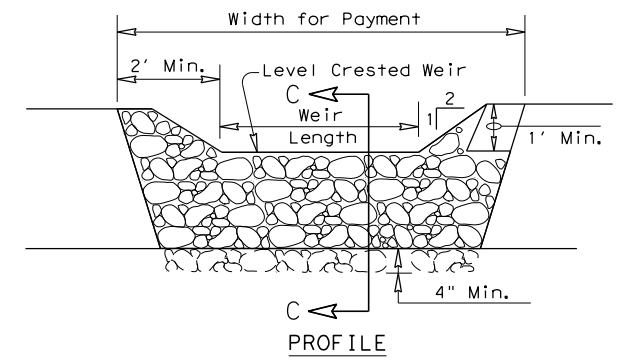
RFD1 OR RFD2 OR RFD3



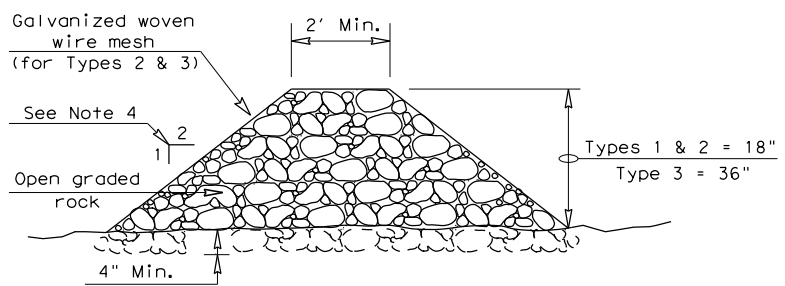
PLAN VIEW



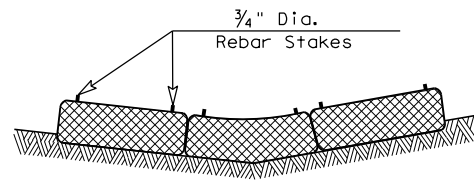
"V" SHAPE PLAN VIEW



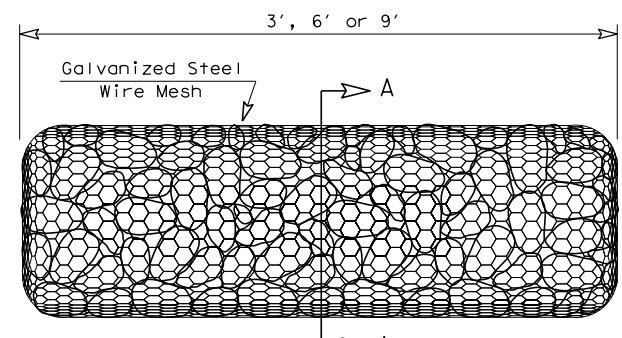
PROFILE



SECTION C-C

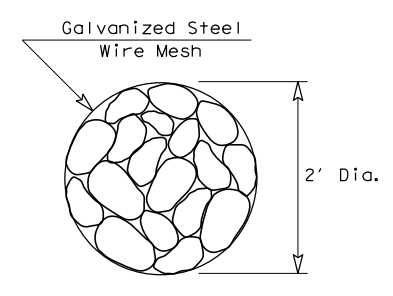


SECTION B-B



TYPE 4 (SACK GABIONS)

RFD4



SECTION A-A

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/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.

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.

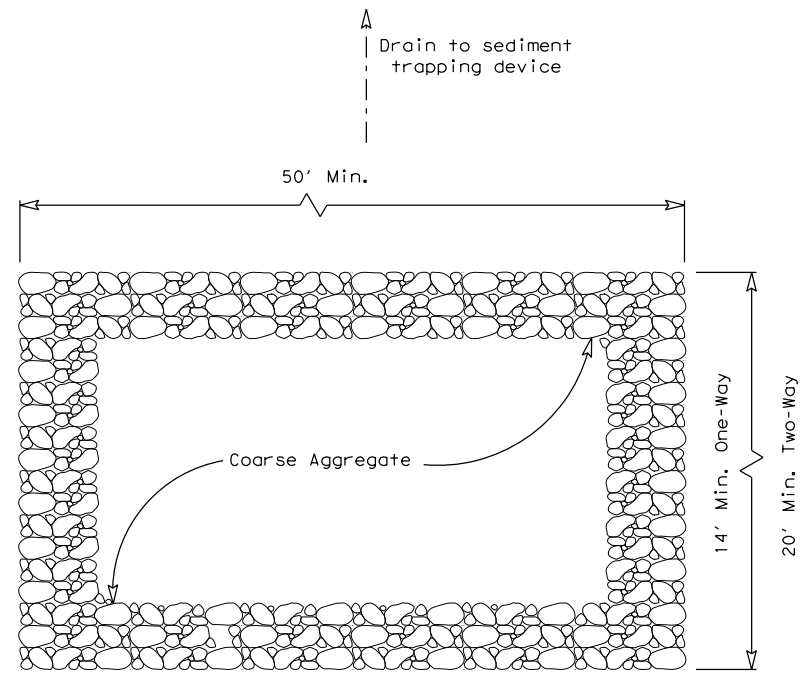
PLAN SHEET LEGEND

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

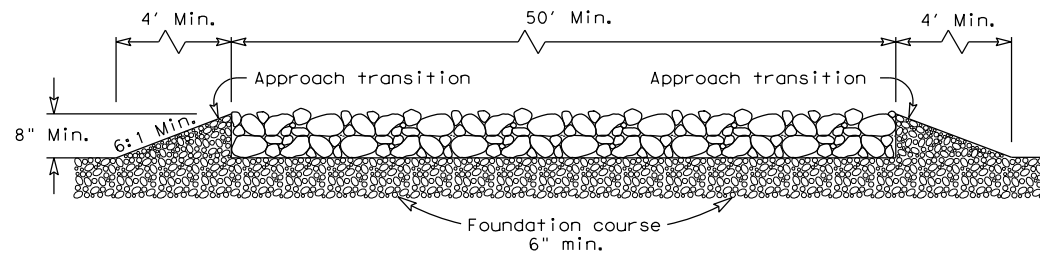
		Design Division Standard	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES ROCK FILTER DAMS EC (2) - 16			
FILE: ec216	DN: TxDOT	CK: KM	DW: VP
© TxDOT: JULY 2016	CONT	SECT	JOB
REVISIONS	0915	46	052
	DIST	COUNTY	SHEET NO.
	SAT	GUADALUPE	482

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PLAN VIEW

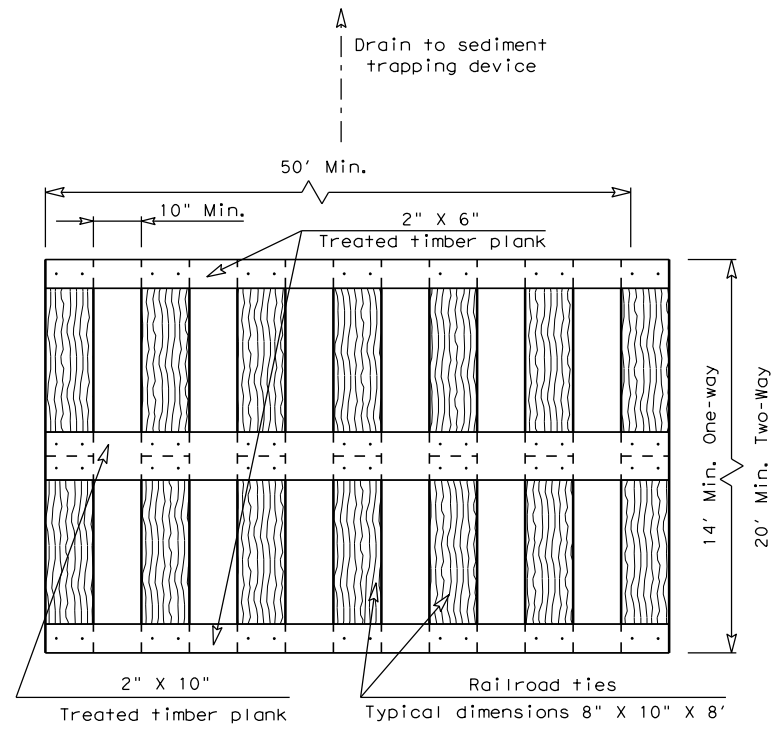


ELEVATION VIEW

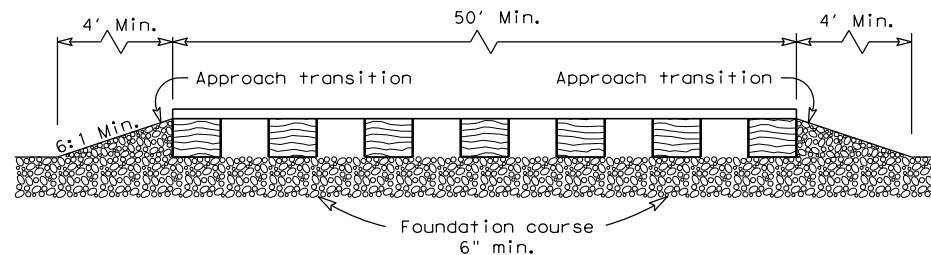
CONSTRUCTION EXIT (TYPE 1)
 ROCK CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

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



PLAN VIEW

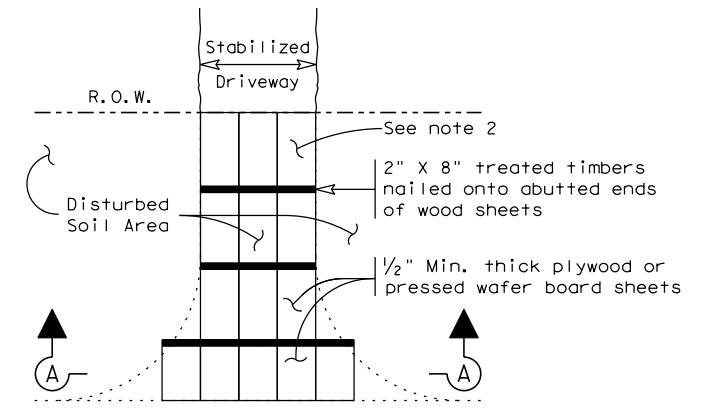


ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)
 TIMBER CONSTRUCTION (LONG TERM)

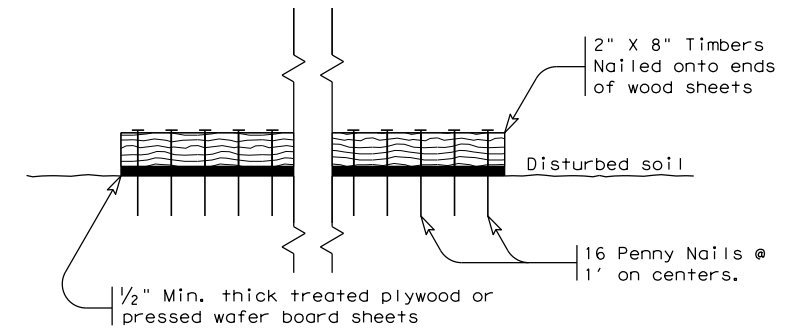
GENERAL NOTES (TYPE 2)

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



Paved Roadway

PLAN VIEW



SECTION A-A

CONSTRUCTION EXIT (TYPE 3)
 SHORT TERM

GENERAL NOTES (TYPE 3)

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

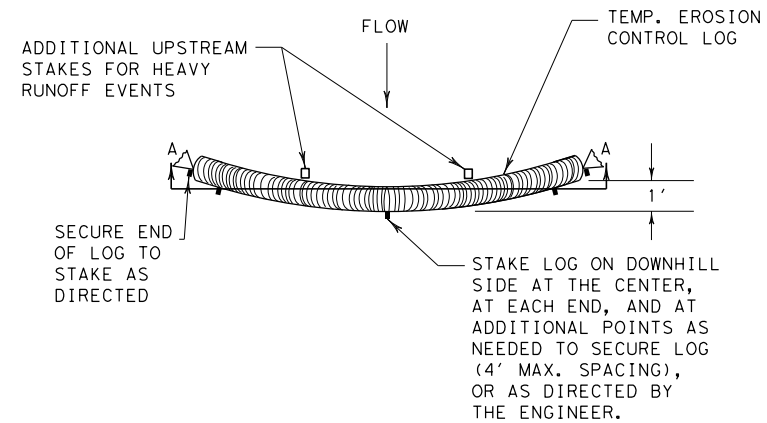


TEMPORARY EROSION,
 SEDIMENT AND WATER
 POLLUTION CONTROL MEASURES
 CONSTRUCTION EXITS
 EC(3)-16

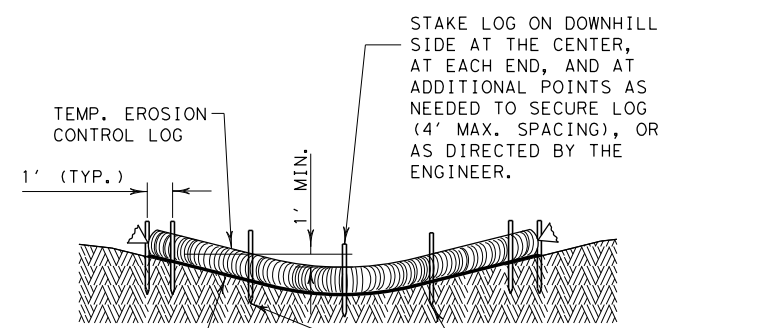
FILE: ec316	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	46	052	CORDOVA
	DIST	COUNTY	SHEET NO.	
	SAT	GUADALUPE	483	

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PLAN VIEW



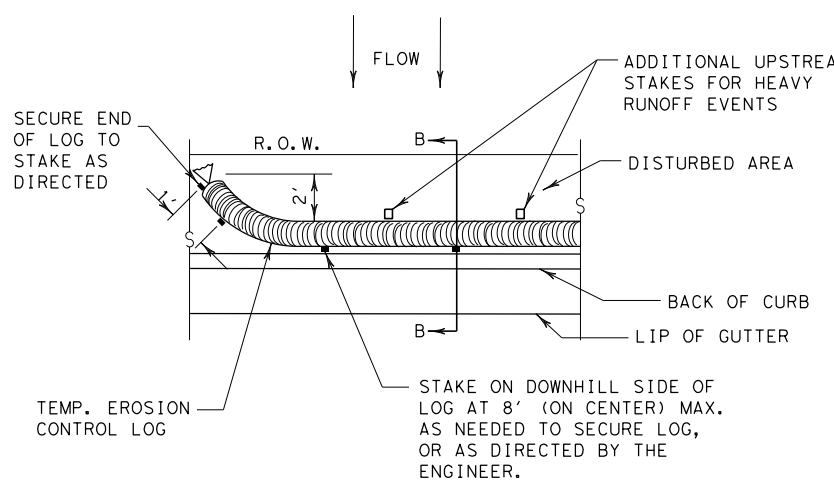
SECTION A-A

EROSION CONTROL LOG DAM

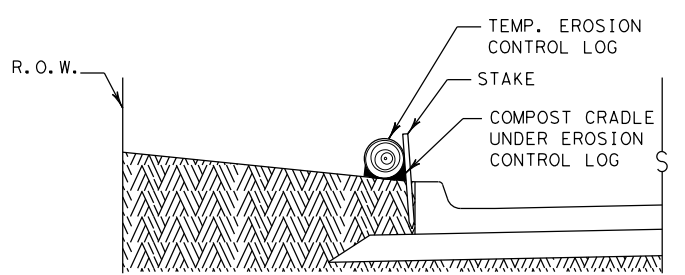
CL-D

LEGEND

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



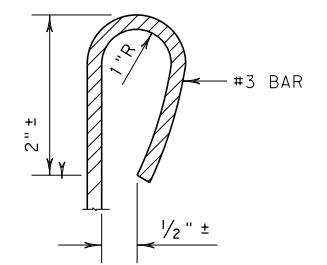
PLAN VIEW



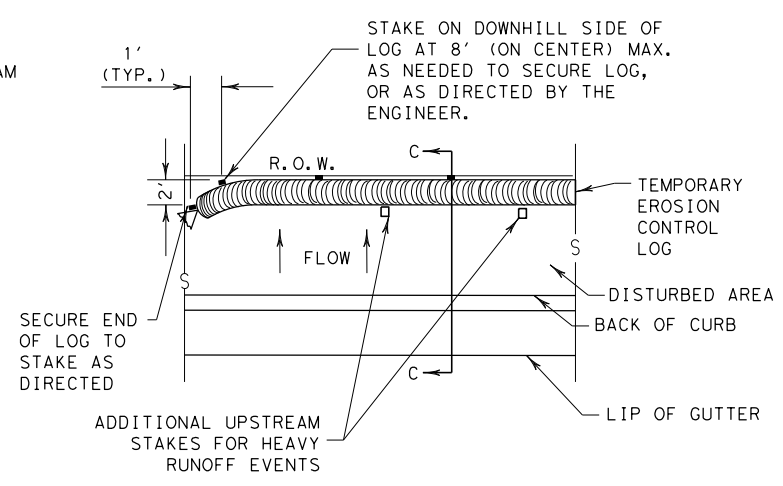
SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

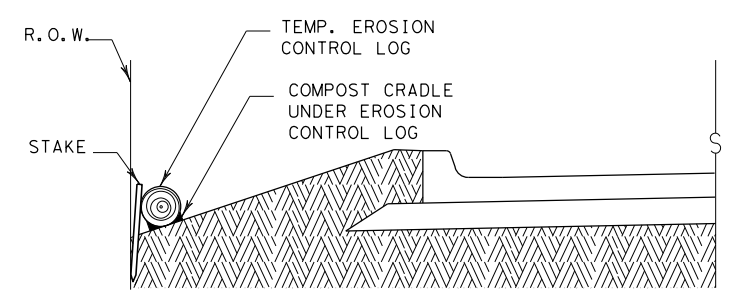
CL-BOC



REBAR STAKE DETAIL



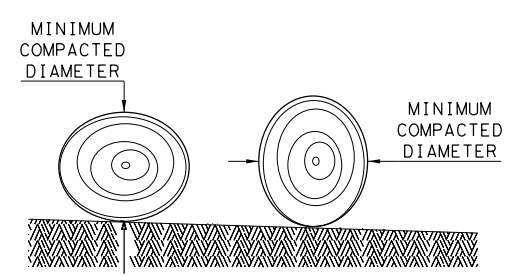
PLAN VIEW



SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

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:

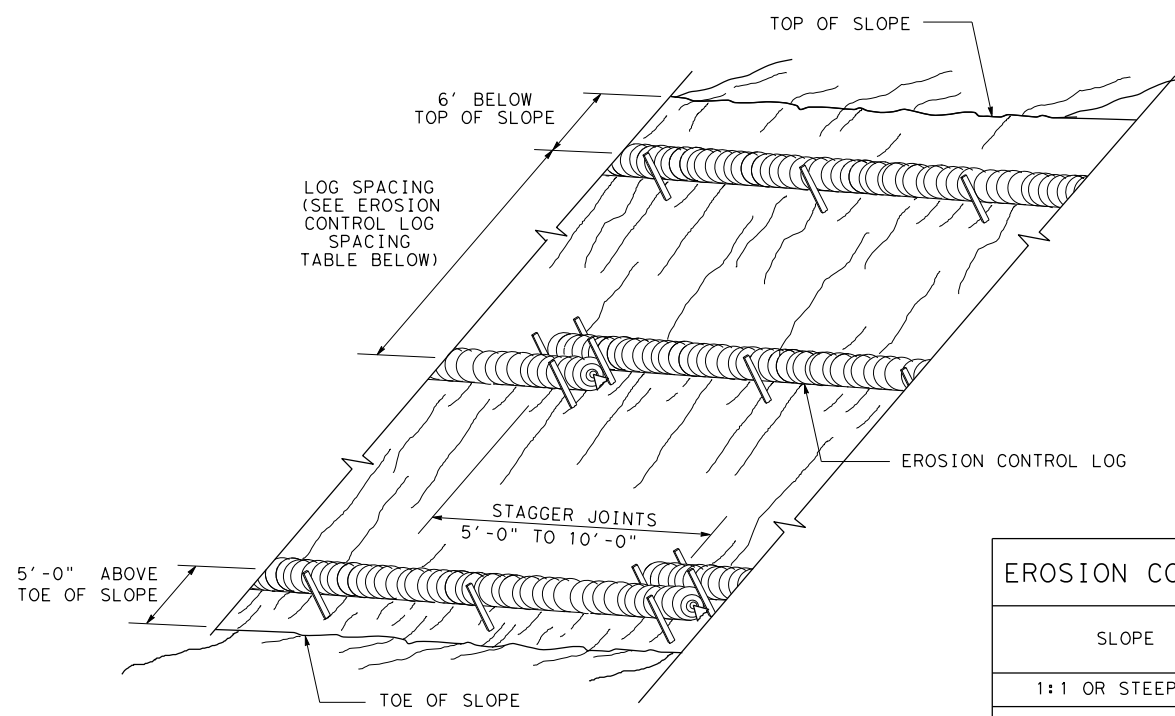
1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE 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	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES EROSION CONTROL LOG EC (9) - 16			
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT
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REVISIONS	0915 46	052	CORDOVA
	DIST	COUNTY	SHEET NO.
	SAT	GUADALUPE	484

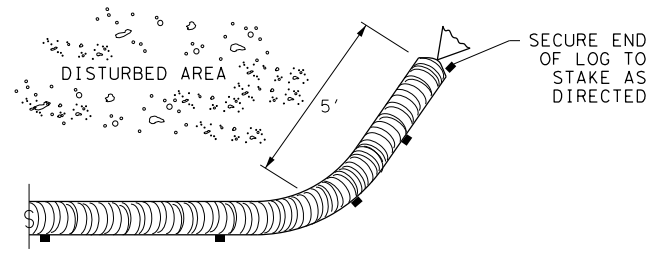
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EROSION CONTROL LOGS ON SLOPES
 STAKE AND TRENCHING ANCHORING

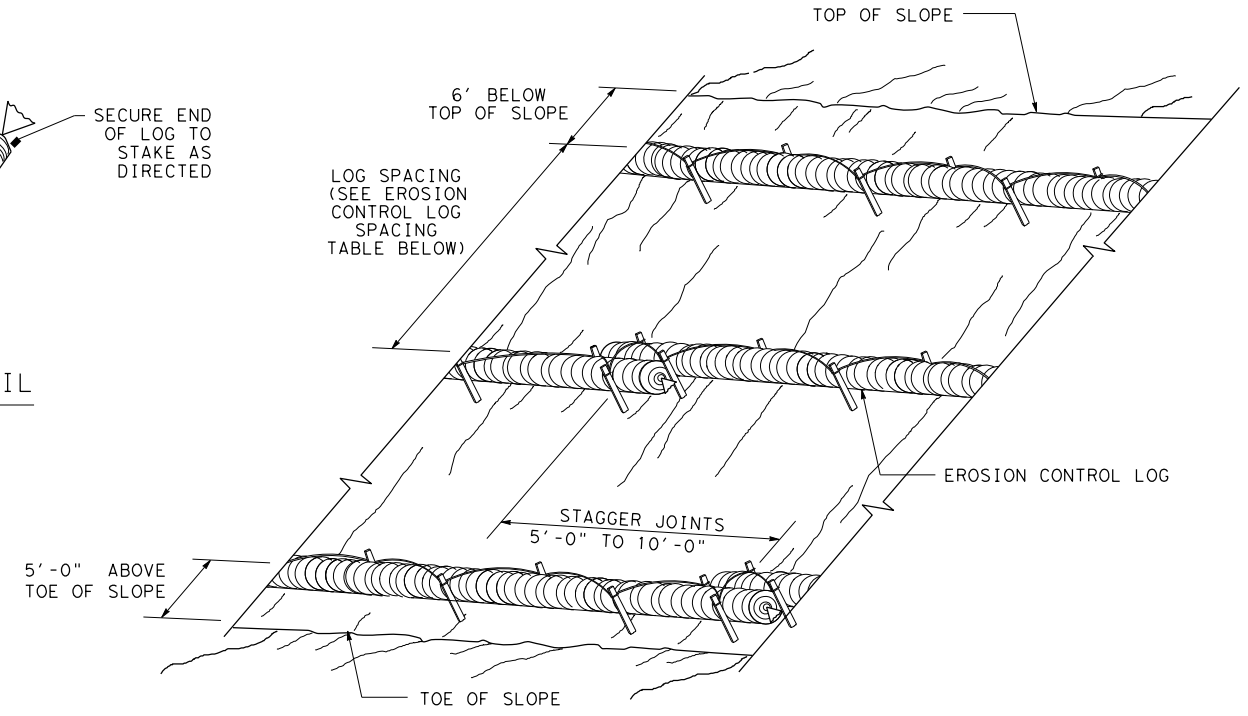
CL-SST



END SECTION RAP DETAIL

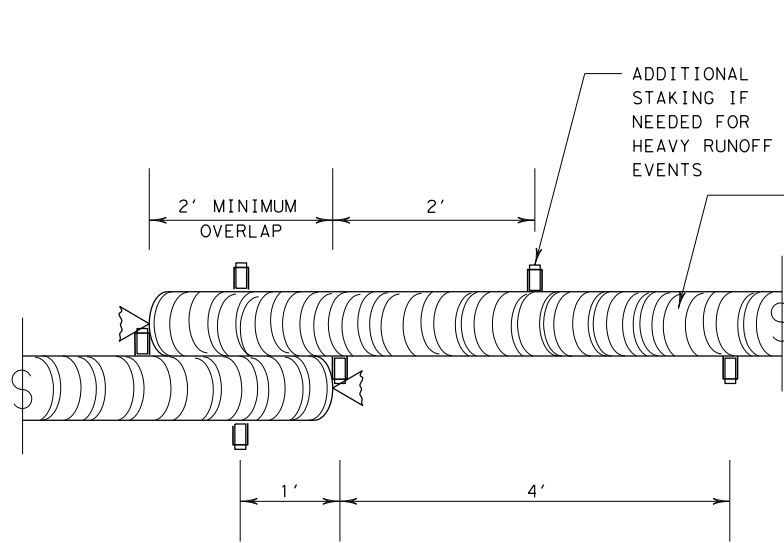
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

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



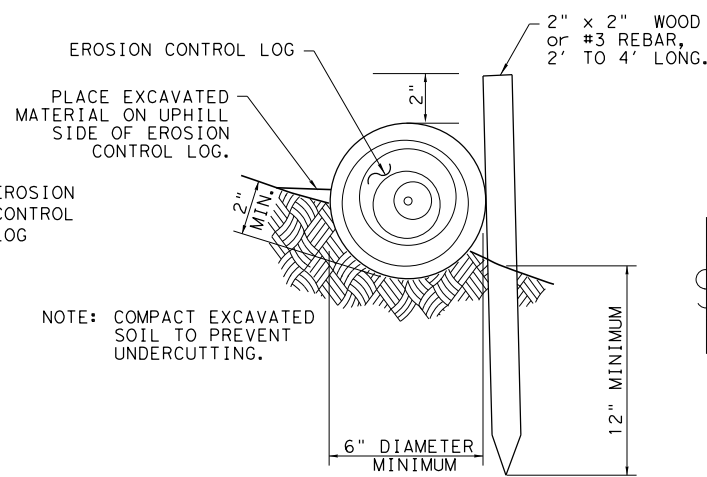
EROSION CONTROL LOGS ON SLOPES
 STAKE AND LASHING ANCHORING

CL-SSL



STAKE AND TRENCHING ANCHORING DETAIL

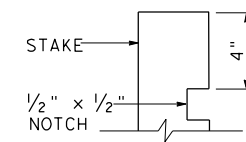
CL-SST



STAKE AND LASHING ANCHORING DETAIL

CL-SSL

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



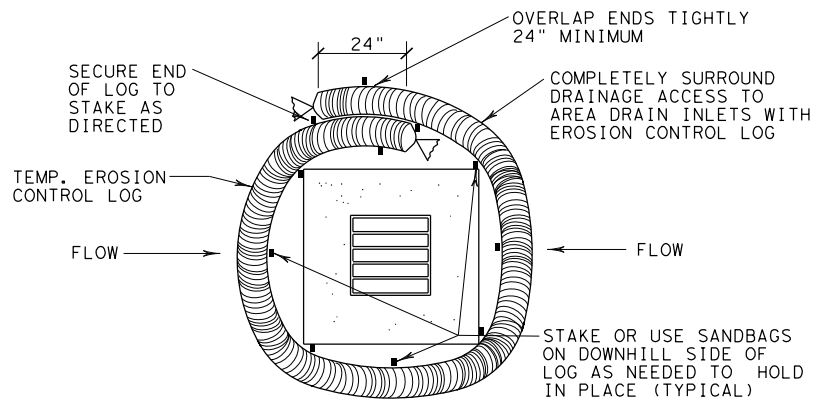
STAKE NOTCH DETAIL

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
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REVISIONS	0915 46	052	CORDOVA
DIST	COUNTY	SHEET NO.	
SAT	GUADALUPE	485	

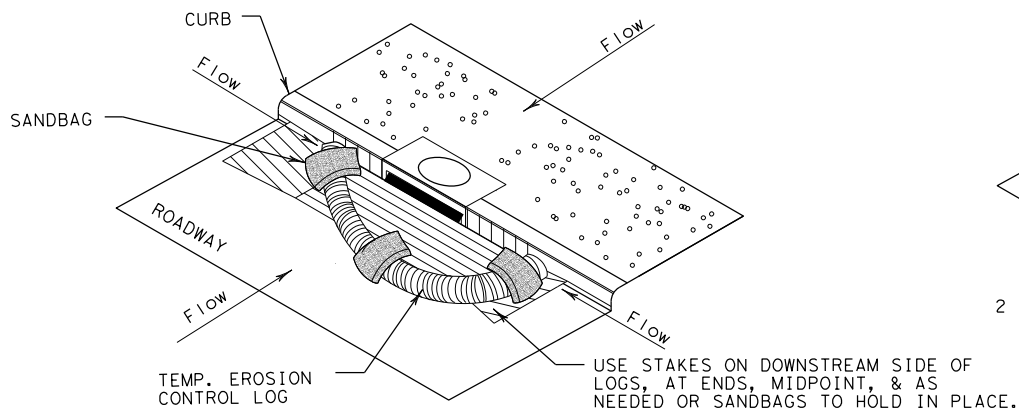
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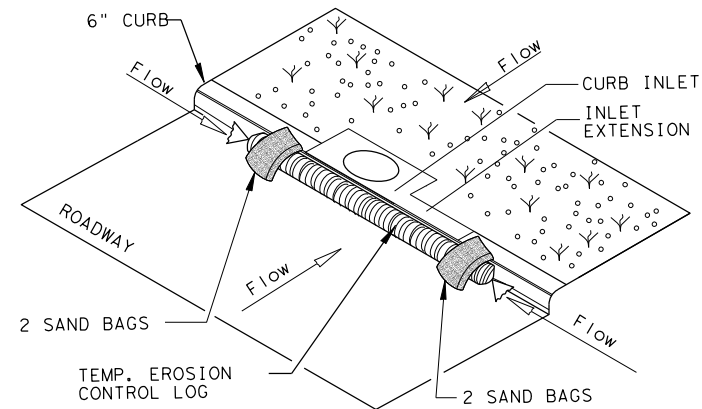
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

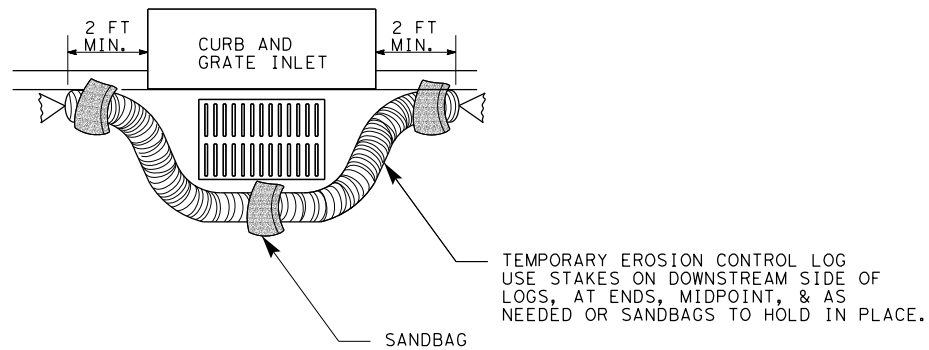
CL-CI



EROSION CONTROL LOG AT CURB INLET

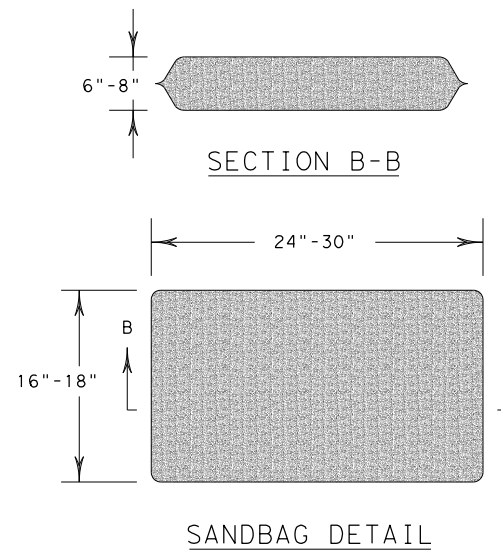
CL-CI

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



EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI



				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	
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REVISIONS	0915	46	052	CORDOVA	
	DIST	COUNTY		SHEET NO.	
	SAT	GUADALUPE		486	